

COMMONWEALTH OF MASSACHUSETTS



**CONTRACT DOCUMENTS
AND SPECIAL PROVISIONS**

PROPOSAL NO.	609516-129633
P.V. =	\$6,540,000.00
PLANS	YES

FOR

**Federal Aid Project No. NHP(NHS)-0954(006)X
Improvements at I-95 (Route 128)/Route 3 Interchange**

in the Town of

BURLINGTON

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

This Proposal to be opened and read:

WEDNESDAY, APRIL 23, 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 4

DOCUMENT 00104
NOTICE TO CONTRACTORS 00104- 1 through 4

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

DOCUMENT 00331
LOCUS MAP 00331-1 through 2

DOCUMENT 00439
CONTRACTOR PROJECT EVALUATION FORM 00439-1 through 2

DOCUMENT 00440
SUBCONTRACTOR PROJECT EVALUATION FORM 00440-1 through 2

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

DOCUMENT 00713
SUBSECTION 701
CEMENT CONCRETE SIDEWALKS, PEDESTRIAN CURB RAMPS, AND DRIVEWAYS
AND GUIDE TO THE INTERIM SUBSECTION 701
CEMENT CONCRETE SIDEWALK SPECIFICATION..... 00713-1 through 34

DOCUMENT 00715
SUPPLEMENTAL SPECIFICATIONS 00715-1 through 24

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

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

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

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

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

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

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

TABLE OF CONTENTS (Continued)

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

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

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

DOCUMENT 00861
STATE PREVAILING WAGE RATES 00861-1 through 38

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

DOCUMENT 00875
TRAINEE SPECIAL PROVISIONS 00875-1 through 2

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

DOCUMENT A00801
SPECIAL PROVISIONS A00801-1 through 88

DOCUMENT A00802
DETAIL SHEETS A00802-1 through 12

DOCUMENT A00803
DIAGRAMS AND SKETCHES A00803-1 through 4

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

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 230

DOCUMENT A00851
MASSACHUSETTS WETLANDS PROTECTION ACT
DETERMINATION OF APPLICABILITY A00851-1 through 22

DOCUMENT A00870
MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE
NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM A00870-1 through 14

DOCUMENT A00871
MASSDOT BAT ACOUSTIC SURVEY AND BRIDGE ASSESSMENT A00871-1 through 114

TABLE OF CONTENTS (Continued)

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

DOCUMENT B00420
PROPOSAL.....B00420-1 through 16

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

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

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

DOCUMENT B00856
JOINT VENTURE AFFIDAVITB00856-1 through 4

*** END OF DOCUMENT ***

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT 00104

**NOTICE TO CONTRACTORS**

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

WEDNESDAY, APRIL 23, 2025 at 2:00 P.M. **

BURLINGTON

**Federal Aid Project No. NHP(NHS)-0954(066)X
Improvements at I-95 (Route 128)/Route 3 Interchange**

****Date Subject to Change**

PROJECT VALUE = \$6,540,000.00

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.

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

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

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

NOTICE TO CONTRACTORS (Continued)

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

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

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

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

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

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

NOTICE TO CONTRACTORS (Continued)

PRICE ADJUSTMENTS

This Contract contains price adjustments for hot mix asphalt and Portland cement mixtures, diesel fuel, and gasoline. For reference the base prices are as follows: liquid asphalt \$622.50 per ton, Portland cement \$425.53 per ton, diesel fuel \$2.986 per gallon, and gasoline \$2.404 per gallon, and Steel Base Price Index 356.2. MassDOT posts the **Price Adjustments** on their Highway Division's website at

<https://www.mass.gov/massdot-contract-price-adjustments>

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

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

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

BY: Monica G. Tibbits-Nutt, Secretary and CEO, MassDOT
Jonathan L. Gulliver, Administrator, MassDOT Highway Division
SATURDAY, MARCH 22, 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.

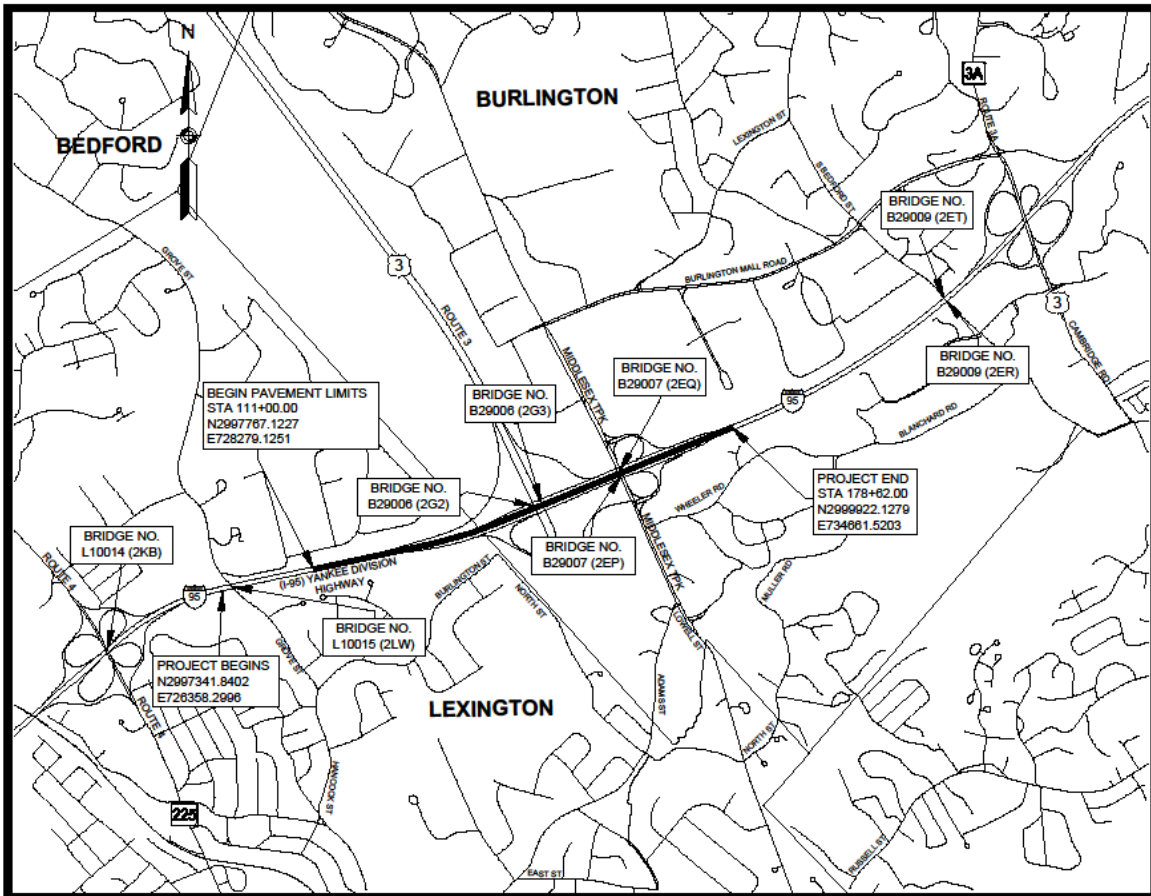
THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT 00331

LOCUS MAP

BURLINGTON

**Federal Aid Project No. NHP(NHS)-0954(006)X
Improvements at I-95 (Route 128)/Route 3 Interchange**



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

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

District Construction Engineer's Signature/Date

Resident Engineer's Signature/Date

Contractor's Signature Acknowledging Report/Date

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

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

CONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number: _____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

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

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR

(Write Yes or No in space provided)

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

I recommend a deduction for project completed late: _____

Signed: _____

District Highway Director

EXPLANATION OF RATINGS 1 – 9: _____

WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

Revised: 04/28/17

*** END OF DOCUMENT ***



Final Report

Interim Report

SUBCONTRACTOR PROJECT EVALUATION FORM

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

Date: _____

City/Town: _____

Subcontractor: _____

Project: _____

Address: _____

F.A. No.: _____

Contract Number: _____

Prime Contractor _____

Current Contract Completion Date: _____

Date Work Started: _____

Date Work Completed*: _____

Subcontractor's Superintendent: _____

Type of Work Performed by Subcontractor: _____

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

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

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

District Construction Engineer's Signature/Date

Resident Engineer's Signature/Date

Contractor Signature Acknowledging Report/Date

Subcontractor Signature Acknowledging Report/Date

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

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

Contractor's Comments: _____



SUBCONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number: _____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

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

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR

(Write Yes or No in space provided)

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

I recommend a deduction for project completed late: _____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 8: _____

WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

DOCUMENT 00710
GENERAL CONTRACT PROVISIONS
Revised: 05/06/24

NOTICE OF AVAILABILITY

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

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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

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

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

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

ALTERNATIVE DISPUTE RESOLUTION

Forum, Choice of Law and Mediations:

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

*** END OF DOCUMENT ***

THIS PAGE IS INTENTIONALLY LEFT BLANK

DOCUMENT 00713

Subsection 701
Cement Concrete Sidewalks, Pedestrian Curb Ramps, and Driveways
and
Guide to the Interim Subsection 701
Cement Concrete Sidewalk Specification

(March 31, 2022)

THIS PAGE INTENTIONALLY LEFT BLANK

SUBSECTION 701: CEMENT CONCRETE SIDEWALKS, PEDESTRIAN CURB RAMPS, AND DRIVEWAYS

Replace this Subsection with the following:

INTERIM SUBSECTION 701: CEMENT CONCRETE SIDEWALKS, PEDESTRIAN CURB RAMPS, AND DRIVEWAYS

DESCRIPTION

701.20: General

This work shall consist of the construction of cement concrete sidewalks, pedestrian curb ramps, and driveways in accordance with the specifications and within the tolerances established on the plans.

MATERIALS

701.30: General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials except as noted herein:

Gravel Borrow, Type b.....	M1.03.0
Cement Concrete ($\geq 4,000$ psi).....	M4.02.00
Preformed Expansion Joint Filler.....	M9.14.0 ^[1]

^[1] Preformed expansion joint filler shall conform to Subsection M9.14.0 or ASTM D8139.

The following best practices may be incorporated into the cement concrete mix design at no additional cost to the Department as identified herein.

A. Combined Aggregate System.

The combined aggregate system for the mix design may be analyzed using the Tarantula Curve, Shilstone Chart, fineness modulus, and coarse aggregate content to enhance the properties of the concrete.

1. Tarantula Curve.

The combined aggregate system for the mix design may be analyzed using the Tarantula Curve to evaluate potential properties of the concrete, including workability, segregation, edge slumping, surface finishing, and cohesion.

Table 701.30-1: Tarantula Curve Particle Size Distribution

Sieve Opening	Percent by Mass Targets (%)		Percent by Mass Retained (%)		
	Passing	Retained			
1-1/2 in.	100	–	–	–	–
1 in.	92	8	0 – 16	–	–
3/4 in.	82	10	0 – 20	–	–
1/2 in.	69	13	4 – 20	–	–
3/8 in.	56	13	4 – 20	–	–
No. 4	43	13	4 – 20	–	–
No. 8	37	6	0 – 12	Coarse Sand 20 – 40	–
No. 16	31	6	0 – 12		–
No. 30	18	13	4 – 20	Fine Sand 24 – 34	–
No. 50	5	13	4 – 20		–
No. 100	0	5	0 – 10		–
No. 200	0	0	0 – 2		–

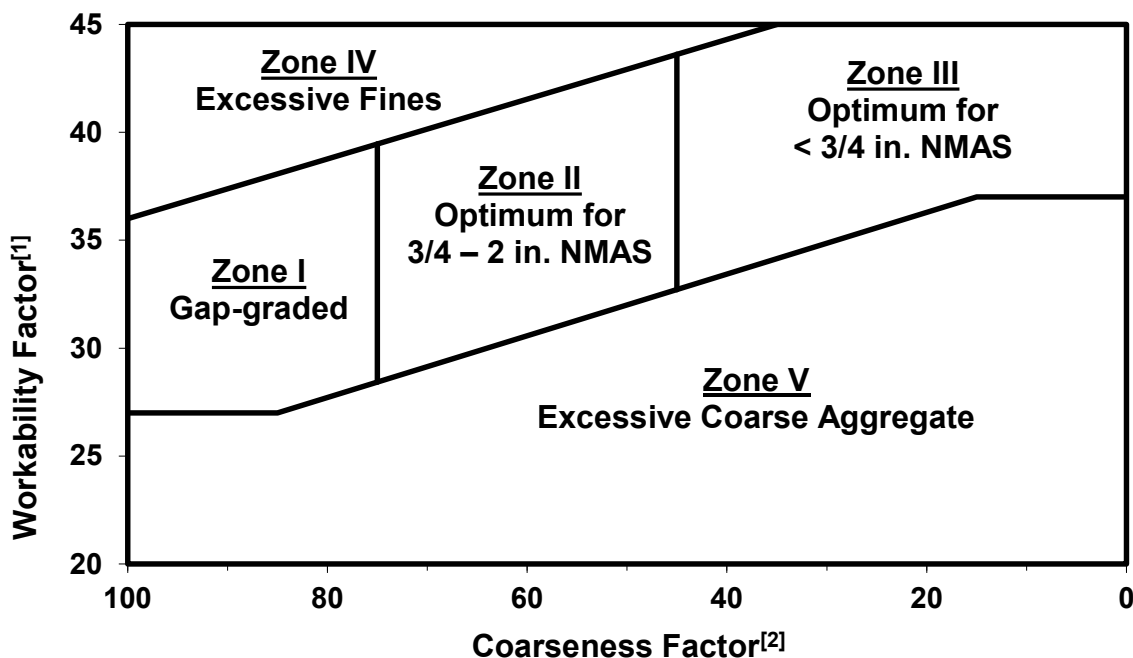
2. Shilstone Workability-Coarseness Chart.

The combined aggregate system for the mix design may be analyzed using the Shilstone Workability-Coarseness Chart, to evaluate potential properties of the concrete, including workability.

Table 701.30-2: Shilstone Workability-Coarseness

Zone	Property	Cause
Zone I	Gap-graded; High potential for segregation during placement and consolidation; Cracking, blistering, spalling, and scaling	Deficiency in intermediate particles; Non-cohesive
Zone II	Optimum mixture for nominal maximum aggregate size from 2 in. – 3/4 in.	Optimized workability factor and coarseness factor
Zone III	Optimum mixture for nominal maximum aggregate size < 3/4 in.	Optimized workability factor and coarseness factor
Zone IV	Sticky; High potential for segregation during consolidation and finishing; Variable strength, high shrinkage, cracking, curling, spalling, and scaling	Excessive fines
Zone V	Rocky; Lacking plasticity	Excessive amount of coarse and intermediate aggregate

Figure 701.30-1: Shilstone Workability-Coarseness Chart



[1] The workability factor is determined by the equation $WF = W + (C - 564) / 38$, where WF = workability factor, W = percent passing No. 8 sieve and C = total cementitious materials content.

[2] The coarseness factor is determined by the equation $CF = (Q/R) / 100$, where CF = coarseness factor, Q = cumulative percent retained on 3/8 in. sieve and R = cumulative percent retained on No. 8 sieve.

3. Fineness Modulus.

The combined aggregate system for the mix design may be analyzed using the fineness modulus, to evaluate potential properties of the concrete, including the fineness or coarseness of the mix design and estimating the design proportions of fine and coarse aggregates. The coarseness of the mix design increases as the fineness modulus increases. The fineness modulus is determined by calculating the total cumulative percentages by mass retained on each designated sieve and dividing by 100.

4. Coarse Aggregate Content.

The combined aggregate system for the mix design may be analyzed using the coarse aggregate content. The coarse aggregate content is determined by calculating the total cumulative percentages by mass retained on the No. 4 sieve.

B. Paste System.

The quality of the paste system is determined by the water-cementitious ratio, air content, cementitious materials, and chemical admixtures incorporated into the mix design.

1. Water-Cementitious Ratio.

The water-cementitious ratio for the mix design may be analyzed to evaluate potential properties of the concrete, including strength, concrete and reinforcement bonding, and resistance to freezing, thawing, de-icing, sulfate reaction, corrosion of steel reinforcement, drying shrinkage, cracking, and

volume change from wetting and drying. The water-cementitious ratio is determined by calculating the total water content by mass and dividing by the total cement and supplementary cementitious material (SCM) content by mass. The recommended water-cementitious ratio design target is identified in Table 701.30-3. The water-cementitious ratio shall be less than or equal to 0.45.

Table 701.30-3: Freezing, Thawing, and De-icing Resistance

Exposure Class	Severity	Condition	Water-Cementitious Ratio
			Requirement
F3	Very Severe	Exposed to freezing and thawing cycles and accumulation of snow, ice, and de-icing chemicals; Frequent exposure to water	≤ 0.45

2. Air Content.

The air content for the mix design may be analyzed to evaluate potential properties of the concrete, including strength and resistance to freezing, thawing, de-icing, and sulfate reaction. The recommended air content design targets are identified in Table 701.30-4.

Table 701.30-4: Freezing, Thawing, and De-icing Resistance

Exposure Class	Severity	Condition	Nominal Maximum Aggregate Size (in.)	Air Content Target Recommendation (%)
F3	Very Severe	Exposed to freezing and thawing cycles and accumulation of snow, ice, and de-icing chemicals; Frequent exposure to water	3/8	7.5
			1/2	7.0
			3/4	7.0
			1	6.5
			1 1/2	6.5

3. Cement and Supplementary Cementitious Materials Content.

The cement and supplementary cementitious materials content incorporated into the mix design shall promote quality properties of the cement concrete, including resistance to alkali silica reaction, freezing, thawing, de-icing, and sulfate reaction. Incorporation of supplementary cementitious materials (SCM) in cement concrete may affect workmanship properties, including workability, bleed rate, setting time, and other properties. Adequate adjustments in Contractor workmanship practices, including placement, finishing, curing, and other construction practices shall be required to account for these changes in properties and to prevent scaling due to freezing, thawing, and de-icing cycles. The cement and supplementary cementitious materials content shall meet the design criteria identified in Table 701.30-5.

Table 701.30-5: Alkali Silica Reaction and Freezing, Thawing, and De-icing Resistance^{[1][2]}

Exposure Class	Severity	Condition	Material	Replacement by Weight of Cement (%)
F3	Very Severe	Exposed to freezing and thawing cycles and accumulation of snow, ice, and de-icing chemicals; Frequent exposure to water	Low Alkali Cement ($\leq 0.60\%$ Alkalinity)	–
			Blended Hydraulic Cement ^[3]	–
			Fly Ash (Class F)	15 – 30
			Slag (Grade 100 or 120)	25 – 50
			Silica Fume	5 – 10
			Total SCM	≤ 50
			Total Fly Ash and Silica Fume	≤ 35

^[1] Acceptable replacement by weight of cement for alkali silica reaction resistance shall be determined by the alkali silica reaction resistance performance test results and the criteria identified in Table 701.73-1: Minimum Acceptance Sampling and Testing Requirements.

^[2] Test results meeting the alkali silica reaction resistance performance criteria of Table 701.30-6: Alternative Performance Evaluation to Alkali Silica Reaction Resistance Design Criteria may supersede the replacement by weight of cement design criteria.

^[3] SCMs in blended hydraulic cement shall meet the criteria identified for fly ash, slag, and silica fume.

Table 701.30-6: Alternative Performance Evaluation to Alkali Silica Reaction Resistance Design Criteria

Method	Quality Characteristic	Criteria
C295	Petrographic Examination for Potential Alkali Aggregate Reactive Constituents and Deleterious Materials in Aggregate ^[1]	–
	Optically Strained, Microfractured or Microcrystalline Quartz (%)	≤ 5.0
	Chert or Chalcedony (%)	≤ 3.0
	Trydimite or Cristobalite (%)	≤ 1.0
	Opal (%)	≤ 0.5
	Natural Volcanic Glass (%)	≤ 3.0
T 380	Alkali Silica Reaction Resistance: Expansion of Miniature Concrete Prisms at 56 days (%)	≤ 0.03 ^[2]

^[1] Examination of aggregate shall be performed and reported to identify and quantify potential alkali-aggregate reactive constituents and deleterious materials in aggregate, as defined in ASTM C294 Standard Descriptive Nomenclature for Constituents of Concrete Aggregates and ASTM C295 Standard Guide for Petrographic Examination of Aggregates for Concrete.

^[2] 56-day expansion results greater than 0.03 but less than or equal to 0.04 shall be considered non-reactive if the average two-week rate of expansion from day 56 to day 84 is less than or equal to 0.01%, otherwise, expansion results shall be considered reactive.

4. Chemical Admixtures.

Chemical admixtures may be incorporated into the mix design to enhance the properties of the concrete.

Table 701.30-7: Chemical Admixtures

Spec.	Type	Chemical Admixture	Properties
M 194	A	Water-Reducing	Increases Workability and Air Content; Decreases Water Demand (5 – 10%, 3 – 6 in. Slump)
	B	Retarding	Increases Initial and Final Setting Time, Air Content, Long-Term Strength; Offsetting of Accelerating Effect of Hot Weather; Decreases Early-Age Strength
	C	Accelerating	Increases Early-Age Strength; Decreases Initial and Final Setting Time
	D	Water-Reducing and Retarding	Type A and Type B Admixture Properties
	E	Water-Reducing and Accelerating	Type A and Type C Admixture Properties
	F	High Range Water-Reducing	Increases Workability (More Effective than Type A), Air Content, Early-Age Strength, and Ultimate Strength; Decreases Water Demand (12 – 40%, > 6 in. Slump) and Permeability
	G	High Range Water-Reducing and Retarding	Type F and Type B Admixture Properties
	S-SRA	Shrinkage Reducing	Increases Setting Time; Decreases Drying Shrinkage Cracking and Bleed Rate
	S-CRA	Crack Reducing	Decreases Cracking (More Effective than SRAs) and Crack Width
M 154	AEA	Air-Entraining	Increases Cohesion, Workability, Stabilization of Air Bubbles, Resistance to Freezing, Thawing, and De-icing, Resistance to Alkali-Reactive Environment, and Resistance to Sulfate Reaction
M 194 ^[1]	MRWRA	Mid Range Water-Reducing	Type A and Type F Admixture Properties; Increases Workability (Especially Concrete with SCMs); Decreases Water Demand (6 – 12 %, 5 – 8 in. Slump)
C1622	CWA	Cold Weather	Increases Hydration Rate; Decreases Freezing Point of Mixing Water

^[1] Mid range water-reducing admixtures (MRWRA) may meet either water-reducing (A) or high range water-reducing (F) admixture criteria.

5. Paste Content.

The paste content for the mix design may be optimized to enhance potential properties of the concrete, including workability, strength, permeability, and resistance to drying shrinkage and cracking and volume change from wetting and drying. The volume of paste should adequately fill the voids and provide sufficient separation between the aggregate particles to promote workability and effective bonding of particles.

Table 701.30-8: Paste Content

Mix Design Characteristic	Recommendation
Volume of Cement Concrete (cf) ^[1]	27
Paste Content (%) ^[2]	≤ 28 ^[3]
Paste Content to Aggregate Void Content Ratio ^[4]	1.25 – 1.75
Excess Volume of Paste for Workability (%) ^[5]	–

^[1] The volume of cement concrete is determined by the following equation, where W = Weight (lbs.), SG = Specific Gravity, D = Density (pcf), and V = Volume (cf).

$$V_{CEMENT} = W_{CEMENT} / SG_{CEMENT} * D_{WATER}$$

$$V_{SCM} = W_{SCM} / SG_{SCM} * D_{WATER}$$

$$V_{ADMIXTURE} = V_{ADMIXTURE} \text{ in oz.} / 957.5 \text{ oz. per cf}$$

$$V_{WATER} = V_{WATER} \text{ in gal.} / 7.48 \text{ gal. per cf}$$

$$V_{COARSE} = W_{COARSE} / SG_{COARSE} * D_{WATER}$$

$$V_{FINE} = W_{FINE} / SG_{FINE} * D_{WATER}$$

$$V_{CONCRETE} = V_{CEMENT} + V_{SCM} + V_{ADMIXTURE} + V_{WATER} + V_{COARSE} + V_{FINE} + V_{AIR}$$

^[2] The paste content by volume of cement concrete is determined by the following equation, where V = Volume (cf) and PC = Paste Content (%).

$$V_{PASTE} = V_{CEMENT} + V_{SCM} + V_{ADMIXTURE} + V_{WATER}$$

$$PC_{CONCRETE} = V_{PASTE} / V_{CONCRETE}$$

^[3] The cracking tendency of structural concrete is significantly reduced when the paste content by volume is less than or equal to 28 percent.

^[4] The paste content to aggregate void content ratio is determined by the following equation, where D = Density (pcf), SG = Specific Gravity, BD = Bulk Density (pcf), VC = Void Content (%), V = Volume (cf), AVC = Aggregate Void Content (%), PC = Paste Content (%), and R = Ratio. Workability increases as the paste content to aggregate void content ratio increases. Decreased paste content to aggregate void content ratios will result in decreased workability, where water-reducing admixtures provide no benefit.

$$V_{COARSE} = SG_{COARSE} * D_{WATER} - BD_{COARSE} / D_{COARSE}$$

$$V_{FINE} = SG_{FINE} * D_{WATER} - BD_{FINE} / D_{FINE}$$

$$V_{AGGREGATE} = [(V_{COARSE} / (V_{COARSE} + V_{FINE})) * VC_{COARSE} + (V_{FINE} / (V_{COARSE} + V_{FINE})) * VC_{FINE}]$$

$$AVC_{CONCRETE} = [V_{AGGREGATE} * ((V_{COARSE} + V_{FINE}) / V_{CONCRETE})]$$

$$R_{PC-AVC} = PC_{CONCRETE} / AVC_{CONCRETE}$$

^[5] The excess paste content for workability is determined by the following equation, where PC = Paste Content (%), AC = Air Content (%), AVC = Aggregate Void Content (%), and EPC = Excess Paste Content for Workability (%).

$$EPC_{CONCRETE} = PC_{CONCRETE} + AC_{CONCRETE} - AVC_{CONCRETE}$$

C. Initial Curing Materials.

The materials and procedures used for initial curing methods of cement concrete shall meet the Manufacturer's instructions and recommendations and the requirements specified herein.

Cement concrete with a low to negligible bleeding rate, exposure to highly evaporative environments, high content of silica fume, fine cement, or other fine cementitious material, low water to cementitious ratio, high air content, or water-reducing admixtures have an increased susceptibility to surface drying and plastic shrinkage between placement and finishing operations. Initial curing materials and procedures shall be applied immediately after the bleed water sheen has disappeared from the surface of the concrete or the concrete surface exhibits loss of moisture and surface drying, between placement and finishing operations. Initial curing materials shall not be worked into the surface in subsequent finishing operations.

1. Liquid-Applied Evaporation Reducers.

Liquid-applied evaporation reducers used for initial curing methods shall produce an effective monomolecular film over the bleed water layer, to reduce the rate of evaporation of the bleed water from the surface and plastic shrinkage when the evaporation rate equals or exceeds the bleeding rate.

D. Intermediate Curing Materials.

The materials and procedures used for intermediate curing methods of cement concrete shall meet the Manufacturer's instructions and recommendations and the requirements specified herein.

In instances where finishing operations have been completed prior to the concrete achieving final set and the concrete surface exhibits loss of moisture and surface drying, the following curing materials and procedures shall be applied immediately to the concrete surface prior to the application of final curing materials, to prevent the loss of moisture without damaging the concrete surface, until final set of the concrete has been achieved and final curing materials have been applied to the concrete surface.

- 701.30.C.1: Liquid-Applied Evaporation Reducers
- 701.30.E.3.a: Liquid Membrane-Forming Compounds for Curing
- 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing

E. Final Curing Materials.

The materials and procedures used for final curing methods of cement concrete shall meet the Manufacturer's instructions and recommendations and the requirements specified herein.

Curing water shall be free of deleterious impurities, causing staining and deterioration. The potential staining ability of curing water shall be evaluated by means of CRD-C401 (US Army Corps

of Engineers 1975) for instances where curing water quality is questioned. Curing water shall not exceed a temperature differential of more than 20°F from the internal concrete temperature, to prevent cracking due to temperature gradients causing strain that exceeds the strain capacity of concrete. Curing water shall remain above freezing temperatures throughout the duration of the curing cycle.

Final curing materials and procedures shall be applied to the concrete surface immediately after application of initial and intermediate curing materials, finishing operations, and final set of cement concrete, to prevent the loss of moisture and surface drying.

Materials used for final curing methods of cement concrete shall accommodate all exposed cement concrete surfaces with a continuous application of moisture throughout the entire duration of the final curing method cycle and provide controlled and gradual termination of the final curing method cycle.

Final curing materials applied to the concrete shall allow the concrete to mature sufficiently to achieve its designed and desired properties, including strength, volume stability, permeability, durability, and resistance to freezing, thawing, and de-icing cycles. Insufficient application of final curing materials results in decreased strength and durability of the top surface of concrete.

Protection to the concrete surface and curing materials shall be required in instances where adverse weather conditions are present, until curing operations can be initiated without damaging the surface of the concrete.

Final curing materials and procedures shall be applied to the concrete surface throughout the entire duration of the curing cycle and meet minimum sustained temperature, duration, and strength requirements, as specified in applicable Division II: Construction Details and herein. Controlled and gradual termination of the final curing method cycle shall begin only after all specified conditions are met, until the concrete gradually cools to within 20°F of the ambient temperature.

1. Saturated Covers.

Saturated covers used for final curing methods shall meet AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing cement concrete and cementitious materials. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to cement concrete and cementitious materials. Saturated covers shall have sufficient thickness and proper positioning onto the surface to maximize moisture retention. Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of cement concrete and cementitious materials. Saturated covers shall have the ability to retain sufficient moisture from continuous watering so that a film of water remains on the surface of cement concrete and cementitious materials throughout the entire duration of the final curing method cycle. Saturated covers shall not absorb water from cement concrete and cementitious materials. Polyethylene film may be applied over the saturated cover to limit the amount of continuous watering required for sufficient moisture retainage. Saturated covers shall accommodate uniform and slow drying of cement concrete and cementitious materials surfaces immediately prior to removal.

2. Sheet Materials.

Sheet materials, including polyethylene film, white burlap-polyethylene sheeting, and reinforced paper, used for final curing methods shall meet ASTM C171 and the requirements specified herein. Sheet materials shall inhibit moisture loss and reduce temperature rise in concrete exposed to radiation from the sun during the final curing method cycle. Adjoining covers shall overlap not less than 12 inches. All edges of the sheet materials shall be secured to maintain a moist environment.

a. Polyethylene Film.

Polyethylene film shall be clear, white, or black in color and consist of a single sheet manufactured from polyethylene resins, be free of visible defects, including tears, wrinkles, and discontinuity. The film shall prohibit mottling and uneven spots from appearing on the surface of concrete, due to variations in temperature, moisture content, or both. Application of additional curing water under the film or application of a polyethylene film bonded to absorbent fabric to the concrete surface may be required to prevent mottling and to retain and evenly distribute the moisture. Polyethylene film shall accommodate concrete surfaces with constant contact without damage. The film shall be sufficient in length to extend beyond the edges of the concrete surface. Edges of adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

i. White Polyethylene Film.

White polyethylene film shall minimize heat gain caused by absorption of solar radiation and shall be exclusively used during warm weather applications.

ii. Clear and Black Polyethylene Films.

Clear and black polyethylene films shall inhibit absorption of solar radiation for cold weather applications.

b. White Burlap-Polyethylene Sheeting.

White burlap-polyethylene sheeting shall be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete.

c. Reinforced Impervious Paper.

Reinforced impervious paper shall be white in color, consist of two sheets of kraft paper cemented together with a bituminous adhesive, and reinforced with embedded cords or strands of fiber running in both directions. Reinforced impervious paper shall be free of holes, tears, and pin holes from deterioration of the paper through repeated use. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried. Reuse of reinforced impervious paper shall be permitted so long as it is able to retain moisture on the surface of concrete. The paper shall be discarded and prohibited from use when moisture is no longer retained in the material.

3. Liquid Membrane-Forming Compounds.

Compounds shall form a continuous, non-yellowing, and durable film with quality moisture-retention properties. Compounds shall maintain the relative humidity of the concrete surface

above 80% for seven days to sustain cement hydration. Compounds shall not affect the original color of the concrete surface. Compounds shall not degrade due to exposure to ultraviolet light from direct sunlight. Compounds shall meet the local and federal allowable Volatile Organic Compound (VOC) content limits.

White-pigmented compounds shall be used in instances where solar-heat gain is concern to the concrete surface. White-pigmented compounds shall be agitated in the container prior to application to prevent pigment from settling out resulting in non-uniform overage and ineffective curing.

Careful considerations shall be made by the Contractor to determine if the evaporation rate is exceeding the rate of bleeding, thus causing the surface to appear dry even though bleeding is still occurring. To diagnose and prevent this condition, the Contractor may place a transparent plastic sheet over a test area of the uncured and unfinished concrete surface and shall determine if any bleed water accumulates under the plastic. Under such conditions, the application of liquid membrane-forming compounds to the concrete surface shall be delayed to prevent bleed water from being sealed below the concrete surface, map cracking of the membrane films, reduction in moisture-retention capability, and the need for reapplication of the compound.

Prior to use, compounds shall be thoroughly mixed, stirred, and agitated per the Manufacturer's instructions and recommendations.

Compounds shall be applied continuously and uniformly to the surface of the concrete per the Manufacturer's instructions and recommendations. Compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. Applying of the compound immediately after final finishing and before all free water on the surface has evaporated will help prevent the formation of cracks. When using compounds to reduce moisture loss from formed surfaces, the exposed surface shall be wetted immediately after form removal and kept moist until the curing compound is applied. The concrete shall be allowed to reach a uniformly damp appearance with no free water on the surface, and then application of the compound shall begin at once. Delayed application will result in surface drying, absorption of the compound into the concrete, and no forming of a continuous membrane.

The concrete surface shall be damp when the compound is applied. Power-driven spray equipment shall be used for uniform application of compounds on large paving projects. Spray nozzles recommended by the compound Manufacturer and use of windshields shall be arranged by the Contractor to prevent wind-blown loss of compound and to ensure proper coverage application rates are achieved. The compound shall be applied by power sprayer, using appropriate wands and nozzles with pressures between 25 and 100 psi. The Contractor shall fill the power sprayer with curing compound from the Manufacturer's original container in the presence of the Engineer. Any dilution as recommended by the Manufacturer shall take place in the presence of the Engineer. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller.

The Contractor shall verify the application rate and procedures are in accordance with the Manufacturer's instructions and recommendations. At least one uniform coat shall be applied at a rate of 150 to 200 ft²/gallon. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of the surface. In such cases, two separate applications may be needed, each at 200 ft²/gallon or greater if specified by the Manufacturer to achieve the desired

moisture retention rate, with the first being allowed to become tacky before the second is applied. If two coats are necessary to ensure complete coverage, for effective protection the second coat should be applied at right angles to the first. Complete coverage of the surface shall be attained due to the potential for formation of small pinholes in the membrane, which will result in loss of moisture from the concrete. Compounds shall not sag, run off peaks, or collect in grooves.

Compounds and procedures shall be compatible with concrete surfaces receiving subsequent applications or placements of concrete, overlays, coatings, paints, sealers, finishes or other toppings to ensure acceptable bonding to the concrete. Testing to establish compatibility among the curing compound, subsequent surface treatments, concrete moisture content and the actual finished surface texture of the concrete shall be conducted when compatibility is not known. The compound Manufacturer shall be consulted by the Contractor to determine the compatibility of the application. Compounds shall not be applied to concrete surfaces where bonding of subsequent applications or placements is incompatible or is of concern. The use of wax-based curing compounds shall be prohibited in instances where concrete surfaces are subject to additional toppings and vehicular, pedestrian, or other traffic. Deliberate removal of compounds in the presence of the Engineer and in accordance with Manufacturer's instructions and recommendations shall be conducted as an alternative to compatibility testing, incompatibility, or in instances where bonding is of concern. Bonding of subsequent materials may still be inhibited by the presence of the compound even after the moisture retention characteristics of the compound have diminished.

a. Liquid Membrane-Forming Compounds for Curing.

Liquid membrane-forming compounds for curing shall meet ASTM C309, the Manufacturer's instructions and recommendations, and the requirements specified herein.

Table 701.30-1: Types of Compounds for Curing

Type	Description
Type 1	Clear or translucent without dye
Type 1-D	Clear or translucent with fugitive dye
Type 2	White pigmented

Table 701.30-2: Composition Class of Compounds for Curing

Type	Description
Class A	Unrestricted composition, generally wax-based products
Class B	ASTM D883 resin-based products

b. Liquid Membrane-Forming Compounds for Curing and Sealing.

Liquid membrane-forming compounds for curing and sealing shall meet ASTM C 1315, the Manufacturer's instructions and recommendations, and the requirements specified herein.

In addition to moisture-retention capabilities compounds shall exhibit specific properties, including alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light.

Table 701.30-3: Types of Compounds for Curing and Sealing

Type	Description
Type I	Clear or translucent
Type II	White pigmented

Table 701.30-4: Class of Compounds for Curing and Sealing

Type	Description
Class A	Non-yellowing

F. Protective Sealing Compounds.

Protective sealing compounds shall maintain valid listing on the Department Qualified Construction Materials List (QCML) and meet AASHTO M 224, NCHRP Report 244 and the requirements specified herein.

Protective sealing compounds shall sufficiently penetrate the concrete to seal the surface pores and fill the capillaries of the concrete by chemically reacting with the concrete and forming a hydrophobic layer. Protective sealing compounds shall limit the penetration of liquids, gases, and harmful substances into hardened concrete, including water, de-icing agents, and carbon dioxide to protect concrete from freezing, thawing, and de-icing cycles, corrosion of reinforcing steel, and acid attack. Protective sealing compounds shall limit the buildup of vapor pressure between the concrete and the applied sealer. Protective sealing compounds shall retard the penetration of harmful substances into hardened concrete. Protective sealing compounds shall maintain their protective properties during environmental exposure to freezing, thawing, and de-icing cycles. Protective sealing compounds shall not reduce the frictional properties of the concrete. Protective sealing compounds shall not affect the original color of the concrete surface if maintaining the original color is desired by the Department. Protective sealers shall meet the local and federal allowable Volatile Organic Compound (VOC) content limits.

Curing methods conforming to Department specifications shall be applied to the concrete prior to the application of protective sealers. Protective sealers shall not be applied to the concrete for a minimum of 28 days after placement and the surface shall be sufficiently prepared, clean, and dry for at least 24 hours with ambient temperatures exceeding 60°F. Protective sealers shall not be applied to concrete placed where freezing, thawing, and de-icing cycles are expected immediately after, due to the retainage of water in the concrete. Periodic re-application shall be required for protective penetrants requiring multiple applications and for concrete surfaces exhibiting wear to ensure long-term protection of the concrete surface.

G. Cold Weather Concreting Materials.

Cold weather concreting shall be defined as the procedures, operations, materials, and equipment required for the mixing, delivery, placement, finishing, curing, and protection of concrete during cold weather conditions, while exposed to air temperatures falling below, or expected to fall below 40°F.

The protection period shall be defined as the minimum duration required to prevent concrete from the negative effects of cold weather exposure. The protection period shall remain in place while

cold weather conditions exist. Controlled and gradual termination of the protection period shall be conducted only after 100% f'c is attained and all specified conditions are met.

The procedures, operations, materials, and equipment selected for cold weather concreting shall adequately maintain specified temperature ranges by addressing all variables, including ambient weather conditions, geometry of the structure, and mix design proportions. Concrete temperatures for cold weather concreting shall meet Table 701.30-5.

Table 701.30-5: Concrete Temperature Requirements for Cold Weather Concreting

Phase	Cold Weather Temperature (°F)	Concrete Temperature (°F)
Mixing	30-39	60-75
	0-30	65-80
	< 0	70-85
Placement	< 40	55-75
Protection Period	< 40	55-75
Termination of Protection Period – Allowable Rate of Decrease in 24 Hours	< 40	≤ 50

Cold weather concreting procedures, operations, materials, and equipment shall be developed and performed to prevent damage to concrete due to freezing at early ages, to ensure that the concrete develops the recommended strength for safe removal of forms, to maintain curing conditions that promote quality strength and durability development, to limit rapid temperature fluctuation, and to provide protection consistent with intended serviceability of the structure. The Contractor shall develop and submit to the Department for review and approval, cold weather concreting procedures for the mixing, delivery, placement, finishing, curing, and protection of concrete during cold weather, including:

- Procedures for protecting the subgrade from frost and the accumulation of ice or snow on reinforcement or forms prior to placement
- Methods and requirements for cold weather protection and temperature control of constituent materials incorporated into the mix design
- Chemical admixtures incorporated into the mix design for cold weather protection and temperature control
- Methods and requirements for cold weather protection and temperature control during mixing, delivery, placement, finishing, curing, and protection period
- Curing methods to be used during and following the protection period
- Types of covering, insulation, heating, or enclosures to be provided
- Methods for verification of in-place strength
- Procedures for measuring and recording concrete temperatures
- Procedures for preventing drying during dry, windy conditions

All procedures, operations, materials, and equipment required for adequate protection and curing shall be present and ready for use prior to concrete production.

1. Insulating Materials.

Insulating materials used for cold weather concreting shall meet the requirements specified herein. The thermal resistance of the proposed insulation system shall be determined to meet the concrete temperature range requirements specified herein. Supplemental heat, including hydronic heating systems, shall be applied in instances where insulating materials cannot achieve the concrete temperature requirements.

2. Heaters.

Heaters used for cold weather concreting including direct fired, indirect fired, and hydronic heaters shall meet ANSI A10.10 carbon monoxide limits, safety regulations for ventilation, and the stability, operation, fueling, and maintenance of heaters and the requirements specified herein.

a. Direct Fired Heaters.

Direct fired heaters generate heat to an enclosed space through the combustion of fossil fuels, including oil, kerosene, propane, gasoline, and natural gas. Hot air comprised of carbon dioxide and carbon monoxide combustion products, is discharged into the enclosed space. Direct fired heaters shall be prohibited from heating the air directly surrounding the concrete surface due to calcium carbonate formation interfering with the hydration reaction, from the reaction between the carbon dioxide generated from the combustion of fossil fuels and the calcium hydroxide on the surface of freshly placed concrete, resulting in a soft, chalky, and nondurable concrete surface. Direct fired heaters shall only be used on concrete surfaces protected from fossil fuel combustion products.

b. Indirect Fired Heaters.

Indirect fired heaters generate heat to an enclosed space through the combustion of fossil fuels, including oil, kerosene, propane, gasoline, and natural gas. The carbon dioxide and carbon monoxide combustion products are expelled through venting, resulting in clean heated air discharged into the enclosed space. Indirect fired heaters are suitable for heating the air directly surrounding the concrete surface.

c. Hydronic Heaters.

Hydronic heaters generate heat to an enclosed space through the circulation of the heat-transfer fluid in a closed system of pipes or hoses. The heat-transfer fluid is comprised of a propylene glycol water solution and is heated through the combustion of fossil fuels, including diesel fuel and kerosene. The combustion of fossil fuel occurs outside of the enclosed space and does not expose the concrete surface to the deleterious effects of carbon dioxide.

After the concrete placement achieves final set, polyethylene film or other suitable material shall sufficiently serve as a vapor barrier. The heat-transfer hoses shall be placed on top of the vapor barrier and covered with insulating materials meeting 701.30.G.1. Hydronic heaters shall be used to thaw or preheat subgrades prior to concrete placement and provide supplementary heat to insulating materials. Hydronic heaters shall provide an even distribution of heat to prevent curling and cracking induced by temperature gradients within concrete.

3. Enclosures.

Enclosures shall be made of wood, canvas tarpaulins, polyethylene film, or prefabricated rigid plastic. Enclosures shall be airtight, block wind, prevent admittance of cold air, conserve heat, and withstand wind and snow loads. Enclosures shall provide adequate headroom for craftsmen and sufficient space between the concrete and the enclosure to permit free circulation of warm air. Supplementary heat shall be supplied to enclosures by hydronic heaters, live steam, hot forced air, or indirect fired combustion heaters. Icing along the perimeter of the enclosure shall be prevented when live steam is utilized. Heaters and ducts shall be positioned to prevent the hot, dry air from overheating or drying the concrete surface. Insulating materials meeting 701.30.G.1 shall be applied as a vapor barrier to the concrete surface immediate after final set is attained.

H. Hot Weather Concreting Materials.

Hot weather concreting shall be defined as the procedures, operations, materials, and equipment required for the mixing, delivery, placement, finishing, bleed water evaporation, curing, and protection of concrete during hot weather conditions, while exposed to air temperatures exceeding, or expected to exceed 80°F; concrete temperatures approaching, or expected to approach 90°F; evaporation rates of surface water approaching, or expected to approach the bleeding rate of the concrete; high solar radiation; low relative humidity; and high wind speed.

The protection period shall be defined as the minimum duration required to prevent concrete from the negative effects of hot weather exposure, including the acceleration of rate of moisture loss and rate of cement hydration, difficulties in curing, increased concrete temperature, increased water demand, accelerated slump loss, increased rate of setting, increased tendency for plastic shrinkage and thermal cracking, increased potential for cold joints, and difficulties in controlling entrained air content. The protection period shall remain in place while hot weather conditions exist. Controlled and gradual termination of the protection period shall be conducted when conditions permit. The allowable rate of temperature decrease shall not exceed 5°F per hour and meet the allowable rate of temperature decrease specified in 701.30.G: Cold Weather Concreting Materials.

The procedures, operations, materials, and equipment selected for hot weather concreting shall adequately maintain specified temperature ranges and evaporation rates by addressing all variables, including ambient weather conditions, geometry of the structure, and mix design proportions. Initial materials meeting 701.30.C: Initial Curing Materials shall be applied to the concrete surface while the concrete and air temperatures, relative humidity of the air, and the wind speed have the capacity to evaporate free water from the fresh concrete surface at a rate that is equal to or greater than bleeding rate of the concrete. The evaporation rate of surface water shall be determined by the following equation:

$$E = (T_c^{2.5} - r * T_a^{2.5})(1 + 0.4V) \times 10^{-6}$$

where E = evaporation rate of water-covered surface (lb/ft²/hr), T_c = concrete temperature of the evaporating surface (°F), r = relative humidity of air surrounding the evaporating surface (%), T_a = temperature of the air surrounding the evaporative surface (°F), and V = average wind speed 20 inches above the evaporating surface. The air surrounding the evaporating surface shall be defined as the air approximately 4 to 6 feet above the evaporating surface on the windward side and shielded from the sun's rays.

Hot weather concreting procedures, operations, materials, and equipment shall be developed and performed to prevent damage to concrete and promote long-term durability. The Contractor shall develop and submit to the Department for review and approval, hot weather concreting procedures for the mixing, delivery, placement, finishing, curing, and protection of concrete during hot weather, including:

- Procedures for preparing the subgrade prior to placement
- Methods and requirements for hot weather protection and temperature control of constituent materials incorporated into the mix design
- Chemical admixtures incorporated into the mix design for hot weather protection and temperature control
- Methods and requirements for hot weather protection and temperature control during mixing, delivery, placement, finishing, curing, and protection period
- Initial curing methods to be used to reduce surface evaporation
- Curing methods to be used during and following the protection period
- Types of covering, insulation, cooling, or enclosures to be provided
- Evaporation rate and bleeding rate of concrete calculations
- Procedures for measuring and recording concrete temperatures
- Procedures for preventing drying during dry, windy conditions

All procedures, operations, materials, and equipment required for adequate protection and curing shall be present and ready for use prior to concrete production.

CONSTRUCTION METHODS

701.40: Pre-Placement

A. Excavation.

Excavation of the area shall be in accordance with the applicable portions of Subsection 120: Excavation.

B. Subgrade and Subbase.

The subgrade for the sidewalks and driveways shall be shaped parallel to the proposed surface of the sidewalks and driveways and thoroughly compacted. All depressions in the subgrade shall be filled with suitable material and again compacted until the surface is smooth and hard. Prior to the placement of the subbase, the Contractor shall inspect the prepared subgrade to ensure that it is in conformance with the required grade and cross-section. Subgrade shall be fine graded to meet the applicable requirements of Subsection 170: Grading.

After the subgrade has been prepared, a gravel subbase shall be placed upon it. After being compacted thoroughly, the subbase shall be at least 8 inches thick and parallel to the proposed surface of the sidewalk. Prior to the placement of the cement concrete, the Contractor shall inspect the prepared subbase material to ensure that it is in conformance with the required grade and cross-section. Subbase material that is not in accordance with the plans or specifications shall be reworked or replaced to meet the applicable requirements of Subsection 170: Grading before the start of cement concrete placement. When placing cement concrete, the compacted subbase shall not be frozen or have standing water.

C. Forms.

Side forms and transverse forms shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed sidewalk or pedestrian curb ramp and of a type satisfactory to the Engineer.

All mortar or dirt from previously used forms shall be completely removed prior to use. The forms shall be well staked and thoroughly graded and set to the established lines with their upper edge conforming to the grade of the finished sidewalk or pedestrian curb ramp which shall have sufficient pitch to the roadside edge to provide for surface drainage.

All pedestrian curb ramp joints and transition sections which define grade changes shall be formed staked and checked for dimension, grade and slope conformance prior to placing cement concrete.

All forms shall be oiled before placing concrete.

701.41: Placement

The concrete shall be placed in alternate slabs 30 ft long except as otherwise ordered. The slabs shall be separated by transverse preformed expansion joint filler ½ in. thick.

Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.

Detectable warning panels conforming to the plans shall be securely incorporated into the work by means acceptable to the Engineer.

On the foundation as specified above, the concrete shall be placed in such quantity that after being thoroughly consolidated in place it shall be 4 in. deep. At driveways, the sidewalks shall be 6 in. deep.

In conveying the concrete from the place of mixing to the place of deposit, the operation shall be conducted in such a manner that no mortar will be lost, and the concrete shall be so handled that the concrete will be of uniform composition throughout, showing neither excess nor lack of mortar in any one place.

The surface of all concrete sidewalks shall be uniformly scored into block units of areas not more than 36 ft². The depth of the scoring shall be at least ½ in. deep and no more than ½ in. wide.

701.42: Initial Curing

In instances where the bleed water sheen has disappeared from the surface of the concrete or the concrete surface exhibits loss of moisture and surface drying between placement and finishing operations, the Contractor shall apply one of the following initial curing materials and procedures meeting 701.30.C: Initial Curing Materials until finishing operations occur.

- 701.30.C.1: Liquid-Applied Evaporation Reducers

Initial curing materials shall not be worked into the surface in subsequent finishing operations.

701.43: Finishing

The finishing of concrete surface shall be done by experienced and competent cement finishers. No finishing operation shall be performed while free water is present. Finishing operations shall be delayed until all bleed water and water sheen has left the surface and the concrete has started to stiffen. After water sheen has disappeared, edging operations, where required, shall be completed. After edging and joining operations, the surface shall be floated. Magnesium floats shall be used for all finishing operations. If necessary tooled joints and edges shall be rerun before and after floating to maintain uniformity. After floating, the surface shall be brushed by drawing a soft-bristled push broom with a long handle over the surface of the concrete to produce a nonslip surface.

701.44: Intermediate Curing

In instances where finishing operations have been completed prior to the concrete achieving final set and the concrete surface exhibits loss of moisture and surface drying, the Contractor shall apply one of the following intermediate curing materials and procedures meeting 701.30.D: Intermediate Curing Materials immediately to the concrete surface prior to the application of final curing materials, to prevent the loss of moisture without damaging the concrete surface, until final set of the concrete has been achieved and final curing materials have been applied to the concrete surface.

- 701.30.C.1: Liquid-Applied Evaporation Reducers
- 701.30.E.3.a: Liquid Membrane-Forming Compounds for Curing
- 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing

701.45: Final Curing

The Contractor shall apply one of the following final curing materials and procedures meeting 701.30.E: Final Curing Materials to the concrete surface immediately after application of initial and intermediate curing materials, finishing operations, and final set of cement concrete, to prevent the loss of moisture and surface drying.

- 701.30.E.1: Saturated Covers
- 701.30.E.2: Sheet Materials
- 701.30.E.3.a: Liquid Membrane-Forming Compounds for Curing
- 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing

The Contractor shall apply final curing materials and procedures to the concrete surface throughout the entire duration of the curing cycle and meet minimum sustained temperature, duration, and strength requirements, as specified in in Table 701.45-1. Controlled and gradual termination of the curing cycle shall begin after all specified conditions are met.

Table 701.45-1: Termination of Curing Cycle

Sustained Concrete Temperature	Final Curing Cycle Duration	Compressive Strength ^[1]
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥ 70% f _c

^[1] Compressive strength cylinders for termination of curing cycle shall be cast and field cured with the same environmental conditions that the sidewalk is subjected to throughout the entire duration of the final curing cycle, per 701.73: Acceptance Sampling and Testing.

701.46: Protective Sealing

The Contractor shall apply sealing materials and procedures meeting 701.30.F: Protective Sealing Compounds only if one or more of the following final curing materials and procedures were applied:

- 701.30.E.1: Saturated Covers
- 701.30.E.2: Sheet Materials
- 701.30.E.3.a: Liquid Membrane-Forming Compounds for Curing

Protective sealing compounds shall not be applied to concrete surfaces applied with a final curing material and procedure meeting 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing.

701.47: Cold Weather Concreting

The Contractor shall conduct cold weather concreting procedures, operations, materials, and equipment required for the mixing, delivery, placement, finishing, curing, and protection of concrete, while surfaces are exposed to air temperatures falling below, or expected to fall below 40°F in accordance with 701.30.G: Cold Weather Concreting Materials. All procedures, operations, materials, and equipment required for adequate protection and curing shall be present and ready for use prior to concrete production.

701.48: Hot Weather Concreting

The Contractor shall conduct hot weather concreting procedures, operations, materials, and equipment required for the mixing, delivery, placement, finishing, curing, and protection of concrete, while surfaces are exposed to air temperatures exceeding, or expected to exceed 80°F; concrete temperatures approaching, or expected to approach 90°F; evaporation rates of surface water approaching, or expected to approach the bleeding rate of the concrete; high solar radiation; low relative humidity; and high wind speed in accordance with 701.30.H: Hot Weather Concreting Materials. All procedures, operations, materials, and equipment required for adequate protection and curing shall be present and ready for use prior to concrete production

CONTRACTOR QUALITY CONTROL**701.60: General**

The Contractor shall provide adequate Quality Control (QC) to ensure that all materials and workmanship conform with the specification requirements. The Contractor shall perform QC activities as outlined further below.

701.61: Contractor Quality Control Plan

The Contractor shall provide and maintain a Quality Control Plan (QC Plan). The QC Plan should sufficiently document the QC processes of all Contractor parties (i.e. Prime Contractor, Subcontractors, Producers) performing work required under this specification.

701.62: Production Personnel

A. Foreman.

A foreman shall be present throughout the entire duration of the construction operation with at least one of the following personnel certifications.

- NRMCA Concrete Exterior Finisher Certification
- ACI Concrete Flatwork Technician and Flatwork Finisher

The foreman is responsible for the oversight of the construction operation per the requirements specified in Table 701.62-1.

Table 701.62-1: Minimum Foreman Activities

Operation	Foreman	Activity
Oversight	One (1)	Review and compare batch ticket quantities and sources to approved mix design
		Monitors conformance to AASHTO M 157 Standard Specification for Ready-Mixed Concrete
		Monitors conformance to Department specifications
		Monitors Production Personnel activities
		Verifies proper equipment is on hand prior to start of construction
		Monitors equipment, environmental conditions, materials, and workmanship
		Prohibits the use of prohibited equipment and practices
		Acknowledges sampling, testing, and inspection results

B. Operators.

Concrete sidewalk shall be constructed by sufficiently staffed, trained, experienced, and qualified equipment operators and craftsmen, who are presently involved in sidewalk construction, throughout the entire duration of the construction operation, per the requirements specified in Table 701.62-2.

Table 701.62-2: Minimum Operator Activities

Operation	Operators^[1]	Activity
701.40: Pre-Placement	Two (2)	Apply sufficient base compaction
		Moisten sub-base, free of standing water
		Secure forms, straight and level
		Mark expansion locations
		Prohibited Practices: Placement on frozen sub-grade
701.41: Placement (Concrete Discharging)	Two (2)	Direct concrete trucks
		Handle chute discharge and truck movement
		Assist in preparing concrete for testing
		Direct trucks to washout area
		Provide general help
		Prohibited Practices: Adding constituent materials not in conformance with AASHTO M 157 or without Department consent
701.41: Placement	Two (2)	Localize placement to minimize moving material
		Level concrete in front of the screed
		Operate come-alongs or flat headed shovel to move concrete in form
		Consolidate concrete along form edge to avoid honeycombing
		Operate screed over top of forms in sawing action for surface leveling
		Operate magnesium bull float to push coarse aggregate below the surface and fill in the low spots or depressions
		Prohibited Practices: Toothed raking, dragging of internal vibrator, and internal vibrator to move concrete; steel troweling or floating
701.42: Initial Curing	Apply an initial curing material and procedure per 701.42	
	One (1)	701.30.C.1: Liquid-Applied Evaporation Reducers
701.43: Finishing	Two (2)	Permit bleed water to dissipate and concrete to set
		Operate a hose drag or squeegee to remove water from the surface
		Check surface for flatness, fill/cut as necessary
		Finish surface with magnesium float
		Apply pulled broom finish at proper time to acceptable texture
		Clean broom when excessive mortar adheres
		Remove excess water from broom before use
		Finish edges and joints
		Finish well formed, properly spaced joints to sufficient depth
Prohibited Practices: Steel troweling or floating; adding water to the surface; excessive working of surface; pushing broom across surface		

^[1] Recommended number of operators.

Table 701.62-2: Minimum Operator Activities (Continued)

Operation	Operators ^[1]	Activity
701.44: Intermediate Curing	If applicable, apply an intermediate curing material and procedure per 701.44	
	One (1)	701.30.C.1: Liquid-Applied Evaporation Reducers
	One (1)	701.30.E.3.a: Liquid Membrane-Forming Compounds
	One (1)	701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing
701.45: Final Curing	Apply a final curing material and procedure meeting 701.45	
	Four (4)	701.30.E.1: Saturated Covers
	Four (4)	701.30.E.2: Sheet Materials
	One (1)	701.30.E.3.a: Liquid Membrane-Forming Compounds
	One (1)	701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing
701.46: Protective Sealing	One (1)	If applicable, apply a protective sealing material and procedure per 701.46
701.47: Cold Weather Concreting	Four (4)	If applicable, apply cold weather concreting materials and procedures per 701.47 and the Department approved Contractor cold weather concreting plan
701.48: Hot Weather Concreting	Four (4)	If applicable, apply hot weather concreting materials and procedures per 701.48 and the Department approved Contractor hot weather concreting plan

^[1] Recommended number of operators.

701.63: Quality Control Inspection

Quality Control inspection shall be performed and reported on inspection report forms by qualified Quality Control Technicians, to confirm conformance to specifications and to visually inspect equipment, environmental conditions, materials, and workmanship. Quality Control Technicians shall obtain at least one of the following personnel certifications.

- NRMCA Concrete Exterior Finisher Certification
- ACI Concrete Flatwork Technician and Flatwork Finisher

Quality Control inspection report forms shall be completed by the Contractor and submitted to the Department for review.

DEPARTMENT ACCEPTANCE

701.70: General

Acceptance shall be performed by the Department, including consultants under direct contract with the Department independent of the Contractor, to evaluate the degree of compliance with contract requirements, to monitor each Contractor entity’s Quality Control activities, to determine the

corresponding value for a given product, and to determine the acceptability of all material produced and placed.

701.71: Acceptance of Contractor Quality Control Plan

The Department will review the Contractor Quality Control Plan. Department approval shall be subject to conformance with the requirements specified herein.

701.72: Acceptance Inspection

Acceptance inspection will be performed and reported by qualified Department (or designee) Acceptance Technicians, to confirm conformance to specifications and to visually inspect equipment, environmental conditions, materials, and workmanship.

701.73: Acceptance Sampling and Testing

Acceptance sampling and testing will be performed and reported by qualified Department (or designee) Acceptance Technicians, to provide quality characteristic data used for Department Acceptance determination, per the requirements specified herein.

Table 701.73-1: Minimum Acceptance Sampling and Testing Requirements

Property	Method	Quality Characteristic	Sublot Size	Minimum Test Frequency	Point of Sampling	Criteria
Uniformity	T 119	Slump Allowable Tolerance (in.) ^[1]	100 cy	1 per Sublot	Point of Discharge	Target \pm 1.5
Workability	T 119	Segregation Resistance ^[2]	100 cy	1 per Sublot	Point of Discharge	Pass
Thermal	T 309	Concrete Temperature (°F)	100 cy	1 per Sublot	Point of Discharge	50 – 90
Strength	T 22	Compressive Strength at 7 Days for Curing Termination (psi) ^[3]	100 cy	1 per Sublot	Point of Discharge	\geq 70% f'_c
		Compressive Strength at 28 Days (psi) ^[3]	100 cy	1 per Sublot	Point of Discharge	\geq 100% f'_c
		Compressive Strength at 56 Days (psi) ^{[3][4]}	100 cy	1 per Sublot	Point of Discharge	\geq 100% f'_c
Durability	T 121 T 152 T 196	Freezing and Thawing Resistance: Air Content (%)	100 cy	1 per Sublot	Point of Discharge	5.5 – 8.5
	T 303 or C1567	Alkali Silica Reaction Resistance: Expansion at 14 Days (%)	–	1 per Annual Mix Design Submission Cycle	–	\leq 0.08

^[1] Test result and the Producer's mix design target shall be within the specified allowable tolerances. Slump shall be reported on the Producer's mix design batch ticket for each delivery.

^[2] Testing for segregation resistance shall be performed while the concrete is being discharged and during AASHTO T 119 Standard Method of Test for Slump of Hydraulic Cement Concrete. Visual signs of segregation include coarse particles advancing in front of or behind the fine particles and mortar and a tendency for coarse aggregate to separate from the mortar, particularly when the mixture is being consolidated.

^[3] Three (3) 4 x 8 in. compressive strength cylinders shall be cast and tested for each age per sublot.

^[4] Testing only required if compressive strength results at 28 days do not conform with specifications.

COMPENSATION

701.80: Method of Measurement

Cement Concrete Sidewalks, Pedestrian Curb Ramps, and Driveways will be measured in square yards.

Excavation will be measured by the cubic yard as specified in 120.80: Method of Measurement.

Gravel Borrow will be measured by the cubic yard as specified in 150.80: Method of Measurement.

Fine grading and compacting will be measured by the square yard as specified in 170.88: Method of Measurement.

701.81: Basis of Payment

Cement Concrete Sidewalk, Cement Concrete Pedestrian Curb Ramp, and Cement Concrete Driveway will be paid for at the contract unit price per square yard complete in place, including detectable warning panels and all incidental materials, labor, and equipment necessary to complete the work to the satisfaction of the Engineer.

Gravel will be paid for at the contract unit price per cubic yard under Item 151: Gravel Borrow.

Fine grading and compacting will be paid for at the contract unit price per square yard under Item 170: Fine Grading and Compacting – Subgrade Areas.

Excavation will be paid for at the contract unit price per cubic yard under the excavation items.

701.82: Payment Items

701.	Cement Concrete Sidewalk.....	Square Yard
701.1	Cement Concrete Sidewalk Driveways	Square Yard
701.2	Cement Concrete Pedestrian Curb Ramp	Square Yard

GUIDE TO THE INTERIM SUBSECTION 701 CEMENT CONCRETE SIDEWALK SPECIFICATION

MATERIALS ACTIVITIES

Section	Activity	
701.30.A	Combined Aggregate System	
701.30.A.1	The mix design's combined aggregate system should meet Table 701.30-1: Tarantula Curve Particle Size Distribution.	Recommendation
701.30.A.2	The mix design's combined aggregate system should meet Table 701.30-2 / Figure 701.30-1: Shilstone Workability-Coarseness.	Recommendation
701.30.A.3	The mix design's combined aggregate system should be analyzed using the Fineness Modulus.	Recommendation
701.30.A.4	The mix design's combined aggregate system should be analyzed using the Coarse Aggregate Content.	Recommendation
701.30.B	Paste System	
701.30.B.1	The mix design's Water-Cementitious Ratio should be ≤ 0.40 (Table 701.30-3: Freezing, Thawing, and De-icing Resistance).	Recommendation
701.30.B.1	The mix design's Water-Cementitious Ratio shall be ≤ 0.45 (Table 701.30-3: Freezing, Thawing, and De-icing Resistance).	Required
701.30.B.2	The mix design's Air Content should approach the recommended Air Content Targets identified in Table 701.30-4: Freezing, Thawing, and De-icing Resistance.	Recommendation
701.30.B.3	The mix design's Cement and Supplementary Cementitious Materials (SCM) Content shall meet Table 701.30-5: Alkali Silica Reaction and Freezing, Thawing, and De-icing Resistance requirements.	Requirement
701.30.B.3	Test results meeting Table 701.30-6: Alternative Performance Evaluation to Alkali Silica Reaction Resistance requirements may be used in lieu of the mix design requirements identified in Table 701.30-5: Alkali Silica Reaction and Freezing, Thawing, and De-icing Resistance requirements.	Optional
701.30.B.4	The mix design should incorporate Chemical Admixtures identified in Table 701.30-7: Chemical Admixtures to enhance the properties of the concrete.	Recommendation
701.30.B.5	The mix design's Paste Content should approach the recommended targets identified in Table 701.30-8: Paste Content.	Recommendation

701.73 Acceptance Sampling and Testing		
T 119	The Slump shall meet Table 701.71-1: Minimum Acceptance Sampling and Testing Requirements (± 1.5 from Slump Target identified by the Concrete Producer on the Batch Ticket).	Requirement
T 119	The Segregation Resistance shall meet Table 701.71-1: Minimum Acceptance Sampling and Testing Requirements.	Requirement
T 309	The Concrete Temperature shall meet Table 701.71-1: Minimum Acceptance Sampling and Testing Requirements.	Requirement
T 22	The Compressive Strength (7, 28, and 56 days) shall meet Table 701.71-1: Minimum Acceptance Sampling and Testing Requirements.	Requirement
T 121 T 152 T 196	The Air Content shall meet Table 701.71-1: Minimum Acceptance Sampling and Testing Requirements (5.5 – 8.5%).	Requirement
T 303 or C1567	The resistance to Alkali Silica Reaction shall meet Table 701.71-1: Minimum Acceptance Sampling and Testing Requirements (One per year for mix design verification).	Requirement

CONTRACTOR ACTIVITIES

Section	Activity	
701.40	Pre-Placement	
	The Contractor should have a minimum of two (2) Operators.	Recommendation
	The Contractor shall apply sufficient base compaction.	Requirement
	The Contractor shall moisten sub-base, free of standing water.	Requirement
	The Contractor shall secure forms, straight and level.	Requirement
	The Contractor shall mark expansion locations.	Requirement
	The Contractor shall be prohibited from performing the following practices: Placement on frozen sub-grade.	Requirement
701.41	Placement (Concrete Discharging)	
	The Contractor should have a minimum of two (2) Operators.	Recommendation
	The Contractor shall direct concrete trucks.	Requirement
	The Contractor shall handle chute discharge and truck movement.	Requirement
	The Contractor shall assist in preparing concrete for testing.	Requirement
	The Contractor shall direct trucks to washout area.	Requirement
	The Contractor shall provide general help.	Requirement

	The Contractor / Concrete Producer shall be prohibited from performing the following practices: Adding constituent materials not in conformance with AASHTO M 157 or without Department consent.	Requirement
701.41	Placement	
	The Contractor should have a minimum of two (2) Operators.	Recommendation
	The Contractor shall localize placement to minimize moving material.	Requirement
	The Contractor shall level concrete in front of the screed.	Requirement
	The Contractor shall operate come-alongs or flat headed shovel to move concrete in form.	Requirement
	The Contractor shall consolidate concrete along form edge to avoid honeycombing.	Requirement
	The Contractor shall operate screed over top of forms in sawing action for surface leveling.	Requirement
	The Contractor shall operate magnesium bull float to push coarse aggregate below the surface and fill in the low spots or depressions.	Requirement
	The Contractor shall be prohibited from performing the following practices: Toothed raking, dragging of internal vibrator, and internal vibrator to move concrete; steel troweling or floating.	Requirement
701.42	Initial Curing (When Applicable)	
	The Contractor should have a minimum of one (1) Operator.	Recommendation
	The Contractor shall apply 701.30.C.1: Liquid-Applied Evaporation Reducers when applicable.	Required when applicable
701.43	Finishing	
	The Contractor should have a minimum of two (2) Operators.	Recommendation
	The Contractor shall permit bleed water to dissipate and concrete to set.	Requirement
	The Contractor shall operate a hose drag or squeegee to remove water from the surface.	Requirement
	The Contractor shall check surface for flatness, fill/cut as necessary.	Requirement
	The Contractor shall finish surface with magnesium float.	Requirement
	The Contractor shall apply pulled broom finish at proper time to acceptable texture.	Requirement
	The Contractor shall clean broom when excessive mortar adheres.	Requirement
	The Contractor shall remove excess water from broom before use.	Requirement

	The Contractor shall finish edges and joints.	Requirement
	The Contractor shall finish well formed, properly spaced joints to sufficient depth.	Requirement
	The Contractor shall be prohibited from performing the following practices: Steel troweling or floating; adding water to the surface; excessive working of surface; pushing broom across surface.	Requirement
701.44	Intermediate Curing (When Applicable, Apply One of the Methods)	
	The Contractor should have a minimum of one (1) Operator.	Recommendation
	The Contractor shall apply 701.30.C.1: Liquid-Applied Evaporation Reducers when applicable and if selected.	Required when applicable
	The Contractor shall apply 701.30.E.3.a: Liquid Membrane-Forming Compounds when applicable and if selected.	Required when applicable
	The Contractor shall apply 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing when applicable and if selected.	Required when applicable
701.45	Final Curing (Apply One of the Methods)	
	The Contractor should meet the minimum number of operators identified in Table 701.62-2: Minimum Operator Activities.	Recommendation
	The Contractor shall apply 701.30.E.1: Saturated Covers if selected.	Requirement
	The Contractor shall apply 701.30.E.2: Sheet Materials if selected.	Requirement
	The Contractor shall apply 701.30.E.3.a: Liquid Membrane-Forming Compounds if selected.	Requirement
	The Contractor shall apply 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing if selected.	Requirement
701.46	Protective Sealing (If Required)	
	The Contractor should have a minimum of one (1) Operator.	Recommendation
	The Contractor shall apply 701.30.F: Protective Sealing Compounds at least 28 days after placement. Application of 701.30.F: Protective Sealing Compounds is NOT REQUIRED IF 701.30.E.3.b: Liquid Membrane-Forming Compounds for Curing and Sealing was applied.	Required if 701.30.E.3.b Curing and Sealing Compound was Not Applied
701.47	Cold Weather Concreting (When Applicable)	
	The Contractor should have a minimum of four (4) Operators.	Recommendation
	The Contractor shall submit a Cold Weather Concreting Plan meeting 701.47.	Required when applicable

	The Contractor shall apply cold weather concreting materials and procedures meeting 701.47 and the Department approved Contractor cold weather concreting plan.	Required when applicable
701.48	Hot Weather Concreting (When Applicable)	
	The Contractor should have a minimum of four (4) Operators.	Recommendation
	The Contractor shall submit a Hot Weather Concreting Plan meeting 701.48.	Required when applicable
	The Contractor shall apply hot weather concreting materials and procedures meeting 701.47 and the Department approved Contractor hot weather concreting plan.	Required when applicable
701.61	Contractor Quality Control Plan	
	The Contractor shall prepare and submit a Quality Control Plan (QC Plan) to the Department for review.	Requirement
701.62	Production Personnel	
701.62.A	Foreman	
	The Contractor shall have a minimum of One (1) Foreman.	Requirement
	A Foreman shall be present throughout the entire duration of the construction operation with at least one of the following personnel certifications. <ul style="list-style-type: none"> • NRMCA Concrete Exterior Finisher Certification • ACI Concrete Flatwork Technician and Flatwork Finisher 	Requirement
	The Contractor's Foreman shall review and compare batch ticket quantities and sources to approved mix design.	Requirement
	The Contractor's Foreman shall monitor conformance to AASHTO M 157 Standard Specification for Ready-Mixed Concrete.	Requirement
	The Contractor's Foreman shall monitor conformance to Department specifications.	Requirement
	The Contractor's Foreman shall monitor Production Personnel activities.	Requirement
	The Contractor's Foreman shall verify that proper equipment is on hand prior to start of construction.	Requirement
	The Contractor's Foreman shall monitors equipment, environmental conditions, materials, and workmanship.	Requirement
	The Contractor's Foreman shall prohibit the use of prohibited equipment and practices.	Requirement
	The Contractor's Foreman shall acknowledge sampling, testing, and inspection results.	Requirement

701.62.B	Operators	
	Concrete sidewalk shall be constructed by sufficiently staffed, trained, experienced, and qualified equipment operators and craftsmen, who are presently involved in sidewalk construction, throughout the entire duration of the construction operation, per the requirements specified in Sections 701.40 to 701.48.	Requirement
701.63	Quality Control Inspection	
	<p>Quality Control inspection shall be performed and reported on inspection report forms by qualified Quality Control Technicians, to confirm conformance to specifications and to visually inspect equipment, environmental conditions, materials, and workmanship. Quality Control Technicians shall obtain at least one of the following personnel certifications.</p> <ul style="list-style-type: none"> • NRMCA Concrete Exterior Finisher Certification • ACI Concrete Flatwork Technician and Flatwork Finisher <p>Quality Control inspection report forms shall be completed by the Contractor and submitted to the Department for review</p>	Requirement

DOCUMENT 00715



SUPPLEMENTAL SPECIFICATIONS

SEPTEMBER 30, 2024

The 2024 *Standard Specifications for Highways and Bridges* are amended by the following modifications, additions and deletions. These Supplemental Specifications prevail over those published in the Standard Specifications.

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

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

DIVISION I

GENERAL REQUIREMENTS AND COVENANTS

SECTION 1: DEFINITION OF TERMS

Subsection 1.03: Defined Terms

Under Part of the First Part replace the words Chapter 90 of the General Laws with MGL Chapter 6C, Section 4[b].

SECTION 2: PROPOSAL REQUIREMENTS AND CONDITIONS

Subsection 2.01: Proposal Forms and Plans

Replace the first paragraph under A. Prequalification Prior to Requesting Proposal Forms with the following:

Subject to the requirements of M.G.L. Chapter 81, Section 8B, each prospective Bidder proposing to bid on any work, excepting the construction, reconstruction, repair or alteration of buildings, to be awarded by the Department or by a municipality under the provisions of M.G.L. Chapter 6C, Section 4(b) must be prequalified in accordance with 700 CMR 14.00 Prequalification of contractors and subcontractors, if the amount of the proposal added to the value of the uncompleted work already under contract with the Department will aggregate \$50,000 or more.

Replace the second paragraph under B. Issuance of Proposal Forms and Plans with the following:

For projects to be awarded under the provisions of M.G.L. Chapter 6C, Section 4(b), bidders may obtain plans and specifications from the applicable municipality at the place specified in the Notice to Contractors.

SECTION 4: SCOPE OF WORK

Subsection 4.04: Changed Conditions

Replace the last paragraph with the following.

The provisions of Section 39N of Chapter 30 of the General Laws, as amended, do not apply to construction contracts entered into on behalf of a municipality under the provisions of M.G.L. Chapter 6C, Section 4(b).

Subsection 4.06: Increased or Decreased Contract Quantities

Replace the second paragraph with the following.

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

SECTION 9: MEASUREMENT AND PAYMENT

Subsection 9.03: Payment for Extra Work

Replace paragraph B., (2) with the following.

- (2) Plus 13 percent of direct labor, for the actual 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, ~~and~~ 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.

Subsection 9.04: Partial Payments

Replace the last sentence of the first paragraph with the following;

No such estimates or payment shall be required to be made when, in the Engineer's judgment, the work is not proceeding in accordance with the provisions of the Contract, or when in their judgment the total value of the work completed since the last estimate amounts to less than \$5,000.00.

DIVISION II

CONSTRUCTION DETAILS

DIVISION II: Construction Details

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

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

SUBSECTION 150: EMBANKMENT

Subsection 150.62: Embankment Construction with Materials Other Than Rock

Replace the fourth paragraph with the following.

The embankment materials shall be compacted to not less than 95% of the maximum dry density of the embankment material as determined by AASHTO T 99, Method C. If required, a correction for oversized particles shall be in accordance with Annex A of AASHTO T 99. If the material retained on the $\frac{3}{4}$ -in. sieve is 30% or more of the total sample, this test shall not apply and the material shall be compacted to the target density. The target density shall be established by determining the number of passes of a roller required to produce a constant and uniform density, after conducting a series of tests using either AASHTO T 310, *In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)*, AASHTO T 191, *Density of Soil In-Place by the Sand-Cone Method*, or *ASTM D 8167 Standard Test Method for In-Place Bulk Density of Soil and Soil-Aggregate by a Low-Activity Nuclear Method (Shallow Depth)*. The Contractor shall, without additional compensation, employ whatever measures may be necessary to adjust the natural water content of the suitable embankment material to permit the placement and compaction as hereinbefore specified.

SUBSECTION 160: CONTROLLED LOW-STRENGTH MATERIAL

Subsection 160: Controlled Low-Strength Material

Add this new subsection.

DESCRIPTION

160.20: General

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

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

MATERIALS

160.40: General

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

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

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

CONSTRUCTION METHODS

160.60: General

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

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

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

COMPENSATION

160.80: Method of Measurement

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

160.81: Basis of Payment

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

160.82: Payment Items

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

SECTION 200: DRAINAGE

SUBSECTION 201: BASINS, MANHOLES AND INLETS

Subsection 201.40: General

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

SECTION 400: SUB-BASE, BASE COURSES, SHOULDERS, PAVEMENTS AND BERMS

SUBSECTION 401: GRAVEL SUB-BASE

Subsection 401.60: Gravel Sub-base

Replace the last sentence of the first paragraph with the following.

The specific density of the Gravel Sub-base shall be maintained by determining the number of passes of a roller required to produce a constant and uniform density, after conducting a series of tests using a nuclear device or the sand/volume method in accordance with AASHTO T310, AASHTO T 191, or ASTM D 8167.

SUBSECTION 402: DENSE GRADED CRUSHED STONE FOR SUB-BASE

Subsection 402.61: Spreading and Compacting

Replace the last sentence of the first paragraph with the following.

The specified density of the Dense Graded Crushed Stone shall be maintained by determining the number of passes of a roller are required to produce a constant and uniform density, after conducting a series of tests using a nuclear device or the sand/volume method in accordance with AASHTO T310, AASHTO T 191, or ASTM D 8167.

SUBSECTION 403: RECLAIMED PAVEMENT FOR BASE COURSE AND/OR SUB-BASE

Subsection 403.64: Compaction and Dust Control

Replace the second paragraph with the following.

The reclaimed base course shall be tested for compaction and smoothness and accuracy of grade in accordance with the applicable provisions of 401.60: Gravel Sub-base. The required density shall be measured by using a nuclear device or the sand/volume method in accordance with AASHTO T310, AASHTO T 191, or ASTM D 8167. If any portions are found to be unacceptable by the Engineer, such portions shall be reprocessed, regraded, and recompacted until the required smoothness and accuracy are obtained.

SUBSECTION 404: RECLAIMED PAVEMENT BORROW MATERIAL

Subsection 404.60: General

Replace the second sentence with the following.

The specified density of the Reclaimed Pavement Borrow Material shall be maintained by determining the number of passes of a roller that are required to produce a constant and uniform density, after conducting a series of tests using a nuclear device or the sand/volume method in accordance with AASHTO T310, AASHTO T 191, or ASTM D 8167

SUBSECTION 450: HOT MIX ASPHALT PAVEMENT

Subsection 450.40: General

Add the following paragraph to the end of this subsection.

Prior to placing hot mix asphalt the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, HMA tonnage, the type of mix, the mix provider and plant location.

SUBSECTION 460: HOT MIX ASPHALT PAVEMENT FOR LOCAL ROADS

Subsection 460.40: General

Add the following paragraph to the end of this subsection.

Prior to placing hot mix asphalt the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, HMA tonnage, the type of mix, the mix provider and plant location.

SUBSECTION 466: STRESS ABSORBING MEMBRANE & STRESS ABSORBING MEMBRANE INTERLAYER

Subsection 466.40: General

Replace this subsection with the following.

Prior to placing stress absorbing membrane the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, tonnage, the type of mix, the mix provider and plant location. Stress absorbing membrane and stress absorbing membrane interlayer shall be constructed as specified herein.

SUBSECTION 470: HOT MIX ASPHALT PAVEMENT BERM

Subsection 470.40: General

Replace this subsection with the following.

Prior to placing hot mix asphalt the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, HMA tonnage, the type of mix, the mix provider and plant location. The Contractor shall obtain HMA berm material of the type specified.

SUBSECTION 472: TEMPORARY ASPHALT PATCHING

Subsection 472.40: General

Add the following paragraph to the beginning of this subsection.

Prior to placing hot mix asphalt the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, HMA tonnage, the type of mix, the mix provider and plant location.

SUBSECTION 486: ULTRATHIN BONDED OVERLAY

Subsection 486.40: General

Add the following paragraph to the end of this subsection.

Prior to placing ultrathin bonded overlay the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, tonnage, the type of mix, the mix provider and plant location.

SECTION 600: HIGHWAY GUARD, FENCES AND WALLS

SUBSECTION 690: WALLS REMOVED AND RESET

Subsection 690.40: General

Replace the last sentence with the following.

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

SECTION 700: INCIDENTAL WORK

SUBSECTION 702: HOT MIX ASPHALT SIDEWALKS AND DRIVEWAYS

Subsection 702.40: General

Add the following paragraph to the end of this subsection.

Prior to placing hot mix asphalt the contractor shall provide notice to the Engineer at least 48 hours in advance of the work. The notice shall include the anticipated schedule, HMA tonnage, the type of mix, the mix provider and plant location.

SECTION 800: TRAFFIC CONTROL DEVICES

SUBSECTION 825: RECTANGULAR RAPID FLASHING BEACONS

Subsection 825: Rectangular Rapid Flashing Beacons

Add this new subsection.

DESCRIPTION

825.20: General

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

MATERIALS

825.40: General

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

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

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

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

The Contractor shall supply cement concrete foundations per the Plans.

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

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

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

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

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

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

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

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

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

825.41: Shop Drawings

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

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

825.42: Material Warranties

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

CONSTRUCTION METHODS

825.60: General

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

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

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

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

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

Solar panels shall be oriented to maximize sunlight gain.

SYSTEM OPERATION

825.70: APS Pushbuttons

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

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

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

825.71: Light Bar

The Light Bar shall remain dark until actuated.

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

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

- A. The yellow beacon on the left-hand side shall be illuminated for approximately 50 milliseconds.
- B. Both yellow beacons shall be dark for approximately 50 milliseconds.
- C. The yellow beacon on the right-hand side shall be illuminated for approximately 50 milliseconds.
- D. Both yellow beacons shall be dark for approximately 50 milliseconds.
- E. The yellow beacon on the left-hand side shall be illuminated for approximately 50 milliseconds.
- F. Both yellow beacons shall be dark for approximately 50 milliseconds.
- G. The yellow beacon on the right-hand side shall be illuminated for approximately 50 milliseconds.
- H. Both yellow beacons shall be dark for approximately 50 milliseconds.
- I. Both yellow beacons shall be illuminated for approximately 50 milliseconds.
- J. Both yellow beacons shall be dark for approximately 50 milliseconds.
- K. Both yellow beacons shall be illuminated for approximately 50 milliseconds.
- L. Both yellow beacons shall be dark for approximately 250 milliseconds.

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

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

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

COMPENSATION

825.80: Method of Measurement

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

825.81: Basis of Payment

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

825.82: Payment Item

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

SECTION 900: STRUCTURES

Subsection 922: Elastomeric Bearing Pads

Add this new subsection.

SUBSECTION 922: ELASTOMERIC BEARING PADS

DESCRIPTION

922.20: General

This specification consists of the construction requirements for elastomeric bearing pads. Elastomeric bearing pads shall consist of plain or laminated bearings consisting of layers of elastomers restrained at their interfaces by bonded steel laminates.

MATERIALS

922.40: General

Elastomeric bearing pads shall meet the following requirements:

Elastomeric Bearing Pads	M9.14.5
Anchor bolts	M8.01.5

CONSTRUCTION METHODS

922.50: Submittals

The Contractor shall submit the following to the Engineer for approval:

1. Prior to fabrication:
 - a. Written notification 30 days prior to the start of bearing production. The notification shall include the contract number, quantity, type, and size of bearing being produced, manufacturer’s name, and the name of the independent testing lab.
 - b. Shop drawings for approval in accordance with Subsection 5.02, 14 days prior to the start of bearing production.
2. At the time of bearing pad delivery:
 - a. A certificate of compliance (COC) certifying that the elastomeric bearing pads meet the requirements of the contract specifications. The COC shall be accompanied by:
 - A mill certificate for steel laminates used in bearings, where applicable.
 - Fabricator QC test reports.
 - b. Independent test results as required under Subsection 922.62.

922.51: Fabricators

Fabricators shall be in accordance with Subsection M9.14.5D.

922.52: Fabrication

Fabrication shall be in accordance with Subsection M9.14.5E.

In addition to the number of bearing pads required for the contract the Contractor shall order additional bearing pads as defined in Subsection M9.14.5G, in order to allow the Engineer to randomly select a bearing pad for testing in accordance with 922.72.

922.53: Packaging, Handling, & Storage

The bearing pads shall be packaged, handled, and stored in accordance with Subsection M9.14.5F.

All bearing devices and components shall be stored on the project in an area that provides protection from environmental and physical damage. When installed, bearings shall be clean and free of all foreign substances.

922.54 Installation

Bearing pads shall be installed only on concrete bridge seat bearing areas that have been prepared in accordance with Subsection 901.65A(3).

Bearing pads shall be installed by qualified personnel to the positions, elevations, and slopes shown on the plans and to the dimensions and offsets prescribed by the manufacturer. The bearing pads shall be adjusted, as necessary, to take into account the ambient temperature at installation and future movements of the bridge due to temperature changes, release of falsework, and shortening due to post-tensioning.

Elastomeric bearings shall be placed directly on the concrete surface provided that it is flat within the bearing area to within a tolerance of 0.005 times the smallest nominal dimension of the bearing as measured by a straight edge from peak to valley. Bearings shall be placed on surfaces that do not deviate from the specified bridge seat slope in any direction by more than 0.01 rad.

Any bearing areas that exceed these tolerances shall be brought into compliance by grouting or use of shims as directed by the Engineer before the weight of the structure acts on the bearing.

Bearings that have an internal tapered load plates shall be marked with an arrow that points up-station in order to properly align the slope of the internal tapered load plate with the centerline of the bridge.

Sole plates that sit on the bearing shall not be welded to the beam flange in the field unless at least 1.5 in. of the steel exists between the weld and the elastomer. In no case shall the elastomer or the bond be subjected to temperatures higher than 400°F.

No beams shall be erected until the bearings have been accepted by the Engineer.

CONTRACTOR QUALITY CONTROL

922.60: General

The Contractor shall provide a Quality Control System (QC System) to ensure that all materials and workmanship meet the required specifications.

922.61: Quality Control Inspection

The Contractor shall perform QC inspection of all work items addressed under this specification. Inspection activities during placement may be performed by qualified production personnel. The Contractor's QC personnel shall have overall responsibility for the QC inspection. The Contractor shall not rely on the results of the Engineer's Acceptance inspection for QC purposes. The Engineer shall be provided with the opportunity to monitor and witness all QC inspections.

QC inspection activities must address the following three primary components:

- a. Materials
- b. Environmental Conditions
- c. Workmanship

The minimum frequency of QC inspection activity shall be in accordance with the requirements below.

Table 922.61-1 - Minimum QC Inspection of Elastomeric Bearing Pads

Inspection Component	Inspection Attribute	Minimum Inspection Frequency	Point of Inspection	Inspection Method
Materials	Bearing Pad	Each Delivery	Bearing Pad	Check COC
	Geometry and Surface	Each Bearing Pad	Bearing Pad Surface	Visual Check & Check Measurement
Environmental Conditions	Temperature of Air	1 per Day	At Project Site	Check Measurement
Workmanship	Bridge Seat	Each Bearing Location	Bearing Pad Location	Visual Check
	Elevation	Each Bearing Pad	Bearing Pad Location	Check Measurement
	Orientation	Each Bearing Pad	Bearing Pad Location	Check Measurement

922.62: Quality Control Sampling and Testing Requirements

The Contractor shall have each Lot of bearing pads sampled and tested in accordance with Subsection M9.14.5G. This shall include both QC and compliant independent laboratory test results.

DEPARTMENT ACCEPTANCE

922.70: General

The Department shall sample and test bearing pads as part of its Acceptance activities. Independent testing shall also be used to supplement its testing.

922.71: Acceptance Inspection

The Engineer will perform Acceptance inspection to ensure that materials and completed work are in conformance with the contract requirements. Acceptance inspection is intended to visually assess the quality of each Lot produced and placed and will address only the inspection components of materials and workmanship in support of the Department's final Acceptance determination. All Acceptance inspection activities by the Department will be performed independent of the Contractor's QC inspection.

Table 922.71-1 – Department Acceptance Inspection of Elastomeric Bearing Pads

Inspection Component	Inspection Attribute	Minimum Inspection Frequency	Point of Inspection	Inspection Method
Materials	Bearing Pad	1 Per Bearing Pad	Bearing Pad Surface	Check COC
	Geometry and Surface	1 Per Bearing Pad	Bearing Pad Surface	Visual Check & Check Measurement
Workmanship	Elevation	1 per Bearing Pad	Bearing Pad Location	Check Measurement
	Orientation	1 per Bearing Pad	Bearing Pad Location	Check Measurement

922.72: Acceptance Sampling and Testing Requirements

For Acceptance samples taken by the Engineer at the project, the sampling rate shall be in accordance with Subsection M9.14.5G. Bearing pads shall be tested by the Department in accordance with Table M9.14.5-1.

922.73: Lot Acceptance Determination Based on Inspection Results

The Engineer's Acceptance inspection results will be used in the final Acceptance determination for all Lots. Prior to final Acceptance of each Lot produced and placed, the Engineer will evaluate all Acceptance inspection information for the Lot. The materials and product workmanship for the completed work will be evaluated for conformance with the plans and the requirements specified in Subsections 922.60, 922.61, and 922.62.

When the Acceptance information identifies deficiencies in either material quality or product workmanship, the location will be isolated and further evaluated by the Engineer through additional Acceptance inspection. Depending upon the findings of the additional Acceptance inspection activity, the Engineer will determine the disposition of the nonconforming work in accordance with Division I, Subsection 5.03, Conformity with Plans and Specifications.

922.74: Lot Acceptance Determination Based on Testing Data

Prior to final Acceptance of each Lot, the Engineer will evaluate all available QC, independent, and Acceptance testing data for the Lot to determine conformance with the minimum requirements in Subsection M9.14.5G and Table M9.14.5-1.

If a test result does not meet the minimum requirement, the Contractor and Engineer will further assess the quality to determine whether the material can remain in place.

If the Engineer's assessment determines that the material quality is not sufficient to permit the bearing pad to remain in place, the pad shall be removed and replaced. When a nonconforming bearing pad is corrected or replaced, the Engineer will perform Acceptance testing of the replacement bearing pad and evaluate the test results for conformance with the minimum requirements.

922.75: Final Lot Acceptance Determination

For each Lot produced and placed, the Engineer will evaluate all Acceptance inspection and testing data for the Lot. The final review and visual inspection shall be conducted jointly by the Contractor and Engineer. Any items that do not meet the requirements of the specifications and plans shall be addressed at this time, at no additional cost to the Department.

After each Lot is complete, including any corrective action, the Engineer will perform a final evaluation of all Acceptance data for the Lot. The Engineer will accept the Lot if the evaluation of all inspection and testing data for the Lot is in conformance with this specification and the contract documents.

When the above requirements have been met, the Engineer will accept all completed bearing pads.

COMPENSATION

922.80: Method of Measurement

Laminated Elastomeric Bearing Pads will be measured by each pad installed. Plain Elastomeric Bearing Pads will be measured by the square foot installed. The measured quantities do not include the additional bearings required for conformance and destructive testing.

922.81: Basis of Payment

Payment under this item shall be at the contract unit price. This price will include all materials, equipment, tools and labor, additional bearing pads for testing and all required testing necessary to complete the work.

922.82: Payment Items

- 921. Laminated Elastomeric Bearing Pad with Anchor Bolts Each
- 922. Laminated Elastomeric Bearing Pad without Anchor Bolts Each
- 923. Laminated Sliding Elastomeric Bearing Pad with Anchor Bolts Each
- 933. Plain Elastomeric Bearing Pad Square Foot

SECTION 970: DAMP-PROOFING

Subsection 970.30: General

Add the following material to this subsection.

Mortar..... M4.04.0

Subsection 970.40: General

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

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

SUBSECTION 983: REVETMENT

Subsection 983.64 Special Slope Paving Under Bridges

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

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

Subsection 983.65 Channel Paving and Grouted Channel Paving

Replace the last sentence with the following.

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

DIVISION III
MATERIALS SPECIFICATIONS

SECTION M4: CEMENT AND CEMENT CONCRETE MATERIALS

Subsection M4.02.00 Cement Concrete

Add the following to the end of this subsection.

Alkali Silica Reactivity - Resistant Portland Cement Concrete

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

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

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

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

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

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

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

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

Subsection M4.02.15 Cement Mortar

Delete this subsection.

Subsection M4.04.0: Grout, Mortar and Concrete Products

Replace this subsection with the following.

M4.04.0: Grout, Mortar, and Concrete Products

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

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

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

A. Technical Data Sheet.

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

- (a) Product Name
- (b) Manufacturer, including address and contact information
- (c) Packaging
- (d) Yield
- (e) Product Description, including an overview of the product and its intended application(s) and use(s).

- (f) Technical Data, including quality characteristics and corresponding performance criteria with the AASHTO and/or ASTM standard test methods identified.
- (g) Recommended Equipment
- (h) Instructions, including surface preparation, mixing, forming, placing, finishing, curing, and protection from adverse conditions, such as precipitation, cold conditions, and hot conditions.
- (i) Limitations
- (j) Storage and Shelf Life
- (k) Safety

B. Mix Design Formulation.

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

C. Product Verification Testing.

Verification test results shall be within the limits specified herein.

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

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

M4.04.2: Rapid Hardening Cementitious Mortar and Concrete Products

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

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

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

Table M4.04.2-2: Verification Testing Requirements

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

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

M4.04.3: Mortar Products for Unit Masonry

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

M4.04.4: Grout Products for Unit Masonry

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

M4.04.5: Non-Shrink Grout Products

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

SECTION M5: PIPE, CULVERT SECTIONS AND CONDUIT

Subsection M5.01.0: Joint Material for Pipe

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

SECTION M8: METALS AND RELATED MATERIALS

Subsection M8.18.1: Traffic Signal Supports

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

SECTION M9: MISCELLANEOUS MATERIALS

Subsection M9.14.5: Elastomeric Bridge Bearing Pads

Replace this subsection with the following:

M9.14.5: Elastomeric Bearing Pads**A. General Requirements**

Elastomeric bearing pads shall be plain or laminated. They shall meet the applicable requirements of AASHTO M 251, the MassDOT Bridge Manual, and the AASHTO LRFD Bridge Design and Construction Specifications. The type of bearing will be specified on the plans.

Laminated elastomeric bearing pads consist of layers of elastomers restrained at their interfaces by bonded metal laminates.

B. Material Requirements

Plain elastomeric bearing pads shall consist of elastomer.

Laminated elastomeric bearing pad shall consist of:

- Elastomer
- Internal Steel Laminates
- Tapered Internal Load Plates (if used)

The components of the elastomeric bearing pad shall conform to AASHTO M 251 and the following:

- The elastomer compound shall be 100% virgin neoprene and classified as being of low-temperature grade 3.
- The steel laminates shall meet the requirements of ASTM A 1011 Grade 36 or higher

C. Material Qualification

Elastomeric bearing pads shall be approved on a project basis. The Contractor shall furnish to the Research and Materials Section certified independent test reports demonstrating conformance. All testing shall be performed by the same independent lab in accordance with Subsection M9.14.5G.

D. Fabricators

Bearing shall be fabricated by a fabricator listed on the MassDOT Qualified Construction Materials List (QCML).

E. Fabrication

Fabrication shall not begin until the shop drawings have been approved and the Department has an inspector at the fabricator's facility.

The shop drawings shall specify bearing dimensions as shown on the plans and, where applicable, shall include:

- Elastomer thickness and edge cover,
- Number and thickness of steel reinforcing laminates,
- Dimensions of load plates (if any),
- Design shear modulus of the elastomer shall be as shown on the Plans.

Plain elastomeric bearing pads shall be fabricated and tested in accordance with the "Method A" design outlined in the AASHTO LRFD Bridge Design Specifications.

Laminated elastomeric bearing pads shall be fabricated and tested in accordance with the "Method B" design outlined in the AASHTO LRFD Bridge Design Specifications.

The manufacturer shall designate the bearings in each Lot, as described in Subsection M9.14.5G, and certify that each bearing in the Lot was manufactured in a reasonably continuous manner from the same batch of elastomer and cured under the same conditions. In addition, the manufacturer shall certify that each bearing in the Lot satisfies the requirements of this specification, AASHTO M 251, the AASHTO LRFD Bridge Construction Specifications, and the contract plans and documents.

The tolerances on the overall dimensions for the bearings shall be according to Table 2 of AASHTO M 251, except that the tolerance on the overall vertical dimension shall be limited to 0, +1/8" regardless of the design thickness.

All steel included in the final bearing product must conform to Buy America Requirements.

F. Packaging, Handling, & Storage

The bearing pads shall be packaged, handled, and stored as specified below:

Prior to shipment from the point of manufacture, bearings shall be packaged in such a manner to ensure that during shipment and storage the bearings will be protected against damage from handling, weather, or any normal hazard. Each completed bearing shall have its components clearly identified, be securely bolted, strapped, or otherwise fastened to prevent any relative movement, and be marked on its top as to location and orientation in each structure in the project in conformity with the contract documents.

Each elastomeric bearing shall be marked in indelible ink or flexible paint. The marking shall consist of the order number, lot number, bearing identification number, and elastomer type and grade per AASHTO M 251. For bearing pads fabricated with a tapered internal load plate, a 1/32" deep direction arrow shall be inscribed into the bearing which will allow the bearing to be aligned with the up-station direction. All marks shall be permanent and be visible after the bearing is installed.

G. Testing Requirements

Quality Control System

Fabricators shall perform Quality Control (QC) testing in accordance with their quality system. QC test reports shall accompany the bearing pads when delivered to the project.

Acceptance System

MassDOT will evaluate the fabricator's quality system and QC test reports. It will also perform its own testing and verify the independent laboratory's test reports, if applicable.

Lot Sizes

Sampling of bearing pads for testing shall be random and performed on a Lot basis. A Lot of bearings shall be a group of 100 or fewer bearings that are:

- For a single contract,
- Cured under the same conditions,
- The same size and configuration,
- Manufactured in a reasonably continuous manner from the same batch of elastomer.

Testing of Plain Bearings

Testing Laboratory

Plain elastomeric bearing pads shall be tested by both an independent laboratory and MassDOT:

- Independent testing shall be performed by a nationally recognized third-party laboratory approved by the Research & Materials Section.
- Acceptance testing shall be performed by the Research and Materials.

Sampling Frequency

Each Lot of plain bearings shall be randomly sampled for testing. The Contractor shall ensure that the fabricator produces the additional bearings required for testing.

Samples for independent testing shall be selected by the fabricator. The sampling rate for the independent

testing shall be as follows:

- Lot sizes less than 10 bearings – One full-size bearing per Lot.
- Lot sizes greater than or equal to 10 bearings – Two full-size bearings per lot.

Samples for Acceptance testing shall be selected by the Engineer. The sampling rate for Acceptance testing shall be one bearing pad per lot.

Testing Requirements

The laboratory shall test the bearings in accordance with Sections 8 and 9 of AASHTO M 251 as specified below:

1. Dimensions per Section 8.4.
2. Elastomer per Section 8.6.
 - The hardness, tensile strength, and ultimate elongation shall be in accordance with Table 1 of AASHTO M 251.
3. Test procedures per Section 8.9.
 - Heat resistance per Section 8.9.3.

Testing of Laminated Bearings

Testing Laboratory

Laminated elastomeric bearing pads shall be tested by both an independent laboratory and MassDOT:

- Independent testing shall be performed by a nationally recognized third-party laboratory approved by the Research & Materials Section.
- Acceptance testing shall be performed by the Research and Materials.

Sampling Frequency

Each Lot of laminated bearings shall be randomly sampled for testing. The Contractor shall ensure that the fabricator produces the additional bearings required for testing.

Samples for independent testing shall be selected by the fabricator. The sampling rate for the independent testing shall be as follows:

- Lot sizes less than 10 bearings – One full-size bearing per Lot.
- Lots sizes greater than or equal to 10 bearings:
 - One full-size bearing per every twenty per lot, or a minimum of two bearings.
 - The number of laminated bearings to sample shall be determined by taking the Lot size divided by 20. If the integer part of this calculation is 0 or 1, then two bearings shall be sampled. For example, if the lot size is 58 laminated bearings, two bearings shall be sampled; if the lot size is 65, three bearings shall be sampled; and if the lot size is 22, two bearings shall be sampled.

Samples for Acceptance testing shall be selected by the Engineer. The sampling rate for Acceptance testing shall be one bearing pad per lot.

Testing Requirements

Testing of the bearings shall be in accordance with Sections 8 and 9 of AASHTO M 251 as specified below:

1. Dimensions per Section 8.4.
2. Elastomer per Section 8.6.
 - The hardness, tensile strength, and ultimate elongation shall be in accordance with Table 1 of AASHTO M 251.
3. Compressive strain at the maximum design dead plus live service compressive load per Section 8.8.1.1.

- The compressive deflection, as determined per Section 9.1., between the two loadings for each bearing tested shall not exceed 10%.
- 4. Bond via Compressive Load per Section 8.8.2.2.
- 5. Shear Modulus of the elastomer per Section 8.8.3.
 - Shear modulus shall meet the requirements on the plans.
- 6. Test procedures per Section 8.9.
 - a. Additional Low Temperature Shear Modulus testing per Section 8.9.1.
 - b. Heat resistance per Section 8.9.3.
 - c. Compression set per Section 8.9.4.
 - d. Creep per Section 8.9.5.
 - The percent creep shall be less than 35%.
 - e. Long Term Compression per Section 8.9.6.

Table M9.14.5-1: Department Acceptance Testing of Elastomeric Bearing Pads

Quality Characteristic	Test Method	Requirement
Hardness	ASTM D2240	From Independent Test Results ± 5 Pts
Tensile Strength	ASTM D412	≥ 2250 psi
Ultimate Elongation	ASTM D412	Minimum Elongation Based on Durometer according to AASHTO M 251 Table 1
Shear Modulus (see Note 1)	ASTM D4014	Specified Value ± 15%
After Heat Aging for 70 Hours at 100°C (Maximum Change from Unaged Testing)		
Hardness	ASTM D573	Hardness + 15 Pts
Tensile Strength	ASTM D573	Tensile Strength - 15%
Ultimate Elongation	ASTM D573	Ultimate Elongation - 40%
Note 1: Test is only required for laminated elastomeric bearing pads.		

SECTION M10: TRAFFIC CONTROL DEVICES

Subsection M10.05.0: Traffic Signal Structures (General)

Add this new subsection.

M10.05.0: Traffic Signal Structures (General)

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

Subsection M10.05.1: Signal Posts and Bases

Add this new subsection.

M10.05.1: Signal Posts and Bases

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

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

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

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

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

1. DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2. DBE PARTICIPATION

a. Goal

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

Design-Bid-Build Projects: DBE Participation Goal 16 %
(One half of this goal shall be met in the form of Subcontractor construction activity)

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

b. Bidders List

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

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

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

3. CONTRACTOR ASSURANCES

No Contractor or any Subcontractor shall discriminate on the basis of race color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in all respects and as applicable prior to, or subsequent to, award of U.S. DOT assisted Contracts. The Contractor agrees to affirmatively seek out and consider DBE firms as Contractors, Subcontractors, and/or suppliers of materials and services for this Contract. No Contract will be approved until MassDOT has reviewed Bidders'/Contractors' affirmative actions concerning DBEs. Failure to carry out these requirements is a material breach of this Contract which may result in the termination of the Contract or such other remedy as MassDOT or FHWA deem appropriate.

4. REQUIRED SUBCONTRACT PROVISIONS

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

5. ELIGIBILITY OF DBES

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

a. Massachusetts DBE Directory

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

Contractors are encouraged to make use of the DBE Directory maintained by SDO on the Internet.

This listing is updated daily and may be accessed at the SDO's website at:

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

b. DBE Certification

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

c. Joint Venture Approval

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

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

6. COUNTING DBE PARTICIPATION TOWARDS DBE PARTICIPATION GOALS

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

a. Commercially Useful Function

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

b. Counting Participation Toward The Contract Participation Goal

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

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

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

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

c. Joint Check Policy

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

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

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

Other factors MassDOT may consider:

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

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

d. Joint Check Procedure(s)

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

7. AWARD DOCUMENTATION AND PROCEDURES

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

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

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

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

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

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

8. COMPLIANCE

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

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

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

n. Prompt Payment.

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

9. SANCTIONS

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

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

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND CONFIDENTIALITY.

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

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

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

11. LIST OF ADDITIONAL DOCUMENTS.

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

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

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

ATTACHMENTS

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

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

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

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

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

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

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

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

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

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

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

6. Training and Promotion:

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

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

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

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

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

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

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

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

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

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

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

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

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

10. Assurances Required:

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

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

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

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

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

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

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

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

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

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

III. NONSEGREGATED FACILITIES

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

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

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

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

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

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

1. Minimum wages (29 CFR 5.5)

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

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

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

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

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

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

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

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

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

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

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

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

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

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

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

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

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

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

2. Withholding (29 CFR 5.5)

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

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901–3907](#).

3. Records and certified payrolls (29 CFR 5.5)

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

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

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

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

b. Certified payroll requirements (1) Frequency and method of submission. The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

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

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

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

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

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

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

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

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

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

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

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

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

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

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

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

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

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

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

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

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

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

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

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

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

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

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

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

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

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

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

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

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

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

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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

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

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

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

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

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

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

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

- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

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

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

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

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

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

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

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

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

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

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

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

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

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

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

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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

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

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

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

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

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

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

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

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

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

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

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

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

1. Instructions for Certification – First Tier Participants:

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

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

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

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

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

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

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

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

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

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

* * * * *

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

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

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

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

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

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

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

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

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

3. Instructions for Certification - Lower Tier Participants:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

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

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

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

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

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

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

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

XII. USE OF UNITED STATES-FLAG VESSELS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DOCUMENT 00811

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

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

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

Base Price

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

Period Price

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

Price Adjustment Determination, Calculation and Payment

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

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

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

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

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

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

***** 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

March 19, 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	\$4.44
19	ASTM A240 Type 316 Stainless Steel	\$4.44
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	\$1.52
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. 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: 129633 Project No. 609516 Federal Aid No.: NHP(NHS)-0954(006)X

Location: BURLINGTON

Project Description: Improvements at I-95 (Route 128)/Route 3 Interchange

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



MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

Proposal No. 609516-129633
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: 129633 **City/Town:** BURLINGTON
Description of Work: BURLINGTON: Federal Aid Project No. NHP(NHS)-0954(006)X Improvements at I-95 (Route 128)/Route 3 Interchange
Job Location: at I-95 (Route 128)/Route 3 Interchange

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Issue Date: 03/24/2025

Wage Request Number: 20250324-009

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2024	\$41.05	\$14.91	\$20.17	\$0.00	\$76.13
	06/01/2025	\$42.05	\$14.91	\$20.17	\$0.00	\$77.13
	08/01/2025	\$42.05	\$15.41	\$20.17	\$0.00	\$77.63
	12/01/2025	\$42.05	\$15.41	\$21.78	\$0.00	\$79.24
	06/01/2026	\$43.05	\$15.41	\$21.78	\$0.00	\$80.24
	08/01/2026	\$43.05	\$15.91	\$21.78	\$0.00	\$80.74
	12/01/2026	\$43.05	\$15.91	\$23.52	\$0.00	\$82.48
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2024	\$40.88	\$14.91	\$20.17	\$0.00	\$75.96
	06/01/2025	\$41.12	\$14.91	\$20.17	\$0.00	\$76.20
	08/01/2025	\$41.12	\$15.41	\$20.17	\$0.00	\$76.70
	12/01/2025	\$41.12	\$15.41	\$21.78	\$0.00	\$78.31
	06/01/2026	\$43.12	\$15.41	\$21.78	\$0.00	\$80.31
	08/01/2026	\$43.12	\$15.91	\$21.78	\$0.00	\$80.81
	12/01/2026	\$43.12	\$15.91	\$23.52	\$0.00	\$82.55
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2024	\$41.24	\$14.91	\$20.17	\$0.00	\$76.32
	06/01/2025	\$42.24	\$14.91	\$20.17	\$0.00	\$77.32
	08/01/2025	\$42.24	\$15.41	\$20.17	\$0.00	\$77.82
	12/01/2025	\$42.24	\$15.41	\$21.78	\$0.00	\$79.43
	06/01/2026	\$43.24	\$15.41	\$21.78	\$0.00	\$80.43
	08/01/2026	\$43.24	\$15.91	\$21.78	\$0.00	\$80.93
	12/01/2026	\$43.24	\$15.91	\$23.52	\$0.00	\$82.67
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	01/01/2024	\$117.16	\$10.08	\$24.29	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.85	\$9.90	\$18.90	\$0.00	\$75.65
	06/01/2025	\$48.35	\$9.90	\$18.90	\$0.00	\$77.15
	12/01/2025	\$49.85	\$9.90	\$18.90	\$0.00	\$78.65
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.90	\$9.90	\$18.90	\$0.00	\$81.70
	06/01/2027	\$54.50	\$9.90	\$18.90	\$0.00	\$83.30
	12/01/2027	\$56.10	\$9.90	\$18.90	\$0.00	\$84.90
	06/01/2028	\$57.78	\$9.90	\$18.90	\$0.00	\$86.58
	12/01/2028	\$59.45	\$9.90	\$18.90	\$0.00	\$88.25
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.95	\$9.90	\$18.90	\$0.00	\$75.75
	06/01/2025	\$48.45	\$9.90	\$18.90	\$0.00	\$77.25
	12/01/2025	\$49.95	\$9.90	\$18.90	\$0.00	\$78.75
	06/01/2026	\$51.50	\$9.90	\$18.90	\$0.00	\$80.30
	12/01/2026	\$53.00	\$9.90	\$18.90	\$0.00	\$81.80
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2024	\$42.80	\$14.50	\$11.05	\$0.00	\$68.35
	06/01/2025	\$43.80	\$14.50	\$11.05	\$0.00	\$69.35
	12/01/2025	\$44.80	\$14.50	\$11.05	\$0.00	\$70.35

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30
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 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75
For apprentice rates see "Apprentice- LABORER"						

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.85	\$9.90	\$18.90	\$0.00	\$75.65
	06/01/2025	\$48.35	\$9.90	\$18.90	\$0.00	\$77.15
	12/01/2025	\$49.85	\$9.90	\$18.90	\$0.00	\$78.65
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.90	\$9.90	\$18.90	\$0.00	\$81.70
	06/01/2027	\$54.50	\$9.90	\$18.90	\$0.00	\$83.30
	12/01/2027	\$56.10	\$9.90	\$18.90	\$0.00	\$84.90
	06/01/2028	\$57.78	\$9.90	\$18.90	\$0.00	\$86.58
	12/01/2028	\$59.45	\$9.90	\$18.90	\$0.00	\$88.25
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.95	\$9.90	\$18.90	\$0.00	\$75.75
	06/01/2025	\$48.45	\$9.90	\$18.90	\$0.00	\$77.25
	12/01/2025	\$49.95	\$9.90	\$18.90	\$0.00	\$78.75
	06/01/2026	\$51.50	\$9.90	\$18.90	\$0.00	\$80.30
	12/01/2026	\$53.00	\$9.90	\$18.90	\$0.00	\$81.80
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 (WALTHAM)</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

Proposal No. 609516-129633

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

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

BULLDOZER/GRADER/SCRAPER	12/01/2024	\$56.40	\$15.55	\$16.50	\$0.00	\$88.45
<i>OPERATING ENGINEERS LOCAL 4</i>	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"

CAISSON & UNDERPINNING BOTTOM MAN	12/01/2024	\$47.35	\$9.90	\$19.05	\$0.00	\$76.30
<i>LABORERS - FOUNDATION AND MARINE</i>	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"

CAISSON & UNDERPINNING LABORER	12/01/2024	\$46.20	\$9.90	\$19.05	\$0.00	\$75.15
<i>LABORERS - FOUNDATION AND MARINE</i>	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"

CAISSON & UNDERPINNING TOP MAN	12/01/2024	\$46.53	\$9.90	\$19.05	\$0.00	\$75.48
<i>LABORERS - FOUNDATION AND MARINE</i>	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"

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75

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

Proposal No. 609516-129633

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 (WALTHAM)	07/01/2024	\$49.19	\$13.35	\$24.21	\$1.80	\$88.55
--	------------	---------	---------	---------	--------	---------

Proposal No. 609516-129633

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

Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Waltham)

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

CHAIN SAW OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <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"

COMPRESSOR OPERATOR <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"

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

Proposal No. 609516-129633

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 1	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 1	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 1	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

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 1</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 1</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 1</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 1)</i>	08/01/2024	\$78.11	\$10.08	\$21.66	\$0.00	\$109.85
as of 8-1-24, Apprentices with diving licenses begin at second year. % 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 1)</i>	08/01/2024	\$55.79	\$10.08	\$24.29	\$0.00	\$90.16
as of 8-1-24, Apprentices with diving licenses begin at second year. % 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 1)</i>	08/01/2024	\$83.69	\$10.08	\$24.29	\$0.00	\$118.06
For apprentice rates see "Apprentice- PILE DRIVER"						

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2024	\$117.16	\$10.08	\$24.29	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89

Apprentice - ELECTRICIAN - Local 103

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$25.99	\$13.00	\$0.78	\$0.00	\$39.77
2	40	\$25.99	\$13.00	\$0.78	\$0.00	\$39.77
3	45	\$29.24	\$13.00	\$16.71	\$0.00	\$58.95
4	45	\$29.24	\$13.00	\$16.71	\$0.00	\$58.95
5	50	\$32.49	\$13.00	\$17.21	\$0.00	\$62.70
6	55	\$35.74	\$13.00	\$17.72	\$0.00	\$66.46
7	60	\$38.99	\$13.00	\$18.23	\$0.00	\$70.22
8	65	\$42.24	\$13.00	\$18.74	\$0.00	\$73.98
9	70	\$45.49	\$13.00	\$19.24	\$0.00	\$77.73
10	75	\$48.74	\$13.00	\$19.76	\$0.00	\$81.50

Effective Date - 09/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$26.76	\$13.00	\$0.80	\$0.00	\$40.56
2	40	\$26.76	\$13.00	\$0.80	\$0.00	\$40.56
3	45	\$30.10	\$13.00	\$16.73	\$0.00	\$59.83
4	45	\$30.10	\$13.00	\$16.73	\$0.00	\$59.83
5	50	\$33.45	\$13.00	\$17.24	\$0.00	\$63.69
6	55	\$36.79	\$13.00	\$17.75	\$0.00	\$67.54
7	60	\$40.13	\$13.00	\$18.26	\$0.00	\$71.39
8	65	\$43.48	\$13.00	\$18.77	\$0.00	\$75.25
9	70	\$46.82	\$13.00	\$19.28	\$0.00	\$79.10
10	75	\$50.17	\$13.00	\$19.81	\$0.00	\$82.98

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
--	------------	---------	---------	---------	--------	----------

Proposal No. 609516-129633

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

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

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

Apprentice to Journeyworker Ratio:1:1

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

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30

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"

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 103</i> / COMMISSIONING <i>ELECTRICIANS</i>	03/01/2025	\$51.98	\$13.00	\$20.27	\$0.00	\$85.25
	09/01/2025	\$53.51	\$13.00	\$20.32	\$0.00	\$86.83
	03/01/2026	\$54.47	\$13.00	\$20.34	\$0.00	\$87.81
	09/01/2026	\$56.00	\$13.00	\$20.39	\$0.00	\$89.39
	03/01/2027	\$56.95	\$13.00	\$20.42	\$0.00	\$90.37
	09/01/2027	\$58.49	\$13.00	\$20.46	\$0.00	\$91.95
	03/01/2028	\$59.45	\$13.00	\$20.49	\$0.00	\$92.94
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 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$27.01	\$9.90	\$18.90	\$0.00	\$55.81
	06/01/2025	\$28.09	\$9.90	\$18.90	\$0.00	\$56.89
	12/01/2025	\$28.09	\$9.90	\$18.90	\$0.00	\$56.89
	06/01/2026	\$29.21	\$9.90	\$18.90	\$0.00	\$58.01
	12/01/2026	\$29.21	\$9.90	\$18.90	\$0.00	\$58.01
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

Proposal No. 609516-129633

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 35 (ZONE 2)</i>	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86
---	------------	---------	--------	---------	--------	---------

Proposal No. 609516-129633

Classification

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

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS	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

Proposal No. 609516-129633

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 - A	02/01/2025	\$59.69	\$14.75	\$28.12	\$2.98	\$105.54
	08/01/2025	\$61.54	\$14.75	\$28.12	\$2.98	\$107.39
	02/01/2026	\$63.49	\$14.75	\$28.12	\$2.98	\$109.34

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2025	\$59.69	\$14.75	\$28.12	\$2.98	\$105.54
	08/01/2025	\$61.54	\$14.75	\$28.12	\$2.98	\$107.39
	02/01/2026	\$63.49	\$14.75	\$28.12	\$2.98	\$109.34

For apprentice rates see "Apprentice- SHEET METAL WORKER"

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

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

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.85	\$9.90	\$18.90	\$0.00	\$75.65
	06/01/2025	\$48.35	\$9.90	\$18.90	\$0.00	\$77.15
	12/01/2025	\$49.85	\$9.90	\$18.90	\$0.00	\$78.65
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.90	\$9.90	\$18.90	\$0.00	\$81.70
	06/01/2027	\$54.50	\$9.90	\$18.90	\$0.00	\$83.30
	12/01/2027	\$56.10	\$9.90	\$18.90	\$0.00	\$84.90
	06/01/2028	\$57.78	\$9.90	\$18.90	\$0.00	\$86.58
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.95	\$9.90	\$18.90	\$0.00	\$75.75
	06/01/2025	\$48.45	\$9.90	\$18.90	\$0.00	\$77.25
	12/01/2025	\$49.95	\$9.90	\$18.90	\$0.00	\$78.75
	06/01/2026	\$51.50	\$9.90	\$18.90	\$0.00	\$80.30
	12/01/2026	\$53.00	\$9.90	\$18.90	\$0.00	\$81.80
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2024	\$56.92	\$14.75	\$19.61	\$0.00	\$91.28
	09/01/2025	\$60.34	\$14.75	\$19.61	\$0.00	\$94.70
	09/01/2026	\$63.76	\$14.75	\$19.61	\$0.00	\$98.12

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

Effective Date - 09/01/2024

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

Effective Date - 09/01/2025

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

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

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

Proposal No. 609516-129633

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

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
<i>LABORERS - ZONE 1</i>	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75

For apprentice rates see "Apprentice- LABORER"

LABORER	12/01/2024	\$46.10	\$9.90	\$18.90	\$0.00	\$74.90
<i>LABORERS - ZONE 1</i>	06/01/2025	\$47.60	\$9.90	\$18.90	\$0.00	\$76.40
	12/01/2025	\$49.10	\$9.90	\$18.90	\$0.00	\$77.90
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.15	\$9.90	\$18.90	\$0.00	\$80.95
	06/01/2027	\$53.75	\$9.90	\$18.90	\$0.00	\$82.55
	12/01/2027	\$55.35	\$9.90	\$18.90	\$0.00	\$84.15
	06/01/2028	\$57.03	\$9.90	\$18.90	\$0.00	\$85.83
	12/01/2028	\$58.70	\$9.90	\$18.90	\$0.00	\$87.50

Proposal No. 609516-129633

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 1

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.66	\$9.90	\$18.90	\$0.00	\$56.46
2	70	\$32.27	\$9.90	\$18.90	\$0.00	\$61.07
3	80	\$36.88	\$9.90	\$18.90	\$0.00	\$65.68
4	90	\$41.49	\$9.90	\$18.90	\$0.00	\$70.29

Effective Date - 06/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$28.56	\$9.90	\$18.90	\$0.00	\$57.36
2	70	\$33.32	\$9.90	\$18.90	\$0.00	\$62.12
3	80	\$38.08	\$9.90	\$18.90	\$0.00	\$66.88
4	90	\$42.84	\$9.90	\$18.90	\$0.00	\$71.64

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	12/01/2024	\$46.20	\$9.90	\$18.90	\$0.00	\$75.00
LABORERS - ZONE 1 (HEAVY & HIGHWAY)	06/01/2025	\$47.70	\$9.90	\$18.90	\$0.00	\$76.50
	12/01/2025	\$49.20	\$9.90	\$18.90	\$0.00	\$78.00
	06/01/2026	\$50.75	\$9.90	\$18.90	\$0.00	\$79.55
	12/01/2026	\$52.25	\$9.90	\$18.90	\$0.00	\$81.05

Apprentice - LABORER (Heavy & Highway) - Zone 1

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.72	\$9.90	\$18.90	\$0.00	\$56.52
2	70	\$32.34	\$9.90	\$18.90	\$0.00	\$61.14
3	80	\$36.96	\$9.90	\$18.90	\$0.00	\$65.76
4	90	\$41.58	\$9.90	\$18.90	\$0.00	\$70.38

Effective Date - 06/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$28.62	\$9.65	\$18.90	\$0.00	\$57.17
2	70	\$33.39	\$9.65	\$18.90	\$0.00	\$61.94
3	80	\$38.16	\$9.65	\$18.90	\$0.00	\$66.71
4	90	\$42.93	\$9.65	\$18.90	\$0.00	\$71.48

Notes:

Apprentice to Journeyworker Ratio:1:5

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.10	\$9.90	\$18.90	\$0.00	\$74.90
	06/01/2025	\$47.60	\$9.90	\$18.90	\$0.00	\$76.40
	12/01/2025	\$49.10	\$9.90	\$18.90	\$0.00	\$77.90
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.15	\$9.90	\$18.90	\$0.00	\$80.95
	06/01/2027	\$53.75	\$9.90	\$18.90	\$0.00	\$82.55
	12/01/2027	\$55.35	\$9.90	\$18.90	\$0.00	\$84.15
	06/01/2028	\$57.03	\$9.90	\$18.90	\$0.00	\$85.83
	12/01/2028	\$58.70	\$9.90	\$18.90	\$0.00	\$87.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.10	\$9.90	\$18.90	\$0.00	\$74.90
	06/01/2025	\$47.60	\$9.90	\$18.90	\$0.00	\$76.40
	12/01/2025	\$49.10	\$9.90	\$18.90	\$0.00	\$77.90
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.15	\$9.90	\$18.90	\$0.00	\$80.95
	06/01/2027	\$53.75	\$9.90	\$18.90	\$0.00	\$82.55
	12/01/2027	\$55.35	\$9.90	\$18.90	\$0.00	\$84.15
	06/01/2028	\$57.03	\$9.90	\$18.90	\$0.00	\$85.83
	12/01/2028	\$58.70	\$9.90	\$18.90	\$0.00	\$87.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</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"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.10	\$9.90	\$18.90	\$0.00	\$74.90
	06/01/2025	\$47.60	\$9.90	\$18.90	\$0.00	\$76.40
	12/01/2025	\$49.10	\$9.90	\$18.90	\$0.00	\$77.90
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.15	\$9.90	\$18.90	\$0.00	\$80.95
	06/01/2027	\$53.75	\$9.90	\$18.90	\$0.00	\$82.55
	12/01/2027	\$55.35	\$9.90	\$18.90	\$0.00	\$84.15
	06/01/2028	\$57.03	\$9.90	\$18.90	\$0.00	\$85.83
	12/01/2028	\$58.70	\$9.90	\$18.90	\$0.00	\$87.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.10	\$9.90	\$18.90	\$0.00	\$74.90
	06/01/2025	\$47.60	\$9.90	\$18.90	\$0.00	\$76.40
	12/01/2025	\$49.10	\$9.90	\$18.90	\$0.00	\$77.90
	06/01/2026	\$50.65	\$9.90	\$18.90	\$0.00	\$79.45
	12/01/2026	\$52.15	\$9.90	\$18.90	\$0.00	\$80.95
	06/01/2027	\$53.75	\$9.90	\$18.90	\$0.00	\$82.55
	12/01/2027	\$55.35	\$9.90	\$18.90	\$0.00	\$84.15
	06/01/2028	\$57.03	\$9.90	\$18.90	\$0.00	\$85.83
	12/01/2028	\$58.70	\$9.90	\$18.90	\$0.00	\$87.50
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 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & 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

Proposal No. 609516-129633

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

Proposal No. 609516-129633

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 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	01/06/2025	\$50.53	\$10.08	\$21.72	\$0.00	\$82.33
	01/05/2026	\$53.03	\$10.08	\$21.72	\$0.00	\$84.83

Proposal No. 609516-129633

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

Apprentice - MILLWRIGHT - Local 1121 Zone 1

Effective Date - 01/06/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$27.79	\$10.08	\$5.64	\$0.00	\$43.51
2	65	\$32.84	\$10.08	\$6.66	\$0.00	\$49.58
3	75	\$37.90	\$10.08	\$19.16	\$0.00	\$67.14
4	85	\$42.95	\$10.08	\$20.18	\$0.00	\$73.21

Effective Date - 01/05/2026

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$29.17	\$10.08	\$5.64	\$0.00	\$44.89
2	65	\$34.47	\$10.08	\$6.66	\$0.00	\$51.21
3	75	\$39.77	\$10.08	\$19.16	\$0.00	\$69.01
4	85	\$45.08	\$10.08	\$20.18	\$0.00	\$75.34

Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)
Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:4

MORTAR MIXER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) <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"

OILER (TRUCK CRANES, GRADALLS) <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"

Proposal No. 609516-129633

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

Proposal No. 609516-129633

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) *	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.*Painters Local 35 - Zone 2*

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
---	------------	---------	--------	---------	--------	---------

Proposal No. 609516-129633

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

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2025

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/01/2024	\$46.20	\$9.90	\$18.90	\$0.00	\$75.00
LABORERS - ZONE 1 (HEAVY & HIGHWAY)	06/01/2025	\$47.70	\$9.90	\$18.90	\$0.00	\$76.50
	12/01/2025	\$49.20	\$9.90	\$18.90	\$0.00	\$78.00
	06/01/2026	\$50.75	\$9.90	\$18.90	\$0.00	\$79.55
	12/01/2026	\$52.25	\$9.90	\$18.90	\$0.00	\$81.05

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

PANEL & PICKUP TRUCKS DRIVER	12/01/2024	\$40.88	\$14.91	\$20.17	\$0.00	\$75.96
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2025	\$41.88	\$14.91	\$20.17	\$0.00	\$76.96
	08/01/2025	\$41.88	\$15.41	\$20.17	\$0.00	\$77.46
	12/01/2025	\$41.88	\$15.41	\$21.78	\$0.00	\$79.07
	06/01/2026	\$42.88	\$15.41	\$21.78	\$0.00	\$80.07
	08/01/2026	\$42.88	\$15.91	\$21.78	\$0.00	\$80.57
	12/01/2026	\$42.88	\$15.91	\$23.52	\$0.00	\$82.31

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2024	\$55.79	\$10.08	\$24.29	\$0.00	\$90.16
---	------------	---------	---------	---------	--------	---------

PILE DRIVER LOCAL 56 (ZONE 1)
For apprentice rates see "Apprentice- PILE DRIVER"

PILE DRIVER	08/01/2024	\$55.79	\$10.08	\$24.29	\$0.00	\$90.16
PILE DRIVER LOCAL 56 (ZONE 1)						

Proposal No. 609516-129633

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

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$25.11	\$10.08	\$2.53	\$0.00	\$37.72
2	55	\$30.68	\$10.08	\$5.07	\$0.00	\$45.83
3	70	\$39.05	\$10.08	\$19.22	\$0.00	\$68.35
4	80	\$44.63	\$10.08	\$21.76	\$0.00	\$76.47

Notes:
 % Indentured BEFORE 8/1/20; 50/60/70/75/80/80/90/90
 Apprenticeship to Journeyworker Ratio: 1:5
 Step 1 \$62.27/ 2 \$67.84/ 3 \$73.42/ 4 \$76.21/ 5&6 \$79.00/ 7&8 \$84.58

PIPEFITTER & STEAMFITTER <i>PIPEFITTERS LOCAL 537</i>	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
--	------------	---------	---------	---------	--------	----------

Apprentice - PIPEFITTER - Local 537

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$27.55	\$12.70	\$9.05	\$0.00	\$49.30
2	45	\$31.00	\$12.70	\$21.80	\$0.00	\$65.50
3	60	\$41.33	\$12.70	\$21.80	\$0.00	\$75.83
4	70	\$48.22	\$12.70	\$21.80	\$0.00	\$82.72
5	80	\$55.10	\$12.70	\$21.80	\$0.00	\$89.60

Notes:
 ** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
 Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30

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

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PLUMBERS & GASFITTERS <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/02/2025	\$70.84	\$14.32	\$19.61	\$0.00	\$104.77

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/02/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.79	\$14.32	\$7.06	\$0.00	\$46.17
2	40	\$28.34	\$14.32	\$8.02	\$0.00	\$50.68
3	55	\$38.96	\$14.32	\$10.93	\$0.00	\$64.21
4	65	\$46.05	\$14.32	\$12.86	\$0.00	\$73.23
5	75	\$53.13	\$14.32	\$14.79	\$0.00	\$82.24

Notes:

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

Apprentice to Journeyworker Ratio:**

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

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

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30

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

POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	12/01/2024	\$47.10	\$9.90	\$18.90	\$0.00	\$75.90
	06/01/2025	\$48.60	\$9.90	\$18.90	\$0.00	\$77.40
	12/01/2025	\$50.10	\$9.90	\$18.90	\$0.00	\$78.90
	06/01/2026	\$51.65	\$9.90	\$18.90	\$0.00	\$80.45
	12/01/2026	\$53.15	\$9.90	\$18.90	\$0.00	\$81.95
	06/01/2027	\$54.75	\$9.90	\$18.90	\$0.00	\$83.55
	12/01/2027	\$56.35	\$9.90	\$18.90	\$0.00	\$85.15
	06/01/2028	\$58.03	\$9.90	\$18.90	\$0.00	\$86.83
	12/01/2028	\$59.70	\$9.90	\$18.90	\$0.00	\$88.50

For apprentice rates see "Apprentice- LABORER"

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$47.20	\$9.90	\$18.90	\$0.00	\$76.00
	06/01/2025	\$48.70	\$9.90	\$18.90	\$0.00	\$77.50
	12/01/2025	\$50.20	\$9.90	\$18.90	\$0.00	\$79.00
	06/01/2026	\$51.75	\$9.90	\$18.90	\$0.00	\$80.55
	12/01/2026	\$53.25	\$9.90	\$18.90	\$0.00	\$82.05
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 42 - J.G. MacLeallan (Wakefield)</i>	05/01/2024	\$29.50	\$12.00	\$7.00	\$0.00	\$48.50
	05/01/2025	\$30.00	\$12.00	\$7.00	\$0.00	\$49.00
	05/01/2026	\$30.50	\$12.00	\$7.00	\$0.00	\$49.50
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"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75
For apprentice rates see "Apprentice- LABORER"						

Proposal No. 609516-129633

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

SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2025	\$59.69	\$14.75	\$28.12	\$2.98	\$105.54
	08/01/2025	\$61.54	\$14.75	\$28.12	\$2.98	\$107.39
	02/01/2026	\$63.49	\$14.75	\$28.12	\$2.98	\$109.34

Proposal No. 609516-129633

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$25.07	\$14.75	\$6.13	\$0.00	\$45.95
2	42	\$25.07	\$14.75	\$6.13	\$0.00	\$45.95
3	47	\$28.05	\$14.75	\$12.11	\$1.62	\$56.53
4	47	\$28.05	\$14.75	\$12.11	\$1.62	\$56.53
5	52	\$31.04	\$14.75	\$13.09	\$1.74	\$60.62
6	52	\$31.04	\$14.75	\$13.34	\$1.75	\$60.88
7	60	\$35.81	\$14.75	\$14.75	\$1.93	\$67.24
8	65	\$38.80	\$14.75	\$15.73	\$2.04	\$71.32
9	75	\$44.77	\$14.75	\$17.69	\$2.28	\$79.49
10	85	\$50.74	\$14.75	\$19.15	\$2.49	\$87.13

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$25.85	\$14.75	\$6.13	\$0.00	\$46.73
2	42	\$25.85	\$14.75	\$6.13	\$0.00	\$46.73
3	47	\$28.92	\$14.75	\$12.11	\$1.62	\$57.40
4	47	\$28.92	\$14.75	\$12.11	\$1.62	\$57.40
5	52	\$32.00	\$14.75	\$13.09	\$1.74	\$61.58
6	52	\$32.00	\$14.75	\$13.34	\$1.75	\$61.84
7	60	\$36.92	\$14.75	\$14.75	\$1.93	\$68.35
8	65	\$40.00	\$14.75	\$15.73	\$2.04	\$72.52
9	75	\$46.16	\$14.75	\$17.69	\$2.28	\$80.88
10	85	\$52.31	\$14.75	\$19.15	\$2.49	\$88.70

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2024	\$41.34	\$14.91	\$20.17	\$0.00	\$76.42
	06/01/2025	\$42.34	\$14.91	\$20.17	\$0.00	\$77.42
	08/01/2025	\$42.34	\$15.41	\$20.17	\$0.00	\$77.92
	12/01/2025	\$42.34	\$15.41	\$21.78	\$0.00	\$79.53
	06/01/2026	\$43.34	\$15.41	\$21.78	\$0.00	\$80.53
	08/01/2026	\$43.34	\$15.91	\$21.78	\$0.00	\$81.03
	12/01/2026	\$43.34	\$15.91	\$23.52	\$0.00	\$82.77

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2024	\$41.63	\$14.91	\$20.17	\$0.00	\$76.71
	06/01/2025	\$42.63	\$14.91	\$20.17	\$0.00	\$77.71
	08/01/2025	\$42.63	\$15.41	\$20.17	\$0.00	\$78.21
	12/01/2025	\$42.63	\$15.41	\$21.78	\$0.00	\$79.82
	06/01/2026	\$43.63	\$15.41	\$21.78	\$0.00	\$80.82
	08/01/2026	\$43.63	\$15.91	\$21.78	\$0.00	\$81.32
	12/01/2026	\$43.63	\$15.91	\$23.52	\$0.00	\$83.06
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2025	\$72.14	\$11.51	\$23.80	\$0.00	\$107.45

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

Effective Date - 03/01/2025

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

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

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR <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"

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2025	\$51.98	\$13.00	\$20.27	\$0.00	\$85.25
	09/01/2025	\$53.51	\$13.00	\$20.32	\$0.00	\$86.83
	03/01/2026	\$54.47	\$13.00	\$20.34	\$0.00	\$87.81
	09/01/2026	\$56.00	\$13.00	\$20.39	\$0.00	\$89.39
	03/01/2027	\$56.95	\$13.00	\$20.42	\$0.00	\$90.37
	09/01/2027	\$58.49	\$13.00	\$20.46	\$0.00	\$91.95
	03/01/2028	\$59.45	\$13.00	\$20.49	\$0.00	\$92.94

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$23.39	\$13.00	\$0.70	\$0.00	\$37.09
2	45	\$23.39	\$13.00	\$0.70	\$0.00	\$37.09
3	50	\$25.99	\$13.00	\$16.16	\$0.00	\$55.15
4	50	\$25.99	\$13.00	\$16.16	\$0.00	\$55.15
5	55	\$28.59	\$13.00	\$16.57	\$0.00	\$58.16
6	60	\$31.19	\$13.00	\$16.97	\$0.00	\$61.16
7	65	\$33.79	\$13.00	\$17.38	\$0.00	\$64.17
8	70	\$36.39	\$13.00	\$17.78	\$0.00	\$67.17
9	75	\$38.99	\$13.00	\$18.18	\$0.00	\$70.17
10	80	\$41.58	\$13.00	\$18.58	\$0.00	\$73.16

Effective Date - 09/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$24.08	\$13.00	\$0.72	\$0.00	\$37.80
2	45	\$24.08	\$13.00	\$0.72	\$0.00	\$37.80
3	50	\$26.76	\$13.00	\$16.16	\$0.00	\$55.92
4	50	\$26.76	\$13.00	\$16.16	\$0.00	\$55.92
5	55	\$29.43	\$13.00	\$16.57	\$0.00	\$59.00
6	60	\$32.11	\$13.00	\$16.97	\$0.00	\$62.08
7	65	\$34.78	\$13.00	\$17.38	\$0.00	\$65.16
8	70	\$37.46	\$13.00	\$17.78	\$0.00	\$68.24
9	75	\$40.13	\$13.00	\$18.18	\$0.00	\$71.31
10	80	\$42.81	\$13.00	\$18.58	\$0.00	\$74.39

Notes:

Apprentice to Journeyworker Ratio:1:1

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

Proposal No. 609516-129633

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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 <i>LABORERS - FOUNDATION AND MARINE</i>	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"

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"

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2024	\$41.92	\$14.91	\$20.17	\$0.00	\$77.00
	06/01/2025	\$42.92	\$14.91	\$20.17	\$0.00	\$78.00
	08/01/2025	\$42.92	\$15.41	\$20.17	\$0.00	\$78.50
	12/01/2025	\$42.92	\$15.41	\$21.78	\$0.00	\$80.11
	06/01/2026	\$43.92	\$15.41	\$21.78	\$0.00	\$81.11
	08/01/2026	\$43.92	\$15.91	\$21.78	\$0.00	\$81.61
	12/01/2026	\$43.92	\$15.91	\$23.52	\$0.00	\$83.35
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"						
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 A</i>	12/01/2024	\$41.34	\$14.91	\$20.17	\$0.00	\$76.42
	06/01/2025	\$42.34	\$14.91	\$20.17	\$0.00	\$77.42
	08/01/2025	\$42.34	\$15.41	\$20.17	\$0.00	\$77.92
	12/01/2025	\$42.34	\$15.41	\$21.78	\$0.00	\$79.53
	06/01/2026	\$43.34	\$15.41	\$21.78	\$0.00	\$80.53
	08/01/2026	\$43.34	\$15.91	\$21.78	\$0.00	\$81.03
	12/01/2026	\$43.34	\$15.91	\$23.52	\$0.00	\$82.77

Proposal No. 609516-129633

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2024	\$46.35	\$9.90	\$18.90	\$0.00	\$75.15
	06/01/2025	\$47.85	\$9.90	\$18.90	\$0.00	\$76.65
	12/01/2025	\$49.35	\$9.90	\$18.90	\$0.00	\$78.15
	06/01/2026	\$50.90	\$9.90	\$18.90	\$0.00	\$79.70
	12/01/2026	\$52.40	\$9.90	\$18.90	\$0.00	\$81.20
	06/01/2027	\$54.00	\$9.90	\$18.90	\$0.00	\$82.80
	12/01/2027	\$55.60	\$9.90	\$18.90	\$0.00	\$84.40
	06/01/2028	\$57.28	\$9.90	\$18.90	\$0.00	\$86.08
	12/01/2028	\$58.95	\$9.90	\$18.90	\$0.00	\$87.75
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2024	\$46.45	\$9.90	\$18.90	\$0.00	\$75.25
	06/01/2025	\$47.95	\$9.90	\$18.90	\$0.00	\$76.75
	12/01/2025	\$49.45	\$9.90	\$18.90	\$0.00	\$78.25
	06/01/2026	\$51.00	\$9.90	\$18.90	\$0.00	\$79.80
	12/01/2026	\$52.50	\$9.90	\$18.90	\$0.00	\$81.30
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 & GASFITTERS LOCAL 12</i>	03/02/2025	\$70.84	\$14.32	\$19.61	\$0.00	\$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

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	4.8
Non-SMSA Counties: MA Barnstable, MA Dukes, MA Nantucket	3.6
Non-SMSA Counties: MA Franklin	5.9

APPENDIX C

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

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

APPENDIX D

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

PERTINENT NON-DISCRIMINATION AUTHORITIES:

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

*** END OF DOCUMENT ***

DOCUMENT 00875
TRAINEE SPECIAL PROVISIONS
Revised October, 2016

THE REQUIRED NUMBER OF TRAINEES TO BE TRAINED UNDER THIS CONTRACT WILL BE **2**

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

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

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

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

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

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

Reimbursement

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

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

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

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

Payment

Trainees will be paid:

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

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

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

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

*** END OF DOCUMENT ***

DOCUMENT 00880

Revised January 12, 2022



DEPARTMENT OF LABOR

Employment Standards Administration

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

"General Decision Number: MA20250021 03/21/2025

Superseded General Decision Number: MA20240021

State: Massachusetts

Construction Type: Highway

County: Middlesex County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

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

<p> If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.</p>
<p> If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 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	03/21/2025

* ELEC0103-007 03/01/2025

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

ENGI0004-026 12/01/2024

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

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

- Group 1: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid Loader; Broom/Sweeper; Gradall; Loader; Paver (Asphalt, Aggregate, and Concrete)
- Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

IRON0007-031 03/16/2024

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

LABO0039-002 06/01/2018

	Rates	Fringes
--	-------	---------

LABORER

Asphalt, Includes Raker,
Shoveler, Spreader and

Distributor.....	\$ 33.50	22.92
Landscape.....	\$ 33.25	22.92

PAIN0035-023 07/01/2024

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

SUMA2014-011 01/11/2017

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 47.93	19.46
CEMENT MASON/CONCRETE FINISHER...	\$ 56.70	21.08
LABORER: Common or General.....	\$ 36.58	19.40
LABORER: Concrete Saw (Hand Held/Walk Behind).....	\$ 41.78	18.37
LABORER: Guardrail Installation.....	\$ 37.70	15.37
OPERATOR: Crane.....	\$ 57.61	0.00
OPERATOR: Forklift.....	\$ 64.67	0.00
OPERATOR: Mechanic.....	\$ 48.14	17.02
OPERATOR: Piledriver.....	\$ 44.46	16.94
OPERATOR: Post Driver (Guardrail/Fences).....	\$ 41.49	23.07
PAINTER: Spray (Linestriping)....	\$ 40.87	13.86
PILEDRIVERMAN.....	\$ 45.65	23.33
TRAFFIC CONTROL: Flagger.....	\$ 23.00	20.44
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 44.49	12.41

TRUCK DRIVER: Concrete Truck.....	\$ 33.69	15.79
TRUCK DRIVER: Dump Truck.....	\$ 38.92	9.73
TRUCK DRIVER: Flatbed Truck.....	\$ 48.53	0.00

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 or by mail to:

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

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

Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

=====

END OF GENERAL DECISION"

DOCUMENT A00801

SPECIAL PROVISIONS**BURLINGTON****Federal Aid Project No. NHP(NHS)-0954(006)X
Improvements at I-95 (Route 128)/Route 3 Interchange**

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

SCOPE OF WORK

All work under this Contract shall be done in conformance with the *2024 Standard Specifications for Highways and Bridges*, the *Supplemental Specifications* contained in this book, the *2017 Construction Standard Details*, the *Traffic Management Plans and Detail Drawings*, *MassDOT Work Zone Safety Temporary Traffic Control*, the *1990 Standard Drawings for Signs and Supports*; the *2015 Overhead Signal Structure and Foundation Standard Drawings*, the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revisions 1, 2, and 3 and the November 2022 Massachusetts Amendments to the MUTCD*; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; *The American Standard for Nursery Stock*; the Plans and these Special Provisions.

