

COMMONWEALTH OF MASSACHUSETTS



---

**CONTRACT DOCUMENTS  
AND SPECIAL PROVISIONS**

---

PROPOSAL NO.	608759-130047
P.V. =	\$13,476,000.00
PLANS	YES

FOR

**Federal Aid Project No. HSI/STP-003S(842)X  
Traffic Signal and Safety Improvements at Three Intersections on Route 6**

**in the Town of**

**SWANSEA**

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

This Proposal to be opened and read:

**TUESDAY, MAY 20, 2025 at 2:00 P.M.**

THIS PAGE IS INTENTIONALLY LEFT BLANK



DOCUMENT 00010

TABLE OF CONTENTS

DOCUMENT 00010  
TABLE OF CONTENTS ..... 00010-1 through 2

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

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

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

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

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

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

DOCUMENT 00715  
SUPPLEMENTAL SPECIFICATIONS ..... 00715-1 through 4

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

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

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

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

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

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

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

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

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

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

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

TABLE OF CONTENTS (Continued)

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

DOCUMENT 00880  
MINIMUM WAGES FOR FEDERAL AND FEDERALLY  
ASSISTED CONTRACTS..... 00880-1 through 14

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

DOCUMENT A00802  
DETAIL SHEETS..... A00802-1 through 30

DOCUMENT A00804  
GEOTECHNICAL REPORT ..... A00804-1 through 74

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

DOCUMENT A00811  
WATERING LOG FOR MASSDOT PLANTINGS..... A00811-1 through 2

DOCUMENT A00816  
RUMBLE STRIP DETAILS ..... A00816-1 through 2

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

DOCUMENT A00850  
MASSACHUSETTS WETLANDS PROTECTION ACT  
REQUEST FOR DETERMINATION OF APPLICABILITY ..... A00850-1 through 108

DOCUMENT A00851  
MASSACHUSETTS WETLANDS PROTECTION ACT  
DETERMINATION OF APPLICABILITY ..... A00851-1 through 8

DOCUMENT A00855  
U.S. FISH AND WILDLIFE SERVICE  
DETERMINATION LETTER ..... A00855-1 through 14

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

DOCUMENT B00420  
PROPOSAL.....B00420-1 through 26

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

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

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

DOCUMENT B00856  
JOINT VENTURE AFFIDAVIT .....B00856-1 through 4

\*\*\* END OF DOCUMENT \*\*\*

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 20, 2025 at 2:00 P.M. \*\***

**SWANSEA**

**Federal Aid Project No. HSI/STP-003S(842)X**

**Traffic Signal and Safety Improvements at Three Intersections on Route 6**

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

PROJECT VALUE = \$13,476,000.00

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 19, 2025

THIS PAGE IS LEFT BLANK INTENTIONALLY

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.





THIS PAGE INTENTIONALLY LEFT BLANK

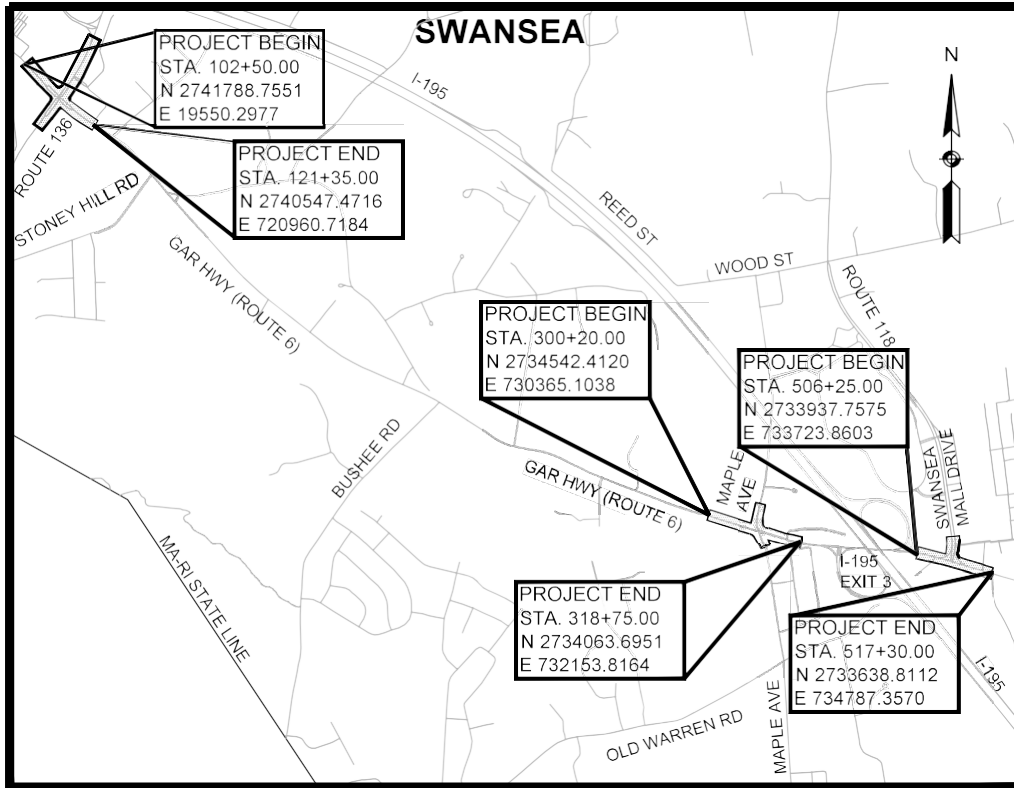
DOCUMENT 00331

### LOCUS MAP

#### SWANSEA

#### Federal Aid Project No. HSI/STP-003S(842)X

#### Traffic Signal and Safety Improvements at Three Intersections on Route 6



NOT TO SCALE

THIS PAGE IS INTENTIONALLY LEFT BLANK

DOCUMENT 00439



Final Report

Interim Report

## CONTRACTOR PROJECT EVALUATION FORM

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

Date: \_\_\_\_\_

City/Town: \_\_\_\_\_ Contractor: \_\_\_\_\_

Project: \_\_\_\_\_ Address: \_\_\_\_\_

F.A. No. \_\_\_\_\_ Contract Number: \_\_\_\_\_

Bid Price: \_\_\_\_\_ Notice to Proceed: \_\_\_\_\_

Funds: State: \_\_\_\_\_ Fed Aid: \_\_\_\_\_ Current Contract Completion Date: \_\_\_\_\_

Date Work Started: \_\_\_\_\_ Date Work Completed\*: \_\_\_\_\_

Contractor's Superintendent: \_\_\_\_\_

Division: (indicates class of work) Highway: \_\_\_\_\_ Bridge: \_\_\_\_\_ Maintenance: \_\_\_\_\_

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

	Excellent 10	Very Good 9	Average 8	7	Fair 6	5	Poor 4	% Rating
<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: \_\_\_\_\_

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

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

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

\*\*\* END OF DOCUMENT \*\*\*

Revised: 04/28/17



DOCUMENT 00440

Final Report

Interim Report

### SUBCONTRACTOR PROJECT EVALUATION FORM

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

Date: \_\_\_\_\_

City/Town: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

Project: \_\_\_\_\_

Address: \_\_\_\_\_

F.A. No.: \_\_\_\_\_

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

Prime Contractor \_\_\_\_\_

Current Contract Completion Date: \_\_\_\_\_

Date Work Started: \_\_\_\_\_

Date Work Completed\*: \_\_\_\_\_

Subcontractor's Superintendent: \_\_\_\_\_

Type of Work Performed by Subcontractor: \_\_\_\_\_

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

	Excellent 10	Very Good 9	Average 8	7	Fair 6	5	Poor 4	% Rating
<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: \_\_\_\_\_

\_\_\_\_\_

**SUBCONTRACTOR PROJECT EVALUATION FORM (Continued)**

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

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

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

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

*(Write Yes or No in space provided)*

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

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

Signed: \_\_\_\_\_  
District Highway Director

EXPLANATION OF RATINGS 1 – 8: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



DOCUMENT 00710  
GENERAL CONTRACT PROVISIONS  
Revised: 04-16-25

NOTICE OF AVAILABILITY

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

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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

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

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

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

ALTERNATIVE DISPUTE RESOLUTION

Forum, Choice of Law and Mediations:

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

\*\*\* END OF DOCUMENT \*\*\*

THIS PAGE IS INTENTIONALLY LEFT BLANK

DOCUMENT 00715



## SUPPLEMENTAL SPECIFICATIONS

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".*



THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT 00719

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

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

Section: Page 00719-

POLICY ..... 2

1. DEFINITIONS..... 3

2. DBE PARTICIPATION ..... 5

    a. Goal ..... 5

    b. Bidders List ..... 5

3. CONTRACTOR ASSURANCES ..... 6

4. REQUIRED SUBCONTRACT PROVISIONS ..... 6

5. ELIGIBILITY OF DBES ..... 6

    a. Massachusetts DBE Directory ..... 6

    b. DBE Certification ..... 6

    c. Joint Venture Approval ..... 7

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

    a. Commercially Useful Function ..... 7

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

    c. Joint Check Policy..... 9

    d. Joint Check Procedure(s) ..... 10

7. AWARD DOCUMENTATION AND PROCEDURES ..... 11

8. COMPLIANCE ..... 13

9. SANCTIONS..... 16

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND  
    CONFIDENTIALITY ..... 16

11. LIST OF ADDITIONAL DOCUMENTS ..... 18

## POLICY

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

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

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

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

<i>Type of Info</i>	<i>Website</i>	<i>Description</i>
MassDOT Highway Division Policies and Info	<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.



---

## 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.

\*\*\*\*\*

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

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

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

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

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

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

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

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

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

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

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

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



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

\*\*\*\*\*

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

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

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

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

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

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

\*\*\*\*\*

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

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

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

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

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

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

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

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

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

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

**ATTACHMENT A - EMPLOYMENT AND MATERIALS  
PREFERENCE FOR APPALACHIAN DEVELOPMENT  
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS  
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

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

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

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

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

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

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

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

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

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

DOCUMENT 00811

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

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

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

**Base Price**

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

**Period Price**

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

**Price Adjustment Determination, Calculation and Payment**

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

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

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

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

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

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

\*\*\*\*\* END OF DOCUMENT \*\*\*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK



DOCUMENT 00812

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

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

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

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

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

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

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

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

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

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

\*\*\* END OF DOCUMENT \*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK

## 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.

END OF DOCUMENT

THIS PAGE IS INTENTIONALLY LEFT BLANK

## DOCUMENT 00814

SPECIAL PROVISIONS  
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

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

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

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

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

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

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

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

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

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

\*\*\* END OF DOCUMENT \*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK



DOCUMENT 00820

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

I. Definitions

For purposes of this contract,

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

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

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

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

II. Equal Opportunity, Non-Discrimination and Affirmative Action

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

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

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

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

\*\*\* END OF DOCUMENT \*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK

## DOCUMENT 00821

ELECTRONIC REPORTING REQUIREMENTS  
CIVIL RIGHTS PROGRAMS AND CERTIFIED PAYROLL

Implemented on March 2, 2009

Revised June 04, 2019

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

## Contractor and Sub-Contractor EBO User Certification

All contractors and sub-contractors must use the EBO software system. The software vendor, Internet Government Solutions (IGS), has developed an online EBO Training Module that is available to contractors and sub-contractors. This module is a self-tutorial which allows all users in the company to access the training, complete the tutorial, and become certified as EBO users for a one time fee of \$75.00. This is the only cost to contractors and sub-contractors associated with the EBO software system. The online EBO Training Module can be accessed at [www.ebotraining.com](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.

\*\*\* END OF DOCUMENT \*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK



DOCUMENT 00859

**CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ‡**

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

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

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

Contract No: 130047 Project No. 608759 Federal Aid No.: HSI/STP-003S(842)X

Location: SWANSEA

Project Description: Traffic Signal and Safety Improvements at Three Intersections on Route 6

**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

THIS PAGE INTENTIONALLY LEFT BLANK



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:** 130047 **City/Town:** SWANSEA  
**Description of Work:** SWANSEA: Federal Aid Project No. HSI/STP-003S(842)X Traffic Signal and Safety Improvements at Three Intersections on Route 6  
**Job Location:** At Three Intersections on Route 6

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <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 <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 <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 <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2024	\$117.16	\$10.08	\$24.29	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <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) <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 WORKER (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</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 <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) <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 <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 <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 <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 <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) <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 <i>BOILERMAKERS LOCAL 29</i>	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

**Apprentice - BOILERMAKER - Local 29**

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

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

**Notes:**

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (NEW BEDFORD)</i>	02/01/2025	\$65.80	\$11.49	\$23.59	\$0.00	\$100.88
	08/01/2025	\$67.95	\$11.49	\$23.59	\$0.00	\$103.03
	02/01/2026	\$69.30	\$11.49	\$23.59	\$0.00	\$104.38
	08/01/2026	\$71.50	\$11.49	\$23.59	\$0.00	\$106.58
	02/01/2027	\$72.90	\$11.49	\$23.59	\$0.00	\$107.98

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

**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 New Bedford**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.90	\$11.49	\$23.59	\$0.00	\$67.98
2	60	\$39.48	\$11.49	\$23.59	\$0.00	\$74.56
3	70	\$46.06	\$11.49	\$23.59	\$0.00	\$81.14
4	80	\$52.64	\$11.49	\$23.59	\$0.00	\$87.72
5	90	\$59.22	\$11.49	\$23.59	\$0.00	\$94.30

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$33.98	\$11.49	\$23.59	\$0.00	\$69.06
2	60	\$40.77	\$11.49	\$23.59	\$0.00	\$75.85
3	70	\$47.57	\$11.49	\$23.59	\$0.00	\$82.65
4	80	\$54.36	\$11.49	\$23.59	\$0.00	\$89.44
5	90	\$61.16	\$11.49	\$23.59	\$0.00	\$96.24

**Notes:**

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

<b>BULLDOZER/GRADER/SCRAPER</b> <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>CAISSON &amp; UNDERPINNING BOTTOM MAN</b> <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$47.35	\$9.90	\$19.05	\$0.00	\$76.30
	06/01/2025	\$48.85	\$9.90	\$19.05	\$0.00	\$77.80
	12/01/2025	\$50.35	\$9.90	\$19.05	\$0.00	\$79.30
	06/01/2026	\$51.90	\$9.90	\$19.05	\$0.00	\$80.85
	12/01/2026	\$53.40	\$9.90	\$19.05	\$0.00	\$82.35

For apprentice rates see "Apprentice- LABORER"

<b>CAISSON &amp; UNDERPINNING LABORER</b> <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$46.20	\$9.90	\$19.05	\$0.00	\$75.15
	06/01/2025	\$47.70	\$9.90	\$19.05	\$0.00	\$76.65
	12/01/2025	\$49.20	\$9.90	\$19.05	\$0.00	\$78.15
	06/01/2026	\$50.75	\$9.90	\$19.05	\$0.00	\$79.70
	12/01/2026	\$52.25	\$9.90	\$19.05	\$0.00	\$81.20

For apprentice rates see "Apprentice- LABORER"

<b>CAISSON &amp; UNDERPINNING TOP MAN</b> <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$46.53	\$9.90	\$19.05	\$0.00	\$75.48
	06/01/2025	\$48.03	\$9.90	\$19.05	\$0.00	\$76.98
	12/01/2025	\$49.53	\$9.90	\$19.05	\$0.00	\$78.48
	06/01/2026	\$51.08	\$9.90	\$19.05	\$0.00	\$80.03
	12/01/2026	\$52.58	\$9.90	\$19.05	\$0.00	\$81.53

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR <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 <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 <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 BRICKLAYERS LOCAL 3 (NEW BEDFORD)	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 - Eastern Mass (New Bedford)**

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

**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**

DEMO: ADZEMAN LABORERS - ZONE 2	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"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	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: BURNERS LABORERS - ZONE 2	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <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 <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 <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 <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 <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2024	\$78.11	\$10.08	\$24.29	\$0.00	\$112.48
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A \$69.83, 3A \$91.79,4A \$102.14 Total Rate						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2024	\$51.97	\$10.08	\$24.29	\$0.00	\$86.34
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A \$54.20, 3A \$73.93,4A \$82.05 Total Rate						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</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) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2024	\$117.16	\$10.08	\$24.29	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2024	\$50.02	\$12.00	\$17.72	\$0.00	\$79.74
	09/01/2025	\$52.25	\$12.25	\$18.61	\$0.00	\$83.11
	09/01/2026	\$54.72	\$12.50	\$19.56	\$0.00	\$86.78

**Apprentice - *ELECTRICIAN - Local 223***

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.01	\$12.00	\$0.60	\$0.00	\$32.61
2	45	\$22.51	\$12.00	\$0.68	\$0.00	\$35.19
3	50	\$25.01	\$12.00	\$0.75	\$0.00	\$37.76
4	55	\$27.51	\$12.00	\$8.59	\$0.00	\$48.10
5	60	\$30.01	\$12.00	\$9.15	\$0.00	\$51.16
6	65	\$32.51	\$12.00	\$9.74	\$0.00	\$54.25
7	70	\$35.01	\$12.00	\$10.30	\$0.00	\$57.31
8	75	\$37.52	\$12.00	\$10.89	\$0.00	\$60.41

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.90	\$12.25	\$0.63	\$0.00	\$33.78
2	45	\$23.51	\$12.25	\$0.71	\$0.00	\$36.47
3	50	\$26.13	\$12.25	\$0.78	\$0.00	\$39.16
4	55	\$28.74	\$12.25	\$9.11	\$0.00	\$50.10
5	60	\$31.35	\$12.25	\$9.71	\$0.00	\$53.31
6	65	\$33.96	\$12.25	\$10.32	\$0.00	\$56.53
7	70	\$36.58	\$12.25	\$10.91	\$0.00	\$59.74
8	75	\$39.19	\$12.25	\$11.52	\$0.00	\$62.96

**Notes:**

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

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

<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 <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
---	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &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 <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 <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 <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"

FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	09/01/2024	\$50.02	\$12.00	\$17.72	\$0.00	\$79.74
	09/01/2025	\$52.25	\$12.25	\$18.61	\$0.00	\$83.11
	09/01/2026	\$54.72	\$12.50	\$19.56	\$0.00	\$86.78

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i>	09/01/2024	\$50.02	\$12.00	\$17.72	\$0.00	\$79.74
<i>LOCAL 223</i>	09/01/2025	\$52.25	\$12.25	\$18.61	\$0.00	\$83.11
	09/01/2026	\$54.72	\$12.50	\$19.56	\$0.00	\$86.78
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <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) <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 <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

**Classification**

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

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$25.98	\$8.83	\$1.76	\$0.00	\$36.57
2	45	\$25.98	\$8.83	\$1.76	\$0.00	\$36.57
3	55	\$31.75	\$8.83	\$3.52	\$0.00	\$44.10
4	55	\$31.75	\$8.83	\$3.52	\$0.00	\$44.10
5	70	\$40.41	\$8.83	\$16.75	\$0.00	\$65.99
6	70	\$40.41	\$8.83	\$16.75	\$0.00	\$65.99
7	80	\$46.18	\$8.83	\$18.51	\$0.00	\$73.52
8	80	\$46.18	\$8.83	\$18.51	\$0.00	\$73.52

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$26.65	\$8.83	\$1.76	\$0.00	\$37.24
2	45	\$26.65	\$8.83	\$1.76	\$0.00	\$37.24
3	55	\$32.58	\$8.83	\$3.52	\$0.00	\$44.93
4	55	\$32.58	\$8.83	\$3.52	\$0.00	\$44.93
5	70	\$41.46	\$8.83	\$16.75	\$0.00	\$67.04
6	70	\$41.46	\$8.83	\$16.75	\$0.00	\$67.04
7	80	\$47.38	\$8.83	\$18.51	\$0.00	\$74.72
8	80	\$47.38	\$8.83	\$18.51	\$0.00	\$74.72

**Notes:** Steps are 750 hrs.

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

FORK LIFT/CHERRY PICKER <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"

GENERATOR/LIGHTING PLANT/HEATERS <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"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2020	\$39.18	\$10.80	\$10.45	\$0.00	\$60.43
--	------------	---------	---------	---------	--------	---------

**Classification**

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

**Apprentice - GLAZIER - Local 1333**

**Effective Date - 06/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.59	\$10.80	\$1.80	\$0.00	\$32.19
2	56	\$22.04	\$10.80	\$1.80	\$0.00	\$34.64
3	63	\$24.49	\$10.80	\$2.45	\$0.00	\$37.74
4	69	\$26.94	\$10.80	\$2.45	\$0.00	\$40.19
5	75	\$29.39	\$10.80	\$3.15	\$0.00	\$43.34
6	81	\$31.83	\$10.80	\$3.15	\$0.00	\$45.78
7	88	\$34.28	\$10.80	\$10.45	\$0.00	\$55.53
8	94	\$36.73	\$10.80	\$10.45	\$0.00	\$57.98

**Notes:**

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

HOISTING ENGINEER/CRANES/GRADALLS	12/01/2024	\$57.03	\$15.55	\$16.50	\$0.00	\$89.08
OPERATING ENGINEERS LOCAL 4	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

**Classification**

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

**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) SHEETMETAL WORKERS LOCAL 17 - B	04/01/2025	\$43.83	\$14.59	\$19.04	\$2.24	\$79.70
	10/01/2025	\$45.08	\$14.59	\$19.04	\$2.24	\$80.95
	04/01/2026	\$46.58	\$14.59	\$19.04	\$2.24	\$82.45

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 223	09/01/2024	\$50.02	\$12.00	\$17.72	\$0.00	\$79.74
	09/01/2025	\$52.25	\$12.25	\$18.61	\$0.00	\$83.11
	09/01/2026	\$54.72	\$12.50	\$19.56	\$0.00	\$86.78

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - B	04/01/2025	\$43.83	\$30.43	\$19.04	\$2.24	\$95.54
	10/01/2025	\$45.08	\$30.43	\$19.04	\$2.24	\$96.79
	04/01/2026	\$46.58	\$30.43	\$19.04	\$2.24	\$98.29

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) PLUMBERS & PIPEFITTERS LOCAL 51	08/26/2024	\$52.49	\$10.80	\$21.40	\$0.00	\$84.69
	08/25/2025	\$55.24	\$10.80	\$21.40	\$0.00	\$87.44

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

HVAC MECHANIC PLUMBERS & PIPEFITTERS LOCAL 51	08/26/2024	\$52.49	\$10.80	\$21.40	\$0.00	\$84.69
	08/25/2025	\$55.24	\$10.80	\$21.40	\$0.00	\$87.44

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS <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"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <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) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	09/01/2024	\$51.23	\$14.75	\$19.61	\$0.00	\$85.59
	09/01/2025	\$54.31	\$14.75	\$19.61	\$0.00	\$88.67
	09/01/2026	\$57.38	\$14.75	\$19.61	\$0.00	\$91.74

**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Southern MA**

**Effective Date - 09/01/2024**

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

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

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

**Notes:**

Steps are 1 year

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

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 37</i>	03/16/2021	\$42.46	\$7.70	\$17.10	\$0.00	\$67.26
--	------------	---------	--------	---------	--------	---------

**Classification**

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

**Apprentice - IRONWORKER - Local 37**

**Effective Date - 03/16/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	\$29.72	\$7.70	\$17.10	\$0.00	\$54.52
2	75	\$31.85	\$7.70	\$17.10	\$0.00	\$56.65
3	80	\$33.97	\$7.70	\$17.10	\$0.00	\$58.77
4	85	\$36.09	\$7.70	\$17.10	\$0.00	\$60.89
5	90	\$38.21	\$7.70	\$17.10	\$0.00	\$63.01
6	95	\$40.34	\$7.70	\$17.10	\$0.00	\$65.14

**Notes:**

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

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	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 LABORERS - ZONE 2	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



**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 <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 <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 <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 <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) <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 <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 <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 <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) <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 <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

**Classification**

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

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

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

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.04	\$11.49	\$21.62	\$0.00	\$59.15
2	60	\$31.25	\$11.49	\$21.62	\$0.00	\$64.36
3	70	\$36.46	\$11.49	\$21.62	\$0.00	\$69.57
4	80	\$41.66	\$11.49	\$21.62	\$0.00	\$74.77
5	90	\$46.87	\$11.49	\$21.62	\$0.00	\$79.98

**Notes:**

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

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

**Classification**

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

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

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

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**

MECH. SWEEPER OPERATOR (ON CONST. SITES) <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"

MECHANICS MAINTENANCE <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"

MILLWRIGHT (Zone 2) <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> <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> <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> <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 <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) <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, 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) <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) * <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) <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	\$51.97	\$10.08	\$24.29	\$0.00	\$86.34
PILE DRIVER LOCAL 56 (ZONE 2)	For apprentice rates see "Apprentice- PILE DRIVER"					
PILE DRIVER	08/01/2024	\$51.97	\$10.08	\$24.29	\$0.00	\$86.34
PILE DRIVER LOCAL 56 (ZONE 2)						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - PILE DRIVER - Local 56 Zone 2</b>						
<b>Effective Date - 08/01/2024</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$23.39	\$10.08	\$2.53	\$0.00	\$36.00
2	55	\$28.58	\$10.08	\$5.07	\$0.00	\$43.73
3	70	\$36.38	\$10.08	\$19.22	\$0.00	\$65.68
4	80	\$41.58	\$10.08	\$21.76	\$0.00	\$73.42

**Notes:**  
 % Indentured BEFORE 8/1/2020, 50/60/70/75/80/80/90/90  
 Step 1 \$60.36/2 \$65.75/3 \$70.75/4 \$73.35/5&6 \$75.95/7&8 81.14

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

PIPELAYER LABORERS - ZONE 2	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"

PIPELAYER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	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)"

PLUMBER & PIPEFITTER PLUMBERS & PIPEFITTERS LOCAL 51	08/26/2024	\$52.49	\$10.80	\$21.40	\$0.00	\$84.69
	08/25/2025	\$55.24	\$10.80	\$21.40	\$0.00	\$87.44

<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 - PLUMBER/PIPEFITTER - Local 51**

**Effective Date - 08/26/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$21.00	\$10.15	\$2.50	\$0.00	\$33.65
2	50	\$26.25	\$10.15	\$2.50	\$0.00	\$38.90
3	60	\$31.49	\$10.15	\$8.90	\$0.00	\$50.54
4	70	\$36.74	\$10.15	\$14.24	\$0.00	\$61.13
5	80	\$41.99	\$10.15	\$17.80	\$0.00	\$69.94

**Effective Date - 08/25/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.10	\$10.15	\$2.50	\$0.00	\$34.75
2	50	\$27.62	\$10.15	\$2.50	\$0.00	\$40.27
3	60	\$33.14	\$10.15	\$8.90	\$0.00	\$52.19
4	70	\$38.67	\$10.15	\$14.24	\$0.00	\$63.06
5	80	\$44.19	\$10.15	\$17.80	\$0.00	\$72.14

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

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

PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/26/2024	\$52.49	\$10.80	\$21.40	\$0.00	\$84.69
	08/25/2025	\$55.24	\$10.80	\$21.40	\$0.00	\$87.44

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

PNEUMATIC DRILL/TOOL OPERATOR <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) <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
POWDERMAN & BLASTER <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"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <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 <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) <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) <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 <i>TEAMSTERS 170 - Dauphinis (Bellingham)</i>	01/01/2025	\$27.60	\$11.26	\$6.15	\$0.00	\$45.01
RECLAIMERS <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
RIDE-ON MOTORIZED BUGGY OPERATOR <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"						
ROLLER/SPREADER/MULCHING MACHINE <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.Roofing Waterproofing &Roofing Damproofg) <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 <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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - B</i>	04/01/2025	\$43.83	\$14.59	\$19.04	\$2.24	\$79.70
	10/01/2025	\$45.08	\$14.59	\$19.04	\$2.24	\$80.95
	04/01/2026	\$46.58	\$14.59	\$19.04	\$2.24	\$82.45

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

**Effective Date - 04/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.53	\$14.59	\$4.18	\$1.09	\$37.39
2	45	\$19.72	\$14.59	\$4.71	\$1.17	\$40.19
3	50	\$21.92	\$14.59	\$11.84	\$1.45	\$49.80
4	55	\$24.11	\$14.59	\$11.84	\$1.52	\$52.06
5	60	\$26.30	\$14.59	\$15.53	\$1.64	\$58.06
6	65	\$28.49	\$14.59	\$15.84	\$1.71	\$60.63
7	70	\$30.68	\$14.59	\$16.15	\$1.78	\$63.20
8	75	\$32.87	\$14.59	\$16.45	\$1.86	\$65.77
9	80	\$35.06	\$14.59	\$16.76	\$1.93	\$68.34
10	85	\$37.26	\$14.59	\$17.07	\$2.00	\$70.92

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.03	\$14.59	\$4.18	\$1.09	\$37.89
2	45	\$20.29	\$14.59	\$4.71	\$1.17	\$40.76
3	50	\$22.54	\$14.59	\$11.84	\$1.45	\$50.42
4	55	\$24.79	\$14.59	\$11.84	\$1.52	\$52.74
5	60	\$27.05	\$14.59	\$15.53	\$1.64	\$58.81
6	65	\$29.30	\$14.59	\$15.84	\$1.71	\$61.44
7	70	\$31.56	\$14.59	\$16.15	\$1.78	\$64.08
8	75	\$33.81	\$14.59	\$16.45	\$1.86	\$66.71
9	80	\$36.06	\$14.59	\$16.76	\$1.93	\$69.34
10	85	\$38.32	\$14.59	\$17.07	\$2.00	\$71.98

**Notes:**

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

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <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
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <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 <i>SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2</i>	03/01/2025	\$64.93	\$11.51	\$23.80	\$0.00	\$100.24

**Apprentice - SPRINKLER FITTER - Local 550 (Section B) Zone 2**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.73	\$11.51	\$13.07	\$0.00	\$47.31
2	40	\$25.97	\$11.51	\$13.90	\$0.00	\$51.38
3	45	\$29.22	\$11.51	\$14.72	\$0.00	\$55.45
4	50	\$32.47	\$11.51	\$15.55	\$0.00	\$59.53
5	55	\$35.71	\$11.51	\$16.38	\$0.00	\$63.60
6	60	\$38.96	\$11.51	\$17.20	\$0.00	\$67.67
7	65	\$42.20	\$11.51	\$18.03	\$0.00	\$71.74
8	70	\$45.45	\$11.51	\$18.85	\$0.00	\$75.81
9	75	\$48.70	\$11.51	\$19.68	\$0.00	\$79.89
10	80	\$51.94	\$11.51	\$20.50	\$0.00	\$83.95

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 <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 <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"

TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2024	\$40.69	\$11.75	\$14.53	\$0.00	\$66.97
	09/01/2025	\$42.52	\$12.00	\$15.30	\$0.00	\$69.82
	09/01/2026	\$44.41	\$12.25	\$16.09	\$0.00	\$72.75
	09/01/2027	\$46.51	\$12.50	\$16.93	\$0.00	\$75.94

**Classification**

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

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223**

**Effective Date - 09/01/2024**

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

**Notes:** See Electrician Apprentice Wages  
 Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages  
**Apprentice to Journeyworker Ratio:2:3\*\*\***

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

**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

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

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$33.45	\$11.49	\$23.59	\$0.00	\$68.53
2	60	\$40.13	\$11.49	\$23.59	\$0.00	\$75.21
3	70	\$46.82	\$11.49	\$23.59	\$0.00	\$81.90
4	80	\$53.51	\$11.49	\$23.59	\$0.00	\$88.59
5	90	\$60.20	\$11.49	\$23.59	\$0.00	\$95.28

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

TEST BORING DRILLER LABORERS - FOUNDATION AND MARINE	12/01/2024	\$50.20	\$9.90	\$19.05	\$0.00	\$79.15
	06/01/2025	\$51.70	\$9.90	\$19.05	\$0.00	\$80.65
	12/01/2025	\$53.20	\$9.90	\$19.05	\$0.00	\$82.15
	06/01/2026	\$54.75	\$9.90	\$19.05	\$0.00	\$83.70
	12/01/2026	\$56.25	\$9.90	\$19.05	\$0.00	\$85.20

For apprentice rates see "Apprentice- LABORER"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$46.32	\$9.90	\$19.05	\$0.00	\$75.27
	06/01/2025	\$47.82	\$9.90	\$19.05	\$0.00	\$76.77
	12/01/2025	\$49.32	\$9.90	\$19.05	\$0.00	\$78.27
	06/01/2026	\$50.87	\$9.90	\$19.05	\$0.00	\$79.82
	12/01/2026	\$52.37	\$9.90	\$19.05	\$0.00	\$81.32
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$46.20	\$9.90	\$19.05	\$0.00	\$75.15
	06/01/2025	\$47.70	\$9.90	\$19.05	\$0.00	\$76.65
	12/01/2025	\$49.20	\$9.90	\$19.05	\$0.00	\$78.15
	06/01/2026	\$50.75	\$9.90	\$19.05	\$0.00	\$79.70
	12/01/2026	\$52.25	\$9.90	\$19.05	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <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"						
TRAILERS FOR EARTH MOVING EQUIPMENT <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 <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) <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 <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"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <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 <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
WAGON DRILL OPERATOR <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) <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 <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 <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/26/2024	\$52.49	\$10.80	\$21.40	\$0.00	\$84.69
	08/25/2025	\$55.24	\$10.80	\$21.40	\$0.00	\$87.44
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$29.67	\$9.25	\$1.89	\$0.00	\$40.81
	For apprentice rates see "Apprentice- LINEMAN"					
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$10.27	\$0.00	\$61.55
	For apprentice rates see "Apprentice- LINEMAN"					
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$34.62	\$9.25	\$10.07	\$0.00	\$53.94
	For apprentice rates see "Apprentice- LINEMAN"					

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$42.03	\$9.25	\$14.35	\$0.00	\$65.63
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$37.09	\$9.25	\$10.87	\$0.00	\$57.21
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$22.25	\$9.25	\$1.82	\$0.00	\$33.32
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$49.45	\$9.25	\$17.48	\$0.00	\$76.18

**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

**Effective Date - 08/30/2020**

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:2**

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

<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>
-----------------------	-----------------------	------------------	---------------	----------------	--------------------------------------	-------------------

---

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, MA Suffolk, NH Rockingham.	
5403 Fall River- New Bedford MA, Bristol	1.6
9243 Worcester-Fitchburg-Leominster, MA	1.6
6323 Springfield-Chicopee-Holyoke MA-CT MA Hampden, MA Hampshire	
Non-SMSA Counties: MA Barnstable, MA Dukes, MA Nantucket	3.6
Non-SMSA Counties: MA Franklin	5.9

## APPENDIX C

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited English proficiency), age, sex, disability, or low-income status in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontractors, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor’s obligations under this contract and the Acts and the Regulations relative to nondiscrimination on the grounds of race, color, national origin (including limited English proficiency), age, sex, disability, or low-income status.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto, and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Massachusetts Department of Transportation (MassDOT) or FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor will so certify to MassDOT or FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor’s noncompliance with the Nondiscrimination provisions of this contract, MassDOT will impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to:
  - a. withholding payments to the contractor under the contract until the contractor complies; and/or
  - b. cancelling, terminating, or suspending a control, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as MassDOT or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request MassDOT to enter into any litigation to protect the interests of MassDOT. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

## APPENDIX D

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor,” which includes consultants) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

**PERTINENT NON-DISCRIMINATION AUTHORITIES:**

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

\*\*\* END OF DOCUMENT \*\*\*

DOCUMENT 00880

Revised January 12, 2022



# **DEPARTMENT OF LABOR**

**Employment Standards Administration**

## **MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS**

THIS PAGE INTENTIONALLY LEFT BLANK



	<p>spent performing on the contract in 2025.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p> <p>listed determination,</p>	<p>. Executive Order 13658 generally applies to the contract.</p> <p>. The contractor must pay covered workers at least \$13.30 per hour (or the applicable wage rate on this wage if it is higher) for all hours spent performing on that contract in 2025.</p>

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

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



Modification Number	Publication Date
0	01/03/2025
1	03/14/2025
2	03/21/2025
3	04/04/2025

ELEC0103-003 03/01/2025

	Rates	Fringes
ELECTRICIAN (Includes Traffic Signalization).....	\$ 64.26	36.99

-----  
-----

ENGI0004-021 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; Crane; Gradall; Loader; Paver  
 (Asphalt, Aggregate, and Concrete); Post Driver  
 (Guardrail/Fences)  
 Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

-----  
-----

IRON0007-029 03/16/2024

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 54.68	36.48

-----  
-----

LABO0133-001 12/01/2024

	Rates	Fringes
LABORER (Concrete Surfacers).....	\$ 46.20	29.85

-----  
-----

LABO0385-001 12/01/2024

	Rates	Fringes
LABORER		
Common or General.....	\$ 38.95	29.41
Fence Erection.....	\$ 38.95	29.41

-----  
-----

\* LABO0721-001 12/01/2024

	Rates	Fringes
LABORER (Guardrail Installation).....	\$ 38.95	29.81

-----  
-----

LABO0876-002 06/01/2018

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

-----  
-----

PAIN0035-023 07/01/2024

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

-----  
-----

SUMA2014-007 01/11/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER....	\$ 56.70	21.08
IRONWORKER, REINFORCING.....	\$ 42.13	18.15

-----  
-----



IRONWORKER, STRUCTURAL.....	\$ 45.19	17.30
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 34.72	16.01
LABORER: Concrete Saw (Hand Held/Walk Behind).....	\$ 44.43	14.18
LABORER: Jack Hammer.....	\$ 35.32	18.48
OPERATOR: Forklift.....	\$ 64.67	0.00
OPERATOR: Mechanic.....	\$ 48.74	11.79
OPERATOR: Piledriver.....	\$ 42.56	17.34
PAINTER: Spray (Linestriping)....	\$ 47.30	6.42
TRAFFIC CONTROL: Flagger.....	\$ 23.00	20.44
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 53.35	12.78
TRUCK DRIVER: Concrete Truck....	\$ 33.69	15.79
TRUCK DRIVER: Dump Truck.....	\$ 39.03	12.89
TRUCK DRIVER: Flatbed Truck.....	\$ 48.53	0.00

-----  
-----

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

=====  
=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any

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

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

-----  
-----

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular

rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

#### Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

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

#### Union Average Rate Identifiers

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

used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

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

### Survey Rate Identifiers

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

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

### State Adopted Rate Identifiers

The "SA" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the "SA" identifier took effect under state law in the state from which the rates were adopted.

-----

#### WAGE DETERMINATION APPEALS PROCESS

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

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

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

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT A00801

**SPECIAL PROVISIONS****SWANSEA****Federal Aid Project No. HSI/STP-003S(842)X  
Traffic Signal and Safety Improvements at Three Intersections on Route 6**

Labor participation goals for this Project shall be 15.3% for minorities and 6.9% for women for each job category. The goals are applicable to both Contractor's and Subcontractor's on-site construction workforce. Refer to Document 00820 for details.

**SCOPE OF WORK**

All work under this Contract shall be done in conformance with the *2025 Standard Specifications for Highways and Bridges*, the *Supplemental Specifications* contained in this book, the *Construction Standard Details* in effect as of 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.

The proposed project consists of geometric modification of the intersection at Grand Army of the Republic Highway (Route 6) at three locations (Market Street/Route 136, Maple Avenue, and Swansea Mall Drive/Route 118) to include exclusive left turn lanes and bicycle and pedestrian accommodation as part of the proposed safety improvement work. The work to be done under this contract also consists of furnishing and installing of new traffic signal equipment at the intersections including emergency vehicle pre-emption system, bicycle and vehicles loop detectors, construction of ADA compliant pedestrian curb ramps, sidewalks, and driveways, full depth box widening, pavement standard milling and resurfacing, new pavement markings and signs, drainage improvements, installation of granite curbing, loam and seeding, and all other incidental items of work included in the contract document. Existing utility pole relocation will be done by others.

**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.

## **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.

### **BIDDERS LIST**

Pursuant to the provisions of 49 CFR Part 26.11 all official bidders will be required to report the names, addresses and telephone numbers of all firms that submitted bids or quotes in connection with this project. Failure to comply with a written request for this information within 15 business days may result in a recommendation to the Prequalification Committee that prequalification status be suspended until the information is received.

The Department will survey all firms that have submitted bids or quotes during the previous year prior to setting the annual goal and shall request that each firm report its age and gross receipts for the year.

---

## **WORK SCHEDULE**

No work that will disrupt travel on the existing roadways (lane closures, lane shifts, trenching, etc.) shall be done from 6:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM.

The milling and pavement operations shall be restricted to overnight hours. All other work to be performed at night shall be approved in writing by the Engineer and MassDOT prior to performing such work. The Contractor will be permitted to perform milling and pavement overlay operations between 8:00 pm and 6:00 am daily, Monday night through Thursday night. The Contractor shall obtain the approval of overnight hours work from the MassDOT. All equipment and personnel must be removed from the roadway prior to 6:00 AM.

Generally, work on this project is to be executed in 1 shift per day per location, 5 days a week between the hours of 7:00 am and 3:30 pm. Work within the roadways that will unduly disrupt travel on the existing roadways (lane closures, trenching, etc.) may only be executed between 9:00 am and 3:00 pm.

District 5 may, at its discretion, adjust the allowed work hours if excessive delays are observed.

The Prime Contractor and all subcontractors shall work the same shift. Set-up and removal of all equipment and materials for construction and/or traffic maintenance shall be done during the prescribed work hours. The roadway shall be free of the Contractor's personnel and operations during other hours.

The Contractor shall coordinate the work schedule with MassDOT and the Town of Swansea.

## **PROVISIONS FOR TRAVEL AND PROSECUTION OF WORK**

*(Supplementing Subsections 7.09, 7.10 and 8.03)*

The Contractor shall also be responsible for notifying the Town of Swansea, in writing, at least two weeks in advance of commencement of work. The Contractor shall also coordinate with the Town of Swansea, as necessary, throughout the duration of the project to ensure that work on this project, is coordinated with other ongoing projects throughout the Town.

All safety signing, temporary pavement markings, reflectorized and lighted drums, and all other safety controls used for construction operations shall conform to the NCHRP 350, MASH, and the MUTCD, Current Edition, for Streets and Highways including all amendments.

## **SAWCUTS**

Sawcuts required for existing pavement at the limit of existing asphalt sidewalk where proposed sidewalk limit of work ends and required for existing asphalt driveways where proposed hot mix driveways limit of work ends shall be considered incidental to the respective contract items and no further compensation will be made.

All sawcutting necessary for construction of concrete sidewalks, driveways and pedestrian curb ramps is incidental to the respective items.

---

## **NORTHERN LONG-EARED BAT PROTECTION**

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

On May 30, 2023 BSC Group, on behalf of MassDOT Highway Division Environmental Services, conducted a northern long-eared bat summer presence/absence survey using acoustic detection methods, in accordance with the 2023 survey guidelines. The survey did not detect northern long-eared bat, and as stated within the survey guidelines, the survey is valid for five years. Due to the 5-year validity of the negative presence/absence survey, it is recommended that the contractor conduct all activities that could result in stressors to the bats such as tree removal/trimming, bridge and/or structure removal/maintenance, lighting, or use of percussive, by May 30, 2028. If additional stressor producing work is proposed by the Contractor past this date, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Due to the negative survey results, the project is eligible for a May Affect, Not Likely to Adversely Affect (NLAA) determination, without Avoidance and Minimizations Measures (AMMs), in accordance with the FHWA, FRA and FTA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat. On behalf of FHWA, the lead federal agency for Section 7 consultation, MassDOT submitted a Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat to the USFWS through the Information for Planning and Consultation (IPaC) webpage and generated a NLAA documentation letter (see **Document A00855**). Therefore, the project has completed Section 7 consultation through the Endangered Species Act, and no AMMs apply to the project.

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

## **ENVIRONMENTAL PERMITTING**

A Negative Determination has been obtained from the Swansea Conservation Commission under the Wetlands Protection Act for proposed work around wetland resource areas. 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 5 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 5 Environmental Engineer. The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to modify or obtain the environmental permits.

## **BUILD AMERICA BUY AMERICA PREFERENCE**

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

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

---

**BUILD AMERICA BUY AMERICA PREFERENCE** (Continued)

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

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

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

**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.



## **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.

## **HOLIDAY WORK RESTRICTIONS** (Continued)

### Memorial Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

### Bunker Hill Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

### Juneteenth

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

### Independence Day (Federal Holiday)

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

### Labor Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

### Columbus Day (Federal Holiday)

No work on major arterials from 5:00 AM on the Friday before, until the normal start of business on the following day

### Veterans' Day (Federal Holiday)

No work restrictions due to traffic concerns.

### Thanksgiving Day (Federal Holiday)

No work on major arterials from 5:00 AM two days before until the normal start of business on the following Monday.

### Christmas Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

---

## **SUBSECTION 8.14 UTILITY COORDINATION, DOCUMENTATION, AND MONITORING RESPONSIBILITIES**

### A. GENERAL

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

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

### B. PROJECT UTILITY COORDINATION (PUC) FORM

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

### C. INITIATION OF UTILITY WORK

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

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

#### C.1 - BASELINE SCHEDULE – UTILITY BASIS

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

---

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

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

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

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

**D. UTILITY DELAYS**

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

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

---

**SUBSECTION 8.14** (Continued)

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

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

**E. LOCATION OF UTILITIES**

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

**F. POST UTILITY SURVEY – NOTIFICATION**

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

**G. MEETINGS AND COOPERATION WITH UTILITY OWNERS**

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

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

**H. FORCE ACCOUNT / UTILITY MONITORING REQUIREMENTS**

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

**I. ACCESS AND INSPECTION**

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

---

**SUBSECTION 8.02 SCHEDULE OF OPERATIONS**

Replace this subsection with the following:

An integrated cost and schedule controls program shall be implemented by the Contractor to track and document the progress of the Work from Notice to Proceed (NTP) through the Contractor Field Completion (CFC) Milestone. The Contractor's schedules will be used by the Engineer to monitor project progress, plan the level-of-effort required by the Department's work force and consultants and as a critical decision-making tool. Accordingly, the Contractor shall ensure that it complies fully with the requirements specified herein and that its schedules are both accurate and updated as required by the specification throughout the life of the project. Detailed requirements are provided in Division II, Section 722 Construction Scheduling.

**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.

---

**TEMPORARY ACCESS TO AREA MERCHANTS AND BUSINESSES**

*(Supplementing Subsections 8.02 and 8.06)*

The work is in residential and commercial business sections of the Town and access to all residences and businesses must be maintained at all times. The Contractor shall provide safe and ready means of ingress and egress to all residences, businesses and professional offices in the project area, both day and night, for the duration of the project.

**DRAINAGE**

The Contractor shall adjust all existing and proposed drainage castings once to intermediate grade and again to finished grade as directed by the Engineer.

All drainage castings adjustments in the existing drainage structures will be measured once and paid under Contract Bid Item 220.

In the proposed Drainage Structures, the first time installation and adjustment of the casting will be incidental to the work of the respective proposed Drainage structure bid item, but the second time adjustment to the finished grade, as required by the Engineer, it will be paid under item 220.

Where new pipe is shown on the Drawings to be connected into an existing drainage structure to remain, the existing structures shall be first cleaned to remove all mud, debris, and other material. The existing structure wall shall be carefully and neatly cut to provide the minimum size opening required for insertion of the new pipe. The proposed pipe end shall be set or cut-off flush with the inside face of the existing structure wall and the remaining space around the pipe completely filled with cement grout for the full thickness of the structure wall.

Existing shaped inverts shall be reconstructed as necessary to provide a smooth and uniform flow channel from the new pipe through the existing structure.

No separate payment will be made for the cost of connecting new pipes into existing structures, or necessary alterations of existing structure, but all costs in connection therewith shall be included in the unit prices bid for the various pipe items.

**PROPERTY BOUNDS**

The Contractor shall exercise due care when working around all property bounds, which are to remain. Should any damage to a bound result from the actions of the Contractor, the bound shall be replaced and/or realigned by a professional Land Surveyor registered in the Commonwealth of Massachusetts retained by the Contractor as required by the Engineer. No additional compensation will be due the Contractor for the materials and labor required for reestablishing the bound in its proper position.

---

**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.

**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 2.07 Million 18-kip (80-kn) ESALs.

**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

**NOTICE TO OWNERS OF UTILITIES**

(Supplementing Subsections 5.05, 7.13 & 7.18)

All drainage & water system alterations indicated on the Contract Documents or as required by the Engineer, shall be performed by the Contractor unless noted otherwise. The Contractor shall make all necessary alterations under the appropriate items, which shall include the cost of all labor, materials, equipment and other incidental items necessary to perform the work required.

The Contractor shall give written notice to all public service corporations or officials, owning or having charge of public or privately owned utilities, of his intention to commence operations affecting such utilities one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

Before commencing work on service connections, the Contractor shall contact the serving utility to ensure that proper construction procedures are followed.

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



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

National Grid (Electric)  
55 Bearfoot Road  
Northborough, MA 01532  
Attn: Noah Skole  
(617) 706-1736

Liberty Utilities (Gas)  
PO Box 911  
Fall River, MA 02721  
Attn: John Amorin  
(774) 627- 2541

Enbridge  
8 Wilson Way  
Westwood, MA 02090  
Attn: Kathy M. Aruda  
(508) 938-7728

Verizon (Telephone)  
385 Myles Standish Blvd.  
Taunton, MA 02780  
Attn: Karen Mealy  
(774) 409-3160

Verizon Rhode Island  
85 High Street  
Pawtucket, RI 02860  
Attn: Pete DeCosta  
(401) 727-9543

Swansea Water District (Water)  
700 Wilbur Avenue  
Swansea, MA 02777  
Attn: Robert A. Marquis  
(508) 672-9746

Comcast Cable Corporation (Cable)  
PO Box 6505, 5 Omni Way  
Chelmsford, MA 01824  
Attn: Wendy Brown  
(978) 848-5163

Radio Alarm (Fire Alarm)  
Attn: Swansea Fire Alarm  
(508) 672-4305

Swansea Highway Department (DPW)  
101 Gardners Neck Road  
Swansea, MA 02777  
Attn: Moe Pukulis  
(508) 678-5615

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

Open Cape  
PO Box 1148  
Barnstable, MA 02630  
Attn: Gary Farrenkopf

CapeNet LLC  
1900 West Park Drive, Suite 280  
Westborough, MA 01581  
Attn: Shannon Silvas  
(508) 744-5080

**NATIONAL GRID EMERGENCY TELEPHONE NUMBERS**

**ELECTRIC:**

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

**LIBERTY UTILITIES EMERGENCY TELEPHONE NUMBERS**

**GAS:**

Outage/ Emergency: 800-936-7000  
Customer Support: 800-544-4944

**MULTIPLE PROJECT LOCATIONS**

The proposed improvements are located at three different intersections along Route 6. The Contractor shall be advised that materials may need to be transported between each location. Items that are proposed to be removed and reset, earth borrow, or borrowed materials from one location to another, may be reset to another location. Transportation of materials from one location to another will be considered incidental to the applicable items.

## **RETAINING WALL CONSTRUCTION**

Contractor shall verify location of existing structures and utilities prior to excavation for walls. Contractor shall ensure all surrounding structures and surfaces are protected from the effects of wall excavation. Excavation support, if required, is the responsibility of the Contractor. The Contractor shall furnish, install, monitor and maintain excavation support and protection systems at locations necessary to support the sides of excavations and resist soil and hydrostatic pressure and superimposed and construction loads; to prevent danger to persons or damage to adjacent pavements, facilities, utilities, or structures; to prevent injurious caving or erosion or the loss of ground; and to maintain pedestrian and vehicular traffic as required by the Engineer. The cost for this work shall be measured and paid for under Item 950.5.

## **MISCELLANEOUS ITEMS REMOVED AND STACKED**

The Contractor shall remove and stack items and materials noted on the Plans. The stacked location of the items and materials shall be approved by the Engineer and/or property owner prior to the removal. If a pay item is not provided for the specific item, the removal and stacking shall be considered incidental to Item 120.1 – Unclassified Excavation, and no additional measurement and payment will be made for the work. Work includes the dismantling, removal, transporting, and stacking of items.

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

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

## **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.

---

## **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.

---

**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.

---

**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.

---

**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.

---

**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.

---

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

**722.20 General**

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

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

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

**Type A –**

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

**Type B –**

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

**Type C –**

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

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

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

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

The Contractor shall use Primavera P6 computer scheduling software.

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

**B. Scheduler Requirements**

The Scheduler shall be approved by the Engineer.

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

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

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

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

**SECTION 722** (Continued)

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

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

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

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

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

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

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

**722.61 Schedule Content and Preparation Requirements**

All schedules shall be prepared and submitted in accordance with the instructions contained in the Construction Schedule Toolkit located on the MassDOT-Highway Division website at:

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

and the following:

**A. LOGIC**

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

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

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

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

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

**SECTION 722** (Continued)

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

**C. EARLY AND LATE DATES**

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

**D. DURATIONS**

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

---

**SECTION 722** (Continued)

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

**E. MATERIALS ON HAND**

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

**F. ACTIVITY DESCRIPTIONS**

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

**G. ACTIVITY IDENTIFICATION NUMBERS**

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

**H. ACTIVITY CODES**

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

**I. CALENDARS**

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

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

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

**SECTION 722** (Continued)

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

**J. FLOAT**

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

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

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

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



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

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

**722.62 Submittal Requirements**

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

Each monthly Contract Progress Schedule submittal shall be uniquely identified.

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

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

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

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

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

**A. Narratives**

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

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

**SECTION 722** (Continued)

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

---

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

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

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

**C. Detailed Activity Schedule Comparisons**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**B. Time Entitlement Analysis**

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

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

**SECTION 722** (Continued)

TEAs shall be submitted:

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

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

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

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

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

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

**C. Recovery Schedules**

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

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

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

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

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

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

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

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

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

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

**E. Disputes**

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

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



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

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

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

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

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

**A. Bar Chart Schedule**

A Bar Chart that shall include the following:

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

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

---

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Schedule of Operations (Type D)**

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

**SECTION 722** (Continued)

**722.81 Basis of Payment**

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

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

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

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

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

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

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

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

**722.82 Payment Items**

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

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

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

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

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

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

All tree trimming work within 10 feet of energized power lines and equipment shall be in conformance with the most current version of the United States Department of Labor (DOL) OSHA Standard 1910.269(r) along with subsections (1) through (8).

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

Contractor shall be required to provide a crew, consisting of a bucket truck with operator and 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. The crew shall be OSHA certified as line-clearance tree trimmers to work within 10 feet of energized power lines and equipment.

**SUBMITTALS**

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

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/her office for the length of the Contract.

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

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

Line-clearance Tree Trimming: Shall be defined as the pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is near (within 10 feet of) energized power lines.

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

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

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

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

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

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

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

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

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.

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 Lump Sum price, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

---

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

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

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

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

**REFERENCES**

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

**MATERIALS**

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

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

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

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

**METHODS OF WORK**

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

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

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

**ITEM 102.511** (Continued)**DAMAGES OR LOSS**

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

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

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

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

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

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

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

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

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

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



---

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

The work under this Item shall conform to the relevant provisions of Subsections 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 chemical 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.

**ITEM 102.521** (Continued)**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.

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 Subsection 771.

**ITEM 102.521** (Continued)

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

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

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

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

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

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

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

**ITEM 102.55****ARBORIST****HOOR**

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, staging 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**

- B 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.
- B 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
- Monitoring and Inspections
  - periodically inspect fencing and ensure root zones are properly protected and clear of equipment and materials as required by the Engineer
  - reevaluate tree protection measures for various phases of a project
  - submit inspection notes with relevant and dated photos to the Engineer.

**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.

**METHOD OF 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 127.1**

**REINFORCED CONCRETE EXCAVATION**

**CUBIC YARD**

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

The work shall include excavating, removing and properly disposing of the existing concrete slab under the roadway surface for installation of proposed drainage structures and pipes, curbs, and other proposed work within the project limits.

The contractor shall sawcut the existing concrete slab before its removal. The sawcut shall be made through any reinforcement within the concrete base slab.

The work shall include the removal of concrete, steel reinforcement (rebar) or anything incidental to the removal existing concrete slab as required.

The excavation of concrete sidewalks, island, curb, and driveway shall be paid for under item 120.1 Unclassified Excavation.

**METHOD OF MEASUREMENT**

Item 127.1 will be measured for payment by the Cubic Yard of reinforced concrete excavated and removed.

Measurement will be taken of the in-place dimensions of the concrete prior to excavation, as approved by the Engineer.

**BASIS OF PAYMENT**

Item 127.1 will be paid for at the Contract unit price per Cubic Yard, which price shall include excavation, removal, disposal, sawcutting, all labor, materials, equipment and all incidental costs required to complete the work.

**ITEM 151.25****GRAVEL BORROW FOR BACKFILLING  
STRUCTURES AND PIPE - SEWER****CUBIC YARD**

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

The Contractor shall provide all services necessary for the proper completion of all earthwork encountered and necessary for construction of the project as indicated in the Contract Documents, and includes but is not limited to the following:

- Excavation
- Backfilling and Filling
- Compaction
- Grading
- Providing soil material as necessary
- Disposal of unsuitable materials
- Disposal of excess suitable material

All work shall be performed and completed in accordance with all local, state and federal regulations. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work. Where a gradation is specified, the testing shall be in accordance with ASTM C117 and ASTM C136 (or latest revision).

Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D1557 (Modified Proctor), or latest revision, unless otherwise indicated.

The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D1556, (or latest revision) or Nuclear method Designation D6938.

Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D6938 (Standard Proctor).

An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.



**ITEM 151.25** (Continued)**Testing Requirements**

The Independent Testing Laboratory shall conform to the procedures and standards listed below. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the Engineer and Contractor at the Owner's expense unless otherwise indicated.

- Paved Areas: Make at least one field density test of subgrade for every 2,000 sq. ft. of paved area, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of overlaying paved area, but in no case less than 3 tests.
- Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.
- In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.

Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.

If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. No allowance will be considered for delays in the performance of the work.

**Job Conditions**

Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn there from by the Contractor. Data are made available for the convenience of Contractor.

Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.

The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warrants that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

**ITEM 151.25** (Continued)**MATERIALS**

Common Borrow: Shall consist of approved material required for the construction of the work where designated. Common borrow shall be free from frozen material, perishable rubbish, peat, organic, and other unsuitable material.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
6-inch	100
No. 200	0-5

Common borrow may be used for embankments unless otherwise indicated and provided that the material is at a moisture content suitable for compaction to the specified density. No rocks shall exceed 3/4 of the depth of the specified lift thickness.

**CONSTRUCTION METHODS****Inspection**

Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

**Excavation**

See Subsection 142.0 Excavation for Structures for more specific requirements.

Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work. The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all coffer damming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.

All excavation shall be classified as either earth or ledge.

**ITEM 151.25** (Continued)

Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders that do not meet the definition of "Ledge" below.

Ledge (Rock) Excavation: Shall consist of the removal, hauling, and disposal of all ledge or rock encountered during excavation. "Ledge" and "rock" shall be defined as any natural compound, natural mixture that in the opinion of the Engineer can be removed from its existing position and state only by drilling and blasting, wedging, sledging, boring or breaking up with power operated tools.

The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.

When excavation has reached required subgrade elevations, notify the Engineer and Resident Project Representative who will observe the conditions.

If material unsuitable for the structure or paved area or pipeline (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, screened stone, crushed stone, or concrete as directed by the Engineer.

All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.

**Structural Excavation**

Structural excavation consist of the removal, hauling, disposal, of all material encountered in the excavation to permit proper installation of structures. Excavations for structures shall be carried to the lines and subgrades shown on the Drawings.

- Excavate areas large enough to provide suitable room for building the structures.
- The extent of open excavation shall be controlled by prevailing conditions subject to any limits designated by the Engineer.
- Provide, install, and maintain sheeting and bracing as necessary to support the sides of the excavation and to prevent any movement of earth which could diminish the width of the excavation or otherwise injure the work, adjacent structures, or persons and property in accordance with all state and OSHA safety standards.

**ITEM 151.25** (Continued)

- Erect suitable fences around structure excavation and other dangerous locations created by the work, at no additional cost to the Owner.
- Exposed subgrade surfaces shall remain undisturbed, protected, and maintained as uniform, plane areas and shape to receive the foundation components of the structure.
  - Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10' and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
  - In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade and trim bottoms to required lines and grades to leave solid base to receive the structure.
  - If a structure is to be constructed within the embankment, the fill shall first be brought to a minimum of 3 feet above the base of the footing. A suitable excavation shall then be made as though the fill were undisturbed earth.

**Trench Excavation**

Shall consist of removal, hauling and disposal of all material encountered in the excavation to the widths and depths shown on the Drawings to permit proper installation of underground utilities.

- Excavate trenches to the uniform width shown on the Drawings sufficiently wide to provide sufficient space for installation, backfilling, and compaction. Every effort should be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.
- Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.
- Grade bottoms of trenches as indicated for pipe and bedding to establish the indicated slopes and invert elevations, notching under pipe joints to provide solid bearing for the entire body of the pipe, where applicable.
- If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least two feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.
- Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.
- Perform excavation for force mains and water mains in a logical sequence.
- The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.
- As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards, as outlined in the appropriate section of this Specification.

---

**ITEM 151.25** (Continued)**Protection Of Persons, Property And Utilities**

- Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.
- Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.
- Rules and regulations governing the respective utilities shall be observed in execution of all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization of the utility owner. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.
- Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility, the property owner, and the Owner.

**Stability Of Excavations**

Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

**Shoring And Bracing**

Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.

Provide trench shoring and bracing to comply with local codes and authorities having jurisdiction.

Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.

**Material Storage**

Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.

Locate and retain soil materials away from edge of excavations.

Dispose of excess soil material and waste materials as herein specified.

---

**ITEM 151.25** (Continued)**Cold Weather Protection**

Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.

**Separation Of Surface Material**

The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work. Prior to excavation, existing pavement shall be cut where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.

Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.

From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

**Backfill And Fill**

- Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
- Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.
- The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.
- Backfill excavations as promptly as work permits, but not until completion of the following:
  - Acceptance by Engineer of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
  - Inspection, approval, and recording locations of underground utilities.
  - Removal of concrete formwork.
  - Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Temporary sheet piling driven below bottom of structures shall be removed in manner to prevent settlement of the structure or utilities, or cut off and left in place if required.
  - Removal of trash and debris.
  - Permanent or temporary horizontal bracing is in place on horizontally supported walls.
  - Density testing having results meeting requirements specified herein.
- In general, and unless otherwise indicated, material used for backfill of trenches and excavations around structures shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the Engineer the backfill and fill shall be placed in layers not to exceed 8 inches in thickness.

**ITEM 151.25** (Continued)

- All fill and backfill under structures and pavement, and adjacent to structures, shall be compacted crushed stone or select fill as specified or as indicated on the Drawings. The fill and backfill materials shall be placed in layers not exceeding 8 inches in thickness.
- All structures (including manholes) shall be placed on a 6-inch mat of screened stone unless otherwise indicated.
- Suitable excavated material shall meet the following requirements:
  - Free from large clods, silt lumps or balls of clay.
  - Free from stones and rock fragments with larger than 12 inch max. dimension.
  - Free from organics, peat, etc.
  - Free from frozen material.
- If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be select fill or common borrow, unless otherwise indicated, as required and as directed by the Engineer.
- Do not backfill with, or on, frozen materials.
- Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.
- Do not mechanically or hand compact material that is, in the opinion of the Engineer, too wet.
- Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
- The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.
- Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
- Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
- Place material in a manner that will prevent stones and lumps from becoming nested.
- Completely fill all voids between stones with fine material.
- Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
- Deposit backfill and fill material evenly on all sides of structures to avoid unequal soil pressures.
- Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe or structure during backfilling.
- Leave sheeting in place when damage is likely to result from its withdrawal.
- Completely fill voids left by the removal of sheeting with screened stone which is compacted thoroughly.

**ITEM 151.25** (Continued)

**Pipe Bedding, Initial Backfill And Trench Backfill:**

Place bedding and backfill in layers of uniform thickness specified herein, and as shown on the Drawings. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper.

- Install pipe bedding and initial backfill in layers of uniform thickness not greater than eight (8) inches.
- Deposit the remainder of the backfill in uniform layers not greater than eight inches.
- Provide underground utility marking tape for new utility trenches as shown on the Drawings.
- Where soft silt and clay soils are encountered the trench shall be excavated six inches below the normal bedding and backfilled with 6-inches of compacted sand.
- Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footings.

**Bedding Requirements**

The following schedule lists the bedding materials for pipe. Refer to the pipe trench detail for dimensional requirements.

PVC or PE Pipe    Screened stone.

**Initial Backfill Requirements**

The following schedule lists the initial backfill requirements for various types of pipes. Refer to the pipe trench detail for dimensional requirements.

PVC or PE Pipe    Screened stone

When excavation and trenches have been improperly backfilled, and when settlement occurs, reopen the excavation to the depth required, as directed by the Engineer. Refill and compact the excavation or trench with suitable material and restore the surface to the required grade and condition. Excavation, backfilling, and compacting work performed to correct improper backfilling shall be performed at no additional cost to the Owner.

**Ground Surface Preparation**

Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, scarify or break-up sloped surface steeper than 1 vertical to 4 horizontal.

When existing ground surface has a density less than that specified under "compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.



**ITEM 151.25** (Continued)**Compaction**

Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.

Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D1557 as indicated.

- Structures: Compact each layer of backfill or fill material below or adjacent to structures to at least 95% of maximum dry density (ASTM D1557).
- Off Traveled Way Areas: Compact each layer of backfill or fill material to at least 90% of maximum dry density (ASTM D1557).
- Walkways: Compact each layer of backfill or fill material to at least 93% of maximum dry density (ASTM D1557).
- Roadways, Drives and Paved Areas: Compact each layer of fill, subbase material, and base material to at least 95% of maximum dry density (ASTM D1557).
- Pipes: Compact bedding material and each layer of backfill to at least 90% maximum dry density (ASTM D1557). Where backfilling with excavated material, compact to native field density.
- Embankments: Compact each layer of embankment material to at least 95% of maximum dry density (ASTM D1557).

Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory level.

**Compaction Methods**

The Contractor may select any method of compaction that is suitable to compact the material to the required density. Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. All voids left by the removal of sheeting shall be completely backfilled with suitable materials and thoroughly compacted.

**ITEM 151.25** (Continued)

Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

**Grading**

Grading shall consist of that work necessary to bring all areas to the final grades. Uniformly grade areas within limits of work requiring grading, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

Grade areas adjacent to buildings to drain away from structures and to prevent ponding. Grade surfaces to be free from irregular surface changes, and as follows:

- Lawn or Unpaved Areas: Finish grade areas to receive topsoil to within not more than 1" above or below the required subgrade elevations.
- Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.
- Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 3/8" above or below the required subgrade elevation.

After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

**METHOD OF MEASUREMENT**

Item 151.25 will be measured for payment by the Cubic Yard of gravel borrow for backfilling structures and pipe – sewer, furnished and placed, complete in place.

**BASIS OF PAYMENT**

Item 151.25 will be paid for at the Contract unit price per Cubic Yard, which price shall include furnishing, placement, excavation, transporting processed gravel to the project site, preparing subgrade, compaction, grading, testing, dewatering, all labor, materials, equipment, and all incidental costs required to complete the work.

---

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

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

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

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

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

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

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

**ITEM 180.01** (Continued)

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

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

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

Based on the preliminary review of the project area potentially impacting release sites are located at the following properties:

- RTN 4-0000544, 52 James Reynolds Road, Mobil Station 01 203
- RTN 4-0014196, 1115 Grand Army Republic Hwy, Cumberland Farms
- RTN 4-0018568, 2345 Grand Army Republic Hwy
- RTN 4-0026287, 2345 GAR Hwy, Fmr Shell Station

This list is based on the preliminary review during the design phase and is not meant to be all inclusive of potential release sites along the project.

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

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

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

**ITEM 180.03** (Continued)

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

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

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

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

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

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

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

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

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

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



<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.

Based on the preliminary review of the project area potentially impacting release sites are located at the following properties:

- RTN 4-0000544, 52 James Reynolds Road, Mobil Station 01 203
- RTN 4-0014196, 1115 Grand Army Republic Hwy, Cumberland Farms
- RTN 4-0018568, 2345 Grand Army Republic Hwy
- RTN 4-0026287, 2345 GAR Hwy, Fmr Shell Station

This list is based on the preliminary review during the design phase and is not meant to be all inclusive of potential release sites along the project.

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.

---

**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 penalties and/or fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

**SUBMITTALS****I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.**

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is on-going throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to MassDOT.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a 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.

---

**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.

**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 183.1****TREATMENT OF  
CONTAMINATED GROUNDWATER****GALLON**

This Item addresses the treatment and disposal of contaminated groundwater encountered during excavation operations. The work generally consists of furnishing the materials, equipment, labor, services, testing/sampling, waste characterization, transportation, disposal, permits and agreements necessary to perform the work required for the collection, treatment and disposal of contaminated groundwater.

The Contractor is advised that contaminated groundwater may be encountered during dewatering activities. The levels and nature of contamination may vary depending on location and/or depth. No data has been provided in this specification indicating the types of contaminants that may be found in groundwater encountered during this work. It will be the responsibility of the Contractor to ensure that water removed during dewatering operations is treated and disposed of in accordance with all applicable laws and regulations and in accordance with this specification.

The Contractor shall monitor the quantity of groundwater collected for treatment using an in-line totalizer flowmeter or an alternate method approved by MassDOT. The Contractor shall, at all times, minimize the quantity of groundwater removed from the excavations. All groundwater determined to be contaminated will be managed in accordance with all applicable local, state and federal regulations.

It is not the intent herein for the Department to design for or specify to the Contractor which particular treatment is to be used, if necessary. Rather, it is the Department's intent to provide guidance to the Contractor for informational and bidding purposes only. It is, therefore, the Contractor's responsibility to use a treatment method to allow him/her to meet any and all laws, regulations, policies, guidelines and permit requirements. Treatment of contaminated groundwater for dewatering operations is generally performed using a mobile treatment trailer equipped with one or more granular-activated carbon (GAC) canisters, although other techniques are also used.

It is likely that treatment of the contaminated groundwater using granular-activated carbon will be required to complete the work under this Contract. The Methods described under Item 183.1 provides for the identification, testing, management and treatment or disposal of contaminated groundwater and shall be implemented, at a minimum and as necessary by the Contractor via Methods under Item 183.1.

The overall handling and management of contaminated groundwater is regulated under the provisions of 310 CMR 40.0000, 314 CMR 3.00 and 5.00, NPDES and other applicable laws. The unpermitted discharge of contaminated dewatering effluent into the environment (storm drain, surface water body, onto the ground) is a violation of federal and state laws and regulations. Should dewatering of contaminated groundwater be necessary, approvals must be sought from the appropriate federal, state, or local regulatory jurisdiction. The USEPA will not specify a treatment system or method, but normally requires that the treated discharge meet Massachusetts Drinking Water Standards.



**ITEM 183.1** (Continued)

The discharge standards are normally met by treating the dewatered groundwater through granular-activated carbon canisters, or similar techniques. Longer term discharges to surface waters or storm drains, and any discharges to the ground, require approval and/or issuance of a permit from the DEP Division of Water Pollution Control. The Contractor shall be responsible for applying for, paying all fees for and obtaining all permits required for treatment and/or disposal of contaminated groundwater. Additional requirements may be mandated by local/regional sewer authorities for discharge to sanitary sewer or Publicly Owned Treatment Works (POTW). Copies of permit applications and correspondence from federal and state agencies and sewer authorities shall be supplied to the Engineer prior to dewatering activities.

EPA regulations published in the Federal Register on September 9, 2005 (70 FR 53663) require a National Pollutant Discharge Elimination System (NPDES) Remediation & Miscellaneous Contaminated Sites General Permit (RGP) for all contaminated construction site dewatering activities in Massachusetts (MAG910000) that will involve the discharge of water to classes of receiving waters designated in the Massachusetts Water Quality Standards (314 CMR 4.00). The application requires that operators of proposed new discharges seeking coverage under this general permit submit a Notice of Intent (NOI) to EPA New England post-marked at least 14 days prior to commencement of discharge. The Contractor is solely responsible for applying for and obtaining coverage under the NPDES Remediation General Permit from EPA and, if applicable, DEP, including the costs associated with sampling and analysis of groundwater and any application fees. The Contractor is required to submit a completed copy of the NOI to the Engineer and the Director of Environmental Programs, Construction Division, 10 Park Plaza, Boston, prior to commencement of discharge.

Upon permanent cessation of the discharges authorized by the RGP, the Contractor shall be responsible for submitting a Notice of Termination (NOT) to EPA New England within 30 days of the permanent cessation. The Contractor is required to submit to MassDOT a completed copy of the NOT within 14 days of the permanent cessation of the discharges authorized by the RGP. All costs and fees associated with the submission of the NOT will be the responsibility of the Contractor.

The Contractor shall be responsible for adhering to regulations, specifications, and recognized standard practices related to contaminated groundwater handling during dewatering activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent local, 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 Department of Environmental Protection (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 this work.

**ITEM 183.1** (Continued)

The Contractor shall be responsible for determining compliance with the requirements of any permit and for any sampling, testing, and disposal required in connection with said permits. MassDOT and the City/Town reserve the right to collect additional samples of dewatered groundwater to determine the Contractor's compliance with the Permit's requirements. All laboratory testing is to be performed by a DEP certified laboratory for all parameters being tested. Copies of all field and laboratory testing results, reports, etc. required by the permits must be supplied to the Engineer. MassDOT, DEP, and the permit-granting agency, where applicable, reserve the right to collect additional samples of discharged groundwater to verify compliance with permit requirements.

For the purpose of these specifications and to establish a basis for the bid, it is anticipated that granular-activated carbon will be the treatment medium for dewatered contaminated groundwater. The bidder shall factor into the payment item all costs associated with the testing and analyses that may be required by the permitting agency. In addition, any laboratory testing of groundwater is to be performed by a DEP certified laboratory for the parameters being tested. Copies of all field and laboratory testing results will be supplied to the Engineer. Bid price shall also include full compensation for labor, materials, maintenance, mobilization, rental and other related costs. Item 183.2 will be used for disposal of used granular-activated carbon canisters.

**SUBMITTALS**

Prior to initiating work, the Contractor shall submit an excavation dewatering plan to the MassDOT that includes a detailed description of the approach to dewatering, a description of methodology for sealing the excavation to minimize infiltration of groundwater, if deemed applicable to the work, anticipated treatment, discharge points, sampling frequency, required permits, transporters and waste facilities complete with license numbers, permit numbers, contact person, and address and telephone number that the Contractor plans to utilize for waste disposal. The plan shall be submitted for the record.

The Contractor shall submit to MassDOT for review, the proposed methods for dewatering and groundwater treatment and disposal for the various portions of the work to be done. The review shall be for methods only. The Contractor shall remain responsible for the maintenance, performance, structural integrity and safety of the systems installed for this work as well as regulatory compliance of the applicable local, state and federal discharge standards. The contractor shall provide all groundwater sampling and analyses, results and reports required by all applicable local, state and federal agencies. The Contractor shall submit to MassDOT for review all plans and documents that must be submitted to the EPA and DEP, including NOI, NOT, treatment system analytical reports and correspondence. Copies of all permits and approvals and lab analyses and test results associated with groundwater treatment and disposal must be submitted to MassDOT within 3 days of receipt by the Contractor.

**ITEM 183.1** (Continued)**ESTABLISHMENT OF TREATMENT PROCEDURE**

Since concentrations of contaminants in groundwater cannot be easily assessed in the field, all groundwater extracted from the ground will be considered contaminated and will be initially pumped and stored into open settling tank(s) or a fractionation tank until it can be sampled and analyzed, unless otherwise directed by MassDOT. The Contractor will perform initial sampling and analyses of the groundwater to determine the need for a permit to dispose of contaminated groundwater. Based on the results of the initial sample analysis, which must be provided to the Engineer within twenty-four (24) hours of the time the samples are received by the laboratory, the Contractor will determine the necessity for treatment(s) and disposal procedures. Sampling must also be performed to meet applicable discharge criteria as set by the appropriate regulatory agencies for the permit obtained for disposal. All discharges must meet regulatory standards set forth in the permits required for discharge. For the purposes of the bidding process, it is anticipated that the treatment system will consist of sedimentation tanks, an oil water separator and liquid-phase granular activated carbon as the primary on-site treatment medium for dewatered contaminated groundwater. MassDOT may require additional treatment processes if such is determined necessary during the groundwater testing procedure. The Contractor shall integrate the additional treatment process into the treatment system, if necessary.

The Contractor shall provide all labor, equipment and appurtenances required to treat the groundwater, subject to the approval of MassDOT. Groundwater stored and tested but not requiring treatment or off-site disposal shall be discharged to a location subject to the approval of MassDOT without payment to the Contractor.

**TREATMENT UNITS**

The Contractor shall furnish all labor and materials, and shall install and operate temporary groundwater treatment and disposal system(s) as necessary to treat contaminated groundwater pumped from excavations during construction activities under the Contract. Such systems shall be capable of treating groundwater to meet applicable discharge criteria as set by the appropriate regulatory agencies.

The Contractor or their Environmental Consultant shall operate, maintain and modify the selected treatment system, and conduct the necessary monitoring and reporting of influent, midpoint and effluent results, as required by the discharge permit for the disposal option selected.

**METHOD OF MEASUREMENT**

Provide a treatment system that meets permit discharge requirements, mobilize it to the site, provide copies of laboratory analytical data indicating that the system is performing appropriately to meet permit requirements, and demobilize it from the site. This includes management and disposal of wastes generated during treatment prior to discharging such as activated carbon, etc. Work under Item 183.1 is based upon the number of gallons disposed or contaminated groundwater pumped through the granular-activated carbon (Item 183.2) as the medium for the treatment of contaminated groundwater that is found in pipe trenches, manhole excavations, catch basin excavations, that need to be dewatered.

**ITEM 183.1** (Continued)

**BASIS OF PAYMENT**

Payment shall be made at the unit price bid per gallon of groundwater pumped, stored, treated as needed and tested as required by discharge permits and regulatory requirements, which price shall be full compensation for all necessary labor and materials, mobilization, maintenance, demobilization of the appropriate unit(s), freight, rental costs, field and laboratory testing costs and permits. Costs associated with the disposal of granular-activated carbon shall be covered under Item 183.2.

**ITEM 183.2**

**DISPOSAL OF  
GRANULAR-ACTIVATED CARBON**

**POUND**

Work under Item 183.2 is based upon the disposal of used granular-activated carbon as the treatment medium for contaminated groundwater (Item 183.1) that is found during excavations in which contaminated groundwater is encountered.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Payment shall be made at the unit price bid per pound of carbon that is properly disposed and replaced, as necessary, to meet treated water discharge requirements during dewatering operations at the site. Payment for Disposal of Granular Activated Carbon shall include compensation for all labor, equipment, materials, permits, characterization, sampling and on-site or laboratory analysis as needed or required by permits, for replacement and disposal of liquid-phase activated carbon for the on-site contaminated groundwater pumping, collection, treatment and treated water discharge system during the time period required to complete the work. No payments shall be made for replacing carbon which is spent due to the Contractor's failure to remove floating petroleum product or excess sediments prior to the groundwater entering the carbon treatment units. All other costs associated with treatment of contaminated groundwater will be covered under Item 183.1- Treatment of Contaminated Groundwater.

**ITEM 192.4****MONITORING WELL ADJUSTED****EACH**

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

The Contractor shall make necessary adjustments to existing monitoring wells that are located within the project limits, as shown on the plans and as directed by the Engineer.

**APPLICABLE LAWS AND REGULATIONS**

Permits: Obtain all required permits required to adjust the wells. Permits may include the following:

Utility clearance: Notify affected utility companies before starting work and comply with their requirements.

The Town of Swansea Conservation Commission Agent

The applicable Health Departments.

Copies of any permits or orders shall be submitted to the Engineer at least 14 days prior to the start of work.

**EXISTING MONITORING WELL IN NON-PAVED AREA**

The existing steel well pipe shall be cut flush below proposed finish grade and the existing locking cap re-installed. An 18-inch by 18-inch by 24-inch deep heavy duty handhole (meeting HS-20 loading requirements) with 12-inch crushed stone bedding shall be installed in the non-paved area, centered over the well pipe. The cover shall be labeled "MONITORING WELL" (or labeled as directed by the Engineer) with 1-inch letters permanently engraved into the cover surface. The cover shall comply with Section M8.03.0 and be HS-20 rated.

**EXISTING MONITORING WELL IN PAVED AREA**

The existing handhole cover shall be adjusted to be even with final grade using standard brick and mortar procedures. If the existing cover is found to not meet HS-20 loading requirements, the Contractor shall replace the cover with an approved cover that is HS-20 load rated, meeting section M8.03.0.

**METHOD OF MEASUREMENT**

Item 192.4 will be measured for payment by the Each monitoring well adjusted, complete in place.

**BASIS OF PAYMENT**

Item 192.4 will be paid for at the Contract unit price per Each, which price shall include adjustment, all labor, materials, equipment and incidental costs required to complete the work.

Payment for any new covers or handholes required to complete the work will be incidental to this Item.

**ITEM 201.**  
**ITEM 202.**

**CATCH BASIN**  
**MANHOLE**

**EACH**  
**EACH**

The work under these items shall conform to the relevant provisions of Subsection 201 of the Standard Specifications and the following.

All drainage castings in new pavement areas shall be installed at base or binder course grade, as directed by the Engineer, and reset to proposed finish surface grade prior to placement of the pavement surface course.

Excavation and backfill shall be included in the cost of the structure.

The top conical sections of manholes and catch basins may need to be replaced with flat top or offset sections as determined by actual field conditions. No additional cost for the use of flat top drainage structures will be accepted.

All frames shall be set in a concrete collar conforming to Standard Detail 202.9.0 prior to placement of top course. All frames shall be set on a minimum of two courses of mortared brick as specified in the Standard Specifications. Cost of such work shall be included in the cost of the structure or item of which it forms a part.

Where new catch basins or manholes are shown on the drawings to be constructed over existing pipes, the work shall also include the connecting of the pipe to the structures and the necessary cutting and removal of the existing pipe within the structures. The existing pipe shall be neatly cut to provide a smooth uniform face flush with the inside wall surface of the structure and totally removed or neatly cut longitudinally and partially removed to retain the lower half of the existing pipe barrel to form the required (manhole) shaped invert.

All proposed catch basins shall be constructed with a minimum 4-foot sump.

All proposed catch basins outside of the State Highway Layout shall have a hood. Hoods shall be installed in accordance with Item 224.12. Hoods will be measured and paid for under Item 224.12.

**METHOD OF MEASUREMENT**

Items 201 and 202 will be measured for payment by the EACH complete and in place regardless of depth.

**ITEMS 201. and 202.** (Continued)

**BASIS OF PAYMENT**

Items 201. and 202. will be paid for at the respective Contract unit prices according to Subsection 201.81.

Crushed stone, where in-situ material is unsuitable, for the foundation will be measured for payment under Item 156. Crushed Stone.

Catch Basin frame and grate, manhole frame and cover will be paid under Items 221, 221.1, and 222.1.

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

Masonry plugs will be paid for under Item 227.4, except when incidental to Items 145. or 146.



**ITEM 210.****SANITARY SEWER MANHOLE****EACH**

The work under this Item shall conform to the relevant provisions of Subsection 201 of the Standard Specifications, and the following:

Work included: construct manholes, covers, frames, brick masonry, inverts and apply waterproofing in conformance with the dimensions, elevations, and locations shown on the drawings and as specified herein.

**Quality Assurance**

Precast Manhole Base, Barrel and Top Sections:

1. Conform to ASTM C478 except as modified herein, and on the Drawings.
2. Average strength of 5,000 psi at 28 days.
3. Testing:
  - a. Determine concrete strength by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.
  - b. Have tests conducted at the manufacturer's plant or at a testing laboratory approved by the Engineer.
  - c. Have not less than 2 tests made for each 100 vertical feet of precast manhole sections.
  - d. Test aggregate in accordance with ASTM C1293 and Section 03420. Aggregate having an expansion less than 0.04% at 1-year is acceptable for use.

Pipe connections shall conform to ASTM C 923, "Standard Specifications for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals

**MATERIALS****Precast Manhole Sections****Base & Riser Sections**

- Diameter: As shown on the Drawings.
- Length: As required.
- Wall Thickness: Not less than 5 inches.
- Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.

**Tops:**

- Diameter: Eccentric cone type, 24 inches I.D. at top, 48 inches I.D. at bottom unless otherwise shown on the Drawings.
- Height: 4 feet.
- Wall thickness: Not less than 5 inches at the base, tapering to not less than 8 inches at the top.
- Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.
- Exterior face of cone sections shall not flare out beyond the vertical.

**Flat Slab Tops:**

- Location: Where shallow installations do not permit the use of a cone-type top and where indicated on the Drawings.
- Slab thickness: Not less than 6 inches.
- Constructed to support an HS-20 wheel loading.