The work under this Contract includes, but is not limited to, fine milling; paving; full depth construction; minor roadway box widening; installing new HMA berm, installing & replacing guardrail; and minor drainage work. The existing concrete median barrier immediately after the Middlesex Turnpike Bridge will be removed in order for the Collector-Distributor (C-D) road to shift onto the mainline utilizing a dropped lane condition and the shoulder. There will be a HMA median separating the C-D Road for physical separation and sign placement. Replacement of overhead guide signs are proposed within the project limits. There are no Rights-of-Way takings or easements required with this project.

I-95 NB shall be reduced to three lanes prior to the start of Stage 1. The contractor shall line the entire outside shoulder on I-95 NB with drums upon closure of the existing right lane for the duration of construction as shown on Temporary Traffic Control plans.

All work shall be performed within the existing Town and/or State Highway Layout Lines. No rights to enter upon or occupy private property have been acquired.

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.

ASBESTOS CONCERNS - ASBESTOS LIABILITY INSURANCE

Since the locations of involving asbestos are unknown, the Contractor will not be required to submit the necessary asbestos insurance amounts prior to execution of the Contract.

Upon assignment of work, if asbestos-containing material (ACM) is anticipated to be encountered prior to any testing or removal of asbestos, Asbestos Liability Insurance shall be obtained for this project in accordance with Subsection 7.05 of the Standard Specifications. The Contractor and the Massachusetts Department of Transportation shall be named as additional insureds. Cost will be reimbursed to the Contractor.

If any existing material is a possible ACM, the Contractor must perform all asbestos inspection, testing, removal and proper disposal in accordance with the required rules and regulations and as required by the Engineer. The Contractor will be reimbursed for the required work under Non-Bid Item included on this Contract, when needed and as required by the Engineer.

NON - BID ITEM**Specialty Services**

Specialty Services is included on this Contract as a non-bid Item to reimburse the Contractor for any work related to inspection, testing, removal and proper disposal of asbestos contaminated materials, if it is encountered during Construction time, as required by the Engineer.

The specialty services will be ordered as required by the Engineer; however, no specialty services shall be hired until approved by the Engineer.

Asbestos testing and removal are not anticipated on the project, but in the case if it is encountered during construction time, then any required work for Asbestos testing, removal, disposal and insurance requirements shall conform to the relevant provisions of Federal, state, local, and all other rules and regulations, as required by the Engineer. The Contractor will be reimbursed for the cost of this work, when needed and as required by the Engineer.

SUPPLEMENTAL REQUIREMENTS FOR NON-BID ITEMS

(Supplementing Subsection 3.04)

The Contractor will be paid for additional artisans, equipment rental, materials, engineering services and specialty services required to perform the work plus (10%) percent, plus actual increased bond premium.

The Contractor shall be required to furnish certified paid receipts for additional artisans, equipment rental, materials, engineering services and specialty services that are required to perform the work prior to payment by the Department. Increased bond premium for additional artisans, equipment rental, materials, engineering services and specialty services will be paid after a certified paid receipt is submitted showing payment of the increased bond.

CONTRACTOR QUESTIONS AND ADDENDUM ACKNOWLEDGEMENTS

Prospective bidders are required to submit all questions to the Construction Contracts Engineer by 3:00 P.M. on the Tuesday of the previous week before the scheduled bid opening date. Any questions received after this time will not be considered for review by the Department.

Contractors should email questions and addendum acknowledgements to the following email address massdotSpecifications@dot.state.ma.us The MassDOT project file number and municipality is to be placed in the subject line.

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

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.

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.

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 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.

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.

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.

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 29.8 Million 18-kip (80-kn) ESALs for I-95 NB (Route 128) and 12.1 Million 18-kip (80-kn) ESALs for the Collector-Distributor (C-D) Road.

BIDDERS LIST

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

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

BUILD AMERICA BUY AMERICA PREFERENCE

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

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

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

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

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

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed endangered, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. This project has been consulted with the USFWS through the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA) Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat revised February 5, 2018 and amended March 31, 2023.

On August 7, 2024, TetraTech, 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 2024 survey guidelines. The survey confirmed the presence of NLEB and/or TCB, and as stated within the survey guidelines, the survey is valid for five years. 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.

The project is eligible for a May Affect, Not Likely to Adversely Affect (NLAA) determination, with 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 A00870 USFWS NLAA**). Therefore, the project has completed Section 7 consultation through the ESA.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

General AMM

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

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31.**
- When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those transportation agencies using the BUG system developed by the Illuminating Engineering Society, be as close to 0 for all three ratings with a priority of "uplight" of 0 and "backlight" as low as practicable.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION (Continued)**Tree Removal AMMs**

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*
- Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
- No tree cutting shall be conducted during the active season: **April 15 to October 31.**
- No tree cutting shall be conducted during the active season: **April 15 to October 31,** or if cutting inside of this timeframe is required, tree removal is limited to 10 or fewer trees per project at any time of year within 100 feet of existing road/rail surface and outside of documented roosting/foraging habitat or travel corridors; and a visual emergence survey must be conducted by *MassDOT Highway Division's Environmental Services Section or appointed representative with no bats observed.*
- Do not remove **documented** or NLEB and/or TCB roosts that are still suitable for roosting, or trees within 0.25 miles of roosts, or **documented** foraging habitat any time of year.
- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and/or TCB, including the **TOY** restriction. If this restriction needs to be waived at any location(s) the Resident Engineer shall send a locus map of the proposed work to MassDOT Highway Division's Environmental Services Section for review and a determination if the restriction can be waived.

NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)

As the accuracy and completeness of the plans are not guaranteed in any manner, it is the Contractor's responsibility to make their own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, etc., will occur.

Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of publicly or privately owned utilities of the Contractor's intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations and the Contractor shall at that time file a copy of such notice with the Engineer.

A list of public and private utilities can be found on the MassDOT website at:

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

Select District 4

Select the City/Town, and then locate the utility.

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

NOTICE TO OWNERS OF UTILITIES(Continued)

District Utility/Constructability Engineer	
MassDOT District 4 Middlesex County	Ray Stinson ray.stinson@dot.state.ma.us 857-368-4135
Electric	
Eversource Electric "A" 1165 Massachusetts Avenue Dorchester, MA 02125	Ned Sadowski ned.sadowski@eversource.com 617-541-5714
Gas	
National Grid Gas 40 Slyvan Road Waltham, MA 02451	Melissa Owens Melissa.Owens@nationalgrid.com 781-907-2845
Tennessee Gas Pipeline Company 8 Anngina Drive Enfield, CT 06082	David Wood KMEncroachmentsNorth@kindermorgan.com 860-763-6005
Telephone	
Verizon 385 Myles Standish Blvd. Taunton, MA 02780	Karen Mealey karen.m.mealey@verizon.com MARI-UGRecordRequest@verizon.com 774-409-3160
Water	
Burlington DPW-Water & Sewer 25 Center Street Burlington, MA 01803	Brian White Bwhite@burlington.org 781-270-1670
Cable	
Comcast Cable Corporation PO Box 6505, 5 Omni Way Chelmsford, MA 01824	Wendy Brown Wendy_Brown@comcast.com 978-848-5163

NOTICE TO OWNERS OF UTILITIES(Continued)

Crown Castle 80 Central Street Boxborough, MA 01719	Mark Bonanno mark.bonanno@crowncastle.com Fiber.dig@crowncastle.com 508-616-7818
Astound 956 Massachusetts Ave Arlington, MA 02476	Alex Ortiz alex.ortiz@astound.com 781-316-8878
AT&T/Teleport Communications America, c/o Siena Engineering 50 Mall Roat - Suit 203 Burlington, MA 01803	Erica Hudson erica.hudson@sienaengineeringgroup.com 781-221-8400
First Light 359 Corporate Drive Portsmouth, NH 03801	Heather Araujo haraujo@firstlight.net 207-432-2045
Eversource Fiber 247 Station Drive Westwood, MA 02090	Bechir Khoury bechir.khoury@eversource.com 781-441-3864
Lightpath 100 Quannapowitt Pkwy Wakefield, MA 01880	Jeff Harrington jeff.harrington@lightpathfiber.com 617-999-5371
DPW	
Burlington DPW Eningeer 25 Center Street Burlington, MA 01803	Thomas Hayes thayes@burlington.org 781-270-1640
Fire Alarm	
Burlington Fire Alarm 21 Center Street Burlington, MA 01803	Michael Hanafin mhanafin@burlington.org 781-270-1925

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

GAS:

Emergency: 1-800-233-5325

New Service: 1- 877-696-4743

Customer Support: 1-800-732-3400

EVERSOURCE EMERGENCY TELEPHONE NUMBERS

ELECTRIC:

Outage/ Emergency: 800-592-2000 or 844-726-7562 New Service: 1-888-633-3797 (1-888-need pwr) Customer Support: 1-800-340-9822

DIGITAL PRINTING OF SIGN PANELS

At their option, the Contractor may choose to utilize a digital printed ink system to fabricate guide and/or other sign panels to be furnished under this Contract. Digitally printed signs shall conform to the following requirements:

Components, processes, and materials used for digital printing shall conform to the applicable sign sheeting manufacturer's recommendations.

Digital printed ink systems shall meet or exceed the minimum daytime and nighttime color standards (chromaticity) specified in ASTM D4956, and shall be at least 70% of the initial retroreflectivity specifications for each respective reflective film color.

Permanent signs printed with digital ink systems shall be fabricated with a full sign protective overlay film (overlaminated) designed to provide the smooth surface needed for proper retroreflectivity, and to protect the sign face from fading and UV degradation. Such overlaminated shall conform to the sheeting manufacturer's recommendations for proper adhesion, transparency, and the minimum reflective film durability requirements of the sheeting.

The Contractor's sign fabricator shall be certified by the applicable sign sheeting manufacturer to ensure they have the proper equipment, manufacturing capabilities and application processes, and the materials required to fulfill the sheeting manufacturer's warranty obligations. Prior to fabrication of digitally printed signs under this Contract, the fabricator shall provide the Engineer with written verification of this Sign Fabricator Certification.

Costs for equipment utilized in employing the digital ink printing process shall be considered incidental to the applicable items of work under this Contract. No separate payment shall be made for any such costs.

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.

CONTAMINATED SOIL

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

SUBSECTION 8.14 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.

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. The schedule type applicable to this project is established in the project special provisions.

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 120.99 REMOVE AND DISPOSE CONCRETE MEDIAN BARRIER FOOT

The work under this item shall conform to the relevant provisions of Subsections 120 and 580 of the Standard Specifications, Contract drawings, as required by the Engineer, and the following:

The work under this item shall consist of removing and discarding the existing median barrier along I-95 Northbound to install a C-D Road.

Construction Methods

The Contractor shall sawcut an area around the barrier to provide a trench of sufficient width and depth to be excavated to allow the removal of the existing barrier. The existing barrier shall be removed in full sections and discarded.

The Contractor shall install gravel borrow Type c from the bottom of the trench to an elevation 4 inches below the existing roadway surface. A 4 inch layer of Hot Mix Asphalt - SUPERPAVE SURFACE COURSE - 12.5 POLYMER (SSC - 12.5 - P) patch on top to match the existing roadway surface.

METHOD OF MEASUREMENT

Item 120.99 will be measured for payment by the Foot the length of concrete median barrier removed and discarded.

BASIS OF PAYMENT

Item 120.99 will be paid for at the contract unit price per Foot, which price shall include all labor, materials, equipment, sawcutting made in existing pavement, excavation for sufficient trench, and all incidental coats required to remove and dispose the concrete median barrier.

Pavement patching for the removed barrier will be paid under Item 451.231.

ITEM 129.3

OLD PAVEMENT EXCAVATION

CUBIC YARD

The work under this item shall conform to the relevant provisions of Subsection 120 of the Standard Specifications with the following additional requirements:

The work to be done under this item consists of the excavation of existing pavement outside of the new roadway alignment, excluding driveways, to be removed and as directed by the Engineer. Excavation methods are subject to the pre-approval of the Engineer.

Existing pavement removed from areas of full depth reconstruction and box widening will be paid for under Item 120. Earth Excavation. The cost of saw cutting pavement for this work shall be incidental. The old pavement excavation shall be removed and become the property of the Contractor and shall be disposed of by the Contractor.

METHOD OF MEASUREMENT

Item 129.3 will be measure for payment by the Cubic Yard of HMA ordered to be removed and disposal of existing pavement that is removed.

BASIS OF PAYMENT

Item 129.3 will be paid at the contract unit price per Cubic Yard which price shall be full compensation for labor, materials, equipment, tools, 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****HOUR**

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

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

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

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

ITEM 180.03 (Continued)

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

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

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, 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 Engineer before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

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

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

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

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

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

ITEM 180.03 (Continued)

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

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

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

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

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

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 201.7

CATCH BASIN – DOUBLE GRATE

EACH

Description

The work under this Item shall conform to the relevant provisions of Subsection 201 of the Standard Specifications, the Construction Details and the following:

Materials

Catch Basins shall conform with Construction Standard Details, Drawing No. E 201.4.0, except as otherwise noted in the Contract Drawings.

Catch Basins – Double Grate shall be constructed as shown in the Plans.

Units shall be precast concrete. Hoods shall be installed in Catch Basins and shall conform to the relevant provisions of Subsection 201 of the Standard Specifications.

Flat top sections shall be rated for HS-20 loading, produced by manufacturers on the MassDOT approved list and shop drawings shall be submitted for approval.

Structures shall have deep sumps with 4 foot minimum depth.

Construction Methods

The cone sections shall be replaced with flat tops sections as needed at no additional cost.

Method of Measurement

Item 201.7 will be measured for payment by the Each, complete in place.

Basis of Payment

Item 201.7 will be paid for at the Contract unit price per Each catch basin – double grate, which price shall include all labor, materials equipment, submittal, shop drawings, and 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, 220 and the following:

The work to be done under this Item consists of the furnishing and delivering Frame and Cover – Secured to the site 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.

.

ITEM 230.11 **10 INCH CORRUGATED METAL PIPE 14 GAGE** **FOOT**

Work under this Item shall conform to the relevant provisions of Subsection 230 of the MassDOT Standard Specifications and the following:

Materials

Materials shall meet the requirements specified, in accordance with Subsection 230 of the Standard Specifications, as directed by the Engineer, and the manufacturer's instructions.

Construction Methods

All 10-inch corrugated metal pipe shall be installed in accordance with Subsection 230 of the MassDOT Standard Specifications standards.

All pipes shall be bedded in crushed stone and uniformly supported over its full length. Crushed stone shall be as specified under Item 156.

All cutting of pipe shall be done with a machine suitable for cutting reinforced concrete pipe.

Method of Measurement

Item 230.11 will be measured for payment by the Foot complete in place, in accordance with Subsection 230.80 of the MassDOT Standard Specifications.

Basis of Payment

Item 230.11 will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

Pipe bedding will be paid for under Item 156.

ITEM 241.21 **21 INCH REINFORCED CONCRETE PIPE CLASS III** **FOOT**

Work under this Item shall conform to the relevant provisions of Subsection 230.40 of the Standard Specifications and the following:

Materials

Materials shall meet the requirements specified, in accordance with Subsection 230.40 of the Standard Specifications, as directed by the Engineer, and the manufacturer's instructions.

Construction Methods

All 21-inch reinforced concrete pipe shall be installed in accordance with Subsection 230.40 of the MassDOT Standard Specifications standards.

All pipes shall be bedded in crushed stone and uniformly supported over its full length. Crushed stone shall be as specified under Item 156.

All cutting of pipe shall be done with a machine suitable for cutting reinforced concrete pipe.

Method of Measurement

Item 241.21 will be measured per foot in place, in accordance with Subsection 230.40 of the MassDOT Standard Specifications.

Basis of Payment

Item 241.21 will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

Pipe bedding will be paid for under Item 156.

**ITEM 269.04 4 INCH SLOT PERFORATED CORRUGATED PLASTIC PIPE FOOT
(SUBDRAIN)**

Work under this Item shall conform to the relevant provisions of Subsection 260 of the Standard Specifications and the following:

This work shall consist of constructing subdrains, using pipe, filter fabric and crushed stone filter material in accordance with the plans and these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Material

Materials shall meet the requirements specified, in accordance with Subsection 260.40 of the Standard Specifications, as directed by the Engineer, and the manufacturer's instructions.

Method of Measurement

Pipe shall be measured in accordance with Subsection 260.40 of the Standard Specifications.

Basis of Payment

Payment for the above work at the contract price per foot will include excavation, pipe, filter fabric, crushed stone and installation, in accordance with Subsection 260.81 of the Standard Specifications.

ITEM 697.1**SILT SACK****EACH**

Work under this item shall conform to the relevant provisions of Subsections 227 and 670 of the Standard Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

CONSTRUCTION

Silt sacks shall be installed in retained existing and proposed catch basins and 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 Section 227 of the Standard Specifications

COMPENSATION

Silt sacks will be measured and paid at the Contract unit price per each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price 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:

Two computer systems and printer system meeting minimum requirements set forth below including installation, maintenance, power, paper, disks, and other supplies shall be provided at the Resident Engineer's Office:

All equipment shall be UL approved and Energy Star compliant.

The Computer System shall meet the following minimum criteria or better:

Processor:	Intel, 3.5 GHz
System Memory (RAM):	12 GB
Hard Drive:	500 GB
Optical Drive:	DVD-RW/DVD+RW/CD-RW/CD+RW
Graphics Card:	8 GB
Network Adapter:	10/100 Mbit/s
USB Ports:	6 USB 3.0 ports
Keyboard:	Generic
Mouse:	Optical mouse with scroll, MS-Mouse compliant
Video/Audio	the computer system shall be capable of allow video calling and recording:
Video camera	shall be High Definition 1080p widescreen capable video calling and recording with built in microphone. The microphone system shall capture natural audio while filtering out background noise.
Audio	shall be stereo multimedia speaker system delivering premium sound.
OS:	Latest Windows Professional with all security updates
Web Browser:	Latest Internet Explorer with all security updates
Applications:	Latest MS Office Professional with all security updates Latest Adobe Acrobat Professional with all security updates Latest Autodesk AutoCAD LT Antivirus software with all current security updates maintained through the life of the contract.
Monitors:	Two 27" LED with Full HD resolution. Max. resolution 1920 x 1080
Flash drives:	2 (two) - 128GB USB 3.0
Internet access:	High Speed (min. 24 mbps) internet access with wireless router.

ITEM 740. (Continued)

The Multifunction Printer System shall meet the following minimum criteria or better:

Color laser printer, fax, scanner, email and copier all in one with the following minimum capabilities:

- Estimated volume 8,000 pages per month
- LCD touch panel display
- 50 page reversing automatic document feeder
- Reduction/enlargement capability
- Ability to copy and print 11" x 17" paper size
- email and network pc connectivity
- Microsoft and Apple compatibility
- ability to overwrite latent images on hard drive
- 600 x 600 dpi capability
- 30 pages per minute print speed (color),
- 4 Paper Trays Standard (RADF) (not including the bypass tray)
- Automatic duplexing
- Finisher with staple functions
- Standard Ethernet. Print Controller
- Scan documents to PDF, PC and USB
- ability to print with authenticated access protection

The Contractor shall supply a maintenance contract for next day service, and all supplies (toner, staples, paper) necessary to meet estimated monthly usage.

The Engineer's Field Office and the equipment included herein including the computer systems, 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 Section 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

MAINTENANCE

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.

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 828.03

OVERHEAD GUIDE SIGN REMOVED

EACH

The work under this Item shall conform to the relevant provisions of Subsections 828 and 840 of the Standard Specifications and the following:

The work to be done under this item shall consist of dismantling, removing, and discarding of existing overhead guide signs as shown on the plans and as directed by the Engineer.

Existing guide signs shall remain in place until proposed final overhead guide signs are in place. Existing overhead sign supports shall be retained as shown on the plans.

Overhead guide signs removed shall become the property of the Contractor and shall be disposed of legally off-site.

METHOD OF MEASUREMENT

Item 828.03 will be measured for payment by the each overhead guide sign removed.

BASIS OF PAYMENT

Item 828.021 will be paid at the contract unit price per each and shall constitute full compensation for removal of all materials, labor, equipment tools, appurtenances, and incidental costs required to complete the work.

ITEM 828.06 **OVERHEAD GUIDE SIGN AND SUPPORT** **EACH**
REMOVED AND DISCARDED

ITEM 829.06 **ROADSIDE GUIDE SIGN AND SUPPORT** **EACH**
REMOVED AND DISCARDED

The work under these items shall include removal and disposal of existing ground mounted and overhead guide sign panels, sign supports including foundations, associated excavations, the supplying and placing of compacted gravel, and the restoration to original condition of any natural features disturbed in any way or manner by the operation.

The existing sign panels, hardware, and supports that are removed shall become the property of the Contractor and shall be properly disposed of by the Contractor. Work shall also include the excavation (including Class "B" rock) of any existing foundations to be removed to a depth of at least one foot below grade outside of roadways, and to at least three feet below grade within proposed roadways.

METHOD OF MEASUREMENT

Items 829.06 will be measured for payment per the each location of overhead guide sign and support removed and discarded regardless of the number of existing sign panels and supports in each location.

Items 828.06 will be measured for payment per the each location of Roadside guide sign and support removed and discarded regardless of the number of existing sign panels and supports in each location.

BASIS OF PAYMENT

Items 828.06 and 829.06 will be paid at the contract unit price per each and shall constitute full compensation for removal of all materials, labor, equipment tools, appurtenances, and all incidental costs required to complete the work.

No separate payments shall be made for all excavation including class "B" rock excavation, gravel backfill, compaction and restoration work but all costs in connection therewith shall be included in the price bid.

Loam Borrow and Seeding as part of the restoration work shall be paid under Item 751 and Item 765.

ITEM 829.07

**ROADSIDE GUIDE SIGN (G)
REMOVED AND RESET**

SQUARE FOOT

the work under this item shall conform to the relevant provisions of Subsection 828 of the Standard Specifications and the following:

The Contractor shall carefully remove existing ground mounted guide signs as noted on the plans. Ground mounted guide signs damaged or otherwise made unsuitable for reuse while being removed, transported, stored, or reset shall be replaced with new materials at no additional cost to the Owner.

The Contractor shall coordinate the removal of ground mounted guide signs with the Resident Engineer by notifying the Resident Engineer prior to and at the completion of the above work. Existing signs shall remain in place until proposed temporary or final overhead or ground mounted guide sign supports are in place. New sign attachment hardware shall be furnished and installed as necessary and considered incidental to these items.

Method of Measurement

Item 829.07 will be measured for payment by the Square Foot of roadside guide (G) removed and reset.

Basis of Payment

Item 829.07 will be paid for at the Contract unit price per Square Foot, which price shall include all labor, materials, equipment and all incidental costs required to complete the work.

The guide sign supports will be paid for under Item 844.10. _

ITEM 829.1**REFLECTIVE SIGN OVERLAY****SQUARE FOOT**

The work under this item shall conform to the relevant provisions of Subsection 828 of the Standard Specifications and the following:

The work under this item involves the installation of overlay panels on existing overhead and/or roadside guide signs as specified on the plans and/or as directed by the Engineer. It may be necessary to overlay the sign background as well as the sign legend.

CONSTRUCTION METHOD

The overlay panel shall be mounted with non-corrosive rivets or metal screws as indicated in the Standard Specifications.

Once existing raised legends and route markers are removed, all burrs and irregularities shall be removed from the application area. The application area shall then be wiped down with xylol before the overlay panel is installed.

Fabrication and installation of the overlay panel shall be in accordance with the manufacturer's recommendations at the time of installation. Any of the existing sign legend removed shall become the property of the Contractor and shall be properly disposed of off-site.

MATERIALS

Overlay panels shall be fabricated from retroreflective sheeting meeting the requirements of Subsection M9.30.0 of the Standard Specifications). For bidding purposes, the sheeting type for sign overlays is presumed to be Type IX. However, the grade of sheeting used for Reflective Sign Overlays shall match the sheeting on the existing sign panel as closely as practical. Existing sheeting can be determined by the inventory code on the sign panel (lower left front corner on overhead signs, lower left rear corner on ground-mounted signs). Sheeting codes are as follows:

- A – Type III
- H – Type IV
- J – Type VIII
- K – Type IX
- L – Type X
- O – Type XI

If the sheeting type of a given sign cannot be determined, then use Type IX sheeting for the overlay.

Overlay panels are to be fabricated and installed on an aluminum blank 0.040 inches thick, meeting the requirements of ASTM B209, Alloy 5052-H38.

ITEM 829.1 (Continued)

METHOD OF MEASUREMENT

Item 829.1 will be measured for payment by the Square Foot of reflective sign overlay, complete in place.

BASIS OF PAYMENT

Item 829.1 will be paid for at the Contract unit price per Square Foot, which price shall include all labor, materials, equipment and incidentals required to complete the work.

ITEM 840.103**SUPPORTS FOR OVERHEAD GUIDE SIGN
(OD-3) STEEL****LUMP SUM**

The work under this Item shall conform to the relevant provisions of Subsection 840 of the Standard Specifications and the following:

Sign supports provided under this item shall meet the design criteria contained in the 2013 AASHTO Standard Specifications For Structural Supports For Highway Signs, Luminaries and Traffic Signals with 2015 Interim Revisions. Support design shall conform to Category 1 (Critical) fatigue requirements and the truck gusting factor for cantilever and full span structures. All new cantilever and full span supports provided under these items shall be designed to sustain a minimum wind speed of 110 mph.

The tolerance values for the “±” notations provided on the individual support detail drawings contained in the plan sheets titled “Guide Sign Sections” shall be as follows:

Left or right offset from edge of road to C/L of upright – 4 feet
Overall span length – 8 feet
Offset between sign panels – 0.5 feet

Provision of these “±” values is for bidding purposes only, and does NOT relieve the Contractor of their responsibilities under Subsection 840.2 of the Standard Specifications.

A copy of the final boring logs shall be submitted to the Engineer with the shop drawings for overhead sign supports.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 840.103 will be paid for at contract unit price of lump sum. The contract price shall constitute full compensation for furnishing and installing all materials, labor, equipment tools, appurtenances, and all incidental costs required to complete the work.

ITEM 846.2

S-BEAM SUPPORT AND FOUNDATION

EACH

The work under this Item shall conform to the relevant provisions of Subsection 840 of the Standard Specifications and the following:

The work to be done under this item shall consist of fabricating and installing S-Beam support posts in 4000 PSI concrete foundations as indicated on the plans or as directed by the Engineer.

Sign supports provided under this Item shall meet the design criteria contained in the 1990 MassDOT Standard Drawings for Signs and Supports for signs with an area over 20 square feet and up to 40 square feet. Supports furnished under this Item shall be designed to sustain a minimum wind speed of 90 MPH. Base plate bolts for supports shall be torqued per current MassDOT and AASHTO specifications.

Method of Measurement

Item 846.2 will be measured for payment by Each S-beam support and foundation installed, complete in place.

Basis of Payment

Item 846.2 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.

ITEM 853.33 TEMPORARY BARRIER – LIMITED DEFLECTION (TL-3) FOOT

Work under this item shall conform to the relevant provisions of Subsection 850 and shall consist of furnishing, installing, maintaining and final removal of limited deflection TL-3 temporary barrier systems for channelization of traffic and/or work zone protection. Limited deflection TL-3 temporary barrier systems shall have a maximum dynamic deflection of 18 inches when anchored on asphalt and 9 inches when anchored on concrete and in all cases the clear area available behind the barrier shall be equal to or greater than the dynamic deflection of the limited deflection barrier system.

Materials

The Contractor shall use a temporary limited deflection barrier system that is listed on the Qualified Traffic Control Equipment List.

The Contractor may submit alternate materials to the Engineer for approval if the temporary limited deflection barrier system meets the following criteria:

1. The system has been tested by an independent laboratory that is accredited by FHWA to crash test roadside hardware;
2. The system meets the minimum requirements of the AASHTO *Manual on Assessing Safety Hardware* (MASH) at Test Level (TL) 3 or higher; and
3. The system has a federal-aid eligibility letter from FHWA.

Copies of the testing results and the federal-aid eligibility letter shall be submitted and approved by the Engineer prior to procurement of an alternate temporary limited deflection barrier system.

The Contractor shall supply shop drawings to confirm the available clear area behind the limited deflection barrier equals or exceeds the maximum dynamic deflection of MASH Test 3-11 during testing procedures taken at an independent laboratory that is accredited by FHWA to crash test roadside hardware.

Delineators shall be installed on all temporary limited deflection barrier systems in conformance with the relevant provisions of Section 850.69 and shall be incidental to the temporary limited deflection barrier systems.

Temporary impact attenuators that are listed on the Qualified Traffic Control Equipment List shall be used whenever a blunt end of the temporary limited deflection barrier system is facing traffic within the clear zone unless it is protected by a second barrier system or secured to a separate barrier system or bridge railing by a method approved by the manufacturer. For any single continuous run of barrier, all contiguous barrier segments shall be of the type and the same product.

ITEM 853.33 (Continued)

CONSTRUCTION METHODS

Temporary limited deflection barrier systems shall be placed in line with the drawings. Installation shall be per the manufacturer's specifications, details, and the approved shop drawings.

The Contractor shall not place any breaks in the temporary limited deflection barrier system that will result in sections that are shorter than the stated minimum length-of-need (LON) under MASH Test 3-11.

Exceptions shall be allowed for gate systems or changeable length segments placed over expansion joints if those barrier segment types have been tested and meet the minimum requirements of MASH Test 3-11 with the adjoining limited deflection barrier system.

Within the LON section, temporary limited deflection barrier systems shall only be placed on paved surfaces unless otherwise tested and certified under MASH TL-3 for those conditions.

Damage to the pavement surface caused by the temporary limited deflection barrier during installation, while in service, and/or during removal shall be repaired as directed by the Engineer at the Contractor's expense.

Temporary limited deflection barrier systems that require anchorage systems shall conform with the relevant provisions of Subsection 850.29.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 853.33 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

ITEM 854.6**TEMPORARY PORTABLE RUMBLE STRIP****DAY**

Work under this item consists of furnishing, deploying, maintaining in proper operating conditions, and removing temporary portable rumble strips (TPRS) for temporary lane closures of 24 hours or less.

MATERIALS

The TPRS shall be 10' to 11' wide, measured perpendicular to the path of travel, 12" to 16" long, measured parallel to the path of travel, and 0.5" to 0.75" tall. All edges shall be beveled. The surfaces shall be grooved to limit potential hydroplaning.

The TPRS shall lay flat on the road surface without the use of nails, anchors, or adhesives, and shall be flexible so as to conform to the surface profile.

The TPRS shall be able to withstand vehicle weights of up to 80,000 lbs. and operate in temperatures between 0° to 120° F.

The manufacturer shall certify the TPRS to be safe for use on roads with speed limits of at least 70 mph.

TPRS that appear damaged or functioning in an unsafe manner may be order removed by the Engineer and replaced at no additional cost.

CONSTRUCTION METHODS

The TPRS shall be installed per the plans or at the discretion of the Engineer.

The Contractor shall conform to the manufacturer's specifications for installation and the following:

- A. The road surface shall be cleared of all gravel, sand, and debris.
- B. If RoadQuake 2TM model is used, the modular pieces shall be assembled into 11-foot strips per the manufacturer's instructions in advance of deployment. The interconnected segments shall form a smooth and flat, continuous section.
- C. A Truck-Mounted Attenuator, conforming to Section 850, shall be used as shadow vehicle protection during the deployment and removal of TPRS on any roadway with speeds of 45 mph or greater.
- D. TPRS shall be deployed in conjunction with all other temporary traffic control devices. MA-W28-1 (Rumble Strips Ahead) sign(s) shall be installed per the Temporary Traffic Control Plan.

ITEM 854.6 (Continued)

E. TPRS deployment:

1. TPRS shall be placed perpendicular to the direction of travel, centered in the lane.
2. Three (3) individual strips are required for a single array.
3. Refer to the Temporary Traffic Control Plan for the location of the array respective to the lane closure.
4. The spacing of the individual strips within the array shall conform to the following table:

Speed Limit	Distance Between Rumble Strips (measured center-to-center)
>55 mph	20 feet
40 mph to 55 mph	15 feet
<40 mph	10 feet

5. The TPRS shall be placed without the use of nails, adhesives, or other methods of affixing them to the road surface.

F. All TPRS shall be maintained in proper condition, alignment, spacing, and location throughout the duration of the lane closure, at no additional cost.

G. The TPRS shall be removed prior to the removal of the traffic control devices used to close the travel lane.

H. TPRS shall not be used during snow events.

METHOD OF MEASUREMENT

An array of three (3) temporary portable rumble strips 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 the array is deployed, repositioned, or removed.

BASIS OF PAYMENT

Temporary Portable Rumble Strips will be paid for at the contract unit price per day, which shall include full compensation for furnishing, deploying, repositioning, and removing the array of three (3) individual strips as directed by the Engineer.

ITEM 864.31 **SLOTTED PAVEMENT MARKER ONE-WAY WHITE** **EACH**

ITEM 864.34 **SLOTTED PAVEMENT MARKER TWO WAY YELLOW/RED** **EACH**

The work to be done under these items shall consist of furnishing and installing one-way white, two-way yellow/red slotted pavement markers in accordance with the construction plans and the relevant provisions of Traffic Standard TR.6.3 “Typical Pavement Markings for Freeways”.

Materials

Reflectorized pavement markers shall be 3M Series 290, Ennis-Flint Stimsonite C80, Ray-O-Lite Model 200 or an approved equal.

Construction Methods

Only motorized vehicles with specialized grinding equipment intended for these purposes shall be used to grind out the slots for the recessed pavement markers. No manually-propelled or walk behind carts shall be allowed. Equipment that does not produce slots that remain in true alignment with the striping centerline shall be replaced with satisfactory equipment as directed by the Engineer.

The work shall include cutting the tapered pavement slot to the dimensions shown on the typical detail for the one-way or two-way markers issued with Engineering Directive E-05-003, 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.

Pavement markers shall not be placed on pavement surfaces that show evidence of cracking, checking, spalling or failure of underlying base material.

If during the laying out process, it is determined that the marker would be installed at a point with one of the aforementioned surface defects or at a pavement construction joint, then the marker shall be relocated a distance not to exceed 10% of the typical marker spacing. If the marker cannot be located within this 10% margin then this marker shall be deleted.

ITEM 864.31, 864.34 (Continued)

The minimum pavement surface temperature at the time of application shall be that recommended by the epoxy manufacturer. No markers shall be installed if the pavement surface or precut slots are wet.

The marker shall be protected against traffic until the adhesive has hardened. The following table may be used as a guideline.

<u>Ambient Air Temp</u> <u>°F</u>	<u>Minimum Period Protected</u> <u>from Traffic (Minutes)</u>
100	15
90	20
80	25
70	30
60	35
50*	45

*No installation shall be made at a lower temperature than 50°F unless the epoxy manufacturer can guarantee his produce will harden sufficiently at this lower temperature to withstand traffic in 45 minutes.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The slotted pavement markers shall be paid for at the respective Contract unit price per Each, which price shall include all labor, materials, equipment, pavement grinding and incidental costs required to complete the work.

<u>ITEM 868.106</u>	<u>6 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
<u>ITEM 868.112</u>	<u>12 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
<u>ITEM 868.114</u>	<u>24 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
<u>ITEM 869.106</u>	<u>6 INCH DURABLE WET RECESSED REFLECTIVE YELLOW LINE (THERMOPLASTIC)</u>	<u>FOOT</u>

The work to be done under these items shall conform to the relevant provisions of Section 860 of the Standard Specifications and the following:

Work shall consist of grooving a slot in the pavement surface and the furnishing and installation of liquid thermoplastic wet reflective pavement markings.

CONSTRUCTION METHODS OF INSTALLATION OF GROOVE

All work shall be done in accordance with the Material Suppliers specifications and the following:

Prior to cutting out the grooves for all recessed lines, the contractor shall use a chalk line or other suitable method to layout the proposed pavement markings on the surface course so that the Engineer can inspect the locations. Once the Engineer has inspected and approved the proposed striping layout, the grooves for the proposed pavement markings may be cut. No pavement grooving shall be done without the prior approval of the Engineer.

Groove position shall be a minimum of 4 inches from the edge of the pavement marking to any longitudinal pavement joints. The groove shall not be installed on bridge joints, at drainage structures, or in other areas identified by the Engineer. **N O T E W E L L** : The groove shall not be installed continuously for intermittent pavement markings, but only where markings are to be applied.

The use of gang stacked diamond cutting blades to grind a smooth square slot is required for producing all grooves. The spacers between blade cuts shall be such that there will be less than a 10 mil rise in the finished groove between the blades. The acceptability of the surface texture shall be determined by the Engineer and/or Material Supplier's Technical Representative.

ITEM 868.106 through ITEM 869.106 (Continued)

The diamond grinder shall have an articulating head so that the slots are installed correctly on grades and super elevated sections.

Grooves that are ground deeper or wider than the specified allowable limits shall be repaired according to the Department's approved repair procedure at no additional cost to the Department. Grooves that are ground too shallow or narrow shall be reground to the specification limits at no additional cost to the Department. Slots that are ground out of alignment shall be cut out and patched using an approved method and approved materials.

The DB Entity shall grind the groove to the correct depth, width, and length as specified and in proper alignment. Grooves shall be 1 inch \pm ¼ inch wider than the pavement marking material. Groove depth shall be per the Material Supplier's specification for liquid thermoplastic application, unless otherwise approved by the Engineer. Depth shall be consistent across the full width of the groove. Depth plates shall be provided by the DB Entity to the Engineer to assure that desired groove depth is achieved.

Grooves shall be clean, dry and free of laitance, oil, dirt, grease, paint or other foreign contaminants. Shrouds and a vacuum apparatus shall be included as part of the grinder to remove larger pieces of pavement that are ground out. If water is used to clean the groove or the grooving process takes place during rainfall, a minimum of 24 hours of dry time is required prior to the placement of pavement markings.

A Technical Representative from the Material Supplier(s) shall be present for the first grooving operation shift to provide quality assurance/quality control.

After the depth, width, length, and surface condition has been approved by the Engineer, an air lance shall be used to remove fine particles from the groove. Air compressors shall initially be blown out away from the application area to prevent compressor condensation build-up from entering the groove. The DB Entity shall prevent traffic from traversing the grooves and re-clean grooves, as necessary, prior to application of pavement markings at no additional cost to the Department.

All grooves must be given final approval by the Engineer prior to the placement of pavement marking material.

ITEM 868.106 through ITEM 869.106 (Continued)**CONSTRUCTION METHODS FOR INSTALLATION OF LIQUID PAVEMENT MARKINGS**

Application of liquid pavement markings and reflective elements shall be per the Material Supplier(s)'s specifications in order to meet the minimum initial retroreflectance levels described herein.

The uniform wet thickness of applied thermoplastic pavement markings shall be 120 mils \pm 5 mils. A Technical Representative from the Material Supplier shall be present for the first liquid pavement marking installation shift for each liquid binder type to provide quality assurance/quality control.

CONSTRUCTION METHODS FOR INSTALLATION OF PREFORMED PAVEMENT MARKINGS

Application of the preformed pavement markings shall be done in accordance with the Material Suppliers specifications, unless otherwise instructed by the Engineer.

A primer application shall be applied prior to the installation of all preformed pavement markings per the Manufacturer's Specifications. This work shall be considered incidental to the cost of the item.

A Technical Representative from the Material Supplier shall be present for the first preformed pavement marking installation shift to provide quality assurance/quality control.

MATERIALS

For thermoplastic applications, the DB Entity shall use one of the following products, or approved equivalent:

3MTM All Weather Thermoplastic;

Ennis-Flint Pavemark®;

Franklin Paint™ 22% Melt Down Thermoplastic; or

Swarco SWARCOTHERM.

3MTM Stamark™ All Weather Contrast Tape 380AW-5, or approved equivalent, shall be used on all Portland Concrete Cement surfaces in place of liquid pavement markings.

Material certifications shall be provided to the Engineer prior to installation.

ITEM 868.106 through ITEM 869.106 (Continued)**PAVEMENT MARKING RETROREFLECTIVITY PERFORMANCE**

Incidental to the cost of these items, the DB Entity or Material Supplier shall perform retroreflectance readings and provide the results to the Department. The measurement and sampling procedures contained in ASTM D7585 (Standard Practice for Evaluating Retroreflective Pavement Markings

Using Portable Hand-Operated Instruments) using the Referee Evaluation Protocol found in sections shall be followed. The following tests shall be performed during the measurement and sampling process:

1. ASTM E1710 (*Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer*);
2. ASTM E2177 (*Standard Test Method for Measuring the Coefficient of Retroreflected Luminance (R_L) of Pavement Markings in a Standard Condition of Wetness*); and
3. ASTM E2832 (*Standard Test Method for Measuring the Coefficient of Retroreflected Luminance of Pavement Markings in a Standard Condition of Continuous Wetting (RL-2)*).

All measuring equipment shall be properly calibrated prior to the implementation of any temporary traffic controls that are required.

Retroreflectance readings shall be taken at the following three times:

1. Initial (between 7 and 30 days from date of application);
2. 6 Month (182 days, \pm 14 days from initial application); and
3. 1 Year (365 days, \pm 14 days from initial application).

The cost of temporary traffic control setups for the Initial readings shall be considered incidental to the cost of item. The Department shall provide temporary traffic control setups for the 6 Month and 1 Year readings at no cost to the DB Entity or Material Supplier.

The average initial retroreflectance readings shall exceed the following minimum values for all pavement marking materials installed under these items:

ITEM 868.106 through ITEM 869.106 (Continued)

	White Marking	Yellow Markings
Observation Angle	1.05°	1.05°
Entrance Angle	88.8°	88.8°
ASTM E1710 (Dry)	475 mcd/lux/m ²	375 mcd/lux/m ²
ASTM E2177 (Wet Recovery)	475 mcd/lux/m ²	375 mcd/lux/m ²
ASTM E2832 (Wet Continuous)	150 mcd/lux/m ²	125 mcd/lux/m ²

Pavement markings with measured average initial retroreflectance readings that do not meet the specified minimum values using the procedures outlined in subsection 6.4.5 of ASTM D7585 shall be removed by an approved method and reapplied at no cost to the Department, unless otherwise approved by the Engineer.

Readings taken at the 6 Month and 1 Year intervals are for MassDOT Highway Division informational purposes only. Average readings that fall below the specified minimum values shall not require additional testing or pavement marking removal and reinstallation.

Retroreflectance readings shall be summarized and include the following information:

1. Date & time of reading;
2. Highway location (including direction) of each test;
3. Material type tested;
4. ASTM test method,
5. Pavement marking color;
6. Date of initial material application;
7. Air and pavement temperature during application;
8. Initial material application thickness;
9. Depth of groove, and

Any other pertinent information/results for all readings shall be provided within 10 business days of testing to the Engineer, with a second copy sent to:

State Traffic Engineer
 Attention: Pavement Marking Retroreflectivity Testing 10 Park Plaza, Room
 7210
 Boston, MA 02116

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Items 868.106, 868.112, 868.114, and 869.106 will be measured and paid for at the respective contract unit price by the Foot, complete in place, which prices shall include all labor, materials, equipment, and all incidental costs required to complete the work.

ITEM 868.107 **6 INCH DURABLE WET RECESSED REFLECTIVE** **FOOT**
WHITE LINE(TAPE)

ITEM 868.113 **12 INCH DURABLE WET RECESSED REFLECTIVE** **FOOT**
WHITE LINE (TAPE)

The work under these items consists of furnishing and installing recessed pavement marking lines (Patterened, Retroreflective, Pliant Tape) at the locations shown on the plans or as directed by the Engineer. All work shall conform to Subsection 860 and the following.

The tape to be used shall be Stamark 380AW or Stamark 380AW-5 (Contrast) White or Yellow Wet Reflective by 3M or approved equivalent. A manufacturer’s technical representative must be onsite for the initial installation of the tape. Groove preparation and tape installation shall be done in strict accordance with manufacturer’s requirements.

All pavement marking colors shall conform to the MUTCD standards, including the Daytime Color Specification Limits for Retroreflective Pavement Marking Material found in 23 CFR 655, Subpart F.

Post-installation, the surfaces of the Tape shall provide a minimum skid resistance value of 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

Retroreflective properties shall be verified by an independent laboratory prior to installation. The average initial retroreflectance readings shall exceed the following minimum values:

Test Method	*White Markings	*Yellow Markings
ASTM E1710 (Dry)	500 mcd/lux/m ²	300 mcd/lux/m ²
ASTM E2177 (Wet Recovery)	300 mcd/lux/m ²	250 mcd/lux/m ²
ASTM E2832 (Continuous Wetting)	250 mcd/lux/m ²	200 mcd/lux/m ²

*Observation Angle = 1.05°, Entrance Angle = 88.8°

The leading edge(s) of all preformed markings shall be tapered to minimize risk of plow damage.

The Contractor shall provide a Certificate of Compliance verifying the product supplied will meet the color, friction, and retroreflectivity requirements prior to installation.

ITEM 868.107 and ITEM 868.113 (Continued)**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.

Recessing of markings shall be per 860.65: Recessed Markings.

Lines shall not be placed adjacent to each other to increase line width unless lines greater than 12 in. wide are required and the manufacturer's specifications allow it.

All existing pavement markings that are to remain, castings, curbs, and rumble strips within the vicinity of the Preformed Markings shall be protected by the Contractor. Existing pavement markings damaged during the 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 Preformed Markings installation from vehicle and foot traffic throughout the minimum cure time recommended by the manufacturer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

Items 868.107 and 868.113 will be measured for payment respectively by the FOOT, complete in place, as specified under Subsection 860.80.

Items 868.107 and 868.113 will be paid for at the respective contract unit price per FOOT. The contract prices shall include all material, labor, and all incidental costs required to complete the work. The installation, inspection, and acceptance of the groove shall be considered incidental to the cost of the item(s).

ITEM 874.2

TRAFFIC SIGN REMOVED AND RESET

EACH

The work under this item shall conform to the relevant provisions of Subsection 828 of the Standard Specifications and the following:

The work to be completed under this item shall consist of removing existing miscellaneous sign panels and supports, discarding the existing supports, and resetting the existing sign panels to new locations on new supports of a type that shall match the existing supports, as indicated on the plans.

The work shall also include excavation (including Class “B” rock) of the existing foundations to a depth of at least 1 foot below grade outside roadways, and to a depth of 3 feet within proposed roadways, the supplying and placing of compacted gravel, the restoration to original condition of any natural features disturbed in any way or manner by the operation, and all materials including new support posts and foundations, and labor and equipment necessary to reset the sign panel at the new location.

METHOD OF MEASUREMENT

Item 874.2 will be measured for payment by the each sign removed and reset as shown on the plans, complete in place.

BASIS OF PAYMENT

Item 874.2 will be paid for at the contract unit price bid per each sign removed and reset, which price shall include removal, loading, transporting and resetting all signs, excavation, removal and disposal of the existing foundation, and all other incidental work, complete in place. Signs and attachment hardware lost, damaged, or otherwise made unsuitable for reuse while being removed, transported, stored or reset shall be replaced at no additional cost. Sign supports shall be paid for under Item 847.1 and 848.1 as applicable. Loam Borrow and Seeding required as part of the restoration work shall be paid under Item 751 and Item 765, respectively.

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 to be done under this item shall consist of the dismantling, removing, transporting and discarding of existing street, warning, regulatory and guide signs and their supports, excavation, removal and disposal of the existing foundation as directed by the Engineer.

Traffic signs to be discarded shall become the property of the Contractor and shall be removed from the project site by the Contractor.

METHOD OF MEASUREMENT

Payment for work under Item 874.41 will be measured for payment by each traffic sign removed and discarded.

BASIS OF PAYMENT

Item 874.41 shall be paid for at the contract unit price per each sign removed and discarded, which price shall include all labor, materials, equipment, removal, loading, transporting, stacking, discarding as required, excavation and disposal of the existing foundations, supplying and placing of gravel backfill and compaction, the restoration or replacement in kind of disturbed surfaces, and all incidental costs required to complete the work.

END OF DOCUMENT

DOCUMENT A00802

DETAIL SHEETS

**THE COMMONWEALTH OF MASSACHUSETTS
MassDOT HIGHWAY DIVISION
TEN PARK PLAZA - BOSTON, MA**

PRELIMINARY ESTIMATE OF QUANTITIES – DETAIL SHEETS

CITY/TOWN: Burlington

YEAR: 2025

ROAD: I-95 C-D Road

CLASS: Urban Principal Arterial

TYPE OF PROJECT: Intersection Improvements

DATE: January 23, 2025

Earth Excavation: 6300 CY	Ordinary Borrow: 425 CY
Old Pavement Excavation: 510 CY	Gravel Borrow: 5000 CY
Crushed Stone: 8 Ton	Pavement Fine Milling: 21000 SY
Test Pit for Exploration: 45 CY	

PAVEMENT NOTES

PROPOSED PAVEMENT FINE MILLING AND RESURFACING (I-95 MAINLINE AND RAMPS) **20,312 SY**

SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC – 12.5-P) OVER ASPHALT EMULSION FOR TACK COAT OVER

MILLING: 1.75" PAVEMENT FINE MILLING

PROPOSED FULL DEPTH RECONSTRUCTION **3,432 SY**

SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT OVER

INTERMEDIATE COURSE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE – 12.5 POLYMER (SIC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT OVER

2 3/4" SUPERPAVE INTERMEDIATE COURSE - 19.0 POLYMER (SIC-19.0-P) OVER ASPHALT EMULSION FOR TACK COAT OVER

BASE COURSE: 5" SUPERPAVE BASE COURSE 37.5 (SBC - 37.5) OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE BASE OVER 8" GRAVEL BORROW, TYPE b

SPECIAL BORROW: 24" GRAVEL BORROW (TYPE b) OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE

PROPOSED HMA PAVEMENT WIDENING – LESS THAN 4 FEET

374 SY

SURFACE COURSE:

1 3/4" SUPERPAVE SURFACE COURSE - 12.5
POLYMER (SSC -12.5-P) OVER
ASPHALT EMULSION FOR TACK COAT OVER

INTERMEDIATE COURSE:

2 1/2" SUPERPAVE INTERMEDIATE COURSE
12.5 (SIC-12.5-P) OVER
ASPHALT EMULSION FOR TACK COAT OVER

BASE COURSE:

8" HIGH EARLY STRENGTH CEMENT CONCRETE

SPECIAL BORROW:

8" GRAVEL BORROW, TYPE b OR RECLAIMED
PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN
8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE
WITH SUBSECTION 170.60

ITEM 102.1 TREE TRIMMING

To be used in areas of trimming tree lines in order to achieve minimum sight distance.

STA 167+63 RT

STA 169+09 RT

ITEM 120. EARTH EXCAVATION

This item includes areas of cuts from cross sections. In areas of fill, existing pavement and loam must be removed prior to filling and this quantity is included here. Excavation is also included for the removed and discarded mulch.

ITEM 120.99 REMOVE AND DISPOSE CONCRETE MEDIAN BARRIER

This item includes areas of removal of the existing concrete median barrier between the C-D road and I-95 NB Mainline. Work includes full depth excavation of the pavement and subbase below existing median barrier where required.

ITEM 141.1 TEST PIT FOR EXPLORATION

Used to locate underground facilities throughout the project, where directed by the Engineer. Also used to locate underground utilities in the vicinity of proposed utility crossings to sewer, water, or drainage pipes. Provided for contingency.

ITEM 146. DRAINAGE STRUCTURE REMOVED

For locations where drainage structures are being removed as shown on Drainage and Utility plan sheets within Project Limits.

ITEM 151. GRAVEL BORROW

Use for the following work:

- Sub-base for full depth HMA pavement reconstruction
- Sub-base for full depth pavement areas less than 4' wide
- Elsewhere as directed.

ITEM 151.2 GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

Use for the following work items:

- Item 201 – Catch Basin
- Item 201.7 – Catch Basin – Double Grate
- Item 202 – Manhole
- Item 230.11 – 10 Inch corrugated metal pipe 16 gage
- Item 230.212 – 12 Inch corrugated metal pipe 14 gage
- Item 241.12 – 12 Inch reinforced concrete pipe class III
- Item 241.21 – 21 Inch reinforced concrete pipe class III
- Item 269.04 – 4 Inch slot perforated corrugated plastic pipe (subdrain)

ITEM 156. CRUSHED STONE

For catch basins, and manholes.

ITEM 170. FINE GRADING AND COMPACTING-SUBGRADE AREA

For grading and compacting roadway subbase or subgrade layers.

ITEM 180.02 PERSONAL PROTECTION LEVEL C UPGRADE

Contingency for Hazardous excavation – 24 hours.

ITEM 180.03 LICENSED SITE PROFESSIONAL SERVICES

Assume 1040 hours.

ITEM 201. CATCH BASIN

For new proposed catch basins.

ITEM 201.7 CATCH BASIN – DOUBLE GRATE

For the two new proposed structures at stations 147+77 and 176+20 as shown in the Drainage and Utility plan sheets

ITEM 202. MANHOLE

For the seven new manholes proposed as shown on Drainage and Utility plan sheets.

ITEM 220. DRAINAGE STRUCTURE ADJUSTED

For locations where drainage structures are being adjusted, and retained as shown on Drainage and Utility plan sheets within Project Limits

ITEM 220.3 DRAINAGE STRUCTURE CHANGE IN TYPE

For locations where drainage structures are being converted and retained as shown on Drainage and Utility plan sheets within Project Limits

ITEM 220.5 DRAINAGE STRUCTURE REMODELED

For locations where drainage structures are being remodeled as shown on Drainage and Utility plan sheets within Project Limits

ITEM 221.1 FRAME AND COVER – SECURED

For drainage structures that are change in types and new manholes.

ITEM 222. FRAME AND GRATE – MASSDOT BAR TYPE

To be used for new catch basins and catch basins-double grate items.

ITEM 223.2 FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED

To be used for drainage structures that are to be removed.

ITEM 224.12 12 INCH HOOD

To be used for proposed catch basins and all catch basin – double grates.

ITEM 227.3 REMOVAL OF DRAINAGE STRUCTURE SEDIMENT

For locations where drainage structures are being removed and retained as shown on Drainage and Utility plan sheets within Project Limits.

ITEM 227.31 REMOVAL OF DRAINAGE PIPE SEDIMENT

For cleaning existing drainage pipe to be retained within the project limits if required by the Engineer.

ITEM 230.11 10 INCH CORRUGATED METAL PIPE 14 GAGE

For locations where new drainage structures are being used as shown on Drainage and Utility plan sheets within Project Limits

ITEM 230.212 12 INCH CORRUGATED METAL PIPE 14 GAGE

For locations where new drainage structures are being used as shown on Drainage and Utility plan sheets within Project Limits

ITEM 241.12 12 INCH REINFORCED CONCRETE PIPE CLASS III

For locations where new drainage structures are being used as shown on Drainage and Utility plan sheets within Project Limits

ITEM 241.21 21 INCH REINFORCED CONCRETE PIPE CLASS III

For locations where new drainage structures are being used as shown on Drainage and Utility plan sheets within Project Limits

ITEM 269.04 4 INCH SLOT PERFORATED CORRUGATED PLASTIC PIPE (SUBDRAIN)

For locations where new drainage structures are being used as shown on Drainage and Utility plan sheets within Project Limits

ITEM 402. DENSE GRADED CRUSHED STONE FOR SUB-BASE

For pavement sub-base course for full depth HMA pavement reconstruction areas.

ITEM 415.2 PAVEMENT FINE MILLING

To be used for fine milling and resurfacing areas.

ITEM 431. HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE

To be used for full depth pavement widening less than 4' areas.

ITEM 443. WATER FOR ROADWAY DUST CONTROL

For use on the pavement subgrade surface for dust control at the following locations and when ordered:

- Full depth concrete and HMA pavement areas, including full depth pavement less than 4' areas.

ITEM 450.231 SUPERPAVE SURFACE COURSE – 12.5 POLYMER (SSC – 12.5 – P)

For mill and overlay, full depth pavement, and full depth widening areas.

ITEM 450.311 SUPERPAVE INTERMEDIATE COURSE – 12.5 POLYMER (SSC – 12.5 – P)

For full depth pavement and full depth widening areas.

ITEM 450.321 SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC – 19.0-P)

For full depth pavement and full depth widening areas.

ITEM 450.42 SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)

For pavement base course at full depth HMA pavement reconstruction areas.

ITEM 451. HMA FOR PATCHING

To be used for permanent pavement repairs needed on milled surfaces.

ITEM 452. ASPHALT EMULSION FOR TACK COAT

For full depth HMA pavement reconstruction, pavement standard milling and resurfacing and full depth HMA pavement widening.

ITEM 453. HMA JOIN ADHESIVE

For use along new pavement structure to join to existing pavement conditions.

ITEM 470. HOT MIX ASPHALT BERM

To be used along roadway and ramps as shown on plans within project limits.

ITEM 472. TEMPORARY ASPHALT PATCHING

For HMA consisting of placing and removing temporary asphaltic material for use as curbing, berm, sidewalk, roadway patches, temporary transition ramps, or other incidental work performed primarily by hand methods.

ITEM 477. MILLED RUMBLE STRIP (TYPE A)

To be used as shown in the Pavement Marking and Signage plans and the Traffic Details.

STA 127+55 to STA 133+80 (I-95 NB at C-D Road Ramp)
STA 128+00 to STA 133+80 (I-95 NB at C-D Road Gore)
STA 133+80 to STA 166+45 (I-95 NB)
STA 137+25 to STA 138+05 (I-95 NB to US-3 Gore)
STA 137+25 to STA 138+45 (I-95 NB to US-3 Ramp)
STA 138+05 to STA 144+20 (C-D Road at US-3 Right Side)
STA 141+35 to STA 145+70 (US-3 to I-95 NB Ramp)
STA 144+20 to STA 145+75 (US-3 to I-95 NB Gore)
STA 163+00 to STA 166+45 (C-D Road Left Side)
STA 163+55 to STA 164+65 (I-95 NB to Middlesex Ramp)
STA 163+65 to STA 164+45 (I-95 NB to Middlesex Gore)
STA 164+45 to STA 172+25 (C-D Road Right Side)
STA 166+45 to STA 170+30 (C-D Road to I-95 NB Ramp)
STA 166+45 to STA 170+80 (C-D Road to I-95 NB Gore)
STA 168+65 to STA 174+80 (Middlesex to I-95 NB Ramp)
STA 172+25 to STA 174+55 (Middlesex to I-95 NB Gore)

ITEM 482.5 SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING

For saw cutting at limits of HMA tie ins along the C-D Road and I-95 Mainline

To be used for proposed sawcutting where shown on the Plans and as required by the Engineer.

ITEM 511.1 GRANITE EDGING TYPE SB – STRAIGHT

To be used for proposed curbing as shown on the Plans.

ITEM 512.1 GRANITE EDGING TYPE SB (RADIUS 10 FEET OR LESS)

To be used for proposed curbing as shown on the Plans.

620.13 GUARDAIL, TL-3 (SINGLE FACED)

STA 111+33 to STA 137+63 RT
STA 150+07 to STA 150+46 RT
STA 152+39 to STA 159+30 RT
STA 162+09 to STA 163+92 RT
STA 162+08 to STA 162+21 LT
STA 168+61 to STA 175+76 RT
STA 136+22 to STA 137+63 RT
STA 163+16 to STA 163+92 RT
STA 167+60 to STA 178+27 RT

627.1 TRAILING ANCHORAGE

STA 137+63 to STA 137+75 RT
STA 162+08 to STA 162+21 LT

627.83 GUARDRAIL TANGENT END TREATMENT, TL-3

STA 149+57 to STA 150+07 RT
STA 151+89 to STA 152+39 RT

628.21 TRANSITION TO NCHRP 350 GUARDRAIL

STA 111+00 to STA 111+32 RT
STA 150+46 to STA 150+81 RT
STA 159+30 to STA 159+66 RT
STA 161+74 to STA 162+09 RT
STA 163+92 to STA 164+24 RT
STA 167+31 to STA 167+60 RT
STA 178+27 to STA 178+62 RT

ITEM 628.305 TEMPORARY IMPACT ATTENUATOR, NON-REDIRECTIVE, TL-3

To be used where temporary barrier creates a blunt end to oncoming vehicle traffic.

ITEM 628.4 TEMPORARY IMPACT ATTENUATOR, REMOVED AND RESET

To be used per Temporary Traffic Control Plans during full depth pavement construction or as required for temporary traffic control setups.

ITEM 630.2 HIGHWAY GUARD REMOVED AND DISCARDED

STA 111+00 to STA 137+63 RT
STA 149+57 to STA 150+81 RT
STA 151+89 to STA 155+66 RT
STA 161+74 to STA 163+92 RT
STA 162+09 to STA 162+21 LT
STA 168+61 to STA 175+76 RT
STA 136+22 to STA 137+75 RT
STA 163+16 to STA 163+92 RT
STA 167+60 to STA 178+62 RT
STA 136+22 to STA 137+63 RT

ITEM 697.1 SILT SACK

For installation in all catch basins and drain inlets that are in operation during construction within the project limits.

ITEM 701. CEMENT CONCRETE SIDEWALK

To be used for proposed cement concrete island noses along C-D Road.

ITEM 702. HOT MIX ASPHALT SIDEWALK OR DRIVEWAY

To be used for new HMA driveways within the project limits.

ITEM 765 SEEDING

To be used in final landscaping along roadways after guardrail installation

ITEM 767.121 SEDIMENT CONTROL BARRIER

STA 111+00 to STA 138+54 RT
 STA 142+94 to STA 146+12 RT
 STA 146+87 to STA 147+54 RT
 STA 148+09 to STA 150+87 RT
 STA 151+86 to STA 160+17 RT
 STA 161+74 to STA 164+24 RT
 STA 164+43 to STA 169+00 RT
 STA 167+30 to STA 178+62 RT

ITEM 769. PAVEMENT MILLING MULCH UNDER GUARDRAIL

For installation under new guardrail sections as shown on the typical sections.

ITEM 828.03 OVERHEAD GUIDE SIGN REMOVED

As shown on Traffic Sign and Pavement Marking Plans

EX-OD-02	STA 111+40
EX-OD-03	STA 127+90
EX-OD-04	STA 127+90

ITEM 828.06 OVERHEAD GUIDE SIGN AND SUPPORT REMOVE AND DISCARDED

As shown on Traffic Sign and Pavement Marking Plans.

EX-OD-05	STA 135+80	Prop I-95 NB C-D Road BL
----------	------------	--------------------------

ITEM 828.1 OVERHEAD GUIDE SIGN – ALUMINUM PANEL (TYPE B)

As shown on Traffic Sign and Pavement Marking Plans and Traffic Sign Summary.

OD-1A	STA 111+40	Prop I-95 NB C-D Road BL
OD-1B	STA 111+40	Prop I-95 NB C-D Road BL
OD-2A	STA 127+86	Prop I-95 NB C-D Road BL
OD-2B	STA 127+86	Prop I-95 NB C-D Road BL
OD-3	STA 136+11	Prop I-95 NB C-D Road BL

ITEM 829. ROADSIDE GUIDE SIGN (G) – ALUMINUM PANEL (TYPE B)

As shown on Traffic Sign and Pavement Marking Plans and Traffic Sign Summary.

E5-1a(50A)	STA 138+19	Prop I-95 NB C-D Road BL
E5-1a(50B)	STA 164+50	Prop I-95 NB C-D Road BL

ITEM 829.06 ROADSIDE GUIDE SIGN AND SUPPORT REMOVED AND DISCARDED

As shown on Traffic Sign and Pavement Marking Plans.

E5-1a(50A)	STA 138+24	Prop I-95 NB C-D Road BL
E5-1a(50B)	STA 164+74	Prop I-95 NB C-D Road BL

ITEM 829.07 ROADSIDE GUIDE SIGN (G) REMOVED AND RESET

As shown on Traffic Sign and Pavement Marking Plans.

EX-G-02	STA 118+60	Prop I-95 NB C-D Road BL
---------	------------	--------------------------

ITEM 832. WARNING-REGULATORY AND ROUTE MARKER – ALUMINUM PANEL (TYPE A)

As shown on Traffic Sign and Pavement Marking Plans.

ITEM 840.103 SUPPORTS FOR OVERHEAD GUIDE SIGN (OD-3) STEEL

As shown on Traffic Sign and Pavement Marking Plans.

OD-3	STA 136+ 11	Prop I-95 NB C-D Road BL
------	-------------	--------------------------

ITEM 844.101 SUPPORTS FOR GUIDE SIGN (G1) STEEL

As shown on Traffic Sign and Pavement Marking Plans.

EX-G-02	STA 118+60	Prop I-95 NB C-D Road BL
---------	------------	--------------------------

ITEM 846.1 SUPPORT FOR GUIDE SIGN (E5-1A) STEEL

As shown on Traffic Sign and Pavement Marking Plans.

E5-1a(50A)	STA 138+19	Prop I-95 NB C-D Road BL
E5-1a(50B)	STA 164+50	Prop I-95 NB C-D Road BL

ITEM 846.2 S-BEAM SUPPORT AND FOUNDATION

As shown on Traffic Sign and Pavement Marking Plans.

MA-W9-8	STA 132+99	Prop I-95 NB C-D Road BL
---------	------------	--------------------------

ITEM 847.1 SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL

As shown on Traffic Sign and Pavement Marking Plans and Traffic Sign Summary.

ITEM 848.1 SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES - STEEL

As shown on Traffic Sign and Pavement Marking Plans and Traffic Sign Summary.

ITEM 852. SAFETY SIGNING FOR TRAFFIC MANAGEMENT

Signs used for Temporary Traffic Control setups, Temporary Traffic Sign Summary and Construction Staging as shown on plans.

ITEM 853.21 TEMPORARY BARRIER REMOVED AND RESET

To be used per Temporary Traffic Control Plans during full depth pavement construction or as required for temporary traffic control setups.

ITEM 853.33 TEMPORARY BARRIER – LIMITED DEFLECTION (TL-3)

For protection of work zone drop-offs as shown on the Temporary Traffic Control Plans and as required by the engineer.

ITEM 853.403 TRUCK MOUNTED ATTENUATOR

As needed to temporarily protect blunt ends for damaged impact attenuators during construction.

ITEM 853.8 TEMPORARY ILLUMINATION FOR WORKZONE

For nighttime work as needed.

ITEM 854.016 TEMPORARY PAVING MARKINGS – 6 INCH (PAINTED)

Temporary paving markings (paint) to be used on base and intermediate course, as directed by the engineer.

ITEM 854.036 TEMPORARY PAVING MARKINGS – 6 INCH (TAPE)

Temporary paving markings (tape) to be used on base and intermediate course, as directed by the engineer.

ITEM 854.1 PAVEMENT MARKING REMOVAL

For removal of existing pavement markings and/or conflicting pavement markings.

ITEM 854.6 TEMPORARY PORTABLE RUMBLE STRIP

For exit ramp work and short term lane closures as shown in the temporary traffic control details or as directed by the engineer.

ITEM 856 PORTABLE CHANGEABLE MESSAGE SIGN

For use within the limits of construction. Total of 6 signs within the project limits for 1 season.

ITEM 856.12 ARROW BOARD

For temporary work for 1 season during the time of construction as needed.

ITEM 859 REFLECTORIZED DRUM

For temporary work for 1 season during the time of construction as needed.

ITEM 864.04 PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC)

As shown on the Pavement Marking & Signage Plans.

ITEM 864.31 SLOTTED PAVEMENT MARKER ONE-WAY WHITE

As shown on the Pavement Marking & Signage Plans.

ITEM 864.34 SLOTTED PAVEMENT MARKER TWO-WAY YELLOW/RED

As shown on the Pavement Marking & Signage Plans.

ITEM 868.106 6 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC)

As shown On the Pavement Marking & Signage Plans.

ITEM 868.107 6 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (TAPE)

As shown On the Pavement Marking & Signage Plans.

**ITEM 868.112 12 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE
(THERMOPLASTIC)**

As shown On the Pavement Marking & Signage Plans.

ITEM 868.113 12 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (TAPE)

As shown on the Pavement Marking & Signage Plans

**ITEM 868.114 24 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE
(THERMOPLASTIC)**

As shown On the Pavement Marking & Signage Plans.

**ITEM 869.106 6 INCH DURABLE WET RECESSED REFLECTIVE YELLOW LINE
(THERMOPLASTIC)**

As shown On the Pavement Marking & Signage Plans.

ITEM 874.2 TRAFFIC SIGN REMOVED AND RESET

As shown on the Pavement Marking & Signage Plans for existing street, warning, regulatory & guide signs.

ITEM 874.41 TRAFFIC SIGN REMOVED AND DISCARDED

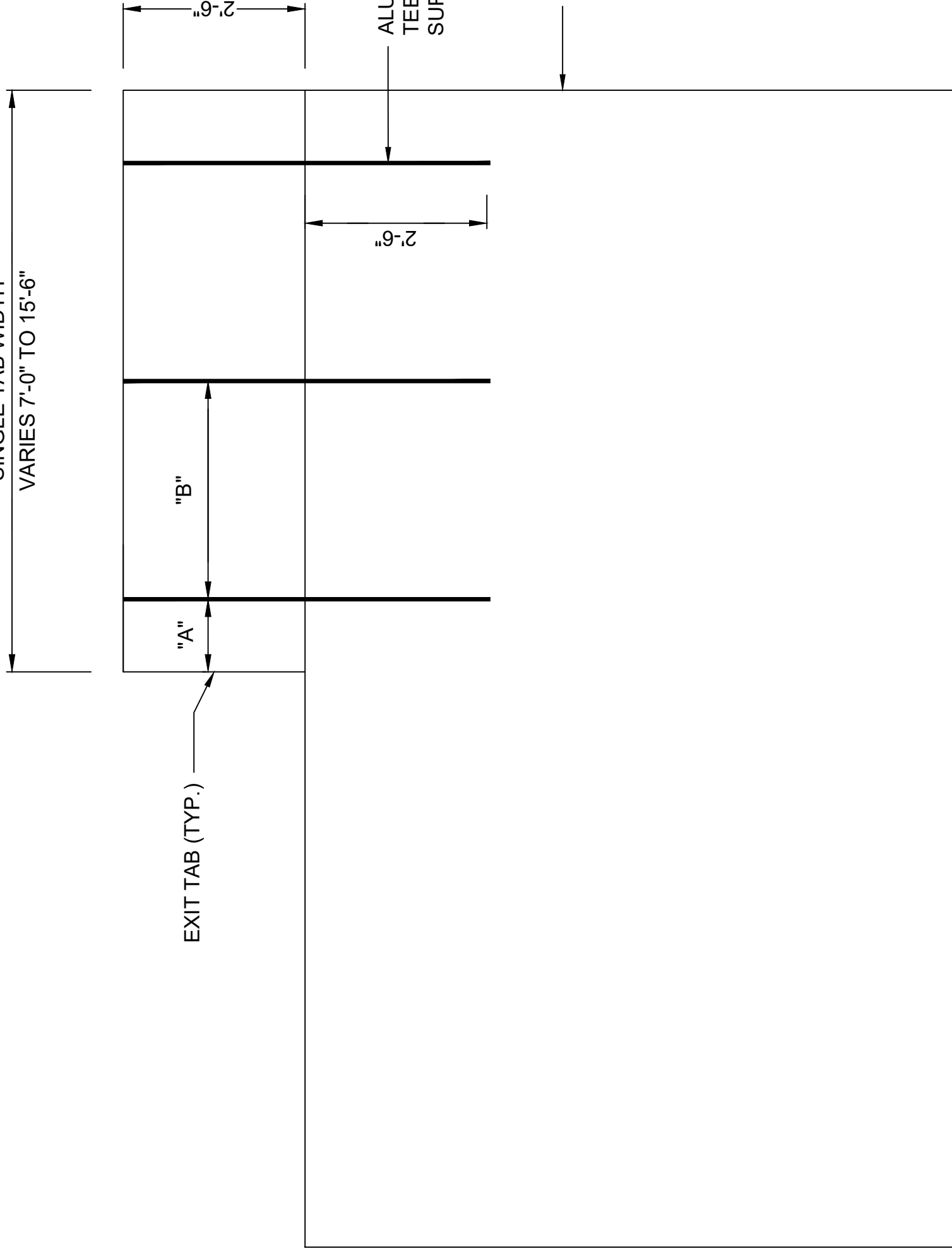
As shown on the Pavement Marking & Signage Plans for existing street, warning, regulatory & guide signs.

END OF DOCUMENT

DOCUMENT A00803

DIAGRAMS AND SKETCHES

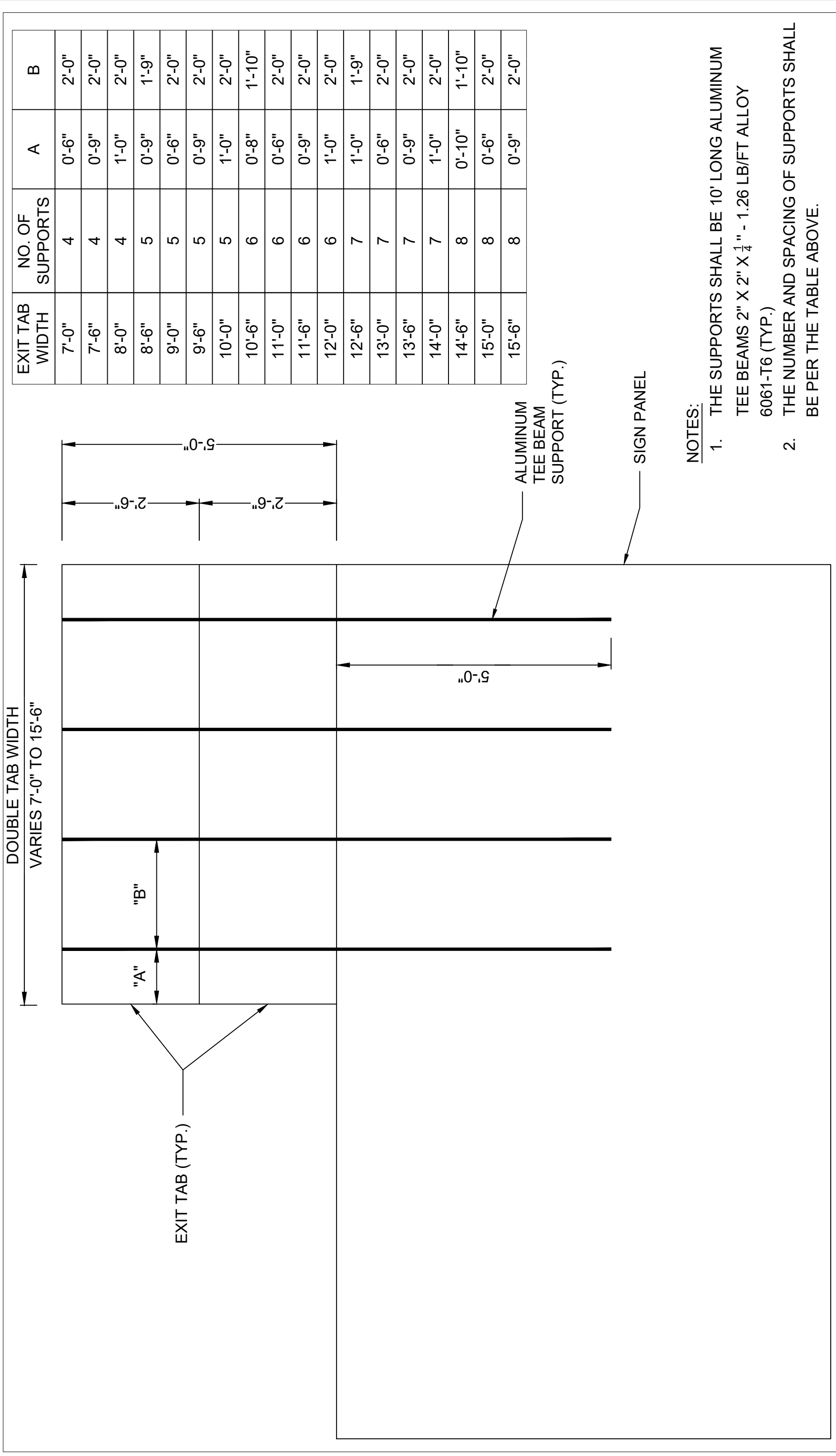
SINGLE TAB WIDTH
VARIES 7'-0" TO 15'-6"



EXIT TAB WIDTH	NO. OF SUPPORTS	A	B
7'-0"	3	1'-0"	2'-6"
7'-6"	3	1'-0"	2'-9"
8'-0"	3	1'-0"	3'-0"
8'-6"	3	1'-0"	3'-3"
9'-0"	3	1'-0"	3'-6"
9'-6"	3	1'-0"	3'-9"
10'-0"	3	1'-0"	4'-0"
10'-6"	3	1'-3"	4'-0"
11'-0"	3	1'-6"	4'-0"
11'-6"	3	1'-9"	4'-0"
12'-0"	3	1'-0"	5'-0"
12'-6"	3	1'-3"	5'-0"
13'-0"	3	1'-6"	5'-0"
13'-6"	3	1'-9"	5'-0"
14'-0"	4	1'-0"	4'-0"
14'-6"	4	1'-3"	4'-0"
15'-0"	4	1'-6"	4'-0"
15'-6"	4	1'-9"	4'-0"

NOTES:

1. THE SUPPORTS SHALL BE 5' LONG ALUMINUM TEE BEAMS 2" X 2" X 1/4" - 1.26 LB/FT ALLOY 6061-T6 (TYP.)
2. THE NUMBER AND SPACING OF SUPPORTS SHALL BE PER THE TABLE ABOVE.



EXIT TAB WIDTH	NO. OF SUPPORTS	A	B
7'-0"	4	0'-6"	2'-0"
7'-6"	4	0'-9"	2'-0"
8'-0"	4	1'-0"	2'-0"
8'-6"	5	0'-9"	1'-9"
9'-0"	5	0'-6"	2'-0"
9'-6"	5	0'-9"	2'-0"
10'-0"	5	1'-0"	2'-0"
10'-6"	6	0'-8"	1'-10"
11'-0"	6	0'-6"	2'-0"
11'-6"	6	0'-9"	2'-0"
12'-0"	6	1'-0"	2'-0"
12'-6"	7	1'-0"	1'-9"
13'-0"	7	0'-6"	2'-0"
13'-6"	7	0'-9"	2'-0"
14'-0"	7	1'-0"	2'-0"
14'-6"	8	0'-10"	1'-10"
15'-0"	8	0'-6"	2'-0"
15'-6"	8	0'-9"	2'-0"

NOTES:

1. THE SUPPORTS SHALL BE 10' LONG ALUMINUM TEE BEAMS 2" X 2" X 1/4" - 1.26 LB/FT ALLOY 6061-T6 (TYP.)
2. THE NUMBER AND SPACING OF SUPPORTS SHALL BE PER THE TABLE ABOVE.

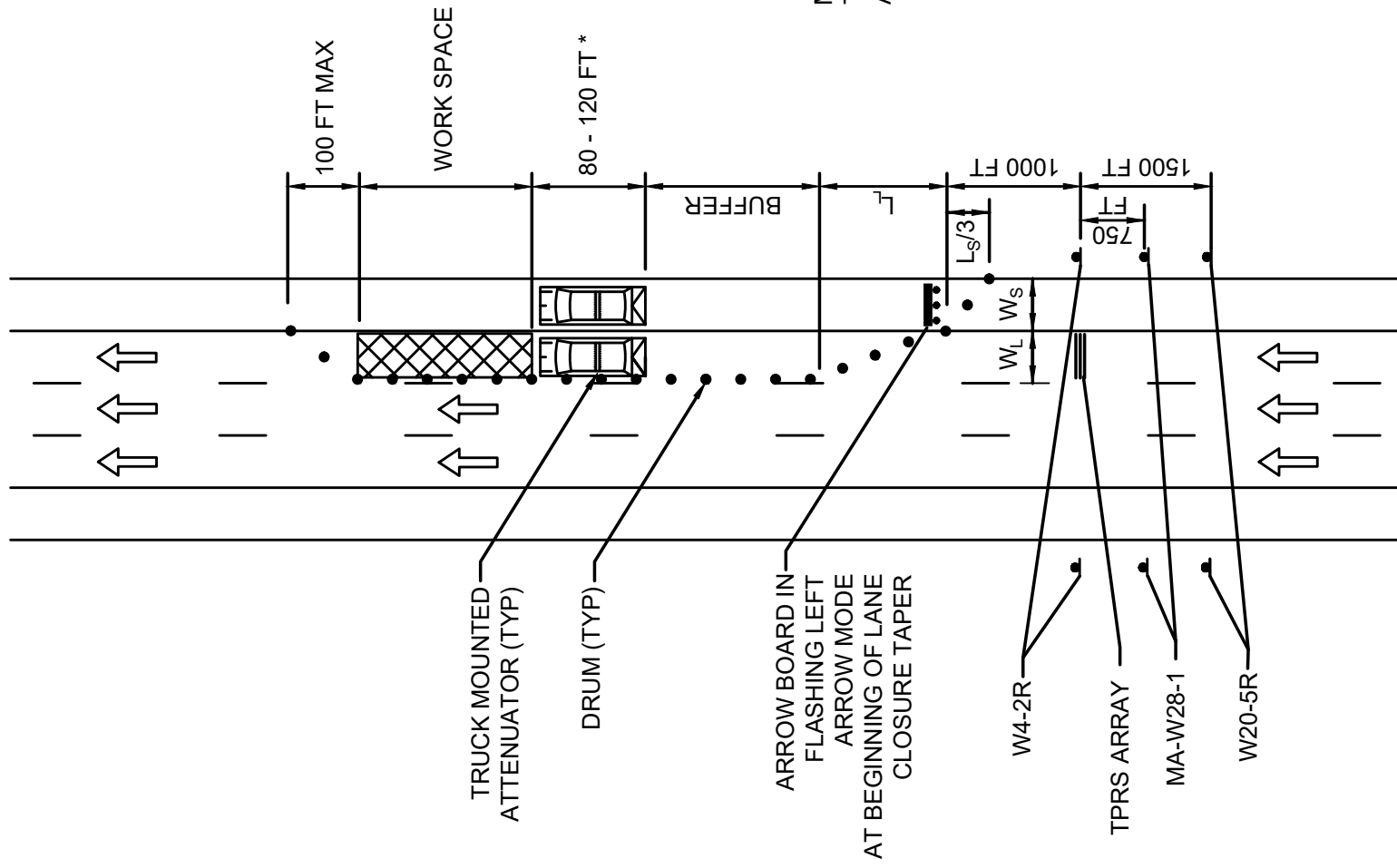


CONSTRUCTION STANDARDS
SECTION 800

**TYPE B GUIDE SIGN
ATTACHMENT DETAIL FOR DOUBLE EXIT TAB**

ISSUE DATE
APRIL 2024

DRAWING NUMBER
828.5.2



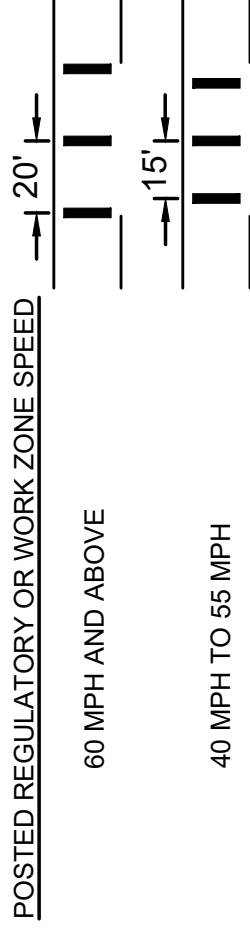
TYPICAL TAPER LENGTHS (L_L OR L_S) IN FEET

SPEED LIMIT (S) IN MPH	WIDTH OF OFFSET (W _L OR W _S) IN FEET	
	10	11
50	500	550
55	550	605
60	600	660
65	650	715
		780

NOTE: FOR SHOULDER WIDTHS NOT LISTED IN TABLE, USE L_S = WS

TEMPORARY PORTABLE RUMBLE STRIP (TPRS)

A TPRS ARRAY SHALL HAVE THREE RUMBLE STRIPS. SPACING SHALL BE AS FOLLOWS:



NOTE: TPRS SHALL BE DEPLOYED ONLY FOR SETUPS OF 12 HOURS OR LESS

MINIMUM LENGTH OF LONGITUDINAL BUFFER IS EQUAL TO THE STOPPING SIGHT DISTANCE AT THE POSTED SPEED LIMIT AND CAN BE DETERMINED FROM THE FOLLOWING TABLE:

STOPPING SIGHT DISTANCE	
SPEED (MPH)	DISTANCE (FT)
50	425
55	495
60	570
65	645

NOTES:

1. THE FIRST TEN DRUMS OF EACH LANE CLOSURE TAPER SHALL BE MOUNTED WITH SEQUENTIALLY FLASHING LIGHTS IF DEPLOYED BETWEEN DUSK AND DAWN.
 2. MAXIMUM DRUM SPACING IN A TAPER IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH. IN TANGENT SECTIONS, MAXIMUM SPACING IN FEET IS EQUAL TO 2.0 TIMES THE SPEED LIMIT IN MPH.
- * DISTANCE MAY BE INCREASED IF ADDITIONAL ROLL-AHEAD ALLOWANCE IS NEEDED. REFER TO MANUFACTURER'S SPECIFICATIONS.



**WORK
ZONE
SAFETY**

Temporary Traffic Control

*Typical Details and
Massachusetts Guidelines
for MassDOT, Municipalities,
Utilities, and Contractors*

SHEET INDEX (1 OF 3)

<u>GENERAL</u>	<u>PAGE</u>
NOTES AND GUIDELINES.....	1-9
FIG. 1: TYPICAL TRAFFIC CONTROL DEVICES.....	10
FIG. 2: PAVEMENT EDGE DROP-OFF GUIDANCE.....	11
FIG. 3: TYPICAL DEVICE SPACING; (AT 30 MPH).....	12-13
FLAGGING GUIDANCE.....	14-15
FIG. 4-5: TYPICAL PEDESTRIAN DEVICES.....	16-17
 <u>STATIONARY OPERATIONS</u>	
FIG. 6: TWO LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED; WORK NEAR CURVE.....	18-19
FIG. 7: TWO LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED.....	20-21
FIG. 8: TWO LANE UNDIVIDED ROADWAY; SHOULDER CLOSED.....	22-23
FIG. 9: TWO LANE UNDIVIDED ROADWAY WITH TRAVERSABLE SHOULDER; HALF OF ROADWAY CLOSED; MAINTAIN TWO-WAY TRAFFIC.....	24-25
FIG. 10: FOUR LANE UNDIVIDED ROADWAY; RIGHT LANE CLOSED.....	26-27
FIG. 11: FOUR LANE UNDIVIDED ROADWAY; LEFT LANE CLOSED.....	28-29
FIG. 12: FOUR LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED.....	30-31
FIG. 13: MULTILANE DIVIDED ROADWAY; RIGHT LANE CLOSED.....	32-33
FIG. 14: MULTILANE DIVIDED ROADWAY; LEFT LANE CLOSED.....	34-35
FIG. 15: MULTILANE DIVIDED ROADWAY; CENTER LANE OR RIGHT/CENTER LANES CLOSED.....	36-37
FIG. 16: MULTILANE DIVIDED ROADWAY; CENTER LANE OR LEFT/CENTER LANES CLOSED.....	38-39

SHEET INDEX (2 OF 3)

<u>STATIONARY OPERATIONS (CONT.)</u>	<u>PAGE</u>
FIG. 17: MULTILANE DIVIDED ROADWAY; RIGHT SIDE OF OFF RAMP CLOSED.....	40-41
FIG. 18: MULTILANE DIVIDED ROADWAY; LEFT SIDE OF OFF RAMP CLOSED.....	42-43
FIG. 19: MULTILANE DIVIDED ROADWAY; ROADWORK BEYOND ON RAMP.....	44-45
FIG. 20: MULTILANE DIVIDED ROADWAY; ROADWORK BEYOND OFF RAMP.....	46-47
FIG. 21: MULTILANE DIVIDED ROADWAY; TYPICAL RAMP CLOSURE.....	48-49
FIG. 22: MULTILANE DIVIDED ROADWAY; TYPICAL CLOVERLEAF RAMP CLOSURE.....	50-51
FIG. 23: MULTILANE DIVIDED ROADWAY; TYPICAL RAMP CLOSURE; ADVANCE SIGNING.....	52-53
FIG. 24: FOR MULTILANE DIVIDED ROADWAY; PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS.....	54-55
 <u>MOBILE OPERATIONS</u>	
NOTES FOR MOBILE OPERATIONS.....	56
FIG. 25: ANY ROADWAY; BEYOND RIGHT SHOULDER.....	57
FIG. 26: ANY ROADWAY; SHOULDER.....	58
FIG. 27: DIVIDED ROADWAY; MEDIAN WORK.....	59
FIG. 28: UNDIVIDED TWO LANE ROADWAY; HALF OF ROADWAY CLOSED.....	60
FIG. 29: MULTILANE DIVIDED ROADWAY; LEFT LANE.....	61
FIG. 30: MULTILANE DIVIDED ROADWAY; RIGHT LANE.....	62
FIG. 31: MULTILANE DIVIDED ROADWAY; CENTER LANE.....	63
FIG. 32: POST-STORM CLEANUP OPERATION.....	64

SHEET INDEX (3 OF 3)

<u>EMERGENCY RESPONSE</u>	<u>PAGE</u>
NOTES FOR TRAFFIC EMERGENCY/INCIDENT OPERATIONS...	65
FIG. 33: ANY ROADWAY; SHOULDER ENCROACHMENT.....	66
FIG. 34: TWO LANE ROADWAY; NO SHOULDER; TRAVEL LANE ENCROACHMENT.....	67
FIG. 35: TWO LANE ROADWAY; TRAVERSABLE SHOULDER; SINGLE LANE ENCROACHMENT.....	68
FIG. 36: TWO LANE ROADWAY; TRAVERSABLE SHOULDER; CENTER OF ROADWAY.....	69
FIG. 37: MULTILANE DIVIDED ROADWAY; RIGHT LANE.....	70
FIG. 38: MULTILANE DIVIDED ROADWAY; LEFT LANE.....	71
FIG. 39: MULTILANE UNDIVIDED ROADWAY; LEFT LANE.....	72
FIG. 40: MULTILANE DIVIDED ROADWAY; MIDDLE LANE; APPROACH FROM LEFT.....	73
FIG. 41: MULTILANE DIVIDED ROADWAY; MIDDLE LANE; APPROACH FROM RIGHT.....	74
 <u>TRAFFIC SIGNAL REPAIR WORK AT INTERSECTION</u>	
FIG. 42: MULTILANE UNDIVIDED ROADWAY; LEFTMOST OR LEFT TURN LANE.....	75
FIG. 43: TWO LANE UNDIVIDED ROADWAY; ONE LEG OF INTERSECTION.....	76
FIG. 44: MULTILANE UNDIVIDED ROADWAY; CENTER OF INTERSECTION.....	77
 <u>PEDESTRIAN DETAILS</u>	
FIG. 45: PEDESTRIAN BYPASS.....	78
FIG. 46: TEMPORARY SIDEWALK CLOSURE.....	79
 <u>BIKE LANE DETAILS</u>	
FIG. 47: BIKE LANE CLOSURE.....	80-81

INTRODUCTION

This guide has been prepared to assist in the planning and installing of temporary traffic controls in maintenance, utility, or short-term construction work areas (work lasting 10 hours or less). This guide serves to assist with the many decisions that must be made for each work site. Special planning for traffic control is necessary on a case by case basis because conditions can vary widely among work locations. **Since this guide cannot cover every situation, representative illustrations covering typical short-term construction, maintenance, and utility operations are presented.**

All typical traffic control device setups illustrated should be considered as guides. The traffic control devices that are shown, the arrangement or position of the devices, and the distances prescribed in the tables are based on the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) and the Massachusetts Amendments to the MUTCD (MA Amendments), but these illustrations only present minimum standards. The provision of safe work zones for all roadway users and roadway workers affected by these activities is paramount. Traffic controls may be expanded or improved upon whenever deemed necessary. Traffic movement through the work site all traffic control devices shall be periodically observed and inspected at all locations.

If necessary, Part 6 of the MUTCD and the MA Amendments, Chapter 17 (Work Zone Management) of MassDOT's Project Development & Design Guide, and the "Traffic Engineering and Safety Section" of the MassDOT web site: (<https://www.massdot.state.ma.us/highway/Departments/TrafficandSafetyEngineering.aspx>), as well as MassDOT District offices can provide additional guidance, information, and suggestions for work zone setups.

RESPONSIBILITIES FOR TRAFFIC CONTROL

Short-term construction, maintenance, and utility work on or near the roadway creates a potentially hazardous situation, typically requiring the use of temporary traffic controls. These controls are important to protect both work crews and the road users. It is the responsibility of each maintenance foreman to establish and maintain safe and effective controls.

Usually the supervisor, working with the crew, plans the traffic control procedures for proposed work sites. The foreman is responsible for re-requesting, storing, and maintaining all traffic control devices necessary for their crews.

The foreman is responsible for placing the devices according to these guidelines. They must inspect each installation and observe traffic flow through the area. The foreman is generally authorized to make adjustments to the original installations that, in their judgment, are necessary to improve the control of traffic and establish greater safety.

All necessary traffic control devices must be installed before work begins and properly maintained during the work period. They must also be removed as soon as they are no longer relevant to the roadway conditions.

PAGE 2

In situations such as night time road or lane closures, detours, or other unusual conditions on state highways, the District Traffic Maintenance Engineer (DTME) should be advised. If the DTME is absent, the section foreman shall follow the instructions of the District Maintenance Engineer.

TRAFFIC CONTROL DEVICES

Traffic control devices regulate the movement of road users, warn of unexpected or unusual roadway conditions, and inform them how to maneuver safely through or around the work area. All signs, channelizing devices, barricades, and other miscellaneous traffic control devices should work together to guide traffic safely and efficiently. Common temporary traffic control devices are outlined and described below.

Signs

Temporary traffic control zone (TTCZ) signs are the primary means of providing information and directions to roadway users. All signs must be retroreflective per MassDOT's latest standard.

Warning signs call attention to unexpected conditions and to situations that might not be readily apparent to road users on or adjacent to a roadway. Warning signs alert road users to conditions that might call for a reduction of speed or an action in the interest of safety and efficient traffic operations. Nearly all warning signs for construction and work areas have black legends and borders on a fluorescent orange background.

Regulatory signs shall be used to inform road users of selected traffic laws or regulations and indicate the applicability of the legal requirements. Regulatory signs typically have black legends and borders on a white background.

Channelizing Devices

When used properly, traffic cones, reflectorized plastic drums, and barricades guide traffic through the work area along an appropriate travel path. It takes roadway users a certain distance along the roadway to safely move away from the upcoming active work site. These transition distances are based on the following taper length (L) formulas:

$L = WS^2/60$ for speeds of 40 mph or less; or

$L = WS$ for speeds of 45 mph or more; where

- L = minimum length of taper in feet,
- S = posted speed limit or typical travel speed in miles per hour prior to the work, and
- W = width of lane closure in feet.

The spacing of channelizing devices (in feet) is approximately equal to the existing speed of traffic (in mph).

Warning Lights

Rotating beacons and other flashing lights mounted on work vehicles, signs, or channelizing devices help alert roadway users to the work area. They may also be used to warn roadway users of hazards within the work area. The first 10 drums in any taper shall be equipped with sequential flashing lights.

Arrow Boards

Arrow boards are a special type of sign that are highly visible work zone warning devices. They are particularly effective on highways, where both speed and volume are high. Arrow boards in the non-directional, CAUTION, mode (four corner flashing) may be used to indicate that a shoulder is closed. Arrow boards in the arrow mode shall only be used when a travel lane is dropped on a multi-lane road and one lane of traffic must merge with another. All arrow boards should be located at the beginning of each lane or shoulder closure taper without extending outside of it. Arrow boards shall flash at a rate of 25 to 40 flashes per minute. Arrow boards shall not be used to indicate a lane shift.

BASIC REQUIREMENTS

In every work situation, the temporary traffic control setup must: Give roadway users sufficient advance warning of the work area; advise roadway users of the proper actions to take and travel paths to follow; and provide protection to roadway users, workers, and the work area. These three general requirements can be met as outlined below.

Provide Advance Warning

Warning devices along the approaches to a work area alert roadway Users to changes to road and operating conditions. Roadway users are usually alerted to these dangers via a sign or series of signs installed in the same order as the roadway user generally would expect to see them on long-term construction projects.

The initial project limit sign is usually a general warning such as "ROAD WORK 1500 FT". Other operational warning signs then provide the roadway user with more specific information about the situation. A minimum of three advance warning signs (the initial project limit sign and two operational warning signs) is recommended when work is located on the traveled way. Warning lights and flags can be used to attract attention to the signs. A highly visible work area helps reinforce the advance warnings.

Advise and Direct Travelers

Operational warning signs provide information to the road-way user such as the type of work being performed, special conditions to watch for, or actions to take. These include signs such as, SHOULDER WORK, RIGHT LANE CLOSED, DETOUR 500 FT, ROAD CLOSED to THRU TRAFFIC, POLICE OFFICER AHEAD, etc. All of these signs must be located far enough in advance of the work area that the roadway user has sufficient time to react to them appropriately. For projects in Urban Areas, see detail: Typical Device Spacing for minimum sign spacing.

Protect Travelers, Workers, and the Work Area

The primary protection of any work area is its own visibility. Traffic cones, reflectorized plastic drums, portable breakaway barricades, etc. are used to make the work area visible and separate workers from traffic.

PAGE 4

Other devices, such as flashing lights, flags, delineators, temporary lighting, and portable changeable message signs (PCMS) can be used to provide additional emphasis and visibility.

Workers must protect themselves by being alert to their work situation, wearing safety vests and hard hats, and by facing traffic whenever possible.

Work vehicles can also add protection when they are equipped with truck mounted attenuators, rotating beacons, flashing lights, flashing arrow boards, etc. and are parked between workers and oncoming traffic. However, workers should not position themselves between two closely parked vehicles. No private personal vehicles are allowed within the work site.

PLANNING GUIDELINES

Decisions regarding selection of work area traffic control devices require a knowledge and understanding of the specifics of each work zone. As there may be vast differences between situations, three main variables need to be considered prior to determining the need for, or the selection of, traffic control devices: 1) location of work, 2) type of roadway, and 3) speed of traffic.

Compiling information about these variables will help with planning a safe work area control. Each of these variables is explained below.

Location of Work

The choice of traffic controls needed for a short-term construction, maintenance, or utility operation depends upon the work zone's location. As a general rule, the closer the active work site is to the roadway, the more control devices are needed. Work can take place:

- Away from the shoulder or edge of pavement. No special devices are needed if work is confined to an area 15 or more feet from the edge of the shoulder. A general warning sign, such as ROAD WORK AHEAD, should be used if workers and equipment must occasionally move closer to the roadway.
- On or near the shoulder/ edge of pavement. This area should be signed as if work were on the road itself, since it is part of the roadway users' recovery area. Advance warning and operational signs are needed, as well as channelization devices to direct traffic and keep the work area visible to roadway users.
- On the median of a divided highway. Work in this location may require traffic control in both directions of traffic. Advance warning and channelization devices should be used if the median is narrow.
- On the roadway. This condition requires detailed protection for workers and sufficient warning to roadway users. Advance warning must provide a general message that work is taking place as well as information about specific hazards and specific actions the roadway user must take.

TYPE OF ROADWAY

The characteristics of the roadway also have an important influence on the selection of work area traffic control. The roadway, itself, may present special hazards. You should plan for maximum protection, using the worst hazard present as your guide to signing the work area. Some general considerations are described below for road conditions.

One-way roads: A one-way road requires signage on both sides of the road if it carries two or more lanes in one direction, ensuring roadway users in all lanes are alerted and informed.

Two-way roads:

- **Undivided:** Two-way, undivided roads will usually require controls for both directions of traffic. When the active work site is well off the roadway, controls for the opposite lane may be eliminated.
- **Divided:** Work on divided multi-lane roadways can often be handled as work along a one-way road (i.e. signs are provided along both sides of the roadway along the direction affected). If the work is in the median, both directions of traffic must be controlled, and both approaches should be double signed (i.e. have all 3 advance warning signs on both sides of each direction).

EFFECTS OF SPEED ON WORK ZONES

Speed is an important consideration in the use of work area traffic control devices. As a general rule, the greater the speed of traffic approaching a work area, the greater the size, number, and spacing of control devices.

Size. The standard size for most warning signs is 36 x 36 inches on conventional roadways and 48 x 48 inches on freeways and expressways. Signs larger than the standard 36 x 36 inches may be desirable on high-speed conventional roads.

Position. Install signs far enough in advance of the work area so the roadway users have time to react to them (see charts associated with diagrams for spacing).

OTHER FACTORS

Sight Obstructions. To ensure safety, work areas must be visible. Assess the placement of the temporary traffic control devices by driving through the area, and determine if the devices can be easily seen and provide sufficient time for roadway users to react in a safe manner. Extra precaution should be enacted in areas where horizontal or vertical curves may obstruct a roadway user's clear view of road activities ahead.

Police/Flaggers. It should be noted that the MUTCD does not require police/flaggers for stationary setups. If police/flaggers are used, a police/flagger ahead sign should be used in advance of any point where the police/flagger is stationed to control road users.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL

1. PLAN YOUR WORK

Inspect location of work area and its surroundings.

Analyze:

- Location of work in relation to the traveled way, intersecting road-ways, driveways, and sight distances;
- Type of roadway and traffic involved; and
- Volume and speed of traffic.

Meet and discuss the work and necessary traffic control with the crew.

Study representative illustrations in this guide to develop a temporary traffic control plan (TTCP).

Other Considerations:

- Base your traffic control plan on the premise that all roadway users are unfamiliar with the area.
- The closer the work area location is to traffic, the more controls are needed.
- Plan for maximum protection.
- Select and inspect the temporary control devices needed (including all warning signs), if they are not in good condition, REPLACE THEM!
- Then collect and transport them to the work site.
- Determine their proper placement.
- Install signs and other traffic control devices prior to allowing personnel or equipment onto the roadway.
- Make sure signs are reflective, accurate, clean, and meet specifications. Completely cover any existing permanent signs that will conflict with the messages of the new work area control signs.

2. INSTALLING/REMOVING TEMP. TRAFFIC CONTROL DEVICES

Care must be exercised when installing and removing temporary traffic control (TTC) devices. The traffic control needed to perform the operation safely is dictated by the location on the roadway the operation will occur: in a shoulder or a lane, in the left lane or right, etc. In all cases, installing TTC begins and ends as a mobile operation.

A shadow vehicle with a truck mounted attenuator (TMA) shall be used to protect workers installing and removing TTC devices on all roadways with a posted speed limit of 45 MPH or greater as directed by the engineer. TTC devices shall not be installed or removed from a shadow vehicle with a TMA. TTC devices shall be installed or removed from a work operation vehicle only and a shadow vehicle with a TMA shall be used to protect the workers installing or removing the devices.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

3. INSTALL TRAFFIC CONTROL DEVICES AT WORK SITE

FOR LOWER SPEED (≤ 40 MPH) ROADWAYS:

- 1) All devices shall be installed in order with the flow of traffic.
- 2) Where one direction of traffic is being affected, the first sign installed should be the sign farthest from the work site, and on the same side as the work.
- 3) Where two directions of traffic are affected, install signs for opposing traffic first, starting with the sign farthest from the work area. When signs for opposing traffic have been installed, install signs on the same side as the work area, again beginning with the sign farthest from the active work site.
- 4) Once signs are in place, other traffic control devices shall be installed in the same manner as the signs.

FOR HIGHER SPEED (≥ 45 MPH) ROADWAYS:

- 1) All devices shall be installed in order with the flow of traffic.
- 2) Install all advance warning signs, beginning with the ROAD WORK XXX (W20-1) sign and ending with the END ROAD WORK/DOUBLE FINES END (MA-R2-10E) sign.
- 3) Install all signs beginning with the opposite side which will be closed (for a right lane closure; first, install all signs on the left side (shoulder) and then install all signs on the right side (shoulder). No signs shall be erected on the roadway unless delineated by traffic control devices.
- 4) If required, install shoulder taper as the mobile operation advances.
- 5) Install arrow board on the shoulder prior to the merging taper or as close to the beginning of the merging taper as possible.
- 6) Install channelizing devices to form a merging taper. Use of a shadow vehicle with a TMA during installation is required on roads with speed limits of 45 MPH or greater or as directed by the Engineer.
- 7) Install traffic control devices along the buffer space at the appropriate spacing.
- 8) Continue placing devices along the work space at the appropriate spacing.
- 9) Install devices for the termination area as necessary.
- 10) Place the shadow vehicle with a TMA in advance of the first work crew or hazard approached by motorists. Multiple shadow vehicles may be required based on the number of lane and shoulder closures implemented.

4. INSPECT WORK AREA SIGNING AND CONTROL DEVICES

- 1) Assess the placement of the temporary traffic control devices by driving through the work area. All approaches to the work zone should be checked.
- 2) Ensure roadway users will have sufficient time to read signs and react in a safe manner.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

- 3) Check visibility of entire work area. If approaching roadway users can't see the work area well, or if they can't see ahead to traffic that may already be queued on the approach because of the work, additional traffic control devices should be deployed.
- 4) Check to ensure the proper temporary traffic control devices are positioned to protect workers from traffic (where possible).
- 5) Ensure all workers wear safety vests, hard hats, and all other necessary safety equipment. All worker safety gear should be in good condition. All reflective gear should be clean and highly visible in the dark.
- 6) Record in the log book the number and location of all signs and devices.

Considerations:

- Work area signs should never be blocked from view or obscured by vegetation, existing signs, or other obstructions.
- Flags, flashing lights, and edge line traffic cones can be used to improve visibility.

5. REMOVE TRAFFIC CONTROL DEVICES AT WORK SITE

All workers and equipment should be clear from work site BEFORE removing signs and other devices.

FOR LOWER SPEED (≤ 40 MPH) ROADWAYS:

- 1) Remove signs and other devices within the delineated area when work is complete.
- 2) Remove other traffic control devices in the reverse order in which they were installed
- 3) Remove signs in the reverse order in which they were installed (i.e. sign closest to the work area to be removed first).
- 4) When the operation is complete, uncover any existing permanent signs covered in Step 2.
- 5) Record in the log book the time at which the signs were removed.

FOR HIGHER SPEED (≥ 45 MPH) ROADWAYS:

All TTC devices for a stationary lane closure on a multi-lane roadway, except advance warning signs, should be removed against the flow of traffic in the following sequence:

- 1) Remove the channelizing devices starting from the end of the activity area working back to the widest part of the merging taper.
- 2) A shadow vehicle with TMA shall be positioned to protect workers removing devices and work backwards as the setup is removed from the roadway.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

- 3) Place the removal vehicle on the shoulder, and remove the channelizing devices from the merging taper by hand onto the work vehicle.
- 4) Remove the arrow board once traffic is clear and it is safe to do so.
- 5) Circle back and moving with the flow of traffic, remove the advance warning signs starting with the opposite side from previous lane closure first.
- 6) At no time shall workers run across the multilane roadway to remove signs on both sides of the road simultaneously.
- 7) Record in the log book the time at which the signs were removed

RAMP FACILITIES

At all times it is necessary to control the on and off-ramp traffic during the installation and breakdown of traffic control devices. Use of temporary traffic slow-downs or rolling roadblocks is recommended to allow for the safety of workers handing temporary traffic control devices on ramp facilities. A shadow vehicle with a TMA shall be used to protect the workers installing or removing the devices. At no time shall the work operation vehicle be used as the shadow vehicle with the TMA.

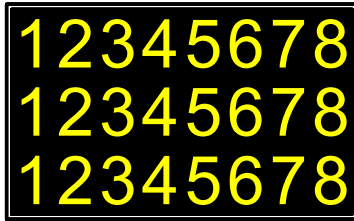
USE OF THIS GUIDE

Illustrations showing minimum standards for short-term construction, maintenance, and utility operations are arranged in this guide by type of operation. The users of this guide should compare all illustrated examples and examine their differences. After gathering information about the work zones using the general guidelines as outlined, proceed as follows:

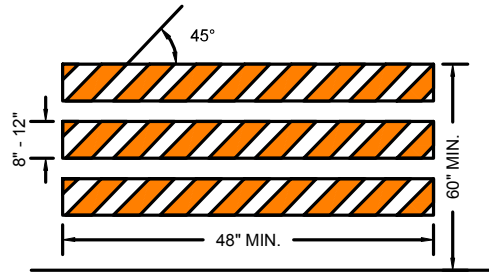
- 1) Turn to the Index. Consider the type of operations and the type of roadway upon which work will occur.
- 2) Select the figure that most closely matches the conditions where you plan to work. Remember that all diagrams represent minimum standards.
- 3) Read the title of the illustration to ensure that it is appropriate to your location. Study the layout of traffic control devices and read all notes.
- 4) Consult the appropriate tables, as directed on each illustration to determine taper length and proper spacing of signs. Notice that distances change when speeds change. Also note that these are guidelines, only, and they must be adapted to your specific work area.
- 5) Use the **“PROCEDURES FOR WORK AREA TRAFFIC CONTROL”** for assistance in completing all necessary steps to provide effective and safe work area traffic control.