**ITEM 210.** (Continued)Aggregates

The use of crushed hydraulic cement or recycled aggregate is prohibited. Coarse aggregate shall consist of a well graded crushed stone or a washed gravel conforming to the requirements of ASTM C33/C33M.

Openings

- Provide openings in the risers to receive pipes entering the manhole.
- Make openings at the manufacturing plant.
- Size: To provide a uniform annular space between the outside wall of pipe and riser.
- Location: To permit setting of the entering pipes at the correct elevations.
- Openings shall have a flexible watertight union between pipe and the manhole base.
  - Cast into the manhole base and sized to the type of pipe being used.
  - Type of flexible joint being used shall be approved by the Engineer. Install materials according to the Manufacturer's instructions.

Joints

Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. Install a double row of joint sealants for every manhole joint. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer.

Joints between precast sections shall conform to related standards and manufacturer's instructions.

All manholes greater than 6 ft. diameter shall be installed with exterior joint collars. The joint collar shall be installed according to the manufacturer's instructions.

Waterproofing

The exterior surface of all manholes shall be given two coats of waterproofing material at a application rate as recommended by the manufacturer.

The coating shall be applied after the manholes have cured adequately and can be applied by brush or spray in accordance with the manufacturer's written instruction.

Sufficient time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.

**Masonry**Brick:

Material shall be sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer. Immediately remove rejected brick from the work.

Mortar:

Composition (by volume):

1. 1 part Portland cement.
2. 1/2 part hydrated lime.
3. 4-1/2 parts sand.

**ITEM 210.** (Continued)

The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.

1. Cement shall be Type II Portland cement.
2. Hydrated lime shall be Type S.
3. Sand:
  - a. Shall consist of inert natural sand.
  - b. Grading:

<u>Sieve</u>	<u>Percent Passing</u>
No. 4	100
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-15
No. 200	0-5

**CONSTRUCTION METHODS**

Perform precast manhole sections jointing in accordance with manufacturer's recommendations and as approved by the Engineer.

Install riser sections and tops level and plumb.

Make all joints watertight.

When necessary, cut openings carefully to prevent damage to barrel sections and tops. Replace damaged manhole sections and tops at no additional cost to the Owner.

When manhole steps are included in the Work, install barrel sections and tops so that steps are in alignment.

Connect pipes to manholes with joint design and materials approved by the Engineer. Special care shall be taken to ensure that the openings through which pipes enter the structure are watertight.

**Adjust to Grade**

Adjust tops of manholes to grade with brick masonry. Concrete rings are not acceptable for adjusting to grade.

In paved areas, set frame and cover to final grade after binder pavement is placed and the grade of surface pavement has been determined.

**Invert Channels**

After manhole and all pipes entering or exiting the manhole have been installed, construct the invert channels and shelf.

**ITEM 210.** (Continued)

Channels to be smooth and semicircular in shape conforming to the inside of the adjacent sewer section. Make changes in direction of flow with smooth curves having a radius as large as permitted by the size of the manhole.

Stop the pipes at the inside face of the manhole where changes of direction occur.

Form invert channels and shelf with brick. Form invert channels and shelf with smooth and carefully shaped 2500 psi concrete with no voids. Coat concrete with non-slip, hi-build epoxy coating.

The maximum change in elevation from the invert of the inlet pipe to the invert of the outlet pipe is 6-inches. Shape invert to make smooth transition in vertical grade.

Slope the floor of the manhole (shelf) to the flow channel, as shown on the Drawings.

**Masonry**

Use only clean bricks in laying brickwork for manholes.

Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.

Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.

Outside faces of brick masonry shall be plastered with mortar from 1/4-inch to 3/8-inch thick.

Completed brickwork shall be watertight.

Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.

Protect brick masonry from the weather and frost as required.

**Exterior Chimney Wrap/Seal**

Clean frame's flange and chimney with a wire brush and a whisk broom. Frame and chimney must be dry.

Apply an aerosol primer on frame flange and chimney per manufacturer's recommendations.

Install wrap/seal around chimney.

Remove tape from the butyl mastic on top section of wrap and seal it to the frame's flange.

**Plugging and Patching**

Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set. Touch up damaged water proofing.

**ITEM 210.** (Continued)**Bedding and Backfilling**

Bedding of manholes shall be 6 inches of 3/4" screened stone. Backfill a minimum of 18 inches all around manhole with gravel borrow.

**Manhole Testing**

Perform a vacuum test on all manholes in the presence of the Engineer. Suitably plug all pipes entering each manhole and brace plugs to prevent blow out.

The manhole shall be tested by a vacuum test after assembly of the manhole, connection piping and backfilling. Vacuum testing to be conducted prior to construction of invert channels.

1. Plug all lifting holes completely with non-shrink grout.
2. Properly tighten all boot clamps and brace all plugs to prevent them from being sucked into the manhole.
3. Install the testing equipment according to the manufacturer's instructions.
4. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of 1 inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for the loss of 1 inch of Hg vacuum is:
  5. Greater than 2 minutes for manholes less than 10-feet deep.
  6. Greater than 2.5 minutes for manholes 10 to 15-feet deep.
  7. Greater than 3 minutes for manholes more than 15-feet deep.
8. If the manhole fails the initial test, the Contractor shall locate the leak(s) and make repairs. The manhole shall be retested until a satisfactory test result is obtained.

**Field Repairs**

Structural repairs shall be completed at the direction of the Engineer.

Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer. The use of lead-wool or expanding mortar will not be permitted.

After the manholes have been backfilled, and prior to final acceptance, any signs of leaks or weeping visible inside the manholes shall be repaired and the manhole made watertight.

**ITEM 210.** (Continued)

**METHOD OF MEASUREMENT**

Item 210. will be measured for payment by the Each sanitary sewer manhole furnished and installed, complete in place.

**BASIS OF PAYMENT**

Item 210. will be paid for at the Contract unit price per Each, which price shall include furnishing, installation, sawcutting, management, removal and disposal of pavement; excavation (except ledge excavation), bedding, furnishing and installing precast concrete sections, frames, covers, frost protective wrap , masonry materials, waterproofing, constructing inverts, backfilling including aggregate base and subbase material, compaction, cleaning, testing, maintaining existing flows during construction, all labor, materials, equipment, and all incidental costs required to complete the work.

Payment for this item shall be as follows:

- Manhole acceptably set in place and backfilled - 90 percent.
- Manhole successfully cleaned and tested - 10 percent.

**ITEM 220.61**

**TRENCH DRAIN REMOVED AND RESET**

**EACH**

The work under this Item shall conform to the relevant provisions of Subsections 201 and 220 of the Standard Specifications, and the following:

The work shall consist of the removal and resetting of existing drainage trench drains at driveways to finish grade in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

The Contractor shall be responsible for removing the existing trench drain structure and resetting to the finish grade. Gravel borrow, type b, shall be used under the trench drain structure to adjust the elevation.

The Contractor will be held responsible for the protection of the casting and trench drain structure.

The Contractor shall set the trench drains so that they are flush with the surrounding HMA. Trench drains outlet pipe connections shall be modified as necessary to reconnect the trench drain to the existing outlet as part of this Item.

**METHOD OF MEASUREMENT**

Item 220.61 will be measured for payment by the Each trench drain removed and reset, complete in place and approved by the Engineer.

**BASIS OF PAYMENT**

Item 220.61 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, gravel borrow, resetting of trench drain and grates, replacement of damaged trench drain units, and all incidental costs required to complete the work.

**ITEM 221.1**

**FRAME AND COVER - SECURED**

**EACH**

The work under this Item shall conform to the relevant provisions of Subsections 201 and 220 of the Standard Specifications, and the following:

The work to be done under this Item consists of the furnishing and delivering Frame and Cover – Secured to the site, to be used at all drain manholes on U.S. Route 6 (State Highway Layout Line), where the posted speed limits is 45 MPH or higher, and as shown on the Plans, and as directed by the Engineer.

Frame and Cover - Secured assemblies shall consist of covers and frames that conform to the nominal size, weight, material and load-carrying requirements in MassDOT Construction Standard Details E 202.6.0, E 202.7.0 and E 202.8.0, and are on the relevant MassDOT Qualified Construction Materials list. Some dimensions of secured manhole covers and frames may vary slightly from those shown on the standard details to account for necessary fastening components. The Contractor shall submit shop drawings of all drainage castings for approval prior to ordering.

Covers and frames shall be held securely together by bolting to threaded holes in the frame or to nuts or tumbler devices secured by the frame, by use of hooks attached to the cover or by any other means approved by MassDOT, to prevent being dislodged under traffic loading. Gaskets and other sealing devices will not be allowed.

**METHOD OF MEASUREMENT**

Item 221.1 will be measured per EACH Frame and Cover – Secured furnished and delivered to the site.

**BASIS OF PAYMENT**

Item 221.1 will be paid for at the contract unit price EACH Frame and Cover – Secured furnished and delivered. Installation of Frame and Cover – Secured will be included and paid under Item 202.



---

<b><u>ITEM 221.15</u></b>	<b><u>FRAME AND COVER – SECURED - SEWER</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 222.35</u></b>	<b><u>FRAME AND COVER MUNICIPAL STANDARD - SEWER</u></b>	<b><u>EACH</u></b>

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

This work shall consist of furnishing and installing new frame and or cover at locations as shown on the plans or required by the Engineer.

### **MATERIALS**

The following materials are required for standard units:

- Made of cast iron conforming to ASTM A48-76, Class 30 minimum.
- Have machined bearing surfaces to prevent rocking.
- Castings shall be smooth with no sharp edges.
- Constructed to support an HS-20 wheel loading.
- Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:
- Covers -solid with sewer in 3-inch letters diamond pattern.
- Frame - 24-inch diameter clear opening, with flange bracing ribs

The following materials are required water tight units:

- Same features as above for Standard Units, with 22-inch diameter minimum clear opening.
- Sealing features
- Inner lid held by a bronze tightening bolt in a locking bar.
- Neoprene gasket
- Water tight pick hole.
- Constructed to support HS-20 wheel loading.

Required locking units are required for speed limit zones set at 45 mph higher. See drawings for more detail.

All frames for covers shall be cast iron and 8-inches deep. New Sewer Manhole Covers shall have the word 'SEWER' in 2-inch, flat face, gothic letters, cast into the cover.

### **CONSTRUCTION METHODS**

Existing and new castings shall be set, as required by the Engineer, so that final grade of the manhole cover is flush with the final course of hot mix asphalt pavement. Material around the structure shall be compacted and high early strength concrete collars shall be placed around the castings. High early strength concrete shall be 4000 PSI, 1.5 In., 565 Cement Concrete.

**ITEMS 221.15 and 222.35** (Continued)

**METHOD OF MEASUREMENT**

Items 221.5 and 222.35 will be measured for payment by the Each respective frame and cover, furnished and installed, complete in place.

**BASIS OF PAYMENT**

Items 221.5 and 222.35 will be paid for at the respective Contract unit prices per Each, which prices shall include furnishing, installation, all labor, materials, equipment, and all incidental costs required to complete the work, including cement concrete collars.

**ITEM 222.3    FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD    EACH**

The work under this item shall conform to the relevant provisions of Subsection 201 of the Standard Specifications and the following:

Grates shall be heavy duty cast iron meeting the requirements of ASTM A48 capable of supporting H20-44 loading approximately 24 inch square with square openings that have a maximum size of 2 1/2 inches.

Cover shall be heavy duty cast iron meeting the requirements of ASTM A48 capable of supporting H20-44 loading. The word "DRAIN" in 3 inch high lettering shall be inlaid on the cover.

Grates shall be bicycle compatible.

**METHOD OF MEASUREMENT**

Item 222.3 will be measured for payment by the Each frame and grate (or cover) municipal standard furnished and delivered to the site.

**BASIS OF PAYMENT**

Item 222.3 will be paid for at the Contract unit price per Each, which price shall include furnishing, delivery, all labor, materials, equipment, and all incidental costs required to complete the work.

<b><u>ITEM 250.06</u></b>	<b><u>6 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 250.08</u></b>	<b><u>8 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 250.10</u></b>	<b><u>10 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 250.12</u></b>	<b><u>12 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE</u></b>	<b><u>FOOT</u></b>

The work under these Items shall conform to the relevant provisions of Subsection 230 of the Standard Specifications, and the following:

The work included under these Items consists of furnishing, installing (including excavation up to 5 feet and backfilling) and testing PVC sewer pipes and fittings of the size, type and class specified, to the lines and grades shown on the Plans, or as directed by the Engineer.

The work under these Items shall include the interfacing with the existing over/under drainage/sewer system. Payment for all work required to complete the installation including connections, disconnection, removing existing pipe, etc., shall be deemed as part of the unit price bid for the above items. Payment for relocation of water services, sanitary sewer connections and water mains will be made under their respective items.

The work under these Items will include the incidental adjustment of utilities, as required to install proposed drainage pipe.

## **MATERIALS**

### **Polyvinylchloride (PVC) Pipe**

Solid wall PVC pipe, size 6 inches to 12 inches and fittings shall conform to ASTM Standard Specification for type PSM sewer pipe and fittings, designation 3034. Co-extruded PVC pipe and fittings using recycled materials and conforming to ASTM Standard Specification, designation F1760, may also be used. All pipes shall have a minimum pipe diameter to wall thickness ratio (SDR) OF 35 and a minimum pipe stiffness of 46 PSI. Solid wall polyvinylchloride pipe sizes 18 inches and greater, and fittings, shall conform to ASTM Standard Specification for large diameter PVC pipe, designation F-679.

The pipe shall have an SDR ratio of 35 and a pipe stiffness of 46 PSI. Wye branches shall conform to the specifications referenced above for pipe material. Saddle wye branches are prohibited. Pipe and fittings shall have bell and spigot (push-on) joints using elastomeric ring gaskets. Gaskets shall be made of a composition and texture, which is resistant to common ingredients of sewage and industrial wastes, including, oils and ground water and which will endure permanently under the conditions of its proposed use. Joints shall conform to ASTM Standard Specifications of Joints for Drain and Sewer Plastic Pipe using Flexible Elastomeric Seals, Designation D3212-76.

## **CONSTRUCTION METHODS**

All piping shall be adequately supported in accordance with the contract plans and as specified herein. The Contractor shall furnish all labor necessary to assist the Engineer in inspecting the pipe and fittings. The pipe and fittings shall be inspected upon delivery and any which does not conform to the above specifications shall be rejected and immediately removed from the site by the Contractor. Installation shall be in accordance with ASTM D2321.

---

**ITEMS 250.06 through 250.12** (Continued)

Existing pavement need not be precut along trench lines, but care shall be taken to avoid unnecessarily disturbing the existing pavement areas beyond the limits shown. All sewer pipe 8 inches in diameter and greater and all main drain lines shall be laid using a laser system approved by the Engineer. PVC pipe shall not be stored in direct sunlight.

Where the bottom of the trench is, in the opinion of the Engineer, found to be unstable, the Contractor shall excavate the unsuitable material to the width and depth ordered by the Engineer, and shall replace all unsuitable materials, as directed, with a well compacted foundation consisting of crushed stone conforming to Standard Specification M2.01.4. Crushed Stone Foundations will be paid for under Item 156, only where ordered by the Engineer. Where rock is encountered it shall be removed to a depth of 12 inches below and from all sides of the pipe.

**PVC Couplings**

Sewer Couplings shall be pressure rated at least equal to that of the pipe.

The coupling sleeve shall be 1/4 inch minimum thickness elastomeric polyvinylchloride with a minimum tensile strength of 13.3 MPa.

The sleeve shall fit snugly onto the pipe to be joined and be resistant to common chemicals present in sewerage and storm water. Adjustable pipe clamps shall consist of a slotted band that mates with the worm gear screw and a screw housing all manufactured of stainless steel, and suitable for underground service.

**Storage and Handling**

Each pipe unit shall be handled into its position in the trench only in such manner, and by such means as acceptable to the Engineer. Care shall be taken to avoid damaging the pipe and fittings. Sewer and drainpipe shall be laid at the lines and grades as shown on the plans and specified herein. Whenever encountered within the trench, existing sewer/drain lines shall be removed unless otherwise noted. All existing sewer/drain lines, which are to be abandoned in place, shall be plugged at all open ends. Each pipe and/or fitting to be installed shall be subjected to a careful inspection just prior to installation. Each straight length of pipe shall be generally straight. Centerline deviation of more than 1/16 inch per foot of length shall be deemed unacceptable and such pipe shall immediately be removed from the site.

PVC Pipe shall be supported by compacted-screened gravel. No pipe or fitting units shall be supported on saddles, blocking or stones.

Suitable bell holes shall be provided so that after installation only the barrel of the pipe receives bearing pressure from the supporting material.

**ITEMS 250.06 through 250.12** (Continued)

All pipes and fittings shall be cleaned of all debris, dirt or other foreign substances prior to being installed and shall be kept clean until accepted. Before any joint is made, the previously installed unit shall be checked to ensure that a closed joint with the adjoining unit has been maintained and that the inverts are matched and conform to the required grade. Pipe shall not be driven down to the required grade by striking with an unyielding object. Immediately before joining the pipe all joint surfaces shall be cleaned and the bell or groove shall be lubricated in accordance with the manufacturer's recommendations. Each pipe unit shall be pushed into place without damage to the pipe or gasket.

All open ends of pipe and branches shall be closed with stoppers secured in place in an acceptable manner. After each pipe has been properly bedded, enough screened gravel or crushed stone shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes shall be filled with screened gravel and compacted, and then screened gravel shall be placed and compacted to complete the pipe bedding as indicated on the drawings. The Contractor shall take all necessary precautions to prevent flotation of the pipe in the trench.

At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe. Pipelines shall not be used as conductors for trench drainage during construction.

All manhole connections shall be as shown on the drawings except that concrete and mortared connections shall be equipped within integral O-ring or other sealant such that a positive watertight seal is established.

Allowable PVC Pipe Deflection Pipe provided under this specification shall be so installed as to not exceed a maximum deflection of 4.0 percent. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

Upon completion of a section of sewer, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

**ITEMS 250.06 through 250.12** (Continued)**Sewer Line Cleaning**

The Contractor shall provide all equipment necessary for the proper cleaning of the sewers prior to the leakage testing and/or closed circuit television inspection. The type of pipe cleaning (light vs heavy) shall be chosen based on the definitions in the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) Version 7.0 standards.

1. Light cleaning definition – Cleaning and removal of settled deposits when the deposits are less than the following percentage of the pipe diameter:
  - a. Pipe diameters less than or equal to 12-inches: < 25%
2. Heavy cleaning definition – Cleaning and removal of settled deposits when the deposits are greater than the following percentage of the pipe diameter:
  - a. Pipe diameters less than or equal to 12-inches: > 25%

High Velocity Hydro-Cleaning Equipment shall:

1. Have a minimum of 400 feet of high pressure hose.
2. Have multiple high velocity nozzles, as follows:
  - a. Standard 35 degree nozzle with multiple rear jets and one front jet.
  - b. Sand nozzle capable of transporting sand and gravel to the downstream manhole; and
  - c. Rotating nozzle for removal of grease and scale.
3. Include a high velocity gun for washing and scouring manhole walls and floor.
4. Be capable of producing flows from a fine spray to a long distance solid stream.
5. Include a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.
6. Have equipment operating controls located above ground.

All heavy cleaning must be coordinated with RPR or Engineer verbally or written for each pipe before any heavy cleaning commences. Acceptance of this portion of the work may be made upon completion of subsequent television inspection and shall be to the complete satisfaction of the Engineer. Once the type of cleaning and equipment has been selected, the Contractor shall:

1. Select cleaning equipment based on the conditions of the lines at the time the work commences.
  - a. Light cleaning (as defined by NASSCO PACP): Use high pressure water jetting equipment, brushes and swabs.
  - b. Heavy cleaning (as defined by NASSCO PACP): Use high pressure water jetting equipment specifically designed for the intended use.
2. Use selected equipment to remove all dirt, grease, rock and other deleterious materials and obstructions.
3. Protect existing sewer lines from damage caused by improper use of cleaning equipment.
4. Take precautions to avoid damage or flooding to public or private property being served by the line being cleaned.

**ITEMS 250.06 through 250.12** (Continued)

5. Removal of Materials:
  - a. Remove all solids and semi-solids at the downstream manhole of the section being cleaned.
  - b. Passing material from one section of a line to another will not be permitted.
6. Disposal of Materials: Remove from the site and dispose of all solids or other waste materials recovered during the cleaning operations in an approved manner.

**Leakage Testing**

Leakage tests and measurements shall be made for all manhole-to manhole sections in which no service laterals are connected.

Where the groundwater level is more than 12 inches above the top of the pipe at its upper end, the Contractor shall conduct either infiltration tests or low-pressure air tests.

Where the groundwater level is less than 12 inches above the top of the pipe at its upper end, the Contractor shall conduct either infiltration tests or low-pressure air tests. At the time of the test, the Contractor shall determine the groundwater elevation from observation wells, excavations or other means, all subject to the acceptance of the Engineer. For making the low-pressure air tests, the Contractor shall use equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low-pressure air. The equipment shall be provided with an air regulator valve or air safety valve so set that the internal air pressure in the pipeline cannot exceed 8 PSI.

Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking. All air used shall pass through a single control panel. Low-pressure air shall be introduced into the sealed line until the internal air pressure reaches 2.5 PSI greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe at the time of the test. However, internal air pressure in the sealed line shall not be allowed to exceed 8 PSI. When the maximum pressure exerted by the groundwater is greater than 4 PSI, the Contractor shall conduct only an infiltration test. At least two minutes shall be allowed for the air pressure to stabilize in the section under test. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from the control panel, the time required in minutes for the pressure in the section under test to decrease from 3.5 to 2.5 PSI. (greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe) shall not be less than that shown in the following table:



**ITEMS 250.06 through 250.12** (Continued)

<b><u>Pipe Diameter</u></b> <b><u>(Inches)</u></b>	<b><u>Minutes</u></b>
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
20	10.0
24	11.5

When the sewer section to be tested contains more than one size of pipe, the minimum allowable time shall be based on the largest diameter pipe in the section and shall be the time shown in the table reduced by 0.5 minutes.

For making the infiltration and exfiltration tests, the Contractor shall furnish suitable test plugs, water pumps, and appurtenances, and all labor required to properly conduct the tests on sections as directed.

Upon completion of a section of the sewer, the Contractor shall dewater it and conduct a satisfactory test to measure the infiltration for at least 24 hours. The amount of infiltration, including manholes, tees, and connections, shall not exceed 300 gallons per inch diameter per mile of sewer per 24 hours. For making the exfiltration tests, the sewers shall be subjected to an internal pressure by plugging the pipe at the lower end and then filling the pipelines and manholes with clean water to a height of 2 feet above the top of the sewer at its upper end.

Where conditions between manholes may result in test pressures, which would cause leakage at the stoppers in branches, provisions shall be made by suitable ties, braces, and wedges to secure the stoppers against leakage resulting from the test pressures. The rate of leakage from the sewers shall be determined by measuring the amount of water required to maintain the level 2 feet above the top of the pipe. Leakage from the sewers under test shall not exceed the requirements for leakage into sewers as hereinbefore specified.

The sewers shall be tested before any connections are made to buildings.

The Contractor shall construct weirs or other means of measurements as may be required.

Suitable bulkheads shall be installed, as required, to permit the test of the sewer. Should the sections under test fail to meet the requirements, the Contractor shall do all work of locating and repairing the leaks and retesting as the Engineer may require without additional compensation.

---

**ITEMS 250.06 through 250.12** (Continued)

If in the judgment of the Engineer, it is impracticable to follow the foregoing procedures for any reason, modifications in the procedures shall be made as required and as acceptable to the Engineer, but in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above test requirements.

**Television Inspection**

Seven days after the completion of the backfilling of each section of new pipe, as defined as a length of pipe between two manholes, the Contractor will provide to the Engineer and Owner a televised inspection of the pipe performed and in accordance with NASSCO standards. The video files and NASSCO-formatted report will be provided to the Owner and Engineer for review and confirmation that the pipe is acceptable to place in service. In the event that the pipe is not acceptable relating to the proper construction of the pipe according to these specifications, the Contractor will be responsible to re-excavate and repair the defects to the satisfaction of the Engineer at no additional cost.

**Clay Cutoff**

If crushed stone bedding is used, 12-inch wide impermeable clay cutoff barrier shall be installed across the trench bottom every 100 feet or as directed by the Engineer, to prevent groundwater from flowing unimpeded along the pipe trench, through the crushed stone. No additional payment will be made for this barrier.

**Service & Lateral Connections**

Service connections shall be installed at a minimum slope of 2 percent at the locations determined by the Engineer in the field. It should be anticipated that each building along the sewer being installed will have one sewer lateral service connection.

Also, connection stubs for future construction may be required as directed by the engineer or City. Each branch installed for future use shall be fitted with a watertight masonry plug and shall extend to the limits of work where shown in order to minimize the impact of future connections.

**Sewer Coupling Installation**

Sewer couplings which are factory manufactured shall be installed at all connections from existing pipe to proposed pipe unless the existing pipe is the same material as the proposed pipe and the bell and spigot end of the pipes to be connected are compatible and free from defects. All sewer couplings shall be installed in accordance with the manufacturer's recommendations for the types of pipe to be connected.

---

**ITEMS 250.06 through 250.12** (Continued)**Inspection and Acceptance**

Acceptance will be on the basis of material and/or pressure tests and inspection by the Engineer. Inspection may be made at the place of manufacture, or on the work after delivery, or both, and the pipe shall be subject to rejection at any time due to failure to meet any of the specification requirements, even though sample pipe units may have been accepted as satisfactory at the place of manufacture. The Contractor shall immediately remove all rejected pipe from the project site. Tests and certified copies in triplicate of test results will be required for the materials as described herein. If less than 100 units of a given size and class of pipe are required, the Contractor may submit certified copies of tests made on identical pipe units made by the same manufacturer within the past year. If more than 100 units of a given size and class of pipe are required, the Contractor shall, at his own expense, engage the services of an acceptable independent testing laboratory to perform or witness all tests and certify the results. In addition, the Owner reserves the right to have any or all pipe units inspected or tested, or both, by an independent testing laboratory at either the manufacturer's plant or elsewhere. Such additional inspection and/or tests shall be the test results of record. Should the test results be satisfactory, the cost for the tests shall be at the Owner's expense. Should the test results not be satisfactory, the cost for the tests shall be at the Contractor's expense. All tests shall be made in accordance with the above-mentioned applicable ASTM specifications, and acceptance or rejection shall be based on the test results.

**METHOD OF MEASUREMENT**

Items 250.06, 250.08, 250.10, and 250.12 will be measured for payment by the Foot of respective PVC sanitary sewer pipe furnished and installed, complete in place.

Wyes for each sewer service and sewer couplings will be included with each lateral.

**BASIS OF PAYMENT**

Items 250.06, 250.08, 250.10, and 250.12 will be paid for at the respective Contract unit prices per Foot, which prices shall include excavation up to 5 feet, pipe, service stubs, gravel pipe bedding and any bedding requirements given by the manufacturer's specifications, backfill including fill concrete and dry pack, if needed; shoring and bracing, not otherwise included under other Items of this contract; the removal and disposal and/or abandoning of existing pipe, installation of 6-inch PVC building service laterals, one lateral per building and TV inspect, all labor materials, equipment, and all incidental costs required to complete the work.

Trench excavation in excess of 5 feet and all rock excavation will be paid for as specified under Items 142 and 144 for Class B Trench Excavation and Class B Rock Excavation respectively.

**ITEM 271.121    12 INCH AND UNDER PIPE REMOVED AND DISCARDED    FOOT**

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

The contractor shall remove the existing drainage pipes designated to be removed or removed and discarded on the plans. Work to be done under this item includes sawcutting, excavation, removal of pipes, backfilling transporting, and legally discarding off site of 12 inch and under pipe.

**METHOD OF MEASUREMENT**

Item 271.121 will be measured for payment by the Foot of 12 Inch and under pipe removed and discarded, as designated on the plans and required by the Engineer.

**BASIS OF PAYMENT**

Item 271.121 will be paid for at the Contract unit price per Foot, which price shall include removal, transporting, discarding, sawcutting, excavation, backfilling, all labor, materials, equipment, and all incidental costs required to complete the work.

<b><u>ITEM 303.06</u></b>	<b><u>6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 303.08</u></b>	<b><u>8 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 303.10</u></b>	<b><u>10 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)</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>
<b><u>ITEM 336.1</u></b>	<b><u>1 INCH PLASTIC WATER PIPE</u></b>	<b><u>FOOT</u></b>

The work under these items shall conform to the relevant provisions of Section 300 of the Standard Specifications, and the following:

The work under these items includes the furnishing and installation of water pipe and fittings, as shown on the Plans. All work shall be coordinated with the Town of Swansea Water Department.

The Contractor shall notify the Town of Swansea Water Department a minimum of 72 hours prior to any work relating the water line. The Town of Swansea will have a representative on-site during all water work. The Contractor shall coordinate with the Town's representative and the Engineer during all proposed water work.

The Contractor shall coordinate the operation of existing valves, timing, and duration of shutdown of existing mains, mark outs, disinfection and re-activation of water mains with the Engineer and Town of Swansea 24 hours prior to the start of work.

The Town of Swansea Water Department will perform all water main shutdowns at no additional cost to the Contractor.

The Contractor shall notify all abutters, with approval of the Town, a minimum of 48 hours prior to any water service shutdowns.

Prior to ordering any materials the Contractor shall submit shop drawings to the Engineer for approval, of all pipes, fittings, valves, gate boxes, and all other items required to complete the work. Shop drawings shall indicate type of joint and lining, and pipe coating. Shop drawings shall consist of manufacturers scale drawings, cuts or catalogs including descriptive literature and complete characteristics, specifications and code requirements. After review by the Engineer, the Engineer will send the shop drawings for review by the Town of Swansea.

Ductile iron pipe, couplings, and fittings shall be cement lined, coal tar enamel double coated, mechanical joint type and shall conform to the latest AWWA Standards:

- Pipe shall be AWWA C151 Class 52 for sizes 4 inch through 14 inch, Class 51 for 16 inch and up, and Class 53 for all sizes of flanged pipe with threaded flanges, zinc coated.
- Cement Lining shall be AWWA C104 with a thickness of not less than 1/8 inch on pipes 12 inches and smaller, and not less than 3/16 inches on pipe larger than 12 inches.
- Push-on and mechanical joints shall be AWWA C111
- Flanges shall be AWWA C115

**ITEMS 303.06 through 336.1** (Continued)

All pipe, couplings, valves, fittings, etc. shall be wrapped or encased in polyethylene per AWWA Standards and the Town of Swansea.

Pipe shall be backfilled, chlorinated, tested, and disinfected per the Town of Swansea Standards. The Town of Swansea will perform the sampling and analyses of all bacteria samples at no additional cost to the Contractor.

Ductile iron fittings shall have a pressure rating of 350 psi.

All mechanical joints shall be restrained joint type such as a mega lug or block buster.

All valves shall have a pressure rating of 200 psi. Valve shall have an operating nut and shall open right (clockwise).

**METHOD OF MEASUREMENT**

Items 303.06, 303.08, and 303.10 will be measured for payment by the Foot of ductile iron water pipe (mechanical joint) furnished and installed, complete in place.

Item 309. will be measured for payment by the Pound of ductile iron fittings for water pipes furnished and installed, complete in place.

Item 336.1 will be measured for payment by the Foot of plastic water pipe furnished and installed, complete in place.

**BASIS OF PAYMENT**

Items 303.06, 303.08, 303.10, & 336.1 will be paid for at the respective Contract unit prices per Foot, which prices shall include furnishing, installation, all labor, materials, equipment, and all incidental costs required to complete the work.

Item 309. will be paid for at the Contract unit price per Pound, which price shall include furnishing, installation, all labor, materials, equipment, and all incidental costs required to complete the work.

Item 309 will only be paid for fittings that are required and not specifically provided under other items in the Contract.

Incidental to these Items shall be excavation, backfill, compaction, testing, restrained joints, connecting of existing services, plugs, testing equipment, removal of existing pipe and fittings.

If required, Class B Trench and Rock Excavation will be measured and paid for under Items 142 and 144, respectively.

If required, cement concrete for thrust blocks, will be measured and paid for under Item 903.

**ITEM 358.1**

**GATE BOX REMOVED AND STACKED**

**EACH**

The work under this Item shall conform to the relevant provisions of Subsection 301 of the Standard Specifications and the following:

The work under this Item shall consist of removing and stacking gate boxes where shown on the plans and as required by the Engineer. Gate boxes to be stacked shall be stacked at the Department of Public Works storage yard at 101 Gardners Neck Road, Swansea, MA 02777 or at a location as required by the Engineer. If the Town or MassDOT wishes not to stack the items designated to be removed and stacked, the contractor shall dispose of those items off-site with no additional cost.

Where required by the Engineer, the Contractor may leave the existing valve in place, but will remove and stack the gate box. Any materials damaged during this work due to the Contractor's operations shall be replaced by the Contractor at no additional cost to the Owner.

**METHOD OF MEASUREMENT**

Item 358.1 will be measured for payment by the Each gate box removed and stacked.

**BASIS OF PAYMENT**

Item 358.1 will be paid for at the Contract unit price per Each, which price shall include removal, stacking, disposal if required, all labor, equipment, materials and all incidental costs required to complete the work.

---

<b><u>ITEM 371.06</u></b>	<b><u>6 INCH COUPLING</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 371.08</u></b>	<b><u>8 INCH COUPLING</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 371.10</u></b>	<b><u>10 INCH COUPLING</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.

### **MATERIALS**

- A. Furnish materials according to Town of Swansea standards.
- B. Transition couplings have the following attributes:
1. Conforming to AWWA C219
  2. Ductile iron sleeve
  3. Buna N gaskets
  4. High strength alloy steel bolts with heavy, semi-finished hexagon nuts per AWWA C219
- C. Excavate test pits to measure the dimensions and pipe outside diameters for the required couplings at the connection points between new and existing piping prior to ordering new couplings.

### **CONSTRUCTION METHODS**

- A. Install couplings according to the Town of Swansea Water Department requirements.
- B. Contractor shall excavate test pits to measure the dimensions and pipe outside diameters for the required coupling at the connection points between new and existing pipelines prior to ordering and installing new couplings.
- C. Sleeve Couplings: Only installed for closure or as shown on Drawings. Do not assemble couplings until adjoining joints have been assembled.
1. Encapsulate bolts and nuts using wax sealing tape per AWWA Standard C217.
  2. Install protective wrap recommended by manufacturer or as required herein. Maintain insulating properties of insulating and dielectric couplings.
- D. All items to be cleaned and disinfected prior to installation, testing, and final acceptance in accordance with AWWA C651
- E. Pressure test water distribution system according to AWWA C600.



**ITEMS 371.06 through 371.12** (Continued)

**METHOD OF MEASUREMENT**

Items 371.06, 371.08, and 371.10 will be measured for payment by the Each coupling furnished and installed, complete in place.

**BASIS OF PAYMENT**

Items 371.06, 371.08, and 371.10 will be paid for at the respective Contract prices per Each, which prices shall include furnishing, installation, disinfection, testing, all labor, materials, equipment and all incidental costs required to complete the work.

**ITEM 376.2**

**HYDRANT - REMOVED AND RESET**

**EACH**

Work under this item shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, and the following:

The contractor shall coordinate all work with the Town of Swansea Water Department prior to the commencement of any work on the water system.

Prior to ordering any materials the Contractor shall submit shop drawings to the Engineer for approval, of all pipes, fittings, and all other items required to complete the work. The contractor shall have all necessary tools materials and equipment needed to complete the work on site and ready before any hydrant is removed. The contractor shall give at least 48 hours written notice to the Swansea Water Department prior to removing any hydrant. If determined by the Engineer, the existing hydrant is not suitable for reset, a new hydrant will be supplied by the Town of Swansea Water Department. The contractor shall install the owner provided hydrant and if directed the contractor shall dispose of the old hydrant at no additional cost to Item 376.2.

**METHOD OF MEASUREMENT**

Item 376.2 will be measured for payment according to Subsection 301.80.

**BASIS OF PAYMENT**

Item 376.2 will be paid for at the Contract unit price according to Subsection 301.81.

Any incidental costs resulting from coordination with Town of Swansea Water Department will be incidental to this Item.

**ITEM 504.21**                      **GRANITE CURB TYPE T100- SPLAYED END**                      **EACH**

Work under this item shall conform to the relevant provisions of Section 500 and the following:

At locations shown on the plan and as directed by the Engineer, a splayed end curb shall be provided to transition from the vertical curb to T100 curb. The splayed end curb shall be six feet in length with a sawn face which shall match the sloped face of the T100 curb (Item 507./507.1). The splayed end shall be 12-inches in width and meet the dimensions on the Plans. The granite curbing shall be in conformance with Section M9.04 and the details on the contract drawings.

**METHOD OF MEASUREMENT**

Item 504.21 will be measured for payment by the Each granite curb type T100 – splayed end, furnished and installed, complete in place.

Each six-foot splayed end curb shall constitute a single unit.

**BASIS OF PAYMENT**

Item 504.21 will be paid for at the Contract unit price per Each, which price shall include furnishing, installation, all labor, materials, equipment, and all incidental costs required to complete the work.

<b><u>ITEM 507.</u></b>	<b><u>TRAVERSABLE GRANITE CURB - TYPE</u></b>	<b><u>FOOT</u></b>
	<b><u>T100 - STRAIGHT</u></b>	
<b><u>ITEM 507.1</u></b>	<b><u>TRAVERSABLE GRANITE CURB - TYPE</u></b>	<b><u>FOOT</u></b>
	<b><u>T100 - CURVED</u></b>	

The work to be done under these items shall conform to the relevant provisions of Section 500 of the Standard Specifications and the following:

The work under these Items shall include the furnishing and installation of traversable granite curbing between as indicated on the contract drawings. The proposed granite curb shall conform to the dimensions as shown on the Plans.

### **MATERIALS**

The granite curbing shall be in conformance with Section M9.04 and the details on the contract drawings.

### **CONSTRUCTION METHODS**

The granite curbing shall be installed in conformance with Subsection 501 and the details within the construction plans.

The curb shall be installed in lengths not greater than 6 feet. The Contractor shall provide curved curb where required, as shown on the plans.

### **METHOD OF MEASUREMENT**

Items 507. and 507.1 will be measured for payment by the Foot of respective traversable granite curb type T100 furnished and installed, complete in place.

### **BASIS OF PAYMENT**

Items 507. and 507.1 will be paid for at the respective Contract unit prices per Foot, which prices shall include furnishing, installation, sawcutting, excavation, gravel, cement concrete, all labor, materials, equipment and all incidental costs required to complete the work.

**ITEM 520.121**      **CONCRETE CURB STOP REMOVED AND STACKED**      **EACH**

The work under this Item shall conform to the relevant provisions of Section 500 of the Standard Specifications and the following:

Work to be done under this item includes the removal, transporting, and stacking of existing concrete curb stop as indicated on the Contract Drawings or as directed by the Engineer. The Contractor shall stack the removed curb stop at a location designated by the Engineer or the Town of Swansea or Private Owner.

If the Town or Private Owner wishes not to stack those removed curb stops, the contractors shall dispose of those items off-site with no additional cost.

**METHOD OF MEASUREMENT**

Item 520.121 will be measured for payment by the Each concrete curb stop removed and stacked.

**BASIS OF PAYMENT**

Item 520.121 will be paid for at the Contractor unit price per Each, which price shall include dismantling, storing, loading, transporting and stacking of the curb stops, the excavation of the existing foundations, placing of compacted gravel backfill and the restoration or replacement in kind where foundations are removed, all labor, materials, equipment, and all incidental costs required to complete the work.

**ITEM 657.**

**TEMPORARY FENCE**

**FOOT**

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

The work under this item consists of the furnishing, installation, maintenance, resetting, transportation, final removal, and temporary storage of a temporary construction fence around the work area as shown on the Plans.

The Contractor shall submit a shop drawing of the temporary construction fence to the Engineer for approval prior to ordering of materials.

The Contractor shall confirm the location of the proposed temporary fence for each phase with the Engineer prior to the installation of the temporary fence.

The temporary fence shall consist of a 72" height steel chain link fence. Chain link fence shall meet the requirements of Section M 8.09.0. Temporary fence shall include nylon fabric to provide dust control within the work zone. Material need not be new but shall not be deteriorated nor in any way jeopardize the security purposes intended. All fencing material shall meet the approval of the Engineer.

The temporary fence posts can be embedded into the ground or placed on pedestals and mounted onto temporary barrier as approved by the Engineer. Temporary fence mounted onto temporary barriers shall meet the requirements set by the temporary barrier manufacturer.

The Contractor shall provide locked gates within the temporary fence as locations approved by the Engineer. Locations of the gates shall be determined by the Contractor for access into the work zone.

The Contractor shall set the temporary fence in each zone such that it protected the work zone. Temporary Fence shall be maintained throughout the duration of the project. The Contractor shall repair the temporary fence as needed, and as required by the Engineer.

Once the project is complete, the Contractor shall remove the temporary fence, posts, at the approval of the Engineer. The Contractor shall minimize damage to the existing, and recently constructed, conditions while removing the temporary fence. The Contractor shall repair, and damaged areas caused by the removal of the temporary fence.

**ITEM 657.** (Continued)

**METHOD OF MEASUREMENT**

Item 657. will be measured for payment by the Foot of temporary fence installed or reset, complete in place, measured along the top edge of the rail element from center to center of end posts.

**BASIS OF PAYMENT**

Item 657. will be paid for at the Contract unit price per Foot, which price shall include furnishing, installation, maintenance, resetting, all equipment, labor, and materials to complete the work including: posts, chain link fence, nylon fabric, mounting hardware, temporary stacking, gates, concrete, removal of temporary fence and foundations, excavation, backfill, connecting hardware, and all incidental costs required to complete the work.

No additional payment shall be made for the replacement and/or restoration of fencing damaged by the Contractor's operation, vandalism and/or any other manner.

**ITEM 697.1****SILT SACK****EACH**

The work under this item shall conform to the relevant provisions of Subsections 227 and 670 of the Standard Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

**CONSTRUCTION**

Silt sacks shall be installed in retained existing and proposed catch basins and drop inlets within the project limits and as required by the Resident Engineer.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Subsection 227 of the Standard Specifications

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Silt sacks will be measured and paid at the Contract unit price per Each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price bid.



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

The work under this Item shall conform to the relevant provisions of Subsection 740 of the Standard Specifications and the following:

Three 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 Latest Adobe Acrobat Professional with all security updates Latest Autodesk AutoCAD LT Antivirus software with all current security updates maintained through the life of the contract.
Monitors:	Two 27" LED with Full HD resolution. Max. resolution 1920 x 1080
Flash drives:	2 (two) - 128GB USB 3.0
Internet access:	High Speed (min. 24 mbps) internet access with wireless router.

The Contractor shall also provide two (2) smart levels at the Resident Engineer's Office. One smart level shall be a 2-ft length, the second shall be a 4-foot length. Smart levels shall include a digital screen and be capable of measuring slopes in % grade.

**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 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 penalty be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. Based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. The contractor shall prepare the SWPPP and update it as necessary. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits.

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 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 767.121****SEDIMENT CONTROL BARRIER****FOOT**

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. Photo-biodegradable fabric shall not be used.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, sedimentation fence shall be used in addition to compost filter tubes and straw bales and shall be compensated under that item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

**MATERIALS AND CONSTRUCTION**

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer's instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

---

**ITEM 767.121** (Continued)**Compost Filter Tube**

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

**Straw Bales**

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

**ITEM 767.121** (Continued)**Sedimentation Fence**

Materials and Installation shall be per Subsection 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

**MAINTENANCE**

Maintenance of the sediment control barrier shall be per Subsection 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

**DISMANTLING & REMOVING**

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.



**ITEM 767.121** (Continued)

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Sedimentation fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 767.121 will be measured and paid for at the contract unit price per foot of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work. Additional barrier, such as double or triple stacking of compost filter tubes, will be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damaged by construction activities shall be repaired or replaced as directed by the Engineer at the Contractor's expense.

**ITEM 767.65**

**CRUSHED SHELL TREATMENT**

**SQUARE YARD**

The work under this item shall conform to the relevant provisions of Subsection 767 of the Standard Specifications and the following:

The work under this Item shall include the furnishing and placement of a crushed seashell landscaping treatment, as shown on the Plans and required by the Engineer.

The Contractor shall provide crushed seashells for surface landscape treatment at locations shown on the Plans and as required by the Engineer to match the pre-construction condition and adjacent materials.

Crushed seashells shall be installed at a minimum depth of 4-inches. The crushed seashells shall be placed on compacted sub-grade soils that meet the requirements of Subsection 150. Crushed seashells shall be installed to the line and grade as shown on the plans.

The crushed seashells shall be white in color. The minimum shell size shall be ¼-inch, and the largest stone size shall be 1-1/4-inch.

**METHOD OF MEASUREMENT**

Item 767.65 will be measured for payment by the Square Yard of crushed shell treatment furnished and installed, complete in place.

**BASIS OF PAYMENT**

Item 767.65 will be paid for by the Contract unit price per Square Yard, which price shall include all labor, material, excavation, grading, equipment, and all incidental costs required to complete the work.

**ITEM 767.9****JUTE MESH****SQUARE YARD**

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following.

The work under this item shall consist of furnishing and installing jute mesh fabric to prevent soil erosion, specifically slopes steeper than 3H:1V. Jute mesh shall be placed over all areas of exposed soil in locations shown on the plans or as required by the Engineer.

**MATERIALS**

Jute netting or similar material shall be new, unused, undyed, and unbleached 100% biodegradable yarn (no polypropylene) and of uniform plain weave. The materials should weigh approximately 1.0 (+/- 5%) pounds per linear yard (assuming a 4-foot width).

Shall meet the following minimum requirements:

Open Area:	70-75%
Mesh Size:	approximately 1/2 inch with an open area of 60-65%.
Roll Weight:	approximately 1.0 (+/- 5%) pounds per linear yard
Warp Ends:	78 per linear yard
Weft Ends:	41 per linear yard
Recommended flow:	6 fps (1.8 m/s)
Functional Longevity:	6-9 months

Anchoring devices shall be 11-gauge steel staples 6-inch minimum length. In loose soils the length of the staples shall be 9-inches.

For areas that will be routinely mowed anchoring devices shall consist of minimum 8" wooden stakes. Longer stakes shall be used where loose soils or other conditions obligate, as required by the Engineer.

**CONSTRUCTION METHODS**

Area shall be seeded prior to installation of jute netting.

Installation shall be such as to ensure continuous contact with soil without folds or wrinkles. Jute netting shall be laid such that upslope fabric is placed over lower slope fabric by a minimum of 3 feet. Adjoining rolls shall be overlapped a minimum 6 inches. The netting shall extend beyond at least 1 foot beyond the edge of the seeded area.

The Contractor shall bury the ends of the jute netting 6-8 inches in anchor trenches at top and bottom of slopes.

**ITEM 767.9** (Continued)

Jute netting shall be anchored in place with vertically driven metal staples. The staples shall be driven in until their tops are flush with the soil. Staples shall be placed at 12-inch intervals along the top of a slope and in staggered courses along the face of the slope to achieve a minimum of 3 staples per square yard, or at manufacturer's recommendations for the given site conditions.

Contractor shall reseed all trenched and otherwise disturbed areas with specified seed mix. The Contractor shall maintain the jute netting and make satisfactory repairs of any areas damaged until acceptance of seed establishment.

**METHOD OF MEASUREMENT**

Jute Mesh will be measured by the number of Square Yards complete in place, including anchoring, as measured across the surface of grade and does not include buried or overlapped portions. The quantity measured for payment shall not exceed that shown on the plans or as directed by the Engineer.

Mesh that becomes loose or that is not otherwise functioning to stabilize soil shall be repaired and new or additional jute matting installed as required at the Contractor's expense. Soil erosion shall be repaired, and area shall be raked and reseeded with the original specified mix as required by the Engineer at the Contractors expense.

**BASIS OF PAYMENT**

Item 767.9 will be paid for at the contract unit price per Square Yard, which price shall include all labor, materials, equipment, trenching, placing, and stapling of jute fabric, reseeded of trenched and disturbed areas, and all incidental costs required to complete the work.

<b><u>ITEM 802.401</u></b>	<b><u>4 INCH TELEPHONE CONDUIT – TYPE NM (SINGLE)</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 802.402</u></b>	<b><u>4 INCH TELEPHONE CONDUIT – TYPE NM (DOUBLE)</u></b>	<b><u>FOOT</u></b>
<b><u>ITEM 802.403</u></b>	<b><u>4 INCH TELEPHONE CONDUIT – TYPE NM (TRIPLE)</u></b>	<b><u>FOOT</u></b>

The work under these Items shall conform to the relevant provisions of Section 800 and the following:

The trench shall be excavated to the width and depth shown on the plans. All construction of duct banks including trench, excavation, and backfill shall conform to Verizon details and specifications. All work shall be performed by a Verizon approved Contractor. A representative from Verizon shall be present for all Telephone conduit installed.

For all conduits encased in concrete, use plastic spacers to maintain conduit spacing. Spacers shall meet Verizon specifications for design and spacing.

All trench excavation activities shall comply with all appropriate OSHA standards.

Duct bank shall have 6-inch orange warning tape installed above the concrete encasement as shown on the plans.

Conduits shall be blown clean using compressed air. Run mandrel through each conduit to confirm viable pathway.

Woven polyester mule tape with minimum strength of 2500 lb. tensile strength to be installed within each conduit.

PVC conduits shall be Schedule 40.

Concrete encasement shall be 2,500 psi, 3/8 inch, 520 cement concrete.

### **METHOD OF MEASUREMENT**

Items 802.401, 802.402, and 802.403 will be measured for payment by the Foot of respective telephone conduit furnished, installed, and maintained, complete in place and approved by the Engineer.

### **BASIS OF PAYMENT**

Items 802.401, 802.402, and 802.403 will be paid for at the respective Contract unit prices per Foot, which prices shall include furnishing, installation, maintenance, excavation, backfilling, conduit, warning tape, spacers, concrete encasement, all labor, materials, equipment, and all incidental costs required to complete the work.

---

<b><u>ITEM 816.01</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION</u></b>	<b><u>LUMP SUM</u></b>
	<b><u>LOCATION NO. 1</u></b>	
<b><u>ITEM 816.02</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION</u></b>	<b><u>LUMP SUM</u></b>
	<b><u>LOCATION NO. 2</u></b>	
<b><u>ITEM 816.03</u></b>	<b><u>TRAFFIC SIGNAL RECONSTRUCTION</u></b>	<b><u>LUMP SUM</u></b>
	<b><u>LOCATION NO. 3</u></b>	

Work under these Items shall be performed in accordance with the provisions of Section 800 of the Standard Specifications, the 2009 Manual on Uniform Traffic Control Devices (MUTCD) with Massachusetts Amendments and the following:

The work done under these items related to traffic signal installation or reconstruction consists of the installation of new traffic signals at the intersection listed below, complete with vehicle and bicycle loop detectors, signal posts, signal heads, mast arm assemblies, cabinets, foundations, pull boxes, conduit, wire and cable, emergency vehicular pre-emption system, communication links for a traffic signal control system, an electrical service connection and all other equipment, materials and incidental costs necessary to furnish, install and program a complete and functioning traffic control signal system as specified herein and as shown in the contract documents for the following intersection in the Town of Swansea:

1. Grand Army of the Republic Highway (U.S. Route 6) at Market Street/James Reynolds Road (Route 136)
2. Grand Army of the Republic Highway (U.S. Route 6) at Maple Avenue
3. Grand Army of the Republic Highway (U.S. Route 6) at Swansea Mall Drive (Route 118)

The work shall include but not necessarily be limited to: removing, transporting and stacking all existing traffic signal equipment including the removal and disposal of their foundations and electrical system; providing temporary signal system as necessary, maintaining and modifying to accommodate different phases of construction; removing and disposing or abandoning existing hand holes and signal conduit. Old cable, all unusable material, existing mast arms/supports, and any item rejected by the Engineer for stacking, shall be disposed of legally by the Contractor.

The work shall also include the excavation and backfilling with compacted gravel of the holes resulting from the excavation of the foundations and the replacement, in kind, of any surface material disturbed. The existing mast arm foundations shall be removed to a minimum of 3 feet deep from the finish grade.

Individual items of work shall include furnishing and installing all or part of the following items: P size ATC traffic controller cabinet and foundation, cabinet concrete pad, remote communication units, coordinating units, amplifiers, mast arm, foundations with anchor bolts, traffic signal posts and housings; pedestrian signals with countdown timers and non-movable accessible push buttons (APS) with signs and saddles, a complete emergency vehicle priority control system (fire pre-emption), roadway loop detectors, and all necessary wiring, mounting assemblies, equipment grounding and bonding, ground rods, and a new service connection. A list of major items required is included in the Contract Drawings.

---

**ITEMS 816.01 through 816.03** (Continued)

The cabinet shall be installed complete in place with all connections and programming so that all eight (8) NEMA vehicle phases and sub-phases are programmed even if only some phases are being used. A list of Major Items Required is included on the contract drawing which contains a list of equipment that is included under the lump sum cost and a list of equipment that will be paid for under their respective items.

After construction of the new signal equipment is complete and when the new signals are ready to be operational, the contractor is responsible for the removal and stacking of all above ground existing signal equipment. The contractor shall deliver the equipment to MassDOT District 5 storage yard or to the location direction by the Engineer. The contractor shall take extra care when removing, transportation, and stacking the existing signal equipment. Any damaged equipment caused by the Contractor's negligence; it should be replaced at no additional cost to the Department.

The contractor shall maintain traffic signal system fully operational during the construction. To provide fully operational signal system, contractor may need to provide temporary signal system to supplement existing signal system. Providing temporary signals and maintaining and modifying existing signal system to accommodate different phases of construction shall be incidental to the contract lump sum bid price for this item.

**General Requirements**

Within 30 days following execution of the Contract, the Contractor shall submit in the form of shop drawings, a list of equipment and manufacturer's equipment specifications, being proposed to be installed, to the Engineer in accordance with the relevant provisions of Subsection 815.20.

The Contractor shall not commence work until approval of the shop drawings has been received in writing from the Engineer. Approval of the shop drawings will be general in character and it is a conformation that the equipment is consistent with the design documents requirements. The contractor is responsible for providing a functioning system and fully operational, as approved by the Engineer and the Town of Swansea.

The Contractor shall deliver to the Engineer a certificate of compliance by manufacturer for all materials purchased.

---

**ITEMS 816.01 through 816.03** (Continued)**Specific Requirements**

1. Local Intersection Controller
  - A. The local intersection controller shall meet all the requirements for a Type 8DW/ TS2-1 controller.
  - B. Each Local intersection controller shall be capable of functioning in every respect as an integrated part of a closed loop traffic control system.
  - C. Terminations of all interconnect cable, lightning/surge arrestors, terminal strips, etc., shall be included with each controller.
  - D. The local intersection controller shall be capable of controlling a fully-actuated two to eight phase intersection and shall meet or exceed NEMA TS 2 Type 1 standards for fully actuated traffic control units.
  - E. The controller shall conform to Section 3, Controller Units of NEMA No. TS 2. Traffic Control Assemblies. The controller unit shall utilize an input/output interface conforming to Section 3.3.1 of the NEMA TS 2 Standard for all input/output functions with the back panel terminals and facilities, including the malfunction management unit, detector rack assemblies, and auxiliary devices.
  - F. The local controller shall have internal communication capability with direct access to the data memory.
  - G. The local controller shall be capable of processing controller and intersection and system detection data and provide all necessary intersection control functions.

Local intersection traffic signal cable shall be #14 AWG.

The Contractor shall make all necessary arrangements with National Grid for the service connections or for any main power cut off when necessary, and pay all charges incurred hereby.

**SIGNAL SUPPORT**

The required work to install and construct the foundations shall be included under the lump sum cost of these Item 816.01, 816.02, & 816.03. **All mast arms, pedestal poles and bases shall be finished as required by MassDOT and as specified herewith in these special provisions.**

Traffic signal posts shall be 8 and 10 foot one-piece, continuously tapered, seamless tube made of steel welded to the Base as a single unit. A one piece pole and base shall be used unless otherwise approved by the Engineer.

The bottom of the signal heads shall have a minimum clearance of not less than 15 feet or greater than 19 feet above the pavement grade at the center of the roadway.



---

**ITEMS 816.01 through 816.03** (Continued)

The Contractor shall be responsible for making all necessary arrangements to have the proper utility company(s) relocate overhead wires in order for the proper mast arm clearances to be obtained, should any conflicts arise. The Contractor shall take extra care and precaution in placing signal heads to ensure the existing overhead utility wires do not interfere with the visibility of the signal heads located above the roadway.

All measurements to determine the exact dimensions and clearances to existing overhead utility lines shall be made in the field by the Contractor for incorporation into the erection plans and shop drawings which are submitted for approval.

**Mast Arm**

Mast arm shall be fabricated and constructed in conformance with the 2015 MassDOT Overhead Signal Structure & Foundation Standard Drawings and as stated below.

All mast arm poles shall be galvanized steel monolevers with shoe bases.

Acceptance of mast arm will be contingent upon review and approval of shop drawings submitted by the Contractor. Long-hand design calculations stamped by a structural engineer licensed in the Commonwealth of Massachusetts shall be submitted by the Contractor with the shop drawings for all mast arm poles.

**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 painted in accordance to the relevant provision of Subsection 815 of the Standard Specifications. This includes the metal strapping used to secure signal heads to the mast arm shaft, the inside of visors. The Contractor shall submit to the Engineer four (4) paint chips and sample finishes on aluminum and steel of the intended color for review and concurrence prior to any work being done under this project.

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:

**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."

**ITEMS 816.01 through 816.03** (Continued)

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.

**2. Aluminum Equipment**

All aluminum equipment called for shall have a powder coat in a color determined by MassDOT. The coating shall be a polyester-TGIC (triglycidyl isocyanurat) 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 Initial 1000 hours	5A 5A
Gloss	ASTM D 523 15°C - 600 hours 15°C - 1000 hours	82% retention 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 ASTM D 1654 1000 hours unscribed 400 hours scribed	Table 2-10 Table 1-10
Weather Resistance	ASTM G 23, 1000 hours, 18 min. waterspray, 102 min. light	No film failure
Color	Per MassDOT Standard	
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

**ITEMS 816.01 through 816.03** (Continued)

A Certificate of Compliance of the powder coating system is required for the Engineer's approval. The contractor shall also secure a warranty on workmanship against any paint chipping, failure, and any other defects accruing during a period of two (2) years from the date of installation and acceptance by MassDOT of the installed equipment.

**3. Foundations**

Signal support and controller cabinet foundations shall be designed and constructed in conformance with MassDOT Standard Drawings and in accordance with the applicable requirements of Subsection 901 and the Standard Drawings for Overhead Signal Structure and Foundation dated December, 2015. See tables below for the mast arm foundation tables for each mast arm.

**Grand Army of the Republic Highway (U.S. Route 6) at Market Street/James Reynolds Road (Route 136)**

MAST ARM FOUNDATION DESIGN TABLE - 130 MPH DESIGN WIND SPEED										
Location	Street Name	Station	Offset	Soil Type	Design Boring	Mast Arm Length	Diameter	Depth	Vert Bars	Tie Bars
#2	Route 6	113+46.50	56.47' Left	Wet Sand (Loose)	B-2	50'	4'-0"	18'-6"	18- #9	#5 @ 6"
#5	Route 136	210+48.98	56.64' Right	Wet Sand (Dense)	B-3	55'	4'-6"	14'-6"	18- #10	#5 @ 5"
#7	Route 6	112+47.25	65.11' Right	Wet Sand (Dense)	B-4	55'	4'-6"	14'-6"	18- #10	#5 @ 5"
#9	Route 6	112+19.71	49.49' Left	Wet Sand (Dense)	B-1	55'	4'-6"	14'-6"	18- #10	#5 @ 5"

**ITEMS 816.01 through 816.03 (Continued)****Grand Army of the Republic Highway (U.S. Route 6) at Maple Avenue**

<b>MAST ARM FOUNDATION DESIGN TABLE - 130 MPH DESIGN WIND SPEED</b>										
Location	Street Name	Station	Offset	Soil Type	Design Boring	Mast Arm Length	Diameter	Depth	Vert. Bars	Tie Bars
#4	Maple Ave	408+53.70	29.85 Right	Wet Sand (Dense)	B-6	35'	3'-6"	12'-6"	18-#8	#5 @ 8"
#6	Route 6	309+86.79	46.36' Right	Wet Sand (Dense)	B-7	40'	3'-6"	12'-6"	18-#8	#5 @ 8"
#9	Maple Ave	407+86.39	37.00' Left	Wet Sand (Dense)	B-8	25'	3'-6"	10'-0"	18-#8	#5 @ 12"
#11	Route 6	308+02.09	36.22' Left	Wet Sand (Dense)	B-5	40'	3'-6"	12'-6"	18-#8	#5 @ 8"

**Grand Army of the Republic Highway (U.S. Route 6) at Swansea Mall Drive (Route 118)**

<b>MAST ARM FOUNDATION DESIGN TABLE - 130 MPH DESIGN WIND SPEED</b>										
Location	Street Name	Station	Offset	Soil Type	Design Boring	Mast Arm Length	Diameter	Depth	Vert. Bars	Tie Bars
#2	Route 6	511+67.72	44.73' Right	Wet Sand (Dense)	B-10	40'	3'-6"	12'-6"	18-#8	#5 @ 8"
#3*	Route 6	510+89.65	44.73' Right	Dry Sand (Loose)	B-1A-S / B-1-S	35'	3'-6"	13'-6"	18-#8	#5 @ 8"
#5	Route 6	510+63.61	47.43' Left	Wet Sand (Loose)	B-9	35'	3'-6"	17'-0"	18-#8	#5 @ 8"

\*The Contractor is hereby advised of an obstruction that was encountered during soil borings B-1-S & B-1A-S at the proposed location for Mast Arm #3 (STA 510+89.65, 44.73'RT). The Contractor shall remove this obstruction as part of the mast arm foundation construction. No additional measurement and payment will be made for the removal of this obstruction. The Contractor shall request that the Geotechnical Engineer be on-site after the obstruction is removed to review the existing sub-surface soils to confirm the design of the foundation. A special design foundation may be required. A mast arm foundation size has been provided based on obtained soil data and shall be confirmed by the Engineer prior to installation of the foundations.

**ITEMS 816.01 through 816.03** (Continued)

The top forming of cast-in-place concrete units shall extend downward for a minimum of 24 inches on the side of any foundation. The lower portions of all foundations shall be placed directly against undisturbed earth. No forms or reinforcing for foundations shall be set and concrete placed until the excavation has been inspected by the Engineer and approval to proceed has been given. The Contractor shall request written approval from the Engineer in advance of the placement of any concrete for foundations of traffic signal poles, mast arms and controller cabinets.

Concrete foundations shall be constructed of 4,000 psi, 1½ inch, 565 Cement Concrete. The Contractor shall submit shop drawings of any bolt circle details for approval by the Engineer. Anchor bolts shall be set accurately and tops shall be formed neatly.

Soil borings will be completed at locations where mast arms are being proposed and a copy of the boring logs are included in the Contract Drawings. The standard foundation design provided herein and in the contract drawing is based on the soil condition identified in the soil boring log. If ledge or unsuitable soil is encountered during construction (i.e. on which does not apply to the design tables shown in MassDOT's standard drawings), the Design engineer shall submit a modified foundation design to be completed by a structural engineer licensed in the Commonwealth of Massachusetts, to the Contractor. If utilities or other underground obstructions are encountered, the Contractor shall backfill the area to its original condition until an alternate design has been approved by MassDOT. Subsurface conditions that require a special foundation as stated in Engineering Directive E-16-001 will be prepared and designed by the design engineer. Such subsurface conditions include sand material with blow counts less than 6bpf and clay material with blow counts less than 2 bpf. These foundations include spread footing and rock socketed foundation designs. No separate payment will be made for work considered incidental to the excavation, including but not limited to, mast arm foundations, dewatering, support of excavation, alternative foundation design, rock coring, etc. but all costs in connection therewith shall be included in the lump sum bid price for this item.

Mast arm foundations shall conform to minimum MAAB dimensions and shall not obstruct a sidewalk or crosswalk so that passage by physically challenged persons is impaired.

Reinforcing bars in the foundations shall comply with MassDOT Engineering Directive E-22-002, which requires all reinforcing bars to be epoxy coated per Section M8.01.07.

---

**ITEMS 816.01 through 816.03** (Continued)**4. As-Built Drawings**

The Contractor shall supply the Engineer with as-built plans for the locations of all installed traffic signal equipment and conduit.

**5. Testing of Traffic Signal System**

The signal shall operate continuously for 30 days before requesting a final inspection.

The Contractor shall perform testing of the equipment grounding, terminals & facilities, detectors, preemption, and other systems components in the presence of the MassDOT, the Engineer, and the Swansea Fire Department in accordance with the Standard Specifications. The Contractor shall order and pay for a Police Officer detail to facilitate the equipment testing.

**SERVICE CONNECTION**

It shall be the Contractor's responsibility to contact the utility company. The electric company (refer to utility contacts) will furnish the connection and power at the locations shown on the Contract Drawings. The service connection shown on the Contract Drawings is only approximate. The electric company will connect and disconnect power as required. No work shall be done in manholes or on power poles without a representative of the electric company being present. The Contractor will be responsible for coordinating work with the electric company.

The utility company will provide a stub conduit connection at the underground structure, or overhead structure. The contractor shall make the connection from the power source to the meter socket. The Contractor will install the conduit connecting the stub connection to the controller cabinet foundation.

The Contractor shall furnish and install a National Grid approved polymer concrete handhole as indicated on the Contract Drawings, set on a 6" layer of 3/4" Crushed Stone (M2.01.4) for drainage.

The Contractor shall furnish and install, or cause to be installed, all service equipment to the satisfaction of the electric utility company. It shall also be the Contractor's responsibility to pay all charges to the utility company for performing the work previously described.

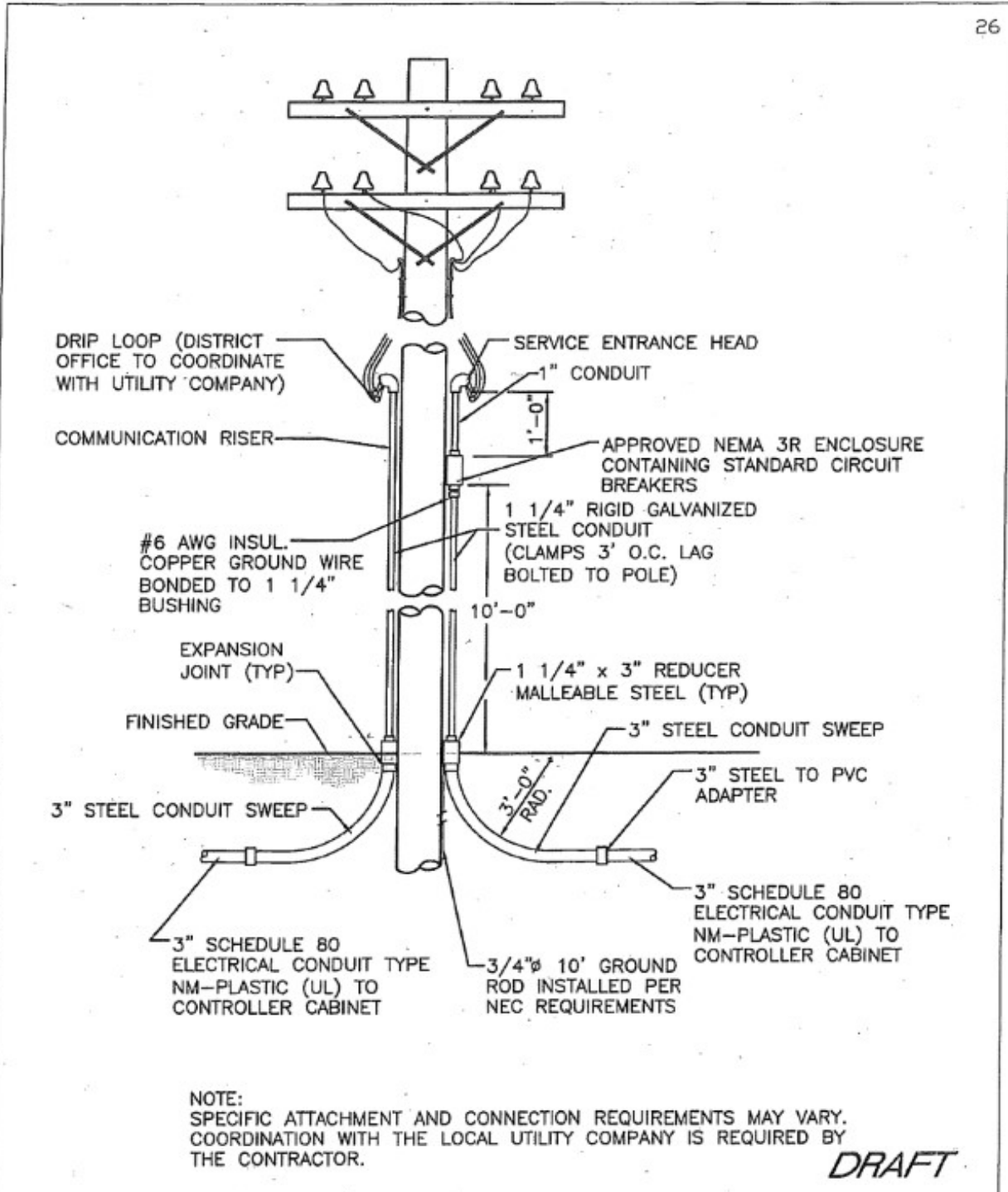
Openings where cables enter the bottom of the controller cabinet and each pull box shall be sealed with approved elastic sealing compound.

No direct reimbursement will be made under this contract to the Contractor for payments made to electric company, it being understood that full compensation for any payment made by the Contractor to the utility company will be included in the contract prices bid.

Grounding Cable - Grounding cable shall be bare copper No. 8 AWG wires.

**ITEMS 816.01 through 816.03 (Continued)**

Service connection shall be installed per MassDOT Standard Detail Drawing 813.1.0 included below.



26

---

**ITEMS 816.01 through 816.03** (Continued)**ACTUATED CONTROLLER**

The traffic signal controller installed shall conform to Subsection 815 of the Standard Specifications except as noted in these Special Provisions. The requirement for full eight-phase loading of load switches and flasher relays is retained.

The controller cabinets shall conform to the NEMA TS 2 Type 1 Standards, Section 7 and the ITS Cabinet Standard. Cabinet size shall be a "P" size cabinet. The cabinet shall contain the following ATC components a modular cabinet in addition to the traffic signal controller: a malfunction management system with 32 channel capability with Ethernet capability, an auxiliary display unit that provides an LED four color by thirty-two channel display, a rack mounted high power supply, a high density switch pack/ flasher unit, a dual channel isolator unit. The ATC signal controllers and components shall be 120-Volt system.

Controller unit shall retain intersection data and controller unit programming in non-volatile EEPROM memory. The real time clock shall be maintained by a battery backup during power outages and shall include automatic accommodations for daylight savings time.

Controller unit shall be capable of two through 16-phase operation and 16 keyboard-programmable overlaps and shall meet or exceed NEMA TS-2, Type 1 standards for fully actuated traffic controller units.

Controller unit shall be capable of operating with one to four concurrent timing rings on a user programmable ring structure.

Controller unit shall be capable of operating as a volume density controller and shall be capable of functioning in every respect as an integrated part of a closed loop traffic control system with internal communication capability and direct access to the data memory.

Controller unit shall have internal Time Base Coordination (TBC) logic. The coordination control shall have the capabilities to operate as described under the Subsection 815.411 of the Standard Specifications.

Controller unit shall use a standard RS232 port provided in or with the local controller to allow for local printing of reports and for interconnecting to a remote master controller through the modem.

Controller unit shall have a security code function.

Controller unit shall have internal preemption with the capability of size unique preemption sequences. Each preempt sequence shall be fully user programmable for timing and signal display in response to an individual preempt command input.

Controller unit shall be provided with all necessary hardware, including cables and internal system modem to operate a closed loop system.



**ITEMS 816.01 through 816.03** (Continued)

**CONTROLLER CABINET**

All controller cabinet sizes shall be a “P” ATC cabinet, and the cabinet shall be finished similar to the signal equipment. The cabinet installed shall meet the requirements of Standard Specification and followings.

The controller cabinet shall be GRADE 316 Stainless Steel. The cabinet shall be provided with circuit breakers, surge protector, terminal blocks and wiring harness, field telephone jack, envelope for documentation, and a door actuated switch.

Each cabinet shall have a circuit breaker rated at 20 amperes to protect the vent fans and duplex outlet. In addition, an appropriately rated circuit breaker shall be furnished to protect all other equipment. The circuit breakers shall be approved and listed by the Underwriters Laboratories (UL). The operating mechanism shall be enclosed, trip free from operating handle on overload, and trip indicating. Contacts shall be silver alloy enclosed in an arc-quenching chamber. Circuit breakers shall be unaffected by ambient temperature range, relative humidity, applied power shock and vibration range specified in the NEMA TS2 standard. Breakers shall have a minimum interrupt capacity of 5,000 amperes. Additional fuses or breakers shall be installed as required by the individual equipment Specifications.

The cabinet shall be provided with a door activated, hermetically sealed microswitch. The switch shall be wired to spare terminals on the terminal facility and shall provide a dry contact closure across these terminals when the cabinet door is opened. This switch will signal the RCU that the cabinet door is open.

---

**ITEMS 816.01 through 816.03** (Continued)**SDLS Serial Bus**

Per section NEMA TS-2 standard, Section 3.3.1 a SDLC (Synchronous Data Link Control) to allow communications between the controller unit, MMU and BIUs shall be provided.

**MALFUNCTION MANAGEMENT UNIT (MMU)**

The MMU shall be capable of providing enhanced memory and remote retrieval of data, by means of a direct connection to the controller and shall be set-up such that remote monitoring of the conflict monitor shall be possible.

The MMU shall comply with Section 4 of the NEMA TS 2 standard for use with an ATC type controller and cabinet. . It shall be capable of being operated as either a Type 16 with 16 channels (8 vehicle, 4 pedestrian and 4 overlap) or a Type 12 with 12 channels (8 vehicle, 4 overlap). Each MMU shall be initially configured as a Type 16 unit.

**BUS INTERFACE UNIT (BIU)**

The controller cabinet will be equipped with a Bus Interface Unit (BIU). The BIU shall comply with Section 8 of the NEMA TS 2 Standard.

BIU shall be fully interchangeable with any other manufacturer's unit and interchangeable in a NEMA TS 2 Type 2 cabinet assembly.

The BIU shall perform the interface function port 1 at the controller unit, the malfunction management unit, the loop detector rack assembly and the back panel terminal and facilities.

At 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.

**CABINET POWER SUPPLY**

A separate power supply shall be supplied and installed in the ATC cabinet. The unit shall be AC line powered and provide regulated DC power, unregulated AC power, and a line frequency reference for the rack mounted loop amplifiers, 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 installed as part of the rack assembly.

The unit shall contain four LED indicators on the front panel to indicate the four outputs: + 12 V DC +/- 1 V DC @ 2.0 amps, + 24 V DC +/- 2 V DC @ 2.0 amps, 12 V AC @ 250 milliamps, and 60 Hz line frequency reference. A test point terminal shall also be located on the front panel for + 24V DC and logic ground testing.

---

**ITEMS 816.01 through 816.03** (Continued)

A standby generator connection and switch shall be installed in the cabinet.

**Loop Detector Amplifier Rack Assembly**

The loop amplifiers supplied shall be rack mount, Type C, two channel units with delay and extension timing internal to each unit's channel conforming to Section 6.5 of the NEMA TS 2 standards and as defined in Table 6-1 of the NEMA Standard. The detector shall fit in a standard card rack conforming to Section 6.5 of the NEMA TS 2 Standard and as defined in Table 5-9 on the NEMA Standard. The detector rack assembly shall be a Type 2 configuration conforming to Section 5.3.4 of the NEMA TS 2 Standard. The two-channel card rack loop amplifier unit shall occupy one of the rack slots. Each amplifier channel shall be labeled with the detector number.

The detector unit shall be capable of operating in a voltage range from 10.8 to 26.5 VDC. The unit shall operate from the cabinet's external power supply at 12 VDC. Detector units shall be microprocessor controlled, fully digital, self-tuning, and capable of detecting bicycles. Each channel of a dual-channel amplifier shall be connected to a series of wire loop detectors.

The cabinet shall be supplied with a minimum of twelve (12), two channel card rack loop amplifiers.

Contractor shall supply and install on the upper left hand corner of the back of the cabinet door a laminated, pictorial diagram depicting the traffic detector amplifier channel assignments. The assignment information contained shall include approach name, phase, and lead-in terminal numbers.

**SOFTWARE**

All local controller, malfunction management unit, 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 traffic signal installations.

**DATA BASE PROGRAMMING**

Each programmable local hardware component (controller, malfunction management unit, preemption unit, and detector amplifier) shall be initially programmed by the Contractor based on information contained on the plans. Three sets of hard copy programming per device shall be supplied in three ring binders supplied by the Contractor.

---

**ITEMS 816.01 through 816.03** (Continued)**STANDARD MODULE FUNCTIONS**

Controller shall be capable of functioning with both incoming and outgoing coordination.

The controller shall be equipped with a separate emergency flashing mechanism capable of providing flashing operation at the rate of 50 to 60 flashes per minute. This mechanism shall be so wired and so mounted within the cabinet that it will continue to cause the signals to flash even when the basic controller is removed from the cabinet.

The controller shall be capable of changing from stop-and-go operation to flashing operation in accordance with the Manual on Uniform Traffic Control Devices.

**LOAD SWITCHES**

Load switches shall be provided with LED indicators wired to the input and output of each circuit. Spare load switches shall be provided in the cabinet as required by MassDOT.

**CONTROLLER BACK PANEL AND TERMINAL FACILITIES**

The Controller shall be supplied complete with all load switches and flash transfer relays and appurtenances required for operation as a complete eight-phase unit regardless of the number of phases placed in operation at the time of installation. Spares should be provided as required by MassDOT.

**SPARE EQUIPMENT**

The Contractor shall provide the following spare signal equipment inside the traffic signal controller cabinet:

1. A full complement of load switches to accommodate each available position of the back panel;
2. A full complement of flash transfer relays;
3. Two spare BIUs;
4. Two spare dual channel loop detector amplifiers (card rack)
5. A 25 foot RS-232 cable for communication function with a laptop computer.

**ITEMS 816.01 through 816.03** (Continued)

**Surge Suppression**

Each cabinet shall have each input and output surge protected except signal outputs from cabinet load switches. (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 NEMA TS-2 standard. The product complies when a lab report summary from an independent test laboratory stating the product passes the current NEMA TS-2(5.4.2.4) specification is submitted with the shop drawings.

Surge protection for all loop, pedestrian button, and pre-emption connections shall have peak surge current protection of at least 10kA with a response time of less than 5 nanoseconds. The product complies when a lab report summary from an independent test laboratory stating the product passes this specification is submitted with the shop drawings.

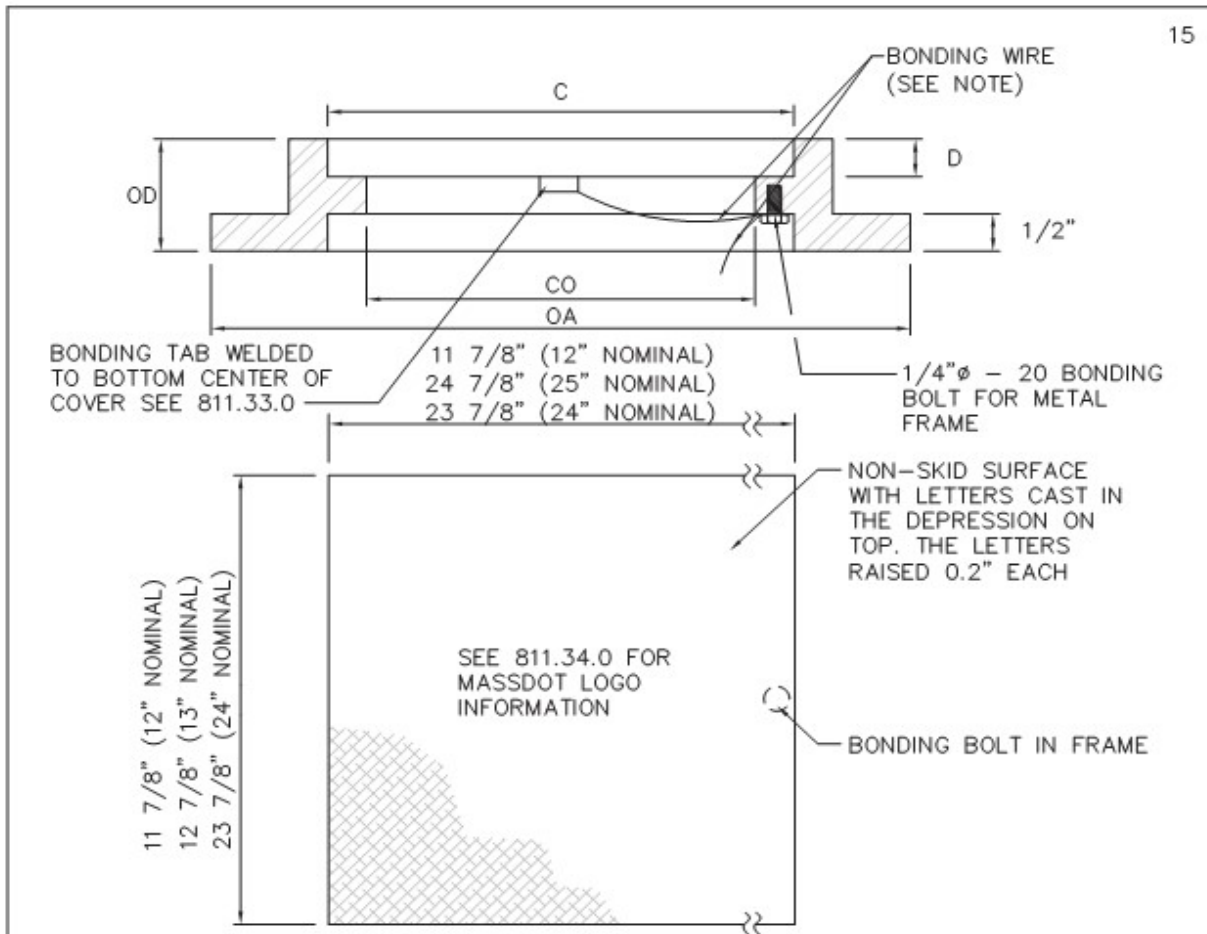
Units shall be plug mounted in the controller cabinet.

Units shall be unconditionally warranted for at least 5 years.

**Grounding and Testing of Grounding System**

All pull boxes shall be grounded according to the MassDOT Standard Details, 811.31.1 / 811.32.1, 811.31.2 / 811.32.2, and 811.33.0 included below in this special provision. The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with MassDOT Standard Specifications.

**ITEMS 816.01 through 816.03 (Continued)**



SIZE OF COVER	COVER DEPTH	OVERALL DEPTH	CLEAR OPENING	OVERALL	APPROX. WEIGHT	STANDARD DRAWING
C	D	OD	CO	OA	W	
12" x 12"	1"	3 1/2"	10 1/2" x 10 1/2"	17 1/4" x 17 1/4"	82lb	811.31.0
13" x 25"	1 1/2"	3"	12" x 24"	20" x 29 3/4"	120lb	811.22.0 811.32.0
24" x 24"	1"	3"	22" x 22"	28 1/2" x 28 1/2"	190lb	811.23.0

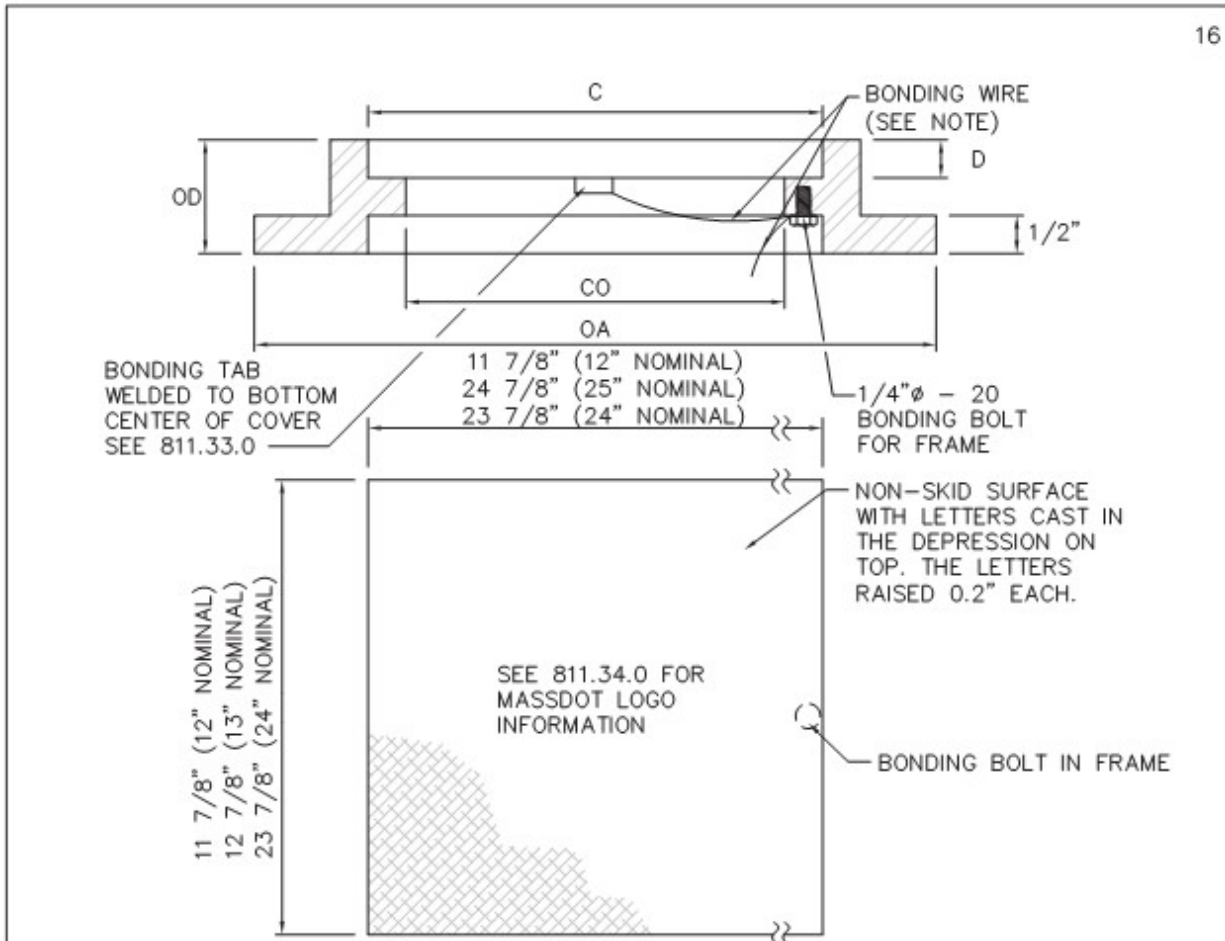
NOTE:  
 ATTACH 3 FEET OF NO. 8 BONDING WIRE FROM COVER TAB TO BONDING BOLT ON FRAME. ATTACH SUFFICIENT LENGTH OF NO. 8 BONDING WIRE FROM BONDING BOLT ON FRAME TO THE BONDING WIRE ROUTED THROUGH THE PULL BOX **DRAFT**



PULL BOX FRAME & COVER  
 NON ROADWAY

DATE ISSUED	JUL 13, 2012
DRAWING NUMBER	<b>811.31.1</b> <b>811.32.1</b>
OLD DRAWING NUMBER	

**ITEMS 816.01 through 816.03 (Continued)**



BONDING TAB  
WELDED TO BOTTOM  
CENTER OF COVER  
SEE 811.33.0

11 7/8" (12" NOMINAL)  
24 7/8" (25" NOMINAL)  
23 7/8" (24" NOMINAL)

BONDING WIRE  
(SEE NOTE)

1/4"φ - 20  
BONDING BOLT  
FOR FRAME

NON-SKID SURFACE  
WITH LETTERS CAST IN  
THE DEPRESSION ON  
TOP. THE LETTERS  
RAISED 0.2" EACH.

SEE 811.34.0 FOR  
MASSDOT LOGO  
INFORMATION

BONDING BOLT IN FRAME

**NOTE:**

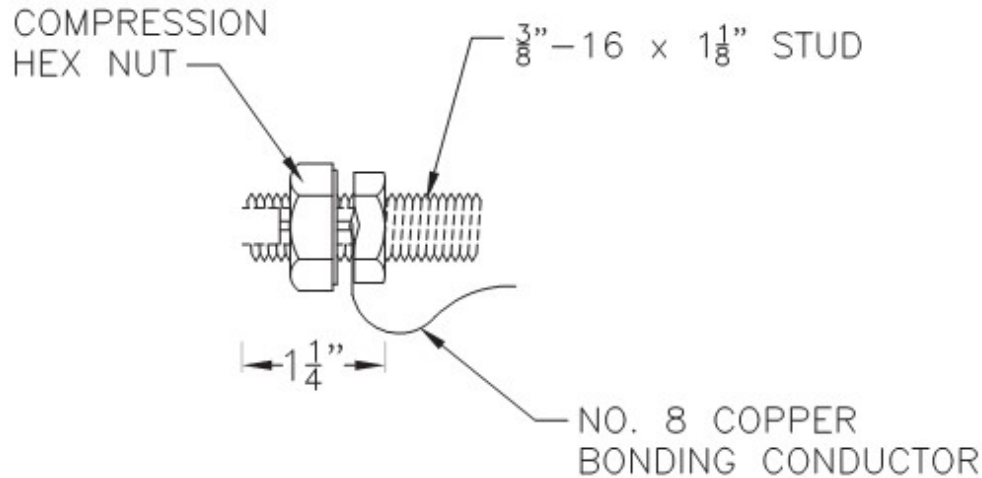
1. ATTACH 3 FEET OF NO. 8 BONDING WIRE FROM COVER TAB TO BONDING BOLT ON FRAME. ATTACH SUFFICIENT LENGTH OF NO. 8 BONDING WIRE FROM BONDING BOLT ON FRAME TO THE BONDING WIRE ROUTED THROUGH THE PULL BOX.
2. WHEN INSTALLED IN ROADWAY, COVER SHALL BE BOLTED DOWN PER MANUFACTURERS REQUIREMENTS.

SIZE OF COVER	COVER DEPTH	OVERALL DEPTH	CLEAR OPENING	OVERALL	APPROX. WEIGHT	STANDARD DRAWING
C	D	OD	CO	OA	W	
12" x 12"	1"	3 1/2"	10 1/2" x 10 1/2"	17 1/4" x 17 1/4"	89lb	811.31.0
13" x 25"	1 1/2"	3"	12" x 24"	20" x 29 3/4"	159lb	811.22.0 811.32.0
24" x 24"	1"	3"	22" x 22"	28 1/2" x 28 1/2"	463lb	811.23.0

**DRAFT**

**ITEMS 816.01 through 816.03 (Continued)**

19



NOTES:

1. BONDING POST CONNECTOR SHALL BE LONG STUD TYPE WHICH WILL ACCOMMODATE A DOUBLE CONDUCTOR INSTALLATION.
2. ATTACH 3 FOOT LENGTH OF NO. 8 COPPER BONDING CONDUCTOR FROM BONDING POST CONNECTOR INSTALLED ON COVER TO BONDING POST CONNECTOR INSTALLED ON FRAME.
3. ATTACH FREE END OF BONDING CONDUCTOR ROUTED THROUGH CONDUIT SYSTEM TO BONDING POST CONNECTOR INSTALLED ON THE FRAME.
4. LUG SHALL BE EITHER COPPER OR BRASS.

*DRAFT*



**ITEMS 816.01 through 816.03** (Continued)

**MANUAL OVERRIDE**

Provisions shall be made for manual override of the traffic controller. Manual override equipment shall include an automatic-manual switch and interval advance hand-push button switch, both located within the auxiliary police door.

Hand-push button switch shall have flexible cord of sufficient length to allow movement by the operator to observe the operation of the intersection from the controller cabinet.

**WIRING AND SERVICE CONNECTIONS**

All conduit runs shall be sealed with an approved sealing compound at all manholes, handholes, pull boxes, junction boxes, cabinets and foundations to form a complete duct system. Sealing foam materials shall not be accepted on this contract.

**FINE TUNING, ADJUSTMENT, AND TESTING PERIOD**

After the Contractor has finished installing the controllers and all other associated signal equipment and after the Contractor has set the 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 ensure safe and efficient operation of the equipment. This period shall not last for more than 30 days. No request for final acceptance will be considered until successful completion of the testing period.

The cost of electrical energy consumed by the operation of the traffic signal during the construction, fine-tuning and testing until final acceptance of the signal shall be borne by the Contractor.

---

**ITEMS 816.01 through 816.03** (Continued)**GUARANTEE AFTER FINAL ACCEPTANCE**

The Contractor shall diagnose (trouble-shoot) the system and, at his own expense, replace any part of the traffic signal control equipment found to be defective in workmanship, material or manner of functioning within six months from the date of final acceptance of 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 the Department, the Contractor shall turn over all guarantees and warranties to the Department Engineer.

**ACCESSIBLE PEDESTRIAN PUSH BUTTON**

The pedestrian accessible pushbutton shall provide valuable information and cues via both a vibrating arrow button and audible sounds making the intersection accessible for all pedestrians.

The accessible pedestrian pushbutton shall be installed at a maximum of 42 inches above the finished sidewalk, the pushbutton 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.

All sounds shall emanate from the unit via a weather-proof speaker that is protected by a vandal resistant screen. The accessible pedestrian pushbutton shall provide the following operating functions:

- Audible Locator tone, tells the pedestrians that the intersection is equipped with accessible pedestrians pushbutton and where it is.
- Acknowledge tone, tells the pedestrians that they have placed the call.
- Informational message, tells the pedestrians about the crossing.
- Walk Cycle message, tells the pedestrians when the Walk Sign is one. Each board has three walk cycle messages; Chirp, Cuckoo, or Custom message.
- Visual: A red LED is lit when the pedestrians has placed a call.
- Tactile: The directional vibro-tactile arrow becomes active with the Walk Sign.

Pedestrian pushbuttons shall be located as close as practicable to the sidewalk curb ramp serving the controlled crossing and shall permit operation from a clear ground space. 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-2. The 9"x15" standard sign (R10-3e) shall be integral to the pushbutton assembly or mounted immediately above the button.

---

**ITEMS 816.01 through 816.03** (Continued)

A maximum mounting height of 42 inch above the finish sidewalk grade shall be used for accessible pedestrian pushbuttons. The pushbuttons shall be located within 10 inches of the back of sidewalk.

**WIRING DIAGRAMS (PERMANENT SIGNAL CONTROL INSTALLATION)**

Five sets of wiring diagrams for each control cabinet and all accessories shall be furnished including one Mylar reproducible copy and an electronic CAD file for each control cabinet when installed. All actual and potential terminal strip connections shall be shown. Accessory equipment includes flashers, switches, relays, detectors, etc.

All identification on the diagrams shall be as installed, and all field labeling shall be consistent with the diagrams. Furthermore, the format symbols, identifications, operating sequence, etc., common to all the intersection wiring diagrams shall be standardized and consistent with industry standards. Before acceptance of the job, the five copies of all operating and maintenance manuals and complete and accurate parts lists shall be supplied.

**MATERIAL SPECIFICATION FOR LED SIGNAL MODULE**

Red, Yellow and Green LED Vehicle Signal Modules:

The following shall apply to the regular LED modules used for the 12 inch signal heads and flashing warning beacons:

Unless already approved by the Department, the LED module shall conform to ITE Performance Specifications for Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement, dated June 27, 2005 and also be Energy Star compliant. Arrow LED modules shall comply with the latest ITE performance specifications and also be Energy Star compliant.

The LED module shall be approved by the Department (Subsection 815.21) to be considered as meeting the requirements of this Special Provision.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits a failure due to workmanship or material defects within the first 60 months of field operation.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits either a greater than 40 percent light output degradation or falls below the minimum intensity levels within the first 36 months of field operation.

The LED module warranty will be voided if the connecting leads on the module are cut. The original LED module leads shall be connected to the signal head terminal block as continuous wire without splices.

---

**ITEMS 816.01 through 816.03** (Continued)**Wire Loop Installed in Pavement**

The wire loop detectors shall consist of 6' x 6' width or other sizes as shown on the plan, installations as specified on plans and shall conform to the relevant specifications as detailed on the general plan detail sheet and to the standard segmented loop detail sheets in the plans. Wire loop detectors shall be tested in accord with Subsection 815.66 of the Standard Specifications.

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.

**Vehicle Loop Detectors**

Wire loop detectors shall be installed in the roadway pavement for vehicle 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.

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-shrunk 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.

**ITEMS 816.01 through 816.03** (Continued)

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.

The loop detector installations shall include all wire, conduits, saw cuts and the correct number of turns. Corners shall be drilled not mitered. All wires shall be located in a single saw cut as shown on the plans.

**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 contract unit price for this Item.

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 one thousand (1,000) 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 816.01 through 816.03** (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.

**EMERGENCY VEHICLE PRE-EMPTION**

All new controller units furnished under this contract shall be capable of providing bus priority in addition to emergency vehicle preemption. Full priority logic will be integrated with coordination so that transit priority will not disrupt coordination. The controller units will have the capability of interfacing with and accepting input from the optical emergency preemption systems at each location.

When optical energy impulses are received at the intersection, control of the signals shall transfer to the controller's internal pre-emption logic which shall cause the signal controller to show a selected display identical to one of the color interval displays normally available as specified, which will assist the emergency vehicle through the intersection without cross street conflict. After the vehicle has passed through the intersection, control of the signals shall then return to normal operation which shall restore the appropriate timings that were in effect prior to pre-emption.

The following description of work specifies the responsibilities involved in the installation of optical emergency vehicle pre-emption.

The Contractor is required to supply material and labor required or shown for the complete installation of optical pre-emption equipment at this project. Intersection pre-emption equipment required includes optical detectors, cable, interfacing equipment to the controller, making electrical connections and all required incidentals. The Contractor shall contact the Swansea Fire and Police Departments to insure compatibility of the equipment.

The following are the operational requirements of the optical emergency vehicle pre-emption system:

Emergency Vehicle Design Speed for pre-emption controlled approaches shall be design speed of the approaching street or as directed by the Engineer.

Operating sequence as specified shall be initiated when the optical 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 signals to the controller for processing.

Controller shall not respond to optical energy signals from another authorized vehicle.

The optical detector cable shall meet the specifications of the system manufacturer.

**ITEMS 816.01 through 816.03** (Continued)

The Contractor shall arrange for a representative of the manufacturer of the optical energy pre-emption equipment to perform the following field supervision and turn-on services: The representative shall select the proper quantity and place and method of installing all components to comply with the operational requirements shown in the pre-emption schedule included in these special provisions.

The representative shall instruct the Contractor and owner personnel in the procedures of installation.

The representative shall be available to assist, supervise and check all wiring to insure proper operation.

The representative shall perform a final check out to include initial adjustment of range and timing to acceptable standards.

The representative shall demonstrate the system and instruct the drivers of emergency vehicles and other authorities in the operation of the system.

The representative shall instruct maintenance personnel in routine maintenance and minor troubleshooting of the system.

Any operation problems occurring within the next 30 days shall be corrected by the Contractor or by a Field Service representative if the Contractor cannot do so.

The cost of these field supervision and turn-on services shall be included in the Lump Sum Bid Price, and no additional payment shall be made therefore.

Pre-emption System Design and Documentation shall include the following:

1. Provide the installing agency with location for detector installation.
2. Provide the controller manufacturer, engineer and owner with electrical diagrams.
3. The installer shall install the equipment consistent with the pre-emption equipment, the manufacturer's recommended installation procedures and electrical diagrams in a neat and workmanlike manner.
4. The pre-emption equipment manufacturer shall be responsible for operational checkouts of the specified pre-emption functions prior to final acceptance and approval by the Engineer.

Operating checkouts include the following:

1. Verifying that priority system timing and range are properly set.
2. Pre-emption equipment warranties are put into effect.

---

**ITEMS 816.01 through 816.03** (Continued)**SIGNAL HOUSINGS**

The housings shall be 12-inch LED Type and shall be listed on the MassDOT “Approved Equipment” list. 5-inch louvered backplates with a 3 inch retroreflective yellow border shall be provided on all signal heads or as noted on the plans. All indicators shall be equipped with a standard cut-away tunnel visor.

Signals shall be rigidly mounted by means of approved hardware. All signal heads mounted overhead on mast arms shall be installed, with the bottom of the signals at the same height.

The Contractor shall modify any signal head location that is visibly obstructed to a motorist or pedestrian by overhead street light posts or other obstructions as determined by the Engineer. The mounting hardware shall be submitted for approval in the form of shop drawings prior to purchase and installation. The contractor will assume the cost of equipment purchased without the proper approval by MassDOT. Warranty on all mounting hardware shall not be less than 60 months from the date of installation and acceptance by MassDOT and the Town of Swansea.

The final adjustment of the facing of signals shall be made as directed by the Engineer after all the signals are operating, but prior to installing the through bolt above.

**COUNTDOWN PEDESTRIAN SIGNAL HEADS AND INDICATIONS**

This Special Provision refers to definitions and practices described in “Pedestrian Traffic Control Signal Indications” published in the Equipment and Materials Standards of the Institute of Transportation Engineers, referred to in this document as “PTCSI.”

Countdown Pedestrian Signal Indications shall be 16-inch with a cap visor and international symbolic full “WALKING MAN” and “HAND” signal display. The symbolic “HAND” shall consist of a Portland Orange LED upright full hand symbol conveying the don’t walk message. The symbolic “WALKING MAN” shall consist of white LED full walk symbol and shall overlay the HAND. Next to the pedestrian control symbols on the right, shall be double digit red LED’s for pedestrian phase countdown. The countdown module shall display the number of seconds. All pedestrian signals shall be a one-piece unit containing both the LED”HAND” and “WALKING MAN” and the LED Countdown fixture in the same unit.

Countdown Pedestrian Signals shall be in conformance with the MUTCD, latest edition, and shall be listed on the MassDOT “Approved Equipment” list.



**ITEMS 816.01 through 816.03** (Continued)

**BASIS OF PAYMENT**

Items 816.01, 816.02, and 816.03 will be paid for at the respective Contract Lump Sum prices, which prices shall include furnishing, installation, removal, stacking, transporting of the existing equipment; providing temporary signal system, removal and disposal of foundations, existing electrical systems, existing handholes, existing signal conduit, and unusable materials; excavation, backfilling, compaction, replacement of disturbed surface material, removal of existing mast arms, and all labor, materials, equipment and all incidental costs required to complete the work.

The cost of maintenance of the proposed traffic signal equipment until final acceptance shall be deemed to be included and no additional payments shall be made.

All tests and any necessary repairs and replacements required to produce a fault-free traffic control system shall be included in the lump sum bid price for this item.

Conduit shall be paid separately under Item 804.3, 3 Inch Electrical Conduit, Type NM Plastic (UL).

Handholes and pull boxes associated with traffic signal system shall be paid for under Items 811.22 and 811.31 respectively.

**ITEM 823.71**

**HIGHWAY LIGHTING POLE AND LUMINAIRE  
REMOVED AND STACKED**

**EACH**

The work shall conform to the relevant provisions of Subsection 801 and the following.

The work under this item shall consist of removing and stacking of existing lights, lamp post, electric outlets and other incidental electrical items as indicated in the plans.

The lighting fixtures, posts, electrical outlets shall be stacked at the location indicated by the property owner or by the Engineer. If property owner does not want to keep the electrical fixtures, the contractor shall dispose offsite with no additional cost to MassDOT.

The work associated with disconnecting power is the responsibility of the Contractor who shall be responsible for the coordination of the work and the scheduling of a time convenient to the property owner occupying the building. No additional compensation shall be given for this work outside of normal work hours if necessary.

**METHOD OF MEASUREMENT**

Item 823.71 will be measured for payment by the Each highway lighting 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 removal, stacking, all labor, materials, equipment, and all incidental costs required to complete the work.

**ITEM 826.7**

**ELECTRIC SERVICE RISER RELOCATION**

**EACH**

The work shall conform to the relevant provisions of Section 800 and the following:

The work under this item shall consist of the removal and relocation of existing underground secondary electrical services from relocated utility poles.

New utility poles will be installed by “By Others”. The contractor shall supply and install a new rigid galvanized riser pipe and sweep assembly, SCH 80 PVC conduit with sand bedding, wiring and appurtenances as necessary per the latest edition of the National Electrical Code, Massachusetts Electrical Code, Utility Company Specifications and Local Codes/Guidelines to complete the service relocation.

The work shall include all excavation, sand bedding, backfill, compaction, and materials or any other requirements in accordance with the latest edition of the National Electrical Code, Massachusetts Electrical Code, Utility Company Specifications and Local Codes/Guidelines.

The work associated with disconnecting power and reconnecting power to the utilities secondary power lines should be performed at a time convenient to the property owners or tenants occupying the building. The actual time of day or evening for the disconnecting and reconnecting will be agreed upon between the Engineer, Power Company and the property owner/tenant during construction. No additional compensation shall be given for this work outside of normal work hours if required.

**METHOD OF MEASUREMENT**

Item 826.7 will be measured for payment by the Each electric service riser removed and relocated, complete in place.

**BASIS OF PAYMENT**

Item 826.7 will be paid for at the Contract unit price per Each, which price shall include removal, relocation, furnishing of risers, sweeps, conduit, sand bedding, wiring, any associated Utility charges and/or permit fees, all labor, materials, equipment, and all incidental costs required to complete the work.

The work associated with the relocation of the utility poles and the transfer of the Utilities overhead primary and secondary wiring shall be the responsibility of the respective utility companies and shall not be paid for under this item.

**ITEM 829.06**

**ROADSIDE GUIDE SIGN AND SUPPORT  
(D6/D8) REMOVED AND DISCARDED**

**EACH**

The work under this Item shall include removal and disposal of all existing ground mounted and sign supports including foundations, associated excavations, the supplying and placing of compacted gravel, loam borrow and seeding (where required), and the restoration to original condition of any natural features disturbed in any way or manner by the Contractor's operation.

The existing sign panels, hardware, and supports that are removed shall become the property of the Contractor and shall be properly disposed of off the project site. Work shall also include the excavation (including Class "B" rock) of any existing foundations to be removed to a depth of at least 3 feet below finish grade in roadway areas and 1 foot below finish grade outside of roadway areas.

**METHOD OF MEASUREMENT**

Item 829.06 will be measured for payment by the Each roadside guide sign and support (D6/D8) removed and discarded.

**BASIS OF PAYMENT**

Item 829.06 will be paid for at the Contract unit price per Each, which price shall include removal, disposal, excavation, backfilling, compaction, placing of loam borrow and seeding, restoration of any natural features disturbed by Contractor's operation, all labor, materials, equipment, and all incidental costs required to complete the work.

Payment shall include all removals and disposals regardless of the number of existing sign panels and supports to be removed and discarded at each installation.

**ITEM 841.81**

**SUPPORT FOR GUIDE SIGN  
(MA-D1-XX) STEEL**

**EACH**

The work under this Item shall conform to the relevant provisions of Subsection 840 of the Standard Specifications and the following:

The work under this item shall consist of fabricating and installing single steel beam breakaway support posts in 4000 psi concrete foundations for extruded (Type B) aluminum MA-D1-XX sign panels that are installed as shown on the plans or as directed by the Engineer.

All new supports provided under these items shall be designed to sustain a minimum wind speed of 90 mph. Base plate bolts shall be torqued per current MassDOT and AASHTO standards.

For bidding purposes, all signs are presumed to be mounted on single 6 inch by 6 inch steel square tube posts, however, the exact size of post to be installed at each location shall be determined by the Contractor and approved by the Engineer prior to fabrication and installation.

**METHOD OF MEASUREMENT**

Item 841.81 will be measured for payment by the Each support for guide sign (MA-D1-XX) fabricated and installed, complete in place.

**BASIS OF PAYMENT**

Item 841.81 will be paid for at the Contract unit price per Each, which price shall include fabrication, installation of support and foundation, design of support, excavation, backfilling, compaction, all labor, materials, equipment, and all incidental costs required to complete the work.

Loam for Roadsides and Seeding, as part of ground restoration work where required or as directed by the Engineer, will be paid under Items 751. and 765., respectively.

**ITEM 852.11**  
**ITEM 852.12****TEMPORARY PEDESTRIAN BARRICADE**  
**TEMPORARY PEDESTRIAN CURB RAMP****FOOT**  
**EACH**

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 and 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**

Payment for Item 852.11 - 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.

**BASIS OF PAYMENT**

Payment for Item 852.12 - 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 furnishing, deploying 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 Subsection 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

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.

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: 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, 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, Traffic Signals, Highway Lighting Systems and Crack Filling	Level III	20 foot-candles

TABLE 1  
TASK CLASSIFICATIONS AND ILLUMINATION LEVELS



**ITEM 853.8** (Continued)

Prior to commencement of work the Contractor shall submit to MassDOT for approval a description of illumination equipment that is proposed to be used on this project, and shall include photometrics that detail the light levels that are to be provided for the particular operation for the type of equipment, level of luminance and height to be installed.

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.

Equipment mounted lighting may be used to supplement light towers to achieve the required lighting levels for the activity involved per Table 1.

**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 submission 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.

Furnishing, Installing, resetting, modifying and removing equipment for work zone illumination shall be incidental to Item 853.8.

**ITEM 859.1**            **REFLECTORIZED DRUMS WITH SEQUENTIAL**            **DAY**  
**FLASHING WARNING LIGHTS**

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

The work under this Item consists of furnishing, installing, maintaining in proper operating conditions, and removing reflectorized drums, and any necessary ballast, equipped with sequential flashing warning lights.

**MATERIALS**

Reflectorized drums shall be listed on the MassDOT Qualified Traffic Control Equipment List. Reflective sheeting on drums shall meet or exceed ASTM D4956 Type VIII. All drums shall be maintained in a satisfactory manner including the removal of oils, dirt, and debris that may cause reduced retroreflectivity.

The Contractor shall use one of the following sequential flashing warning light systems unless otherwise approved by the Engineer:

1. Empco-Lite LWCS D.
2. pi-Lit® Sequential Barricade-Style Lamp; or
3. Unipart Dorman SynchroGUIDE.

Sequential flashing warning lights shall be secured to reflectorized drums per the light manufacturer's specifications.

The first ten drums in any merging or shifting taper as designated in the Temporary Traffic Control Plan shall be equipped with sequential flashing warning lights. These lights shall be operating, at a minimum, between dusk and dawn when the taper is deployed.

The successive flashing of the sequential warning lights shall occur from the upstream end of the merging or shifting taper to the downstream end of the taper in order to identify the desired vehicle path. Each warning light in the sequence shall be flashed at a rate of not less than 55, nor more than 75 times per minute. Warning lights shall be powered off when drums are not deployed in a taper.

**METHOD OF MEASUREMENT**

A group of ten (10) reflectorized drums with sequential flashing warning lights is considered one (1) unit and will be measured by the Day. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times that the drums are positioned, repositioned, removed, or returned to service.

**BASIS OF PAYMENT**

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the Contract unit price per Day, which shall include full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

<b><u>ITEM 864.31</u></b>	<b><u>SLOTTED PAVEMENT MARKER ONE-WAY WHITE</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 864.35</u></b>	<b><u>SLOTTED PAVEMENT MARKER</u></b> <b><u>TWO-WAY YELLOW/YELLOW</u></b>	<b><u>EACH</u></b>

The work under these items shall conform to the relevant provisions of Subsection 860 of the Standard Specifications and the following:

The work to be done under these Items shall consist of furnishing and installing one-way white and two-way yellow/yellow reflectorized pavement markers (slotted in pavement) in accordance with the relevant provisions of Traffic Standard TR.6.5 “Typical Pavement Marking for Conventional Roadways”.

The work shall include cutting the tapered pavement slot to the dimensions specified by the Manufacturer for the one-way or two-way markers, application of the Manufacturer’s recommended epoxy adhesive, and placing the reflectorized pavement marker in the proper position within the slot so that the reflective face is visible and perpendicular to oncoming traffic and so that the top of the marker is set 1/8± inch below the top of the adjacent pavement.

Surface preparation and installation shall be strictly in accordance with the Manufacturer’s instructions.

Reflectorized pavement markers shall be 3M Series 290, Avery Dennison Lifelite Model C80, Ray-O-Lite Model 2004 or an approved equivalent.

**METHOD OF MEASUREMENT**

Items 864.31 and 864.35 will be measured for payment by the Each respective slotted pavement marker furnished and installed, complete in place.

**BASIS OF PAYMENT**

Items 864.31 and 864.35 will be paid for at the respective Contract unit prices per Each, which prices shall include furnishing, installation, all labor, materials, equipment and all incidental costs required to complete the work.

No separate payment will be made for cutting the tapered pavement slot, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 864.41      GREEN COLORIZED PAVEMENT MARKINGS      SQUARE FOOT**

The work under this item shall conform to the relevant provisions of Subsection 860 of the Standard Specifications, and the following:

The work under this item consists of furnishing and installing Colorized Pavement Markings at the locations shown on the plans or as required by the Engineer.

**MATERIALS**

Colorized Pavement Markings are composed of Epoxy, Methyl Methacrylate (MMA), or Preformed Thermoplastic Materials.

The initial daytime chromaticity coordinates for green colorized pavement shall fall within the area created by the following coordinates:

<b>Initial Daytime Chromaticity Coordinates (Corner Points) for Green Colorized Pavement Markings</b>				
	1	2	3	4
<b>x</b>	0.230	0.266	0.367	0.444
<b>y</b>	0.754	0.460	0.480	0.583

The surface of the Colorized Pavement Markings shall provide a minimum skid resistance value of 55 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

The Contractor shall provide a Certificate of Compliance verifying the product supplied meets the specified daytime chromaticity requirements and friction requirements prior to installation.

**CONSTRUCTION METHODS**

The Contractor shall supply Shop Drawings to the Engineer for approval a minimum of 30 days in advance of installation. Shop Drawings shall include the product manufacturer's instructions, material safety data sheets (MSDS) for all components including any primers and sealers, and all tools, equipment, and procedures to be used for the installation. No work shall commence until the Shop Drawings have been approved.

It shall be the responsibility of the Contractor to prepare the surface prior to the installation of any Colorized Pavement Markings. Any joints or cracks in the pavement shall be pre-treated per the manufacturer's recommendation. The surface shall be clean and dry prior to installation of the system. If additional surface preparation is recommended by the manufacturer, such as the installation of a primer or preheating, it shall be completed per the manufacturer's specifications. All surface preparation shall be considered incidental to the cost of the item.

**ITEM 864.41** (Continued)

Any existing pavement markings that conflict with the Colorized Pavement Markings shall be removed by the Contractor in advance of installation; installation of colorized pavement over pavement markings shall not be allowed. All existing pavement markings that are to remain, castings, curbs, and rumble strips within the vicinity of the colorized pavement application shall be covered and protected by the Contractor. Existing pavement markings damaged by the Colorized Pavement Markings installation shall be removed and replaced by the Contractor at no additional cost.

The Contractor shall follow all installation instructions from the manufacturer, including allowable ranges of temperature and humidity for installation, unless otherwise approved by the Engineer.

Upon completion of installation, a sealer shall be applied if recommended by the manufacturer. The sealer shall be installed per the manufacturer's specification. The application of a sealer shall be considered incidental to the cost of the item.

The Contractor shall maintain protection of the Colorized Pavement Markings installation from vehicle and foot traffic throughout the minimum cure time recommended by the manufacturer.

**METHOD OF MEASUREMENT**

Item 864.41 will be measured for payment by the Square Foot of green colorized pavement markings furnished and installed, complete in place.

**BASIS OF PAYMENT**

Item 864.41 will be paid for at the Contract unit price per Square Foot, which price shall include furnishing, installation, surface preparation, application of sealer, all labor, materials, equipment, and all incidental costs required to complete the work.

**ITEM 874.2****TRAFFIC SIGN REMOVED AND RESET****EACH**

The work under this Item shall conform to the relevant provisions of Subsection 840 of the Standard Specifications and the following:

**CONSTRUCTION**

The Contractor shall carefully remove all existing signs, attachment hardware and sign support posts as shown on the drawings and as directed by the Engineer. Existing foundations shall be removed to a depth of at least 3 feet (within roadway) or 12 inches (outside roadway) below the existing ground, and the holes backfilled with gravel. The surface shall be patched with a material to match the existing ground or as directed by the Engineer.

Signs and attachment hardware shall be satisfactorily stored and protected until reset in the proposed work. Sign support posts shall be disposed of in a satisfactory manner. New sign support posts shall be provided as called for under Item 847.1 and Item 848.1 as applicable.

Signs and attachment hardware lost, damaged or otherwise made unsuitable for reuse while being removed, transported, stored or reset shall be replaced with new material at no additional cost. New attachment hardware shall be furnished and installed as necessary to replace any missing or unusable existing hardware.

The sign shall be mounted in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and the 1990 Standard Drawings for Signs and Supports. Sign panels shall be cleaned before being reset.

**METHOD OF MEASUREMENT**

Item 874.2 will be measured for payment by the Each traffic sign removed and reset, complete in place.

**BASIS OF PAYMENT**

Item 874.2 will be paid for at the Contract unit price per Each, which price shall include removal, resetting, dismantling, storage, disposal, excavation of existing foundation, backfilling and compaction of gravel, patching of existing surface, all labor, materials, equipment, and all incidental costs required to complete the work.

---

<b><u>ITEM 874.4</u></b>	<b><u>TRAFFIC SIGN REMOVED AND STACKED</u></b>	<b><u>EACH</u></b>
<b><u>ITEM 874.7</u></b>	<b><u>MISCELLANEOUS SIGN REMOVED AND STACKED</u></b>	<b><u>EACH</u></b>

The work under these items shall be performed in accordance with the relevant provisions of Subsection 828 of the Standard Specifications and the following:

Work to be done under these items includes the dismantling, removal, transporting, and stacking of existing warning and regulatory signs, miscellaneous private signs, and their supports as indicated on the Contract Drawings. Signs not required for reuse shall be removed by the Contractor to a site designated by the Engineer for pick up by the Town of Swansea or MassDOT, or Private Owner.

The existing foundation shall be removed in its entirety, backfilled with compacted gravel, and the holes restored. The sign panels and supports shall be stacked on boards. The existing signs shall not be removed until the new signs and supports replacing them are ready for traffic or until the Engineer shall permit. If the Town or MassDOT or Private Owner wishes not to stack those signs and posts, the contractors shall dispose of those items off-site with no additional cost.

#### **METHOD OF MEASUREMENT**

Items 874.4 and 874.7 will be measured for payment by the Each respective traffic sign or miscellaneous sign removed and stacked.

#### **BASIS OF PAYMENT**

Items 874.4 and 874.7 will be paid for at the respective Contract unit prices per Each, which prices shall include dismantling, storing, loading, transporting and stacking of the signs and their supports, the excavation of the existing foundations, placing of compacted gravel backfill, the restoration or replacement in kind where foundations are removed, all labor, materials, equipment and all incidental costs required to complete the work.

**ITEM 874.41**                      **TRAFFIC SIGN REMOVED AND DISCARDED**                      **EACH**

The work under this Item shall conform to the relevant provisions of Subsection 828 of the Standard Specifications and the following:

The work shall consist of removing and discarding existing regulatory, warning and directional signs not required for reuse on this project.

**CONSTRUCTION**

The signs shall become the property of the Contractor and the Contractor shall legally dispose of the items at a location not on MassDOT Highway Division property. Existing foundations shall be removed to a depth of at least 3 feet (within roadway) or 12 inches (outside roadway) below the existing ground, and the holes backfilled with gravel. The surface shall be patched with a material to match the existing ground or as directed by the Engineer

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 874.41 will be measured for payment by the Each traffic sign removed and discarded.

**BASIS OF PAYMENT**

Item 874.41 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment and all incidental costs required to complete the work.

No separate payment will be made for dismantling, loading, transporting and discarding of the signs and supports, backfilling with gravel borrow, as designated above, but all costs in connection therewith shall be included in the Contract unit price bid.



**ITEM 950.5****TEMPORARY SUPPORT OF EXCAVATION****LUMP SUM**

The work under this Item shall conform to the relevant provisions of Subsection 950 of the Standard Specifications and the following:

The Contractor shall furnish, install, maintain, and remove a temporary earth support system to be used in the excavation and construction of the proposed stone masonry retaining wall from STA. 310+57RT to STA. 312+32RT.

The temporary earth support system shall be designed and constructed to allow the safe removal of existing structures, and construction of proposed structures and shall prevent damage to, or undermining of, the sides of excavations, roadways, driveways, and portions of existing structures to remain. The temporary earth support system is not intended to provide for control of water.

The temporary earth support system shall either consist of sheet pile walls, soldier piling and lagging, or any other system which is approved by the Engineer. It is the Contractor's responsibility to coordinate with DigSafe for any underground utilities before installing a temporary earth support system to avoid any conflict and damage. The Contractor may relocate any underground utilities temporarily if it is feasible to do so to construct temporary earth support system.

Existing overhead service wires to abutting properties may interfere with the installation of the temporary earth support system. The Contractor may relocate overhead service wires if it is feasible to do so to construction the temporary earth support system. The Contractor shall coordinate the need to temporarily relocated overhead service wires to abutting properties with National Grid directly.

The temporary earth support system shall be fully designed by the Contractor to carry all the applicable AASHTO loads. It shall be designed in accordance with the AASHTO Guide Design Specifications for Bridge Temporary Works, 1995, and all interims published as of the bid opening date.

The Contractor is responsible for determining all geotechnical criteria associated with the temporary earth support system including lateral earth pressures, live load surcharge, surcharge due to construction equipment operation, surcharge due to temporary traffic barriers and/or surcharge due to material storage near the top of excavation. Maximum design stresses in steel members shall not exceed 125% of the allowable basic stresses specified in the current specifications of the American Institute of Steel Construction. The design shall provide for all anticipated load conditions that may occur during the entire construction period. The minimum factor of safety for each of the design conditions shall be 1.50.

**ITEM 950.5** (Continued)

The temporary earth support system must be designed and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts. Complete detailed drawings and calculations shall be submitted to the Engineer for approval. Detailed drawings shall include all materials, sizes of members, connections, methods and sequence of installation. Any earth support system located along the roadway approaches and adjacent to concrete barriers shall be designed for a vehicular impact load equivalent to the Test Level, MASH TL-3 assuming the concrete barrier to impact the support system. Written approval must be obtained prior to installation of the temporary earth support system. Furnishing such plans and calculations shall not relieve the Contractor of sole responsibility for safety of the public, personnel, equipment, and structures, as well as successful project completion.

**BASIS OF PAYMENT**

Item 950.5 will be paid for at the Contract Lump Sum price, which price shall include furnishing, installation, maintenance, and final removal of the temporary earth support system; Contractor's design, plans, and submittals; all labor, materials, equipment, and all incidental costs required to complete the work.

**END OF DOCUMENT**

\*\*\*\*\*

DOCUMENT A00802

# **DETAIL SHEETS**

THIS PAGE INTENTIONALLY LEFT BLANK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
TEN PARK PLAZA – BOSTON, MA

- ESTIMATE OF QUANTITIES – DETAIL SHEETS -

CITY/TOWN: Swansea  
STA. 103+50 TO 517+30

YEAR: 2025  
ROAD: G.A.R. Highway (Route 6)  
CLASS: Principal Arterial  
DATE: January 10, 2025

Type of Project: Transportation Improvement Project

Unclassified Excavation	8,900	Cu. Yards	Ordinary Borrow	500	Cu. Yards
Class A Trench Excavation	300	Cu. Yards	Gravel Borrow	8,000	Cu. Yards
Class "B" Trench Excavation	2,740	Cu. Yards	Gravel for Sidewalks	1,861	Cu. Yards
Class B Rock Excavation	200	Cu. Yards	Gravel for Driveways	1,192	Cu. Yards
Reinforced Concrete Excavation	70	Cu. Yards	Gravel for Pipes	550	Cu. Yards
Loam for Roadside	1,100	Cu. Yards	Gravel for Pipes-Sewer	530	Cu. Yards

**PAVEMENT NOTES**

**FULL DEPTH CONSTRUCTION:**

**TOTAL AREA = 5,250 SY**

- SURFACE: 1.75" SUPERPAVE SURFACE COURSE – 12.5 POLYMER (SSC-12.5-P)  
OVER (ASPHALT EMULSION FOR TACK COAT 0.06-0.08 GAL/SY)
- INTERMEDIATE: 1.75" SUPERPAVE INTERMEDIATE COURSE – 12.5 POLYMER (SIC-12.5-P)  
OVER (ASPHALT EMULSION FOR TACK COAT 0.06-0.08 GAL/SY)
- BASE: 4.00" SUPERPAVE BASE COURSE – 37.5 (SBC-37.5) OVER
- SUBBASE: 4.00" DENSE GRADED CRUSHED STONE FOR SUBBASE OVER  
8" GRAVEL BOTTOM, TYPE b

**STANDARD MILLING & OVERLAY:**

**TOTAL AREA = 40,658 SY**

- SURFACE: 1.75" SUPERPAVE SURFACE COURSE – 12.5 POLYMER (SSC-12.5-P)  
OVER  
(ASPHALT EMULSION FOR TACK COAT 0.06-0.08 GAL/SY)
- INTERMEDIATE: 1.75" SUPERPAVE INTERMEDIATE COURSE – 12.5 POLYMER (SIC-12.5-P)  
OVER  
  
(SUPERPAVE LEVELING COURSE – 9.5 9SLC-9.5) SHALL BE USED  
WHERE REQUIRED IN FILL LOCATIONS  
  
VARIABLE STANDARD MILLING DEPTH (3.50" MAX) OF EXIST  
PAVEMENT  
  
EXISTING PAVEMENT TREATED WITH ASPHALT EMULSION FOR  
TACK COAT 0.07-0.09 GAL/SY

**FULL DEPTH PAVEMENT WIDENING (LESS THAN 4 FEET WIDE):**

**TOTAL AREA = 1,361 SY**

- SURFACE: 1.75" SUPERPAVE SURFACE COURSE – 12.5 POLYMER (SSC-12.5-P)  
OVER (ASPHALT EMULSION FOR TACK COAT 0.06-0.08 GAL/SY)
- INTERMEDIATE: 1.75" SUPERPAVE INTERMEDIATE COURSE – 12.5 POLYMER (SIC-12.5-P)  
OVER (ASPHALT EMULSION FOR TACK COAT 0.06-0.08 GAL/SY)
- BASE: 8.00" HIGH EARLY STRENGTH (3000 PSI, 1.5") CEMENT CONCRETE OVER
- SUBBASE: 8.00" GRAVEL BORROW, TYPE b

**HMA WALK SURFACE:**

**AREA = 6,582 SY**

- SURFACE: 3.0" HMA WALK SURFACE PLACED IN TWO LAYERS (ITEM 702.)  
1.25" SUPERPAVE SURFACE COURSE – 9.5 (SSC-9.5) OVER  
1.75" SUPERPAVE SURFACE COURSE – 12.5 (SSC-12.5) OVER
- SUBBASE: 8.00" GRAVEL BORROW, TYPE b

**CEMENT CONCRETE SIDEWALK/ISLAND/PCR:**

**AREA = 1,789 SY**

- SURFACE: 4.0" CEMENT CONCRETE SIDEWALK/PEDESTRIAN CURB RAMP OVER  
(4000 PSI, 3/4", 610)
- SUBBASE: 8.00" GRAVEL BORROW, TYPE b

**HMA DRIVEWAY:**

**AREA = 5,343 SY**

- SURFACE: 4.0" HMA DRIVEWAY PLACED IN TWO LAYERS (ITEM 702.)  
1.5" SUPERPAVE SURFACE COURSE – 12.5 (SSC-12.5) OVER  
2.5" SUPERPAVE SURFACE COURSE – 12.5 (SSC-12.5) OVER
- SUBBASE: 8.00" GRAVEL BORROW, TYPE b

Surface joints between new hot mix asphalt roadway pavement and sawcut existing pavement shall be sealed with HMA joint sealant.

**ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING**

Intersection	Baseline	Station	Offset
Route 136	Route 6	116+24.77	63.42 RT
	Route 6	116+69.83	64.93 RT
Maple Ave	Maple Ave	407+18.46	36.06 LT
Route 118	Route 6	513+93.00	52.12 LT

And as required by the engineer

**ITEM 102.521 TREE AND PLANT PROTECTION FENCE**

Intersection	Baseline	Station
Route 136	Route 6	STA 104+71 TO 104+80 RT
	Route 6	STA 105+36 TO 106+18 LT
	Route 6	STA 115+30 TO 115+38 LT
	Route 6	STA 119+38 TO 119+82 RT
	Route 136	STA 207+92 TO 208+04 RT
	Route 136	STA 209+14 TO 209+62 RT
Maple Ave	Route 136	STA 212+06 TO 212+09 LT
	Route 6	STA 306+12 TO 306+19 LT
	Route 6	STA 307+23 TO 307+27 LT
	Maple Ave	STA 406+44 TO 406+52 LT
	Maple Ave	STA 412+03 TO 412+22 LT
	Maple Ave	STA 413+23 TO 413+74 LT
	Maple Ave	STA 413+48 TO 413+71 RT
Route 118	Route 6	STA 514+45 TO 514+55 LT
	Route 6	STA 516+68 TO 516+72 LT

**ITEM 103. TREE REMOVED – DIAMETER UNDER 24 INCHES**

Baseline	Station	Offset
Route 6	119+36.17	37.81 RT
Route 6	304+01.22	38.01 RT
Route 6	305+97.49	37.14 RT
Route 6	315+83.99	37.46 RT
Maple Ave	406+10.97	31.82 LT
Maple Ave	406+14.33	32.13 LT
Maple Ave	406+29.39	32.10 LT
Maple Ave	406+39.41	32.01 LT
Maple Ave	406+41.64	30.72 LT
Maple Ave	406+59.02	35.29 LT
Maple Ave	410+86.52	34.16 LT
Maple Ave	410+91.14	38.97 LT
Maple Ave	411+10.54	29.87 LT

**ITEM 104. TREE REMOVED – DIAMETER 24 INCHES AND OVER**

Baseline	Station	Offset
Maple Ave	412+59.21	21.32 RT

**ITEM 144. CLASS B ROCK EXCAVATION**

Removal and disposal of rock encountered when excavating to install drainage structures, pipe, fence, guard rail, sign supports, walls, and conduit.

**ITEM 145. DRAINAGE STRUCTURE ABANDONED**

Sta 512+05 RT

**ITEM 146. DRAINAGE STRUCTURE REMOVED**

Intersection	Baseline	Station	Offset	Type
Route 136	Route 6	104+35	RT	CB
	Route 6	107+75	LT	CB
	Route 6	110+68	RT	DMH
	Route 6	110+70	LT	CB
	Route 6	111+02	RT	CB
	Route 6	111+04	RT	DMH
	Route 6	111+99	RT	CB
	Route 6	112+00	LT	CB
	Route 6	113+58	RT	CB
	Route 6	114+48	RT	DMH
	Route 6	114+55	RT	CB
	Route 136	207+63	RT	DMH
	Route 136	208+09	RT	CB
	Route 136	208+58	RT	CB
	Route 136	210+12	RT	CB
	Route 136	210+20	LT	CB
	Route 136	212+87	RT	CB
	Route 136	212+95	RT	DMH
	Route 136	213+10	RT	CB
	Route 136	213+55	LT	CB
Route 136	213+92	RT	DMH	
Route 136	214+61	LT	CB	
Route 136	214+94	RT	DMH	
Route 136	217+59	LT	CB	
Route 136	217+85	LT	DMH	
Maple Ave	Route 6	302+58	RT	DMH
	Route 6	306+98	RT	DMH
	Route 6	307+04	RT	CB
	Maple Ave	409+71	LT	CB
	Maple Ave	411+26	RT	CB



**ITEM 146.**      **DRAINAGE STRUCTURE REMOVED** (Continued)

<u>Intersection</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>	<u>Type</u>
Route 118	Route 6	511+05	LT	CB
	Route 6	512+28	LT	DMH
	Route 6	516+08	LT	CB
	Route 6	513+77	LT	CB
	Route 118	600+67	LT	DMH
	Route 118	600+71	RT	CB
	Route 118	600+73	LT	CB
	Route 118	600+73	RT	CB
	Route 118	602+01	RT	CB

And as required by the Engineer

**ITEM 156.**      **CRUSHED STONE**

To be used to stabilize the foundations of proposed drainage structures and where in-situ material will not provide a suitable base. This item will also be used for a 4" crushed stone surface treatment at the following locations:

Sta 104+65 to 105+86

Sta 206+48 to 207+15

Sta 207+40 to 208+07

**ITEM 201.**      **CATCH BASIN**

This item is used for all proposed catch basins.

<u>Intersection</u>	<u>Structure #</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Route 136	CB 1	Route 6	103+87	RT
	CBCI 5	Route 6	105+24	RT
	CBCI 7	Route 6	105+49	RT
	CBCI 9	Route 6	105+49	LT
	CBCI 10	Route 6	107+75	LT
	CBCI 13	Route 6	107+74	RT
	CB 14	Route 6	110+66	LT
	CB 16	Route 6	110+79	RT
	CBCI 18	Route 6	111+92	LT
	CBCI 22	Route 136	210+19	LT
	CB 25	Route 6	113+83	RT
	CB 28	Route 136	211+89	RT
	CB 30	Route 6	113+81	LT
	CBCI 37	Route 136	213+19	RT
	CBCI 39	Route 6	117+82	LT

**ITEM 201. CATCH BASIN (Continued)**

Intersection	Structure #	Baseline	Station	Offset
Route 136	CBCI	Route 136	207+63	RT
	CB 43	Route 136	207+91	RT
	CB 44	Route 136	213+49	LT
	CBCI 45	Route 136	214+62	LT
	CBCI 49	Route 136	217+58	LT
	CBCI 118	Route 136	218+75	LT
	CB 122	Route 136	219+13	LT
	CB 123	Route 136	219+13	RT
Maple Ave	CBCI 51	Route 6	302+56	LT
	CBCI 53	Route 6	302+57	RT
	CBCI 55	Route 6	305+06	RT
	CBCI 56	Route 6	305+14	LT
	CBCI 58	Route 6	307+09	RT
	CBCI 66	Route 6	312+93	LT
	CBCI 69	Route 6	312+94	RT
	CBCI 101	Route 6	311+68	LT
	CBCI 102	Route 6	311+68	RT
	CBCI 104	Route 6	315+92	LT
CBCI 105	Route 6	315+93	RT	
Maple Ave	CBCI 59	Maple Ave	409+41	LT
	CBCI 61	Maple Ave	409+66	LT
	CBCI 63	Maple Ave	409+41	RT
	CB 64	Maple Ave	409+66	RT
	CBCI 72	Maple Ave	411+08	LT
	CBCI 74	Maple Ave	411+27	RT
Route 118	CBCI 75A	Route 6	508+91	LT
	CBCI 75B	Route 6	502+12	RT
	CB 76	Route 6	510+61	LT
	CBCI 88	Route 6	510+72	RT
	CBCI 114	Route 6	512+92	RT
	CBCI 78	Route 118	600+78	LT
	CBCI 80	Route 118	600+68	LT
	CB 82	Route 118	600+72	RT
	CBCI 86	Route 6	512+28	LT
	CBCI 91	Route 6	516+16	LT
	CBCI 97	Route 118	601+36	LT
CBCI 111	Route 118	602+34	RT	

And as required by the Engineer

**ITEM 202.**      **MANHOLE**

<u>Intersection</u>	<u>Structure #</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Maple Ave	DMH 54	Route 6	305+00	RT
	DMH 57	Route 6	306+97	RT
	DMH 67	Route 6	312+98	LT
	DMH 68	Route 6	312+99	RT
	DMH 70	Route 6	316+02	RT
	DMH 103	Route 6	312+85	RT
	DMH 108	Route 6	302+51	RT
	DMH 109	Route 6	315+93	RT
	DMH 60	Maple Ave	409+66	LT
	DMH 62	Maple Ave	409+65	RT
	DMH 65	Maple Ave	410+03	LT
Route 118	DMH 77	Route 118	600+59	LT
	DMH 79	Route 118	600+51	LT
	DMH 83	Route 118	600+79	RT
	DMH 93	Route 6	516+16	LT
	DMH 89	Route 6	511+13	RT
	DMH 115	Route 6	512+32	RT
	DMH 116	Route 6	514+64	LT

**ITEM 204.**      **GUTTER INLET**

<u>Intersection</u>	<u>Structure #</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Route 136	GICI 34	Route 6	115+20	LT
	GICI 47	Route 136	215+73	RT
Route 118	GICI 90	Route 6	514+69	LT
	GICI 95	Route 6	516+21	RT

**ITEM 210.**      **SANITARY SEWER MANHOLE**

<u>Baseline</u>	<u>Structure #</u>	<u>Station</u>
ROUTE 6	29	517+30
ROUTE 6	30	516+60.7
ROUTE 6	31	512+76.8
ROUTE 118	32	601+60
ROUTE 118	33	603+24.8
ROUTE 6	35	509+32
ROUTE 6	36	507+30
ROUTE 6	37	508+38.4
ROUTE 6	39	516+42.1

**ITEM 220.5 DRAINAGE STRUCTURE REMODELED**

<u>Intersection</u>	<u>Baseline</u>	<u>Structure #</u>	<u>Offset</u>
Route 136	Route 6	REMODEL CB 3	LT
	Route 6	REMODEL CB 8	LT
	Route 6	REMODEL DMH 15	RT
	Route 6	REMODEL CB 21	RT
	Route 136	REMODEL CB 23	RT
	Route 6	REMODEL CB 35	RT
	Route 6	REMODEL CB 40	RT
	Route 136	REMODEL CB 41	LT
Route 118	Route 6	REMODEL DMH 92	LT

**ITEM 220.61 TRENCH DRAIN REMOVED AND RESET**

<u>Intersection</u>	<u>Baseline</u>	<u>Offset</u>	<u>Station</u>
Maple Ave	Route 6	RT	312+60

**ITEM 221.1 FRAME AND COVER - SECURED**

This item is used for drainage manholes within the State Highway Layout with speed limit greater or equal to 45 mph, and as required by the Engineer.

<u>Intersection</u>	<u>Structure #</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Route 136	EX DMH	Route 6	119+18	LT
	EX DMH	Route 6	120+88	LT
Maple Ave	CIT 52	Route 6	302+50	RT
	DMH 108	Route 6	302+51	RT
	DMH 54	Route 6	305+00	RT
	DMH 57	Route 6	306+97	RT

**ITEM 227.4 MASONRY PLUG**

<u>Intersection</u>	<u>Baseline</u>	<u>Station</u>	<u>Pipe Size</u>
Route 136	Route 136	207+85 to 208+05 RT	12
	Route 136	214+90 LT/RT	12
Route 118	Route 6	511+00 to 512+25 LT	4
	Route 6	512+00 to 514+00 RT	12

**ITEM 358.**      **GATE BOX ADJUSTED**

<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Route 6	110+03.55	24.47 LT
Route 6	112+51.71	63.10 RT
Route 6	113+36.84	32.02 LT
Route 6	113+41.61	37.04 LT
Route 6	113+69.81	25.30 LT
Route 6	113+75.26	29.71 LT
Route 6	114+23.81	29.57 LT
Route 6	116+37.57	29.63 LT
Route 6	118+43.44	25.74 LT
Route 6	118+60.61	38.60 RT
Route 6	119+21.36	29.75 LT
Route 136	205+41.13	34.17 RT
Route 136	209+11.55	38.19 RT
Route 136	212+64.83	50.37 RT
Route 6	301+46.66	28.35 LT
Route 6	302+44.59	24.20 LT
Route 6	305+07.06	22.95 LT
Route 6	307+98.57	28.08 LT
Route 6	308+38.75	28.91 LT
Route 6	308+44.31	31.42 LT
Maple Ave	404+29.04	12.95 RT
Route 6	509+56.16	26.45 LT
Route 6	509+56.24	35.92 LT
Route 6	509+59.70	28.99 LT
Route 6	509+60.87	36.60 LT
Route 6	510+05.43	31.43 LT
Route 6	513+43.53	27.09 LT
Route 6	514+81.97	28.40 LT
Route 6	514+97.42	30.15 LT
Route 6	516+34.70	35.47 LT
Route 6	516+40.37	30.50 LT

**ITEM 381.**      **SERVICE BOX**

<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Route 6	514+82.13	24.22 RT

And as required by the Engineer

**ITEM 482.5**      **SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING**

To be used at all limits of box widening.

<u>Intersection</u>	<u>Station</u>
Route 136	103+50 RT TO 109+34 RT
	112+19 RT TO 112+46 RT
	111+63 LT TO 218+50 LT
	113+46 RT TO 115+40 RT
	116+36 LT TO 214+96 RT
	117+04 RT TO 118+04 RT
	204+80 LT TO 205+48 LT
	205+48 LT TO 208+00 LT
	210+43 RT TO 210+71
	210+27 RT TO 114+40 RT
	211+66 LT TO 213.14 LT
	215+48 RT TO 218+50 RT
	215+48 RT TO 218+50 RT
Maple Ave	301+87 LT TO 413+65 LT
	302+40 RT TO 404+60 LT
	309+91 RT TO 316+80 RT
Route 118	409+20 RT TO 411+63 RT
	507+30 RT TO 508+16 RT
	507+50 LT TO 512+36 LT
	511+76 LT TO 513+86 RT
	602+10 LT TO 602+86 LT

**ITEM 504.21**      **GRANITE CURB TYPE T100 – SPLAYED END**

2 each per location

207+48 LT/RT

513+22 LT/RT

**ITEM 505.**      **GRANITE CURB TYPE VA5 – STRAIGHT**

<u>Intersection</u>	<u>Baseline</u>	<u>From Station</u>	<u>To Station</u>
Maple Ave	Route 6	301+05 RT	303+85 RT
	Route 6	302+83 LT	303+13 LT
	Route 6	303+17 LT	303+42 LT
	Route 6	304+17 LT	304+60 LT
	Route 6	306+38 LT	306+59 LT
	Route 6	312+77 RT	312+98 RT

**ITEM 506. GRANITE CURB TYPE VB – STRAIGHT**

Route 6 @ Route 136 LT

Baseline	From Station	To Station
Route 6	103+50	104+21
Route 6	104+32	108+23
Route 6	108+73	109+55
Route 6	109+85	110+23
Route 6	110+19	110+23
Route 6	110+63	111+36
Route 6	111+75	111+97
Route 6	113+75	115+37
Route 6	115+67	116+43
Route 6	110+63	110+63
Route 6	111+35	111+36
Route 6	111+72	111+75
Route 6	115+37	115+41
Route 6	115+64	115+67
Route 6	115+67	116+43
Route 6	116+73	120+16
Route 6	120+32	120+35
Route 6	120+70	120+72
Route 6	120+89	121+05

Route 6 @ Route 136 RT

Baseline	From Station	To Station
Route 6	103+52	104+08
Route 6	103+51	104+02
Route 6	104+66	106+17
Route 6	105+86	106+17
Route 6	106+48	108+09
Route 6	106+48	106+65
Route 6	106+93	112+19
Route 6	106+93	112+19
Route 6	107+62	108+05
Route 6	108+08	108+08
Route 6	108+36	108+38
Route 6	108+38	109+17
Route 6	109+05	109+08
Route 6	109+53	110+27
Route 6	109+53	110+27
Route 6	110+27	110+33
Route 6	110+67	112+29
Route 6	110+67	112+29
Route 6	113+81	117+03
Route 6	113+81	117+04
Route 6	113+82	116+89
Route 6	117+12	117+14
Route 6	117+48	117+50

**ITEM 506. GRANITE CURB TYPE VB – STRAIGHT (Continued)**

Route 6 @ Route 136 RT (Continued)

Baseline	From Station	To Station
Route 6	117+70	118+65
Route 6	118+98	119+97
Route 6	120+14	121+05

Route 136 @ Route 6 LT

Baseline	From Station	To Station
Route 136	204+70	204+94
Route 136	205+24	205+24
Route 136	205+24	206+24
Route 136	205+24	206+24
Route 136	206+49	207+02
Route 136	207+02	207+02
Route 136	207+48	210+43
Route 136	207+39	208+07
Route 136	207+39	207+39
Route 136	208+37	208+68
Route 136	208+37	208+86
Route 136	208+37	208+37
Route 136	208+39	208+86
Route 136	209+36	209+39
Route 136	209+77	210+64
Route 136	209+56	210+48
Route 136	212+14	213+56
Route 136	213+49	213+56
Route 136	213+80	213+94
Route 136	213+94	215+09
Route 136	214+96	215+00
Route 136	214+48	214+48
Route 136	214+54	214+54
Route 136	215+10	215+10
Route 136	215+50	215+50
Route 136	215+50	217+87
Route 136	215+55	215+66
Route 136	217+87	217+96
Route 136	218+29	218+34
Route 136	218+37	218+40
Route 136	218+28	222+15



**ITEM 506. GRANITE CURB TYPE VB – STRAIGHT (Continued)**

## Route 136 @ Route 6 RT

Baseline	From Station	To Station
Route 136	204+70	205+60
Route 136	205+84	206+18
Route 136	206+43	207+52
Route 136	207+48	210+43
Route 136	206+82	207+02
Route 136	208+04	208+05
Route 136	208+56	208+42
Route 136	208+42	210+27
Route 136	212+04	214+78
Route 136	212+11	213+56
Route 136	212+11	213+56
Route 136	214+96	214+97
Route 136	215+47	215+49
Route 136	215+67	217+20
Route 136	217+20	217+34
Route 136	217+66	217+66
Route 136	217+66	218+50

## Route 6 @ Maple Ave LT

Baseline	From Station	To Station
Route 6	301+05	301+09
Route 6	301+37	301+40
Route 6	301+57	307+58
Route 6	301+88	302+68
Route 6	302+83	303+42
Route 6	303+65	303+83
Route 6	303+65	303+83
Route 6	304+03	304+66
Route 6	304+91	306+65
Route 6	306+65	306+74
Route 6	307+07	307+11
Route 6	307+18	307+98
Route 6	309+34	312+96
Route 6	314+18	316+80

**ITEM 506. GRANITE CURB TYPE VB – STRAIGHT (Continued)**

## Route 6 @ Maple Ave RT

Baseline	From Station	To Station
Route 6	301+05	301+57
Route 6	301+05	301+52
Route 6	301+42	301+42
Route 6	301+45	301+49
Route 6	301+52	301+52
Route 6	301+82	303+40
Route 6	302+71	302+71
Route 6	302+74	302+77
Route 6	302+80	302+80
Route 6	303+65	304+19
Route 6	303+65	303+85
Route 6	304+49	305+43
Route 6	305+43	305+45
Route 6	305+60	305+69
Route 6	305+91	306+68
Route 6	306+79	306+83
Route 6	306+94	308+69
Route 6	309+92	312+32
Route 6	310+63	312+32
Route 6	312+39	312+45
Route 6	312+47	312+47
Route 6	312+83	313+41
Route 6	313+41	313+43
Route 6	313+77	313+78
Route 6	313+77	316+80

## Maple Ave @ Route 6 LT

Baseline	From Station	To Station
Maple Ave	404+16	404+23
Maple Ave	404+36	407+78
Maple Ave	409+21	410+11
Maple Ave	410+11	410+13
Maple Ave	410+41	410+42
Maple Ave	410+41	411+60
Maple Ave	411+75	412+83
Maple Ave	412+95	413+65

**ITEM 506. GRANITE CURB TYPE VB – STRAIGHT (Continued)**

## Maple Ave @ Route 6 RT

Baseline	From Station	To Station
Maple Ave	404+16	404+23
Maple Ave	404+23	404+23
Maple Ave	404+47	404+46
Maple Ave	404+47	405+31
Maple Ave	405+86	405+89
Maple Ave	406+13	407+18
Maple Ave	408+71	409+67
Maple Ave	409+88	410+70
Maple Ave	410+95	412+24
Maple Ave	412+39	413+19
Maple Ave	413+34	413+65

## Route 6 @ Route 118 LT

Baseline	From Station	To Station
Route 6	507+30	510+42
Route 6	509+38	510+69
Route 6	509+38	510+69
Route 6	511+84	513+22
Route 6	512+14	513+74
Route 6	514+01	514+03
Route 6	514+42	514+43
Route 6	514+68	515+81
Route 6	516+12	516+15
Route 6	516+58	516+65
Route 6	516+79	516+87

## Route 6 @ Route 118 RT

Baseline	From Station	To Station
Route 6	507+30	508+16
Route 6	508+26	508+38
Route 6	508+45	508+52
Route 6	508+61	508+62
Route 6	508+77	508+80
Route 6	508+78	508+93
Route 6	509+09	509+27
Route 6	509+22	509+25
Route 6	509+27	509+27
Route 6	509+52	510+27
Route 6	509+57	510+22
Route 6	510+27	510+36
Route 6	510+65	511+76
Route 6	510+65	510+65

**ITEM 506. GRANITE CURB TYPE VB – STRAIGHT (Continued)**

## Route 6 @ Route 118 RT (Continued)

Baseline	From Station	To Station
Route 6	510+68	511+73
Route 6	511+76	511+76
Route 6	511+84	513+22
Route 6	512+11	512+16
Route 6	512+16	512+38
Route 6	512+21	512+35
Route 6	512+38	512+38
Route 6	512+69	513+22
Route 6	512+69	512+69
Route 6	512+71	512+81
Route 6	512+89	513+20
Route 6	513+22	513+22
Route 6	513+47	513+47
Route 6	513+47	513+66
Route 6	513+66	513+74
Route 6	513+99	514+08
Route 6	514+08	515+73
Route 6	515+73	515+74
Route 6	516+08	516+12
Route 6	516+08	516+72
Route 6	516+69	516+72
Route 6	517+08	517+10
Route 6	517+10	517+30

## Route 118 @ Route 6 LT

Baseline	From Station	To Station
Route 118	600+85	601+87
Route 118	602+03	603+25

## Route 118 @ Route 6 RT

Baseline	From Station	To Station
Route 118	600+77	601+93
Route 118	602+38	602+40
Route 118	602+45	602+72
Route 118	602+45	602+72
Route 118	602+53	602+64
Route 118	602+21	602+22
Route 118	602+25	602+26
Route 118	602+90	602+91
Route 118	602+95	602+96
Route 118	603+21	603+25

**ITEM 506.1**      **GRANITE CURB TYPE VB – CURVED**

Baseline	From Station	To Station	Radius
Route 6 LT	111+98	112+24	45
Route 6 LT	112+29	112+39	45
Route 6 LT	113+30	113+75	45
Route 6 LT	120+16	120+26	20
Route 6 LT	120+72	120+74	20
Route 6 LT	120+81	120+89	20
Route 6 RT	103+51	103+52	6
Route 6 RT	104+02	104+08	5
Route 6 RT	106+93	106+93	3
Route 6 RT	110+67	110+72	9
Route 6 RT	112+19	112+19	3
Route 6 RT	112+29	112+73	45
Route 6 RT	112+29	112+64	36.5
Route 6 RT	113+42	113+82	45
Route 6 RT	113+81	113+81	3
Route 6 RT	116+89	117+12	25
Route 6 RT	117+03	117+04	3
Route 6 RT	117+50	117+70	25
Route 6 RT	118+65	118+72	20
Route 6 RT	118+91	118+98	20
Route 136 LT	204+94	204+99	30
Route 136 LT	208+68	208+88	25
Route 136 LT	208+86	208+88	2
Route 136 LT	209+31	209+36	5
Route 136 LT	209+31	209+56	25
Route 136 LT	210+43	210+43	3
Route 136 LT	212+03	212+14	45
Route 136 LT	214+48	214+54	3
Route 136 LT	215+00	215+10	10
Route 136 LT	215+50	215+55	5
Route 136 LT	218+34	218+38	5
Route 136 RT	212+11	212+11	3
Route 136 RT	213+56	213+56	3
Route 136 RT	214+78	214+97	20
Route 136 RT	215+49	215+67	20

**ITEM 506.1**      **GRANITE CURB TYPE VB – CURVED** (Continued)

Baseline	From Station	To Station	Radius
Route 6 LT	301+09	301+37	30
Route 6 LT	301+40	301+40	9
Route 6 LT	301+58	301+88	30
Route 6 LT	307+98	308+35	40
Route 6 LT	308+94	309+34	45
Route 6 LT	312+96	313+37	40
Route 6 LT	313+67	314+18	50
Route 6 RT	301+42	301+45	3
Route 6 RT	301+49	301+52	3
Route 6 RT	301+71	301+74	3
Route 6 RT	302+77	302+80	3
Route 6 RT	308+69	309+02	40
Route 6 RT	309+72	309+92	27
Route 6 RT	312+31	312+39	5
Route 6 RT	312+32	312+47	15
Route 6 RT	312+45	312+47	5
Route 6 RT	312+77	312+83	6
Maple Ave RT	405+31	405+55	25
Maple Ave RT	405+89	406+13	25
Route 6 LT	509+38	509+38	3
Route 6 LT	510+69	510+69	3
Route 6 LT	510+42	510+87	45
Route 6 LT	511+84	511+84	5.25
Route 6 LT	511+71	512+14	45
Route 6 LT	513+74	514+01	25
Route 6 LT	514+43	514+68	25
Route 6 LT	515+81	516+12	35
Route 6 LT	516+52	516+58	5
Route 6 LT	516+52	516+79	30
Route 6 RT	508+16	508+38	25
Route 6 RT	508+52	508+61	5
Route 6 RT	508+77	508+78	10
Route 6 RT	508+93	509+09	20
Route 6 RT	509+25	509+27	10
Route 6 RT	509+52	509+57	5
Route 6 RT	510+65	510+68	3
Route 6 RT	511+73	511+76	3

**ITEM 506.1**      **GRANITE CURB TYPE VB – CURVED** (Continued)

Baseline	From Station	To Station	Radius
Route 6 RT	512+35	512+38	5
Route 6 RT	512+69	512+72	2
Route 6 RT	513+20	513+22	2
Route 118 RT	601+93	602+22	50
Route 118 RT	602+32	602+38	50
Route 118 RT	602+43	602+45	3
Route 118 RT	602+43	602+45	69
Route 118 RT	602+53	602+56	69
Route 118 RT	602+56	602+61	3
Route 118 RT	602+61	602+64	69
Route 118 RT	602+72	602+74	69
Route 118 RT	602+72	602+74	3
Route 118 RT	602+77	602+84	50
Route 118 RT	602+95	603.21	50

**ITEM 507.**      **TRAVERSABLE GRANITE CURB – TYPE T100 – STRAIGHT**

Intersection	Baseline	From Station	To Station
Route 136	Route 136	207+09 LT	207+48 LT
	Route 136	207+09 RT	207+48 RT
Route 118	Route 6	513+22 LT	513+86 LT
	Route 6	513+22 RT	513+86 RT

**ITEM 507.1**      **TRAVERSABLE GRANITE CURB – TYPE T100 – CURVED**

Intersection	Baseline	From Station	To Station	Radius
Route 136	Route 136	207+09 LT	207+09 RT	3
Route 118	Route 6	513+86 LT	513+86 RT	3

**ITEM 512.1**      **GRANITE EDGING TYPE SB (RADIUS 10 FEET OR LESS)**

Intersection	Baseline	From Station	To Station	Radius
Route 136	Route 6	117+23.91 RT	117+25.38 RT	2
	Route 6	117+29.66 RT	117+33.49 RT	2
	Route 6	117+35.53 RT	117+37.44 RT	2
Route 118	Route 118	600+52.00	600+52.08 LT	5.5

**ITEM 516. GRANITE CURB CORNER TYPE A**

Baseline	Station	Offset
Route 6	305+60.39	30.63
Route 6	305+69.39	30.82
Route 6	306+79.92	33.11
Route 6	306+82.98	33.19
Route 118 (2 units)	602+27.38	44.37
Route 118 (2 units)	602+88.81	44.03

**ITEM 520.121 CONCRETE CURB STOP REMOVED AND STACKED**

Sta 304+69 RT

**ITEM 580. CURB REMOVED AND RESET**

Intersection	Baseline	From Station	To Station
Route 136	Route 6	103+50 LT	104+16 LT
	Route 6	103+52 RT	104+07 RT
	Route 6	104+44 LT	106+00 LT
	Route 6	104+71 RT	105+96 RT
	Route 6	106+53 RT	107+91 RT
	Route 6	106+71 LT	107+99 LT
	Route 6	108+70 RT	108+89 RT
	Route 6	108+84 LT	109+25 LT
	Route 6	109+56 RT	110+21 RT
	Route 6	109+56 RT	110+21 RT
	Route 6	110+55 RT	112+19 RT
	Route 6	110+74 RT	112+24 RT
	Route 6	110+77 LT	111+12 LT
	Route 6	110+34 LT	111+12 LT
	Route 6	111+97 LT	112+14 LT
	Route 6	113+50 RT	115+32 RT
	Route 6	113+68 LT	115+15 LT
	Route 6	113+76 RT	116+88 RT
	Route 6	115+88 LT	116+07 LT
	Route 6	116+77 LT	120+04 LT
Route 6	117+73 RT	118+48 RT	
Route 6	119+18 RT	119+86 RT	
Route 6	120+18 RT	121+05 RT	
Route 6	120+94 LT	121+05 LT	
Route 136	205+34 LT	206+14 LT	
Route 136	206+44 RT	207+41 RT	
Route 136	206+52 LT	206+82 LT	



**ITEM 580. CURB REMOVED AND RESET (Continued)**

Intersection	Baseline	From Station	To Station
	Route 136	206+54 LT	206+93 LT
	Route 136	207+48 LT	208+00 LT
Route 136	Route 136	207+57 LT	207+99 LT
	Route 136	208+41 LT	209+05 LT
	Route 136	208+54 LT	209+05 LT
	Route 136	208+54 LT/RT	210+67 LT/RT
	Route 136	208+58 RT	210+32 RT
	Route 136	209+35 LT	210+02 LT
	Route 136	211+70 RT	213+12 RT
	Route 136	211+86 RT	214+64 RT
	Route 136	212+06 LT	213+37 LT
	Route 136	213+70 RT	214+68 RT
	Route 136	214+18 LT	214+72 LT
	Route 136	215+70 RT	217+01 RT
	Route 136	215+87 LT	217+71 LT
	Route 136	217+75 RT	218+50 RT
	Route 136	218+33 LT	218+50 LT
Maple Ave	Route 6	301+05 RT	301+53 RT
	Route 6	301+98 RT	303+39 RT
	Route 6	302+12 LT	302+68 LT
	Route 6	302+85 LT	303+42 LT
	Route 6	303+68 RT	304+08 RT
	Route 6	304+70 RT	305+40 RT
	Route 6	305+06 LT	306+47 LT
	Route 6	305+91 RT	306+57 RT
	Route 6	307+02 RT	308+48 RT
	Route 6	307+27 LT	307+88 LT
	Route 6	309+35 LT	313+01 LT
	Route 6	310+24 RT	313+17 RT
	Route 6	313+96 RT	316+80 RT
	Route 6	314+21 LT	316+80 LT
	Maple Ave	404+40 LT	407+92 LT
	Maple Ave	406+07 RT	407+11 RT
	Maple Ave	408+57 RT	409+12 RT
	Maple Ave	409+10 LT	410+02 LT
	Maple Ave	409+91 RT	410+66 RT
Route 118	Route 6	507+30 RT	508+01 RT
	Route 6	507+30 LT	509+45 LT
	Route 6	513+38 LT	514+12 LT
	Route 6	514+38 LT	515+09 LT

**ITEM 580.**      **CURB REMOVED AND RESET** (Continued)

Intersection	Baseline	From Station	To Station
	Route 6	515+34 LT	515+91 LT
	Route 6	517+24 LT	517+30 LT

**ITEM 583.**      **EDGING REMOVED AND RESET**

Route 118    Station 600+56 LT to 603+25 LT  
 Station 511+95 to 512+95  
 Station 600+35 RT to 601+20 RT

**ITEM 594.**      **CURB REMOVED AND DISCARDED**

Intersection	Baseline	From Station	To Station
Route 136	Route 6	104+07 RT	104+08 RT
	Route 6	104+35 LT	104+44 LT
	Route 6	106+00 LT	106+10 LT
	Route 6	106+58 LT	106+71 LT
	Route 6	107+99 LT	108+11 LT
	Route 6	108+55 RT	108+70 RT
	Route 6	108+74 LT	108+84 LT
	Route 6	108+89 RT	108+99 RT
	Route 6	109+25 LT	109+36 LT
	Route 6	109+56 RT	109+56 RT
	Route 6	109+84 LT	110+06 LT
	Route 6	110+67 LT	110+78 LT
	Route 6	110+69 RT	112+70 RT
	Route 6	111+12 LT	111+22 LT
	Route 6	112+14 LT	112+52 LT
	Route 6	112+24 RT	112+65 RT
	Route 6	113+31 LT	113+68 LT
	Route 6	113+42 RT	113+76 RT
	Route 6	115+15 LT	115+41 LT
	Route 6	115+63 LT	115+88 LT
	Route 6	116+88 RT	117+10 RT
	Route 6	117+50 RT	117+73 RT
	Route 6	118+48 RT	118+72 RT
	Route 6	118+92 RT	119+18 RT
	Route 6	119+86 RT	119+95 RT
	Route 6	120+04 LT	120+35 LT
	Route 6	120+15 RT	120+18 RT
	Route 6	120+70 LT	120+94 LT

**ITEM 594.      CURB REMOVED AND DISCARDED (Continued)**

<u>Intersection</u>	<u>Baseline</u>	<u>From Station</u>	<u>To Station</u>	
Route 136	Route 136	204+78 LT	204+96 LT	
	Route 136	205+23 LT	205+34 LT	
	Route 136	206+82 LT	206+92 LT	
	Route 136	206+93 LT	207+02 LT	
	Route 136	207+39 LT	207+48 LT	
	Route 136	207+47 LT	207+57 LT	
	Route 136	207+81 RT	208+05 RT	
	Route 136	208+34 LT	208+41 LT	
	Route 136	208+37 RT	208+58 RT	
	Route 136	209+05 LT	209+09 LT	
	Route 136	209+36 LT	209+45 LT	
	Route 136	213+42 LT	213+56 LT	
	Route 136	213+91 LT	214+18 LT	
	Route 136	214+64 RT	214+74 RT	
	Route 136	214+68 RT	214+90 RT	
	Route 136	214+72 LT	214+84 LT	
	Route 136	215+61 RT	215+70 RT	
	Route 136	215+66 LT	215+71 LT	
	Route 136	215+74 LT	215+87 LT	
	Maple Ave	Route 136	217+01 RT	217+34 RT
Route 136		217+66 RT	217+75 RT	
Route 6		301+14 LT	301+40 LT	
Route 6		301+80 LT	302+19 LT	
Route 6		306+47 LT	306+56 LT	
Route 6		306+57 RT	306+65 RT	
Route 6		306+94 RT	307+02 RT	
Route 6		307+18 LT	307+27 LT	
Route 6		307+88 LT	308+33 LT	
Route 6		308+48 RT	308+88 RT	
Route 6		309+05 LT	309+35 LT	
Route 6		309+84 RT	310+24 RT	
Route 6		313+01 LT	313+37 LT	
Route 6		313+17 RT	313+43 RT	
Route 6		313+67 LT	314+21 LT	
Route 6		313+77 RT	313+96 RT	
Maple Ave			404+45 RT	405+80 RT
Maple Ave			409+12 RT	409+66 RT
Maple Ave			410+46 LT	411+59 LT
Maple Ave			411+02 RT	412+23 RT
Maple Ave		411+78 LT	412+80 LT	

**ITEM 594.**      **CURB REMOVED AND DISCARDED** (Continued)

<u>Intersection</u>	<u>Baseline</u>	<u>From Station</u>	<u>To Station</u>
Maple Ave	Maple Ave	412+39 RT	413+18 RT
	Maple Ave	412+98 LT	413+65 LT
	Maple Ave	413+35 RT	413+65 RT
Route 118	Route 6	508+01 RT	508+32 RT
	Route 6	508+54 RT	508+62 RT
	Route 6	508+80 RT	509+22 RT
	Route 6	509+55 RT	509+85 RT
	Route 6	510+19 RT	510+40 RT
	Route 6	510+88 RT	511+50 RT
	Route 6	512+06 RT	512+11 RT
	Route 6	512+21 RT	512+24 RT
	Route 6	512+72 RT	513+19 RT
	Route 6	513+47 RT	513+74 RT
	Route 6	513+99 RT	514+31 RT
	Route 6	515+40 RT	515+74 RT
	Route 6	515+91 LT	516+15 LT
	Route 6	516+12 RT	516+69 RT
	Route 6	516+60 LT	516+88 LT
	Route 6	517+08 RT	517+30 RT
	Route 6	517+24 LT	517+26 LT
	Route 118	600+35 LT	603+25 LT
	Route 118	600.34 RT	602+40 RT
	Route 118	602+77 RT	603+25 RT

**ITEM 597.**      **EDGING REMOVED AND DISCARDED**

<u>Intersection</u>	<u>Baseline</u>	<u>From Station</u>	<u>To Station</u>
Route 118	Route 118	600+37 LT	601+13 LT
		602+51 RT	602+67 RT

**ITEM 620.12**      **GUARDRAIL, TL-2 (SINGLE-FACED)**

<u>Intersection</u>	<u>Baseline</u>	<u>From Station</u>	<u>To Station</u>
Route 136	Route 6	119+28 RT	119+88 RT
Maple Ave	Route 6	310+83 RT	312+32 RT
Route 118	Route 6	507+64 LT	508+77 LT

**ITEM 627.1 TRAILING ANCHORAGE**

Intersection	Baseline	From Station	To Station
Route 6	Route 6	119+88 RT	119+98 RT
Route 118	Route 6	508+18 RT	508+29 RT

**ITEM 627.82 GUARDRAIL TANGENT END TREATMENT, TL-2**

Intersection	Baseline	Station
Route 136	Route 6	119+03 to 119+28 RT
Maple Ave	Route 6	310+58 to 310+83 RT
Route 118	Route 6	508+77 to 509.09 LT

**ITEM 628.21 TRANSITION TO NCHRP 350 GUARDRAIL**

Intersection	Baseline	Station
Route 118	Route 6	507+30 TO 507+64 LT
	Route 6	507+84 TO 508+18 RT

**ITEM 669. FENCE REMOVED AND STACKED**

Intersection	Baseline	From Station	To Station
Maple Ave	Maple Ave	410+89 LT	411+57 LT
	Maple Ave	411+75 LT	412+80 LT
	Maple Ave	412+97 LT	413+06 LT

**ITEM 710.3 BOUND – LETTERED GRANITE**

Intersection	Baseline	Station	Offset
Route 136	Route 6	104+14.02	35.67 RT
	Route 6	104+76.87	38.39 RT
	Route 6	108+44.54	46.56 RT
	Route 6	110+12.05	53.50 RT
	Route 6	110+60.62	53.50 RT
	Route 6	113+61.39	47.21 LT
	Route 6	113+70.97	44.77 LT
	Route 6	113+78.14	58.00 RT
	Route 6	113+98.62	56.02 RT
	Route 6	114+71.80	45.50 LT
	Route 6	115+31.22	41.35 LT
	Route 136	212+32.47	51.49 LT
	Route 136	214+02.24	50.42 LT
	Route 136	214+35.86	47.29 LT
Maple Ave	Route 6	301+05.00	29.47 RT
	Route 6	301+05.00	30.65 RT

**ITEM 710.3**      **BOUND – LETTERED GRANITE** (Continued)

<u>Intersection</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Maple Ave	Route 6	303+22.63	30.53 LT
	Route 6	304+31.91	33.50 LT
	Route 6	307+21.89	43.50 RT
	Route 6	307+46.38	43.50 RT
	Route 6	307+73.45	33.44 LT
	Route 6	308+51.29	43.50 RT
	Route 6	310+28.61	42.64 RT
	Route 6	313+32.86	41.29 RT
	Route 6	313+44.76	39.97 RT
	Route 118	Route 6	509+41.24
Route 6		510+73.56	47.50 RT
Route 6		510+73.56	44.50 RT
Route 6		511+72.91	47.50 RT
Route 6		511+72.91	44.50 RT
Route 6		515+29.24	44.50 RT
Route 6		516+54.47	57.00 LT
Route 6		516+55.57	57.35 LT
Route 6		516+58.37	49.84 LT
Route 6		517+30.99	42.33 RT
Route 6	517+30.99	40.00 RT	

**ITEM 710.4**      **BOUND – PLAIN GRANITE**

<u>Intersection</u>	<u>Baseline</u>	<u>Station</u>	<u>Offset</u>
Route 136	Route 136	204+85.98	27.36 LT
	Route 136	204+85.98	30.29 LT
	Route 136	205+73.20	33.51 LT
	Route 136	206+17.02	35.13 LT
	Route 136	206+50.49	35.88 LT
Maple Ave	Maple Ave	405+03.66	25.57 LT
	Maple Ave	406+32.45	30.97 LT
	Maple Ave	407+10.98	32.50 LT
	Maple Ave	409+39.38	22.35 RT
	Maple Ave	410+62.22	32.64 LT
	Maple Ave	410+92.55	22.53 RT
	Maple Ave	410+91.68	35.50 LT
	Maple Ave	411+42.08	28.28 LT
	Maple Ave	411+93.49	24.49 LT
	Route 118	Route 118	602+64.76
Route 118		602+64.76	58.54 LT
Route 118		602+92.94	65.38 RT
Route 118		603+09.31	46.25 RT
Route 118		603+47.72	57.98 LT

**ITEM 711. BOUND REMOVED AND RESET**

Contingency for removed and reset of Bound affected by the construction.