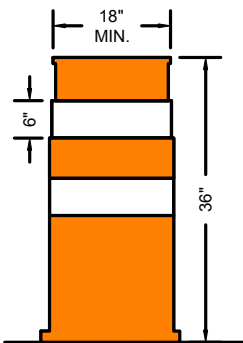
SIGN



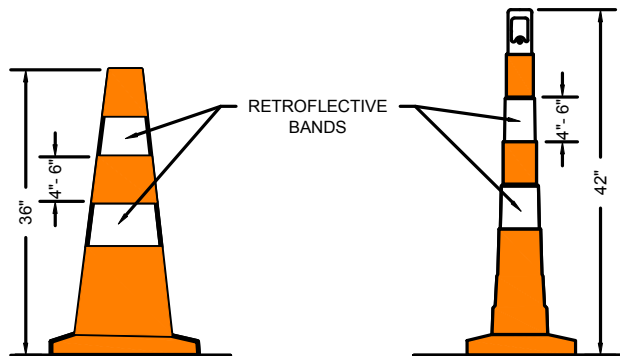
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



TYPE III BARRICADE

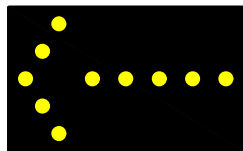


DRUM

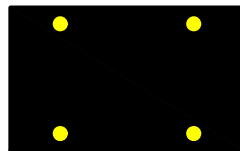


CONES

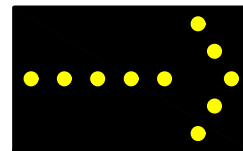
Cones may be used for all daytime operations. For night work, drums should be used to form the taper(s) and cones can be used along the tangent section of the work setup.



LEFT

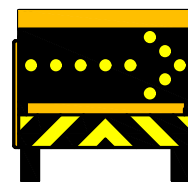


CAUTION



RIGHT

ARROW BOARD (WITH MODE)



TRUCK MOUNTED ATTENUATORS

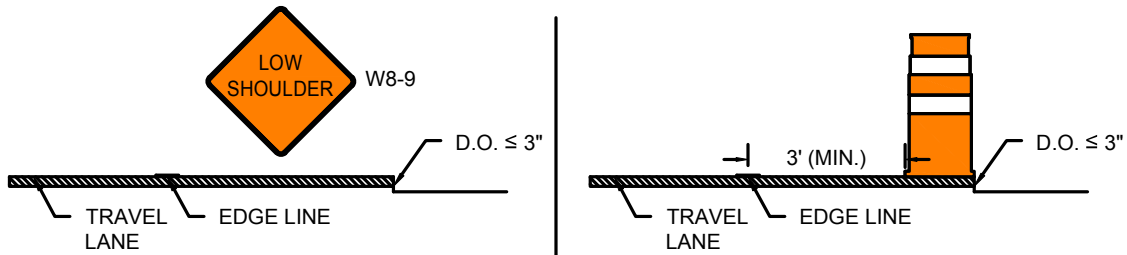
Truck Mounted Attenuators (TMA) shall be positioned between the start of the work area and the end of the designated buffer zone. The TMAs are to be positioned in each temporarily closed lane. This includes shoulders (≥ 8 feet) whether combined with a travel lane closure or being closed alone. These TMA conditions are required on roadways with speeds of 45 MPH or greater. TMAs can be used on other roadways at the discretion of the engineer. TMAs shall be used for the deployment and removal of all traffic control devices, including all advance warning signs.

SHORT-TERM PAVEMENT EDGE DROP-OFFS

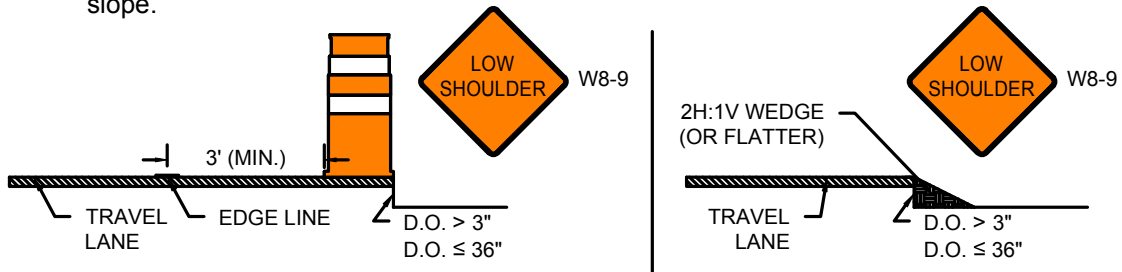
Note that this guidance is adopted from the Roadside Design Guide, 4th Edition.

Pavement drop-offs may occur during paving, excavation, and other construction activities. Drop-offs create hazards for vehicles if not properly mitigated. The following applies for all roads with speed limits greater than 30 mph; for roads with speed limits of 30 mph or less, treatments for pavement edge drop-offs are at the discretion of the Engineer. Drop-offs between adjacent, open travel lanes should not exceed 2", and any drop-off in excess of 3" should not be left unattended without one of these mitigation measures applied.

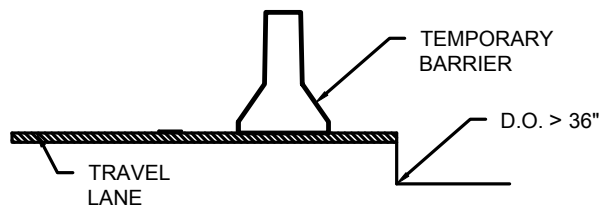
- Shoulder drop-offs 3" or less adjacent to a shoulder or active travel lane should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment; or
 - ✓ The placement of drums on the traffic side of the drop-off.



- Shoulder drop-offs greater than 3" but less than or equal to 36" should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment and the placement of drums on the traffic side of the drop-off, offset at least 3' from the travel lane; or
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment and the placement of a temporary wedge of material along the face of the drop-off. The wedge should consist of stable material placed on a 2H:1V or flatter slope.



- Shoulder drop-offs greater than 36" must be protected by temporary barrier.





POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	55
45-55	500 / 1000 / 1000	660	495	40	40
60-65	1000 / 1600 / 2600	780	645	40	50










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

MINIMUM SPACING OF ADVANCE WARNING SIGNS FOR URBAN ROADWAYS	
ROAD TYPE	DISTANCE BETWEEN SIGNS
URBAN (LOW SPEED)	100 FT
URBAN (HIGH SPEED)	350 FT

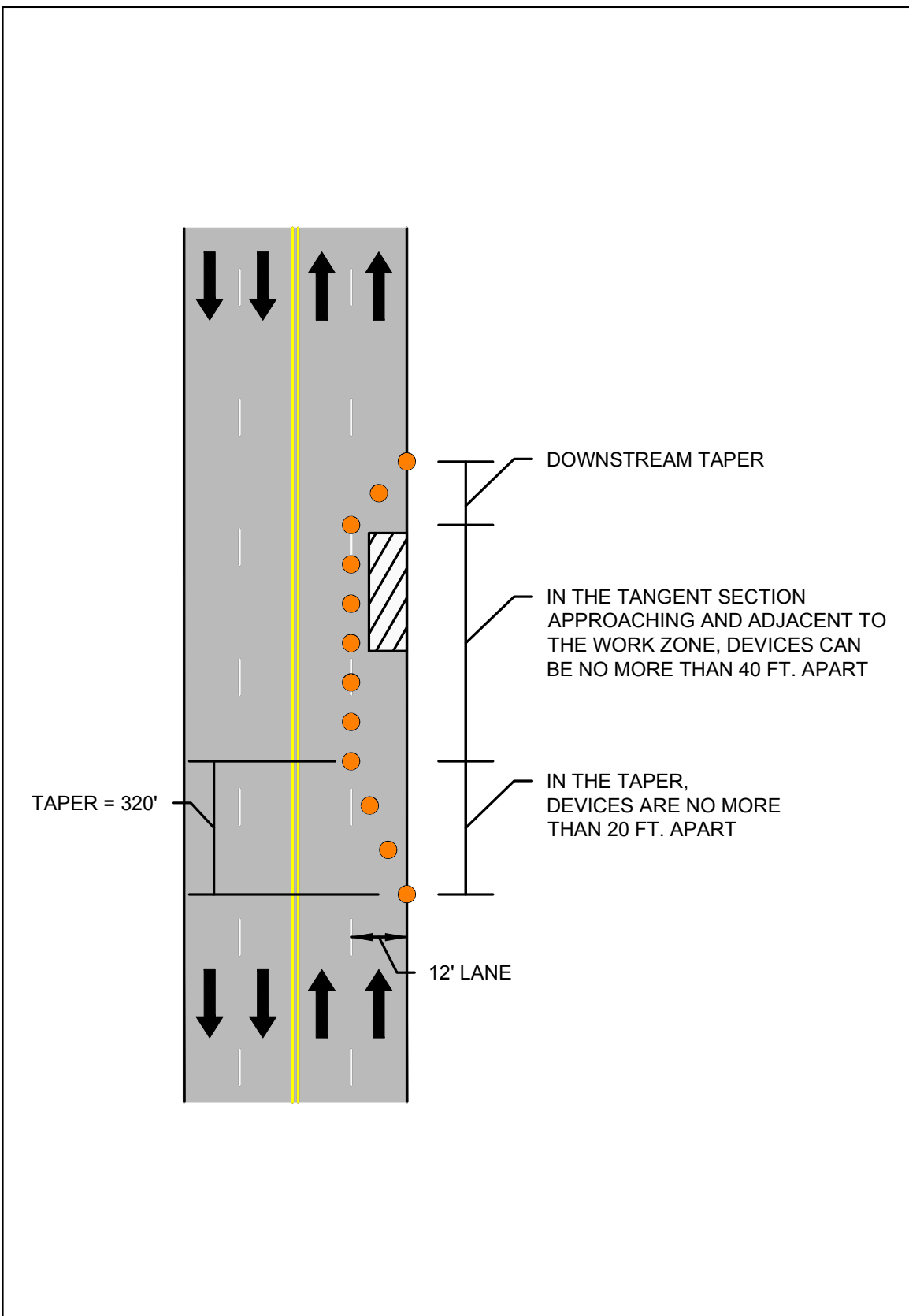
NOTES


1. 40 FT = 10 FT PAVEMENT MARKING + 30 FT SKIP

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 14</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FLAGGING GUIDANCE</p>
--	---	--------------------------

Guidance for Flagging Operations

NOTE:

A flagger shall always be aware of their surroundings and have a good escape route. A flagger shall never be positioned directly beside or against construction equipment. When a flagger is required to direct traffic in an area where the escape route is partially blocked by a traversable obstruction such as a guardrail, the flagger shall be physically capable of traversing that obstruction. Prior to commencing a project, the supervisor in charge shall review the project, including guardrail areas, for safe flagging stations. The supervisor in charge shall clearly communicate with the flagger(s), indicating any locations where they cannot safely perform their duties.

Each flagger shall be equipped with the following high visibility clothing, signaling, and safety devices:

- 1) A white protective hard hat with a minimum level of reflectivity per the requirements of ANSI, Type I, Class E&G;
- 2) A clean, unfaded, untorn lime/yellow reflective safety vest and pants meeting the requirements of ANSI 107 Class 3 with the words "Traffic Control" on the front and rear panels in minimum two (2) inch (50 millimeter) high letters;
- 3) A 24 inch "STOP/SLOW" traffic paddle conforming to the requirements of Part 6E.03 of the Manual on Uniform Traffic Control Devices (MUTCD), a weighted, reflectorized red flag, flagger station advance warning signage, and two-way radios capable of providing clear communication within the work zone between flaggers, the Contractor, and the Engineer. The traffic paddle shall be mounted on a pole of sufficient length to be seven feet above the ground as measured from the bottom of the paddle;
- 4) A working flashlight with a minimum of 15,000 candlepower and a six inch red attachable wand, a whistle with a working lanyard, and a First Aid kit that complies with the requirements of ANSI Z308.1; and
- 5) An industrial/safety type portable air horn that complies with the requirements of the U.S. Coast Guard.

A "STOP/SLOW" paddle should be the primary hand-signaling device. It shall have an octagonal shape on a rigid handle. Flag use should be limited to emergency situations.

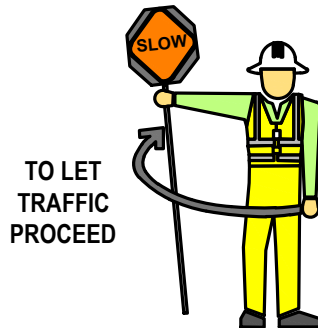


Properly Trained Flaggers

- Give clear messages to drivers.
- Allow distance for drivers to react.
- Coordinate with other flaggers.
- Use standard signaling methods.

Properly Equipped Flaggers

- Use approved stop/slow paddles.
- Use approved safety apparel.
- Use retroreflective equipment.
- Use hand held radios, as needed.
- All flaggers shall wear safety apparel that meets ANSI Class 3 requirements. The combination of vest and pants is required.



Proper Flagging Stations

- Good approach sight distance.
- Highly visible to traffic.
- Stand alone away from other machinery and people.
- Stand on right edge of pavement or shoulder- proceed to centerline only when first vehicle has come to stop.
- Have a good escape route.



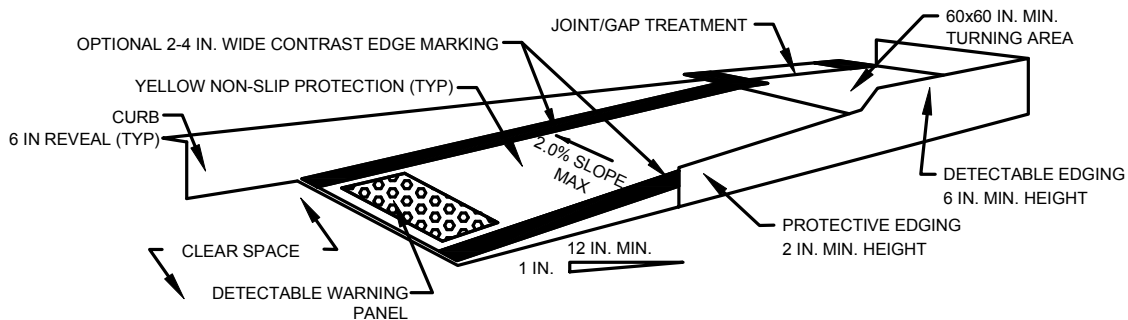
Proper Advance Warning Signs

- Always use warning signs.
- Allow for reaction distance from signs.
- Remove signs if no longer necessary or not flagging.
- Use free hand in up-and-down motion to help slow traffic.

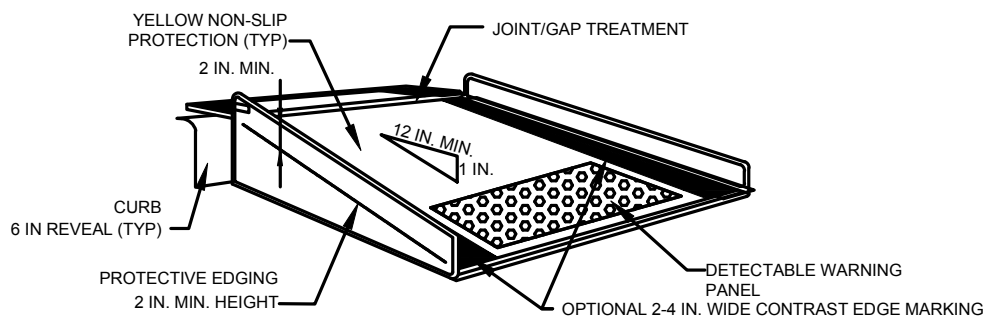




FIGURE 4
TYPICAL PEDESTRIAN DEVICES
(1 OF 2)
NOT TO SCALE



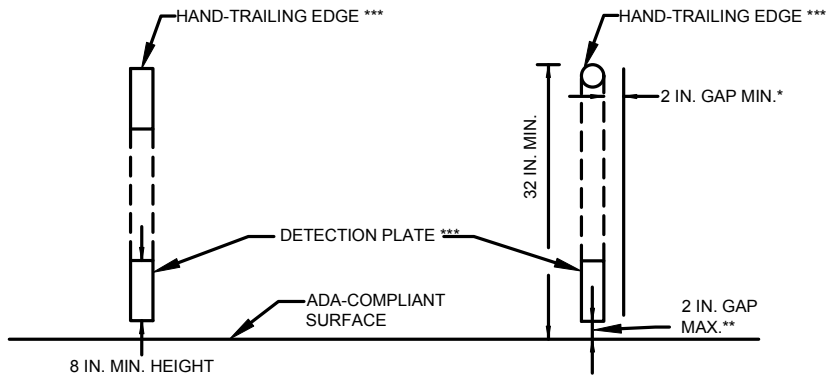
TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

NOTES:

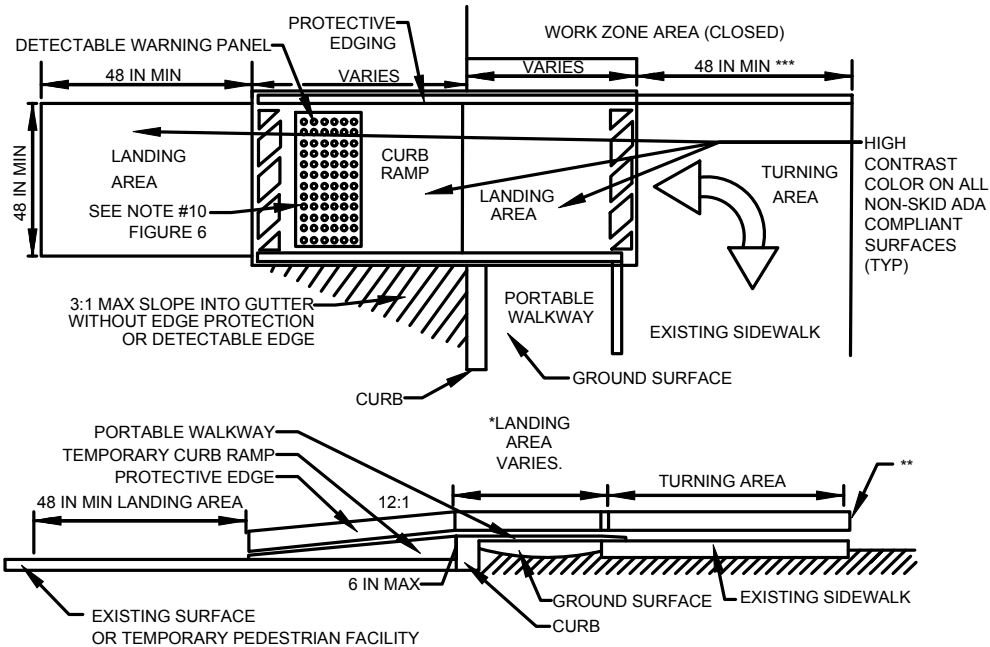
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE, AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. PROTECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
6. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.



CROSS SECTION VIEW


PEDESTRIAN CHANNELIZING DEVICE

- * THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.
- ** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.
- *** THE HAND-TRAILING EDGE AND DETECTION PLATE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE PATH SUCH THAT A PEDESTRIAN USER WITH A LONG CANE CAN FOLLOW IT.



TEMPORARY CURB RAMP

- * LANDING AREA USED TO OVERLAP NON-ADA COMPLIANT SURFACES.
- ** DETECTABLE EDGE REMOVED IF A CONTINUOUS SIDEWALK.
- *** 60 IN. IF AN OBSTRUCTION IS AT BACK OF SIDEWALK.

 <p>massDOT Massachusetts Department of Transportation Highway Division</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 5 TYPICAL PEDESTRIAN DEVICES (2 OF 2) NOT TO SCALE</p>
<p>PAGE 17</p>		



PAGE 18

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED
WORK NEAR CURVE










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	50	100	20	30
45-55	500 / 1000 / 1000	100	150	40	20

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

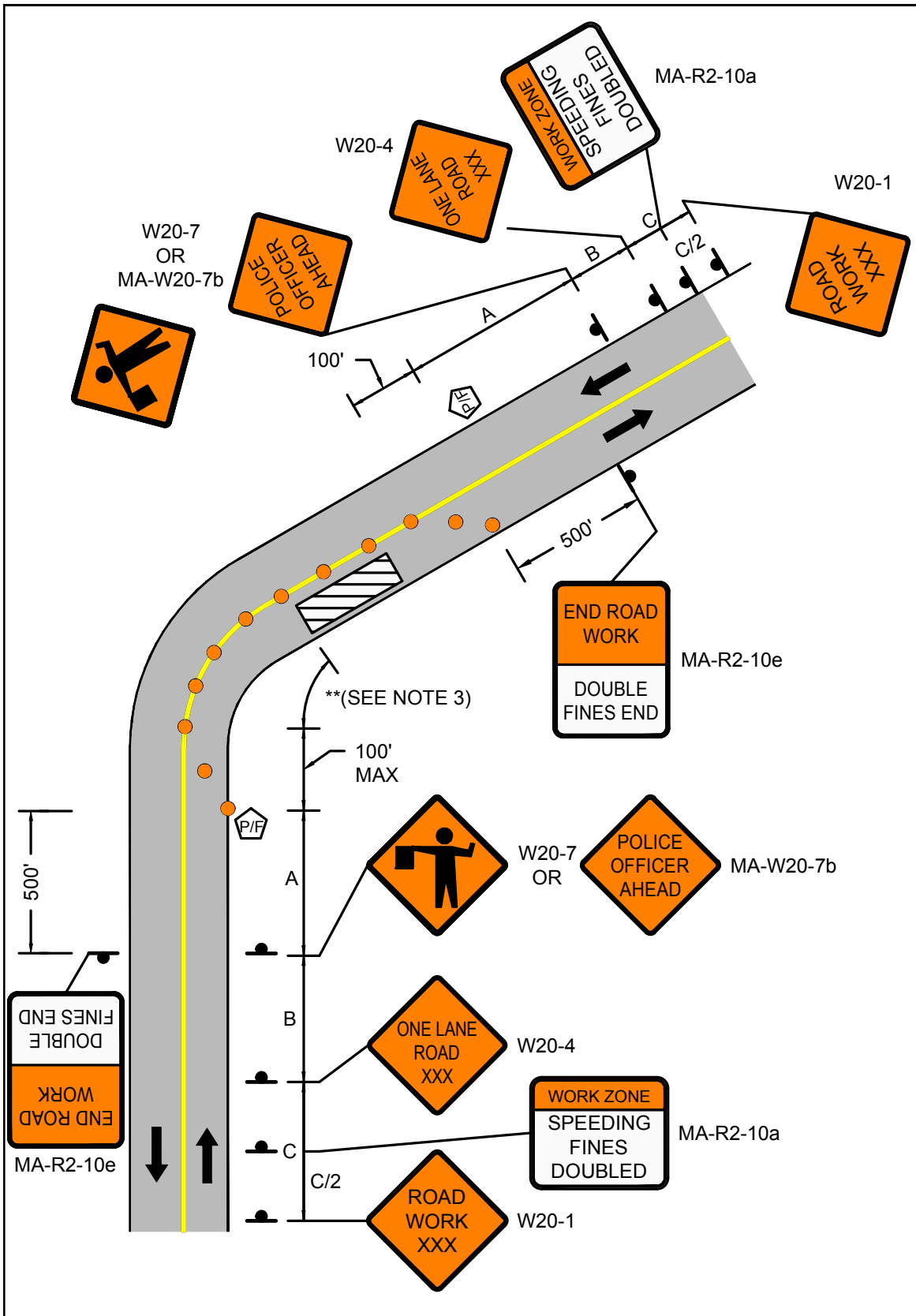
NOTES


1. IF POLICE DETAIL/UNIFORMED FLAGGER SUPPORT IS REQUIRED, PROVIDE TWO UNITS.
2. MA-R2-10a LOCATED AT C/2.
3. ** = EXTEND ENOUGH SO TAPER IS BEFORE CURVE

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 19</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 6 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED WORK NEAR CURVE</p>
--	---	---



PAGE 20

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	50	100	20	30
45-55	500 / 1000 / 1000	100	150	40	20










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS
36-mph to 55-mph	15-feet
35-mph and under	10-feet

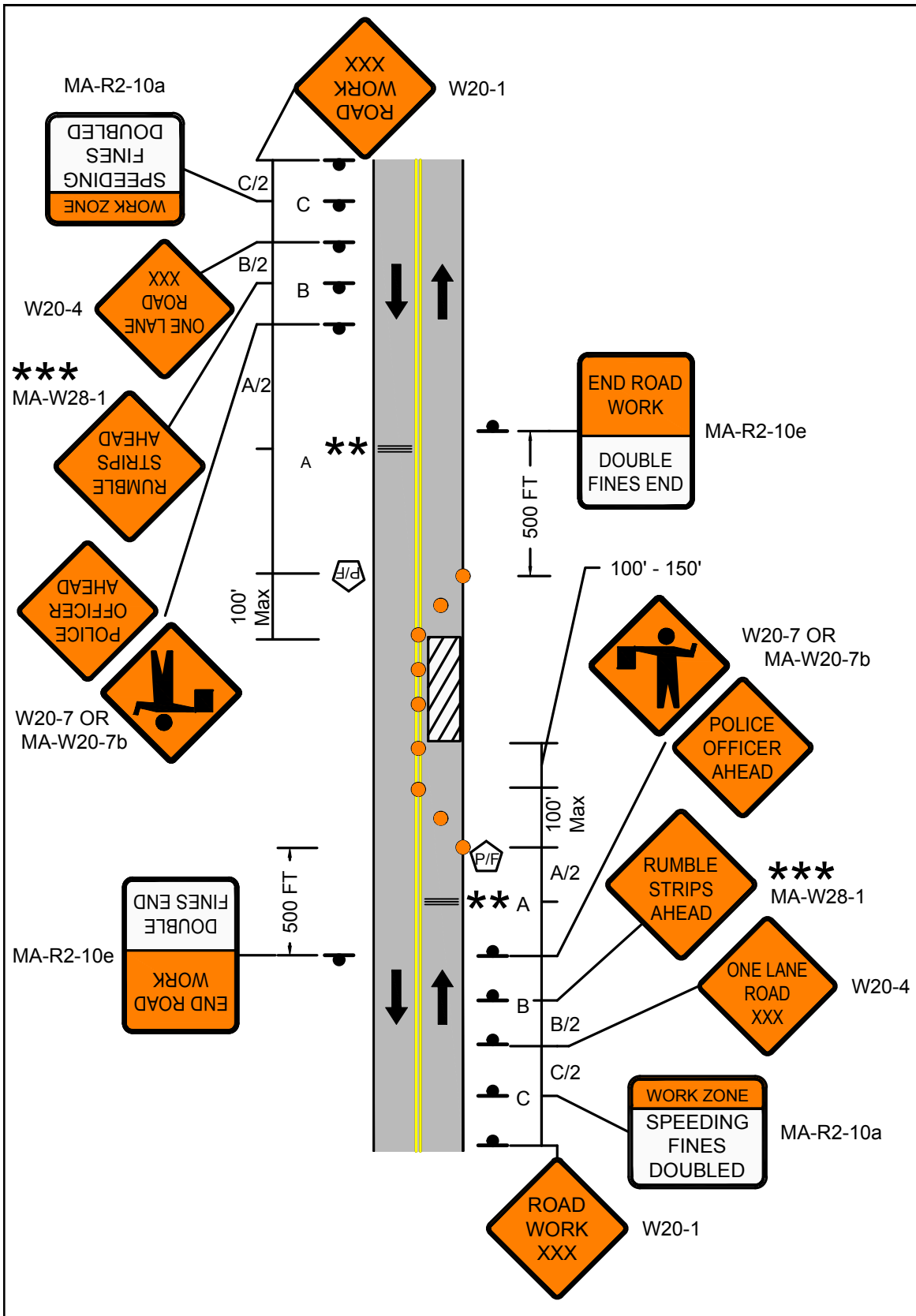
NOTES


1. IF POLICE DETAIL/UNIFORMED FLAGGER SUPPORT IS REQUIRED, PROVIDE TWO UNITS.
2. MA-R2-10a LOCATED AT C/2.
3. ** OPTIONAL AT THE ENGINEER'S DISCRETION.
4. *** SHALL BE DEPLOYED IF RUMBLE STRIPS ARE PRESENT.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 21</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 7 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED</p>
--	---	---



PAGE 22

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
SHOULDER CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

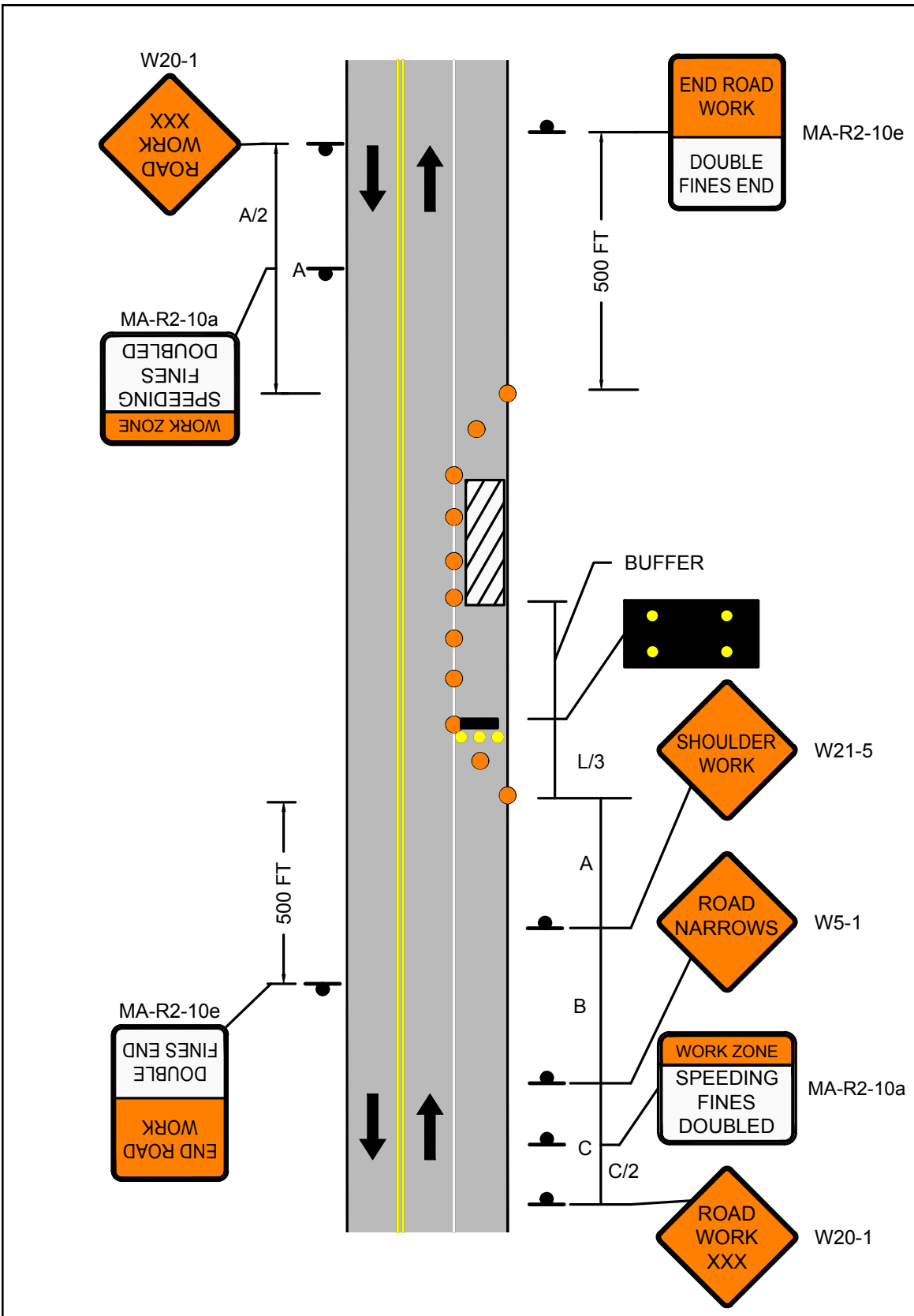
NOTES


1. MA-R2-10a at C/2 and A/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 23</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 8 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY SHOULDER CLOSED</p>
---	---	--



PAGE 24

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
WITH TRAVERSABLE SHOULDER
HALF OF ROADWAY CLOSED
MAINTAIN TWO-WAY TRAFFIC

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	160	305	20	125
45-55	220	330	495	40	100
60-65	260	390	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

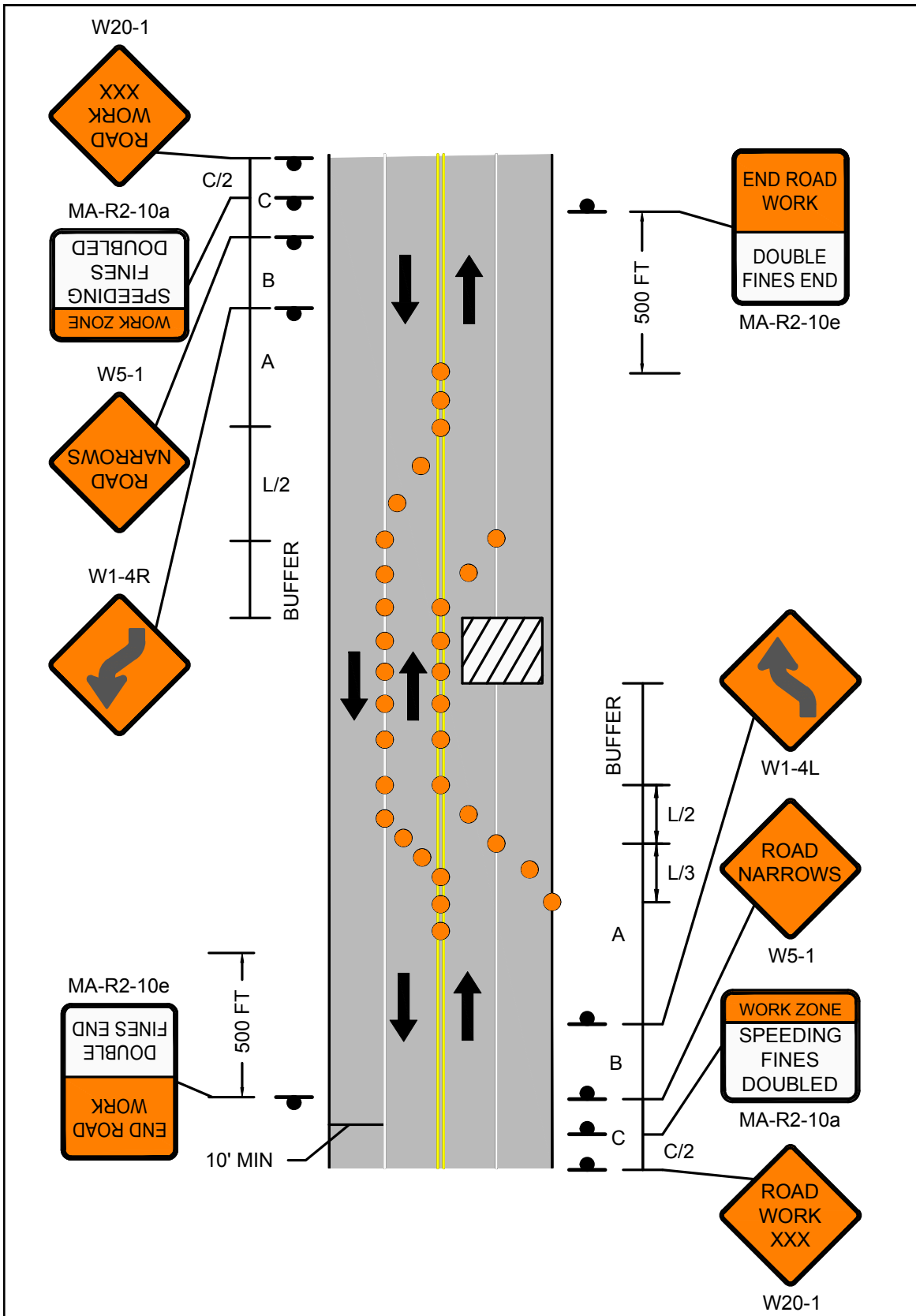


FIGURE 9
 STATIONARY OPERATIONS
 TWO LANE UNDIVIDED ROADWAY
 WITH TRAVERSABLE SHOULDER
 HALF OF ROADWAY CLOSED
 MAINTAIN TWO-WAY TRAFFIC





PAGE 26

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
RIGHT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

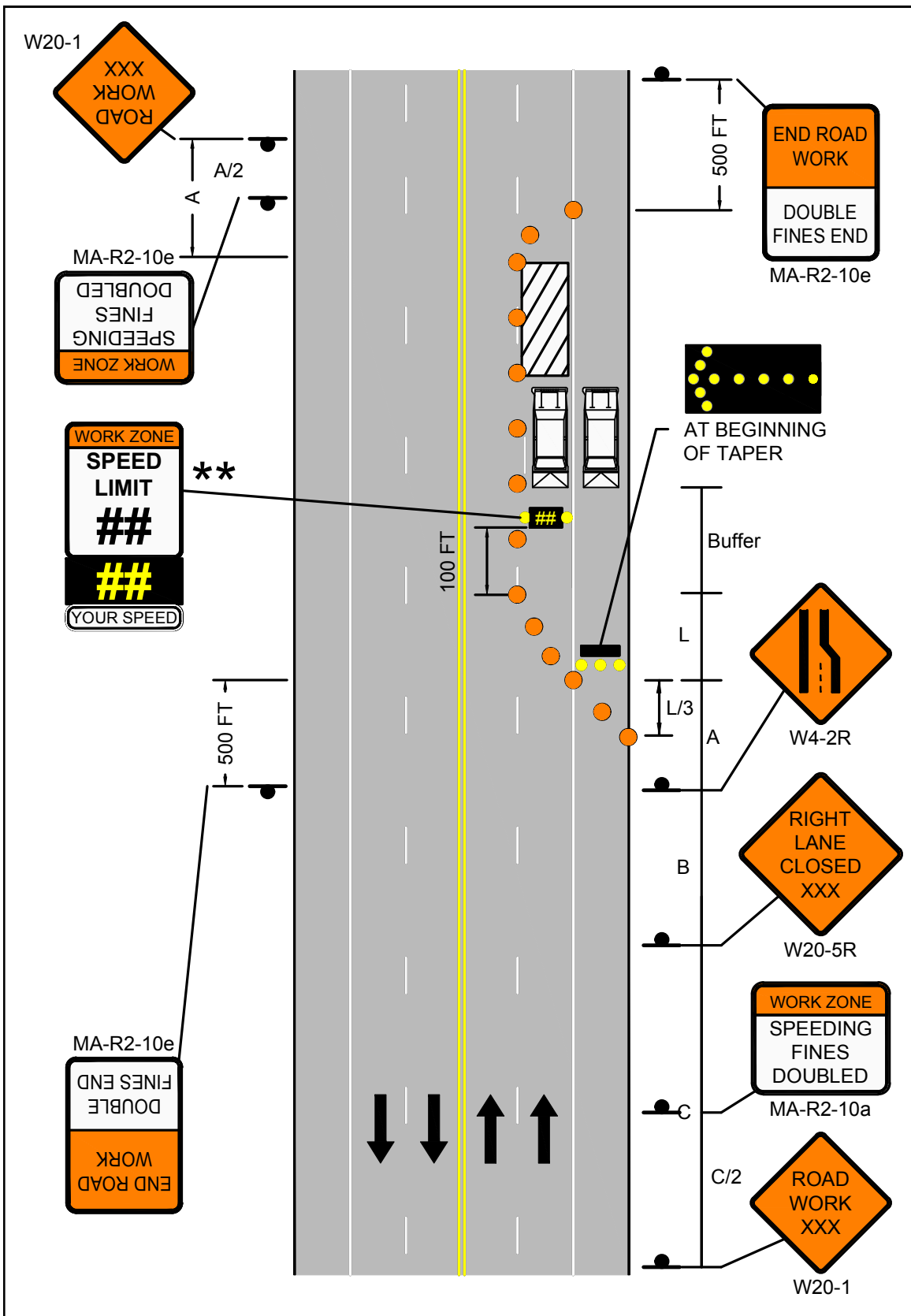
NOTES


1. MA-R2-10a LOCATED AT A/2 AND C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 27</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 10 STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY RIGHT LANE CLOSED</p>
--	---	--



PAGE 28

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
LEFT LANE CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	105
45-55	500 / 1000 / 1000	660	495	40	80
60-65	1000 / 1600 / 2600	780	645	40	100

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

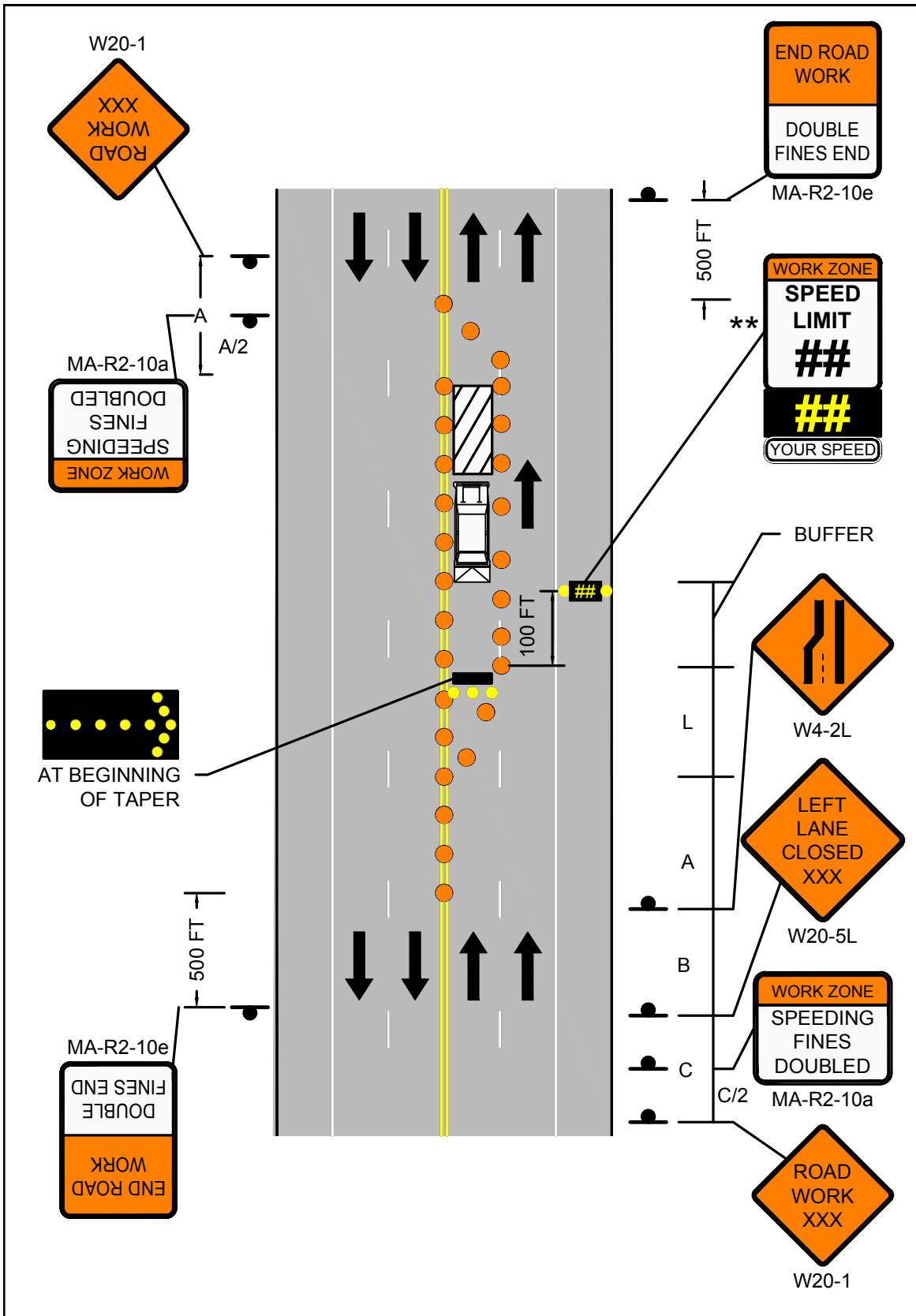
NOTES


1. MA-R2-10a LOCATED AT A/2 AND C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION. 2' OFFSET FROM EDGE OF TRAVEL LANE TO RADAR SPEED FEEDBACK BOARD IS REQUIRED. BOARD MAY BE MOVED FULLY OR PARTIALLY OFF PAVED SHOULDER, IF REQUIRED.


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 29</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 11 STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY LEFT LANE CLOSED</p>
--	---	---

 PAGE 30	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED
--	--	--

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	160	305	20	140
45-55	220	660	330	495	40	120
60-65	260	780	390	645	40	140










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.
3. W1-4L SHALL BE PLACED AT THE MIDDLE OF THE TANGENT.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

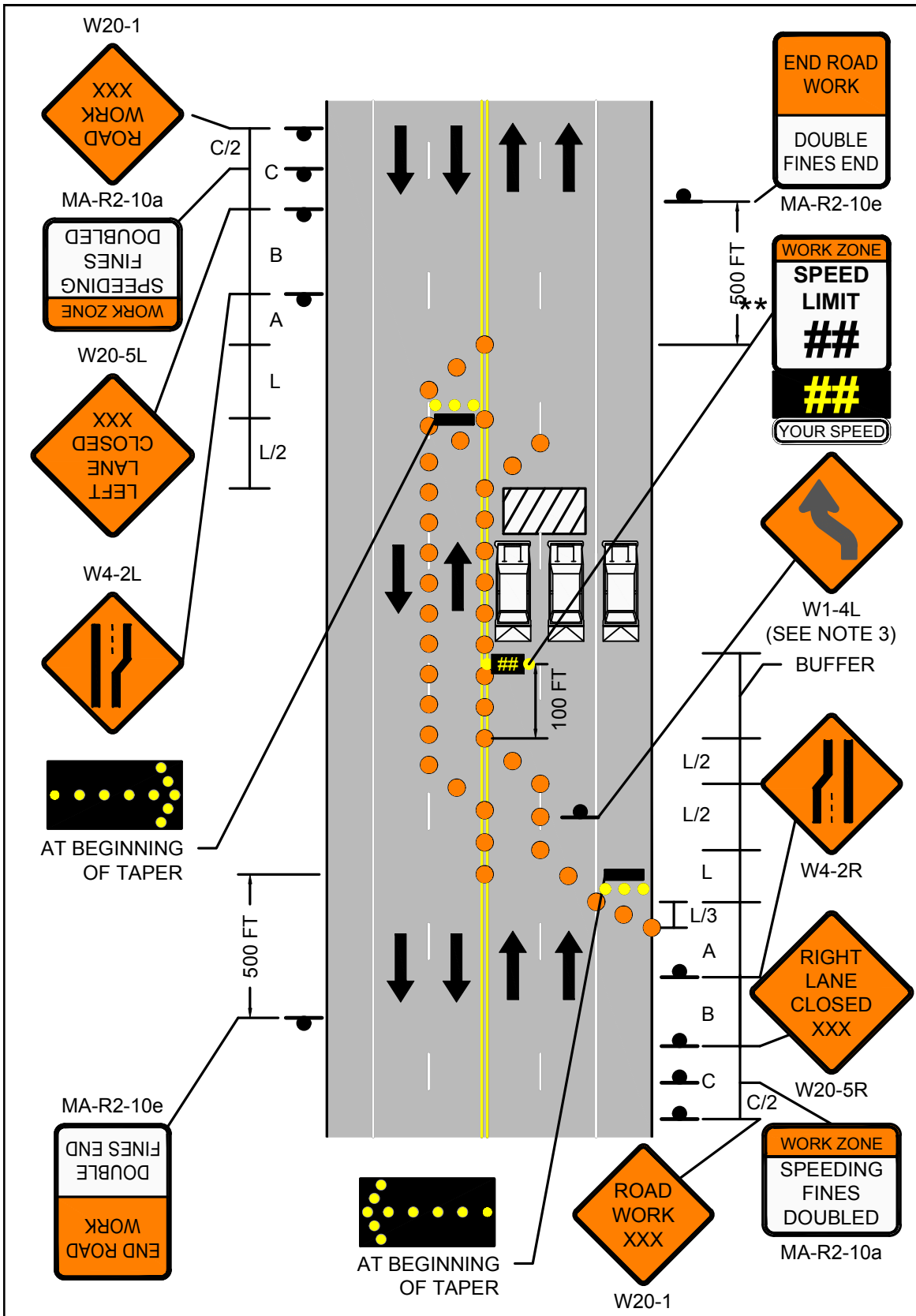


FIGURE 12
STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED





PAGE 32

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

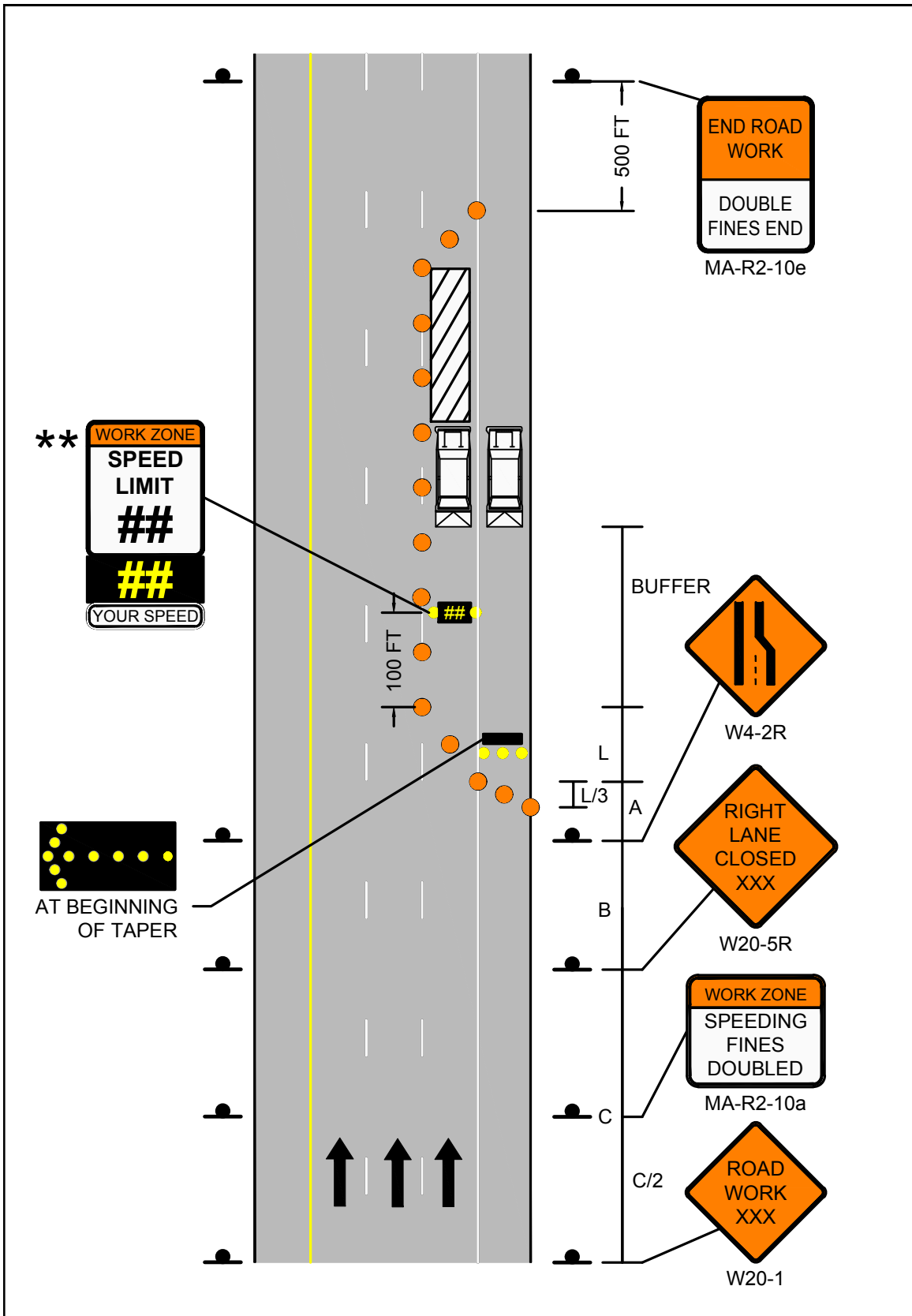
NOTES

1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





PAGE 34

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
LEFT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

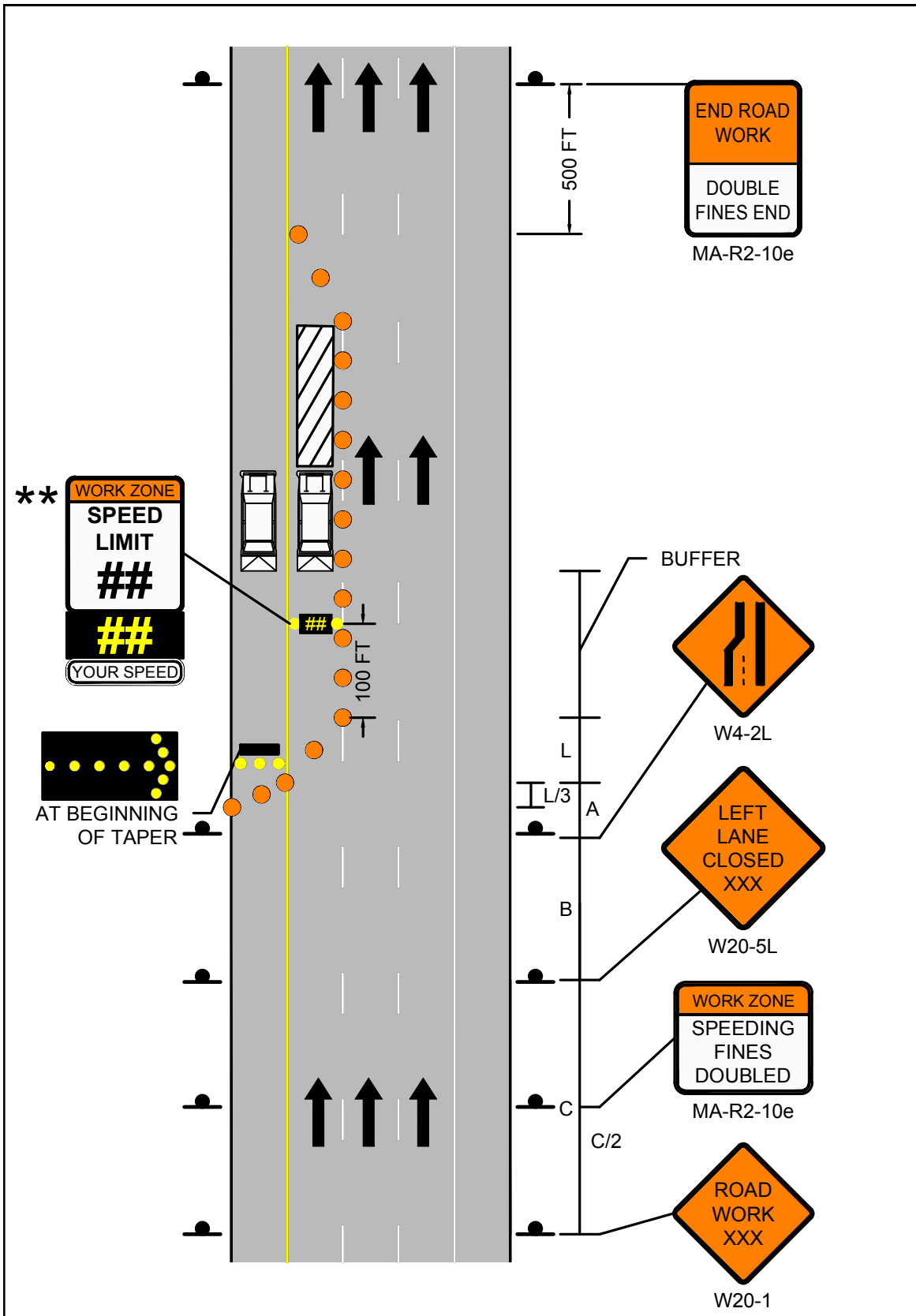
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 36</p>	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR RIGHT/CENTER LANES CLOSED
---	--	---

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TANGENT LENGTH BETWEEN TAPERS T (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	640	305	20	110
45-55	220	660	1320	495	40	100
60-65	260	780	1560	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.
2. ***OPTIONAL AT THE ENGINEER'S DISCRETION.
3. ***THIS SET OF SIGNS SHALL BE LOCATED AT T/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

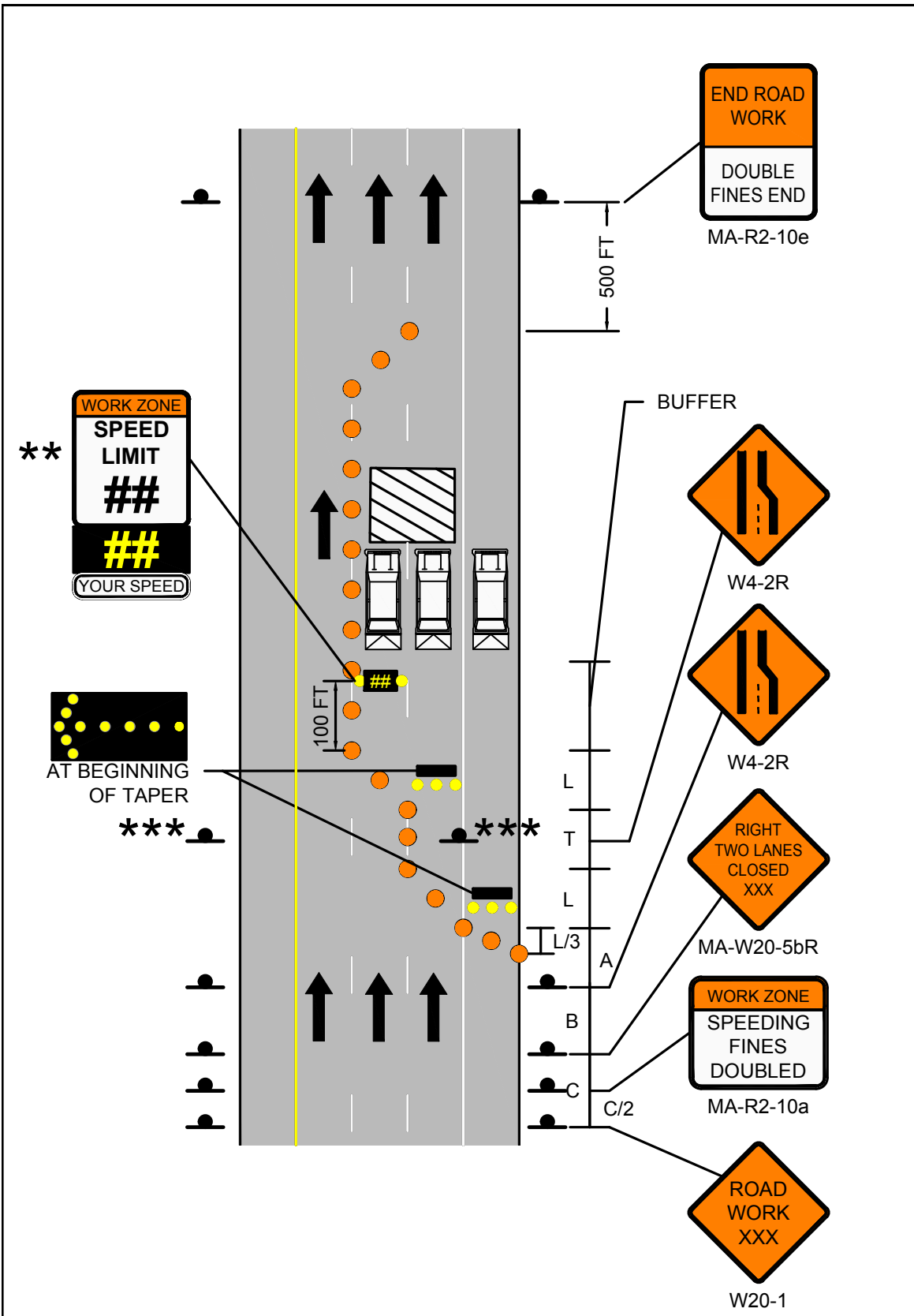



FIGURE 15
 STATIONARY OPERATIONS
 MULTILANE DIVIDED ROADWAY
 CENTER LANE OR RIGHT/CENTER
 LANES CLOSED



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 38</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR LEFT/CENTER LANES CLOSED</p>
---	---	--

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TANGENT LENGTH BETWEEN TAPERS T (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	640	305	20	110
45-55	220	660	1320	495	40	100
60-65	260	780	1560	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

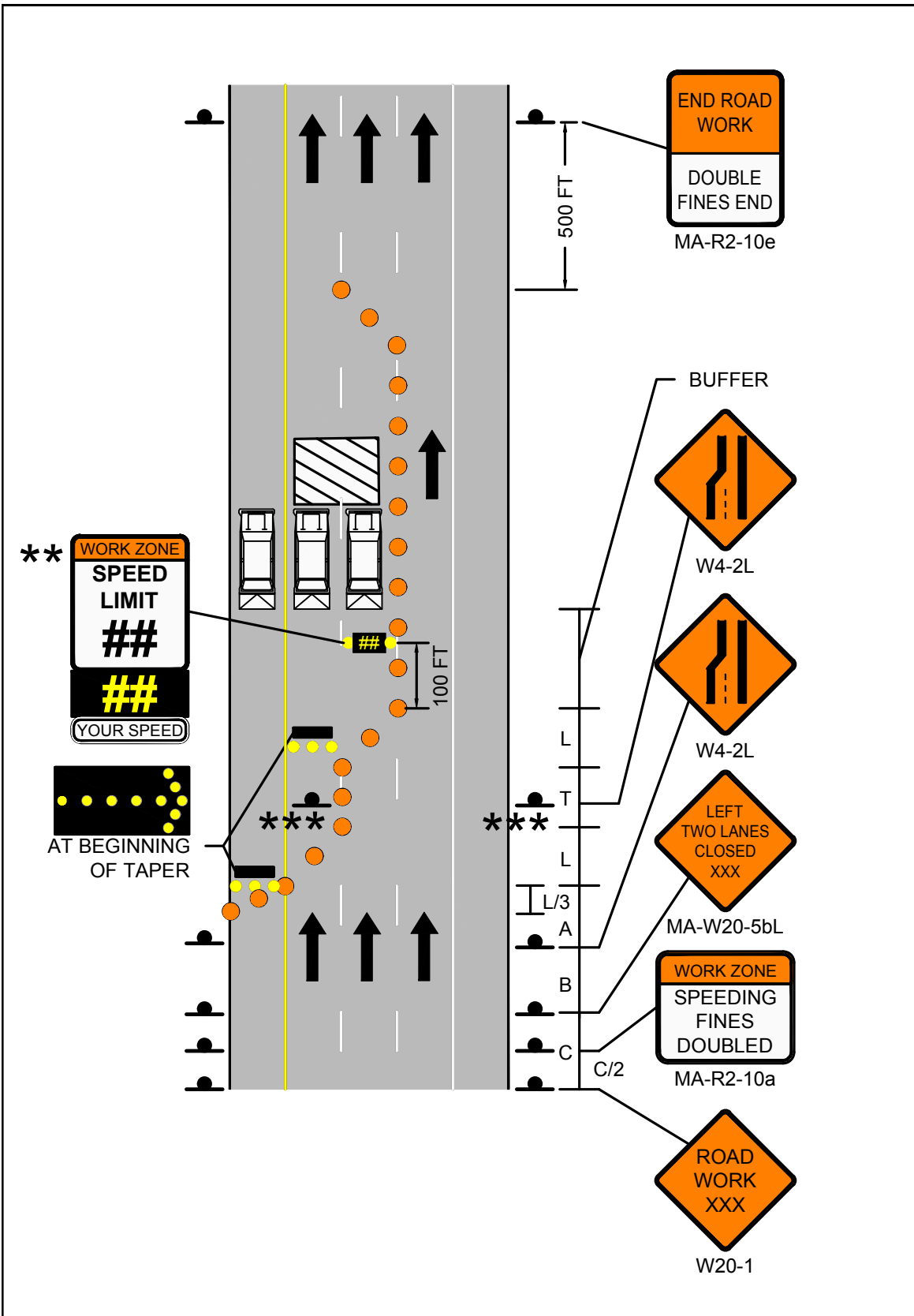
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. ***OPTIONAL AT THE ENGINEER'S DISCRETION.
3. ***THIS SET OF SIGNS SHALL BE LOCATED AT T/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 39</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 16 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR LEFT/CENTER LANES CLOSED</p>
--	---	--



PAGE 40

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT SIDE OF OFF RAMP CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	160	305	20	45
45-55	500 / 1000 / 1000	330	495	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

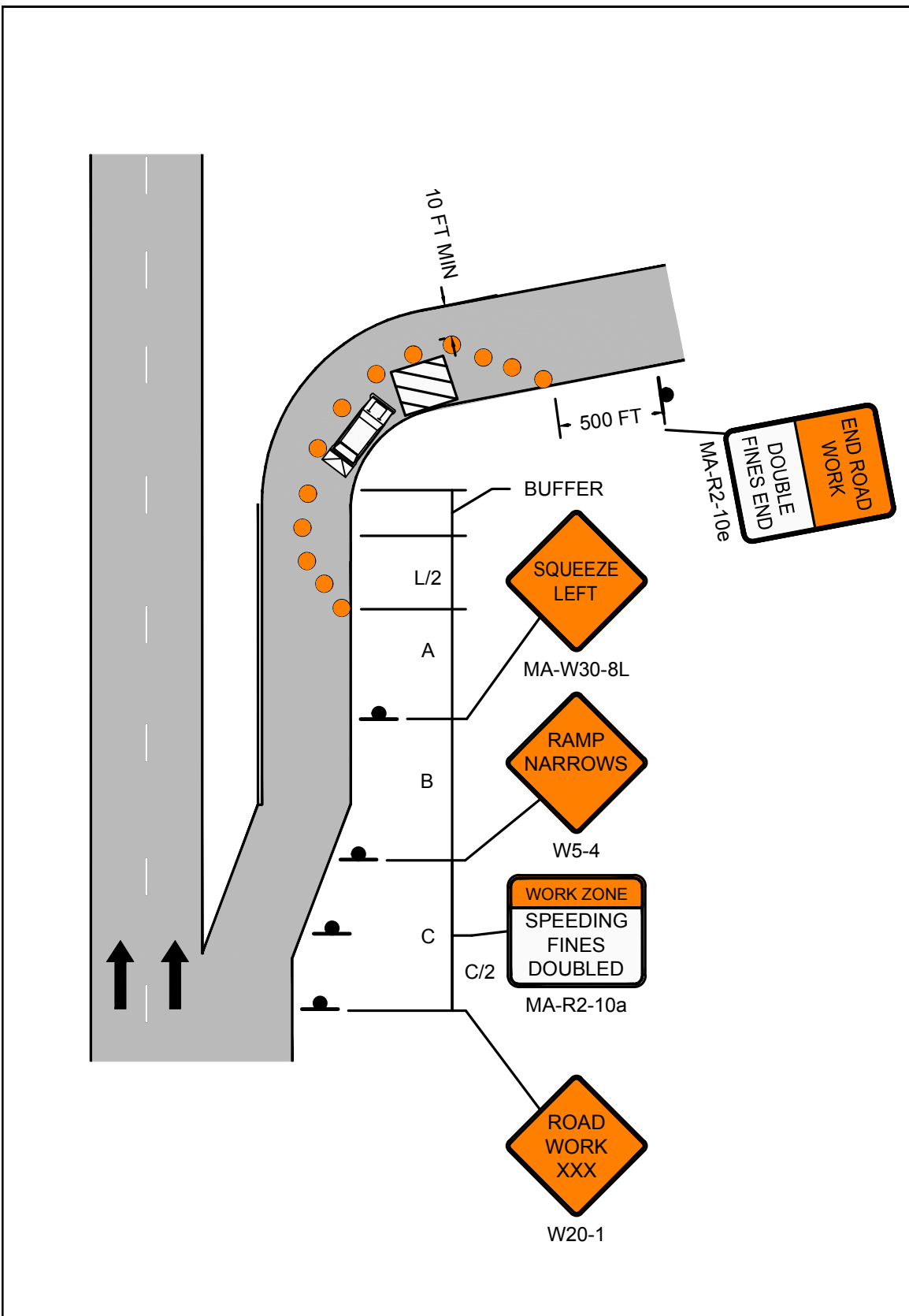
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 41</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 17 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY RIGHT SIDE OF OFF RAMP CLOSED</p>
--	---	--



PAGE 42

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
LEFT SIDE OF OFF RAMP CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	160	305	20	45
45-55	500 / 1000 / 1000	330	495	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

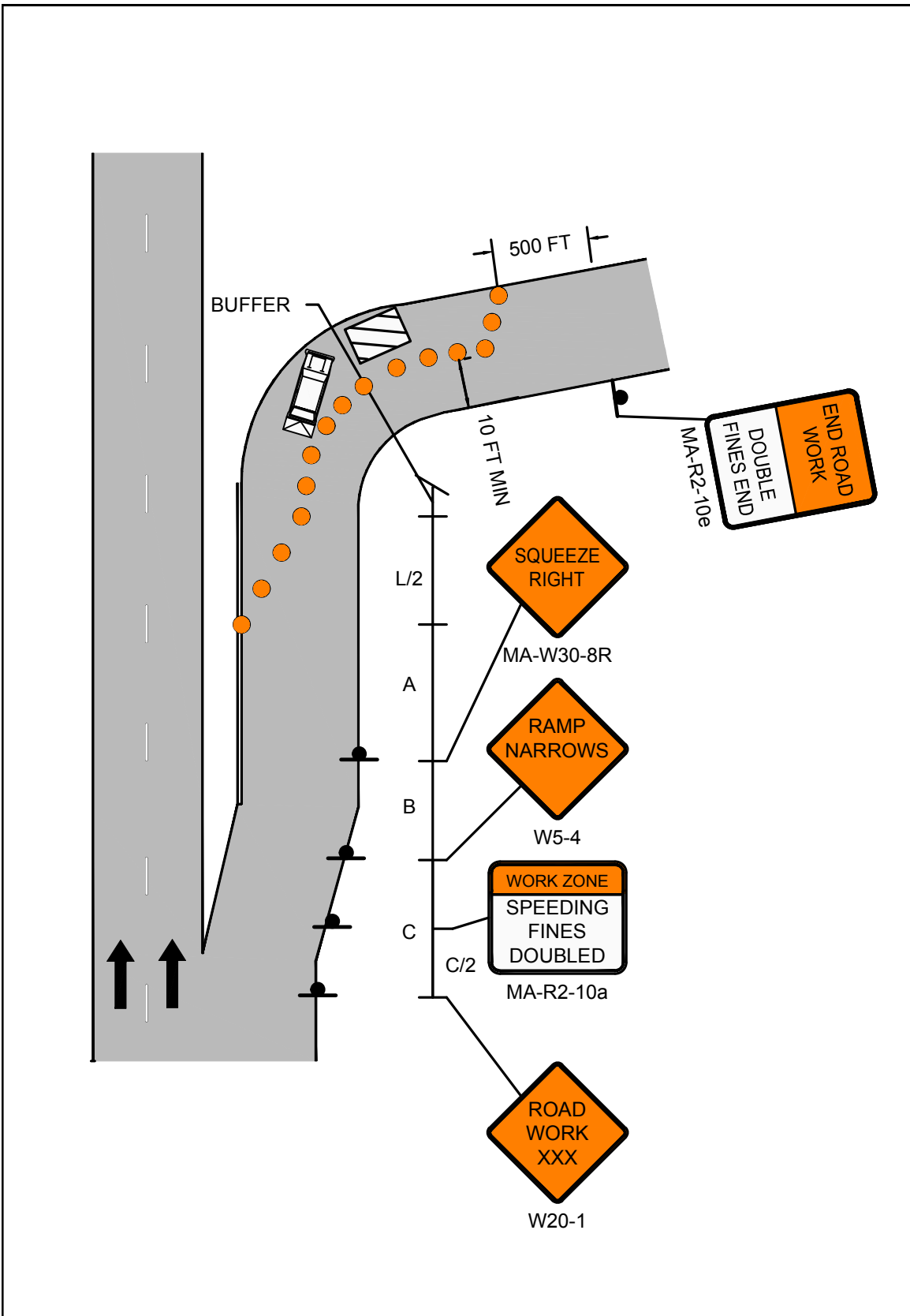
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 18 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY LEFT SIDE OF OFF RAMP CLOSED PAGE 43</p>
---	---	---



PAGE 44

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
ROADWORK BEYOND ON RAMP

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	175
45-55	220	660	495	40	135
60-65	260	780	645	40	155










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

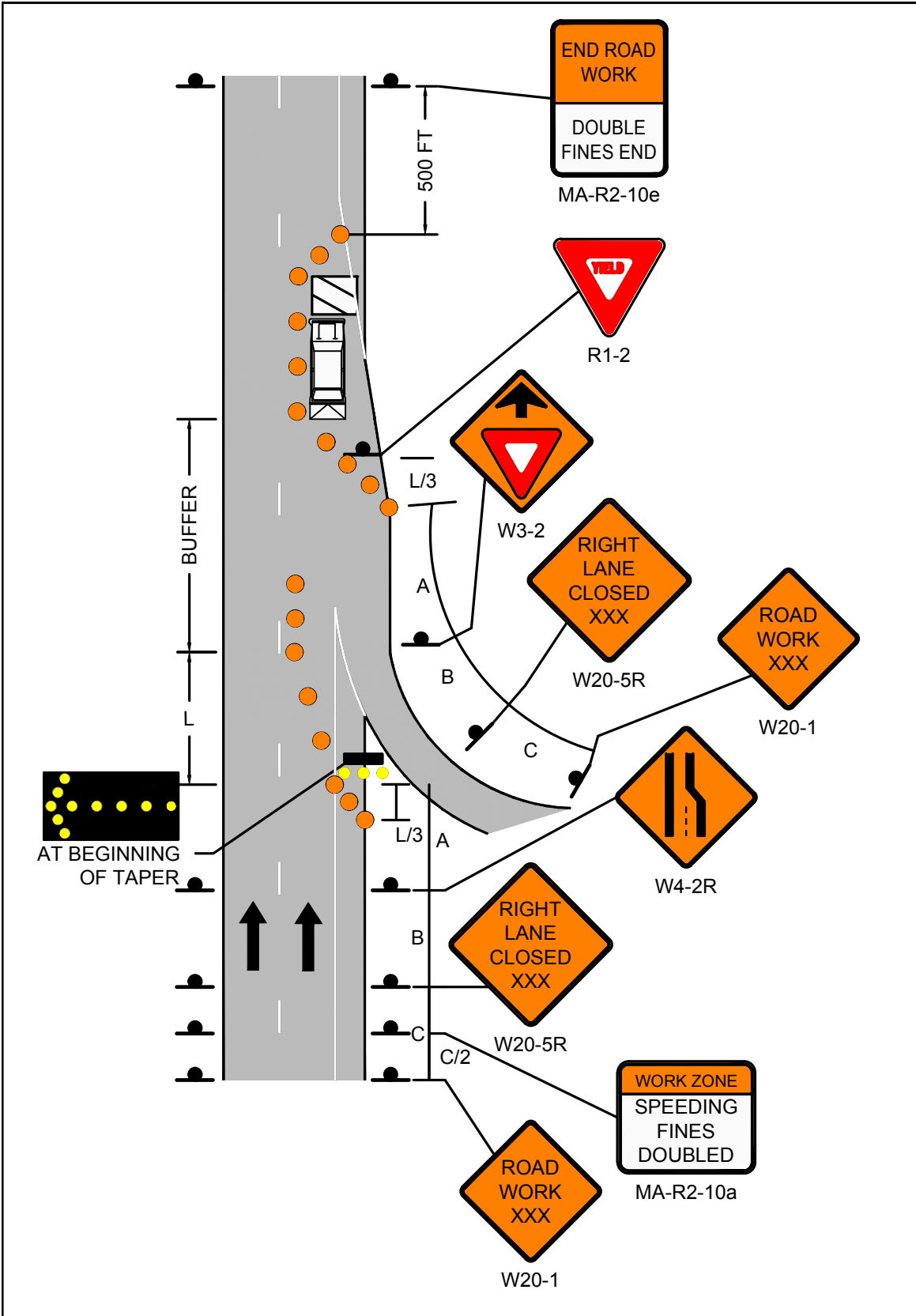
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 45</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 19 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY ROADWORK BEYOND ON RAMP</p>
--	---	--



PAGE 46

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
ROADWORK BEYOND OFF RAMP

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	160	305	20	70
45-55	220	660	330	495	40	55
60-65	260	780	390	645	40	65










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

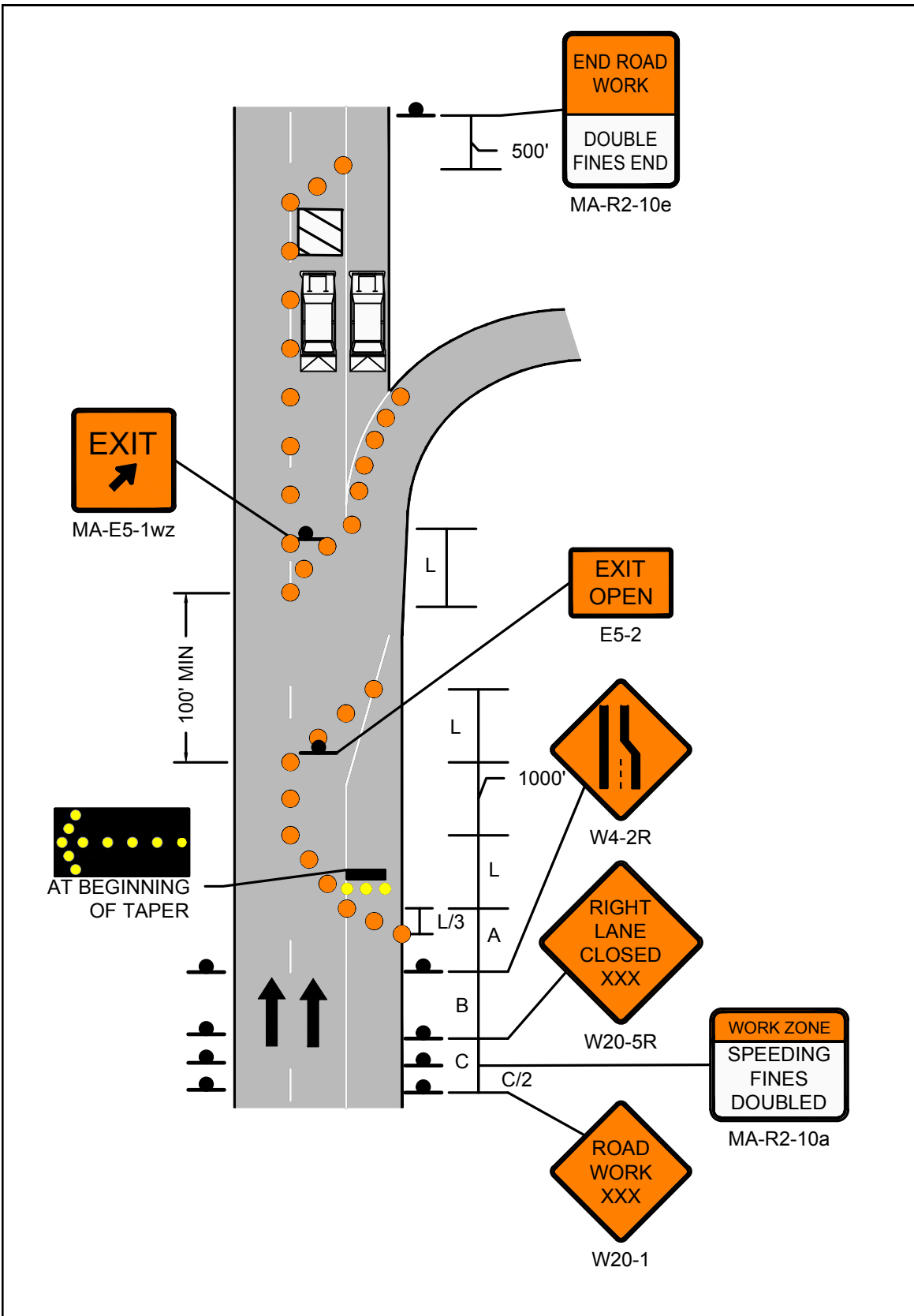
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 47</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 20 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY ROADWORK BEYOND OFF RAMP</p>
---	---	---



PAGE 48

Work Zone Safety
Standard Details
and Drawings










MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

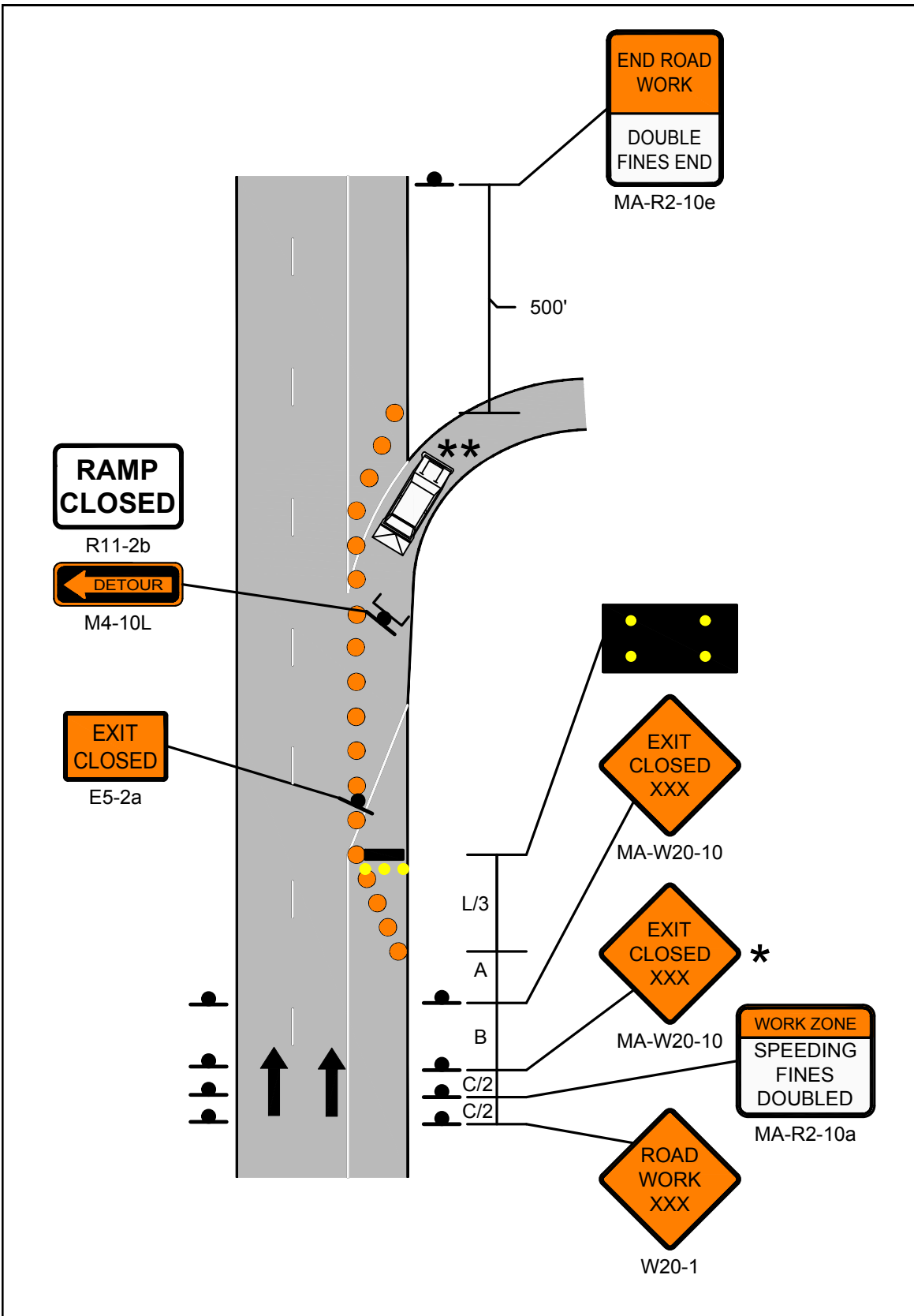
NOTES

1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





PAGE 50

Work Zone Safety
Standard Details
and Drawings










MULTILANE DIVIDED ROADWAY
TYPICAL CLOVERLEAF RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

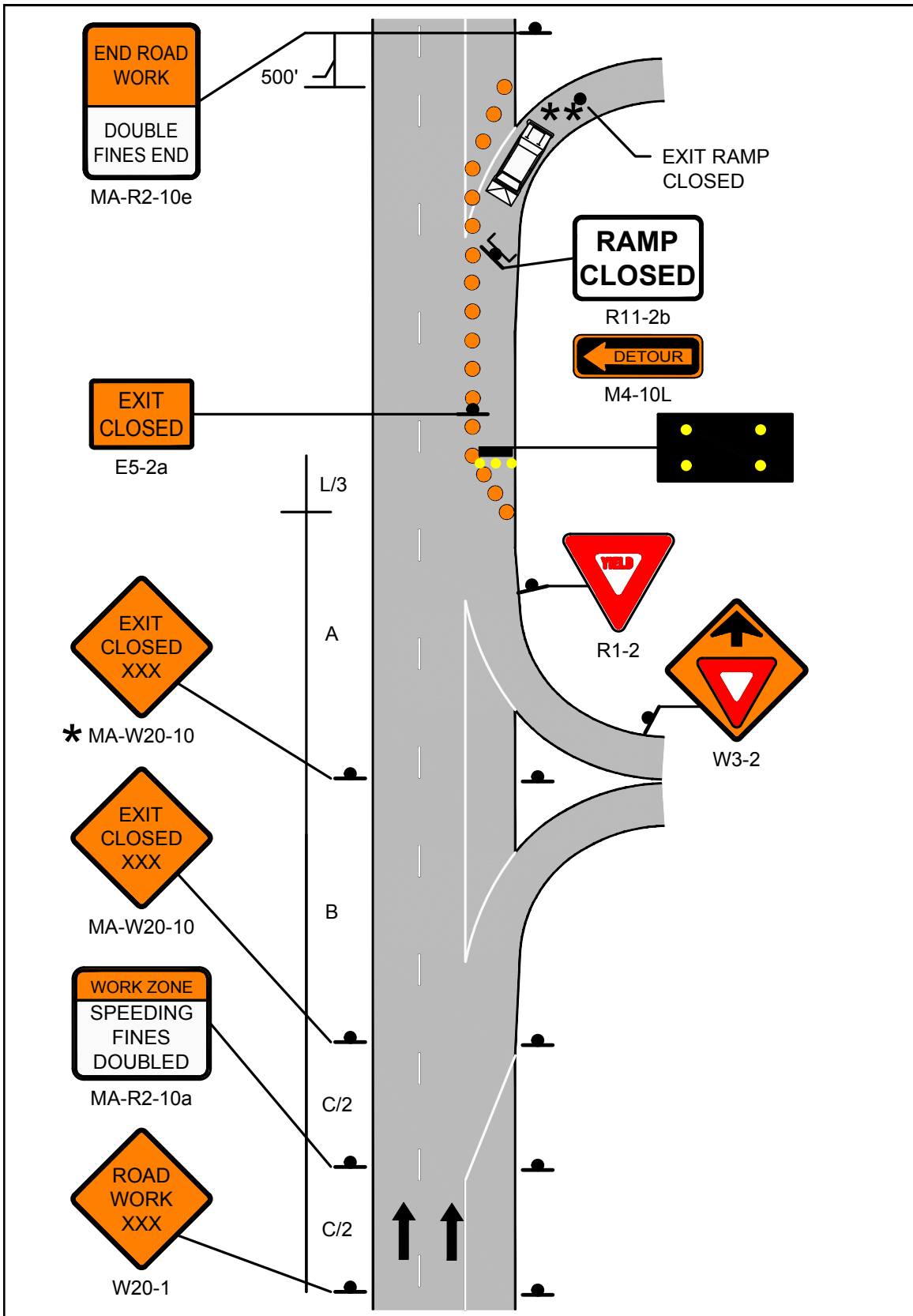
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 51</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 22 MULTILANE DIVIDED ROADWAY TYPICAL CLOVERLEAF RAMP CLOSURE</p>
--	---	--



PAGE 52










Work Zone Safety
Standard Details
and Drawings

MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE
ADVANCE SIGNING

NOTES

1. IF THE CLOSED RAMP IS LOCATED DOWNSTREAM FROM THE PROPOSED DETOUR ROUTE/RAMP, A PCMS SHALL BE POSITIONED AT A SUFFICIENT DISTANCE IN ADVANCE OF THE DETOUR ROUTE/RAMP AND SHOULD STATE WHICH RAMP IS CLOSED AND WHICH SHALL BE USED FOR THE DETOUR.
2. IF THE CLOSED RAMP IS LOCATED UPSTREAM FROM THE PROPOSED DETOUR ROUTE/RAMP, A PCMS SHALL BE POSITIONED PRIOR TO THE CLOSED RAMP AND SHOULD STATE WHICH RAMP IS CLOSED AND WHICH SHALL BE USED FOR THE DETOUR.
3. A SUFFICIENT NUMBER OF DETOUR SIGNS (M4-9 SERIES) SHOULD BE DEPLOYED TO PROPERLY DIRECT DETOURED TRAFFIC. SIGN SPACING SHALL BE AT THE DIRECTION OF THE ENGINEER.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

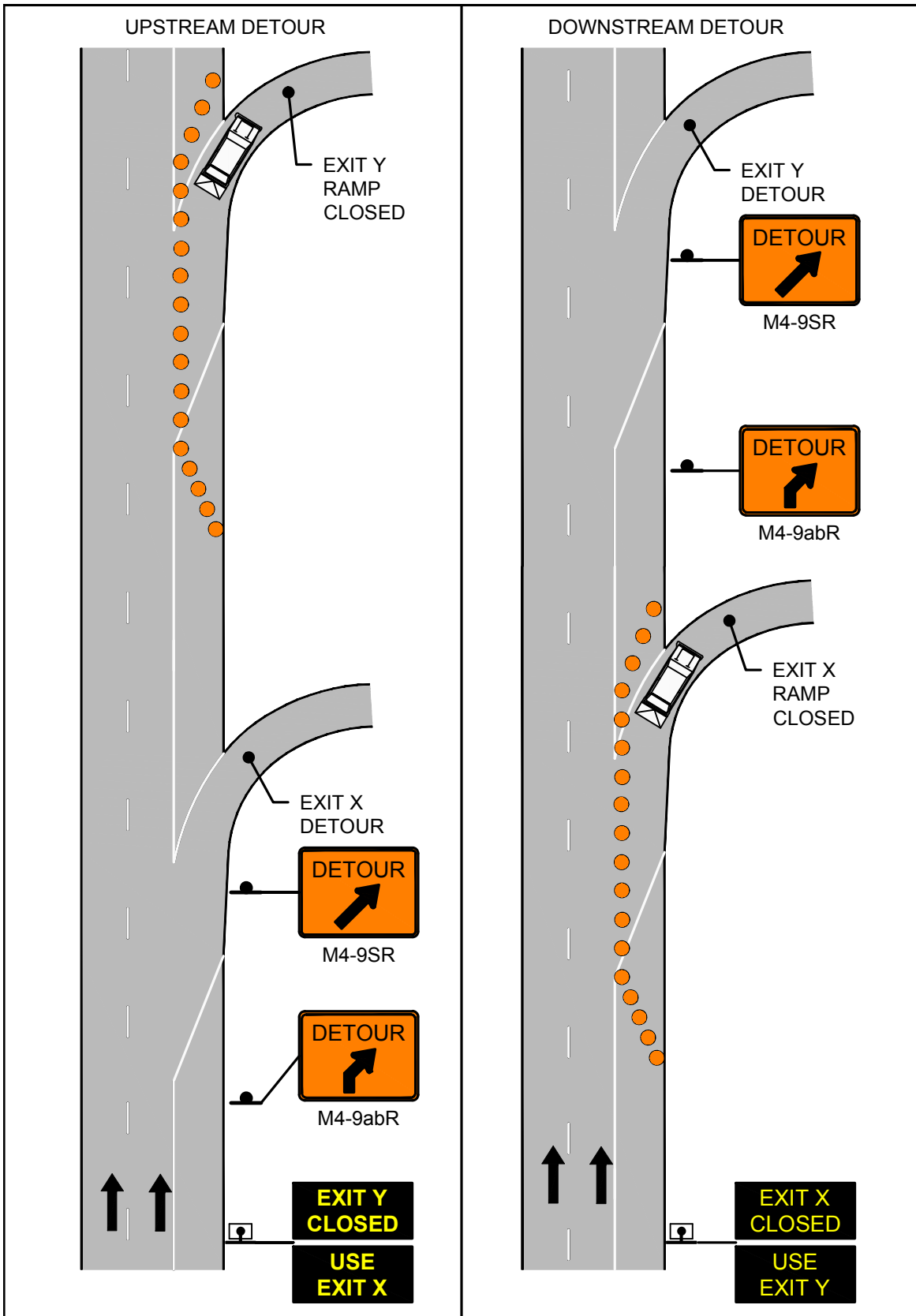



FIGURE 23
MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE
ADVANCE SIGNING

 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PAGE 54	Work Zone Safety Standard Details and Drawings	FIGURE 24-1 MULTILANE DIVIDED ROADWAY PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS SHEET 1 OF 2
--	--	--

POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS
Above 55-mph	20-feet
36-mph to 55-mph	15-feet
35-mph and under	10-feet

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	TANGENT LENGTH BETWEEN TAPERS (T) (FT)
25-40	500 / 500 / 500	640
45-55	500 / 1000 / 1000	1320
60-65	1000 / 1600 / 2600	1560

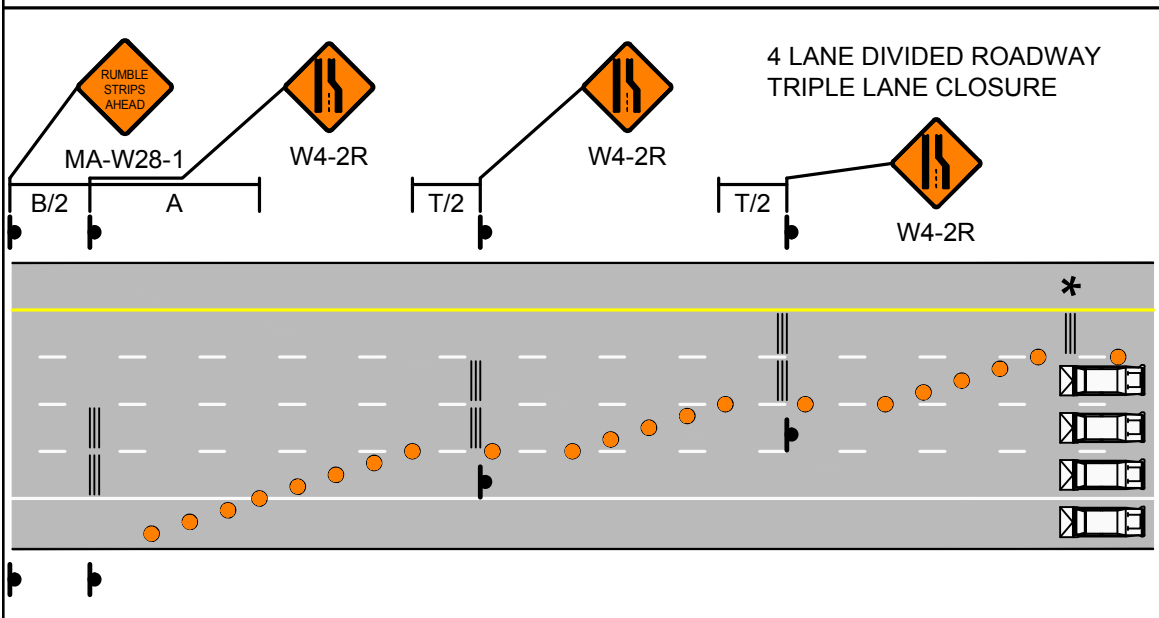
NOTES

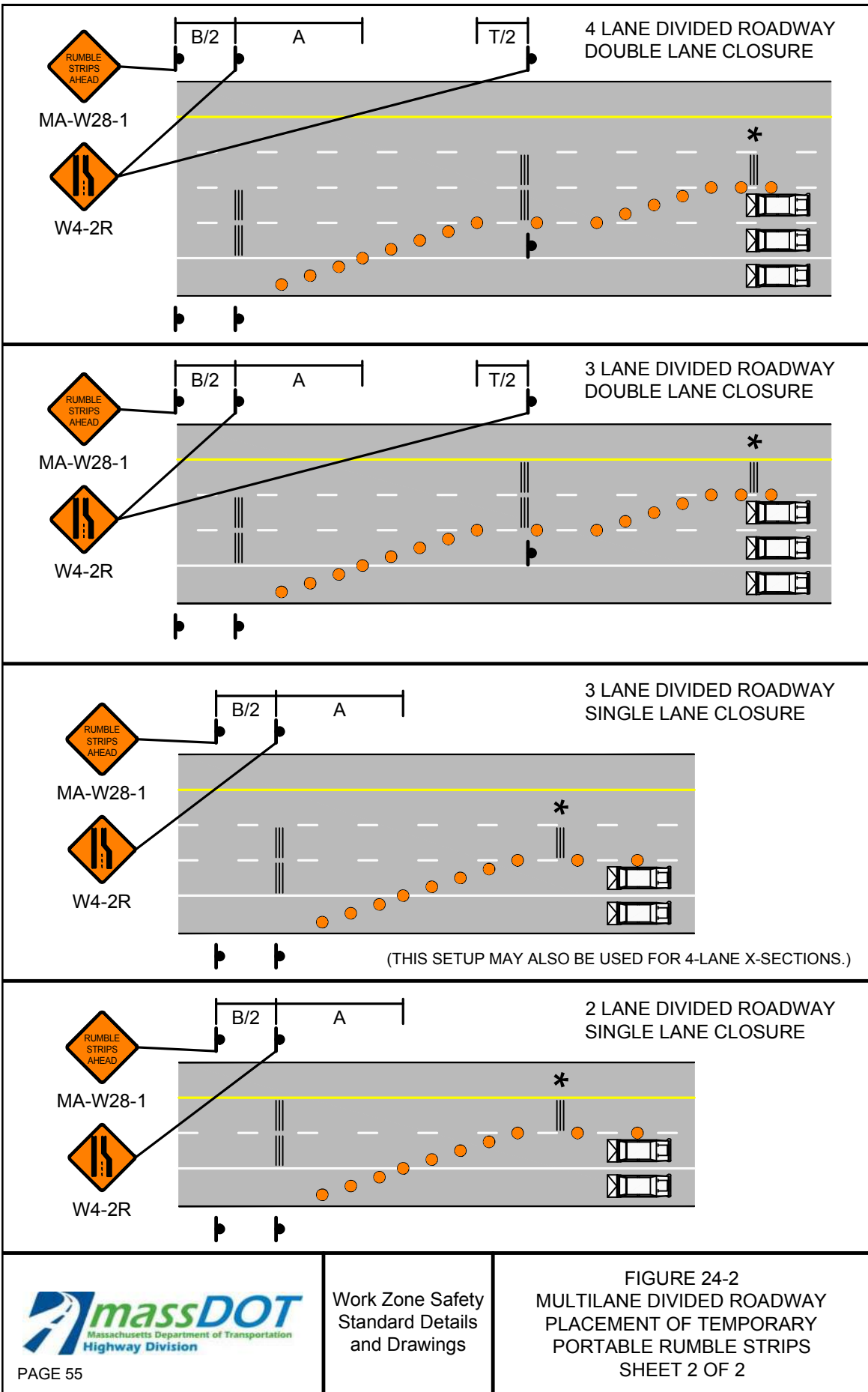
1. THE INTENTION OF THESE DETAILS IS ONLY TO DEPICT THE PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS (TPRS) IN RELATIONSHIP TO THE TAPER AND THE BUFFER OF A SINGLE- OR MULTI-LANE CLOSURE. THE DEPICTION OF THE NUMBER AND SPACING OF ALL OTHER TRAFFIC CONTROL DEVICES IS NOT TO SCALE. REFER TO OTHER DETAILS FOR LANE CLOSURES FOR THE PLACEMENT AND NUMBER OF ALL OTHER TRAFFIC CONTROL DEVICES.
2. THESE DETAILS ONLY DEPICT RIGHT LANE CLOSURES. LEFT LANE CLOSURES SHOULD UTILIZE A MIRROR IMAGE OF THESE SETUPS, STARTING WITH CLOSURE OF THE LEFTMOST LANE.
3. ★ THIS TPRS ARRAY IS OPTIONAL AT THE ENGINEER'S DISCRETION. IF USED, IT SHOULD BE PLACED ADJACENT TO THE BUFFER.
4. DETAILS SHOW THE MINIMUM NUMBER OF TPRS REQUIRED. ADDITIONAL MAY BE USED IF CONDITIONS WARRANT.


LEGEND

- CHANNELIZATION DEVICE
- TRUCK MOUNTED ATTENUATOR
- TEMPORARY PORTABLE RUMBLE STRIP

NOT TO SCALE

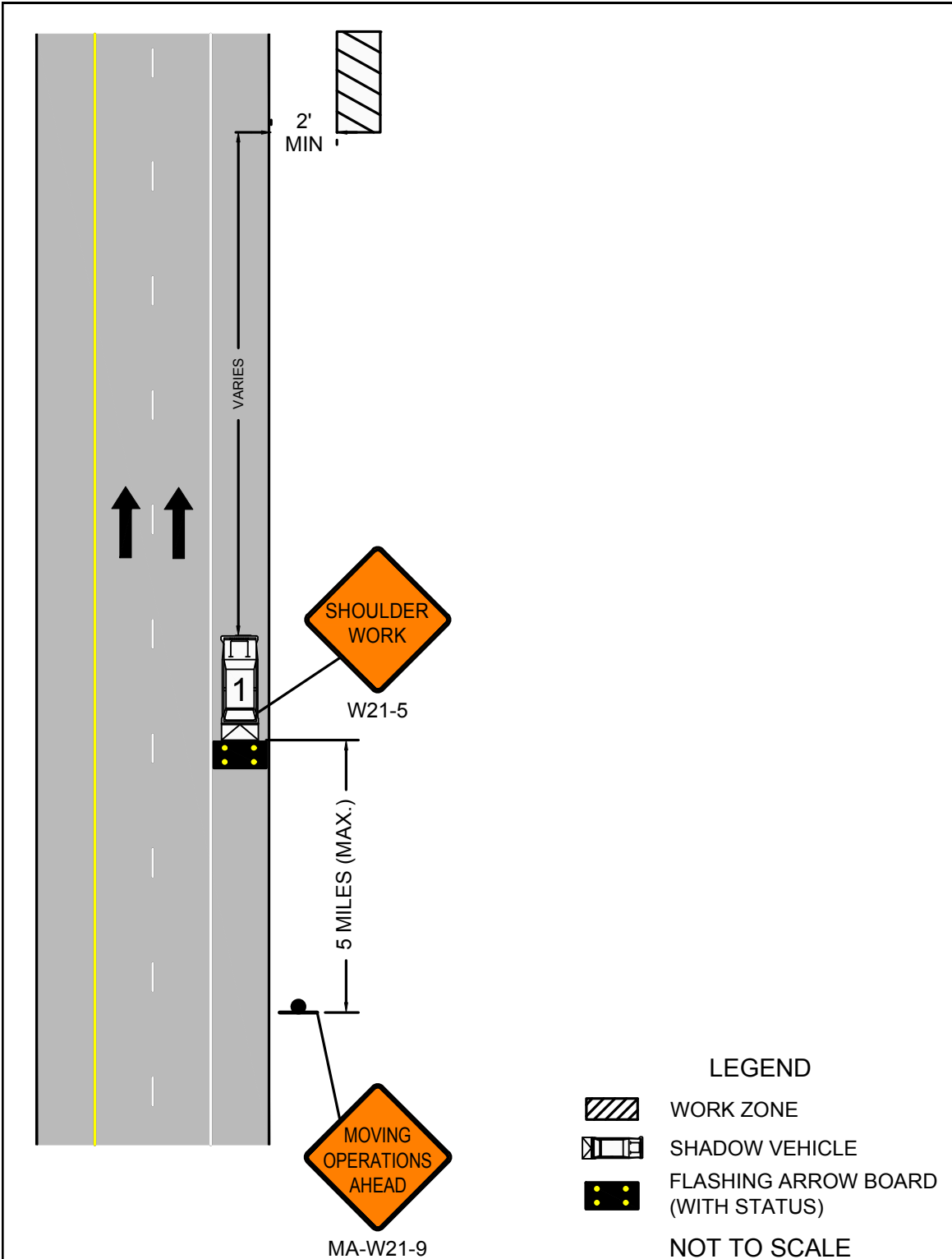




 <p>PAGE 56</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>NOTES FOR MOBILE OPERATIONS</p>
--	---	------------------------------------


Notes for Mobile Operations

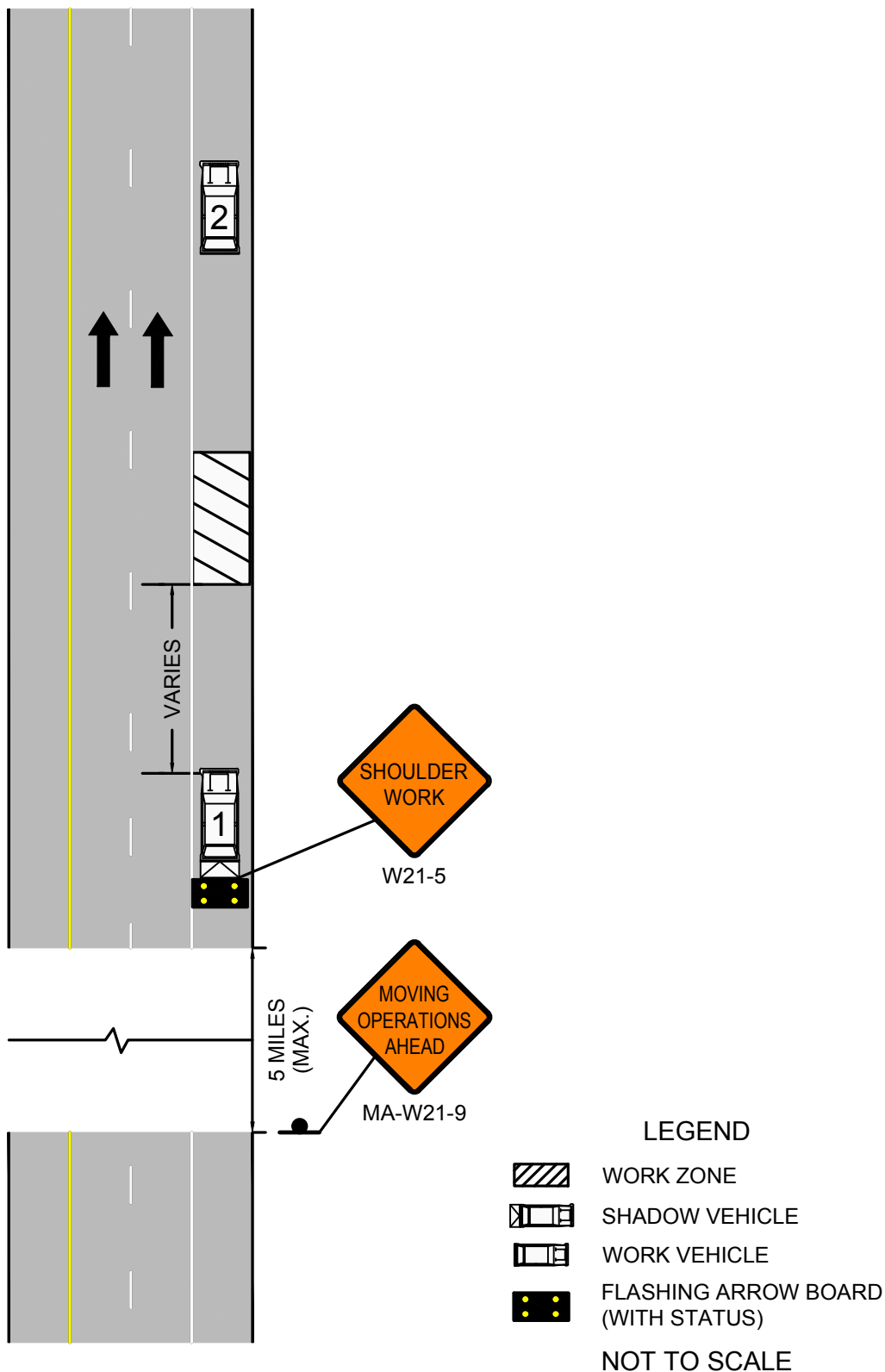
- Unless otherwise stated, these notes shall apply to all Mobile Operation setups.
 - Additional, setup-specific notes may be found on individual sheets.
1. The Supervisor shall travel the designated roadway prior to scheduling the work to ensure that sufficient and appropriate traffic control devices will be available. Special consideration shall be exercised to ensure that appropriate traffic controls be placed in areas that will have limited visibility of the work areas or any associated traffic queues.
 2. Vehicles used for these operations shall be made highly visible with appropriate equipment such as flashing lights, rotating beacons, flags, signs, flashing arrow boards, and/or portable changeable message signs. Any signs mounted to these vehicles shall not obscure the visibility of other devices.
 3. All vehicles shown may not be required based upon roadway conditions. However, when needed and practical, additional shadow vehicles and equipment to warn and protect motorists and workers should be used. Based upon roadway conditions, the addition of a police detail with cruiser may be used for additional protection or warning for the traveling public.
 4. The distance between the work and shadow vehicle(s) may vary according to the terrain and other factors. Shadow vehicles are used to warn traffic of the operations ahead. Whenever adequate sight distance exists, the shadow vehicle(s) should maintain the minimum appropriate distance and maintain the same speed to prevent non-work related vehicles from entering the work convoy. If this formation cannot be maintained then additional traffic control devices should be deployed in advance of any vertical or horizontal curves that may restrict the sight distance of an oncoming vehicle to either the work vehicle or associated traffic queue.
 5. All shadow vehicles shall be equipped with a truck or trailer mounted attenuator (TMA) and a flashing arrow board.
 6. Signs should be covered or turned from view when work is not in progress.
 7. Portable changeable message signs may be used in lieu of MA-W21-9 signs and any signs mounted directly to a shadow vehicle.



NOTES

1. IF THE WORK AREA IS SUFFICIENTLY AWAY FROM THE EDGE OF ROADWAY (20' MINIMUM) THEN SIGNS AND VEHICLES MAY NOT BE REQUIRED.

 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 57</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 25 MOBILE OPERATIONS ANY ROADWAY BEYOND RIGHT SHOULDER</p>
---	---	--



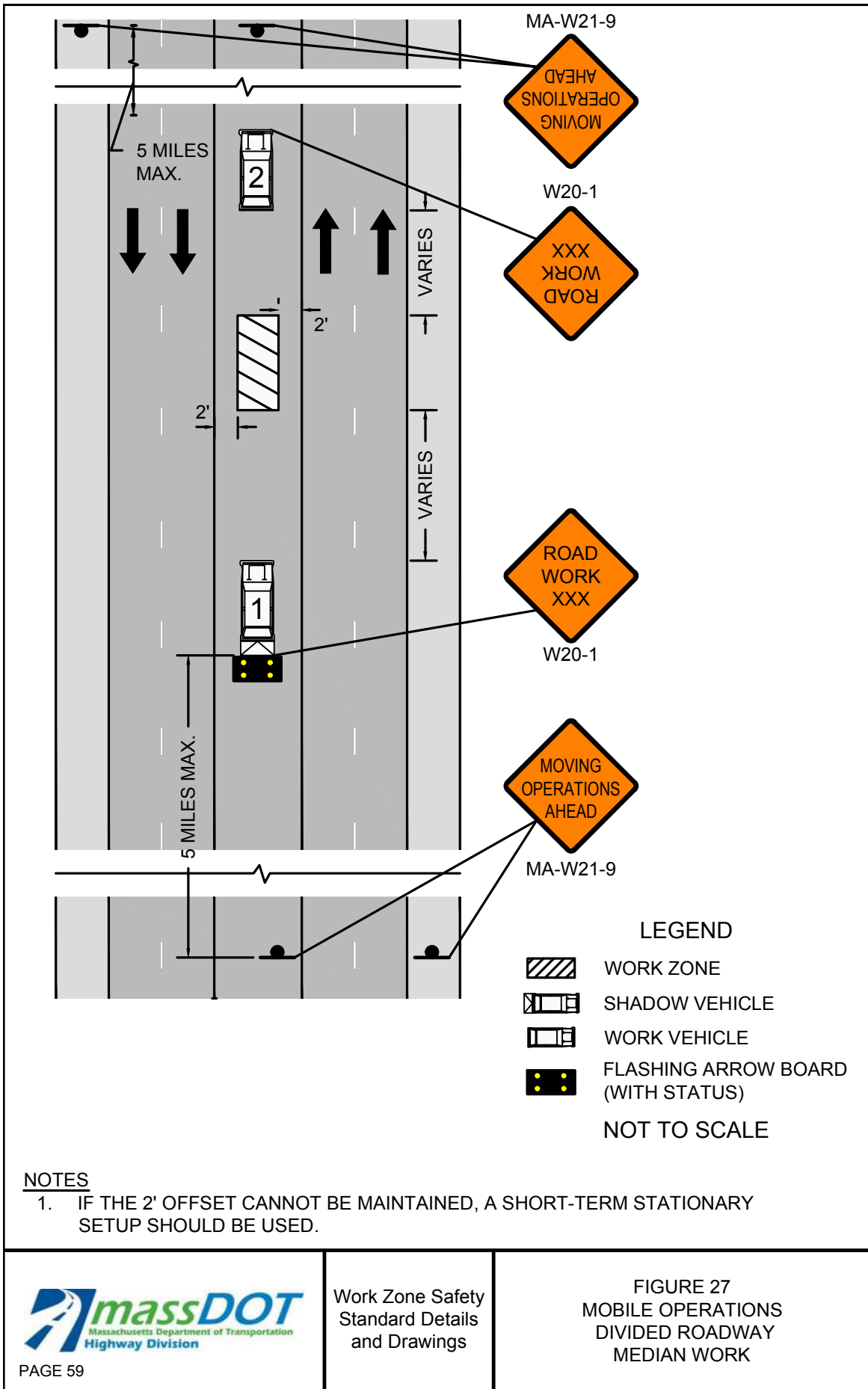
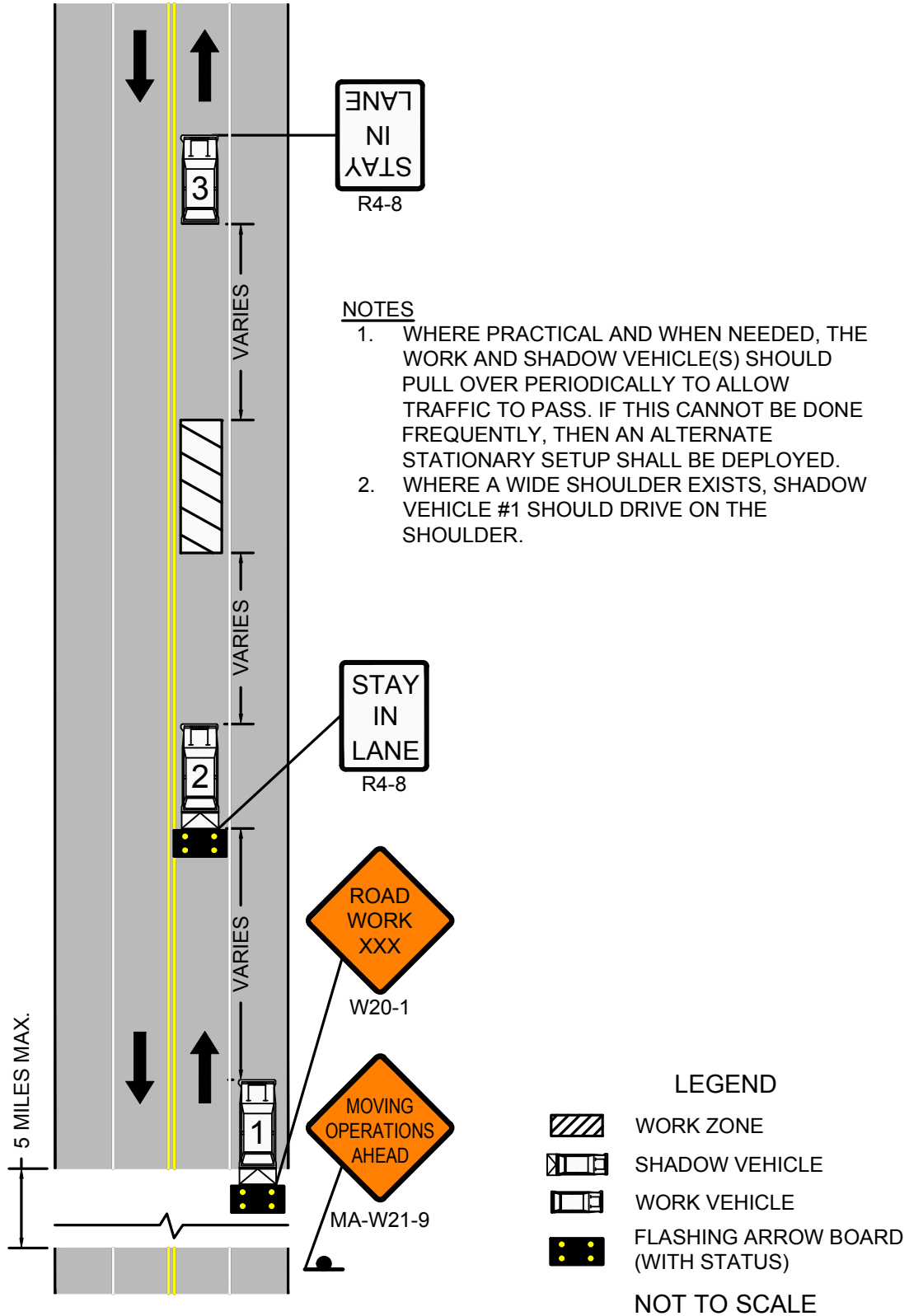




FIGURE 28
MOBILE OPERATIONS
UNDIVIDED TWO LANE ROADWAY
HALF OF ROADWAY CLOSED



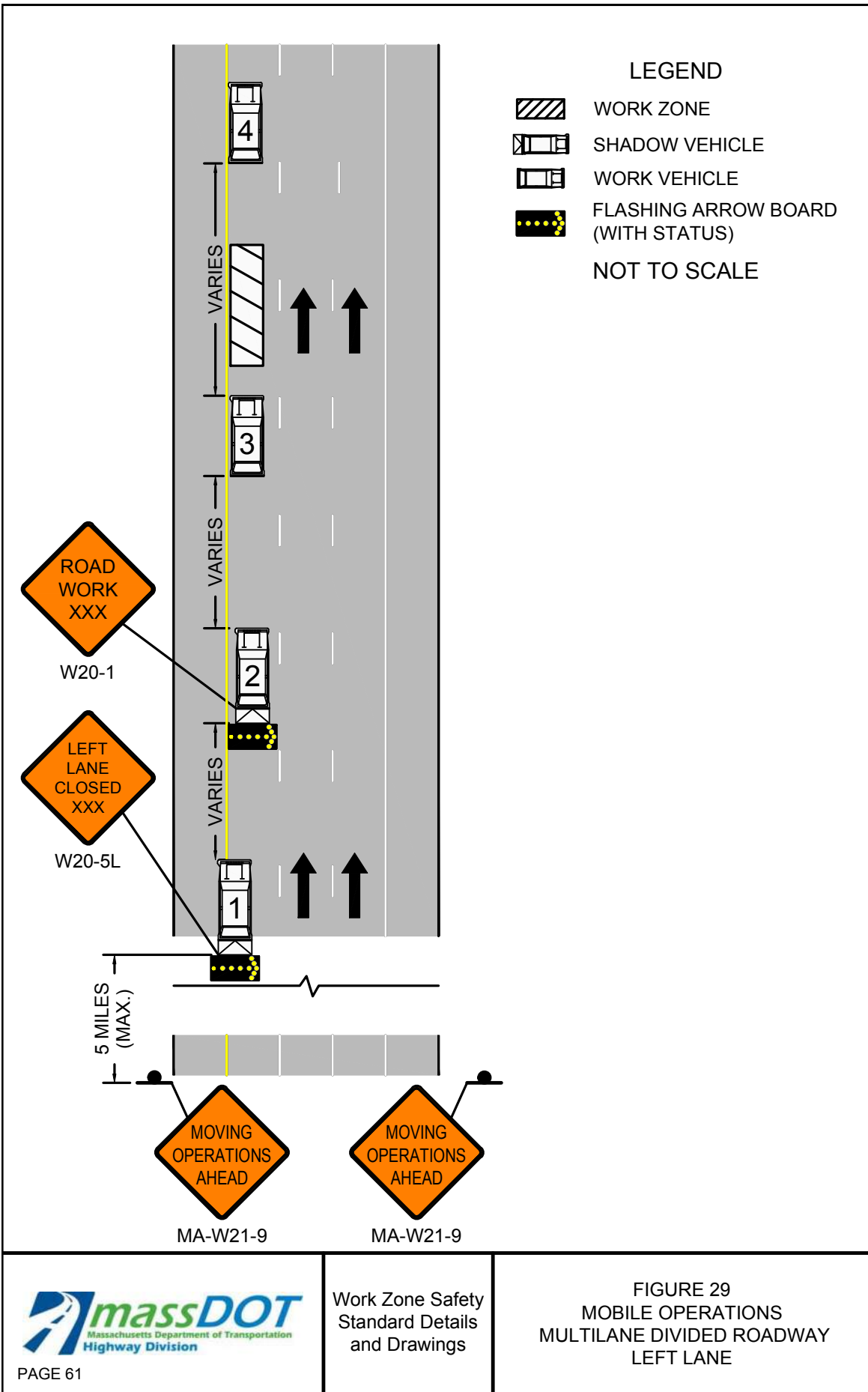
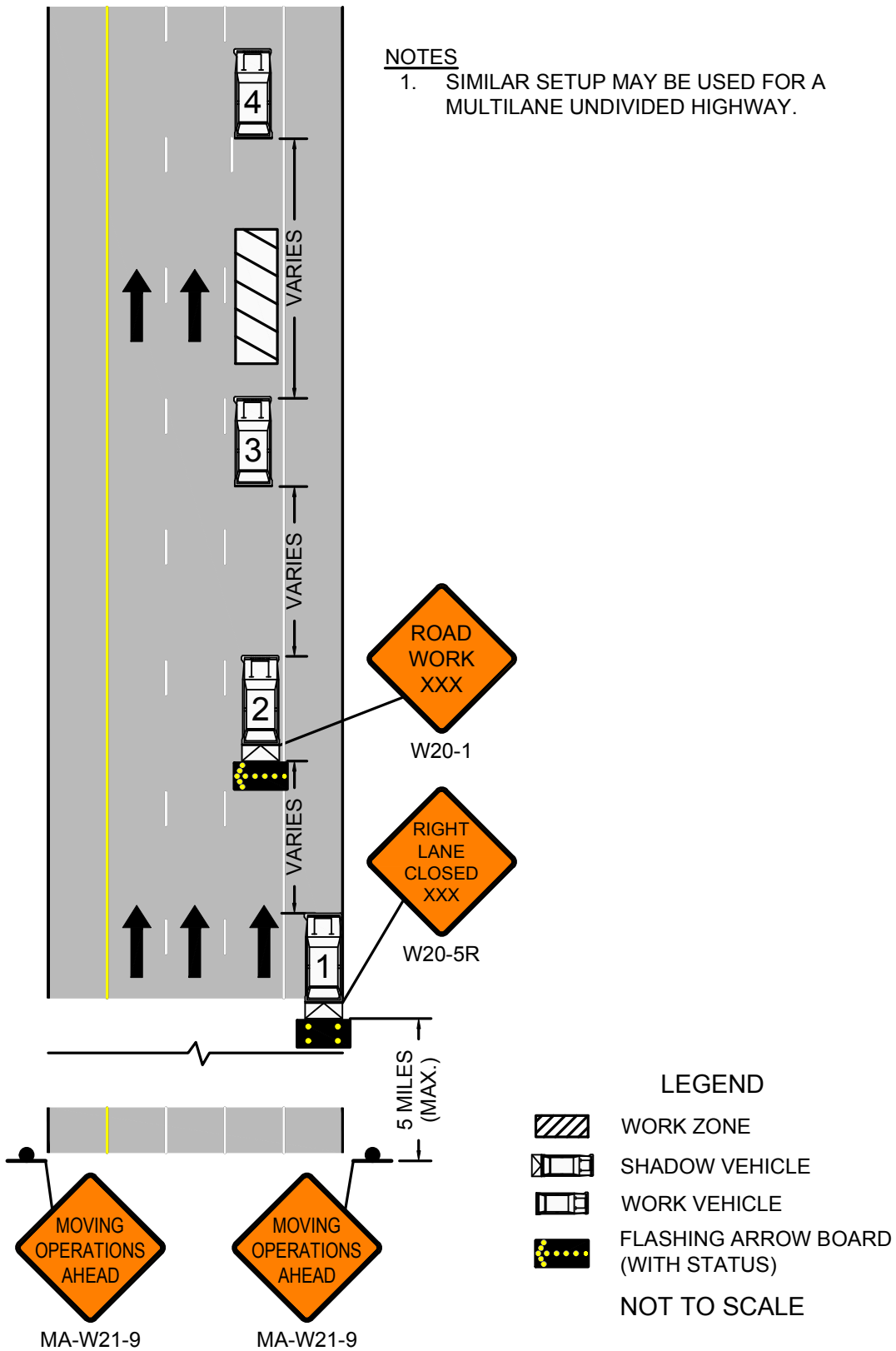
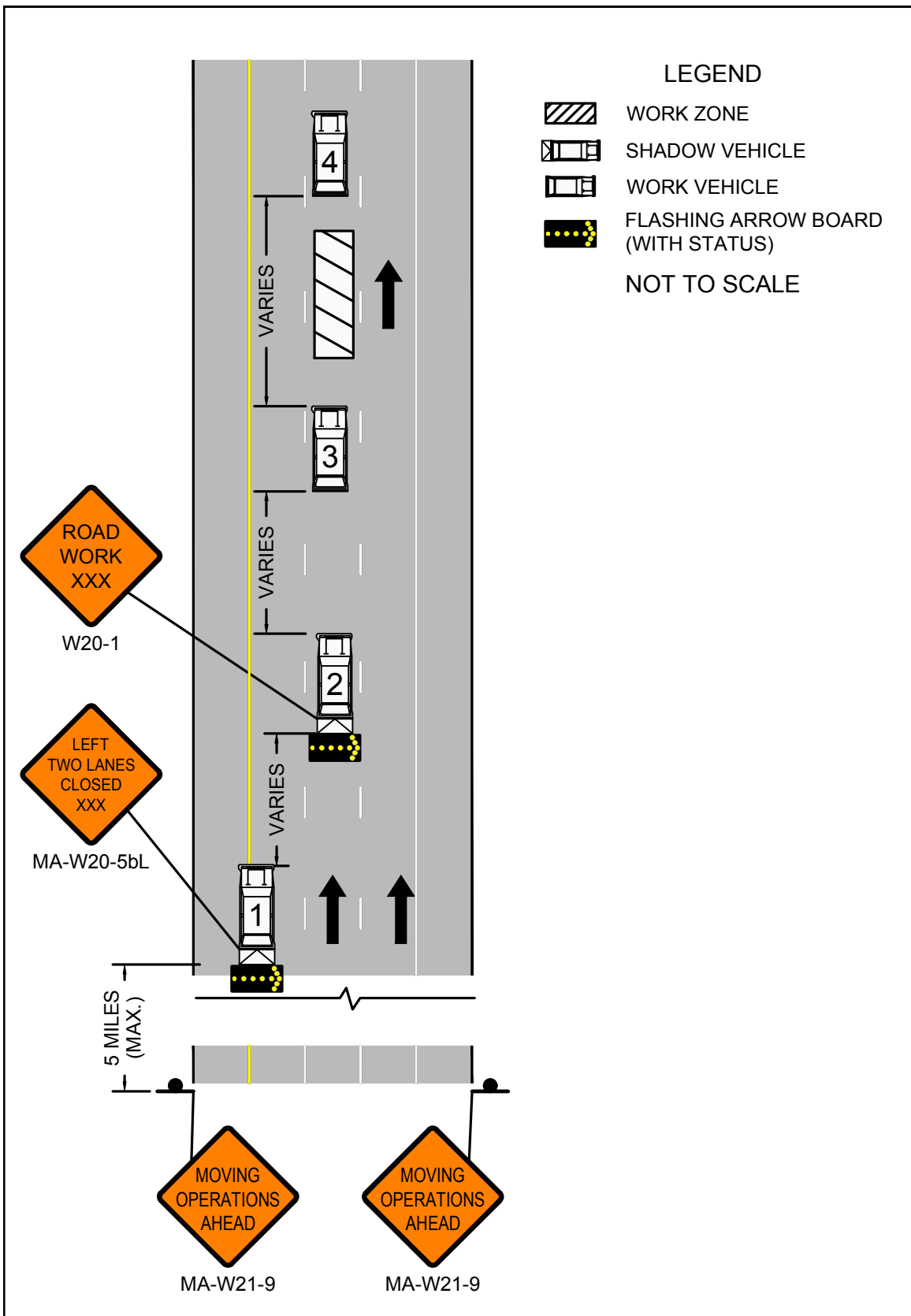
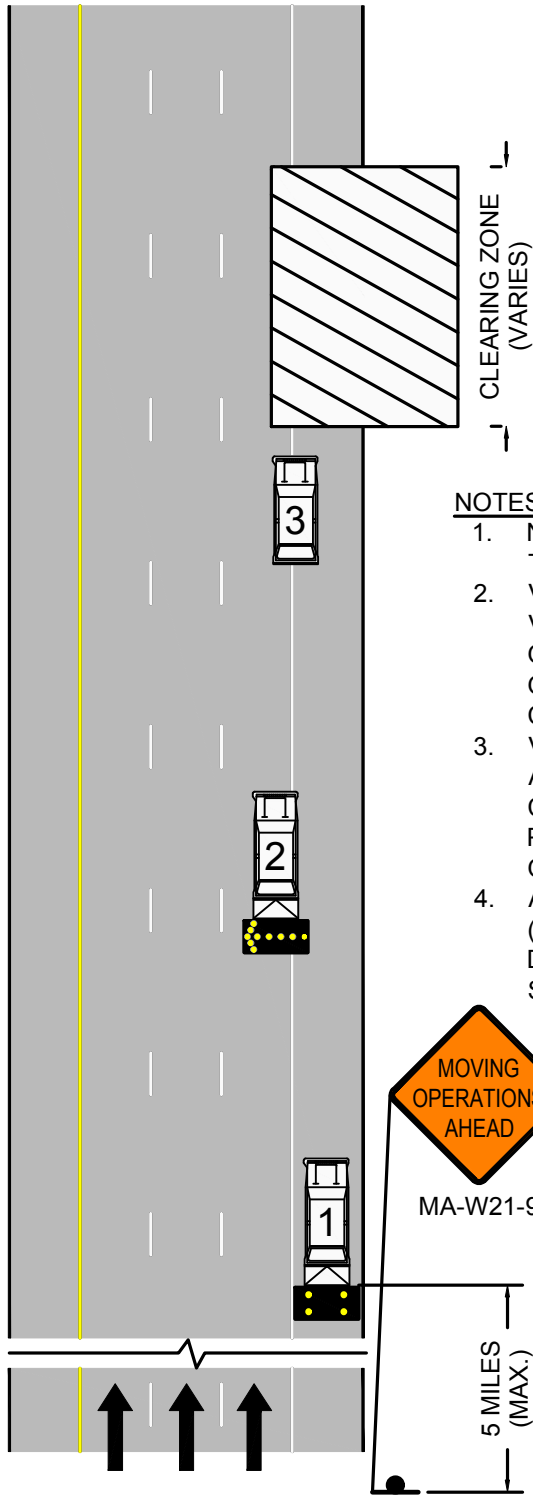




FIGURE 30
MOBILE OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT LANE







NOTES

1. NO OTHER NOTES ARE APPLICABLE TO THIS DETAIL.
2. VEHICLE #3 IS A SNOW/DEBRIS REMOVAL VEHICLE AND SHALL ALWAYS BE AWARE OF THE SURROUNDINGS. MORE THAN ONE VEHICLE MAY BE USED IN THE CLEARING ZONE.
3. VEHICLE #1 SHOULD BE EQUIPPED WITH A PCMS, A TMA, AND STAY IN VISUAL CONTACT WITH VEHICLE #3 WHILE PROVIDING AMPLE WARNING TO ONCOMING TRAFFIC.
4. A POLICE DETAIL WITH BLUE LIGHTS (OPTIONAL) SHALL REMAIN DOWNSTREAM OF VEHICLE #1 IN THE SHOULDER.