**ITEM 715. RURAL MAIL BOX REMOVED AND RESET**

Intersection	Baseline	Station	Offset
Route 136	Route 6	116+87	LT
Route 136	Route 6	119+85	RT
Maple Ave	Route 6	303+10	LT
	Route 6	306+00	RT
	Route 6	307+07	RT
	Maple Ave	411+83	LT
	Maple Ave	413+02	LT
Maple Ave	Maple Ave	413+11	LT

**ITEM 767.121. SEDIMENT CONTROL BARRIER**

Intersection	Baseline	Station
Route 136	Route 6	STA 114+40 TO 115+97 RT
	Route 6	STA 116+13 TO 117+12 RT
	Route 6	STA 117+49 TO 118+70 RT
	Route 6	STA 118+91 TO 120+35 LT
	Route 6	STA 120+15 TO 121+07 RT
	Route 6	STA 120+70 TO 121+05 LT
	Route 136	STA 212+11 TO 213+46 LT
Route 136	STA 215+98 TO 217+83 LT	
Maple Ave	Route 6	STA 307+00 TO 308+71 RT
	Route 6	STA 309+91 TO 312+50 LT
Route 118	Route 6	STA 507+30 TO 509+55 LT
	Route 6	STA 512+10 TO 514+01 LT

**ITEM 767.9 JUTE MESH**

Intersection	Baseline	Station
Route 136	Route 136	212+00 to 213+50 LT

**ITEM 826.7. ELECTRIC SERVICE RELOCATION**

Baseline	Station
Route 6	301+49 RT
Route 6	310+20 RT
Route 6	104+60 RT
Route 6	109+80 RT
Route 6	120+30 RT

And as required by the Engineer

**ITEM 854.1 PAVEMENT MARKING REMOVAL**

For removal of existing pavement markings that conflict with proposed pavement markings.

**ITEM 901. 4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE**

For stair construction at Sta 303+15 LT.

**ITEM 903. 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE**

Cement concrete required for construction of thrust blocks at hydrants relocation

Baseline	Station	Offset
Route 6	108+74.07	46.88 RT
Route 6	114+24.27	45.29 LT
Route 6	310+69.35	34.28 LT
Route 6	510+05.44	41.87 LT



DOCUMENT A00804

# **GEOTECHNICAL REPORT**

THIS PAGE INTENTIONALLY LEFT BLANK



October 7, 2024

Mr. Matthew Soltys, PE, RSP, ENV SP  
Nitsch Engineering  
2 Center Plaza, Suite 430  
Boston, MA 02108  
Phone: (617) 338-0063  
Fax: (617) 338-6472  
E-mail: msoltys@nitscheng.com

Re: **Geotechnical Report**  
**Proposed Mast Arm and Retaining Wall**  
**Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)**  
**Swansea, Massachusetts**  
**LGCI Project No. 2317-Rev. 2**

Dear Mr. Soltys:

Lahlaf Geotechnical Consulting, Inc. (LGCI) has completed a geotechnical study for the proposed Mast Arm and Retaining Wall in Swansea, Massachusetts. We are submitting our geotechnical report electronically.

The soil and rock samples from our explorations are currently stored at LGCI for further analysis, if requested.

Thank you for choosing LGCI as your geotechnical engineer.

Very truly yours,

**Lahlaf Geotechnical Consulting, Inc.**

Abdelmadjid M. Lahlaf, Ph.D., P.E.  
Principal Engineer



**GEOTECHNICAL REPORT  
PROPOSED MAST ARM AND RETAINING WALL  
ROUTE 6 AT MAPLE ST. AND SWANSEA MALL DRIVE (MASSDOT  
MSA, ASSIGNMENT #7)  
SWANSEA, MASSACHUSETTS  
LGCI Project No. 2317-Rev. 2  
July 29, 2024  
Revised October 7, 2024**

Prepared for:

**NITSCH ENGINEERING**  
2 Center Plaza, Suite 430  
Boston, Massachusetts 02108  
Tel: (617) 338-0063  
Fax: (617) 338-6472

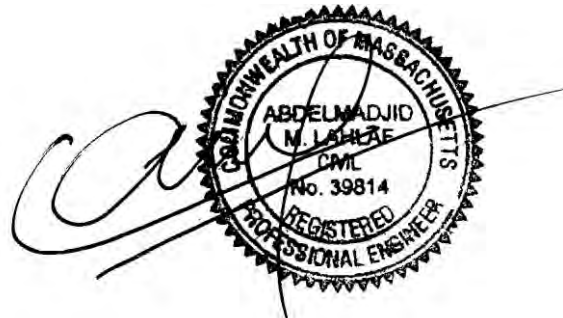
**GEOTECHNICAL REPORT**  
**PROPOSED MAST ARM AND RETAINING WALL**  
**ROUTE 6 AT MAPLE ST. AND SWANSEA MALL DRIVE (MASSDOT MSA,**  
**ASSIGNMENT #7)**  
**SWANSEA, MASSACHUSETTS**  
LGCI Project No. 2317-Rev. 2  
July 10, 2024  
Revised October 7, 2024

Prepared for:

**NITSCH ENGINEERING**  
2 Center Plaza, Suite 430  
Boston, Massachusetts 02108  
Tel: (617) 338-0063  
Fax: (617) 338-6472

Prepared by:

**LAHLAF GEOTECHNICAL CONSULTING, INC.**  
100 Chelmsford Road, Suite 2  
Billerica, Massachusetts 01862  
Phone: (978) 330-5912  
Fax: (978) 330-5056



Abdelmadjid M. Lahlaf, Ph.D., P.E.  
Principal Engineer

**TABLE OF CONTENTS**

**1. PROJECT INFORMATION ..... 2**

1.1 PROJECT AUTHORIZATION .....2

1.2 PURPOSE AND SCOPE OF SERVICES .....2

1.3 SITE AND PROJECT DESCRIPTION .....2

1.4 ELEVATION DATUM .....3

**2. SITE AND SUBSURFACE CONDITIONS ..... 4**

2.1 SURFICIAL GEOLOGY .....4

2.2 LGCI’S BORINGS .....4

    2.2.1 *General* .....4

    2.2.2 *Soil Borings* .....4

    2.2.3 *Boring Logs and Locations* .....5

2.3 SUBSURFACE CONDITIONS .....5

2.4 GROUNDWATER .....6

**3. EVALUATION AND RECOMMENDATIONS ..... 7**

3.1 GENERAL .....7

3.2 PROPOSED MAST ARM .....7

3.3 PROPOSED RETAINING WALL .....7

    3.3.1 *Existing Fill* .....7

    3.3.2 *Support of Excavation* .....7

3.4 FOUNDATION RECOMMENDATIONS .....8

    3.4.1 *Footing Design for Strength Limit State* .....8

    3.4.1 *Service Limit Load Case* .....9

3.5 SEISMIC DESIGN .....9

3.6 LATERAL PRESSURES FOR WALL DESIGN .....9

    3.6.1 *Lateral Earth Pressures* .....9

    3.6.2 *Seismic Pressure* .....10

3.7 PROTECTION OF ROADWAY .....11

**4. CONSTRUCTION CONSIDERATIONS ..... 12**

4.1 SUBGRADE PREPARATION FOR RETAINING WALLS .....12

4.2 SITE PREPARATION FOR CORED PIER FOUNDATIONS .....12

    4.2.1 *General* .....12

    4.2.2 *Drilled Shafts* .....13

4.3 SUBGRADE PROTECTION .....13

4.4 FILL MATERIALS .....13

4.5 REUSE OF ONSITE MATERIALS .....14

4.6 GROUNDWATER CONTROL PROCEDURES .....14

4.7 CONTRACTOR SUBMITTALS .....14

4.8 TEMPORARY EXCAVATIONS .....15

**5. RECOMMENDATIONS FOR FUTURE WORK ..... 16**

**6. REPORT LIMITATIONS ..... 17**

**7. REFERENCES ..... 18**

## List of Tables and Figures

<b>Table 1</b>	Summary of LGCI's Borings
<b>Figure 1</b>	Site Location Map
<b>Figure 2</b>	Surficial Geologic Map
<b>Figures 3A</b>	Boring Location Plan (Swansea Mall Dr.)
<b>Figures 3B</b>	Boring Location Plan (Maple Ave.)

## List of Appendices

<b>Appendix A</b>	LGCI's Boring Logs
<b>Appendix B</b>	Calculations

**Geotechnical Report**  
**Proposed Mast Arm and Retaining Wall**  
**Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)**  
**Swansea, Massachusetts**  
**LGCI Project No. 2317-Rev. 1**

## 1. PROJECT INFORMATION

### 1.1 Project Authorization

This geotechnical report presents the results of the subsurface explorations and a geotechnical evaluation performed by Lahlaf Geotechnical Consulting, Inc. (LGCI) for the proposed Mast Arm and Retaining Wall in Swansea, Massachusetts. We performed our services in general accordance with our proposals No. 22152 dated December 29, 2022, and No. 23124 dated October 30, 2023, and in general accordance with the Subconsultant Agreement between Nitsch Engineering, Inc. (Nitsch) and LGCI dated April 23, 2024. Mr. John M. Michalak of Nitsch authorized our services by signing the Subconsultant Agreement.

### 1.2 Purpose and Scope of Services

The purpose of our geotechnical services was to perform subsurface explorations at the site for the proposed mast arm and retaining wall, and to provide foundation design and construction recommendations. LGCI performed the following additional services:

- Coordinated our boring locations with Nitsch and marked the boring locations at the site.
- Engaged a drilling subcontractor for four (4) days to advance three (3) soil borings at the site. Our drilling subcontractor applied for and obtained a street opening permit prior to starting our explorations at the site. Our drilling subcontractor notified Dig Safe Systems Inc. (Dig Safe) and the Town of Swansea for utility clearance. Our drilling subcontractor also coordinated with a police detail during our explorations.
- Provided an LGCI geotechnical field representative at the site to coordinate and observe the borings, describe the soil and rock samples, and prepare field logs.
- Prepared this geotechnical report containing the results of our subsurface explorations and our recommendations for foundation design and construction recommendations.

The services outlined in this report are supplementary to the services previously performed by LGCI at this site in 2021, outlined in the report titled: “1824 Geo. Report,” prepared by LGCI, dated April 18, 2021.

Our scope includes attending a meeting with Nitsch and responding to MassDOT comments on our geotechnical report. These services will be performed separately and are not included in this report. Recommendations for stormwater management, erosion control, pavement design, slope stability analyses, site specific seismic and liquefaction analyses, pile analysis and design, FEMA 100-year flood elevation, historic uses of site, contaminated soil and groundwater treatment and disposal requirements and techniques, and cost or quantity estimates are not included in our scope of work.





**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

LGCI's scope of services does not include an environmental assessment for the presence or absence of wetlands or analytical testing for hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site, or mold in the soil or in any structure at the site. Any statements regarding odors, colors, or unusual or suspicious items or conditions are strictly for the information of the client.

### **1.3 Site and Project Description**

Our understanding of the site is based on our field observations, our discussions with Nitsch, and on the following documents:

- Geotechnical Report titled: "Geotechnical Letter Report, Proposed Mast Arm Borings, Route 6 at Market St., Maple Ave., and Swansea Mall Dr. (Assignment 21), Swansea, Massachusetts, LGCI Project No. 1824," (Prior Geotechnical Report) prepared by LGCI, dated April 18, 2021.
- Drawings titled: "Massachusetts Department of Transportation, Highway Division, Plan and Profile of Traffic Signal and Safety Improvements at Three Intersections on Grand Army of the Republic (GAR) Highway (Route 6), in the Town of Swansea, Bristol County" (Site Plan) prepared by MassDOT, dated November 1, 2022, and provided to LGCI by Nitsch via e-mail on December 9, 2022.

The site consists of two (2) locations along the Grand Army of the Republic Highway (Route 6) in Swansea, Massachusetts as shown in Figure 1. The locations and description of the proposed improvements that are the focus of this report are as follows:

Proposed Mast Arm – The site of the proposed mast arm is located at the intersection of Route 6 and Swansea Mall Drive. Swansea Mall Drive runs in a north-south direction and Route 6 runs in an east-west direction. Based on the Site Plan, the grades along Route 6, near proposed mast arm, rise from El. 50 feet near the intersection of Route 6 and Milford Road up to El. 40 feet, located east of the intersection of Route 6 and Swansea Mall Drive. The proposed mast arm will be located in a landscaped island in front of a gas station on the southern side of Route 6. The grades within the general vicinity of the proposed mast arm range between El. 46 feet and El. 47 feet. Based on information provided to us by Nitsch in an e-mail dated July 9, 2024, the proposed mast arm will be 35 feet long.

Proposed Retaining Wall – The site of the proposed retaining wall is located on the southern side of Route 6 near the intersection with Maple Avenue. Maple Avenue extends in a north-south direction and Route 6 extends in an east-west direction. The proposed retaining wall will be about 175 feet long and will extend between approximately Sta. 310+50 and Sta. 312+25 near the intersection. Based on the Site Plan, the grades along Route 6 within the limits of the proposed retaining wall rise from El. 88 feet on the eastern end and El. 91 feet near the intersection of Route 6 and Maple Avenue. The retaining wall increases in height in an easterly direction. At the western end, the proposed retaining wall will be approximately 0.5 feet high. At the eastern end, the proposed retaining wall will be 3 feet high.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

**1.4 Elevation Datum**

We understand that the elevations provided in the Existing Conditions Plan are referenced with respect to the North American Vertical Datum of 1988 (NAVD 88).



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

## **2. SITE AND SUBSURFACE CONDITIONS**

### **2.1 Surficial Geology**

LGCI reviewed the maps titled: “Surficial Materials Map of the Fall River Quadrangle, Massachusetts,” prepared by Stone, B.D., and DiGiacomo-Cohen, M.L. Scientific Investigation Map 3402, Quadrangle 120 – Fall River, 2018, and “Surficial Materials Map of the Somerset Quadrangle, Massachusetts,” prepared by Stone, J.R., Stone, B.D., and DiGiacomo-Cohen, M.L. Scientific Investigation Map 3402, Quadrangle 119 – Somerset, 2018.

The Surficial Geologic Map indicates that the natural soils in the general vicinity of the site consist of thin till at the proposed retaining wall and coarse deposits at the proposed mast arm.

The thin till consists of a nonsorted, nonstratified matrix of sand, some silt and little clay containing scattered pebble, cobble, and boulder clasts. The thin till is generally less than 10 to 15 feet thick.

The coarse deposits consist of sand, sand and gravel, and gravel deposits as described below.

**Sand Deposits** – The sand deposits are comprised mostly of fine to coarse sand. Coarser layers may contain up to 25 percent gravel. Finer layers may contain very fine sand, silt, and clay.

**Sand and Gravel Deposits** –The sand and gravel deposits occur as a mixture of gravel and sand within individual layers and as alternating layers of sand and gravel. The sand and gravel layers range between 25 to 50 percent gravel and 50 to 75 percent sand.

**Gravel Deposits** – The gravel deposits are comprised of at least 50 percent gravel, cobbles, and boulders. Sand occurs within gravel beds and as separate layers within the gravel.

The Surficial Geologic Map is shown in Figure 2.

### **2.2 LGCI’s Borings**

#### **2.2.1 General**

LGCI coordinated our boring locations with Nitsch and marked the boring locations in the field. Our drilling subcontractor applied for and obtained a street opening permit and a MassDOT permit, and notified Dig Safe and the Town of Swansea for utility clearance prior to starting our explorations at the site.

#### **2.2.2 Soil Borings**

LGCI engaged Northern Drilling Services, Inc. (NDS) of Northborough, Massachusetts to advance three (3) soil borings (B-1S, B-1AS, and B-2S) at the site on September 10 and 11, 2023, and on May 30 and 31, 2024. The borings were advanced with a Mobile B-48 ATV or a



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

Ditch Witch FX 60 using vacuum exploration techniques and Mobile B-46 Drill Rig using drive and wash boring techniques with 4-inch and 3-inch casings. Borings B-1S and B-2S extended to depths of 5.7 feet and 21.0 feet beneath the ground surface. Boring B-1AS extended to a depth of 5.7 feet using vacuum exploration techniques. Boring B-1AS was then continued to a depth of 26.5 feet below ground surface using drive and wash boring techniques. Boring B-1S was abandoned at a depth of 5.7 feet beneath the ground surface due to an obstruction, and boring B-1AS was advanced instead a few feet east of boring B-1AS.

An LGCI geotechnical field representative observed and logged the borings in the field.

NDS performed Standard Penetration Tests (SPT) and obtained split spoon samples with an automatic hammer at typical depth intervals of 2 feet or 5 feet as noted on the boring logs in general accordance with ASTM D-1586.

Upon completion, the boreholes were backfilled with the soil cuttings, sand, and gravel.

### **2.2.3 Boring Logs and Locations**

The boring locations are shown in Figures 3A to 3B. Appendix A contains LGCI's boring logs and Table 1 includes a summary of LGCI's borings.

## **2.3 Subsurface Conditions**

The subsurface description in this report is based on a limited number of borings and is intended to highlight the major soil strata encountered during our borings. The subsurface conditions are known only at the actual boring locations. Variations may occur and should be expected between borings locations. The boring logs represent conditions that we observed at the time of our borings and were edited, as appropriate, based on the results of the laboratory test data and inspection of the soil samples in the laboratory. The strata boundaries shown in our boring logs are based on our interpretations and the actual transitions may be gradual. Graphic soil symbols are for illustration only.

The soil strata encountered in LGCI's borings were as follows, starting at the ground surface.

Topsoil – A layer of surficial organic topsoil was encountered at the ground surface in boring B-2. The surficial organic topsoil extended to a depth of 0.3 feet beneath the ground surface.

Fill – A layer of fill was encountered at the ground surface in borings B-1S and B-1AS, and beneath the surficial organic topsoil in boring B-2S. The fill extended to depths of 10.5 and 8.0 feet beneath the ground surface in borings B-1AS and B-2S, respectively. The fill extended to the termination depth of 5.7 feet beneath the ground surface in boring B-1S, which was terminated at a shallow depth due to a concrete obstruction. The fill was mostly described as silty sand. Two (2) samples were described as bark mulch, one (1) sample was described as well graded gravel, and one (1) sample was described as poorly graded gravel. The fines content in the fill ranged between 0 and



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

25 percent, and the gravel content ranged between 5 and 30 percent. When described as gravel, the sand content in the fill ranged between 0 and 20 percent. The fill contained traces of asphalt, organic soil, wood, and roots.

A boulder was encountered between depths of 6.8 and 10.5 feet beneath the ground surface in boring B-1AS near the bottom of the fill.

The SPT N-values in this layer ranged between 3 blows per foot (bpf) and refusal, with most values ranging between 3 and 15 bpf, indicating loose to medium dense material. Please note that the high SPT N-values may be due to cobbles and boulders within the fill and may not represent the true density of the fill.

Sand and Gravel – A layer of sand and gravel was encountered beneath the fill in borings B-1AS and B-2S, and extended to their termination depths of 26.4 and 21.0 feet beneath the ground surface, respectively. The samples in this layer were mostly described as silty sand and poorly graded sand. One (1) sample was described as well graded gravel. The fines content in this layer ranged between 0 and 25 percent, and the gravel content ranged between 0 and 30 percent. When described as gravel, the sand content in this layer was approximately 5 percent. One (1) sample in the sand and gravel contained traces of weathered rock from boring B-2S.

The SPT N-values in this layer ranged between 13 bpf and refusal, with most values between 13 bpf and 28 bpf, indicating medium dense material. Please note that the high SPT N-values may be due to cobbles and boulders within the sand and gravel and may not represent the true density of the sand and gravel.

## **2.4 Groundwater**

Groundwater was encountered in all borings at depths ranging between 4.0 feet and 19.0 feet beneath the ground surface, as shown in Table 1 and in the boring logs.

The groundwater information reported herein is based on observations made during or shortly after the completion of drilling. Furthermore, the drilling procedure introduced water into the boreholes; therefore, the groundwater levels shown in the boring logs may not represent the actual groundwater conditions, as additional time may be required for the groundwater levels to stabilize. The groundwater information presented in this report only represents the conditions encountered at the time and location of the explorations. Seasonal fluctuation should be anticipated.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

### **3. EVALUATION AND RECOMMENDATIONS**

#### **3.1 General**

Based on our understanding of the proposed construction, our observation of our borings, and the results of our laboratory testing, there are a few issues that we would like to highlight for consideration and discussion.

#### **3.2 Proposed Mast Arm**

Based on the results of the boring, the subsurface conditions at the site are suitable to support the proposed mast arm foundation. The mast arm should be supported on a cored pier (drilled shaft) designed in accordance with the standard drawings: “Overhead Signal Structure & Foundation, Sheets 1 through 7,” by the MassDOT, Highway Division and dated December 2015 (Standard Drawing).

The groundwater in boring B-1AS was deep and the SPT N-values deeper than 6 feet were higher than 20 bpf which would warrant a design designation of “Dry Sand (Dense).” However, due to the multiple attempts to vacuum the soil in the general area of the proposed mast arm, we anticipate that the soil in the top 6 feet is loose. Accordingly, we recommend designing the proposed mast arm using the Standard Drawing designation “Dry Sand (Loose).”

#### **3.3 Proposed Retaining Wall**

##### **3.3.1 Existing Fill**

The existing fill observed in boring B-2S extended to a depth of 8 feet beneath the ground surface. Typically, we would recommend entirely removing the existing fill from under the proposed retaining wall, However, because the existing fill does not include zones of organic soil or other compressible material and because the proposed wall will have an exposed height of less than 3 feet, we believe that the existing fill could be improved to support a shallow retaining wall foundation. We recommend removing the top 2 feet of existing fill beneath the proposed wall footing, improving the exposed existing fill as described in Section 4.1, and restoring the grades to the bottom of the proposed wall footing using Gravel Borrow (MassDOT material M1.03.0 Type a). Laterally, the removal should extend beyond the limits of the proposed footings a distance of 2 feet.

Our recommendations for footing design are presented in Section 3.4.1. recommendations for preparation of subgrades.

##### **3.3.2 Support of Excavation**

Due to the proximity of the proposed wall to the edge of the existing roadways, we believe that open excavations may not be feasible, unless the lane closest to the proposed construction is



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

closed to traffic. If traffic must be maintained, the construction of the proposed retaining wall will require the installation of temporary support of excavation (SOE) systems. Due to the high SPT N-values in the sand and gravel layer, sheet pile walls may not be feasible. SOE systems will likely need to consist of soldier pile and lagging walls with drilled soldier piles.

**3.4 Foundation Recommendations**

**3.4.1 Footing Design for Strength Limit State**

- We recommend entirely removing asphalt and topsoil. We recommend removing the existing fill as described in Section 3.3.1. The footings should be placed on a minimum of 2 feet of Gravel Borrow (MassDOT material M1.03.0 Type a), placed directly on top of improved fill.
- Footing subgrades should be prepared in accordance with the recommendations in Section 4.1.
- Footings should be placed at a minimum depth of 4 feet below the final grade to provide adequate frost protection.
- A representative of LGCI should be engaged to observe that the foundation subgrades have been prepared in accordance with our recommendations.
- LGCI estimated the nominal bearing resistance for the Strength Limit Case for different values of the effective width of the footing, B. The results of our analyses are included in Appendix B. We varied B between 4 feet, i.e., value higher than the effective width based on the maximum allowed eccentricity in accordance with AASHTO-9, Section 10.6.3.3, and 6 feet. LGCI used the SPT data from boring B-2S to estimate the friction angle. Using a friction angle of 32 degrees for the natural sand and gravel, we estimated a nominal resistance as follows:

$$q_n = 0.6*B + 14.8 \text{ (ksf) where B is the width of the footing in feet}$$

- The factored bearing resistance,  $q_R$ , should be calculated by multiplying the nominal resistance,  $q_n$ , by the appropriate resistance factor  $\phi_b$ . The resistance factors should be as follows:

Service Limit State	1.0 (AASHTO-9, Section 11.5.7 and 10.5.5.1)
Extreme Limit State	1.0 (AASHTO-9, Section 11.5.8 and 10.5.5.3)
Strength Limit State	0.55 for Gravity and Semigravity retaining wall footings (AASHTO-9, Section 11.5.7)
Strength Limit State	0.65 for MSE wall footings (AASHTO-9, Section 11.5.7)





**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

### 3.4.1 Service Limit Load Case

LGCI estimated the service limit state bearing resistance of the proposed retaining wall foundation using the boring data and using Hough's Method for effective width of the footing, B, ranging between 5 feet and 8 feet:

$$q = 3.1 + 37.2/B \quad \text{where } B \text{ is the effective footing width in feet and } q_n \text{ is in ksf}$$

The results of our analyses are included in Appendix B. The expression above was calculated for bearing pressures that result in a settlement of 1 inch. In accordance with AASHTO-9, Sections 11.5.7 and 10.5.5.1, the limit state bearing resistance should be multiplied by a Resistance Factor of 1.0 for the Service Limit State. If the bearing resistance values listed in this section for the Service Limit Load Case are lower than those calculated for the Strength Limit Load Case, the bearing resistance of the proposed retaining wall foundation should be controlled by the Service Limit Load Case, i.e., the bearing resistance value calculated using the expression shown above for the Service Limit State should be used in the design.

### 3.5 Seismic Design

Seismic design criteria for the proposed wall are provided in this section for a 1,000-year return period in accordance with the AASHTO Guide Specifications for LRFD Seismic Bridge Design (2011 with latest revisions).

- Site Class (after removing existing fill and organic soil): D
- Peak Ground Acceleration (PGA): 0.058g
- Spectral Response Acceleration at short period ( $S_s$ ): 0.123g
- Spectral Response Acceleration at 1 sec. ( $S_1$ ): 0.034g
- Site Factor  $F_{pga}$  (Table 3.10.3.2-1): 1.6
- Site Coefficient  $F_a$  (Table 3.10.3.2-2): 1.6
- Site Coefficient  $F_v$  (Table 3.10.3.2-3): 2.4
- Adjusted Peak Ground Acceleration,  $A_s$ : 0.093g
- Adjusted Spectral Response  $S_{DS}$ : 0.197g
- Adjusted Spectral Responses  $S_{D1}$ : 0.082g

Based on the SPT data from the borings, the site soils are not susceptible to liquefaction.

### 3.6 Lateral Pressures for Wall Design

#### 3.6.1 Lateral Earth Pressures

Lateral earth pressures for the design of the proposed retaining wall are provided below.





**Geotechnical Report**  
**Proposed Mast Arm and Retaining Wall**  
**Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)**  
**Swansea, Massachusetts**  
**LGCI Project No. 2317-Rev. 1**

Coefficient of Active Earth Pressure, $K_A$ :	0.31
Coefficient of At-Rest Earth Pressure, $K_0$ :	0.47
Friction Angle between Backfill and Back of Wall, $\delta$ :	10 degrees
Total Unit Weight, $\gamma$ :	120 pcf
Buoyant Unit Weight $\gamma'$ :	57.4 pcf

Note: The coefficient of active pressure value is based on Coulomb’s equation using an internal friction angle for the backfill,  $\phi$ , of 30 degrees and a friction angle between the backfill and the structure,  $\delta$ , of 10 degrees. The coefficients of active and at-rest earth pressure are provided for wall backfill with a horizontal surface (non-sloping backfill) on the active side for the retaining wall.

- In accordance with MassDOT’s LRFD Bridge Manual (2024) Section 3.1.6, and for cantilever walls not founded on rock with a total height greater than 5 feet or any spread footing-supported gravity wall, the coefficient of lateral earth pressure should be calculated using  $K_A$ . For cantilever walls not founded on rock with a total height less than or equal to 5 feet, the coefficient of lateral earth pressure should be calculated using the following equation:  $0.5*(K_A + K_0)$ .
- In accordance with Section 3.3.1 of the 2024 MassDOT LRFD Bridge Design Manual, the passive earth pressures should be neglected in front of the walls in determining local wall stability (overturning, sliding, and bearing pressures).
- In accordance with AASHTO-9, Section 3.4.1, for the Strength Limit State, a load factor of 1.5 should be applied to the lateral earth pressure.
- We recommend placing free-draining material (Gravel Borrow, MassDOT M1.03.0, Type b) within the 3 feet immediately behind the wall. We recommend providing weep holes in the wall to promote drainage.
- We recommend providing weep holes at the bottom of cantilever retaining walls.
- Assuming that the footings are cast in place, we recommend an angle of friction  $\phi_f$  of 31 degrees between the bottom of the footing and the Gravel Borrow. In accordance with AASHTO-9, a resistance factor of 0.8 (AASHTO-9 (Table 10.5.5.2.2-1) should be used for the shear resistance between the bottom of the proposed foundation and the Gravel Borrow.

**3.6.2 Seismic Pressure**

In accordance with AASHTO Guide Specifications for LRFD Seismic Bridge Design (2011 with latest revisions), the site described in this report are classified as Seismic Design Category (SDC) A. According to the MassDOT Bridge Manual, Sections 3.4.4 and 3.4.6 According to the MassDOT Bridge Manual, Sections 3.4.9.1, a seismic analysis is not required for free-standing retaining walls classified as SDC A.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

**3.7 Protection of Roadway**

In order to maintain traffic in one lane, the excavation should be safely benched so as not to interfere with the traffic lane as described or a temporary earth support system should be installed.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

## **4. CONSTRUCTION CONSIDERATIONS**

### **4.1 Subgrade Preparation for Retaining Walls**

- Topsoil, organic materials, existing fill, abandoned utilities, buried foundations, and other below-ground structures should be entirely removed from within the footprint of the proposed retaining wall.
- Tree stumps, root balls, and roots larger than ½ inch in diameter should be removed and the cavities filled with suitable material and compacted per Section 4.3 of this report.
- The contractor should anticipate and be prepared to remove boulders from excavations.
- Should boulders be encountered at the footing subgrade, the boulders should be removed, and the resulting excavation should be backfilled with compacted Gravel Borrow.
- After the top 2 feet of existing fill are removed beneath the bottom of the proposed wall foundation, the exposed subgrade should be improved by compacting it with at least six (6) overlapping passes of a vibratory plate compactor imparting a minimum dynamic effort of 10 kips to a firm and unyielding condition. Where soft zones or pumping material are encountered, the soft zones or pumping material should be removed and replaced with Gravel Borrow (MassDOT M1.03.0, Type a).
- Where crushed stone is used for the convenience of the contractor, it should be wrapped in a geotextile fabric for separation except where introduction of the geotextile fabric promotes sliding. A geotextile fabric should not be placed between the bottoms of the footings and crushed stone.
- An LGCI representative should observe the exposed foundation subgrades prior to fill and concrete placement to verify that the exposed bearing materials are suitable for the design soil bearing pressure. If soft or loose pockets are encountered in the footing excavations, the soft or loose materials that cannot be compacted in place should be removed, and the bottom of the footing should be placed at a lower elevation on firm soil, or the resulting excavation should be backfilled with Gravel Borrow, or crushed stone wrapped in a geotextile fabric.

### **4.2 Site Preparation for Cored Pier Foundations**

#### **4.2.1 General**

Loose, soft, or organic materials as well as abandoned structures, if any, and utilities and deleterious matter encountered during initial stripping operations should be removed within the proposed foundation area. Material placed around the mast arm near the surface should be compacted.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

#### **4.2.2 Drilled Shafts**

- During construction of the cored pier foundation (drilled shaft), a temporary casing that will be removed when concrete is placed will be required to prevent collapse of the fill and sand.
- Many boulders, and possibly weathered rock, were encountered in one (1) of our borings. The contractor should be prepared to remove such materials, if encountered, during the installation of the drilled shaft or to use coring equipment to drill through the boulders or weathered rock. Where the drilled shaft extends into competent rock, coring equipment will be required.
- When the drilling operations are complete, concrete should be placed inside the casing as soon as possible.
- The concrete should be placed using a tremie pipe. We recommend pouring the pier foundation concrete on the same day that the pier is drilled.
- A representative of LGCI should assess that the pier foundation is founded on competent bearing materials and that the pier foundation installation procedures comply with our recommendations.

#### **4.3 Subgrade Protection**

The onsite fill and natural soils are frost-susceptible. If construction takes place during freezing weather, special measures should be taken to prevent the subgrade from freezing. Such measures should include the use of heat blankets or excavating the final 6 inches of soil just before pouring the concrete. Footings should be backfilled as soon as possible after footing construction. Soil used as backfill should be free of frozen material, as should the ground on which it is placed. Filling operations should be halted during freezing weather.

Materials with high fines contents are typically difficult to handle when wet, as they are sensitive to moisture content variations. Subgrade support capacities may deteriorate when such soils become wet and/or disturbed. The contractor should keep exposed subgrades properly drained and free of ponded water. Subgrades should be protected from machine and foot traffic to reduce disturbance.

#### **4.4 Fill Materials**

Fill placed beneath the foundations should meet the gradation and compaction requirements of Gravel Borrow (MassDOT M1.03.0, Type a). Fill placed behind the proposed retaining wall should meet the gradation and compaction requirements of Gravel Borrow (MassDOT M1.03.0, Type b).



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

Materials to be used as fill should first be tested for compliance with the applicable gradation specifications.

#### **4.5 Reuse of Onsite Materials**

Based on our field observations, the onsite soils are not suitable for reuse as Gravel Borrow. Should the contractor encounter materials suitable for reuse during earthwork operations, the contractor should avoid mixing the reusable soils with fine-grained and/or organic soils. The soils to be reused should be excavated and stockpiled separately for compliance testing.

Soils with 20 percent or greater fines contents are generally very sensitive to moisture content variations and are susceptible to frost. Such soils are very difficult to compact at moisture contents that are much higher or much lower than the optimum moisture content determined from the laboratory compaction test. Therefore, strict moisture control should be implemented during the compaction of onsite soils with fines contents of 20 percent or greater. The contractor should be prepared to remove and replace such soils if pumping occurs.

Materials to be used as fill should first be tested for compliance with the applicable gradation specifications.

#### **4.6 Groundwater Control Procedures**

Based on the groundwater levels measured in our borings, we do not anticipate that major groundwater control procedures will be needed during construction. We anticipate that filtered sump pumps installed in a series of sump pump pits located at least 3 feet below the bottom of planned excavations may be sufficient to handle groundwater and surface runoff that may enter the excavation during wet weather. The contractor should be prepared to use multiple deep sump pumps to maintain a dry excavation during the removal of the existing fill, especially where stacked boulders are encountered.

The contractor should be permitted to employ whatever commonly accepted means and practices are necessary to maintain the groundwater level below the bottom of the excavation and to maintain a dry excavation during wet weather. Groundwater levels should be maintained at a minimum of 1 foot below the bottom of the excavations during construction. The placement of reinforcing steel or concrete in standing water should not be permitted.

To reduce the potential for sinkholes developing over sump pump pits after the sump pumps are removed, the crushed stone placed in the sump pump pits should be wrapped in a geotextile fabric. Alternatively, the crushed stone should be entirely removed after the sump pump is no longer in use, and the sump pump pit should be restored with suitable backfill.

#### **4.7 Contractor Submittals**

The contractor should submit details about the construction procedures, including:



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

- The proposed construction sequence.
- Temporary earth support system including support of utilities, where applicable.

Contractor submittals should be prepared and sealed by a professional engineer registered in the Commonwealth of Massachusetts and should be submitted for review at least two (2) weeks before the start of the work.

#### **4.8 Temporary Excavations**

Where temporary support of excavation (SOE) systems are needed, the design of the SOE system should be performed by a professional engineer registered in the Commonwealth of Massachusetts and engaged by the contractor. The existing sand and gravel may contain cobbles and boulders that may preclude the use of sheet piles. The contractor should review the subsurface information and select the appropriate SOE system. The design should be submitted to Nitsch for review at least two (2) weeks before the start of construction. The design should include details about the size of the components of the system, and the construction and removal sequence.

All excavations to receive human traffic should be constructed in accordance with OSHA guidelines.

The site soils should generally be considered Type “C” and should have a maximum allowable slope of 1.5 Horizontal to 1 Vertical (1.5H:1V) for excavations less than 20 feet deep. Deeper excavations, if needed, should have shoring designed by a professional engineer.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain the stability of the excavation sides and bottom.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

## **5. RECOMMENDATIONS FOR FUTURE WORK**

We recommend engaging LGCI to perform the following services:

- Review contractor submittals and Request for Information (RFIs);
- Provide a field representative during construction to observe the removal of the unsuitable soil and to observe the subgrade of footings.



**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

## **6. REPORT LIMITATIONS**

Our analyses and recommendations are based on project information provided to us at the time of this report. If changes to the type, size, and location of the proposed structures or to the site grading are made, the recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions and recommendations modified in writing by LGCI. LGCI cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations, and whether our recommendations have been properly implemented in the design.

It is not part of our scope to perform a more detailed site history; therefore, we have not explored for or researched the locations of buried utilities or other structures in the area of the proposed construction. Our scope did not include environmental services or services related to moisture, mold, or other biological contaminants in or around the site.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. We cannot accept responsibility for designs based on recommendations in this report unless we are engaged to 1) make site visits during construction to check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and 2) ascertain that, in general, the work is being performed in compliance with the contract documents.

Our report has been prepared in accordance with generally accepted engineering practices and in accordance with the terms and conditions set forth in our agreement. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of Nitsch Engineering, Inc. for the specific application to the proposed Mast Arm and Retaining Wall in Swansea, Massachusetts as conceived at this time.





**Geotechnical Report  
Proposed Mast Arm and Retaining Wall  
Route 6 at Maple St. and Swansea Mall Dr. (MassDOT MSA, Assignment #7)  
Swansea, Massachusetts  
LGCI Project No. 2317-Rev. 1**

## **7. REFERENCES**

In addition to the references included in the text of the report, we used the following references:

American Association of State Highway and Transportation Officials (2020), "AASHTO LRFD Bridge Design Specifications," 9<sup>th</sup> Edition, Washington, D.C.

American Association of State Highway and Transportation Officials (2011), "AASHTO Guide Specifications for LRFD Seismic Bridge Design," 2<sup>nd</sup> Edition, with 2012 and 2014 Interim Revisions.

Massachusetts Highway Department (2023), "Standard Specifications for Highways and Bridges."

MassDOT Bridge Manual, 2024 – Hundredth Anniversary Edition (Bridge Manual).

United States Department of Labor, Occupational Safety and Health Administration [OSHA] (October 1989) "Federal Register, Volume 54, No. 209: Construction Standards for Excavations, 29 CFR, part 1926, Subpart P."

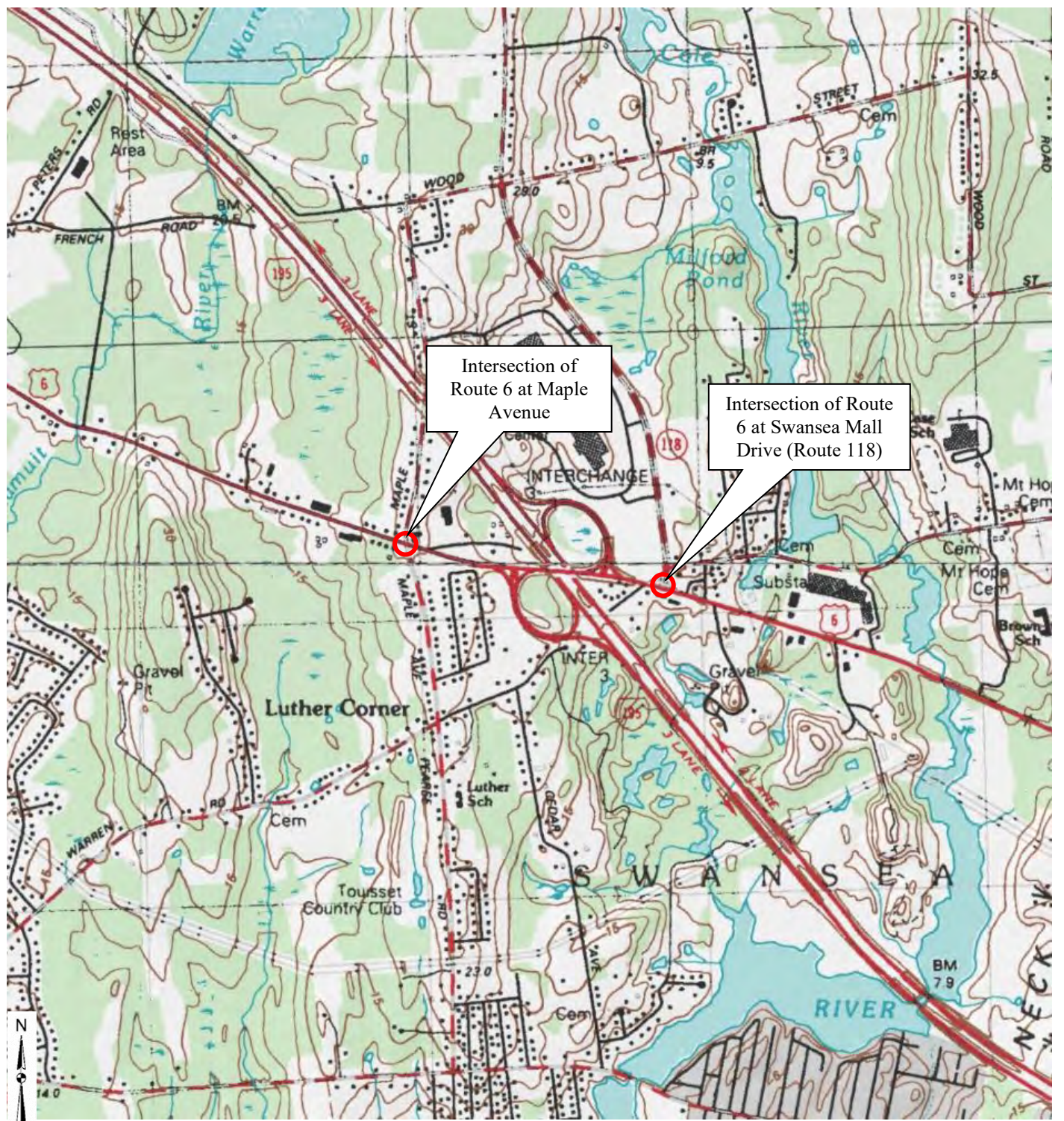
USGS Swansea, MA topographic map from <http://mapserver.mytopo.com>.



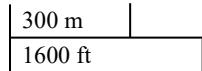
**Table 1 - Summary of LGCI's Borings  
Proposed Mast Arm and Retaining Wall  
Swansea, Massachusetts  
LGCI Project No. 2317**

Boring No.	Ground Surface Elevation (ft.) <sup>1</sup>	Groundwater <sup>2</sup> Depth / El. (ft.)	Bottom of Topsoil Depth / El. (ft.)	Bottom of Fill Depth / El. (ft.)	Bottom of Sand and Gravel Depth / El. (ft.)	Bottom of Boring Depth / El. (ft.)
B-1-S	47.0	4.0 / <b>43.0</b>	- / -	5.7 <sup>3</sup> / <b>41.3</b>	- / -	5.7 / <b>41.3</b>
B-1A-S	47.0	19.0 / <b>28.0</b>	- / -	6.8 <sup>4</sup> / <b>40.2</b>	26.4 <sup>5</sup> / <b>20.6</b>	26.4 / <b>20.6</b>
B-2-S	88.0	4.0 / <b>84.0</b>	0.3 / <b>87.7</b>	8.0 / <b>80.0</b>	21.0 <sup>5</sup> / <b>67.0</b>	21.0 / <b>67.0</b>


1. The ground surface elevation was interpolated to the nearest foot from drawing titled: "Grading Plans, Swansea, Traffic Signal & Safety Improvement at Three Intersections on Route 6," prepared by Nitsch Engineering, Inc., plotted on November 1, 2022, and provided to LGCI by Nitsch Engineering, Inc. via e-mail on December 9, 2022..
2. Groundwater was measured during drilling, at the end of drilling, or based on sample moisture whichever is shallower.
3. Boring terminated in the fill layer on a concrete obstruction.
4. A boulder was encountered in B-1A-S between depths of 6.8 to 10.5 feet, between the fill and sand and gravel layers, and was cored between depths of 8.5 and 10.5 feet.
5. Boring terminated in the sand and gravel layer.
6. "-" means layer was not encountered.



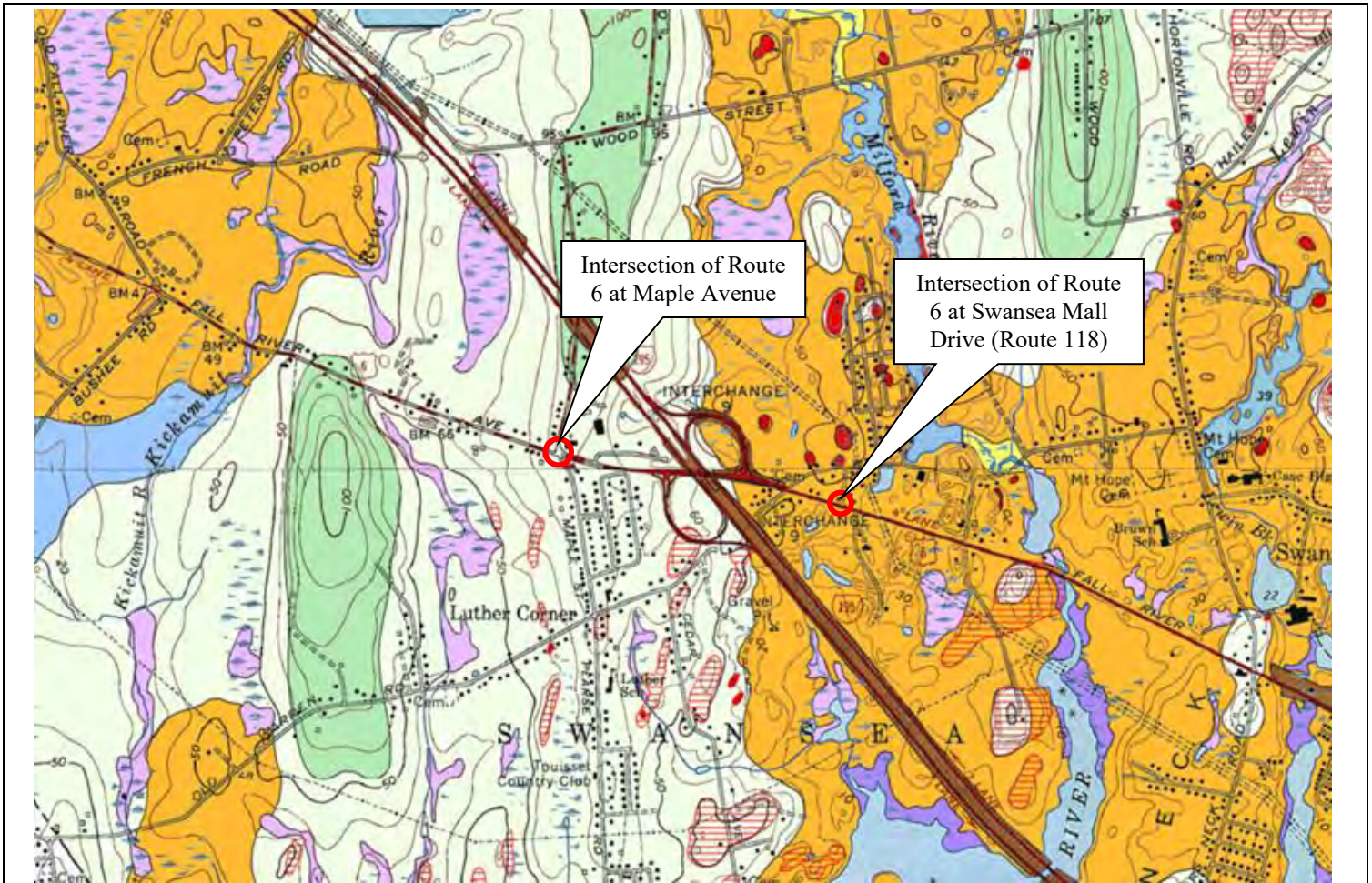
Contour Intervals: 3 meters





Note: Figure based on USGS topographic map of Swansea, MA obtained from <https://www.mytopo.com/maps/>

<p>Client: Nitsch Engineering, Inc.</p>	<p>Project: Proposed Mast Arm and Retaining Wall</p>	<p>Figure 1 – Site Location Map</p>	
 <p><b>LGCI</b> Lahlaf Geotechnical Consulting, Inc.</p>	<p>Project Location: Swansea, MA</p>	<p>LGCI Project No.: 2317</p>	<p>Date: July 2024</p>






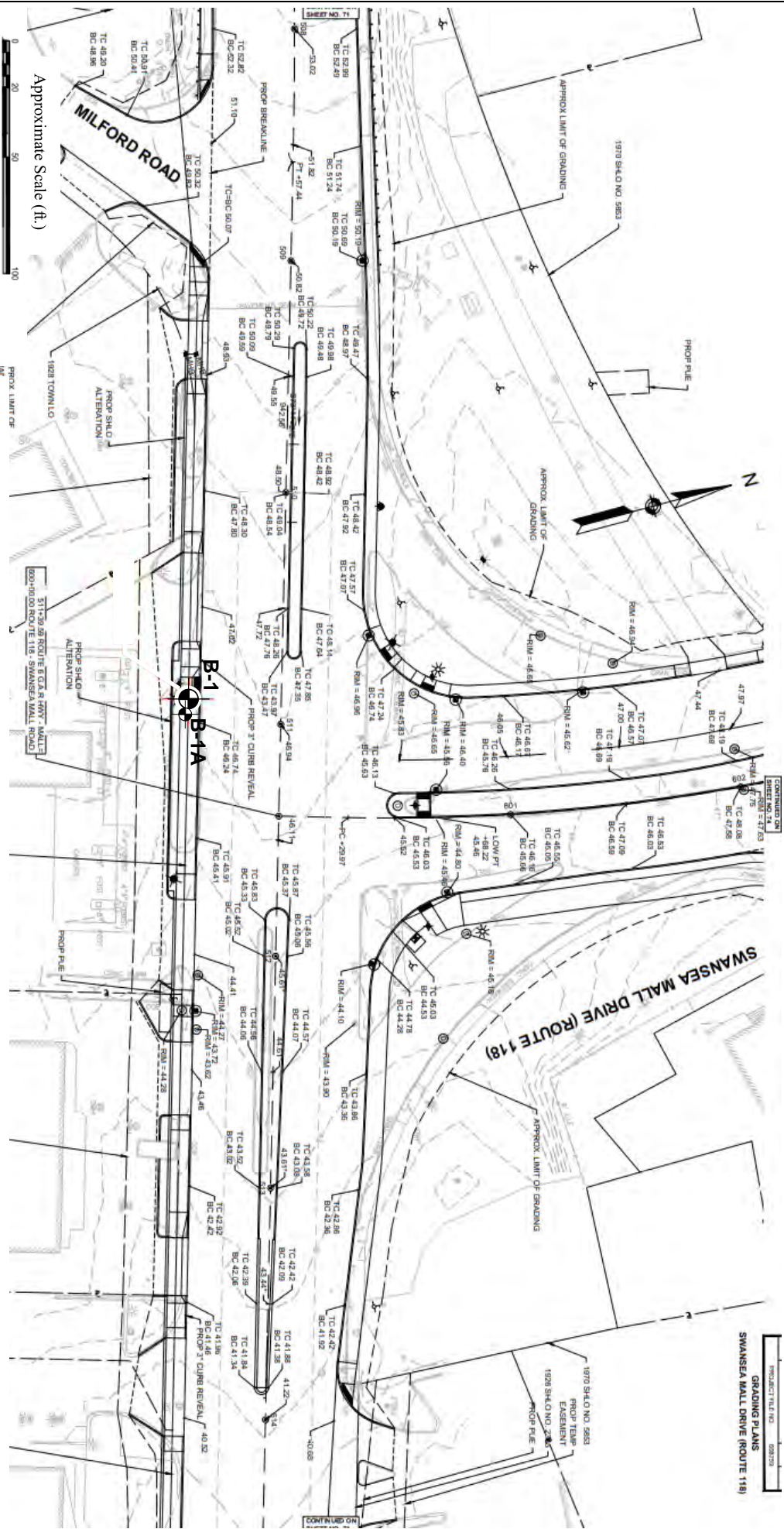
- 
**Thin till**—Nonsorted, nonstratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts; large surface boulders are common; unit was mapped where till is generally less than 10 to 15 ft thick including areas of shallow bedrock. Predominantly consists of upper till of the last glaciation; loose to moderately compact, generally sandy, commonly stony. Two facies are present in some places: a looser, coarser grained ablation facies, melted out from supraglacial position; and an underlying more compact, finer grained lodgement facies deposited subglacially. In general, both ablation and lodgement facies of upper till derived from fine-grained bedrock are finer grained, more compact, less stony and have fewer surface boulders than upper till derived from coarse-grained crystalline rocks. Across Massachusetts, fine-grained bedrock sources include the red Mesozoic sedimentary rocks of the Connecticut Valley lowland, marble in the western river valleys, and fine-grained schists in upland areas
- 
**Coarse deposits** consist of *gravel deposits*, *sand and gravel deposits*, and *sand deposits*, not differentiated in this report. *Gravel deposits* are composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises a few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. *Sand and gravel deposits* occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range between 25 and 50 percent gravel particles and between 50 and 75 percent sand particles. Layers are well sorted to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. *Sand deposits* are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay

Note: Figure based on the following maps titled:

1. "Surficial Materials Map of the Fall River Quadrangle, Massachusetts," prepared by Stone, B.D., and DiGiacomo-Cohen, M.L. Scientific Investigation Map 3402, Quadrangle 120 – Fall River, 2018.
2. "Surficial Materials Map of the Somerset Quadrangle, Massachusetts," prepared by Stone, J.R., Stone, B.D., and DiGiacomo-Cohen, M.L. Scientific Investigation Map 3402, Quadrangle 119 – Somerset, 2018.

Client: <b>Nitsch Engineering, Inc.</b>	Project: <b>Proposed Mast Arm and Retaining Wall</b>	<b>Figure 2 – Surficial Geologic Map</b>	
 <b>LGCI</b> Lahlaf Geotechnical Consulting, Inc.	Project Location: <b>Swansea, MA</b>	LGCI Project No.: <b>2317</b>	Date: <b>July 2024</b>







Approximate Scale (ft.)

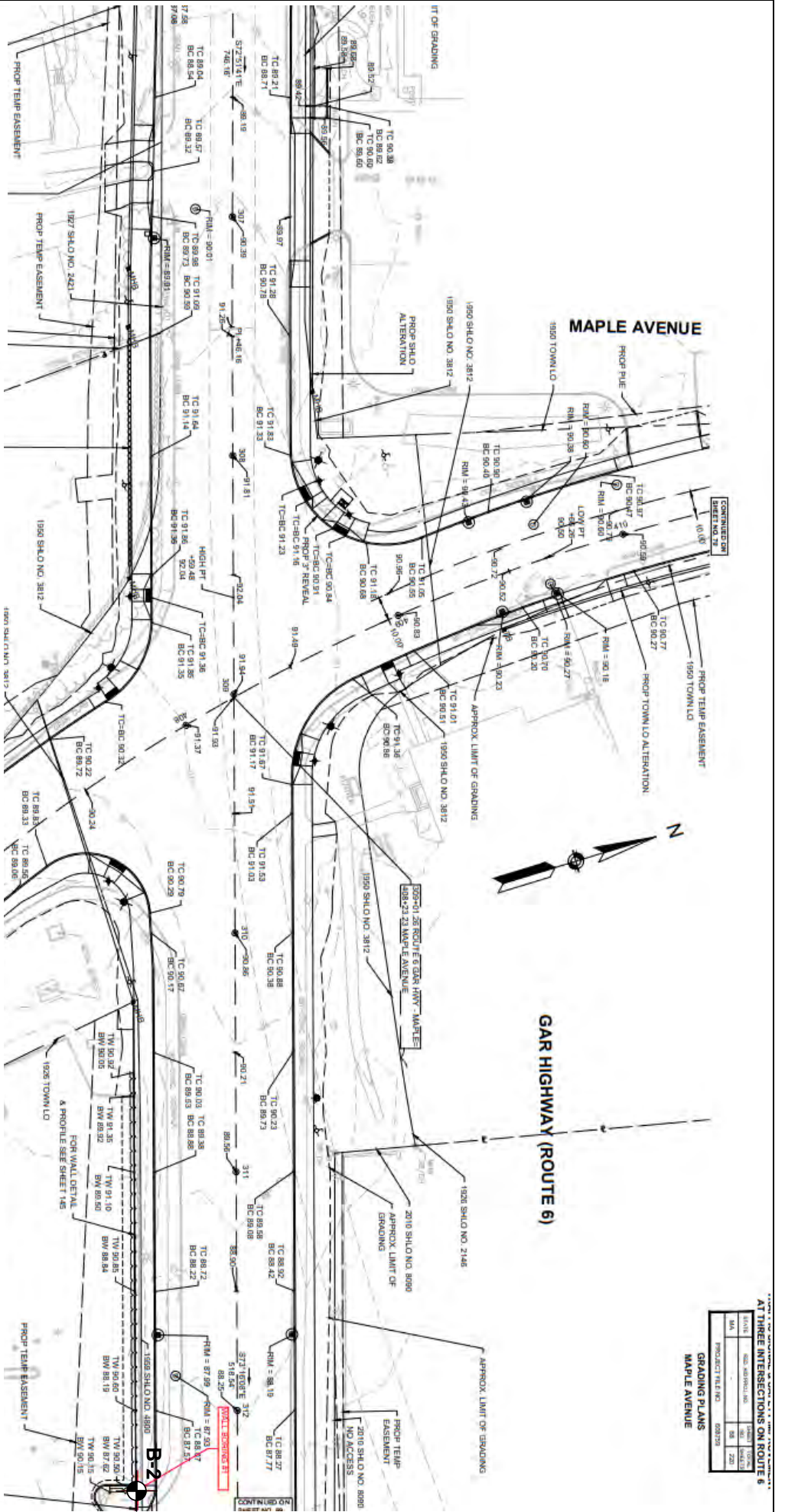


**Legend**

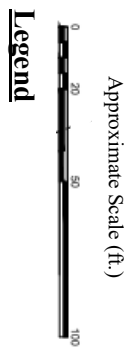
-  Approximate location of boring advanced by Northern Drill Services, Inc. (NDS) of Northborough, MA on September 11, 2023, and observed by Lahlat Geotechnical Consulting, Inc. (LGCI).
-  Approximate location of boring advanced by NDS on May 30 and 31, 2024, and observed by LGCI.

**Note**  
 Figure based on drawing titled: "Grading Plans, Swansea Mall Drive (Route 118), Swansea, Traffic Signal & Safety Improvement at Three Intersections on Route 6," prepared by Nitsch Engineering, Inc. plotted on November 1, 2022, and provided to LGCI by Nitsch Engineering, Inc. via e-mail on December 9, 2022.

Client:	Nitsch Engineering, Inc.	Project:	Proposed Mast Arm and Retaining Wall	Project Location:	Swansea, MA	LGCI Project No.:	2317	Date:	July 2024
 Lahlat Geotechnical Consulting, Inc.		Figure 3A – Boring Location Plan (Swansea Mall Dr.)							



**Note**  
 Figure based on drawing titled: "Grading Plans, Maple Avenue, Swansea, Traffic Signal & Safety Improvement at Three Intersections on Route 6," prepared by Nitsch Engineering, Inc. plotted on November 1, 2022, and provided to LGCI by Nitsch Engineering, Inc. via e-mail on December 9, 2022.



**Legend**

Approximate location of boring advanced by Northern Drill Services, Inc. (NDS) of Northborough, MA on September 10 and 11, 2023, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).

Client:	Nitsch Engineering, Inc.
Project:	Proposed Mast Arm and Retaining Wall
Project Location:	Swansea, MA
LGCI Project No.:	2317
Date:	July 2024



**Appendix A – LGCI’s Boring Logs**





# BORING LOG

**B-1-S**  
PAGE 1 OF 1

**CLIENT:** Nitsch Engineering, Inc. **PROJECT NAME:** Prop. Mast Arms and Retaining Wall  
**LGCI PROJECT NUMBER:** 2317 **PROJECT LOCATION:** Swansea, MA

**DATE STARTED:** 9/11/23 **DATE COMPLETED:** 9/11/23 **DRILLING SUBCONTRACTOR:** Northern Drill Service, Inc.  
**BORING LOCATION:** Prop. Mast Arm - Route 6 and Swansea Mall Drive **DRILLING FOREMAN:** Jon Beirholm  
**COORDINATES:** N 2733781.1117 E 734159.3294 **DRILLING METHOD:** Drive and wash with 4-inch casing  
**SURFACE EI.:** 47 ft. NAVD88 (see note 1) **TOTAL DEPTH:** 5.7 ft. **DRILL RIG TYPE/MODEL:** Mobile B-48 ATV Rig  
**WEATHER:** 80's / Sunny **HAMMER TYPE:** Automatic  
**GROUNDWATER LEVELS:** **HAMMER WEIGHT:** 140 lb. **HAMMER DROP:** 30 in.  
 ▽ **DURING DRILLING:** 4.0 ft. / El. 43.0 ft. Based on sample moisture **SPLIT SPOON DIA.:** 1.375 in. I.D., 2 in. O.D.  
 ▼ **AT END OF DRILLING:** 5.0 ft. / El. 42.0 ft. **CORE BARREL SIZE:** NA  
 ▼ **OTHER:** - **LOGGED BY:** NP **CHECKED BY:** JKW

Depth (ft.)	EI. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El. (ft.)	Material Description
0									S1 - Top 4": Bark Mulch Bot. 9": Silty SAND (SM), fine to medium, 20-25% fines, trace of organic soil, dark brown, moist
45.0		2	S1	1-1-2-6 (3)	24/13		Fill		
			S2	5-7-8-7 (15)	24/5			S2 - Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 25-30% fine to coarse subrounded gravel, trace of organic soil, dark brown, moist	
5		4	S3	32-36-37-68/2" (73)	20/2			▽ S3 - Well Graded GRAVEL with Silt and Sand (GW-GM), fine to coarse, subangular, 5-10% fines, 15-20% fine to coarse sand, gray, wet	
5.7								5.7	REMARK 1: Split spoon and drill bit refusal encountered on concrete obstruction at depth of 5.7'. Offset boring 6' east and encountered refusal at 5.7'. Offset boring additional 7' east and encountered refusal at 5.7'. Boring terminated at request of Nitsch. Bottom of borehole at 5.7 feet. Borehole backfilled with drill cuttings.
40.0									
10									
35.0									
15									
30.0									
20									
25.0									
25									

**GENERAL NOTES:**  
 1. The ground surface elevation was interpolated to the nearest foot from drawing titled: "Grading Plans, Swansea Mall Drive (Route 118), Swansea, Traffic Signal & Safety Improvement at Three Intersections on Route 6," prepared by Nitsch Engineering, Inc., plotted on November 1, 2022, and provided to LGCI by Nitsch Engineering, Inc. via e-mail on December 9, 2022.





# BORING LOG

**B-1A-S**  
PAGE 1 OF 2

CLIENT: Nitsch Engineering, Inc. PROJECT NAME: Prop. Mast Arms and Retaining Wall  
 LGCI PROJECT NUMBER: 2317 PROJECT LOCATION: Swansea, MA

DATE STARTED: 5/30/24 DATE COMPLETED: 5/31/24 DRILLING SUBCONTRACTOR: Northern Drill Service, Inc.  
 BORING LOCATION: Prop. Mast Arm - Route 6 and Swansea Mall Drive DRILLING FOREMAN: Tyler Kennedy  
 COORDINATES: N 2733776.7068 E 734173.6681 DRILLING METHOD: Drive and wash with 3-inch and 4-inch casing  
 SURFACE EI.: 47 ft. NAVD88 (see note 1) TOTAL DEPTH: 26.4 ft. DRILL RIG TYPE/MODEL: Ditch Witch FX 60 / Mobile B-46  
 WEATHER: 70's / Sunny HAMMER TYPE: Automatic  
 GROUNDWATER LEVELS: HAMMER WEIGHT: 140 lb. HAMMER DROP: 30 in.  
 ∇ DURING DRILLING: 19.0 ft. / El. 28.0 ft. Based on sample moisture SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.  
 ▼ AT END OF DRILLING: 20.5 ft. / El. 26.5 ft. CORE BARREL SIZE: NA  
 ▼ OTHER: - LOGGED BY: EP / AML CHECKED BY: NP

Depth (ft.)	EI. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
0								REMARK 1: Performed vacuum exploration to depth of 6 feet. G1 - Top 12": Bark mulch Bot. 60": Silty SAND with Gravel (SM), fine to medium, trace coarse, 15-20% fines, 20-25% fine to coarse subangular gravel, 20-25% cobbles up to 8 inches in size, trace of organic soil, trace of roots, brown, moist
45.0			G1		72/72		Fill	
6			S1	26-100/3" (100/3")	9/5			REMARK 2: Vacuum exploration refusal encountered at depth of 5.7 feet on what appears to be a concrete slab. Offset borehole 4 feet north and performed additional vacuum exploration. S1 - Poorly Graded GRAVEL (GP), fine, subangular, 0-5% fines, 0-5% fine to coarse sand, gray-black, wet
40.0								REMARK 3: 4-inch casing refusal encountered at depth of 6.8 feet on boulder. Advanced roller bit through boulder to depth of 8 feet and switched to 3-inch casing.
6.8			S2	20/0"	0/0		Boulder	REMARK 4: Boulder encountered at depth of 8.5 feet. Advanced core barrel through boulder and into soil to depth of 11.5 feet. S2 - No recovery, split spoon bouncing on obstruction
8.5			C1		24/24			C1 - Min./ft.: 4.5, 5.0 Slightly weathered, slightly fractured, coarse-grained, gray, CONGLOMERATE
10.5			S3	6-16-20-17 (36)	24/12			REMARK 5: Lost water in borehole at depth of 9 feet. Refilled water tank at Swansea DPW yard. S3 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine, trace medium to coarse, 5-10% fines, ~15% fine to coarse subrounded gravel, brown, wet
11.5			S4	18-11-9-9 (20)	24/13			S4 - Top 3": Silty SAND with Gravel (SM), fine to coarse, ~15% fines, 25-30% fine to coarse subrounded gravel, gray, moist Bot. 10": Poorly Graded SAND (SP), fine, trace medium, 0-5% fines, ~5% fine to coarse subrounded gravel, gray, moist
13.5								
15.5							Sand and Gravel	
19			S5	4-6-7-9 (13)	24/5			∇ REMARK 6: Lost water in borehole at depth of 19 feet. Refilled water tank at Swansea DPW yard. S5 - Poorly Graded SAND with Silt (SP-SM), fine, 5-10% fines, 5-10% fine to coarse subrounded gravel, gray, wet
21								
24				12-12-9-8				S6 - Top 7": Similar to S5 ,but with 20-25% gravel

**GENERAL NOTES:**

1. The ground surface elevation was interpolated to the nearest foot from drawing titled: "Grading Plans, Maple Avenue, Swansea, Traffic Signal & Safety Improvement at Three Intersections on Route 6," prepared by Nitsch Engineering, Inc., plotted on November 1, 2022, and provided to LGCI by Nitsch Engineering, Inc. via e-mail on December 9, 2022.



# BORING LOG

**B-1A-S**  
PAGE 2 OF 2

**CLIENT:** Nitsch Engineering, Inc. **PROJECT NAME:** Prop. Mast Arms and Retaining Wall  
**LGCI PROJECT NUMBER:** 2317 **PROJECT LOCATION:** Swansea, MA

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
		24	S6	(21)	24/10			
		26	S7	100/5"	5/5	7	Sand and Gravel	Bot. 3": Well Graded GRAVEL (GW), fine to coarse, subrounded to subangular, 0-5% fines, ~5% fine to coarse sand, gray, wet (possible wash)
20.0		26.4						S7 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine, 5-10% fines, 20-25% fine to coarse subrounded gravel, gray, wet REMARK 7: Split spoon refusal encountered at depth of 26.4 feet. Boring terminated. Bottom of borehole at 26.4 feet. Borehole backfilled with drill cuttings, rock core, and 5 bags of gravel.
30								
15.0								
35								
10.0								
40								
5.0								
45								
0.0								
50								
-5.0								
55								
-10.0								
60								



# BORING LOG

**B-2-S**  
PAGE 1 OF 1

**CLIENT:** Nitsch Engineering, Inc. **PROJECT NAME:** Prop. Mast Arms and Retaining Wall  
**LGCI PROJECT NUMBER:** 2317 **PROJECT LOCATION:** Swansea, MA

**DATE STARTED:** 9/10/23 **DATE COMPLETED:** 9/11/23 **DRILLING SUBCONTRACTOR:** Northern Drill Service, Inc.  
**BORING LOCATION:** Near Eastern End of Prop. Retaining Wall - Route 6 **DRILLING FOREMAN:** Jon Beirholm  
**COORDINATES:** N 2734148.1827 E 731511.2533 **DRILLING METHOD:** Drive and wash with 4-inch casing  
**SURFACE EI.:** 88 ft. NAVD88 (see note 1) **TOTAL DEPTH:** 21 ft. **DRILL RIG TYPE/MODEL:** Mobile B-48 ATV Rig  
**WEATHER:** 80's / Sunny **HAMMER TYPE:** Automatic  
**GROUNDWATER LEVELS:** **HAMMER WEIGHT:** 140 lb. **HAMMER DROP:** 30 in.  
 ∇ **DURING DRILLING:** 4.0 ft. / El. 84.0 ft. Based on sample moisture **SPLIT SPOON DIA.:** 1.375 in. I.D., 2 in. O.D.  
 ▼ **AT END OF DRILLING:** 13.5 ft. / El. 74.5 ft. **CORE BARREL SIZE:** NA  
 ∇ **OTHER:** - **LOGGED BY:** NP **CHECKED BY:** JKW

Depth (ft.)	EI. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
		0					Topsoil	S1 - Top 4": Topsoil
		0.3	S1	4-6-9-20 (15)	24/16		Fill	Bot. 12": Silty SAND with Gravel (SM), fine to coarse, ~15% fines, 20-25% fine to coarse subrounded gravel, trace of organic soil, trace of asphalt, dark brown, moist
	85.0	2	S2	35-41-42-27 (83)	24/17			S2 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 25-30% fine to coarse subangular gravel, gray, moist
5		4	S3	7-8-5-5 (13)	24/20			∇ S3 - Silty SAND (SM), fine to medium, 20-25% fines, 5-10% fine to coarse subrounded gravel, gray, wet
		6	S4	2-3-3-4 (6)	24/18			S4 - Silty SAND (SM), fine to medium, 20-25% fines, 5-10% fine to coarse subangular gravel, trace of organic soil, light brown, wet
	80.0	8	S5	18-44-45-49 (89)	24/15		Sand and Gravel	S5 - Silty SAND (SM), fine to medium, 15-20% fines, 5-10% fine subrounded gravel, light brown, wet
10		10	S6	60-55-49-67 (104)	24/19			S6 - Similar to S5, 20-25% fines
		12						
	75.0	14	S7	12-12-16-39 (28)	24/21			▼ S7 - Silty SAND (SM), fine to medium, 20-25% fines, 0-5% fine subrounded gravel, light brown, wet
15		16						
	70.0	19	S8	27-38-23-31 (61)	24/7			S8 - Silty SAND with Gravel (SM), fine to coarse, 20-25% fines, 20-25% fine to coarse subrounded gravel, trace of weathered rock, gray, wet
20		21						
	65.0							Bottom of borehole at 21.0 feet. Borehole backfilled with drill cuttings, 5 bags of gravel, and 1 bag of sand.
25								

**GENERAL NOTES:**

1. The ground surface elevation was interpolated to the nearest foot from drawing titled: "Grading Plans, Maple Avenue, Swansea, Traffic Signal & Safety Improvement at Three Intersections on Route 6," prepared by Nitsch Engineering, Inc., plotted on November 1, 2022, and provided to LGCI by Nitsch Engineering, Inc. via e-mail on December 9, 2022.

**Appendix B – Calculations**

## **Bearing Resistance**



**BEARING RESISTANCE CALCULATION**

LGCI Project No.:	2317	Calculated by:	AML
LGCI Project Name:	Prop. Mast Arm and Retaining Wall	Date:	7/8/2024
Location:	Swansea, MA	Checked by:	SL
Client:	Nitsch Engineering	Date:	7/9/2024

$$q_n = c N_{cm} + 0.5 \gamma B N_{\gamma m} C_{w\gamma} + q N_{qm} C_{wq} \quad (\text{AASHTO 9, 10.6.3.2a-1})$$

$$q_n = c N_c S_c i_c + 0.5 \gamma B N_\gamma S_\gamma i_\gamma C_{w\gamma} + q N_q S_q d_q i_q C_{wq}$$

where:

$q_n$  = Nominal bearing resistance

$c$  = shear strength

$B$  = Width of footing

$q$  = (total or buoyant unit weight,  $\gamma$  or  $\gamma'$ ) x (depth of embedment,  $D_f$ )

$N_{c, \gamma, q}$  = Bearing Capacity Factors (AASHTO 9, Table 10.6.3.1.2a-1)

$C_{w\gamma}$  and  $C_{wq}$  = Correction Factors for the g.w. Table (AASHTO 9, Table 10.6.3.1.2a-2)

$S_{c, \gamma, q}$  = Shape Factors (AASHTO 9, Table 10.6.3.1.2a-3)

$d_q$  = Depth Correction Factor (AASHTO 9, 10.6.3.1.2a-10)

$i_{c, \gamma, q}$  = Incline loading factors (AASHTO 9, Equations 10.6.3.1.2a-5 to -9) - use 1.0 (see below)

Given:

Bearing material (fine grained or granular): Granular

Thickness of granular soil

beneath footing, $h =$	0	feet	
Footing inclination, $\alpha, =$	0	Degrees	
Width of footing, $B =$	5	feet	
Effective width, $B' =$	5	feet	(See Note 1 below)
Wall height, $H =$	8	feet	(See Note 2 below)
Length of footing, $L =$	180	feet	
Depth of Embedment, $D_f =$	4	feet	(See Note 2 below)
Groundwater depth, $d_w =$	4	feet	
Load inclination, $\theta =$	90	Degrees	(AASHTO 9, Figure C10.6.3.2a-1)
Angle of friction, $\phi =$	32	Degrees	See shear strength (See page 5)

Shear strength ( $c$ or $s_u$ ) =	0	psf
Unit weight of soil, $\gamma =$	120	pcf
Unit Weight of Water, $\gamma_w =$	62.4	pcf

$N_c =$	35.5	$N_{cm} =$	36.14
$N_q =$	23.2	$N_{qm} =$	28.00
$N_\gamma =$	30.2	$N_{\gamma m} =$	29.86

Notes:

1. For granular bearing materials  $B=B'$ .

2. Depth of embedment must be at least 4 feet.

See commentary C.10.6.3.1.2a

$S_c =$	1.018	$i_c =$	1	$b_c =$	1.00	$d_q =$	1.19	$C_{wq} =$	1
$S_q =$	1.017	$i_q =$	1	$b_q =$	1.00			$C_{w\gamma} =$	0.5
$S_\gamma =$	0.989	$i_\gamma =$	1						

$q_n = 17,921$  psf

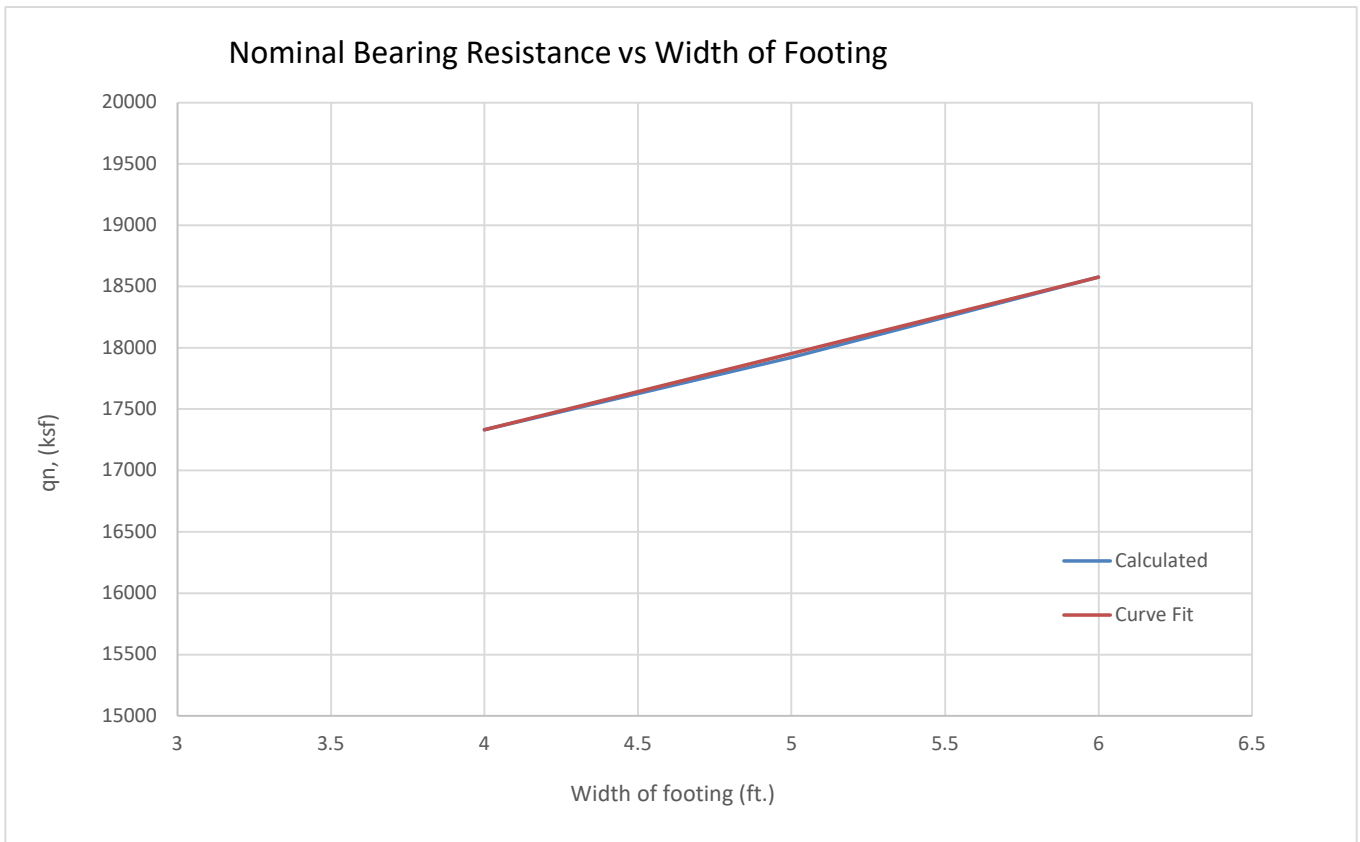
For Allowable Stress Design (ASD), use FS = 3 i. e.,  $q_{all} = 5,974$  psf

Resistance Factor:

Shallow Foundations: AASHTO 9, Table 10.5.5.2.2-1 0.45  
 Gravity and Semigravity Walls: AASHTO 9, Table 11.5.7-1 0.55  
 MSE Walls: AASHTO 9, Table 11.5.7-1 0.65

B(ft)	Calculated Regression	
4	17332	17332
5	17921	17955
6	18578	18578

Slope = 623  
 Intercept = 14840  
 $q_n = 0.62 B + 14.84$



Shape Factors (AASHTO 9, Table 10.6.3.1.2a-3)

$$\phi = 0, s_c = 1 + (B/5L)$$

$$\phi > 0, s_c = 1 + (B/L) (N_q/N_c) = 1.018$$

$$\phi = 0, s_q = 1$$

$$s_q = 1 + (B/L) \tan \phi = 1.017$$

$$\phi = 0, s_\gamma = 1$$

$$s_\gamma = 1 - 0.4 (B/L) = 0.989$$

Load Inclination Factors (if horizontal load other than lateral pressure, enter manually)

**DO NOT USE INCLINATION FACTOR (see Commentary on page 10-71 of AASHTO 9)**

$$i_c = i_q - [(1-i_q)/(N_q-1)] \quad \text{for } \phi > 0$$

$$i_c = 1 - (nh/BLcN_c) \quad \text{for } \phi = 0$$

$$i_c = 0.519 \text{ Use 1}$$

$$i_q = [1 - h/(v + BLc \cot \phi)]^n = 0.540 \text{ Use 1}$$

$$i_\gamma = [1 - h/(v + BLc \cot \phi)]^{(n+1)} = 0.395 \text{ Use 1}$$

$$n = [2 + L/B]/[1 + L/B] \cos^2 \theta + [(2 + B/L)/(1 + B/L)] \sin^2 \theta = 1.973$$

Estimate P, and Q. Use:

Coefficient of lateral earth pressure, $K_A =$	0.285
Wall height, H =	8 feet
Groundwater depth, $d_w =$	4 feet
Wall Toe, $t_w =$	0.75 feet
Unit weight of fill, $\gamma_{fill} =$	125 pcf
Unit weight of water, $\gamma_w =$	62.4 pcf
$v = (\gamma_{fill} * H)(B - t_w) =$	4,250 plf
$h = K_A(\gamma_{fill} * H) * H/2 =$	1,140 plf

Base inclination Factors (Based on AASHTO 2002. Not included in AASHTO 2007)

$$b_q = b_\gamma = (1 - \alpha \tan \phi)^2 = 1.00$$

$$b_c = b_\gamma - (1 - b_\gamma)/(N_c \tan \phi) \quad \text{for } \phi > 0$$

$$b_c = 1 - (2\alpha/(\pi + 2)) \quad \text{for } \phi = 0$$

$$b_c = 1.00$$



Depth Correction Factor

AASHTO 9 10.6.3.1.2a-10

$$d_q = \quad 1.2 \quad 1.2$$

If  $d_q > 1.4$  use 1.4, otherwise use  $d_q$  (Per AASHTO Section 10.6.3.1.2 pp. 10-73 for soil above bot. of footing as competent as subgrade of footing)

Groundwater Correction Factor

$$C_{wq} \quad 1$$

$$C_{w\gamma} \quad 0.5$$

Table 4-3 Manual On Estimating Soil Properties for Foundation Design - EPP I 1990  
 N VERSUS  $\bar{\phi}_{tc}$  RELATIONSHIPS

N Value (blows/ft or 305 mm)	Relative Density	Approximate $\bar{\phi}_{tc}$ (degrees)	
		(a)	(b)
0 to 4	very loose	< 28	< 30
4 to 10	loose	28 to 30	30 to 35
10 to 30	medium	30 to 36	35 to 40
30 to 50	dense	36 to 41	40 to 45
> 50	very dense	> 41	> 45

a - Source: Peck, Hanson, and Thornburn (12), p. 310.  
 b - Source: Meyerhof (13), p. 17.

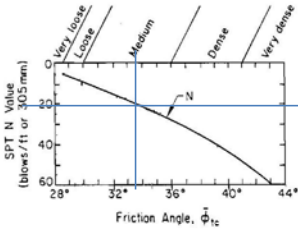


Figure 4-12. N versus  $\bar{\phi}_{tc}$

Source: Peck, Hanson, and Thornburn (12), p. 310.

can be approximated as follows:

$$\bar{\phi}_{tc} = \tan^{-1} [0.1 + 0.38 \log (q_c/\bar{\sigma}_{v0})] \quad (4-12)$$

Adjustments to this figure and equation for soils of different compressibility and stress history should be made as described in Section 2.

4-15

Correct for hammer energy:  $N60=80/60^*$

Use borings B-2 in  
 top 20 feet (less top 2 feet)  
 Start at 4' below g.s.