LEGEND

- WORK ZONE
- SHADOW VEHICLE
- WORK VEHICLE
- FLASHING ARROW BOARD (WITH STATUS)

NOT TO SCALE

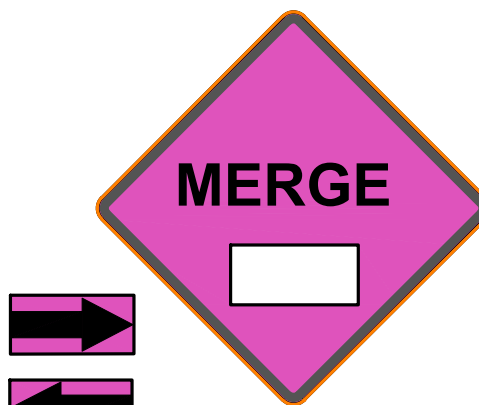
Notes for Traffic Emergency or Incident Operations

- The goal is to increase awareness of during traffic emergencies or incidents.
- These signs are to be used to differentiate from the traditional construction work zone and an emergency or incident.
- Upon arrival MassDOT First Responders shall assess the magnitude of the scene to determine if the incident is likely to last an hour or more in duration which would trigger the requirement to use these signs.
- Place the “Emergency Ahead” sign on the same side of the road as the incident, if possible, for up to an hour. Emergency response signs should be put up for all incidents and emergencies as soon as possible.
- Place the emergency sign 500 to 1000 feet before the first channelization devices.
- As an incident evolves this sign would be used as a secondary sign with all other emergency controls put in place.
- Only use “MERGE” signs where applicable (Not on 2 lane roads).
- Use MERGE signs on Multi-lane Roads to move traffic away from the incident and keep them in a safe lane.
- Place the MERGE sign about 500 feet before the closure.
- If additional signs are available, they should be placed accordingly as a sign informing people coming in the other direction or on the opposite side of the roadway.
- Use 12 emergency cones spaced 40 to 80 feet apart to form a taper and protect the scene.
- Sequential flashing lights/flares may be used in lieu of or to supplement cones.
- During a major incident that will last for a long duration, the EMERGENCY AHEAD sign should be moved back before an intersecting road or ramp to alert travelers and give them an option of using an alternate route. (Be sure all other devices are in place before moving this sign).

Standard Emergency Signs (36"x36" or 48"x48")



MA-W20-9






MA-W4-2aR/L



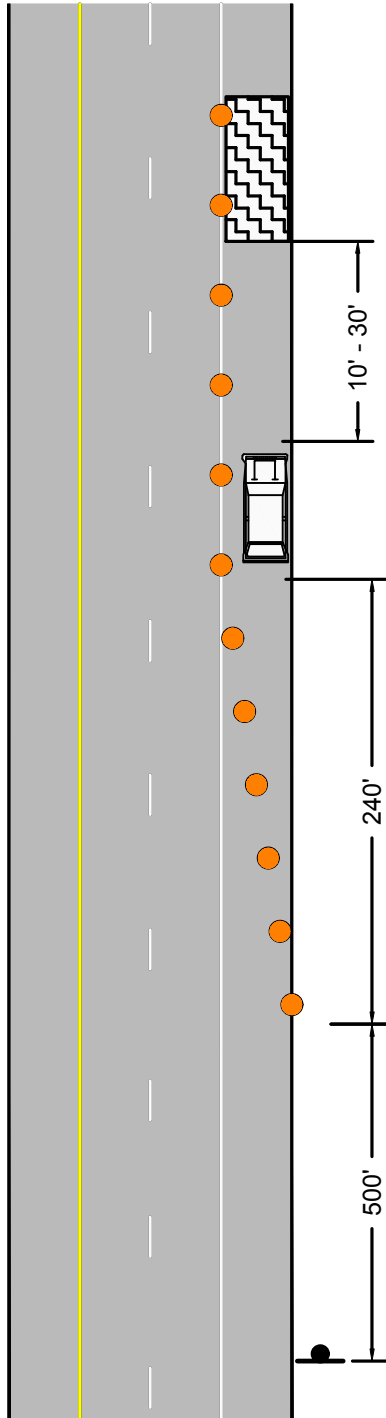


FIGURE 33
EMERGENCY RESPONSE
ANY ROADWAY
SHOULDER ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE



ORDER OF RESPONSE ACTIVITIES

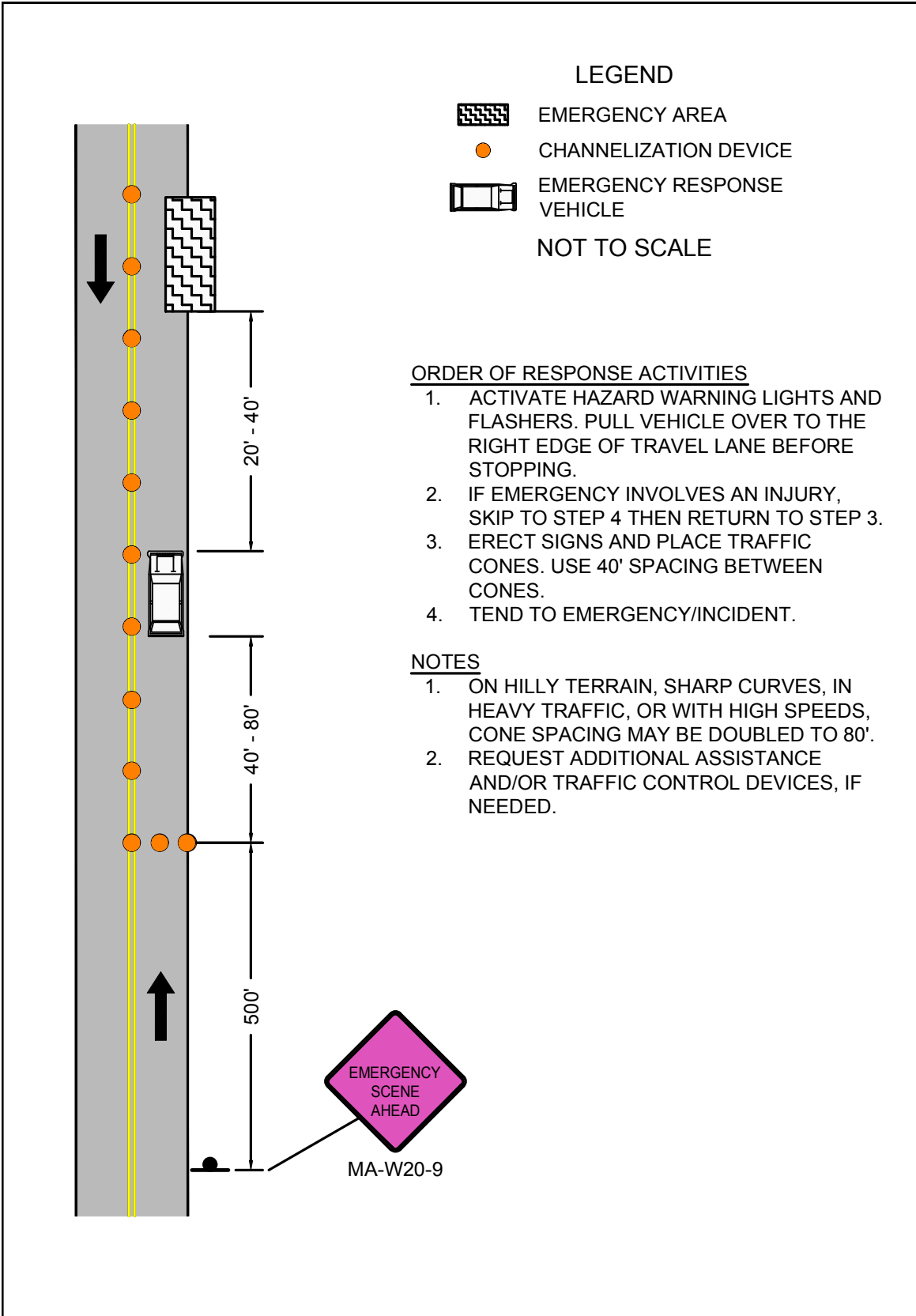
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9







 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION Highway Division PAGE 67	Work Zone Safety Standard Details and Drawings	FIGURE 34 EMERGENCY RESPONSE TWO LANE ROADWAY NO SHOULDER TRAVEL LANE ENCROACHMENT
--	--	---

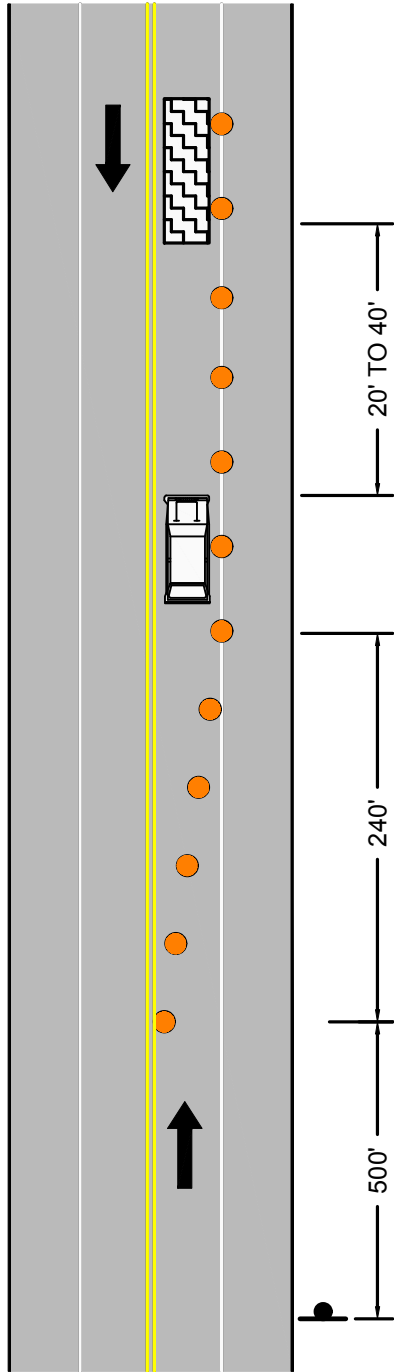


FIGURE 35
EMERGENCY RESPONSE
TWO LANE ROADWAY
TRAVERSABLE SHOULDER
SINGLE LANE ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE

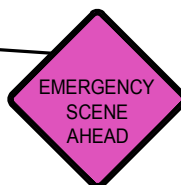


ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE LEFT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9

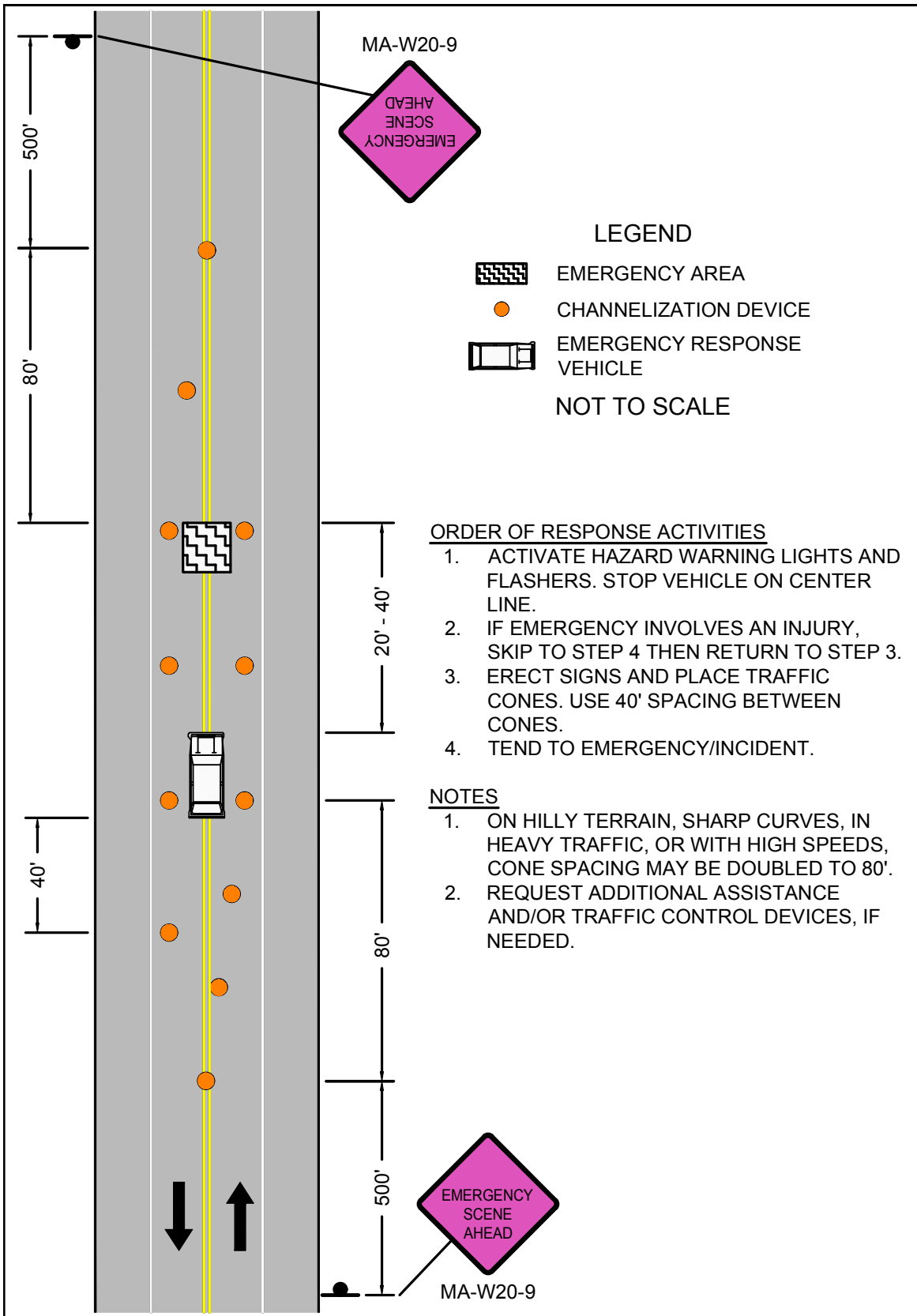
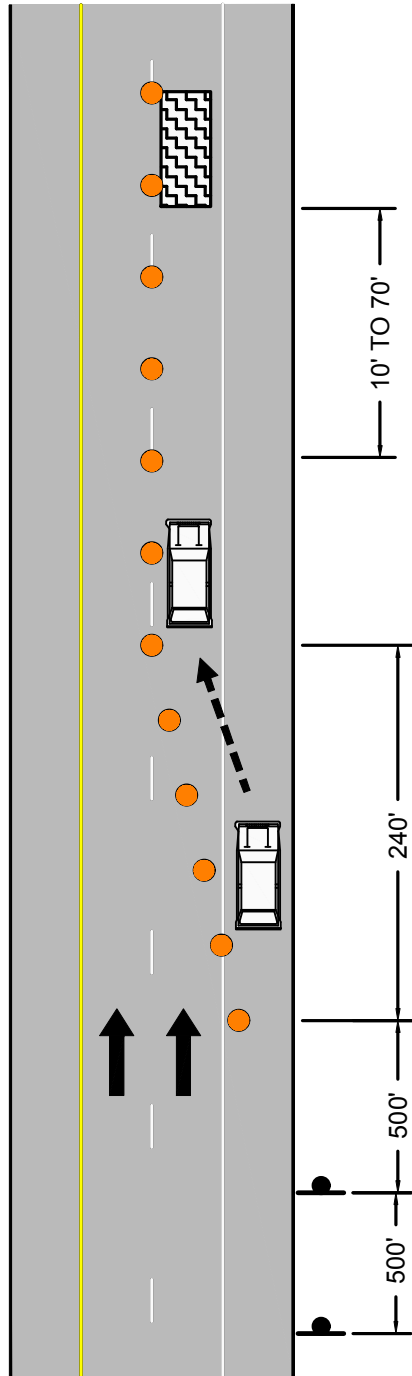






FIGURE 36
EMERGENCY RESPONSE
TWO LANE ROADWAY
TRAVERSABLE SHOULDER
CENTER OF ROADWAY



FIGURE 37
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
RIGHT LANE



LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE
-  RESPONSE VEHICLE MOVEMENT

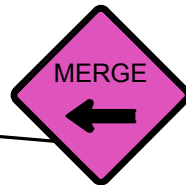
NOT TO SCALE

ORDER OF RESPONSE ACTIVITIES

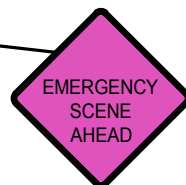
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. STOP VEHICLE IN BREAKDOWN LANE.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 6 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. MOVE RESPONSE VEHICLE BEHIND EMERGENCY.
5. PLACE ADDITIONAL CONES.
6. TEND TO EMERGENCY.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W4-2aL



MA-W20-9

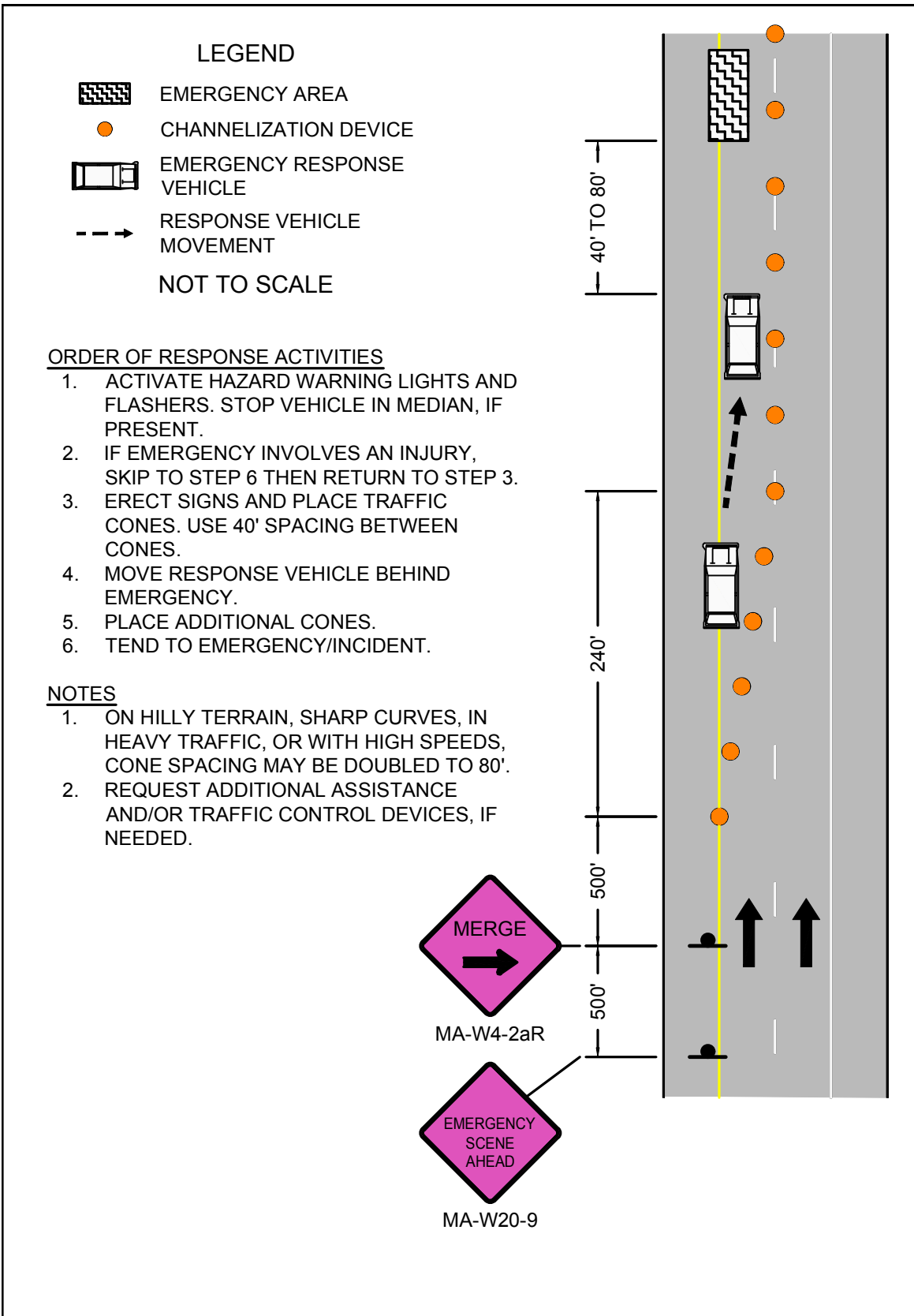
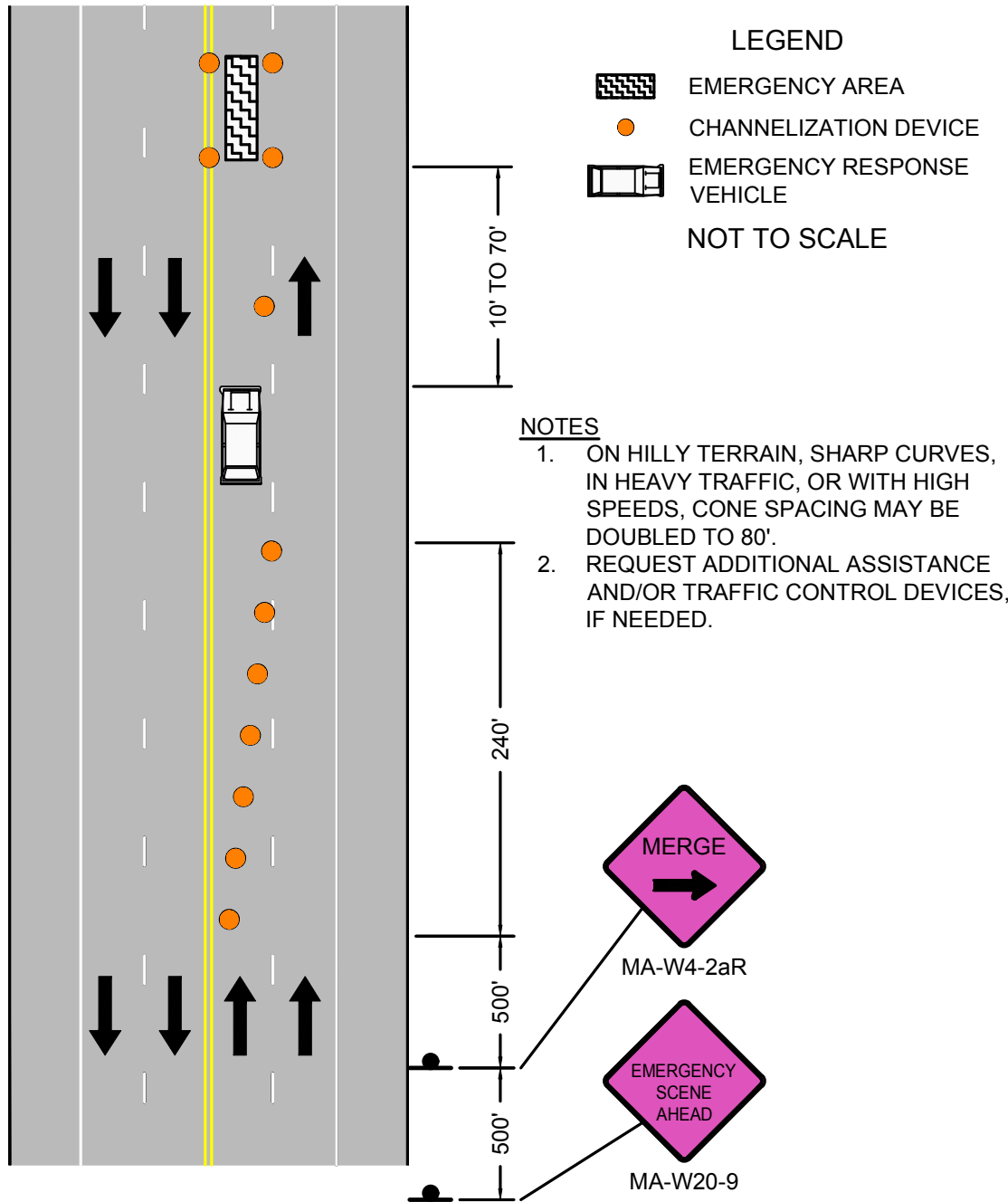


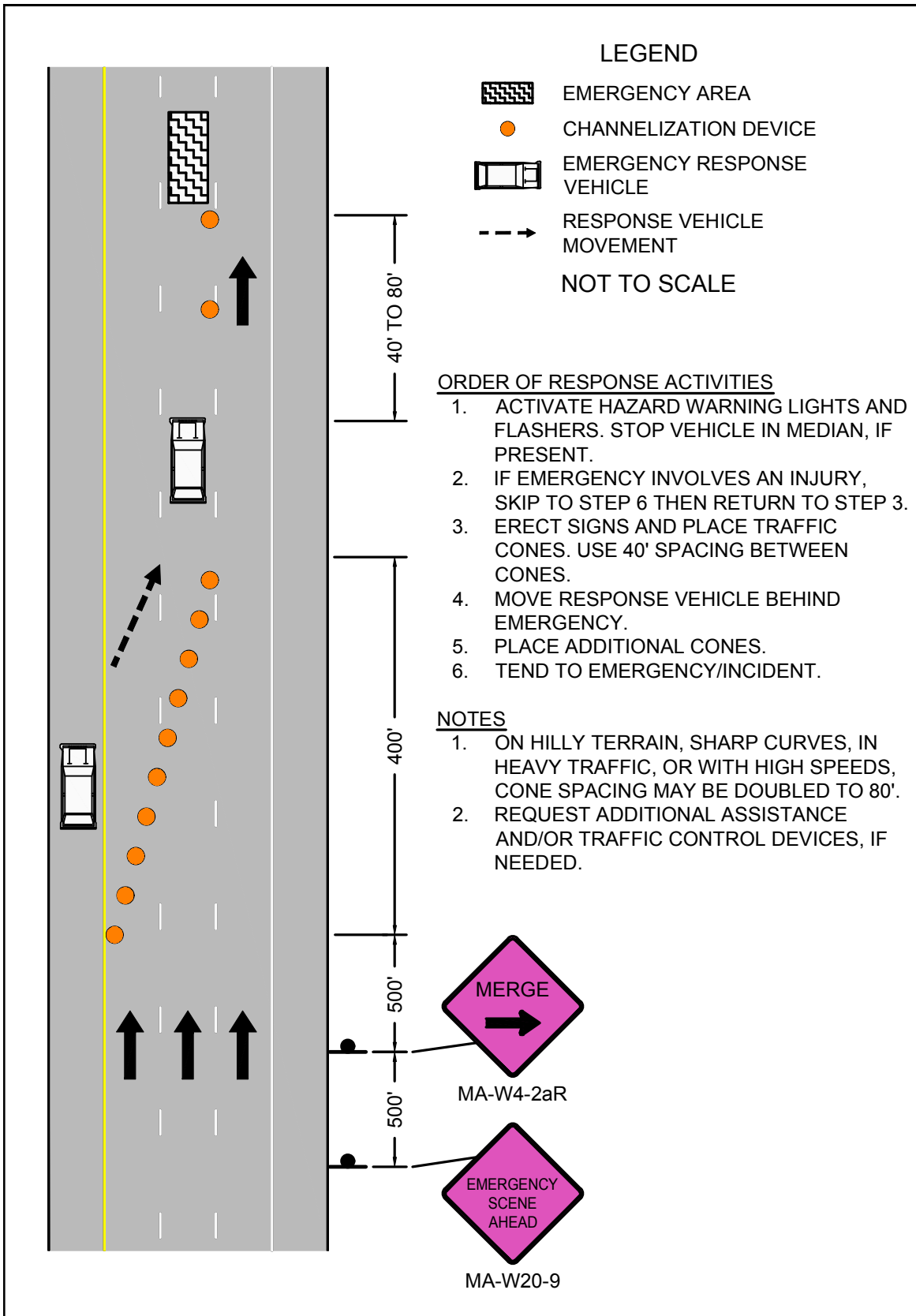



FIGURE 39
EMERGENCY RESPONSE
MULTILANE UNDIVIDED
ROADWAY
LEFT LANE

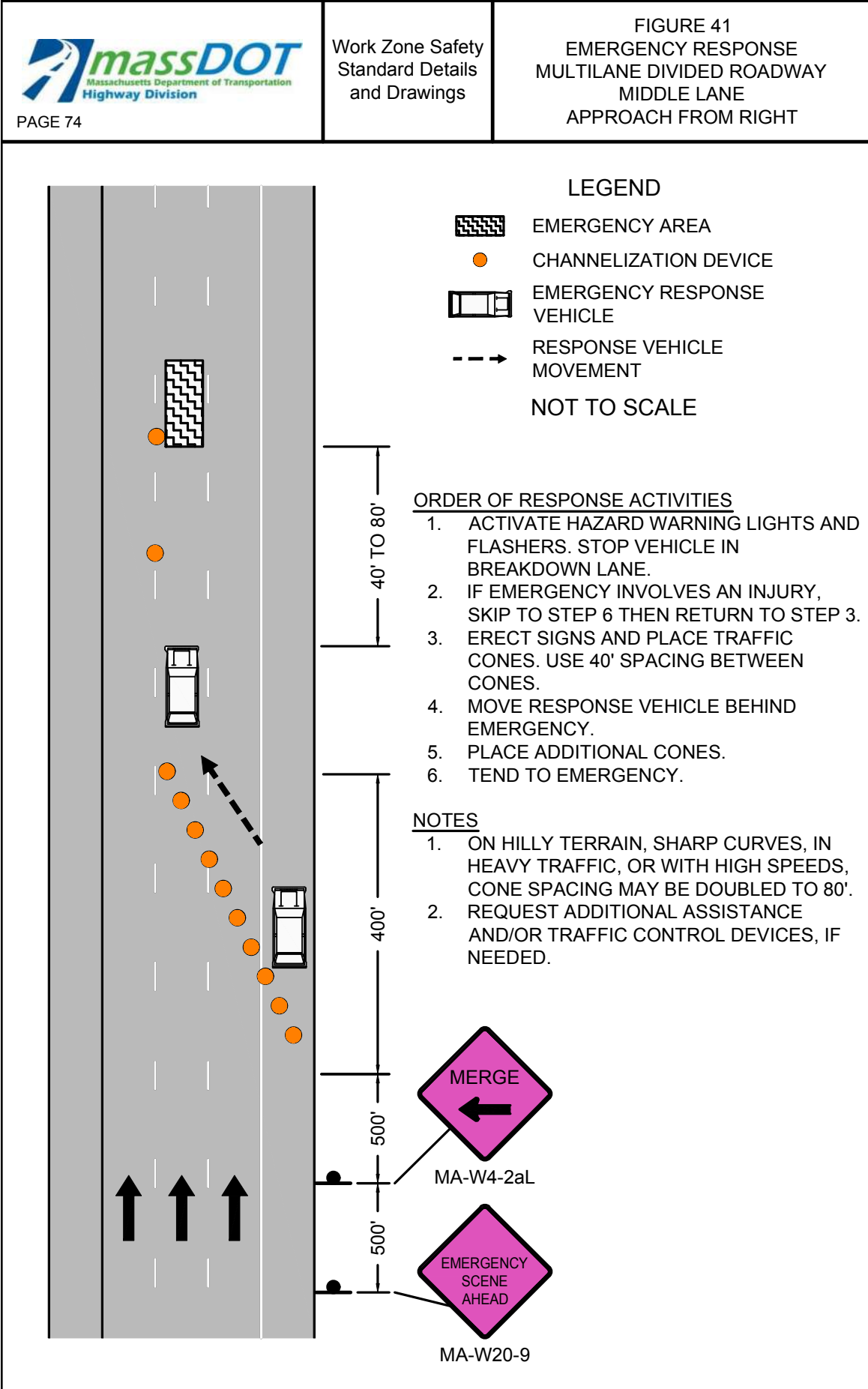


ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF BREAKDOWN LANE OR SHOULDER OR, IF NOT PRESENT, RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.



 <p>Massachusetts Department of Transportation Highway Division</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 40 EMERGENCY RESPONSE MULTILANE DIVIDED ROADWAY MIDDLE LANE APPROACH FROM LEFT</p>
--	---	---



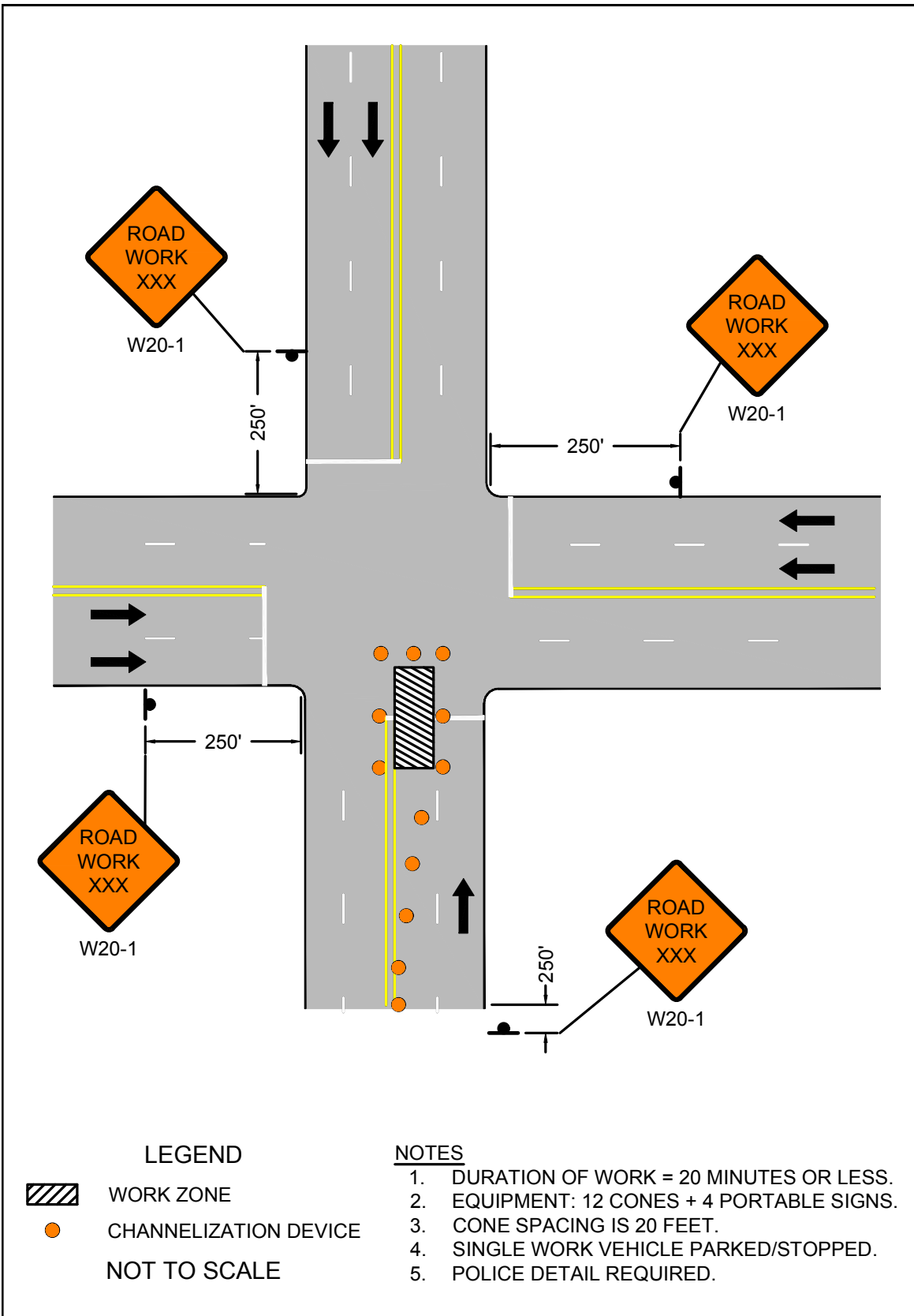
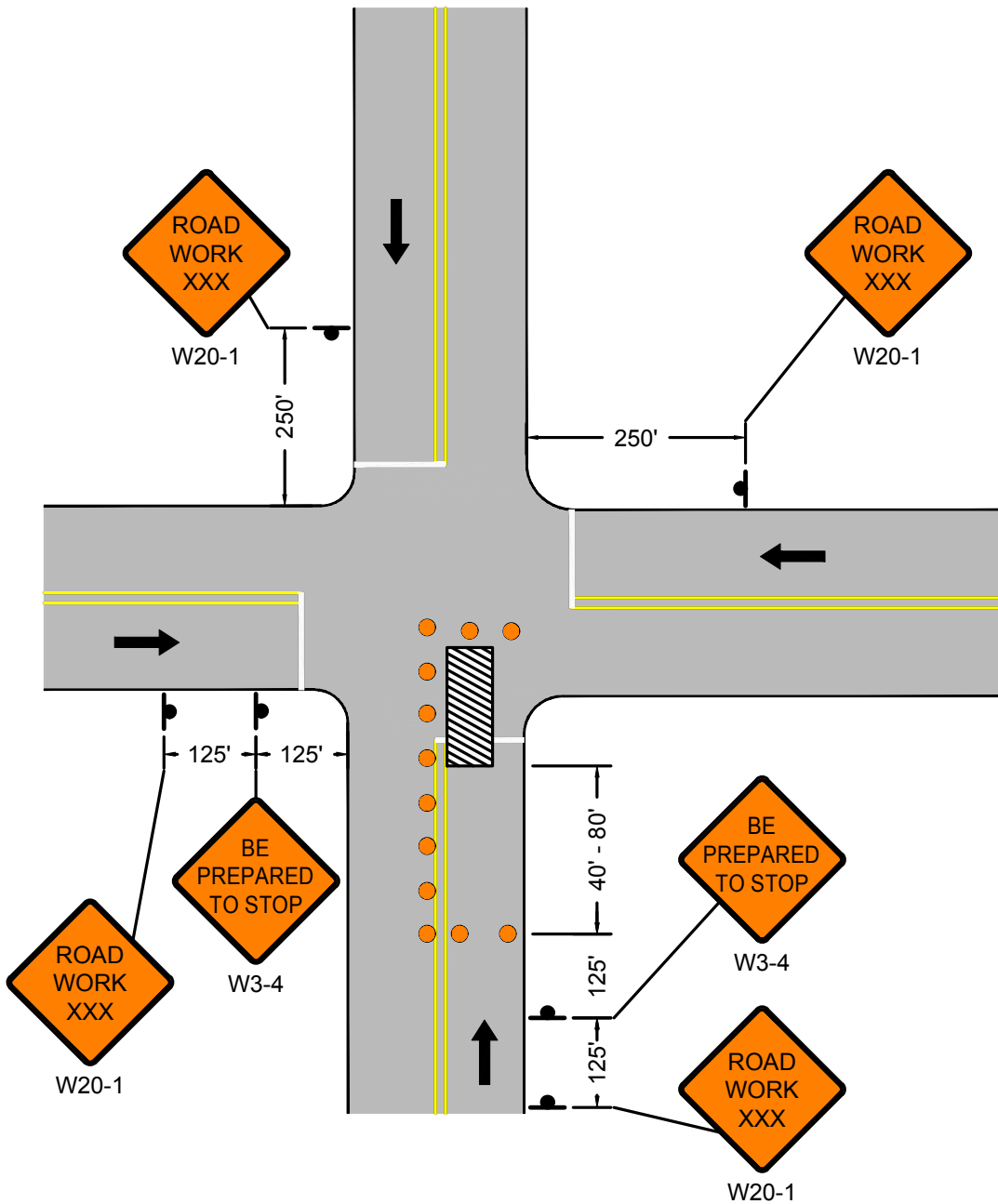






FIGURE 43
TRAFFIC SIGNAL REPAIR WORK
TWO LANE UNDIVIDED ROADWAY
ONE LEG OF INTERSECTION

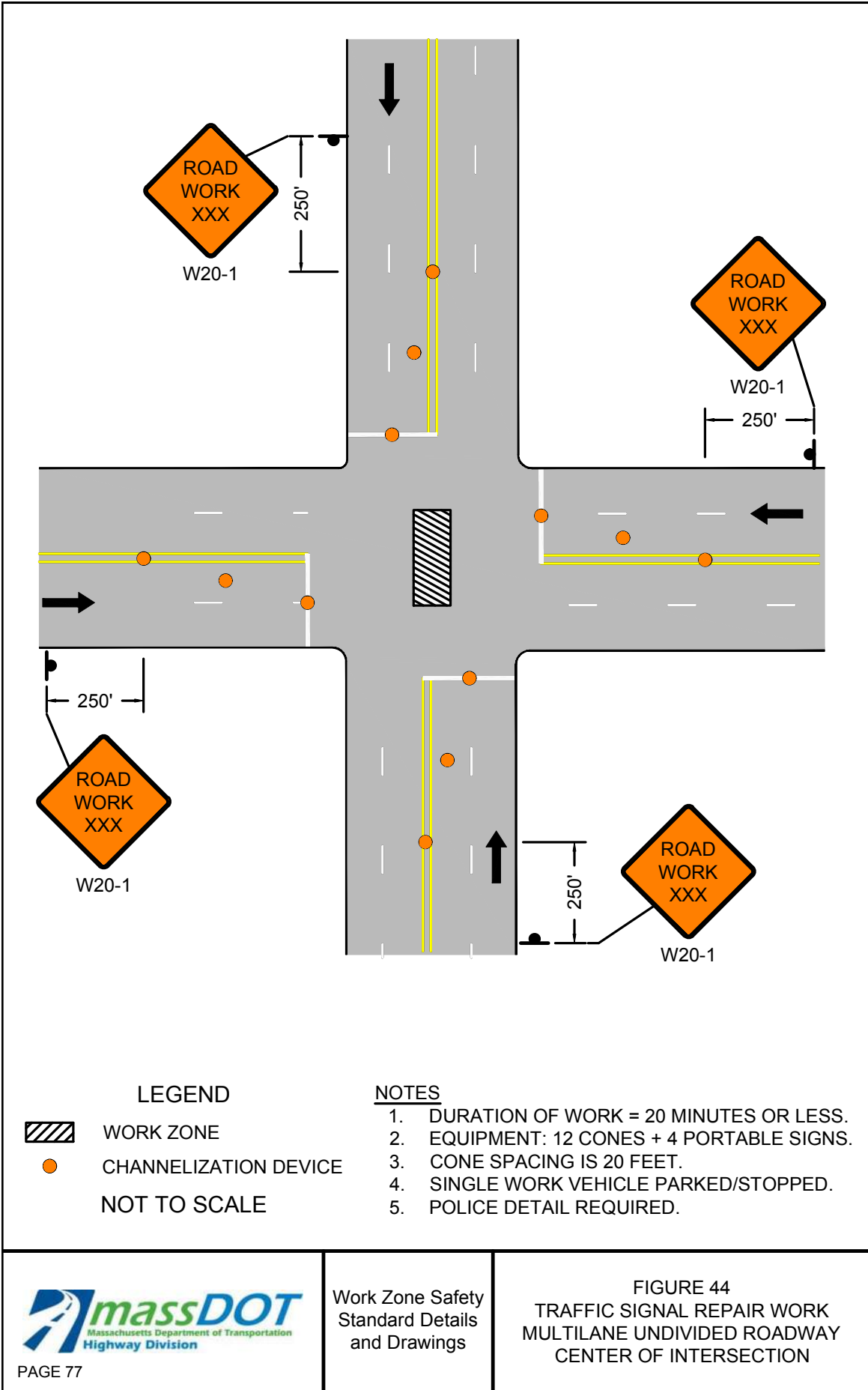


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
- NOT TO SCALE

NOTES

1. DURATION OF WORK = 20 MINUTES OR LESS.
2. EQUIPMENT: 12 CONES + 6 PORTABLE SIGNS.
3. CONE SPACING IS 20 FEET.
4. SINGLE WORK VEHICLE PARKED/STOPPED.
5. POLICE DETAIL REQUIRED.

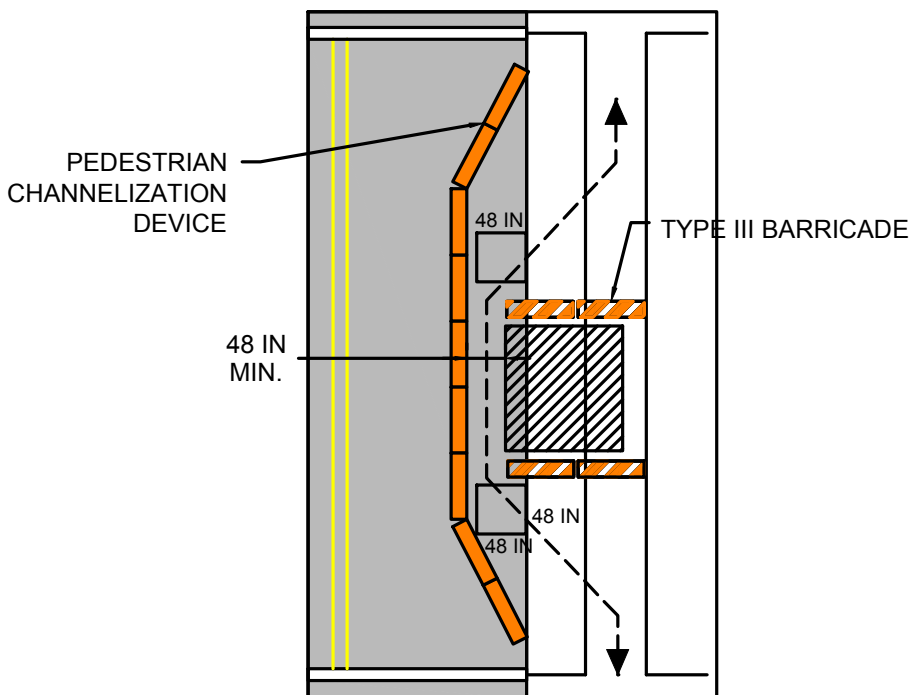




PAGE 78

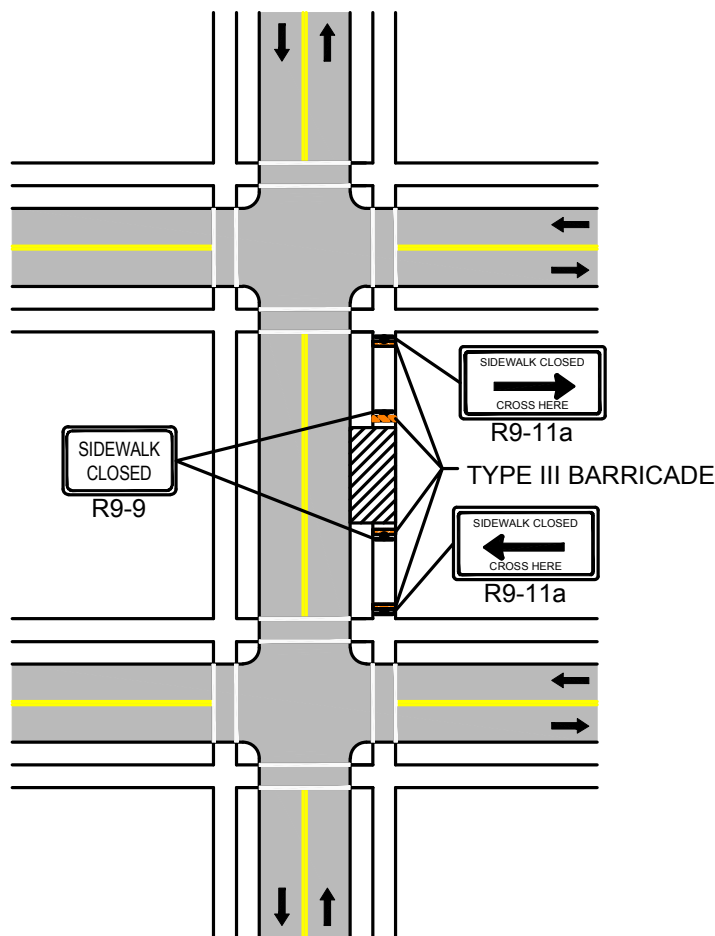
Work Zone Safety
Standard Details
and Drawings

FIGURE 45
PEDESTRIAN BYPASS



NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. A PEDESTRIAN CHANNELIZATION DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ALONG THE FULL LENGTH OF THE TEMPORARY PEDESTRIAN ROUTE.
3. WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT.
4. THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
5. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THE SIDEWALK EXCEEDS 200 FEET THEN A 5 FOOT BY 5 FOOT PASSING ZONE SHALL BE PROVIDED NEAR THE MID-POINT OF THE CLOSURE.
6. THE PROTECTIVE REQUIREMENTS OF A TTC WORK ZONE MAY HAVE AN IMPACT IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN PROVIDING PEDESTRIAN DELINEATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
7. ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL TO ASSIST WITH NAVIGATION AROUND THE CLOSURE/WORK AREA MAY BE CONSIDERED AS AN OPTION IN PLACE OF PROVIDING ADA/AAB DEVICES FOR WORK FOR CLOSURES LASTING 4 HOURS OR LESS.
8. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN; VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE. THESE DETAILS ARE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DETERMINED BY THE ENGINEER.



NOTES:

1. CLOSURE OF A SIDEWALK FACILITY SHALL CONSTITUTE THE PROVISION FOR MANAGING PEDESTRIAN TRAFFIC AND ACCOMMODATING ALL USERS. IF THE EXISTING PEDESTRIAN ACCESS ROUTE(S) CAN BE TEMPORARILY RELOCATED ALONG THE EXISTING SIDEWALK , AND SAID FACILITY PROVIDES A MINIMUM WIDTH OF 48-INCHES OF SOLID, SMOOTH UNOBSTRUCTED SURFACE, THEN NO DETOURING OF THE ROUTE SHALL BE REQUIRED. DELINEATION OF THE WORK AREA IS STILL REQUIRED.
2. IF IT IS NECESSARY TO DIVERT PEDESTRIAN TRAFFIC TO AN ALTERNATE ROUTE ACROSS THE ROADWAY FROM THE EXISTING FACILITY, THE FIGURE ABOVE SHALL BE FOLLOWED TO PROVIDE ADEQUATE DIRECTION TO PEDESTRIANS. ALTERNATE ROUTE SHALL PROVIDE THE SAME LEVEL OF ACCOMMODATION AS THE FACILITY THAT IS BEING DETOURED AND RETAIN ADA COMPLIANCE IN ITS ENTIRETY.
3. FOR EMERGENCY OR SHORT-DURATION SIDEWALK CLOSURES OF 4-HOURS OR LESS, IT IS OPTIONAL TO HAVE ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL AVAILABLE AT ALL TIMES DURING THE CLOSURE TO ASSIST THOSE MOBILITY CHALLENGED PERSONS WHO REQUIRE ADDITIONAL ASSISTANCE TO SAFELY NAVIGATE AROUND THE WORK AREA IN LIEU OF A FULL DETOUR.





PAGE 80

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
BIKE LANE CLOSURE










POSTED SPEED LIMIT (MPH)	SPACING FOR BIKE ADVANCE WARNING SIGNS (FT) (A,B))	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRANSITION LENGTH (L/3)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	150 / 150	100	305	20	45
45-55	150 / 150	220	495	40	35
60-65	150 / 150	260	645	40	40

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

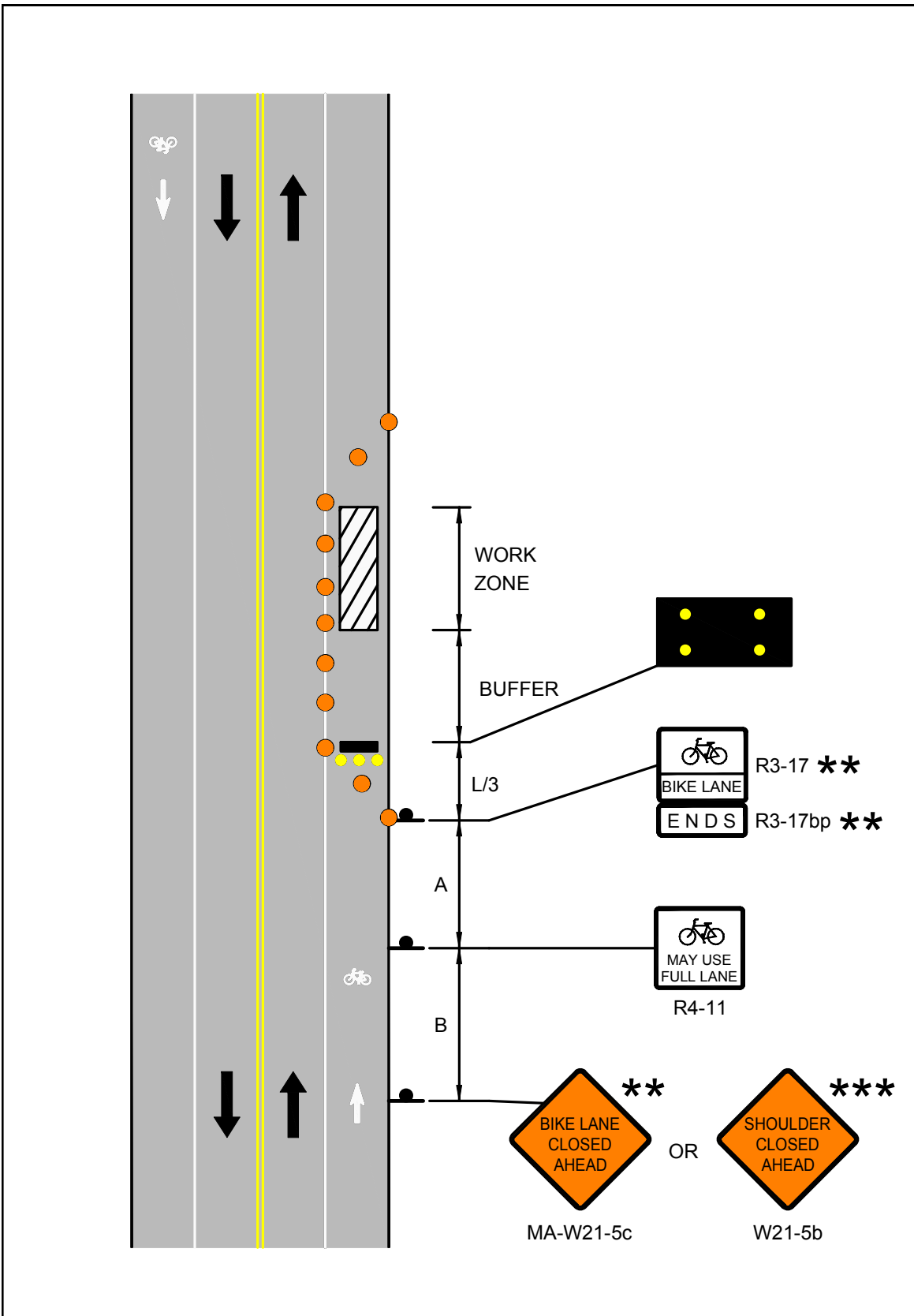
NOTES


1. DETAIL SHALL BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS. SIGNING SHOWN ONLY FOR BIKE TRAFFIC. FOLLOW ALL OTHER RELEVANT DETAILS FOR TTC DEVICES FOR VEHICULAR TRAFFIC.
2. ****** SIGN SHALL BE USED ONLY IF THERE IS A MARKED BIKE LANE.
3. ******* SIGN SHALL BE USED ONLY IF THERE IS NO MARKED BIKE LANE.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 81</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 48 STATIONARY OPERATIONS BIKE LANE CLOSURE</p>
--	---	--

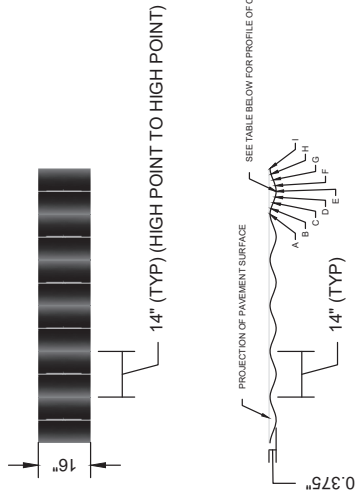


Safety is everyone's business

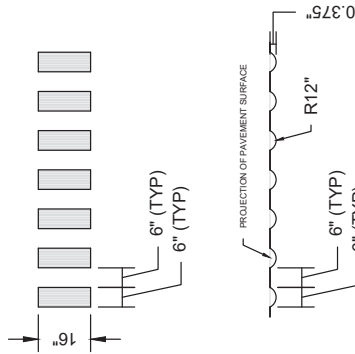
Rev. June, 2017

RUMBLE STRIP DETAILS

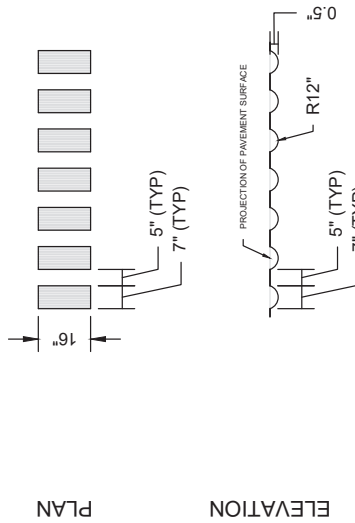
TYPE C
CONTINUOUS SINUSOIDAL
RUMBLE STRIP



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: BURLINGTON Project File Number: 609516

Contract Number 129633

Project Description: Improvements at I-95 (Route 128)/Route 3 Interchange

All AutoCAD files are provided solely as a courtesy to facilitate public access to information. MassDOT attempts to provide current and accurate information but cannot guarantee so. MassDOT provides such documents, files or other data "as is" without any warranty of any kind, either expressed or implied, including but not limited to, accuracy, reliability, omissions, completeness and currentness. The Commonwealth of Massachusetts and its Consultants shall not be liable for any claim for damages, including lost profits or other consequential, exemplary, incidental, indirect or special damages, relating in any way to the documents, files or other data accessible from this file, including, but not limited to, claims arising out of or related to electronic access or transmission of data or viruses. Because data stored on electronic media can deteriorate undetected or be modified without our knowledge, MassDOT cannot be held liable for its completeness or correctness. MassDOT makes no representation as to the compatibility of these files beyond the version of the stated CAD software.

By signing this form, I agree that it shall be my responsibility to reconcile this electronic data with the conformed contract documents, and that only the conformed contract documents shall be regarded as legal documents for this Project. I understand that this authorization does not give me the right to distribute the files. I agree to the terms above and wish to receive the AutoCAD files.

This signed form shall be emailed to the Highway Design Engineer at the MassDOT -Highway Division at the following email address:

DOTHighwayDesign@dot.state.ma.us

Attn: AutoCAD Files

Name of person requesting AutoCAD files: _____

Affiliation/Company: _____

Address: _____

Telephone number: _____

Email address: _____

Signature/Date: _____

THIS PAGE IS INTENTIONALLY LEFT BLANK

DOCUMENT A00850

MASSACHUSETTS WETLANDS PROTECTION ACT

Request for Determination

**REQUEST FOR DETERMINATION OF APPLICABILITY
FOR
BURLINGTON**



October 17, 2024

Larry Cohen, Conservation Commission Chair
Burlington Conservation Commission
Burlington Town Office Building
29 Center Street
Burlington, MA 01803

Re: Improvements at I-95 (Route 128)/Route 3 Interchange Project
(MassDOT Project No. 609516)
Request for Determination of Applicability

Dear Mr. Cohen,

The Massachusetts Department of Transportation (MassDOT)—Highway Division is submitting the enclosed Request for Determination of Applicability (RDA) in accordance with the Massachusetts Wetlands Protection Act (MA WPA) for the Improvements at I-95 (Route 128)/Route 3 Interchange Project. The project proposes improvements to the interchange of Interstate-95 Northbound (I-95 NB) and US Route 3 Southbound (US-3-SB) and the ramps along the Collector-Distributor (C-D Road) in the towns of Burlington and Lexington, Massachusetts. A project location map is provided in the attached narrative. For project activities located in Lexington, an RDA is being filed concurrently with the Lexington Conservation Commission.

The project is located entirely along MassDOT-owned roadway right of way (ROW) and is limited to the Buffer Zone and Riverfront Area. The proposed work is anticipated to result in approximately 2,816 sf of temporary impacts and 8,265 sf of permanent impacts to Buffer Zones, 74 sf of temporary and 152 sf of permanent impacts to the RFA due to guard rail installation, grading, minor drainage upgrades, and erosion and sediment controls. It should be noted that several proposed construction activities are considered exempt from the WPA as minor activities in the Buffer Zone and Riverfront Area per 310 CMR 10.02(2)(b)2. and 310 CMR 10.58(6)(b). These activities include pavement resurfacing and reclamation (310 CMR 10.02(2)(b)2.p), the conversion of impervious to vegetated surfaces (310 CMR 10.02(2)(b)2.f), vegetation cutting for road safety maintenance (310 CMR 10.02(2)(b)2.n), and the removal/replacement of signage (310 CMR 10.02(2)(b)2.o).

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).

Please advertise this matter and place it on the agenda for the next scheduled Conservation Commission meeting. We look forward to meeting with the Conservation Commission to discuss the Project at that time. For additional information, please do not hesitate to contact me at (617) 981-0653 or mseifert@hntb.com. Thank you for your consideration of this request.

Regards,

A handwritten signature in black ink that reads "Marissa Seifert". The signature is written in a cursive, flowing style.

Marissa Seifert, PWS
Section Manager - Environmental Assessment

cc: MassDEP Northeast Regional Office

Improvements at I-95 (Route 128)/Route 3 Interchange Project

MassDOT Project #: 609516
Request for Determination of Applicability
(Burlington)

October 2024

PREPARED FOR:

Massachusetts Department of Transportation -
Highway Division
10 Park Plaza
Boston, Massachusetts 02116

Phone: (857) 268 - 1729
Contact: Erica Larner

PREPARED BY:

HNTB Corporation
31 Saint James Avenue
Boston, Massachusetts 02116

Phone: (617) 981 - 0653
Contact: Marissa Seifert



TABLE OF CONTENTS

Part A: WPA Form 1 - Request for Determination of Applicability

Part B: Request of Determination of Applicability Narrative

	<u>Page</u>
1. Introduction	1
2. Existing Conditions	1
2.1. Existing Roadway Conditions	1
2.2. Desktop Review of Resource Area	2
2.3. Field Delineation of Resource Areas and Buffer Zones	3
3. Proposed Conditions	5
3.1. Proposed Construction Activities	5
3.2. Proposed Drainage Activities	6
3.3. Proposed Construction Sequencing	6
4. Work in Jurisdictional Areas	6
5. Best Management Practices	8
6. Summary	8

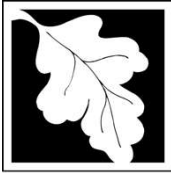
Attachments

Appendix A – Figures

Appendix B – Wetland Delineation Report

Appendix C – Project Design Plans

Part A: WPA Form 1 - Request for Determination of Applicability

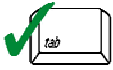


Massachusetts Department of Environmental Protection
 Bureau of Water Resources - Wetlands

WPA Form 1- Request for Determination of Applicability Burlington
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40 Municipality

A. General Information

Important:
 When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Massachusetts Department of Transportation - Highway Division	Erica Larner	
First Name	Last Name	
10 Park Plaza, Room 7360		
Address		
Boston	MA	02116
City/Town	State	Zip Code
857-268-1729	erica.n.larner@dot.state.ma.us	
Phone Number	Email Address	

2. Property Owner (if different from Applicant):

Massachusetts Department of Transportation - Highway Division		
First Name	Last Name	
10 Park Plaza		
Address		
Boston	MA	02116
City/Town	State	Zip Code
Phone Number	Email Address (if known)	

3. Representative (if any)

Marissa	Seifert	
First Name	Last Name	
HNTB Corporation		
Company Name		
31 St. James Ave		
Address		
Boston	MA	02116
City/Town	State	Zip Code
617-981-0653	mseifert@hntb.com	
Phone Number	Email Address (if known)	

B. Project Description

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

I-95 (Route 128)/Route 3	Burlington
Street Address	City/Town
42.47820	-71.21327
Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX)	Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX)
N/A - roadway	N/A - roadway
Assessors' Map Number	Assessors' Lot/Parcel Number

b. Area Description (use additional paper, if necessary):

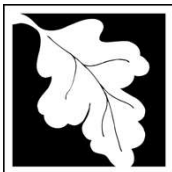
The project area is approx. 1.44 miles long along the right-of-way of Interstate 95 (Route 128) and Route 3 Interchange.

c. Plan and/or Map Reference(s): (use additional paper if necessary)

Plan and Profile of Improvements at Interstate 95 (Route 128)/Route 3 Interchange in the town of Burlington - WPA RDA Submission.	8/5/2024
Title	Date
Title	Date

[How to find Latitude and Longitude](#)

[and how to convert to decimal degrees](#)



Massachusetts Department of Environmental Protection
 Bureau of Water Resources - Wetlands

WPA Form 1- Request for Determination of Applicability Burlington
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40 Municipality

B. Project Description (cont.)

2. a. Activity/Work Description (use additional paper and/or provide plan(s) of Activity, if necessary):

The project proposes improvements to the interchange of Interstate-95 Northbound (I-95 NB) and US Route 3 Southbound (US-3-SB) and the ramps along the Collector-Distributor (C-D Road) in the towns of Burlington and Lexington, Massachusetts. The proposed scope of work in jurisdictional areas in Burlington includes pavement mill and overlay along I-95 NB, new pavement markings, minor geometric improvements, guardrail installation, tree trimming, and minor drainage upgrades.



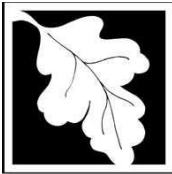
b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

10.02(2)(b)2.f; 10.02(2)(b)2.n; 10.02(2)(b)2.o; and 10.02(2)(b)2.p.

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- Single family house on a lot recorded on or before 8/1/96
- Single family house on a lot recorded after 8/1/96
- Expansion of an existing structure on a lot recorded after 8/1/96
- Project, other than a single-family house or public project, where the applicant owned the lot before 8/7/96
- New agriculture or aquaculture project
- Public project where funds were appropriated prior to 8/7/96
- Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- Residential subdivision; institutional, industrial, or commercial project
- Municipal project
- District, county, state, or federal government project
- Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)



Massachusetts Department of Environmental Protection

Bureau of Water Resources - Wetlands

WPA Form 1- Request for Determination of Applicability Burlington

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Municipality

C. Determinations

1. I request the Burlington Conservation Commission make the following determination(s). Check any that apply:
Conservation Commission

- a. whether the **area** depicted on plan(s) and/or map(s) referenced above is an area subject to jurisdiction of the Wetlands Protection Act.
- b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced above are accurately delineated.
- c. whether the **Activities** depicted on plan(s) referenced above is subject to the Wetlands Protection Act and its regulations.
- d. whether the area and/or Activities depicted on plan(s) referenced above is subject to the jurisdiction of any **municipal wetlands' ordinance** or **bylaw** of:

Name of Municipality

- e. whether the following **scope of alternatives** is adequate for Activities in the Riverfront Area as depicted on referenced plan(s).
- _____

D. Signatures and Submittal Requirements


I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

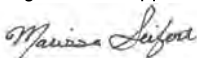
Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.


Signature of Applicant

9/24/2024

Date


Signature of Representative (if any)

10/2/2024

Date

Part B: Request for Determination of Applicability Narrative

1. Introduction

This Request for Determination of Applicability (RDA) is being submitted by the Massachusetts Department of Transportation - Highway Division (MassDOT) pursuant to the Massachusetts Wetlands Protection Act (WPA) (M.G.L. Ch.131, S.40) and its implementing regulations (310 CMR 10.00) for the Improvements at I-95 (Route 128)/ Route 3 Interchange Project. The project proposes improvements to US Route 3 Southbound (US-3 SB) and the ramps along the Collector-Distributor (C-D Road) in the Towns of Lexington and Burlington, Massachusetts. The project limits extend approximately 1.5 miles along I-95 NB (just east of the Grove Street bridge over I-95) and the C-D Road in the Town of Lexington, easterly, under the Route 3 overpass, to the Middlesex Turnpike I-95 NB on-ramp in Burlington.

The I-95 NB/US-3 Interchange experiences safety concerns with frequent rear-end collisions on the C-D Road, servicing US-3 and Middlesex Turnpike (Exits 50A and 50B), and the highway ramps. Other safety concerns related to ramp geometry, high speeds, and driver confusion create an unsafe environment for drivers. With the local and regional growth that has occurred and is projected to occur in the future, operations and safety are expected to deteriorate without improvements.

The project will address existing transportation deficiencies by providing geometric improvements, roadway resurfacing, guide sign replacement, and new pavement markings. Specifically, the project will drop a lane on I-95 NB (between Exit 50A to the Middlesex Turnpike off-ramp at Exit 50B) and eliminate the Middlesex Turnpike to I-95 NB On-Ramp merge by breaking the jersey barrier after the bridge over Middlesex Turnpike. The proposed improvements will improve traffic operations and safety along the I-95 C-D Road between Exit 50A and Exit 50B.

All work is limited to the 100-foot Buffer Zone and the Riverfront Area (RFA). The proposed work will result in 2,816 square feet (sf) of temporary and 8,265 sf of permanent Buffer Zone impacts and 74 sf of temporary and 152 sf of permanent impacts to the Riverfront Area due to guard rail installation, grading, minor drainage upgrades, and erosion and sediment controls. It should be noted that several of the proposed project activities are exempt as minor activities in the buffer zone and RFA per 310 CMR 10.02(2)(b)2. and 310 CMR 10.58(6)(b). These activities include the pavement resurfacing and reclamation (310 CMR 10.02(2)(b)2.p), the conversion of impervious to vegetated surfaces (310 CMR 10.02(2)(b)2.f), vegetation cutting for road safety maintenance (310 CMR 10.02(2)(b)2.n), and the removal/replacement of signage (310 CMR 10.02(2)(b)2.o).

The following narrative describes the proposed project activities located in Burlington. A concurrent RDA is being filed with the Lexington Conservation Commission for proposed work within the Lexington town limits.

2. Existing Conditions

The following subsections describe existing roadway conditions, the results of an existing conditions desktop review, and the results of a field delineation conducted to support the project.

2.1 Existing Roadway Conditions

I-95 is an interstate that runs from the Massachusetts/Rhode Island state line in Attleboro, MA, to the Massachusetts/New Hampshire state line in Salisbury, MA. I-95 generally runs in a north-south direction. I-95 is a divided highway with four 12-foot travel lanes, a 10-foot left shoulder, and a 2-foot

right shoulder in each direction. I-95 near the project area features exit and entrance ramps to and from US-3 and Middlesex Turnpike. The posted speed limit in both directions is 65 mph.

I-95 C-D Road is a collector-distributor road that runs parallel to I-95 NB between Exit 50A and Exit 50B. I-95 and the C-D Road are separated by a barrier. The C-D Road is approximately 0.8 miles long with an approximately 2600-foot deceleration lane and 2100-foot acceleration lane back onto I-95. The C-D road consists of two 12-foot travel lanes with 2-foot shoulders on each side. I-95 NB to US-3 NB Off-Ramp (Exit 50A) consists of two 12-foot travel lanes with 2-foot shoulders on each side. The ramp is approximately 3800 feet long with an advisory speed of 30 mph. I-95 NB to Middlesex Turnpike Off-Ramp (Exit 50B) consists of a single 18-foot travel lane with 2-foot shoulders on each side with an advisory speed of 30 mph. There is an approximately 1700-foot auxiliary lane along I-95 NB between the on-ramp from US-3 SB and the off-ramp to Middlesex Turnpike.

US-3 is a US route that runs from the Longfellow Bridge in Boston, MA, to I-95 in Burlington, MA. US-3 meets I-95 at the Exit 51A on-ramp and runs along 1.6 miles of I-95 before exiting at Exit 50A onto its own freeway. US-3 then continues in a north-south direction to the Massachusetts/New Hampshire state line in Tyngsborough, MA. Within the project area, US-3 is a divided highway with three 12-foot travel lanes, a 6-foot left shoulder, and a 6-foot right shoulder in each direction. The roadway drops to 2 lanes in each direction at Exit 72B, and US-3 SB drops to one lane in advance of the bridge over I-95. The posted speed limit in both directions is 55 mph.

Between the entrance to the C-D Road and the 50A off-ramp, there are two lanes in the northbound direction. Ramp 50A exits, and the C-D Road drops to one lane until the Exit 50A on-ramp. Ramp Exit 50A enters its own lane, and the C-D Road becomes two lanes before the right lane exits to Exit 50B.

The roadway has two lanes between the on-ramp and the 50B off-ramp and one lane between the 50B off-ramp and the on-ramp. There is no posted speed limit on the roadway; however, based on the roadway conditions, it is assumed to be approximately 50 mph.

2.2 Desktop Review of Resource Areas

The proposed project area is located along I-95 in Lexington and Burlington (Appendix A, Figure 1). The land use types in the area to be impacted by the proposed activities consist of right-of-way, vegetated shoulders, and other impervious surfaces. The land uses surrounding the impact area are deciduous forested, developed open space, and palustrine forested wetlands.

As indicated by the land use types, the MassDEP Wetlands and National Wetland Inventory (NWI) was reviewed to identify potential wetland resources. Based on reviews of the MassDEP Wetland data, the project area has a wooded marsh within the project limits (Appendix A, Figure 3). The NWI data identified two freshwater emergent wetlands and a stream (Appendix A, Figure 4). The wetlands were identified as palustrine freshwater emergent wetlands (PEM1E and PEM1Fh), and the waterbody is classified as an intermittent stream (R4SBCx). Please note that USGS Topographical Maps indicate that the stream, also known as Vine Brook, is a perennial stream.

The most recently issued Flood Insurance Rate Map (firm panel #25017C0402E) produced by the Federal Emergency Management Agency (FEMA) indicates that the project area is located within the 100-year floodplain (Zone AE, BFE 138 ft NAVD88).

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey for Middlesex County has mapped most of the project area as a Udorthents-Urban land complex, with the

surrounding land composed of Freetown muck, 0 to 1 percent slopes (52A), and urban land (602). Appendix A, Figure 6 contains mapped soils within and surrounding the Project.

According to the most recently available data from the Massachusetts Natural Heritage and Endangered Species Program, the project is not located within Estimated Habitat of Rare Wildlife or Priority Habitat of Rare Species. No Certified or Potential Vernal Pools are within or adjacent to the Site. The closest Certified Vernal Pool (CVP 668) is approximately 1,600 feet north, and the closest Potential Vernal Pool (PVP 4182) is approximately 600 feet south of the project area.

The project is located within a Zone II Wellhead Protection Area (PWS ID: 3048000) but not within an Area of Critical Environmental Concern, Outstanding Resource Water, or Coldwater Fishery.

One Article 97 Protected Open Space parcel is located to the south of the project area, known as Wheeler Road CR (Appendix A, Figure 8). There is no impact proposed to the Article 97 property.

2.3 Field Delineation of Resource Areas and Buffer Zones

HNTB Corporation conducted a field delineation on May 11 and 24, 2023. Wetlands were delineated in accordance with the *U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual* (1987 edition) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE, 2012). Wetland resource areas identified within or near the project area included Land Under Water Bodies and Waterways (LUW), Banks, Riverfront Areas (RFA), Bordering Vegetated Wetlands (BVW), and Isolated Land Subject to Flooding (ILSF). These resources are defined under the WPA regulations as follows:

- **Land Under Water Bodies and Waterways (LUW):** As defined in 310 CMR 10.56(2)(a), is “the land beneath any creek, river, stream, pond or lake.”
- **Bank:** As defined in 310 CMR 10.54(2)(a), is “the portion of the land surface which normally abuts and confines a waterbody.”
- **Riverfront Area (RFA):** As defined in 310 CMR 10.58(2)(a), is “the area of land between a river’s mean annual high-water line and a parallel line measured horizontally.” The RFA is 200 feet in the town of Burlington.
- **Bordering Vegetated Wetlands (BVW):** As defined in 310 CMR 10.55(2)(a), are “freshwater wetlands which border on creeks, rivers, streams, ponds and lakes.”
- **Isolated Land Subject to Flooding (ILSF):** As defined in 310 CMR 10.57(2)(b)1., “an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches.”

Per 310 CMR 10.02(2)(b), Bank and Bordering Vegetated Wetlands are provided a 100-foot Buffer Zone.

The table below summarizes the resources identified during the wetland delineation. Following the table, the subsequent sections describe the delineated features’ hydrology, hydric soils, and hydrophytic vegetation. Wetland data sheets for each feature are included in the Wetland Delineation Report (Appendix B).

Table 1. Summary of Delineated Resources

Feature ID	Wetland Flag Numbers	Type	Jurisdiction ¹		Feature Description
			Federal	State	
HNTB-A	HNTB-A-1 - HNTB-A-37	Emergent Wetland	Yes	Yes -BVW	Hillslope wetland located adjacent to exit 50B off Middlesex Turnpike to I-95 N. Vegetation in the wetland includes alder buckthorn, broadleaf cattail, and soft rush.
HNTB-D	HNTB-D-1 - HNTB-D-14	Emergent Wetland	No	Yes -ILSF	Depressional wetland (basin) located along the south of I-95 N, east of its crossing with Route 3 north. Vegetation in the wetland includes broadleaf cattail, sensitive fern, and purple loosestrife.
Vine Brook (HNTB- B/HNTB-C)	HNTB-B-1A/B - HNTB-B-6A/B HNTB-C-1A/B - HNTB-C-2A/B	Perennial Stream	Yes	Yes -Bank -LUW -RFA	A perennial stream known as Vine Brook flows to the north of the project area and passes beneath I-95 through a culvert, eventually draining into the Shawsheen River. The channel is approximately 15 to 20 feet wide and is comprised predominantly of silts and sands. During the field investigation, approximately 1 to 2 feet of water was present.

¹BVW = Bordering Vegetative Wetland, LUW = Land Under Water, ILSF = Isolated Land Subject to Flooding, RFA = Riverfront Area

HNTB-A (Flag Numbers: HNTB-A-1 through HNTB-A-37):

HNTB-A is a palustrine emergent wetland located adjacent to exit 50B off Middlesex Turnpike to I-95N. The wetland abuts a perennial stream known as Vine Brook (HNTB-B/C). Primary indicators of wetland hydrology present on the day of the field delineation include surface water (A1) with a depth of approximately 2 inches, a high-water table (A2) at the surface, saturation (A3), inundation visible on aerial imagery (B7), water-stained leaves (B9), and a hydrogen sulfide odor (C1). Three secondary indicators were also identified: drainage patterns (B10), saturation visible on aerial imagery (C9), and geomorphic position (D2).

The dominant plant species in the sapling/shrub stratum was alder buckthorn (*Frangula alnus*). Broadleaf cattail (*Typha latifolia*) was identified as the dominant species in the herb stratum, contributing 50 percent of the total cover. Additional species in the herb stratum included common rush (*Juncus effusus*) and spinulose wood fern (*Dryopteris carthusiana*). The hydric soil indicator present was Histic epipedon (A2 - surface horizons 8 inches or more thick of organic soil material) and Black Histic (A3 - (a layer of peat, mucky peat, or muck 8 inches or more thick that starts within the upper 6 inches of the soil surface; has a hue of 10YR or yellower, value of 3 or less, and chroma of 1 or less; and is underlain by mineral soil material with chroma of 2 or less). HNTB-A is jurisdictional under the WPA as a bordering vegetated wetland.

HNTB-D (Flag Numbers: HNTB-D-1 through HNTB-D-14):

HNTB-D is a palustrine emergent wetland south of I-95 N, east of its crossing with Route 3 North. The wetland has no hydrological connection to a stream or other wetland. Primary indicators of wetland hydrology present include surface water (A1) at a depth of 1-inch, high water table (A2), saturation (A3), inundation visible on aerial imagery (B7), and water-stained leaves (B9). Two secondary indicators were also identified: drainage patterns (B10) and geomorphic position (D2).

Broadleaf cattail (*Typha latifolia*) was identified as the dominant species in the herb stratum, contributing 70 percent of the total cover. Additional species in the herb stratum include sensitive fern

(*Onoclea sensibilis*), purple loosestrife (*Lythrum salicaria*), wrinkle-leaf goldenrod (*Solidago rugosa*), field horsetail (*Equisetum arvense*). The hydric soil indicator present was Sandy Mucky Mineral (S1): a layer of mucky-modified sandy soil material two inches or more thick starting within six inches of the soil surface. HNTB-F is jurisdictional under the WPA as isolated land subject to flooding.

HNTB-B/HNTB-C (Flag Numbers: HNTB-B-1A/B through HNTB-B-6A/B and HNTB-C-1A/B through HNTB-C-2A/B):

HNTB-B/C, also known as Vine Brook, is a perennial stream flowing through delineated wetland HNTB-A. This stream has a channel approximately 15 - 20 feet wide and is comprised of silts and sands. Approximately 1-2 feet of water was present during the field investigation. The delineated stream, HNTB-B/C, is regulated under the WPA as land under water and bank. As a perennial stream, the jurisdictional feature is provided a 200-foot Riverfront Area. Within the project area, Vine Brook runs through a culvert that is greater than 200 feet in length; as such, the Riverfront Area stops at a perpendicular line at the upstream end of the culvert and resumes at the downstream end per 310 CMR 10.58(2)(a)3.c.

3. Proposed Conditions

3.1 Proposed Construction Activities

The proposed scope of work in jurisdictional areas in Burlington includes pavement mill and overlay along I-95 NB, new pavement markings, minor geometric improvements, guardrail installation, tree trimming, and minor drainage upgrades. The following subheaders detail project activities that are exempt from the WPA as minor activities and those that are not exempt from the WPA. It should be noted that the contractor will determine the proposed construction equipment and the exact construction methodology.

Exempt Activities

Much of the proposed project work is the mill and overlay and full-depth pavement reclamation of I-95 and the C-D road. The mill and overlay portion of the project involves grinding off the top layer of existing asphalt pavement using a large milling machine and replacing this layer with a new Hot Mix Asphalt (HMA) riding surface. The typical depth of milling is between 1" and 2", depending on the condition of the existing riding surface, the depth of the available curb reveal, and the depth of the existing asphalt pavement.

MassDOT will also remove the concrete median barrier separating the C-D road from the I-95 mainline to allow free-flow movements onto the mainline. Removing the concrete median barrier will require full-depth pavement reconstruction and old pavement excavation. MassDOT will re-vegetate areas with a 4-inch loam and seed where pavement is excavated. The project does not propose any new impervious surface and will result in a reduction of impervious of approximately 10,920 square feet along the median and merge locations onto I-95.

Some tree trimming will be required along the right-of-way to maintain roadway safety, the visibility of road signs, and sight distances.

Non-Exempt Activities

Activities not exempt under the WPA will include installing guardrails, grading, developing an HMA berm, and minor drainage activities. The HMA berm, which runs along most of the roadway, will be

developed by asphalt pavers spreading the asphalt, and then a roller compactor will be used for the HMA compaction.

Guardrails will be installed using a guardrail post driver. Some grading is associated with the guardrail installation to ensure the ground is level and stable and prevent the guardrail from shifting over time. Once grading has been completed, the areas will be loamed and seeded. Additionally, in locations where the guardrail is being installed in close proximity to a jurisdictional resource, deep post guardrail will be used to avoid additional grading that would result in an impact. The proposed non-exempt drainage activities are described in Section 3.2.

3.2 Proposed Drainage Activities

Drainage upgrades will include providing a deep sump at an existing catch basin (Station 171+00) and adding a new drainage manhole and catch basin (Station 173+00). A 63-foot 12-inch RCP pipe will connect the proposed new structures. Deep sump catch basins are proposed to provide an added level of sediment removal within the drainage networks. All proposed structures will tie into the existing stormwater system and are located within the roadway's existing footprint.

The proposed stormwater system will collect stormwater runoff in proposed and existing catch basin structures and convey flow through proposed and existing pipes, which ultimately discharge to existing outfalls. No new outfalls are proposed for this project. The existing drainage system, within project limits, is being utilized to the maximum extent practicable. The proposed design is a redevelopment project that will meet stormwater standards to the maximum extent practicable and will improve the existing conditions.

3.3 Proposed Construction Sequencing

During construction, vehicular traffic flow will always be maintained along I-95 NB, and access will be in and out of unaffected ramps. During peak hours, no reduction in the number of lanes on the C-D Road will be permitted. The I-95 NB mainline will be reduced to 3 lanes at the beginning of construction. Ramp construction is anticipated to be completed in two main stages:

- Pre-Stage 1 - Remove existing guardrail within the work zone and construct proposed curb and guardrail.
- Stage 1 - Shift traffic to construct full-depth pavement between I-95 NB and the C-D Road
- Stage 2 - Shift traffic onto new alignment to construct the final curb and full-depth pavement.

Please note that the contractor will determine the exact sequence of construction.

4. Work in Jurisdictional Areas

The proposed work that is not subject to the minor project exemptions will result in approximately 2,816 sf of temporary impacts and 8,265 sf of permanent impacts to the Buffer Zone, 74 sf of temporary and 152 sf of permanent impacts to the RFA. Permanent impacts to the Buffer Zone and the RFA result from the installation of guardrails, grading, and minor drainage upgrades. The 2,816 sf of temporary Buffer Zone impacts result from the placement of erosion and sediment controls, and temporary construction disturbance. Table 2 below provides a breakdown of the anticipated Buffer Zone impacts and RFA impacts.

Table 2. Impact Summary Table

Work Activity	Buffer Zone		Riverfront Area	
	Temporary Impact (sf)	Permanent Impact (sf)	Temporary Impact (sf)	Permanent Impact (sf)
Guardrail Installation & Associated Grading	0 sf	8,130 sf	0 sf	152 sf
Minor Drainage Work	0 sf	135 sf	0 sf	0 sf
Erosion & Sediment Controls and Temporary Construction Disturbance	2,816 sf	0 sf	74 sf	0 sf
Total	2,816 sf	8,265 sf	74 sf	152 sf

It should be noted that several proposed construction activities are considered exempt from the WPA as minor activities in the Buffer Zone and Riverfront Area. Impacts resulting from minor activities were not quantified or totaled in Table 2. The minor activity exemptions utilized for the proposed construction activities are detailed in Table 3 (below).

Table 3. Summary of Exempt Minor Activities in the Buffer Zone and Riverfront Area

Proposed Construction Activity	Minor Activity Exemption
Pavement Mill and Overlay	310 CMR 10.02(b)2.p: Pavement repair, resurfacing, and reclamation of existing roadways within the right-of-way configuration provided that the roadway and shoulders are not widened, no staging or stockpiling of materials, all disturbed road shoulders are stabilized within 72 hours of completion of the resurfacing or reclamation, and no work on the drainage system is performed, other than adjustments and/or repairs to respective structures within the roadway.
Full Depth Pavement Reconstruction	
Old Pavement Excavation for the Removal of the Concrete Median Barrier	310 CMR 10.02(b)2.f: The conversion of impervious to vegetated surfaces, provided erosion and sedimentation controls are implemented during construction, respectively.
Tree Trimming	310 CMR 10.02(b)2.n: Vegetation cutting for road safety maintenance.
Removal/Replacement of Signage	310 CMR 10.02(2)(b)2.o: Installation, repair, replacement or removal of signs, signals, sign and signal posts and associated supports, braces, anchors, and foundations along existing paved roadways and their shoulders, provided that work is conducted as far from resource areas as practicable, and is located a minimum of ten feet from a resource area, any excess soil is removed from the project location, and any disturbed soils are stabilized as appropriate.

The project was planned and designed to avoid wetland and waterbody impacts to the maximum extent practicable. Where avoiding temporary impacts was not feasible, MassDOT sought to minimize impacts while completing the project's purpose. Impacts to sensitive environmental resources are temporary, and no permanent impacts to sensitive environmental resources are anticipated as part of the project.

5. Best Management Practices

During construction, erosion and sedimentation controls such as compost filter tubes (or similar) will be utilized to protect wetland resources. Following the completion of the work, all erosion and sedimentation controls will be removed, and all disturbed areas will be permanently stabilized with loam and seed.

The Project Design Plans (Appendix C) show the locations and details of erosion and sediment controls. During all work, precautions will be taken to avoid contaminating the adjacent WPA wetland resources. All earthwork, grading, equipment moving, and other operations involving the movement of material and debris will be planned and conducted to protect against sediment release or pollution in adjacent resources. In addition to this, 4-inch loam and seed is proposed in areas along the roadway where old pavement is proposed to be excavated, increasing overall pervious area.

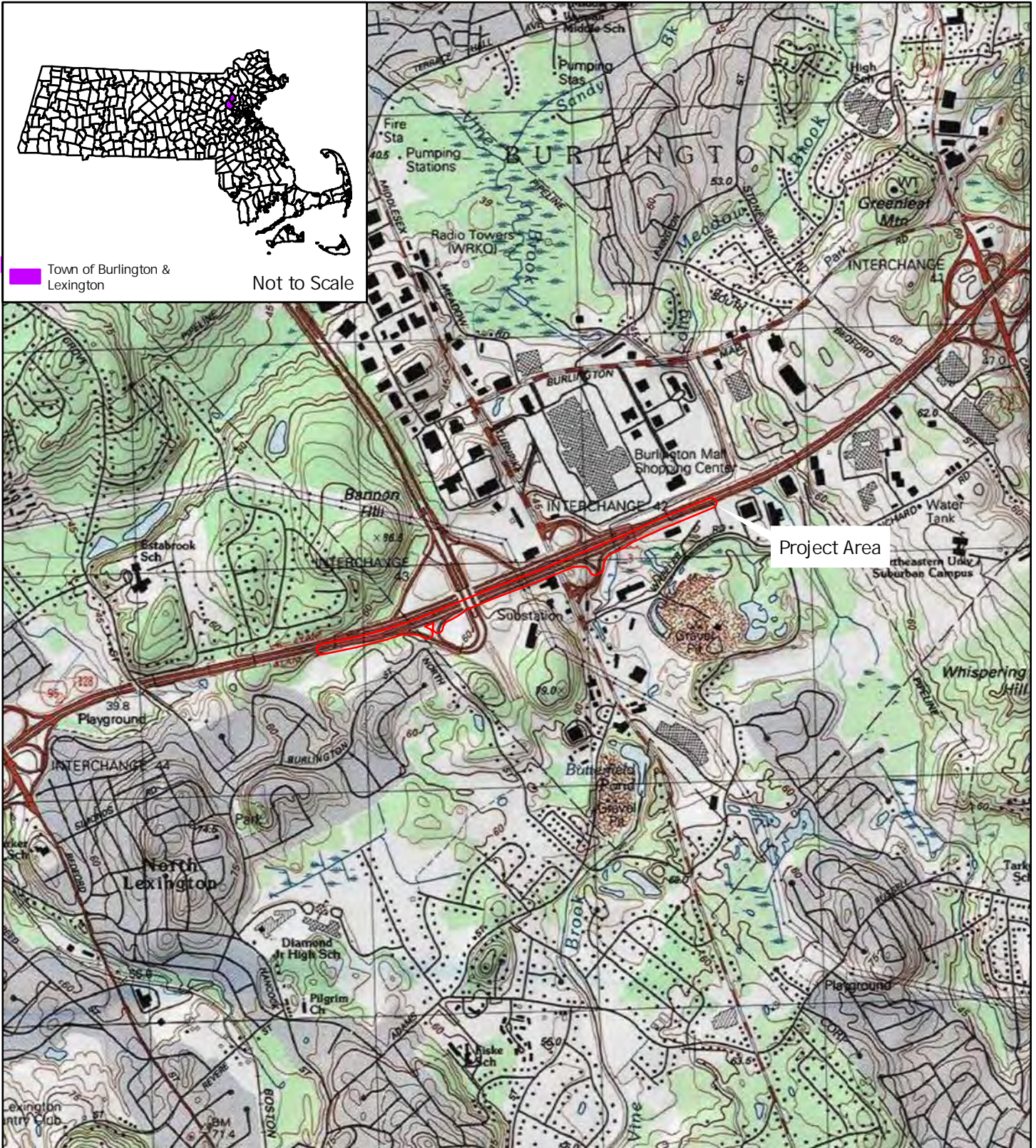
Additionally, the project is anticipated to have more than one acre of disturbance and will require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit and a Stormwater Pollution Prevention Plan (SWPPP) in order to manage stormwater discharge from the construction site. The SWPPP will detail the stormwater controls to be used on-site to protect the surrounding environment.

The proposed erosion and sediment control measures are in compliance with the Massachusetts Stormwater Handbook and MassDOT standards and specifications. Erosion and sediment controls will be installed prior to the start of construction to prevent any unintended impacts to Bordering Vegetated Wetlands, Isolated Land Subject to Flooding, Bank, or Land Under Water.

6. Summary

MassDOT is proposing the Improvements at I-95 (Route 128)/ Route 3 Interchange Project, which consists of geometric improvements, roadway resurfacing, guide sign replacement, and new pavement markings along US-3 SB and the on and off-ramps along the C-D Road. The project will additionally drop a lane on I-95 NB (between Exit 50A and the Middlesex Turnpike off-ramp at Exit 50B) and will eliminate the Middlesex Turnpike to I-95 NB On-Ramp merge by breaking the jersey barrier after the bridge over Middlesex Turnpike. All jurisdictional work is limited to the 100-foot Buffer Zone and the RFA. Most of the work is exempt per minor activities in the Buffer Zone and/or RFA. The installation of guardrail, grading, and minor drainage activities will result in 2,816 square feet (sf) of temporary and 8,265 sf of permanent Buffer Zone impacts and 74 sf of temporary and 152 sf of permanent impacts to RFA. Accordingly, MassDOT respectfully requests that the Burlington Conservation Commission issue a Negative 2 Determination and find that the proposed measures protect the interests of the Massachusetts Wetlands Protection Act.

Appendix A – Figures



Legend



— Project Area

Notes:
 1. U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle Maps for Lexington, Massachusetts (USGS 2021).

0 0.4 Miles



N

Figure 1. Topographic Map
 Improvements at I-95 (Route 128) / Route 3 Interchange Project
 Lexington & Burlington, MA

 Massachusetts Department of Transportation Highway Division	
August 2024	Boston, MA



Legend

-  Town Boundary
-  Project Area

Notes:
1. Basemap courtesy of ESRI.

0 800
Feet



Figure 2. Aerial Map
Improvements at I-95 (Route 128) / Route 3
Interchange Project
Lexington & Burlington, MA








August 2024

Boston, MA



Legend

<p>DEP Wetlands</p> <ul style="list-style-type: none">  Marsh/Bog  Wooded Marsh  Open Water 	<ul style="list-style-type: none">  Town Boundary  Project Area
--	---

Notes:

1. GIS data courtesy of MassDEP and MassGIS.
2. Basemap courtesy of ESRI.

0 800 Feet












Figure 3. MassDEP Wetlands Map
 Improvements at I-95 (Route 128) / Route 3 Interchange Project
 Lexington & Burlington, MA

	
August 2024	Boston, MA



Legend

- | | |
|---|---|
| NWI Wetlands |  Riverine |
|  Freshwater Emergent Wetland |  Town Boundary |
|  Freshwater Forested/Shrub Wetland |  Project Area |
|  Freshwater Pond | |

Notes:
 1. GIS data courtesy of USFWS.
 2. Basemap courtesy of ESRI.



Figure 4. NWI Wetlands Map
 Improvements at I-95 (Route 128) / Route 3
 Interchange Project
 Lexington & Burlington, MA



August 2024

Boston, MA



Legend

- FEMA Zone A: 1% Annual Chance, no BFE
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard
- Town Boundary
- Project Area

Notes:
 1. GIS data courtesy of FEMA.
 2. Basemap courtesy of ESRI.

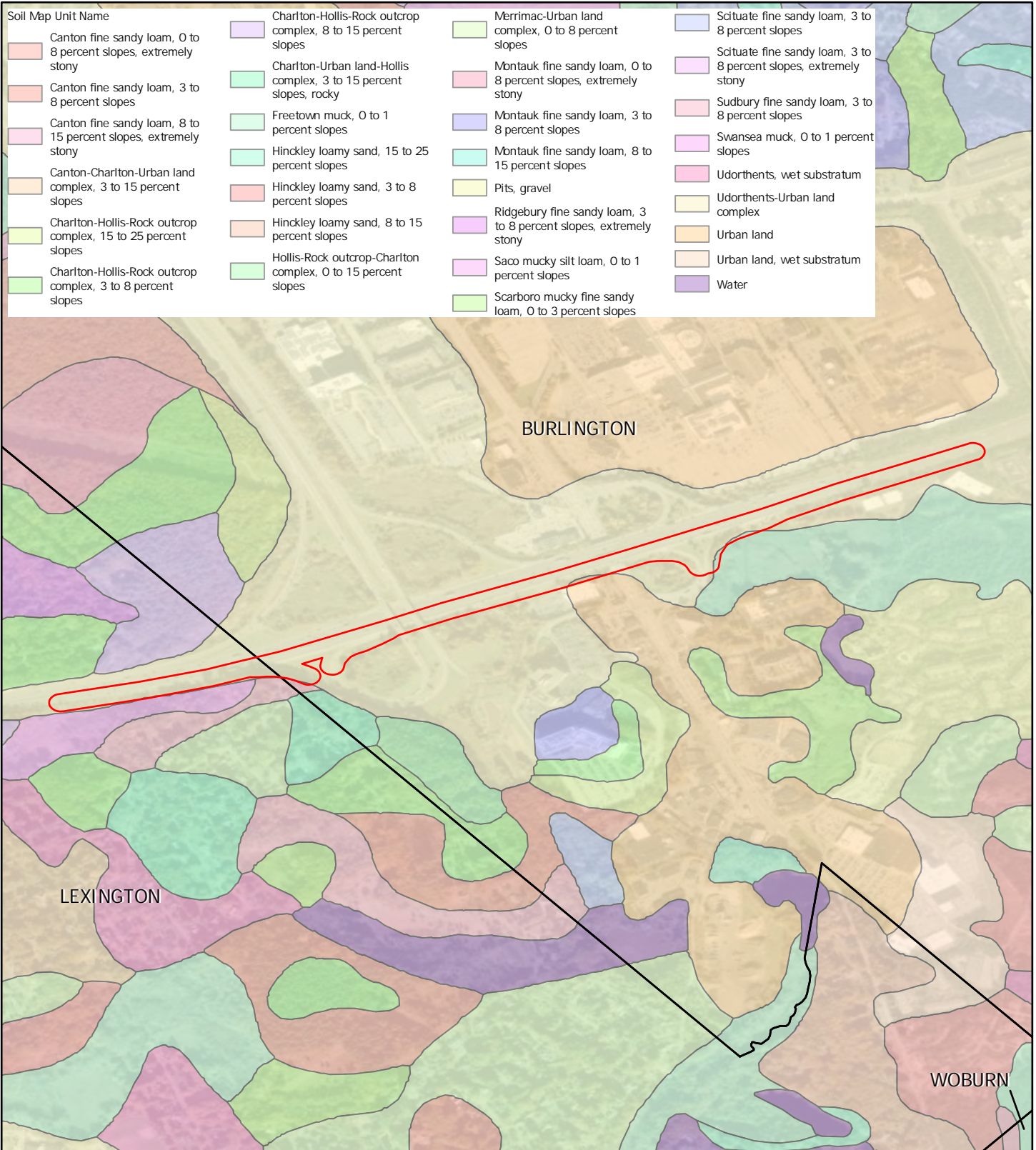


Figure 5. FEMA Map
 Improvements at I-95 (Route 128) / Route 3
 Interchange Project
 Lexington & Burlington, MA



August 2024

Boston, MA



Legend
 [Black line] Town Boundary
 [Red line] Project Area

Notes:
 1. GIS data courtesy of NRCS and MassGIS.
 2. Basemap courtesy of ESRI.

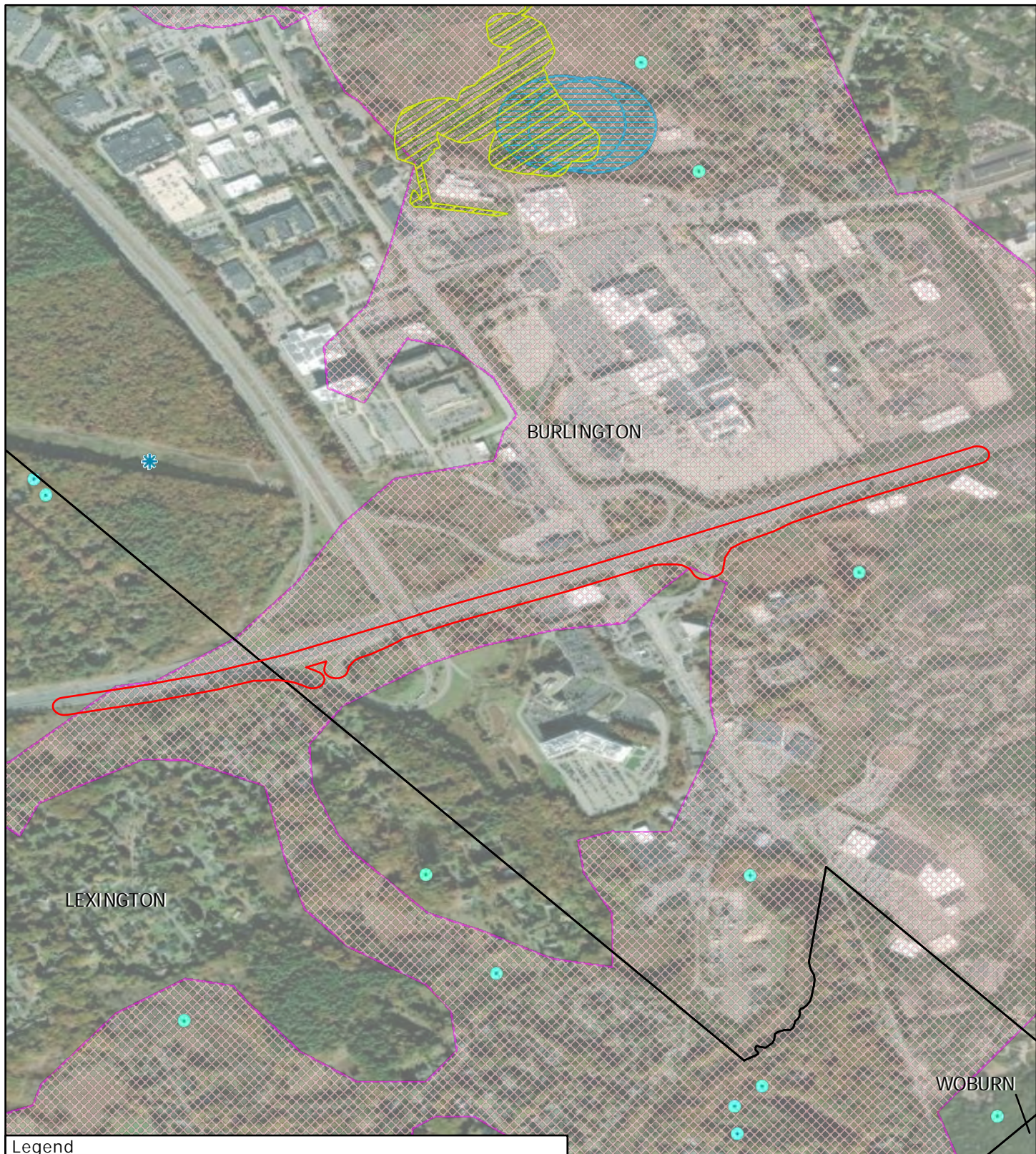


Figure 6. Soils Map
 Improvements at I-95 (Route 128) / Route 3
 Interchange Project
 Lexington & Burlington, MA











August 2024

Boston, MA



Legend

 DEP Approved Zone I	 NHESP Priority Habitats of Rare Species
 Approved Wellhead Protection Areas (Zone II)	 NHESP Estimated Habitats of Rare Wildlife
 NHESP Certified Vernal Pools	 Town Boundary
 NHESP Potential Vernal Pools	 Project Area

Notes:
 1. GIS data courtesy of NHESP and MassGIS.
 2. Basemap courtesy of ESRI.
 3. There is no ACEC or Coldwater fishery resource in proximity to the project area.

0 800 Feet

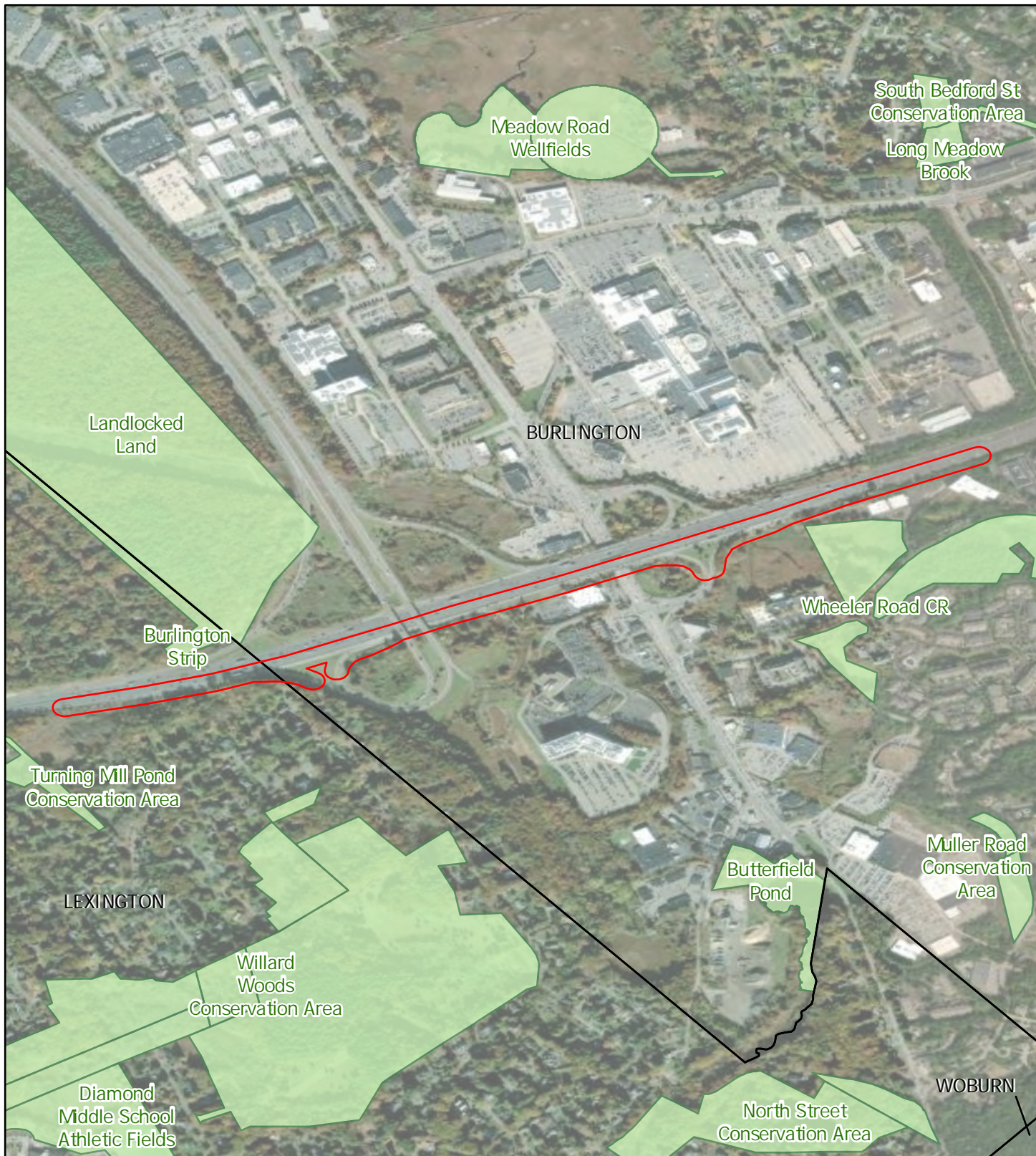
N

Figure 7. NHESP and MassDEP Wellhead Map
 Improvements at I-95 (Route 128) / Route 3
 Interchange Project
 Lexington & Burlington, MA



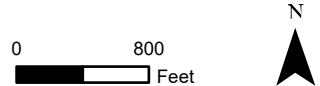
August 2024



Boston, MA



- Legend**
- Protected Open Space
 - Town Boundary
 - Project Area

Notes:
 1. GIS data courtesy of MassGIS.
 2. Basemap courtesy of ESRI.



<p>Figure 8. Open Space Map Improvements at I-95 (Route 128) / Route 3 Interchange Project Lexington & Burlington, MA</p>	
	
<p>August 2024</p>	<p>Boston, MA</p>

Appendix B – Wetland Delineation Report

Wetland and Waterbody Resource Delineation Report

**Improvements at I-95 (Route 128)
/Route 3 Interchange Project**

Project No. 609516

Burlington, Massachusetts

February 2024

Prepared For:
Massachusetts Department of Transportation
10 Park Plaza
Boston, Massachusetts 02116

Prepared By:
HNTB Corporation
31 St. James Avenue, Suite 300
Boston, Massachusetts 02116

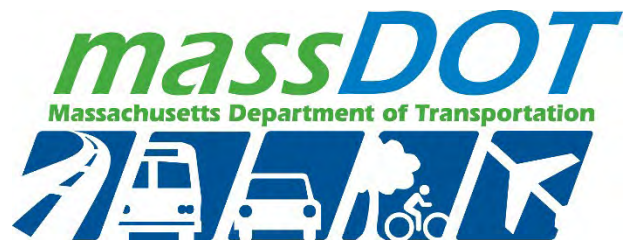


Table of Contents

Section	Page
1.0 Introduction	4
2.0 Methods	4
2.1 Background Information	4
2.2 On-Site Field Determination	5
2.2.1 Wetland Delineation	5
2.2.2 Waterbody Identification	5
2.3 GPS and GIS Mapping.....	6
3.0 Summary of Background Information.....	6
3.1 Project Area Description.....	6
3.2 MassDEP and NWI Mapped Wetlands	6
3.3 USGS Mapped Waterbodies.....	7
3.4 FEMA Floodplain.....	7
3.5 Soils	7
3.6 Natural Heritage Habitat & Other Resources.....	7
4.0 Field Survey Results.....	8
4.1 Wetlands.....	8
4.1.1 Palustrine Emergent (PEM)	8
4.1.2 Palustrine Emergent (PEM) / Palustrine Scrub-Shrub (PSS)	9
4.1.3 Palustrine Forested (PFO).....	9
4.2 Waterbodies	10
4.3 Additional Jurisdictional Resources Under the Massachusetts Wetlands Protection Act	12
5.0 Summary of Findings & Next Steps	12
5.1 Wetlands.....	12
5.2 Waterbodies	12
5.3 Next Steps	13
6.0 References.....	14

List of Appendices

Appendix

Appendix A Figures

- Figure 1. Project Locus Map
- Figure 2. Aerial Location Map
- Figure 3. MassDEP Wetlands Map
- Figure 4. NWI Wetlands Map
- Figure 5. FEMA Floodplain Map
- Figure 6. SSURGO Soils Map
- Figure 7. NHESP & Other Resources Map
- Figure 8. Delineated Features Map

Appendix B Wetland Determination Data Forms

Appendix C Waters of the US Field Data Forms

List of Tables

<u>Table</u>	<u>Page</u>
Table 1. Soil Mapping Units Occurring in the Cape Cod Bridges Project Area.....	7
Table 2. Delineated Wetlands in the Cape Cod Bridges Project Area.....	10
Table 3. Delineated Waterbodies in the Cape Cod Bridges Project Area.....	11

1.0 Introduction

The Massachusetts Department of Transportation (MassDOT) is proposing improvements to the interchange of Interstate-95 Northbound (I-95 NB) and US Route 3 Southbound (US-3-SB) and the on and off-ramps along the Collector-Distributor (C-D Road) in the Town of Burlington, Massachusetts. The project limits extend approximately 1.5 miles along I-95 NB and the C-D Road in the Town of Lexington, easterly, under the Route 3 overpass, to the Middlesex Turnpike I-95 NB on-ramp in Burlington.

Safety concerns on the I-95 NB/US-3 Interchange include frequent rear-end collisions on the highway ramps and the collector/distributor (C-D Road), servicing US-3 and Middlesex Turnpike (Exits 50A and 50B), as well as safety concerns related to ramp geometry, high speeds, and driver confusion. For these reasons, and due to the local and regional growth that has occurred, operations and safety measures are proposed. The Project will address existing transportation deficiencies through the provision of geometric improvements, roadway resurfacing, guide sign replacement, and new pavement markings. This incorporates a dropped lane on I-95 NB (between Exit 50A, to the Middlesex Turnpike off-ramp at Exit 50B) and the elimination of the Middlesex Turnpike to I-95 NB On-Ramp merge by breaking the jersey barrier located after the bridge over Middlesex Turnpike, allowing vehicles from the C-D Road to enter the I-95 NB in an add-a-lane. The proposed improvements will improve traffic operations and safety along the I-95 C-D Road between Exit 50A and Exit 50B.

In support of the project, HNTB Corporation performed a field delineation of the wetlands and waterbodies of the project area. The purpose of the investigation was to determine the presence and extent of wetlands and waterbodies within the project area that meet the criteria for federal or state regulation under Section 404 of the Clean Water Act [33 United States Code (USC) § 1344] and/or the Massachusetts Wetlands Protection Act (MA WPA) (310 CMR 10.00). Results will be used to facilitate environmental permitting, construction planning, and design efforts.

2.0 Methods

2.1 Background Information

Prior to conducting field work, a desktop review of existing site information was conducted to aid in the identification of potential resources in the project areas, including:

- U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle Maps for Lexington, Massachusetts (USGS 2021);
- Google Earth high-resolution satellite imagery (Google Earth 2018);
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps (USFWS 2018);
- MassDEP Wetlands 2005 (MassGIS);
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Community Panel No. 25017C0401E, and 25017C0402E;
- U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) Database (USDA NRCS, 2017);

- NHESP Estimated and Priority Habitat 2021 (MassGIS);
- NHESP Potential and Certified Vernal Pools (MassGIS); and
- MassDEP Wellhead Protection Areas (Zone I, Zone II, & IWPA) (MassGIS)

2.2 On-Site Field Determination

2.2.1 Wetland Delineation

Wetlands were delineated in accordance with the *U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual* (1987 edition) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE, 2012), referenced in this report as the *USACE Manual* and *Regional Supplement*. Per the *USACE Manual*, the project area was evaluated using the Routine Level 2 approach, which included reviewing existing data followed by an on-site inspection and field determination.

Wetland scientists performed systematic field surveys within the study area (Appendix A, Figure 1) on May 11, 2023, and May 24, 2023. The wetland delineation was executed by inspecting the project area to identify topographic, drainage, soil characteristics, and vegetation features that would indicate potential wetland features. Sampling locations were then identified within potential wetland areas and investigated using the Routine On-Site Determination Method provided in the *Regional Supplement*. At each sampling location, Wetland Determination Data Forms were completed to evaluate and document vegetation, soils, hydrology, and general site characteristics for upland and wetland data points, which are provided in Appendix B.

Boundaries of all resource areas within the project areas that exhibited the three criteria (hydrophytic vegetation, hydric soils, and hydrology) that define a wetland feature were demarcated with pink flagging. For wetlands that extended beyond the project areas, only the boundary within the project area was delineated.

Each area was assigned a wetland cover type classification based on the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Representative photographs of the wetland features were collected and are included in Appendix B.

2.2.2 Waterbody Identification

Prior to field surveys, USGS topographic quadrangle maps were reviewed to identify waterbodies and topography conducive to hydrologic flow near the site. A field survey, conducted concurrently with the wetland delineation effort, was performed to identify streams that meet the definition of Waters of the United States (WOTUS) and/or Massachusetts Wetlands Protection Act.

Federal Definition. According to WOTUS, a stream must be a natural defined channel between banks, created by the action of surface water, and exhibit two or more of the following characteristics:

- A. Feature is depicted as a solid or broken blue line on the most recent edition of the USGS 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map;

- B. Feature is known to contain flowing water continuously for a period of at least six months of the year in most years;
- C. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water;
- D. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed and/or
- E. The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

State Definition. According to the Massachusetts Wetlands Protection Act, a stream is defined as a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into, or out of an Area Subject to Protection under M.G.L. c. 131, § 40. A portion of a stream may flow through a culvert or beneath a bridge. Such a body of running water which does not flow throughout the year (i.e., which is intermittent) is a stream except for that portion upgradient of all bogs, swamps, wet meadows and marshes.

All waterbodies were demarcated with blue flagging, photographs were collected, and feature characteristics were recorded on a Waters of the U.S. Data Sheet. Completed data forms are provided in Appendix C.

2.3 GPS and GIS Mapping

Wetland boundaries and waterbody features were demarcated using pink or blue flagging by wetland scientists in the field. GPS location data was collected at each flag in the project area. A geo-referenced wetland file and a waterbody verification file suitable for overlay onto survey area maps and aerial photographs were created using ArcGIS Version 10.8.1 geographical information system (GIS) mapping software.

3.0 Summary of Background Information

3.1 Project Area Description

The Project is located along the I-95 in Lexington and Burlington, Massachusetts, and is located within the Merrimack River Watershed (Hydrologic Unit Code (HUC) 8: 01070006). See Appendix A, Figures 1 and 2 for project area location.

3.2 MassDEP and NWI Mapped Wetlands

According to Massachusetts Department of Environmental Protection Wetlands data (MassDEP 2018) and the National Wetland Inventory (USFWS 2018), there are predominately freshwater emergent, forest/scrub-shrub wetlands within the project area. Locations of the MassDEP and NWI mapped wetlands in and proximate to the project extent are depicted in Appendix A, Figures 3 and 4.

3.3 USGS Mapped Waterbodies

Based on USGS topographic quadrangle maps (7.5-minute Topographic Quadrangle Maps for Lexington, Massachusetts), one stream intersects the project area. Vine Brook crosses beneath I-95 and continues to flow north out of the project area. USGS-mapped water bodies are identified in the National Hydrography Dataset (NHD), which is a feature-based database that interconnects and uniquely identifies the stream segments or reaches that make up the nation's surface water drainage system, developed at 1:24,000 scale.

3.4 FEMA Floodplain

Based on the FEMA floodplain map, the eastern portion of the project is located in the 100-yr floodplain. The Base Floodplain Elevation (BFE) varies through the project from 138 ft NAVD88 to 140 ft NAVD88. The location of the FEMA 100-yr floodplain in and proximate to the project area is depicted in Appendix A, Figure 5.

3.5 Soils

The project areas pass through a total of 4 soil mapping units (USDA NRCS 2013). Table 1 shows the soil mapping units occurring within the project areas. Of the four soil units, only one soil unit is hydric soils, which can be indicative of the presence of wetland communities. Locations of the soil types in the project area are depicted in Appendix A, Figure 6.

Table 1. Soil Mapping Units Occurring in the Project Area.

Soil Series Mapping Unit	Soil Series	Hydric
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	No
52A	Freetown muck, 0 to 1 percent slopes	Yes
656	Udorthents-Urban land complex	No
602	Urban land	No

3.6 Natural Heritage Habitat & Other Resources

Other resources included in the desktop review were NHESP Estimated and Priority Habitat of Rare Wildlife, NHESP Certified and Potential Vernal Pools, Well Protection Areas, and Protected Open Space. Based on a review of these GIS data layers, the project is located within a Zone II Approved Wellhead Protection Zone. The project is not located in NHESP Estimated or Priority Habitat, NHESP Certified or Potential Vernal Pools, or Protected Open Space. Locations of the other resources in the project area are depicted in Appendix A, Figure 7.

4.0 Field Survey Results

Delineated resources in the project area include four wetlands and two waterbodies, as depicted in Appendix A, Figure 8.

4.1 Wetlands

Four wetland complexes that meet the definition of a wetland were delineated, as summarized in Table 2 (at the end of the section). Table 2 also categorizes the jurisdiction of these wetlands under the Massachusetts Wetlands Protection Act and/or the Federal Clean Water Act, pending agency review and approval. Wetland types were classified based on the predominant classification within the likely impact area of the proposed project, as defined by the *Classification of Wetlands and Deepwater Habitats* (Cowardin, et al. 1979) (Appendix B). The predominant wetland types delineated were palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands. Sections 4.1.1, 4.1.2, and 4.1.3 further describe these wetland types.