SPT N-Values		
	B-2	N60
	13	17.3
	6	8.0
	<b>89</b>	<b>118.7</b>
	<b>104</b>	<b>138.7</b>
	28	37.3
	<b>61</b>	<b>81.3</b>
	Avg. =	20.9

**Bold = Ignored**

N60avg = 21 Phi = 33.5 Degrees by

Navg = Phi = Degrees by

Use Phi =

Peck et al., say:

Meyerhof say:

**32**

**32** degrees

Degrees

**AASHTO 9, Table 10.6.3.1.2a-1**

Angle of friction, $\phi$	$N_c$	$N_q$	$N_\gamma$
0	5.14	1	0
1	5.4	1.1	0.1
2	5.6	1.2	0.2
3	5.9	1.3	0.2
4	6.2	1.4	0.3
5	6.5	1.6	0.5
6	6.8	1.7	0.6
7	7.2	1.9	0.7
8	7.5	2.1	0.9
9	7.9	2.3	1
10	8.4	2.5	1.2
11	8.8	2.7	1.4
12	9.3	3	1.7
13	9.8	3.3	2
14	10.4	3.6	2.3
15	11	3.9	2.7
16	11.6	4.3	3.1
17	12.3	4.8	3.5
18	13.1	5.3	4.1
19	13.9	5.8	4.7
20	14.8	6.4	5.4
21	15.8	7.1	6.2
22	16.9	7.8	7.1
23	18.1	8.7	8.2
24	19.3	9.6	9.4
25	20.7	10.7	10.9
26	22.3	11.9	12.5
27	23.9	13.2	14.5
28	25.8	14.7	16.7
29	27.9	16.4	19.3
30	30.1	18.4	22.4
31	32.7	20.6	26
32	35.5	23.2	30.2
33	38.6	26.1	35.2
34	42.2	29.4	41.1
35	46.1	33.3	48
36	50.6	37.8	56.3
37	55.6	42.9	66.2
38	61.4	48.9	78
39	67.9	56	92.3
40	75.3	64.2	109.4
41	83.9	73.9	130.2
42	93.7	85.4	155.6
43	105.1	99	186.5
44	118.4	115.3	224.6
45	133.9	134.9	271.8

Consideration should be given to the relative change in the computed nominal resistance based on effective versus gross footing dimensions for the size of footings typically used for bridges. Judgment should be used in deciding whether the use of gross footing dimensions for computing nominal bearing resistance at the strength limit state would result in a conservative design.

10.6.3.1.2—Theoretical Estimation

10.6.3.1.2a—Basic Formulation

C10.6.3.1.2a

The nominal bearing resistance shall be estimated using accepted soil mechanics theories and should be based on measured soil parameters. The soil parameters used in the analyses shall be representative of the soil shear strength under the considered loading and subsurface conditions.

The nominal bearing resistance of spread footings on cohesionless soils shall be evaluated using effective stress analyses and drained soil strength parameters.

The nominal bearing resistance of spread footings on cohesive soils shall be evaluated for total stress analyses and undrained soil strength parameters. In cases where the cohesive soils may soften and lose strength with time, the bearing resistance of these soils shall also be evaluated for permanent loading conditions using effective stress analyses and drained soil strength parameters.

For spread footings bearing on compacted soils, the nominal bearing resistance shall be evaluated using the more critical of either total or effective stress analyses.

Except as noted below, the nominal bearing resistance of a soil layer, in ksf, should be taken as:

$$q_n = cN_{cm} + \gamma_q D_f N_{qm} C_{uq} + 0.5\gamma_f B N_{\gamma m} C_{w\gamma} \quad (10.6.3.1.2a-1)$$

in which:

$$N_{cm} = N_c s_c i_c \quad (10.6.3.1.2a-2)$$

$$N_{qm} = N_q s_q d_q i_q \quad (10.6.3.1.2a-3)$$

$$N_{\gamma m} = N_{\gamma} s_{\gamma} i_{\gamma} \quad (10.6.3.1.2a-4)$$

where:

- $c$  = cohesion, taken as undrained shear strength (ksf)
- $N_c$  = cohesion term (undrained loading) bearing capacity factor as specified in Table 10.6.3.1.2a-1 (dim)
- $N_q$  = surcharge (embedment) term (drained or undrained loading) bearing capacity factor as specified in Table 10.6.3.1.2a-1 (dim)

The bearing resistance formulation provided in Eqs. 10.6.3.1.2a-1 through 10.6.3.1.2a-4 is the complete formulation as described in the Munfakh et al. (2001). However, in practice, not all of the factors included in these equations have been routinely used.

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@lgcinc.net).

- $N_\gamma$  = unit weight (footing width) term (drained loading) bearing capacity factor as specified in Table 10.6.3.1.2a-1 (dim)
- $\gamma_q$  = total (moist) unit weight of soil above the bearing depth of the footing (kcf)
- $\gamma_f$  = total (moist) unit weight of soil below the bearing depth of the footing (kcf)
- $D_f$  = footing embedment depth (ft)
- $B$  = footing width (ft)
- $C_{wq}, C_{w_f}$  = correction factors to account for the location of the groundwater table as specified in Table 10.6.3.1.2a-2 (dim)
- $s_{cs}, s_\gamma, s_q$  = footing shape correction factors as specified in Table 10.6.3.1.2a-3 (dim)
- $d_q$  = depth correction factor to account for the shearing resistance along the failure surface passing through cohesionless material above the bearing elevation determined from Eq. 10.6.3.1.2a-10 (dim)
- $i_c, i_\gamma, i_q$  = load inclination factors determined from Eqs. 10.6.3.1.2a-5 or 10.6.3.1.2a-6, and 10.6.3.1.2a-7 and 10.6.3.1.2a-8 (dim)

For  $\phi_f = 0$ :

$$i_c = 1 - mH/cBLN_c \quad (10.6.3.1.2a-5)$$

For  $\phi_f > 0$ :

$$i_c = i_q - [(1 - i_q)/(N_q - 1)] \quad (10.6.3.1.2a-6)$$

in which:

$$i_q = \left[ 1 - \frac{H}{(V + cBL \cot \phi_f)} \right]^n \quad (10.6.3.1.2a-7)$$

$$i_\gamma = \left[ 1 - \frac{H}{V + cBL \cot \phi_f} \right]^{(n+1)} \quad (10.6.3.1.2a-8)$$

$$n = [(2 + L/B)/(1 + L/B)] \cos^2 \theta \quad (10.6.3.1.2a-9)$$

+ [(2 + B/L)/(1 + B/L)] sin<sup>2</sup>  $\theta$   
 where:

- $B$  = footing width (ft)
- $L$  = footing length (ft)
- $H$  = unfactored horizontal load (kips)
- $V$  = unfactored vertical load (kips)
- $\theta$  = projected direction of load in the plane of the footing, measured from the side of length  $L$  (degrees)

Most geotechnical engineers nationwide have not used the load inclination factors. This is due, in part, to the lack of knowledge of the vertical and horizontal loads at the time of geotechnical explorations and preparation of bearing resistance recommendations.

Furthermore, the basis of the load inclination factors computed by Eqs. 10.6.3.1.2a-5 to 10.6.3.1.2a-8 is a combination of bearing resistance theory and small scale load tests on 1.0 in. wide plates on London Clay and Ham River Sand (Meyerhof, 1953). Therefore, the factors do not take into consideration the effects of depth of embedment. Meyerhof further showed that for footings with a depth of embedment ratio of  $D_f/B = 1$ , the effects of load inclination on bearing resistance are relatively small. The theoretical formulation of load inclination factors were further examined by Brinch-Hansen (1970), with additional modification by Vesic (1973) into the form provided in Eqs. 10.6.3.1.2a-5 to 10.6.3.1.2a-8.

It should further be noted that the resistance factors provided in Article 10.5.5.2.2 were derived for vertical loads. The applicability of these resistance factors to design of footings resisting inclined load combinations is not currently known. The combination of the resistance factors and the load inclination factors may be overly conservative for footings with an embedment of approximately  $D_f/B = 1$  or deeper because the load inclination factors were derived for footings without embedment.

In practice, therefore, for footings with modest embedment, consideration may be given to omission of the load inclination factors.

Figure C10.6.3.1.2a-1 shows the convention for determining the  $\theta$  angle in Eq. 10.6.3.1.2a-9.

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@lgcinc.net).

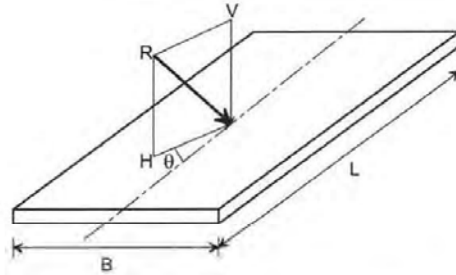


Figure C10.6.3.1.2a-1—Inclined Loading Conventions

Table 10.6.3.1.2a-1—Bearing Capacity Factors  $N_c$  (Prandtl, 1921),  $N_q$  (Reissner, 1924), and  $N_\gamma$  (Vesic, 1975)

$\phi_f$	$N_c$	$N_q$	$N_\gamma$	$\phi_f$	$N_c$	$N_q$	$N_\gamma$
0	5.14	1.0	0.0	23	18.1	8.7	8.2
1	5.4	1.1	0.1	24	19.3	9.6	9.4
2	5.6	1.2	0.2	25	20.7	10.7	10.9
3	5.9	1.3	0.2	26	22.3	11.9	12.5
4	6.2	1.4	0.3	27	23.9	13.2	14.5
5	6.5	1.6	0.5	28	25.8	14.7	16.7
6	6.8	1.7	0.6	29	27.9	16.4	19.3
7	7.2	1.9	0.7	30	30.1	18.4	22.4
8	7.5	2.1	0.9	31	32.7	20.6	26.0
9	7.9	2.3	1.0	32	35.5	23.2	30.2
10	8.4	2.5	1.2	33	38.6	26.1	35.2
11	8.8	2.7	1.4	34	42.2	29.4	41.1
12	9.3	3.0	1.7	35	46.1	33.3	48.0
13	9.8	3.3	2.0	36	50.6	37.8	56.3
14	10.4	3.6	2.3	37	55.6	42.9	66.2
15	11.0	3.9	2.7	38	61.4	48.9	78.0
16	11.6	4.3	3.1	39	67.9	56.0	92.3
17	12.3	4.8	3.5	40	75.3	64.2	109.4
18	13.1	5.3	4.1	41	83.9	73.9	130.2
19	13.9	5.8	4.7	42	93.7	85.4	155.6
20	14.8	6.4	5.4	43	105.1	99.0	186.5
21	15.8	7.1	6.2	44	118.4	115.3	224.6
22	16.9	7.8	7.1	45	133.9	134.9	271.8

Table 10.6.3.1.2a-2—Coefficients  $C_{wq}$  and  $C_{w\gamma}$  for Various Groundwater Depths

$D_w$	$C_{wq}$	$C_{w\gamma}$
0.0	0.5	0.5
$D_f$	1.0	0.5
$>1.5B + D_f$	1.0	1.0

Where the position of groundwater is at a depth less than 1.5 times the footing width below the footing base, the bearing resistance is affected. The highest anticipated groundwater level should be used in design.

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf gci@igcinc.net).

Table 10.6.3.1.2a-3—Shape Correction Factors  $s_c, s_f, s_q$

Factor	Friction Angle	Cohesion Term ( $s_c$ )	Unit Weight Term ( $s_f$ )	Surcharge Term ( $s_q$ )
Shape Factors $s_c, s_f, s_q$	$\phi_f = 0$	$1 + \left(\frac{B}{5L}\right)$	1.0	1.0
	$\phi_f > 0$	$1 + \left(\frac{B}{L}\right)\left(\frac{N_c}{N_f}\right)$	$1 - 0.4\left(\frac{B}{L}\right)$	$1 + \left(\frac{B}{L} \tan \phi_f\right)$

$$d_q = 1 + 2 \tan \phi_f (1 - \sin \phi_f)^2 \arctan \left( \frac{D_f}{B} \right) \tag{10.6.3.1.2a-10}$$

Eq. 10.6.3.1.2a-10 has been verified to cover a range of friction angle,  $\phi_f$ , of 32 degrees to 42 degrees, and a range of  $D_f/B$  of 1 to 8. Depth correction factor values beyond this range have not been verified at this time.

where:

- $d_q$  = depth correction factor to account for the shearing resistance along the failure surface passing through cohesionless material above the bearing elevation(dim)
- $\phi_f$  = angle of internal friction of soil (degrees)
- $D_f$  = footing embedment depth (ft)
- $B$  = footing width (ft)

Arctan ( $D_f/B$ ) is in radians.

The depth correction factor should be used only when the soils above the footing bearing elevation are as competent as the soils beneath the footing level; otherwise, the depth correction factor should be taken as 1.0. The depth correction factor,  $d_q$ , shall not exceed 1.4.

10.6.3.1.2b—Considerations for Punching Shear

C10.6.3.1.2b

If local or punching shear failure is possible, the nominal bearing resistance shall be estimated using reduced shear strength parameters  $c^*$  and  $\phi^*$  in Eqs. 10.6.3.1.2b-1 and 10.6.3.1.2b-2. The reduced shear parameters may be taken as:

$$c^* = 0.67c \tag{10.6.3.1.2b-1}$$

$$\phi^* = \tan^{-1}(0.67 \tan \phi_f) \tag{10.6.3.1.2b-2}$$

where:

- $c^*$  = reduced effective stress soil cohesion for punching shear (ksf)
- $\phi^*$  = reduced effective stress soil friction angle for punching shear (degrees)

Local shear failure is characterized by a failure surface that is similar to that of a general shear failure but that does not extend to the ground surface, ending somewhere in the soil below the footing. Local shear failure is accompanied by vertical compression of soil below the footing and visible bulging of soil adjacent to the footing but not by sudden rotation or tilting of the footing. Local shear failure is a transitional condition between general and punching shear failure. Punching shear failure is characterized by vertical shear around the perimeter of the footing and is accompanied by a vertical movement of the footing and compression of the soil immediately below the footing but does not affect the soil outside the loaded area. Punching shear failure occurs in loose or compressible soils, in weak soils under slow (drained) loading, and in dense sands for deep footings subjected to high loads.

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf igci@igcinc.net).

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@gcinc.net).

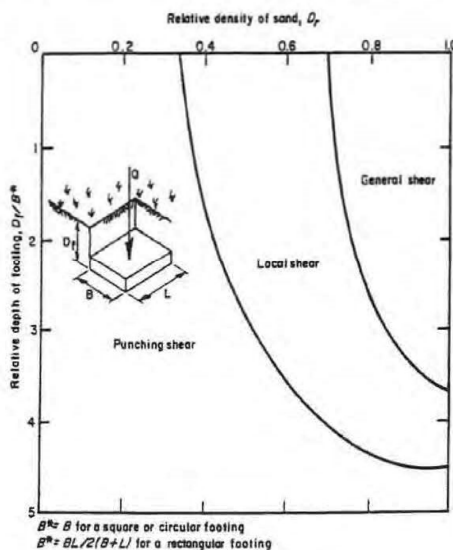


Figure C10.6.3.1.2b-1—Modes of Bearing Capacity Failure for Footings in Sand

10.6.3.1.2c—Considerations for Footings on Slopes

For footings constructed on or adjacent to slopes, the nominal bearing resistance shall be determined using a reduction coefficient ( $RC_{BC}$ ) as presented in Tables 10.6.3.1.2c-1 and 10.6.3.1.2c-2. The reduction coefficient should be applied directly to the nominal bearing resistance calculated from Eq.10.6.3.1.2a-1 for footings on level ground and supported on the same foundation soil conditions.

The nominal resistance of footings on or adjacent to slopes shall be taken as:

$$q_{n-sloping\ ground} = RC_{BC} \cdot q_n = RC_{BC} (cN_c + 0.5\gamma BN_\gamma) \quad (10.6.3.1.2c-1)$$

where:

- $q_{n-sloping\ ground}$  = the nominal footing bearing resistance considering the effect of sloping ground (ksf)
- $RC_{BC}$  = reduction coefficient for bearing resistance due to slope effects (dim)

and other variables are as defined in Article 10.6.3.1.2a and Figure 10.6.3.1.2c-1. The bearing capacity factors  $N_c$  and  $N_\gamma$  are obtained in accordance with Article 10.6.3.1.2a.

Reduction coefficients ( $RC_{BC}$ ) should be determined using the definitions illustrated in Figure 10.6.3.1.2c-1

C10.6.3.1.2c

A rational approach for determining a modified bearing resistance for footings on or adjacent to a slope is presented in Leshchinsky (2015) and Leshchinsky and Xie (2016). These methods are considered valid and applicable to structure foundations in addition to the MSE retaining wall example presented in the reference papers. The reduction coefficients provided in Tables 10.6.3.1.2c-1 and 10.6.3.1.2c-2 are modified and reconfigured by the author of the cited papers to allow for more convenient use in practice. See the original papers for the complete tabulation of reduction coefficient values.

The reduction coefficients are applicable to purely cohesive, purely cohesionless and  $c-\phi$  soils. The  $RC_{BC}$  factors are based on no footing embedment for footings either on or adjacent to slopes and may be conservative for deep footing embedment depths.

Limit analysis, or limit equilibrium analysis, should be considered to estimate the nominal bearing resistance of footings on or adjacent to slopes composed of soils and/or site conditions that are not consistent with the parameters and conditions described in the reference documents (i.e. embedment >0, layered soils, steeper slopes).

The schematic shown in Figure 10.6.3.1.2c-1 is provided only for illustrating and defining the terms used in the design equations and tables. This figure should not be used as the basis for locating footings on slopes regarding embedment depth and setback.



for footings on or adjacent to slopes. Use linear interpolation to obtain reduction coefficients for values not provided. The slope stability factor,  $N_s$ , in Tables 10.6.3.1.2c-1 and 10.6.3.1.2c-2 shall be taken as:

$$N_s = \frac{\gamma H_s}{c} \quad (10.6.3.1.2c-2)$$

where:

$N_s$  = slope stability factor (dim)  
 $H_s$  = height of sloping ground surface below bottom of footing (ft)

and other variables are as defined in Article 10.6.3.1.2a.

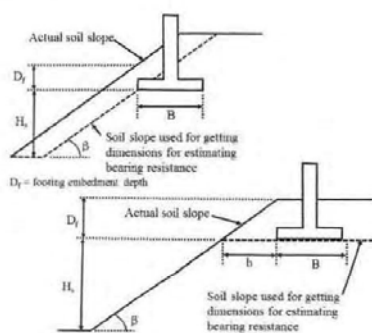


Figure 10.6.3.1.2c-1—Definition of Footing and Slope Geometric Parameters for Determination of  $RC_{BC}$

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@igcinc.net).

Table 10.6.3.1.2c-1—Reduction Coefficients ( $RC_{BC}$ ) for Footings Placed on Slopes Composed of either Purely Cohesive Soils, ( $\phi = 0$ ); Purely Cohesionless Soils ( $c'=0$ ); or Soils with both Cohesive and Cohesionless Strength Components

$\phi$ (°)	B/H	b/B	$\beta=10^\circ$				$\beta=20^\circ$				$\beta=30^\circ$				$\beta=40^\circ$			
			$N_s$				$N_s$				$N_s$				$N_s$			
			0	2	4	$c'=0$	0	2	4	$c'=0$	0	2	4	$c'=0$	0	2	4	$c'=0$
0	0.1	0 (On Slope)	0.89	0.89	0.88	0.00	0.89	0.88	0.87	0.00	0.85	0.84	0.83	0.00	0.77	0.76	0.74	0.00
	0.2		0.89	0.88	0.88	0.00	0.89	0.87	0.86	0.00	0.82	0.81	0.78	0.00	0.76	0.73	0.69	0.00
	0.4		0.88	0.87	0.86	0.00	0.89	0.86	0.82	0.00	0.81	0.77	0.66	0.00	0.74	0.68	0.53	0.00
	0.6		0.89	0.87	0.84	0.00	0.88	0.84	0.71	0.00	0.81	0.74	0.53	0.00	0.74	0.64	0.41	0.00
	1		0.87	0.84	0.75	0.00	0.87	0.79	0.56	0.00	0.80	0.66	0.42	0.00	0.73	0.56	0.33	0.00
	1.5		0.87	0.82	0.62	0.00	0.87	0.72	0.47	0.00	0.80	0.61	0.37	0.00	0.73	0.54	0.30	0.00
3	0.87	0.73	0.47	0.00	0.87	0.67	0.37	0.00	0.83	0.62	0.31	0.00	0.80	0.59	0.28	0.00		
20	0.1	0 (On Slope)	0.91	0.91	0.91	0.69	0.80	0.79	0.79	0.22	0.64	0.63	0.61	0.00	0.53	0.52	0.50	0.00
	0.2		0.90	0.89	0.90	0.68	0.75	0.73	0.72	0.21	0.62	0.59	0.56	0.00	0.52	0.49	0.45	0.00
	0.4		0.86	0.86	0.84	0.63	0.73	0.70	0.67	0.22	0.62	0.56	0.51	0.00	0.52	0.45	0.39	0.00
	0.6		0.85	0.84	0.82	0.58	0.73	0.68	0.63	0.22	0.61	0.54	0.47	0.00	0.51	0.41	0.33	0.00
	1		0.85	0.82	0.78	0.58	0.72	0.64	0.58	0.26	0.61	0.50	0.42	0.00	0.52	0.39	0.30	0.00
	1.5		0.86	0.80	0.75	0.58	0.73	0.62	0.54	0.31	0.65	0.50	0.42	0.00	0.60	0.44	0.34	0.00
3	0.90	0.77	0.72	0.58	0.88	0.66	0.56	0.35	0.86	0.61	0.51	0.00	0.85	0.57	0.46	0.00		
30	0.1	0 (On Slope)	0.93	0.92	0.91	0.77	0.65	0.64	0.63	0.40	0.51	0.50	0.48	0.11	0.40	0.37	0.36	0.00
	0.2		0.81	0.82	0.84	0.76	0.64	0.61	0.59	0.39	0.50	0.47	0.44	0.11	0.39	0.35	0.32	0.00
	0.4		0.79	0.79	0.78	0.72	0.63	0.59	0.55	0.37	0.50	0.43	0.39	0.13	0.39	0.32	0.27	0.00
	0.6		0.78	0.77	0.75	0.68	0.62	0.56	0.52	0.36	0.49	0.41	0.36	0.14	0.39	0.30	0.24	0.00
	1		0.79	0.75	0.73	0.67	0.63	0.53	0.49	0.41	0.55	0.41	0.35	0.24	0.48	0.33	0.26	0.00
	1.5		0.79	0.73	0.69	0.66	0.72	0.56	0.50	0.46	0.68	0.47	0.39	0.33	0.64	0.41	0.33	0.00
3	0.95	0.74	0.70	0.65	0.92	0.66	0.60	0.51	0.90	0.62	0.57	0.43	0.88	0.59	0.51	0.00		
40	0.1	0 (On Slope)	0.74	0.77	0.79	0.80	0.52	0.51	0.50	0.38	0.37	0.36	0.34	0.17	0.28	0.26	0.24	0.05
	0.2		0.69	0.69	0.69	0.78	0.51	0.48	0.47	0.37	0.37	0.33	0.30	0.16	0.27	0.23	0.20	0.05
	0.4		0.67	0.69	0.67	0.72	0.50	0.45	0.43	0.36	0.36	0.30	0.26	0.17	0.27	0.20	0.17	0.06
	0.6		0.67	0.67	0.64	0.66	0.50	0.43	0.43	0.34	0.40	0.34	0.26	0.17	0.32	0.22	0.18	0.08
	1		0.69	0.64	0.62	0.70	0.63	0.48	0.43	0.45	0.58	0.39	0.33	0.32	0.54	0.33	0.27	0.24
	1.5		0.76	0.65	0.61	0.74	0.74	0.53	0.48	0.56	0.71	0.47	0.40	0.47	0.68	0.43	0.36	0.41
3	0.95	0.74	0.71	0.77	0.94	0.68	0.65	0.66	0.91	0.67	0.62	0.62	0.92	0.67	0.59	0.57		

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@gcinc.net).

SECTION 10: FOUNDATIONS

Table 10.6.3.1.2c-2—Reduction Coefficients ( $RC_{BC}$ ) for Footings Placed Adjacent to Slopes Composed of either Purely Cohesive Soils, ( $\phi = 0$ ); Purely Cohesionless Soils ( $c'=0$ ); or Soils with both Cohesive and Cohesionless Strength Components

$\phi$ (°)	B/H	b/B	$\beta=10^\circ$				$\beta=20^\circ$				$\beta=30^\circ$				$\beta=40^\circ$			
			$N_s$				$N_s$				$N_s$				$N_s$			
			0	2	4	$c'=0$	0	2	4	$c'=0$	0	2	4	$c'=0$	0	2	4	$c'=0$
0	0.2	0	0.89	0.88	0.88	0.00	0.89	0.87	0.86	0.00	0.82	0.81	0.78	0.00	0.76	0.73	0.69	0.00
		0.5	0.97	0.96	0.96	0.00	0.95	0.93	0.91	0.00	0.92	0.89	0.87	0.00	0.86	0.83	0.76	0.00
		1.25	1.00	0.99	0.98	0.00	1.00	0.98	0.96	0.00	1.00	0.97	0.95	0.00	0.95	0.91	0.81	0.00
		2.5	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.97	0.84	0.00
		5	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.89	0.00
		10	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
	0.5	0	0.92	0.91	0.88	0.00	0.85	0.82	0.76	0.00	0.77	0.73	0.63	0.00	0.71	0.65	0.52	0.00
		0.5	0.96	0.95	0.89	0.00	0.92	0.89	0.78	0.00	0.87	0.84	0.68	0.00	0.83	0.76	0.56	0.00
		1.25	0.98	0.97	0.90	0.00	0.96	0.94	0.80	0.00	0.94	0.92	0.71	0.00	0.90	0.83	0.58	0.00
		2.5	1.00	1.00	1.00	0.00	1.00	1.00	0.86	0.00	1.00	1.00	0.79	0.00	1.00	0.93	0.68	0.00
		5	1.00	1.00	1.00	0.00	1.00	1.00	0.95	0.00	1.00	1.00	0.93	0.00	1.00	1.00	0.88	0.00
		10	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
	1	0	0.87	0.84	0.75	0.00	0.87	0.79	0.56	0.00	0.80	0.66	0.42	0.00	0.73	0.56	0.33	0.00
		0.5	0.95	0.91	0.82	0.00	0.92	0.83	0.65	0.00	0.86	0.73	0.46	0.00	0.81	0.67	0.40	0.00
		1.25	0.97	0.94	0.83	0.00	0.95	0.87	0.67	0.00	0.92	0.81	0.50	0.00	0.89	0.76	0.46	0.00
		2.5	1.00	0.98	0.88	0.00	1.00	0.97	0.77	0.00	1.00	1.00	0.84	0.00	0.99	0.92	0.63	0.00
		5	1.00	1.00	0.95	0.00	1.00	1.00	0.90	0.00	1.00	1.00	0.84	0.00	1.00	1.00	0.83	0.00
		10	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
	2	0	0.87	0.79	0.57	0.00	0.87	0.71	0.44	0.00	0.81	0.62	0.35	0.00	0.75	0.56	0.29	0.00
		0.5	0.97	0.93	0.65	0.00	0.94	0.79	0.49	0.00	0.89	0.72	0.42	0.00	0.85	0.69	0.37	0.00
		1.25	0.99	0.98	0.73	0.00	0.99	0.91	0.57	0.00	0.98	0.86	0.51	0.00	0.96	0.83	0.47	0.00
		2.5	1.00	0.99	0.82	0.00	1.00	0.96	0.69	0.00	1.00	0.95	0.64	0.00	1.00	0.95	0.61	0.00
		5	1.00	1.00	0.96	0.00	1.00	1.00	0.87	0.00	1.00	1.00	0.84	0.00	1.00	1.00	0.81	0.00
		10	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
20	0.2	0	0.90	0.89	0.90	0.68	0.75	0.73	0.72	0.21	0.62	0.59	0.56	0.00	0.52	0.49	0.45	0.00
		0.5	0.78	0.87	0.86	0.70	0.74	0.76	0.74	0.40	0.63	0.65	0.63	0.00	0.52	0.56	0.52	0.00
		1.25	0.86	0.92	0.92	0.82	0.83	0.84	0.83	0.70	0.74	0.75	0.74	0.00	0.63	0.66	0.63	0.00
		2.5	0.96	0.98	0.99	0.83	0.95	0.94	0.95	0.84	0.90	0.89	0.90	0.00	0.78	0.81	0.78	0.00
		5	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.00	0.96	0.98	0.96	0.00
		10	1.00	1.00	1.00	0.84	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.00	0.99	0.99	1.00	0.00
	0.5	0	0.86	0.86	0.84	0.60	0.73	0.70	0.67	0.22	0.62	0.56	0.51	0.00	0.52	0.45	0.39	0.00
		0.5	0.84	0.91	0.92	0.71	0.80	0.80	0.79	0.40	0.70	0.68	0.67	0.00	0.62	0.59	0.56	0.00
		1.25	0.88	1.00	0.97	0.82	0.85	0.88	0.86	0.70	0.76	0.75	0.75	0.00	0.68	0.66	0.64	0.00
		2.5	0.97	1.00	1.00	0.81	0.95	0.97	0.98	0.84	0.90	0.94	0.96	0.00	0.84	0.86	0.87	0.00
		5	1.00	1.00	1.00	0.84	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
		10	1.00	1.00	1.00	0.84	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
	1	0	0.85	0.82	0.78	0.58	0.72	0.64	0.58	0.26	0.61	0.50	0.42	0.00	0.52	0.39	0.30	0.00
		0.5	0.84	0.91	0.91	0.71	0.81	0.80	0.79	0.46	0.70	0.69	0.67	0.00	0.64	0.62	0.60	0.00
		1.25	0.87	0.95	0.96	0.82	0.85	0.85	0.85	0.73	0.76	0.76	0.75	0.00	0.71	0.70	0.69	0.00
		2.5	0.97	1.00	1.00	0.82	0.95	0.97	0.98	0.83	0.90	0.94	0.97	0.00	0.86	0.89	0.91	0.00
		5	1.00	1.00	1.00	0.83	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
		10	1.00	1.00	1.00	0.83	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
	2	0	0.90	0.90	0.90	0.58	0.87	0.86	0.84	0.33	0.84	0.81	0.78	0.00	0.81	0.77	0.74	0.00
		0.5	0.90	0.93	0.93	0.70	0.88	0.88	0.87	0.54	0.84	0.83	0.81	0.00	0.84	0.82	0.81	0.00
		1.25	0.92	0.97	0.99	0.81	0.90	0.92	0.92	0.77	0.86	0.86	0.86	0.00	0.85	0.85	0.84	0.00
		2.5	0.98	1.00	1.00	0.81	0.97	0.98	1.00	0.81	0.93	0.97	1.00	0.00	0.92	0.96	0.99	0.00
		5	1.00	1.00	1.00	0.82	1.00	1.00	1.00	0.84	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
		10	1.00	1.00	1.00	0.82	1.00	1.00	1.00	0.84	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00

Continued on next page

This publication is licensed to 73.149.116.197 (c/o Abdelmadjid M Lahiaf lgci@lgcinc.net).

Table 10.6.3.1.2c-2 (cont.)— Reduction Coefficients ( $RC_{BC}$ ) for Footings Placed Adjacent to Slopes Composed of either Purely Cohesive Soils, ( $\phi = 0$ ); Purely Cohesionless Soils ( $c'=0$ ); or Soils with both Cohesive and Cohesionless Strength Components

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@lgcinc.net).

			$\beta=10^\circ$				$\beta=20^\circ$				$\beta=30^\circ$				$\beta=40^\circ$			
			$N_s$				$N_s$				$N_s$				$N_s$			
$\phi$ (°)	B/H	b/B	0	2	4	$c'=0$	0	2	4	$c'=0$	0	2	4	$c'=0$	0	2	4	$c'=0$
30	0.2	0	0.93	0.92	0.91	0.76	0.65	0.64	0.63	0.39	0.51	0.50	0.48	0.11	0.40	0.37	0.36	0.00
		0.5	0.74	0.81	0.80	0.75	0.70	0.66	0.65	0.50	0.57	0.52	0.49	0.21	0.47	0.42	0.39	0.00
		1.25	0.78	0.85	0.86	0.86	0.74	0.73	0.72	0.72	0.63	0.60	0.59	0.38	0.54	0.50	0.47	0.00
		2.5	0.84	0.92	0.93	0.99	0.81	0.82	0.83	0.94	0.72	0.73	0.74	0.74	0.64	0.62	0.61	0.00
		5	0.95	1.00	1.00	1.00	0.93	0.98	1.00	1.00	0.88	0.95	1.00	0.97	0.80	0.85	0.87	0.00
	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
	0.5	0	0.79	0.79	0.78	0.70	0.63	0.59	0.55	0.36	0.50	0.43	0.39	0.13	0.39	0.32	0.27	0.00
		0.5	0.76	0.87	0.87	0.74	0.72	0.71	0.70	0.51	0.58	0.56	0.54	0.24	0.49	0.46	0.43	0.00
		1.25	0.79	0.85	0.92	0.87	0.75	0.73	0.76	0.72	0.63	0.62	0.61	0.45	0.54	0.52	0.50	0.00
		2.5	0.87	0.91	1.00	0.99	0.84	0.85	0.90	0.98	0.74	0.78	0.80	0.80	0.67	0.70	0.71	0.00
		5	0.97	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.90	1.00	1.00	1.00	0.85	0.94	0.98	0.00
	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
	1	0	0.79	0.75	0.73	0.67	0.63	0.53	0.49	0.41	0.55	0.41	0.35	0.24	0.48	0.33	0.26	0.00
		0.5	0.78	0.87	0.89	0.74	0.75	0.74	0.74	0.51	0.64	0.62	0.60	0.35	0.59	0.56	0.54	0.00
		1.25	0.81	0.90	0.91	0.88	0.78	0.78	0.78	0.72	0.68	0.67	0.66	0.58	0.64	0.62	0.61	0.00
		2.5	0.88	0.99	1.00	0.96	0.85	0.90	0.92	0.95	0.78	0.81	0.84	0.88	0.75	0.78	0.80	0.00
		5	0.97	1.00	1.00	1.00	0.96	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.89	0.98	1.00	0.00
	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
	2	0	0.88	0.88	0.87	0.65	0.87	0.85	0.83	0.48	0.85	0.82	0.80	0.38	0.83	0.80	0.76	0.00
		0.5	0.89	0.91	0.91	0.75	0.89	0.89	0.87	0.58	0.88	0.86	0.84	0.51	0.87	0.85	0.82	0.00
1.25		0.90	0.92	0.93	0.88	0.90	0.90	0.90	0.75	0.89	0.87	0.87	0.70	0.89	0.87	0.86	0.00	
2.5		0.97	1.00	1.00	1.00	0.96	0.97	0.98	0.98	0.92	0.94	0.96	0.95	0.91	0.92	0.94	0.00	
5		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	
40	0.2	0	0.69	0.69	0.69	0.78	0.51	0.48	0.47	0.37	0.37	0.33	0.30	0.16	0.27	0.23	0.20	0.05
		0.5	0.65	0.73	0.71	0.74	0.60	0.55	0.53	0.38	0.64	0.38	0.35	0.25	0.34	0.29	0.25	0.13
		1.25	0.68	0.77	0.75	0.86	0.63	0.60	0.58	0.55	0.74	0.44	0.42	0.39	0.39	0.34	0.31	0.25
		2.5	0.72	0.83	0.84	1.00	0.68	0.68	0.68	0.76	0.87	0.53	0.53	0.62	0.45	0.43	0.41	0.48
		5	0.80	0.93	0.95	1.00	0.76	0.82	0.85	1.00	1.00	0.72	0.76	1.00	0.57	0.61	0.63	0.94
	10	0.94	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.93	1.00	1.00	
	0.5	0	0.67	0.69	0.67	0.69	0.50	0.45	0.43	0.35	0.36	0.30	0.26	0.17	0.27	0.20	0.17	0.07
		0.5	0.68	0.81	0.81	0.73	0.63	0.62	0.61	0.46	0.47	0.44	0.41	0.25	0.39	0.35	0.32	0.09
		1.25	0.70	0.82	0.84	0.85	0.65	0.65	0.66	0.60	0.51	0.49	0.47	0.40	0.43	0.41	0.39	0.18
		2.5	0.76	0.92	0.96	1.00	0.72	0.77	0.80	0.81	0.59	0.62	0.63	0.60	0.54	0.56	0.56	0.37
		5	0.84	1.00	1.00	1.00	0.81	0.91	0.94	1.00	0.71	0.82	0.88	1.00	0.67	0.77	0.83	0.84
	10	0.96	1.00	1.00	1.00	0.94	1.00	1.00	1.00	0.89	1.00	1.00	1.00	0.86	1.00	1.00	1.00	
	1	0	0.69	0.64	0.62	0.70	0.63	0.48	0.43	0.45	0.58	0.39	0.33	0.32	0.54	0.33	0.27	0.24
		0.5	0.77	0.81	0.82	0.74	0.75	0.73	0.72	0.49	0.71	0.66	0.62	0.38	0.68	0.62	0.57	0.30
		1.25	0.78	0.84	0.85	0.84	0.77	0.76	0.75	0.64	0.73	0.69	0.66	0.55	0.71	0.66	0.63	0.48
		2.5	0.83	0.92	0.95	1.00	0.81	0.85	0.87	0.85	0.76	0.78	0.79	0.76	0.75	0.76	0.77	0.72
		5	0.89	1.00	1.00	1.00	0.87	0.95	0.98	1.00	0.80	0.90	0.95	1.00	0.80	0.89	0.94	1.00
	10	0.98	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.94	1.00	1.00	1.00	0.93	1.00	1.00	1.00	
	2	0	0.93	0.92	0.89	0.45	0.92	0.90	0.87	0.60	0.91	0.88	0.84	0.53	0.89	0.85	0.81	0.47
		0.5	0.93	0.95	0.93	0.76	0.93	0.92	0.90	0.65	0.92	0.89	0.87	0.64	0.92	0.89	0.86	0.60
1.25		0.93	0.95	0.94	0.86	0.93	0.93	0.92	0.78	0.93	0.91	0.89	0.74	0.93	0.90	0.88	0.74	
2.5		0.94	0.99	1.00	1.00	0.94	0.98	0.98	0.92	0.94	0.97	0.97	0.87	0.94	0.96	0.96	0.88	
5		0.95	1.00	1.00	1.00	0.96	1.00	1.00	1.00	0.98	1.00	1.00	1.00	0.96	1.00	1.00	1.00	
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		

10.6.3.1.2d—Considerations for Two-Layer Soil Systems—Critical Depth

Where the soil profile contains a second layer of soil with different properties affecting shear strength within a distance below the footing less than  $H_{crit}$ , the bearing resistance of the layered soil profile shall be determined using the provisions for two-layered soil systems herein. The distance  $H_{crit}$ , in feet, may be taken as:

$$H_{crit} = \frac{(3B) \ln\left(\frac{q_1}{q_2}\right)}{2\left(1 + \frac{B}{L}\right)} \quad (10.6.3.1.2d-1)$$

where:

- $q_1$  = nominal bearing resistance of footing supported in the upper layer of a two-layer system, assuming the upper layer is infinitely thick (ksf)
- $q_2$  = nominal bearing resistance of a fictitious footing of the same size and shape as the actual footing but supported on surface of the second (lower) layer of a two-layer system (ksf)
- $B$  = footing width (ft)
- $L$  = footing length (ft)

10.6.3.1.2e—Two-Layered Soil System in Undrained Loading

Where a footing is supported on a two-layered soil system subjected to undrained loading, the nominal bearing resistance may be determined using Eq. 10.6.3.1.2a-1 with the following modifications:

- $c_1$  = undrained shear strength of the top layer of soil as depicted in Figure 10.6.3.1.2e-1 (ksf)
- $N_{cm}$  =  $N_m$ , a bearing capacity factor as specified below (dim)
- $N_{qm}$  = 1.0 (dim)

Where the bearing stratum overlies a stiffer cohesive soil,  $N_m$ , may be taken as specified in Figure 10.6.3.1.2e-2.

Where the bearing stratum overlies a softer cohesive soil,  $N_m$  may be taken as:

$$N_m = \left(\frac{1}{\beta_m} + \kappa s_c N_c\right) \leq s_c N_c \quad (10.6.3.1.2e-1)$$

in which:

$$\beta_m = \frac{BL}{2(B+L)H_{s2}} \quad (10.6.3.1.2e-2)$$

C10.6.3.1.2e

Vesic' (1970) developed a rigorous solution for the modified bearing capacity factor,  $N_m$ , for the weak undrained layer over strong undrained layer situation. This solution is given by the following equation:

$$N_m = \frac{\kappa N_c^* (N_c^* + \beta_m - 1) A}{B C - (\kappa N_c^* + \beta_m - 1)(N_c^* + 1)} \quad (C10.6.3.1.2e-1)$$

in which:

$$A = [(\kappa + 1)N_c^{*2} + (1 + \kappa\beta_m)N_c^* + \beta_m - 1] \quad (C10.6.3.1.2e-2)$$

$$B = [\kappa(\kappa + 1)N_c^* + \kappa + \beta_m - 1] \quad (C10.6.3.1.2e-3)$$

$$C = [(N_c^* + \beta_m)N_c^* + \beta_m - 1] \quad (C10.6.3.1.2e-4)$$

- For circular or square footings:

$$\beta_m = \frac{B}{4H_{s2}} \quad (C10.6.3.1.2e-5)$$

$$N_c^* = 6.17$$

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@gcinc.net).

$$\kappa = \frac{c_2}{c_1} \quad (10.6.3.1.2e-3)$$

• For strip footings:

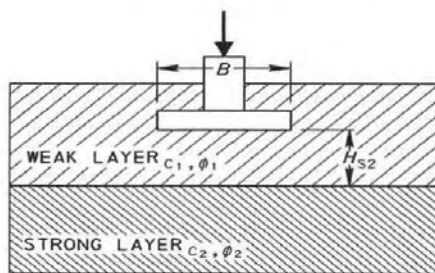
$$\beta_m = \frac{B}{2H_{s2}} \quad (C10.6.3.1.2e-6)$$

$$N_c^* = 5.14$$

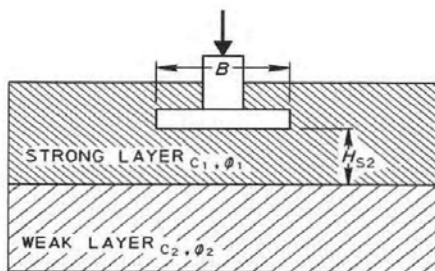
where:

- $\beta_m$  = punching index (dim)
- $c_1$  = undrained shear strength of upper soil layer (ksf)
- $c_2$  = undrained shear strength of lower soil layer (ksf)
- $H_{s2}$  = distance from bottom of footing to top of the second soil layer (ft)
- $s_c$  = shape correction factor determined from Table 10.6.3.1.2a-3
- $N_c$  = bearing capacity factor determined herein (dim)
- $N_{qm}$  = bearing capacity factor determined herein (dim)

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahiaf igci@igcinc.net).



( a )



( b )

Figure 10.6.3.1.2e-1—Two-Layer Soil Profiles

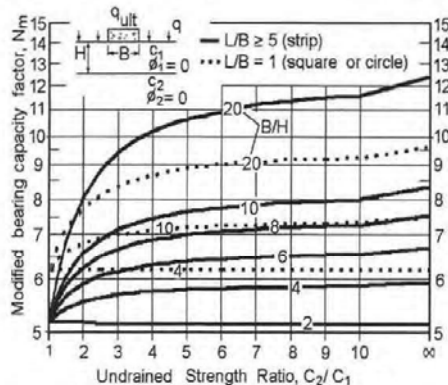


Figure 10.6.3.1.2e-2—Modified Bearing Factor for Two-Layer Cohesive Soil with Weaker Soil Overlying Stronger Soil (EPRI, 1983)

10.6.3.1.2f—Two-Layered Soil System in Drained Loading

Where a footing supported on a two-layered soil system is subjected to a drained loading, the nominal bearing resistance, in ksf, may be taken as:

$$q_n = \left[ q_2 + \left( \frac{1}{K} \right) c'_1 \cot \phi'_1 \right] e^{2 \left[ 1 + \left( \frac{B}{L} \right) K \tan \phi'_1 \left( \frac{H_2}{B} \right) \right]} - \left( \frac{1}{K} \right) c'_1 \cot \phi'_1 \quad (10.6.3.1.2f-1)$$

in which:

$$K = \frac{1 - \sin^2 \phi'_1}{1 + \sin^2 \phi'_1} \quad (10.6.3.1.2f-2)$$

where:

- $c'_1$  = drained shear strength of the top layer of soil in a two-layer system, such as depicted in Figure 10.6.3.1.2e-1 (ksf)
- $q_2$  = nominal bearing resistance of a fictitious footing of the same size and shape as the actual footing but supported on surface of the second (lower) layer of a two-layer system (ksf)
- $\phi'_1$  = effective stress angle of internal friction of the top layer of soil (degrees)

10.6.3.1.3—Semiempirical Procedures

The nominal bearing resistance of foundation soils may be estimated from the results of in-situ tests or by observed resistance of similar soils. The use of a particular in-situ test and the interpretation of test results should take local experience into consideration. The following in-situ tests may be used:

C10.6.3.1.2f

If the upper layer is a cohesionless soil and  $\phi'$  equals 25–50 degrees, Eq. 10.6.3.1.2f-1 reduces to:

$$q_n = q_2 e^{0.67 \left[ 1 + \left( \frac{B}{L} \right) \frac{H_2}{B} \right]} \quad (C10.6.3.1.2f-1)$$

C10.6.3.1.3

In application of these empirical methods, the use of average *SPT* blow counts and *CPT* tip resistances is specified. The resistance factors recommended for bearing resistance included in Table 10.5.5.2.2-1 assume the use of average values for these parameters. The use of lower bound values may result in an overly conservative design. However, depending on the availability of soil

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahiaf lgci@gcinc.net).

- Standard Penetration Test (*SPT*)
- Cone Penetration Test (*CPT*)

The nominal bearing resistance in sand, in ksf, based on *SPT* results may be taken as:

$$q_n = \frac{\bar{N}_{160} B}{5} \left( C_{wq} \frac{D_f}{B} + C_{wy} \right) \quad (10.6.3.1.3-1)$$

where:

- $\bar{N}_{160}$  = average *SPT* blow count corrected for both overburden and hammer efficiency effects (blows/ft) as specified in Article 10.4.6.2.4. Average the blow count over a depth range from the bottom of the footing to 1.5*B* below the bottom of the footing.
- B* = footing width (ft)
- $C_{wq}, C_{wy}$  = correction factors to account for the location of the groundwater table as specified in Table 10.6.3.1.2a-2 (dim)
- $D_f$  = footing embedment depth taken to the bottom of the footing (ft)

The nominal bearing resistance, in ksf, for footings on cohesionless soils based on *CPT* results may be taken as:

$$q_n = \frac{\bar{q}_c B}{40} \left( C_{wq} \frac{D_f}{B} + C_{wy} \right) \quad (10.6.3.1.3-2)$$

where:

- $\bar{q}_c$  = average cone tip resistance within a depth range, *B*, below the bottom of the footing (ksf)
- B* = footing width (ft)
- $C_{wq}, C_{wy}$  = correction factors to account for the location of the groundwater table as specified in Table 10.6.3.1.2a-2 (dim)
- $D_f$  = footing embedment depth taken to the bottom of the footing (ft)

10.6.3.1.4—Plate Load Tests

The nominal bearing resistance may be determined by plate load tests, provided that adequate subsurface explorations have been made to determine the soil profile below the foundation. Where plate load tests are conducted, they should be conducted in accordance with ASTM D1194.

The nominal bearing resistance determined from a plate load test may be extrapolated to adjacent footings where the subsurface profile is confirmed by subsurface exploration to be similar.

property data and the variability of the geologic strata under consideration, it may not be possible to reliably estimate the average value of the properties needed for design. In such cases, the Engineer may have no choice but to use a more conservative selection of design input parameters to mitigate the additional risks created by potential variability or the paucity of relevant data.

The original derivation of Eqs. 10.6.3.1.3-1 and 10.6.3.1.3-2 did not include inclination factors (Meyerhof, 1956).

C10.6.3.1.4

Plate load tests have a limited depth of influence and furthermore may not disclose the potential for long-term consolidation of foundation soils.

Scale effects should be addressed when extrapolating the results to performance of full scale footings. Extrapolation of the plate load test data to a full scale footing should be based on the design procedures provided herein for settlement (service limit state) and bearing resistance (strength and extreme event limit state), with consideration to the effect of the stratification, e.g., layer thicknesses, depths, and properties. Plate load test results should be applied only within a sub-area of the

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@gcinc.net).



10.5.5.2.2—Spread Footings

C10.5.5.2.2

The resistance factors provided in Table 10.5.5.2.2-1 shall be used for strength limit state design of spread footings, with the exception of the deviations allowed for local practices and site-specific considerations in Article 10.5.5.2.

Table 10.5.5.2.2-1—Resistance Factors for Geotechnical Resistance of Shallow Foundations at the Strength Limit State

		Method/Soil/Condition	Resistance Factor
Bearing Resistance	$\phi_b$	Theoretical method (Munfakh et al., 2001), in clay	0.50
		Theoretical method (Munfakh et al., 2001), in sand, using <i>CPT</i>	0.50
		Theoretical method (Munfakh et al., 2001), in sand, using <i>SPT</i>	0.45
		Semi-empirical methods (Meyerhof, 1957), all soils	0.45
		Footings on rock	0.45
		Plate Load Test	0.55
Sliding	$\phi_r$	Precast concrete placed on sand	0.90
		Cast-in-Place Concrete on sand	0.80
		Cast-in-Place or precast Concrete on Clay	0.85
		Soil on soil	0.90
	$\phi_{ep}$	Passive earth pressure component of sliding resistance	0.50

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgcinc.net).

The resistance factors in Table 10.5.5.2.2-1 were developed using both reliability theory and calibration by fitting to Allowable Stress Design (ASD). In general, ASD safety factors for footing bearing capacity range from 2.5 to 3.0, corresponding to a resistance factor of approximately 0.55 to 0.45, respectively, and for sliding, an ASD safety factor of 1.5, corresponding to a resistance factor of approximately 0.9. Calibration by fitting to ASD controlled the selection of the resistance factor in cases where statistical data were limited in quality or quantity.

The resistance factor for sliding of cast-in-place concrete on sand is slightly lower than the other sliding resistance factors based on reliability theory analysis (Barker et al., 1991). The higher interface friction coefficient used for sliding of cast-in-place concrete on sand relative to that used for precast concrete on sand causes the cast-in-place concrete sliding analysis to be less conservative, resulting in the need for the lower resistance factor. A more detailed explanation of the development of the resistance factors provided in Table 10.5.5.2.2-1 is provided in Allen (2005).

The resistance factors for plate load tests and passive resistance were based on engineering judgment and past ASD practice.

10.5.5.2.3—Driven Piles

C10.5.5.2.3

Resistance factors shall be selected from Table 10.5.5.2.3-1 based on the method used for determining the driving criterion necessary to achieve the required nominal pile bearing resistance.

Where nominal pile bearing resistance is determined by static load test, dynamic testing, wave equation, or dynamic formulas, the uncertainty in the nominal resistance is strictly due to the reliability of the resistance determination method used in the field during pile installation.

Regarding load tests, and dynamic tests with signal matching, the number of tests to be conducted to justify the design resistance factors selected should be based on the variability in the properties and geologic stratification of the site to which the test results are to be applied. A

In most cases, the nominal bearing resistance of each production pile is field-verified based on compliance with a driving criterion developed using a dynamic method

Table 11.5.7-1—Strength Limit State Resistance Factors for Permanent Retaining Walls

Wall-Type and Condition		Resistance Factor
<b>Nongravity Cantilevered and Anchored Walls</b>		
Axial compressive resistance of vertical elements		Article 10.5 applies
Passive resistance of vertical elements		0.75
Pullout resistance of anchors <sup>(1)</sup>	• Cohesionless (granular) soils	0.65 <sup>(1)</sup>
	• Cohesive soils	0.70 <sup>(1)</sup>
	• Rock	0.50 <sup>(1)</sup>
Pullout resistance of anchors <sup>(2)</sup>	• Where proof tests are conducted	1.0 <sup>(2)</sup>
Tensile resistance of anchor tendon	• Mild steel (e.g., ASTM A615 bars)	0.90 <sup>(3)</sup>
	• High-strength steel (e.g., ASTM A722 bars)	0.80 <sup>(3)</sup>
Overall stability, soil failure		Article 11.6.3.7 applies
Flexural capacity of vertical elements		0.90
<b>Mechanically Stabilized Earth Walls, Gravity Walls, and Semigravity Walls</b>		
Bearing resistance	• Gravity and semigravity walls	0.55
	• MSE walls	0.65
Sliding		1.0
Tensile resistance of metallic reinforcement and connectors	Strip reinforcements <sup>(4)</sup>	0.75
	Grid reinforcements <sup>(4) (5)</sup>	0.65
Tensile resistance of geosynthetic reinforcement and connectors	• Geotextile and geogrid reinforcements	0.80
	• Geostrip reinforcements	0.55
Pullout resistance of metallic reinforcement	• Steel strip reinforcements	0.90
	• Steel grid reinforcements	0.90
Pullout resistance of geosynthetic reinforcement	• Geotextiles and geogrids	0.70
	• Geostrip reinforcements	0.70
Service Limit, for soil failure using stiffness method		1.0
Overall and compound stability, soil failure		Article 11.6.3.7 applies
<b>Prefabricated Modular Walls</b>		
Bearing		Article 10.5 applies
Sliding		Article 10.5 applies
Passive resistance		Article 10.5 applies
Overall stability, soil failure		Article 11.6.3.7 applies
<b>Soil Nail Walls <sup>(6)</sup></b>		
Lateral sliding		1.00
Overall and Compound stability, soil failure		Article 11.6.3.7 applies
Tensile resistance of nail tendon	Mild steel bars (Grade 75)	0.75
	High resistance bars (Grades 95 and 150)	0.65
Pullout resistance of nail		0.65
Facing flexure		Initial and final facing 0.90
Facing punching shear		Initial and final facing 0.90
Tensile resistance of headed stud	A307 steel bolt <sup>(7)</sup>	0.70
	A325 steel bolt	0.80

(1) Apply to presumptive ultimate unit bond stresses for preliminary design only in Article C11.9.4.2.

(Continued on next page)

This publication is licensed to 73.149.116.197 (c/o Abdelmadjid M Lahlaf lgci@lgcinc.net).

**Bearing Resistance (Strength Limit State)**

Project: Prop. Mast arm and retaining wall  
 Location: Swansea, MA  
 Project No. 2317  
 Purpose: Estimate Settlement using Houghs Method

Calculated by: AML  
 Date: 7/8/24  
 Checked By: SL  
 Date: 7/9/24

**Procedure: Use Hough's Method (see attached AASHTO-9 Section 10.6.2.4.2b)**

$$\Delta H = H * (1/C') * \log ((\sigma'_o + \Delta\sigma)/\sigma'_o)$$

$\sigma'_o$  = effective stress at mid-depth of layer =  $q_m$  in sketch below

$\Delta\sigma$  = Load ( $q$  in sketch below)

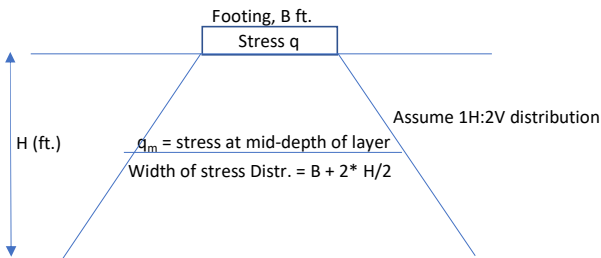
$C'$  = Bearing Capacity Index from Chart AASHTO-9 10.6.2.4.2b-1

Unit Weight = 120 pcf  
 Buoyant Unit Weight = 57.6 pcf  
 Limiting Settlement ( $\Delta H$ ) = 1 inch  
 Assume Settlement Occurs in Top 16 feet, i.e., about 3 times the width of the wall foundation  
 Depth of Footing Embedment = 4 feet  
 $H = 16' - 4' =$  12 feet

Depth (ft.)	Depth to Groundwater (ft.)	Total Stress (psf)	Pore Water Pressure (psf)	Effective Stress (psf)	B-2	Average SPT, N	Energy Correction for 80% Efficiency	SPT, N60	Overburden Correction, CN = $0.77 * \log(40/\sigma'_o)$ (ksf)	SPT (N1)60
4	4	480	0.0	480.0	13	13	1.33	17.33	1.48	25.64
6	4	720	124.8	595.2	6	6	1.33	8.00	1.41	11.26
8	4	960	249.6	710.4	89					
10	4	1200	374.4	825.6	104					
14	4	1680	624.0	1056.0	28	28	1.33	37.33	1.22	45.37

**Bold = Ignored**

Average (N1)60 = 28.32



Average (N1)60	Factor C'	C' * $\Delta H/H$	Stress, $q_m$ , at H/2 from b.o.f.* (ksf)
28.32	97.5	0.68	3.10

\*  $\Delta H = H * (1/C') * \log ((q_m + q)/q_m)$ , isolate  $q$

$$q = q_m * (10^{(C' * \Delta H/H)} - 1)$$

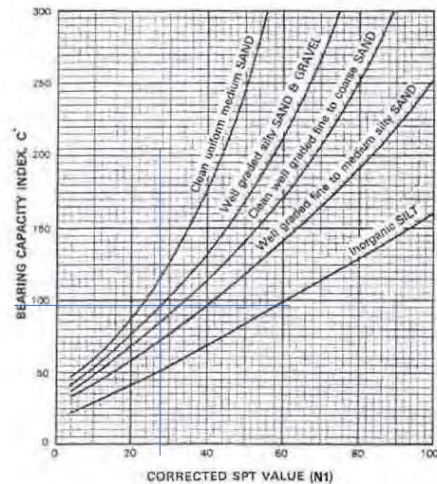
Also,

$$q * B = q_m * (B + 2 * H/2)$$

$$q = q_m * (1 + H/B)$$

$$q = 3.10 + 37.19 * (1/B) \quad (\text{ksf})$$

H (ft.)	$q_m$ (ksf)	B (ft.)	q (ksf)
12	3.10	4	12.40
12	3.10	5	10.54
12	3.10	6	9.30



Reference: Hough, 'Compressibility as a Basis for Soil Bearing Value' ASCE 1959

**Figure 10.6.2.4.2b-1—Bearing Capacity Index versus Corrected SPT (Hough, 1959, as modified in Samtani and Nowatzki, 2006)**

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@igctnc.net).

settlement due the fill or reinforced soil structure should be included in the footing settlement estimate, unless the approach fill or reinforced soil structure settlement is allowed to occur before the bridge foundation is constructed. Both the Hough and Schmertmann methods have been successfully used to estimate fill/reinforced soil structure settlement when cohesionless soils are present (Samtani and Allen, 2018).

Details of other settlement estimation procedures can be found in textbooks and engineering manuals, including:

- Terzaghi and Peck (1967)
- Sowers (1979)
- U.S. Department of the Navy (1982)
- D'Appolonia (Gifford et al., 1987)—This method includes consideration for over-consolidated sands.
- Tomlinson (1986)
- Gifford et al. (1987)
- Elastic Half Space Method (Munkfakh et al., 2001)

These methods, however, have not been calibrated.

Calibration of local methods should be based on processes as described in Samtani and Kulicki (2018) and Samtani and Allen (2018).

Use of methods based on local geologic conditions and calibration require approval from the Owner.

10.6.2.4.2b—Hough Method

Estimation of spread footing settlement on cohesionless soils by the empirical Hough method shall be determined using Eqs. 10.6.2.4.2b-1 and 10.6.2.4.2b-2. *SPT* blow counts shall be corrected as specified in Article 10.4.6.2.4 for depth, i.e. overburden stress, and *SPT* hammer efficiency, before correlating the *SPT* blow counts to the bearing capacity index,  $C'$ .

$$S_v = \sum_{i=1}^n \Delta H_i \tag{10.6.2.4.2b-1}$$

in which:

$$\Delta H_i = H_e \frac{1}{C'} \log \left( \frac{\sigma'_o + \Delta \sigma_v}{\sigma'_o} \right) \tag{10.6.2.4.2b-2}$$

where:

- $n$  = number of soil layers within zone of stress influence of the footing
- $\Delta H_i$  = elastic settlement of layer  $i$  (ft)
- $H_e$  = initial height of layer  $i$  (ft)
- $C'$  = bearing capacity index from Figure 10.6.2.4.2b-1 (dim)
- $\sigma'_o$  = initial vertical effective stress at the midpoint of layer  $i$  (ksf)
- $\Delta \sigma_v$  = increase in vertical stress at the midpoint of layer  $i$  (ksf)

C10.6.2.4.2b

The Hough method was developed for normally consolidated cohesionless soils.

The Hough method has several advantages over other methods used to estimate settlement in cohesionless soil deposits, including express consideration of soil layering and the zone of stress influence beneath a footing of finite size.

The subsurface soil profile should be subdivided into layers based on stratigraphy to a depth of about three times the footing width. The maximum layer thickness should be about 10.0 ft.

While Hough (1959) did not specifically state that the *SPT*  $N$  values should be corrected for hammer energy in addition to overburden pressure, due to the vintage of the original work, hammers that typically have an efficiency of approximately 60 percent were in general used to develop the empirical correlations contained in the method. If using *SPT* hammers with efficiencies that differ significantly from this 60 percent value, the  $N$  values should also be corrected for hammer energy, in effect requiring that  $N_{160}$  be used (Samtani and Nowatzki, 2006).

Studies conducted by Gifford et al. (1987) and Samtani and Nowatzki (2006) indicate that Hough's procedure may be more conservative, but with less prediction variability, than the Schmertmann Method. However, this difference is mostly taken into account through the load factor,  $\gamma_{SE}$ , since it has been calibrated using reliability theory (Kulicki et al. 2015) (Samtani and Kulicki, 2018) (Samtani and Allen (2018)).

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahlaf lgci@gcinc.net).

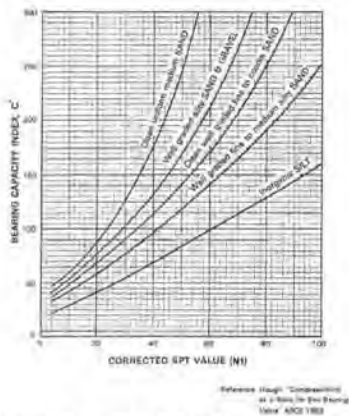


Figure 10.6.2.4.2b-1—Bearing Capacity Index versus Corrected SPT (Hough, 1959, as modified in Samtani and Nowatzki, 2006)

The Hough method is applicable to cohesionless soil deposits. The “Inorganic Silt” curve should generally not be applied to soils that exhibit plasticity because N-values in such soils are unreliable (Samtani and Nowatzki, 2006). The settlement characteristics of cohesive soils that exhibit plasticity should be investigated using undisturbed samples and laboratory consolidation tests as prescribed in Article 10.6.2.4.3.

10.6.2.4.2c—Schmertmann Method

Estimation of spread footing immediate, or elastic, settlement,  $S_e$ , on cohesionless soils by the empirical Schmertmann, method shall be calculated using Eq. 10.6.2.4.2c-1.

$$S_e = C_1 C_2 \Delta p \sum_{i=1}^n \Delta J_i \tag{10.6.2.4.2c-1}$$

in which:

$$\Delta J_i = H_c \left( \frac{I_z}{144XE} \right) \tag{10.6.2.4.2c-2}$$

$$C_1 = 1 - 0.5 \left( \frac{p_o}{\Delta p} \right) \geq 0.5 \tag{10.6.2.4.2c-3}$$

$$C_2 = 1 + 0.2 \log_{10} \left( \frac{t}{0.1} \right) \tag{10.6.2.4.2c-4}$$

where:

- $\Delta J_i$  = elastic spring stiffness of layer,  $i$  (ft/ksf)
- $H_c$  = height of compressible soil layer,  $i$  (ft)
- $I_z$  = strain influence factor from Figure 10.6.2.4.2c-1a. The dimensions  $L_f$  and  $B_f$  represent the least lateral dimension of the footing after correction for eccentricities, i.e., use effective footing dimension. The strain influence factor is a function of depth and is obtained from the strain influence diagram. The

C10.6.2.4.2c

Background information for this method, originally published in Schmertmann (1970) and Schmertmann et al. (1978), in the format as presented here can be found in Samtani and Nowatzki (2006). This method was originally developed for use with the static cone bearing resistance  $q_c$ , in which  $q_c$  was correlated to the soil modulus,  $E$ , and  $E$  is used directly in this method. The original formulation for this correlation by Schmertmann (1970) assumed  $E$  was in units of tsf (i.e.,  $E$  (in tsf) =  $2q_c$  (in tsf or kg/cm<sup>2</sup>)). The correlation in Table 10.6.2.4.2c-1 predicts  $E$  in ksi. Correlations between  $E$  and the SPT  $N$  values are also available and provided in Table 10.6.2.4.2c-1.

The variables in the equation for  $\Delta J_i$  (Eq. 10.6.2.4.2c-2) require specific units for  $H_c$  (ft) and  $E$  (provided in Table 10.6.2.4.2c-1) is in ksi. This results in the units for  $\Delta J_i$  being ft/ksf. Furthermore, in Eqs. 10.6.2.4.2c-1 and 10.6.2.4.2c-3, units of  $p_o$  and  $\Delta p$  must be ksf.

This publication is licensed to 73.149.116.197 (c/o Abdelmajid M Lahiaf igci@igcinc.net).

strain influence diagram is constructed for the axisymmetric case ( $L/B_f = 1$ ) and the plane strain case ( $L/B_f \geq 10$ ) as shown in Figure 10.6.2.4.2c-1a. The strain influence diagram for intermediate conditions should be determined by simple linear interpolation.

- $n$  = number of soil layers within the zone of strain influence (strain influence diagram).
- $\Delta p$  = net uniform applied stress (load intensity) at the foundation depth as shown in Figure 10.6.2.4.2c-1b in which  $p$  is equal to the uniform applied footing stress,  $\sigma_v$ , as specified in Article 11.6.3.2 (see Figure 10.6.2.4.2c-1b) (ksf).
- $E$  = elastic modulus of layer  $i$ , estimated using Table 10.6.2.4.2c-1 (ksi).
- $X$  = a factor used to determine the value of elastic modulus. The value of elastic modulus is based on correlations with  $N_{100}$ -values or  $q_c$  from Table 10.6.2.4.2c-1, then values of  $X$  shall be taken as follows:

$X = 1.25$  for axisymmetric case ( $L/B_f = 1$ )  
 $X = 1.75$  for plane strain case ( $L/B_f \geq 10$ )

Use interpolation for footings with values of  $L/B_f$  between 1 and 10. If the value of elastic modulus is based on in-situ testing (e.g., pressuremeter), use  $X = 1.0$ .

- $C_1$  = correction factor to incorporate the effect of strain relief due to embedment
- $p_o$  = effective in-situ overburden stress at the foundation depth as shown in Figure 10.6.2.4.2c-1b (ksf)
- $p_{op}$  = effective in-situ overburden stress at the depth to peak strain influence factor,  $I_{sp}$ , as shown in Figure 10.6.2.4.2c-1b (ksf)
- $\Delta p$  = net uniform applied stress (load intensity) at the foundation depth as shown in Figure 10.6.2.4.2c-1b in which  $p$  is equal to the uniform applied footing stress,  $\sigma_v$ , as specified in Article 11.6.3.2 (ksf).
- $C_2$  = correction factor to incorporate time-dependent (creep) increase in settlement for time,  $t$ , after construction
- $t$  = time from completion of construction to date under consideration for evaluation of  $C_2$  (yrs)

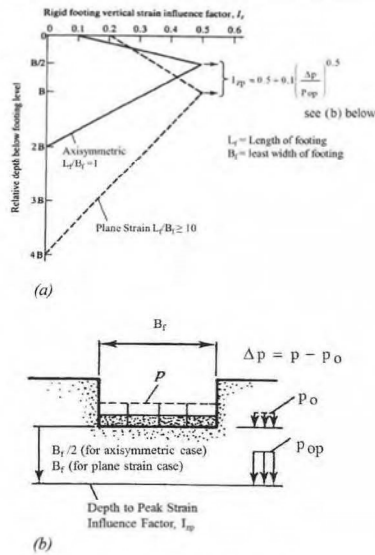
The  $C_2$  parameter shall not be used to estimate time-dependent consolidation settlements. Where consolidation settlement can occur within the depth of the strain distribution diagram, the magnitude of the consolidation settlement shall be estimated as per Article 10.6.2.4.3 and added to the immediate settlement of other layers within the strain distribution diagram where consolidation settlement may not occur.

For  $C_2$ , correction factor, the time duration,  $t$ , in Eq. 10.6.2.4.2c-4 is set to 0.1 years to evaluate the settlement immediately after construction, i.e.,  $C_2 = 1$ . If long-term creep movement of the soil is suspected then an appropriate time duration,  $t$ , should be used in the computation of  $C_2$ . Creep movement is not the same as consolidation settlement. This factor can have an important influence on the reported settlement since it is included in Eq. 10.6.2.4.2c-1 as a multiplier. For example, the  $C_2$  factor for time durations of 0.1 yrs, 1 yr, 10 yrs, and 50 yrs are 1.0, 1.2, 1.4, and 1.54, respectively. In cohesionless soils and unsaturated fine-grained cohesive soils with low plasticity, time durations of 0.1 yr and 1 yr, respectively, are generally appropriate and sufficient for cases of static loads.

**Table 10.6.2.4.2c-1—Correlations between Elastic Soil Modulus and  $SPT N_{60}$  or static Cone  $q_c$  values for the Schmertmann Method (modified after Schmertmann 1970, and Samtani and Nowatzki 2006)**

Correlation between $E$ and $SPT N_{60}$ Value	
Soil Type	$E$ (ksi)
Silts, sandy silts, slightly cohesive mixtures	$0.056 N_{60}$
Clean fine to medium sands and slightly silty sands	$0.097 N_{60}$
Coarse sands and sands with little gravel	$0.139 N_{60}$
Sandy gravel and gravels	$0.167 N_{60}$
Correlation between $E$ and $q_c$ (static cone resistance, in ksi)	
Soil Type	$E$ (ksi)
Sandy soils	$0.028 q_c$

This publication is licensed to 73.149.116.197 (c/o Abdelmadjid M Lahlaf lgci@igcinc.net).



**Figure 10.6.2.4.2c-1—(a) Simplified vertical strain influence factor distributions, (b) Explanation of pressure terms in equation for  $I_{zp}$  (after Schmertmann et al., 1978, as reported in Samtani and Nowatzki, 2006).**



This publication is licensed to 73.149.116.197 (c/o Abdelmadjid M Lahiaf lgci@lgcinc.net).

10.4.6.2.3—Drained Strength of Cohesive Soils

Long-term effective stress strength parameters,  $c'$  and  $\phi'_s$ , of clays should be evaluated by slow consolidated drained direct shear box tests, consolidated drained (CD) triaxial tests, or consolidated undrained (CU) triaxial tests with pore pressure measurements. In laboratory tests, the rate of shearing should be sufficiently slow to ensure substantially complete dissipation of excess pore pressure in the drained tests or, in undrained tests, complete equalization of pore pressure throughout the specimen.

10.4.6.2.4—Drained Strength of Granular Soils

The drained friction angle of granular deposits should be evaluated by correlation to the results of *SPT* testing, *CPT* testing, or other relevant in-situ tests. Laboratory shear strength tests on undisturbed samples, if feasible to obtain, or reconstituted disturbed samples, may also be used to determine the shear strength of granular soils.

If *SPT*  $N$  values are used, unless otherwise specified for the design method or correlation being used, they shall be corrected for the effects of overburden pressure determined as:

$$N_1 = C_N N \tag{10.4.6.2.4-1}$$

$N_1$  = *SPT* blow count corrected for overburden pressure,  $\sigma'_v$  (blows/ft)  
 $C_N$  =  $[0.77 \log_{10}(40/\sigma'_v)]$ , and  $C_N < 2.0$   
 $\sigma'_v$  = vertical effective stress (ksf)  
 $N$  = uncorrected *SPT* blow count (blows/ft)

*SPT*  $N$  values should also be corrected for hammer efficiency, if applicable to the design method or correlation being used, determined as:

limits, grain size, and unit weight measurements to confirm soil layering.

- CU tests on normally to slightly over consolidated samples that exhibit disturbance should contain at least one specimen consolidated to at least  $4\sigma'_p$  to permit extrapolation of the undrained shear strength at  $\sigma'_p$ .
- Undrained strengths from CU tests correspond to the effective consolidation pressure used in the test. This effective stress needs to be converted to the equivalent depth in the ground.
- A profile of  $\sigma'_p$  (or OCR) should be developed and used in evaluating undrained shear strength.
- Correlations for  $S_u$  based on in-situ test measurements should not be used for final design unless they have been calibrated to the specific soil profile under consideration. Correlations for  $S_u$  based on *SPT* tests should be avoided.

C10.4.6.2.3

The selection of peak, fully softened, or residual strength for design analyses should be based on a review of the expected or tolerable displacements of the soil mass.

The use of a nonzero cohesion intercept,  $c'$ , for long-term analyses in natural materials must be carefully assessed. With continuing displacements, it is likely that the cohesion intercept value will decrease to zero for long-term conditions, especially for highly plastic clays.

C10.4.6.2.4

Because obtaining undisturbed samples of granular deposits for laboratory testing is extremely difficult, the results of in-situ tests are commonly used to develop estimates of the drained friction angle,  $\phi_f$ . If reconstituted disturbed soil samples and laboratory tests are used to estimate the drained friction angle, the reconstituted samples should be compacted to the same relative density estimated from the available in-situ data. The test specimen should be large enough to allow the full grain size range of the soil to be included in the specimen. This may not always be possible, and if not possible, it should be recognized that the shear strength measured would likely be conservative.

A method using the results of *SPT* testing is presented. Other in-situ tests, such as *CPT* and *DMT*, may be used. For details on determination of  $\phi_f$  from these tests, refer to Sabatini et al. (2002).

The use of automatic trip hammers is increasing. In order to use correlations based on standard rope and cathead hammers, the *SPT*  $N$  values must be corrected to

$$N_{60} = \left(\frac{ER}{60\%}\right)N \quad (10.4.6.2.4-2)$$

where:

$N_{60}$  = SPT blow count corrected for hammer efficiency (blows/ft)

$ER$  = hammer efficiency expressed as percent of theoretical free fall energy delivered by the hammer system actually used (dim)

$N$  = uncorrected SPT blow count (blows/ft)

When SPT blow counts have been corrected for both overburden effects and hammer efficiency effects, the resulting corrected blow count shall be denoted as  $N_{160}$ , determined as:

$$N_{160} = C_N N_{60} \quad (10.4.6.2.4-3)$$

The drained friction angle of granular deposits should be determined based on the following correlation.

**Table 10.4.6.2.4-1—Correlation of SPT  $N_{160}$  Values to Drained Friction Angle of Granular Soils (modified after Bowles, 1977)**

$N_{160}$	$\phi_f$
<4	25–30
4	27–32
10	30–35
30	35–40
50	38–43

For gravels and rock fill materials where SPT testing is not reliable, Figure 10.4.6.2.4-1 should be used to estimate the drained friction angle.

Rock Fill Grade	Particle Unconfined Compressive Strength (ksf)
A	>4,610
B	3,460–4,610
C	2,590–3,460
D	1,730–2,590
E	≤1,730

reflect the greater energy delivered to the sampler by these systems.

Hammer efficiency ( $ER$ ) for specific hammer systems used in local practice may be used in lieu of the values provided. If used, specific hammer system efficiencies shall be developed in general accordance with ASTM D4945 for dynamic analysis of driven piles or other accepted procedure.

The following values for  $ER$  may be assumed if hammer specific data are not available, e.g., from older boring logs:

$ER$  = 60 percent for conventional drop hammer using rope and cathead

$ER$  = 80 percent for automatic trip hammer

Corrections for rod length, hole size, and use of a liner may also be made if appropriate. In general, these are only significant in unusual cases or where there is significant variation from standard procedures. These corrections may be significant for evaluation of liquefaction. Information on these additional corrections may be found in Youd and Idriss (1997).

The  $N_{160}$ - $\phi_f$  correlation used is modified after Bowles (1977). The correlation of Peck, Hanson, and Thornburn (1974) falls within the ranges specified. Experience should be used to select specific values within the ranges. In general, finer materials or materials with significant silt-sized material will fall in the lower portion of the range. Coarser materials with less than five percent fines will fall in the upper portion of the ranges. The geologic history and angularity of the particles may also need to be considered when selecting a value for  $\phi_f$ .

Care should be exercised when using other correlations of SPT results to soil parameters. Some published correlations are based on corrected values ( $N_{160}$ ) and some are based on uncorrected values ( $N$ ).

The designer should ascertain the basis of the correlation and use either  $N_{160}$  or  $N$  as appropriate.

Care should also be exercised when using SPT blow counts to estimate soil shear strength if in soils with coarse gravel, cobbles, or boulders. Large gravels, cobbles, or boulders could cause the SPT blow counts to be unrealistically high.

The secant friction angle derived from the procedure to estimate the drained friction angle of gravels and rock fill materials depicted in Figure 10.4.6.2.4-1 is based on a straight line from the origin of a Mohr diagram to the intersection with the strength envelope at the effective normal stress. Thus, the angle derived is applicable only to analysis of field conditions subject to similar normal stresses. See Terzaghi, Peck, and Mesri (1996) for additional details regarding this procedure.

This publication is licensed to 73.149.116.197 (c/o Abdelmadjid M Lahlaf lgci@igcinc.net).

## **Seismic Parameters**

Project: Proposed Mast Arm and Retaining Wall

Location: Swansea, MA

LGCI Project No.: 2317

Purpose: Estimate Seismic Parameters

By: AML

Date: 7/08/2024

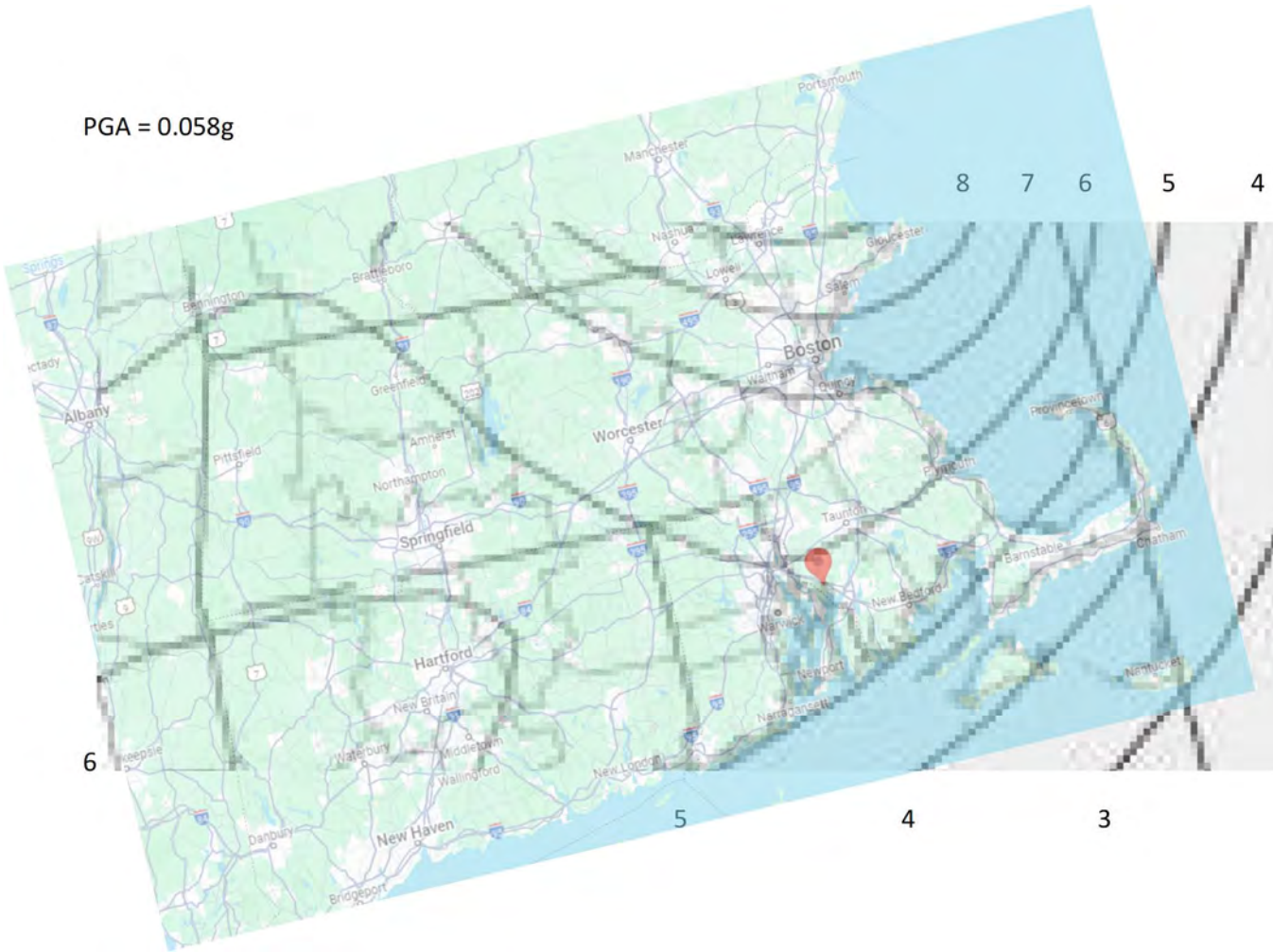
Checked by: SL

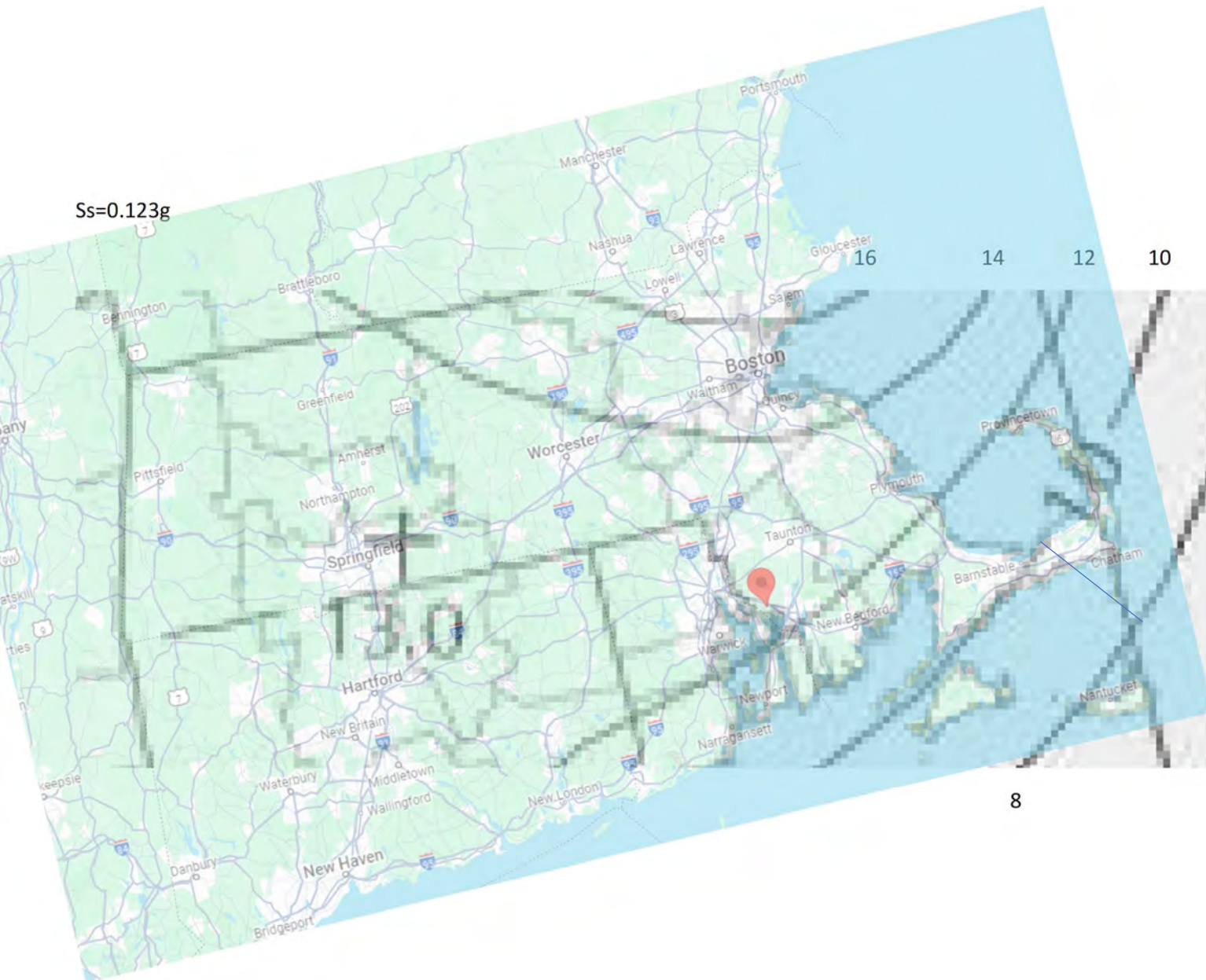
Date: 7/09/2024

Reference:

American Association of State Highway and Transportation Officials (2011), "AASHTO Guide Specifications for LRFD Seismic Bridge Design," 2<sup>nd</sup> Edition, with 2012 and 2014 Interim Revisions.

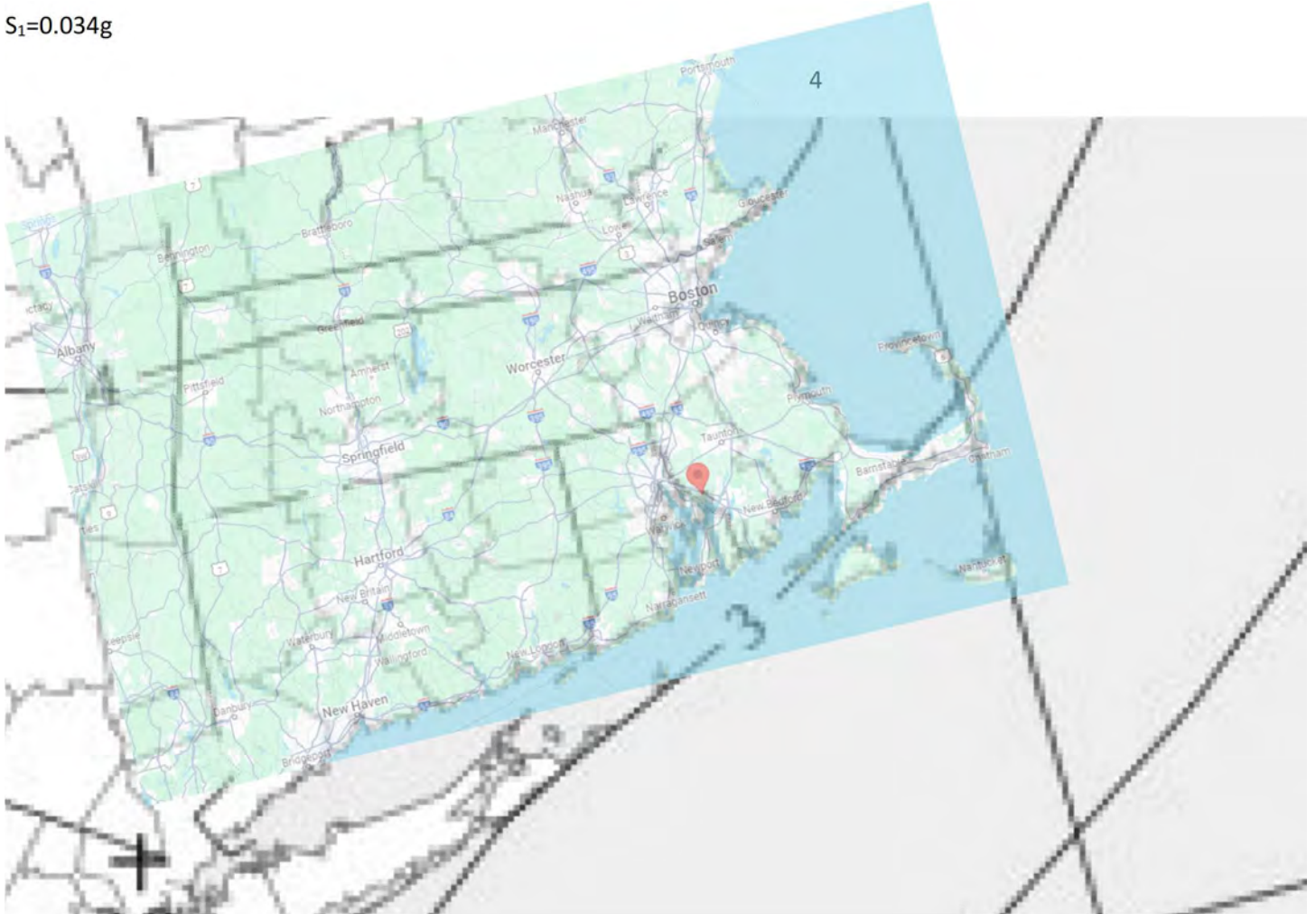
PGA = 0.058g







$S_1=0.034g$



3

2

**Coefficient of Lateral Earth Pressure**





Project Name: Proposed Mast Arm and Retaining Wall  
 Swansea, MA  
 LGCI Project No.: 2317  
 Date: 7/8/2024  
 Performed By: AML  
 Checked By: SL

**Purpose :** Calculate coefficient of earth pressure following AASHTO LRFD Bridge Design Specifications, 9th Ed., (2020)

- $\phi$  = soil internal friction angle
- $\theta$  = angle of back of retaining wall
- $\delta$  = friction angle between wall and soil
- $\beta$  = angle of soil slope behind wall, measured from horizontal

**Active Earth Pressure (AASHTO-9 (2020) - Section 3.11.5.3)**

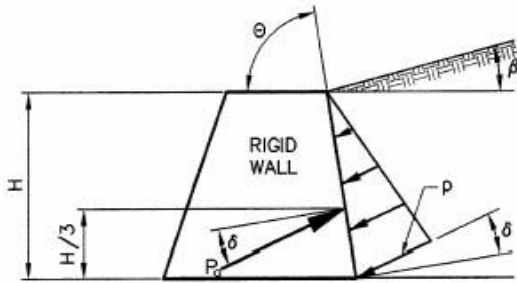


Figure from page 3-121, Equation 3.11.5.3-1  
 AASHTO-9 (2020)

Figure 3.11.5.3-1 Notation for Coulomb Active Earth Pressure.

$$K_A = \frac{\sin^2(\phi + \theta)}{\sin^2 \theta * \sin(\theta - \delta) * [1 + \sqrt{\frac{\sin(\phi + \delta) * \sin(\phi - \beta)}{\sin(\theta - \delta) * \sin(\theta + \beta)}}]^2} = \frac{A}{B * C * [1 + \sqrt{\frac{D}{E}}]^2}$$

Value of Variables:					Terms in equation:						
	$\phi$	$\theta$	$\delta$	$\beta$	A	B	C	D	E	F	$K_A$
degrees	32	90	10	0							
Radians	0.558	1.571	0.175	0	0.720	1.000	0.985	0.354	0.985	2.560	0.285

**At Rest Pressure**

$K_o = 1 - \sin \phi = 0.47$

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT A00808

# **PROJECT UTILITY COORDINATION FORM**

THIS PAGE INTENTIONALLY LEFT BLANK



# Project Utilities Coordination (PUC) Form

CONTACTS AND GENERAL UTILITY INFORMATION

<b>City/Town:</b> Swansea	<b>Project File #:</b> 608759	<b>PUC Completed by:</b> JC/JHL	<b>Utility Pole Set:</b> National Grid Electric
<b>Route/Street:</b> Rt. 6 at Route 136, Maple Ave and Route 118	<b>Resident Engineer:</b>	<b>Mass DOT PM:</b> Gregory Mischel	<b>Scheduled Ad Date:</b> 3/29/2025
<b>Consultant:</b> Nitsch Engineering	<b>Contact:</b> Mathew Soltys	<b>Office #:</b> 508-964-3355	<b>Cell #:</b>
<b>Utility Company</b>	<b>Contact</b>	<b>Office #</b>	<b>Cell #</b>

11/18/2024  
PRINTED

11/18/2024  
Revision  
Date:

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-Refundable	YES	NO	YES	NO	UG	OH
Grid Electric	Noah Skole	781-296-6483		Noah.Skole@nationalgrid.com	X		X		X	NO	X			X
Verizon	Karen Mealey/Peter DeCosta	774-409-3160 401-727-9943		karen.m.mealey@verizon.com Peter.x.decosta@verizon.com	X		X		X	NO	X			X
Comcast	Wendy Brown	978-843-5163		Wendy_Brown@cable.comcast.com	X		X		X	NO	X			X
Open Cape	Gary Farrenkopf			gfarrenkopf@opencape.com	X		X		X	NO	X			X
Liberty Utilities	Benjamin Phillips	508-468-7759		Benjamin.Phillips@libertyutilities.com	X		X		X	NO	X			X
Swansea School Dept IT	Gilbert Pereira	508-889-6429		gpereira@swansea-schools.org	X		X		X	NO	X			X

**Utility Relocation Notes for MassDOT Contractor**  
 Unless otherwise noted by Contract, the MassDOT Contractor is to provide the District Construction Office with 7 Calendar Days advance notification in order to validate the current progress and provide the required 30 Days advance notice-to-proceed for the first Utility - and each subsequent Utility. These advance notifications are to be identified in the Contractor's Schedules (Pre-Con preparation, Baseline, Subnets, and Updated/Monthly Schedules) as specified in subsection 8.02 (for DBB Contracts) and/or Section 9 (for 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 Swansea. 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
Has any of the utility work been identified to work concurrently	<input checked="" type="checkbox"/>	<input type="checkbox"/>

11/18/2024  
PRINTED



RESPONSIBLE PARTY	DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)				Concurrent / Exclusive Utility Work				Access Restraint & Limitations of Operations Notes	
		Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility is Contractor and Utility are working on-site - but NOT in the same vicinity	Contractor Concurrent	Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site	Contractor Concurrent	Potential Access Restraint (Yes/No)	Reason/Note (optional)
C = Contractor U = Utility Co.	>Contractor to notify Utilities 30 days prior to start of work >Clearing and Grubbing work and tree trimming as necessary. >Roadway embankments work as necessary.										
	<b>UTILITY OPERATIONS - Aerial</b>										
	<b>McAid Electric</b>										
U	Site Readiness: Dig-safe, pre-checks, etc.	10	X					X			
U	Poles and Anchors: 79 Poles, 50 Anchors, and 6 Pushbraces being relocated, replaced or removed	100	X					X			
U	Electric Overhead, Reconductor or crossarm construction and frame poles	165	X					X			
U	Secondary: Replace secondary cables & replace services	20	X					X			
U	Equipment: Replace transformers and relocate capacitor & load break switch	25	X					X			
U	Outage Coordination: Commercial customers (*estimated duration based on customer availability*)	75	X					X			
U	Civil: Spans of 15' conduit for 3ph riser relocations.	10	X					X			
U	Electric Underground: Riser relocations	30	X					X			
U	Tree Trimming: Additional tree trimming if needed	15	X					X			
	<b>Sub-Total</b>	<b>450</b>									
	<b>Open Cape</b>										
U	Route 6 and Maple Street	2	X					X			
U	Set-Up Work Location, Trucks, Work Area Protection, Police Detail		X					X			
U	Migrate Required Cable Slack to Transfer Locations.		X					X			
U	Transfer OpenCape Fiber Optic Cable from Old Poles to New Sets		X					X			
U	Breakdown Completed Work Site.		X					X			
U	Route 6 and Route 136	2	X					X			
U	Set-Up Work Location, Trucks, Work Area Protection, Police Detail		X					X			
U	Migrate Required Cable Slack to Transfer Locations.		X					X			
U	Transfer OpenCape Fiber Optic Cable from Old Poles to New Sets		X					X			
U	Breakdown Completed Work Site.		X					X			
U	Route 6 and Swansea Mail Drive	1	X					X			
U	Set-Up Work Location, Trucks, Work Area Protection, Police Detail		X					X			
U	Migrate Required Cable Slack to Transfer Locations.		X					X			
U	Transfer OpenCape Fiber Optic Cable from Old Poles to New Sets		X					X			
	<b>Sub-Total</b>	<b>5</b>									
	<b>Swansea Public Schools IT Department</b>										
U	Install 2000 Ft of new 72 count single mode fiber backbone cable on new poles. (Rte 6 at Maple - Area "2")	2	X					X			
U	Splice new fiber cable into existing backbone cable and testing (requires multiple splice crews to minimize down time)	2	X					X			
U	Wreck out old fiber cable, remove all pole attachment hardware, top poles, and dispose of materials	1	X					X			
U	Install 2500 Ft of new 72 count single mode fiber backbone cable on new poles. (Rte 6 at Milford & Mitchell St - Area "3")	2	X					X			
U	Splice new fiber cable into existing backbone cable and testing (requires multiple splice crews to minimize down time)	2	X					X			
U	Wreck out old fiber cable, remove all pole attachment hardware, top poles, and dispose of materials	1	X					X			
	<b>Sub-Total</b>	<b>10</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	
C = Contractor	U = Utility Co.	Utility working with no other Utilities in vicinity		Utility working with other Utilities on site		No Contractor physical construction operations on-site (while Utility is Contractor and Utility are working on-site - but NOT in the same vicinity		Potential Access Restraint (Yes/No)	Reason/Note (optional)		Should an AR be considered for the Contractor?				
		Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site	Contractor Concurrent										
<b>Comcast</b>															
U		Route 6 and Maple Street													
U		Comcast - Build new strand and cable	X												
U		Comcast - Splice in new equipment	X												
U		Comcast - Delash fiber and lash fiber to new cable plant	X												
U		Comcast - Wreck out old cable plant	X												
U		Route 6 and Route 136													
U		Comcast - Build new strand and cable	X												
U		Comcast - Splice in new equipment	X												
U		Comcast - Delash fiber and lash fiber to new cable plant	X												
U		Comcast - Wreck out old cable plant	X												
U		Route 6 and Swansea Mall Drive													
U		Comcast - Build new strand and cable	X												
U		Comcast - Splice in new equipment	X												
U		Comcast - Delash fiber and lash fiber to new cable plant	X												
U		Comcast - Wreck out old cable plant	X												
<b>Sub-Total</b>															
45															
<b>Verizon</b>															
C		>Contractor to install proposed conduits for Verizon at the Route 6 and Route 136 intersection location.													
U		Task 1 - Grants and easements for new pole and anchor locations to be obtained before work can begin	X												
U		Task 2 - ELCO to set all new jointly owned poles	X												
U		Task 3 - ELCO to transfer/place new facilities to new poles; ELCO remove all old facilities	X												
U		Task 4 - CATV to transfer/place new facilities to new poles; ELCO remove all old facilities	X												
U		Task 5 - MassDOT General Contractor to place new ducts for Verizon's use (Route 6 @ Route 136)	X												
U		Task 6 - Verizon contract work to place new risers and inspect conduit placed by MassDOT General Contractor	X												
U		Task 7 - Verizon Line splice all aerial strand and guying	X												
U		Task 8 - Verizon Line splice all aerial copper cables	X												
U		Task 9 - Verizon line splice riser copper cables	X												
U		Task 10 - Verizon line splice fiber cables	X												
U		Task 11 - Verizon splice all aerial copper cables and cut off cables to be removed	X												
U		Task 12 - Verizon splice all underground copper cables and cut off cables to be removed	X												
U		Task 13 - Verizon splice all aerial fiber cables and cut off cables to be removed	X												
U		Task 14 - Verizon splice all underground fiber cables and cut off cables to be removed	X												
U		Task 15 - Verizon line remove all aerial cables and associated plant	X												
U		Task 16 - Verizon line remove 26 jointly owned poles and anchors.	X												
<b>Sub-Total</b>															
210															
<b>UTILITY OPERATIONS - Underground</b>															
>Contractor to notify Utilities 30 days prior to start of work.															
<b>Liberty Utilities (Gas)</b>															
U		30ft relocation of 8" PE for proposed lateral between CB #18 and MH #19	X												
U		30ft relocation of 4" PE for proposed lateral between CB #30 and MH#29	X												
U		30ft relocation of 8" PE for proposed lateral between CB #34 and MH #33	X												
U		30ft relocation of 4" PE for proposed new signal pole location on Rt 136 at SS210+50	X												
U		25ft relocation of 4" PE for proposed CB # 47	X												
U		25ft relocation of 4" PE for proposed CB # 123 on Rte 136	X												
U		30ft relocation of 4" PE for proposed CB # 160	X												
U		30ft relocation of 8" WS for proposed CB #51(SS302+60)	X												
U		60ft relocation of 8" WS for proposed CB #53 and MH #52 on GAR Hwy (SS302+50)	X												
U		30ft relocation of 4" WS for proposed lateral between CB #55 and MH #54 on GAR Hwy (SS305+00)	X												
U		70ft relocation of 4" WS for proposed CB #63 and CB #64 on Maple Ave (SS409+60)	X												
U		350ft relocation of 8" WS for proposed new sidewalk GAR Hwy (SS314+00 to 317+40) Test holes to determine if main needs relo	X												
U		25ft relocation of 4" WS for proposed CB #74 on Maple Ave (411+20)	X												
U		40ft relocation of 8" WS for proposed CB#91 and MH#93 on Michael Ave at GAR Hwy)	X												
U		valve box adjustments for paving as needed	X												
<b>Sub-Total</b>															
67															

RESPONSIBLE PARTY	
C = Contractor	
U = Utility Co.	

DESCRIPTION - Utility Relocation Phases, Tasks and Activities							
<b>Estimated Duration (Work Days) by Utilities</b> (Lead time not included)							
<b>Concurrent / Exclusive Utility Work</b> <small>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.</small>	<table border="1"> <tr> <td>Utility working with no other Utilities in vicinity</td> <td>Utility working with other Utilities on site</td> <td>No Contractor physical construction operations on-site (while Utility is Contractor and Utility are working on-site - but NOT in the same vicinity</td> </tr> <tr> <td style="text-align: center;">Exclusive Utility on site</td> <td style="text-align: center;">Concurrent Utilities</td> <td style="text-align: center;">Contractor Off-Site Contractor Concurrent</td> </tr> </table>	Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility is Contractor and Utility are working on-site - but NOT in the same vicinity	Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site Contractor Concurrent
	Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility is Contractor and Utility are working on-site - but NOT in the same vicinity				
	Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site Contractor Concurrent				
	Potential Access Restraint (Yes/No)	Reason/Note (optional)					
Should an AR be considered for the Contractor ?							

**IMPORTANT BASIS NOTES - FOR CONTRACTOR**

- 1 Unless otherwise specified in the MassDOT Construction Contract, or unless specifically noted within this PUC Form, these durations (herein) are based upon the Contractor providing *unimpeded access* to the Utility company to perform Utility relocations (see Note 5 - Access).
- 2 "Concurrent Utilities" operations noted herein, are to signify those Utility Company operations that can be worked concurrently (e.g. Utility A and Utility B work on-site together) - MassDOT and the Contractor are to prepare NTPs to Utilities accordingly.
- 3 "Potential Access Restraints" noted within this PUC Form are for planning purposes. See MassDOT Contract for Contractual Access Restraints (refer to Subsections 8.02, 8.03, and/or 8.06 for Design Bid Build Contracts and Volume II Section 9 for Design Build Contracts).
- 4 Utility non-work periods - For planning purposes, the durations above contain some non work days (contingency) for New England conditions (precipitation, high temperatures, low temperatures, snow, ice). Gas line work however, typically has a seasonal restriction and can NOT be installed from 15-November to 15-March. Municipally Owned Electric and Gas Utilities are also restricted from proceeding from 15-November to 15-March. The Contractor shall (and the CTD plan) reflect this calendar restriction within the schedule (unless otherwise note).
- 5 Access - Unless otherwise noted in the contract, and in addition to the 'enabling' notes above, the contractor must provide safe and unimpeded access (for trucks, lifts, cranes, etc.) to the Utilities, to allow for the proposed relocation(s) - including but not limited to snow removal, clearing and grubbing, guard rail removal, barrier removal, tree removal, and grading.
- 6 For all MassDOT construction contracts issued after January 2014, the new Utility Coordination/documentation specification is required. This is Section 8.14 in Design-Bid-Build Contracts (see Design-Build index reference for applicable section #).
- 7 Prior to starting any and all enabling work for Utilities, the Contractor is to plan in advance with submittals and approved durations.
- 8 \* Potential District Initiated Early Utility Relocation - if noted herein, the District reserves the right to initiate early utility relocation in advance of the Contract NTP. In submitting a bid price and in the development/basis of the
- 9 \*\* Assumed Duration, Not Provided By Utility Company.



DOCUMENT A00811

**WATERING LOG**  
**for**  
**MassDOT Plantings**

# Watering Log for MassDOT Plantings

**Project Description:**

**Contract No.:**

**Plant Locations/s:**   
 (Attach planting plan/s as necessary)

**Project No.:**

**Notes:**

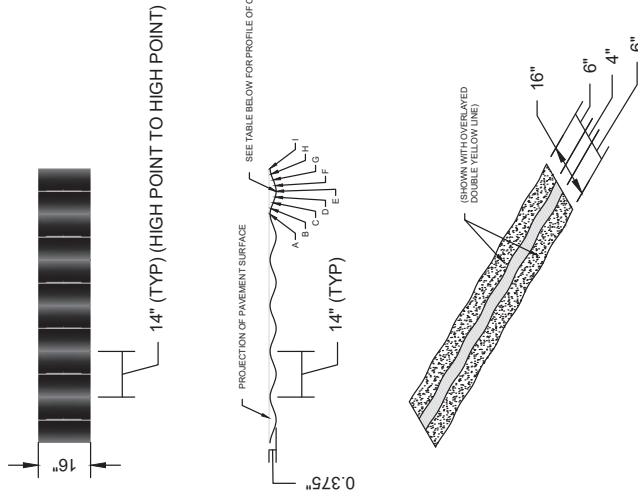
Separate logs shall be kept to track areas or plants with different watering schedules. Trees shall receive a minimum of 10 gallons with each watering and shrubs a minimum of 5 gallons. Provide note that if watering is not performed as scheduled due to rain. Record date of rainfall and amount.												
Date Watered												
Landscape Contractor Initial												
Prime Contractor Initial												
Date Watered												
Landscape Contractor Initial												
Prime Contractor Initial												

Each week, following watering, Log shall be submitted to the MassDOT Engineer.  
 6/15/2018

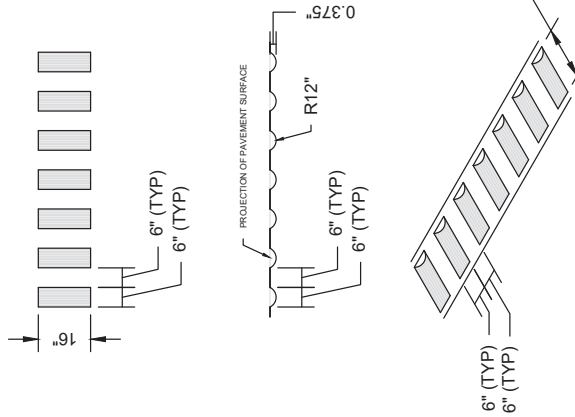
DOCUMENT A00816

# RUMBLE STRIP DETAILS

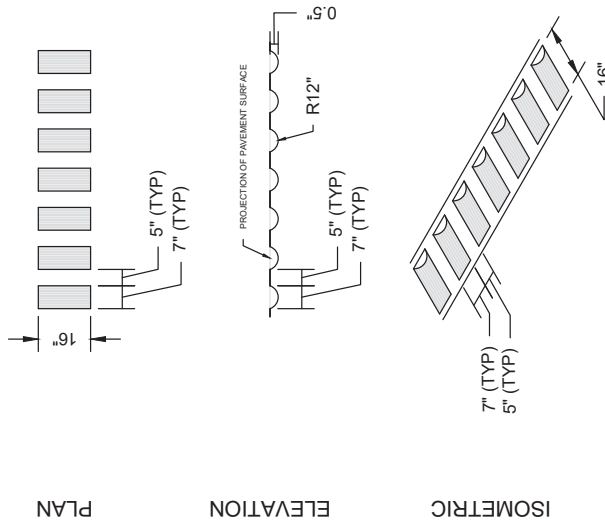
**TYPE C**  
**CONTINUOUS SINUSOIDAL**  
**RUMBLE STRIP**



**TYPE B**  
**CYLINDER RUMBLE STRIP**  
**(BICYCLE TRAVEL PERMITTED)**



**TYPE A**  
**CYLINDER RUMBLE STRIP**  
**(BICYCLE TRAVEL PROHIBITED)**



- NOTES:**
1. NOT TO SCALE. SOME LINE WORK EXAGGERATED FOR CLARITY.
  2. SEE PLANS FOR LOCATION(S) AND START AND END STATIONS FOR ALL RUMBLE STRIP INSTALLATIONS.
  3. HIGH POINT OF SINUSOIDAL RUMBLE STRIP LOCATED  $\frac{1}{16}$ " BELOW PAVEMENT SURFACE.

**DESIGN OF CURVE PROFILE FOR SINUSOIDAL RUMBLE STRIP**

POINT	A	B	C	D	E	F	G	H	I
DEPTH FROM PAVEMENT SURFACE (IN.)	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{7}{32}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{11}{32}$	$\frac{7}{32}$	$\frac{1}{8}$	$\frac{1}{16}$
DISTANCE FROM HIGH POINT "A" (IN.)	0	1.75	3.5	5.25	7	8.75	10.5	12.25	14

**massDOT**  
Massachusetts Department of Transportation  
Highway Division

**TRAFFIC & SAFETY STANDARDS**  
SECTION 860

**RUMBLE STRIP DETAILS**

D-T-E OF ISSUE  
2020

DR- ING NUMBER  
**XXX.X.X**

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: SWANSEA Project File Number: 608759

Contract Number: 130047

Project Description: Traffic Signal and Safety Improvements at Three Intersections on Route 6

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: \_\_\_\_\_

THIS PAGE IS INTENTIONALLY LEFT BLANK

DOCUMENT A00850

# **MASSACHUSETTS WETLANDS PROTECTION ACT**

## **Request for Determination**

THIS PAGE INTENTIONALLY LEFT BLANK





August 8, 2024

2 Center Plaza, Suite 430  
 Boston, MA 02108-1928  
 T: 617-338-0063  
 F: 617-338-6472  
[www.nitscheng.com](http://www.nitscheng.com)

Ms. Adeline Bellesheim  
 Conservation Agent  
 Conservation Commission  
 Town of Swansea  
 68 Stevens Road  
 Swansea, MA 02777

RE: Nitsch Project #9720.19  
 MassDOT Project: 608759  
 Traffic Signal & Safety  
 Improvement at Three  
 Intersections on Route 6  
 Swansea, MA

Dear Ms. Bellesheim:

On behalf of the Applicant, the Massachusetts Department of Transportation-Highway Division (MassDOT), Nitsch Engineering respectfully submits the enclosed Request for Determination of Applicability (RDA) for the intersection improvements at three intersections along Route 6 (Grand Army of the Republic Highway) (Route 6 at Route 136, Route 6 at Maple Avenue, and Route 6 at Route 118) in Swansea, Massachusetts. This filing is submitted pursuant to the Massachusetts Wetlands Protection Act (the Act, M.G.L.c.131 § 40) and its implementing Regulations (the Act Regulations, 310 CMR 10.00).

As an agency of the Commonwealth providing essential government functions, MassDOT is exempt from certain municipal requirements including but not limited to wetland bylaws, ordinances and policies, and for paying peer review fees. Additionally, MassDOT is not required to notify abutters per the WPA Regulations at 310 CMR 10.05(4).

Bordering Vegetated Wetland (BVW) occurs on and/or proximate to the project area and are protected under the Act and Act Regulations. A portion of the project area is located within the previously disturbed/developed 100-foot Buffer Zone. A portion of the proposed work within buffer to BVW is considered minor in nature and exempt per 310 CMR 10.02(2)(b) [10.02;(2)(b)2f, 2h, 2m, 2n, 2o, 2p], this work includes: tree and shrub pruning/trimming, installation and removal of overhead wires and poles, and installation and repair of traffic signs. Proposed work within the BVW buffer zone is limited to full depth pavement box widening, curb realignment, sidewalk and driveway reconstruction, roadway resurfacing, and grading at back of sidewalk. As part of the proposed activities, the Applicant will implement erosion controls and establish a clearly defined Limit-of-Work. It shall be noted that buffer zone impacts are only proposed at Route 6 at Route 136 intersection. Minor exempt work is proposed at the Route 6 at Route 118 intersection and is included herein. No bordering wetlands are buffer zones are located within the Route 6 at Maple Avenue intersection and is therefore not included in this document.

In conclusion, the proposed project fully complies with the governing regulations such that we respectfully request the Commission to issue a Negative Determination of Applicability allowing the work to proceed as described herein.

If you have any questions or require additional copies of plans or documents, please feel free to contact me at 508-964-3355.

Very truly yours,

**Nitsch Engineering, Inc.**

Matthew Soltys, PE, RSP, ENV SP  
 Project Manager

MJS/

\\jnei.local\DFS\Projects\08000-09999\9720.19 Rte 6 Swansea\Transportation\Project Data\RDA\RDA Swansea-ltr.docx



**Nitsch Engineering**

# Request for Determination of Applicability

Under the *Massachusetts Wetland Protection Act*  
(MGL c. 13, s. 40) and Implementing Regulations (310 CMR 10.00)

For:

Traffic Signal and Safety Improvements at  
Three Locations on U.S. Route 6

**Swansea, MA**

**July 22, 2024**

Prepared for:

Massachusetts Department of Transportation  
Highway Division, District 5 Office  
1000 County Street  
Taunton, MA 02780

Submitted by:

Nitsch Engineering  
2 Center Plaza, Suite 430  
Boston, MA 02108

Nitsch Engineering Project #9720.19  
MassDOT Project #608759

**TABLE OF CONTENTS**

---

TABLE OF CONTENTS ..... 2

SECTION 1 ..... 3

    WPA FORM 1 – REQUEST FOR DETERMINATION OF APPLICABILITY ..... 3

SECTION 2 ..... 8

    PROJECT NARRATIVE..... 8

        PROJECT OVERVIEW ..... 9

        EXISTING CONDITIONS..... 10

        PROPOSED CONDITIONS..... 11

        OTHER ENVIRONMENTAL CONSIDERATIONS ..... 12

        SUMMARY OF PROPOSED WORK IN THE WETLAND RESOURCE AREAS..... 13

        SUMMARY..... 15

FIGURES ..... 16

    Locus Map..... 17

    USGS Locus Map ..... 18

    FEMA Flood Insurance Rate Map..... 19

    Rare Species Habitat Map..... 20

    Wetlands Map..... 21

    Existing Conditions Photos..... 22

APPENDIX A..... 23

    DESIGN PLANS..... 23

APPENDIX B..... 24

    LEC WETLAND DELINEATION REPORT ..... 24

Traffic Signal Improvements at  
Three Intersections on Route 6

Request for Determination of Applicability  
July 22, 2024

**SECTION 1**

---

**WPA FORM 1 – REQUEST FOR DETERMINATION OF APPLICABILITY**



**Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands

Swansea

City/Town

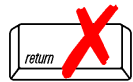
**WPA Form 1- Request for Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**A. General Information**

**Important:**

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Erica Larner; Massachusetts Department of Transportation - Highway Division

erica.n.larner@dot.state.ma.us

E-Mail Address

10 Park Plaza, Room 7360

Mailing Address

Boston

MA

02116

City/Town

State

Zip Code

(857) 268-1729

Phone Number

Fax Number (if applicable)

2. Representative (if any):

Nitsch Engineering

Firm

Matthew Soltys

msoltys@nitscheng.com

Contact Name

E-Mail Address

370 Main Street Suite 850

Mailing Address

Worcester

MA

01608

City/Town

State

Zip Code

508-964-3345

Phone Number

617-338-6472

Fax Number (if applicable)

**B. Determinations**

1. I request the Town of Swansea make the following determination(s). Check any that apply:  
Conservation Commission

- a. whether the **area** depicted on plan(s) and/or map(s) referenced below is an area subject to jurisdiction of the Wetlands Protection Act.
- b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced below are accurately delineated.
- c. whether the **work** depicted on plan(s) referenced below is subject to the Wetlands Protection Act.
- d. whether the area and/or work depicted on plan(s) referenced below is subject to the jurisdiction of any **municipal wetlands ordinance** or **bylaw** of:

\_\_\_\_\_  
 Name of Municipality

- e. whether the following **scope of alternatives** is adequate for work in the Riverfront Area as depicted on referenced plan(s).

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



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

Swansea  
City/Town

**WPA Form 1- Request for Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**C. Project Description**

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

U.S. Route 6 at Route 136, Maple Avenue, Route  
118

Swansea  
City/Town

State Roadway

Assessors Map/Plat Number

Parcel/Lot Number

b. Area Description (use additional paper, if necessary):

Proposed traffic signal and safety improvements at three intersections (Route 6 @ Route 136, Route 6 @ Maple Avenue, Route 6 @ Route 188) along U.S. Route 6 (Grand Army of the Republic Highway) in the Town of Swansea, Massachusetts. Work includes intersection upgrades and work on the approaches, as required. Existing land use is urbanized area with commercial properties.

c. Plan and/or Map Reference(s):

Traffic Signal and Safety Improvements at Three Locations on Grand Army  
of the Republic (GAR) Highway (Route 6) - Construction sheets (#25-38)  
Stamped by Matthew Soltys, PE

5/17/2024  
Date

Title

Date

Title

Date

2. a. Work Description (use additional paper and/or provide plan(s) of work, if necessary):

Proposed work consists of and upgrade to all signal equipment at all 3 intersections, sidewalk reconstruction in compliance with Americans with Disabilities Act (ADA) and Massachusetts Architectural Access Board (MAAB) guidelines. Exclusive bicycle lanes and bike boxes will be provided to address MassDOT's Complete Streets and GreenDOT Initiatives. Intersection approaches will be widened to accommodate the addition of exclusive bicycle lanes and exclusive left-turn approaches where proposed.



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

Swansea  
City/Town

**WPA Form 1- Request for Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**C. Project Description (cont.)**

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

See Project Narrative. It shall be noted that the project qualifies under minor activities 310 CMR 10.02 (2)(b), 310 CMR 10.02 (2)(b) 2f, 2h, 2k 2m, 2n, 2o, 2p, a majority of the proposed work is exempt from regulation.

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- Single family house on a lot recorded on or before 8/1/96
- Single family house on a lot recorded after 8/1/96
- Expansion of an existing structure on a lot recorded after 8/1/96
- Project, other than a single family house or public project, where the applicant owned the lot before 8/7/96
- New agriculture or aquaculture project
- Public project where funds were appropriated prior to 8/7/96
- Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- Residential subdivision; institutional, industrial, or commercial project
- Municipal project
- District, county, state, or federal government project
- Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)



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

Swansea  
City/Town

**WPA Form 1- Request for Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**D. Signatures and Submittal Requirements**

I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Name and address of the property owner:

Erica Lerner; Massachusetts Department of Transportation - Highway Division

Name

10 Park Plaza, Room 7360

Mailing Address

Boston

City/Town

MA

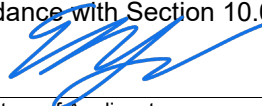
State

02116

Zip Code

Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.

  
Signature of Applicant

7/24/2024

Date

  
Signature of Representative (if any)

8/8/2024

Date



**SECTION 2**

---

**PROJECT NARRATIVE**

## PROJECT OVERVIEW

---

On behalf of the Applicant, The Massachusetts Department of Transportation – Highway Division (MassDOT), Nitsch Engineering is seeking a determination on the applicability of the Massachusetts Wetlands Protection Act (MGL c131 s.40) and implementing Regulations (310 CMR 10.00), for the proposed traffic signal and safety improvement project. Traffic signal and safety improvements are proposed at three intersections along U.S. Route 6, also known as Grand Army of the Republic (GAR) Highway in the Town of Swansea, Massachusetts. The three intersections, referred to as “the study intersections” herein, include: the intersection of U.S. Route 6 at James Reynolds Road (Route 136) and Market Street (Route 136), the intersection of U.S. Route 6 at Maple Avenue, and U.S. Route 6 at Swansea Mall Drive (Route 118). Figure 1 shows the Locus Map and Figures 2A and 2B show the study area.

The project was initiated by MassDOT as the three intersections have a high rate of crash history. In August 2016, the Massachusetts Department of Transportation (MassDOT) released the “2014 Top Crash Locations Report”<sup>1</sup>, which details the Top 200 Intersection Locations in the Commonwealth of Massachusetts for the study period of 2012-2014. The report ranks intersections by the number of Equivalent Property Damage Only (EPDO) crashes, in which fatal crashes are weighted by ten, injury crashes are weighted by five, and property damage only or non-reported crashes are weighted by one. The study intersection of U.S. Route 6 at Route 136 was ranked at #3 Statewide, and the study intersection of U.S. Route 6 at Route 118 was ranked at #101 Statewide. The project goals include improving safety for all users, improving pedestrian mobility, and providing bicycle accommodations.

The proposed project consists of geometric modification of the intersection at Grand Army of the Republic Highway (Route 6) at three locations (Market Street/Route 136, Maple Avenue, and Swansea Mall Drive/Route 118) to include exclusive left turn lanes and bicycle and pedestrian accommodation as part of the proposed safety improvement work. The work to be done under this project also consists of furnishing and installing of new traffic signal equipment at the intersections including emergency vehicle pre-emption system, bicycle and vehicles loop detectors, construction of ADA compliant pedestrian curb ramps, sidewalks, and driveways, full depth box widening, pavement milling and resurfacing, new pavement markings and signs, drainage improvements, existing utility pole relocations, installation of granite curbing, loam and seeding, and all other incidental items of work included in the contract document. Existing utility pole relocation will be done by others.

Bordering Vegetated Wetland (BVW) occurs on and/or proximate to the project area and are protected under the Act and Act Regulations. The project area is located largely within the previously disturbed/developed 100-foot Buffer Zone. A portion of the proposed work within buffer to BVW is considered minor in nature and exempt per 310 CMR 10.02(2)(b) [10.02;(2)(b)2f, 2h, 2m, 2n, 2o, 2p], this work includes: tree and shrub pruning/trimming, installation and removal of overhead wires and poles, and installation and repair of traffic signs. Proposed work within the BVW buffer zone is limited to full depth pavement box widening, curb realignment, sidewalk and driveway reconstruction, roadway resurfacing, and grading at back of sidewalk. As part of the proposed activities, the Applicant will implement erosion controls and establish a clearly defined Limit-of-Work.

It shall be noted that buffer zone impacts are only proposed at Route 6 at Route 136 intersection. Minor exempt work is proposed at the Route 6 at Route 118 intersection and is included herein. No bordering wetlands are buffer zones are located within the Route 6 at Maple Avenue intersection and is therefore not included in this document.

---

<sup>1</sup> 2014 Top Crash Locations Report, Massachusetts Department of Transportation (MassDOT), August 2016

**EXISTING CONDITIONS**

---

On February 15, 2023, and supplemented on April 26, 2024, wetland investigations were performed by a Professional Wetland Scientists (PWS) employed by LEC Environmental Consultants, Inc., in accordance with the Massachusetts Wetland Protection Act (1995), the U.S. Army Corps of Engineers (ACOE) *Wetland Delineation Manual* (1987) and the Town of Swansea Wetlands Protection By-law and Regulations (Wetland Bylaw) to determine if wetland resource areas were present within or adjacent to potential work areas.

Four bordering vegetated wetlands (Series A through E) (BVWs) were delineated along two of the three intersections (U.S. Route 6 at Route 136 and U.S. Route 6 at Route 118).

- A. Wetland A: East side of Route 136, near southerly project limits
  - 1. Flags WF#A-1 to WF#A-6
- B. Wetland B: West side of Route 136, past the northerly project limits
  - 1. Flags WF#B1 to WF#B4 & WF#B1-1 to WF#B1-8
- B. Wetland C&D: West side of Route 136, near northerly project limits
  - 1. Flags WF#C1 to WF#C8
  - 2. Flags WF#D-1 to WF#D-5
- D. Wetland E: Route 6 at Route 118, near westerly project limits
  - 1. Flags WF#E-1 to WF#E-4
  - 2. This wetland area is outside the limits of work.

These intersections do not occur within Department of Environmental (DEP) wellhead protection areas, surface water supply protection zones/outstanding resource waters (ORWs) or FEMA 100-year floodplains. A review of the Massachusetts Natural Heritage GIS data layer (2018) indicates that there is no estimated/priority habitat or rare upland, or wetland wildlife located within potential work areas along U.S. Route 6. No perennial streams occur in the vicinity of the study intersections according to USGS Somerset, Fall River and East Providence topographic maps. Additional information on the wetland resource areas can be found in LEC's Wetland Delineation Report in Appendix B. Figures 3A and 3B show the USGS Locus Maps of the project area.

**PROPOSED CONDITIONS**

---

*U.S. Route 6 at Route 136*

At the intersection of Route 6 and Route 136, the project proposes to improve exclusive left turn lanes at the intersection. The existing exclusive left turn lanes are being extended, and new exclusive right turn lanes are being added for the southbound and westbound directions. New raised medians are being constructed on all approaches to restrict left turns out of commercial driveways. New ADA compliant sidewalks are being constructed throughout the project limits, where are proposed to be wide enough to be bicycle accommodating. Box widening is proposed for the extension of the exclusive turn lanes and improved roadway geometry. Existing driveways are proposed to be reconstructed to provide delineation and ADA compliant crossings. The existing traffic signal is proposed to be replaced with a new signal system and ADA compliant crossings.

Utility upgrades and modifications are required for the reconfigured roadway geometry. Overhead utility wires and poles will be relocated to be at the back of the proposed sidewalks. The existing closed drainage system is proposed to be modified to accommodate the new roadway alignment. The existing trunk line system and outlets are proposed to be retained. Existing catch basins will be retained where appropriate. In locations of roadway widening, new deep sump catch basins will be installed and connected to the existing closed drainage system. There are 11,810 Square Feet of total buffer zone impacts proposed at this intersection. As part of the proposed improvements, about 2,000 Square Feet of additional impervious area will be added within the project limits. Proposed impervious area within the buffer zone areas is 1,225 Square Feet, primarily due to proposed sidewalks.

Construction plans with the 100-foot BVW buffer for Wetlands A through D can be found in Appendix A.

*U.S. Route 6 at Route 118*

For the intersection of U.S. Route 6 and Route 118, the intersection will be reconfigured by removing the channelized right-turn lanes on U.S. Route 6 westbound and Route 118 southbound and replacing them with exclusive right-turn lanes adjacent to the left turn lanes, which will likely reduce the crashes at this intersection associated with merging and yielding. This reconfiguration will replace impervious surface occupied by channelized right-turn lanes with grass area. U.S. Route 6 will be widened to accommodate the addition of bicycle accommodating sidewalks and improved travel lane geometry. A new traffic signal system with ADA compliant crossings will be installed as part of the project. A median island will be installed on U.S. Route 6 eastbound to provide access management by restricting left-turns into and out of the commercial driveways on the south side of the roadway. Utility upgrades and modifications are required for the reconfigured roadway geometry. Overhead utility wires and poles will be relocated to be at the back of the proposed sidewalks. The existing closed drainage system is proposed to be modified to accommodate the new roadway alignment. The existing trunk line system and outlets are proposed to be retained. Existing catch basins will be retained where appropriate. In locations of roadway widening, new deep sump catch basins will be installed and connected to the existing closed drainage system.

A BVW is located northwest of the U.S. Route 6 at Route 118 intersection (Wetland E). No work is proposed within the 100-foot BVW buffer, except for overhead utility relocation, which is exempt per 310 CMR 10.02(2)(b) 2h. Erosion controls will be installed prior to construction and silt sacks will be installed on each catch basin. All disturbed areas will be stabilized and reseeded upon completion of work. As part of the proposed improvements, about 7,000 Square Feet of additional impervious area will be added within the project limits. Proposed sidewalks are the primary reason for the additional impervious area.

## **OTHER ENVIRONMENTAL CONSIDERATIONS**

---

### FEMA Flood Zone

Based on the GIS FEMA Flood Insurance Rate Map for the surrounding project area, the Project limit of work is not located within any Flood Zones (Figures 4A and 4B).

### Natural Heritage and Endangered Species Program

Based on the GIS Rare Species Map for the surrounding project area, the project areas do not fall within Priority Habitat of Rare Species and/or Estimated Habitat of Rare Wildlife by the Natural Heritage and Endangered Species Program under the Massachusetts Endangered Species Act and the Massachusetts Wetlands Protection Act, respectively (Natural Heritage Atlas, 2012) (Figures 5A and 5B).

Using the U.S. Fish and Wildlife Services' (FWS) Information for Planning and Conservation (IPaC) online mapping tool, the Red Knot Bird (*Calidris canutus rufa*) and the Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*) were found within the project limits of all three intersections. This is an intersection improvement project that involves roadway reconstruction, sidewalk reconstruction, curb realignment, and pavement resurfacing all within the existing Right of Way (ROW). The project site is within a previously developed area and does not involve removing native vegetation. With this said, a "No Effect" determination can be assumed for the Red Knot Bird and no further action is needed.

Proposed project work does not include activities purposely taking the NLEB habitat. A review of the Online NHESP Northern Long-eared Bat Location Map indicates there are no known locations of winter hibernacula and maternity roost trees in the surrounding area. A review of the Online Town Species of all documented MESA-listed species indicates there has been no observed NLEBs in the town of Swansea. Subsequently, a "No Effect" determination can be assumed for the NLEB and no further action is needed.

**SUMMARY OF PROPOSED WORK IN THE WETLAND RESOURCE AREAS**

Proposed work for the project at the intersections falls within BVW buffer zones of Wetlands A, B, C, & D at Route 6/Route 136. Proposed work near Wetlands E, which are primarily located near the Route 6/I-195 interchange (Exit 8), east of the intersection of Route 118, are located outside of the wetlands and buffer zone.

A portion of the proposed work within buffer to BVW is considered minor in nature and exempt per 310 CMR 10.02(2)(b) [10.02;(2)(b)2f, 2h, 2m, 2n, 2o, 2p], this work includes: tree and shrub pruning/trimming, pavement milling and overlay/resurfacing, installation and removal of overhead wires and poles, and installation and repair of traffic signs.

Proposed work within the buffer zone for the BVW of Wetland A, located along the east side of Route 136, south of the intersection with Route 6, is shown in Table 1. Proposed work within the northeast BVW buffer zone is limited to curb realignment, sidewalk and driveway reconstruction, roadway resurfacing, and grading at back of sidewalk. The existing area within the buffer zone is primarily impervious; therefore, no impervious area is being added.

<b>Table 1: Summary of Proposed Work within BVW 100-foot buffer of Wetland A</b>
1. Reconstruction of hot mix asphalt sidewalk
2. Grading at back of sidewalk
3. Curb realignment
<b>Total Disturbance with Buffer Zone = 2,110 SF</b>

Proposed work within the two buffer zones for the BVW of Wetlands B, C & D, located along the west side of Route 136, north of the intersection with Route 6, is shown in Table 2. Buffer zone work is limited to sidewalk reconstruction, driveway reconstruction, roadway resurfacing, and grading at back of sidewalk. There is negligible change in impervious area for the proposed work within the buffer zone for Wetland A. Impervious area will be added (1,225 square feet) due to box widening and bicycle accommodating sidewalks within the buffer zones to Wetlands B, C & D. This additional impervious area, for Wetland buffer zones of B, C, & D, is collected via the existing closed drainage system and outlets near the Route 136/I-195 interchange via a 24" pipe. This discharge location is located within Wetland B along the west side of Route 136.

<b>Table 2: Summary of Proposed Work within BVW 100-foot buffer of Wetlands B, C &amp; D</b>
<ol style="list-style-type: none"> <li>1. Full depth pavement widening</li> <li>2. Reconstruction of hot mix asphalt sidewalk</li> <li>3. Reconstruction of cement concrete/hot mix asphalt driveway</li> <li>4. Grading at back of sidewalk</li> <li>5. Curb realignment</li> <li>6. Clearing and grubbing at back of sidewalk</li> </ol>
<b>Total Disturbance with Buffer Zone = 9,700 SF</b>

Construction plans for the intersection of the project are provided in Appendix A. Figure 6 shows the GIS wetland data layers for the intersection of U.S. Route 6 at Route 136.

Table 3 below summarizes the impact areas for all proposed buffer zone areas, including additional impervious areas within the Route 6 at Route 136 intersection.

<b>Table 3: Area Summary – Route 6 at Route 136</b>	
Total Buffer Zone Impact Area (Square Feet)	2,110 SF (Wetland A) + 9,700 SF (Wetlands B, C, D) = 11,810 SF Total
Change in Impervious Area Within Buffer Zones (Square Feet)	+1,225 SF Impervious
Change in Impervious Area for Intersection (Square Feet)	+2,000 SF Impervious (~1% of total project area)

Proposed work at the intersection of U.S. Route 6 at Route 118 is outside of all resource areas and wetland buffer zones except for overhead utility relocation which is exempt per 310 CMR 10.02(2)(b) 2h. Therefore, there are no buffer zone impacts proposed at this intersection.

Table 4 below summarizes the impact areas for all proposed buffer zone areas, including additional impervious areas within the Route 6 at Route 118 intersection.

<b>Table 4: Area Summary – Route 6 at Route 118</b>	
Total Buffer Zone Impact Area (Square Feet)	No Impact Area – All work is minor exempt
Change in Impervious Area Within Buffer Zones (Square Feet)	No Change – All work is minor exempt
Change in Impervious Area for Intersection (Square Feet)	+7,000 SF Impervious (~7% of total project area)

As part of the proposed improvements, the existing closed drainage system is to be retained. Catch basins will be relocated to the new roadway geometry. Existing outlets, outside of the project limits, are to be retained. It is assumed that these outlets connect to wetland resource areas. A soil erosion and sediment control plan will be implemented before the start of construction operations and removed following construction and site stabilization. Erosion controls will consist of compost filter tubes positioned along contours and perpendicular to sheet or concentrated flow and silt sacks, or equivalent, installed at each catch basin.

**SUMMARY**

In summary, although some of the proposed construction activities will occur within the outer 100-foot buffer zone of BVWs, the proposed work effort will not result in any direct impacts to the resources. Additionally, soil erosion and sediment controls designed to avoid secondary impacts also are proposed. Accordingly, it is requested that the Swansea Conservation Commission issue a Negative Determination with conditions as deemed appropriate, thereby allowing the project to proceed in the absence of the preparation of filing a Notice of Intent.



**FIGURES**

<b>Figure 1</b>	<b>Locus Map</b>
<b>Figure 2A, 2B</b>	<b>Study Areas</b>
<b>Figure 3A, 3B</b>	<b>USGS Locus Maps</b>
<b>Figure 4A, 4B</b>	<b>FEMA Flood Insurance Rate Maps</b>
<b>Figure 5A, 5B</b>	<b>Rare Species Habitat Maps</b>
<b>Figure 6</b>	<b>Wetlands Map</b>
<b>Figure 7</b>	<b>Existing Condition Photos</b>



**Figure 1: Locus**

Traffic Signal and Safety Improvements at Three Intersections on U.S. Route 6  
Swansea, MA





**Figure 2A: Study Area - U.S. Route 6 at Route 136**

Traffic Signal and Safety Improvements at Three Intersections on U.S. Route 6  
Swansea, MA

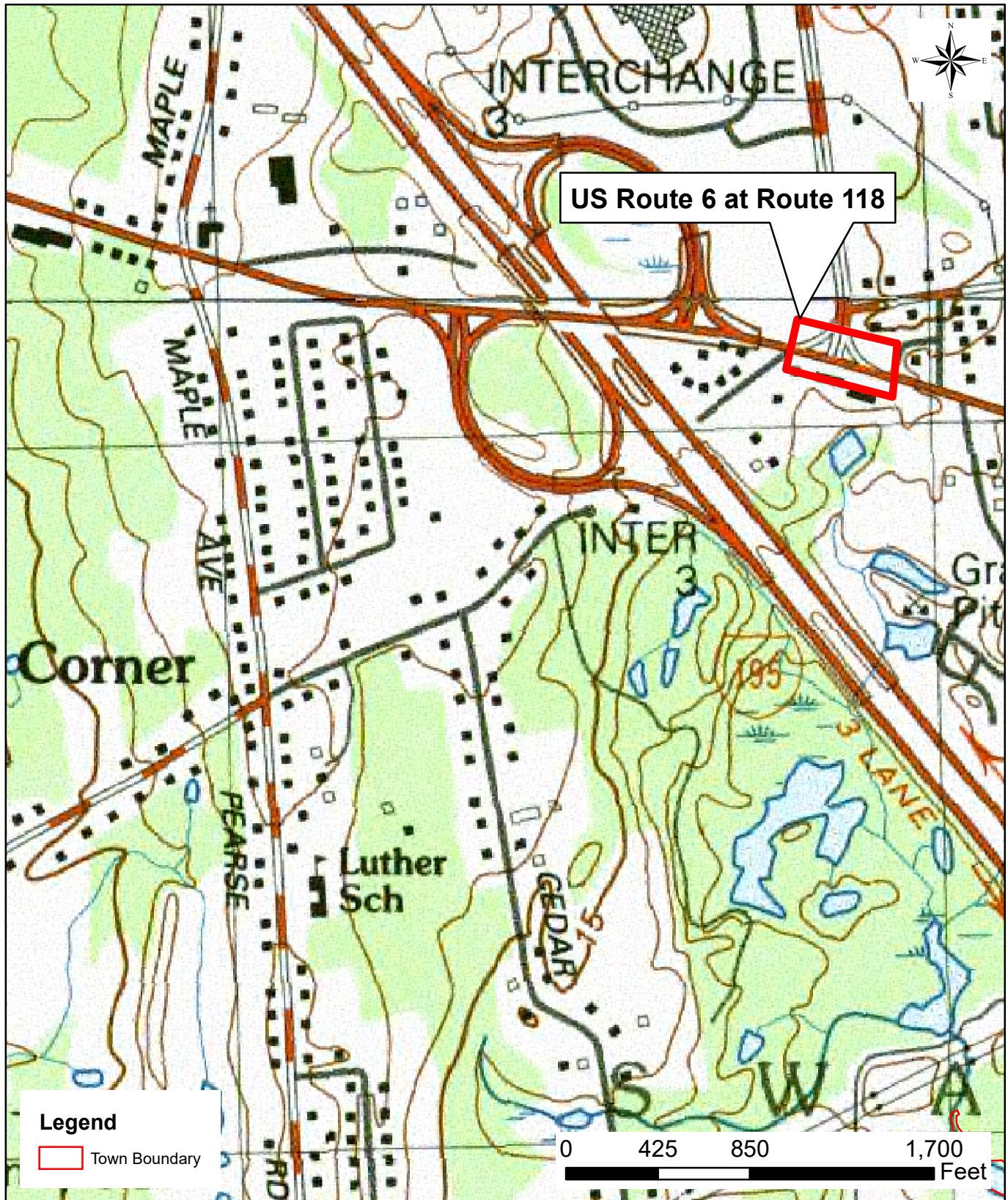




**Figure 2B: Study Area - Route 6 at Maple Avenue and U.S. Route 6 at Route 118**

Traffic Signal and Safety Improvements at Three Intersections on U.S. Route 6 Swansea, MA





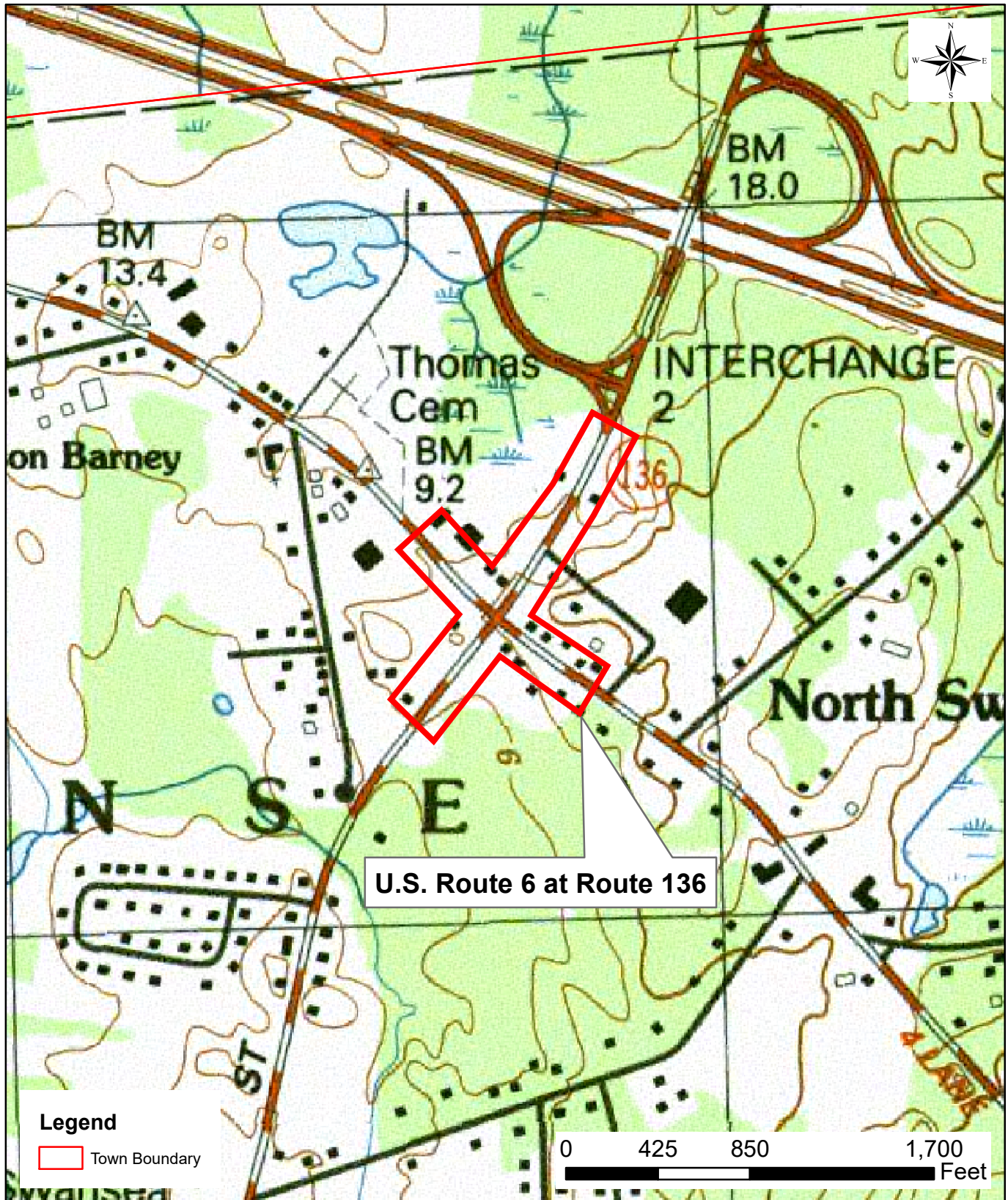
**Figure 3A: USGS Locus**

Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts

Data Source: MassGIS  
Nitsch Project #9720.19





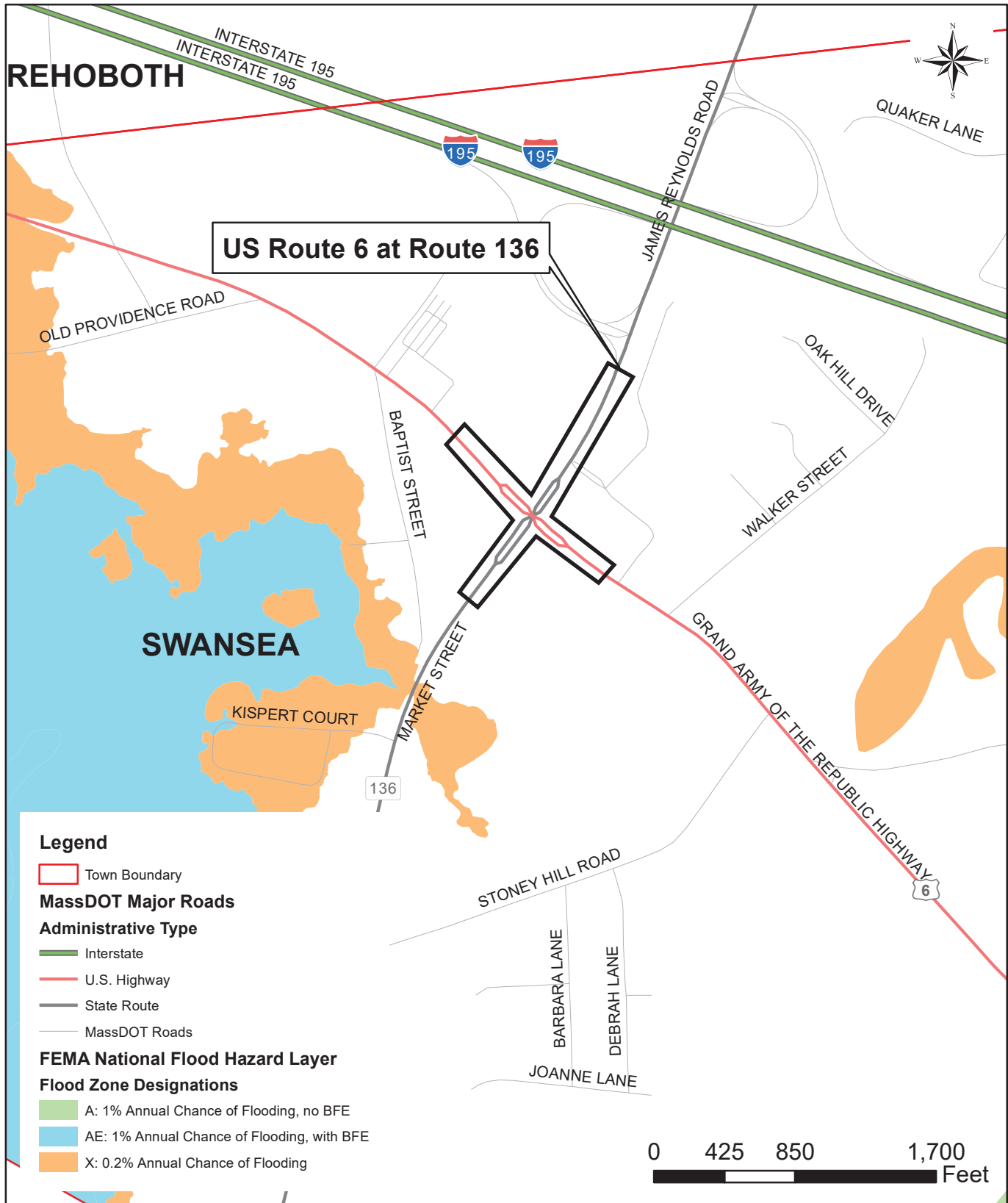


### Figure 3B: USGS Locus

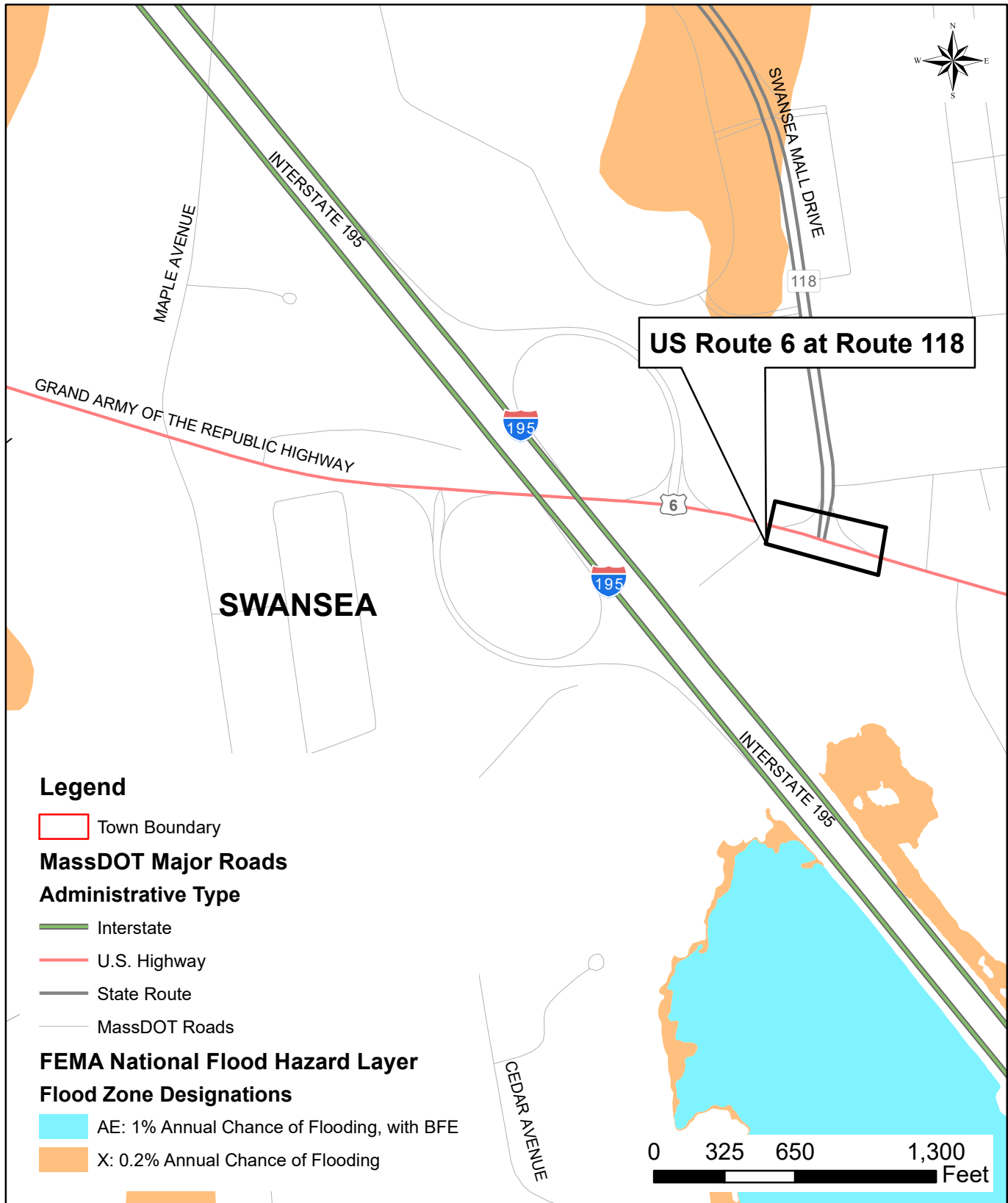
Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts

Data Source: MassGIS  
Nitsch Project #9720.19



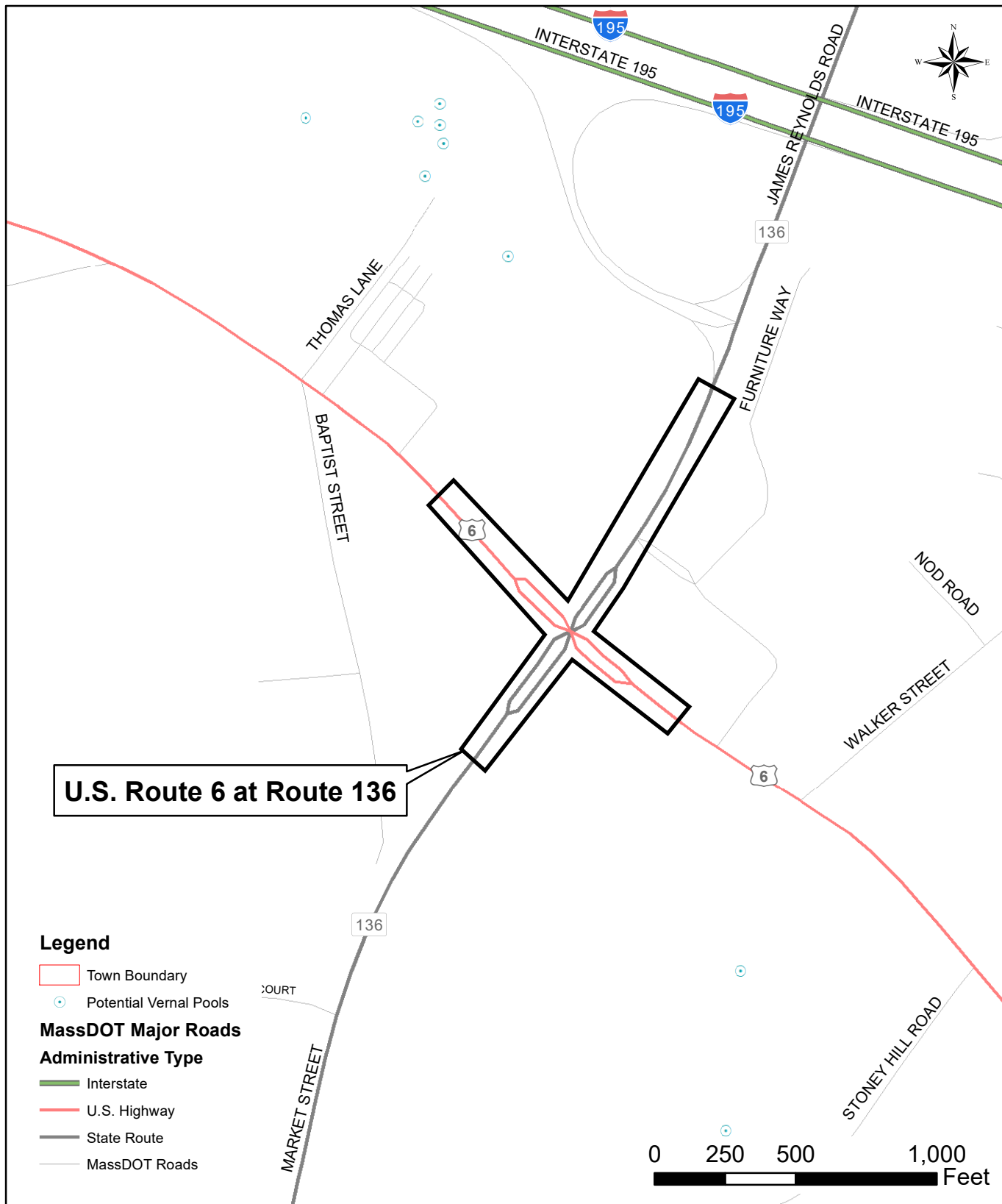


**Figure 4A: FEMA National Flood**  
 Traffic Signal and Safety Improvements at Three Intersections on Route 6  
 Swansea, Massachusetts

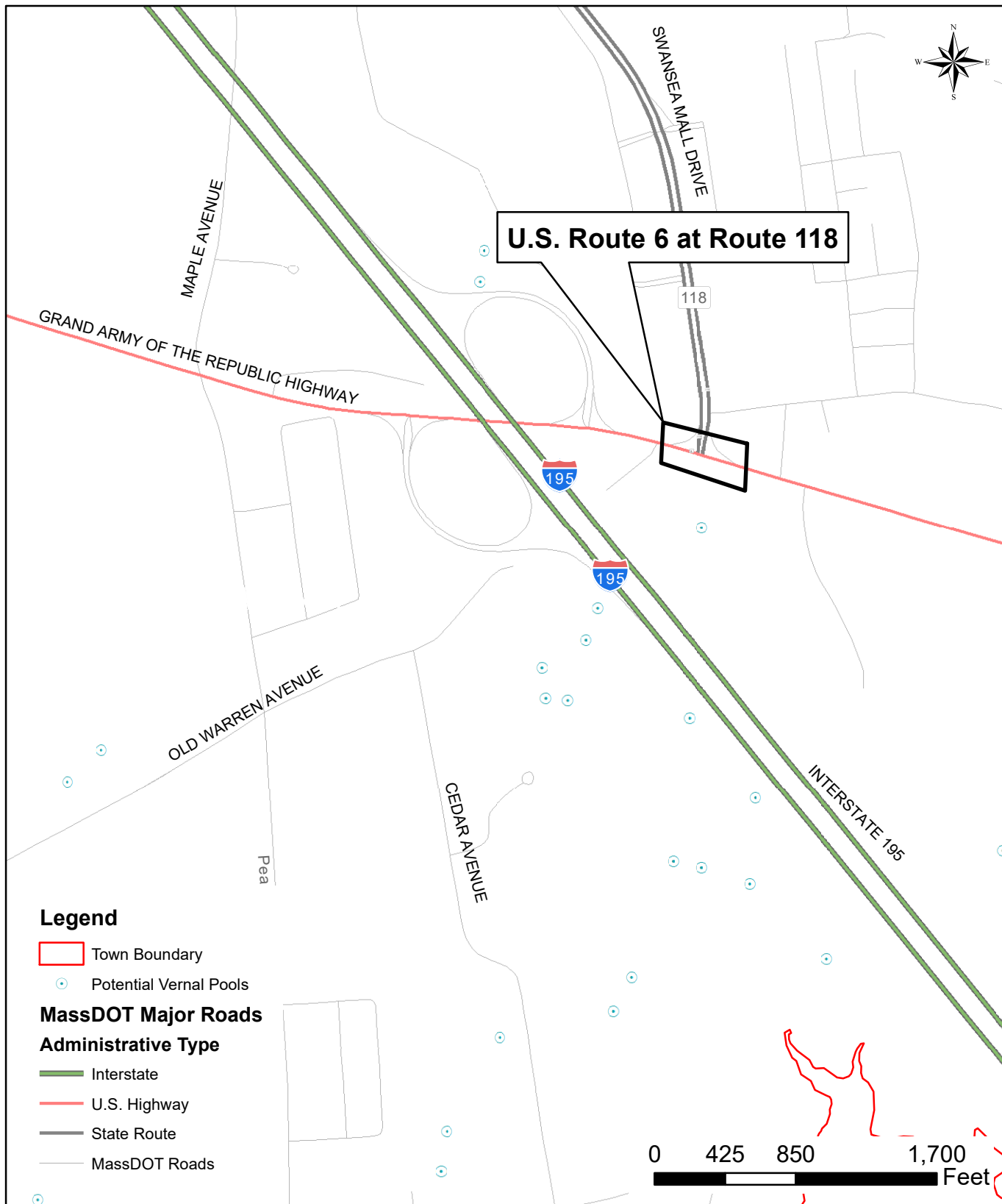


**Figure 4B: FEMA National Flood**  
 Traffic Signal and Safety Improvements at Three Intersections on Route 6  
 Swansea, Massachusetts

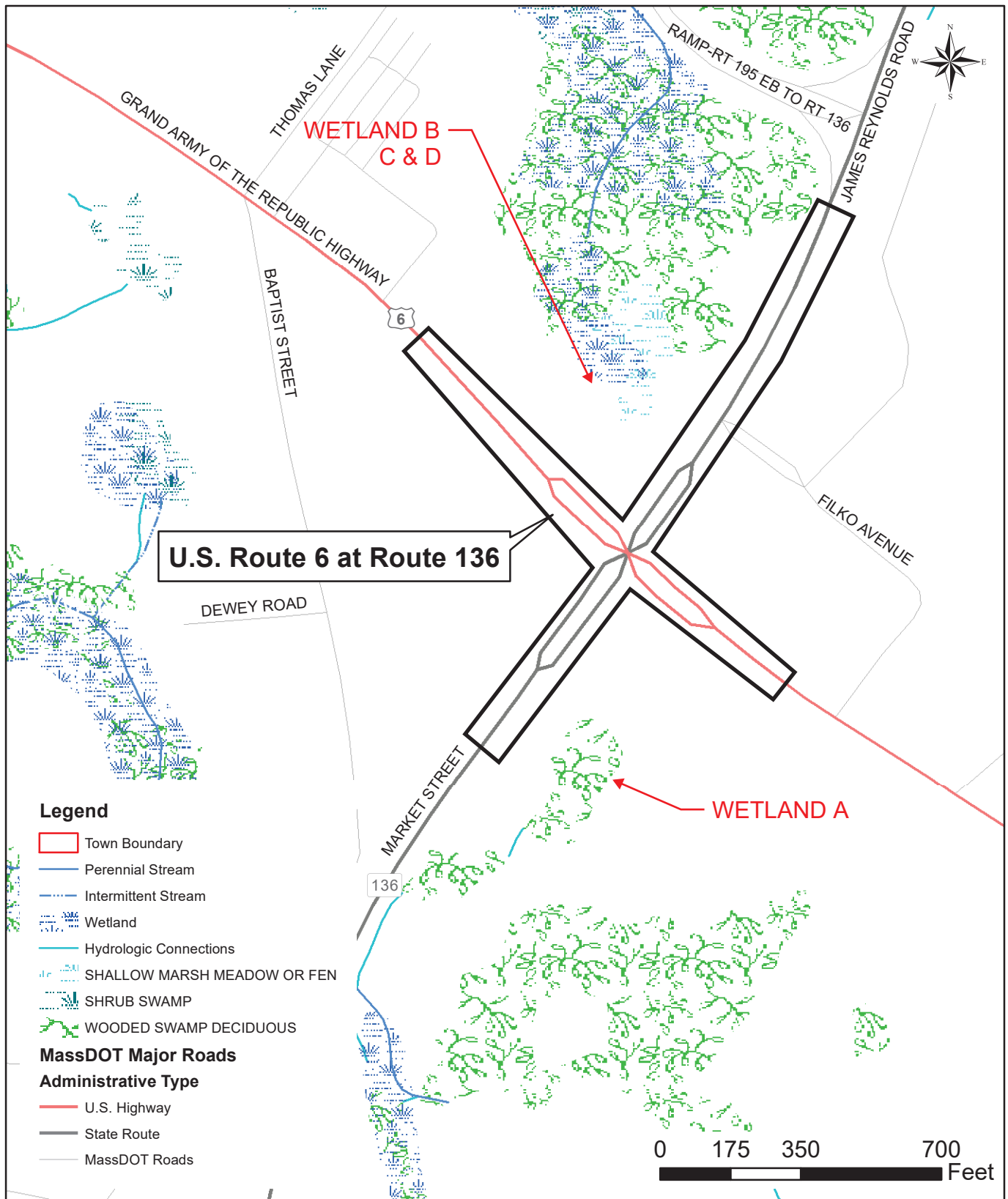




**Figure 5A: Rare Species Habitat**  
Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts



**Figure 5B: Rare Species Habitat**  
Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts



**Figure 6: Wetlands**  
 Traffic Signal and Safety Improvements at Three Intersections on Route 6  
 Swansea, Massachusetts