4.1.1 Palustrine Emergent (PEM) Wetlands (HNTB-A and HNTB-D)

Two delineated wetlands can be classified as palustrine emergent wetlands. Wetlands that meet the Cowardian definition of a freshwater emergent (PEM) wetland are comprised of greater than 30 percent cover of emergent vegetation. Tree species and shrub species are also found in PEM wetlands; however, they are found predominately on the edges of the wetland. No species within the tree layer was identified within the two delineated palustrine emergent wetlands. The dominant species in the herb layer of emergent areas included broadleaf cattail (*Typha latifolia*). Other common species found in the herb layer include soft rush (*Juncus effusus*), spinulose wood fern (*Dryopteris carthusiana*), sensitive fern (*Onoclea sensibilis*), purple loosestrife (*Lythrum salicaria*), wrinkleleaf goldenrod (*Solidago rugosa*), and common horsetail (*Equisetum arvense*). The shrub layer was relatively sparse for the two delineated wetlands (less than 20 percent cover), with the only identified woody species in the shrub stratum being alder buckthorn (*Frangula alnus*). Please note that purple loosestrife (*Lythrum salicaria*) and alder buckthorn (*Frangula alnus*) are identified as invasive species by the Massachusetts Invasive Plant Advisory Group.

Soils of mapped palustrine emergent wetlands fall into one of three hydric soil classification types: histic epipedon (surface horizons 8 inches or more thick of organic soil material), black histic (a layer of peat, mucky peat, or muck 8 inches or more thick that starts within the upper 6 inches of the soil surface; has a hue of 10YR or yellower, value of 3 or less, and chroma of 1 or less; and is underlain by mineral soil material with chroma of 2 or less), or sandy mucky mineral (a layer of mucky modified sandy soil material 2 in. or more thick starting within 6 in. of the soil surface).

Hydrologic input appears to be primarily from the abutting stream, groundwater, and surface flow from adjacent road embankments, paved areas, and the overall road stormwater drainage system of storm drains and culverts. All PEM wetlands encountered during the field survey had standing water, high water table, or saturated soil conditions. Wetlands also had other primary and/or secondary evidence of hydrology, including inundation visible on aerial imagery, water-stained leaves, hydrogen sulfide odor, drainage patterns, saturation visible on aerial imagery, and geomorphic position.

4.1.2 Palustrine Emergent (PEM) Wetland/Palustrine Scrub-Shrub (PSS) Wetland (HNTB-E)

One delineated wetland can be classified as palustrine emergent and palustrine scrub-shrub. Wetlands that meet the Cowardian definition of a palustrine emergent and palustrine scrub-shrub wetland are wetlands with greater than 30 percent of their areas dominated by woody vegetation, including trees and shrubs and woody vegetation less than 20 feet tall. In these wetlands, bottoms are submerged all or most of the time, and streambeds are exposed much of the time.

In a scrub-shrub wetland, vegetation is separated into five subclasses that are distinguished by leaf type being either broad-leaved deciduous, needle-leaved deciduous, broad-leaved evergreen, needle-leaved evergreen, or dead (includes stands of dead woody plants less than 6 m tall, regardless of density, and less than 30 percent cover of living vegetation).¹ The dominant tree species identified include swamp white oak (*Quercus bicolor*), green ash (*Fraxinus pennsylvanica*), and red maple (*Acer rubrum*), which constitute approximately 90 percent of the total cover. Dominant woody species in the shrub stratum include highbush blueberry (*Vaccinium corymbosum*), and southern arrowwood (*Viburnum dentatum*). The dominant species in the herb layer of the delineated PEM/PSS wetland includes Eastern skunk cabbage (*Symplocarpus foetidus*). Other common species found in this layer include poison ivy (*Toxicodendron radicans*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), soft rush (*Juncus effusus*) and wrinkle-leaf goldenrod (*Solidago rugosa*).

The hydric soil classification of the delineated palustrine scrub-shrub wetland was identified as sandy mucky mineral (a layer of mucky modified sandy soil material 2 in. or more thick starting within 6 in. of the soil surface).

Hydrologic input is primarily from groundwater and surface flow from adjacent road embankments, paved areas, and the overall road stormwater drainage system of storm drains and culverts. The delineated wetland also had primary and/or secondary evidence of hydrology including high water table, saturation, water marks, water-stained leaves, thin muck surface, drainage patterns and geomorphic position.

4.1.3 Palustrine Forested (PFO) Wetland (HNTB-E)

One of the delineated wetland features can be classified as a palustrine forested wetland. Wetlands that meet the Cowardian definition of a freshwater forested wetland are comprised of greater than 30 percent cover of trees. Emergent vegetation and shrub species are also found in the understory of such wetlands, found predominately within larger open canopy areas. The dominant tree species identified in the delineated palustrine forested wetland is Northern Red Oak (*Quercus rubra*), providing approximately 30 percent of the total cover. The shrub layer was relatively sparse (less than 20 percent cover), with the dominant woody species being multiflora rose (*Rosa multiflora*). The herb layer was found to be most abundant in this wetland, providing an estimated 125 percent cover. The dominant species in the herb layer include creeping buttercup (*Ranunculus repens*) and Eastern skunk cabbage (*Symplocarpus foetidus*). Other common plant species identified within this layer include jewelweed (*Impatiens capensis*) and wrinkleleaf goldenrod (*Solidago rugosa*). Please note, that oriental bittersweet (*Celastrus orbiculatus*) and multiflora rose were

¹ USFWS Second Edition Classification of Wetlands and Deepwater Habitats of the United States (August 2013). Accessible on USFWS website here: <https://www.fws.gov/media/classification-wetlands-and-deepwater-habitats-united-states>.

identified in or along the boundary of the wetland and these species are identified as invasive species by the Massachusetts Invasive Plant Advisory Group.

The hydric soil classification of the forested wetland included depleted below dark surface (a layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting at a depth of 12 inches of the soil surface, and having a minimum thickness of either 6 inches or 2 inches if the 2 inches consists of fragmental soil material.).

Hydrologic input is primarily from groundwater, surface flow from adjacent undeveloped lands, road embankments, and paved areas. Wetlands also had primary and/or secondary evidence of hydrology, including surface water, high water table, saturation, water marks, sediment deposits, water-stained leaves, thin muck surface, drainage patterns, and geomorphic position.

Table 2. Delineated Bordering Vegetated Wetlands in the Cape Cod Canal Area Transportation Improvements Program Areas.

Wetland ID	Wetland Flag Numbers	Type ¹	Jurisdiction ²		Wetland Description
			Federal	State ³	
HNTB-A	HNTB-1-A-1 – HNTB-1-A-37	PEM	Yes	Yes -BVW	Hillslope wetland located adjacent to exit 50B off Middlesex Turnpike to I-95 N. Vegetation in the wetland includes alder buckthorn, broadleaf cattail, and soft rush.
HNTB-D	HNTB-D-1 – HNTB-D-14	PEM	No	Yes -ILSF	Depressional wetland (basin) located along the south of I-95 N, east of its crossing with route 3 north. Vegetation in the wetland includes broadleaf cattail , sensitive fern, and purple loosestrife.
HNTB-E	HNTB-E-1 – HNTB-E-24	PEM/ PSS	Yes	Yes -BVW	Depressional wetland located south of I-95 N and northeast of N Emerson Road. Vegetation includes swamp white oak, arrowwood viburnum, and eastern skunk cabbage.
HNTB-F	HNTB-F-1 – HNTB-F-8	PFO	Yes	Yes -BVW	Depressional wetland located south of I-95 N and to the north of Burlington Street. Vegetation includes northern red oak, Multiflora rose, and creeping buttercup.

¹ Cowardian et al. (1979) classifications: PFO = palustrine forest, PEM =palustrine emergent, PSS = palustrine scrub-shrub

³ BVW = Bordering Vegetative Wetland, LUW = Land Under Water, ILSF = Isolated Land Subject to Flooding

4.2 Waterbodies

Two waterbodies were identified in the project area, as depicted in Appendix A, Figure 5. One of these delineated features is a USGS-mapped perennial stream, known as Vine Brook (HNTB B/HNTB-C), which is a tributary to the Shawsheen River. The other delineated waterbody (HNTB-G) was identified as an unnamed intermittent stream flowing through wetland HNTB-F. Per the current definition of WOTUS

pursuant to the CWA, perennial streams are subject to jurisdiction. Intermittent streams are not subject to jurisdiction under the CWA unless connected to a traditional navigable water. Streams are regulated by the Massachusetts Wetlands Protection Act based on the definition of a stream, which states that “means a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into or out of an Area Subject to Protection under M.G.L. c. 131, § 40. A portion of a stream may flow through a culvert or beneath a bridge. Such a body of running water which does not flow throughout the year (i.e., which is intermittent) is a stream except for that portion upgradient of all bogs, swamps, wet meadows and marshes.” Under the Massachusetts Wetlands Protection Act, Vine Brook (HNTB-B/HNTB-C) is regulated as land under water, riverfront area, and bank, with a 100-foot buffer zone associated with it. The delineated stream, HNTB-G, is regulated as land under water and bank, which has a 100-foot buffer associated with it. Table 3 includes a summary of the channelized feature identified during field investigations. Field datasheets are included in Appendix C.

Table 3. Delineated Waterbodies in the Cape Cod Canal Area Transportation Improvements Program Areas.

Waterbody Name	Channel Hydrologic Classification	USGS Mapped	Jurisdiction ¹		Description
			Federal	State	
Vine Brook (HNTB-B/HNTB-C)	Perennial	Yes	Yes	Yes -Bank -LUW -Riverfront Area	Perennial stream known as Vine Brook which flows to the north of the project area and passes beneath I-95 through a culvert, eventually draining into the Shawsheen River. The channel is approximately 15 to 20 feet wide and is comprised predominately of silts and sands. There was approximately 1 to 2 feet of water present during the field investigation.
HNTB-G	Intermittent	No	No	Yes -Bank -LUW	Intermittent stream which flows upstream from delineated wetland HNTB-F. This is an unnamed stream with a channel that is approximately 10 feet wide that is comprised of cobbles and muck. There was approximately 3 inches of water present during the field investigation.

4.3 Additional Jurisdictional Resources Under the Massachusetts Wetlands Protection Act

Under the Massachusetts Wetlands Protection Act, bordering vegetated wetlands and perennial streams are provided additional protections of buffer zones and Riverfront Areas. The following sections detail these additional resources.

4.3.1 Buffer Zone

Per 310 CMR 10.02(1)(a), resources identified as bordering vegetated wetlands and banks are provided buffer zones extending 100 feet horizontally outward from the delineated boundary. The wetland delineation identified HNTB-A, HNTB-E, and HNTB-F as bordering vegetated wetlands and, therefore, are provided a 100-ft buffer zone. No buffer zone is associated with HNTB-D, as it has been identified as isolated land subject to flooding. The delineated streams are regulated under the MA WPA as bank and are provided a 100-foot buffer zone.

4.3.2 Riverfront Area

As a perennial stream, Vine Brook (HNTB-B/HNTB-C) also has a Riverfront Area. Per 310 CMR 10.58(2)(a)(3), the Riverfront Area is measured horizontally outward from the river and a parallel line 200 feet away. Within the project area, Vine Brook runs through a culvert that is greater than 200 feet in length; as such, the Riverfront Area stops at a perpendicular line at the upstream end of the culvert and resumes at the downstream end (310 CMR 10.58(2)(a)(3)c).

5.0 Summary of Findings and Next Steps

Section 5 summarizes resources identified in the Improvements at I-95 (Route 128) /Route 3 Interchange Area and the next steps for the project.

5.1 Wetlands

Field investigations identified and delineated four jurisdictional wetland complexes within the project area. These wetlands have varying jurisdiction under Section 404 of the Clean Water Act and the Massachusetts Wetlands Protection Act.

5.2 Waterbodies

Two streams were delineated during the field survey. Currently, under the CWA, only Vine Brook (HNTB-B/HNTB-C) is jurisdictional under Sections 401 and 404 and meets the definition of WOTUS. However, per the Clean Water Act guidance, each agency reserves the right to determine permitting requirements on a case-by-case basis for features that convey water even if the feature is man-made, modified, or part of stormwater drainage system. Both streams are considered jurisdictional under the Massachusetts Wetlands Protection Act.

5.3 Next Steps

Further coordination with USACE, MassDEP, and local conservation commissions will be conducted for a final determination regarding federal and/or state jurisdiction of wetlands and waterbodies and environmental permitting requirements for potential project impacts to these resources.

6.0 References

- “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States & Carabell v. United States*.” 2008. https://www.epa.gov/sites/production/files/2016-02/documents/cwa_jurisdiction_following_rapanos120208.pdf
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. (1979). *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79/31, Washington, D.C.
- Environmental Laboratory. 1987. *United States Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS.
- Federal Emergency Management Agency (FEMA) *Flood Insurance Rate Map, Community Panel No. 25001C0316J, 25001C0318J, 25001C0319J, 25001C0526J, 25001C0314J, 25001C0313J, 25001C0501J, 25001C0502J*.
- Federal Interagency Committee for Wetland Delineation. 1989. *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication. 76 pp. plus appendices.
- Gretag, Macbeth. 2000. *Munsell Soil Color Charts*.
- United States Army Corp of Engineers (USACE). 1987. *Corps of Engineers Wetland Delineation Manual*. Vicksburg, MS.
- United States Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast & Northcentral Region*. Vicksburg, MS.
- United States Department of Agriculture (USDA) Natural Resource Conservation Service, National Hydric Soils List by State. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html.
- United States Department of Agriculture (USDA): Natural Resources Conservation Service Official Soil Descriptions. <https://soilseries.sc.egov.usda.gov/osdname.aspx>. Accessed October 2020.
- United States Fish and Wildlife Service. (2018). *National Wetland Inventory (NWI) database*, updated May 1, 2018. Available at: <http://www.fws.gov/wetlands/Data/Mapper.html>
- United States Geological Survey (USGS). (2021). *7.5-minute Scale Series Topographic Quadrangle*, Lexington, MA.

Appendices

Appendix A

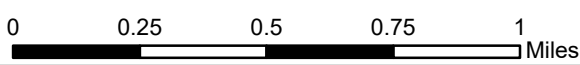
Figures

Figure 1
Project Locus Map



Legend
— Project Area Town of Burlington

Note:
- USGS US Topo 7.5 minute maps for Lexington, 2021.



Project Locus Map
Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Appendix A
Figure 1



Boston, MA

February 2024

A00890-46

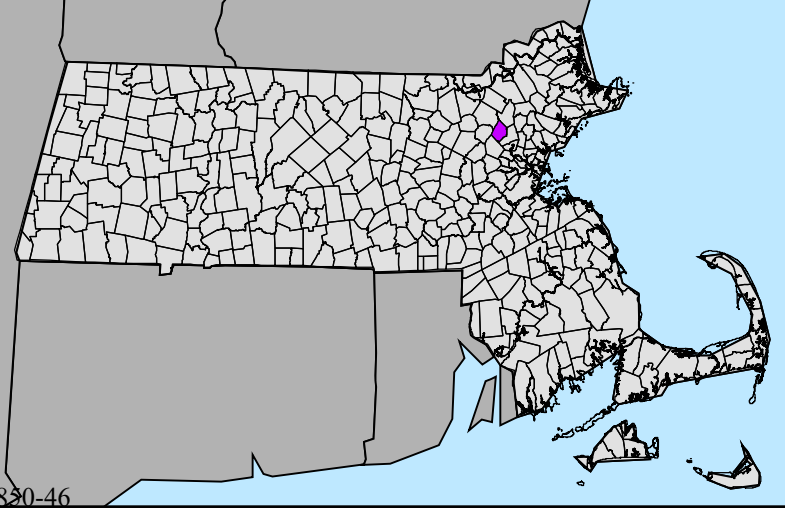


Figure 2
Aerial Location Map



Aerial Location Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

— Project Area

Appendix A
Figure 2



Boston, MA

February 2024

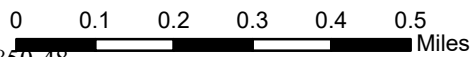


Figure 3

MassDEP Wetlands Map



MassDEP Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

- Project Area
- Shoreline
- Perennial Stream
- - - Intermittent Stream
- Deep Marsh
- Open Water
- Shallow Marsh Meadow or Fen
- Shrub Swamp
- Wooded Swamp Deciduous

Appendix A
Figure 3



Boston, MA

February 2024

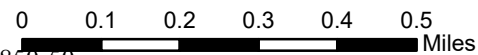


Figure 4
NWI Wetlands Map



NWI Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

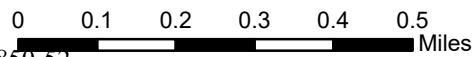
- Project Area
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

Appendix A
Figure 4



Boston, MA

February 2024



A00850-52

Figure 5

FEMA Floodplain Map



FEMA Floodplain Map
 Improvements at I-95 (Route 128)/Route 3 Interchange
 Burlington, MA

Legend

- Project Area
- Base Flood Elevations
- Flood Zone Designations**
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- A: 1% Annual Chance of Flooding, no BFE
- X: 0.2% Annual Chance of Flooding

Appendix A
 Figure 5































Boston, MA February 2024

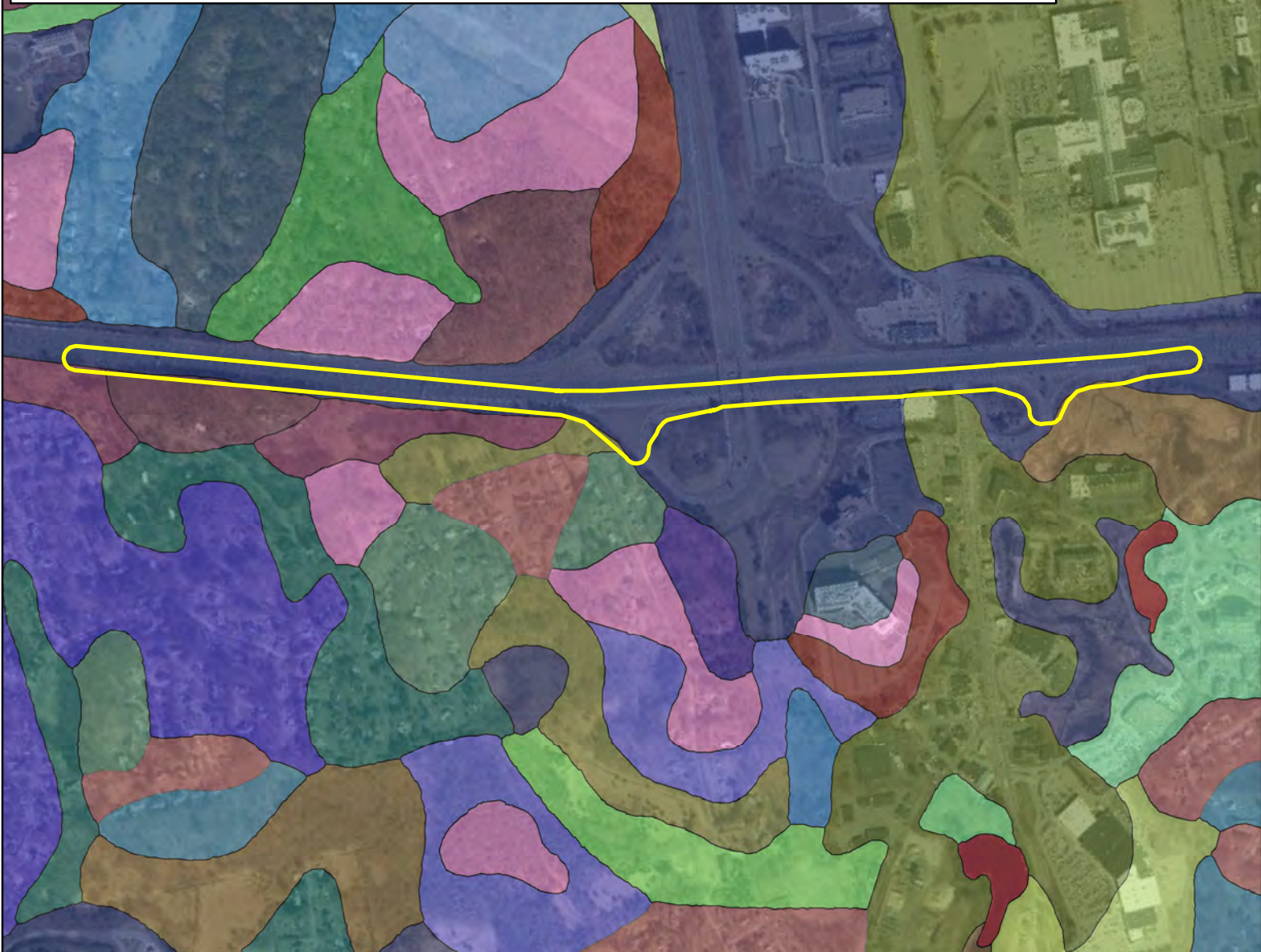
0 0.1 0.2 0.3 0.4 0.5 Miles

A00850-54

Figure 6
SSURGO Soils Map

Soil Type Legend

- | | |
|---|--|
|  Canton fine sandy loam, 0 to 8 percent slopes, extremely stony |  Montauk fine sandy loam, 8 to 15 percent slopes |
|  Canton fine sandy loam, 3 to 8 percent slopes |  Pits, gravel |
|  Canton fine sandy loam, 8 to 15 percent slopes, extremely stony |  Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony |
|  Canton-Charlton-Urban land complex, 3 to 15 percent slopes |  Saco mucky silt loam, frequently ponded, 0 to 1 percent slopes, frequently flooded |
|  Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes |  Scarborough mucky fine sandy loam, 0 to 3 percent slopes |
|  Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes |  Scituate fine sandy loam, 3 to 8 percent slopes |
|  Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes |  Sudbury fine sandy loam, 3 to 8 percent slopes |
|  Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky |  Swansea muck, 0 to 1 percent slopes |
|  Freetown muck, 0 to 1 percent slopes |  Udorthents, wet substratum |
|  Hinckley loamy sand, 15 to 25 percent slopes |  Udorthents-Urban land complex |
|  Hinckley loamy sand, 3 to 8 percent slopes |  Urban land |
|  Hinckley loamy sand, 8 to 15 percent slopes |  Urban land, wet substratum |
|  Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes |  Wareham loamy fine sand, 0 to 5 percent slopes |
|  Merrimac-Urban land complex, 0 to 8 percent slopes |  Water |
|  Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony |  Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony |
|  Montauk fine sandy loam, 3 to 8 percent slopes | |



SSURGO Soils Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

 Project Area

Appendix A
Figure 6



Boston, MA

February 2024

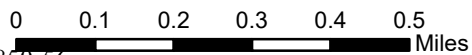
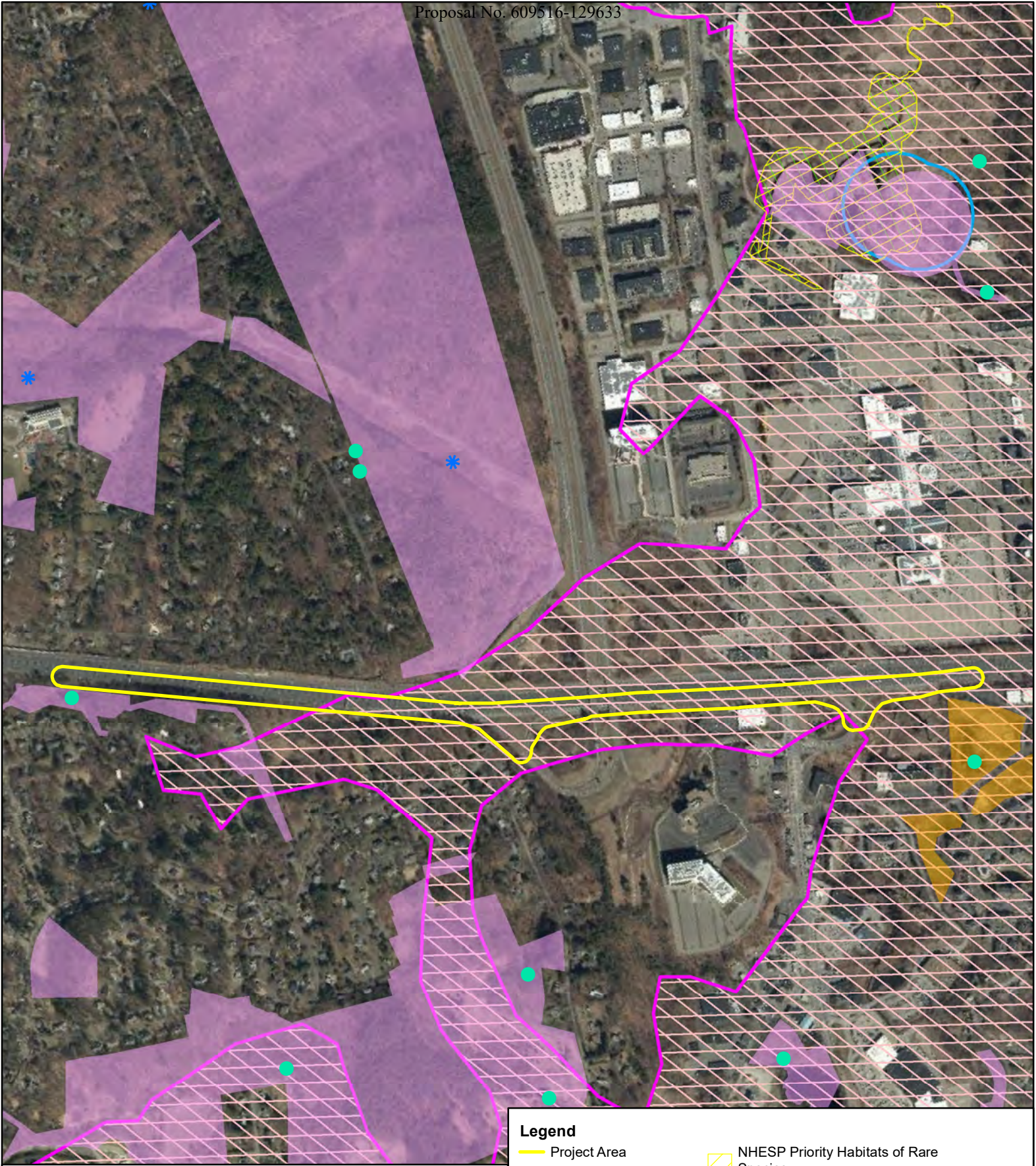


Figure 7
NHESP & Other Resources Map



NHESP & Other Resources Map
 Improvements at I-95 (Route 128)/Route 3 Interchange
 Burlington, MA

- Legend**
- Project Area
 - * Certified Vernal Pool
 - Potential Vernal Pool
 - Open Space - Municipal
 - Open Space - Private
 - ▨ NHESP Priority Habitats of Rare Species
 - ▨ NHESP Estimated Habitats of Rare Wildlife
 - ▨ Zone I Approved Wellhead Protection Area
 - ▨ Zone II Approved Wellhead Protection Area

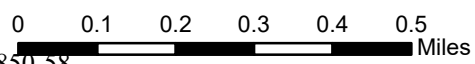
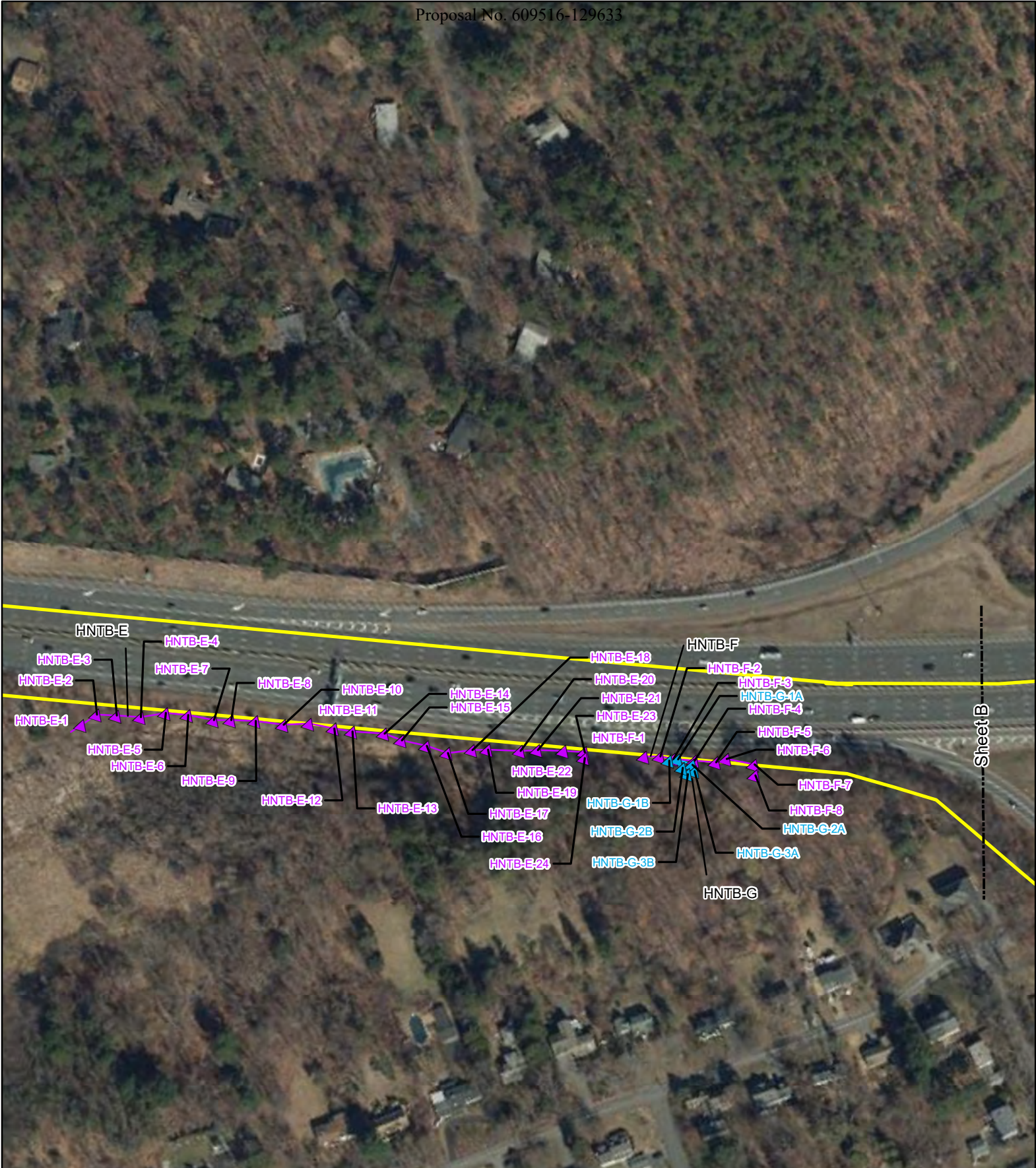


Figure 8
Delineated Features Map



Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

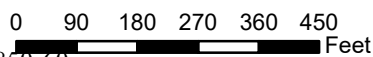
- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- ▲ Wetland Boundary Flag
- Wetland Boundary Line

Appendix A
Figure 8
Sheet A



Boston, MA

February 2024





Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

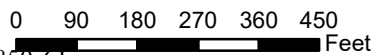
- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- Wetland Boundary Line
- ▲ Wetland Boundary Flag

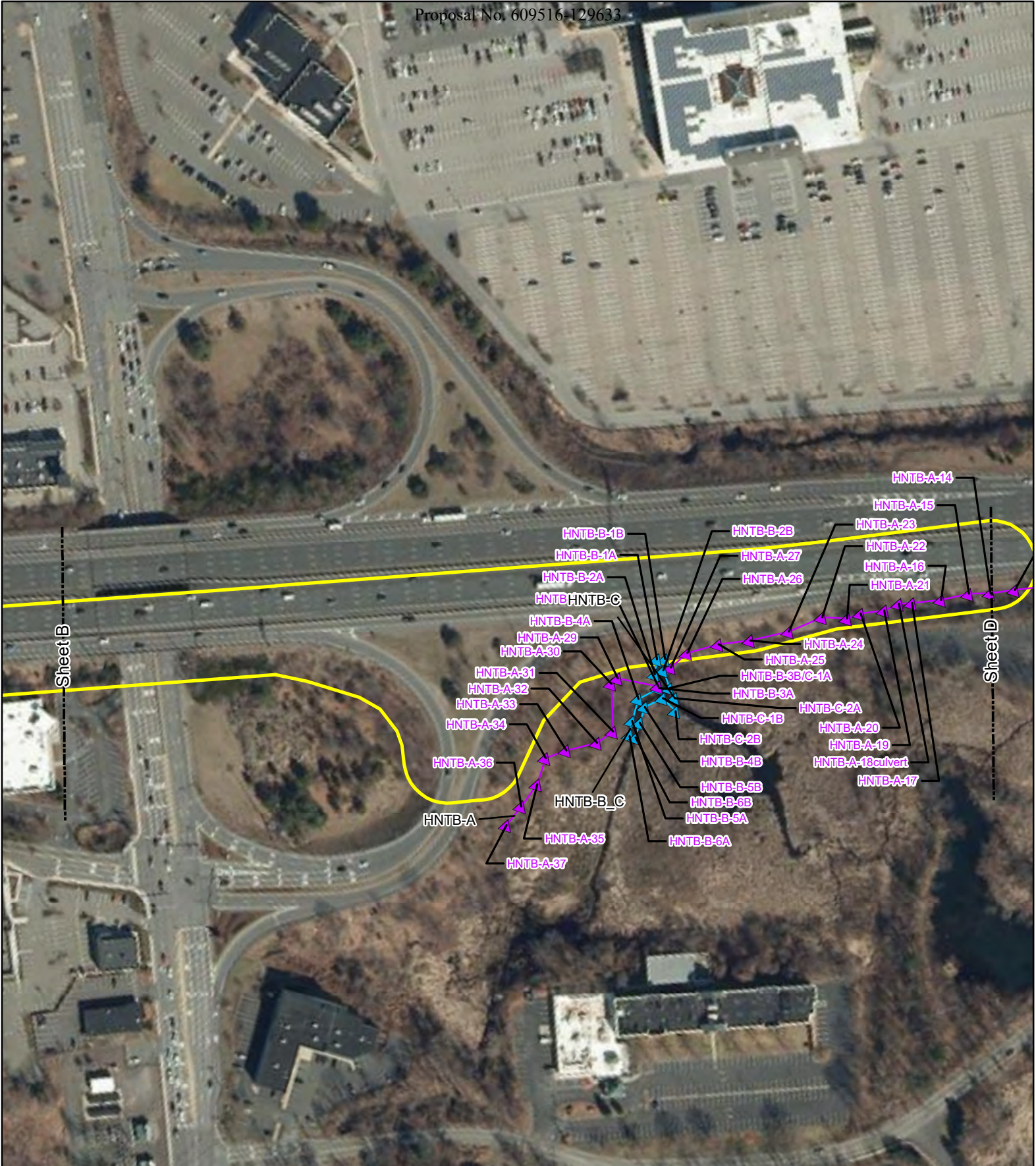
Appendix A
Figure 8
Sheet B



Boston, MA

February 2024





Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

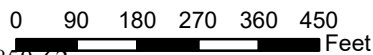
- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- ▲ Wetland Boundary Flag
- Wetland Boundary Line

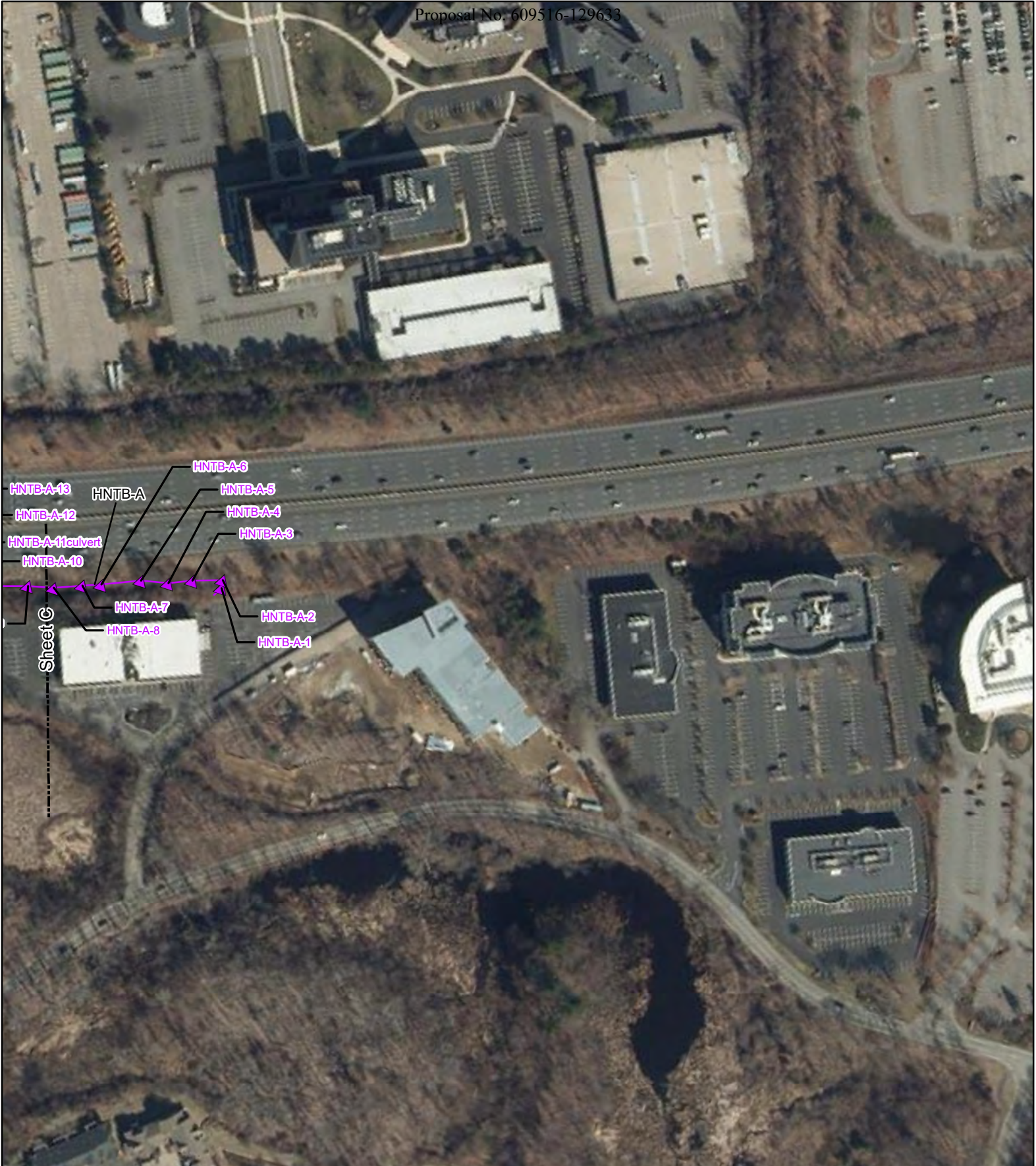
Appendix A
Figure 8
Sheet C



Boston, MA

February 2024





Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

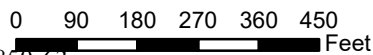
- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- Wetland Boundary Line
- ▲ Wetland Boundary Flag

Appendix A
Figure 8
Sheet D



Boston, MA

February 2024



A00850-63



Appendix B

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-A-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.4787 Long: -71.2121 Datum: NAD83
 Soil Map Unit Name: Freetown Muck, 0 to 1 percent NWI classification: PEM1Fh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2 inches</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-A-Wet

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;"><u>Total % Cover of:</u></td> <td style="width:50%;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species <u>55</u></td> <td>x 1 = <u>55</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>95</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.36</u>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species <u>55</u>	x 1 = <u>55</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>95</u> (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species <u>55</u>	x 1 = <u>55</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>10</u>	x 3 = <u>30</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>95</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)					Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
1. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>															
2. <u>Typha latifolia</u>	<u>50</u>	<u>Yes</u>	<u>OBL</u>															
3. <u>Dryopteris carthusiana</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-A-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					MK	
8-15	10YR 4/1	100					S	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-A-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5-10%
 Subregion (LRR or MLRA): LRR R Lat: 42.479 Long: -71.212 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-A-Up

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
			<u>30</u> = Total Cover
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Frangula alnus</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>
2. <u>Malus pumila</u>	<u>15</u>	<u>Yes</u>	<u>UPL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
			<u>40</u> = Total Cover
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Toxicodendron radicans</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>
2. <u>Solidago rugosa</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
			<u>25</u> = Total Cover
Woody Vine Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Celastrus orbiculatus</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
			<u>20</u> = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>50</u>	x 3 = <u>150</u>
FACU species <u>30</u>	x 4 = <u>120</u>
UPL species <u>35</u>	x 5 = <u>175</u>
Column Totals: <u>115</u> (A)	<u>445</u> (B)
Prevalence Index = B/A = <u>3.87</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: HNTB-A-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-15	10YR 3/3	100					SL	fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|--|--|---|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|--|--|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:




Photo 1: View of Upland data point.
 Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-D-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.477 Long: -71.218 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1 inches</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-D-Wet

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><u>Total % Cover of:</u></td> <td style="width:50%;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species <u>75</u></td> <td>x 1 = <u>75</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>115</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.28</u>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species <u>75</u>	x 1 = <u>75</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>115</u> (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species <u>75</u>	x 1 = <u>75</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>10</u>	x 3 = <u>30</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>115</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)					Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
1. <u>Typha latifolia</u>	<u>70</u>	<u>Yes</u>	<u>OBL</u>															
2. <u>Onoclea sensibilis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
3. <u>Lythrum salicaria</u>	<u>5</u>	<u>No</u>	<u>OBL</u>															
4. <u>Solidago rugosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
5. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
<u>90</u> = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-D-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	100					SL	masked with some organics
3-15	10YR 4/1	100					SL	fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-D-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5-10%
 Subregion (LRR or MLRA): LRR R Lat: 42.477 Long: -71.218 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> 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? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-D-Up

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>37</u></td> <td>x 4 = <u>148</u></td> </tr> <tr> <td>UPL species <u>35</u></td> <td>x 5 = <u>175</u></td> </tr> <tr> <td>Column Totals: <u>87</u> (A)</td> <td><u>368</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.23</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>37</u>	x 4 = <u>148</u>	UPL species <u>35</u>	x 5 = <u>175</u>	Column Totals: <u>87</u> (A)	<u>368</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>15</u>	x 3 = <u>45</u>																	
FACU species <u>37</u>	x 4 = <u>148</u>																	
UPL species <u>35</u>	x 5 = <u>175</u>																	
Column Totals: <u>87</u> (A)	<u>368</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Pyrus calleryana</u>	<u>25</u>	<u>Yes</u>	<u>UPL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Solidago rugosa</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>		Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>													
2. <u>Achillea millefolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
3. <u>Pyrus calleryana</u>	<u>10</u>	<u>No</u>	<u>UPL</u>															
4. <u>Rubus flagellaris</u>	<u>2</u>	<u>No</u>	<u>FACU</u>															
5. <u>Festuca rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-D-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 3/4	100					SL	fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock
 Depth (inches): 8"

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Upland data point.
 Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-E-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.474499 Long: -71.227948 Datum: NAD83
 Soil Map Unit Name: Swansea muck, 0 to 1 percent slopes NWI classification: PEM1E/PSS1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input checked="" type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input checked="" type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input checked="" type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p>Secondary Indicators (minimum of two required)</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Surface Soil Cracks (B6)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Drainage Patterns (B10)</td> </tr> <tr> <td><input type="checkbox"/> Moss Trim Lines (B16)</td> </tr> <tr> <td><input type="checkbox"/> Dry-Season Water Table (C2)</td> </tr> <tr> <td><input type="checkbox"/> Crayfish Burrows (C8)</td> </tr> <tr> <td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td> </tr> <tr> <td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Geomorphic Position (D2)</td> </tr> <tr> <td><input type="checkbox"/> Shallow Aquitard (D3)</td> </tr> <tr> <td><input type="checkbox"/> Microtopographic Relief (D4)</td> </tr> <tr> <td><input type="checkbox"/> FAC-Neutral Test (D5)</td> </tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)																															
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																															
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																															
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																															
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)																															
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																															
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																															
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																																
<input type="checkbox"/> Surface Soil Cracks (B6)																																
<input checked="" type="checkbox"/> Drainage Patterns (B10)																																
<input type="checkbox"/> Moss Trim Lines (B16)																																
<input type="checkbox"/> Dry-Season Water Table (C2)																																
<input type="checkbox"/> Crayfish Burrows (C8)																																
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)																																
<input type="checkbox"/> Stunted or Stressed Plants (D1)																																
<input checked="" type="checkbox"/> Geomorphic Position (D2)																																
<input type="checkbox"/> Shallow Aquitard (D3)																																
<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> 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>2 inches</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks:																																

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-E-Wet

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30 ft</u>)																		
1. <u>Quercus bicolor</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. <u>Fraxinus pennsylvanica</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>90</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:right;">Total % Cover of:</td> <td style="width:50%; text-align:left;">Multiply by:</td> </tr> <tr> <td>OBL species <u>85</u></td> <td>x 1 = <u>85</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u>65</u></td> <td>x 3 = <u>195</u></td> </tr> <tr> <td>FACU species <u>12</u></td> <td>x 4 = <u>48</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>262</u> (A)</td> <td><u>528</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.01</u>	Total % Cover of:	Multiply by:	OBL species <u>85</u>	x 1 = <u>85</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u>65</u>	x 3 = <u>195</u>	FACU species <u>12</u>	x 4 = <u>48</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>262</u> (A)	<u>528</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>85</u>	x 1 = <u>85</u>																	
FACW species <u>100</u>	x 2 = <u>200</u>																	
FAC species <u>65</u>	x 3 = <u>195</u>																	
FACU species <u>12</u>	x 4 = <u>48</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>262</u> (A)	<u>528</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Vaccinium corymbosum</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Viburnum dentatum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>35</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Symplocarpus foetidus</u>	<u>80</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Toxicodendron radicans</u>	<u>10</u>	<u>No</u>	<u>FAC</u>															
3. <u>Osmunda cinnamomea</u>	<u>10</u>	<u>No</u>	<u>FACW</u>															
4. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>No</u>	<u>FACU</u>															
5. <u>Onoclea sensibilis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
6. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>															
7. <u>Solidago rugosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
8. <u>Rosa mulitflora</u>	<u>2</u>	<u>No</u>	<u>FACU</u>															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>127</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30ft</u>)																		
1. <u>Vitis riparia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10</u> = Total Cover																		
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-E-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	100					SL	
12-16	10YR 2/1	75					SL	
	10YR 4/3	25					SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/24/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-E-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 5-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.474484 Long: -71.228035 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-E-Up

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Acer rubrum</u>	<u>30</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>57%</u> (A/B)
2. <u>Quercus alba</u>	<u>15</u>	Yes	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>45</u>	= Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Frangula alnus</u>	<u>30</u>	Yes	FAC	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>110</u> x 3 = <u>330</u> FACU species <u>45</u> x 4 = <u>180</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>160</u> (A) <u>520</u> (B) Prevalence Index = B/A = <u>3.25</u>
2. <u>Vaccinium corymbosum</u>	<u>5</u>	No	FACW	
3. <u>Prunus serotina</u>	<u>20</u>	Yes	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
	<u>55</u>	= Total Cover		
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Trientalis borealis</u>	<u>30</u>	Yes	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Solidago rugosa</u>	<u>5</u>	No	FAC	
3. <u>Osmunda claytoniana</u>	<u>5</u>	No	FAC	
4. <u>Lysimachia quadrifolia</u>	<u>10</u>	Yes	FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>50</u>	= Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Vitis riparia</u>	<u>10</u>	Yes	FAC	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
	<u>10</u>	= Total Cover		
Hydrophytic Vegetation Present?				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: HNTB-E-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/2	100					SL	
2-5	10YR 3/4	100					SL	
5-15	10YR 5/4	100					S	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Upland data point. Photo taken 5/24/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-F-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.474987 Long: -71.224389 Datum: NAD83
 Soil Map Unit Name: Swansea muck, 0 to 1 percent slopes NWI classification: PFO1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0.5 inches</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-F-Wet

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Quercus rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)														
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	<u>30</u>	= Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>175</u> (A)</td> <td><u>520</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.97</u>	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>175</u> (A)	<u>520</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>30</u>	x 1 = <u>30</u>																	
FACW species <u>15</u>	x 2 = <u>30</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>50</u>	x 4 = <u>200</u>																	
UPL species <u>10</u>	x 5 = <u>50</u>																	
Column Totals: <u>175</u> (A)	<u>520</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)																		
1. <u>Rosa muliflora</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>															
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	<u>15</u>	= Total Cover																
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)																		
1. <u>Symplocarpus foetidus</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Impatiens capensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>															
3. <u>Ranunculus repens</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>															
4. <u>Artemisia vulgaris</u>	<u>10</u>	<u>No</u>	<u>UPL</u>															
5. <u>Solidago rugosa</u>	<u>10</u>	<u>No</u>	<u>FAC</u>															
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
12. _____																		
	<u>125</u>	= Total Cover																
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)																		
1. <u>Celastrus orbiculatus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>															
2. _____																		
3. _____																		
4. _____																		
	<u>5</u>	= Total Cover																
Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																		
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-F-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					SL	masked with some organics
8-16	Gley 6/10Y	85	10YR 5/8	15	C	M	S	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/24/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-F-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): convex Slope (%): 5-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.474979 Long: -71.224426 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-F-Up

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align: right;">Total % Cover of:</td> <td style="width:50%; text-align: left;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>65</u></td> <td>x 5 = <u>325</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>575</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.26</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>65</u>	x 5 = <u>325</u>	Column Totals: <u>135</u> (A)	<u>575</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>30</u>	x 3 = <u>90</u>																	
FACU species <u>40</u>	x 4 = <u>160</u>																	
UPL species <u>65</u>	x 5 = <u>325</u>																	
Column Totals: <u>135</u> (A)	<u>575</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Rhus typhina</u>	<u>5</u>	<u>Yes</u>	<u>NR</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Artemisia vulgaris</u>	<u>60</u>	<u>Yes</u>	<u>UPL</u>		Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>													
2. <u>Solidago rugosa</u>	<u>20</u>	<u>No</u>	<u>FAC</u>															
3. <u>Schizachyrium scoparium</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-F-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 2/2	100					SL	
10-15	10YR 3/4	100					SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Upland data point. Photo taken 5/24/2023.

Appendix C

Waters of the United States Field Data Forms

Waters of the U.S. Data Sheet

Project: Burlington	Feature ID: HNTB-B & HNTB-C		Stream Order: UNK
Date: 5/11/23	State: MA	Photos: See attached	
Crew: C. Barron & M. Seifert	County: Middlesex	Flag Numbers: HNTB-B-1A/B – 6A/B & HNTB-C-1A/B – 2A/B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
TNW (Subject to ebb and flow)	TNW – Perennial (Flowing year round)	RPW – Seasonal (must flow at least 3 months a year)	Non-RPW draining uplands
	RPW – Perennial (Flowing year round)		Non-RPW erosional feature
Describe <i>rational for hydrologic class:</i> USGS named stream Vine Brook	X (Flowing year round)		Non-RPW with abutting wetland
			Non-RPW with adjacent wetland
Hydrologic Connectivity – Upstream: Unnamed Wetland		Downstream: HNTB-A	
		Adjacent/Abutting: HNTB-A	

Feature Description: (check all that apply)

Shape (with respect to OHW)		Substrate		Vegetation Cover Type (MBSS)
X Natural Channel Shape	Width: 15 – 20 ft	X Silts	X Sands	
Artificial (man-made)	Depth: 1-2 ft		Gravel	Other:
X Manipulated (man-altered)	Bank Erosion/stability:		Concrete	Riprap
Other:	Stable	Side slope: <input type="checkbox"/> ≥1:1 <input type="checkbox"/> 2:1 <input checked="" type="checkbox"/> 3:1 <input checked="" type="checkbox"/> ≤4:1		LB: Same as RB.

Notes: Large stream flowing through HNTB-A and under I-95.

Weather/Precipitation Conditions:

Inches of Rain Within Last Week		Monthly Drought Condition		NCDC Regional PDSI	
X No rain	0-0.5		X		
Light rain	0.5-1	-6	-5	-4	-3
Heavy Rain	>1	Severe Drought	Moderate Drought	Normal	Moderately Wet
					Severely Wet

Non-tidal tributary has: (check all that apply; include photos for each & list photo #)

Bed and Banks		Ordinary High Water Mark	
X Yes	Clear, natural line impressed on the bank		Sediment deposition
No	Changes in the character of soil		Water staining
	Shelving	X	Presence of flood litter/debris
X	Vegetation matted down, bent, or absent		Destruction of terrestrial veg.
	Leaf litter disturbed		Presence of wrack line

Tidal tributary has: (check all that apply; include photos for each & list photo #)

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
	Oil or scum line along shore objects		Survey to available datum		Water is clear
	Fine shell or debris deposits (foreshore)		Physical markings		Water is discolored
	Physical markings/characteristics		Vegetation lines/changes in types		Oily film
	Tidal gauges				Other:

Notes:

Photo 1: View of HNTB-B, facing North. The stream is culverted under I-95.



Photo 2: View of HNTB-C, facing South. The stream is abutting HNTB-A.



Waters of the U.S. Data Sheet

Project: Burlington	Feature ID: HNTB-G	Stream Order: UNK
Date: 5/24/23	State: MA	Photos: See attached
Crew: C. Barron & M. Seifert	County: Middlesex	Flag Numbers: HNTB-G-1A/B – 3A/B

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
TNW (Subject to ebb and flow)	TNW – Perennial (Flowing year round)	X RPW – Seasonal (must flow at least 3 months a year)	Non-RPW draining uplands
	RPW – Perennial (Flowing year round)		Non-RPW erosional feature
			Non-RPW with abutting wetland
			Non-RPW with adjacent wetland
			Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class:

Flowing at the time of delineation, not USGS mapped.

Hydrologic Connectivity –	Upstream: Unknown	Downstream: HNTB-F	Adjacent/Abutting: HNTB-F
---------------------------	-------------------	--------------------	---------------------------

Feature Description: (check all that apply)

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)	
<input checked="" type="checkbox"/>	Natural Channel Shape	Width: 10 ft	Silts	Sands	X Muck	RB: common mugwort, skunk cabbage, jewelweed, creeping buttercup, multiflora rose LB: Same as RB.
<input checked="" type="checkbox"/>	Artificial (man-made)	Depth: 3 in	X Cobbles	Gravel	Other: Riprap	
<input checked="" type="checkbox"/>	Manipulated (man-altered)	Bank Erosion/stability:	Bedrock	Concrete		
	Other:	Stable	Side slope: <input type="checkbox"/> ≥1:1 <input type="checkbox"/> 2:1 <input checked="" type="checkbox"/> 3:1 <input checked="" type="checkbox"/> ≤4:1			

Weather/Precipitation Conditions:

Inches of Rain Within Last Week		Monthly Drought Condition															
		NCDC Regional PDSI															
		http://www.ncdc.noaa.gov/temp-and-precip/ climatological-rankings/index.php															
		Month: April Year: 2023															
<input checked="" type="checkbox"/>	No rain	0-0.5															
	Light rain	X 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
	Heavy Rain	>1	Severe Drought			Moderate Drought			Normal			Moderately Wet			Severely Wet		

Non-tidal tributary has: (check all that apply; include photos for each & list photo #)

Bed and Banks		Ordinary High Water Mark					
<input checked="" type="checkbox"/>	Yes	X	Clear, natural line impressed on the bank	Sediment deposition		Sediment sorting	
	No	X	Changes in the character of soil	X	Water staining	Scour	
			Shelving		Presence of flood litter/debris	X	Observed/predicted flow events
			Vegetation matted down, bent, or absent		Destruction of terrestrial veg.		Abrupt change in plant community
			Leaf litter disturbed		Presence of wrack line		Other:

Tidal tributary has: (check all that apply; include photos for each & list photo #)

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
	Oil or scum line along shore objects		Survey to available datum		Water is clear
	Fine shell or debris deposits (foreshore)		Physical markings		Water is discolored
	Physical markings/characteristics		Vegetation lines/changes in types		Oily film
	Tidal gauges				Other:

Notes:

Photo 1: View of HNTB-G, facing South. The stream is culverted under I-95.



Photo 2: View of HNTB-G culvert under I-95, facing North.



Appendix C – Project Design Plans

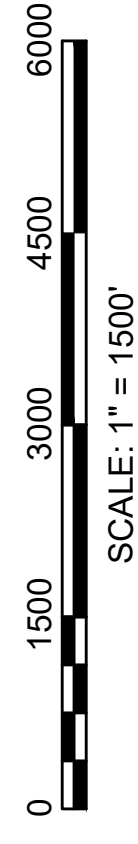
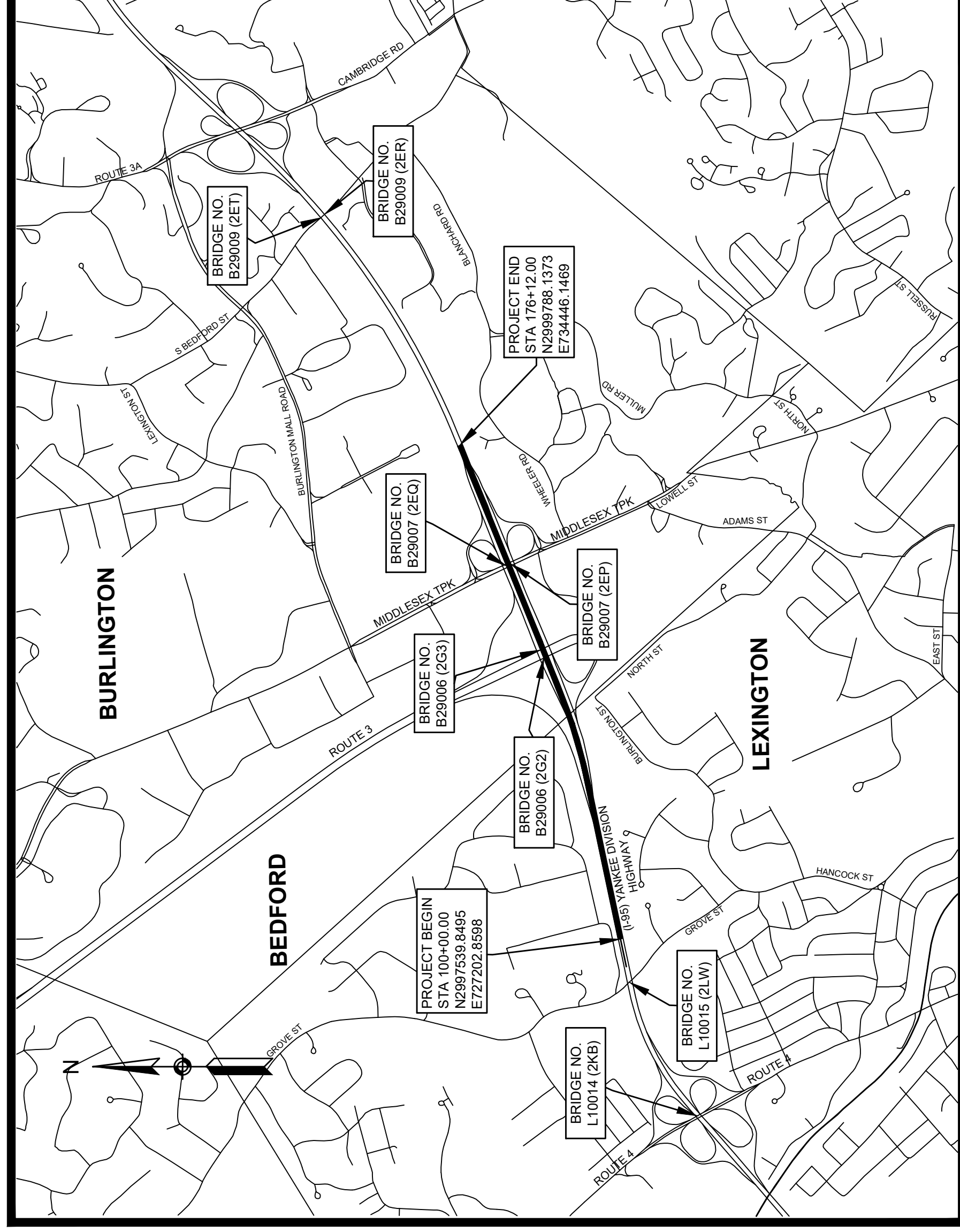
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

PLAN AND PROFILE OF IMPROVEMENTS AT INTERSTATE 95 (ROUTE 128)/ROUTE 3 INTERCHANGE

IN THE TOWN OF
BURLINGTON
MIDDLESEX COUNTY

WPA RDA SUBMISSION

SHEET NO.	DESCRIPTION
1	TITLE & INDEX
2	LEGEND
3	GENERAL NOTES
4	KEY PLAN
5 - 6	TYPICAL SECTIONS
7 - 14	CONSTRUCTION PLANS
15 - 21	PROFILES
22	CONSTRUCTION STAGING PLANS
23	CONSTRUCTION DETAILS



LENGTH OF PROJECT = 7612.00 FEET = 1.442 MILES

BURLINGTON I-95 / ROUTE 3 INTERCHANGE			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	24
PROJECT FILE NO. 609516		TITLE SHEET & INDEX	

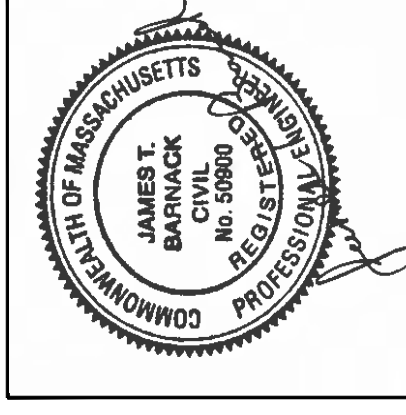
THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

DESIGN DESIGNATION (I-95 NB)

DESIGN SPEED	65 MPH
ADT (2019)	107,000
ADT (2031)	115,800
K	10.6%
D	100% NB
T (PEAK HOUR)	8.00%
T (AVERAGE DAY)	8.00%
DHV	8,500
DDHV	8,500 NB
FUNCTIONAL CLASSIFICATION	INTERSTATE

DESIGN DESIGNATION (C-D ROAD)

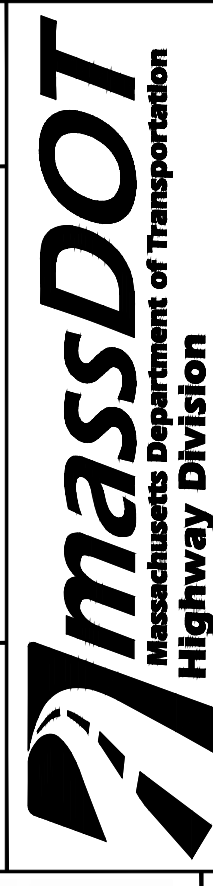
DESIGN SPEED	55 MPH
ADT (2019)	38,200
ADT (2031)	41,700
K	13.0%
D	100% NB
T (PEAK HOUR)	8.00%
T (AVERAGE DAY)	8.00%
DHV	3,700
DDHV	3,700 NB
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL



31 ST. JAMES AVE SUITE 300
BOSTON, MA 02116

APPROVED

CHIEF ENGINEER _____ DATE _____



DATE	8/5/2024	DESCRIPTION	WPA RDA SUBMISSION	REV #	0
------	----------	-------------	--------------------	-------	---

GENERAL SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for various infrastructure elements like barriers, manholes, poles, and utility lines.

TRAFFIC SYMBOLS

Table with columns: EXISTING (REM), PROPOSED, DESCRIPTION. Lists symbols for traffic control elements like signal heads, detectors, and signs.

PAVEMENT MARKINGS SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for pavement markings such as white and yellow lines, rumble strips, and yield lines.

ABBREVIATIONS

Table with columns: GENERAL, ANNUAL AVERAGE DAILY TRAFFIC, and other categories. Lists abbreviations for various engineering and construction terms.

BURLINGTON I-95 / ROUTE 3 INTERCHANGE

Table with columns: STATE, FED. AID PROJ. NO., SHEET NO., TOTAL SHEETS. Project information for the interchange.

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

Table with columns: GENERAL and other categories. Continuation of abbreviations for various engineering and construction terms.

GENERAL NOTES:

- THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BETWEEN APRIL 18, 2022 AND MAY 25, 2022 BY GREEN INTERNATIONAL AFFILIATES, INC. SEE FIELD NOTES IN MASSDOT DISTRICT 4 FIELD BOOK 42017
- HORIZONTAL CONTROL IS BASED UPON THE NORTH AMERICAN DATUM OF 1983-NAD83 (2011), EPOCH 2010.00, SPC 83-MASSACHUSETTS (MAINLAND ZONE), AS PROVIDED BY MASSDOT FOR STATIONS 2968, 2969, 2970 AND 2971. VERTICAL CONTROL IS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 AS PROVIDED BY MASSDOT FOR STATIONS 2968, 2969, 2970, 2971 AND BENCHMARK #774.
- WETLANDS WERE DELINEATED BY HNTB ON MAY 11, 2023 AND MAY 24, 2023 USING ROUTINE LEVEL 2 METHODS IN ACCORDANCE WITH THE UNITED STATES ARMY CORP OF ENGINEERS.
- THE RIGHTS OF WAY LINES OF ROUTE 3 AND INTERSTATE 95 SHOWN ARE THE DIRECT RESULT OF AN INSTRUMENT SURVEY PERFORMED ON THE GROUND BY GREEN INTERNATIONAL AFFILIATES, INC. WITH AN ERROR OF CLOSURE OF 1 IN 41,139, AND FROM PLANS AND DEEDS OF RECORD. OTHER RIGHTS OF WAY SHOWN AND PRIVATE PROPERTY LINES HAVE NOT BEEN SURVEYED, THEY ARE COMPILED FROM GIS & RECORD PLAN INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE.
- LOCATION OF ALL EXISTING UTILITIES AND SUBSURFACE STRUCTURES ARE FROM SURVEY AND RECORDS OF THE CITY OR PRIVATE UTILITY COMPANIES AND ARE CONSIDERED APPROXIMATE BOTH AS TO SIZE AND LOCATION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND ELEVATIONS. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY GRADE DISCREPANCIES PRIOR TO CONSTRUCTION.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION.
- THE CONTRACTOR SHALL CAUSE AS LITTLE INTERFERENCE AND INCONVENIENCE AS POSSIBLE TO ABUTTERS. THE CONTRACTOR SHALL MAINTAIN SAFE AND CONVENIENT ACCESS TO PRIVATE PROPERTY AT ALL TIMES. EMERGENCY VEHICLE ACCESS SHALL BE MAINTAINED AT ALL TIMES.
- CONSTRUCTION STAGING AREAS SHALL BE LOCATED AS DIRECTED AND APPROVED BY THE ENGINEER WITHIN THE RIGHT OF WAY.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE TOWN AND APPLICABLE AGENCIES PRIOR TO COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR COMPLETION OF ALL DESIGN TASKS, CALCULATIONS AND CONSTRUCTION AS REFERENCED IN THE CONTRACT PLANS, SPECIFICATIONS AND SUPPLEMENTARY DOCUMENTS.
- CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITY SERVICES AND HIGHWAY LIGHTING THROUGHOUT CONSTRUCTION UNTIL AND UNLESS THEY ARE REPLACED PER THE CONTRACT.
- EXISTING PAVEMENTS SHALL BE SAWCUT WHERE THEY MEET PROPOSED SURFACE TREATMENTS. SAWCUTS WILL BE SMOOTH AND STRAIGHT. AREAS OUTSIDE THE LIMITS OF WORK DISTURBED BY THE CONTRACTOR DURING CONSTRUCTION WILL BE RESTORED TO THEIR ORIGINAL CONDITION.
- CONTRACTOR SHALL FIELD CHECK ALL DIMENSIONS AND ELEVATIONS BEFORE PROCEEDING WITH NEW WORK. TEST PITS WILL BE PERFORMED TO VERIFY PERTINENT DRAINAGE INVERTS AND POTENTIAL UTILITY CONFLICTS. DISCREPANCIES OR CONFLICTS WILL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- GUARDRAIL POSTS SHOULD NOT BE DRIVEN IN CLOSE PROXIMITY TO EXISTING UNDERGROUND UTILITIES UNLESS UNDERGROUND UTILITIES ARE EXPOSED AND LOCATIONS ARE CLEARLY KNOWN.

TRAFFIC NOTES

- ALL CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED BY APPROVED METHOD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

- ALL EXISTING SIGNS TO BE RETAINED (RET.) UNLESS OTHERWISE NOTED.

UTILITY NOTES:

- THE LOCATION OF ALL UNDERGROUND UTILITIES ARE SHOWN APPROXIMATE AND WERE COMPILED USING FIELD SURVEY INFORMATION AND AVAILABLE RECORD INFORMATION. THE LOCATION OF EXISTING PIPES OR OTHER UNDERGROUND STRUCTURES OR PROPERTY LINES ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL CALL "DIG SAFE" (1-888-344-7233) AND NOTIFY THE CITY OF BURLINGTON AND MASSDOT AT LEAST 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO ANY EXCAVATION TO OBTAIN ACCURATE UTILITY LOCATIONS.
- RECORD UTILITY INFORMATION FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES ARE APPROXIMATE ONLY AND ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD.

- THE COMPLETION AND ACCURACY OF LATERAL UTILITY SERVICES IS NOT GUARANTEED AND MUST BE VERIFIED BY THE CONTRACTOR IN THE FIELD.

- ALL UTILITY COMPANIES, PUBLIC AND PRIVATE MUST BE NOTIFIED

- SUBSURFACE UTILITY LOCATIONS HAVE BEEN PLOTTED TO MEET UTILITY QUALITY LEVEL "C" AS DESCRIBED IN ASCE STANDARD 38-02 AND SUMMARIZED ON THIS SHEET. THE UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS BASED ON ABOVE-GROUND FIELD OBSERVATION AND EXISTING RECORD INFORMATION RECEIVED FROM UTILITY STAKE-HOLDERS.

- INVERTS SHOWN ON PLAN ARE NOT GUARANTEED TO BE ACCURATE. DUE TO THE LIMITATIONS OF FIELD OBSERVATION AND SURVEY TECHNIQUES THE INVERTS ARE SHOWN AS APPROXIMATE ONLY AND SHALL NOT BE WARRANTED TO BE CORRECT. ADDITIONAL FIELD INVESTIGATION IS NECESSARY WHERE ACCURATE MEASUREMENTS ARE REQUIRED FOR DESIGN OF CRITICAL AREAS.

- WHERE AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED WORK, THE CONTRACTOR SHALL ACCURATELY DETERMINE THE LOCATION, ELEVATION AND SIZE OF THE UTILITY AND FURNISH THE INFORMATION TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

- THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN EXCAVATING NEAR AND BACKFILLING IN THE VICINITY OF EXISTING UTILITIES. THE CONTRACTOR SHALL USE HAND EXCAVATION WHERE APPROPRIATE TO PROTECT EXISTING UTILITIES.

- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES IN SERVICE AT ALL TIMES UNLESS NOTED ON THE PLANS OR APPROVED BY THE ENGINEER.

- THE CONTRACTOR SHALL SUPPORT AND PROTECT EXISTING UTILITIES IN AND AROUND EXCAVATIONS, AND IN PARTICULAR, WHEN CROSSING OVER OR UNDER ANY DUCT OR PIPE, ALL PROTECTIVE MEASURES SHALL BE CONSIDERED INCIDENTAL WORK.

- IF THE CONTRACTOR DAMAGES ANY UTILITY SYSTEM, HE OR SHE SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL REPAIR/REPLACE THE AFFECTED SYSTEM AT HIS OR HER OWN EXPENSE.

- THE CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES AND MAKE ARRANGEMENTS FOR ADJUSTMENTS, ALTERATIONS AND REPLACEMENT OF PRIVATE UTILITIES.

- BELOW GROUND STRUCTURES ARE SHOWN SYMBOLIC UNLESS DIMENSIONED.

- THE EXISTING CONDITIONS PLAN IS TO BE USED FOR THE SPECIFIED PROJECT ONLY AND IS NOT WARRANTED TO BE COMPLETE FOR ANY OTHER FUTURE PROJECTS.

GENERAL PAVEMENT NOTES:

- ALL PERMANENT HOT MIX ASPHALT PAVEMENTS WILL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 450 HOT MIX ASPHALT PAVEMENT AND SECTION 455 SUPERPAVE HOT MIX ASPHALT PAVEMENT SPECIFICATIONS.
- ALL PERMANENT SUPERPAVE MIXTURES WILL BE MODIFIED USING A WARM MIX ASPHALT ADDITIVE THAT IS ON THE NORTHEAST ASPHALT USER PRODUCER GROUP (NEAUPG) QUALIFIED PRODUCTS LIST AND THAT COMPLIES WITH MASSDOT WMA SPECIAL PROVISIONS.
- ASPHALT EMULSION FOR TACK COAT WILL BE SPRAY APPLIED FOR UNIFORM COVERAGE (RS-1h) AT 0.07 GAL/SY OVER MICRO-MILLED SURFACES, AND 0.05 GAL/SY OVER SMOOTH SURFACES.
- EXISTING SUBBASE MATERIAL MEETING MATERIAL SPECIFICATION M1.03.0 GRAVEL BORROW, TYPE b WILL BE RETAINED. EXISTING SUBBASE NOT CONFORMING TO THE MATERIAL SPECIFICATION M1.03.0 GRAVEL BORROW, TYPE b WILL BE REMOVED TO THE REQUIRED DEPTH AND REPLACED WITH GRAVEL BORROW, TYPE b.
- HMA FOR PATCHING, ASPHALT EMULSION FOR TACK COAT AND HMA JOINT SEALANT WILL BE PER SECTION 450.
- FRICTION COURSE WILL NOT BE PLACED UNTIL THE FULL WIDTH AND THE FULL LENGTH CAN BE PLACED. SEE SPECIAL PROVISIONS.
- SUPERPAVE LEVELING COURSE ONLY APPLIED IN LOCATIONS WHERE REQUIRED CROSS SLOPES CANNOT BE ACHIEVED WITH MICROMILLING, WITH APPROVAL BY ENGINEER.

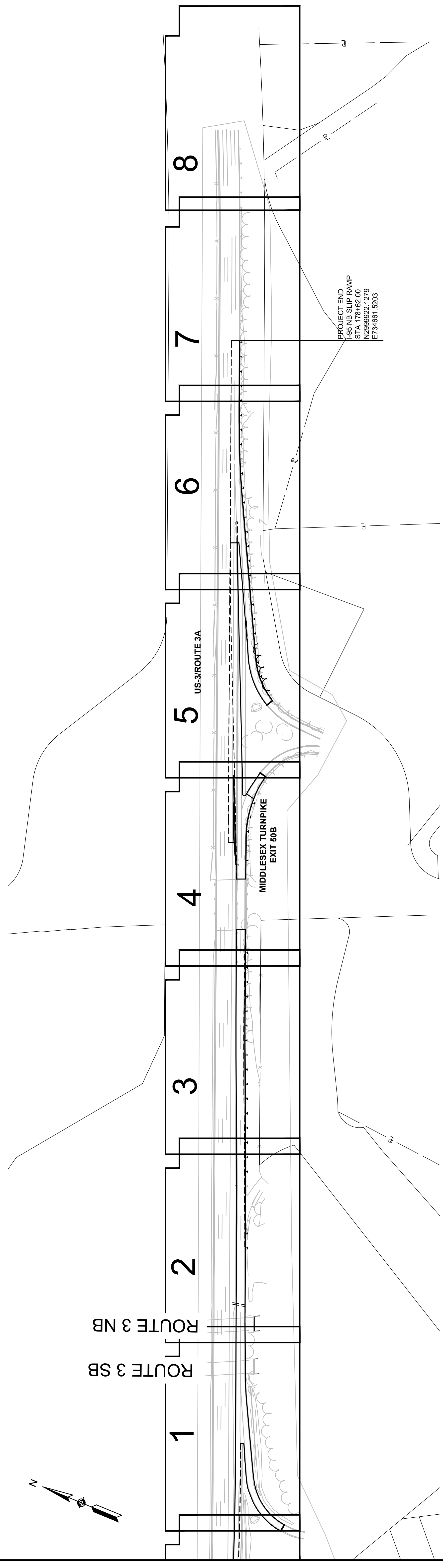
BURLINGTON			
I-95 / ROUTE 3 INTERCHANGE			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	24
PROJECT FILE NO.		609516	

GENERAL NOTES

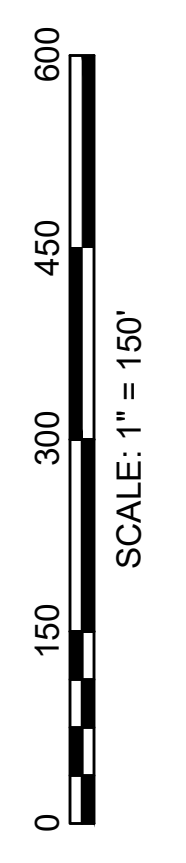
**BURLINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	4	24
PROJECT FILE NO. 609516			

KEY PLAN



PLAN VIEW NUMBER	1	2	3	4	5	6	7	8
CONSTRUCTION PLANS	7	8	9	10	11	12	13	14



**BURLINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	24
PROJECT FILE NO. 609516			

TYPICAL SECTIONS 1 OF 2

PAVEMENT NOTES

PROPOSED FULL DEPTH RECONSTRUCTION

- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- INTERMEDIATE** 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 POLYMER (SIC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- 2.75" SUPERPAVE INTERMEDIATE COURSE 19.0 POLYMER (SIC-19.0-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- BASE COURSE:** 5" SUPERPAVE BASE COURSE 37.5 (SBC-37.5)
- SUBBASE:** 4" DENSE GRADED CRUSHED STONE BASE OVER 8" GRAVEL BORROW (TYPE b)
- SPECIAL BORROW:** 24" GRAVEL BORROW (TYPE b) OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN 8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE WITH SUBSECTION 170.60

PROPOSED PAVEMENT FINE MILLING AND RESURFACING (I-95 MAINLINE AND RAMPS):

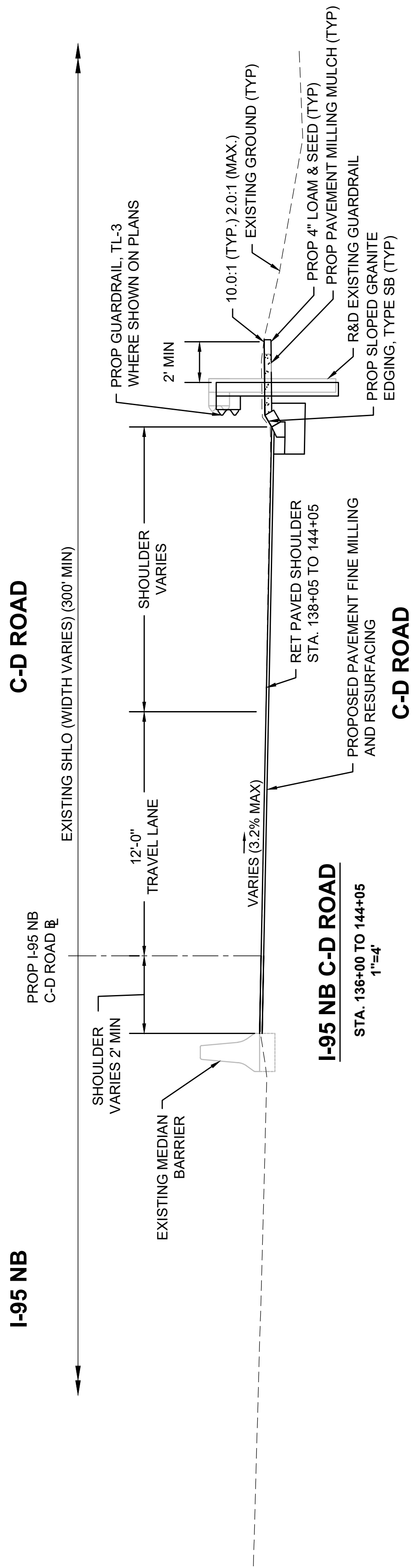
- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- FINE MILLING:** 1.75" PAVEMENT FINE MILLING

PROPOSED WIDENING LESS THAN 4 FEET WIDE:

- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- INTERMEDIATE** 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 POLYMER (SIC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- BASE COURSE:** 8" HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE
- SPECIAL BORROW:** 8" GRAVEL BORROW, TYPE B OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN 8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE WITH SUBSECTION 170.60

PROPOSED HMA MEDIAN ISLAND:

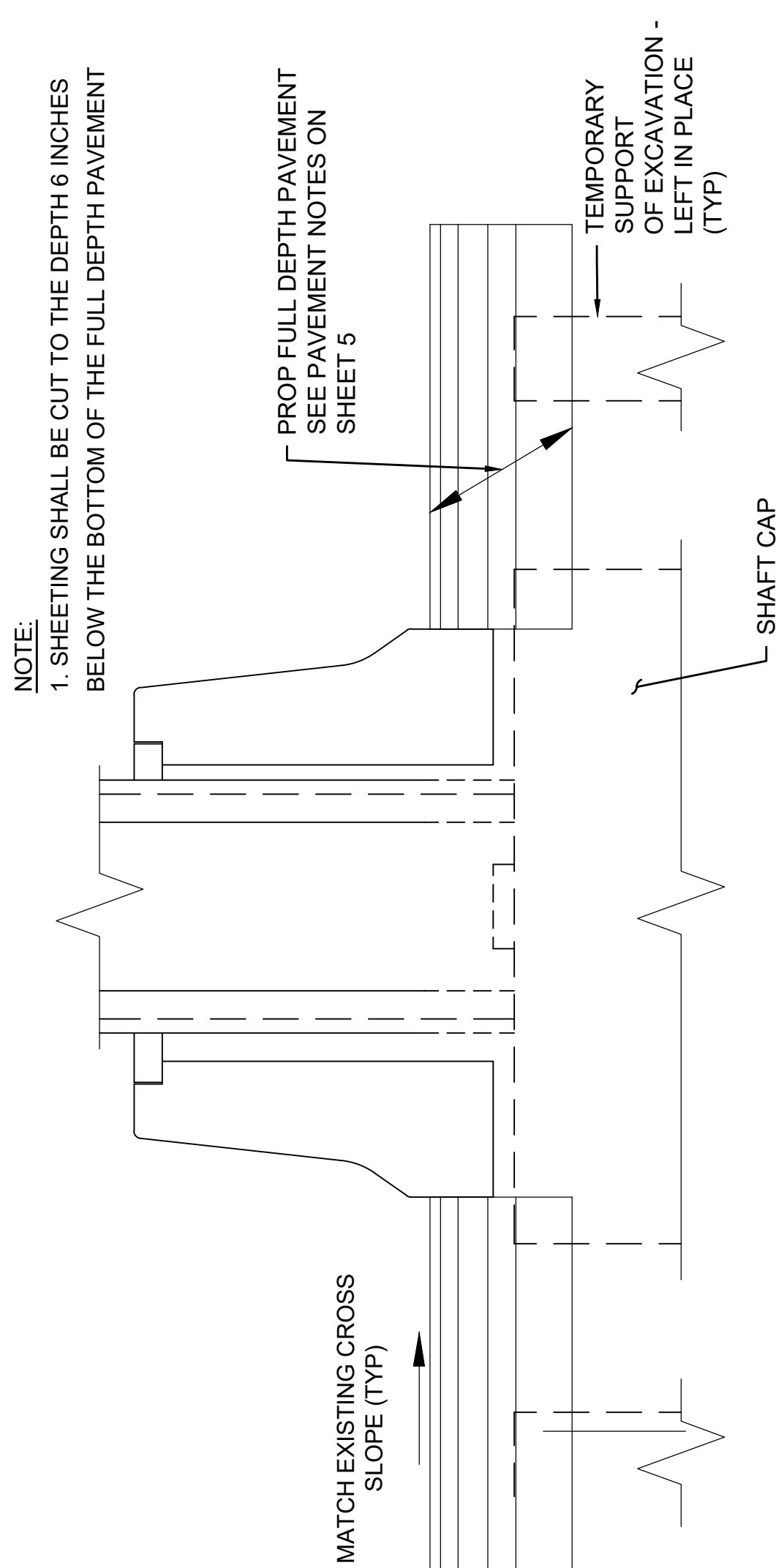
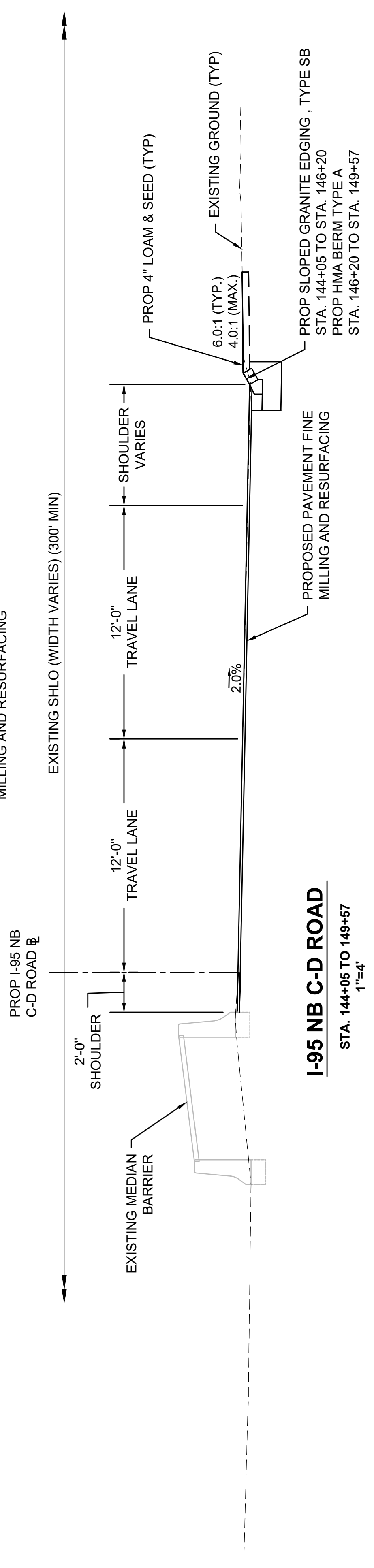
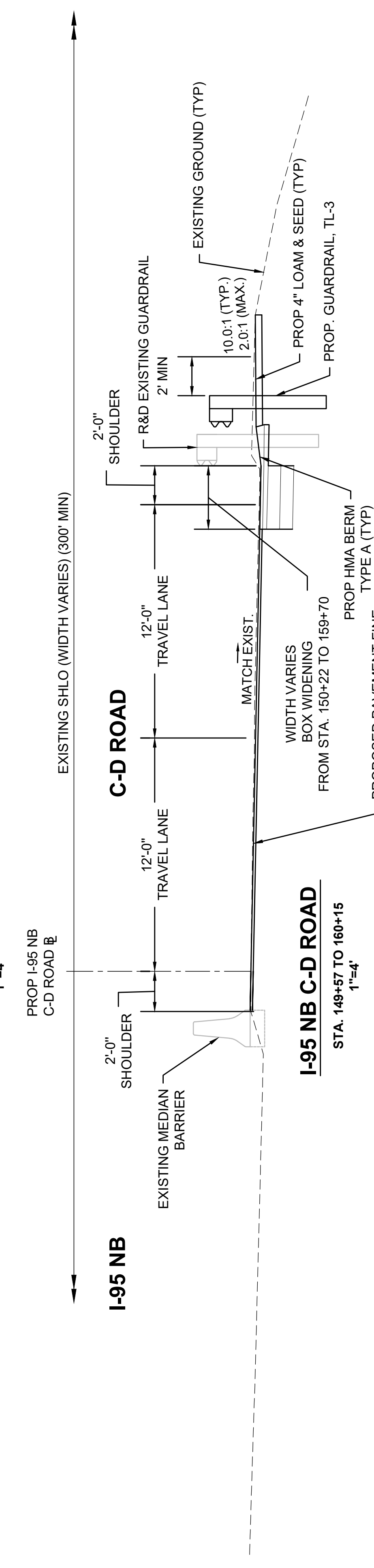
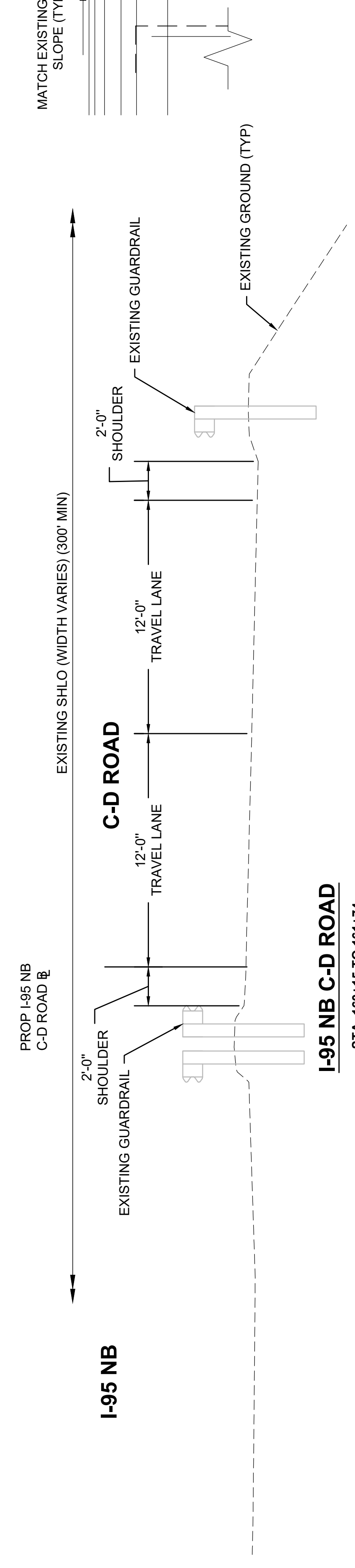
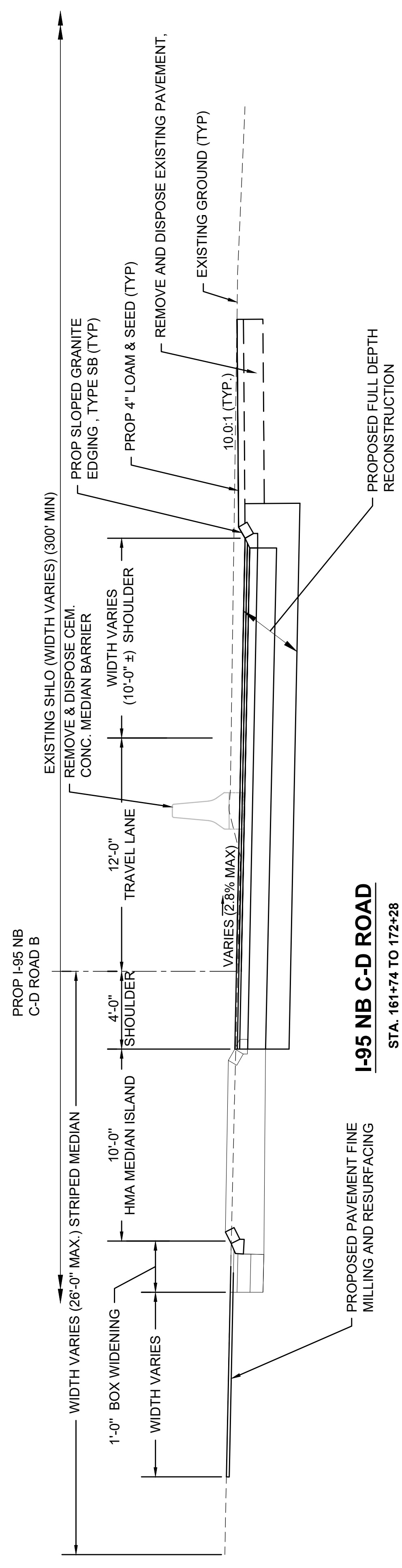
- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
- INTERMEDIATE** 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
- SPECIAL BORROW:** 8" GRAVEL BORROW, TYPE B OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN 8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE WITH SUBSECTION 170.60



BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	24
PROJECT FILE NO. 609516			

TYPICAL SECTIONS 2 OF 2

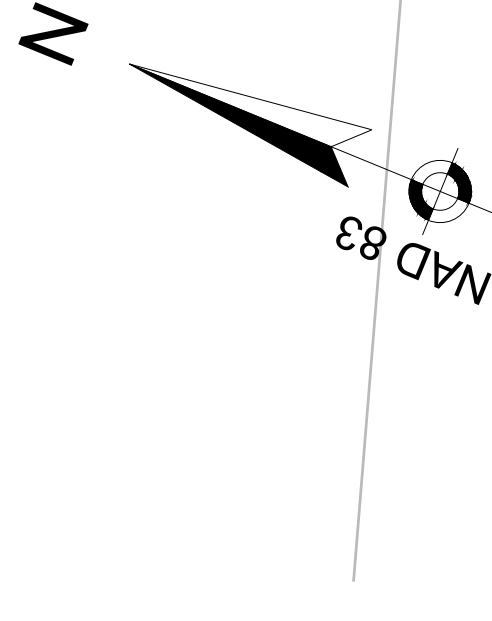


NOTE:
1. SHEETING SHALL BE CUT TO THE DEPTH 6 INCHES BELOW THE BOTTOM OF THE FULL DEPTH PAVEMENT

MEDIAN BARRIER WORK DETAIL
SCALE: 3/4" = 1' - 0"

HIGHWAY GUARD DETAILS

STA. 119+86 RT - STA. 136+22 RT GUARDRAIL, TL-3 (SINGLE FACED)
STA. 136+22 RT - STA. 137+63 RT GUARDRAIL - CURVED, TL-3 (SINGLE FACED)
STA. 137+63 - STA. 137+75 RT TRAILING ANCHORAGE (SINGLE FACED)



1960 MAIN BASELINE (SHLO 4999) R=8000.00' L=1017.68'

260 261 261±04.80

100 FT BUFFER ZONE

APPROXIMATE TOWN LINE - BURLINGTON
APPROXIMATE TOWN LINE - LEXINGTON

YANKEE DIVISION HIGHWAY - NORTHEAST EXPRESSWAY INTERCHANGE
(INTERSTATE 95/ROUTE 128 - ROUTE 3 INTERCHANGE)
(STATE HIGHWAY LAYOUTS 3988 - 4032 - 4998 - 4999 - 7136 - 8178)

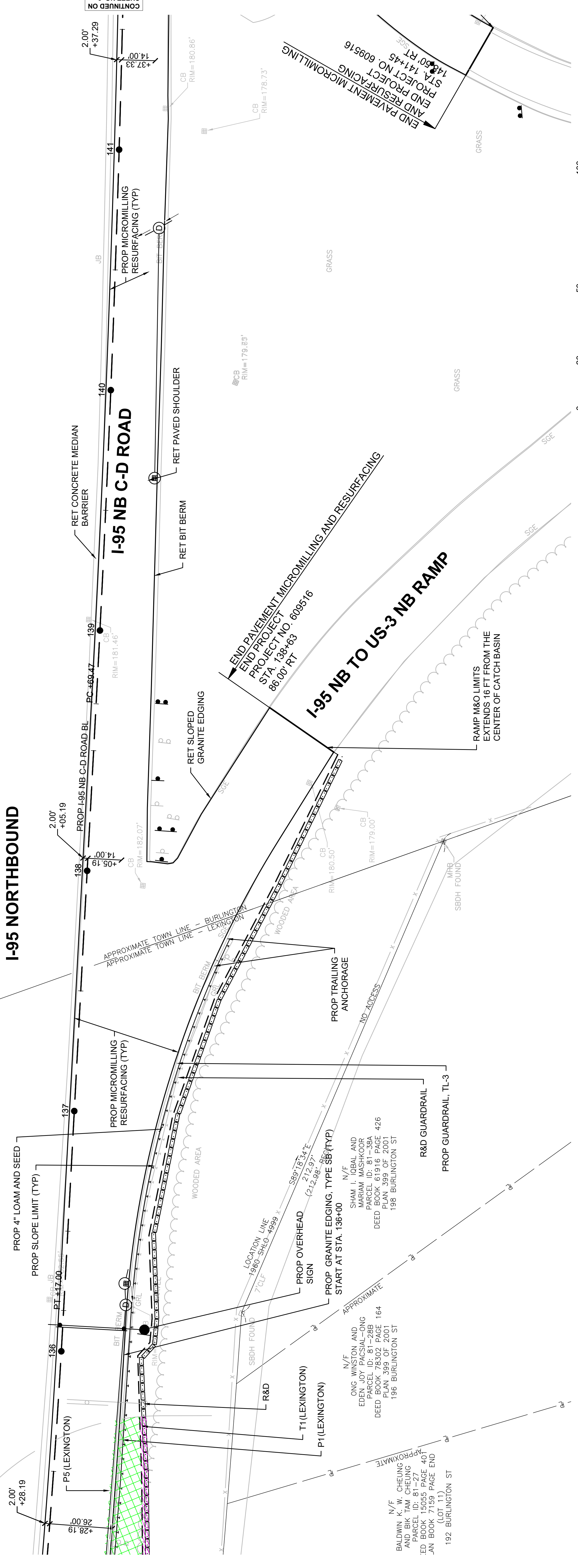
BURLINGTON
I-95 / ROUTE 3 INTERCHANGE
CONSTRUCTION PLANS
SHEET 1 OF 8

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	24
PROJECT FILE NO. 609516			

I-95 NORTHBOUND

I-95 NB C-D ROAD

I-95 NB TO US-3 NB RAMP



CONTINUED ON SHEET NO. 8

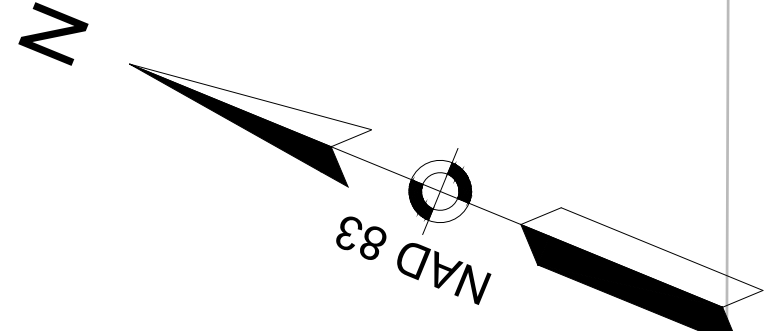
END PAVEMENT MICROMILLING AND RESURFACING PROJECT NO. 609516 STA. 141+45 TO STA. 145+50 RT



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

HIGHWAY GUARD DETAILS

NONE

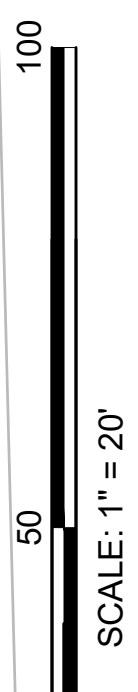
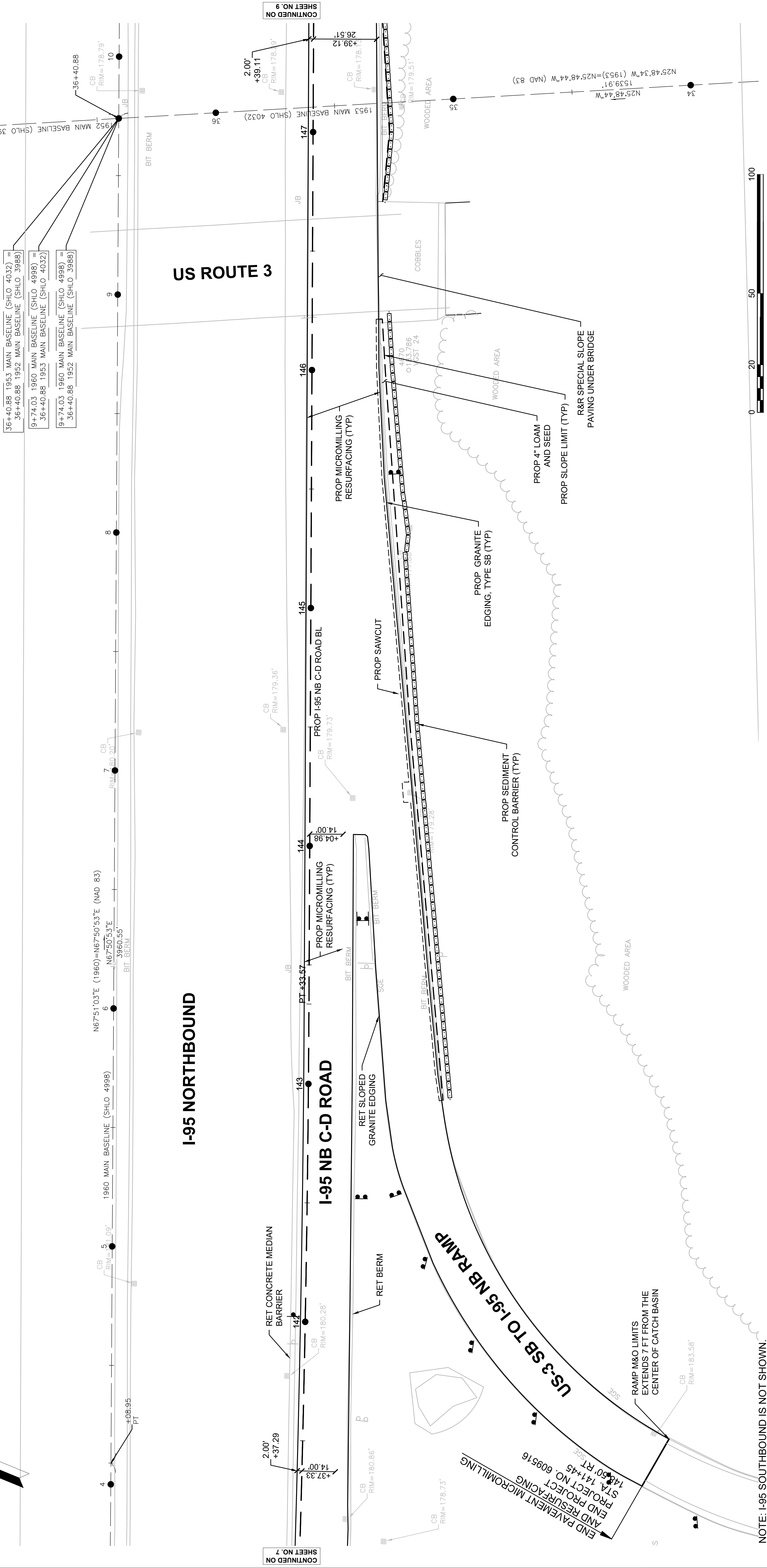


BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	24
PROJECT FILE NO. 609516			

CONSTRUCTION PLANS
SHEET 2 OF 8

YANKEE DIVISION HIGHWAY - NORTHEAST EXPRESSWAY INTERCHANGE
(INTERSTATE 95/ROUTE 128 - ROUTE 3 INTERCHANGE)
(STATE HIGHWAY LAYOUTS 3988 - 4032 - 4998 - 4999 - 7136 - 8178)



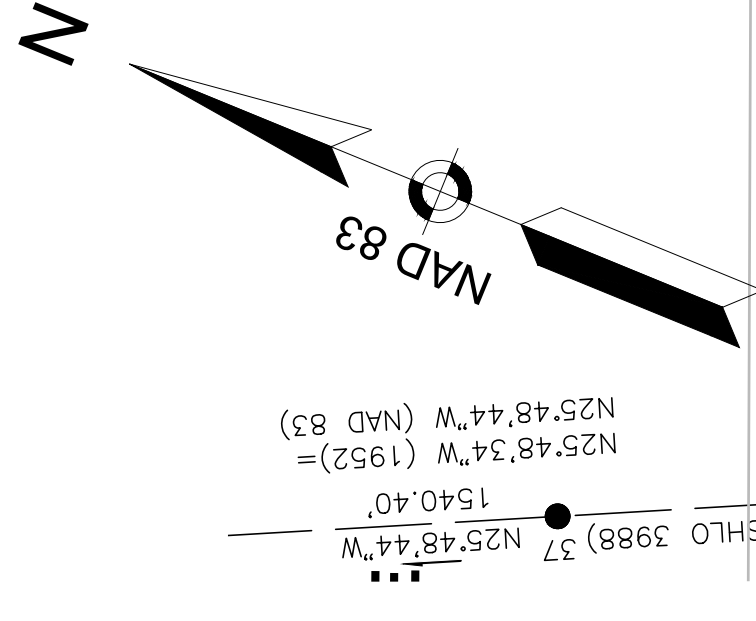
NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

CONTINUED ON SHEET NO. 7

CONTINUED ON SHEET NO. 9

HIGHWAY GUARD DETAILS

- STA. 149+57 RT - STA. 150+07 RT TANGENT END TREATMENT FOR GUARDRAIL, TL-3 (SINGLE FACED)
- STA. 150+07 RT - STA. 150+46 RT GUARDRAIL, TL-3 (SINGLE FACED)
- STA. 150+46 RT - STA. 150+81 RT TRANSITION TO NCHRP 350 GUARDRAIL
- STA. 151+89 RT - STA. 152+39 RT TANGENT END TREATMENT FOR GUARDRAIL, TL-3 (SINGLE FACED)
- STA. 152+39 RT - STA. 159+30 RT GUARDRAIL, TL-3 (SINGLE FACED)



**YANKEE DIVISION HIGHWAY - NORTHEAST EXPRESSWAY INTERCHANGE
(INTERSTATE 95/ROUTE 128 - ROUTE 3 INTERCHANGE)**
(STATE HIGHWAY LAYOUTS 3988 - 4032 - 4998 - 4999 - 7136 - 8178)

US ROUTE 3

I-95 NORTHBOUND

I-95 NB C-D ROAD

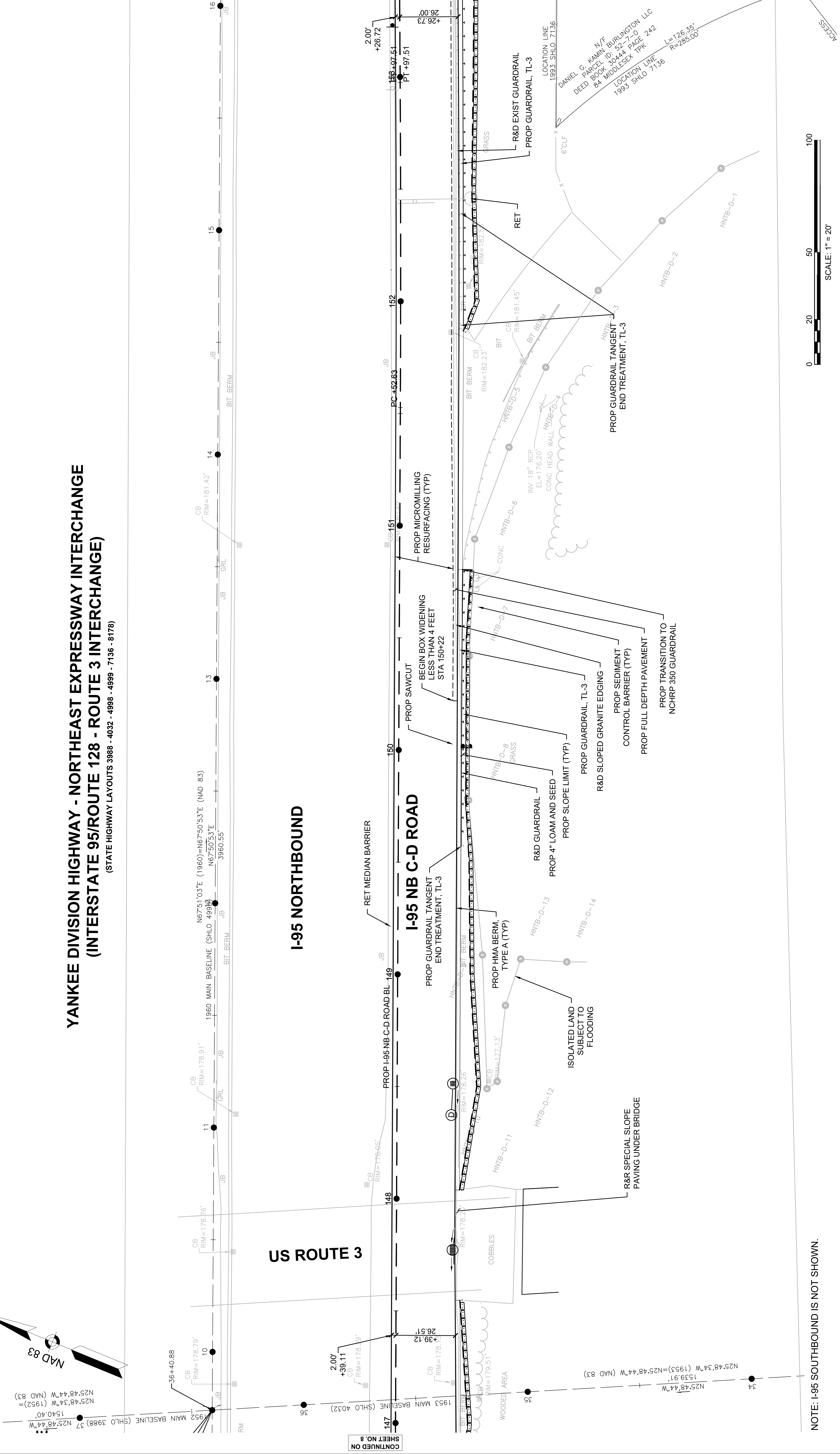
SHEET NO. 8

SHEET NO. 10

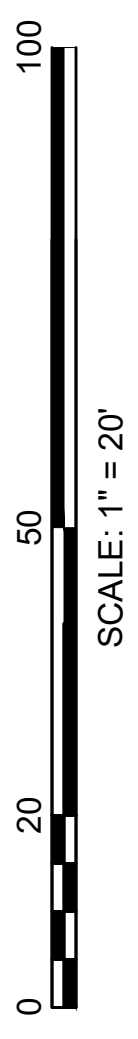
CONTINUED ON

CONTINUED ON

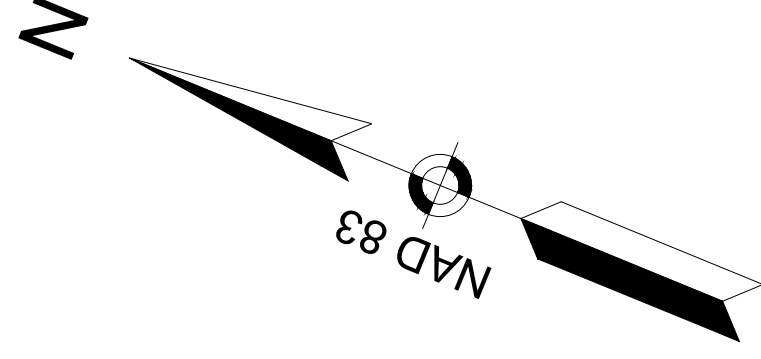
BURLINGTON I-95 / ROUTE 3 INTERCHANGE			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	24
PROJECT FILE NO. 609516		CONSTRUCTION PLANS	
SHEET 3 OF 8			



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.



HIGHWAY GUARD DETAILS
 STA. 152+39 RT - STA. 159+30 RT GUARDRAIL, TL-3 (SINGLE FACED)

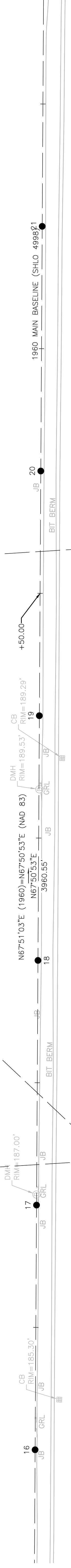


BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

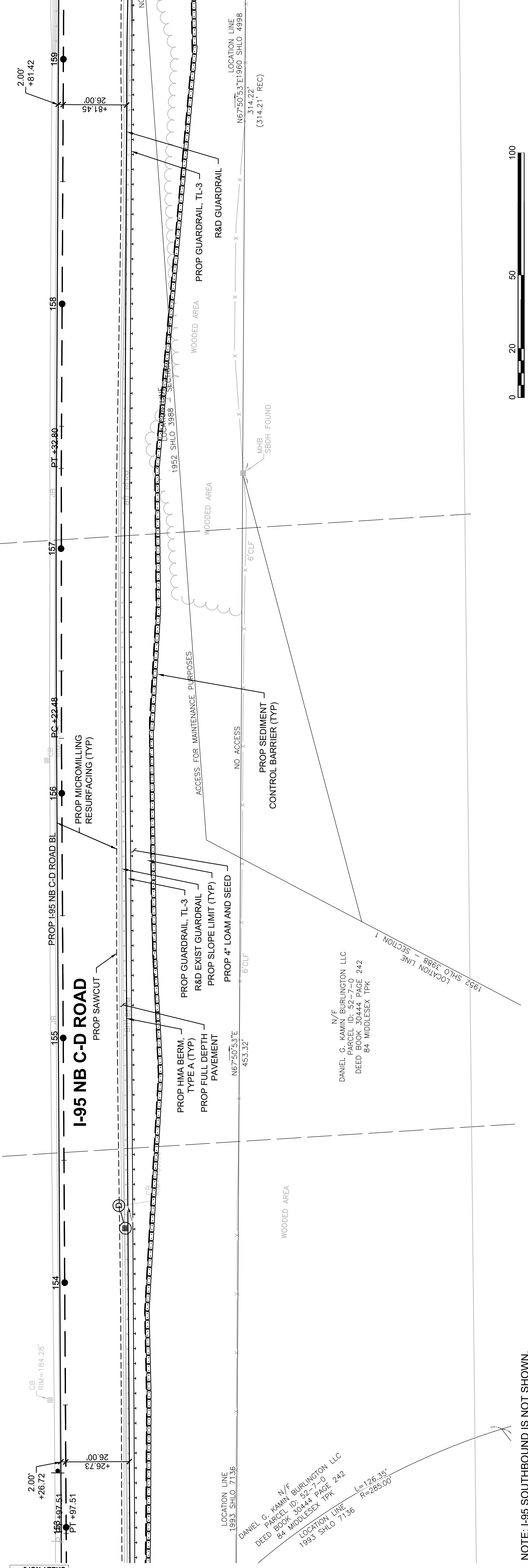
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	24
PROJECT FILE NO. 609516			

CONSTRUCTION PLANS
SHEET 4 OF 8

YANKEE DIVISION HIGHWAY
(INTERSTATE 95/ROUTE 128)
 (STATE HIGHWAY LAYOUTS 4998)

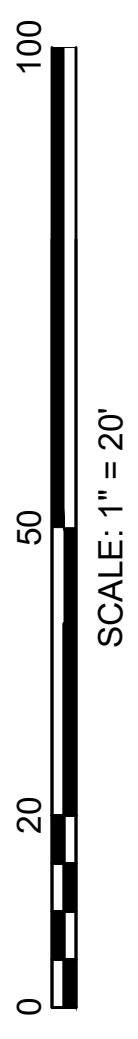


I-95 NORTHBOUND



CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

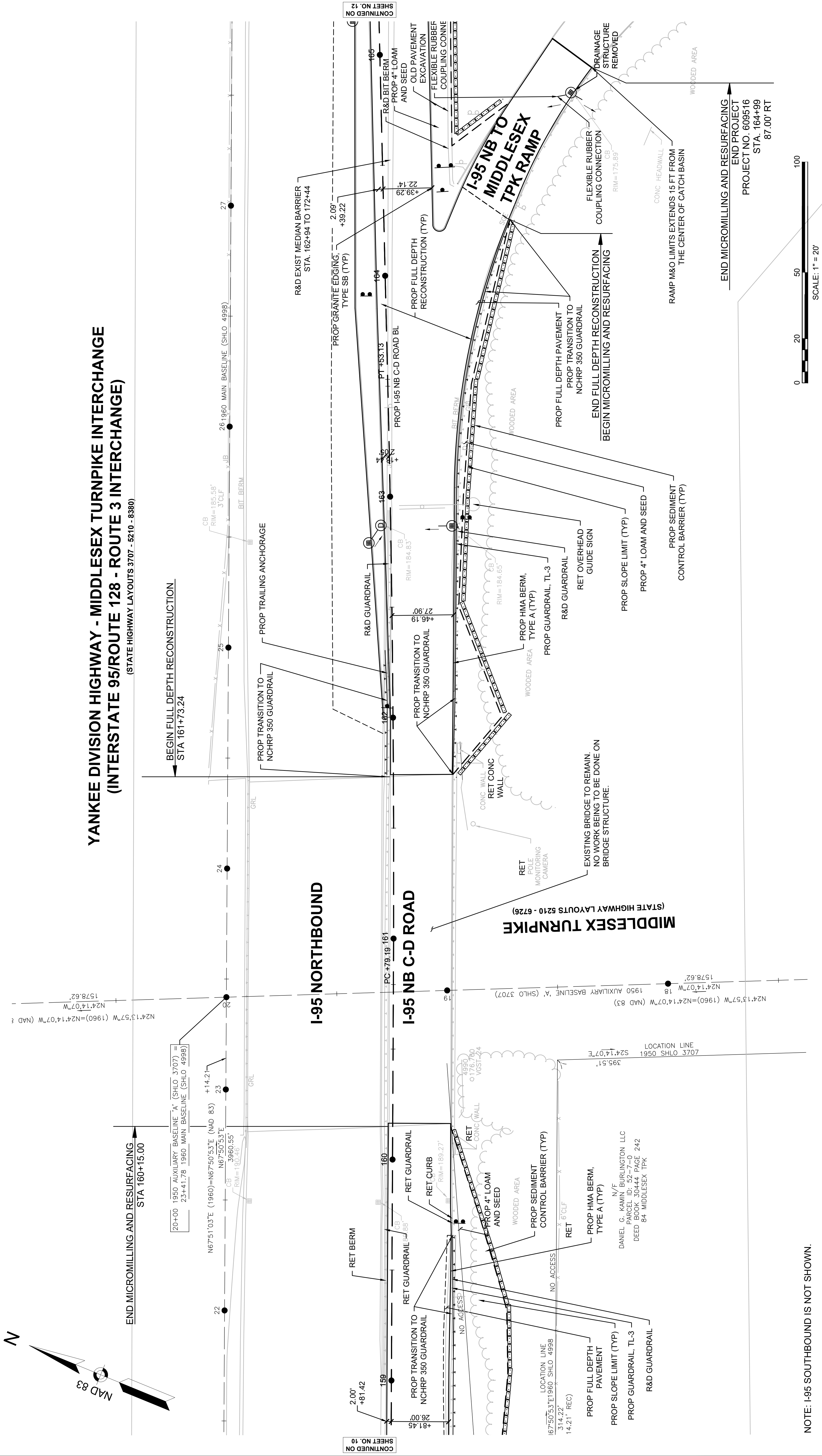
BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	24
PROJECT FILE NO. 609516			

CONSTRUCTION PLANS
SHEET 5 OF 8

YANKEE DIVISION HIGHWAY - MIDDLESEX TURNPIKE INTERCHANGE
(INTERSTATE 95/ROUTE 128 - ROUTE 3 INTERCHANGE)
(STATE HIGHWAY LAYOUTS 3707 - 5210 - 8380)

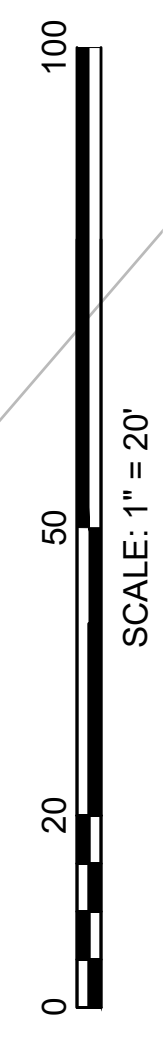
- HIGHWAY GUARD DETAILS**
- STA. 152+39 RT - STA. 159+30 RT GUARDRAIL, TL-3 (SINGLE FACED)
 - STA. 159+30 RT - STA. 159+66 RT TRANSITION TO NCHRP 350 GUARDRAIL (SINGLE FACED)
 - STA. 161+74 RT - STA. 162+09 RT TRANSITION TO NCHRP 350 GUARDRAIL (SINGLE FACED)
 - STA. 162+09 RT - STA. 163+16 RT GUARDRAIL, TL-3 (SINGLE FACED)
 - STA. 163+16 RT - STA. 163+92 RT GUARDRAIL - CURVED, TL-3 (SINGLE FACED)
 - STA. 163+92 RT - STA. 164+24 RT TRANSITION TO NCHRP 350 GUARDRAIL (DOUBLE FACED)
 - STA. 161+73 LT - STA. 162+08 LT TRANSITION TO NCHRP 350 GUARDRAIL (DOUBLE FACED)
 - STA. 162+08 LT - STA. 162+21 LT GUARDRAIL, TL-3 (SINGLE FACED)
 - STA. 162+21 LT - STA. 162+33 LT TRAILING ANCHORAGE (DOUBLE FACED)



DANIEL G. KAMIN BURLINGTON LLC
DEED BOOK 30424 PAGE 242
84 MIDDLESEX TPK

NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

END MICROMILLING AND RESURFACING
END PROJECT
PROJECT NO. 609516
STA. 164+99
87.00' RT

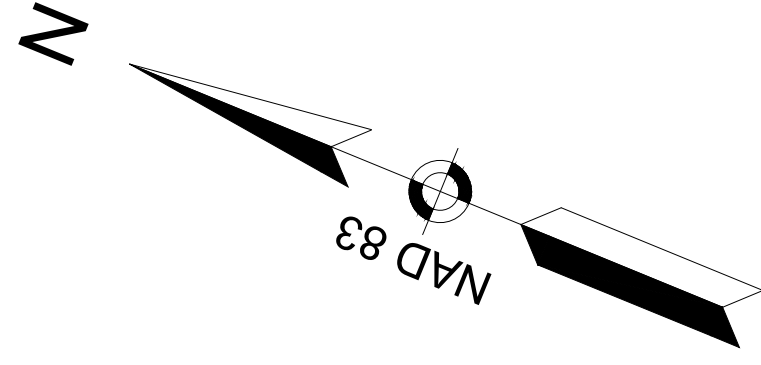


CONTINUED ON SHEET NO. 10

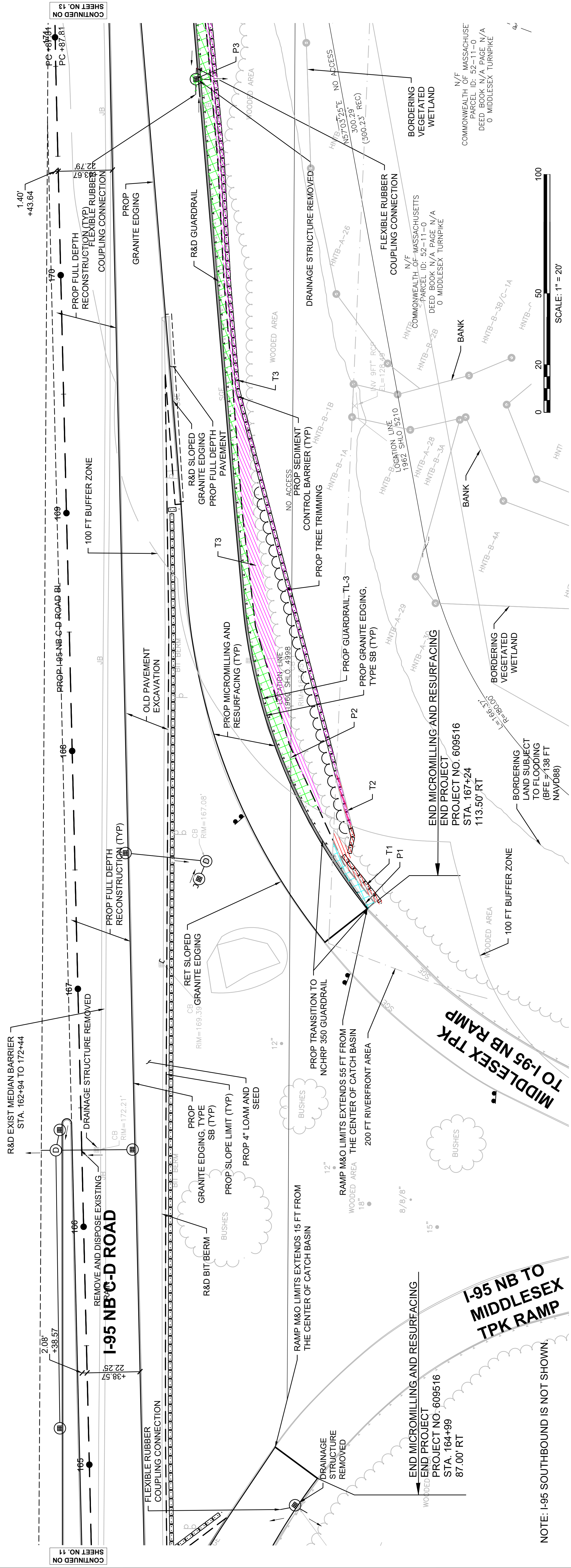
CONTINUED ON SHEET NO. 12

HIGHWAY GUARD DETAILS

STA. 167+31 RT - STA. 167+60 RT TRANSITION TO NCHRP 350 GUARDRAIL (SINGLE FACED)
 STA. 167+60 RT - STA. 168+61 RT GUARDRAIL - CURVED, TL-3 (SINGLE FACED)
 STA. 168+61 RT - STA. 175+76 RT GUARDRAIL, TL-3 (SINGLE FACED)



I-95 NORTHBOUND



CONTINUED ON SHEET NO. 11

CONTINUED ON SHEET NO. 13

IMPACT ID	WPA RESOURCE	EFFECTIVE FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P1)	200-FOOT RIVERFRONT AREA	HNTB - B	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	152 SQ. FT
PERMANENT (P2)	100-FOOT BUFFER ZONE	HNTB - A	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	8,130 SQ. FT
PERMANENT (P3)	100-FOOT BUFFER ZONE	HNTB - A	MINOR DRAINAGE WORK	30 SQ. FT
TEMPORARY (T1)	200-FOOT RIVERFRONT AREA	HNTB - B	PLACEMENT OF EROSION & SEDIMENT CONTROLS	38 SQ. FT
TEMPORARY (T2)	100-FOOT BUFFER ZONE & 200-FOOT RIVERFRONT AREA	HNTB - A & HNTB - B	PLACEMENT OF EROSION & SEDIMENT CONTROLS	36 SQ. FT
TEMPORARY (T3)	100-FOOT BUFFER ZONE	HNTB - A	PLACEMENT OF EROSION & SEDIMENT CONTROLS	2,780 SQ. FT

NOTE: IMPACTS TO JURISDICTIONAL WPA AREAS ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS. WHERE T REPRESENTS A TEMPORARY IMPACT AND P REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

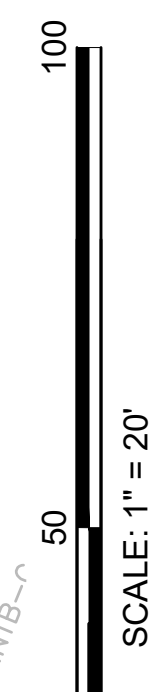
LEGEND

[Pattern]	100-FOOT BUFFER ZONE
[Pattern]	200-FOOT RIVERFRONT AREA
[Pattern]	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
[Pattern]	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
[Pattern]	PERMANENT IMPACT TO 200-FOOT RIVERFRONT AREA
[Pattern]	TEMPORARY IMPACT TO 200-FOOT RIVERFRONT AREA
[Pattern]	EROSION & SEDIMENT CONTROLS

BURLINGTON
 I-95 / ROUTE 3 INTERCHANGE
 CONSTRUCTION PLANS
 SHEET 6 OF 8

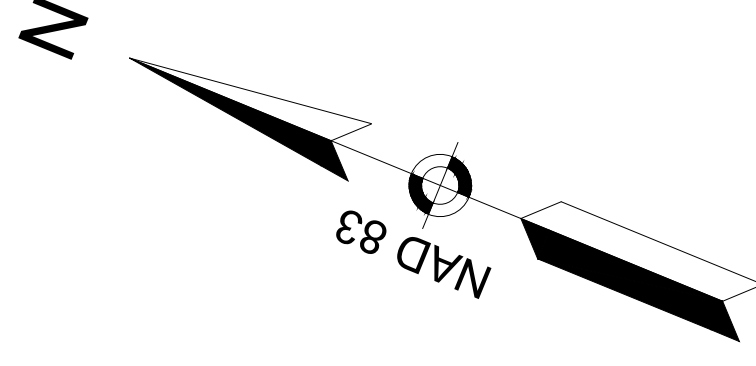
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		12	24
PROJECT FILE NO. 609516			

NOTE: I-95 SOUTHBOUND IS NOT SHOWN.