**Project Photos:**

**U.S. Route 6 at Route 136:**



**U.S. Route 6 looking eastbound towards the intersection at Route 136**



**U.S. Route 6 looking westbound towards the intersection at Route 136**



**Route 136 looking northbound towards intersection at U.S. Route 6**



**Route 136 looking southbound towards intersection at U.S. Route 6**



**Project Photos:**

**U.S. Route 6 at Route 118:**



**U.S. Route 6 looking eastbound towards the intersection at Route 118**



**U.S. Route 6 looking westbound towards the intersection at Route 118**



**Route 118 looking Northbound**

**APPENDIX A**  
**DESIGN PLANS**

---



HIGHWAY GUARD DETAILS NONE

TRAFFIC SIGNAL CONDUIT NONE

WATER SUPPLY ALTERATIONS NONE

DRAINAGE DETAILS SEE SHEET 79

**LEGEND:**

- TEMPORARY BUFFER ZONE DISTURBANCE
- PERMANENT BUFFER ZONE DISTURBANCE
- LIMIT OF WETLAND/BW
- 100-FOOT WETLAND BUFFER

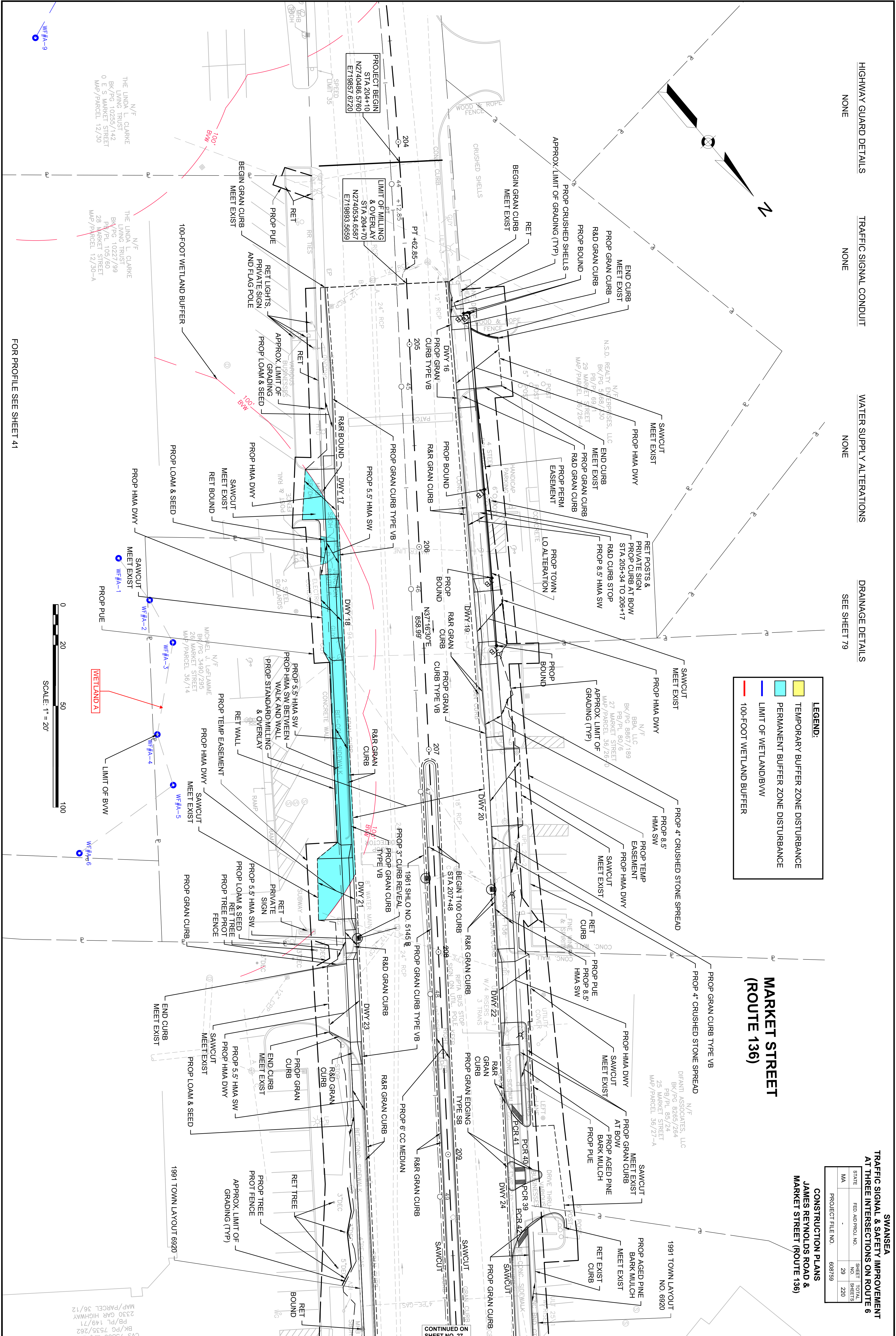
**MARKET STREET  
(ROUTE 136)**

**SWANSEA**  
TRAFFIC SIGNAL & SAFETY IMPROVEMENT  
AT THREE INTERSECTIONS ON ROUTE 6

STATE	FED AID PROJ. NO.	SHEET TOTAL
MA	-	29 / 220

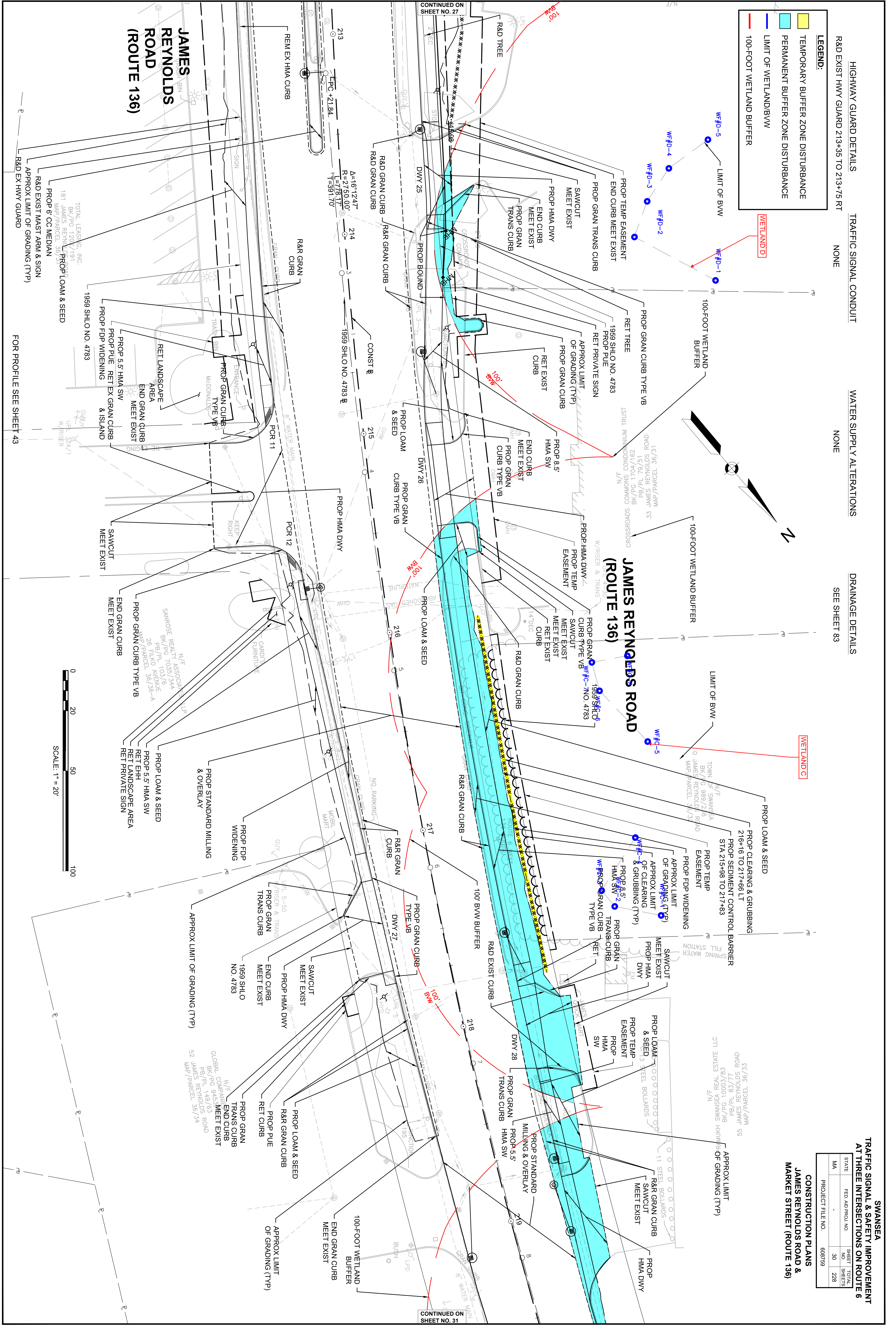
PROJECT FILE NO. 608759

**CONSTRUCTION PLANS**  
JAMES REYNOLDS ROAD &  
MARKET STREET (ROUTE 136)



FOR PROFILE SEE SHEET 41





**LEGEND:**

- TEMPORARY BUFFER ZONE DISTURBANCE
- PERMANENT BUFFER ZONE DISTURBANCE
- LIMIT OF WETLAND/BWV
- 100-FOOT WETLAND BUFFER

HIGHWAY GUARD DETAILS  
R&D EXIST HWY GUARD 213+35 TO 213+75 RT

TRAFFIC SIGNAL CONDUIT  
NONE

WATER SUPPLY ALTERATIONS  
NONE

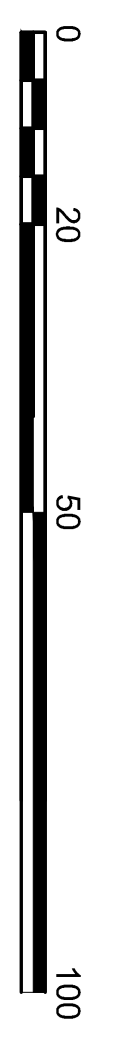
DRAINAGE DETAILS  
SEE SHEET 83

**SWANSEA**  
**TRAFFIC SIGNAL & SAFETY IMPROVEMENT**  
**AT THREE INTERSECTIONS ON ROUTE 6**

STATE	FED AID PROJ. NO.	SHEET TOTAL
MA		NO. SHEETS
		30 228

**CONSTRUCTION PLANS**  
**JAMES REYNOLDS ROAD &**  
**MARKET STREET (ROUTE 136)**

PROJECT FILE NO. 608759



CONTINUED ON SHEET NO. 27

CONTINUED ON SHEET NO. 31



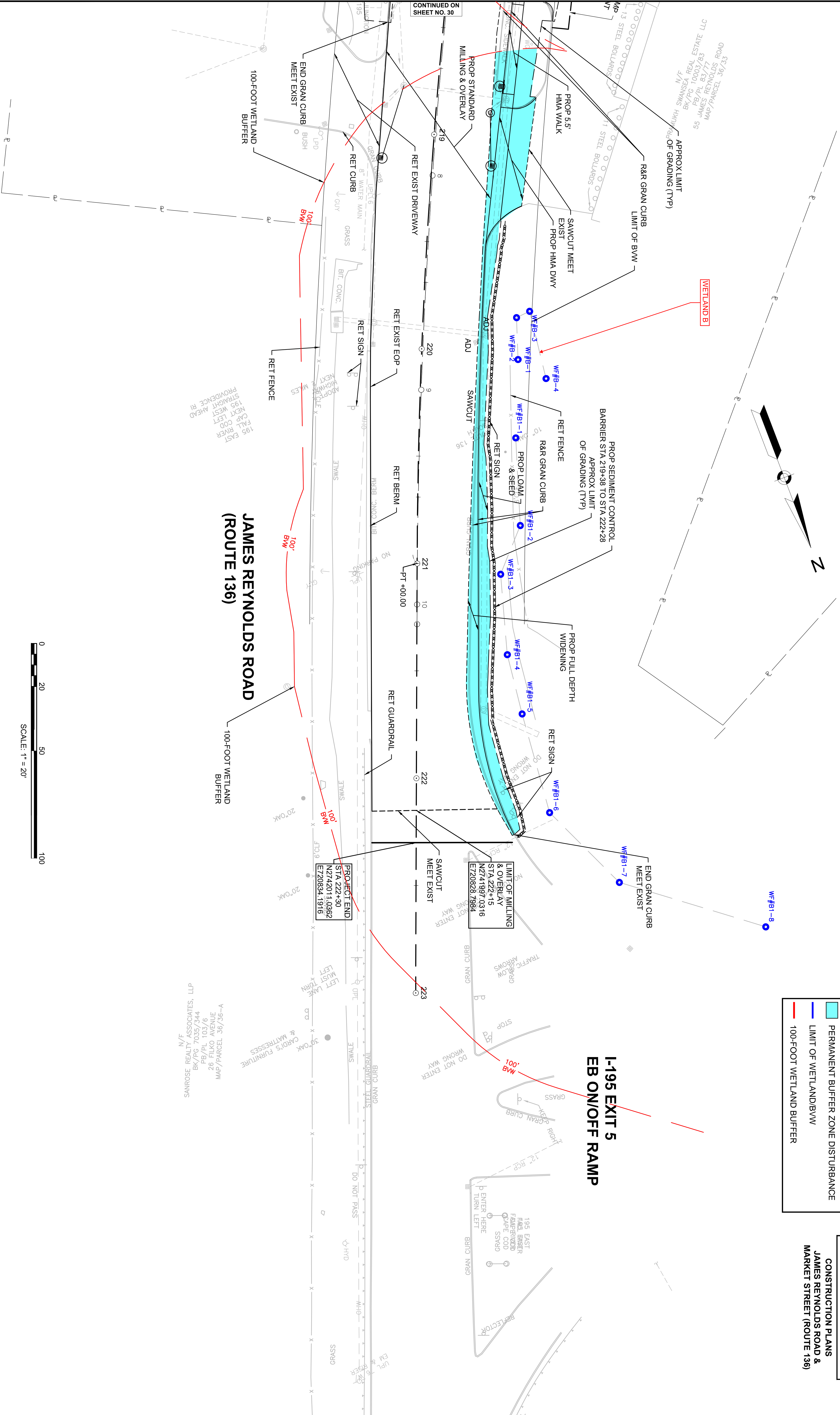
**HIGHWAY GUARD DETAILS**      **TRAFFIC SIGNAL CONDUIT**      **WATER SUPPLY ALTERATIONS**      **DRAINAGE DETAILS**  
 R&D EXIST HWY GUARD 221+86 TO 222+30 RT      NONE      NONE      SEE SHEET 83

- LEGEND:**
- TEMPORARY BUFFER ZONE DISTURBANCE
  - PERMANENT BUFFER ZONE DISTURBANCE
  - LIMIT OF WETLAND/BW
  - 100-FOOT WETLAND BUFFER

**SWANSEA**  
**TRAFFIC SIGNAL & SAFETY IMPROVEMENT**  
**AT THREE INTERSECTIONS ON ROUTE 6**

STATE	FED AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	31	228

**CONSTRUCTION PLANS**  
**JAMES REYNOLDS ROAD & MARKET STREET (ROUTE 136)**  
 PROJECT FILE NO. 608759



**JAMES REYNOLDS ROAD (ROUTE 136)**

**I-195 EXIT 5 EB ON/OFF RAMP**

FOR PROFILE SEE SHEET 43



**HIGHWAY GUARD DETAILS**  
 TRANSITION TO NCHRP 350 GUARDRAIL:  
 507+30 LT TO 507+64 LT, 507+64 RT TO 508+18 RT  
 R&D GUARDRAIL: 507+30 TO 508+80 LT,  
 507+84 TO 508+23 RT  
 GUARDRAIL, TL-2 (SINGLE FACED): 507+64 TO 508+77 LT  
 TRAILING ANCHORAGE: 508+18 TO 508+29 RT  
 TANGENT END TREATMENT, TL-2: 508+77 TO 509+09 LT

**TRAFFIC SIGNAL CONDUIT**  
 NONE

**WATER SUPPLY ALTERATIONS**  
 NONE

**DRAINAGE DETAILS**  
 SEE SHEET 85

**I-195 EXIT 3  
 WB ON/OFF RAMP**

**GAR HIGHWAY (ROUTE 6)**

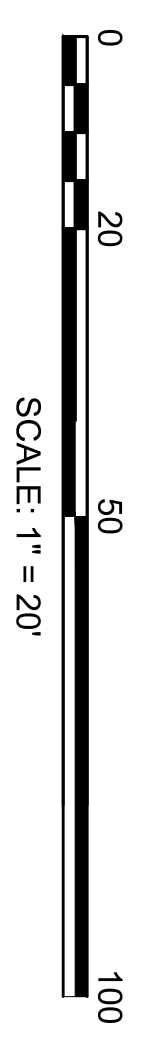
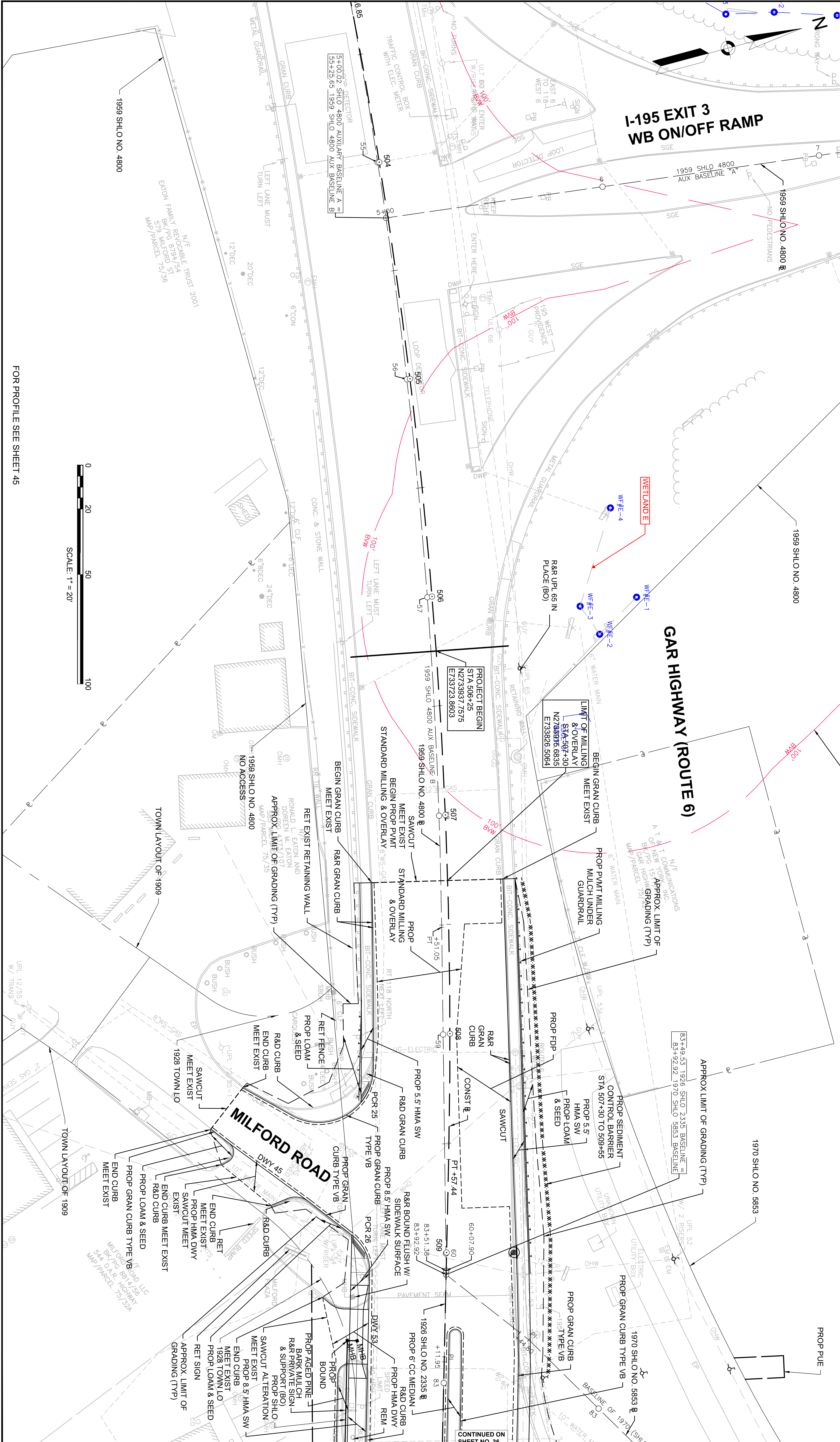
**LEGEND:**

- TEMPORARY BUFFER ZONE DISTURBANCE
- PERMANENT BUFFER ZONE DISTURBANCE
- LIMIT OF WETLAND/B/W
- 100-FOOT WETLAND BUFFER

**SWANSEA  
 TRAFFIC SIGNAL & SAFETY IMPROVEMENT  
 AT THREE INTERSECTIONS ON ROUTE 6**

STATE	FED AID PROJ. NO.	SHEET TOTAL
MA	35	220
PROJECT FILE NO. 608759		

**CONSTRUCTION PLANS  
 SWANSEA MALL DRIVE  
 (ROUTE 118)**



FOR PROFILE SEE SHEET 45

CONTINUED ON SHEET NO. 36



**APPENDIX B**

---

**LEC WETLAND DELINIATION REPORT**



May 24, 2024

**Email** (msoltys@nitscheng.com)

Mr. Matthew Soltys  
 Nitsch Engineering  
 370 Main Street, Suite 850  
 Worcester, MA 01608

**Re: Wetland Resource Area Analysis Report**  
**Contract 115784; Project No. 608759**  
**Route 6 at Market Street (Route 136) Intersection**  
**Swansea, Massachusetts**

[LEC File #: NEI22-366.04]

Dear Mr. Soltys:

As requested, LEC Environmental Consultants, Inc., (LEC) conducted site evaluations and a Wetland Resource Area Analysis on February 15, 2023 and April 26, 2024 for the above-referenced site in Swansea, Massachusetts. The purpose of the 2023 evaluation was to determine Wetland Resource Area boundaries within and in proximity to the survey area (“the site”) for a proposed Massachusetts Department of Transportation (MassDOT) roadway improvement project, as depicted on *Figure 3B: USGS Locus*, prepared by Nitsch Engineering, undated (Attachment A). Subsequently, MassDOT extended the northern project footprint at Route 136 to the I-195 off-ramp, prompting LEC’s 2024 site evaluation.

The wetland boundary determinations were conducted in accordance with the *Massachusetts Wetlands Protection Act* (“the Act” M.G.L. c. 131, s. 40) and its implementing *Regulations* (310 CMR 10.00), and the *Federal Clean Water Act (CWA)*; 33 U.S.C. 1344, s. 404) and its *Regulations* (33 CFR and 40 CFR). While the Town of Swansea administers a *Wetlands Protection Bylaw* and implementing *Rules and Regulations*, as a state agency, MassDOT is not subject to local wetlands protection bylaws or ordinances. LEC also employed the criteria provided *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands* (Second Edition, September 2022) and *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020). Representative photographs of the site are provided in Attachment B, and Bordering Vegetated Wetland Determination Forms are completed and provided in Attachment C.

The following report provides a general site description, wetland delineation methodology, a description of the Wetland Resource Areas, and potential regulatory implications.

**General Site Description**

The site is comprised of a 1,500± linear-foot segment of Market Street (Route 136), and an 1,800± linear foot segment of Route 6 (Grand Army of the Republic Highway) in the central section of Swansea

LEC Environmental Consultants, Inc.			www.lectenvironmental.com	
12 Resnik Road Suite 1 Plymouth, MA 02360 508.746.9491	380 Lowell Street Suite 101 Wakefield, MA 01880 781.245.2500	100 Grove Street Suite 310 Worcester, MA 01605 508.753.3077	P. O. Box 590 Rindge, NH 03461 603.899.6726	680 Warren Avenue Suite 3 East Providence, RI 02914 401.685.3109
PLYMOUTH, MA	WAKEFIELD, MA	WORCESTER, MA	RINDGE, NH	EAST PROVIDENCE, RI



(Attachment A, Figures 1 and 2). Route 136 extends in a northeast/southwest direction and intersects at a traffic signal with Route 6 which extends in a northwest/southeast direction. The site is generally surrounded by commercial and residential development, forested uplands, and manicured landscaping associated with development. Bordering Vegetated Wetlands (BVW) are situated northwest and southeast of Route 136 in proximity to the site.

Route 6 and Route 136 are paved asphalt MassDOT roadways consisting of four bidirectional travel lanes, adjacent curbing, catch basins, stormwater swales, associated subsurface drainage infrastructure, and a concrete sidewalk. The Route 6/Route 136 intersection includes vehicular traffic signals in all directions, dedicated left turn lanes, and striped medians between intersections. Topography within the site slopes gradually downgradient towards the west and south from the intersection. Topography adjacent to the paved roadways is generally flat where developed, and slopes moderately to steeply downgradient towards the adjacent forested uplands and BVWs.

Where present, forested and upland portions of the site included a canopy of eastern cottonwood (*Populus deltoides*), gray birch (*Betula populifolia*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and individuals of eastern red cedar (*Juniperus virginiana*), and black cherry (*Prunus serotina*). The understory is comprised of saplings from the canopy layer and a sparse shrub layer of Japanese knotweed (*Fallopia japonica*), multiflora rose (*Rosa multiflora*), glossy buckthorn (*Frangula alnus*), Japanese barberry (*Berberis thunbergii*), Tartarian honeysuckle (*Lonicera tatarica*), sweet pepperbush (*Clethra alnifolia*), huckleberry (*Gaylussacia* sp.), northern arrowwood (*Viburnum dentatum*), and autumn olive (*Elaeagnus umbellata*). The groundcover layer consists of seedlings from the overstory and Pennsylvania sedge (*Carex pennsylvanica*). Entanglements of poison ivy (*Toxicodendron radicans*), Asiatic bittersweet (*Celastrus orbiculatus*), and greenbrier (*Smilax rotundifolia*) are common throughout. Remaining upland areas are generally comprised of manicured lawn and landscaping features.

According to the Natural Resources Conservation Services (NRCS) Web Soil Survey for Bristol County, Massachusetts, Southern Part, (Version 14; September 9, 2022), the upland portions of the site are mapped with Udorthents-Urban Land; Windsor Loamy Sand, 8-15% slopes; and Pits Udorthents complex, gravelly. NRCS describes the Urban Land Series as nearly level to moderately steep areas where the soils have been altered or obscured by urban works and structures, and buildings and pavement cover more than 85 percent of the surface; the Windsor Series as very deep, excessively drained soils formed in sandy outwash or eolian deposits; and Pits Udorthents Series as mostly excavations in gravelly and sandy outwash, but some excavations are in loose, sandy glacial till. LEC inspected soil conditions within the upland areas adjacent to Route 136 using a hand-held, Dutch-style auger, and generally observed a three-inch thick layer hemic Organic layer directly underlain by a one-inch-thick, sandy loam topsoil (A-Horizon) with a soil matrix color of 10YR 2/1. The topsoil was directly underlain by a 16-inch coarse sand subsoil (Bw-Horizon) with a soil matrix color of 2.5Y 5/4 with 15% gravel. The soil profile is not considered 'hydric' in accordance with the *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020).



## Natural Heritage and Endangered Species Program Designation

According to the 15<sup>th</sup> Edition of the *Massachusetts Natural Heritage Atlas* (effective August 1, 2021) published by the Natural Heritage & Endangered Species Program (NHESP), the site is not located within or in proximity to a Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife. No Certified or Potential Vernal Pools are mapped on or within the immediate vicinity of the site (Attachment A, Figure 2).

## Floodplain Designation

According to the FEMA Flood Insurance Rate Map (FIRM) for Town of Swansea, Massachusetts, dated July 16, 2014 (*Community Panel 25005 C 0219G*), the site is mapped within a Zone X (unshaded) - *Areas determined to be outside the 0.2% annual chance floodplain* (Attachment A, Figure 3). As a result, no portions of the site are mapped within the 100-year floodplain.

## Wetland Boundary Determination

On February 15, 2023 and April 26, 2024, LEC conducted site evaluations to identify and characterize existing protectable Wetland Resource Areas and to determine the boundaries of BVW within 100 feet of the site. The extent of Wetland Resource Areas was determined through observations of existing plant communities, hydrologic indicators, and the interpretation of soil characteristics in accordance with the *Act*, the *Act Regulations*, the *CWA*, and the *CWA Regulations*. Based on our observations and review of pertinent maps, LEC identified and delineated the Wetland Resource Areas located in proximity to the project footprint, including BVW. As a result, portions of the project footprint are located within the 100-foot Buffer Zone to BVW.

The boundaries of BVW were demarcated in the field with blaze orange surveyor's flagging tape embossed with the words "LEC Resource Area Boundary" in bold, black print. The BVW flags are numbered A1-A6; B1-B4 and B1-1 through B1-8; C1-C4; C5-C8; and D1-D5.

Department of Environmental Protection (DEP) Bordering Vegetated Wetland (310 CMR 10.55) Bordering Vegetated Wetland Determination Forms are included with this report to support the wetland delineation (Attachment C), and the boundaries of delineated Wetland Resource Areas are depicted on the attached *Construction Plans, James Reynolds Road & Market Street (Route 136)* (Sheets 25-31), prepared by Nitsch Engineering, Inc., dated May 10, 2024 (Attachment D).

A brief description of the Wetland Resource Areas is provided below.

## Bordering Vegetated Wetland (BVW)

According to the *Act Regulations* [310 CMR 10.55(2)], Bordering Vegetated Wetlands are defined as: *freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes...Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants...The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.*



Two (2) non-contiguous BVWs occur within proximity to the site; one BVW is located within the southeastern portion of the site (A-series BVW), and three segments of one BVW system are situated within the northwest portion of the site (B, C, and D-series BVWs). The BVWs exhibit palustrine forested/scrub-shrub/emergent marsh characteristics.

The A-series BVW is situated within a topographic depression located southeast of the Route 6/Route 136 intersection, directly east of 26 Market Street. The BVW is connected to an off-site intermittent stream located southeast of the site. Topography slopes moderately downgradient towards the BVW boundary from adjacent developed areas associated with Market Street/Route 136, and becomes generally flat within the BVW.

Vegetation within the A-series BVW is comprised of a canopy dominated by clusters of mature and sapling red maple (*Acer rubrum*); a shrub layer consisting of patches of highbush blueberry (*Vaccinium corymbosum*), northern arrowwood (*Viburnum dentatum*), spicebush (*Lindera benzoin*), and red-osier dogwood (*Cornus sericea*), with scattered individuals of multiflora rose; and a groundcover layer consisting of sensitive fern (*Onocleus sensibilis*), cinnamon fern (*Osmunda cinnamomea*), and skunk cabbage (*Symplocarpus foetidus*). Entanglements of grapevine (*Vitis* sp.) are present along the BVW boundary.

The B, C, and D-series BVW boundaries are associated with a larger wetland system continuing off-site to the west of Route 136 and northwest of the Route 6/Route 136 intersection. The B-series BVW is located at the western toe-of-slope to Route 136 and the I-195 off-ramp, and includes a finger-like extension up to riprap associated with a stormwater swale. Topography slopes moderately downgradient towards the BVW.

Vegetation within the B-series BVW is comprised of a canopy layer dominated by red maple with individuals of eastern white pine (*Pinus strobus*). The understory contains saplings from the canopy layer, highbush blueberry, bebb willow (*Salix bebbiana*), sweet pepperbush, and spicebush. Groundcover is dominated by skunk cabbage, with individual patches of Japanese knotweed and horsetail (*Equisetum* sp.). The finger-like extension is dominated by common reed (*Phragmites australis*), goldenrod (*Solidago* sp.), aster (*Asteraceae* sp.), knapweed (*Centaurea* sp.), and various grasses (*Gramineae* spp.), and the perimeter is occupied by individual red maple saplings.

The C-Series BVW is situated within a topographic depression, and a finger-like upland extends partially into the wetland between flags C4 and C5. Topography slopes gradually to moderately downgradient towards the BVW boundary from adjacent forested upland and developed areas associated with James Reynolds Road. The BVW boundary generally occurs between one to two feet above the toe-of-slope.

Vegetation within the C-series BVW is comprised of a canopy layer dominated by red maple, with individuals of yellow birch (*Betula alleghaniensis*), red oak, and gray birch (*Betula populifolia*). The shrub layer consists of saplings from the canopy and clusters of spicebush, sweet pepperbush, winterberry holly (*Ilex verticillata*), highbush blueberry, and a patch of common reed. Groundcover vegetation consists of sensitive fern, cinnamon fern, various grasses, and skunk cabbage.



The D-series BVW is situated within an abrupt topographic depression west of Route 136, and is best described as a scrub-shrub/emergent marsh. Topography slopes steeply downgradient towards the BVW boundary, and a manicured lawn is situated between the BVW and an adjacent stormwater basin.

Vegetation within the D-series BVW is dominated by common reed with individuals of elderberry (*Sambucus nigra*), box elder (*Acer negundo*), and poison ivy. Entanglements of grape vine are common throughout.

According to the Natural Resources Conservation Services (NRCS) Web Soil Survey for Bristol County, Massachusetts, Southern Part, (Version 16; September 9, 2022), the portions of the site occupied by BVWs are mapped as Paxton Fine Sandy Loam, 0-8% slopes, very stony (A-series BVW); Pits Udorthents complex, gravelly (B-series BVW); and Freetown Muck, 0-1% slopes (C-series, D-series). NRCS describes the Paxton Series as very deep and moderately deep, well drained loamy soils formed in lodgment till; the Pits-Udorthents Complex, gravelly Series as an area that have been excavated for sand and gravel; and the Freetown Muck Series as very deep, very poorly drained organic soils formed in more than 130 centimeters of highly decomposed organic material. LEC inspected soil conditions using a hand-held, Dutch-style auger within the BVWs and generally observed a six-inch-thick, mucky peat layer (Oe-Horizon) with a soil matrix color of 5YR 2.5/1. The hemic organic material was directly underlain by an 18-inch-thick muck layer (Oa-Horizon) with a soil matrix color of 10YR 2/1. The soil was saturated to the surface and LEC observed water nine inches below the surface. This soil profile is considered a hydric soil in accordance with *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020), as it meets the indicator *A1: Histosol*.

## Summary

LEC identified and delineated the boundaries of BVW within proximity to the site located in Swansea. The aforementioned Wetland Resource Area is subject to jurisdiction under the *Act*, *Act Regulations*, the *CWA*, and *CWA Regulations*. The BVW boundaries place the 100-foot Buffer Zone onto the site, as jurisdictional under the *Act* and *Act Regulations*. Since MassDOT is the Applicant for the proposed project, the proposed project is not subject to the *Town of Swansea Wetlands Protection Bylaw* and its implementing *Rules* and *Regulations*. Any work proposed within a BVW and/or the associated 100-foot Buffer Zone will require compliance with performance standards enumerated in the *Act Regulations*, and filing the appropriate permits with the Town of Swansea Conservation Commission and/or the Massachusetts Department of Environmental Protection. The proposed work activities may require additional wetlands permitting with the Department of the Army Corps of Engineers if any direct impacts are proposed within BVW.





Thank you for the opportunity to provide these services. If you have any questions or require additional information, please do not hesitate to contact us in our Plymouth office at 508-746-9491 or at [choogeboom@lecenvironmental.com](mailto:choogeboom@lecenvironmental.com).

Sincerely,

**LEC Environmental Consultants, Inc.**

A handwritten signature in cursive script that reads "Claire Hoozeboom".

Claire Hoozeboom  
Wetland Scientist

A handwritten signature in cursive script that reads "Nicole M. Ferrara".

Nicole M. Ferrara  
Wetland Specialist

Attachments

---

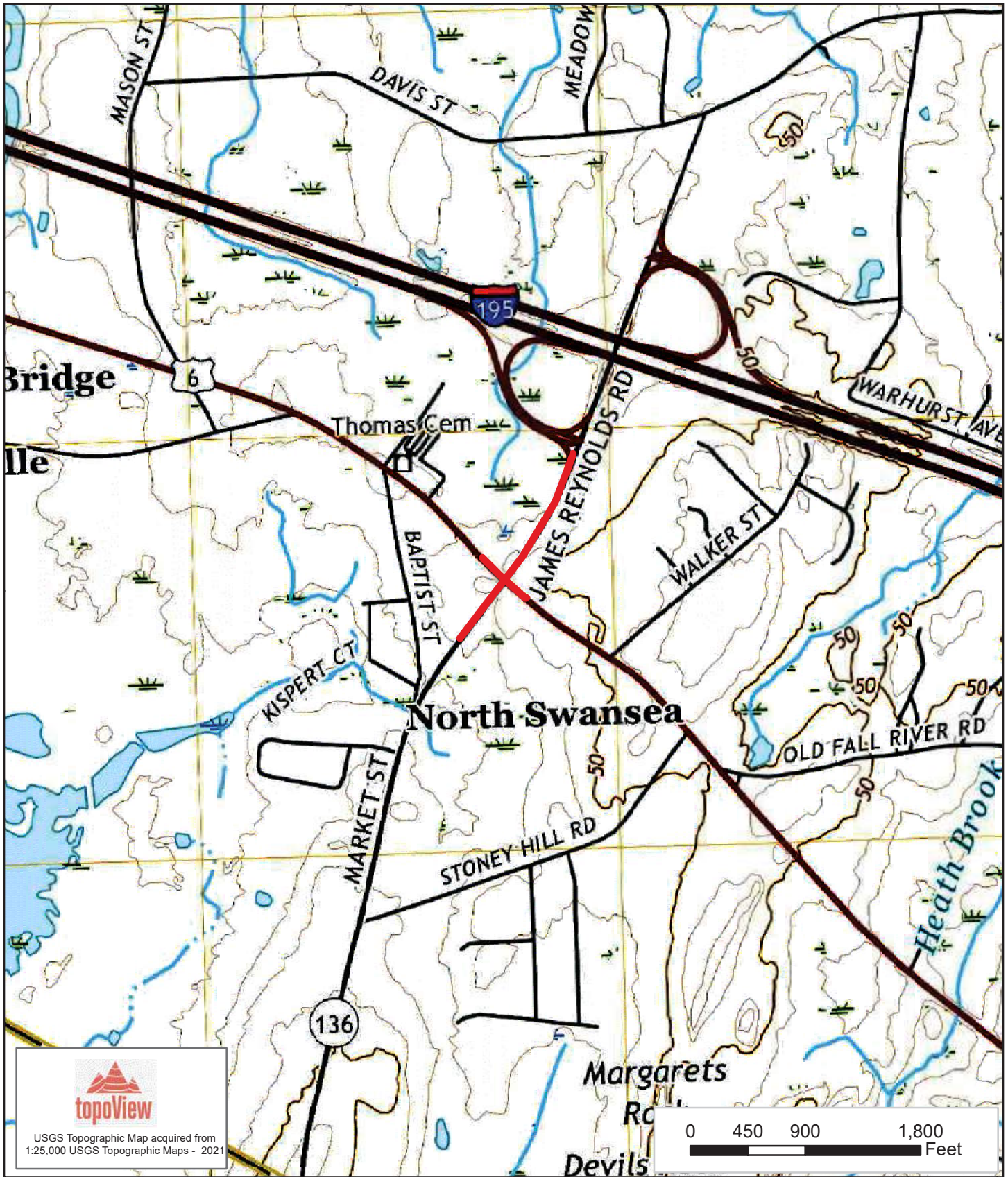

**Attachment A**

Figure 1: USGS Topographic Map

Figure 2: Aerial/NHESP Map

Figure 3: FEMA Flood Insurance Rate Map

Figure 3B: USGS Locus Prepared by Nitsch Engineering

USGS Topographic Map acquired from  
1:25,000 USGS Topographic Maps - 2021



LEC Environmental Consultants, Inc.  
Plymouth, MA  
508.746.9491  
www.lecenvironmental.com

**Figure 1: USGS Topographic Map**  
Route 6 at Market Street (Route 136) Intersection  
Swansea, Massachusetts

N  
May 24, 2024





**Figure 2: Aerial/NHESP Orthophoto Map**  
Route 6 at Market Street (Route 136) Intersection  
Swans, Massachusetts

May 24, 2024









### Figure 3B: USGS Locus

Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts

Data Source: MassGIS  
Nitsch Project #9720.19



**Attachment B**

Representative Photographs





Photograph 1: East view of A-series BVW from the bottom of side slope off Route 6.



Photograph 2: Northwest view of Route 6, paved sidewalk, stormwater management features, and Toyota car dealership (2283 GAR Highway) east of the Route 6/Route 136 intersection.





Photograph 3: Southwest view of the Route 6/Route 136 intersection from James Reynolds Road (Route 136).



Photograph 4: Northwest view of B-series BVW from James Reynolds Road (Route 136). Stormwater confluence with common reed in foreground, BVW in background.





Photograph 5: North view of B-series BVW (left) and James Reynolds Road (Route 136) north of paved entrance to 55 James Reynolds Road.



Photograph 6: Western view of C-series BVW west of James Reynolds Road (Route 136).





Photograph 7: Northwest view of D-series BVW (left), upland lawn area (center) and adjacent stormwater basin (right).

---

**Attachment C**

Bordering Vegetated Wetland Determination Forms

**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Route 6/ Route 136 Intersection City/Town: Swansea Sampling Date: 2/15/2023  
 Applicant/Owner: MassDOT Sampling Point or Zone: NONWET-1  
 Investigator(s): Claire Hoogeboom, Nicole Ferrara Latitude / Longitude: 42.771064, -71.264423  
 Soil Map Unit Name: Pits-Udorthents complex NWI or DEP Classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydic Soils criterion met?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetlands hydrology present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks, Photo Details, Flagging, etc.:  
 - Plot located 10' upgradient of Wetland Flag C3.  
 - Observed soil profile is generally consistent with the NRCS Soil Series description

**HYDROLOGY**

<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Saturation Present (including capillary fringe)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____

<b>Wetland Hydrology Indicators</b>		
Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
<input type="checkbox"/> Water-stained leaves	<input type="checkbox"/> Hydrological records	<input type="checkbox"/> Direct observation of inundation
<input type="checkbox"/> Evidence of aquatic fauna	<input type="checkbox"/> Free water in a soil test hole	<input type="checkbox"/> Drainage patterns
<input type="checkbox"/> Iron deposits	<input type="checkbox"/> Saturated soil	<input type="checkbox"/> Drift lines
<input type="checkbox"/> Algal mats or crusts	<input type="checkbox"/> Water marks	<input type="checkbox"/> Scoured areas
<input type="checkbox"/> Oxidized rhizospheres/pore linings	<input type="checkbox"/> Moss trim lines	<input type="checkbox"/> Sediment deposits
<input type="checkbox"/> Thin muck surfaces	<input type="checkbox"/> Presence of reduced iron	<input type="checkbox"/> Surface soil cracks
<input type="checkbox"/> Plants with air-filled tissue (aerenchyma)	<input type="checkbox"/> Woody plants with adventitious roots	<input type="checkbox"/> Sparsely vegetated concave surface
<input type="checkbox"/> Plants with polymorphic leaves	<input type="checkbox"/> Trees with shallow root systems	<input type="checkbox"/> Microtopographic relief
<input type="checkbox"/> Plants with floating leaves	<input type="checkbox"/> Woody plants with enlarged lenticels	<input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
<input type="checkbox"/> Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. red maple	Acer rubrum	FAC	20.5	Yes	Yes
2. red oak	Quercus rubra	FACU	10.5	Yes	No
3. white oak	Quercus alba	FACU	20.5	Yes	No
4.					
5.					
6.					
7.					
8.					
9.					
<u>51.5</u> = Total Cover					
<u>Shrub/Sapling Stratum</u>		Plot size <u>15'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. red maple	Acer rubrum	FAC	10.5	Yes	Yes
2. gray birch	Betula populifolia	FAC	10.5	Yes	Yes
3. eastern red cedar	Juniperus virginiana	FACU	3.0	No	No
4. black cherry	Prunus serotina	FACU	10.5	Yes	No
5. sweet pepperbush	Clethra alnifolia	FAC	20.5	Yes	Yes
6. northern arrowwood	Viburnum dentatum	FAC	3.0	No	Yes
7.					
8.					
9.					
<u>58.0</u> = Total Cover					
<u>Herb Stratum</u>		Plot size <u>5'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. pennsylvania sedge	Carex pennsylvanica		20.5	Yes	No
2. sweet pepperbush	Clethra alnifolia	FAC	3.0	No	Yes
3. greenbriar	Smilax rotundifolia	FAC	3.0	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<u>26.5</u> = Total Cover					

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>		Plot size <u>30'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name					
1.	asiatic bittersweet	Celastrus orbiculatus		FACU	3.0	No	No
2.	poison ivy	Toxicodendron radicans		FAC	3.0	No	Yes
3.	greenbriar	Smilax rotundifolia		FAC	10.5	Yes	Yes
4.							
				16.5 = Total Cover			

<u>Rapid Test:</u> Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<u>Dominance Test:</u>	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?	
	9	5	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<u>Prevalence Index:</u>		Total % Cover (all strata)	Multiply by:	Result
	OBL species	0	X 1	= 0.00
	FACW species	0	X 2	= 0.00
	FAC species	64	X 3	= 192.00
	FACU species	17	X 4	= 66.00
	UPL species	0	X 5	= 0.00
	Column Totals	(A) 80.5		(B) 258
Prevalence Index		B/A = <b>3.20</b>		Is the Prevalence Index ≤ 3.0?
				Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<u>Wetland vegetation criterion met?</u>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

**Definitions of Vegetation Strata**

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %





**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Route 6/ Route 136 Intersection City/Town: Swansea Sampling Date: 2/15/2023

Applicant/Owner: MassDOT Sampling Point or Zone: WET-1

Investigator(s): Claire Hooeboom, Nicole Ferrara Latitude / Longitude: 42.771064, -71.264423

Soil Map Unit Name: Freetown Muck NWI or DEP Classification: WS1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)

Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydic Soils criterion met?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetlands hydrology present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks, Photo Details, Flagging, etc.:

- Test Pit located 10' downgradient of wetland flag C3
- Observed soil profile is generally consistent with the NRCS Soil Series description

**HYDROLOGY**

<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches)	<u>9.00</u>
Saturation Present (including capillary fringe)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches)	<u>0.00</u>

Wetland Hydrology Indicators		
Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
<input type="checkbox"/> Water-stained leaves	<input type="checkbox"/> Hydrological records	<input type="checkbox"/> Direct observation of inundation
<input type="checkbox"/> Evidence of aquatic fauna	<input checked="" type="checkbox"/> Free water in a soil test hole	<input type="checkbox"/> Drainage patterns
<input type="checkbox"/> Iron deposits	<input checked="" type="checkbox"/> Saturated soil	<input type="checkbox"/> Drift lines
<input type="checkbox"/> Algal mats or crusts	<input type="checkbox"/> Water marks	<input type="checkbox"/> Scoured areas
<input type="checkbox"/> Oxidized rhizospheres/pore linings	<input type="checkbox"/> Moss trim lines	<input type="checkbox"/> Sediment deposits
<input checked="" type="checkbox"/> Thin muck surfaces	<input type="checkbox"/> Presence of reduced iron	<input type="checkbox"/> Surface soil cracks
<input type="checkbox"/> Plants with air-filled tissue (aerenchyma)	<input type="checkbox"/> Woody plants with adventitious roots	<input type="checkbox"/> Sparsely vegetated concave surface
<input type="checkbox"/> Plants with polymorphic leaves	<input type="checkbox"/> Trees with shallow root systems	<input type="checkbox"/> Microtopographic relief
<input type="checkbox"/> Plants with floating leaves	<input type="checkbox"/> Woody plants with enlarged lenticels	<input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
<input type="checkbox"/> Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

- Depth to free water in observation hole is 9" below soil surface.

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. red maple	Acer rubrum	FAC	63.0	Yes	Yes
2. red oak	Quercus rubra	FACU	20.5	No	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					
<u>83.5</u> = Total Cover					
<u>Shrub/Sapling Stratum</u>		Plot size <u>15'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. red maple	Acer rubrum	FAC	10.5	Yes	Yes
2. winterberry	Ilex verticillata	FACW	10.5	Yes	Yes
3. spice bush	Lindera benzoin	FACW	20.5	Yes	Yes
4. swamp azalea	Rhododendron viscosum	FACW	3.0	No	Yes
5.					
6.					
7.					
8.					
9.					
<u>44.5</u> = Total Cover					
<u>Herb Stratum</u>		Plot size <u>5'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. skunk cabbage	Symplocarpus foetidus	OBL	63.0	Yes	Yes
2. cinnamon fern	osmunda cinnamomea	FACW	3.0	No	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<u>66.0</u> = Total Cover					

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>		Plot size <u>30'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name					
1.	asiatic bittersweet	Celastrus orbiculatus		FACU	10.5	Yes	No
2.							
3.							
4.							
				<u>10.5</u> = Total Cover			

<b>Rapid Test:</b> Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<b>Dominance Test:</b>	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?	
	6	5	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Prevalence Index:</b>		Total % Cover (all strata)	Multiply by:	Result
	OBL species	63	X 1	= 63.00
	FACW species	31	X 2	= 62.00
	FAC species	74	X 3	= 220.50
	FACU species	11	X 4	= 42.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 178		(B) 387.5
Prevalence Index		B/A = <b>2.17</b>		Is the Prevalence Index ≤ 3.0?
				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Wetland vegetation criterion met?</b>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

**Definitions of Vegetation Strata**

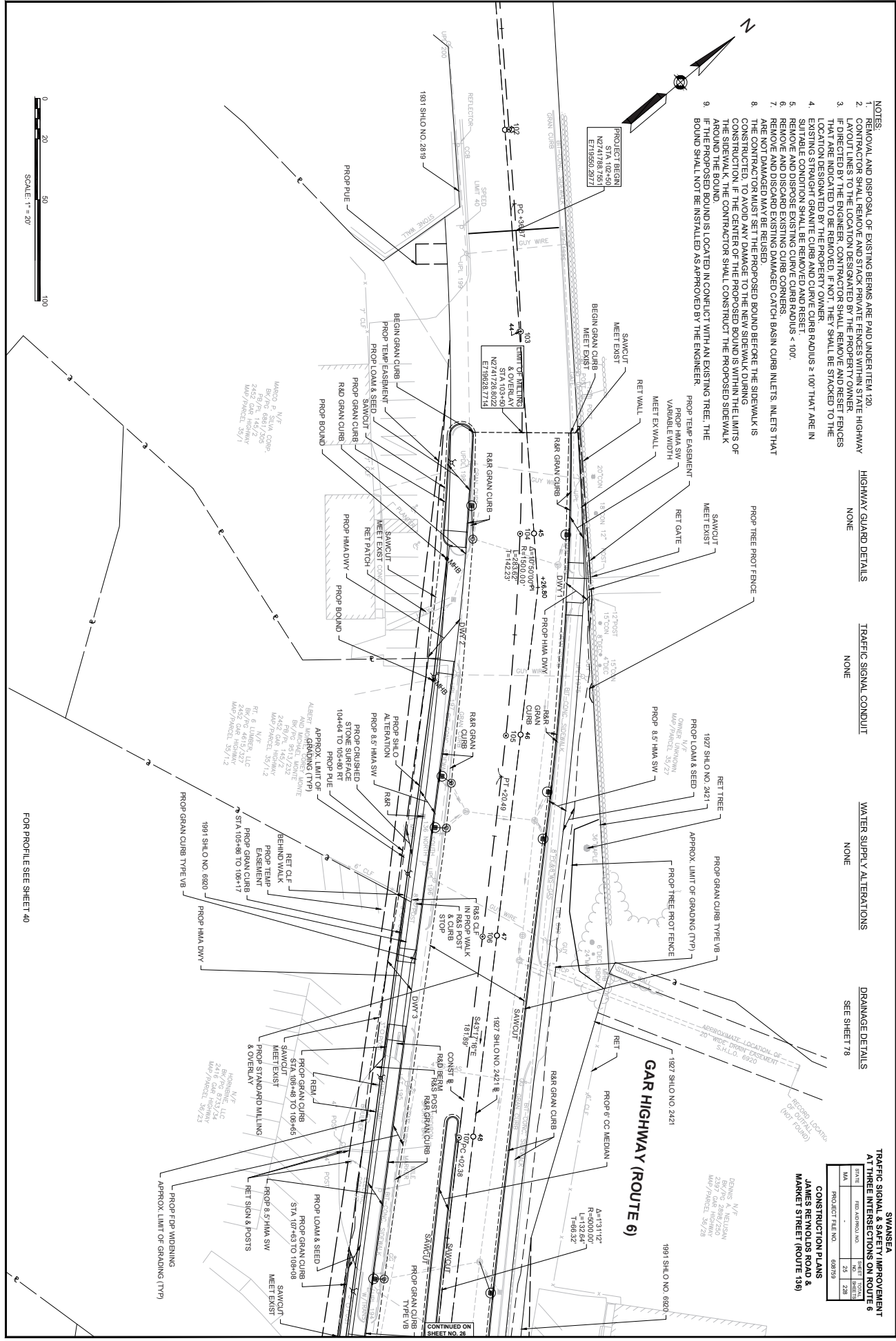
- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %



**Attachment D**

*Construction Plans, James Reynolds Road & Market Street (Route 136) (Sheets 25-30),*  
Prepared by Nitsch Engineering, Inc., Dated April 4, 2023



- NOTES:**
1. REMOVAL AND DISPOSAL OF EXISTING BERMS ARE PAID UNDER ITEM 120.
  2. EXISTING CURBS TO BE REMOVED SHALL BE REMOVED TO THE LOCATION DESIGNATED BY THE ENGINEER. CONTRACTOR SHALL REMOVE AND RESET FENCES THAT ARE INDICATED TO BE REMOVED. IF NOT, THEY SHALL BE STACKED TO THE LOCATION DESIGNATED BY THE PROPERTY OWNER.
  3. SUITABLE CONDITION SHALL BE REMOVED AND RESET.
  4. REMOVE AND DISCARD EXISTING CURB RADIUS < 100'.
  5. REMOVE AND DISCARD EXISTING CURB RADIUS > 100'.
  6. REMOVE AND DISCARD EXISTING DAMAGED CATCH BASIN CURB INLETS. INLETS THAT ARE NOT DAMAGED MAY BE REUSED.
  7. THE CONTRACTOR MUST SET THE PROPOSED BOUND BEFORE THE SIDEWALK IS CONSTRUCTED. TO AVOID ANY DAMAGE TO THE NEW SIDEWALK DURING CONSTRUCTION, IF THE CENTER OF THE PROPOSED BOUND IS WITHIN THE LIMITS OF THE SIDEWALK, THE CONTRACTOR SHALL CONSTRUCT THE PROPOSED SIDEWALK IF THE PROPOSED BOUND IS LOCATED IN CONFLICT WITH AN EXISTING TREE, THE BOUND SHALL NOT BE INSTALLED AS APPROVED BY THE ENGINEER.

HIGHWAY GUARD DETAILS  
NONE

TRAFFIC SIGNAL CONDUIT  
NONE

WATER SUPPLY ALTERATIONS  
NONE

DRAINAGE DETAILS  
SEE SHEET 78

**SWANSEA**  
**TRAFFIC SIGNAL & SAFETY IMPROVEMENT**  
**AT THREE INTERSECTIONS ON ROUTE 6**

STATE	PROJECT FILE NO.	NO.	SHEET
MA	608759	15	228

**CONSTRUCTION PLANS**  
**JAMES REVOLDS ROAD &**  
**MARKET STREET (ROUTE 138)**

DESIGN: N/A  
BY: J. J. GONZALEZ  
CHECKED: J. J. GONZALEZ  
DATE: 5/24/24  
MAY/PROJECT: 30/28



FOR PROFILE SEE SHEET 40



May 15, 2023

**Email** (msoltys@nitscheng.com)

Mr. Matthew Soltys  
Nitsch Engineering  
370 Main Street, Suite 850  
Worcester, MA 01608

**Re: Wetland Resource Area Analysis Report**  
**Contract 115784; Project No. 608759**  
**Route 6 at Maple Avenue**  
**Swansea, Massachusetts**

[LEC File #: NEI22-366.04]

Dear Mr. Soltys:

As requested, LEC Environmental Consultants, Inc., (LEC) conducted a site evaluation and Wetland Resource Area Analysis for the above-referenced site in Swansea, Massachusetts. The purpose of the evaluation was to determine Wetland Resource Area boundaries within and in proximity to the survey area (“the site”) for a proposed Massachusetts Department of Transportation (MassDOT) roadway improvement project, as depicted on *Figure 3A: USGS Locus* prepared by Nitsch Engineering, undated (Attachment A).

The wetland boundary determinations were conducted in accordance with the *Massachusetts Wetlands Protection Act* (“the Act” M.G.L. c. 131, s. 40) and its implementing *Regulations* (310 CMR 10.00), and the Federal *Clean Water Act* (“CWA”; 33 U.S.C. 1344, s. 404) and its *Regulations* (33 CFR and 40 CFR). While the Town of Swansea administers a *Wetlands Protection Bylaw* and implementing *Rules and Regulations*, as a state agency, MassDOT is not subject to local wetlands protection bylaws or ordinances. LEC also employed the criteria provided *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands* (Second Edition, September 2022) and *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020). Representative photographs of the site are provided in Attachment B.

The following report provides a general site description, wetland delineation methodology, and potential regulatory implications.

### General Site Description

The site is comprised of a 2,000± linear foot segment of Route 6, and a 1,100± linear foot segment of Maple Avenue at the intersection of the two public roadways in the central section of Swansea (Attachment A, Figures 1 and 2). Maple Avenue extends in a north/south direction intersecting at a

---

#### LEC Environmental Consultants, Inc.

[www.lecenvironmental.com](http://www.lecenvironmental.com)

12 Resnik Road  
Suite 1  
Plymouth, MA 02360  
508.746.9491

380 Lowell Street  
Suite 101  
Wakefield, MA 01880  
781.245.2500

100 Grove Street  
Suite 302  
Worcester, MA 01605  
508.753.3077

P.O. Box 590  
Rindge, NH 03461  
603.899.6726

680 Warren Avenue  
Suite 3  
East Providence, RI 02914  
401.685.3109

PLYMOUTH, MA

WAKEFIELD, MA

WORCESTER, MA

RINDGE, NH

EAST PROVIDENCE, RI





traffic signal with Route 6, which extends in an east/west direction. The site is generally surrounded by commercial and residential development, forested uplands, and manicured landscaping associated with the development.

Route 6 is a paved asphalt MassDOT roadway consisting of four bi-directional travel lanes, adjacent curbing, catch basins, associated subsurface drainage infrastructure, and limited sections of concrete sidewalk. The Route 6/Maple Avenue intersection includes vehicular traffic signals in all directions, and dedicated left turn lanes are provided on Maple Avenue only. Maple Avenue is a paved asphalt MassDOT roadway consisting of two-lane bi-directional travel lanes and limited sections of adjacent curbing and concrete sidewalks. Topography within the site is generally flat with a marginal/gradual slope downgradient to the south and west of the intersection.

Where present, forested and upland portions of the site include a canopy of red maple (*Quercus rubra*), sassafras (*Sassafras albidum*), eastern cottonwood (*Populus deltoides*), catalpa (*Catalpa sp.*), and white oak (*Quercus alba*), with individuals of black cherry (*Prunus serotina*). The understory is comprised of saplings from the canopy layer and a sparse shrub layer of barberry (*Berberis vulgaris*), multiflora rose (*Rosa multiflora*), Tatarian honeysuckle (*Lonicera tatarica*), northern arrowwood (*Viburnum dentatum*), and autumn olive (*Elaeagnus umbellata*). The groundcover layer consists of seedlings from the overstory, poison ivy (*Toxicodendron radicans*), goldenrod (*Solidago sp.*), and blackberry (*Rubus sp.*). Entanglements of common greenbrier (*Smilax rotundifolia*), poison ivy (*Toxicodendron radicans*), and Asiatic bittersweet (*Celastrus orbiculatus*) are common in dense patches. Remaining vegetated upland areas are generally comprised of manicured lawn and landscaping features.

According to the Natural Resources Conservation Services (NRCS) Web Soil Survey for Bristol County, Massachusetts (Version 14; September 2, 2022), the upland portions of the site are mapped with Paxton Fine Sandy Loam, 0-8% slopes and Woodbridge Fine Sandy Loam, 0-3% slopes. NRCS describes the Paxton Series as very deep and moderately deep, well-drained loamy soils formed in lodgment till, and the Woodbridge Series as very deep to moderately deep, moderately well-drained loamy soils formed in lodgment till. LEC inspected soil conditions within the upland areas southwest of the intersection using a hand-held, Dutch-style auger, and observed a 13-inch-thick, fine sandy loam topsoil (Ap-Horizon) with a soil matrix color of 10YR 3/3 and 10% redoximorphic concentrations (10YR 2/2). The topsoil was underlain by a 5-inch-thick weathered subsoil (Bw-Horizon) with a soil matrix color of 2.5Y 5/6 with 5% redoximorphic concentrations (10YR 4/6). Stony refusal was met at 18 inches below the soil surface. The soil profile is not considered 'hydric' in accordance with the *Field Indicators for Identifying Hydric Soils in New England* (Version 4, December 2020).

### **Natural Heritage and Endangered Species Program Designation**

According to the 15<sup>th</sup> Edition of the *Massachusetts Natural Heritage Atlas* (effective August 1, 2021) published by the Natural Heritage & Endangered Species Program (NHESP), the site is not located within or in proximity to a *Priority Habitat of Rare Species* or *Estimated Habitat of Rare Wildlife*. No Certified or Potential Vernal Pools are mapped on or within the immediate vicinity of the site (Attachment A, Figure 2).





## Floodplain Designation

According to the FEMA Flood Insurance Rate Map (FIRM) for Town of Swansea, Massachusetts, dated July 16, 2014 (*Community Panels 25005 C 0238G and 25005 C 0326G*), the site is mapped within a Zone X (unshaded) - *Areas determined to be outside the 0.2% annual chance floodplain* (Attachment A, Figure 3). As a result, no portions of the site are mapped within the 100-year floodplain.

## Wetland Boundary Determination

On February 15, 2023, LEC conducted a site evaluation to identify and characterize existing protectable Wetland Resource Areas and to determine the boundaries of BVW within 100 feet of the site. The extent of Wetland Resource Areas was determined through observations of existing plant communities, hydrologic indicators, and the interpretation of soil characteristics in accordance with the *Act*, the *Act Regulations*, the *CWA*, and the *CWA Regulations*. Based on our observations and review of pertinent maps, LEC did not observe any jurisdictional Wetland Resource Areas in proximity to the project site. A Department of Environmental Protection (DEP) Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form is included with this report to support the determination.

## Summary

LEC conducted a site evaluation on February 15, 2023 to identify and determine the extent of Wetland Resource Areas within proximity to the site located in Swansea subject to jurisdiction under the *Act*, *Act Regulations*, the *CWA*, and *CWA Regulations*. Based on our site evaluations and review of pertinent maps, LEC did not observe any jurisdictional wetland resource areas in proximity to the project site.

Thank you for the opportunity to provide these services. If you have any questions or require additional information, please do not hesitate to contact me in our Plymouth office at 508-746-9491 or at [choogeboom@lecenvironmental.com](mailto:choogeboom@lecenvironmental.com).

Sincerely,

**LEC Environmental Consultants, Inc.**

Claire Hoogeboom  
Wetland Scientist

Nicole M. Ferrara  
Wetland Specialist

Attachments

**Attachment A**

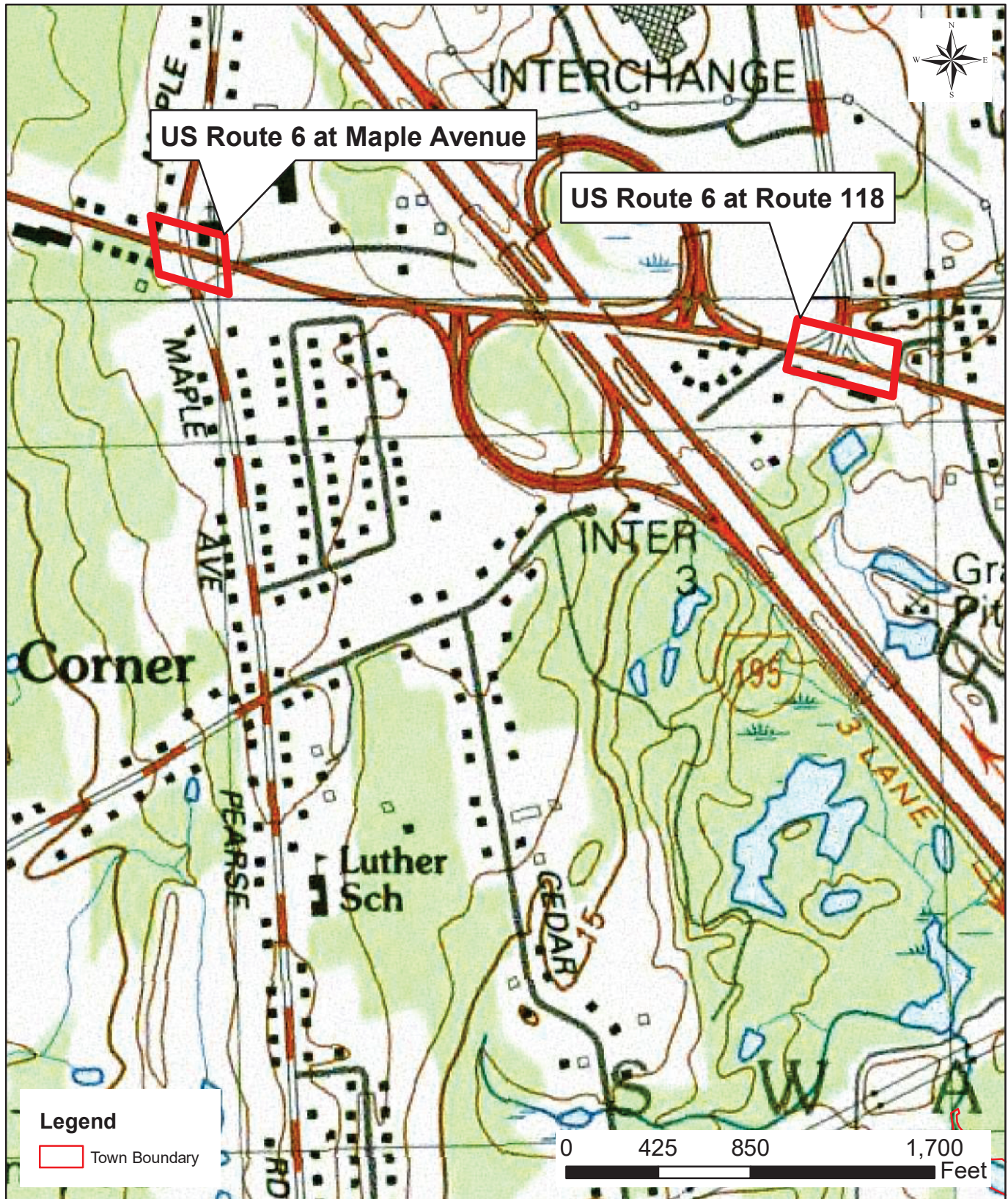
---

Figure 3A: USGS Locus prepared by Nitsch Engineering, undated

Figure 1: USGS Topographic Map

Figure 2: USGS Color Ortho Imagery & NHESP Map

Figure 3: FEMA Flood Insurance Rate Map



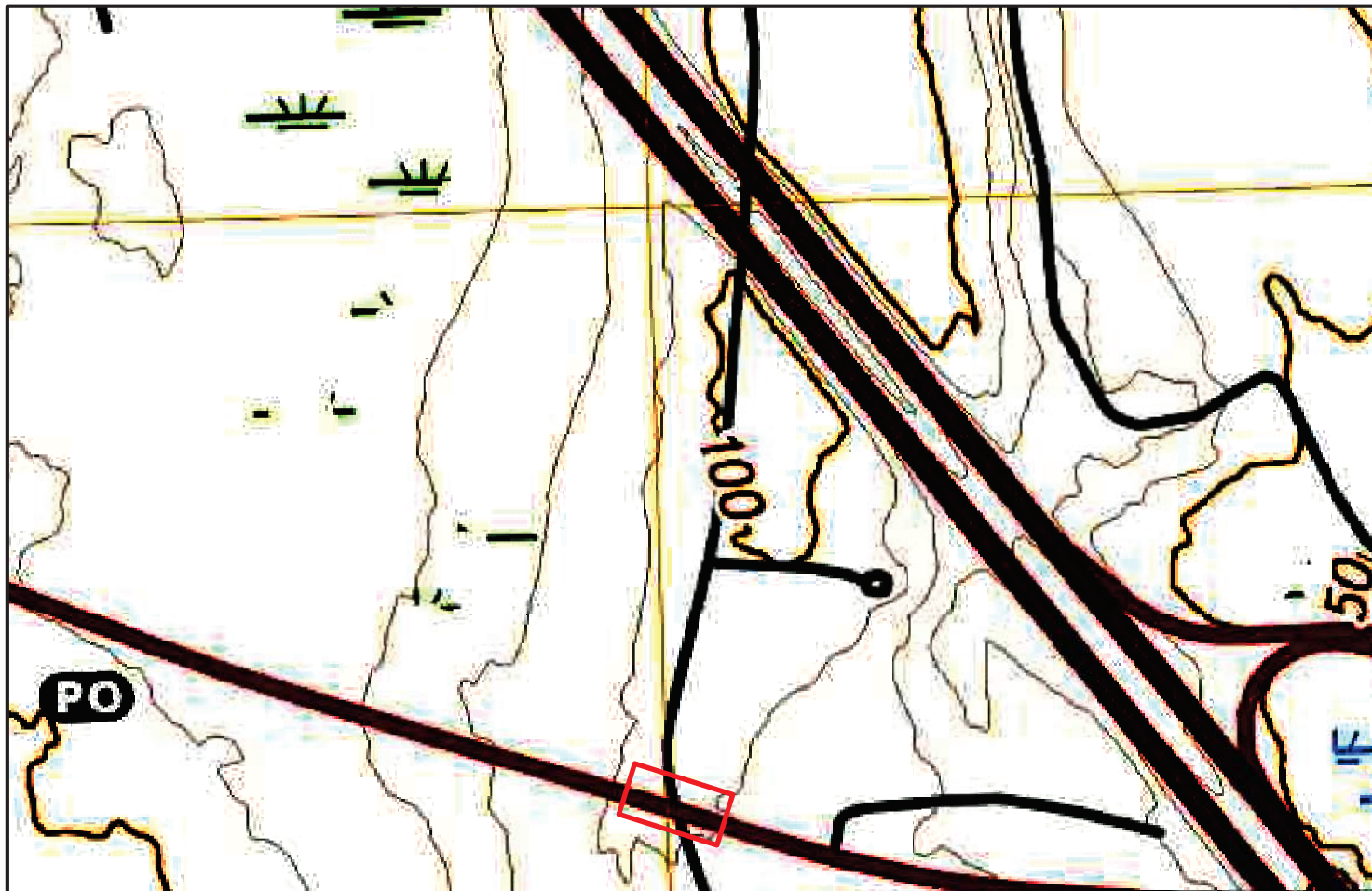
### Figure 3A: USGS Locus

Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts

Data Source: MassGIS  
Nitsch Project #9720.19







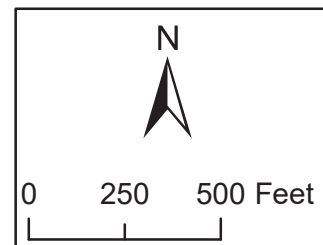
15



**LEC**  
Environmental Consultants, Inc.  
Wakefield, MA  
781.245.2500  
www.lecenvironmental.com

Figure 1: USGS Topographic Map  
Route 6 at Maple Avenue  
Swansea, MA

April 21, 2023







Environmental Consultants, Inc.

Wakefield, MA  
781.245.2500

[www.lecenvironmental.com](http://www.lecenvironmental.com)

Figure 2: USGS Color Ortho Imagery & NHESP Map  
Route 6 at Maple Avenue  
Swansea, MA

April 21, 2023





Figure 3 - FEMA FIRMeTte Map



43587 25005C02386

	LWKRW %DNDP RRG OH DM L RO % #CHS 935
	LW%GRU HBWK #CH 35=3=35
	\$HODM/RU/D RRG2

	25005C03266
	RIDDDOD &KOHDP RRG2UG 3LNDY RKHDIORR2LWKRHNDH G&WKOHMVKODRHRW/RJZWKGDUD DLD/RI OHMVKODRCHVXDUHOPRCH MVKHRRG2 WL RO/25005 &KOHDP RRG2UG #CH: \$H0ZWKSGRHRGD RRG2 MSHWR MHTGRH/M/ #CH: \$H0ZWKD RRG2 MSHWR/MHT #CH:

	\$HDIRDQ BD P RRG2UG #CH: (HFWL YH2)
	\$HDIR &HWHUHQG P RRG2UG #CH: &KODD 20 YHUWTRUWRUJ2U MHTMTRU/P RRG2D

	\$HDIR &HWHUHQG P RRG2UG #CH: (HFWL YH2)
	\$HDIR &HWHUHQG P RRG2UG #CH: &KODD 20 YHUWTRUWRUJ2U MHTMTRU/P RRG2D
	\$HDIR &HWHUHQG P RRG2UG #CH: (HFWL YH2)
	\$HDIR &HWHUHQG P RRG2UG #CH: &KODD 20 YHUWTRUWRUJ2U MHTMTRU/P RRG2D
	\$HDIR &HWHUHQG P RRG2UG #CH: (HFWL YH2)
	\$HDIR &HWHUHQG P RRG2UG #CH: &KODD 20 YHUWTRUWRUJ2U MHTMTRU/P RRG2D

	L.L WDO DWDSD O BPDH
	FEL WDO DWDSD O BPDH
	25005C03266

7K VBSRFDL HZVWK @VWMDDDUG/RUJWKHXHR  
GL WDO JORRGRB/LILWL VGRV/R GMD/GMUL BGGHDPZ  
7KHEDBHWK2RFRDL HZVWK @VBDHBS  
DPXUFRVWDDUG/

7K JORRGRDUGL GRUBMLROL VGLU HGG UHMO/TUPRWH  
DMWRUL WDML HXZEMUJL RH/SUJRL GGGR 7K VBS  
Z/FRUWHGRD **DVID** DDEGRVGRW  
UHOHWM RKOJH/RU DFRGRVWVXGAKKQVWVRWK VGDMDGG  
WL PLZKH JODGHIHFWL HYLGRBML ROJHRODHRU  
BFRVVSUMG3BEGZDWDHRU WLPJ

7K VBSL BHLVYR GIL MWKFRCHRU RUIRUKHROORZ QIBS  
HOHDMVGRQV DSSDU BDLBSL BHLVORRGRDODHVD  
OHHGGWED HBDJ BSRUHM LROGWHFRQL WLL GDM LILUV  
25005C03266 25005C03266 25005C03266  
XCBSSGDDXQRG-UQ JGDHCVRODNRV BFXVGRU  
UHXODWRUSUSRAHV

**Attachment B**

---

Representative Photographs



## Representative Photographs



Photograph 1: East view of the Route 6 with Route 6/Maple Avenue intersection in background.



Photograph 2: Southern view of Maple Avenue with Route 6/Maple Avenue intersection in background.





Photograph 3: Western view of Route 6 with Route 6/Maple Avenue intersection in background.



Photograph 4: Western view of Route 6 (1049 GAR Highway to the right). Intersection in background.

**Attachment C**

---

Department of Environmental Protection (DEP)  
Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Forms (Upland Plot only)

**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Route 6/ Maple Ave Intersection City/Town: Swansea Sampling Date: 3/6/2023  
 Applicant/Owner: MassDOT Sampling Point or Zone: NONWET-3  
 Investigator(s): Claire Hooeboom Latitude / Longitude: 41.759939, -71.216050  
 Soil Map Unit Name: Hinkley Loamy Sand NWI or DEP Classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydic Soils criterion met?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetlands hydrology present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks, Photo Details, Flagging, etc.:  
 - Test pit located approximately 80 feet southwest of the Route 6/Maple Avenue intersection  
 - Observed soil profile is generally consistent with the NRCS Soil Series description

**HYDROLOGY**

<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Saturation Present (including capillary fringe)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____

Wetland Hydrology Indicators		
Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
<input type="checkbox"/> Water-stained leaves	<input type="checkbox"/> Hydrological records	<input type="checkbox"/> Direct observation of inundation
<input type="checkbox"/> Evidence of aquatic fauna	<input type="checkbox"/> Free water in a soil test hole	<input type="checkbox"/> Drainage patterns
<input type="checkbox"/> Iron deposits	<input type="checkbox"/> Saturated soil	<input type="checkbox"/> Drift lines
<input type="checkbox"/> Algal mats or crusts	<input type="checkbox"/> Water marks	<input type="checkbox"/> Scoured areas
<input type="checkbox"/> Oxidized rhizospheres/pore linings	<input type="checkbox"/> Moss trim lines	<input type="checkbox"/> Sediment deposits
<input type="checkbox"/> Thin muck surfaces	<input type="checkbox"/> Presence of reduced iron	<input type="checkbox"/> Surface soil cracks
<input type="checkbox"/> Plants with air-filled tissue (aerenchyma)	<input type="checkbox"/> Woody plants with adventitious roots	<input type="checkbox"/> Sparsely vegetated concave surface
<input type="checkbox"/> Plants with polymorphic leaves	<input type="checkbox"/> Trees with shallow root systems	<input type="checkbox"/> Microtopographic relief
<input type="checkbox"/> Plants with floating leaves	<input type="checkbox"/> Woody plants with enlarged lenticels	<input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
<input type="checkbox"/> Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. red maple	Acer rubrum	FAC	20.5	Yes	Yes
2. black cherry	Prunus serotina	FACU	20.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					
<u>41.0</u> = Total Cover					
<u>Shrub/Sapling Stratum</u>		Plot size <u>15'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. black cherry	Prunus serotina	FACU	38.0	Yes	No
2. catalpa	Catalpa speciosa	FACU	20.5	Yes	No
3. white oak	Quercus alba	FACU	3.0	No	No
4. northern arrowwood	Viburnum dentatum	FAC	20.5	Yes	Yes
5. multiflora rosa	Rosa multiflora	FACU	10.5	No	No
6. tartarian honeysuckle	Lonicera tatarica	FACU	3.0	No	No
7.					
8.					
9.					
<u>95.5</u> = Total Cover					
<u>Herb Stratum</u>		Plot size <u>5'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. raspberry	Rubus sp.	FACU	10.5	No	No
2. poison ivy	Toxicodendron radicans	FAC	63.0	Yes	Yes
3. goldenrod	Solidago sp.		3.0	No	No
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<u>76.5</u> = Total Cover					

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>		Plot size <u>30'</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. asiatic bittersweet	Celastrus orbiculatus	FACU	38.0	Yes	No
2. poison ivy	Toxicodendron radicans	FAC	38.0	Yes	Yes
3. common greenbriar	Smilax rotundifolia	FAC	10.5	No	Yes
4.					
			<u>86.5</u>	= Total Cover	

<u>Rapid Test:</u> Do all dominant species have an indicator status of OBL or FACW?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<u>Dominance Test:</u>	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	8	4	
<u>Prevalence Index:</u>		Total % Cover (all strata)	Multiply by:
	OBL species	0	X 1 = 0.00
	FACW species	0	X 2 = 0.00
	FAC species	153	X 3 = 457.50
	FACU species	144	X 4 = 576.00
	UPL species	0	X 5 = 0.00
	Column Totals	(A) 296.5	(B) 1033.5
Prevalence Index		B/A = <b>3.49</b>	Is the Prevalence Index ≤ 3.0? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<u>Wetland vegetation criterion met?</u>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

**Definitions of Vegetation Strata**

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %



**SOIL**

<b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Location <sup>2</sup>		
13.00	10YR 3/3	90.0%	10YR 2/2	10.0%	C	PL	Fine Sandy Loam	Ap-Horizon
18.00	2.5Y 5/6	95.0%	10YR 4/6	5.0%	C	PL	Coarse Sandy Loam	Bw-Horizon
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains      <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators</b> (Check all that apply)		<b>Indicators for Problematic Hydric Soils</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F8)	<input type="checkbox"/> Mesic Spodic (A17)
<input type="checkbox"/> Sandy Mucky Mineral (S1)		<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Other (Include Explanation in Remarks)
<input type="checkbox"/> Stripped Matrix (S6)		
<input type="checkbox"/> Dark Surface (S7)		

**Restrictive Layer (if observed)**    Type: stony refusal    Depth (inches): 18.00

Remarks:

**Hydric Soils criterion met?**    Yes     No



May 15, 2023

**Email** (msoltys@nitscheng.com)

Mr. Matthew Soltys  
 Nitsch Engineering  
 370 Main Street, Suite 850  
 Worcester, MA 01608

**Re: Wetland Resource Area Analysis Report** [LEC File #: NEI22-366.04]  
**Contract 115784; Project No. 608759**  
**Route 6 at Swansea Mall Drive (Route 118) Intersection**  
**Swansea, Massachusetts**

Dear Mr. Soltys:

As requested, LEC Environmental Consultants, Inc., (LEC) conducted a site evaluation and Wetland Resource Area Analysis for the above-referenced site in Swansea, Massachusetts. The purpose of the evaluation was to determine Wetland Resource Area boundaries within and in proximity to the survey area (“the site”) for a proposed Massachusetts Department of Transportation (MassDOT) roadway improvement project, as depicted on *Figure 3A: USGS Locus* prepared by Nitsch Engineering, undated (Attachment A).

The wetland boundary determinations were conducted in accordance with the *Massachusetts Wetlands Protection Act* (“the Act” M.G.L. c. 131, s. 40) and its implementing *Regulations* (310 CMR 10.00), and the Federal *Clean Water Act* (“CWA”; 33 U.S.C. 1344, s. 404) and its *Regulations* (33 CFR and 40 CFR). While the Town of Swansea administers a *Wetlands Protection Bylaw* and implementing *Rules and Regulations*, as a state agency, MassDOT is not subject to local wetlands protection bylaws or ordinances. LEC also employed the criteria provided in *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands* (Second Edition, September 2022) and *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020). Representative photographs of the site are provided in Attachment B, and DEP Delineation Field Data Forms are completed and provided in Attachment C.

The following report provides a general site description, wetland delineation methodology, a description of the Wetland Resource Areas, and potential regulatory implications.

**General Site Description**

The site is comprised of an approximately 1,100± linear foot segment of the Route 6 (Grand Army of the Republic Highway) and an approximately 350± linear foot segment of Route 118 (Swansea Mall Drive) extending north from the intersection with Route 6 in the central section of Swansea (Attachment A,

LEC Environmental Consultants, Inc.				<a href="http://www.lecenvironmental.com">www.lecenvironmental.com</a>	
12 Resnik Road Suite 1 Plymouth, MA 02360 508.746.9491	380 Lowell Street Suite 101 Wakefield, MA 01880 781.245.2500	100 Grove Street Suite 302 Worcester, MA 01605 508.753.3077	P.O. Box 590 Rindge, NH 03461 603.899.6726	680 Warren Avenue Suite 3 East Providence, RI 02914 401.685.3109	
PLYMOUTH, MA	WAKEFIELD, MA	WORCESTER, MA	RINDGE, NH	EAST PROVIDENCE, RI	



Figures 1 and 2). Route 118 extends in a northerly direction and starts at the intersection with Route 6, which extends perpendicular in an east/west direction. The site is generally surrounded by commercial and industrial development to the north and south, and residential development associated with Michael Avenue is situated to the northeast. Forested uplands and manicured landscaping associated with development are adjacent to portions of the site. A Bordering Vegetated Wetland (BVW) is situated northwest of the Route 6/Route 118 intersection along the toe-of-slope associated with the I-195 on-ramp.

Route 6 is a paved asphalt MassDOT roadway consisting of four bi-directional travel lanes, adjacent curbing, catch basins, stormwater swales, associated subsurface drainage infrastructure, and a concrete sidewalk. The Route 6/Route 118 intersection includes vehicular traffic signals in all directions, dedicated left turn lanes, and striped medians between intersections. Topography within the site is generally flat, sloping gradually downgradient towards the east and south from the intersection. Topography adjacent to the western portion of the site descends steeply downgradient to the north towards the E-series BVW, and south towards existing development.

Where present, marginal shrub-scrub upland portions of the site includes a canopy of individual red maple (*Acer rubrum*) trees. The understory is comprised of saplings from the canopy layer, red oak (*Quercus rubra*), and American elm (*Ulmus americana*), and a sparse shrub layer of multiflora rose (*Rosa multiflora*). The groundcover layer consists of seedlings from the overstory, goldenrod (*Solidago* sp.), and primrose (*Primula* sp.), and thick entanglements of Asiatic bittersweet (*Celastrus orbiculatus*), multiflora rose, and poison ivy (*Toxicodendron radicans*) are present in dense patches. Remaining upland areas are generally comprised of manicured lawn, paved areas, and landscaping features.

According to the Natural Resources Conservation Services (NRCS) Web Soil Survey for Bristol County, Massachusetts (Version 14; September 9, 2022), the upland portions of the site are mapped with Udorthents Urban Land Complex and Hinkley Loamy Sand, 3 – 8% slopes. NRCS describes Urban Land as nearly level to moderately steep areas where the soils have been altered or obscured by urban works and structures. Buildings and pavement cover more than 85 percent of the surface. NRCS describes the Hinkley Series as very deep, excessively drained soils formed in glaciofluvial materials through very steep soils on outwash terraces, outwash plains, outwash deltas, kames, kame terraces, and eskers. LEC inspected soil conditions within the upland areas adjacent to the BVW using a hand-held, Dutch-style auger, and observed a 12-inch thick sandy loam topsoil (A-Horizon) with a soil matrix color of 10YR 3/1 with 20% of variegated soil matrix color of 10YR 4/3. The topsoil was directly underlain by a 4-inch-thick sandy loam subsoil (B-Horizon) with a soil matrix color 2.5 Y 4/3 with 10% redoximorphic concentrations (10 YR 4/6). Stony refusal was met at 16 inches below the soil surface. The soil profile is not considered ‘hydric’ in accordance with the *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020).





## Natural Heritage and Endangered Species Program Designation

According to the 15<sup>th</sup> Edition of the *Massachusetts Natural Heritage Atlas* (effective August 1, 2021) published by the Natural Heritage & Endangered Species Program (NHESP), the site is not located within or in proximity to a *Priority Habitat of Rare Species* or *Estimated Habitat of Rare Wildlife*. No Certified Vernal Pools (CVP) are mapped on or within the immediate vicinity of the site; however, one Potential Vernal Pool (PVP; #24606) is mapped approximately 250± feet south of the Route 6/ Route 118 intersection (Attachment A, Figure 2).

## Floodplain Designation

According to the FEMA Flood Insurance Rate Map (FIRM) for Town of Swansea, Massachusetts, dated July 16, 2014 (*Community Panels 25005 C 0239G and 25005 C 0327G*), the site is mapped within a Zone X (unshaded) - *Areas determined to be outside the 0.2% annual chance floodplain* (Attachment A, Figure 3). As a result, no portions of the site are mapped within the 100-year floodplain.

## Wetland Boundary Determination

On February 15, 2023, LEC conducted a site evaluation to identify and characterize existing protectable Wetland Resource Areas and to determine the boundaries of BVW within 100 feet of the site. The extent of Wetland Resource Areas was determined through observations of existing plant communities, hydrologic indicators, and the interpretation of soil characteristics in accordance with the *Act*, the *Act Regulations*, the *CWA*, and the *CWA Regulations*. Based on our observations and review of pertinent maps, LEC identified and delineated the Wetland Resource Areas located in proximity to the project footprint, including BVW. As a result, portions of the project footprint are located within the 100-foot Buffer Zone to BVW.

The boundaries of BVW were demarcated in the field with blaze orange surveyor's flagging tape embossed with the words "LEC Resource Area Boundary" in bold, black print. The BVW flags are numbered E1-E4.

Department of Environmental Protection (DEP) Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Forms are included with this report to support the wetland delineation (Attachment C), and the boundaries of delineated Wetland Resource Areas are depicted on the attached *Construction Plans, Swansea Mall Drive (Route 118)* (Sheets 35 – 38), prepared by Nitsch Engineering, Inc., dated April 4, 2023 (Attachment D).

A brief description of the Wetland Resource Areas is provided below.

## Bordering Vegetated Wetland (BVW)

According to the *Act Regulations* [310 CMR 10.55(2)], Bordering Vegetated Wetlands are defined as: *freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes...Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a*



*predominance of wetland indicator plants...The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.*

One (1) small BVW occurs northwest of the site to the north of Route 6 and east of the northbound I-195 interchange. The scrub-shrub wetland is hydrologically influenced by high groundwater and stormwater discharging from two culverts upgradient of wetland flags E2-E3 and E4. The BVW is connected to off-site wetlands to the northwest interior of the I-195 interchange via a network of culverts to the north. The BVW boundary occurs along the toe-of-slope and the interior is generally flat, sloping slightly downgradient to the northwest. Topography slopes steeply downgradient towards the BVW boundary from adjacent paved areas associated with Route 6 and I-195.

Vegetation within the perimeter of the BVW lacks a distinct canopy layer, and is comprised of individual red maple saplings. The dense groundcover layer is dominated by common reed (*Phragmites australis*) and cattail (*Typha* sp.), with clusters of purple loosestrife (*Lythrum salicaria*), blue vervain (*Verbena hastata*), cinnamon fern (*Osmunda cinnamomea*), and soft rush (*Juncus effusus*). Entanglements of Asiatic bittersweet and poison ivy are common throughout.

According to the Natural Resources Conservation Services (NRCS) Web Soil Survey for Bristol County, Massachusetts, Southern Part, (Version 14; September 9, 2022), the portion of the site occupied by the BVW is mapped as Hinckley Loamy Sand, 3-8% slopes. NRCS describes the Hinckley series as very deep, excessively drained soils formed in glaciofluvial materials. LEC inspected soil conditions using a hand-held, Dutch-style auger within the BVW and generally observed a 5-inch-thick, fine sandy loam, mucky modified topsoil (^A-Horizon) with a soil matrix color of 10YR 2/1 with 10% redoximorphic depletions (10YR 5/2), and 10% redoximorphic concentrations (10YR 4/6). The topsoil was directly underlain by a 10-inch-thick clay sandy loam subsoil (^Bg-Horizon) with a soil matrix color 2.5 Y 4/2 with 5% redoximorphic depletions (2.5 Y 6/1), 20% redoximorphic concentrations of (2.5Y4/3), 20% redoximorphic concentration (2.5Y 4/3), 5% redoximorphic concentrations of (7.5YR 4/6), and 15% redoximorphic concentrations of (10YR 4/6) occupying the soil profile. The Bg-Horizon was situated atop a buried very fine sandy loam, topsoil layer (Ab-Horizon) with a soil matrix color of 10 YR 2/1 with 15% redoximorphic depletions of 5Y 5/2. This soil profile is considered a hydric soil in accordance with *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020), as it meets the indicator *HTM-A: Human Transported Material*.

## Summary

LEC identified and delineated the boundaries of BVW within proximity to the site located in Swansea. The aforementioned Wetland Resource Area is subject to jurisdiction under the *Act, Act Regulations*, the *CWA*, and *CWA Regulations*. The BVW boundary places the 100-foot Buffer Zone onto the site, as jurisdictional under the *Act* and *Act Regulations*. Since MassDOT is the Applicant for the proposed project, the proposed project is not subject to the *Town of Swansea Wetlands Protection Bylaw* and its



implementing *Rules and Regulations*. Any work proposed within BVW and/or the associated 100-foot Buffer Zone will require compliance with performance standards enumerated in the *Act Regulations*, and filing the appropriate permits with the Town of Swansea Conservation Commission and/or the Massachusetts Department of Environmental Protection. The proposed work activities may require additional wetlands permitting with the Department of the Army Corps of Engineers if any direct impacts are proposed within BVW.