HIGHWAY GUARD DETAILS

STA. 168+61 RT - STA. 175+76 RT GUARDRAIL, TL-3 (SINGLE FACED)
 STA. 175+76 RT - STA. 176+12 RT TRANSITION TO NCHRP 350 GUARDRAIL (SINGLE FACED)



IMPACT TYPE	WPA RESOURCE	EFFECTIVE FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P2)	100-FOOT BUFFER ZONE	HNTB - A	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	8,130 SQ. FT
PERMANENT (P3)	100-FOOT BUFFER ZONE	HNTB - A	MINOR DRAINAGE WORK	30 SQ. FT
PERMANENT (P4)	100-FOOT BUFFER ZONE	HNTB - A	MINOR DRAINAGE WORK	105 SQ. FT
TEMPORARY (T3)	100-FOOT BUFFER ZONE	HNTB - A	PLACEMENT OF EROSION & SEDIMENT CONTROLS AND TEMPORARY CONSTRUCTION DISTURBANCE	2,780 SQ. FT

NOTE: IMPACTS TO JURISDICTIONAL WPA ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS. WHERE T REPRESENTS A TEMPORARY IMPACT AND P REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	13	24
PROJECT FILE NO. 609516		CONSTRUCTION PLANS	
		SHEET 7 OF 8	

PROJECT NO. 609516

END PAVEMENT MICROMILLING AND RESURFACING
 STA 176+12.00
 N 2999788.1373
 E 7344446.1469

YANKEE DIVISION HIGHWAY
(INTERSTATE 95/ROUTE 128)
 (STATE HIGHWAY LAYOUTS 4998)

END FULL DEPTH RECONSTRUCTION
 BEGIN MICROMILLING AND RESURFACING
 STA 172+28.09

N67°51'03"E (1960)=N67°50'53"E (NAD 83)
 34+167.50'53"E
 3960.55'

R&D EXIST MEDIAN BARRIER
 STA. 162+94 TO 172+44

FLEXIBLE RUBBER COUPLING CONNECTION INTO EXISTING ISLAND
 PROP GRANITE EDGING, TYPE SB (TYP)

PROP FULL DEPTH RECONSTRUCTION (TYP)

PROP MICROMILLING AND RESURFACING (TYP)

MIDDLESEX TPK TO I-95
NB RAMP

PROP MICROMILLING AND RESURFACING (TYP)

FLEXIBLE RUBBER COUPLING CONNECTION

DRAINAGE STRUCTURE REMOVED

BORDERING LAND SUBJECT TO FLOODING (BFE = 138 FT NAVD88)

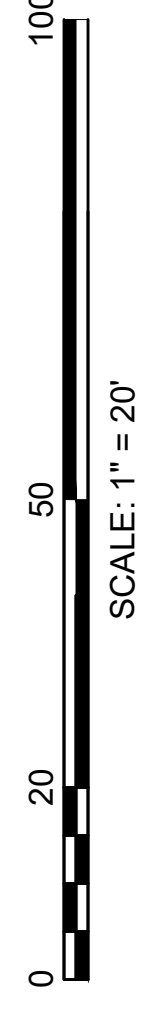
N/F BURLINGTON OWNER LP
 PARCEL ID: 56-23-0
 L. C. CERT#279277
 L. C. DOC#1913623
 L. C. C. 36291A
 5 WHEELER RD

N/F MASSACHUSETTS DEED BOOK N/A PAGE N/A
 0 MIDDLESEX TURNPIKE

N/F ACCO PROPERTY LLC
 PARCEL ID: 52-S-0
 L. C. CERT#278683
 L. C. DOC#1907025
 L. C. C. 16941D (LOT 4)
 1 ROUNDER WAY

LEGEND	
[White Box]	100-FOOT BUFFER ZONE
[White Box]	200-FOOT RIVERFRONT AREA
[Green Hatched Box]	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
[Purple Hatched Box]	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
[Blue Hatched Box]	PERMANENT IMPACT TO 200-FOOT RIVERFRONT AREA
[Red Hatched Box]	TEMPORARY IMPACT TO 200-FOOT RIVERFRONT AREA
[Black Dotted Box]	EROSION & SEDIMENT CONTROLS

NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

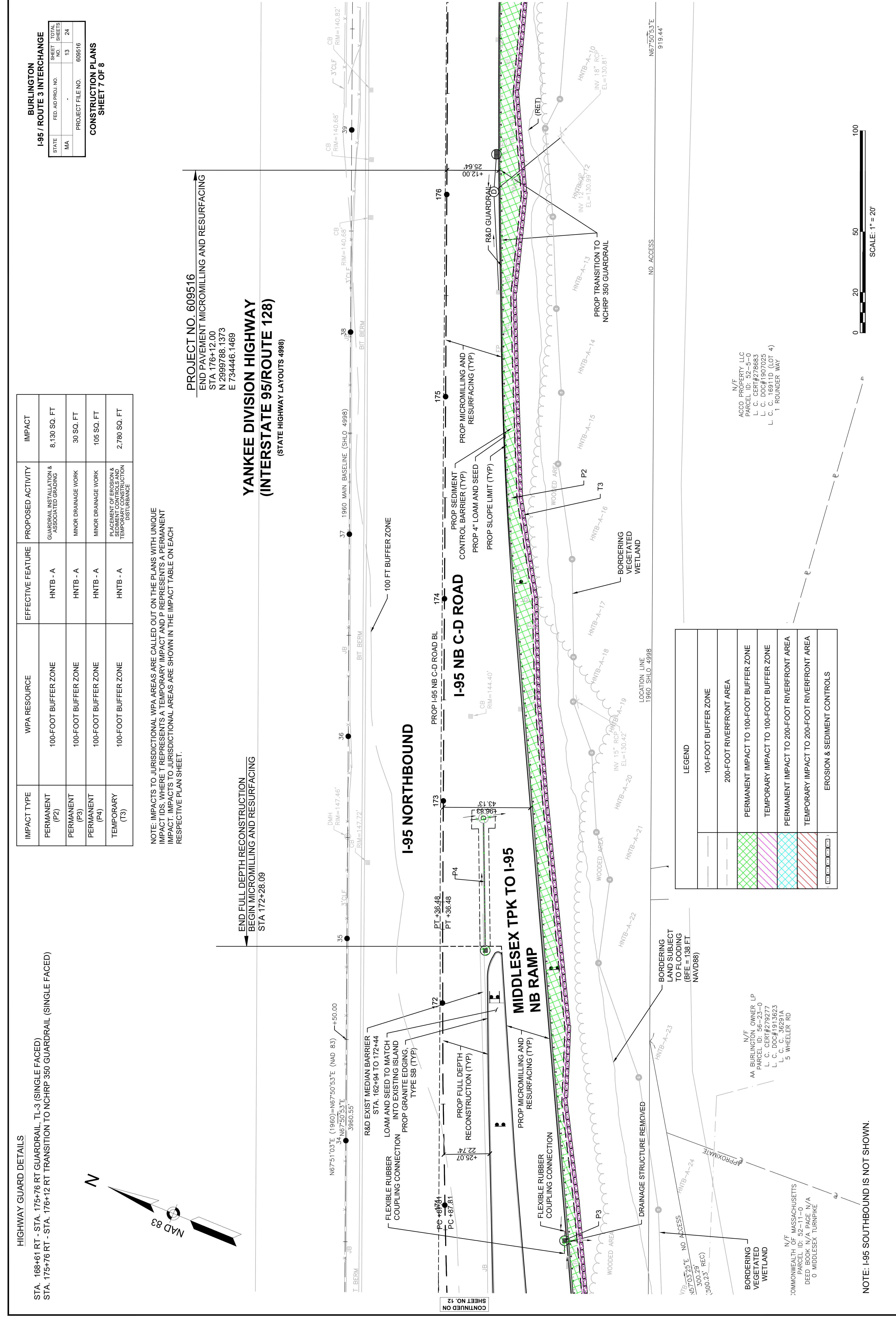


I-95 NORTHBOUND

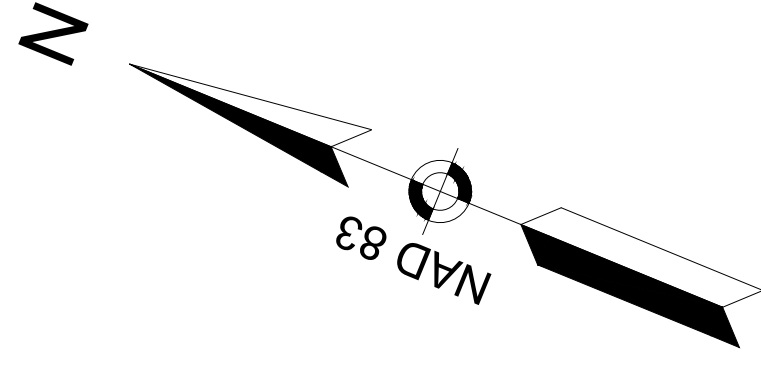
SHEET NO. 12
 CONTINUED ON

I-95 NB C-D ROAD

SHEET NO. 14
 CONTINUED ON



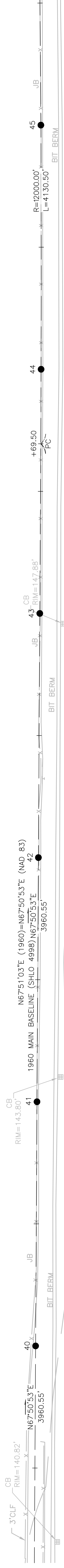
HIGHWAY GUARD DETAILS



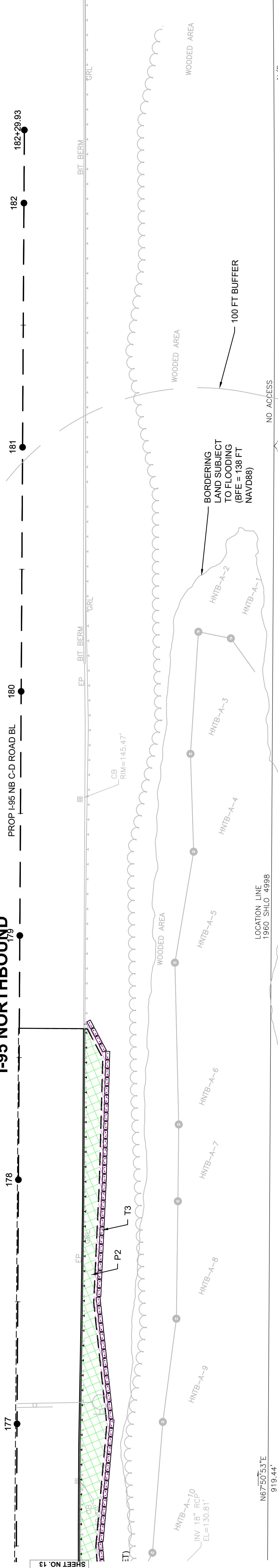
IMPACT TYPE	WPA RESOURCE	EFFECTIVE FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P2)	100-FOOT BUFFER ZONE	HNTB - A	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	8,130 SQ. FT
TEMPORARY (T3)	100-FOOT BUFFER ZONE	HNTB - A	PLACEMENT OF EROSION & SEDIMENT CONTROLS AND TEMPORARY CONSTRUCTION DISTURBANCE	2,780 SQ. FT

NOTE: IMPACTS TO JURISDICTIONAL WPA AREAS ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS. WHERE T REPRESENTS A TEMPORARY IMPACT AND P REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

**YANKEE DIVISION HIGHWAY
(INTERSTATE 95/ROUTE 128)**
(STATE HIGHWAY LAYOUTS 4998)



I-95 NORTHBOUND

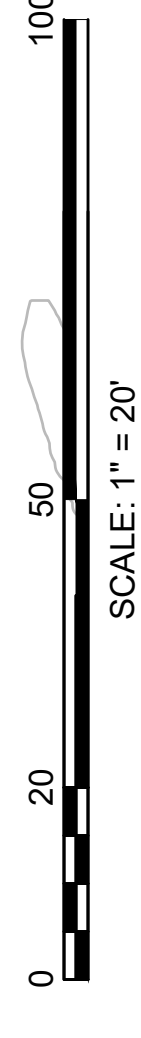


LEGEND	
[Green hatched box]	100-FOOT BUFFER ZONE
[Blue hatched box]	200-FOOT RIVERFRONT AREA
[Red hatched box]	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
[Purple hatched box]	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
[Cyan hatched box]	PERMANENT IMPACT TO 200-FOOT RIVERFRONT AREA
[Pink hatched box]	TEMPORARY IMPACT TO 200-FOOT RIVERFRONT AREA
[Black and white patterned box]	EROSION & SEDIMENT CONTROLS

NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

N/F
ACCO PROPERTY LLC
PARCEL ID: 52-5-0
L. C. CERT#278683
L. C. DOC#1907025
L. C. C. 16911D (LOT 4)
1 ROUNDER WAY

N/F
ACCO PROPERTY LLC
PARCEL ID: 52-5-0
L. C. CERT#278683
L. C. DOC#1907025
L. C. C. 16911D (LOT 4)
1 ROUNDER WAY



BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	14	24

PROJECT FILE NO. 609516

CONSTRUCTION PLANS
SHEET 8 OF 8

CONTINUED ON SHEET NO. 17

CONTINUED ON SHEET NO. 15

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

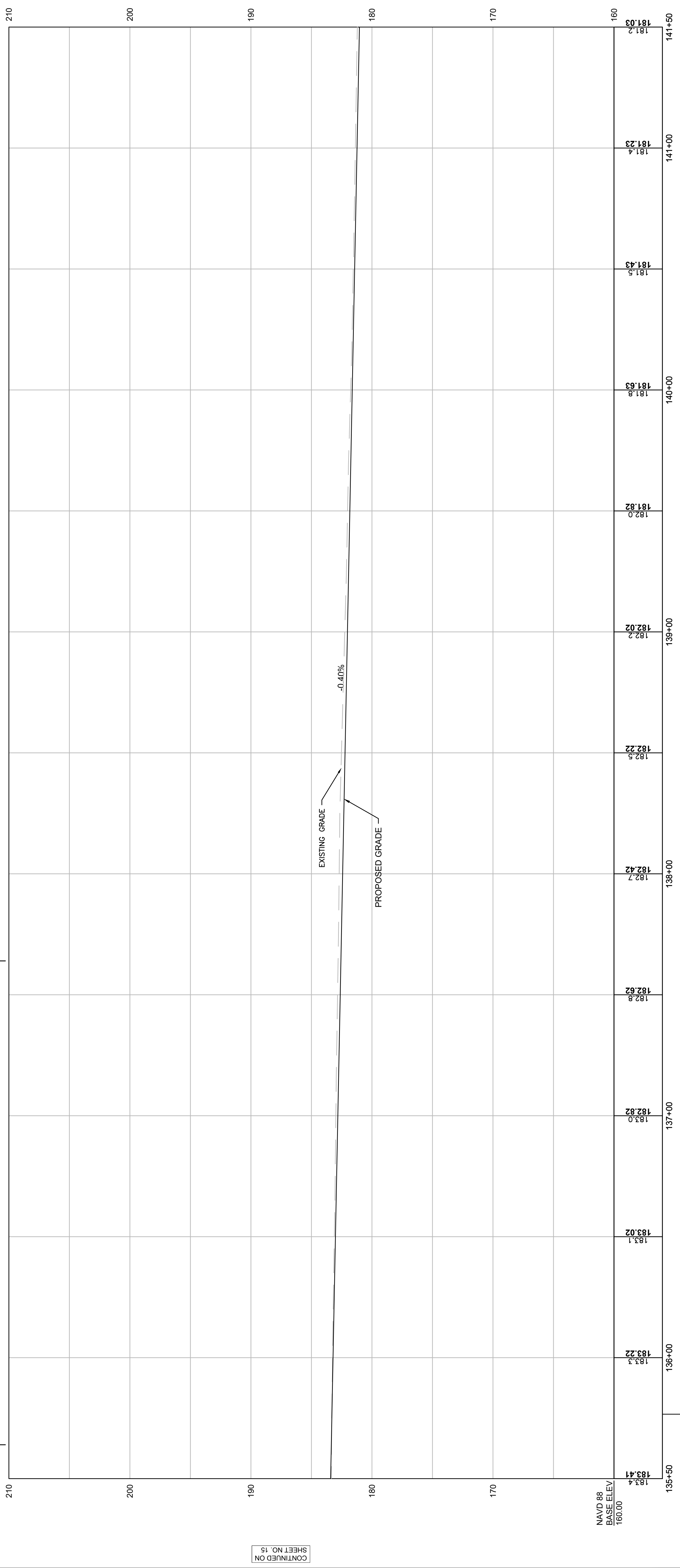
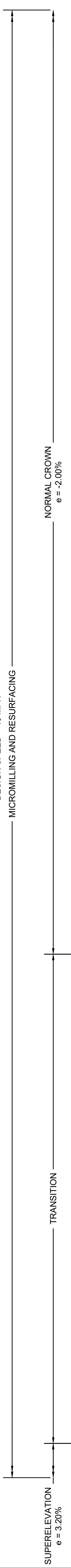
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	24
PROJECT FILE NO. 609516			

PROFILES
SHEET 6 OF 6

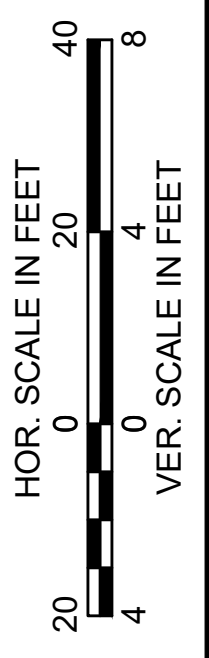
PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH

MICROMILLING AND RESURFACING



BENCHMARK: 2
TOP OF WEST BOLD
ON OVERHEAD SIGN
Elevation = 185.12'
Sta. 135+76.65, 34.27 RT



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 9

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

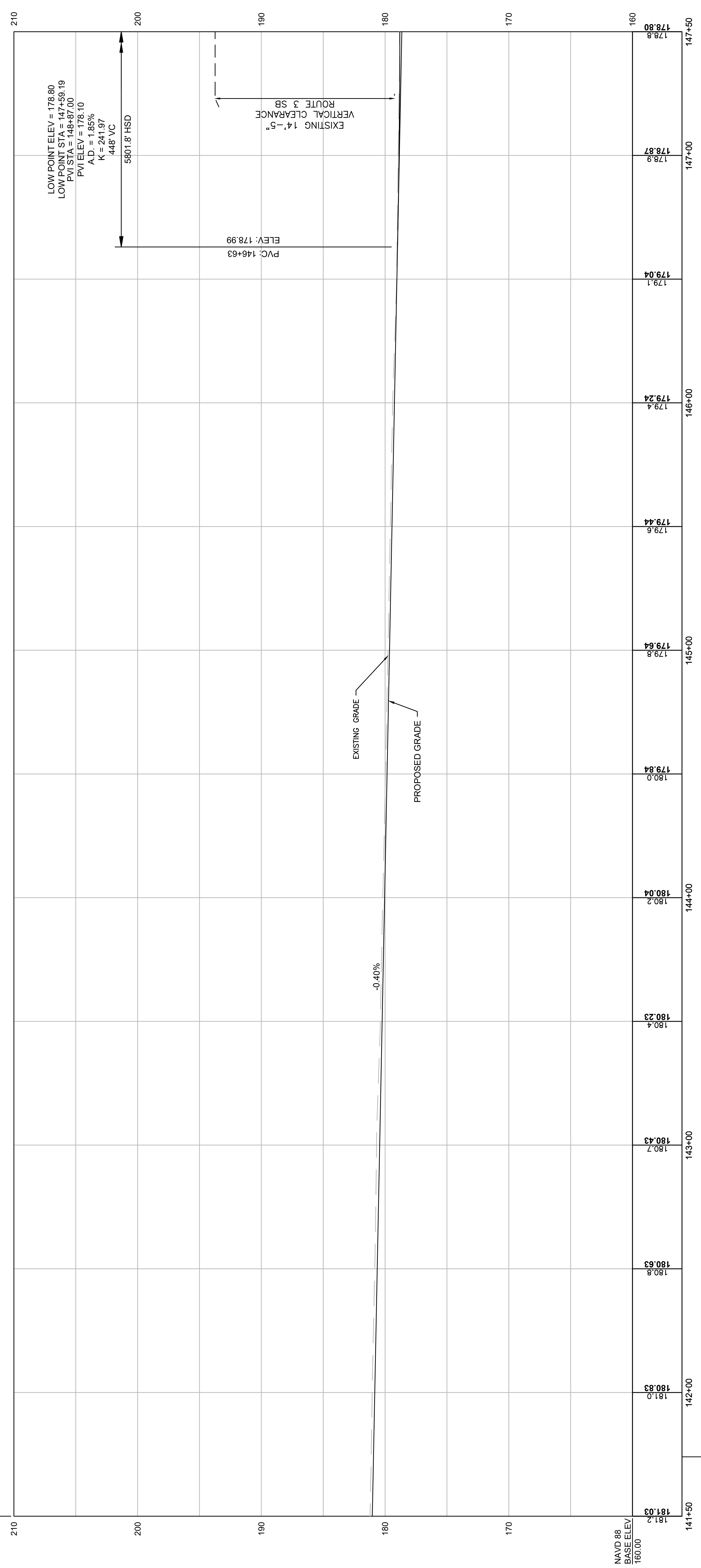
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	16	24

PROJECT FILE NO. 609516

PROFILES
SHEET 2 OF 8

PROP I-95 NB C-D ROAD
 DESIGN SPEED = 45 MPH
 MICROMILLING AND RESURFACING

NORMAL CROWN
 $\theta = -2.00\%$



CONTINUED ON SHEET NO. 16

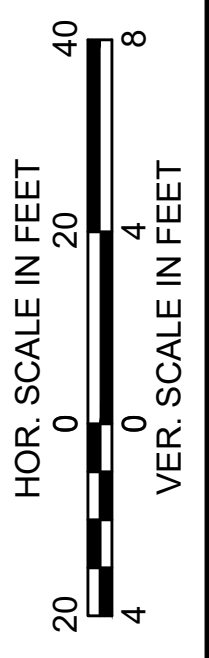
CONTINUED ON SHEET NO. 18

LOW POINT ELEV = 178.80
 LOW POINT STA = 147+59.19
 PVI STA = 148+87.00
 PVI ELEV = 178.10
 A.D. = 1.85%
 K = 241.97
 448' VC

PVC: 146+63
 ELEV: 178.99

EXISTING 14'-5"
 VERTICAL CLEARANCE
 ROUTE 3 SB

BENCHMARK 3
 Elevation = 784.23
 Sta. 141+74.03 55.74 FT



FOR CONSTRUCTION PLAN:
 SEE SHEET NO. 10

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

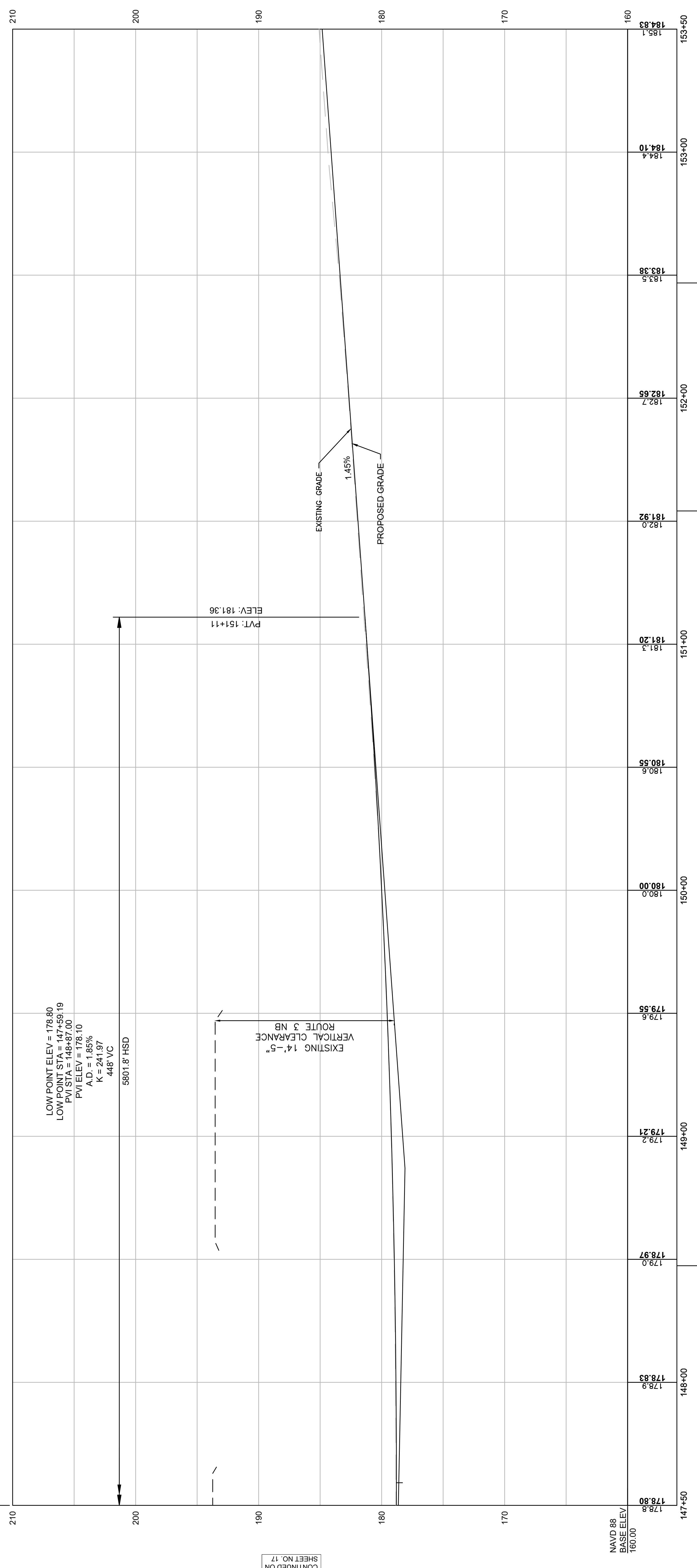
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	17	24
PROJECT FILE NO. 609516			

PROFILES
SHEET 3 OF 8

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH
MICROMILLING AND RESURFACING

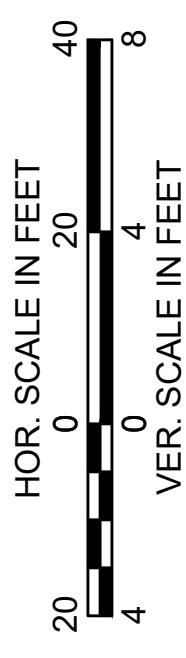
NORMAL CROWN
e = -2.00%



BENCHMARK 5
TOP OF N-NE BOLT ON
OVERHEAD SIGN
Elevation = 184.74'
Sta. 152+46.84, 28.88 RT

OUTFALL #3
EXISTING 18" RCP
INVERT ELEVATION: 176.20'
STA. 151+54.17, 63.04 RT

BENCHMARK 4
TOP OF NE BOLT ON I/P
Elevation = 182.55'
Sta. 148+47.39, 54.93 RT



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 11

CONTINUED ON
SHEET NO. 19

CONTINUED ON
SHEET NO. 17

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	18	24
PROJECT FILE NO. 609516			

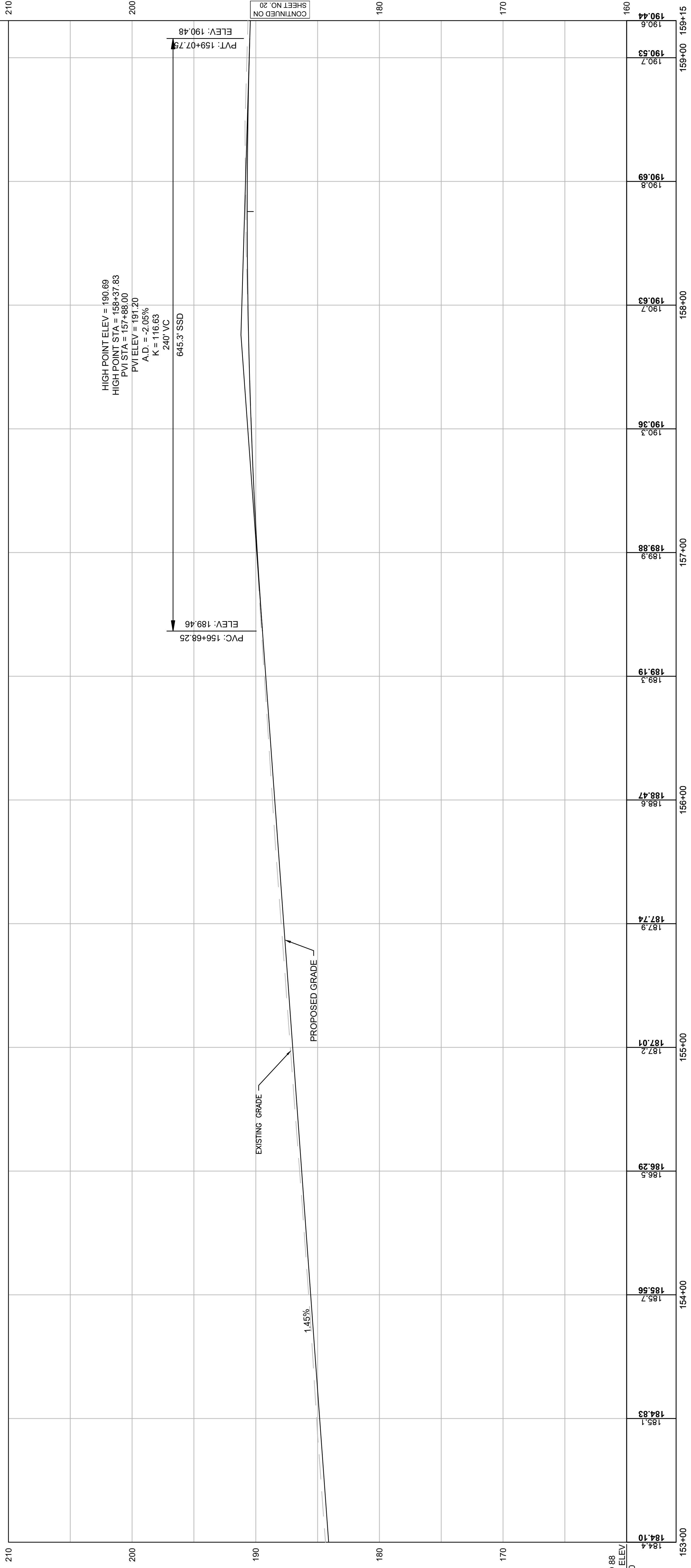
PROFILES
SHEET 4 OF 8

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH

MICROMILLING AND RESURFACING

NORMAL CROWN
 $e = -2.00\%$



CONTINUED ON SHEET NO. 18

NAVD 88
BASE ELEV
160.00



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 12

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	24
PROJECT FILE NO. 609516			

PROFILES
SHEET 5 OF 8

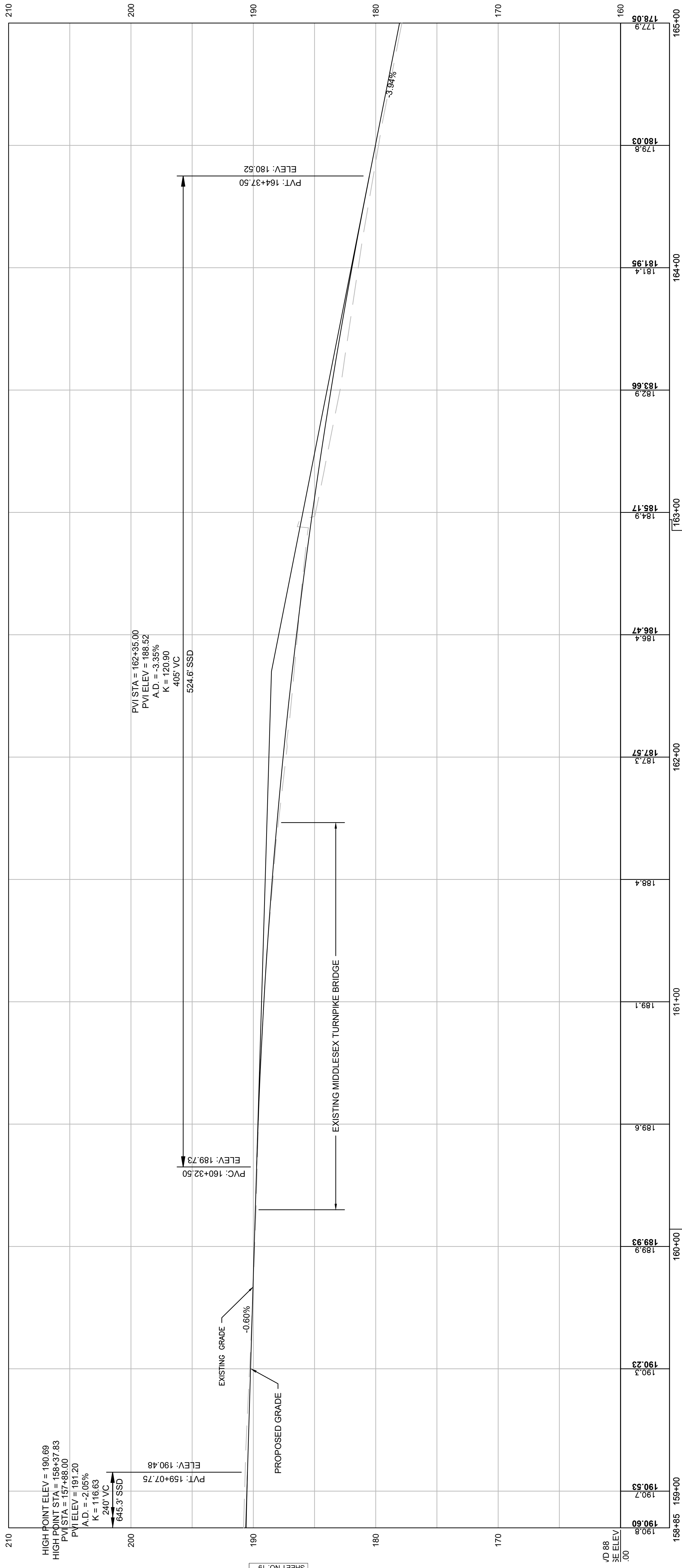
PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH
NORMAL CROWN
e = -2.00%

FULL DEPTH PAVEMENT

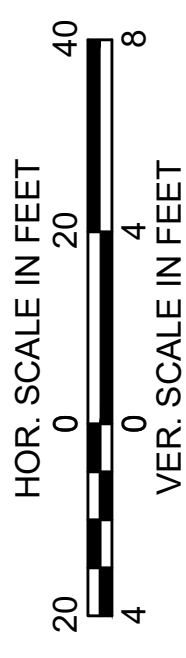
EXISTING BRIDGE

MICROMILLING AND RESURFACING



BENCHMARK 7
Elevation = 186.99
Sta. 162+97.02, 36.70 RT

BENCHMARK 6
TOP OF N-NW BOLT
ON LFL
Elevation = 185.63
Sta. 160+07.05, 43.29 RT



NOTE: EXISTING ON AND OFF RAMP FROM MIDDLESEX TURNPIKE WITHIN STATION RANGE OF 163+00 TO 172+50 ARE TO BE MILL AND OVERLAID. EXISTING PROFILES ARE TO BE MAINTAINED.

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 13

CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	20	24
PROJECT FILE NO. 609516			

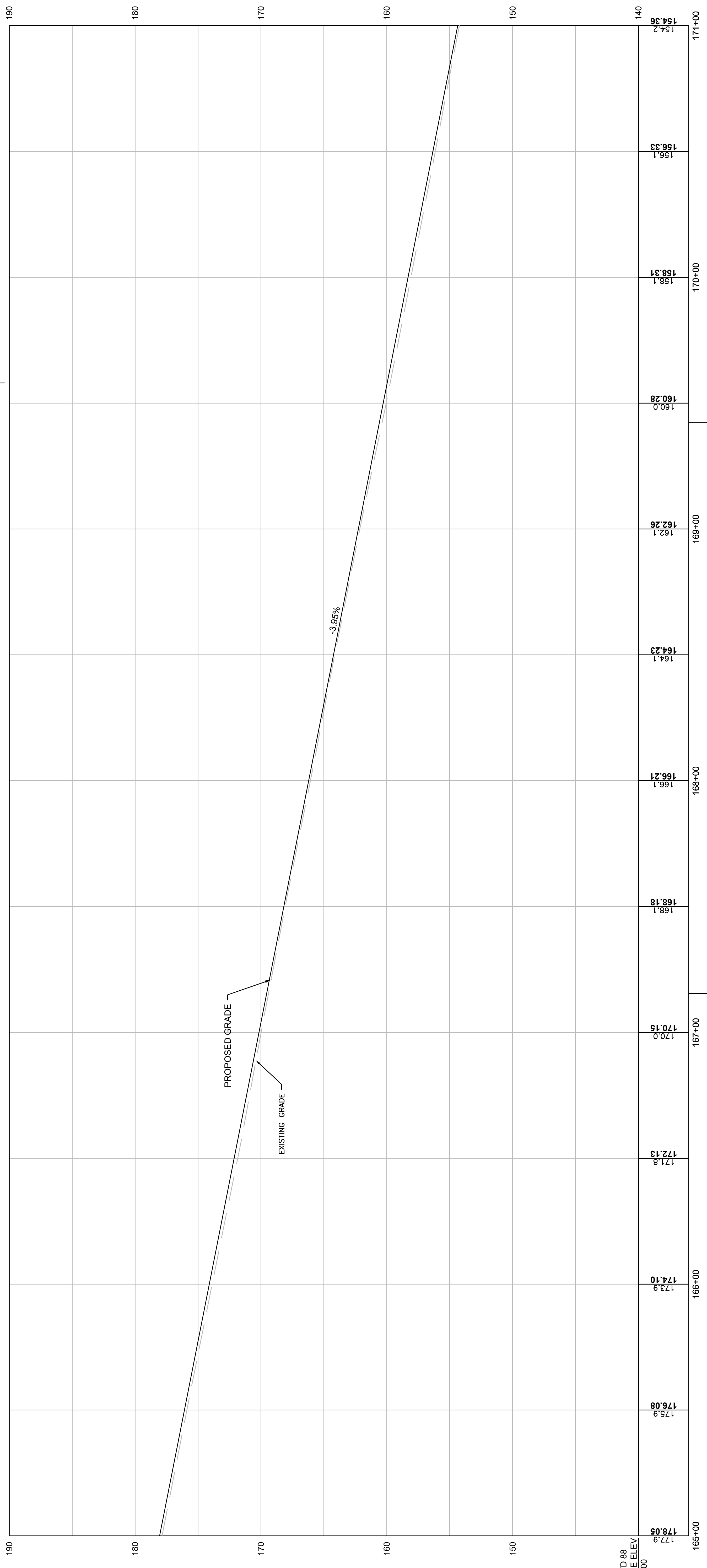
PROFILES
SHEET 6 OF 8

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH
FULL DEPTH PAVEMENT

NORMAL CROWN
e = -2.00%

TRANSITION

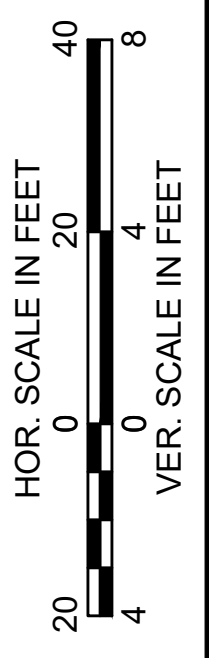


CONTINUED ON
SHEET NO. 20

CONTINUED ON
SHEET NO. 22

BENCHMARK: 8
Elevation = 170.38'
Sta. 167+15.52, 68.37 RT

OUTFALL #4
EXISTING 9 RCP
INVERT ELEVATION: 128.49'
STA. 169+42.23, 122.34 RT



NOTE: EXISTING ON AND OFF RAMP FROM MIDDLESEX TURNPIKE WITHIN STATION RANGE OF 163+00 TO 172+50 ARE TO BE MILL AND OVERLAID. EXISTING PROFILES ARE TO BE MAINTAINED.

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 13

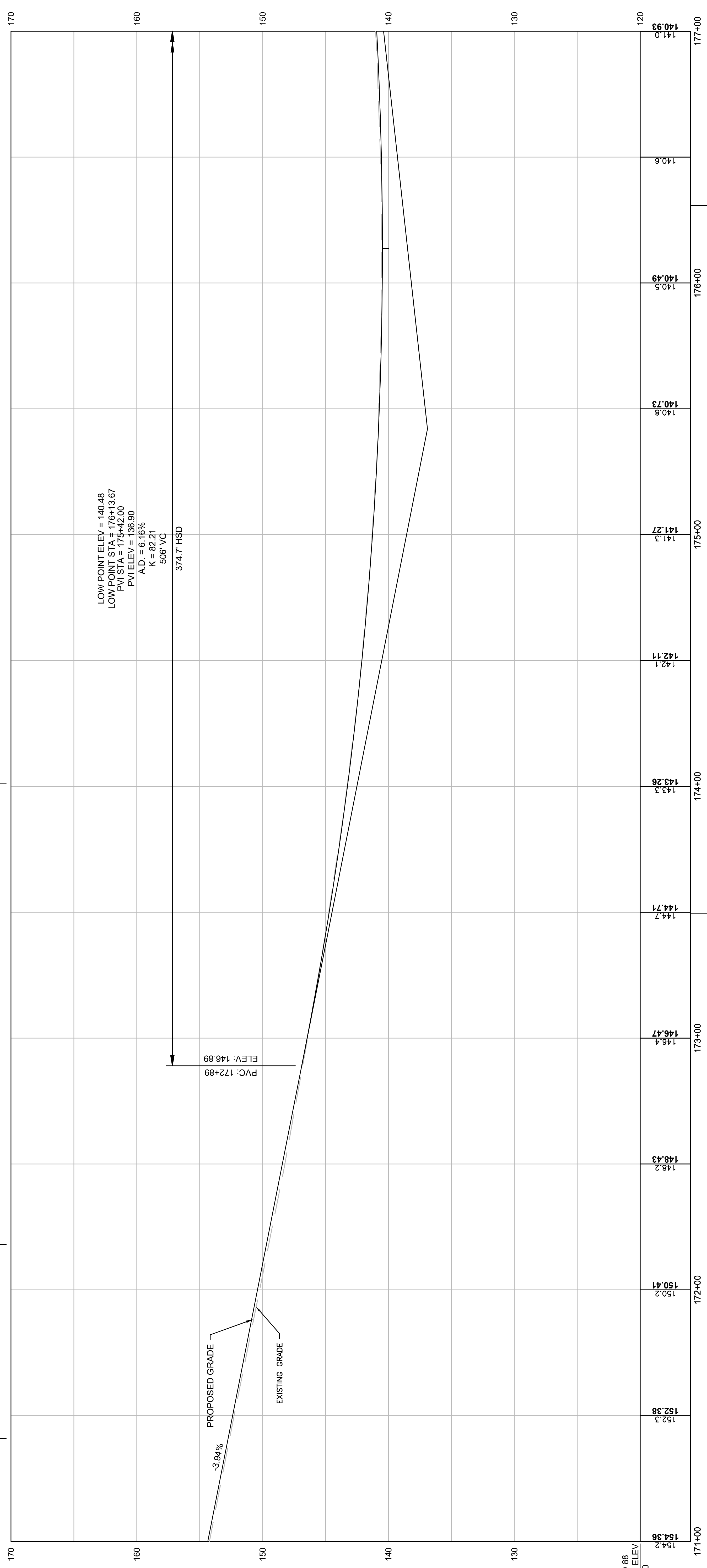
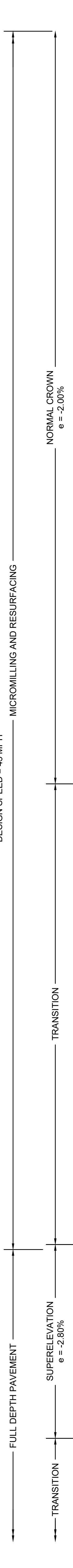
BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	21	24
PROJECT FILE NO. 609516			

PROFILES
SHEET 7 OF 8

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH

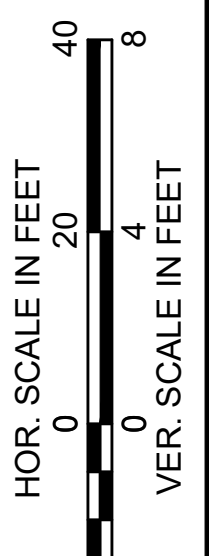


LOW POINT ELEV = 140.48
 LOW POINT STA = 176+13.67
 PVI STA = 175+42.00
 PVI ELEV = 136.90
 A.D. = 6.16%
 K = 82.21
 506' VC
 374.7' HSD

PVC: 172+89
 ELEV: 146.89

OUTFALL #6
 EXISTING 18" RCP
 INVERT ELEVATION: 130.81'
 STA. 176+307.2-367.51 FT

OUTFALL #5
 EXISTING 15" RCP
 INVERT ELEVATION: 130.42'
 STA. 173+49.63-663.07 FT



- NOTES**
- EXISTING ON AND OFF RAMP FROM MIDDLESEX TURNPIKE WITHIN STATION RANGE OF 163+00 TO 172+50 ARE TO BE MILL AND OVERLAD. EXISTING PROFILES ARE TO BE MAINTAINED.

FOR CONSTRUCTION PLAN:
 SEE SHEET NO. 14

CONTINUED ON SHEET NO. 21

CONTINUED ON SHEET NO. 23

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	22	24
PROJECT FILE NO. 609516			

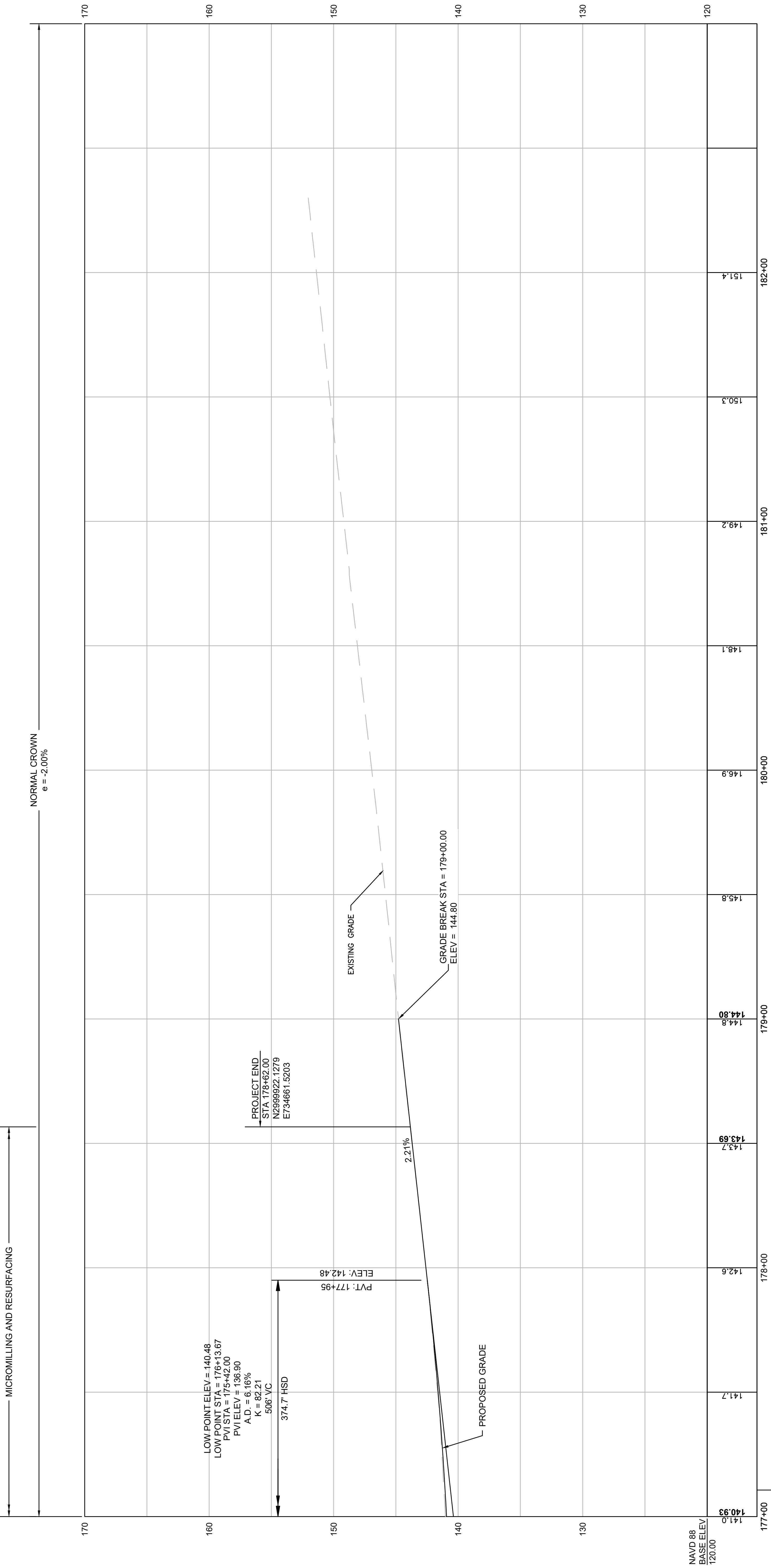
PROFILES
SHEET 8 OF 8

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH

NORMAL CROWN
e = -2.00%

MICROMILLING AND RESURFACING



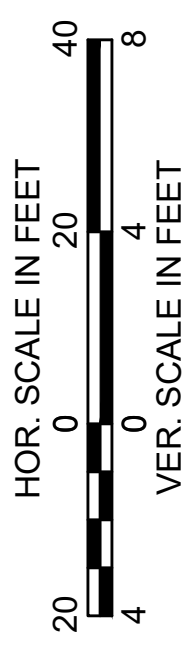
LOW POINT ELEV = 140.48
LOW POINT STA = 176+13.67
PVI STA = 175+42.00
PVI ELEV = 136.90
A.D. = 6.16%
K = 82.21
506' VC
374.7' HSD

PROJECT END
STA 178+62.00
N2999922.1279
E734661.5203

PVT: 177+95
ELEV: 142.48

GRADE BREAK STA = 179+00.00
ELEV = 144.80

BENCHMARK 9
Elevation = 143.71'
Sta. 177+10.67, 32.65 RT



NOTE: PROFILE SHOWN PAST LIMITS OF WORK AT STATION 178+62 ARE FOR VIEWING PURPOSES ONLY AND NO WORK IS BEING PROPOSED.

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 14

CONTINUED ON
SHEET NO. 22

TRAFFIC DEVICE LEGEND

- DIRECTION OF TRAVEL
- WORK AREA
- TEMPORARY SIGN
- BARRIER (TYPE AS NOTED)
- REFLECTORIZED DRUM
- TEMPORARY IMPACT ATTENUATOR (TYPE AS NOTED)
- FLASHING ARROW BOARD
- TYPE III BARRICADE
- PCMS BOARD

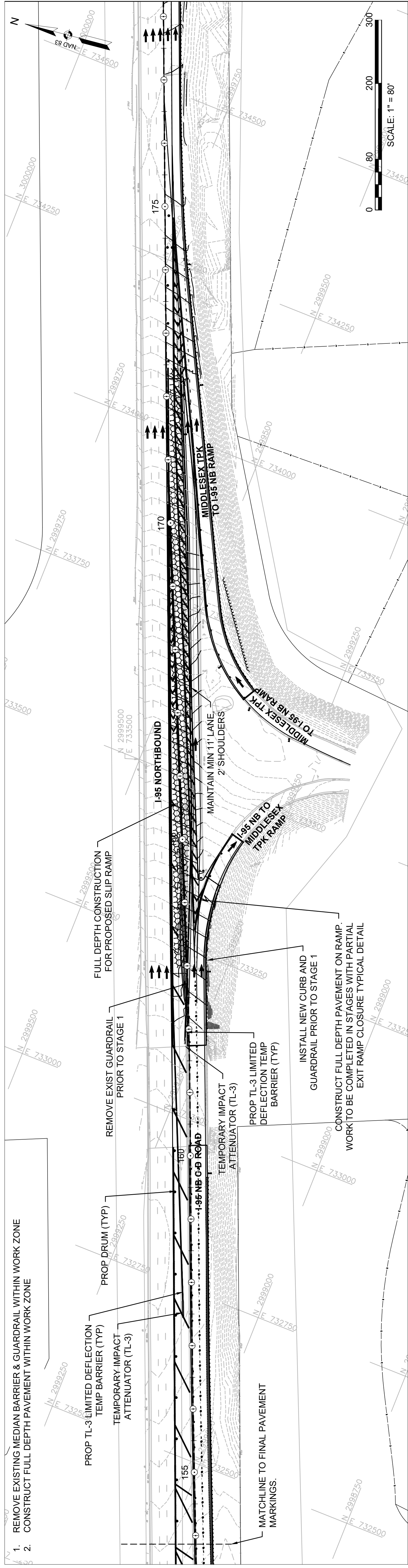
NOTES:
 I-95 NB SHALL BE REDUCED TO THREE LANES PRIOR TO STAGE 1. SEE FINAL PLANS.
 CONTRACTOR SHALL MAINTAIN MINIMUM 11' TRAVEL LANES AND 2' MINIMUM SHOULDER AT ALL TIMES.
 STAGING PLANS ARE FOR CONSTRUCTION OF FULL DEPTH PAVEMENT ONLY. ALL OTHER CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO MEDIAN, RESTRIPIPING, AND OVERHEAD SIGN INSTALLATION SHALL USE TYPICAL TEMPORARY TRAFFIC CONTROL SETUPS.

SEQUENCING NOTES:
 THE INFORMATION ON THESE PLANS IS INTENDED TO SHOW THE SUGGESTED SEQUENCE OF CONSTRUCTION FOR THE PROJECT. THE CONTRACTOR SHALL PREPARE DETAILED CONSTRUCTION STAGING PLANS INCLUDING CROSS SECTIONS AND ANY REQUIRED TEMPORARY DRAINAGE AS THE DESIGN IS DEVELOPED.
 THESE PLANS DEPICT THE MAJOR FULL DEPTH WORK TO BE COMPLETED FOR EACH CONSTRUCTION STAGE.
 LANE CLOSURES AND LANE SHIFTS AT THE PROJECT LIMITS ARE NOT SHOWN. WHERE NECESSARY, LANE CLOSURES AND SHIFTS SHALL BE DESIGNED AS DETAILED IN THE TEMPORARY TRAFFIC CONTROL DETAILS.
 THESE PLANS DEPICT THE MINIMUM NUMBER OF LANES ALONG WITH MINIMUM LANE WIDTHS TO BE MAINTAINED THROUGHOUT EACH STAGE OF CONSTRUCTION.

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

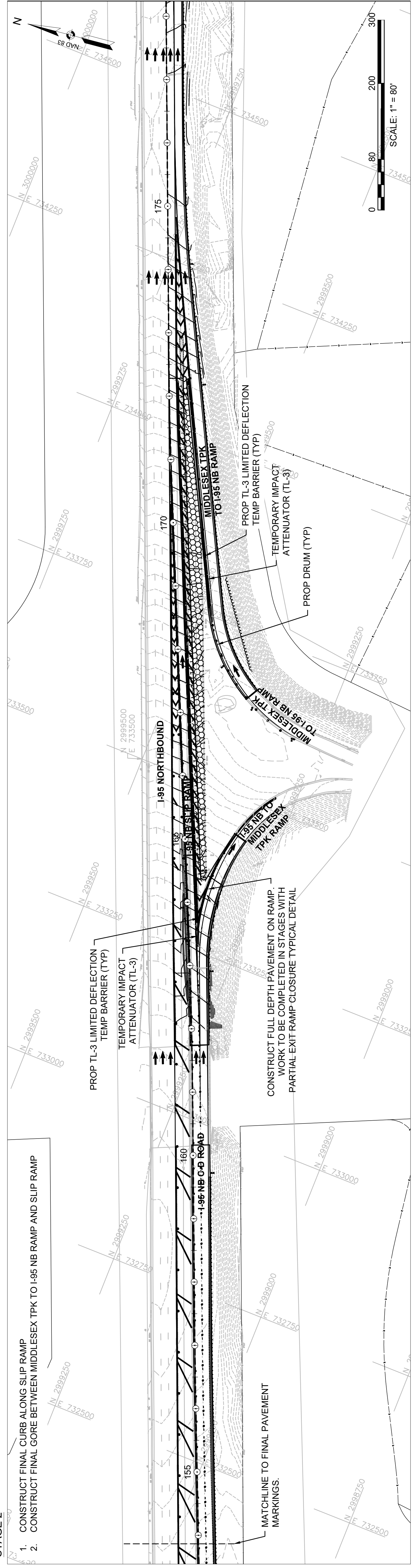
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	23	24
PROJECT FILE NO. 609516		STAGING OVERVIEW	

STAGE 1



1. REMOVE EXISTING MEDIAN BARRIER & GUARDRAIL WITHIN WORK ZONE
2. CONSTRUCT FULL DEPTH PAVEMENT WITHIN WORK ZONE

STAGE 2

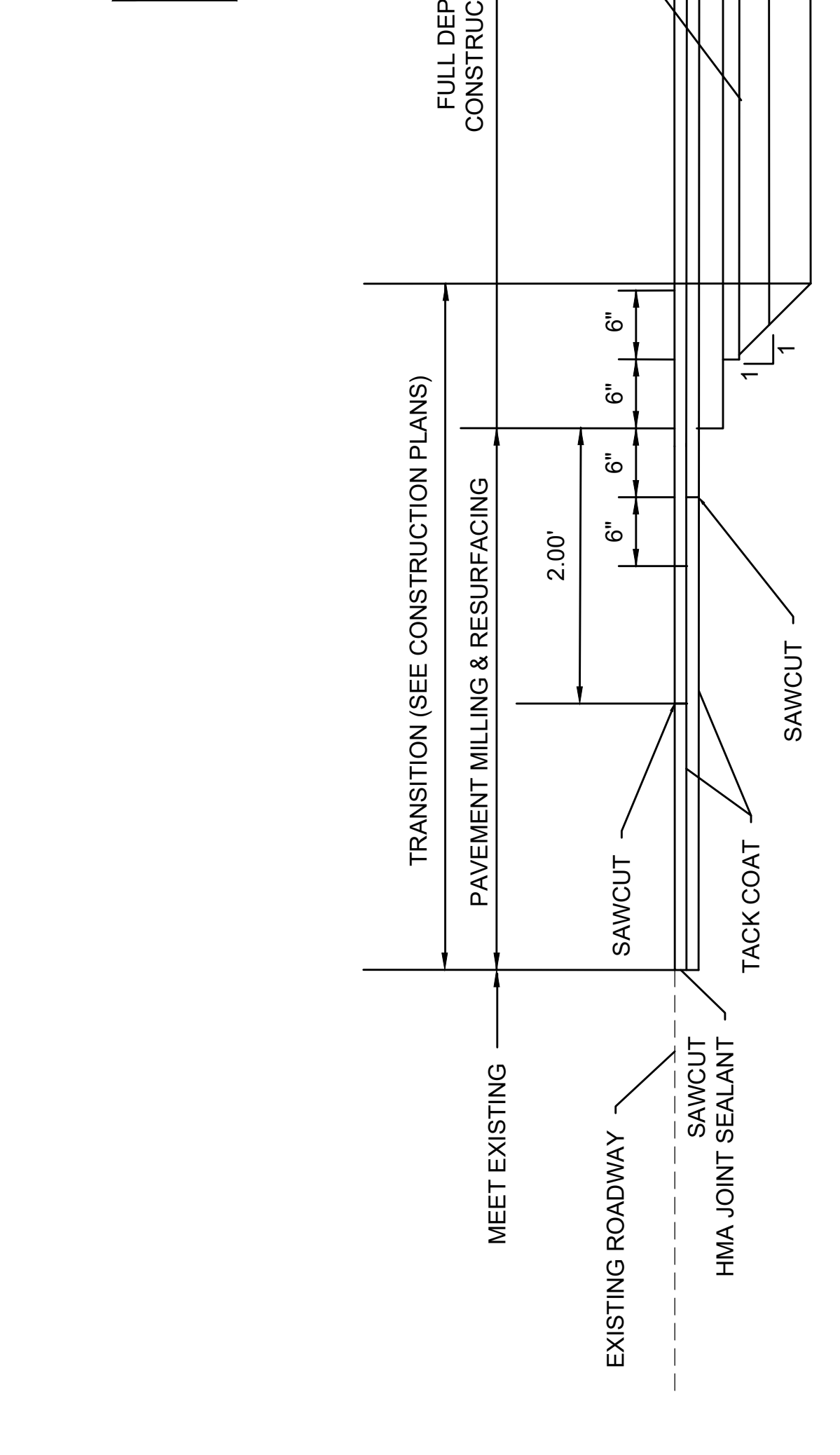


1. CONSTRUCT FINAL CURB ALONG SLIP RAMP
2. CONSTRUCT FINAL GORE BETWEEN MIDDLESEX TPK TO I-95 NB RAMP AND SLIP RAMP

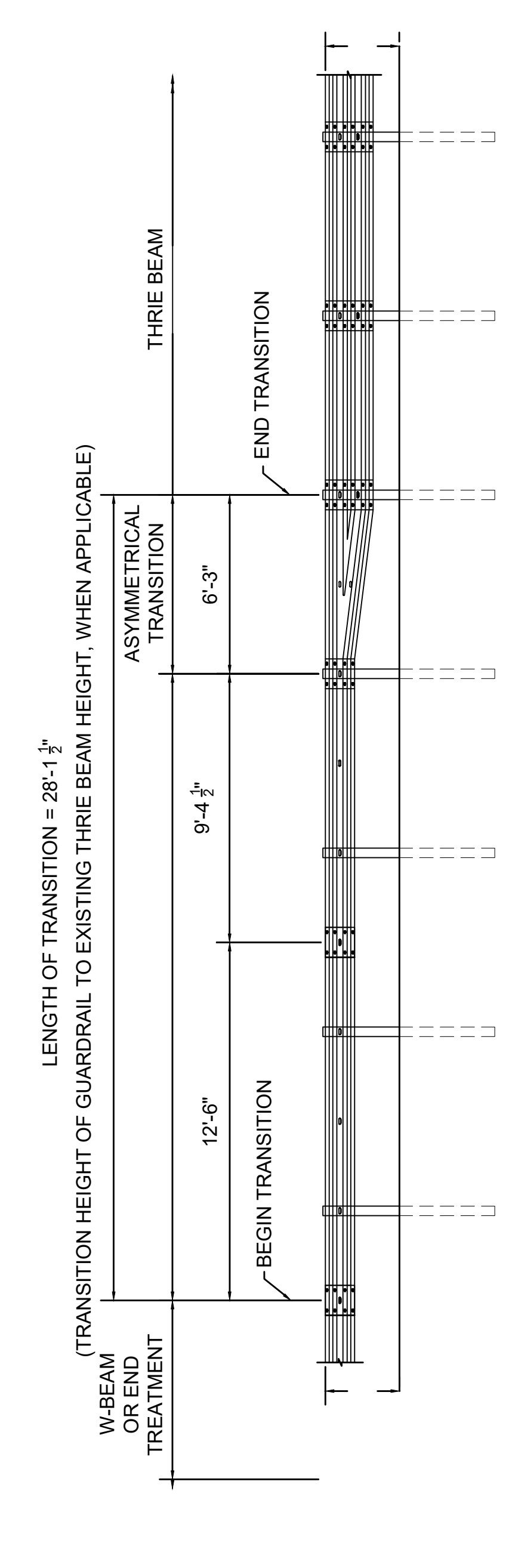
BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	24	24
PROJECT FILE NO. 609516			

CONSTRUCTION DETAILS
SHEET 1 OF 1



PAVING TRANSITION AT FULL DEPTH CONSTRUCTION
NOT TO SCALE



TRANSITION TO THIRIE BEAM
NOT TO SCALE

PROVIDE A 3 FT. MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM. SECURE ENDS OF TUBES WITH STAKES SPACED 18 IN. APART THROUGH TOPS OF TUBES. DO NOT PUNCTURE TUBES WITH STAKES.

PLAN VIEW - JOIN DETAIL

NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR SHALLOWER.
2. TRIPLE 12-INCH COMPOST FILTER TUBES SHALL BE INSTALLED IN AREAS WITH SLOPES STEEPER THAN 3:1, AND IN AREAS WARRANTING ADDITIONAL EROSION CONTROL MEASURES BASED ON SITE CONDITIONS AS DETERMINED BY THE CONTRACTOR AND HIS OR HER ENVIRONMENTAL MONITOR (I.E. AREAS ADJACENT TO STOCKPILING AND SENSITIVE/LARGE WATERSHED, AREAS IMMEDIATELY ADJACENT TO EXCAVATION, GRADING OR CLEARING AREAS, ETC.)
3. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.

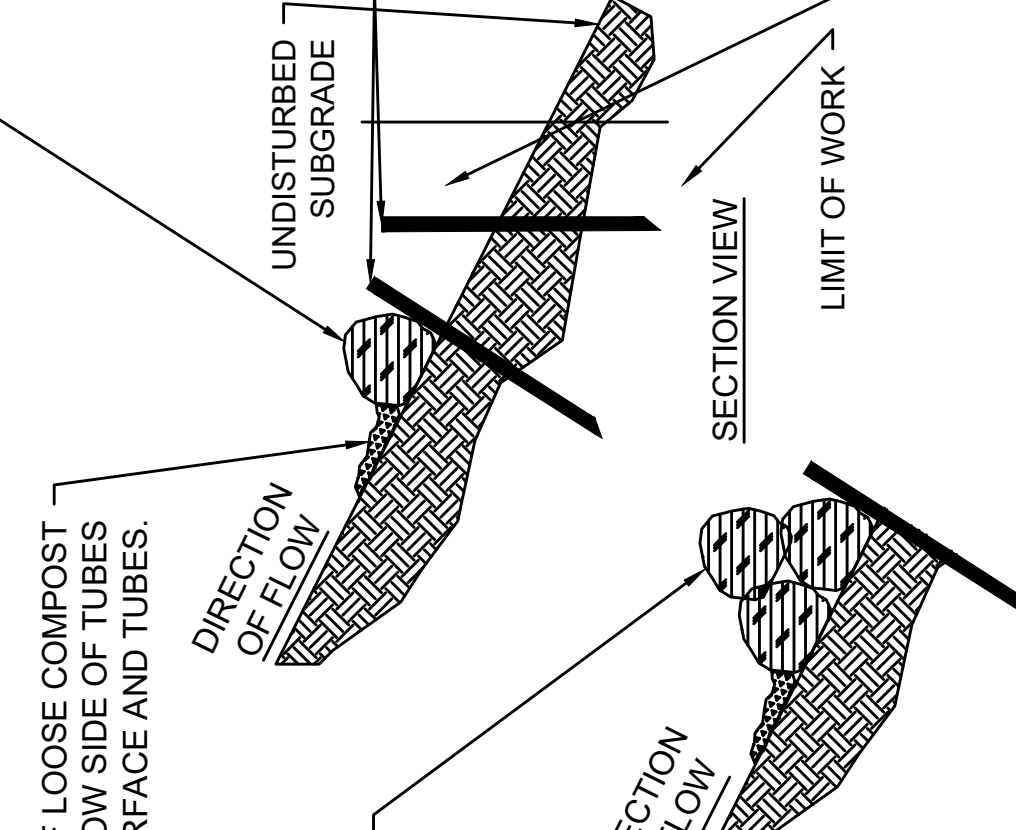
COMPOST FILTER TUBE MINIMUM 12 INCHES IN DIAMETER WITH AN EFFECTIVE HEIGHT OF 9.5 INCHES. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.

TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.

2 INCH X 2 INCH X 3 FEET UNTREATED HARDWOOD STAKES, UP TO 5 FT. APART OR AS REQUIRED TO SECURE TUBES IN PLACE.

WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5 FT. APART OR AS REQUIRED TO SECURE TUBES IN PLACE. DO NOT PUNCTURE TUBES WITH STAKES.

INSTALLATION TO OCCUR AT OR WITHIN LIMIT OF WORK TO PREVENT IMPACTS TO RESOURCE AREAS.



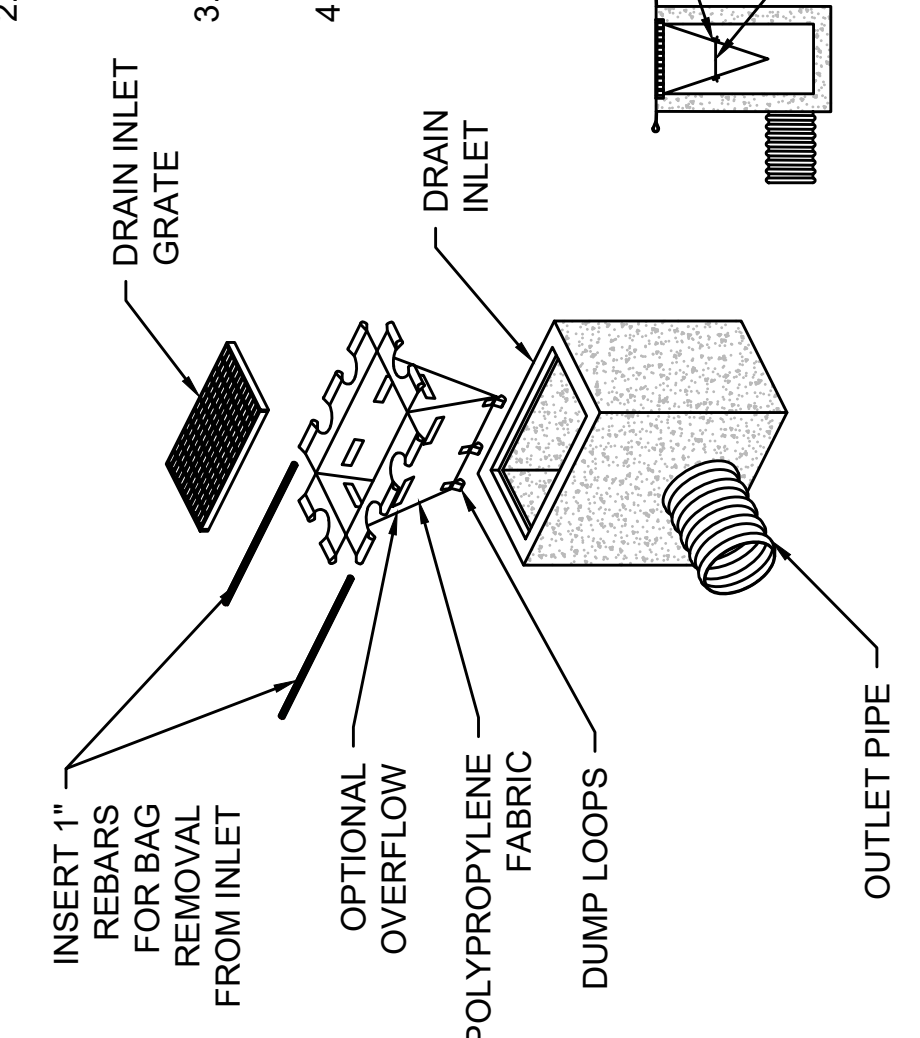
2 IN. DEEP x 12 IN. WIDE LAYER OF LOOSE COMPOST MATERIAL PLACED ON UPHILL/FLOW SIDE OF TUBES TO FILL SPACE BETWEEN SOIL SURFACE AND TUBES.

TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY. EXISTING HEADWALL OR OTHER OBSTACLE

EXISTING TREE

PLACING TUBES AGAINST THE UPHILL SIDE OF WELL-ANCHORED, STATIONARY FEATURES SUCH AS EXISTING TREES CAN PROVIDE ADDITIONAL BRACING. CURVE ENDS UPHILL TO PREVENT DIVERSION OF UNFILTERED RUN-OFF.

EROSION CONTROL - COMPOST FILTER TUBE
NOTES



NOTES:

1. INSTALL DRAIN INLET PROTECTION PER MANUFACTURER'S SPECIFICATIONS.
2. REMOVE DRAIN INLET GRATE AND INSTALL POLYPROPYLENE FABRIC OVER DRAIN INLET FRAME. REPLACE DRAIN INLET GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.
3. LENGTH AND WIDTH SHALL BE MANUFACTURED TO FIT THE OPENING OF THE DRAIN INLET.
4. MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF UNIT AFTER EACH STORM EVENT. REMOVE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE DRAIN INLET PROTECTION SACK AS NEEDED.

TYPICAL DRAIN INLET PROTECTION
NOT TO SCALE

REQUEST FOR DETERMINATION OF APPLICABILITY
FOR
LEXINGTON



October 17, 2024

Karen Mullins, Conservation Director
Lexington Conservation Commission
Lexington Town Office Building
1625 Massachusetts Ave
Lexington, MA 02420

Re: Improvements at I-95 (Route 128)/Route 3 Interchange Project
(MassDOT Project No. 609516)
Request for Determination of Applicability

Dear Ms. Mullins,

The Massachusetts Department of Transportation (MassDOT)—Highway Division is submitting the enclosed Request for Determination of Applicability (RDA) in accordance with the Massachusetts Wetlands Protection Act (MA WPA) for the Improvements at I-95 (Route 128)/Route 3 Interchange Project. The project proposes improvements to the interchange of Interstate-95 Northbound (I-95 NB) and US Route 3 Southbound (US-3-SB) and the on- and off-ramps along the Collector-Distributor (C-D Road) in the towns of Burlington and Lexington, Massachusetts. A project location map is provided in the attached narrative. For project activities located in Burlington, an RDA is being filed concurrently with the Burlington Conservation Commission.

The project is located entirely along MassDOT-owned roadway right of way (ROW) and is limited to the Buffer Zone associated with Bordering Vegetated Wetlands and Banks. The proposed work is anticipated to result in approximately 1,295 sf of temporary impacts and 10,604 sf of permanent impacts to Buffer Zones due to the installation of guardrails, grading, and minor drainage work. It should be noted that there are proposed project activities which are considered to be exempt as minor activities in the buffer zone per 310 CMR 10.02(2)(b)2. These activities include pavement repair, resurfacing, and reclamation (310 CMR 10.02(2)(b)2.p) and the removal/replacement of signage (310 CMR 10.02(2)(b)2.o).

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).

Please advertise this matter and place it on the agenda for the next scheduled Conservation Commission meeting. We look forward to meeting with the Conservation Commission to discuss the Project at that time. For additional information, please do not hesitate to contact me at (617) 981-0653 or mseifert@hntb.com. Thank you for your consideration of this request.

Regards,

A handwritten signature in black ink that reads 'Marissa Seifert'. The signature is written in a cursive, flowing style.

Marissa Seifert, PWS
Section Manager - Environmental Assessment

cc: MassDEP Northeast Regional Office

Improvements at I-95 (Route 128)/Route 3 Interchange Project

MassDOT Project #: 609516
Request for Determination of Applicability
(Lexington)

October 2024

PREPARED FOR:

Massachusetts Department of Transportation -
Highway Division
10 Park Plaza
Boston, Massachusetts 02116

Phone: (857) 268 - 1729
Contact: Erica Larner

PREPARED BY:

HNTB Corporation
31 Saint James Avenue
Boston, Massachusetts 02116

Phone: (617) 981 - 0653
Contact: Marissa Seifert



TABLE OF CONTENTS

Part A: WPA Form 1 - Request for Determination of Applicability

Part B: Request of Determination of Applicability Narrative

	<u>Page</u>
1. Introduction	1
2. Existing Conditions	1
2.1. Existing Roadway Conditions	1
2.2. Desktop Review of Resource Areas	2
2.3. Field Delineation of Resource Areas and Buffer Zones	3
3. Proposed Conditions	5
3.1. Proposed Construction Activities	5
3.2. Proposed Drainage Activities	5
3.3. Proposed Construction Sequencing	5
4. Work in Jurisdictional Areas	6
5. Best Management Practices	7
6. Summary	7

Attachments

Appendix A – Figures

Appendix B – Wetland Delineation Report

Appendix C – Project Design Plans

Part A: WPA Form 1 - Request for Determination of Applicability

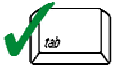


Massachusetts Department of Environmental Protection
 Bureau of Water Resources - Wetlands

WPA Form 1- Request for Determination of Applicability Lexington
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40 Municipality

A. General Information

Important:
 When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Massachusetts Department of Transportation - Highway Division	Erica Larner	
First Name	Last Name	
10 Park Plaza, Room 7360		
Address		
Boston	MA	02116
City/Town	State	Zip Code
857-268-1729	erica.n.larner@dot.state.ma.us	
Phone Number	Email Address	

2. Property Owner (if different from Applicant):

Massachusetts Department of Transportation - Highway Division		
First Name	Last Name	
10 Park Plaza		
Address		
Boston	MA	02116
City/Town	State	Zip Code
	Email Address (if known)	

3. Representative (if any)

Marissa	Seifert	
First Name	Last Name	
HNTB Corporation		
Company Name		
31 St. James Ave		
Address		
Boston	MA	02116
City/Town	State	Zip Code
617-981-0653	mseifert@hntb.com	
Phone Number	Email Address (if known)	

B. Project Description

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

Route 3	Lexington
Street Address	City/Town
42.47488	-71.22488
Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX)	Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX)
N/A - roadway	N/A - roadway
Assessors' Map Number	Assessors' Lot/Parcel Number

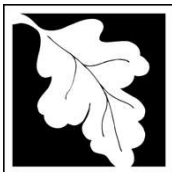
b. Area Description (use additional paper, if necessary):
 The project area is approx. 1.44 miles long along the right-of-way of Interstate 95 (Route 128) and Route 3 Interchange.

c. Plan and/or Map Reference(s): (use additional paper if necessary)

Plan and Profile of Improvements at Interstate 95 (Route 128)/Route 3 Interchange in the town of Lexington - WPA RDA Submission.	8/2/2024
Title	Date
Title	Date

[How to find Latitude and Longitude](#)

[and how to convert to decimal degrees](#)



Massachusetts Department of Environmental Protection
 Bureau of Water Resources - Wetlands

WPA Form 1- Request for Determination of Applicability Lexington

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Municipality

B. Project Description (cont.)

2. a. Activity/Work Description (use additional paper and/or provide plan(s) of Activity, if necessary):

The project proposes work along Southbound (US-3 SB) and the on and off-ramps along the Collector-Distributor (C-D Road) in the Towns of Lexington and Burlington, Massachusetts. The project limits extend approximately 1.5 miles along I-95 NB (just east of the Grove Street bridge over I-95) and the C-D Road in the Town of Lexington, easterly, under the Route 3 overpass, to the Middlesex Turnpike I-95 NB on-ramp in Burlington. The proposed scope of work in Lexington includes pavement mill and overlay along I-95 NB, construction of a hot-mix asphalt (HMA) berm, new pavement markings, minor geometric improvements, guardrail installation with associated grading, and minor drainage upgrades.

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).

10.02(2)(b)2.o and 10.02(2)(b)2.p.

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- Single family house on a lot recorded on or before 8/1/96
- Single family house on a lot recorded after 8/1/96
- Expansion of an existing structure on a lot recorded after 8/1/96
- Project, other than a single-family house or public project, where the applicant owned the lot before 8/7/96
- New agriculture or aquaculture project
- Public project where funds were appropriated prior to 8/7/96
- Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- Residential subdivision; institutional, industrial, or commercial project
- Municipal project
- District, county, state, or federal government project
- Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary).



Massachusetts Department of Environmental Protection
Bureau of Water Resources - Wetlands

WPA Form 1- Request for Determination of Applicability Lexington
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40 Municipality

C. Determinations

1. I request the Lexington Conservation Commission make the following determination(s). Check any that apply:
Conservation Commission

- a. whether the **area** depicted on plan(s) and/or map(s) referenced above is an area subject to jurisdiction of the Wetlands Protection Act.
- b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced above are accurately delineated.
- c. whether the **Activities** depicted on plan(s) referenced above is subject to the Wetlands Protection Act and its regulations.
- d. whether the area and/or Activities depicted on plan(s) referenced above is subject to the jurisdiction of any **municipal wetlands' ordinance or bylaw** of:

Name of Municipality

- e. whether the following **scope of alternatives** is adequate for Activities in the Riverfront Area as depicted on referenced plan(s).
- _____

D. Signatures and Submittal Requirements


I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Signatures:

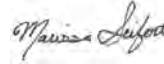
I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.



Signature of Applicant

9/24/2024

Date



Signature of Representative (if any)

10/2/2024

Date

Part B: Request for Determination of Applicability Narrative

1. Introduction

This Request for Determination of Applicability (RDA) is being submitted by the Massachusetts Department of Transportation - Highway Division (MassDOT) pursuant to the Massachusetts Wetlands Protection Act (WPA) (M.G.L. Ch.131, S.40) and its implementing regulations (310 CMR 10.00) for the Improvements at I-95 (Route 128)/ Route 3 Interchange Project. The project proposes work along Southbound (US-3 SB) and the on and off-ramps along the Collector-Distributor (C-D Road) in the Towns of Lexington and Burlington, Massachusetts. The project limits extend approximately 1.5 miles along I-95 NB (just east of the Grove Street bridge over I-95) and the C-D Road in the Town of Lexington, easterly, under the Route 3 overpass, to the Middlesex Turnpike I-95 NB on-ramp in Burlington.

The I-95 NB/US-3 Interchange experiences safety concerns with frequent rear-end collisions on the C-D Road, servicing US-3 and Middlesex Turnpike (Exits 50A and 50B), and the highway ramps. Other safety concerns related to ramp geometry, high speeds, and driver confusion create an unsafe environment for drivers. With the local and regional growth that has occurred and is projected to occur in the future, operations and safety are expected to deteriorate without improvements.

The project will address existing transportation deficiencies by providing geometric improvements, roadway resurfacing, guide sign replacement, and new pavement markings. Specifically, the project will drop a lane on I-95 NB (between Exit 50A to the Middlesex Turnpike off-ramp at Exit 50B). It will eliminate the Middlesex Turnpike to I-95 NB On-Ramp merge by breaking the jersey barrier after the bridge over Middlesex Turnpike, allowing vehicles from the C-D Road to enter I-95 NB in an add-a-lane. The proposed improvements will improve traffic operations and safety along the I-95 C-D Road between Exit 50A and Exit 50B.

All jurisdictional work is limited to the 100-foot Buffer Zone and will result in 1,295 square feet (sf) of temporary and 10,604 sf of permanent impacts due to guardrail installation, grading, minor drainage upgrades, and erosion and sediment controls. It should be noted that there are proposed project activities which are considered to be exempt as minor activities in the buffer zone per 310 CMR 10.02(2)(b)2. These activities include pavement repair, resurfacing, and reclamation (310 CMR 10.02(2)(b)2.p), and the removal/replacement of signage (310 CMR 10.02(2)(b)2.o).

The following narrative describes the proposed project activities located in Lexington. A concurrent Request for Determination is being filed with the Burlington Conservation Commission for proposed work within the Burlington town limits.

2. Existing Conditions

The following subsections describe existing roadway conditions, the results of an existing conditions desktop review, and the results of a field delineation conducted to support the project.

2.1 Existing Roadway Conditions

I-95 is an interstate that runs from the Massachusetts/Rhode Island state line in Attleboro, MA, to the Massachusetts/New Hampshire state line in Salisbury, MA. I-95 generally runs in a north-south direction. I-95 is a divided highway with four 12-foot travel lanes, a 10-foot left shoulder, and a 2-foot right shoulder in each direction. I-95 near the project area features exit and entrance ramps to and from US-3 and Middlesex Turnpike. The posted speed limit in both directions is 65 mph.

I-95 C-D Road is a collector-distributor road that runs parallel to I-95 NB between Exit 50A and Exit 50B. I-95 and the C-D Road are separated by a barrier. The C-D Road is approximately 0.8 miles long with an approximately 2600-foot deceleration lane and 2100-foot acceleration lane back onto I-95. The C-D road consists of two 12-foot travel lanes with 2-foot shoulders on each side. I-95 NB to US-3 NB Off-Ramp (Exit 50A) consists of two 12-foot travel lanes with 2-foot shoulders on each side. The ramp is approximately 3800 feet long with an advisory speed of 30 mph. I-95 NB to Middlesex Turnpike Off-Ramp (Exit 50B) consists of a single 18-foot travel lane with 2-foot shoulders on each side with an advisory speed of 30 mph. There is an approximately 1700-foot auxiliary lane along I-95 NB between the on-ramp from US-3 SB and the off-ramp to Middlesex Turnpike.

US-3 is a US route that runs from the Longfellow Bridge in Boston, MA, to I-95 in Burlington, MA. US-3 meets I-95 at the Exit 51A on-ramp and runs along 1.6 miles of I-95 before exiting at Exit 50A onto its own freeway. US-3 then continues in a north-south direction to the Massachusetts/New Hampshire state line in Tyngsborough, MA. Within the project area, US-3 is a divided highway with three 12-foot travel lanes, a 6-foot left shoulder, and a 6-foot right shoulder in each direction. The roadway drops to 2 lanes in each direction at Exit 72B, and US-3 SB drops to one lane in advance of the bridge over I-95. The posted speed limit in both directions is 55 mph.

Between the entrance to the C-D Road and the 50A off-ramp, there are two lanes in the northbound direction. Ramp 50A exits, and the C-D Road drops to one lane until the Exit 50A on-ramp. Ramp Exit 50A enters its own lane, and the C-D Road becomes two lanes before the right lane exits to Exit 50B. The roadway has two lanes between the on-ramp and the 50B off-ramp and one lane between the 50B off-ramp and the on-ramp. There is no posted speed limit on the roadway; however, based on the roadway conditions, it is assumed to be approximately 50 mph.

2.2 Desktop Review of Resource Areas

The proposed project area is located along I-95 in Lexington and Burlington (Appendix A, Figure 1). The land use types in the area to be impacted by the proposed activities consist of right-of-way and other impervious surfaces. The land uses surrounding the impact area are deciduous forested, developed open space, commercial, palustrine emergent wetlands, and palustrine forested wetlands.

The MassDEP Wetlands and National Wetland Inventory (NWI) was reviewed to identify potential wetland resources. Based on reviews of the MassDEP Wetland Area Maps, the project area has a marsh/bog and a wooded marsh within the project limits (Appendix A, Figure 3). This NWI data identified one wetland within the project area with similar boundaries to the inland resources mapped by MassDEP (Appendix A, Figure 4). The waterbody mapped within the project area is classified as a palustrine, freshwater forested/shrub wetland (PSS1E).

The most recently issued Flood Insurance Rate Map produced by the Federal Emergency Management Agency (FEMA) indicates that the project area is located outside the 100-year floodplain (firm panel #25017C0401E).

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey for Middlesex County has mapped most of the project area as Udorthents-Urban land complex, with the surrounding land being composed mostly of Swansea muck Carver, 0 to 1 percent slopes (51A), Charlton-Hollis Rock outcrop complex, 8 to 15 percent slopes (103C) and Sudbury fine sandy loam, 3 to 8 percent slopes (260B). Appendix A, Figure 6 contains mapped soils within and surrounding the Project.

According to the most recently available data from the Massachusetts Natural Heritage and Endangered Species Program, the project is located outside Estimated Habitat of Rare Wildlife or Priority Habitat of Rare Species. No Certified or Potential Vernal Pools are within or adjacent to the Site. The closest Certified Vernal Pool (CVP 668) is approximately 2,000 feet north, and the closest Potential Vernal Pool (PVP 12578) is approximately 1,000 feet west.

The project is located within a Zone II Wellhead Protection Area (PWS ID: 3048000) but not within an Area of Critical Environmental Concern, Outstanding Resource Water, or Coldwater Fishery.

One Article 97 Protected Open Space parcel is located to the south of the project area, known as Turning Mill Pond (Appendix A, Figure 8). There is no impact proposed to the Article 97 property.

2.3 Field Delineation of Resource Areas and Buffer Zones

HNTB Corporation conducted a field delineation on May 11 and 24, 2023. Wetlands were delineated in accordance with the *U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual* (1987 edition) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE, 2012). Wetland resource areas identified within or near the project area included Land Under Water Bodies and Waterways (LUW), Bank, and Bordering Vegetated Wetlands (BVW). These resources are defined under the WPA as:

- **Land Under Water Bodies and Waterways (LUW):** As defined in 310 CMR 10.56(2)(a), is “the land beneath any creek, river, stream, pond or lake.”
- **Bank:** As defined in 310 CMR 10.54(2)(a), is “the portion of the land surface which normally abuts and confines a waterbody.”
- **Bordering Vegetated Wetlands (BVW):** As defined in 310 CMR 10.55(2)(a), are “freshwater wetlands which border on creeks, rivers, streams, ponds and lakes.”

Per 310 CMR 10.02(2)(b), Bank and Bordering Vegetated Wetlands are provided a 100-foot buffer zone.

The table below summarizes the resources identified during the wetland delineation. Following the table, the subsequent sections describe the delineated features' hydrology, hydric soils, and hydrophytic vegetation. Wetland data sheets for each feature are included in the Wetland Delineation Report (Appendix B).

Table 1. Summary of Delineated Resources

Feature ID	Wetland Flag Numbers	Type	Jurisdiction ¹		Feature Description
			Federal	State	
HNTB-E	HNTB-E -1 HNTB-E-24	Scrub-Shrub Wetland	Yes	Yes -BVW	Depressional wetland located south of I-95 N and northeast of N Emerson Road. Vegetation includes swamp white oak, arrowwood viburnum, and eastern skunk cabbage.
HNTB-F	HNTB-F-1 - HNTB-F-8	Forested Wetland	No	Yes -BVW	Depressional wetland located south of I-95 N and to the north of Burlington Street. Vegetation includes northern red oak, multiflora rose, and creeping buttercup.
HNTB-G	HNTB-G-1A/B - HNTB-G-3A/B	Intermittent Stream	No	Yes -Bank - LUW	An intermittent stream flows upstream from the delineated wetland HNTB-F. This unnamed stream has an approximately 10-foot-wide channel comprised of cobbles and muck. During the field investigation, approximately 3 inches of water was present.

¹ BVW = Bordering Vegetative Wetland, LUW = Land Under Water, ILSF = Isolated Land Subject to Flooding

HNTB-E (Flag Numbers: HNTB-E-1 through HNTB-E-24):

HNTB-E is a palustrine scrub-shrub wetland located south of Interstate 95. Primary indicators of wetland hydrology present on the day of the field delineation include a high-water table (A2) at a depth of 2 inches, saturation (A3), watermarks (B1), water-stained leaves (B9), and a thin muck surface (C7). Two secondary indicators were also identified: drainage patterns (B10) and geomorphic position (D2).

The dominant plant species identified in the tree stratum are swamp white oak (*Quercus bicolor*), green ash (*Fraxinus pennsylvanica*), and red maple (*Acer rubrum*). The dominant plant species in the sapling/shrub stratum include highbush blueberry (*Vaccinium corymbosum*) and northern arrowwood (*Viburnum dentatum*). Skunk cabbage (*Symplocarpus foetidus*) was identified as the dominant species in the herb stratum, contributing 80 percent of the total cover. Additional species present in the herb stratum included poison ivy (*Toxicodendron radicans*), cinnamon fern (*Osmunda cinnamomea*), Virginia creeper (*Parthenocissus quinquefolia*), sensitive fern (*Onoclea sensibilis*), common rush (*Juncus effusus*), wrinkle-leaf goldenrod (*Solidago rugosa*) and multiflora rose (*Rosa multiflora*). The dominant species identified in the woody vine stratum was riverbank grape (*Vitis riparia*), providing 10 percent total cover. The hydric soil indicator present was Sandy Mucky Mineral (S4): a layer of mucky-modified sandy soil material 2 inches or more thick starting within 6 inches of the soil surface). HNTB-E is jurisdictional under the WPA as a bordering vegetated wetland.

HNTB-F (Flag Numbers: HNTB-F-1 through HNTB-F-8):

HNTB-F is a palustrine forested wetland located south of Interstate 95. The wetland abuts an intermittent stream identified as HNTB-G. Primary indicators of wetland hydrology present include surface water (A1) at a depth of 0.5 inches, high water table (A2), saturation (A3), watermarks (B1), sediment deposits (B2), water-stained leaves (B9), aquatic fauna (B13), and thin muck surface (C7). Two secondary indicators were also identified: drainage patterns (B10) and geomorphic position (D2).

The dominant plant species identified in the tree stratum is red oak (*Quercus rubra*), constituting 30 percent of the total cover. The dominant plant species in the sapling/shrub stratum was multiflora rose constituting 15 percent of the total cover. Skunk cabbage and creeping buttercup (*Ranunculus repens*) were identified as the dominant species in the herb stratum, contributing 90 percent of the total cover. The dominant species identified in the woody vine stratum was oriental bittersweet (*Celastrus orbiculatus*), providing 5 percent total cover. The hydric soil indicator present was Depleted Below Dark Surface (A11): (a layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting at a depth of 12 inches of the soil surface, and having a minimum thickness of either 6 inches or 2 inches if the 2 inches consists of fragmental soil material. HNTB-F is jurisdictional under the WPA as a bordering vegetated wetland.

HNTB-G (Flag Numbers: HNTB-G-1A/B through HNTB-G-3A/B):

HNTB-G is classified as an Intermittent stream that flows upstream from the delineated wetland HNTB-F. This unnamed stream has a channel approximately 10 feet wide and is comprised of cobbles and muck. Approximately 3 inches of water was present during the field investigation. The delineated stream, HNTB-G, is regulated under the WPA as land under water and bank.

3. Proposed Conditions

3.1 Proposed Construction Activities

The proposed scope of work in Lexington includes pavement mill and overlay along I-95 NB, construction of a hot-mix asphalt (HMA) berm, new pavement markings, minor geometric improvements, guardrail installation with associated grading, and minor drainage upgrades. The mill and overlay portion of the project involves grinding off the top layer of existing asphalt pavement using a large milling machine and replacing this layer with a new HMA riding surface. The typical depth of milling is between 1" and 2", depending on the condition of the existing riding surface, the depth of the available curb reveal, and the depth of the existing asphalt pavement. Asphalt pavers will spread the asphalt, and then a roller compactor will be used for the HMA compaction.

Guardrails will be installed using a guardrail post driver. To assist in the installation of the guardrail, the surrounding area will be graded and then tied into the existing grade. The areas of grading will be loamed and seeded to stabilize the soil following grading.

The contractor will determine the proposed construction equipment and construction methodology.

3.2 Proposed Drainage Activities

The proposed drainage work includes upgrading a culvert to include a deep sump (Station 129+00), a change in type (CIT) from a catch basin to a drainage manhole (Station 131+00), and additional catchbasins and drainage manholes (Station 132+00 - 134+00 and Station 135+00 - 136+00). The change in type essentially replaces an existing catch with a proposed manhole and proposes a new catch basin adjacent to the proposed manhole. The change in type from a catch basin to a manhole is required because catch basins must be an end-of-the-line device and not have flow directed into them as it will resuspend the solids that have settled into the sump. Additionally, when a catch basin is used as an inline structure, there is the potential for it to back up the upstream system if the structure becomes filled with debris. All proposed structures will tie into the existing stormwater system and are located within the roadway's existing footprint.

The proposed stormwater system will collect stormwater runoff in proposed and existing catch basin structures and convey flow through proposed and existing pipes, which ultimately discharge to existing outfalls. No new outfalls are proposed for this project. The existing drainage system, within project limits, is being utilized to the maximum extent practicable. The proposed design is a redevelopment project that will meet stormwater standards to the maximum extent practicable and will improve the existing conditions.

3.3 Proposed Construction Sequencing

During construction, vehicular traffic flow will always be maintained along I-95 NB, and access will be in and out of unaffected ramps. During peak hours, no reduction in the number of lanes on the C-D Road will be permitted. The I-95 NB mainline will be reduced to 3 lanes at the beginning of construction. Ramp construction is anticipated to be completed in two main stages:

- Pre-Stage 1 - Remove existing guardrail within the work zone and construct proposed curb and guardrail.
- Stage 1 - Shift traffic to construct full-depth pavement between I-95 NB and the C-D Road

- Stage 2 - Shift traffic onto new alignment to construct the final curb and full-depth pavement.

Please note that the contractor will determine the exact sequence of construction.

4. Work in Jurisdictional Areas

The proposed work is anticipated to result in approximately 1,295 sf of temporary impacts and 10,604 sf of permanent impacts to Buffer Zones. The permanent impacts to the Buffer Zone result from the installation of guardrails and HMA berm, as well as minor drainage upgrades. The 1,295 sf of temporary Buffer Zone impacts result from the placement of erosion and sediment controls. Table 2 below provides a breakdown of the anticipated buffer zone impacts.

Table 2. Impact Summary Table

Work Activity	Buffer Zone	
	Temporary Impact (sf)	Permanent Impact (sf)
Guardrail Installation & Associated Grading	0 sf	10,291 sf
Minor Drainage Work	0 sf	313 sf
Erosion & Sediment Controls	1,295 sf	0 sf
Total	1,295 sf	10,604 sf

It should be noted that several proposed construction activities are considered exempt from the WPA as minor activities in the Buffer Zone and Riverfront Area. Impacts resulting from minor activities were not quantified or totaled in Table 2. The minor activity exemptions utilized for the proposed construction activities are detailed in Table 3 (below).

Table 3. Summary of Exempt Minor Activities in the Buffer Zone

Proposed Construction Activity	Minor Activity Exemption
Pavement Mill and Overlay	310 CMR 10.02(b)2.p: Pavement repair, resurfacing, and reclamation of existing roadways within the right-of-way configuration provided that the roadway and shoulders are not widened, no staging or stockpiling of materials, all disturbed road shoulders are stabilized within 72 hours of completion of the resurfacing or reclamation, and no work on the drainage system is performed, other than adjustments and/or repairs to respective structures within the roadway.
Removal/Replacement of Signage	310 CMR 10.02(2)(b)2.o: Installation, repair, replacement or removal of signs, signals, sign and signal posts and associated supports, braces, anchors, and foundations along existing paved roadways and their shoulders, provided that work is conducted as far from resource areas as practicable, and is located a minimum of ten feet from a resource area, any excess soil is removed from the project location, and any disturbed soils are stabilized as appropriate.

The project was planned and designed to avoid wetland and waterbody impacts to the maximum extent practicable. Where avoiding temporary impacts was not feasible, MassDOT sought to minimize impacts while completing the project's purpose.

5. Best Management Practices

During construction, erosion and sedimentation controls such as compost filter tubes (or similar) will be utilized to protect wetland resources. Following the completion of the work, all erosion and sedimentation controls will be removed, and all disturbed areas will be permanently stabilized with loam and seed.

The Project Design Plans (Appendix C) show the locations and details of erosion and sediment controls. During all work, precautions will be taken to avoid contaminating the adjacent WPA wetland resources. All earthwork, grading, equipment moving, and other operations involving the movement of material and debris will be planned and conducted to protect against sediment release or pollution in adjacent resources. In addition to this, 4-inch loam and seed is proposed in areas along the roadway where old pavement is proposed to be excavated, increasing overall pervious area.

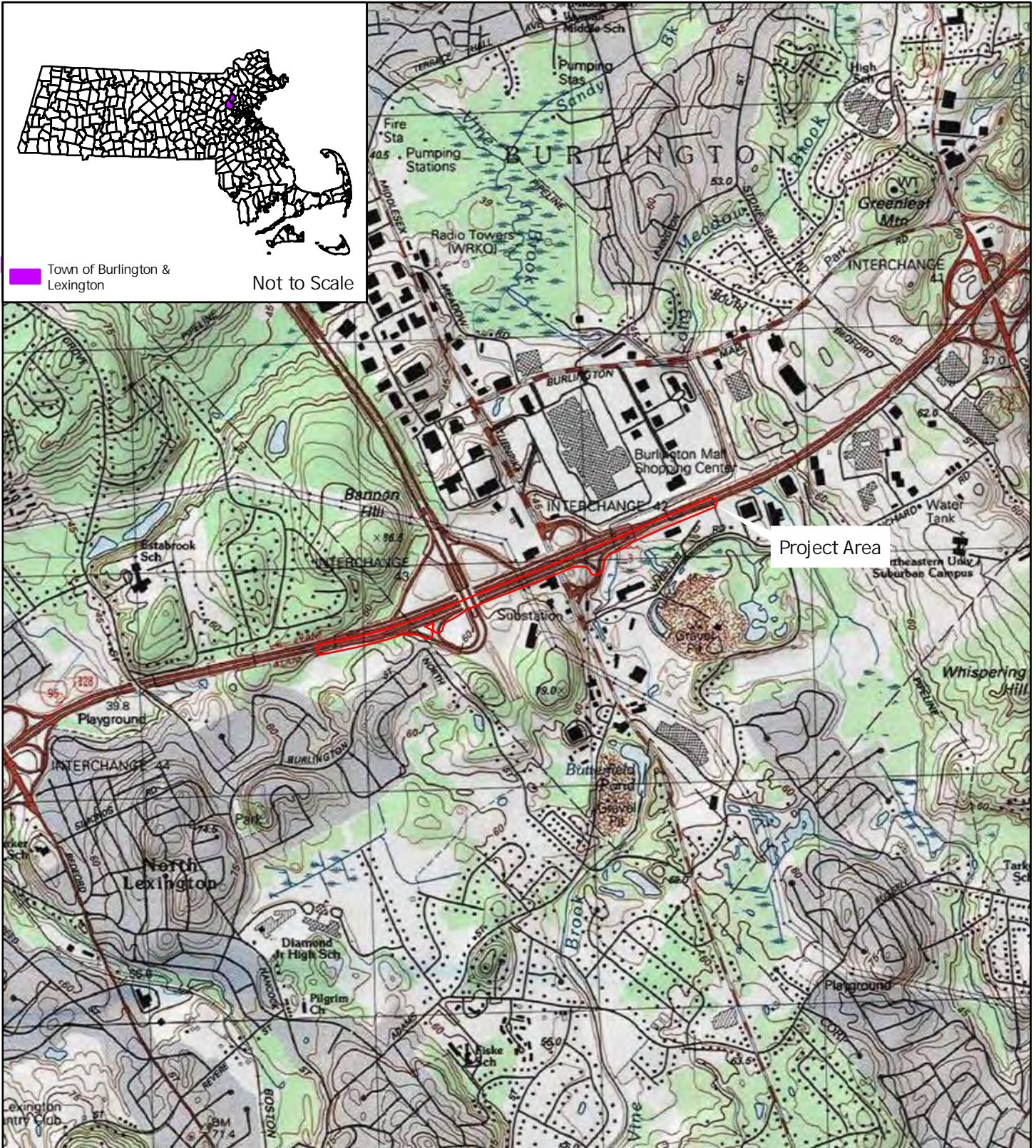
Additionally, the project is anticipated to have more than one acre of disturbance and will require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit and a Stormwater Pollution Prevention Plan (SWPPP) in order to manage stormwater discharge from the construction site. The SWPPP will detail the stormwater controls to be used on-site to protect the surrounding environment.

The proposed erosion and sediment control measures are in compliance with the Massachusetts Stormwater Handbook and MassDOT standards and specifications. Erosion and sediment controls will be installed prior to the start of construction to prevent any unintended impacts to Bordering Vegetated Wetlands, Bank, or Land Under Water.

6. Summary

MassDOT is proposing the Improvements at I-95 (Route 128)/ Route 3 Interchange Project, which consists of geometric improvements, roadway resurfacing, guide sign replacement, and new pavement markings along US-3 SB and the on and off-ramps along the C-D Road. The project will additionally drop a lane on I-95 NB (between Exit 50A and the Middlesex Turnpike off-ramp at Exit 50B) and will eliminate the Middlesex Turnpike to I-95 NB On-Ramp merge by breaking the jersey barrier after the bridge over Middlesex Turnpike. All work is limited to the 100-foot buffer zone. Project activities will result in 1,295 sf of temporary and 10,604 sf of permanent buffer zone impacts. Accordingly, MassDOT respectfully requests that the Lexington Conservation Commission issue a negative determination and find that the proposed measures protect the interests of the Massachusetts Wetland Protection Act.

Appendix A – Figures



Legend



— Project Area

Notes:
 1. U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle Maps for Lexington, Massachusetts (USGS 2021).

0 0.4 Miles



N

Figure 1. Topographic Map
 Improvements at I-95 (Route 128) / Route 3 Interchange Project
 Lexington & Burlington, MA

 Massachusetts Department of Transportation Highway Division	
August 2024	Boston, MA



Legend

-  Town Boundary
-  Project Area

Notes:
1. Basemap courtesy of ESRI.

0 800
Feet



Figure 2. Aerial Map
Improvements at I-95 (Route 128) / Route 3
Interchange Project
Lexington & Burlington, MA






August 2024



Boston, MA



Legend

DEP Wetlands

-  Marsh/Bog
-  Wooded Marsh
-  Open Water

-  Town Boundary
-  Project Area

Notes:
 1. GIS data courtesy of MassDEP and MassGIS.
 2. Basemap courtesy of ESRI.






Figure 3. MassDEP Wetlands Map
 Improvements at I-95 (Route 128) / Route 3
 Interchange Project
 Lexington & Burlington, MA



August 2024






Boston, MA



<p>Legend</p> <p>NWI Wetlands</p> <ul style="list-style-type: none"> Freshwater Emergent Wetland Freshwater Forested/Shrub Wetland Freshwater Pond Riverine Town Boundary Project Area 		<p>Figure 4. NWI Wetlands Map Improvements at I-95 (Route 128) / Route 3 Interchange Project Lexington & Burlington, MA</p>	
<p>Notes:</p> <ol style="list-style-type: none"> 1. GIS data courtesy of USFWS. 2. Basemap courtesy of ESRI. 		 	
<p>0 800 Feet</p> 		<p>August 2024</p>	
		<p>Boston, MA</p>	



Legend

-  FEMA Zone A: 1% Annual Chance, no BFE
-  Regulatory Floodway
-  0.2% Annual Chance Flood Hazard
-  Town Boundary
-  Project Area

Notes:
 1. GIS data courtesy of FEMA.
 2. Basemap courtesy of ESRI.

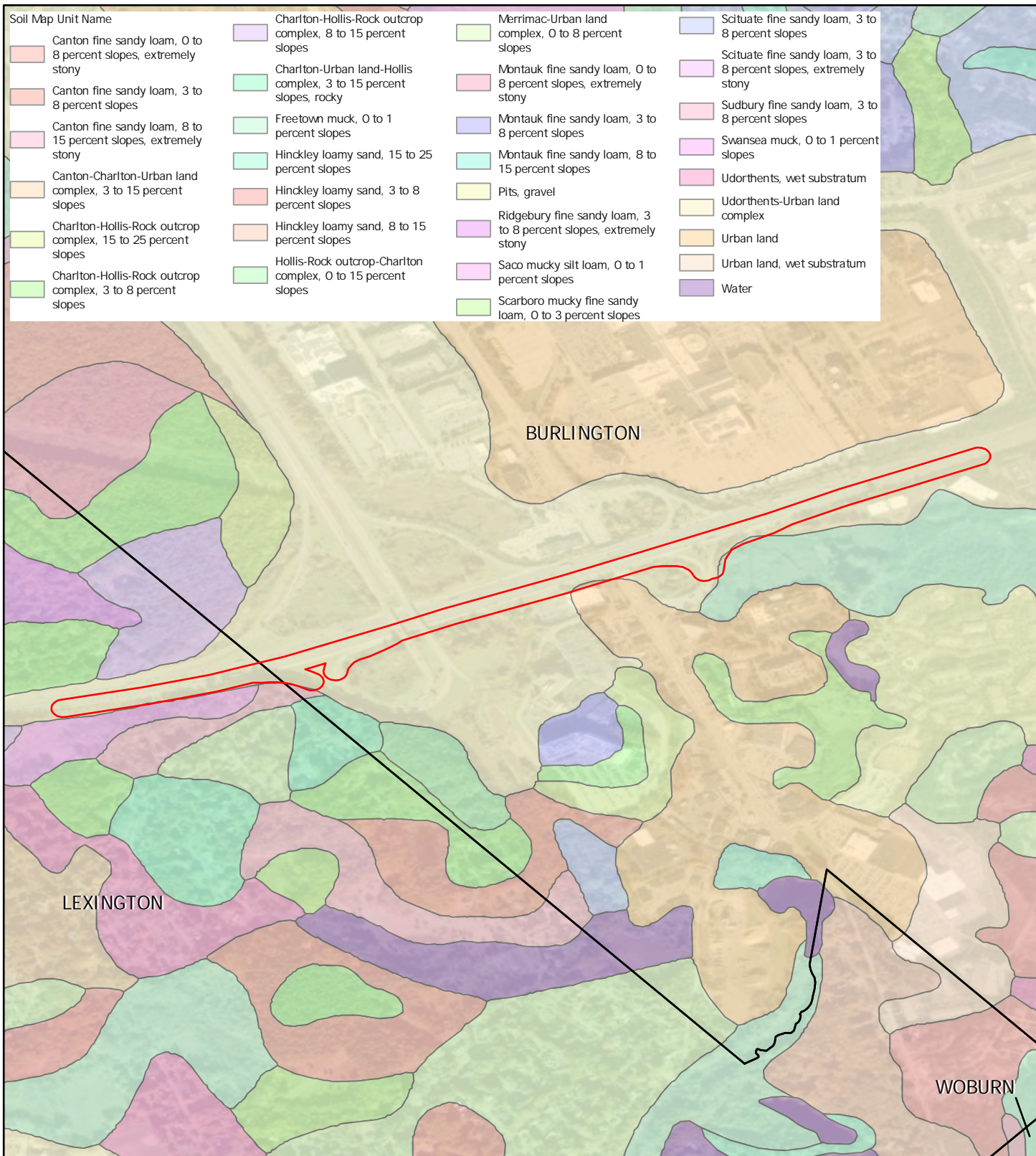


Figure 5. FEMA Map
 Improvements at I-95 (Route 128) / Route 3
 Interchange Project
 Lexington & Burlington, MA

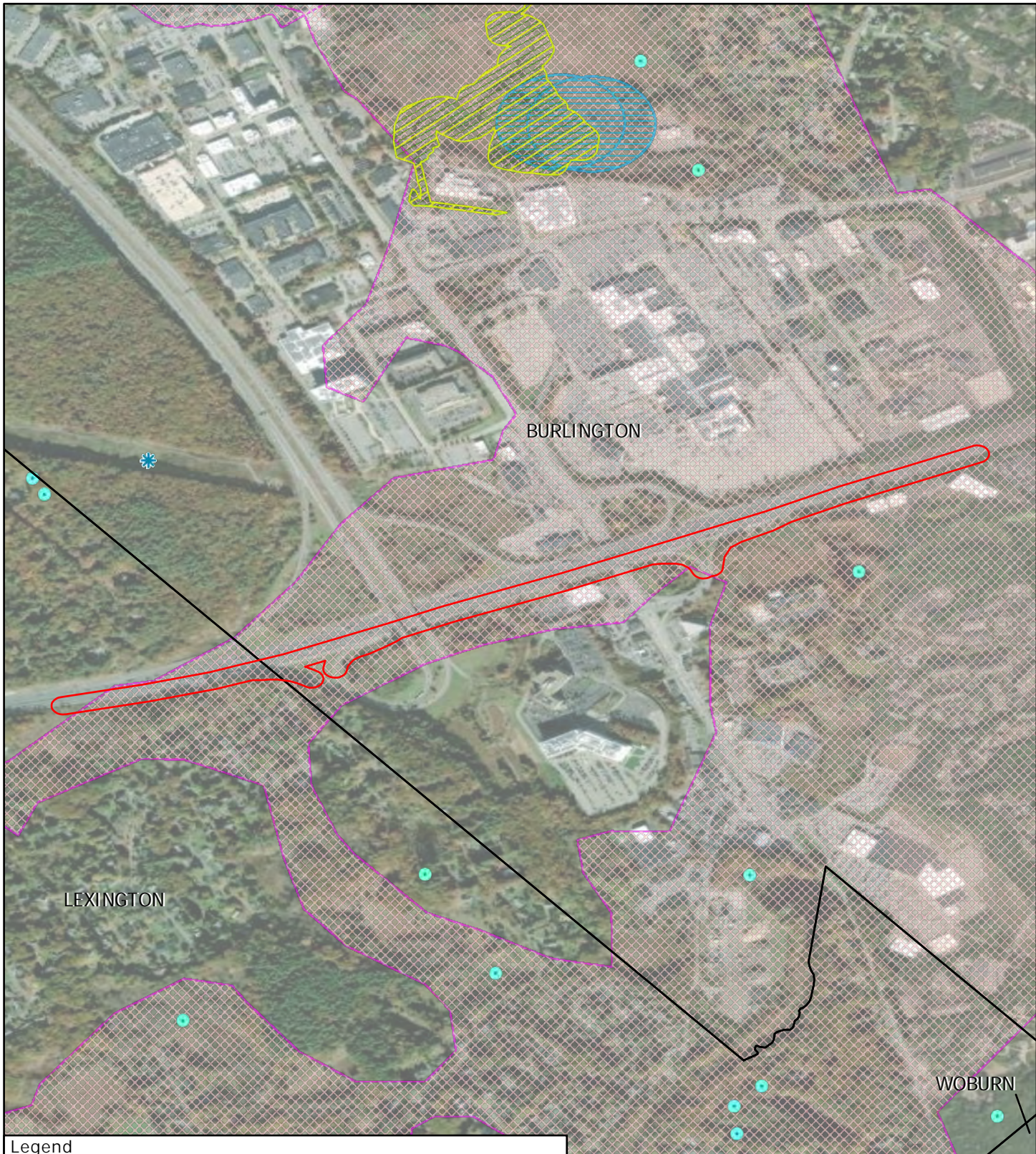


August 2024









Boston, MA



<p>Legend</p> <p> Town Boundary</p> <p> Project Area</p> <p>Notes: 1. GIS data courtesy of NRCS and MassGIS. 2. Basemap courtesy of ESRI.</p> <p>0 800 Feet</p> <p>N</p>	<p>Figure 6. Soils Map Improvements at I-95 (Route 128) / Route 3 Interchange Project Lexington & Burlington, MA</p>	
	<p>Massachusetts Department of Transportation Highway Division</p> <p>August 2024</p>	<p>Boston, MA</p>



Legend

 DEP Approved Zone I	 NHESP Priority Habitats of Rare Species
 Approved Wellhead Protection Areas (Zone II)	 NHESP Estimated Habitats of Rare Wildlife
 NHESP Certified Vernal Pools	 Town Boundary
 NHESP Potential Vernal Pools	 Project Area

Notes:
 1. GIS data courtesy of NHESP and MassGIS.
 2. Basemap courtesy of ESRI.
 3. There is no ACEC or Coldwater fishery resource in proximity to the project area.

0 800 Feet

N

Figure 7. NHESP and MassDEP Wellhead Map
 Improvements at I-95 (Route 128) / Route 3 Interchange Project
 Lexington & Burlington, MA



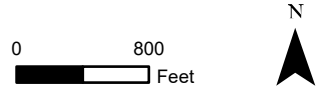
August 2024



Boston, MA



- Legend**
- Protected Open Space
 - Town Boundary
 - Project Area

Notes:
 1. GIS data courtesy of MassGIS.
 2. Basemap courtesy of ESRI.



<p>Figure 8. Open Space Map Improvements at I-95 (Route 128) / Route 3 Interchange Project Lexington & Burlington, MA</p>	
	
<p>August 2024</p>	<p>Boston, MA</p>

Appendix B – Wetland Delineation Report

Wetland and Waterbody Resource Delineation Report

**Improvements at I-95 (Route 128)
/Route 3 Interchange Project**

Project No. 609516

Burlington, Massachusetts

February 2024

Prepared For:
Massachusetts Department of Transportation
10 Park Plaza
Boston, Massachusetts 02116

Prepared By:
HNTB Corporation
31 St. James Avenue, Suite 300
Boston, Massachusetts 02116

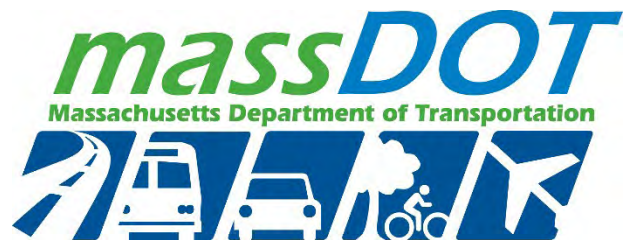


Table of Contents

<u>Section</u>	<u>Page</u>
1.0 Introduction	4
2.0 Methods	4
2.1 Background Information	4
2.2 On-Site Field Determination	5
2.2.1 Wetland Delineation	5
2.2.2 Waterbody Identification	5
2.3 GPS and GIS Mapping.....	6
3.0 Summary of Background Information.....	6
3.1 Project Area Description.....	6
3.2 MassDEP and NWI Mapped Wetlands	6
3.3 USGS Mapped Waterbodies.....	7
3.4 FEMA Floodplain.....	7
3.5 Soils	7
3.6 Natural Heritage Habitat & Other Resources.....	7
4.0 Field Survey Results.....	8
4.1 Wetlands.....	8
4.1.1 Palustrine Emergent (PEM)	8
4.1.2 Palustrine Emergent (PEM) / Palustrine Scrub-Shrub (PSS)	9
4.1.3 Palustrine Forested (PFO).....	9
4.2 Waterbodies	10
4.3 Additional Jurisdictional Resources Under the Massachusetts Wetlands Protection Act	12
5.0 Summary of Findings & Next Steps	12
5.1 Wetlands.....	12
5.2 Waterbodies	12
5.3 Next Steps	13
6.0 References.....	14

List of Appendices

Appendix

Appendix A Figures

- Figure 1. Project Locus Map
- Figure 2. Aerial Location Map
- Figure 3. MassDEP Wetlands Map
- Figure 4. NWI Wetlands Map
- Figure 5. FEMA Floodplain Map
- Figure 6. SSURGO Soils Map
- Figure 7. NHESP & Other Resources Map
- Figure 8. Delineated Features Map

Appendix B Wetland Determination Data Forms

Appendix C Waters of the US Field Data Forms

List of Tables

<u>Table</u>	<u>Page</u>
Table 1. Soil Mapping Units Occurring in the Cape Cod Bridges Project Area.....	7
Table 2. Delineated Wetlands in the Cape Cod Bridges Project Area.....	10
Table 3. Delineated Waterbodies in the Cape Cod Bridges Project Area.....	11

1.0 Introduction

The Massachusetts Department of Transportation (MassDOT) is proposing improvements to the interchange of Interstate-95 Northbound (I-95 NB) and US Route 3 Southbound (US-3-SB) and the on and off-ramps along the Collector-Distributor (C-D Road) in the Town of Burlington, Massachusetts. The project limits extend approximately 1.5 miles along I-95 NB and the C-D Road in the Town of Lexington, easterly, under the Route 3 overpass, to the Middlesex Turnpike I-95 NB on-ramp in Burlington.

Safety concerns on the I-95 NB/US-3 Interchange include frequent rear-end collisions on the highway ramps and the collector/distributor (C-D Road), servicing US-3 and Middlesex Turnpike (Exits 50A and 50B), as well as safety concerns related to ramp geometry, high speeds, and driver confusion. For these reasons, and due to the local and regional growth that has occurred, operations and safety measures are proposed. The Project will address existing transportation deficiencies through the provision of geometric improvements, roadway resurfacing, guide sign replacement, and new pavement markings. This incorporates a dropped lane on I-95 NB (between Exit 50A, to the Middlesex Turnpike off-ramp at Exit 50B) and the elimination of the Middlesex Turnpike to I-95 NB On-Ramp merge by breaking the jersey barrier located after the bridge over Middlesex Turnpike, allowing vehicles from the C-D Road to enter the I-95 NB in an add-a-lane. The proposed improvements will improve traffic operations and safety along the I-95 C-D Road between Exit 50A and Exit 50B.

In support of the project, HNTB Corporation performed a field delineation of the wetlands and waterbodies of the project area. The purpose of the investigation was to determine the presence and extent of wetlands and waterbodies within the project area that meet the criteria for federal or state regulation under Section 404 of the Clean Water Act [33 United States Code (USC) § 1344] and/or the Massachusetts Wetlands Protection Act (MA WPA) (310 CMR 10.00). Results will be used to facilitate environmental permitting, construction planning, and design efforts.

2.0 Methods

2.1 Background Information

Prior to conducting field work, a desktop review of existing site information was conducted to aid in the identification of potential resources in the project areas, including:

- U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle Maps for Lexington, Massachusetts (USGS 2021);
- Google Earth high-resolution satellite imagery (Google Earth 2018);
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps (USFWS 2018);
- MassDEP Wetlands 2005 (MassGIS);
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Community Panel No. 25017C0401E, and 25017C0402E;
- U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) Database (USDA NRCS, 2017);

- NHESP Estimated and Priority Habitat 2021 (MassGIS);
- NHESP Potential and Certified Vernal Pools (MassGIS); and
- MassDEP Wellhead Protection Areas (Zone I, Zone II, & IWPA) (MassGIS)

2.2 On-Site Field Determination

2.2.1 Wetland Delineation

Wetlands were delineated in accordance with the *U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual* (1987 edition) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE, 2012), referenced in this report as the *USACE Manual* and *Regional Supplement*. Per the *USACE Manual*, the project area was evaluated using the Routine Level 2 approach, which included reviewing existing data followed by an on-site inspection and field determination.

Wetland scientists performed systematic field surveys within the study area (Appendix A, Figure 1) on May 11, 2023, and May 24, 2023. The wetland delineation was executed by inspecting the project area to identify topographic, drainage, soil characteristics, and vegetation features that would indicate potential wetland features. Sampling locations were then identified within potential wetland areas and investigated using the Routine On-Site Determination Method provided in the *Regional Supplement*. At each sampling location, Wetland Determination Data Forms were completed to evaluate and document vegetation, soils, hydrology, and general site characteristics for upland and wetland data points, which are provided in Appendix B.

Boundaries of all resource areas within the project areas that exhibited the three criteria (hydrophytic vegetation, hydric soils, and hydrology) that define a wetland feature were demarcated with pink flagging. For wetlands that extended beyond the project areas, only the boundary within the project area was delineated.

Each area was assigned a wetland cover type classification based on the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Representative photographs of the wetland features were collected and are included in Appendix B.

2.2.2 Waterbody Identification

Prior to field surveys, USGS topographic quadrangle maps were reviewed to identify waterbodies and topography conducive to hydrologic flow near the site. A field survey, conducted concurrently with the wetland delineation effort, was performed to identify streams that meet the definition of Waters of the United States (WOTUS) and/or Massachusetts Wetlands Protection Act.

Federal Definition. According to WOTUS, a stream must be a natural defined channel between banks, created by the action of surface water, and exhibit two or more of the following characteristics:

- A. Feature is depicted as a solid or broken blue line on the most recent edition of the USGS 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map;

- B. Feature is known to contain flowing water continuously for a period of at least six months of the year in most years;
- C. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water;
- D. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed and/or
- E. The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

State Definition. According to the Massachusetts Wetlands Protection Act, a stream is defined as a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into, or out of an Area Subject to Protection under M.G.L. c. 131, § 40. A portion of a stream may flow through a culvert or beneath a bridge. Such a body of running water which does not flow throughout the year (i.e., which is intermittent) is a stream except for that portion upgradient of all bogs, swamps, wet meadows and marshes.

All waterbodies were demarcated with blue flagging, photographs were collected, and feature characteristics were recorded on a Waters of the U.S. Data Sheet. Completed data forms are provided in Appendix C.

2.3 GPS and GIS Mapping

Wetland boundaries and waterbody features were demarcated using pink or blue flagging by wetland scientists in the field. GPS location data was collected at each flag in the project area. A geo-referenced wetland file and a waterbody verification file suitable for overlay onto survey area maps and aerial photographs were created using ArcGIS Version 10.8.1 geographical information system (GIS) mapping software.

3.0 Summary of Background Information

3.1 Project Area Description

The Project is located along the I-95 in Lexington and Burlington, Massachusetts, and is located within the Merrimack River Watershed (Hydrologic Unit Code (HUC) 8: 01070006). See Appendix A, Figures 1 and 2 for project area location.

3.2 MassDEP and NWI Mapped Wetlands

According to Massachusetts Department of Environmental Protection Wetlands data (MassDEP 2018) and the National Wetland Inventory (USFWS 2018), there are predominately freshwater emergent, forest/scrub-shrub wetlands within the project area. Locations of the MassDEP and NWI mapped wetlands in and proximate to the project extent are depicted in Appendix A, Figures 3 and 4.

3.3 USGS Mapped Waterbodies

Based on USGS topographic quadrangle maps (7.5-minute Topographic Quadrangle Maps for Lexington, Massachusetts), one stream intersects the project area. Vine Brook crosses beneath I-95 and continues to flow north out of the project area. USGS-mapped water bodies are identified in the National Hydrography Dataset (NHD), which is a feature-based database that interconnects and uniquely identifies the stream segments or reaches that make up the nation's surface water drainage system, developed at 1:24,000 scale.

3.4 FEMA Floodplain

Based on the FEMA floodplain map, the eastern portion of the project is located in the 100-yr floodplain. The Base Floodplain Elevation (BFE) varies through the project from 138 ft NAVD88 to 140 ft NAVD88. The location of the FEMA 100-yr floodplain in and proximate to the project area is depicted in Appendix A, Figure 5.