Thank you for the opportunity to provide these services. If you have any questions or require additional information, please do not hesitate to contact me in our Plymouth office at 508-746-9491 or at [choogeboom@lecenvironmental.com](mailto:choogeboom@lecenvironmental.com).

Sincerely,

**LEC Environmental Consultants, Inc.**

A handwritten signature in black ink that reads "Claire Hoozeboom".

Claire Hoozeboom  
Wetland Scientist

A handwritten signature in black ink that reads "Nicole M. Ferrara".

Nicole M. Ferrara  
Wetland Specialist

Attachments

**Attachment A**

---

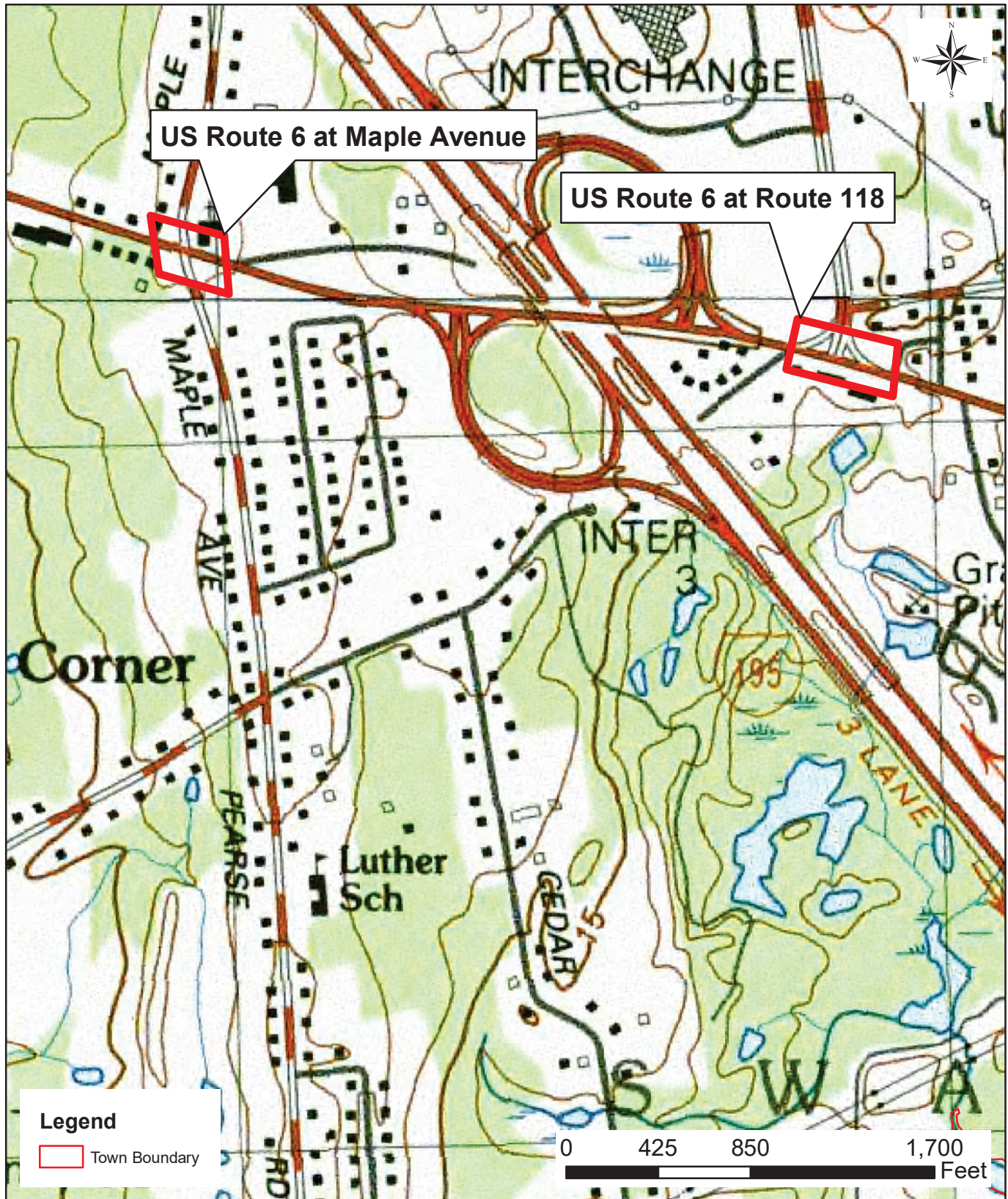
Figure 3A: USGS Locus prepared by Nitsch Engineering, undated

Figure 1: USGS Topographic Map

Figure 2: USGS Color Ortho Imagery & NHESP Map

Figure 3: FEMA Flood Insurance Rate Map





**Figure 3A: USGS Locus**

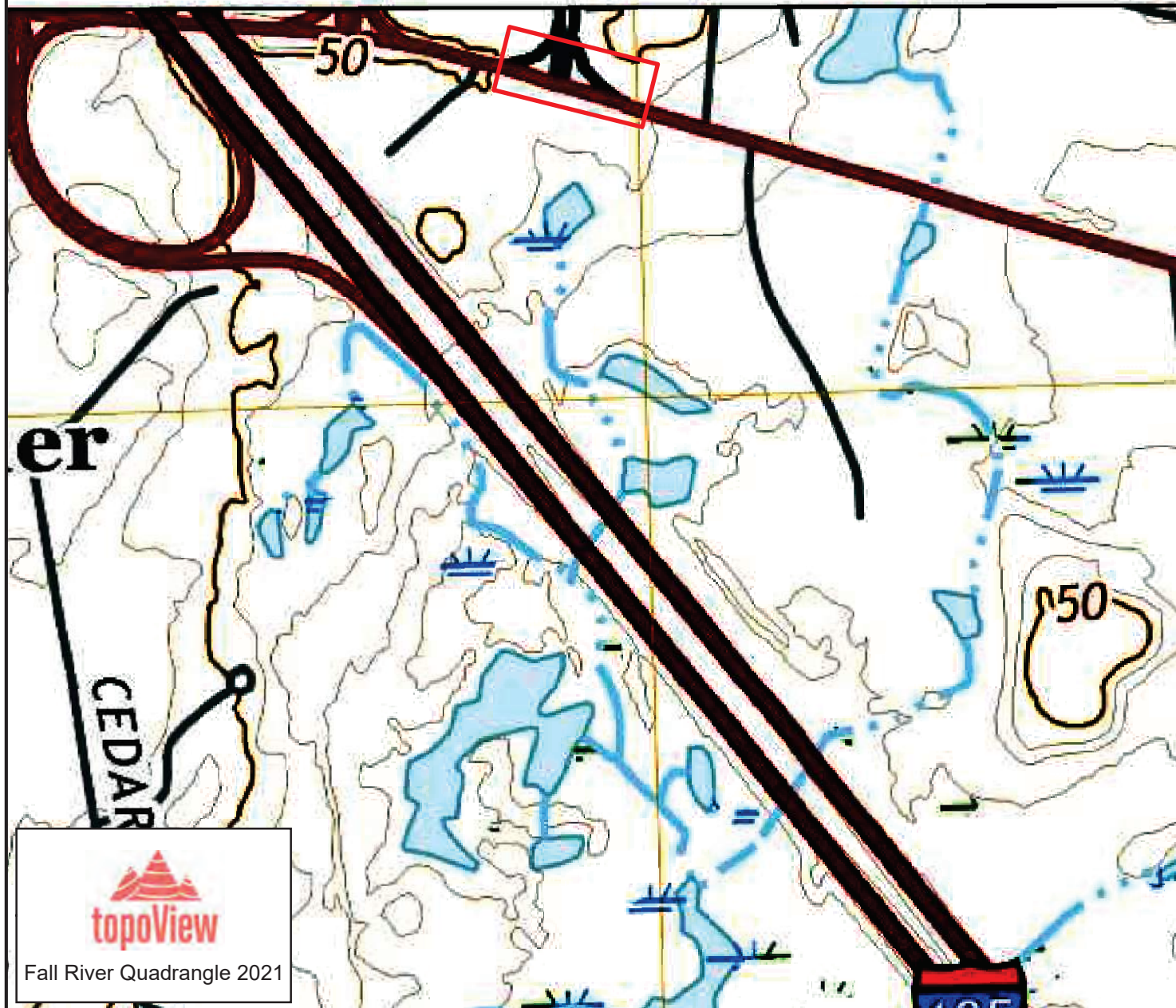
Traffic Signal and Safety Improvements at Three Intersections on Route 6  
Swansea, Massachusetts

Data Source: MassGIS  
Nitsch Project #9720.19





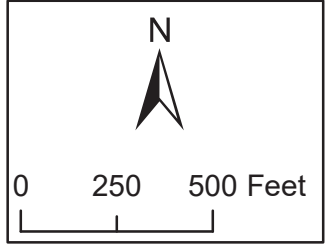
16



**LEC**  
Environmental Consultants, Inc.  
Wakefield, MA  
781.245.2500  
www.lecenvironmental.com

Figure 1: USGS Topographic Map  
Route 6 at Route 118  
Swansea, MA

April 21, 2023



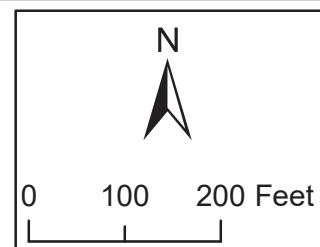




**LEC**  
 Environmental Consultants, Inc.  
 Wakefield, MA  
 781.245.2500  
 www.lecenvironmental.com

Figure 2: USGS Color Ortho Imagery & NHESP Map  
 Route 6 at Route 118  
 Swansea, MA

April 21, 2023





# National Flood Hazard Layer FIRMette



71°13'8"W 41°45'11"N

Figure 3: FEMA FIRMette Map



## Legend

SEE HIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

<b>SPECIAL FLOOD HAZARD AREAS</b>	Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
-----------------------------------	--

<b>OTHER AREAS OF FLOOD HAZARD</b>	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance Flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee. See Notes. Zone X Area with Flood Risk due to Levee Zone D
------------------------------------	---

<b>OTHER AREAS</b>	NO SCREEN Area of Minimal Flood Hazard Zone X Effective LOMRs Area of Undetermined Flood Hazard Zone D
<b>GENERAL STRUCTURES</b>	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall

<b>OTHER FEATURES</b>	20.2 Cross Sections with 1% Annual Chance 17.5 Water Surface Elevation 8 Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature
-----------------------	--

<b>MAP PANELS</b>	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 4/21/2023 at 2:49 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.

0 250 500 1,000 1,500 2,000 Feet 1:6,000  
Basemap: USGS National Map: Orthoimagery. Data refreshed October, 2020  
71°12'31"W 41°44'44"N



**Attachment B**

---

Representative Photographs

**Representative Photographs**



Photograph 1: East view of Route 6/Route 118 intersection (Route 118 to the left). Taken May 10, 2023.



Photograph 2: Northeast view of E-series BVW from the on-ramp to I-195 North.





Photo 3: Northwest view of Route 6 from #711 Route 6 (eastern site limit).



Photograph 4: Southeast view of culvert discharging stormwater towards the E-series BVW.

**Attachment C**

---

Department of Environmental Protection (DEP)  
Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Forms

**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Route 6/ Route 118 Intersection City/Town: Swansea Sampling Date: 3/6/2023  
 Applicant/Owner: MassDOT Sampling Point or Zone: NONWET-2  
 Investigator(s): Claire Hooeboom Latitude / Longitude: 41.759939, -71.216050  
 Soil Map Unit Name: Hinkley Loamy Sand NWI or DEP Classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>
Hydic Soils criterion met?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetlands hydrology present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks, Photo Details, Flagging, etc.:			
- BVW was flagged E1-E4 - Observed soil profile is generally consistent with the NRCS Soil Series description			

**HYDROLOGY**

<b>Field Observations:</b>		
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Saturation Present (including capillary fringe)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
<b>Wetland Hydrology Indicators</b>		
<b>Reliable Indicators of Wetlands Hydrology</b>	<b>Indicators that can be Reliable with Proper Interpretation</b>	<b>Indicators of the Influence of Water</b>
<input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Evidence of aquatic fauna <input type="checkbox"/> Iron deposits <input type="checkbox"/> Algal mats or crusts <input type="checkbox"/> Oxidized rhizospheres/pore linings <input type="checkbox"/> Thin muck surfaces <input type="checkbox"/> Plants with air-filled tissue (aerenchyma) <input type="checkbox"/> Plants with polymorphic leaves <input type="checkbox"/> Plants with floating leaves <input type="checkbox"/> Hydrogen sulfide odor	<input type="checkbox"/> Hydrological records <input type="checkbox"/> Free water in a soil test hole <input type="checkbox"/> Saturated soil <input type="checkbox"/> Water marks <input type="checkbox"/> Moss trim lines  <input type="checkbox"/> Presence of reduced iron <input type="checkbox"/> Woody plants with adventitious roots <input type="checkbox"/> Trees with shallow root systems <input type="checkbox"/> Woody plants with enlarged lenticels	<input type="checkbox"/> Direct observation of inundation <input type="checkbox"/> Drainage patterns <input type="checkbox"/> Drift lines <input type="checkbox"/> Scoured areas <input type="checkbox"/> Sediment deposits  <input type="checkbox"/> Surface soil cracks <input type="checkbox"/> Sparsely vegetated concave surface <input type="checkbox"/> Microtopographic relief <input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):		

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1. red maple	Acer rubrum	FAC	10.5	Yes	Yes		
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
			<u>10.5</u> = Total Cover				
<u>Shrub/Sapling Stratum</u>		Plot size <u>15'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1. American elm	Ulmus Americana	FACW	3.0	No	Yes		
2. red oak	Quercus rubra	FACU	10.5	Yes	No		
3. multiflora rose	Rosa multiflora	FACU	20.5	Yes	No		
4.							
5.							
6.							
7.							
8.							
9.							
			<u>34.0</u> = Total Cover				
<u>Herb Stratum</u>		Plot size <u>5'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1. primrose	Oenothera sp.	FACU	10.5	Yes	No		
2. goldenrod	Solidago sp.		20.5	Yes	No		
3.					No		
4.					No		
5.					No		
6.					No		
7.					No		
8.					No		
9.					No		
10.					No		
11.					No		
12.					No		
			<u>31.0</u> = Total Cover				

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>		Plot size <u>30'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name					
1.	asiatic bittersweet	Celastrus orbiculatus		FACU	63.0	Yes	No
2.							
3.							
4.							
				<u>63.0</u> = Total Cover			

<b>Rapid Test:</b> Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<b>Dominance Test:</b>	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?	
	5	1	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
<b>Prevalence Index:</b>		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	= 0.00
	FACW species		X 2	= 0.00
	FAC species	11	X 3	= 31.50
	FACU species	95	X 4	= 378.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 105		(B) 409.5
Prevalence Index		B/A = <b>3.90</b>		Is the Prevalence Index ≤ 3.0?
				Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Wetland vegetation criterion met?</b>			Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

**Definitions of Vegetation Strata**

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %



**SOIL**

<b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Location <sup>2</sup>		
12.00	10YR 3/1	0.0%	10YR 4/3	20.0%	C	M	Sandy Loam	A Horizon (Redox = Variegated)
16.00	2.5Y 4/3	0.0%	10YR 4/6	10.0%	C	PL	Sandy Loam	B Horizon
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				
		0.0%		0.0%				

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains    <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators</b> (Check all that apply)			<b>Indicators for Problematic Hydric Soils</b>		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8)	<input type="checkbox"/> 2 cm Muck (A10)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Dark Surface (S7)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Polyvalue Below Surface (S8)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Thin Dark Surface (S9)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F8)	<input type="checkbox"/> Mesic Spodic (A17)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)		<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Other (Include Explanation in Remarks)			
<input type="checkbox"/> Stripped Matrix (S6)					
<input type="checkbox"/> Dark Surface (S7)					

**Restrictive Layer (if observed)**    Type: \_\_\_\_\_    Depth (inches): \_\_\_\_\_

Remarks: Met stony refusal at 16" below soil surface.

**Hydric Soils criterion met?**    Yes     No



**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Route 6/ Route 118 Intersection City/Town: Swansea Sampling Date: 3/6/2023  
 Applicant/Owner: MassDOT Sampling Point or Zone: WET-2  
 Investigator(s): Claire Hooeboom Latitude / Longitude: 41.75000, -71.21595  
 Soil Map Unit Name: Hinkley Loamy Sand NWI or DEP Classification: SS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydic Soils criterion met?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetlands hydrology present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks, Photo Details, Flagging, etc.:

- BVW was flagged E1-E4
- Observed soil profile is generally consistent with the NRCS Soil Series description?

**HYDROLOGY**

<b>Field Observations:</b>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches) _____
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches) <u>5.00</u>
Saturation Present (including capillary fringe)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches) <u>0.00</u>
<b>Wetland Hydrology Indicators</b>		
Reliable Indicators of Wetlands Hydrology <input checked="" type="checkbox"/> Water-stained leaves <input type="checkbox"/> Evidence of aquatic fauna <input type="checkbox"/> Iron deposits <input type="checkbox"/> Algal mats or crusts <input type="checkbox"/> Oxidized rhizospheres/pore linings <input checked="" type="checkbox"/> Thin muck surfaces <input type="checkbox"/> Plants with air-filled tissue (aerenchyma) <input type="checkbox"/> Plants with polymorphic leaves <input type="checkbox"/> Plants with floating leaves <input type="checkbox"/> Hydrogen sulfide odor	Indicators that can be Reliable with Proper Interpretation <input type="checkbox"/> Hydrological records <input checked="" type="checkbox"/> Free water in a soil test hole <input type="checkbox"/> Saturated soil <input type="checkbox"/> Water marks <input type="checkbox"/> Moss trim lines <input type="checkbox"/> Presence of reduced iron <input type="checkbox"/> Woody plants with adventitious roots <input type="checkbox"/> Trees with shallow root systems <input type="checkbox"/> Woody plants with enlarged lenticels	Indicators of the Influence of Water <input type="checkbox"/> Direct observation of inundation <input type="checkbox"/> Drainage patterns <input type="checkbox"/> Drift lines <input type="checkbox"/> Scoured areas <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Surface soil cracks <input type="checkbox"/> Sparsely vegetated concave surface <input type="checkbox"/> Microtopographic relief <input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available): - Depth to free water in observation hole is 5".		

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1. red maple	Acer rubrum	FAC	10.5	Yes	Yes		
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
			<u>10.5</u> = Total Cover				
<u>Shrub/Sapling Stratum</u>		Plot size <u>15'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1. black Ash	Fraxinus nigra	FACW	3.0	No	Yes		
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
			<u>3.0</u> = Total Cover				
<u>Herb Stratum</u>		Plot size <u>5'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name						
1. blue vervain	Verbena hastata	FACW	3.0	No			
2. soft rush	Juncus effusus	OBL	10.5	Yes			
3. purple Loosestrife	Lythrum salicaria	OBL	10.5	Yes			
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
			<u>24.0</u> = Total Cover				

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>		Plot size <u>30'</u>		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name					
1.	asiatic bittersweet	Celastrus orbiculatus		FACU	63.0	Yes	No
2.							
3.							
4.							
				<u>63.0</u> = Total Cover			

<b>Rapid Test:</b> Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<b>Dominance Test:</b>	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?	
	4	3	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Prevalence Index:</b>		Total % Cover (all strata)	Multiply by:	Result
	OBL species	21	X 1	= 21.00
	FACW species	6	X 2	= 12.00
	FAC species	11	X 3	= 31.50
	FACU species	63	X 4	= 252.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 100.5		(B) 316.5
Prevalence Index		B/A = <b>3.15</b>		Is the Prevalence Index ≤ 3.0?
				Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Wetland vegetation criterion met?</b>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

**Definitions of Vegetation Strata**

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

**SOIL**

<b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>		
5.00	10YR 2/1	80.0%	10YR 5/2	10.0%	D	PL	FSL, Muck Mod
		0.0%	10YR 4/6	10.0%	C	PL	A Horizon (FSL, Muck Mod.)
15.00	2.5Y 4/2	55.0%	2.5Y 6/1	5.0%	D	PL	Coarse Sandy Loam
		0.0%	2.5Y 4/3	20.0%	C	PL	Bg Horizon
		0.0%	7.5YR 4/6	5.0%	C	PL	
		0.0%	10YR 4/6	15.0%	C	PL	
23.00	10YR 2/1	85.0%	5Y 5/2	15.0%	D	PL	Very Fine Sandy Loam
		0.0%		0.0%			Ab Horizon
		0.0%		0.0%			
		0.0%		0.0%			
		0.0%		0.0%			

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains    <sup>2</sup>Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)	Indicators for Problematic Hydric Soils
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F8)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Mesic Spodic (A17)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
	<input checked="" type="checkbox"/> Other (Include Explanation in Remarks)

**Restrictive Layer (if observed)** Type: \_\_\_\_\_ Depth (inches): \_\_\_\_\_

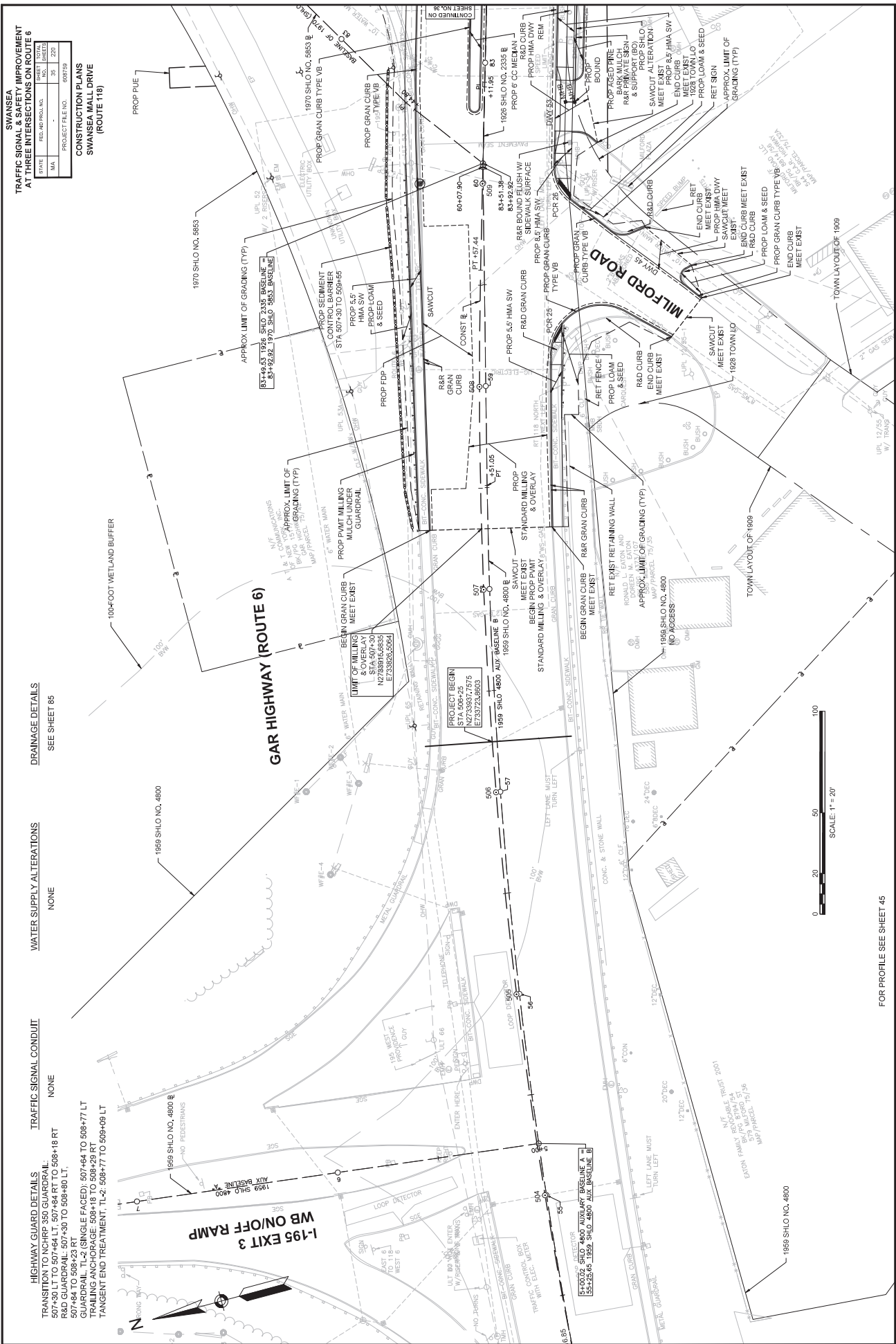
Remarks: Buried A-Horizon also meets hydric indicator HTM-A: Human Transported Material

Hydric Soils criterion met? Yes  No

**Attachment D**

---

*Construction Plans, Swansea Mall Drive (Route 118) (Sheets 35 – 38),  
prepared by Nitsch Engineering, Inc., dated April 4, 2023*



**SWANSEA**  
**TRAFFIC SIGNAL & SAFETY IMPROVEMENT**  
**AT THREE INTERSECTIONS ON ROUTE 6**

STATE	REG. PROJ. NO.	NO.	SHEET
MA	-	35	220

PROJECT FILE NO. 608759

**CONSTRUCTION PLANS**  
**SWANSEA MALL DRIVE**  
**(ROUTE 118)**

**TRAFFIC SIGNAL CONDUIT**  
NONE

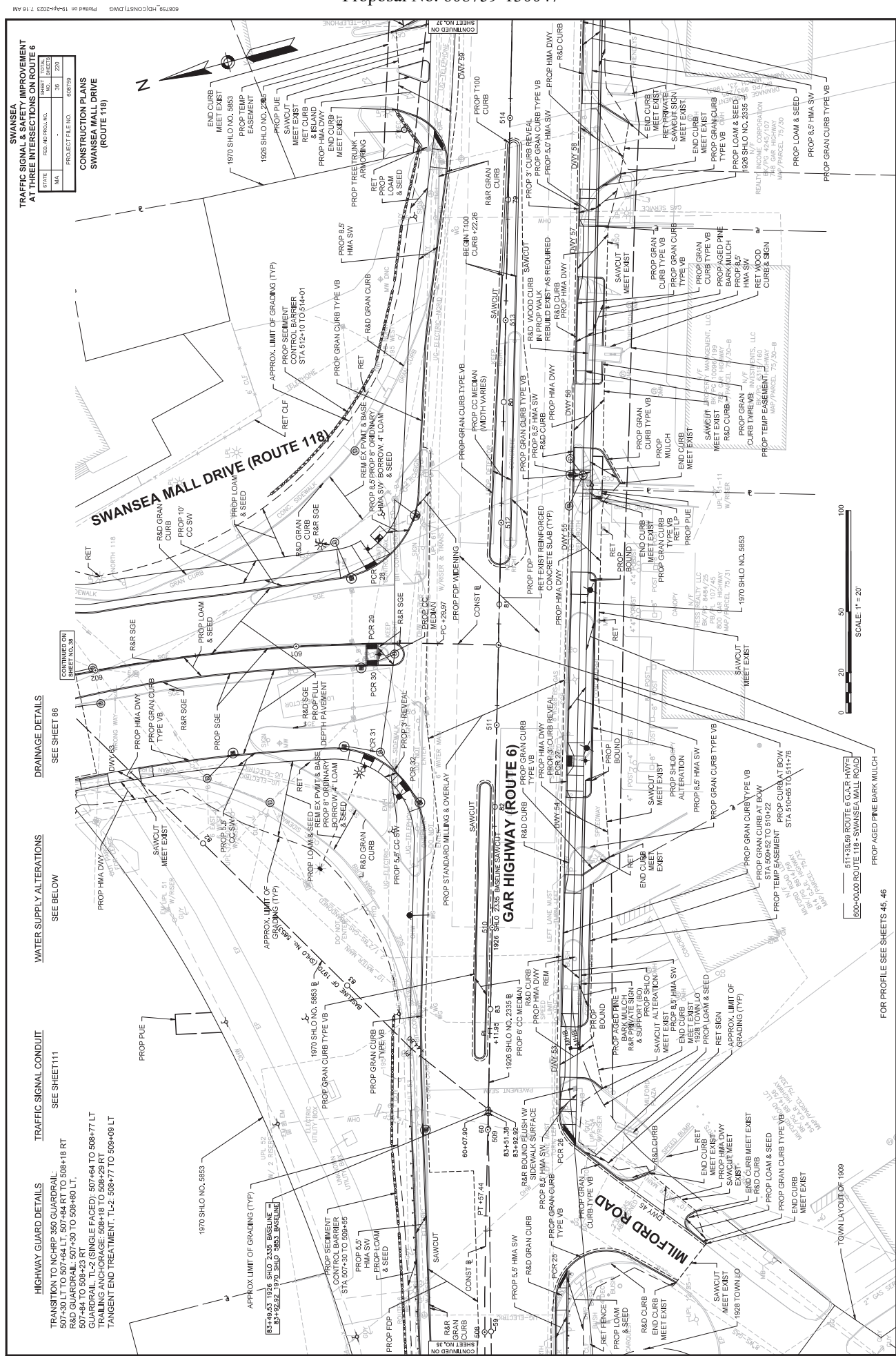
**WATER SUPPLY ALTERATIONS**  
NONE

**DRAINAGE DETAILS**  
SEE SHEET 85

**HIGHWAY GUARD DETAILS**  
 TRANSITION TO NCHRP 350 GUARDRAIL:  
 507+30 LT TO 507+64 LT, 507+84 RT TO 508+18 RT  
 R&D GUARDRAIL: 507+30 TO 508+80 LT,  
 507+86 TO 508+23 RT (ANGLE FACED), 507+44 TO 508+77 LT  
 TRAILING ANCHORAGE: 508+18 TO 508+29 FT  
 TANGENT END TREATMENT, TL-2: 508+77 TO 508+09 LT

FOR PROFILE SEE SHEET 45





**SWANSEA TRAFFIC SIGNAL & SAFETY IMPROVEMENT AT THREE INTERSECTIONS ON ROUTE 6 CONSTRUCTION PLANS SWANSEA MALL DRIVE (ROUTE 118)**

STATE	RES. PROJ. NO.	NO.	SHEET NO.
MA		38	220
PROJECT FILE NO.		608759	

DRAINAGE DETAILS SEE SHEET 86

WATER SUPPLY ALTERATIONS SEE BELOW

TRAFFIC SIGNAL CONDUIT SEE SHEET 111

HIGHWAY GUARD DETAILS TRANSITION TO NCHRP 350 GUARDRAIL: 507+30 LT TO 507+64 LT, 507+84 RT TO 508+18 RT R&D GUARDRAIL: 507+30 TO 508+80 LT, 507+84 TO 508+23 RT GUARDRAIL, TL-2 (SINGLE FACED): 507+64 TO 508+77 LT TRAILING ANCHORAGE: 508+18 TO 508+29 RT TANGENT END TREATMENT, TL-2: 508+77 TO 509+09 LT

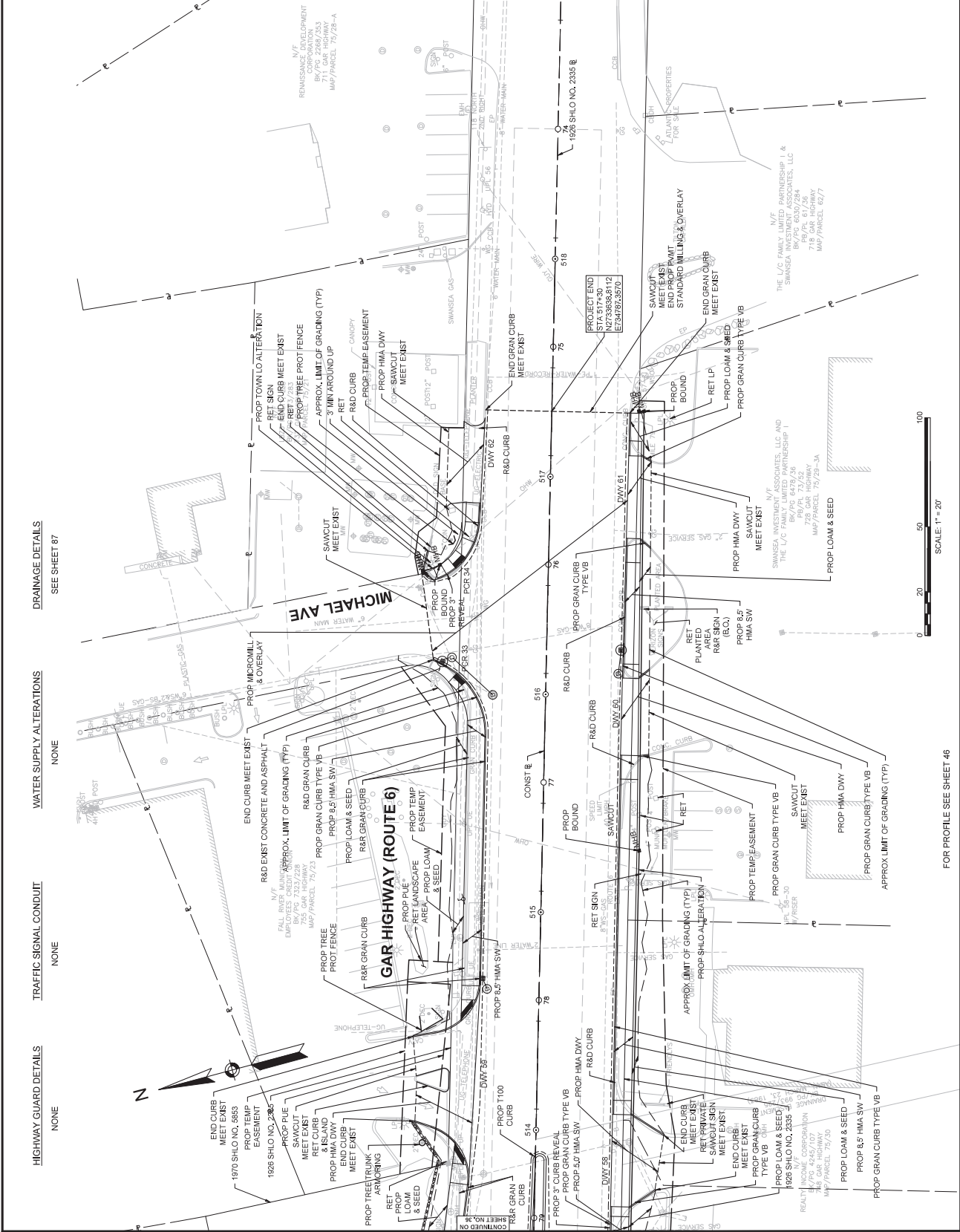


FOR PROFILE SEE SHEETS 45, 46

**SWANSEA**  
**TRAFFIC SIGNAL & SAFETY IMPROVEMENT**  
**AT THREE INTERSECTIONS ON ROUTE 6**  
**CONSTRUCTION PLANS**  
**SWANSEA MALL DRIVE**  
**(ROUTE 118)**

STATE	REG. PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	37	220

PROJECT FILE NO. 608759





**SWANSEA**  
**TRAFFIC SIGNAL & SAFETY IMPROVEMENT**  
**AT THREE INTERSECTIONS ON ROUTE 6**  
**CONSTRUCTION PLANS**  
**SWANSEA MALL DRIVE**  
**(ROUTE 118)**

STATE	RES. PROJ. NO.	NO.	SHEET NO.
MA	-	38	220

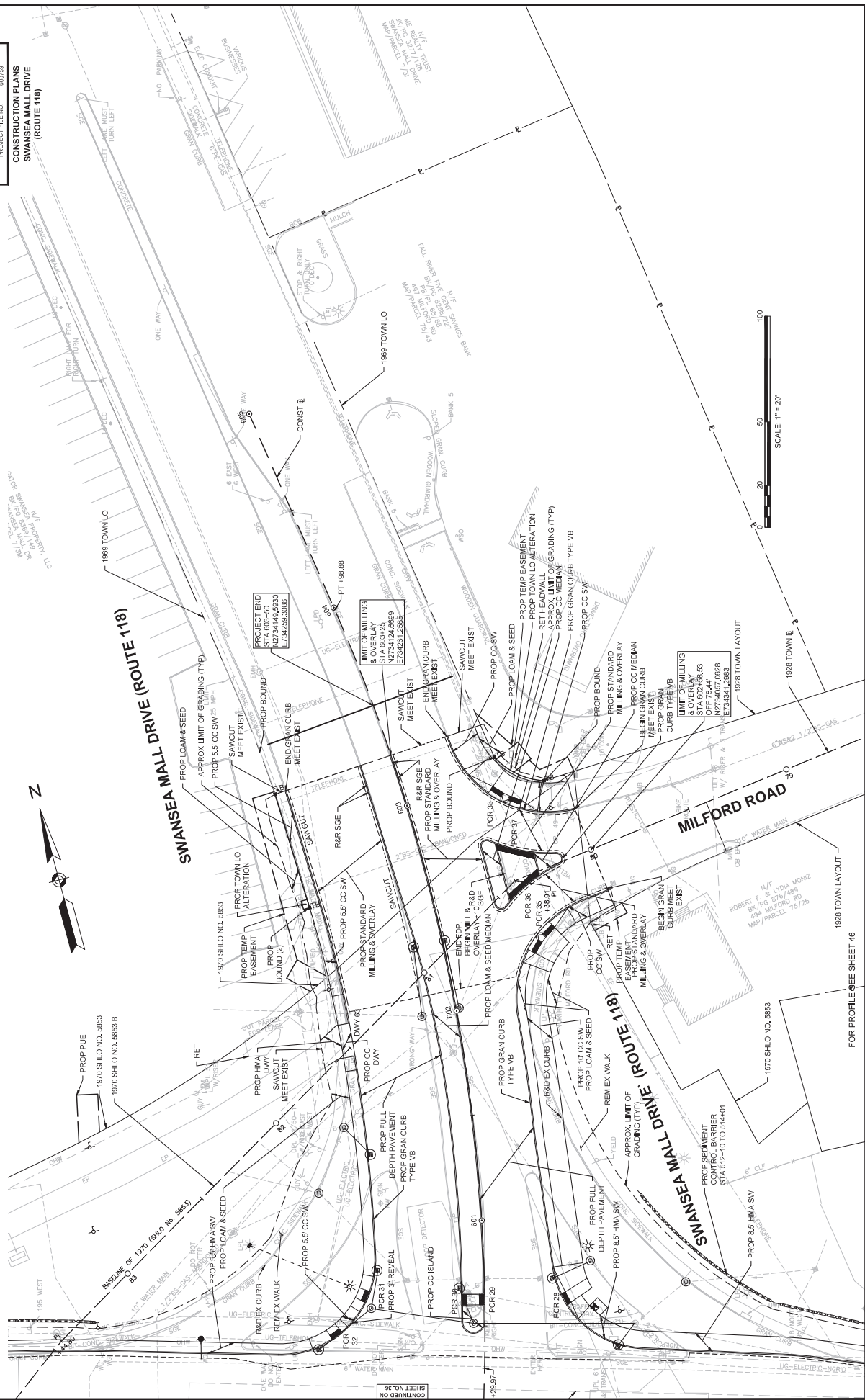
PROJECT FILE NO. 000759

TRAFFIC SIGNAL CONDUIT  
SEE SHEET 111

WATER SUPPLY ALTERATIONS  
NONE

DRAINAGE DETAILS  
SEE SHEET 88

HIGHWAY GUARD DETAILS  
NONE



THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT A00851

# **MASSACHUSETTS WETLANDS PROTECTION ACT**

## **Determination of Applicability**

THIS PAGE INTENTIONALLY LEFT BLANK

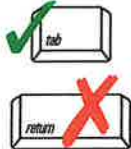


Massachusetts Department of Environmental Protection  
Bureau of Water Resources - Wetlands  
**WPA Form 2 – Determination of Applicability**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Swansea  
Municipality

**A. General Information**

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



From: SWANSEA  
Conservation Commission

<p>To: Applicant</p> <p>Erica Lerner: MA Dept. of Transportation Hwy Division Name 10 Park Plaza, Room 7360 Mailing Address Boston MA 02116 City/Town State Zip Code</p> <p>Phone Number 857.268.1729 Email Address</p>	<p>Property Owner (if different from applicant):</p> <p>Name Mailing Address City/Town State Zip Code</p> <p>Phone Number crkjc99@aol.com Email Address (if known)</p>
---	--

<p>1. Project Location:</p> <p>US Rte 6 at Rte 136, Maple Ave, Rte 118 Street Address</p> <p>Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX)</p> <p>State Roadway Assessors Map/Plat Number</p>	<p>Swansea City/Town</p> <p>Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX)</p> <p>Parcel/Lot Number</p>
---	--

[How to find Latitude and Longitude](#)

[and how to convert to decimal degrees](#)

2. Date Request Filed:  
08.09.2024

**B. Determination**

Pursuant to the authority of M.G.L. c. 131, § 40, the Conservation Commission considered your Request for Determination of Applicability, with its supporting documentation, and made the following Determination.

Project Description (if applicable):

Proposed traffic signal and safety improvements at three intersections (Rte 6 @ Rte 136, Rte 6 @ Maple Ave, Rte 6 @ Rte 118 along US Rte 6 (Grand Army of the Republic Highway) in the Town of Swansea, MA. Work includes intersection upgrades and work on the approaches as required. Existing land use is urbanized area with commercial properties.

Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

Traffic signal and safety improvements at three locations on GAR Hwy -Rte 6 - Construction sheets (#25-38)	<del>06.17.2024</del> 8.27.24
Title	Date
_____	_____
Title	Date
_____	_____
Title	Date
_____	_____



**Massachusetts Department of Environmental Protection**  
Bureau of Water Resources - Wetlands

**WPA Form 2 – Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Swansea  
Municipality

**B. Determination (cont.)**

The following Determination(s) is/are applicable to the proposed site and/or project relative to the Wetlands Protection Act and regulations:

**Positive Determination**

Note: No work within the jurisdiction of the Wetlands Protection Act may proceed until a final Order of Conditions (issued following submittal of a Notice of Intent or Abbreviated Notice of Intent) has been received from the issuing authority (i.e., Conservation Commission or the Department of Environmental Protection).

- 1. The area described on the referenced plan(s) is an area subject to jurisdiction under the Act. Removing, filling, dredging, or altering of the area requires the filing of a Notice of Intent.
- 2a. The boundary delineations of the following resource areas described on the referenced plan(s) are confirmed as accurate. Therefore, the resource area boundaries confirmed in this Determination are binding as to all decisions rendered pursuant to the Wetlands Protection Act and its regulations regarding such boundaries for as long as this Determination is valid.

- 2b. The boundaries of Wetlands Resource Area(s) and Buffer Zone(s) listed below are not confirmed by this Determination, regardless of whether such boundaries are contained on the plans attached to this Determination or to the Request for Determination.

- 3. The work described on referenced plan(s) and document(s) is within an area subject to jurisdiction under the Act and will remove, fill, dredge, or alter that area. Therefore, said work requires the filing of a Notice of Intent.
- 4. The work described on referenced plan(s) and document(s) is within the Buffer Zone and will alter an Area subject to jurisdiction under the Act. Therefore, said work requires the filing of a Notice of Intent
- 5. The area and/or work described on referenced plan(s) and document(s) is subject to review and approval by:

\_\_\_\_\_  
Name of Municipality

Pursuant to the following municipal wetland ordinance or bylaw:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Ordinance or Bylaw Citation



**Massachusetts Department of Environmental Protection**  
 Bureau of Water Resources - Wetlands  
**WPA Form 2 – Determination of Applicability**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Swansea  
 Municipality

**B. Determination (cont.)**

- 6. The following area and/or work, if any, is subject to a municipal ordinance or bylaw but not subject to the Massachusetts Wetlands Protection Act:
  
- 7. If a Notice of Intent is filed for the work in the Riverfront Area described on referenced plan(s) and document(s), which includes all or part of the work described in the Request, the applicant must consider the following alternatives. (Refer to the wetland regulations at 10.58(4)(c) 2. for more information about the scope of alternatives requirements):
  - Alternatives limited to the lot on which the project is located.
  - Alternatives limited to the lot on which the project is located, the subdivided lots, and any adjacent lots formerly or presently owned by the same owner.
  - Alternatives limited to the original parcel on which the project is located, the subdivided parcels, any adjacent parcels, and any other land which can reasonably be obtained within the municipality.
  - Alternatives extend to any sites which can reasonably be obtained within the appropriate region of the state.

**Negative Determination**

Note: No further action under the Wetlands Protection Act is required by the applicant. However, if the Department is requested to issue a Superseding Determination of Applicability, work may not proceed on this project unless the Department fails to act on such request within 35 days of the date the request is post-marked for certified mail or hand delivered to the Department. Work may then proceed at the owner's risk only upon notice to the Department and to the Conservation Commission. Requirements for requests for Superseding Determinations are listed at the end of this document.

- 1. The area described in the Request is not an area subject to jurisdiction under the Act or the Buffer Zone.
- 2. The work described in the Request is within an area subject to jurisdiction under the Act, but will not remove, fill, dredge, or alter that area. Therefore, said work does not require the filing of a Notice of Intent.
- 3. The work described in the Request is within the Buffer Zone, as defined in the regulations, but will not alter an Area subject to jurisdiction under the Act. Therefore, said work does not require the filing of a Notice of Intent, subject to the following conditions (if any).

Prior to the start of any work, erosion controls shall be installed as shown on the approved plan and inspected & approved by the Conservation Agent. The erosion controls shall remain in place until the disturbed soils have been stabilized with vegetation.

- 4. The work described in the Request is not within an Area subject to jurisdiction under the Act (including the Buffer Zone). Therefore, said work does not require the filing of a Notice of Intent, unless and until said work alters an Area subject to jurisdiction under the Act.



Massachusetts Department of Environmental Protection  
Bureau of Water Resources - Wetlands

**WPA Form 2 – Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Swansea  
Municipality

**B. Determination (cont.)**

- 5. The area described in the Request is subject to jurisdiction under the Act. Since the work described therein meets the requirements for the following exemption, as specified in the Act and the regulations, no Notice of Intent is required:

Portions of the overall project work are exempt under 10.02(2)(b)2p

Exempt Activity (site applicable statutory/regulatory provisions)

- 6. The area and/or work described in the Request is not subject to additional review and approval by:

Swansea

Name of Municipality

Pursuant to a municipal wetlands' ordinance or bylaw.

Swansea Wetlands Protection Bylaw (subject to conditions in #3)

Name

Ordinance or Bylaw Citation

**C. Authorization**

This Determination is issued to the applicant and delivered as follows:

- By hand delivery on  By certified mail, return receipt request on

8.27.2024

Date

Date

Certified Mail Number

A copy of this Determination has been sent on the same date, considered the date of issuance, to the appropriate DEP Regional Office and the property owner (if not the applicant) in the manner as follows:

**DEP**

- By eDEP DOA Submittal Platform (Attach this form and supporting documents)

- By USPS mail

- By hand delivery

Date

Date

**Property Owner (if not applicant)**

- By mail

- By hand delivery

Date

Date





**Massachusetts Department of Environmental Protection**  
Bureau of Water Resources - Wetlands  
**WPA Form 2 – Determination of Applicability**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Swansea  
Municipality

**C. Authorization (cont.)**

This Determination is valid for **three years** from the date of issuance (except Determinations for Vegetation Management Plans which are valid for the duration of the Plan). This Determination does not relieve the applicant from complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.

This Determination must be signed by a majority of the Conservation Commission. As noted above, a copy must be sent to the appropriate DEP Regional Office (see <https://www.mass.gov/service-details/massdep-regional-offices-by-community>) and the property owner (if different from the applicant) on the same date that the Applicant is issued this Determination.

Swansea Conservation Commission

Issuing Authority

Signatures:

Signature

Signature

Signature

Signature

Signature

Signature

Signature

Charles Ashley

Printed Name

Charles Applegate

Printed Name

Robert Lemoi

Printed Name

Nanci Hedgcoth

Printed Name

Sean Moffi

Printed Name

Printed Name

Printed Name

**D. Appeals**

The applicant, owner, any person aggrieved by this Determination, any owner of land abutting the land upon which the proposed work is to be done, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate Department of Environmental Protection Regional Office (see <https://www.mass.gov/service-details/massdep-regional-offices-by-community>) to issue a Superseding Determination of Applicability. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and Fee Transmittal Form (see Request for Departmental Action Fee Transmittal Form) as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Determination. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant if he/she is not the appellant. The request shall state clearly and concisely the objections to the Determination which is being appealed. To the extent that the Determination is based on a municipal ordinance or bylaw and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.



**Massachusetts Department of Environmental Protection**  
**Bureau of Resource Protection - Wetlands**  
**Request for Departmental Action Fee**  
**Transmittal Form**

DEP File Number:

\_\_\_\_\_  
Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

---

**B. Instructions (cont.)**

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.
3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see <https://www.mass.gov/service-details/massdep-regional-offices-by-community>).
4. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

DOCUMENT A00855

**U.S. FISH AND WILDLIFE SERVICE  
DETERMINATION LETTER**

THIS PAGE IS INTENTIONALLY LEFT BLANK



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5094  
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

05/03/2024 14:40:06 UTC

Project code: 2024-0085499

Project Name: 608759 - SWANSEA- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT THREE INTERSECTIONS ON ROUTE 6

Subject: Concurrence verification letter for the '608759 - SWANSEA- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT THREE INTERSECTIONS ON ROUTE 6' 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 May 03, 2024 to verify that the **608759 - SWANSEA- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT THREE INTERSECTIONS ON ROUTE 6** (Proposed Action) may rely on the concurrence provided in 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 is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures. **At least one of the qualification interview questions indicated an activity or portion of your project is consistent with a not likely to adversely affect determination therefore, the overall determination for your project is, may affect, and is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the endangered northern long-eared bat (*Myotis septentrionalis*).** Consultation with the Service pursuant to section 7(a)(2) of ESA (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed

Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

**For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities:** If your initial bridge/culvert or structure assessment documented signs of bat use or occupancy, or an assessment failed to detect Indiana bats and/or NLEBs, yet are 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 any potential take. In these instances, potential incidental take of Indiana bats and/or NLEBs is covered under the Incidental Take Statement in the 2018 FHWA, FRA, FTA PBO (provided that the take is reported to the Service).

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required.

**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 bats are 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 any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

## **PROJECT DESCRIPTION**

The following project name and description was collected in IPaC as part of the endangered species review process.

### **NAME**

608759 - SWANSEA- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT THREE INTERSECTIONS ON ROUTE 6

### **DESCRIPTION**

608759 - SWANSEA- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT THREE INTERSECTIONS ON ROUTE 6

Work on this project consists of intersection improvements at the following three intersections ONLY: Route 6/Route 118 (Swansea Mall Drive) Route 6/Maple Avenue and Route 6/Route 136 (Market Street). Work includes traffic signal upgrades, geometric improvements, improved bicycle and pedestrian accessibility, signs, pavement markings, and/or geometric modifications. The intent of the project is to address safety at these three high crash location. Recommendations from the Road Safety Audit will be basis for design.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

Tricolor Bat: Proposed Endangered Species only, no conservation measures at this time.

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@41.75940905,-71.24412260888076,14z>





## DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the endangered northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the 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.

## 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. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction<sup>[1]</sup> activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces<sup>[1]</sup>?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum<sup>[1]</sup>?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable<sup>[1]</sup> summer habitat for Indiana Bat or NLEB **within** the project action area<sup>[2]</sup>? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat<sup>[1]</sup> and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

No

11. Have presence/probable absence (P/A) summer surveys<sup>[1][2]</sup> been conducted<sup>[3][4]</sup> **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

#### **SUBMITTED DOCUMENTS**

- [611990\\_\\_608759\\_SomersetSwansea\\_NLEB\\_Report\\_Reduced.pdf https://ipac.ecosphere.fws.gov/project/5QRWVVLGAVH7ZLMUINQQ46ICU/projectDocuments/142756905](https://ipac.ecosphere.fws.gov/project/5QRWVVLGAVH7ZLMUINQQ46ICU/projectDocuments/142756905)

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB<sup>[1]</sup>?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum<sup>[1]</sup>?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**<sup>[1][2]</sup>?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

*C) During both the active and inactive seasons*

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?  
Yes
22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?  
No
23. Does the project include slash pile burning?  
No
24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?  
No
25. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)  
No
26. Will the project involve the use of *any* **temporary** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees), or bridge/structure removal, replacement or maintenance activities?  
Yes
27. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be used?  
Yes
28. Will the project install *any* new or replace any existing **permanent** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities?  
Yes
29. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **permanent** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be installed or replaced?  
Yes
30. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?  
Yes

31. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season<sup>[1]</sup>?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

32. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season<sup>[1]</sup>?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

33. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage, rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

34. Will the project raise the road profile **above the tree canopy**?

No

35. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

**Automatically answered**

*Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.*

36. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

**Automatically answered**

*Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season*

37. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

**Automatically answered**

*Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.*

38. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

## PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

N/A

3. How many acres<sup>[1]</sup> of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

3.1

## AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

### GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

## **DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT**

This key was last updated in IPaC on October 30, 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: Ian Battles

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email: [ian.h.battles@dot.state.ma.us](mailto:ian.h.battles@dot.state.ma.us)

Phone: 8572623378

## **LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Federal Highway Administration



DOCUMENT A00875

**POLICY DIRECTIVE P-22-001  
AND  
POLICY DIRECTIVE P-22-002**

THIS PAGE INTENTIONALLY LEFT BLANK



zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

### **Implementation Procedures**

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

#### **1. Off-Site Stockpile Storage Locations**

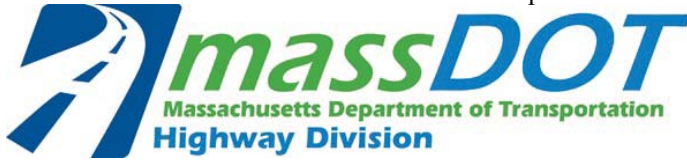
- a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
- b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
- c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
- d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
- e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
  - i. A description of material to be stored off-site, including available analytical data;
  - ii. A figure of the location with distances to residences and residential receptors; and
  - iii. Anticipated duration of temporary storage.
- f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
  - i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

- g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
- h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

## **2. Off-Site Stockpile Management**

- a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
- b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
  - i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
- c. The Contractor shall label stockpiles with signs, including:
  - i. Location of origin (including any Release Tracking Numbers)
  - ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
  - iii. Date of initial accumulation
  - iv. Applicable telephone numbers for the Contractor and MassDOT.
- d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
- e. The Contractor shall remedy noncompliance with this policy within 48 hours.
- f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
- g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
- h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

THIS PAGE INTENTIONALLY LEFT BLANK



Number: P-22-002  
Date: 9/23/22

# **POLICY DIRECTIVE**

Jonathan Gulliver (signature on original)  
HIGHWAY ADMINISTRATOR

## **Use of MassDOT Property for Staging and other Construction-Related Operations**

### **Purpose**

This Policy Directive is intended to address the use of MassDOT property by MassDOT Contractors for construction staging and other construction-related operations that are not specifically defined in the construction contract. Such use of MassDOT property will only be allowed if permitted by the District Office in accordance with 700 CMR 13.00, Approval of Access to MassDOT Highways and Other Property. This includes the use of MassDOT property for staging, laydown, and storage of equipment and materials, including soil excavated from a project site.

This Policy Directive requires the Contractor/applicant to obtain a Non-Vehicular Access Permit from MassDOT to use MassDOT property for these purposes.

This Policy Directive is effective immediately and applies to all MassDOT construction projects.

### **General Permit Considerations and Conditions**

In addition to other normal MassDOT Access Permit procedures, MassDOT shall consider the following during the application, review, implementation and monitoring processes of Access Permits required by this Policy Directive:

- Storage and placement of the Contractor’s equipment and materials should not be allowed within the clear zone of the roadway.
- Stockpiled soils should not be located within 500 feet of residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.
- The Contractor/applicant shall identify the access/egress locations of the proposed storage areas. MassDOT will only approve locations determined to be safe for roadway users, construction workers and the general public.
- The Contractor may be required to submit a Traffic Management Plan and/or Lighting Plan for MassDOT review and approval as part of the permit application, depending on the proposed use of the area.

- The Contractor shall submit the permit application through MassDOT's online State Highway Access Permit System (SHAPS).
- MassDOT will waive the permit application fee for any application received from a MassDOT Contractor for any permit required by this Policy Directive and will waive any subsequent amendment and extension fees that may otherwise be required.
- MassDOT will review the permit application in accordance with applicable standard procedures and will apply standard permit terms and conditions, as necessary.
- The Resident Engineer will verify that the permit is approved before allowing the Contractor to use the affected area for the requested purpose.
- Areas permitted are for use by the approved applicant only and are not to be shared with or used by other vendors. Subcontractors specifically engaged with the applicant working on the specific MassDOT project will be allowed to use the area in accordance with the terms of the permit.
- Permits are issued on an annual basis and will require the Contractor to file for an extension each year to continue use.

### **Exemptions from Permit Requirements**

Equipment and materials being used for active construction operations and located within the work zone of the construction contract are exempt from this permit requirement, provided they do not interfere with the safety or operation of the roadway or the work zone. Examples of these types of exempt uses are:

- Equipment and materials parked or stored within a protected (barriered) work zone.
- Materials placed in the work zone prior to same-day installation or use.
- Soils excavated temporarily and scheduled to be replaced, such as for trenching operations or for installation of drainage structures.



DOCUMENT B00420

PROPOSAL

SWANSEA

For: **Traffic Signal and Safety Improvements at Three Intersections on Route 6**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of SWANSEA in Bristol 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:

**Route 6 and Route 136**

**Beginning – Station 102+50.00 +/-**

**Ending – Station 121+35.00 +/-**

**Route 6 and Maple Avenue**

**Beginning – Station 300+20.00 +/-**

**Ending – Station 318+75.00 +/-**

**Route 6 and Swansea Mall Drive**

**Beginning – Station 506+25.00**

**Ending – Station 517+30.00**

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 **1262 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.

THIS PAGE INTENTIONALLY LEFT BLANK



Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
101.	0.25	CLEARING AND GRUBBING  AT _____ PER ACRE		
102.2	1	TREE TRIMMING  AT _____ LUMP SUM		
102.511	7	TREE PROTECTION - ARMORING AND PRUNING  AT _____ EACH		
102.521	480	TREE AND PLANT PROTECTION FENCE  AT _____ PER FOOT		
102.55	24	ARBORIST  AT _____ PER HOUR		
103.	13	TREE REMOVED - DIAMETER UNDER 24 INCHES  AT _____ EACH		
104.	1	TREE REMOVED - DIAMETER 24 INCHES AND OVER  AT _____ EACH		
105.	4	STUMP REMOVED  AT _____ EACH		
120.1	8,900	UNCLASSIFIED EXCAVATION  AT _____ PER CUBIC YARD		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
127.1	70	REINFORCED CONCRETE EXCAVATION  AT _____ PER CUBIC YARD		
141.	300	CLASS A TRENCH EXCAVATION  AT _____ PER CUBIC YARD		
141.1	240	TEST PIT FOR EXPLORATION  AT _____ PER CUBIC YARD		
142.	2,740	CLASS B TRENCH EXCAVATION  AT _____ PER CUBIC YARD		
144.	200	CLASS B ROCK EXCAVATION  AT _____ PER CUBIC YARD		
145.	1	DRAINAGE STRUCTURE ABANDONED  AT _____ EACH		
146.	40	DRAINAGE STRUCTURE REMOVED  AT _____ EACH		
150.	500	ORDINARY BORROW  AT _____ PER CUBIC YARD		
151.	8,000	GRAVEL BORROW  AT _____ PER CUBIC YARD		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
151.2	550	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES  AT _____ PER CUBIC YARD		
151.25	530	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES - SEWER  AT _____ PER CUBIC YARD		
156.	110	CRUSHED STONE  AT _____ PER TON		
170.	20,960	FINE GRADING AND COMPACTING - SUBGRADE AREA  AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM  AT _____ LUMP SUM		
180.02	80	PERSONAL PROTECTION LEVEL C UPGRADE  AT _____ PER HOUR		
180.03	80	LICENSED SITE PROFESSIONAL SERVICES  AT _____ PER HOUR		
181.11	10,470	DISPOSAL OF UNREGULATED SOIL  AT _____ PER TON		
181.12	1,580	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY  AT _____ PER TON		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
181.13	1,370	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY  AT _____ PER TON		
181.14	700	DISPOSAL OF HAZARDOUS WASTE  AT _____ PER TON		
182.1	1	INSPECTION AND TESTING FOR ASBESTOS  AT _____ LUMP SUM		
182.2	50	REMOVAL OF ASBESTOS  AT _____ PER FOOT		
183.1	4,500	TREATMENT OF CONTAMINATED GROUNDWATER  AT _____ PER GALLON		
183.2	2,000	DISPOSAL OF GRANULAR ACTIVATED CARBON  AT _____ PER POUND		
192.4	5	MONITORING WELL ADJUSTED  AT _____ EACH		
201.	53	CATCH BASIN  AT _____ EACH		
202.	18	MANHOLE  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
204.	4	GUTTER INLET  AT _____ EACH		
210.	9	SANITARY SEWER MANHOLE  AT _____ EACH		
220.	211	DRAINAGE STRUCTURE ADJUSTED  AT _____ EACH		
220.2	9	DRAINAGE STRUCTURE REBUILT  AT _____ PER FOOT		
220.3	13	DRAINAGE STRUCTURE CHANGE IN TYPE  AT _____ EACH		
220.5	9	DRAINAGE STRUCTURE REMODELED  AT _____ EACH		
220.61	1	TRENCH DRAIN REMOVED AND RESET  AT _____ EACH		
221.	45	FRAME AND COVER  AT _____ EACH		
221.1	8	FRAME AND COVER - SECURED  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
221.15	2	FRAME AND COVER - SECURED -SEWER  AT _____ EACH		
222.1	42	FRAME AND GRATE - MASSDOT CASCADE TYPE  AT _____ EACH		
222.3	21	FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD  AT _____ EACH		
222.35	7	FRAME AND COVER - MUNICIPAL STANDARD - SEWER  AT _____ EACH		
223.2	70	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED  AT _____ EACH		
224.12	8	12 INCH HOOD  AT _____ EACH		
227.3	70	REMOVAL OF DRAINAGE STRUCTURE SEDIMENT  AT _____ PER CUBIC YARD		
227.31	3,800	REMOVAL OF DRAINAGE PIPE SEDIMENT  AT _____ PER FOOT		
227.4	10	MASONRY PLUG  AT _____ PER SQUARE FOOT		



Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
238.10	180	10 INCH DUCTILE IRON PIPE  AT _____ PER FOOT		
238.12	120	12 INCH DUCTILE IRON PIPE  AT _____ PER FOOT		
241.12	2,100	12 INCH REINFORCED CONCRETE PIPE  AT _____ PER FOOT		
241.24	20	24 INCH REINFORCED CONCRETE PIPE  AT _____ PER FOOT		
242.24	1	24 INCH REINFORCED CONCRETE PIPE FLARED END  AT _____ EACH		
243.12	40	12 INCH REINFORCED CONCRETE PIPE CLASS IV  AT _____ PER FOOT		
244.12	170	12 INCH REINFORCED CONCRETE PIPE CLASS V  AT _____ PER FOOT		
250.06	390	6 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE  AT _____ PER FOOT		
250.08	235	8 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE  AT _____ PER FOOT		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
250.10	1,274	10 INCH POLYVINYLCHLORIDE SANITARY SEWER PIPE  AT _____ PER FOOT		
250.12	70	12 INCH POLYVINYLCHLORIDE SANITARY SEWER PIPE  AT _____ PER FOOT		
252.112	1	12 INCH CORRUGATED PLASTIC PIPE FLARED END  AT _____ EACH		
252.12	180	12 INCH CORRUGATED PLASTIC PIPE  AT _____ PER FOOT		
271.121	600	12 INCH AND UNDER PIPE REMOVED AND DISCARDED  AT _____ PER FOOT		
303.06	40	6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)  AT _____ PER FOOT		
303.08	130	8 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)  AT _____ PER FOOT		
303.10	30	10 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)  AT _____ PER FOOT		
309.	3,100	DUCTILE IRON FITTINGS FOR WATER PIPE  AT _____ PER POUND		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
336.1	140	1 INCH PLASTIC WATER PIPE  AT _____ PER FOOT		
357.06	6	6 INCH GATE BOX  AT _____ EACH		
357.08	10	8 INCH GATE BOX  AT _____ EACH		
357.10	10	10 INCH GATE BOX  AT _____ EACH		
358.	49	GATE BOX ADJUSTED  AT _____ EACH		
358.1	9	GATE BOX REMOVED AND STACKED  AT _____ EACH		
371.06	6	6 INCH COUPLING  AT _____ EACH		
371.08	12	8 INCH COUPLING  AT _____ EACH		
371.10	2	10 INCH COUPLING  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
376.2	4	HYDRANT - REMOVED AND RESET  AT _____ EACH		
381.	5	SERVICE BOX  AT _____ EACH		
381.1	9	SERVICE BOX REMOVED AND RESET  AT _____ EACH		
381.3	6	SERVICE BOX ADJUSTED  AT _____ EACH		
384.	9	CURB STOP  AT _____ EACH		
402.	610	DENSE GRADED CRUSHED STONE FOR SUB-BASE  AT _____ PER CUBIC YARD		
415.1	42,700	PAVEMENT STANDARD MILLING  AT _____ PER SQUARE YARD		
431.	1,430	HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE  AT _____ PER SQUARE YARD		
440.	53,800	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL  AT _____ PER POUND		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
443.	14	WATER FOR ROADWAY DUST CONTROL  AT _____ PER 1000 GALLONS		
450.231	4,900	SUPERPAVE SURFACE COURSE - 12.5 POLYMER (SSC - 12.5 - P)  AT _____ PER TON		
450.311	4,800	SUPERPAVE INTERMEDIATE COURSE - 12.5 POLYMER (SIC -12.5 - P)  AT _____ PER TON		
450.42	1,240	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)  AT _____ PER TON		
450.52	230	SUPERPAVE LEVELING COURSE - 9.5 (SLC - 9.5)  AT _____ PER TON		
451.	660	HMA FOR PATCHING  AT _____ PER TON		
452.	8,370	ASPHALT EMULSION FOR TACK COAT  AT _____ PER GALLON		
453.	20,200	HMA JOINT SEALANT  AT _____ PER FOOT		
470.	10	HOT MIX ASPHALT BERM  AT _____ PER TON		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
472.	580	ASPHALT MIXTURES FOR TEMPORARY WORK  AT _____ PER TON		
477.2	1,400	MILLED RUMBLE STRIP (TYPE C)  AT _____ PER FOOT		
482.5	8,100	SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING  AT _____ PER FOOT		
504.21	4	GRANITE CURB TYPE T100 - SPLAYED END  AT _____ EACH		
505.	330	GRANITE CURB TYPE VA5 - STRAIGHT  AT _____ PER FOOT		
506.	7,600	GRANITE CURB TYPE VB - STRAIGHT  AT _____ PER FOOT		
506.1	1,480	GRANITE CURB TYPE VB - CURVED  AT _____ PER FOOT		
507.	220	TRAVERSABLE GRANITE CURB - TYPE T100 - STRAIGHT  AT _____ PER FOOT		
507.1	10	TRAVERSABLE GRANITE CURB - TYPE T100 - CURVED  AT _____ PER FOOT		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
509.	1,500	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT  AT _____ PER FOOT		
509.1	620	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED  AT _____ PER FOOT		
512.1	40	GRANITE EDGING TYPE SB (RADIUS 10 FEET OR LESS)  AT _____ PER FOOT		
514.	34	GRANITE CURB INLET - STRAIGHT  AT _____ EACH		
515.	1	GRANITE CURB INLET - CURVED  AT _____ EACH		
516.	8	GRANITE CURB CORNER TYPE A  AT _____ EACH		
520.121	1	CONCRETE CURB STOP REMOVED AND STACKED  AT _____ EACH		
580.	6,350	CURB REMOVED AND RESET  AT _____ PER FOOT		
581.	28	CURB INLET REMOVED AND RESET  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
583.	670	EDGING REMOVED AND RESET  AT _____ PER FOOT		
594.	6,670	CURB REMOVED AND DISCARDED  AT _____ PER FOOT		
595.	36	CURB INLET REMOVED AND DISCARDED  AT _____ EACH		
596.	20	CURB CORNER REMOVED AND DISCARDED  AT _____ EACH		
597.	630	EDGING REMOVED AND DISCARDED  AT _____ PER FOOT		
620.12	340	GUARDRAIL, TL-2 (SINGLE FACED)  AT _____ PER FOOT		
627.1	2	TRAILING ANCHORAGE  AT _____ EACH		
627.82	3	GUARDRAIL TANGENT END TREATMENT, TL-2  AT _____ EACH		
628.21	2	TRANSITION TO NCHRP 350 GUARDRAIL  AT _____ EACH		



Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
630.2	340	HIGHWAY GUARD REMOVED AND DISCARDED  AT _____ PER FOOT		
644.072	270	72 INCH CHAIN LINK FENCE (SPRING TENSION WIRE) (LINE POST OPTION)  AT _____ PER FOOT		
644.148	180	48 INCH CHAIN LINK FENCE (SPRING TENSION WIRE) VINYL COATED (LINE POST OPTION)  AT _____ PER FOOT		
652.048	2	48 INCH CHAIN LINK FENCE END POST  AT _____ EACH		
652.072	2	72 INCH CHAIN LINK FENCE END POST  AT _____ EACH		
657.	100	TEMPORARY FENCE  AT _____ PER FOOT		
665.	110	CHAIN LINK FENCE REMOVED AND STACKED  AT _____ PER FOOT		
666.	190	CHAIN LINK FENCE REMOVED AND RESET  AT _____ PER FOOT		
669.	200	FENCE REMOVED AND STACKED  AT _____ PER FOOT		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
685.	140	STONE MASONRY WALL IN CEMENT MORTAR  AT _____ PER CUBIC YARD		
691.	100	BALANCE STONE WALL REMOVED AND REBUILT  AT _____ PER FOOT		
697.1	108	SILT SACK  AT _____ EACH		
701.	1,200	CEMENT CONCRETE SIDEWALK  AT _____ PER SQUARE YARD		
701.1	30	CEMENT CONCRETE SIDEWALK AT DRIVEWAYS  AT _____ PER SQUARE YARD		
701.2	700	CEMENT CONCRETE PEDESTRIAN CURB RAMP  AT _____ PER SQUARE YARD		
702.	2,500	HOT MIX ASPHALT WALK SURFACE  AT _____ PER TON		
710.3	36	BOUND - LETTERED GRANITE  AT _____ EACH		
710.4	19	BOUND - PLAIN GRANITE  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
711.	9	BOUND REMOVED AND RESET  AT _____ EACH		
715.	8	RURAL MAIL BOX REMOVED AND RESET  AT _____ EACH		
722.2	1	SCHEDULE OF OPERATIONS (TYPE B) - FIXED PRICE \$85000  AT Eighty Five Thousand Dollars LUMP SUM	\$85,000.00	\$85,000.00
740.	26	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A)  AT _____ PER MONTH		
748.	1	MOBILIZATION  AT _____ LUMP SUM		
751.	1,100	LOAM FOR ROADSIDES  AT _____ PER CUBIC YARD		
756.	1	NPDES STORMWATER POLLUTION PREVENTION PLAN  AT _____ LUMP SUM		
765.	7,400	SEEDING  AT _____ PER SQUARE YARD		
767.121	2,900	SEDIMENT CONTROL BARRIER  AT _____ PER FOOT		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
767.6	30	AGED PINE BARK MULCH  AT _____ PER CUBIC YARD		
767.65	10	CRUSHED SHELL TREATMENT  AT _____ PER SQUARE YARD		
767.9	200	JUTE MESH  AT _____ PER SQUARE YARD		
769.	530	PAVEMENT MILLING MULCH UNDER GUARD RAIL  AT _____ PER FOOT		
802.401	100	4 INCH TELEPHONE CONDUIT - TYPE NM (SINGLE)  AT _____ PER FOOT		
802.402	420	4 INCH TELEPHONE CONDUIT - TYPE NM (DOUBLE)  AT _____ PER FOOT		
802.403	60	4 INCH TELEPHONE CONDUIT - TYPE NM (TRIPLE)  AT _____ PER FOOT		
804.3	8,900	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)  AT _____ PER FOOT		
811.22	40	ELECTRIC HANDHOLE - SD2.022  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
811.31	30	PULL BOX 12 X 12 INCHES - SD2.031  AT _____ EACH		
816.01	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1  AT _____ LUMP SUM		
816.02	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 2  AT _____ LUMP SUM		
816.03	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 3  AT _____ LUMP SUM		
823.70	3	HIGHWAY LIGHTING POLE AND LUMINAIRE REMOVED AND RESET  AT _____ EACH		
823.71	1	HIGHWAY LIGHTING POLE AND LUMINAIRE REMOVED AND STACKED  AT _____ EACH		
826.7	9	ELECTRIC SERVICE RELOCATION  AT _____ EACH		
829.06	25	ROADSIDE GUIDE SIGN AND SUPPORT (D6/D8) REMOVED AND DISCARDED  AT _____ EACH		
831.	740	ROADSIDE GUIDE SIGN (D6/D8) - ALUMINUM PANEL (TYPE A)  AT _____ PER SQUARE FOOT		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
832.	560	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A)  AT _____ PER SQUARE FOOT		
841.81	16	SUPPORT FOR GUIDE SIGN (MA-D1-XX) STEEL  AT _____ EACH		
847.1	71	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL  AT _____ EACH		
848.1	10	SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES-STEEL  AT _____ EACH		
850.41	160	ROADWAY FLAGGER  AT _____ PER HOUR		
851.1	90	TRAFFIC CONES FOR TRAFFIC MANAGEMENT  AT _____ PER DAY		
852.	2,630	SAFETY SIGNING FOR TRAFFIC MANAGEMENT  AT _____ PER SQUARE FOOT		
852.11	1,200	TEMPORARY PEDESTRIAN BARRICADE  AT _____ PER FOOT		
852.12	10	TEMPORARY PEDESTRAIN CURB RAMP  AT _____ EACH		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
853.1	16	PORTABLE BREAKAWAY BARRICADE TYPE III  AT _____ EACH		
853.403	960	TRUCK MOUNTED ATTENUATOR  AT _____ PER DAY		
853.8	120	TEMPORARY ILLUMINATION FOR WORK ZONE  AT _____ PER DAY		
854.016	3,900	TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED)  AT _____ PER FOOT		
854.036	12,180	TEMPORARY PAVING MARKINGS - 6 INCH (TAPE)  AT _____ PER FOOT		
854.1	1,300	PAVEMENT MARKING REMOVAL  AT _____ PER SQUARE FOOT		
856.	1,440	ARROW BOARD  AT _____ PER DAY		
856.12	190	PORTABLE CHANGEABLE MESSAGE SIGN  AT _____ PER DAY		
859.	144,000	REFLECTORIZED DRUM  AT _____ PER DAY		

Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
859.1	960	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS  AT _____ PER DAY		
864.02	10	PAVEMENT ARROW AND LEGENDS - TAPE  AT _____ PER SQUARE FOOT		
864.04	1,900	PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC)  AT _____ PER SQUARE FOOT		
864.31	120	SLOTTED PAVEMENT MARKER ONE-WAY WHITE  AT _____ EACH		
864.35	220	SLOTTED PAVEMENT MARKER TWO-WAY YELLOW/YELLOW  AT _____ EACH		
864.41	700	GREEN COLORIZED PAVEMENT MARKINGS  AT _____ PER SQUARE FOOT		
866.106	21,000	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)  AT _____ PER FOOT		
866.112	8,700	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)  AT _____ PER FOOT		
867.106	18,400	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)  AT _____ PER FOOT		



Project # 608759		Contract # 130047		
Location : SWANSEA				
Description : Traffic Signal and Safety Improvements at Three Intersections on Route 6				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
867.112	1,300	12 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)  AT _____ PER FOOT		
874.	19	STREET NAME SIGN  AT _____ EACH		
874.2	8	TRAFFIC SIGN REMOVED AND RESET  AT _____ EACH		
874.4	1	TRAFFIC SIGN REMOVED AND STACKED  AT _____ EACH		
874.41	114	TRAFFIC SIGN REMOVED AND DISCARDED  AT _____ EACH		
874.7	3	MISCELLANEOUS SIGNS REMOVED AND STACKED  AT _____ EACH		
901.	2	4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE  AT _____ PER CUBIC YARD		
903.	11	3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE  AT _____ PER CUBIC YARD		
950.5	1	TEMPORARY SUPPORT OF EXCAVATION  AT _____ LUMP SUM		
<b>Total Qty:</b>		504,615.25		

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT B00853

SCHEDULE OF PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES (DBES)

PRIME BIDDER: \_\_\_\_\_

DATE OF BID OPENING: \_\_\_\_\_ PROJECT NO.: 608759

FEDERAL AID PROJECT NO. 130047

PROJECT LOCATION: SWANSEA

Name, Address, and Phone Number(s) of DBE	Name of Activity	(a)† DBE Contractor Activity Amount <i>Construction Work</i>	(b) DBE Other Business Amount <i>Services, Supplies, Material</i>	(c) 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 \*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK



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.: 608759 FEDERAL AID PROJECT NO.: HSI/STP-003S(842)X

PROJECT LOCATION: SWANSEA

DATE OF BID OPENING: \_\_\_\_\_

I, \_\_\_\_\_, authorized signatory of the above-referenced DBE firm hereby declare:
Print Name

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: 608759

FEDERAL AID PROJECT NUMBER: HSI/STP-003S(842)X

PROJECT LOCATION: SWANSEA

PRIME BIDDER: \_\_\_\_\_

DBE COMPANY NAME: \_\_\_\_\_

<u>Item number</u> if applicable	<u>NAICS</u> <u>Code</u>	<u>Description of Activity</u> with notations such as Services, or Brokerage, Installation Only, Material Only, or Complete	<u>Quantity</u>	<u>Unit Price</u>	<u>Amount</u>
				<b>TOTAL AMOUNT:</b>	

*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: 130047 Project No. 608759 Federal Aid No.: HSI/STP-003S(842)X

Location: SWANSEA Bid Opening Date: \_\_\_\_\_

Project Description: Traffic Signal and Safety Improvements at Three Intersections on Route 6

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 \*\*\*

THIS PAGE INTENTIONALLY LEFT BLANK



DOCUMENT B00856

JOINT VENTURE AFFIDAVIT  
(All Firms)

- All Information Requested By This Schedule Must Be Answered. Additional Sheets May Be Attached.
- If, there is any change in the information submitted, the Joint Venture parties must inform MassDOT Pre-Qualifications Office (and, if one of the companies is a DBE, the Director of Contract Compliance, Office of Civil Rights) *prior* to such change, in writing, either directly or through the Prime Contractor if the Joint Venture is a subcontractor.
- If the Joint Venture Entity will be the bidder on a prime Contract, it must bid and submit all required documents (insurance, worker’s compensation, bonds, etc.) in the name of the Joint Venture Entity.

**I. Name of Joint Venture:** \_\_\_\_\_

Type of Entity if applicable (Corp., LLC): \_\_\_\_\_ Filing State \_\_\_\_\_

Address of joint venture: \_\_\_\_\_

Phone No(s) for JV Entity: \_\_\_\_\_ E-mail: \_\_\_\_\_

Contact Person(s) \_\_\_\_\_

Tax ID/EIN of Joint Venture: \_\_\_\_\_ Vendor Code: \_\_\_\_\_

**II. Identify each firm or party to the Joint Venture:**

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Phone : \_\_\_\_\_ E-mail: \_\_\_\_\_

Contact person(s) \_\_\_\_\_

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Contact Person(s) \_\_\_\_\_

**III. Describe the role(s) of the each party to the Joint Venture:**

\_\_\_\_\_  
\_\_\_\_\_

- IV. Attach a copy of the Joint Venture Agreement.** The proposed Joint Venture Agreement should include specific details including, but not limited to: (1) the contributions of capital and equipment; (2) work items to be performed by each company’s forces, (3) work items to be performed under the supervision of any DBE Venturer; (4) the commitment of management, supervisory and operative personnel employed by the DBE to be dedicated to the performance of the Project; and (5) warranty, guaranty, and indemnification clauses.

**V. Attach any applicable Corporate or LLC Votes, Authorizations, etc.**

**VI. Ownership of the Joint Venture:**

A. What is the percentage(s) of each company's ownership in the Joint Venture?

ownership percentage(s): \_\_\_\_\_

ownership percentage(s): \_\_\_\_\_

B. Specify percentages for each of the following (provide narrative descriptions and other detail as applicable):

1. Sharing of profit and loss: \_\_\_\_\_

2. Capital contributions:

(a) Dollar amounts of initial contribution: \_\_\_\_\_

(b) Dollar amounts of anticipated on-going contributions: \_\_\_\_\_

(c) Contributions of equipment (specify types, quality and quantities of equipment to be provided by each firm): \_\_\_\_\_

4. Other applicable ownership interests, including ownership options or other agreements, which restrict or limit ownership and/or control:

\_\_\_\_\_  
\_\_\_\_\_

5. Provide copies of all other written agreements between firms concerning bidding and operation of this Project or projects or contracts.

6. Identify all current contracts and contracts completed during the past two (2) years by either of the Joint Venture partners to this Joint Venture:

\_\_\_\_\_  
\_\_\_\_\_

**VII. Control of and Participation in the Joint Venture.** Identify by name and firm those individuals who are, or will be, responsible for and have the authority to engage in the following management functions and policy decisions. (Indicate any limitations to their authority such as dollar limits and co-signatory requirements.):

A. Joint Venture check signing:

\_\_\_\_\_  
\_\_\_\_\_

B. Authority to enter Contracts on behalf of the Joint Venture:

\_\_\_\_\_  
\_\_\_\_\_

C. Signing, co-signing and/or collateralizing loans:

\_\_\_\_\_  
\_\_\_\_\_

D. Acquisition of lines of credit:

\_\_\_\_\_

\_\_\_\_\_

E. Acquisition and indemnification of payment and performance bonds:

\_\_\_\_\_

\_\_\_\_\_

F. Negotiating and signing labor agreements:

\_\_\_\_\_

\_\_\_\_\_

G. Management of contract performance. *(Identify by name and firm only):*

1. Supervision of field operations: \_\_\_\_\_
2. Major purchases: \_\_\_\_\_
3. Estimating: \_\_\_\_\_
4. Engineering: \_\_\_\_\_

**VIII. Financial Controls of Joint Venture:**

A. Which firm and/or individual will be responsible for keeping the books of account?

\_\_\_\_\_

\_\_\_\_\_

B. Identify the "Managing Partner," if any, and describe the means and measure of their compensation:

\_\_\_\_\_

\_\_\_\_\_

C. What authority does each firm have to commit or obligate the other to insurance and bonding companies, financing institutions, suppliers, subcontractors, and/or other parties participating in the performance of this Contract or the work of this Project?

\_\_\_\_\_

**IX. Personnel of Joint Venture:** State the approximate number of personnel (by trade) needed to perform the Joint Venture's work under this Contract. Indicate whether they will be employees of the majority firm, DBE firm, or the Joint Venture.

	Firm 1 (number)	Firm 2 (number)	Joint Venture (number)
Trade			
Professional			
Administrative/Clerical			
Unskilled Labor			

Will any personnel proposed for this Project be employees of the Joint Venture?: \_\_\_\_\_

If so, who: \_\_\_\_\_

A. Are any proposed Joint Venture employees currently employed by either firm?

Employed by Firm 1: \_\_\_\_\_ Employed by firm 2 \_\_\_\_\_

B. Identify by name and firm the individual who will be responsible for Joint Venture hiring: \_\_\_\_\_

\_\_\_\_\_

**X. Additional Information.** Please state any material facts and additional information pertinent to the control and structure of this Joint Venture.

\_\_\_\_\_  
\_\_\_\_\_

**XI. AFFIDAVIT OF JOINT VENTURE PARTIES.** The undersigned affirm that the foregoing statements and attached documents are correct and include all material information necessary to identify and explain the terms and operations of our Joint Venture and the intended participation of each firm in the undertaking. Further, the undersigned covenant and agree to provide to MassDOT current, complete and accurate information regarding actual Joint Venture work, payments, and any proposed changes to any provisions of the Joint Venture, or the nature, character of each party to the Joint Venture. We understand that any material misrepresentation will be grounds for terminating any Contract awarded and for initiating action under Federal or State laws concerning false statements.

\_\_\_\_\_  
Firm 1

\_\_\_\_\_  
Firm 2

\_\_\_\_\_  
Signature  
Duly Authorized

\_\_\_\_\_  
Signature  
Duly Authorized

\_\_\_\_\_  
Printed Name and Title

\_\_\_\_\_  
Printed Name and Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\*\*\* END OF DOCUMENT \*\*\*