3.5 Soils

The project areas pass through a total of 4 soil mapping units (USDA NRCS 2013). Table 1 shows the soil mapping units occurring within the project areas. Of the four soil units, only one soil unit is hydric soils, which can be indicative of the presence of wetland communities. Locations of the soil types in the project area are depicted in Appendix A, Figure 6.

Table 1. Soil Mapping Units Occurring in the Project Area.

Soil Series Mapping Unit	Soil Series	Hydric
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	No
52A	Freetown muck, 0 to 1 percent slopes	Yes
656	Udorthents-Urban land complex	No
602	Urban land	No

3.6 Natural Heritage Habitat & Other Resources

Other resources included in the desktop review were NHESP Estimated and Priority Habitat of Rare Wildlife, NHESP Certified and Potential Vernal Pools, Well Protection Areas, and Protected Open Space. Based on a review of these GIS data layers, the project is located within a Zone II Approved Wellhead Protection Zone. The project is not located in NHESP Estimated or Priority Habitat, NHESP Certified or Potential Vernal Pools, or Protected Open Space. Locations of the other resources in the project area are depicted in Appendix A, Figure 7.

4.0 Field Survey Results

Delineated resources in the project area include four wetlands and two waterbodies, as depicted in Appendix A, Figure 8.

4.1 Wetlands

Four wetland complexes that meet the definition of a wetland were delineated, as summarized in Table 2 (at the end of the section). Table 2 also categorizes the jurisdiction of these wetlands under the Massachusetts Wetlands Protection Act and/or the Federal Clean Water Act, pending agency review and approval. Wetland types were classified based on the predominant classification within the likely impact area of the proposed project, as defined by the *Classification of Wetlands and Deepwater Habitats* (Cowardin, et al. 1979) (Appendix B). The predominant wetland types delineated were palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands. Sections 4.1.1, 4.1.2, and 4.1.3 further describe these wetland types.

4.1.1 Palustrine Emergent (PEM) Wetlands (HNTB-A and HNTB-D)

Two delineated wetlands can be classified as palustrine emergent wetlands. Wetlands that meet the Cowardian definition of a freshwater emergent (PEM) wetland are comprised of greater than 30 percent cover of emergent vegetation. Tree species and shrub species are also found in PEM wetlands; however, they are found predominately on the edges of the wetland. No species within the tree layer was identified within the two delineated palustrine emergent wetlands. The dominant species in the herb layer of emergent areas included broadleaf cattail (*Typha latifolia*). Other common species found in the herb layer include soft rush (*Juncus effusus*), spinulose wood fern (*Dryopteris carthusiana*), sensitive fern (*Onoclea sensibilis*), purple loosestrife (*Lythrum salicaria*), wrinkleleaf goldenrod (*Solidago rugosa*), and common horsetail (*Equisetum arvense*). The shrub layer was relatively sparse for the two delineated wetlands (less than 20 percent cover), with the only identified woody species in the shrub stratum being alder buckthorn (*Frangula alnus*). Please note that purple loosestrife (*Lythrum salicaria*) and alder buckthorn (*Frangula alnus*) are identified as invasive species by the Massachusetts Invasive Plant Advisory Group.

Soils of mapped palustrine emergent wetlands fall into one of three hydric soil classification types: histic epipedon (surface horizons 8 inches or more thick of organic soil material), black histic (a layer of peat, mucky peat, or muck 8 inches or more thick that starts within the upper 6 inches of the soil surface; has a hue of 10YR or yellower, value of 3 or less, and chroma of 1 or less; and is underlain by mineral soil material with chroma of 2 or less), or sandy mucky mineral (a layer of mucky modified sandy soil material 2 in. or more thick starting within 6 in. of the soil surface).

Hydrologic input appears to be primarily from the abutting stream, groundwater, and surface flow from adjacent road embankments, paved areas, and the overall road stormwater drainage system of storm drains and culverts. All PEM wetlands encountered during the field survey had standing water, high water table, or saturated soil conditions. Wetlands also had other primary and/or secondary evidence of hydrology, including inundation visible on aerial imagery, water-stained leaves, hydrogen sulfide odor, drainage patterns, saturation visible on aerial imagery, and geomorphic position.

4.1.2 Palustrine Emergent (PEM) Wetland/Palustrine Scrub-Shrub (PSS) Wetland (HNTB-E)

One delineated wetland can be classified as palustrine emergent and palustrine scrub-shrub. Wetlands that meet the Cowardian definition of a palustrine emergent and palustrine scrub-shrub wetland are wetlands with greater than 30 percent of their areas dominated by woody vegetation, including trees and shrubs and woody vegetation less than 20 feet tall. In these wetlands, bottoms are submerged all or most of the time, and streambeds are exposed much of the time.

In a scrub-shrub wetland, vegetation is separated into five subclasses that are distinguished by leaf type being either broad-leaved deciduous, needle-leaved deciduous, broad-leaved evergreen, needle-leaved evergreen, or dead (includes stands of dead woody plants less than 6 m tall, regardless of density, and less than 30 percent cover of living vegetation).¹ The dominant tree species identified include swamp white oak (*Quercus bicolor*), green ash (*Fraxinus pennsylvanica*), and red maple (*Acer rubrum*), which constitute approximately 90 percent of the total cover. Dominant woody species in the shrub stratum include highbush blueberry (*Vaccinium corymbosum*), and southern arrowwood (*Viburnum dentatum*). The dominant species in the herb layer of the delineated PEM/PSS wetland includes Eastern skunk cabbage (*Symplocarpus foetidus*). Other common species found in this layer include poison ivy (*Toxicodendron radicans*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), soft rush (*Juncus effusus*) and wrinkle-leaf goldenrod (*Solidago rugosa*).

The hydric soil classification of the delineated palustrine scrub-shrub wetland was identified as sandy mucky mineral (a layer of mucky modified sandy soil material 2 in. or more thick starting within 6 in. of the soil surface).

Hydrologic input is primarily from groundwater and surface flow from adjacent road embankments, paved areas, and the overall road stormwater drainage system of storm drains and culverts. The delineated wetland also had primary and/or secondary evidence of hydrology including high water table, saturation, water marks, water-stained leaves, thin muck surface, drainage patterns and geomorphic position.

4.1.3 Palustrine Forested (PFO) Wetland (HNTB-E)

One of the delineated wetland features can be classified as a palustrine forested wetland. Wetlands that meet the Cowardian definition of a freshwater forested wetland are comprised of greater than 30 percent cover of trees. Emergent vegetation and shrub species are also found in the understory of such wetlands, found predominately within larger open canopy areas. The dominant tree species identified in the delineated palustrine forested wetland is Northern Red Oak (*Quercus rubra*), providing approximately 30 percent of the total cover. The shrub layer was relatively sparse (less than 20 percent cover), with the dominant woody species being multiflora rose (*Rosa multiflora*). The herb layer was found to be most abundant in this wetland, providing an estimated 125 percent cover. The dominant species in the herb layer include creeping buttercup (*Ranunculus repens*) and Eastern skunk cabbage (*Symplocarpus foetidus*). Other common plant species identified within this layer include jewelweed (*Impatiens capensis*) and wrinkleleaf goldenrod (*Solidago rugosa*). Please note, that oriental bittersweet (*Celastrus orbiculatus*) and multiflora rose were

¹ USFWS Second Edition Classification of Wetlands and Deepwater Habitats of the United States (August 2013). Accessible on USFWS website here: <https://www.fws.gov/media/classification-wetlands-and-deepwater-habitats-united-states>.

identified in or along the boundary of the wetland and these species are identified as invasive species by the Massachusetts Invasive Plant Advisory Group.

The hydric soil classification of the forested wetland included depleted below dark surface (a layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting at a depth of 12 inches of the soil surface, and having a minimum thickness of either 6 inches or 2 inches if the 2 inches consists of fragmental soil material.).

Hydrologic input is primarily from groundwater, surface flow from adjacent undeveloped lands, road embankments, and paved areas. Wetlands also had primary and/or secondary evidence of hydrology, including surface water, high water table, saturation, water marks, sediment deposits, water-stained leaves, thin muck surface, drainage patterns, and geomorphic position.

Table 2. Delineated Bordering Vegetated Wetlands in the Cape Cod Canal Area Transportation Improvements Program Areas.

Wetland ID	Wetland Flag Numbers	Type ¹	Jurisdiction ²		Wetland Description
			Federal	State ³	
HNTB-A	HNTB-1-A-1 – HNTB-1-A-37	PEM	Yes	Yes -BVW	Hillslope wetland located adjacent to exit 50B off Middlesex Turnpike to I-95 N. Vegetation in the wetland includes alder buckthorn, broadleaf cattail, and soft rush.
HNTB-D	HNTB-D-1 – HNTB-D-14	PEM	No	Yes -ILSF	Depressional wetland (basin) located along the south of I-95 N, east of its crossing with route 3 north. Vegetation in the wetland includes broadleaf cattail , sensitive fern, and purple loosestrife.
HNTB-E	HNTB-E-1 – HNTB-E-24	PEM/ PSS	Yes	Yes -BVW	Depressional wetland located south of I-95 N and northeast of N Emerson Road. Vegetation includes swamp white oak, arrowwood viburnum, and eastern skunk cabbage.
HNTB-F	HNTB-F-1 – HNTB-F-8	PFO	Yes	Yes -BVW	Depressional wetland located south of I-95 N and to the north of Burlington Street. Vegetation includes northern red oak, Multiflora rose, and creeping buttercup.

¹ Cowardian et al. (1979) classifications: PFO = palustrine forest, PEM =palustrine emergent, PSS = palustrine scrub-shrub

³ BVW = Bordering Vegetative Wetland, LUW = Land Under Water, ILSF = Isolated Land Subject to Flooding

4.2 Waterbodies

Two waterbodies were identified in the project area, as depicted in Appendix A, Figure 5. One of these delineated features is a USGS-mapped perennial stream, known as Vine Brook (HNTB B/HNTB-C), which is a tributary to the Shawsheen River. The other delineated waterbody (HNTB-G) was identified as an unnamed intermittent stream flowing through wetland HNTB-F. Per the current definition of WOTUS

pursuant to the CWA, perennial streams are subject to jurisdiction. Intermittent streams are not subject to jurisdiction under the CWA unless connected to a traditional navigable water. Streams are regulated by the Massachusetts Wetlands Protection Act based on the definition of a stream, which states that “means a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into or out of an Area Subject to Protection under M.G.L. c. 131, § 40. A portion of a stream may flow through a culvert or beneath a bridge. Such a body of running water which does not flow throughout the year (i.e., which is intermittent) is a stream except for that portion upgradient of all bogs, swamps, wet meadows and marshes.” Under the Massachusetts Wetlands Protection Act, Vine Brook (HNTB-B/HNTB-C) is regulated as land under water, riverfront area, and bank, with a 100-foot buffer zone associated with it. The delineated stream, HNTB-G, is regulated as land under water and bank, which has a 100-foot buffer associated with it. Table 3 includes a summary of the channelized feature identified during field investigations. Field datasheets are included in Appendix C.

Table 3. Delineated Waterbodies in the Cape Cod Canal Area Transportation Improvements Program Areas.

Waterbody Name	Channel Hydrologic Classification	USGS Mapped	Jurisdiction ¹		Description
			Federal	State	
Vine Brook (HNTB-B/HNTB-C)	Perennial	Yes	Yes	Yes -Bank -LUW -Riverfront Area	Perennial stream known as Vine Brook which flows to the north of the project area and passes beneath I-95 through a culvert, eventually draining into the Shawsheen River. The channel is approximately 15 to 20 feet wide and is comprised predominately of silts and sands. There was approximately 1 to 2 feet of water present during the field investigation.
HNTB-G	Intermittent	No	No	Yes -Bank -LUW	Intermittent stream which flows upstream from delineated wetland HNTB-F. This is an unnamed stream with a channel that is approximately 10 feet wide that is comprised of cobbles and muck. There was approximately 3 inches of water present during the field investigation.

4.3 Additional Jurisdictional Resources Under the Massachusetts Wetlands Protection Act

Under the Massachusetts Wetlands Protection Act, bordering vegetated wetlands and perennial streams are provided additional protections of buffer zones and Riverfront Areas. The following sections detail these additional resources.

4.3.1 Buffer Zone

Per 310 CMR 10.02(1)(a), resources identified as bordering vegetated wetlands and banks are provided buffer zones extending 100 feet horizontally outward from the delineated boundary. The wetland delineation identified HNTB-A, HNTB-E, and HNTB-F as bordering vegetated wetlands and, therefore, are provided a 100-ft buffer zone. No buffer zone is associated with HNTB-D, as it has been identified as isolated land subject to flooding. The delineated streams are regulated under the MA WPA as bank and are provided a 100-foot buffer zone.

4.3.2 Riverfront Area

As a perennial stream, Vine Brook (HNTB-B/HNTB-C) also has a Riverfront Area. Per 310 CMR 10.58(2)(a)(3), the Riverfront Area is measured horizontally outward from the river and a parallel line 200 feet away. Within the project area, Vine Brook runs through a culvert that is greater than 200 feet in length; as such, the Riverfront Area stops at a perpendicular line at the upstream end of the culvert and resumes at the downstream end (310 CMR 10.58(2)(a)(3)c).

5.0 Summary of Findings and Next Steps

Section 5 summarizes resources identified in the Improvements at I-95 (Route 128) /Route 3 Interchange Area and the next steps for the project.

5.1 Wetlands

Field investigations identified and delineated four jurisdictional wetland complexes within the project area. These wetlands have varying jurisdiction under Section 404 of the Clean Water Act and the Massachusetts Wetlands Protection Act.

5.2 Waterbodies

Two streams were delineated during the field survey. Currently, under the CWA, only Vine Brook (HNTB-B/HNTB-C) is jurisdictional under Sections 401 and 404 and meets the definition of WOTUS. However, per the Clean Water Act guidance, each agency reserves the right to determine permitting requirements on a case-by-case basis for features that convey water even if the feature is man-made, modified, or part of stormwater drainage system. Both streams are considered jurisdictional under the Massachusetts Wetlands Protection Act.

5.3 Next Steps

Further coordination with USACE, MassDEP, and local conservation commissions will be conducted for a final determination regarding federal and/or state jurisdiction of wetlands and waterbodies and environmental permitting requirements for potential project impacts to these resources.

6.0 References

- “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States & Carabell v. United States*.” 2008. https://www.epa.gov/sites/production/files/2016-02/documents/cwa_jurisdiction_following_rapanos120208.pdf
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. (1979). *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79/31, Washington, D.C.
- Environmental Laboratory. 1987. *United States Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS.
- Federal Emergency Management Agency (FEMA) *Flood Insurance Rate Map, Community Panel No. 25001C0316J, 25001C0318J, 25001C0319J, 25001C0526J, 25001C0314J, 25001C0313J, 25001C0501J, 25001C0502J*.
- Federal Interagency Committee for Wetland Delineation. 1989. *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication. 76 pp. plus appendices.
- Gretag, Macbeth. 2000. *Munsell Soil Color Charts*.
- United States Army Corp of Engineers (USACE). 1987. *Corps of Engineers Wetland Delineation Manual*. Vicksburg, MS.
- United States Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast & Northcentral Region*. Vicksburg, MS.
- United States Department of Agriculture (USDA) Natural Resource Conservation Service, National Hydric Soils List by State. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html.
- United States Department of Agriculture (USDA): Natural Resources Conservation Service Official Soil Descriptions. <https://soilseries.sc.egov.usda.gov/osdname.aspx>. Accessed October 2020.
- United States Fish and Wildlife Service. (2018). *National Wetland Inventory (NWI) database*, updated May 1, 2018. Available at: <http://www.fws.gov/wetlands/Data/Mapper.html>
- United States Geological Survey (USGS). (2021). *7.5-minute Scale Series Topographic Quadrangle, Lexington, MA*.

Appendices

Appendix A

Figures

Figure 1
Project Locus Map



Legend

- Project Area
- Town of Burlington

Note:
- USGS US Topo 7.5 minute maps for Lexington, 2021.



Project Locus Map
Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA



Appendix A
Figure 1

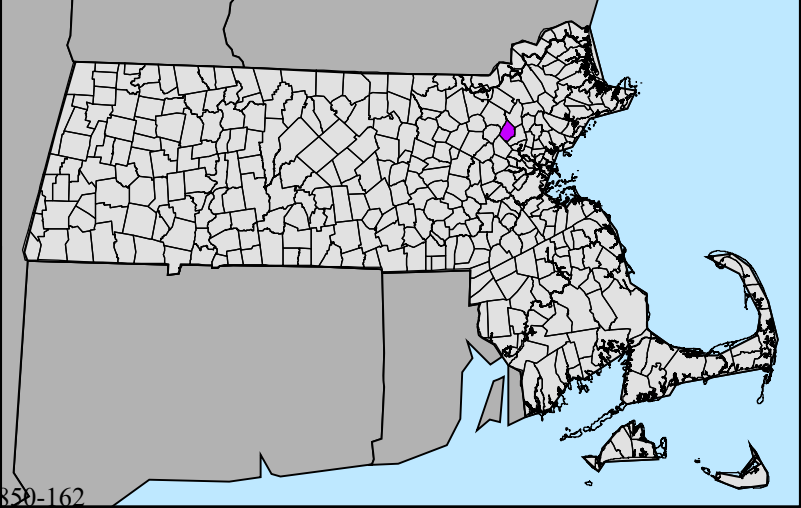


Figure 2
Aerial Location Map



Aerial Location Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

— Project Area

Appendix A
Figure 2



Boston, MA

February 2024

0 0.1 0.2 0.3 0.4 0.5 Miles



Figure 3

MassDEP Wetlands Map

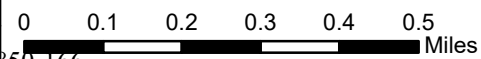


MassDEP Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

- Project Area
- Shoreline
- Perennial Stream
- - - Intermittent Stream
- Deep Marsh
- Open Water
- Shallow Marsh Meadow or Fen
- Shrub Swamp
- Wooded Swamp Deciduous



Appendix A
Figure 3



Boston, MA

February 2024

A00850-166

Figure 4
NWI Wetlands Map



NWI Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

- Project Area
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

Appendix A
Figure 4



Boston, MA

February 2024

A00850-168

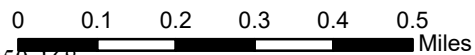


Figure 5

FEMA Floodplain Map



FEMA Floodplain Map
 Improvements at I-95 (Route 128)/Route 3 Interchange
 Burlington, MA

Legend	
Project Area	AE: 1% Annual Chance of Flooding, with BFE
Base Flood Elevations	AE: Regulatory Floodway
Flood Zone Designations	
A: 1% Annual Chance of Flooding, no BFE	X: 0.2% Annual Chance of Flooding
































Appendix A
 Figure 5

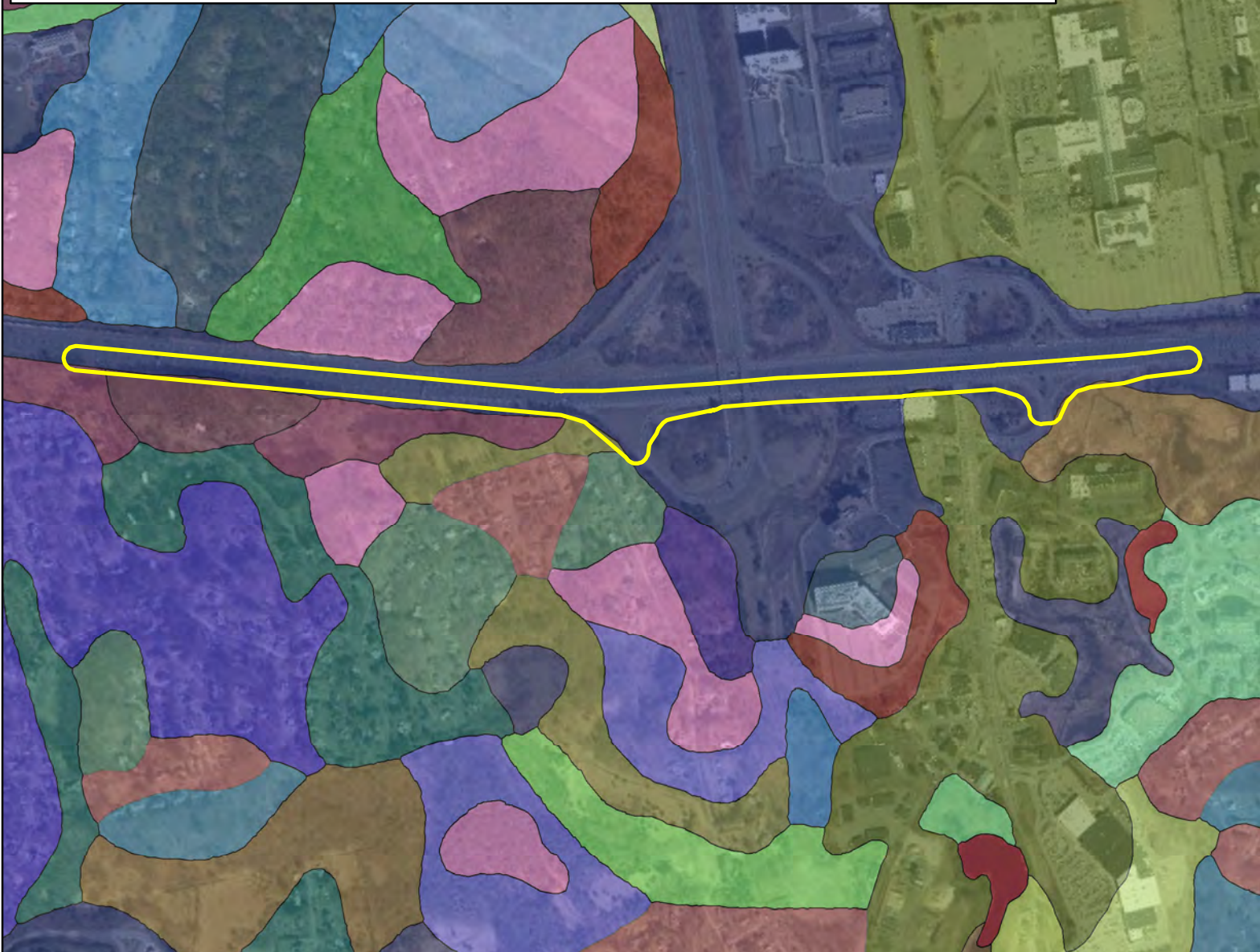
Boston, MA February 2024



Figure 6
SSURGO Soils Map

Soil Type Legend

- | | |
|---|--|
|  Canton fine sandy loam, 0 to 8 percent slopes, extremely stony |  Montauk fine sandy loam, 8 to 15 percent slopes |
|  Canton fine sandy loam, 3 to 8 percent slopes |  Pits, gravel |
|  Canton fine sandy loam, 8 to 15 percent slopes, extremely stony |  Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony |
|  Canton-Charlton-Urban land complex, 3 to 15 percent slopes |  Saco mucky silt loam, frequently ponded, 0 to 1 percent slopes, frequently flooded |
|  Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes |  Scarborough mucky fine sandy loam, 0 to 3 percent slopes |
|  Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes |  Scituate fine sandy loam, 3 to 8 percent slopes |
|  Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes |  Sudbury fine sandy loam, 3 to 8 percent slopes |
|  Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky |  Swansea muck, 0 to 1 percent slopes |
|  Freetown muck, 0 to 1 percent slopes |  Udorthents, wet substratum |
|  Hinckley loamy sand, 15 to 25 percent slopes |  Udorthents-Urban land complex |
|  Hinckley loamy sand, 3 to 8 percent slopes |  Urban land |
|  Hinckley loamy sand, 8 to 15 percent slopes |  Urban land, wet substratum |
|  Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes |  Wareham loamy fine sand, 0 to 5 percent slopes |
|  Merrimac-Urban land complex, 0 to 8 percent slopes |  Water |
|  Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony |  Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony |
|  Montauk fine sandy loam, 3 to 8 percent slopes | |



SSURGO Soils Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

 Project Area

Appendix A
Figure 6



Boston, MA

February 2024

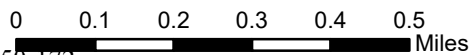
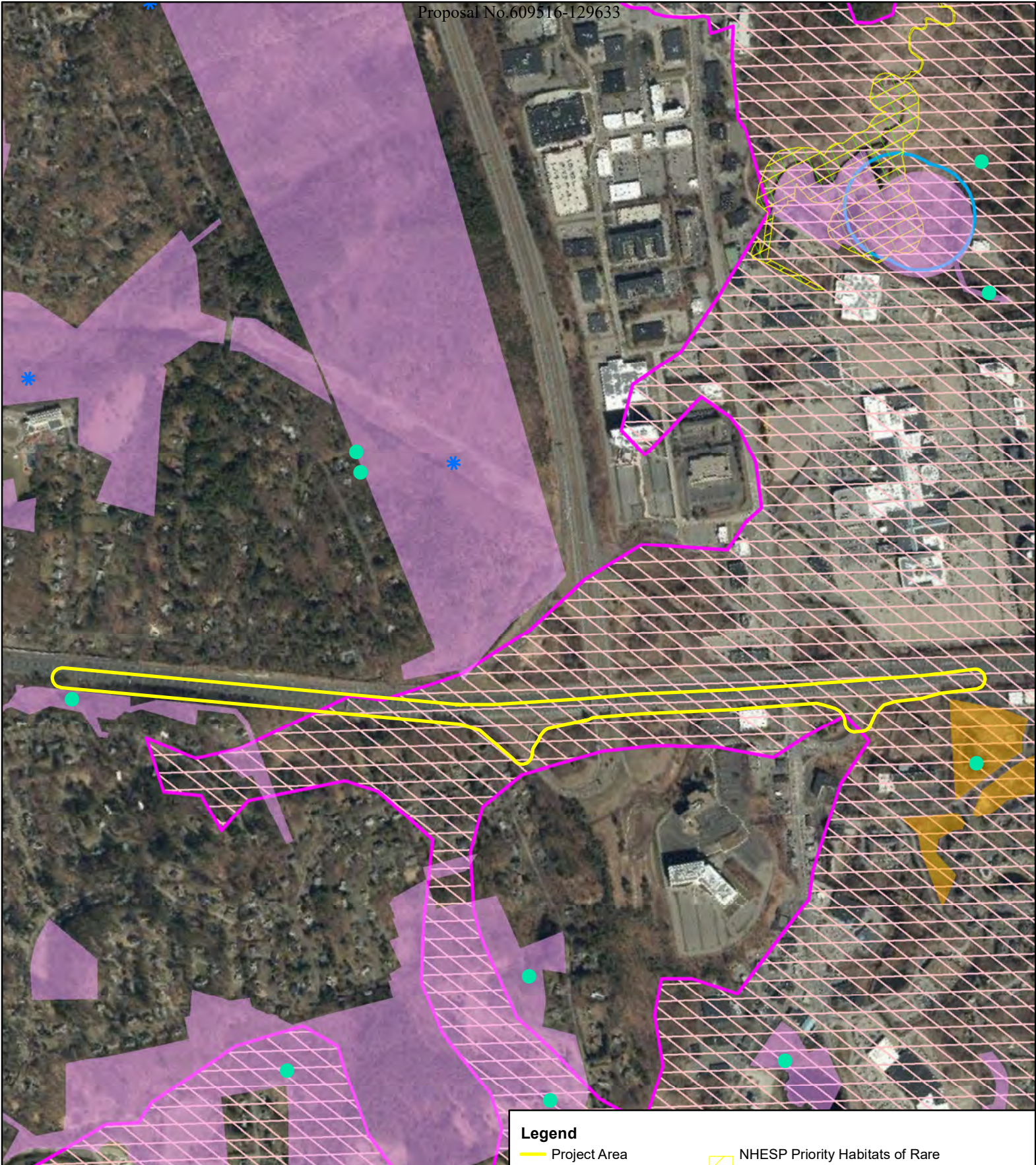


Figure 7
NHESP & Other Resources Map



NHESP & Other Resources Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

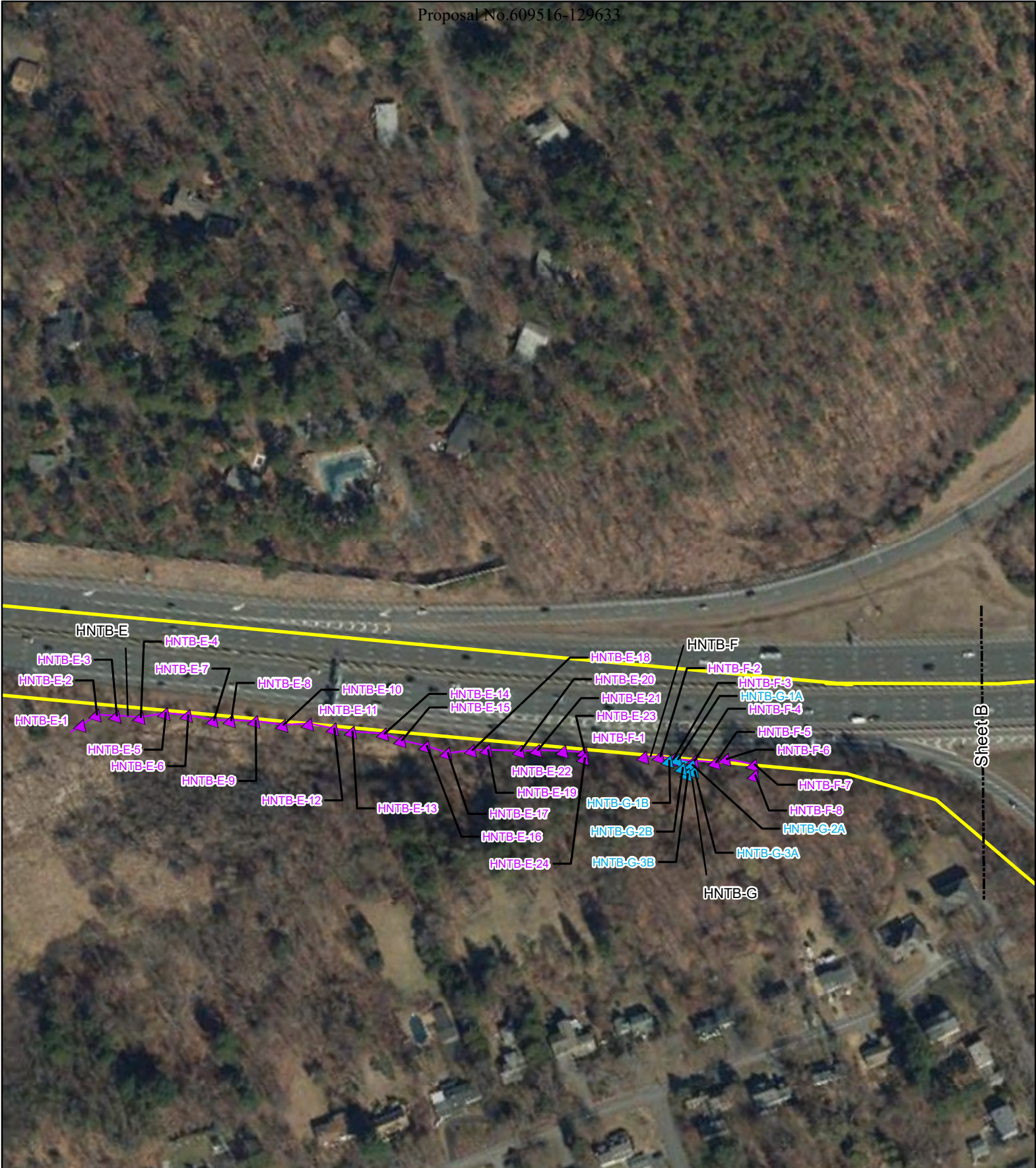
Legend

- Project Area
- * Certified Vernal Pool
- Potential Vernal Pool
- Open Space - Municipal
- Open Space - Private
- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Zone I Approved Wellhead Protection Area
- Zone II Approved Wellhead Protection Area

0 0.1 0.2 0.3 0.4 0.5 Miles



Figure 8
Delineated Features Map



Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

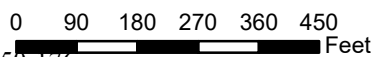
- Project Area
- Stream Boundary Line
- Wetland Boundary Line
- ▲ Bank Boundary Flag
- ▲ Wetland Boundary Flag

Appendix A
Figure 8
Sheet A



Boston, MA

February 2024





Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

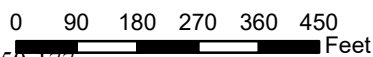
- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- ▲ Wetland Boundary Flag

Appendix A
Figure 8
Sheet B

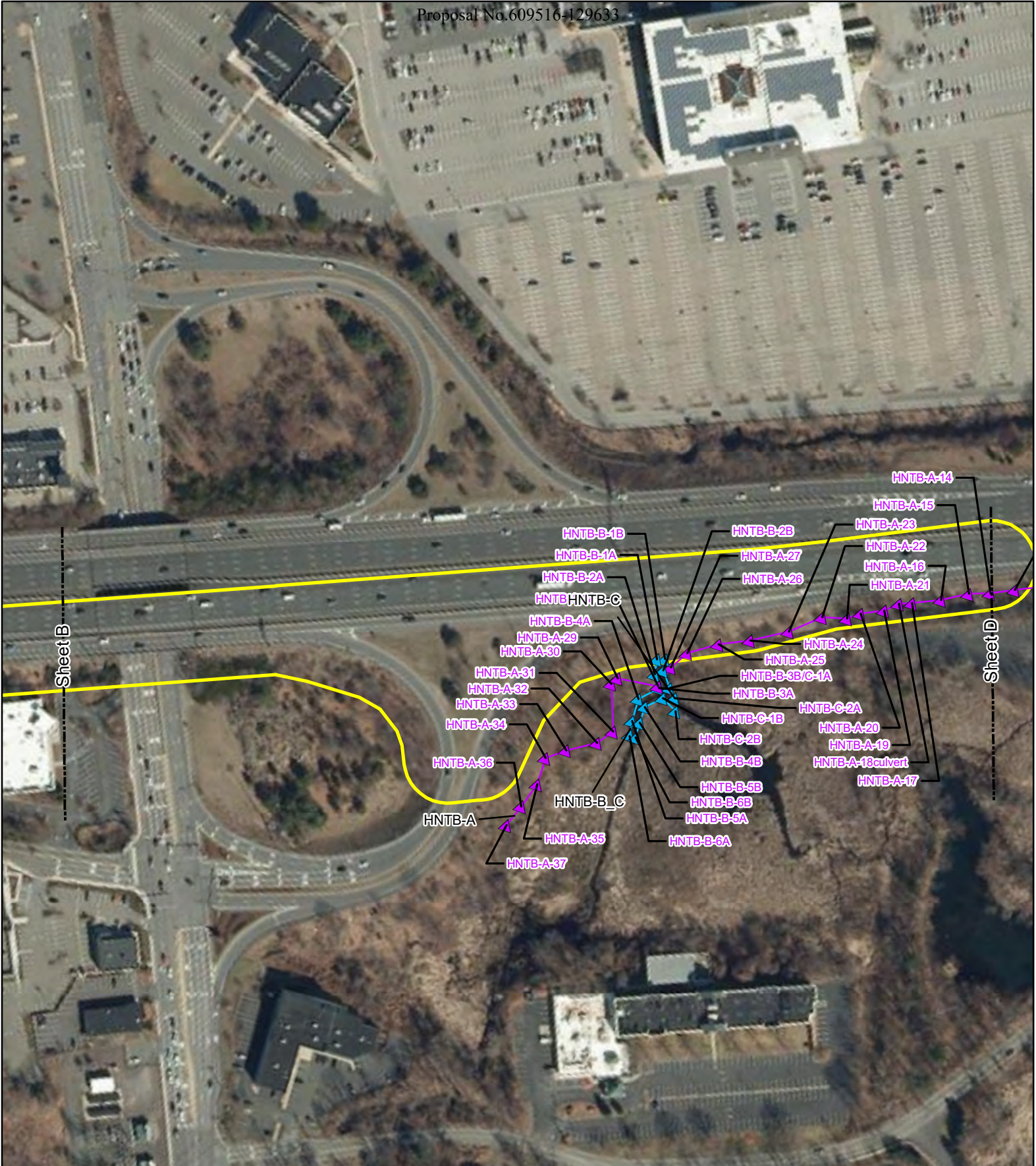


Boston, MA

February 2024



A00850-177



Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

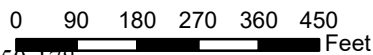
- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- ▲ Wetland Boundary Flag
- Wetland Boundary Line

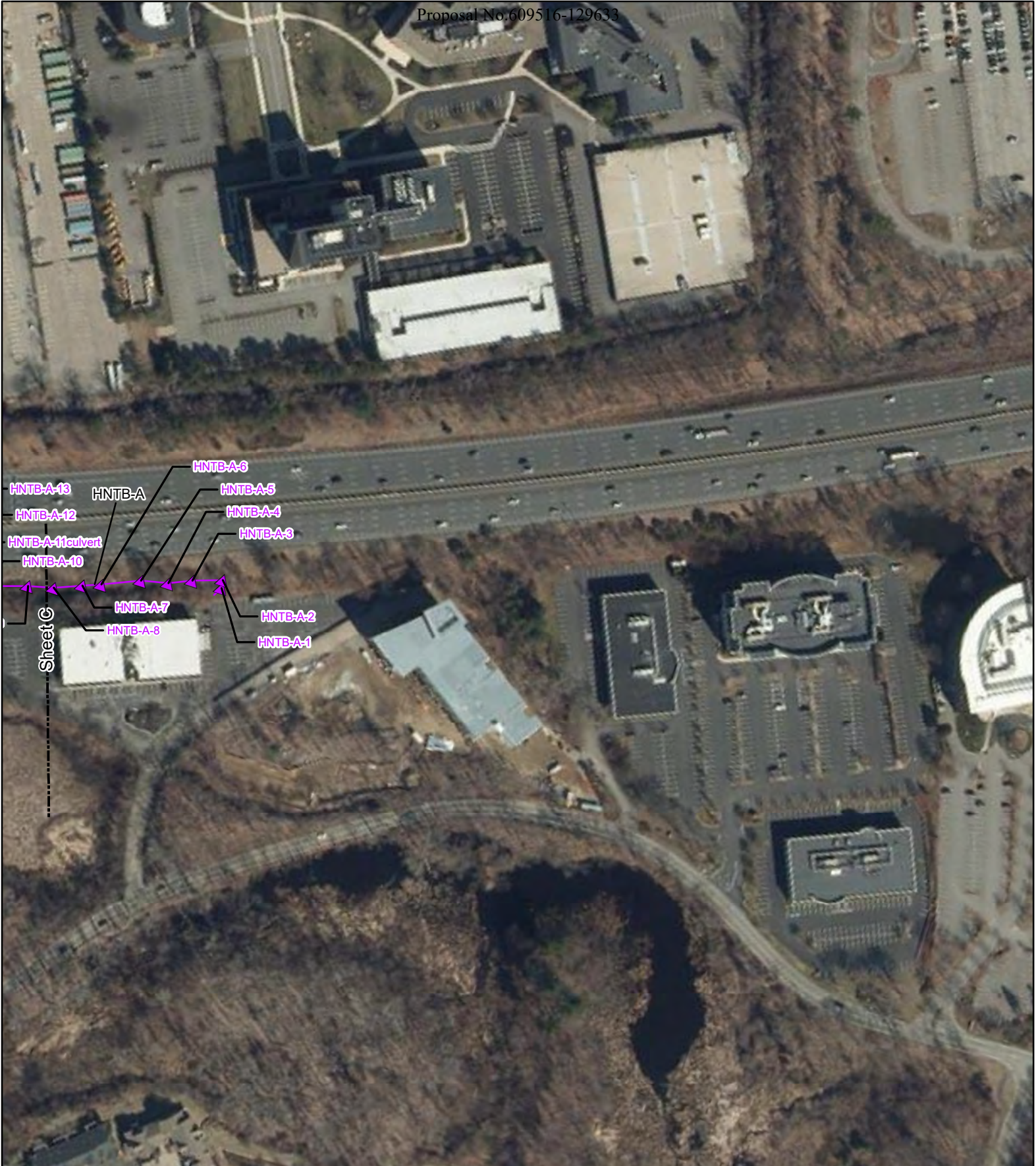
Appendix A
Figure 8
Sheet C



Boston, MA

February 2024





Delineated Wetlands Map

Improvements at I-95 (Route 128)/Route 3 Interchange
Burlington, MA

Legend

- Project Area
- Stream Boundary Line
- ▲ Bank Boundary Flag
- Wetland Boundary Line
- ▲ Wetland Boundary Flag

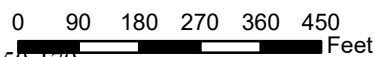
Appendix A
Figure 8
Sheet D



Boston, MA

February 2024

A00850-179



Appendix B

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-A-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.4787 Long: -71.2121 Datum: NAD83
 Soil Map Unit Name: Freetown Muck, 0 to 1 percent NWI classification: PEM1Fh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2 inches</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-A-Wet

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>55</u></td> <td>x 1 = <u>55</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>95</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.36</u>	Total % Cover of:	Multiply by:	OBL species <u>55</u>	x 1 = <u>55</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>95</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>55</u>	x 1 = <u>55</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>10</u>	x 3 = <u>30</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>95</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
2. <u>Typha latifolia</u>	<u>50</u>	<u>Yes</u>	<u>OBL</u>															
3. <u>Dryopteris carthusiana</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-A-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					MK	
8-15	10YR 4/1	100					S	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-A-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5-10%
 Subregion (LRR or MLRA): LRR R Lat: 42.479 Long: -71.212 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> 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? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-A-Up

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																
1. <u>Quercus rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)															
2. _____	_____	_____	_____																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
5. _____	_____	_____	_____																
6. _____	_____	_____	_____																
7. _____	_____	_____	_____																
	<u>30</u>	= Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>35</u></td> <td>x 5 = <u>175</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>445</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.87</u>		Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>35</u>	x 5 = <u>175</u>	Column Totals: <u>115</u> (A)	<u>445</u> (B)
Total % Cover of:	Multiply by:																		
OBL species <u>0</u>	x 1 = <u>0</u>																		
FACW species <u>0</u>	x 2 = <u>0</u>																		
FAC species <u>50</u>	x 3 = <u>150</u>																		
FACU species <u>30</u>	x 4 = <u>120</u>																		
UPL species <u>35</u>	x 5 = <u>175</u>																		
Column Totals: <u>115</u> (A)	<u>445</u> (B)																		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)																			
1. <u>Frangula alnus</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)															
2. <u>Malus pumila</u>	<u>15</u>	<u>Yes</u>	<u>UPL</u>																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
5. _____	_____	_____	_____																
6. _____	_____	_____	_____																
7. _____	_____	_____	_____																
	<u>40</u>	= Total Cover		Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.															
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)																			
1. <u>Toxicodendron radicans</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>			Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>													
2. <u>Solidago rugosa</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
5. _____	_____	_____	_____																
6. _____	_____	_____	_____																
7. _____	_____	_____	_____																
8. _____	_____	_____	_____																
9. _____	_____	_____	_____																
10. _____	_____	_____	_____																
11. _____	_____	_____	_____																
12. _____	_____	_____	_____																
	<u>25</u>	= Total Cover																	
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)																			
1. <u>Celastrus orbiculatus</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>																
2. _____	_____	_____	_____																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
	<u>20</u>	= Total Cover																	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: HNTB-A-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-15	10YR 3/3	100					SL	fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|--|--|---|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |
|--|--|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
--	---



Photo 1: View of Upland data point.
Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-D-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.477 Long: -71.218 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1 inches</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-D-Wet

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><u>Total % Cover of:</u></td> <td style="width:50%;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species <u>75</u></td> <td>x 1 = <u>75</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>115</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.28</u>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species <u>75</u>	x 1 = <u>75</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>115</u> (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species <u>75</u>	x 1 = <u>75</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>10</u>	x 3 = <u>30</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>115</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)					Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
1. <u>Typha latifolia</u>	<u>70</u>	<u>Yes</u>	<u>OBL</u>															
2. <u>Onoclea sensibilis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
3. <u>Lythrum salicaria</u>	<u>5</u>	<u>No</u>	<u>OBL</u>															
4. <u>Solidago rugosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
5. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>90</u> = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-D-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	100					SL	masked with some organics
3-15	10YR 4/1	100					SL	fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/11/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-D-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5-10%
 Subregion (LRR or MLRA): LRR R Lat: 42.477 Long: -71.218 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-D-Up

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>37</u></td> <td>x 4 = <u>148</u></td> </tr> <tr> <td>UPL species <u>35</u></td> <td>x 5 = <u>175</u></td> </tr> <tr> <td>Column Totals: <u>87</u> (A)</td> <td><u>368</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.23</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>37</u>	x 4 = <u>148</u>	UPL species <u>35</u>	x 5 = <u>175</u>	Column Totals: <u>87</u> (A)	<u>368</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>15</u>	x 3 = <u>45</u>																	
FACU species <u>37</u>	x 4 = <u>148</u>																	
UPL species <u>35</u>	x 5 = <u>175</u>																	
Column Totals: <u>87</u> (A)	<u>368</u> (B)																	
_____ = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Pyrus calleryana</u>	<u>25</u>	<u>Yes</u>	<u>UPL</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Solidago rugosa</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>															
2. <u>Achillea millefolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
3. <u>Pyrus calleryana</u>	<u>10</u>	<u>No</u>	<u>UPL</u>															
4. <u>Rubus flagellaris</u>	<u>2</u>	<u>No</u>	<u>FACU</u>															
5. <u>Festuca rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30ft</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																		
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																		
Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																		
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-D-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 3/4	100					SL	fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock
 Depth (inches): 8"

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Upland data point.
 Photo taken 5/11/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-E-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.474499 Long: -71.227948 Datum: NAD83
 Soil Map Unit Name: Swansea muck, 0 to 1 percent slopes NWI classification: PEM1E/PSS1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: 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>2 inches</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-E-Wet

	Absolute % Cover	Dominant Species?	Indicator Status																													
Tree Stratum (Plot size: <u>30 ft</u>)																																
1. <u>Quercus bicolor</u>	<u>40</u>	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																												
2. <u>Fraxinus pennsylvanica</u>	<u>30</u>	Yes	FACW																													
3. <u>Acer rubrum</u>	<u>20</u>	Yes	FAC																													
4. _____	_____	_____	_____																													
5. _____	_____	_____	_____																													
6. _____	_____	_____	_____																													
7. _____	_____	_____	_____																													
<u>90</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;"></td> <td style="text-align:center;">Total % Cover of:</td> <td style="width:50%;"></td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td style="text-align:center;"><u>85</u></td> <td>x 1 =</td> <td style="text-align:center;"><u>85</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align:center;"><u>100</u></td> <td>x 2 =</td> <td style="text-align:center;"><u>200</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align:center;"><u>65</u></td> <td>x 3 =</td> <td style="text-align:center;"><u>195</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align:center;"><u>12</u></td> <td>x 4 =</td> <td style="text-align:center;"><u>48</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align:center;"><u>0</u></td> <td>x 5 =</td> <td style="text-align:center;"><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align:center;"><u>262</u></td> <td>(A)</td> <td style="text-align:center;"><u>528</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.01</u>		Total % Cover of:		Multiply by:	OBL species	<u>85</u>	x 1 =	<u>85</u>	FACW species	<u>100</u>	x 2 =	<u>200</u>	FAC species	<u>65</u>	x 3 =	<u>195</u>	FACU species	<u>12</u>	x 4 =	<u>48</u>	UPL species	<u>0</u>	x 5 =	<u>0</u>	Column Totals:	<u>262</u>	(A)	<u>528</u> (B)
	Total % Cover of:		Multiply by:																													
OBL species	<u>85</u>	x 1 =	<u>85</u>																													
FACW species	<u>100</u>	x 2 =	<u>200</u>																													
FAC species	<u>65</u>	x 3 =	<u>195</u>																													
FACU species	<u>12</u>	x 4 =	<u>48</u>																													
UPL species	<u>0</u>	x 5 =	<u>0</u>																													
Column Totals:	<u>262</u>	(A)	<u>528</u> (B)																													
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																																
1. <u>Vaccinium corymbosum</u>	<u>15</u>	Yes	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																												
2. <u>Viburnum dentatum</u>	<u>20</u>	Yes	FAC																													
3. _____	_____	_____	_____																													
4. _____	_____	_____	_____																													
5. _____	_____	_____	_____																													
6. _____	_____	_____	_____																													
7. _____	_____	_____	_____																													
<u>35</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																												
Herb Stratum (Plot size: <u>5 ft</u>)																																
1. <u>Symplocarpus foetidus</u>	<u>80</u>	Yes	OBL		Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																											
2. <u>Toxicodendron radicans</u>	<u>10</u>	No	FAC																													
3. <u>Osmunda cinnamomea</u>	<u>10</u>	No	FACW																													
4. <u>Parthenocissus quinquefolia</u>	<u>10</u>	No	FACU																													
5. <u>Onoclea sensibilis</u>	<u>5</u>	No	FACW																													
6. <u>Juncus effusus</u>	<u>5</u>	No	OBL																													
7. <u>Solidago rugosa</u>	<u>5</u>	No	FAC																													
8. <u>Rosa multiflora</u>	<u>2</u>	No	FACU																													
9. _____	_____	_____	_____																													
10. _____	_____	_____	_____																													
11. _____	_____	_____	_____																													
12. _____	_____	_____	_____																													
<u>127</u> = Total Cover																																
Woody Vine Stratum (Plot size: <u>30ft</u>)																																
1. <u>Vitis riparia</u>	<u>10</u>	Yes	FAC	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																												
2. _____	_____	_____	_____																													
3. _____	_____	_____	_____																													
4. _____	_____	_____	_____																													
<u>10</u> = Total Cover																																
Remarks: (Include photo numbers here or on a separate sheet.)																																

SOIL

Sampling Point: HNTB-E-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	100					SL	
12-16	10YR 2/1	75					SL	
	10YR 4/3	25					SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/24/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-E-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 5-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.474484 Long: -71.228035 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-E-Up

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30 ft</u>)																		
1. <u>Acer rubrum</u>	<u>30</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>57%</u> (A/B)														
2. <u>Quercus alba</u>	<u>15</u>	Yes	FACU															
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	<u>45</u>	= Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>110</u></td> <td>x 3 = <u>330</u></td> </tr> <tr> <td>FACU species <u>45</u></td> <td>x 4 = <u>180</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>160</u> (A)</td> <td><u>520</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.25</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>110</u>	x 3 = <u>330</u>	FACU species <u>45</u>	x 4 = <u>180</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>160</u> (A)	<u>520</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>110</u>	x 3 = <u>330</u>																	
FACU species <u>45</u>	x 4 = <u>180</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>160</u> (A)	<u>520</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Frangula alnus</u>	<u>30</u>	Yes	FAC															
2. <u>Vaccinium corymbosum</u>	<u>5</u>	No	FACW															
3. <u>Prunus serotina</u>	<u>20</u>	Yes	FACU															
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	<u>55</u>	= Total Cover																
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Trientalis borealis</u>	<u>30</u>	Yes	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Solidago rugosa</u>	<u>5</u>	No	FAC															
3. <u>Osmunda claytoniana</u>	<u>5</u>	No	FAC															
4. <u>Lysimachia quadrifolia</u>	<u>10</u>	Yes	FACU															
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
12. _____																		
	<u>50</u>	= Total Cover																
Woody Vine Stratum (Plot size: <u>30ft</u>)																		
1. <u>Vitis riparia</u>	<u>10</u>	Yes	FAC	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____																		
3. _____																		
4. _____																		
	<u>10</u>	= Total Cover																
<table style="width:100%; border:none;"> <tr> <td style="width:60%;">Hydrophytic Vegetation Present?</td> <td style="width:10%; text-align:center;">Yes <input checked="" type="checkbox"/></td> <td style="width:10%; text-align:center;">No <input type="checkbox"/></td> <td style="width:20%;"></td> </tr> </table>					Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>											
Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>																
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-E-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/2	100					SL	
2-5	10YR 3/4	100					SL	
5-15	10YR 5/4	100					S	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Upland data point. Photo taken 5/24/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-F-Wet
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR R Lat: 42.474987 Long: -71.224389 Datum: NAD83
 Soil Map Unit Name: Swansea muck, 0 to 1 percent slopes NWI classification: PFO1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0.5 inches</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>at surface</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-F-Wet

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Quercus rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)														
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	<u>30</u>	= Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>175</u> (A)</td> <td><u>520</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.97</u>	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>175</u> (A)	<u>520</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>30</u>	x 1 = <u>30</u>																	
FACW species <u>15</u>	x 2 = <u>30</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>50</u>	x 4 = <u>200</u>																	
UPL species <u>10</u>	x 5 = <u>50</u>																	
Column Totals: <u>175</u> (A)	<u>520</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)																		
1. <u>Rosa multiflora</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>															
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	<u>15</u>	= Total Cover																
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)																		
1. <u>Symplocarpus foetidus</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Impatiens capensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>															
3. <u>Ranunculus repens</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>															
4. <u>Artemisia vulgaris</u>	<u>10</u>	<u>No</u>	<u>UPL</u>															
5. <u>Solidago rugosa</u>	<u>10</u>	<u>No</u>	<u>FAC</u>															
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
12. _____																		
	<u>125</u>	= Total Cover																
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)																		
1. <u>Celastrus orbiculatus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>															
2. _____																		
3. _____																		
4. _____																		
	<u>5</u>	= Total Cover																
Remarks: (Include photo numbers here or on a separate sheet.)																		
<table style="width:100%; border:none;"> <tr> <td style="width:70%;">Hydrophytic Vegetation Present?</td> <td style="width:10%; text-align:center;">Yes <input checked="" type="checkbox"/></td> <td style="width:20%; text-align:center;">No <input type="checkbox"/></td> </tr> </table>				Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>												
Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>																

SOIL

Sampling Point: HNTB-F-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					SL	masked with some organics
8-16	Gley 6/10Y	85	10YR 5/8	15	C	M	S	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Wetland data point. Photo taken 5/24/2023.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Burlington City/County: Middlesex County Sampling Date: 5/24/23
 Applicant/Owner: MassDOT State: MA Sampling Point: HNTB-F-Up
 Investigator(s): C. Barron & M. Seifert Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): convex Slope (%): 5-15%
 Subregion (LRR or MLRA): LRR R Lat: 42.474979 Long: -71.224426 Datum: NAD83
 Soil Map Unit Name: Udorthents-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? 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"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: HNTB-F-Up

<u>Tree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>65</u></td> <td>x 5 = <u>325</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>575</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.26</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>65</u>	x 5 = <u>325</u>	Column Totals: <u>135</u> (A)	<u>575</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>30</u>	x 3 = <u>90</u>																	
FACU species <u>40</u>	x 4 = <u>160</u>																	
UPL species <u>65</u>	x 5 = <u>325</u>																	
Column Totals: <u>135</u> (A)	<u>575</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Rhus typhina</u>	<u>5</u>	<u>Yes</u>	<u>NR</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
<u>Herb Stratum</u> (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Artemisia vulgaris</u>	<u>60</u>	<u>Yes</u>	<u>UPL</u>		Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>													
2. <u>Solidago rugosa</u>	<u>20</u>	<u>No</u>	<u>FAC</u>															
3. <u>Schizachyrium scoparium</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: HNTB-F-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 2/2	100					SL	
10-15	10YR 3/4	100					SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



Photo 1: View of Upland data point. Photo taken 5/24/2023.

Appendix C

Waters of the United States Field Data Forms

Waters of the U.S. Data Sheet

Project: Burlington	Feature ID: HNTB-B & HNTB-C	Stream Order: UNK
Date: 5/11/23	State: MA	Photos: See attached
Crew: C. Barron & M. Seifert	County: Middlesex	Flag Numbers: HNTB-B-1A/B – 6A/B & HNTB-C-1A/B – 2A/B

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
TNW (Subject to ebb and flow)	TNW – Perennial (Flowing year round)	RPW – Seasonal (must flow at least 3 months a year)	Non-RPW draining uplands
	RPW – Perennial (Flowing year round)		Non-RPW erosional feature
Describe <i>rational for hydrologic class:</i> USGS named stream Vine Brook	X (Flowing year round)		Non-RPW with abutting wetland
			Non-RPW with adjacent wetland
Hydrologic Connectivity – Upstream: Unnamed Wetland		Downstream: HNTB-A	Adjacent/Abutting: HNTB-A

Feature Description: (check all that apply)

Shape (with respect to OHW)		Substrate		Vegetation Cover Type (MBSS)
X Natural Channel Shape	Width: 15 – 20 ft	X Silts	X Sands	
Artificial (man-made)	Depth: 1-2 ft		Gravel	Other:
X Manipulated (man-altered)	Bank Erosion/stability:		Concrete	Riprap
Other:	Stable	Side slope: <input type="checkbox"/> ≥1:1 <input type="checkbox"/> 2:1 <input checked="" type="checkbox"/> 3:1 <input checked="" type="checkbox"/> ≤4:1		

Notes: Large stream flowing through HNTB-A and under I-95.
LB: Same as RB.

Weather/Precipitation Conditions:

Inches of Rain Within Last Week		Monthly Drought Condition							
		NCDC Regional PDSI							
		http://www.ncdc.noaa.gov/temp-and-precip/ climatological-rankings/index.php Month: April Year: 2023							
X No rain	0-0.5				X				
Light rain	0.5-1	X	-6	-5	-4	-3	-2	-1	0
Heavy Rain	>1								1
		Severe Drought		Moderate Drought		Normal		Moderately Wet	
								Severely Wet	

Non-tidal tributary has: (check all that apply; include photos for each & list photo #)

Bed and Banks		Ordinary High Water Mark			
X Yes	Clear, natural line impressed on the bank		Sediment deposition		Sediment sorting
No	Changes in the character of soil		Water staining		Scour
	Shelving	X	Presence of flood litter/debris	X	Observed/predicted flow events
X	Vegetation matted down, bent, or absent		Destruction of terrestrial veg.		Abrupt change in plant community
	Leaf litter disturbed		Presence of wrack line		Other:

Tidal tributary has: (check all that apply; include photos for each & list photo #)

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
	Oil or scum line along shore objects		Survey to available datum		Water is clear
	Fine shell or debris deposits (foreshore)		Physical markings		Water is discolored
	Physical markings/characteristics		Vegetation lines/changes in types		Oily film
	Tidal gauges				Other:

Notes:

Photo 1: View of HNTB-B, facing North. The stream is culverted under I-95.



Photo 2: View of HNTB-C, facing South. The stream is abutting HNTB-A.



Waters of the U.S. Data Sheet

Project: Burlington	Feature ID: HNTB-G	Stream Order: UNK
Date: 5/24/23	State: MA	Photos: See attached
Crew: C. Barron & M. Seifert	County: Middlesex	Flag Numbers: HNTB-G-1A/B – 3A/B

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
TNW (Subject to ebb and flow)	TNW – Perennial (Flowing year round)	X RPW – Seasonal (must flow at least 3 months a year)	Non-RPW draining uplands
	RPW – Perennial (Flowing year round)		Non-RPW erosional feature
<i>Describe rational for hydrologic class:</i> Flowing at the time of delineation, not USGS mapped.			Non-RPW with abutting wetland
			Non-RPW with adjacent wetland
			Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity – Upstream: Unknown Downstream: HNTB-F Adjacent/Abutting: HNTB-F

Feature Description: (check all that apply)

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
Natural Channel Shape	Width: 10 ft	Silts	Sands	Muck	
X	Depth: 3 in	X	Gravel		RB: common mugwort, skunk cabbage, jewelweed, creeping buttercup, multiflora rose
X	Bank Erosion/stability:	Bedrock	Concrete	Other:	
	Stable	Side slope: <input type="checkbox"/> ≥1:1 <input type="checkbox"/> 2:1 <input checked="" type="checkbox"/> 3:1 <input checked="" type="checkbox"/> ≤4:1		Riprap	
<i>Notes:</i>					

LB: Same as RB.

Weather/Precipitation Conditions:

Inches of Rain Within Last Week		Monthly Drought Condition								
		NCDC Regional PDSI								
		http://www.ncdc.noaa.gov/temp-and-precip/ climatological-rankings/index.php Month: April Year: 2023								
X	0-0.5				X					
	0.5-1	X	-6	-5	-4	-3	-2	-1	0	1
	>1		Severe Drought			Moderate Drought			Normal	
										Moderately Wet
										Severely Wet

Non-tidal tributary has: (check all that apply; include photos for each & list photo #)

Bed and Banks		Ordinary High Water Mark			
X	Yes	X	Clear, natural line impressed on the bank		Sediment deposition
	No	X	Changes in the character of soil	X	Water staining
			Shelving		Presence of flood litter/debris
			Vegetation matted down, bent, or absent		Destruction of terrestrial veg.
			Leaf litter disturbed		Presence of wrack line

Tidal tributary has: (check all that apply; include photos for each & list photo #)

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
	Oil or scum line along shore objects		Survey to available datum		Water is clear
	Fine shell or debris deposits (foreshore)		Physical markings		Water is discolored
	Physical markings/characteristics		Vegetation lines/changes in types		Oily film
	Tidal gauges				Other:
<i>Notes:</i>					

Photo 1: View of HNTB-G, facing South. The stream is culverted under I-95.



Photo 2: View of HNTB-G culvert under I-95, facing North.



Appendix C – Project Design Plans

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

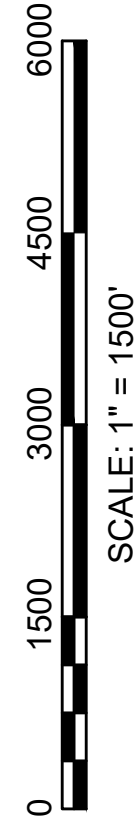
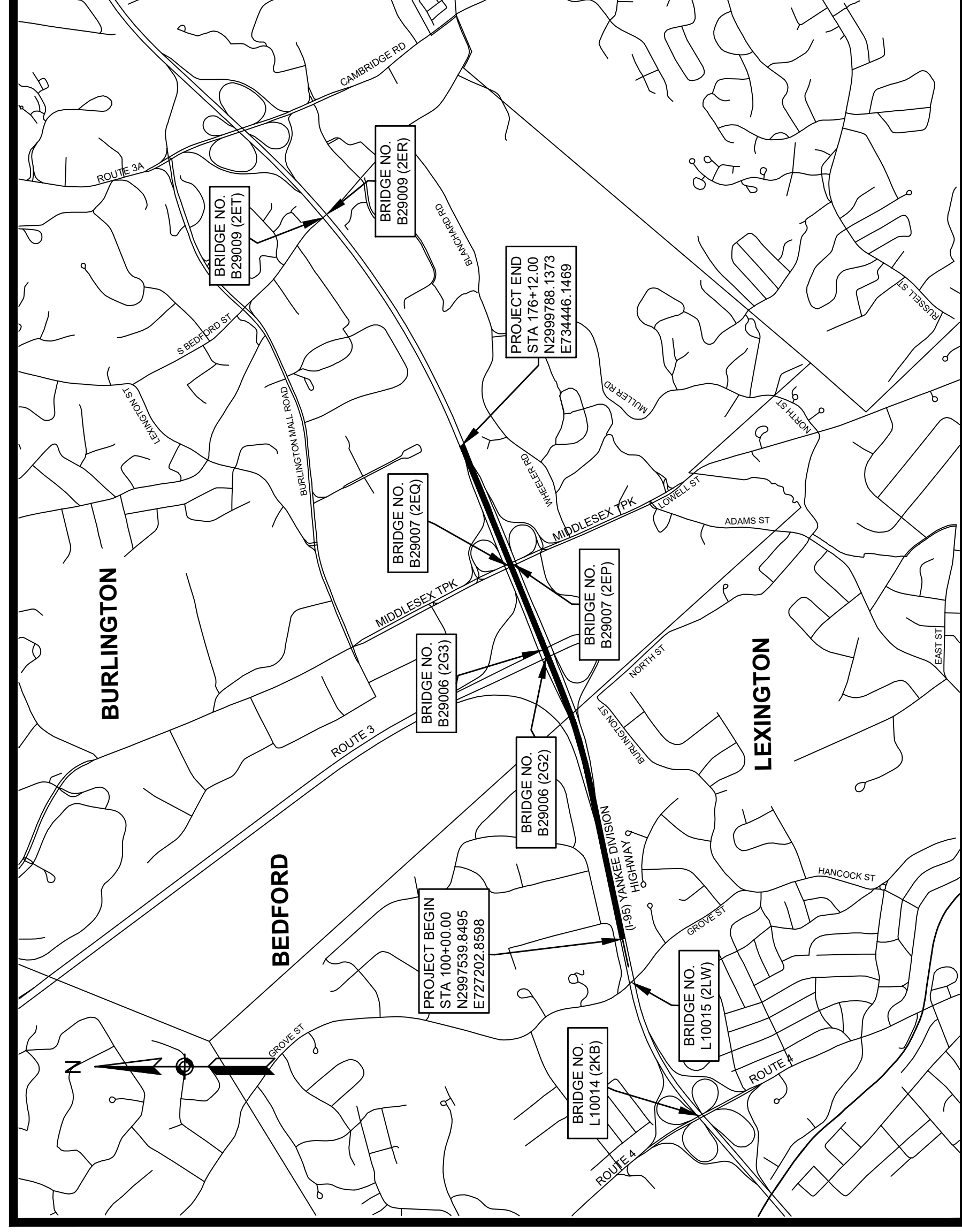
PLAN AND PROFILE OF IMPROVEMENTS AT INTERSTATE 95 (ROUTE 128)/ROUTE 3 INTERCHANGE

IN THE TOWN OF
LEXINGTON
MIDDLESEX COUNTY

WPA RDA SUBMISSION

SHEET NO.	DESCRIPTION
1	TITLE & INDEX
2	LEGEND
3	GENERAL NOTES
4	KEY PLAN
5	TYPICAL SECTIONS
6-12	CONSTRUCTION PLANS
13-18	PROFILES
19	CONSTRUCTION STAGING PLANS
20	CONSTRUCTION DETAILS

INDEX



LENGTH OF PROJECT = 7612.00 FEET = 1.442 MILES

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

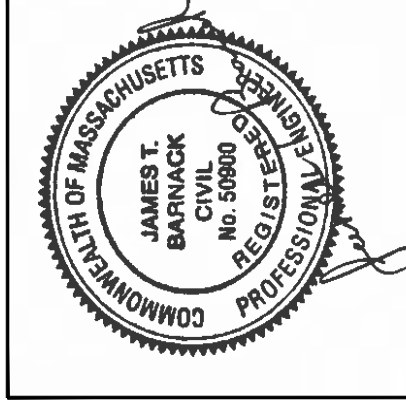
LEXINGTON I-95 / ROUTE 3 INTERCHANGE			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	20
PROJECT FILE NO. 609516		TITLE SHEET & INDEX	

DESIGN DESIGNATION (I-95 NB)

DESIGN SPEED	65 MPH
ADT (2019)	107,000
ADT (2031)	115,800
K	10.6%
D	100% NB
T (PEAK HOUR)	8.00%
T (AVERAGE DAY)	8.00%
DHV	8,500
DDHV	8,500 NB
FUNCTIONAL CLASSIFICATION	INTERSTATE

DESIGN DESIGNATION (C-D ROAD)

DESIGN SPEED	55 MPH
ADT (2019)	38,200
ADT (2031)	41,700
K	13.0%
D	100% NB
T (PEAK HOUR)	8.00%
T (AVERAGE DAY)	8.00%
DHV	3,700
DDHV	3,700 NB
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL



31 ST. JAMES AVE SUITE 300
BOSTON, MA 02116

APPROVED

CHIEF ENGINEER

DATE



DATE	DESCRIPTION	REV #
8/2/2024	WPA RDA SUBMISSION	0

GENERAL NOTES:

- THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BETWEEN APRIL 18, 2022 AND MAY 25, 2022 BY GREEN INTERNATIONAL AFFILIATES, INC. SEE FIELD NOTES IN MASSDOT DISTRICT 4 FIELD BOOK 42017
- HORIZONTAL CONTROL IS BASED UPON THE NORTH AMERICAN DATUM OF 1983-NAD83 (2011), EPOCH 2010.00, SPC 83-MASSACHUSETTS (MAINLAND ZONE), AS PROVIDED BY MASSDOT FOR STATIONS 2968, 2969, 2970 AND 2971. VERTICAL CONTROL IS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 AS PROVIDED BY MASSDOT FOR STATIONS 2968, 2969, 2970, 2971 AND BENCHMARK #774.
- WETLANDS WERE DELINEATED BY HNTB ON MAY 11, 2023 AND MAY 24, 2023 USING ROUTINE LEVEL 2 METHODS IN ACCORDANCE WITH THE UNITED STATES ARMY CORP OF ENGINEERS.
- THE RIGHTS OF WAY LINES OF ROUTE 3 AND INTERSTATE 95 SHOWN ARE THE DIRECT RESULT OF AN INSTRUMENT SURVEY PERFORMED ON THE GROUND BY GREEN INTERNATIONAL AFFILIATES, INC. WITH AN ERROR OF CLOSURE OF 1 IN 41,139, AND FROM PLANS AND DEEDS OF RECORD. OTHER RIGHTS OF WAY SHOWN AND PRIVATE PROPERTY LINES HAVE NOT BEEN SURVEYED, THEY ARE COMPILED FROM GIS & RECORD PLAN INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE.
- LOCATION OF ALL EXISTING UTILITIES AND SUBSURFACE STRUCTURES ARE FROM SURVEY AND RECORDS OF THE CITY OR PRIVATE UTILITY COMPANIES AND ARE CONSIDERED APPROXIMATE BOTH AS TO SIZE AND LOCATION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND ELEVATIONS. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY GRADE DISCREPANCIES PRIOR TO CONSTRUCTION.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION.
- THE CONTRACTOR SHALL CAUSE AS LITTLE INTERFERENCE AND INCONVENIENCE AS POSSIBLE TO ABUTTERS. THE CONTRACTOR SHALL MAINTAIN SAFE AND CONVENIENT ACCESS TO PRIVATE PROPERTY AT ALL TIMES. EMERGENCY VEHICLE ACCESS SHALL BE MAINTAINED AT ALL TIMES.
- CONSTRUCTION STAGING AREAS SHALL BE LOCATED AS DIRECTED AND APPROVED BY THE ENGINEER WITHIN THE RIGHT OF WAY.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE TOWN AND APPLICABLE AGENCIES PRIOR TO COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR COMPLETION OF ALL DESIGN TASKS, CALCULATIONS AND CONSTRUCTION AS REFERENCED IN THE CONTRACT PLANS, SPECIFICATIONS AND SUPPLEMENTARY DOCUMENTS.
- CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITY SERVICES AND HIGHWAY LIGHTING THROUGHOUT CONSTRUCTION UNTIL AND UNLESS THEY ARE REPLACED PER THE CONTRACT.
- EXISTING PAVEMENTS SHALL BE SAWCUT WHERE THEY MEET PROPOSED SURFACE TREATMENTS. SAWCUTS WILL BE SMOOTH AND STRAIGHT. AREAS OUTSIDE THE LIMITS OF WORK DISTURBED BY THE CONTRACTOR DURING CONSTRUCTION WILL BE RESTORED TO THEIR ORIGINAL CONDITION.
- CONTRACTOR SHALL FIELD CHECK ALL DIMENSIONS AND ELEVATIONS BEFORE PROCEEDING WITH NEW WORK. TEST PITS WILL BE PERFORMED TO VERIFY PERTINENT DRAINAGE INVERTS AND POTENTIAL UTILITY CONFLICTS. DISCREPANCIES OR CONFLICTS WILL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- GUARDRAIL POSTS SHOULD NOT BE DRIVEN IN CLOSE PROXIMITY TO EXISTING UNDERGROUND UTILITIES UNLESS UNDERGROUND UTILITIES ARE EXPOSED AND LOCATIONS ARE CLEARLY KNOWN.

TRAFFIC NOTES

- ALL CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED BY APPROVED METHOD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

- ALL EXISTING SIGNS TO BE RETAINED (RET.) UNLESS OTHERWISE NOTED.

UTILITY NOTES:

- THE LOCATION OF ALL UNDERGROUND UTILITIES ARE SHOWN APPROXIMATE AND WERE COMPILED USING FIELD SURVEY INFORMATION AND AVAILABLE RECORD INFORMATION. THE LOCATION OF EXISTING PIPES OR OTHER UNDERGROUND STRUCTURES OR PROPERTY LINES ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL CALL "DIG SAFE" (1-888-344-7233) AND NOTIFY THE CITY OF BURLINGTON AND MASSDOT AT LEAST 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO ANY EXCAVATION TO OBTAIN ACCURATE UTILITY LOCATIONS.

- RECORD UTILITY INFORMATION FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES ARE APPROXIMATE ONLY AND ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD.

- THE COMPLETION AND ACCURACY OF LATERAL UTILITY SERVICES IS NOT GUARANTEED AND MUST BE VERIFIED BY THE CONTRACTOR IN THE FIELD.

- ALL UTILITY COMPANIES, PUBLIC AND PRIVATE MUST BE NOTIFIED

- SUBSURFACE UTILITY LOCATIONS HAVE BEEN PLOTTED TO MEET UTILITY QUALITY LEVEL "C" AS DESCRIBED IN ASCE STANDARD 38-02 AND SUMMARIZED ON THIS SHEET. THE UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS BASED ON ABOVE-GROUND FIELD OBSERVATION AND EXISTING RECORD INFORMATION RECEIVED FROM UTILITY STAKE-HOLDERS.

- INVERTS SHOWN ON PLAN ARE NOT GUARANTEED TO BE ACCURATE. DUE TO THE LIMITATIONS OF FIELD OBSERVATION AND SURVEY TECHNIQUES THE INVERTS ARE SHOWN AS APPROXIMATE ONLY AND SHALL NOT BE WARRANTED TO BE CORRECT. ADDITIONAL FIELD INVESTIGATION IS NECESSARY WHERE ACCURATE MEASUREMENTS ARE REQUIRED FOR DESIGN OF CRITICAL AREAS.

- WHERE AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED WORK, THE CONTRACTOR SHALL ACCURATELY DETERMINE THE LOCATION, ELEVATION AND SIZE OF THE UTILITY AND FURNISH THE INFORMATION TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

- THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN EXCAVATING NEAR AND BACKFILLING IN THE VICINITY OF EXISTING UTILITIES. THE CONTRACTOR SHALL USE HAND EXCAVATION WHERE APPROPRIATE TO PROTECT EXISTING UTILITIES.

- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES IN SERVICE AT ALL TIMES UNLESS NOTED ON THE PLANS OR APPROVED BY THE ENGINEER.

- THE CONTRACTOR SHALL SUPPORT AND PROTECT EXISTING UTILITIES IN AND AROUND EXCAVATIONS, AND IN PARTICULAR, WHEN CROSSING OVER OR UNDER ANY DUCT OR PIPE, ALL PROTECTIVE MEASURES SHALL BE CONSIDERED INCIDENTAL WORK.

- IF THE CONTRACTOR DAMAGES ANY UTILITY SYSTEM, HE OR SHE SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL REPAIR/REPLACE THE AFFECTED SYSTEM AT HIS OR HER OWN EXPENSE.

- THE CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES AND MAKE ARRANGEMENTS FOR ADJUSTMENTS, ALTERATIONS AND REPLACEMENT OF PRIVATE UTILITIES.

- BELOW GROUND STRUCTURES ARE SHOWN SYMBOLIC UNLESS DIMENSIONED.

- THE EXISTING CONDITIONS PLAN IS TO BE USED FOR THE SPECIFIED PROJECT ONLY AND IS NOT WARRANTED TO BE COMPLETE FOR ANY OTHER FUTURE PROJECTS.

GENERAL PAVEMENT NOTES:

- ALL PERMANENT HOT MIX ASPHALT PAVEMENTS WILL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 450 HOT MIX ASPHALT PAVEMENT AND SECTION 455 SUPERPAVE HOT MIX ASPHALT PAVEMENT SPECIFICATIONS.
- ALL PERMANENT SUPERPAVE MIXTURES WILL BE MODIFIED USING A WARM MIX ASPHALT ADDITIVE THAT IS ON THE NORTHEAST ASPHALT USER PRODUCER GROUP (NEAUPG) QUALIFIED PRODUCTS LIST AND THAT COMPLIES WITH MASSDOT WMA SPECIAL PROVISIONS.
- ASPHALT EMULSION FOR TACK COAT WILL BE SPRAY APPLIED FOR UNIFORM COVERAGE (RS-1h) AT 0.07 GAU/SY OVER MICRO-MILLED SURFACES, AND 0.05 GAU/SY OVER SMOOTH SURFACES.
- EXISTING SUBBASE MATERIAL MEETING MATERIAL SPECIFICATION M1.03.0 GRAVEL BORROW, TYPE b WILL BE RETAINED. EXISTING SUBBASE NOT CONFORMING TO THE MATERIAL SPECIFICATION M1.03.0 GRAVEL BORROW, TYPE b WILL BE REMOVED TO THE REQUIRED DEPTH AND REPLACED WITH GRAVEL BORROW, TYPE b.
- HMA FOR PATCHING, ASPHALT EMULSION FOR TACK COAT AND HMA JOINT SEALANT WILL BE PER SECTION 450.
- FRICTION COURSE WILL NOT BE PLACED UNTIL THE FULL WIDTH AND THE FULL LENGTH CAN BE PLACED. SEE SPECIAL PROVISIONS.
- SUPERPAVE LEVELING COURSE ONLY APPLIED IN LOCATIONS WHERE REQUIRED CROSS SLOPES CANNOT BE ACHIEVED WITH MICROMILLING, WITH APPROVAL BY ENGINEER.

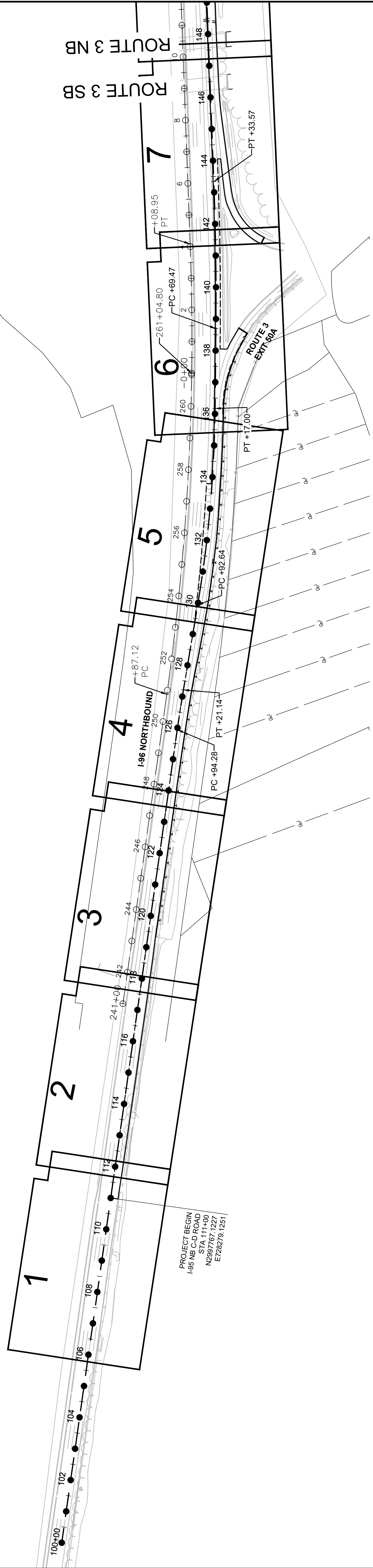
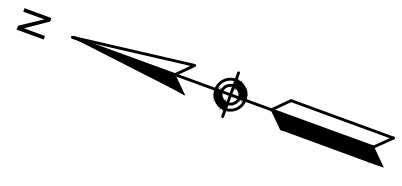
LEXINGTON I-95 / ROUTE 3 INTERCHANGE			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	20
PROJECT FILE NO.		609516	

GENERAL NOTES

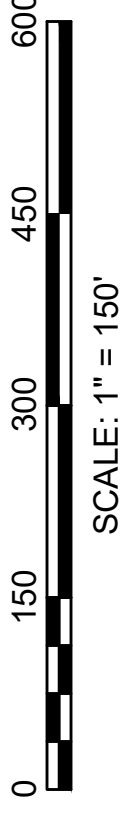
**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	4	20
PROJECT FILE NO. 609516			

KEY PLAN



PLAN VIEW NUMBER	1	2	3	4	5	6	7
CONSTRUCTION PLANS	6	7	8	9	10	11	12



**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	20
PROJECT FILE NO. 609516			

TYPICAL SECTIONS 1 OF 1

PAVEMENT NOTES

PROPOSED FULL DEPTH RECONSTRUCTION

- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- INTERMEDIATE** 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 POLYMER (SIC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- 2.75" SUPERPAVE INTERMEDIATE COURSE 19.0 POLYMER (SIC-19.0-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- BASE COURSE:** 5" SUPERPAVE BASE COURSE 37.5 (SBC-37.5)
- SUBBASE:** 4" DENSE GRADED CRUSHED STONE BASE OVER 8" GRAVEL BORROW (TYPE b)
- SPECIAL BORROW:** 24" GRAVEL BORROW (TYPE b) OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN 8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE WITH SUBSECTION 170.60

PROPOSED PAVEMENT FINE MILLING AND RESURFACING (I-95 MAINLINE AND RAMPS):

- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- FINE MILLING:** 1.75" PAVEMENT FINE MILLING

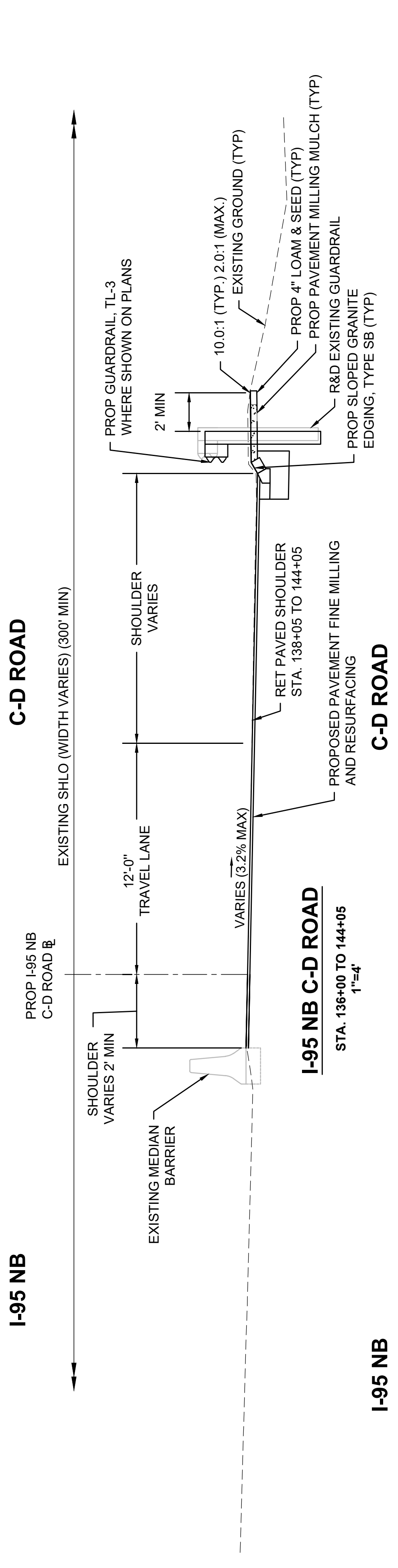
PROPOSED WIDENING LESS THAN 4 FEET WIDE:

- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- INTERMEDIATE** 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 POLYMER (SIC-12.5-P) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) OVER
- BASE COURSE:** 8" HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE
- SPECIAL BORROW:** 8" GRAVEL BORROW, TYPE B OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN 8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE WITH SUBSECTION 170.60

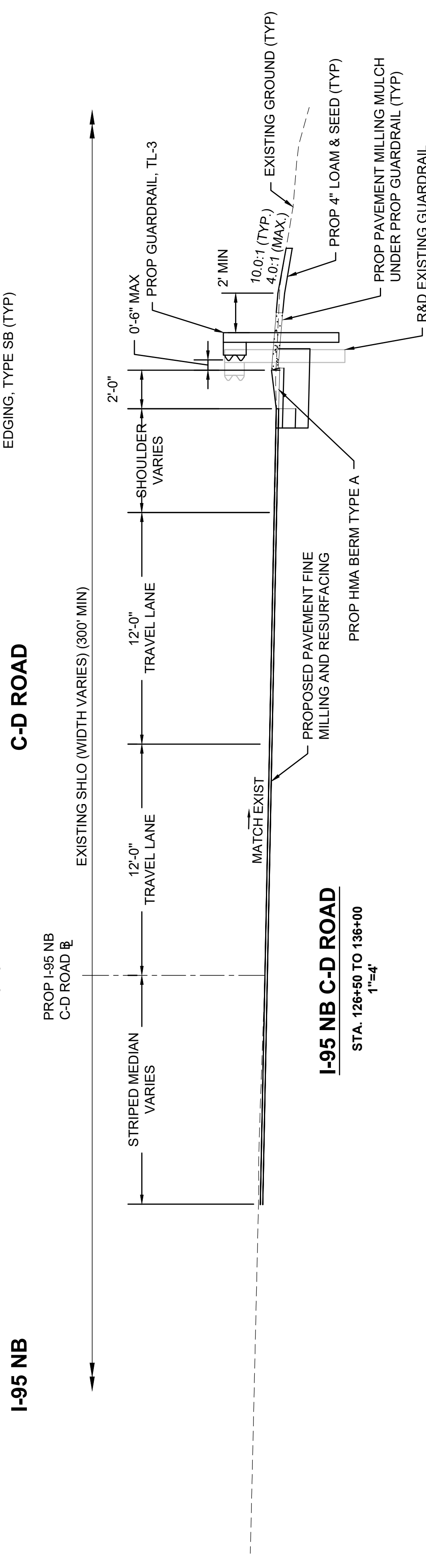
PROPOSED HMA MEDIAN ISLAND:

- SURFACE COURSE:** 1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
- INTERMEDIATE** 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
- SPECIAL BORROW:** 8" GRAVEL BORROW, TYPE B OR RECLAIMED PAVEMENT BORROW FOR SUB-BASE (COMPACTED IN 8" MAX LIFTS) WHERE REQUIRED IN ACCORDANCE WITH SUBSECTION 170.60

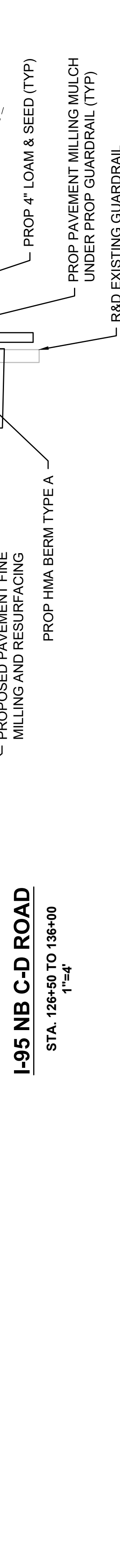
C-D ROAD



C-D ROAD



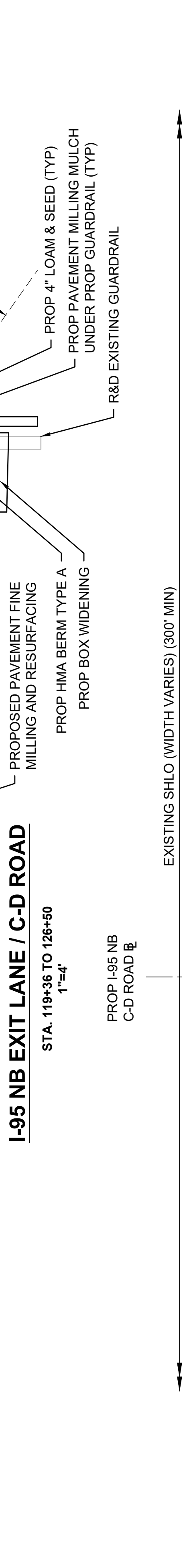
I-95 NB C-D ROAD



I-95 NB



I-95 NB EXIT LANE / C-D ROAD

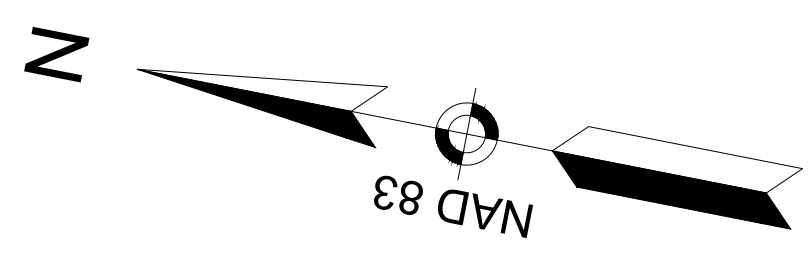


I-95 NB EXIT LANE / C-D ROAD

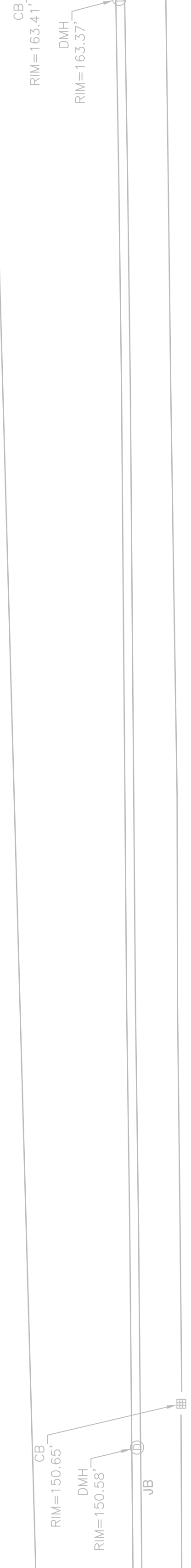


**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE
CONSTRUCTION PLANS
SHEET 1 OF 7**

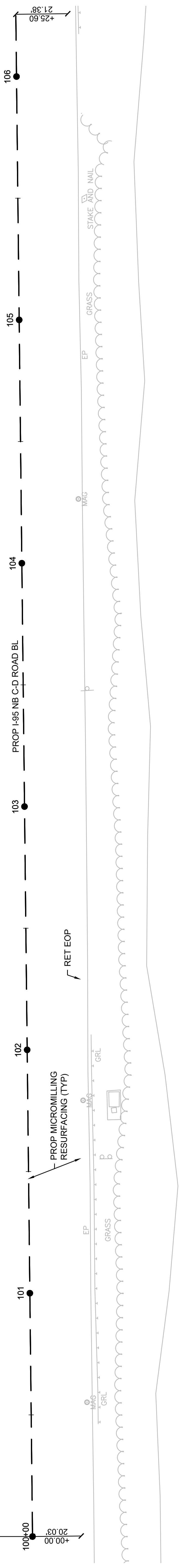
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	20
PROJECT FILE NO. 609516			



**BEGIN PROJECT
PROJECT NO. 609516
BEGIN PAVEMENT MICROMILLING AND RESURFACING**
 STA 100+00.00
 N 2997539.8495
 E 727202.8598



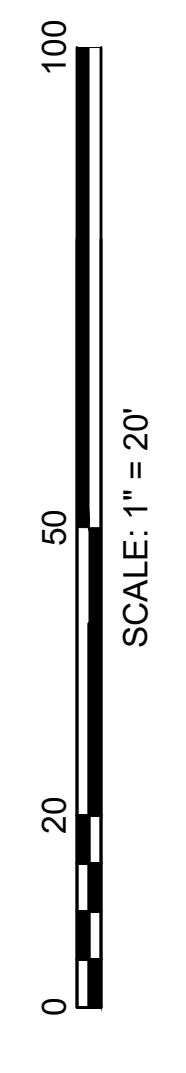
I-95 NORTHBOUND



CONTINUED ON
SHEET NO. 7

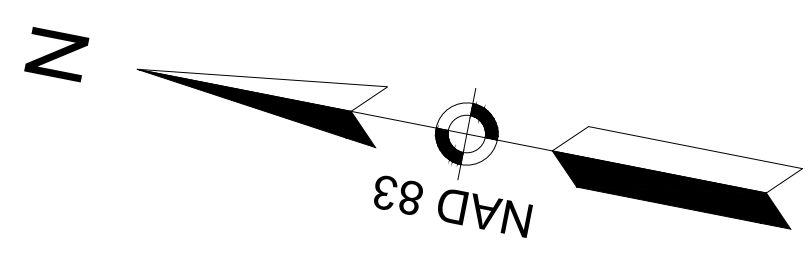
NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

FOR PROFILE: PROPOSED MILL AND OVERLAY SURVEY DATA WILL BE INCLUDED AT LATER SUBMISSION



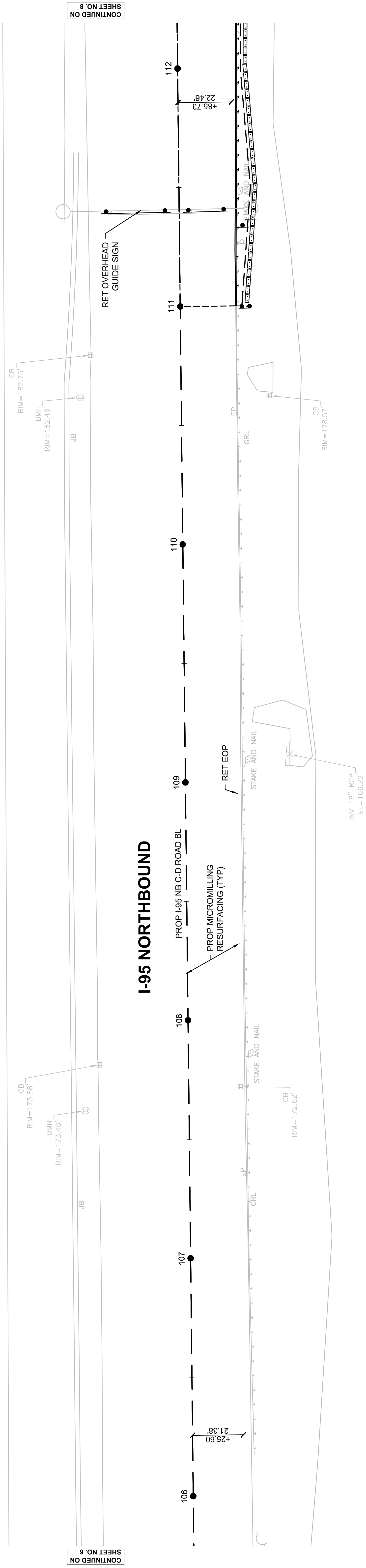
**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE
CONSTRUCTION PLANS
SHEET 2 OF 7**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	20
PROJECT FILE NO. 609516			



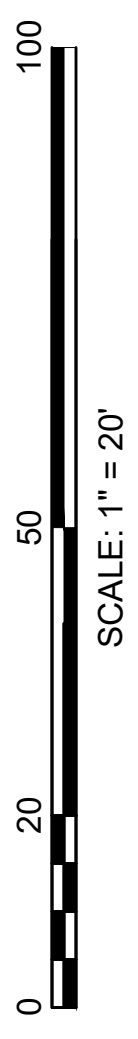
CONTINUED ON SHEET NO. 8

CONTINUED ON SHEET NO. 6



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

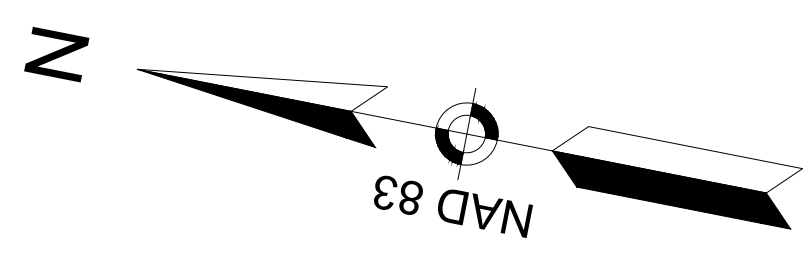
FOR PROFILE: PROPOSED MILL AND OVERLAY SURVEY DATA WILL BE INCLUDED AT LATER SUBMISSION



LEXINGTON
I-95 / ROUTE 3 INTERCHANGE

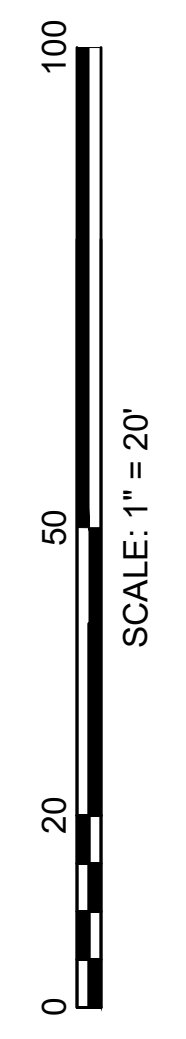
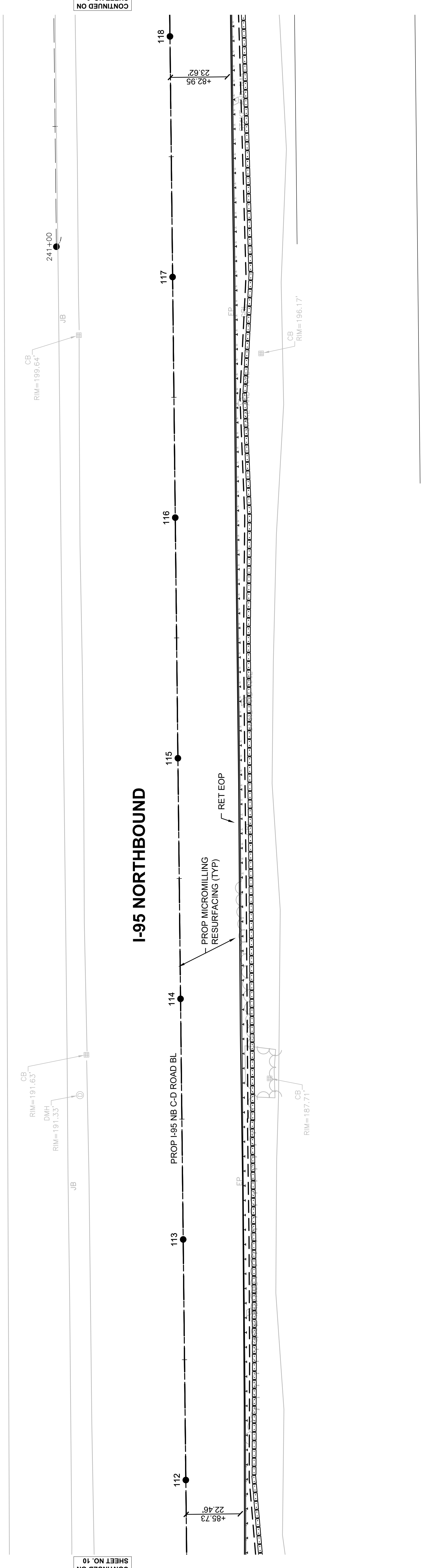
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	20
PROJECT FILE NO. 609516			

CONSTRUCTION PLANS
SHEET 3 OF 7



CONTINUED ON SHEET NO. 9

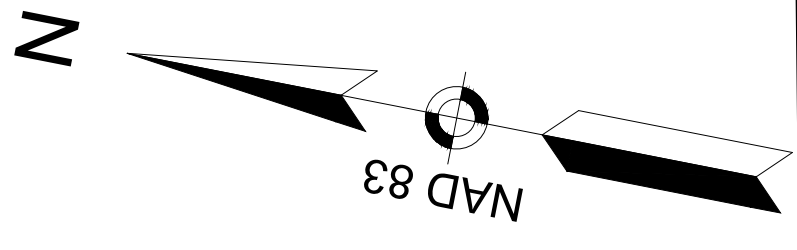
CONTINUED ON SHEET NO. 10



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.

FOR PROFILE: PROPOSED MILL AND OVERLAY SURVEY DATA WILL BE INCLUDED AT LATER SUBMISSION

HIGHWAY GUARD DETAILS
 STA. 119+36 RT - STA. 119+71 RT TRANSITION TO NCHRP 350 GUARDRAIL
 STA. 119+71 RT - STA. 136+22 RT GUARDRAIL, TL-3 (SINGLE FACED)



IMPACT TYPE	WPA RESOURCE	EFFECTED FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P1)	100-FOOT BUFFER ZONE	HNTB-E	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	10,291 SQ. FT
TEMPORARY (T1)	100-FOOT BUFFER ZONE	HNTB-E	PLACEMENT OF EROSION & SEDIMENT CONTROLS	1,295 SQ. FT

NOTE: IMPACTS TO JURISDICTIONAL WPA AREAS ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS, WHERE 'T' REPRESENTS A TEMPORARY IMPACT AND 'P' REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

**LEXINGTON
 I-95 / ROUTE 3 INTERCHANGE
 CONSTRUCTION PLANS
 SHEET 4 OF 7**

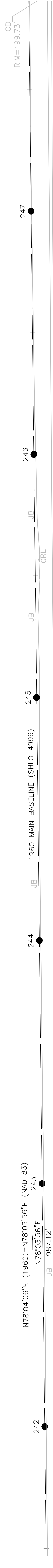
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	20
PROJECT FILE NO. 609516			

NO ACCESS
 LOCATION LINE 1950 SHLO 3709

LEGEND

	100-FOOT BUFFER ZONE
	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
	EROSION & SEDIMENT CONTROLS

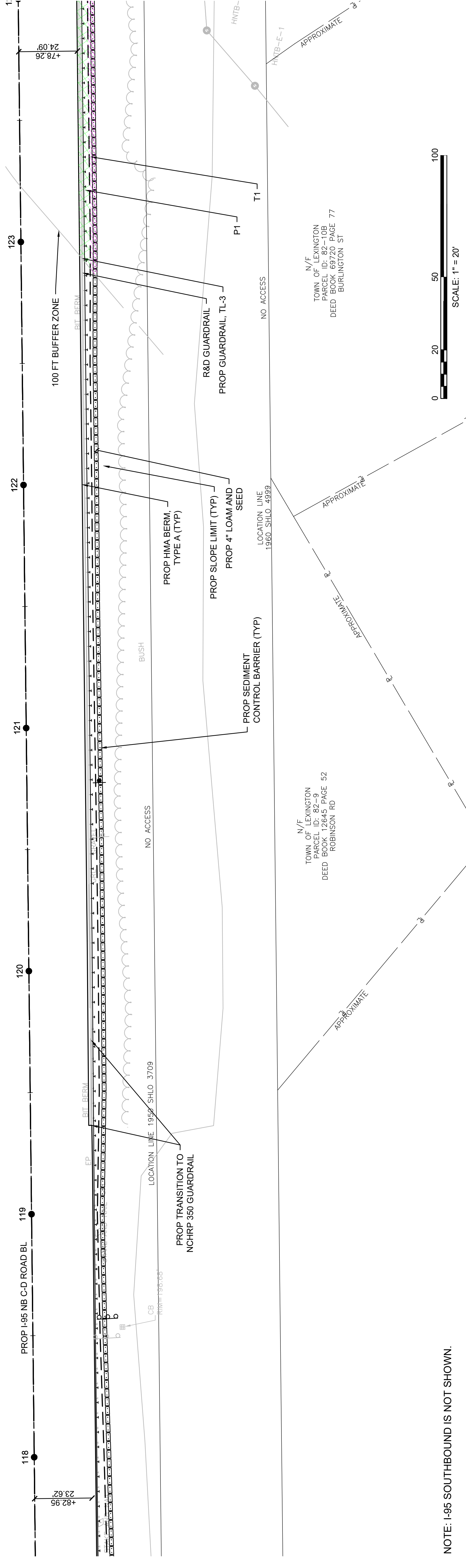
**YANKEE DIVISION HIGHWAY
 (INTERSTATE 95/ROUTE 128)
 (STATE HIGHWAY LAYOUT 4999)**



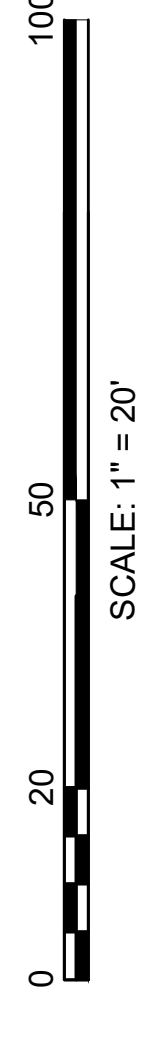
CONTINUED ON
 SHEET NO. 8

CONTINUED ON
 SHEET NO. 10

I-95 NORTHBOUND



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.



N/F
 TOWN OF LEXINGTON
 PARCEL ID: 82-9
 DEED BOOK 12645, PAGE 52
 ROBINSON RD

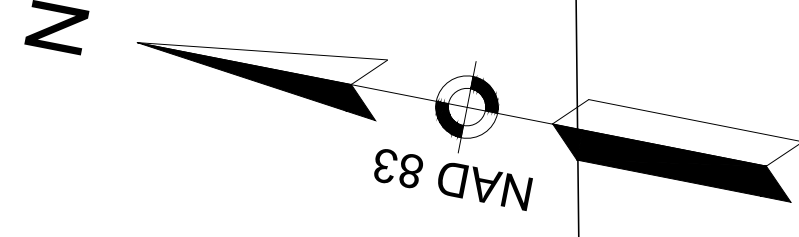
N/F
 TOWN OF LEXINGTON
 PARCEL ID: 82-10B
 DEED BOOK 69720, PAGE 77
 BURLINGTON ST

STATIONING: STA. 119+86 RT - STA. 136+22 RT GUARDRAIL, TL-3 (SINGLE FACED)

IMPACT TYPE	WPA RESOURCE	EFFECTED FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P1)	100-FOOT BUFFER ZONE	HNTB-E	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	10,291 SQ. FT
PERMANENT (P2)	100-FOOT BUFFER ZONE	HNTB-E	MINOR DRAINAGE WORK	30 SQ. FT
TEMPORARY (T1)	100-FOOT BUFFER ZONE	HNTB-E	PLACEMENT OF EROSION & SEDIMENT CONTROLS	1,295 SQ. FT

NOTE: IMPACTS TO JURISDICTIONAL WPA AREAS ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS. WHERE T REPRESENTS A TEMPORARY IMPACT AND P REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

HIGHWAY GUARD DETAILS



**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	20
PROJECT FILE NO. 609516		CONSTRUCTION PLANS	
SHEET 5 OF 7			

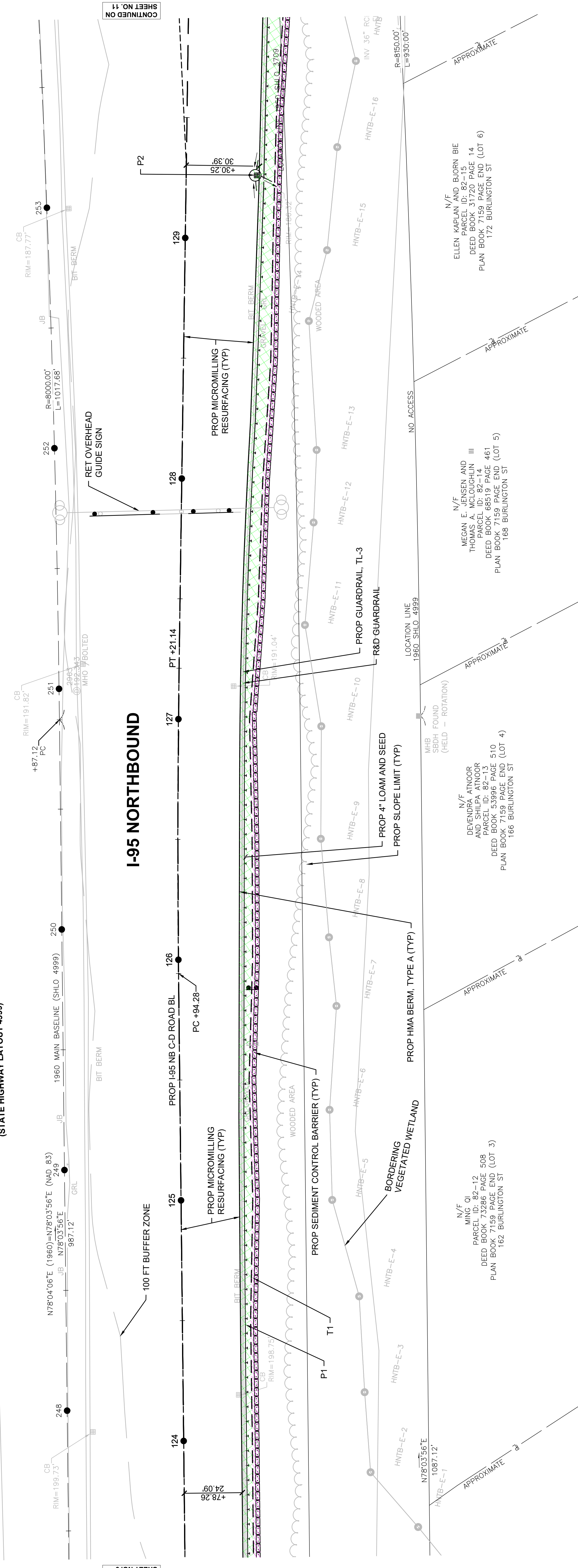
LOCATION LINE 1950 SHLO 3709

R=7900.00'

LEGEND

[Green Hatched Box]	100-FOOT BUFFER ZONE
[Pink Hatched Box]	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
[Purple Hatched Box]	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
[Black Dotted Box]	EROSION & SEDIMENT CONTROLS

**YANKEE DIVISION HIGHWAY
(INTERSTATE 95/ROUTE 128)**
(STATE HIGHWAY LAYOUT 4999)



CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11

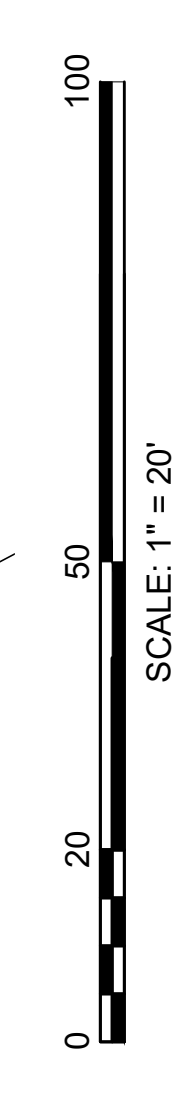
N/F
ELLEN KAPLAN AND BJORN BIE
PARCEL ID: 82-15
DEED BOOK 31720 PAGE 14
PLAN BOOK 7159 PAGE END (LOT 6)
172 BURLINGTON ST

N/F
MEGAN E. JENSEN AND
THOMAS A. MCLOUGHLIN III
PARCEL ID: 82-14
DEED BOOK 66519 PAGE 461
PLAN BOOK 7159 PAGE END (LOT 5)
168 BURLINGTON ST

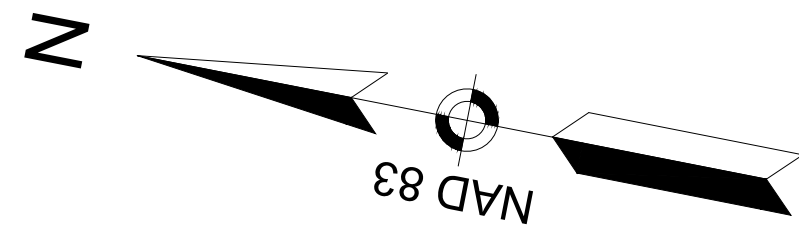
N/F
DEVENDRA ANOOR
MAY PHILLIPS
PARCEL ID: 82-13
DEED BOOK 53996 PAGE 510
PLAN BOOK 7159 PAGE END (LOT 4)
166 BURLINGTON ST

N/F
MING OI
PARCEL ID: 82-12
DEED BOOK 73286 PAGE 508
PLAN BOOK 7159 PAGE END (LOT 3)
182 BURLINGTON ST

NOTE: I-95 SOUTHBOUND IS NOT SHOWN.



HIGHWAY GUARD DETAILS
 STA. 119+86 RT - STA. 136+22 RT GUARDRAIL, TL-3 (SINGLE FACED)



IMPACT TYPE	WPA RESOURCE	EFFECTED FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P1)	100-FOOT BUFFER ZONE	HNTB-E	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	10,291 SQ. FT
PERMANENT (P2)	100-FOOT BUFFER ZONE	HNTB-E	MINOR DRAINAGE WORK	30 SQ. FT
PERMANENT (P3)	100-FOOT BUFFER ZONE	HNTB-E	MINOR DRAINAGE WORK	40 SQ. FT
PERMANENT (P4)	100-FOOT BUFFER ZONE	HNTB-F	MINOR DRAINAGE WORK	156 SQ. FT
PERMANENT (P5)	100-FOOT BUFFER ZONE	HNTB-F	MINOR DRAINAGE WORK	87 SQ. FT
TEMPORARY (T1)	100-FOOT BUFFER ZONE	HNTB-E	PLACEMENT OF EROSION & SEDIMENT CONTROLS	1,295 SQ. FT

NOTE: IMPACTS TO JURISDICTIONAL WPA AREAS ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS, WHERE T REPRESENTS A TEMPORARY IMPACT AND P REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

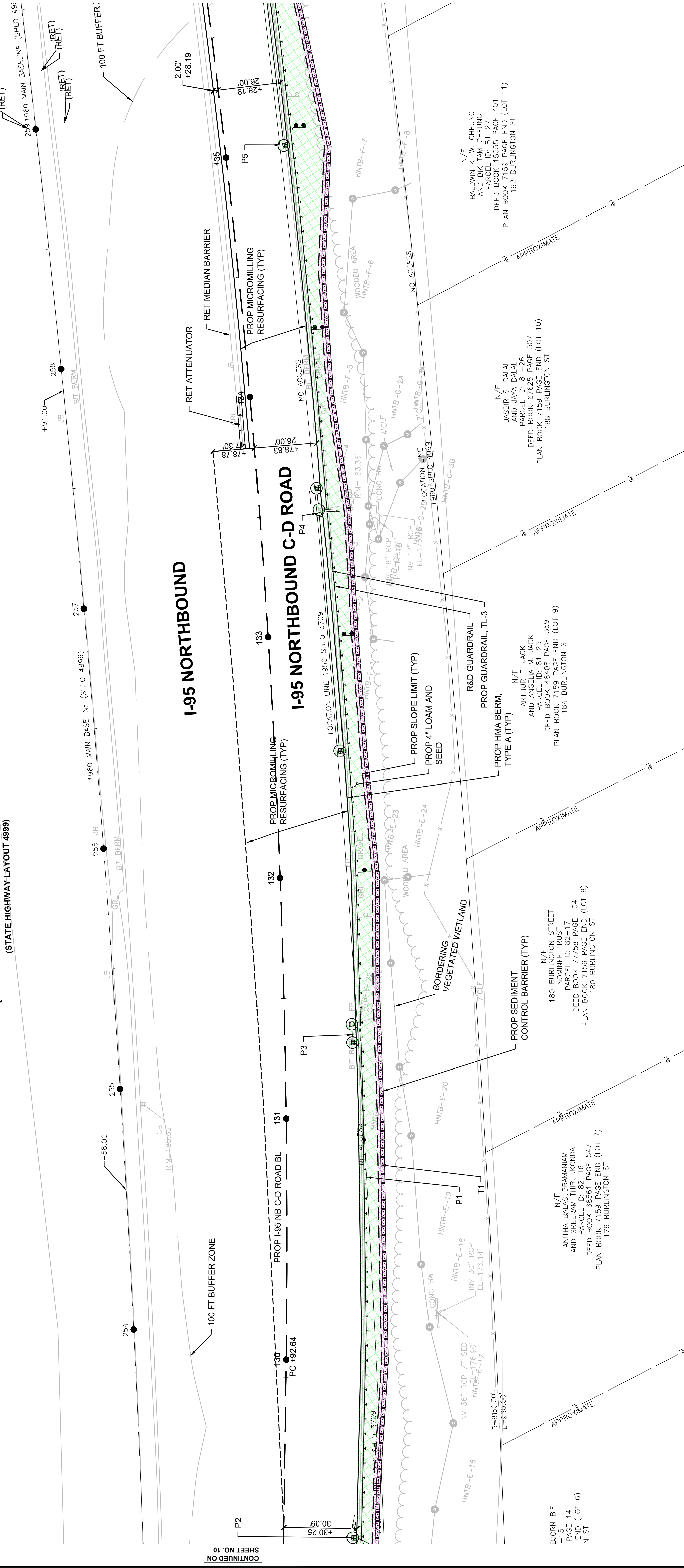
LEXINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	20

PROJECT FILE NO. 609516
CONSTRUCTION PLANS
SHEET 6 OF 7

LEGEND	
	100-FOOT BUFFER ZONE
	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
	EROSION & SEDIMENT CONTROLS

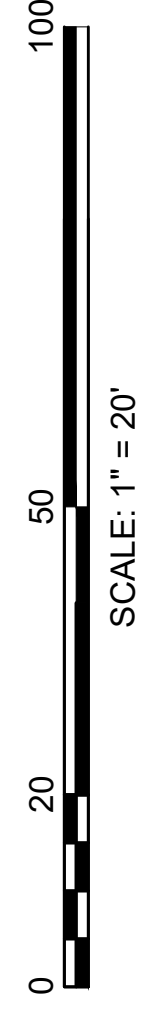
YANKEE DIVISION HIGHWAY
(INTERSTATE 95/ROUTE 128)
 (STATE HIGHWAY LAYOUT 4999)



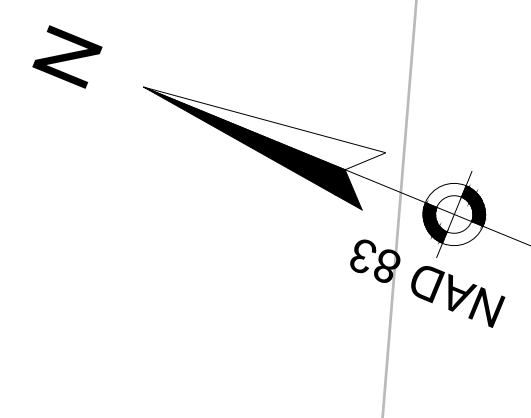
CONTINUED ON
 SHEET NO. 10

CONTINUED ON
 SHEET NO. 12

NOTE: I-95 SOUTHBOUND IS NOT SHOWN.



HIGHWAY GUARD DETAILS
 STA. 119+86 RT - STA. 136+22 RT GUARDRAIL, TL-3 (SINGLE FACED)
 STA. 136+22 RT - STA. 137+63 RT GUARDRAIL - CURVED, TL-3 (SINGLE FACED)
 STA. 137+63 - STA. 137+75 RT TRAILING ANCHORAGE (SINGLE FACED)



IMPACT TYPE	WPA RESOURCE	EFFECTED FEATURE	PROPOSED ACTIVITY	IMPACT
PERMANENT (P1)	100-FOOT BUFFER ZONE	HNTB-E	GUARDRAIL INSTALLATION & ASSOCIATED GRADING	10,291 SQ. FT
PERMANENT (P5)	100-FOOT BUFFER ZONE	HNTB-F	MINOR DRAINAGE WORK	87 SQ. FT
TEMPORARY (T1)	100-FOOT BUFFER ZONE	HNTB-E	PLACEMENT OF EROSION & SEDIMENT CONTROLS	1,295 SQ. FT

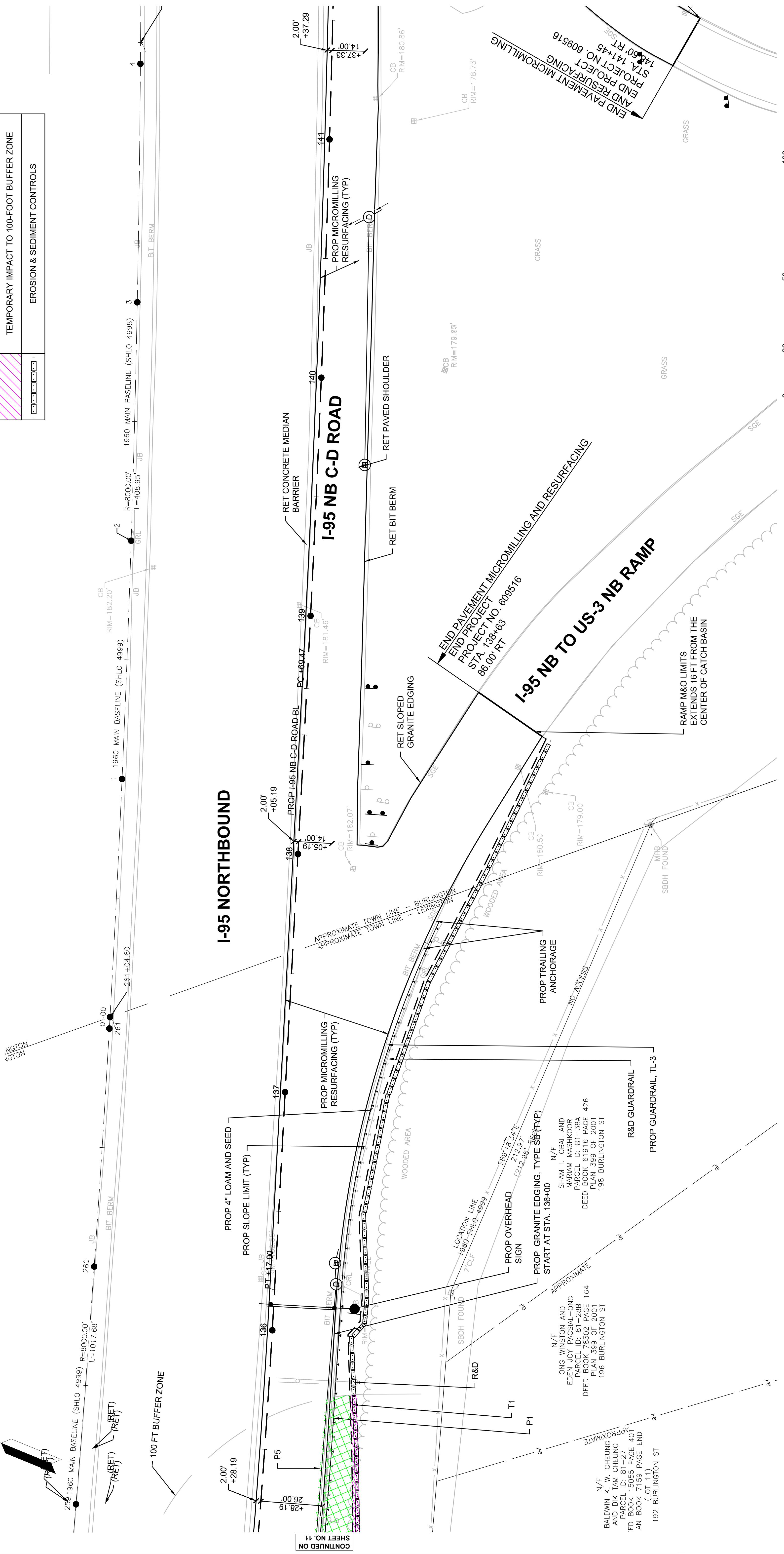
NOTE: IMPACTS TO JURISDICTIONAL WPA ARE CALLED OUT ON THE PLANS WITH UNIQUE IMPACT IDS. WHERE T REPRESENTS A TEMPORARY IMPACT AND P REPRESENTS A PERMANENT IMPACT. IMPACTS TO JURISDICTIONAL AREAS ARE SHOWN IN THE IMPACT TABLE ON EACH RESPECTIVE PLAN SHEET.

LEGEND

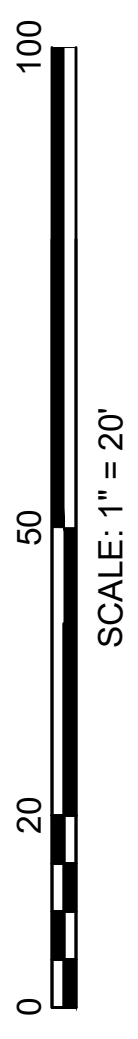
[Green Hatched Box]	100-FOOT BUFFER ZONE
[Pink Hatched Box]	PERMANENT IMPACT TO 100-FOOT BUFFER ZONE
[Purple Hatched Box]	TEMPORARY IMPACT TO 100-FOOT BUFFER ZONE
[Black Dotted Box]	EROSION & SEDIMENT CONTROLS

LEXINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		12	20
PROJECT FILE NO. 609516		CONSTRUCTION PLANS	
		SHEET 7 OF 7	



NOTE: I-95 SOUTHBOUND IS NOT SHOWN.



CONTINUED ON SHEET NO. 11

**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	13	20
PROJECT FILE NO. 609516			

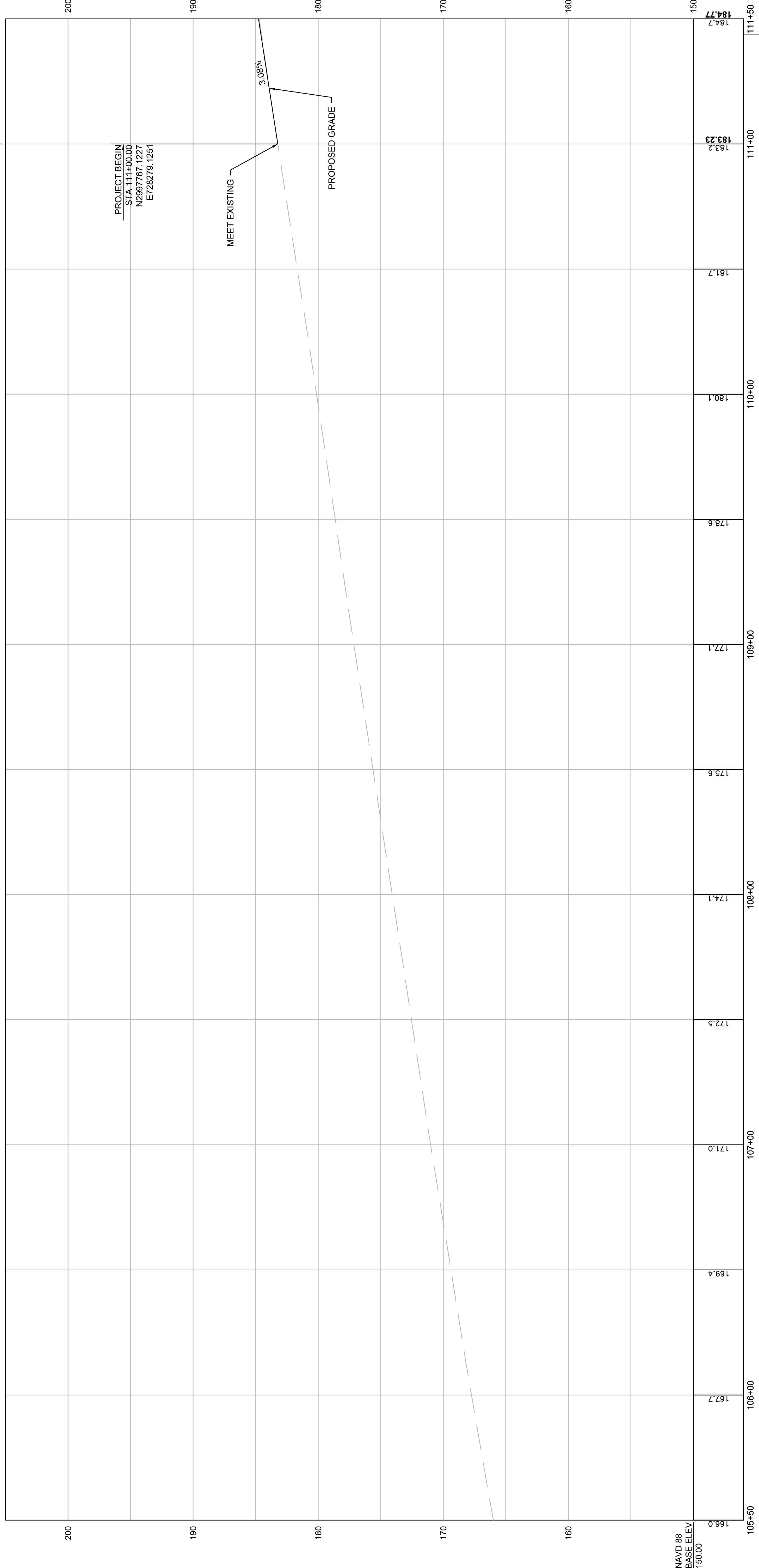
**PROFILES
SHEET 1 OF 6**

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH

MICROMILLING AND RESURFACING

NORMAL CROWN
e = -2.00%



PROJECT BEGIN
STA 111+00.00
N2997767.1227
E728279.1251

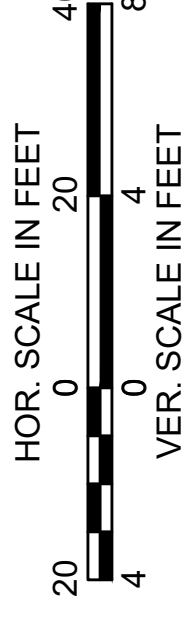
MEET EXISTING

PROPOSED GRADE

3.08%

CONTINUED ON
SHEET NO. 14

BENCHMARK 12
NW BOLT AT MAST ARM
Elevation = 183.42
Sta. 111+43.90, 183.42/RT



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 9

LEXINGTON
I-95 / ROUTE 3 INTERCHANGE

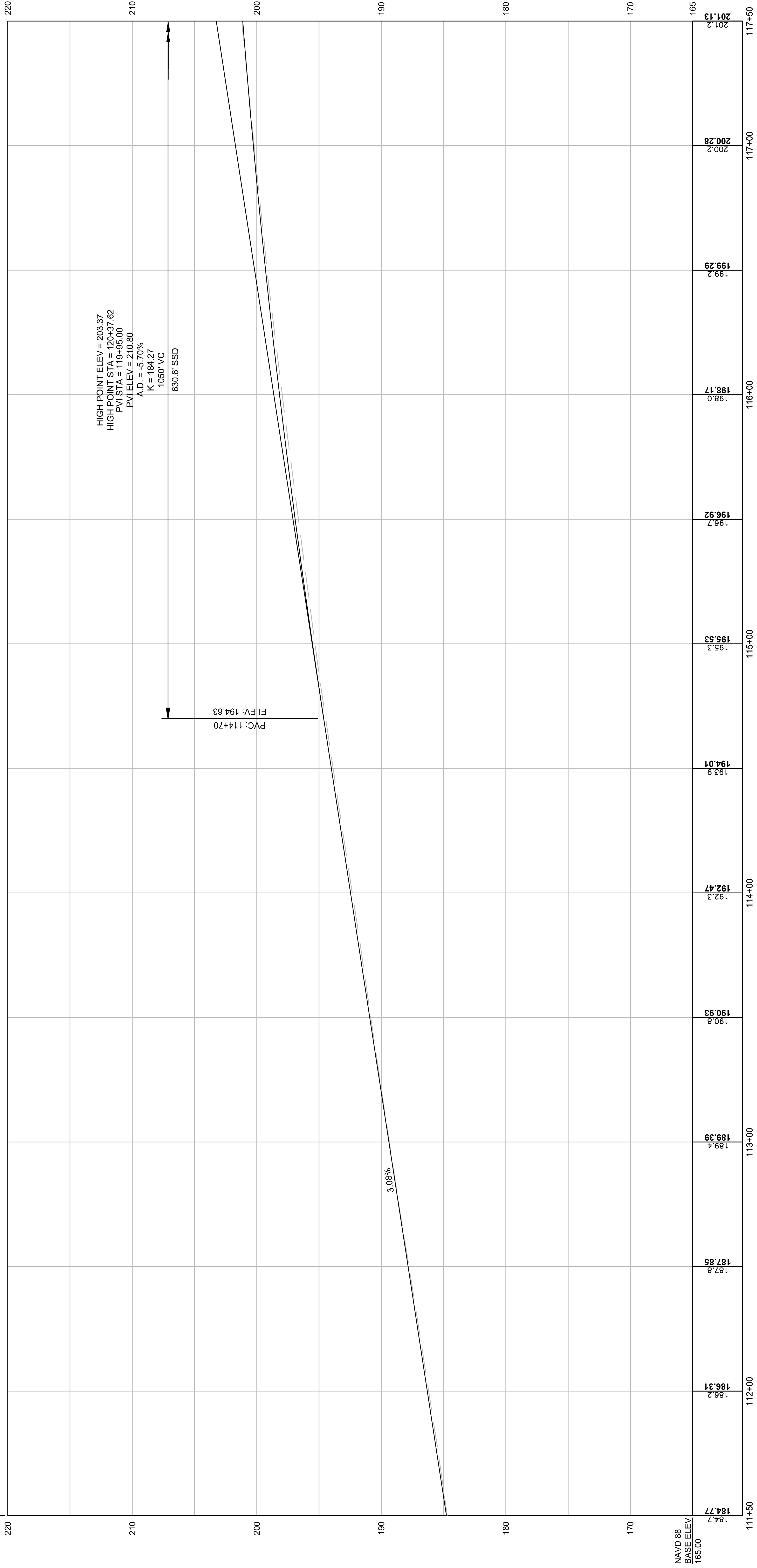
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	14	20
PROJECT FILE NO. 609516			

PROFILES
SHEET 2 OF 6

PROP I-95 NB C-D ROAD

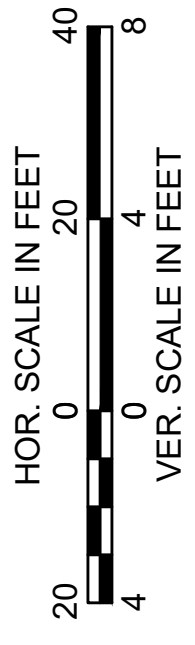
DESIGN SPEED = 45 MPH
MICROMILLING AND RESURFACING

NORMAL CROWN
e = -2.00%



CONTINUED ON
SHEET NO. 13

CONTINUED ON
SHEET NO. 15



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 10

**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	20
PROJECT FILE NO. 609516			

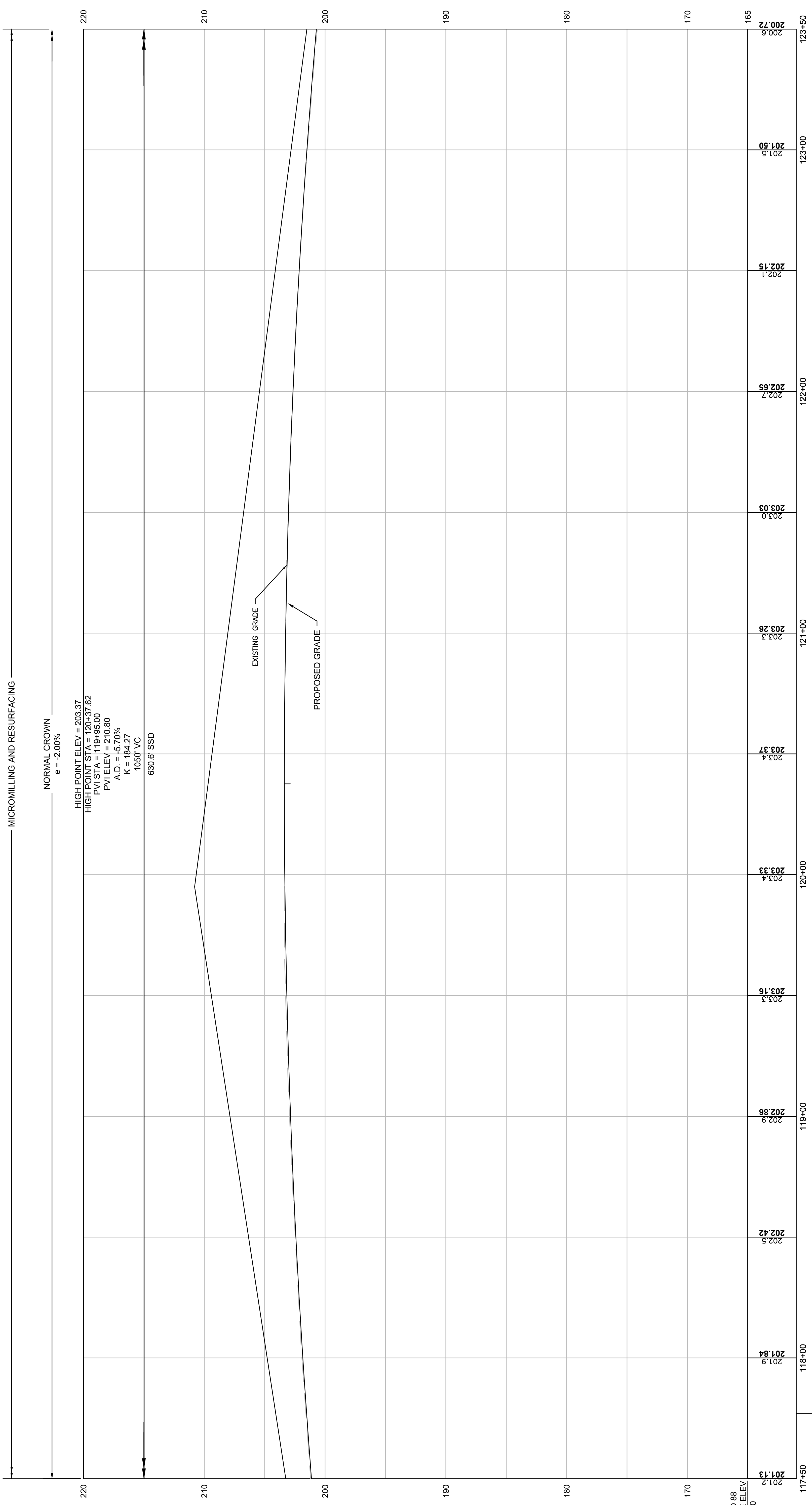
**PROFILES
SHEET 3 OF 6**

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH
MICROMILLING AND RESURFACING

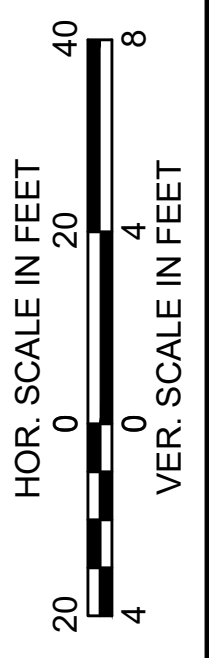
NORMAL CROWN
e = -2.00%

HIGH POINT ELEV = 203.37
 HIGH POINT STA = 120+37.62
 PVI STA = 119+95.00
 PVI ELEV = 210.80
 A.D. = -5.70%
 K = 184.27
 1050' VC
 630.6' SSD



CONTINUED ON
SHEET NO. 14

CONTINUED ON
SHEET NO. 16



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 11

CONTINUED ON
SHEET NO. 15

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH
MICROMILLING AND RESURFACING

NORMAL CROWN
 $e = -2.00\%$

TRANSITION

SUPERELEVATION
 $e = -2.80\%$

TRANSITION

HIGH POINT ELEV = 203.37
HIGH POINT STA = 120+37.62
PVI STA = 119+95.00
PVI ELEV = 210.80
A.D. = -5.70%
K = 184.27
1050' VC
630.6' SSD

PVT: 125+20
ELEV: 197.06

PVI STA = 129+50.00
PVI ELEV = 185.80
A.D. = 2.22%
K = 134.22
298' VC
1118.1' HSD

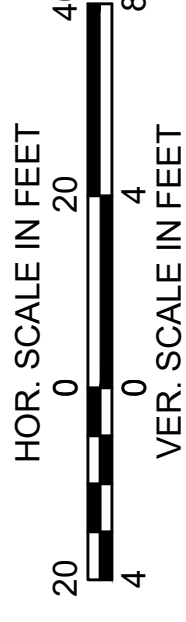
PVC: 128+01
ELEV: 189.70

-2.62%

EXISTING GRADE

PROPOSED GRADE

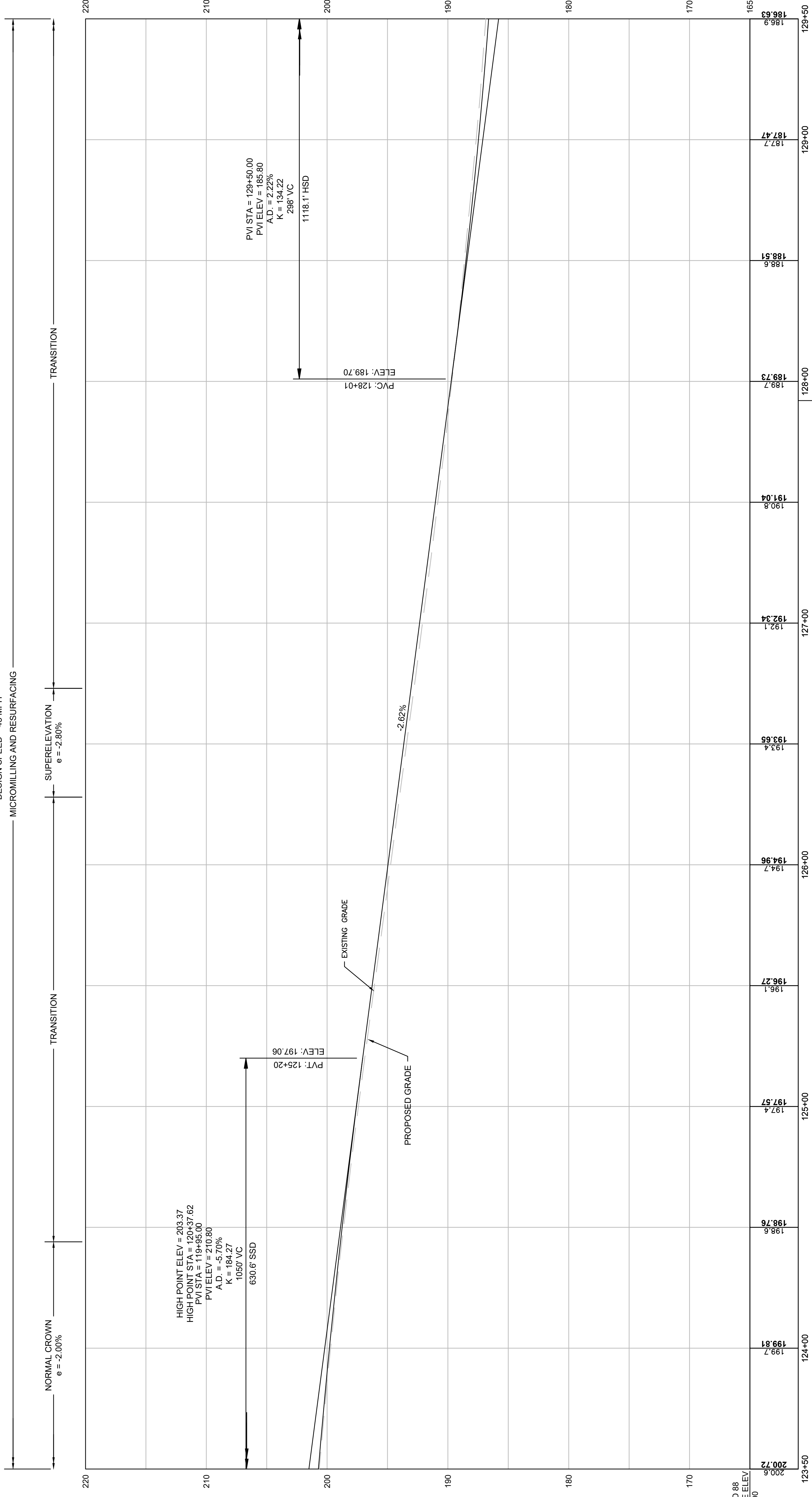
BENCHMARK
TOP OF NE BOLD EAST
POST ON OVERHEAD SIGN
Elevation = 190.52
Sta. 127+92.05, 43.24 RT



LEXINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	16	20
PROJECT FILE NO. 609516			

PROFILES
SHEET 4 OF 6



NAVD 88
BASE ELEV
165.00

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 12

CONTINUED ON SHEET NO. 16

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	20
PROJECT FILE NO. 609516			

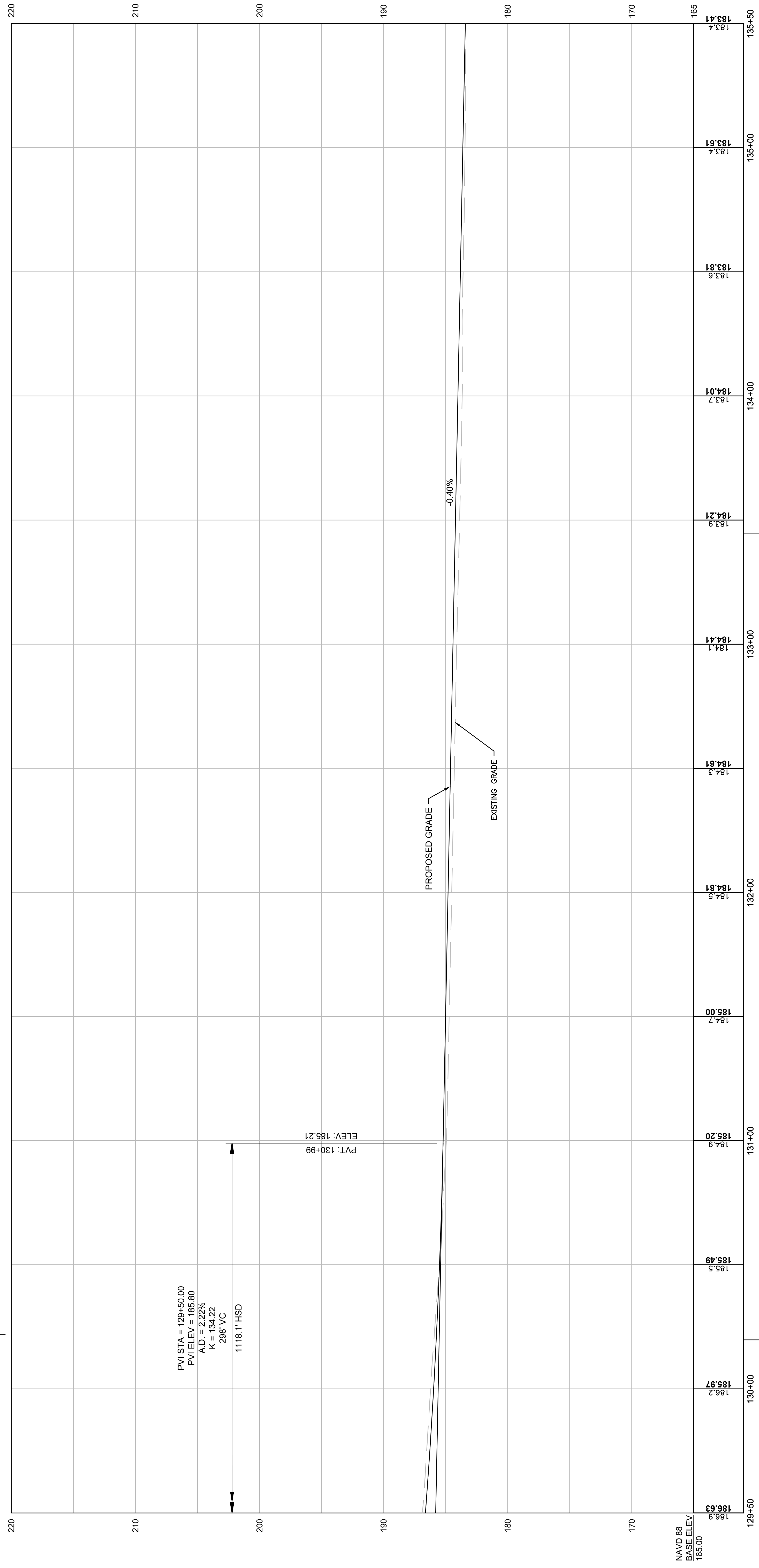
PROFILES
SHEET 5 OF 6

PROP I-95 NB C-D ROAD

DESIGN SPEED = 45 MPH
MICROMILLING AND RESURFACING

SUPERELEVATION
e = 3.20%

TRANSITION



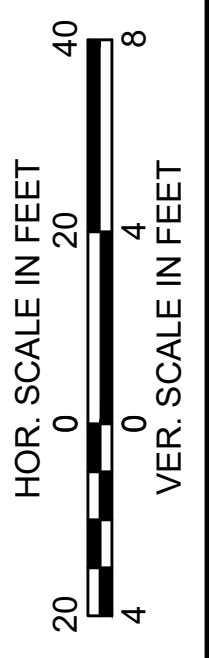
PVI STA = 129+50.00
 PVI ELEV = 185.80
 A.D. = 2.22%
 K = 134.22
 298' VC
 1118.1' HSD

PVT: 130+99
 ELEV: 185.21

PROPOSED GRADE
 EXISTING GRADE
 -0.40%

OUTFALL #1
 EXISTING 30' RCP
 INVERT ELEVATION: 176.14'
 STA. 130+19.73, 62.87 RT

OUTFALL #2
 EXISTING 18" RCP
 INVERT ELEVATION: 175.91'
 STA. 133+44.75, 49.45 RT



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 8

CONTINUED ON
SHEET NO. 15

CONTINUED ON
SHEET NO. 17

BURLINGTON
I-95 / ROUTE 3 INTERCHANGE

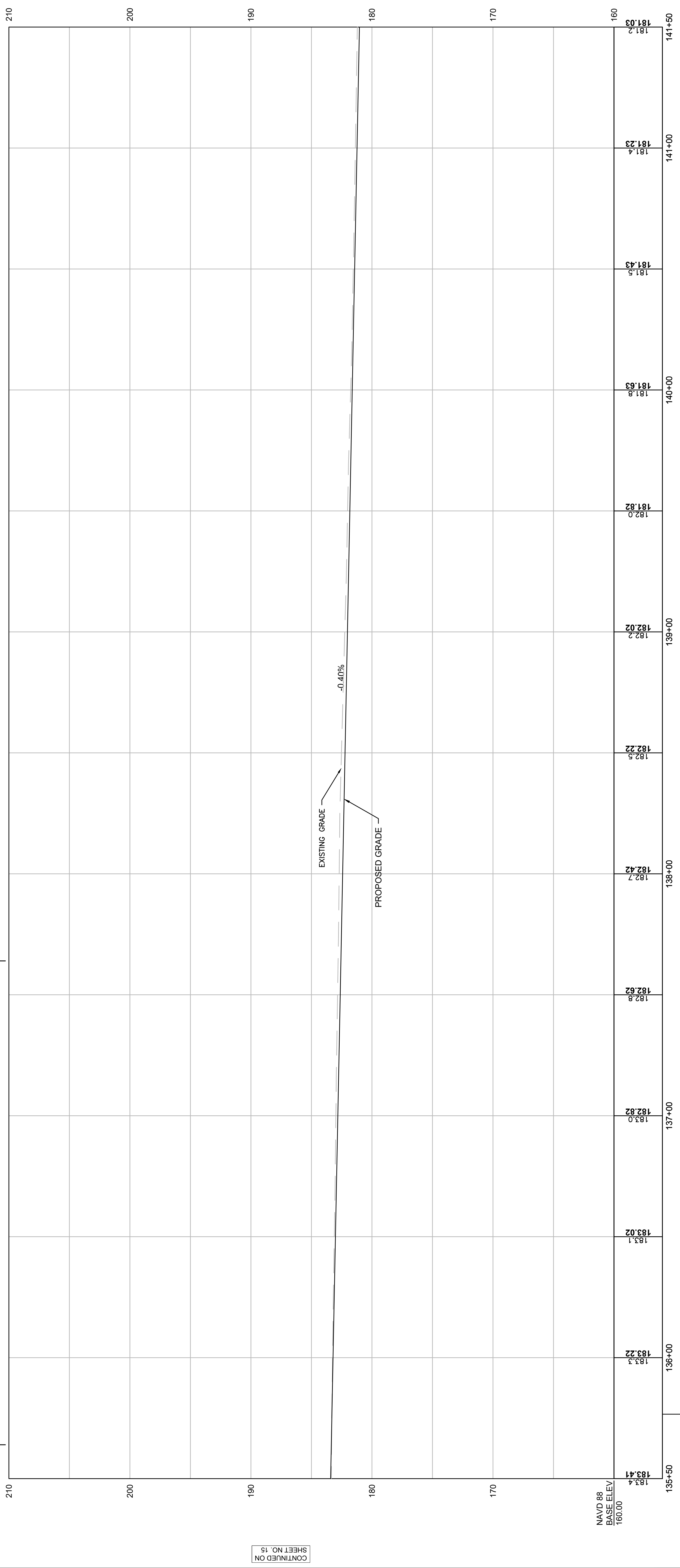
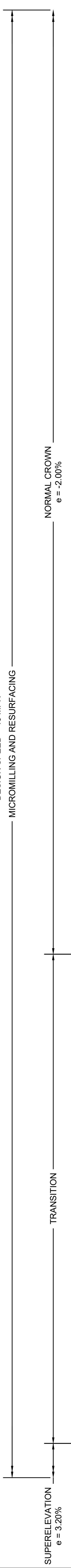
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	16	20
PROJECT FILE NO. 609516			

PROFILES
SHEET 6 OF 6

PROP I-95 NB C-D ROAD

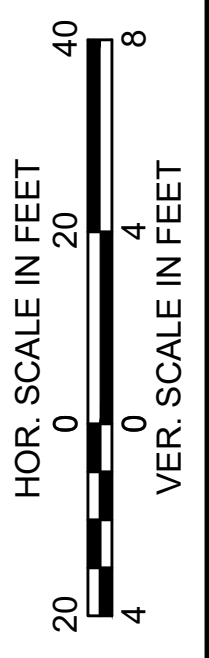
DESIGN SPEED = 45 MPH

MICROMILLING AND RESURFACING



NAVD 88
BASE ELEV.
160.00

BENCHMARK 2
TOP OF WEST BOLD
ON OVERHEAD SIGN
Elevation = 185.12'
Sta. 135+76.65, 34.27 RT



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 9

TRAFFIC DEVICE LEGEND

- DIRECTION OF TRAVEL
- WORK AREA
- TEMPORARY SIGN
- BARRIER (TYPE AS NOTED)
- REFLECTORIZED DRUM
- TEMPORARY IMPACT ATTENUATOR (TYPE AS NOTED)
- FLASHING ARROW BOARD
- TYPE III BARRICADE
- PCMS BOARD

NOTES:
 I-95 NB SHALL BE REDUCED TO THREE LANES PRIOR TO STAGE 1. SEE FINAL PLANS.
 CONTRACTOR SHALL MAINTAIN MINIMUM 11' TRAVEL LANES AND 2' MINIMUM SHOULDER AT ALL TIMES.
 STAGING PLANS ARE FOR CONSTRUCTION OF FULL DEPTH PAVEMENT ONLY. ALL OTHER CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO MEDIAN, RESTRIPIPING, AND OVERHEAD SIGN INSTALLATION SHALL USE TYPICAL TEMPORARY TRAFFIC CONTROL SETUPS.

SEQUENCING NOTES:
 THE INFORMATION ON THESE PLANS IS INTENDED TO SHOW THE SUGGESTED SEQUENCE OF CONSTRUCTION FOR THE PROJECT. THE CONTRACTOR SHALL PREPARE DETAILED CONSTRUCTION STAGING PLANS INCLUDING CROSS SECTIONS AND ANY REQUIRED TEMPORARY DRAINAGE AS THE DESIGN IS DEVELOPED.
 THESE PLANS DEPICT THE MAJOR FULL DEPTH WORK TO BE COMPLETED FOR EACH CONSTRUCTION STAGE.
 LANE CLOSURES AND LANE SHIFTS AT THE PROJECT LIMITS ARE NOT SHOWN. WHERE NECESSARY, LANE CLOSURES AND SHIFTS SHALL BE DESIGNED AS DETAILED IN THE TEMPORARY TRAFFIC CONTROL DETAILS.
 THESE PLANS DEPICT THE MINIMUM NUMBER OF LANES ALONG WITH MINIMUM LANE WIDTHS TO BE MAINTAINED THROUGHOUT EACH STAGE OF CONSTRUCTION.

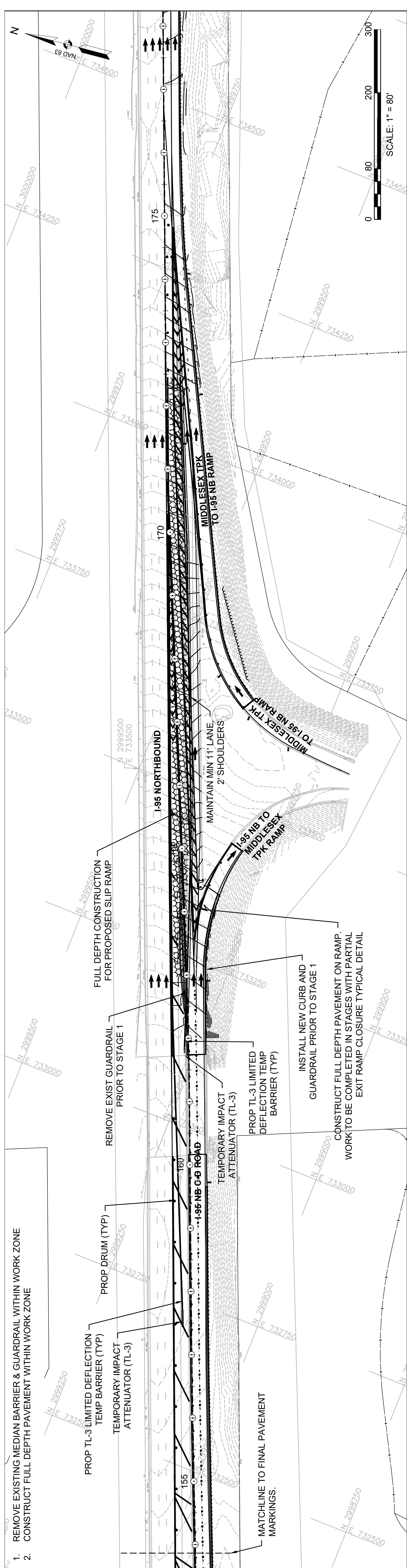
**LEXINGTON
 I-95 / ROUTE 3 INTERCHANGE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	20
PROJECT FILE NO. 609516			

STAGING OVERVIEW

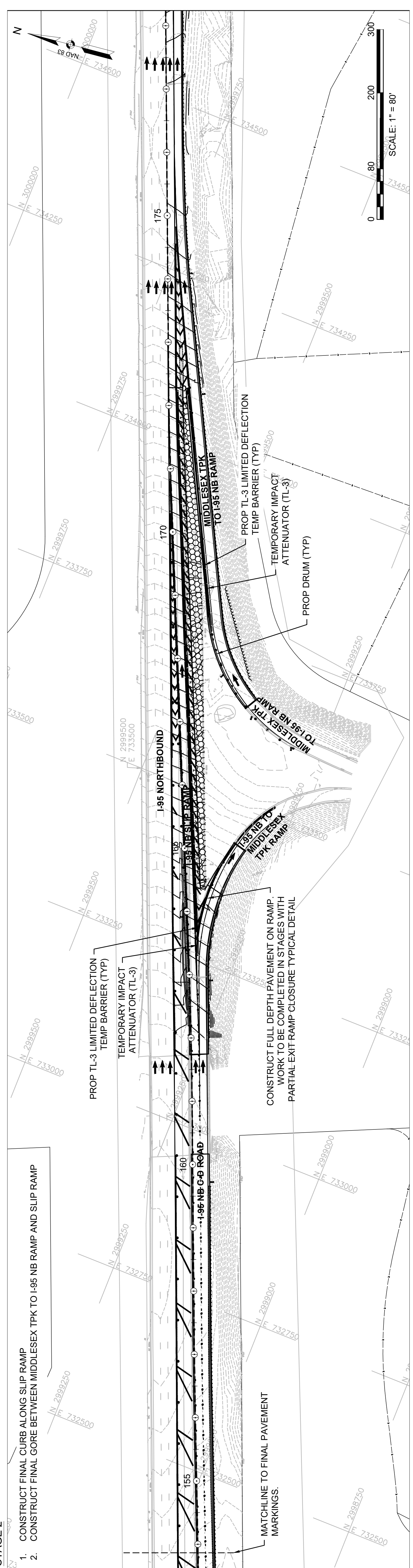
STAGE 1

1. REMOVE EXISTING MEDIAN BARRIER & GUARDRAIL WITHIN WORK ZONE
2. CONSTRUCT FULL DEPTH PAVEMENT WITHIN WORK ZONE



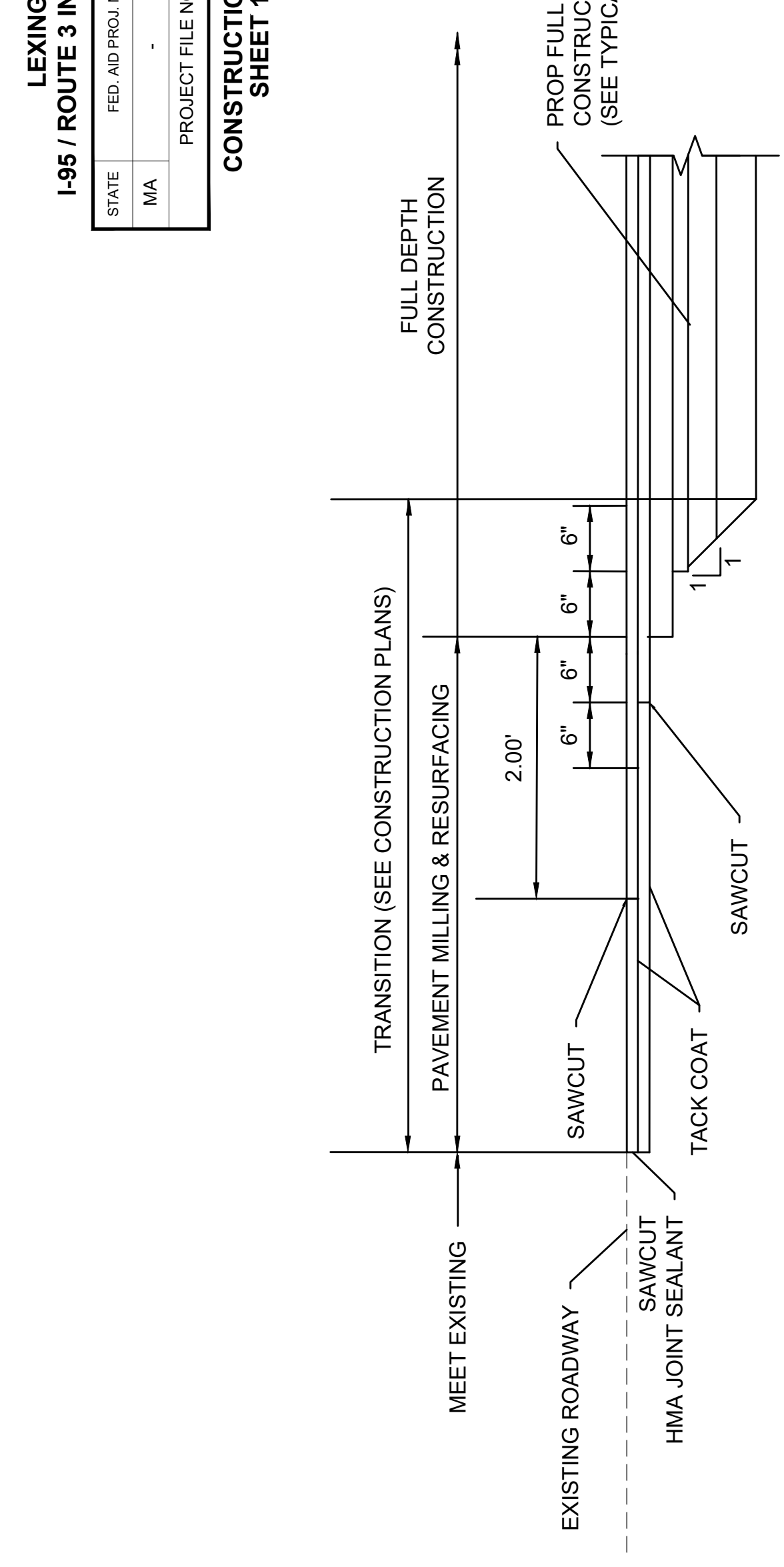
STAGE 2

1. CONSTRUCT FINAL CURB ALONG SLIP RAMP
2. CONSTRUCT FINAL GORE BETWEEN MIDDLESEX TPK TO I-95 NB RAMP AND SLIP RAMP

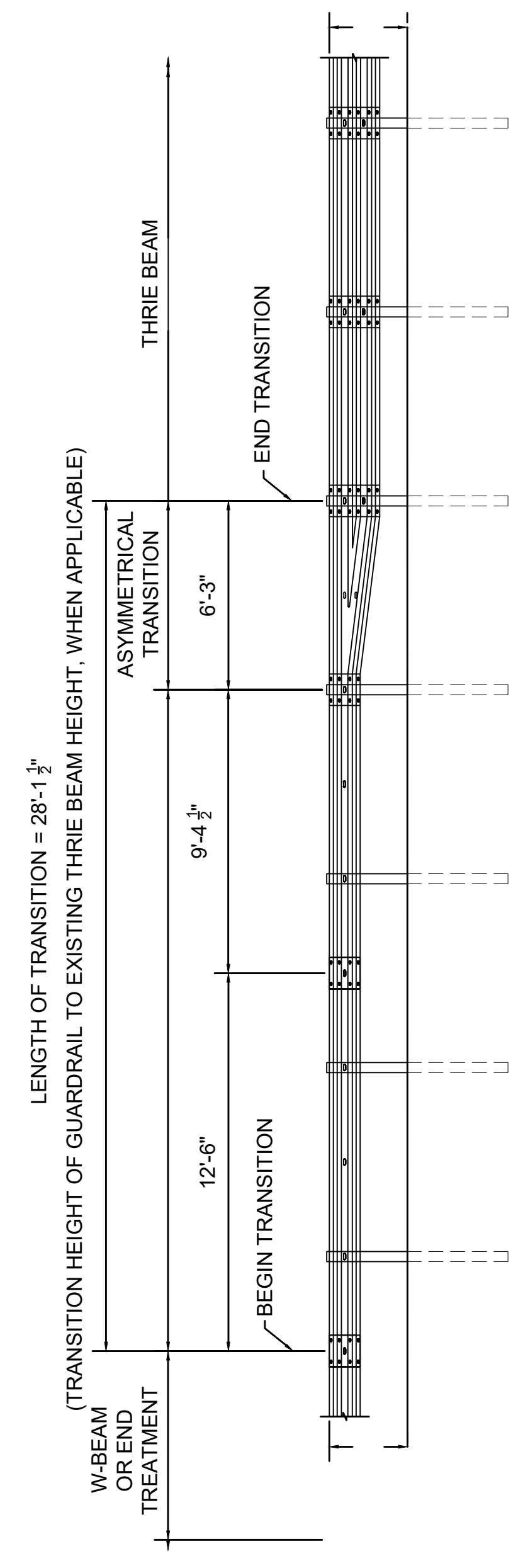


**LEXINGTON
I-95 / ROUTE 3 INTERCHANGE
CONSTRUCTION DETAILS
SHEET 1 OF 1**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	20	20
PROJECT FILE NO. 609516			

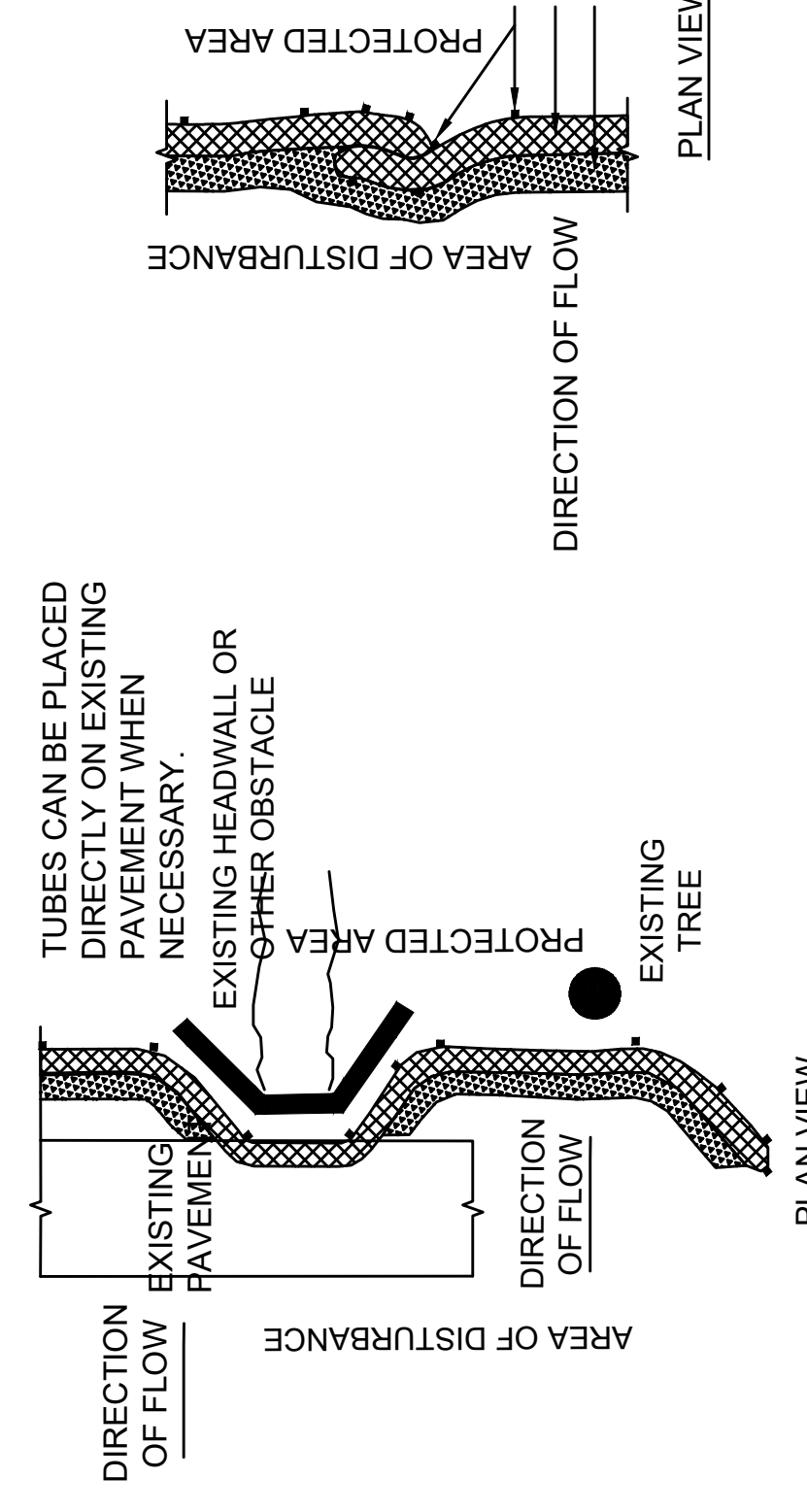


PAVING TRANSITION AT FULL DEPTH CONSTRUCTION
NOT TO SCALE



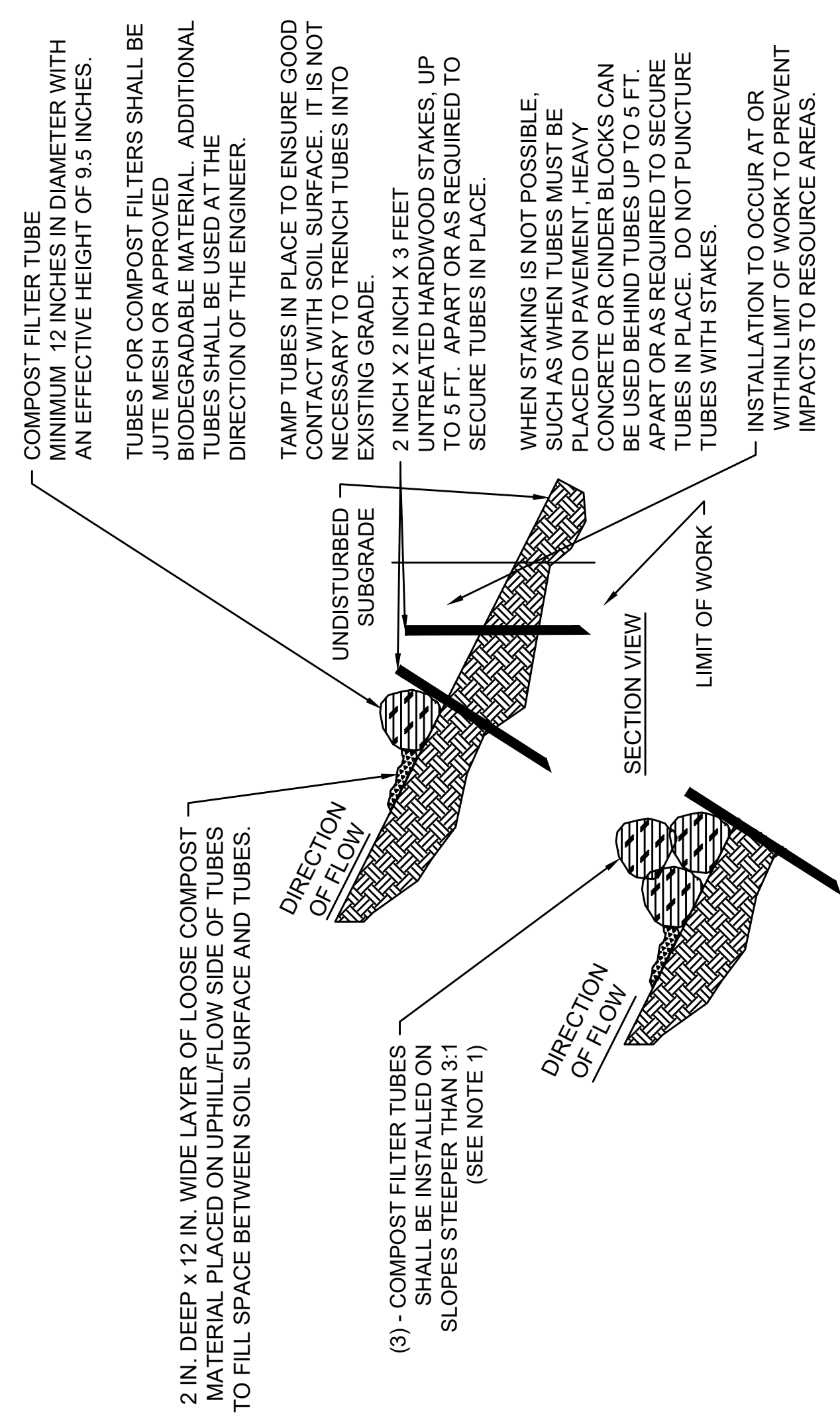
TRANSITION TO THRIE BEAM
NOT TO SCALE

PROVIDE A 3 FT. MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM. SECURE ENDS OF TUBES WITH STAKES SPACED 18 IN. APART THROUGH TOPS OF TUBES. DO NOT PUNCTURE TUBES WITH STAKES.



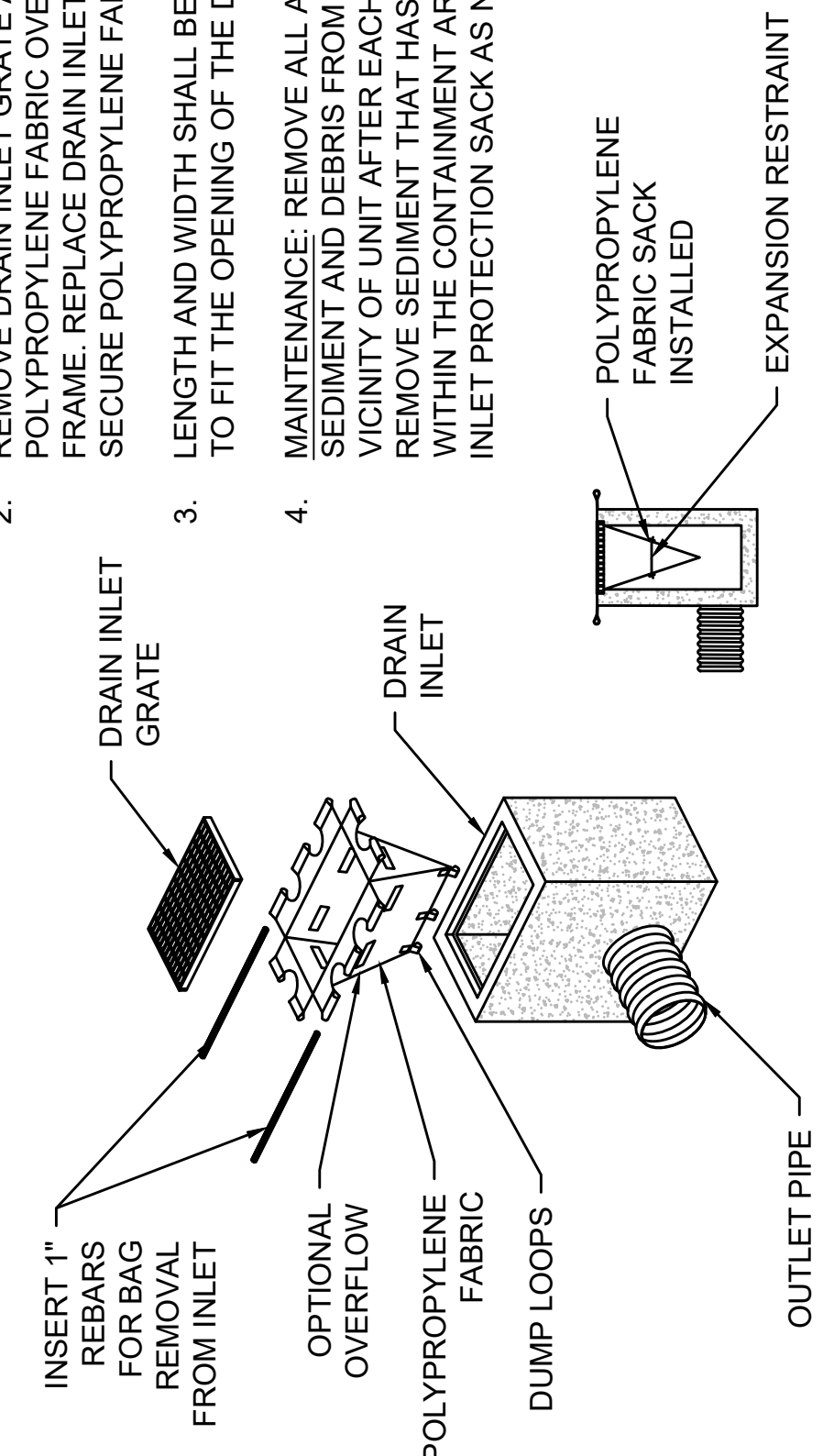
NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR SHALLOWER.
2. TRIPLE 12-INCH COMPOST FILTER TUBES SHALL BE INSTALLED IN AREAS WITH SLOPES STEEPER THAN 3:1, AND IN AREAS WARRANTING ADDITIONAL EROSION CONTROL MEASURES BASED ON SITE CONDITIONS AS DETERMINED BY THE CONTRACTOR AND HIS OR HER ENVIRONMENTAL MONITOR (I.E. AREAS ADJACENT TO STOCKPILING AND SENSITIVE/LARGE WATERSHED, AREAS IMMEDIATELY ADJACENT TO EXCAVATION, GRADING OR CLEARING AREAS, ETC.)
3. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.



EROSION CONTROL - COMPOST FILTER TUBE
NOT TO SCALE

1. INSTALL DRAIN INLET PROTECTION PER MANUFACTURER'S SPECIFICATIONS.
2. REMOVE DRAIN INLET GRATE AND INSTALL POLYPROPYLENE FABRIC OVER DRAIN INLET FRAME. REPLACE DRAIN INLET GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.
3. LENGTH AND WIDTH SHALL BE MANUFACTURED TO FIT THE OPENING OF THE DRAIN INLET.
4. MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF UNIT AFTER EACH STORM EVENT. REMOVE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE DRAIN INLET PROTECTION SACK AS NEEDED.



TYPICAL DRAIN INLET PROTECTION
NOT TO SCALE

DOCUMENT A00851

MASSACHUSETTS WETLANDS PROTECTION ACT

Determination of Applicability

THIS PAGE INTENTIONALLY LEFT BLANK

DETERMINATION FOR APPLICABILITY
FOR
BURLINGTON

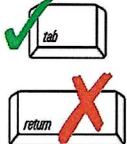


Massachusetts Department of Environmental Protection
Bureau of Water Resources - Wetlands
WPA Form 2 – Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Burlington
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:

Burlington
Conservation Commission

To: Applicant

Massachusetts Dept. of Transportation - Highway Division
Name
10 Park Plaza, Room 7360
Mailing Address
Boston MA 02116
City/Town State Zip Code

Property Owner (if different from applicant):

Name
Mailing Address
City/Town State Zip Code

Phone Number

Phone Number

Email Address

Email Address (if known)

1. Project Location:

I-95 (Route 128) & Route 3
Street Address
42.47820
Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX)

Burlington
City/Town
-71.21327
Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX)

Assessors Map/Plat Number

Parcel/Lot Number

2. Date Request Filed:

October 25, 2024

[How to find Latitude and Longitude](#)

[and how to convert to decimal degrees](#)

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):

Pavement, drainage & safety improvements

Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

see attached

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

Burlington
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:

Burlington

Name of Municipality

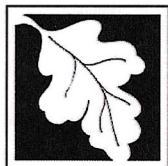
Pursuant to the following municipal wetland ordinance or bylaw:

Burlington Conservation Commission

Name

Article 14

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

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).

See Attached

- 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

Municipality

B. Determination (cont.)

- 5. The area described in the Request is subject to jurisdiction under the Act. Since the work described therein meets the requirements for the following exemption, as specified in the Act and the regulations, no Notice of Intent is required:

Exempt Activity (site applicable statutory/regulatory provisions)

- 6. The area and/or work described in the Request is not subject to additional review and approval by:

Name of Municipality

Pursuant to a municipal wetlands' ordinance or bylaw.

BURLINGTON BY-LAW

Name

ARTICLE XIV

Ordinance or Bylaw Citation

C. Authorization

This Determination is issued to the applicant and delivered as follows:

- By hand delivery on

Date

- By certified mail, return receipt request on

November 19, 2024

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

November 19, 2024

Date

- By hand delivery

Date

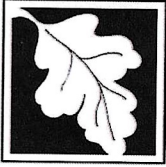
Property Owner (if not applicant)

- By mail

Date

- By hand delivery

Date



Massachusetts Department of Environmental Protection
 Bureau of Water Resources - Wetlands
WPA Form 2 – Determination of Applicability
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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.

Issuing Authority _____

Signatures:

Signature *Larry Cohen*
 Signature *William Boivin*
 Signature *Indra Deb*
 Signature *Ed LoTurco*
 Signature *Kent Moffatt*
 Signature *Robert Sheahan*
 Signature *Sarah Wolinski*

 Larry Cohen
 Printed Name

 William Boivin
 Printed Name

 Indra Deb
 Printed Name

 Ed LoTurco
 Printed Name

 Kent Moffatt
 Printed Name

 Robert Sheahan
 Printed Name

 Sarah Wolinski
 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.



Town of Burlington
29 Center Street
Burlington, MA 01803

Phone 781-270-1655
Fax 781-238-4690

Burlington Conservation Commission

**MGL CHAPTER 131, SEC. 40
DETERMINATION OF APPLICABILITY**

APPLICANT: Mass Department of Transportation, Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116

PROJECT LOCATION: I-95 (Route 128)/Route 3

ASSESSORS MAP-PARCEL: N/A (Road layout)

PROPERTY OWNER/ADDRESS: Mass Department of Transportation, Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116

PLAN REFERENCES:

- Request for Determination of Applicability, prepared by HNTB Corporation, cover letter signed by Marissa Seifert, PWS, dated October 17, 2024
- "Plan and Profile of Improvements at Interstate 95 (Route 128)/Route 3 Interchange," signed and stamped by James T. Barnack, dated August 5, 2024.
- Presentation Request for Determination of Applicability, Conservation Commission meeting November 14, 2024

DATE OF DECISION: November 19, 2024

FINDINGS

Project Description: The applicant proposed improvements to the interchange of Interstate-95 (I-95 Northbound) and US Route 3 Southbound (US-3-SB) and the ramps along the Collector-Distributor (C-D Road) in Burlington and Lexington. The proposed scope of work in jurisdictional area included pavement mill and overlay along I-95 NB, new pavement markings, minor geometric improvements, guardrail installation, tree trimming, and minor drainage upgrades.

The proposed work that is not subject to minor project exemptions resulted in approximately 2816sf of temporary impacts and 8265sf of permanent impacts to the buffer zone and 74sf of temporary and 152sf of permanent impacts to the Riverfront Area. Drainage improvements include replacement of one shallow catch basin with a deep-sump catchbasin and adding one new manhole and catchbasin.

Jurisdictional Areas: Segments of the work were located within the 100-foot buffer to Bordering Vegetated Wetlands, within Riverfront Area and within the 100-foot buffer to the bank of a perennial stream (part of Vine Brook).

Determination of Applicability
Interstate-95/Route 3
November 19, 2024
Page 2

Other Findings: The Conservation Commission found that the roadway improvements would not detrimentally affect the stream or wetlands, but did not formally approve the flagged wetland boundaries.

DECISION

The Burlington Conservation Commission voted to issue a Negative Determination of Applicability, with conditions as noted in this decision for work at the Interstate-95/Route 3 Interchange in Burlington, MA. The conditions have been imposed to assure that the activity will not increase flooding on the property of others.

CONDITIONS

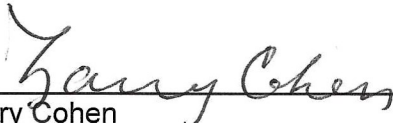
1. This decision is for work as outlined in the Project Description above. No other work has been reviewed or permitted by this decision. Prior to commencing any work beyond that which is permitted in this decision, the applicant shall contact the Conservation Department in order to determine whether or not a new filing will be required.
2. **Prior to beginning any construction on the site, sediment barriers shall be installed per the reference plans and inspected by Conservation Department staff. Compost filter tubes (12" minimum), silt dykes or staked straw bales plus silt fencing shall be used as a sediment barrier on this site and shall be installed by hand.** The sediment barriers shall remain in place while the work is being done and until the disturbed areas have been permanently stabilized (re-vegetated). Permanent stabilization must be approved by Conservation Department staff and sediment barriers must remain in place until approval is granted.
3. Catch basins along the route shall be protected with silt sacks or equivalent. Silt sacks shall be maintained and regularly cleaned of sediments until stabilization is achieved and/or until the Conservation Commission has formally approved their removal.
4. The Burlington Conservation Commission reserves the right to require additional erosion and/or damage prevention controls if deemed necessary. These may be required by the Conservation Administrator or the Conservation Commission at any time when deemed appropriate.
5. All disturbed areas within the jurisdiction of the Commission shall be stabilized immediately as defined herewith and re-vegetated within thirty (30) days after being disturbed. Bare ground and disturbed areas that cannot be permanently revegetated within 30 days shall be stabilized by a method approved by the Conservation Commission. Temporary stabilization shall include, but not be limited to: hydroseeding, straw mats, jute netting, sod, or another means approved by the Conservation Commission prior to its use. Where a slope is steeper than 3:1, temporary stabilization shall be staked or otherwise affixed to the slope.
6. **There shall be no dewatering permitted on this site** in conjunction with these conditions unless the Conservation Commission has received and approved – or approved with modifications – a dewatering plan which addresses issues of contamination and sediment control.
7. No materials shall be stockpiled within 100 feet of a resource area unless covered and encircled with straw bales. The applicant shall be responsible for ensuring that stockpiled materials do not erode from the limits of the pile or intrude into resource areas or associated buffer zones. In no case shall stockpiles be located closer than 30 feet from wetland boundary.

Determination of Applicability
Interstate-95/Route 3
November 19, 2024
Page 3

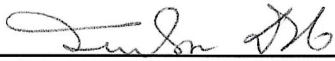
8. Damaged catch basins shall be repaired and/or replaced with catch basins with 4-foot sumps, where feasible. Notify Conservation Staff of planned replacements.
9. Any excavated materials not reused on site shall be disposed of off-site in a legal manner. No material (asphalt, concrete, soil, etc.) shall be deposited within wetland.
10. No tracking of sediments onto public roadways shall be allowed. In the event tracking does occur, sediments shall be swept from roadway daily.
11. There shall be no removal of trees permitted under this Determination without prior notification and consultation with the Conservation Department.
12. Upon completion of work the Applicant shall contact the Conservation Department to schedule a final inspection at which time it will be determined if work has been completed in compliance with this negative Determination.

Burlington By-laws Article 14
Determination of Applicability
I-95 (Route 128) & Route 3 [Lat. 42.47820 Long. -7121327]
Applicant: Massachusetts Department of Transportation – Highway Division
Date: November 19, 2024

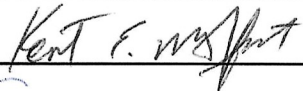
ISSUED BY BURLINGTON CONSERVATION COMMISSION:



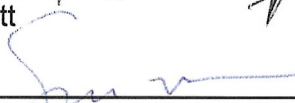
Larry Cohen




Indra Deb



Kent Moffatt




Sarah Wolinski



William Boivin



Ed LoTurco



Robert Sheahan

DETERMINATION FOR APPLICABILITY
FOR
LEXINGTON



WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Lexington
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:

Lexington
Conservation Commission

To: Applicant

Massachusetts Department of Transportation
Name
10 Park Plaza, Room 7360
Mailing Address
Boston MA 02116
City/Town State Zip Code
857-268-1729
Phone Number
Erica.n.larner@dot.state.ma.us
Email Address

Property Owner (if different from applicant):

Name
Mailing Address
City/Town State Zip Code
Phone Number
Email Address (if known)

1. Project Location:

Route 3N and I-95N Interchange (filed under 198 Burlington Street)
42.47488
Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX)
N/A - roadway
Assessors Map/Plat Number

Lexington
City/Town
-71.22488
Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX)
N/A - roadway
Parcel/Lot Number

[How to find Latitude and Longitude](#)

[and how to convert to decimal degrees](#)

2. Date Request Filed:

10/30/2024

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):

Pavement and guardrail installation, associated grading, new sign installation, and upgraded catch basins and drain manholes on I-95 Northbound and Route 3 Northbound Ramp and the C-D Road per referenced Plan Set.

Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

<u>WPA Form 1 – Request for Determination of Applicability</u>	<u>10/2/2024</u>
Title	Date
<u>“Project Design Plans”</u>	<u>8/2/2024</u>
Title	Date
<u>Improvements at I-95 (Route 128)/Route 3 Interchange Report</u>	<u>10/17/2024</u>
Title	Date



WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Lexington
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

**WPA Form 2 – Determination of Applicability**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Lexington
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).

See attached Conditions beginning on Page 4-1 of 4.

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.



WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Lexington
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:

[310 CMR 10.02\(2\)\(b\)2.o and 10.02\(2\)\(b\)2.p](#)

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:

[Town of Lexington](#)

Name of Municipality

Pursuant to a municipal wetlands' ordinance or bylaw.

[Wetlands Protection Code](#)

Name

[c. 130](#)

Ordinance or Bylaw Citation

But, the work is approved here in under this Negative Determination of Applicability subject to the attached conditions beginning on Page 4-1.

C. Authorization

This Determination is issued to the applicant and delivered as follows:

- By hand delivery on
- By certified mail, return receipt request on

Date

[1/14/2025](#)

Date

[7017066000020766899](#)

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

[1/14/2025](#)

Date

Date

Property Owner (if not applicant)

- By mail

- By hand delivery

Date

Date

APPLICANT/OWNER: Massachusetts Department of Transportation**ADDRESS: Route Interstate 95 and Route 3 Interchange, Lexington, MA****CDOA-24-19****CONDITIONS:**

1. All work shall conform to the Request for Determination of Applicability, the referenced plans, and supporting documentation unless, otherwise, specified in this Determination.
2. A copy of this Determination, as well as construction plans, shall be on site at the start of and during any site work for contractors to use as reference. The property owner(s) and any successor(s) in title shall inform all contractors and subcontractors of the conditions and provisions of this Determination concerning their work. This Determination shall be included in all construction contracts, subcontracts, and any other construction documents dealing with the proposed work and shall supersede any conflicting contract requirements.
3. In conjunction with the transfer of interest or control of any part of the site, the applicant shall provide a copy of this Determination and Approved Site Plan to any broker, potential buyer or lessee of the property. If the lot is sold before the Certificate of Compliance is issued, a statement acknowledging an understanding of this Determination and agreeing to comply with it shall be signed by the buyer and submitted to the Commission.
4. Prior to commencing any work on the property, the following conditions shall be in compliance:
 - a. Survey and install the erosion and sedimentation control devices in the locations as shown on Sheets 7 through 12 of the submitted Plan Set dated 8-2/2024, Stamped and Signed by James T. Barnack, PE No. 50900, and as further directed by the Conservation Commission, or its designee, to serve as the erosion and sedimentation control boundary. The devices shall consist of natural fiber biodegradable 12-inch filter sock tube filled with compost (i.e. filtrex compost sock);
 - b. Install catch basin silt sacks with emergency overflow bypass weirs in any adjacent and down-gradient catch basins that could receive sediment laden runoff from the site and demarcate a construction staging and material stockpiling area for the project;
 - c. Install a limit of work boundary, comprised of orange construction fencing or similar visible barrier, on the up-gradient edge of the installed erosion and sedimentation compost sock, and/or as further directed by the Conservation Commission, or its designee.
 - d. Submit the following information in writing to the Conservation Office:
 - 1) The names, addresses, and day and night numbers of the project supervisor/manager/ and their alternates and the project professional engineer who will be responsible for ensuring on-site compliance with this Determination; and

- 2) A construction sequencing schedule that outlines the site work tasks schedule/time frame from milling and paving, guardrail install, signage install, stabilization and landscaping;
 - e. Schedule a pre-construction meeting with the Conservation Office for the purpose of reviewing the requirements of the Determination and to inspect the pollution prevention conditions, such as erosion and sedimentation control devices, catch basin protection silt sacks, and limit of work boundary, and review the construction sequencing schedule and plan. The applicant, the owner the project supervisor/manager and the project professional engineer who will be responsible for ensuring on-site compliance with this Determination shall attend this meeting.
5. The following conditions shall be complied with to protect the wetland resource areas:
 - a. If any unforeseen problems occur during construction that affects any of the interests of the Act or the Lexington General Bylaw for Wetland Protection, upon discovery, the owner(s) shall notify the Commission. An immediate meeting shall be held between the Commission, the applicant, the engineer, the contractor, and other concerned parties to determine the corrective measures to be employed. The applicant shall then act to correct the problems using the corrective measures agreed upon;
 - b. As soon as possible, all disturbed upland areas shall be brought to final grade, and shall be permanently stabilized within 30 days after disturbance by loam and seeding or other measures acceptable to the Commission. Seeding shall be native species, such as a native pollinator or conservation seed mix, and specifications and evidence of native species purchased and planted shall be submitted to the Conservation Commission. Where necessary, the loam and seeding shall be held in place with biodegradable erosion control matting. Bare ground and disturbed areas that cannot be permanently revegetated within thirty (30) days, unless the 30 days are in the winter, shall be stabilized by a method approved by the Commission. Temporary stabilization shall include, but not be limited to, hydro-seeding, straw mats, erosion control blankets, sod, or other Commission approved method;
 - c. The site shall be maintained in a clean condition at all times. Construction refuse and debris shall be contained within a dumpster located at a horizontal distance greater than 100 feet from the boundaries of the bank and bordering vegetated wetlands and shall be disposed of promptly and properly. Disposal records (bills of lading) of all materials removed from the site shall be kept and shall be made available to the Conservation Commission upon request.
 - d. All stockpiled materials shall be located in an approved designated upland area at a horizontal distance greater than 100 feet from the boundaries of the bank and bordering vegetated wetlands (or if not feasible, in a location to be determined and approved by the Conservation Director at the preconstruction meeting) and excess materials shall be removed from the site and properly disposed of upon completion of the associated work.

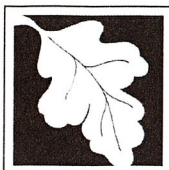
APPLICANT/OWNER: Massachusetts Department of Transportation

ADDRESS: Route Interstate 95 and Route 3 Interchange, Lexington, MA

CDOA-24-19

- To prevent impact from erosion, hay bales and silt fence shall be installed at the base of the stockpile and the stockpile shall be covered at night and during storm events.
- e. Equipment, materials, and fuel staging, storage, and operations shall be situated in an upland area location at a horizontal distance greater than 100 feet from the boundaries of the bank and bordering vegetated wetlands as approved by conservation staff during the pre-construction meeting;
 - f. Spill containment kits shall be onsite to be prepared and to immediately manage any accidental leaks from construction equipment to prevent washing and migrating to catch basin drains and wetland resource areas;
 - g. Silt Sacks with emergency overflow bypass weir shall be secured under any catch basin grates that may receive stormwater runoff from the construction area to prevent pulverized asphalt, sediment and debris from entering the drainage system before the site stabilized or the construction is completed;
 - h. No drains or stormwater management systems shall be installed down-gradient of the limit of work boundary without submitting for supplemental conservation commission review and receiving written approval;
 - i. Any dewatering activities associated with the project where water will be released to a resource area (including the 100-foot buffer zone) or storm drain shall make use of a Dirtbag® at the pumping discharge outlet, or similar settling device to remove sediment before the water is released. The Commission shall approve the dewatering device specifications and placement location prior to commencing any dewatering;
 - j. Any sediment tracked from the site onto the paved surfaces shall be swept from these surfaces daily, and at the end of each work day, to prevent sediment from washing to the drainage system and wetlands, and
 - k. Dust shall be minimized, controlled, and managed on site in accordance with accepted industry standards. A plan for minimizing, controlling, and managing shall be prepared and implemented during the construction activities and available upon request. At a minimum, the plan shall include measures to limit soil disturbance and how to prevent dust from entering the air.
6. The following are required relative to the stormwater management systems designed for the proposed project:
- a) All construction and post-construction stormwater management shall be conducted in accordance with supporting documents submitted with the Request for Determination of Applicability and referenced Plan Set;

- b) Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized;
 - c) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer certifies that all post-construction stormwater BMPs are installed in accordance with the plans, and have been inspected to ensure that they are not damaged and that they are in proper working condition, and that any vegetation associated with post-construction BMPs is suitably established to withstand erosion;
 - d) The project engineer shall inspect all aspects of the stormwater management system, including, but not limited to, elevations and inverts of rims, pipe inverts, and bottom of sump basin for new deep sump catch basins and drain manholes, during installation so that he/she/they can certify in writing that all systems were installed in accordance with the approved plan and are operating in substantial compliance with above conditions and any deviations and field changes that exist, if any.
7. A surveyed as-built plan stamped by the professional land surveyor and professional engineer's written certification affidavit shall be submitted to the Conservation Commission, via conservation staff, documenting the as-built record site conditions compliance, including grades, impervious surface limits, guard rail limits, sign posts, and stormwater management system catch basin and drain manholes, and in addition, an onsite meeting with conservation staff shall be coordinated for staff to review compliance with this Determination.
8. The stormwater management system, comprised of deep sump catch basins, shall be maintained regularly to ensure long-term performance of the stormwater management system. At a minimum, the systems shall be inspected and maintained as specified in the DEP Stormwater Handbook, and repaired, as needed. Inspection and Maintenance Program Logs shall be maintained by MassDOT, and provided to Lexington Conservation Commission upon request. When the system (or any best management practice) clogs and/or fails, the system (or best management practice) shall be repaired and/or replaced.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

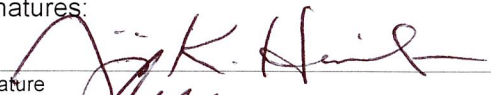
CDOA-24-19

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

C. Authorization (cont.)

Lexington Conservation Commission

Signatures:

Signature 

Philip Hamilton

Printed Name

Signature 

Jason Hnatko

Printed Name

Signature _____

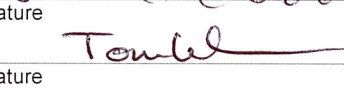
Ralph "Duke" Bitsko

Printed Name

Signature _____

Alex Dohan

Printed Name

Signature 

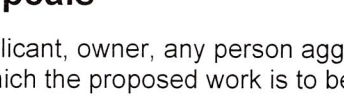
Kevin Beuttell

Printed Name

Signature _____

Ruth Ladd

Printed Name

Signature 

Tom Whelan

Printed Name

Signature _____

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.

DOCUMENT A00870

**MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE**

**NATURAL HERITAGE AND
ENDANGERED SPECIES
PROGRAM**

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:

11/19/2024 19:10:34 UTC

Project code: 2025-0020178

Project Name: 609516 - BURLINGTON- IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE

Subject: Concurrence verification letter for the '609516 - BURLINGTON- IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE' 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 November 19, 2024 to verify that the **609516 - BURLINGTON- IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE** (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

609516 - BURLINGTON- IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3
INTERCHANGE

DESCRIPTION

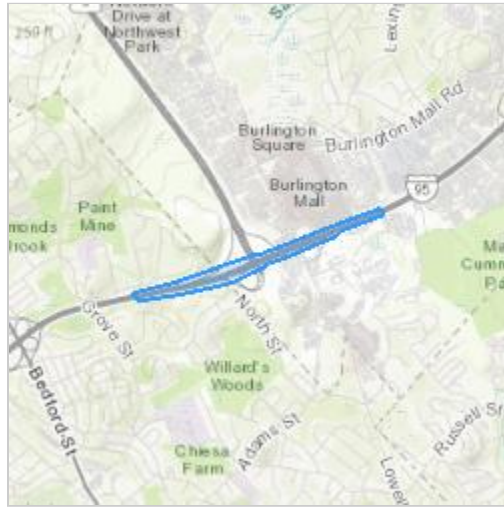
609516 - BURLINGTON- IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3
INTERCHANGE

The proposed work consists of improving traffic operations and safety at Interstate 95 and Route 3 Interchange. No work is occurring at Bridges B-29-006 and B-29-007.

Tricolored Bat: Proposed Endangered Species only. The project action will not jeopardize the continued existence of a proposed species.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@42.47718195,-71.21774539875398,14z>



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^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the northern long-eared bat^[1]?

[1] See [northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

SUBMITTED DOCUMENTS

- [609516_BURLINGTON_acoustic_bridge_survey_reduced.pdf](#) <https://ipac.ecosphere.fws.gov/project/I4KDFUB63NCGBKGCPCMBRTOKAPA/projectDocuments/152743245>

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB^[1]?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum^[1]?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry triangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

23. Does the project include slash pile burning?

No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

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 new or replace existing **permanent** lighting?

No

29. 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

30. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

31. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

32. 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

33. Will the project raise the road profile **above the tree canopy**?

No

34. 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.

35. 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

36. 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.

37. **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^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

1.3

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 November 04, 2024. 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: Emily Puglisi

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email emily.a.puglisi@dot.state.ma.us

Phone: 6178964454

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

DOCUMENT A00871

MASSDOT

BAT ACOUSTIC SURVEY
AND
BRIDGE ASSESSMENT

November 7, 2024

Dave Paulson
 Wildlife and Endangered Species Program Supervisor
 Massachusetts Department of Transportation – Highway Division
 Ten Park Plaza, Room 7360
 Boston, MA 02116-3973
David.J.Paulson@dot.state.ma.us
 (857) 262-3378

Project	Bat Presence/Absence Acoustic Survey and Bridge Assessments
MassDOT Project #	609516
MassDOT Project Title	Burlington - Improvements at I-95 (Route 128)/Route 3 Interchange Project
Town	Burlington, Massachusetts
Surveyor Name/Firm	Nicholas Boulanger / Tetra Tech, Inc.
Detector Operation Dates	August 7–15, 2024
Acoustic Survey Results	NLEB NOT DETECTED
Acoustic Survey Results	PESU DETECTED
Acoustic Survey Results	MYLU DETECTED
Acoustic Survey Results	MYLE NOT DETECTED
Bridge Assessment Dates	August 7, September 27, and October 13, 2024
Bridge Assessment Results	Signs of Bats Not Detected at Bridge Number Bridge L-10-015, B-29-006 2G2, B-29-006 2G3, B-29-006 2EP, B-29-006 2EQ, and at Five Culverts

Dear Mr. Paulson,

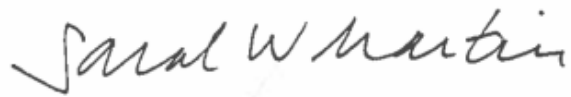
This report contains the results of the Massachusetts Department of Transportation (MassDOT) bat summer presence/absence survey performed for the MassDOT Project #609516, Burlington - Improvements at I-95 (Route 128)/Route 3 Interchange Project, in Burlington, Massachusetts. Acoustic detectors deployed by Tetra Tech detected the following species:

- Did not detect the presence of federally endangered northern long-eared bat (*Myotis septentrionalis*, hereafter NLEB) as 0 calls were classified and confirmed as such via qualitative assessment.
- Did detect the presence of federally proposed endangered and state endangered tricolored bat (*Perimyotis subflavus*) as 38 calls were classified and confirmed as such via qualitative assessment.
- Did detect the presence of state endangered little brown bat (*Myotis lucifugus*) as 77 calls were classified and confirmed as such via qualitative assessment.

- Did not detect the presence of state endangered eastern small-footed bat (*Myotis leibii*) as 0 calls were classified and confirmed as such via qualitative assessment.

This report also contains the results of the bridge and culvert assessments performed for the Project. No bats (dead or alive), staining, bat sounds, or distinct odors were observed at five bridges (L-10-015, B-29-006 2G2, B-29-006 2G3, B-29-007 2EP, B-29-007 2EQ). These bridges do not appear to provide a cave-like environment. The survey also included assessments at five culverts, none of which were observed to have signs of roosting bats. For the reasons stated above, it is determined that these bridges and culverts are not used by bats.

Sincerely,

A handwritten signature in cursive script that reads "Sarah Watts Martin".

Sarah Watts Martin
Tetra Tech, Inc.

Attachments: Bat Presence/Probable Absence Acoustic Survey and Bridge Assessment Report,
Burlington - Improvements at I-95 (Route 128)/Route 3 Interchange Project,
MassDOT Project No. 609516

Bat Presence/Probable Absence Acoustic Survey and Bridge Assessment Report

Burlington - Improvements at I-95 (Route 128)/Route 3 Interchange Project

MassDOT Project No. 609516

Prepared for:

Massachusetts Department of Transportation
Highway Division
Ten Park Plaza, Room 7360
Boston, MA 02116-3973

Prepared by:



Tetra Tech, Inc.
451 Presumpscot Street
Portland, ME 04103
www.tetrattech.com

November 2024

EXECUTIVE SUMMARY

This report conveys results of the survey assessing presence/probable absence for northern long-eared bat (*Myotis septentrionalis*, NLEB) and other bats during the summer of 2024 for Massachusetts Department of Transportation (MassDOT) Burlington - Improvements at I-95 (Route 128)/Route 3 Interchange Project (MassDOT Project #609516) located in Burlington, Massachusetts (Project). Tetra Tech, Inc. (Tetra Tech) deployed four acoustic detectors, and call analysis did not indicate the presence of NLEB. Tetra Tech reviewed a subsample of other *Myotis* calls to further verify detection of NLEB. The survey confirmed presence of six species at the Project: big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), tricolored bat (*Perimyotis subflavus*), and little brown bat (*Myotis lucifugus*).

This report summarizes the methods and results of the acoustic survey and bridge/structure assessment. Appendix A includes an aerial map of the Project and detector locations along with photographs illustrating site conditions and microphone orientation. Appendix B includes copies of the completed Phase 1 Summer Habitat Assessment form(s) for the Project. Appendix C is a summary of Maximum Likelihood Estimates (MLE), Appendix D includes assessment forms and photographs of the bridge/structure conditions, and Appendix E includes resumes for relevant staff members involved with the Project.

Table of Contents

1.0	Project Description.....	1
2.0	Methods.....	1
2.1	Habitat Assessment.....	2
2.1.1	Desktop Assessment.....	2
2.1.2	Field-based Assessment.....	2
2.2	Acoustic Survey.....	5
2.2.1	Detector Type.....	5
2.2.2	Detector Deployment.....	5
2.2.3	Weather Requirements.....	5
2.2.4	Acoustic Analysis.....	5
2.3	Bridge/Structure Assessments.....	6
3.0	Results.....	6
3.1	Habitat Assessment.....	6
3.2	Acoustic Survey.....	6
3.3	Bridge/Structure Assessments.....	12
4.0	Conclusion.....	13
5.0	References.....	15

List of Tables

Table 1.	Survey personnel, bat acoustic presence/probable absence survey, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024).....	1
Table 2.	Detector station descriptions, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024).....	2
Table 3.	Summary of weather information during the first 5 hours of each survey night, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024).....	7
Table 4.	Summary of species presence by Kaleidoscope Pro and manual vetting, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024).....	7
Table 5.	Bat passes recorded after qualitative analysis at Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024).....	9

List of Figures

Figure 1.	Locations of acoustic detectors deployed at Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024).....	4
-----------	---	---

List of Appendices

Appendix A. Detector Station Map and Photographs

Appendix B. Completed Phase 1 Summer Habitat Assessment for Acoustic Detectors

Appendix C. Maximum Likelihood Estimates (MLE) Summary

Appendix D. Bridge/Structure Bat Assessment Forms, Habitat Assessment Forms, and Photographs

Appendix E. Relevant Staff Resumes

1.0 Project Description

This report conveys results of the survey assessing presence/probable absence for the northern long-eared bat (*Myotis septentrionalis*, NLEB) and other bats during the summer for Massachusetts Department of Transportation (MassDOT) Burlington - Improvements at I-95 (Route 128)/Route 3 Interchange Project (MassDOT Project #609516) located in Burlington, Massachusetts. (Project; Figure 1). The linear area affected is 2.2 miles (3.5 kilometers). The Project area is a major interstate highway that runs through an area of moderate to high-density residential and commercial development with highly fragmented woodlots and wetlands. Forested public lands near the Project include Simonds Brook Conservation Area (78 acres, 0.5 miles north), Willard’s Woods Conservation Area (100 acres, 0.5 miles south), Paint Mine Conservation Area (48 acres, 0.25 miles north), and Whispering Hill Woods (75 acres, 0.7 miles southeast). In addition, there are several wooded areas within 5 miles of the Project that are in conservation easement. Open water bodies in the immediate area include several brooks streams, such as Shaker Glen Brook. Further away in the surrounding area, open water bodies include the Shawsheen River and Horn Pond.

2.0 Methods

The survey to assess bat summer presence/probable absence at the Project accorded with the 2024 U.S. Fish and Wildlife Service (USFWS) *Range-wide Indiana Bat Summer Survey Guidelines for Indiana Bat and Northern Long-eared Bat* (Guidelines) (USFWS 2024). This survey followed a two-phased approach: Phase 1 included the desktop and field-based habitat assessments, and Phase 2 included the acoustic survey. Tetra Tech deployed full-spectrum acoustic detectors during Phase 2, and the resulting data were processed by use of Kaleidoscope Pro version 5.4.0 (Wildlife Acoustics, Inc.). Qualified Tetra Tech personnel conducted all phases of the survey. Specific roles are summarized in Table 1, and resumes of relevant staff are provided in Appendix D.

Table 1. Survey personnel, bat acoustic presence/probable absence survey, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024)

Personnel	Desktop Analysis	Field Assessment	Detector Deployment	Bridge / Structure Assessment	Acoustic Analysis	Qualitative Analysis
Nicholas Boulanger Wildlife Biologist	X	X	X			
Baxter Seguin Wildlife Biologist					X	X
Ken Deshais Sr. Project Scientist		X		X		
Kinsale McGrath Environ. Scientist		X		X		

2.1 Habitat Assessment

The following sections describe the desktop and field-based habitat assessments of summer presence of the NLEB at the Project.

2.1.1 Desktop Assessment

Prior to field work, Tetra Tech performed a desktop land cover analysis to identify suitable NLEB habitat within the proposed Project area (Figure 1). Tetra Tech reviewed aerial photography and Google Earth imagery to identify areas of possible use by the NLEB for foraging and roosting during the maternity and migration seasons. Determination of these areas was based on forest patch size, proximity to closed-canopy forests, and landscape features that bats may use to commute between roosting and foraging habitats (e.g., forested tracts, wetlands, and streams). All relatively contiguous forested lands that were not highly fragmented by residential or commercial developments were considered suitable NLEB habitat, and all densely populated or developed stretches were determined to be unsuitable (USFWS 2024) (see Figure 1 and Figures in Appendix A). The Guidelines indicate for linear projects a minimum of one detector per kilometer of suitable habitat for four detector-nights (USFWS 2024). Therefore, four detector stations were necessary for this linear project with 3.5 kilometers of suitable habitat.

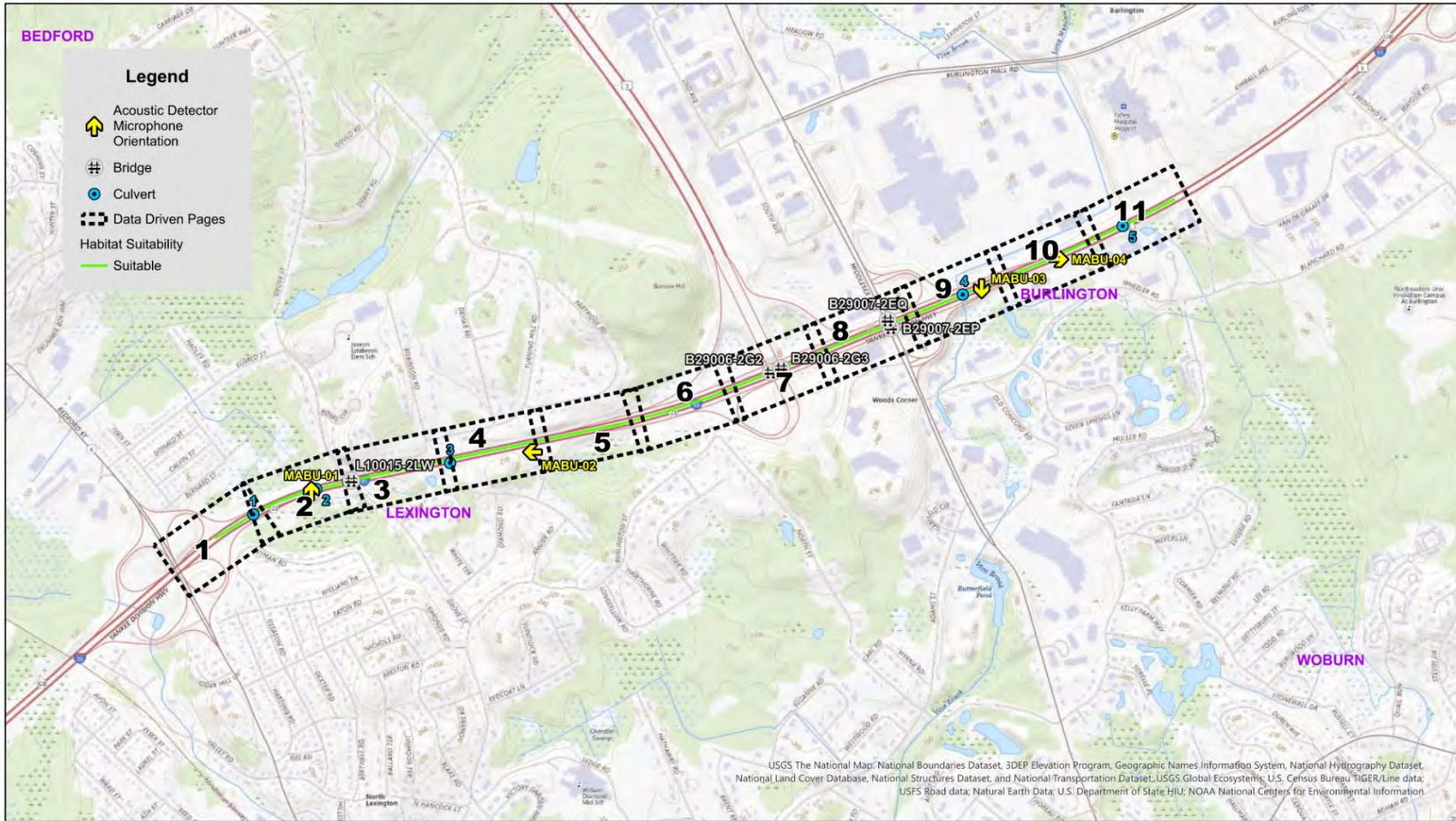
2.1.2 Field-based Assessment

On August 7, 2024, Tetra Tech conducted a site visit to verify presence of NLEB habitat identified during the desktop analysis, deploy four full-spectrum acoustic detectors, and conduct a Phase 1 Summer Habitat Assessment. General habitat descriptions are provided for each station in Table 2. The completed Phase 1 Summer Habitat Assessment for the acoustic detectors is included in Appendix B.

Table 2. Detector station descriptions, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024)

Detector Station	Suitable NLEB Habitat	Description	GPS Coordinates	Microphone Orientation (degrees)	Survey Nights
MABU-01	Yes	On interstate highway near wetland bordered by 30- to 50-foot-tall trees. Japanese winged-knotweed and cat-tail dominate wetland. Area is suburban with moderate- to high-density residential and commercial development.	42.473028 -71.239419	0	8/7- 8/15/2024
MABU-02	Yes	On interstate highway bordered by forest of young and mature trees. Nearby woodlots have more mature trees. Area is suburban with moderate- to high-density residential and commercial development.	42.473951 -71.230507	270	8/7- 8/15/2024

Detector Station	Suitable NLEB Habitat	Description	GPS Coordinates	Microphone Orientation (degrees)	Survey Nights
MABU-03	Yes	On interstate highway bordered on both sides by a thin band of trees and shrubs. Immediate area is open with a wetland to the south and a shopping mall to the north. Surrounding area is suburban with moderate- to high-density residential and commercial development.	42.478707 -71.211290	180	8/7- 8/15/2024
MABU-04	Yes	On interstate highway bordered on both sides by a narrow band of mostly small trees and shrubs. General area is developed with forested and wetland habitat occurring further to the south. Surrounding area is suburban with moderate- to high-density commercial development.	42.479871 -71.207686	90	8/7- 8/15/2024



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HUI; NOAA National Centers for Environmental Information

Contract - 609516



Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

0 500 1,000 Feet
1 inch = 1,000 feet

Page: 1 of 1
Basemap: USGS Topo

Figure 1. Locations of acoustic detectors deployed at Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024)

2.2 Acoustic Survey

The following sections discuss the various aspects of the acoustic survey.

2.2.1 Detector Type

Tetra Tech used a Wildlife Acoustics Song Meter-4 BAT ultrasonic bat detector (Wildlife Acoustics, Inc., Massachusetts, USA) equipped with a SMM-U2 microphone over the duration of the survey. The detector was set to record from an hour before sunset to an hour after sunrise (approximately 7:30 PM–6:11 AM) in full-spectrum mode, and files were saved in .WAV format on internal SD cards. The detector was fully waterproof and powered by internal D cell batteries. Tetra Tech tested the detector and microphone prior to deployment using a Wildlife Acoustics Ultrasonic Calibrator to confirm equipment was functioning properly and device sensitivity was within the manufacturer’s suggested thresholds. A “chirp test” with the Ultrasonic Calibrator confirmed that all connections were sound, and the microphone registered high-frequency noise once the detector was set. Tetra Tech performed this test again at demobilization to ensure the microphone was functioning while deployed. Tetra Tech reviewed log files when the unit was recovered to verify proper functioning over the duration of the survey.

2.2.2 Detector Deployment

Tetra Tech micro-sited the detectors in suitable habitat within the Project area to facilitate sampling of potential habitats in accordance with the Guidelines. The detectors were deployed on August 7, 2024, and retrieved on August 16, 2024.

The microphone was mounted at a minimum height of 9 feet above ground to avoid ground vegetation and elevate the cone of detection. Orientation of the microphone was along suspected flight paths to increase the number of call pulses and quality of recordings. Therefore, microsite conditions determined specific orientation. Appendix A includes the photograph log and descriptions of each detector station.

2.2.3 Weather Requirements

For valid survey results, the Guidelines specify weather requirements during the first 5 hours after sunset of each detector-night as follows: temperatures remain above 50 degrees Fahrenheit, no precipitation exceeds 30 minutes, and sustained wind speed is less than 9 miles/hour. Tetra Tech reviewed hourly weather history from the weather station closest to the Project that provided data on temperature, precipitation rate, and precipitation accumulation (Weather Underground 2024). A RainWise® WindLog™ Wind Data Logger was set up at Belmont, which is approximately 6 miles from the Project, and wind speed was collected every 2 minutes and viewed in Windsoft software to determine if the weather guidelines were met.

2.2.4 Acoustic Analysis

Tetra Tech analyzed the recorded data according to the Guidelines. Data were filtered and analyzed via Kaleidoscope Pro version 5.4.0, by use of the classifier “Bats of North America 5.4.0” for species of bats in Massachusetts at the 0 Balanced “Neutral” sensitivity level. Signals of interest ranged

from 16–120 kilohertz (kHz), lasting 2–500 milliseconds, with a minimum of two call pulses. Conversions of full-spectrum .WAV files to zero-crossing proceeded by use of a division ratio of eight. Tetra Tech subsequently used SonoBat v 4.2.0 to manually review all files auto-classified as NLEB, eastern small-footed bat (*Myotis leibii*), and tricolored bat (*Perimyotis subflavus*). Files auto-classified as little brown bat (*Myotis lucifugus*) were manually reviewed on those nights with a *p*-value for NLEB of ≤ 0.05 , per the Guidelines. Eastern small-footed bats, little brown bats and tricolored bats were included in qualitative analysis because of their protected status under the Massachusetts Endangered Species Act (M.G.L. c. 131A; MassWildlife 2020). In addition, tricolored bats are proposed for endangered listing under the federal Endangered Species Act. All bat passes ≥ 35 kHz were reviewed during any night with a significant NLEB MLE value. Indiana bat is listed as endangered at both the federal and state levels. However, the species has not been documented in Massachusetts since 1939 (MassWildlife 2019a), and Massachusetts is not within the putative range for the species (USFWS 2024). Therefore, Indiana bat presence is very unlikely, and the species was not included as a potential species in the analysis.

Tetra Tech manually reviewed a subsample of files auto-classified as big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), and little brown bat to confirm presence of species. Bat passes auto-classified as “No ID” indicated that the program recognized the recording as a bat but could not identify it to the species level. These “No ID” auto-classifications were filtered by characteristic frequency (Fc), and those with an Fc ≥ 35 kHz were labeled “unidentified high-frequency bat species” and those with an Fc < 35 kHz were labeled “unidentified low-frequency bat species.” Results were summarized by station and by night.

2.3 Bridge/Structure Assessments

On August 7, September 27, and October 13, 2024, Tetra Tech conducted site visits to assess the bridges and culverts that occur in the Project area for the presence of characteristics that have the potential to provide bat habitat. The bridge assessments followed the guidance provided in Appendix K of the Guidelines, and survey personnel completed the Bridge/Structure Bat Assessment Form. The bridge/structure assessment included a visual and auditory inspection for flying and roosting bats, visual inspection for indirect evidence (guano, staining), and identifying favorable characteristics (cracks, expansion joints, weep holes, etc.) for roosting.

3.0 Results

3.1 Habitat Assessment

The desktop and field-based habitat assessments revealed approximately 2.2 miles (3.5 kilometers) of suitable NLEB habitat. The majority of the Project area with potential for tree removal is composed of relatively small patches of woodland proximate to the highway.

3.2 Acoustic Survey

Based on the results of the habitat assessment, Tetra Tech deployed four detectors August 7–15, 2024 for 36 detector-nights. Weather conditions were met during 7 nights of the survey (Table 3).

Table 3. Summary of weather information during the first 5 hours of each survey night, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024)

Survey Night	Temperature Range (°F)	Wind Range (mph)	Precipitation (inches)	Qualifying Night
August 7	63-65	0-1	0	Yes
August 8¹	63-64	0-3	0.18	No
August 9	77-79	2-5	0.19	No
August 10	76-82	0-1	0	Yes
August 11	71-78	0-2	0	Yes
August 12	67-72	0-2	0	Yes
August 13	73-78	0-1	0	Yes
August 14	68-71	0-1	0	Yes
August 15	66-67	0-2	0	Yes
1. Bold text emphasizes the date and weather parameter for those detector nights that did not meet the weather criteria.				

Interpreting results solely according to the number of species’ bat passes by software auto-classification can be misleading because of varying levels of confidence in the classifications. Therefore, MLEs were applied as a secondary measure to determine likelihood of species presence by incorporation of known error rates for each species classifier within the software. Of the eight bat species that currently occur in Massachusetts, MLEs indicated the likely presence of six species in the Project Area, i.e., big brown bat, eastern red bat, hoary bat, silver-haired bat, little brown bat, and tricolored bat (Table 4).

Table 4. Summary of species presence by Kaleidoscope Pro and manual vetting, Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024)

Species	MLE Prediction ¹	Qualitative Analysis	Overall Evaluation
Big Brown Bat	Present	Present	Present
Eastern Red Bat	Present	Present	Present
Hoary Bat	Present	Present	Present
Silver-haired Bat	Present	Present	Present
Small-footed Bat	Absent	Absent	Absent
Little Brown Bat	Present	Present	Present
Northern Long-eared Bat	Absent	Absent	Absent
Tricolored Bat	Present	Present	Present

1. Based on probability of presence for any site on any night. See Appendix C for complete listing of MLEs by site/night.

Manual review of bat passes by experienced biologists usually is the most accurate method of species identification. Manual review confirmed the presence of the species per MLE prediction. Table 5 summarizes the number of qualitatively analyzed passes the four detectors recorded on nights August 7-15, 2024. The detectors were functional over the duration of deployment. Kaleidoscope Pro classified 0 bat passes as NLEB, and manual vetting did not confirm presence of

NLEB. Qualitative analysis confirmed 77 passes as little brown bat and 38 passes as tricolored bat. All other species listed in Table 4 above were subsampled to confirm species presence. In summary, manual vetting confirmed presence of little brown bat and tricolored bat and probable absence of NLEB.

Table 5. Bat passes recorded after qualitative analysis at Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024)

Station	Date	Big brown bat	Eastern red bat	Hoary bat	Silver-haired bat	Little brown bat	Tricolored bat	Unidentified high frequency species	Unidentified low-frequency species	Grand Total
MABU-01	Station Total	165	58	69	115	4	9	19	112	551
	8/7	4	2	1	2	-	1	-	2	12
	8/8	1	2	1	-	-	1	-	1	6
	8/9	13	1	-	2	-	-	3	5	24
	8/10	48	7	7	25	-	1	1	30	119
	8/11	31	14	29	31	1	1	4	28	139
	8/12	19	10	6	13	1	3	5	11	68
	8/13	17	10	9	14	1	1	1	8	61
	8/14	28	3	6	17	-	-	3	16	73
	8/15	4	9	10	11	1	1	2	11	49
	8/16	5	3	-	3	-	-	1	-	12
MABU-02	Station Total	118	98	24	67	0	7	281	80	675
	8/7	3	3	2	1	-	-	20	3	32
	8/8	-	1	3	-	-	-	18	-	22
	8/9	2	2	-	1	-	-	39	2	46

Station	Date	Big brown bat	Eastern red bat	Hoary bat	Silver-haired bat	Little brown bat	Tricolored bat	Unidentified high frequency species	Unidentified low-frequency species	Grand Total
	8/10	31	8	3	11	-	1	33	13	100
	8/11	34	18	11	26	-	2	29	24	144
	8/12	6	14	4	3	-	2	34	8	71
	8/13	13	8	-	5	-	1	38	4	69
	8/14	12	36	-	12	-	1	39	11	111
	8/15	17	8	1	8	-	-	31	15	80
	8/16	2	2	3	10	-	-	5	3	25
MABU-03	Station Total	168	109	38	71	73	21	242	73	795
	8/7	6	3	3	2	1	1	10	1	27
	8/8	1	2	5	-	11	1	13	1	34
	8/9	2	2	-	1	-	-	1	2	8
	8/10	17	6	5	8	2	1	6	11	56
	8/11	62	15	8	26	3	3	16	26	159
	8/12	10	22	4	5	11	6	61	7	126
	8/13	40	12	5	10	3	3	27	8	108
	8/14	18	15	6	8	17	-	30	10	104

Station	Date	Big brown bat	Eastern red bat	Hoary bat	Silver-haired bat	Little brown bat	Tricolored bat	Unidentified high frequency species	Unidentified low-frequency species	Grand Total
	8/15	12	32	2	11	25	6	78	7	173
	8/16	1	2	-	-	1	-	9	1	14
MABU-04	Station Total	25	30	7	26	0	1	59	25	173
	8/7	-	1	-	-	-	-	5	-	6
	8/8	-	1	1	-	-	-	4	1	7
	8/9	-	-	-	1	-	-	11	-	12
	8/10	5	3	1	1	-	-	7	2	19
	8/11	13	8	1	13	-	1	4	3	43
	8/12	2	5	2	5	-	-	8	3	25
	8/13	-	6	-	1	-	-	8	2	17
	8/14	3	1	2	4	-	-	7	8	25
	8/15	2	5	-	1	-	-	5	6	19
	8/16	1	-	-	-	-	-	1	-	2
	Project Total	476	295	138	279	77	38	601	290	2,194

Based on this survey, six species were present at the Project (Table 4), with big brown bat having the most passes (22 percent), followed by eastern red bat and silver-haired bat (13 percent), hoary bat (6 percent), little brown bat (4 percent), and tricolored bat (2 percent) (Table 5).

3.3 Bridge/Structure Assessments

The survey included assessing five bridges and five culverts. Bridge/structure and habitat assessment forms and photographs of each structure are provided in Appendix D.

Culvert 1 was inspected on August 7, 2024. This culvert conveys water under I-95 just east of the highway's interchange with State Routes 4/225. The culvert is a 48-inch, reinforced concrete pipe with areas of rough surfaces. Flowing water at the time of the assessment prevented a full inspection of the culvert interior. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use the culvert.

Culvert 2 was inspected on August 7, 2024. This culvert conveys a perennial stream under I-95 just west of the Grove Street bridge over I-95. The culvert is a 48-inch, reinforced concrete pipe with areas of rough surfaces. Flowing water nearly filled the pipe at the time of the assessment preventing a full inspection of the culvert interior. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use the culvert.

Bridge L-10-015 was inspected on September 27, 2024. This bridge is a vehicle overpass (Grove Street) that spans Interstate 95. This steel I-beam bridge has a concrete deck along with concrete end walls and piers, and stone-covered embankments. The bridge has rough concrete surfaces and gaps and spaces in the end walls that may provide roosting opportunities. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use this bridge.

Culvert 3 was inspected on October 13, 2024. This culvert conveys water under I-95 just east of the Grove Street overpass and drains to a small pond immediately south of the highway. The culvert is a 42-inch, reinforced concrete pipe with areas of rough surfaces, but the culvert is in good condition, and no cracks or crevices were detected. There was a small amount of flowing water at the time of the assessment. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use the culvert.

Bridge B-29-006 was inspected on September 27, 2024. This bridge actually comprises two vehicle bridges (B-29-006 2G2 and B-29-006 2G3) that span I-95 and convey vehicle traffic on US Route 3 where the two highways interchange. The bridges are steel I-beam structures with concrete piers, and end walls and stone-covered embankments. Both bridges have rough concrete and metal surfaces, and there are multiple spaces in the end walls, decks, and joists that may provide roosting opportunities. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use either of these two bridges.

Bridge B-29-007 was inspected on September 27, 2024. This bridge also comprises two vehicle bridges (B-29-006 2EP and B-29-006 2EQ) that span the Middlesex Turnpike and convey vehicle traffic on I-95 where the two highways interchange. The bridges are steel I-beam structures with concrete piers, and end walls and stone-covered embankments. Both bridges have places with rough concrete and metal surfaces, and there are multiple spaces in the end walls, decks, and joists

that may provide roosting opportunities. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use either of these two bridges.

Culvert 4 was inspected on September 27, 2024. This culvert conveys a perennial stream (Vine Brook) under I-95 just east of the Middlesex Turnpike interchange. The culvert is a 96-inch, reinforced concrete pipe with a portion lined with corrugated metal. The interior of the culvert has areas of rough surfaces, and there are spaces and imperfections in the pipe joints that may provide roosting opportunities. There were several inches of flowing water at the time of the assessment. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use the culvert.

Culvert 5 was inspected on October 13, 2024. This culvert conveys water under I-95. The culvert is a 36-inch, reinforced concrete pipe. The interior of the culvert has areas of rough surfaces, but generally the culvert interior is relatively smooth, and no gaps or spaces were detected. There was no water in the culvert at the time of the assessment, and a large deposit of sediment was found at one end. There was no visible or audible evidence of bat presence. Staining and guano were not observed. In summary, there is no evidence that bats currently use the culvert.

4.0 Conclusion

Qualitative analysis of acoustic data did not determine any bat passes to be those of NLEB, and manual vetting of *Myotis* calls did not determine these bat passes to be those of NLEB. Given there were no confirmed acoustic detections of NLEBs during this survey that conformed to the summer survey protocol (Guidelines), activities associated with the Project are unlikely to negatively impact the NLEB. There are three records of NLEB hibernacula located approximately 7 miles east-northeast of the Project (MassWildlife 2019b).

Additionally, presence was not confirmed for the state endangered eastern small-footed bat, but presence was confirmed for the state endangered tricolored bat and state endangered little brown bat. Both the little brown bat and tricolored bat have experienced significant regional population declines due to white-nose syndrome (Frick et al. 2010, USFWS 2021). Under the Massachusetts Endangered Species Act, all listed species are protected from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors. Listed species are specifically protected from activities that disrupt breeding, feeding, or migration (M.G.L c.131A; 321 CMR 10.00). The limited amount of clearing planned is expected to have little effect on suitable habitat for forest bats.

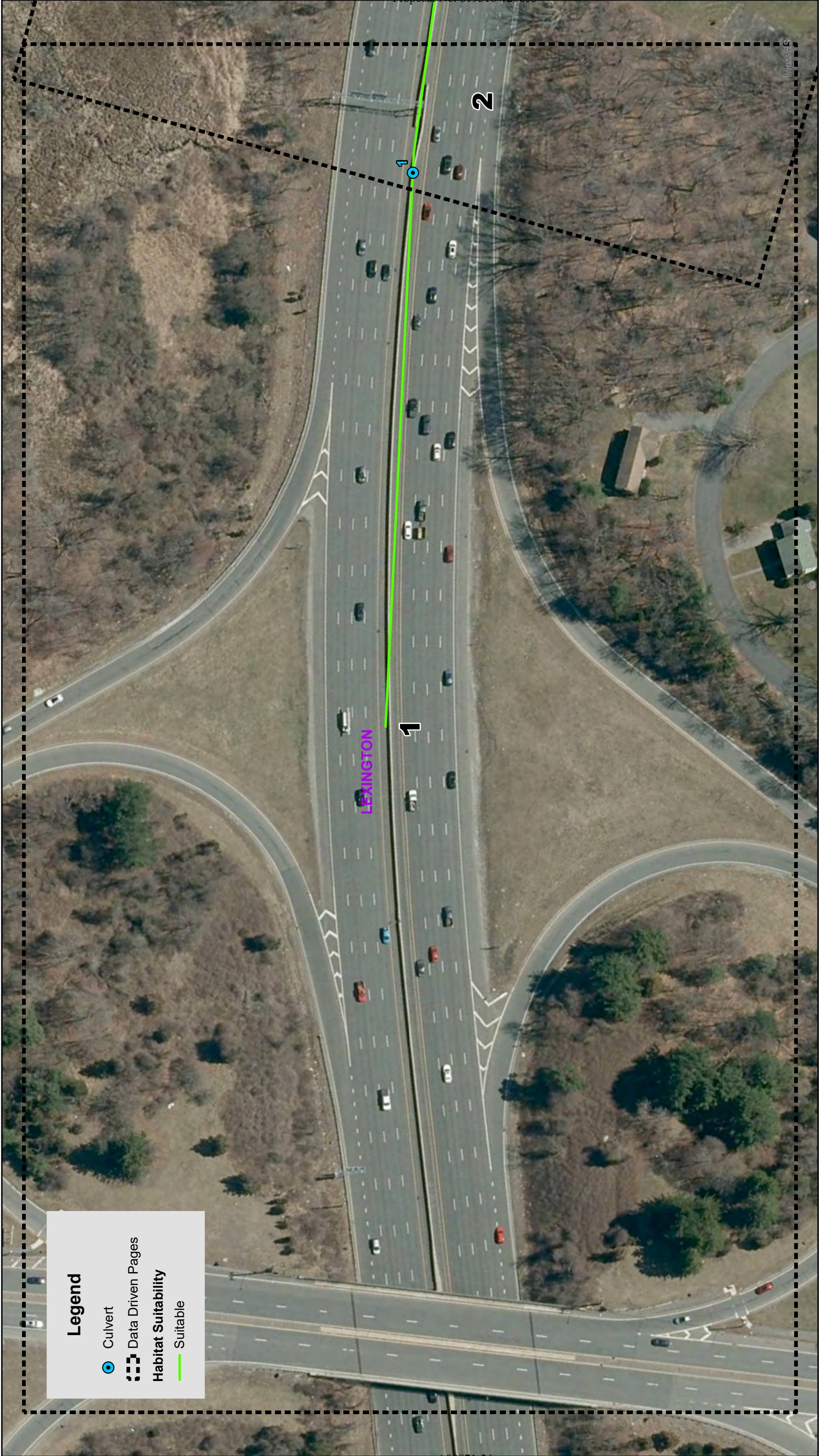
Six species were detected at the Project during the acoustic survey, with big brown bat having the most passes (22 percent), followed by eastern red bat and silver-haired bat (13 percent), hoary bat (6 percent), little brown bat (4 percent), and tricolored bat (2 percent) (Table 5). The detector stations were located along an interstate highway that runs through an area of high-density commercial and residential development where forested habitat occurs as fragmented woodlots. The Project's bat activity rate was low (61 bat passes per detector night). Bats occurring in the Project area would be using the patches of forest and possibly residences for roosting.

Assessment of five bridges and five culverts did not find visible or audible evidence of bat presence. In summary, there is no evidence that bats currently use the bridges and culverts that were inspected in the Project area.

5.0 References

- Frick W.F., J.P. Pollock, A.C. Hicks, K.E. Langwig, D.S. Reynolds, G.C. Turner, C.M. Butchkoski, and T.H. Kunz. 2010. An emerging disease causes regional population collapse of a common North American bat species. *Science* 329: 697–682.
- Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2019a. Indiana bat fact sheet. Available online at : <https://www.mass.gov/doc/indiana-bat/download>. Accessed September 2024.
- MassWildlife. 2019b. Northern long-eared bat locations online viewer. Natural Heritage and Endangered Species Program, Westborough, Massachusetts. June 12. [NHESP No. Long-eared Bat Locations \(arcgis.com\)](#). Accessed September 2024.
- MassWildlife. 2024. Massachusetts endangered species. Summary of the MESA list (as listed in 321 CMR 10.90). Natural Heritage & Endangered Species Program, Westborough, Massachusetts. August 16. <https://www.mass.gov/doc/printable-list-of-endangered-threatened-and-special-concern-species/download>. Accessed September 2024.
- U.S. Fish and Wildlife Service (USFWS). 2021. Species status assessment (SSA) report for the tricolored bat (*Perimyotis subflavus*), version 1.1. Northeast Region, Hadley, Massachusetts. December. Available online at: <https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus>. Accessed October 2024.
- USFWS. 2024. Indiana bat online interactive range map. Available online at: <https://www.fws.gov/species/indiana-bat-myotis-sodalis/map>. Accessed September 2024.
- USFWS. 2024. Range-wide Indiana bat & northern long-eared bat survey guidelines. U.S. Fish and Wildlife Service, Region 3, Bloomington, Minnesota. March. Available online at [https://www.fws.gov/sites/default/files/documents/2024-04/final_usfws_rangewide_ibat-nleb_survey_guidelines_508-compliant .pdf](https://www.fws.gov/sites/default/files/documents/2024-04/final_usfws_rangewide_ibat-nleb_survey_guidelines_508-compliant.pdf). Accessed June 2024.
- Weather Underground. 2024. PWS data for Logan Int'l Airport Station. Available online at <https://www.wunderground.com/history/daily/us/ma/east-boston/KBOS>. Accessed September 2024.

**APPENDIX A: DETECTOR STATION MAP AND PHOTOGRAPHS OF
DETECTOR AND SITE DESCRIPTION**



Legend

-  Culvert
-  Data Driven Pages
-  Habitat Suitability
-  Suitable

BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



1 inch = 80 feet

Page Number: 1







Contract - 609516



Basemap:
MassGIS Aerial 2023



Legend

- Acoustic Detector Microphone Orientation 
- Bridge 
- Culvert 
- Data Driven Pages 
- Habitat Suitability 
- Suitable 

Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Contract - 609516

Page Number: 2



1 inch = 80 feet

Basemap:
MassGIS Aerial 2023





Legend

- Bridge
- Culvert
- Data Driven Pages
- Habitat Suitability**
- Suitable

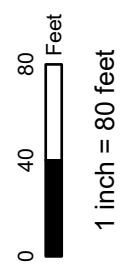
Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Contract - 609516




Page Number: 3



Basemap:
MassGIS Aerial 2023

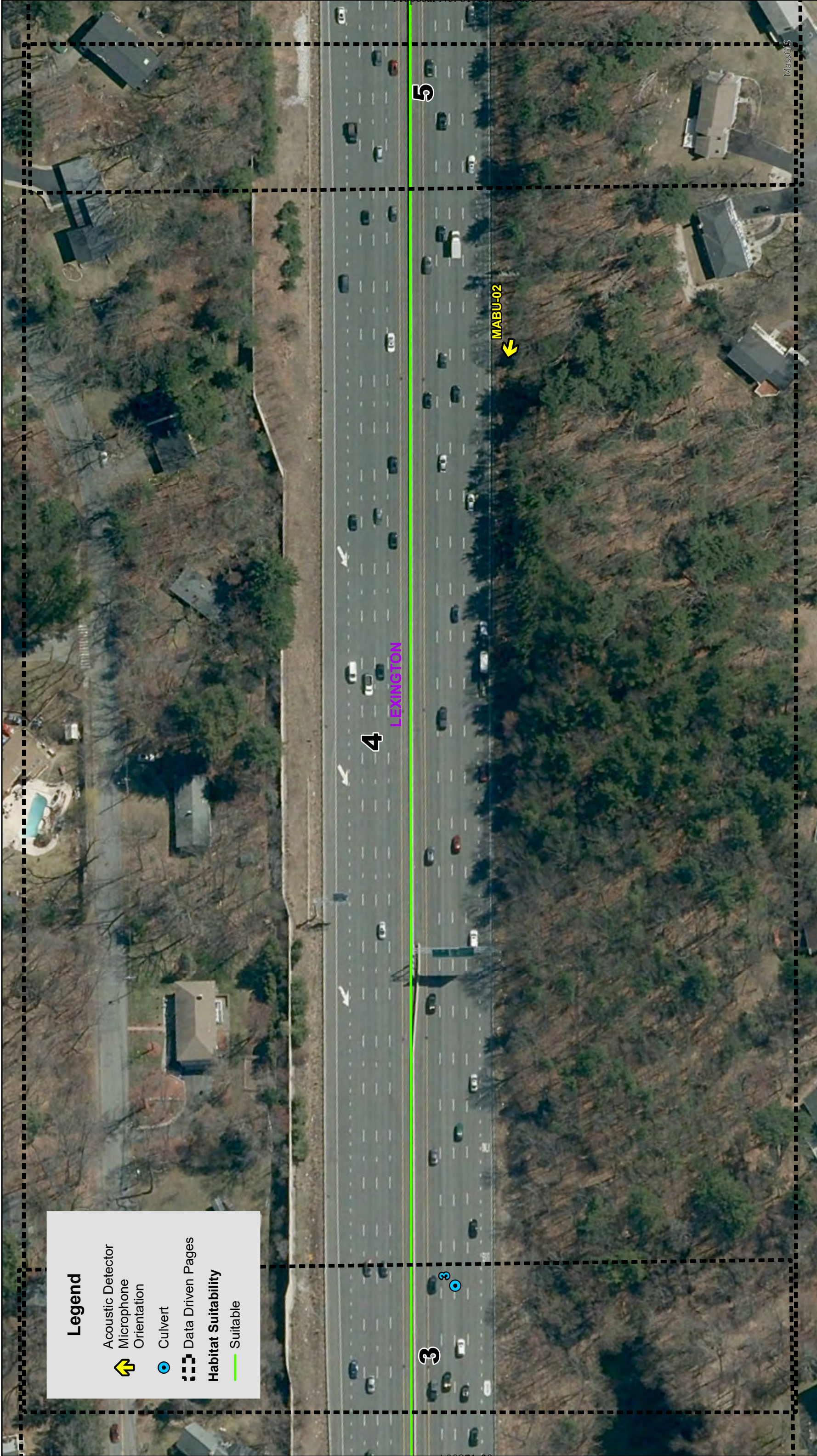


Legend

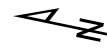
-  Acoustic Detector Microphone Orientation
-  Culvert
-  Data Driven Pages

Habitat Suitability

-  Suitable



Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Page Number: 4





1 inch = 80 feet

Basemap:
MassGIS Aerial 2023

Contract - 609516



Legend

-  Data Driven Pages
- Habitat Suitability**
-  Suitable

Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Contract - 609516

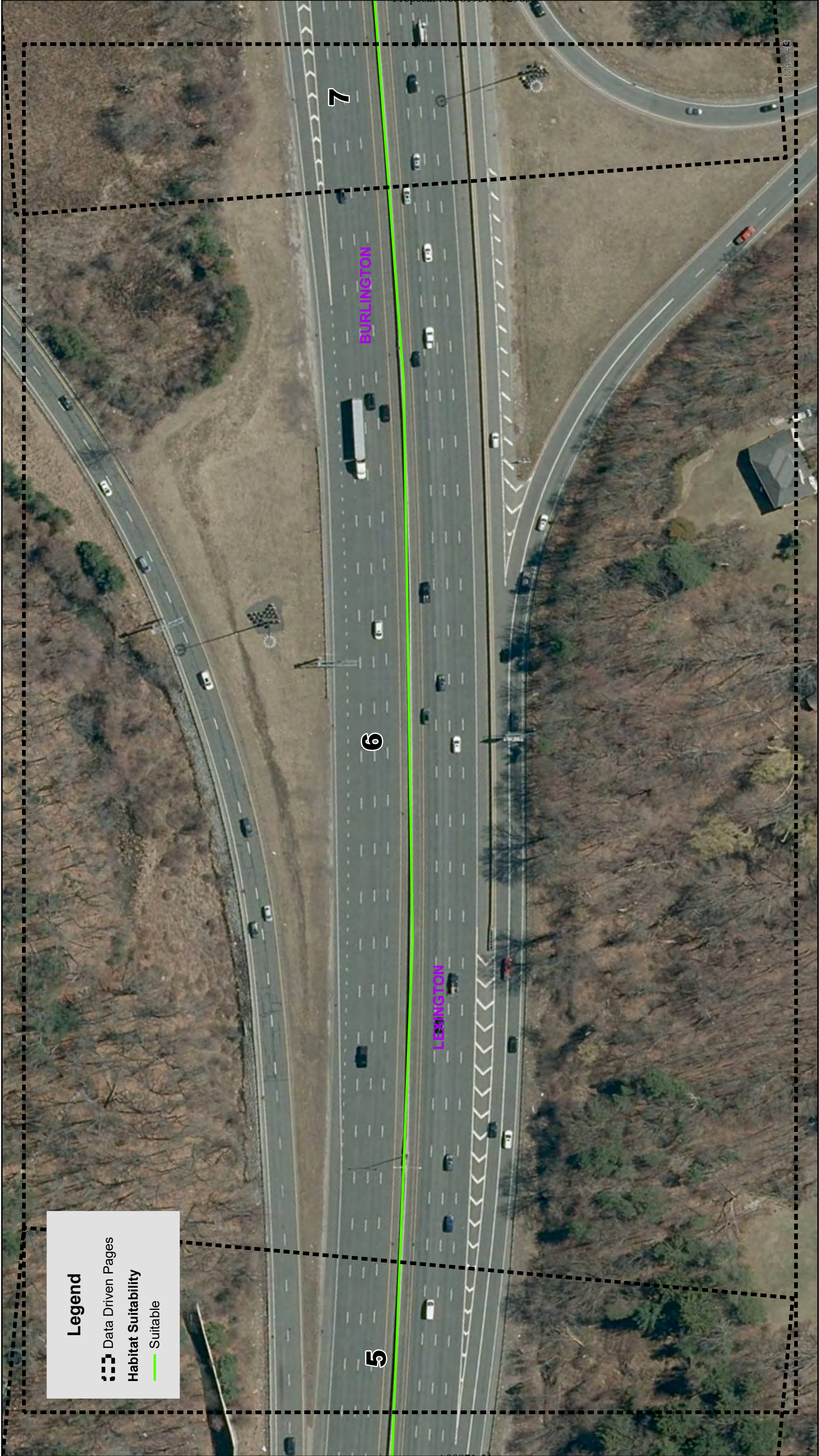
Page Number: 5



1 inch = 80 feet

Basemap:
MassGIS Aerial 2023

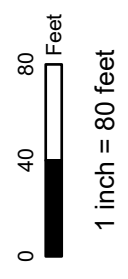




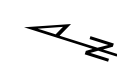
Contract - 609516

Page Number: 6

Basemap: MassGIS Aerial 2023



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

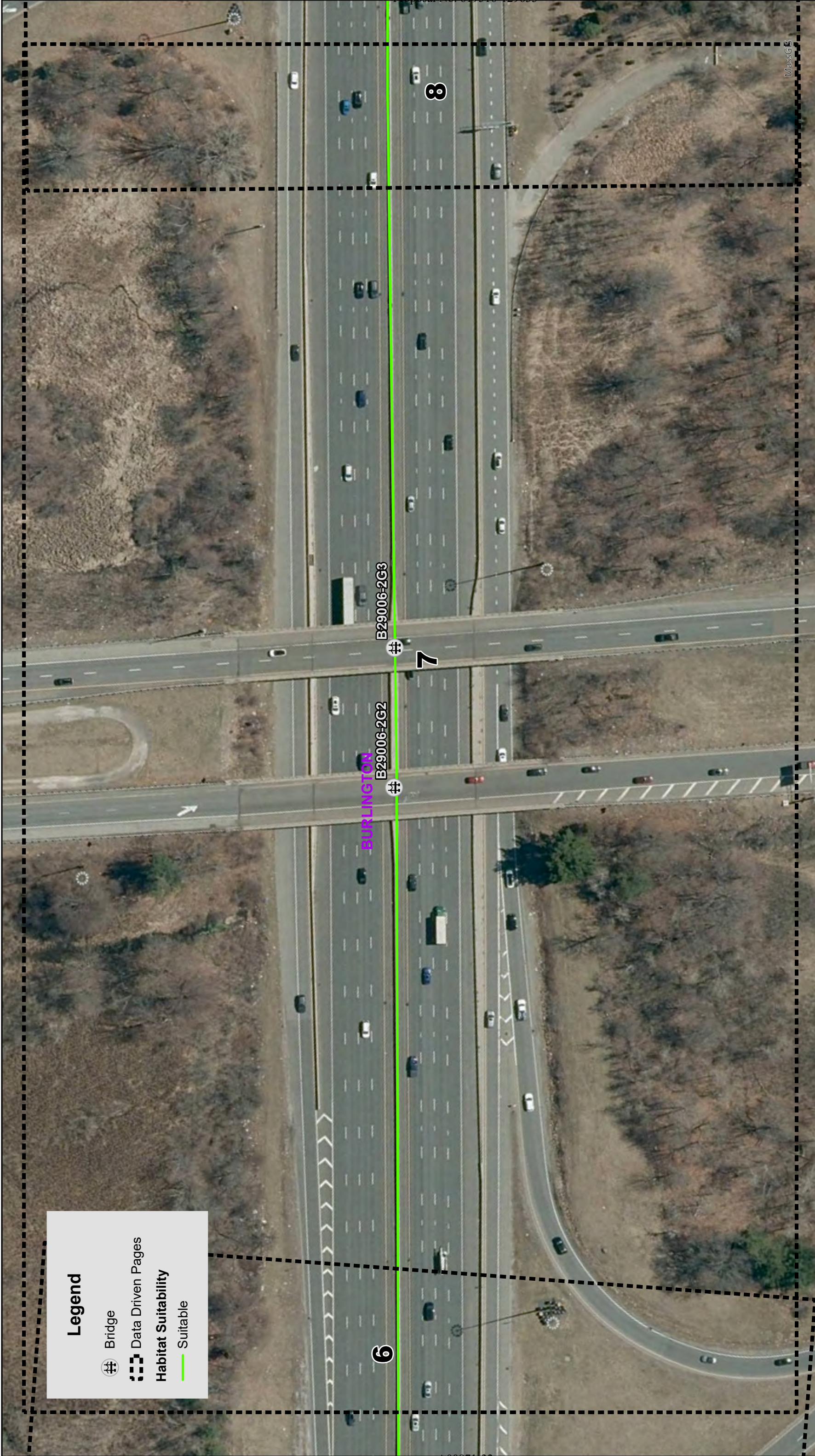
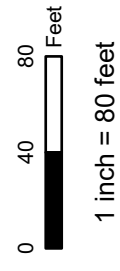


Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



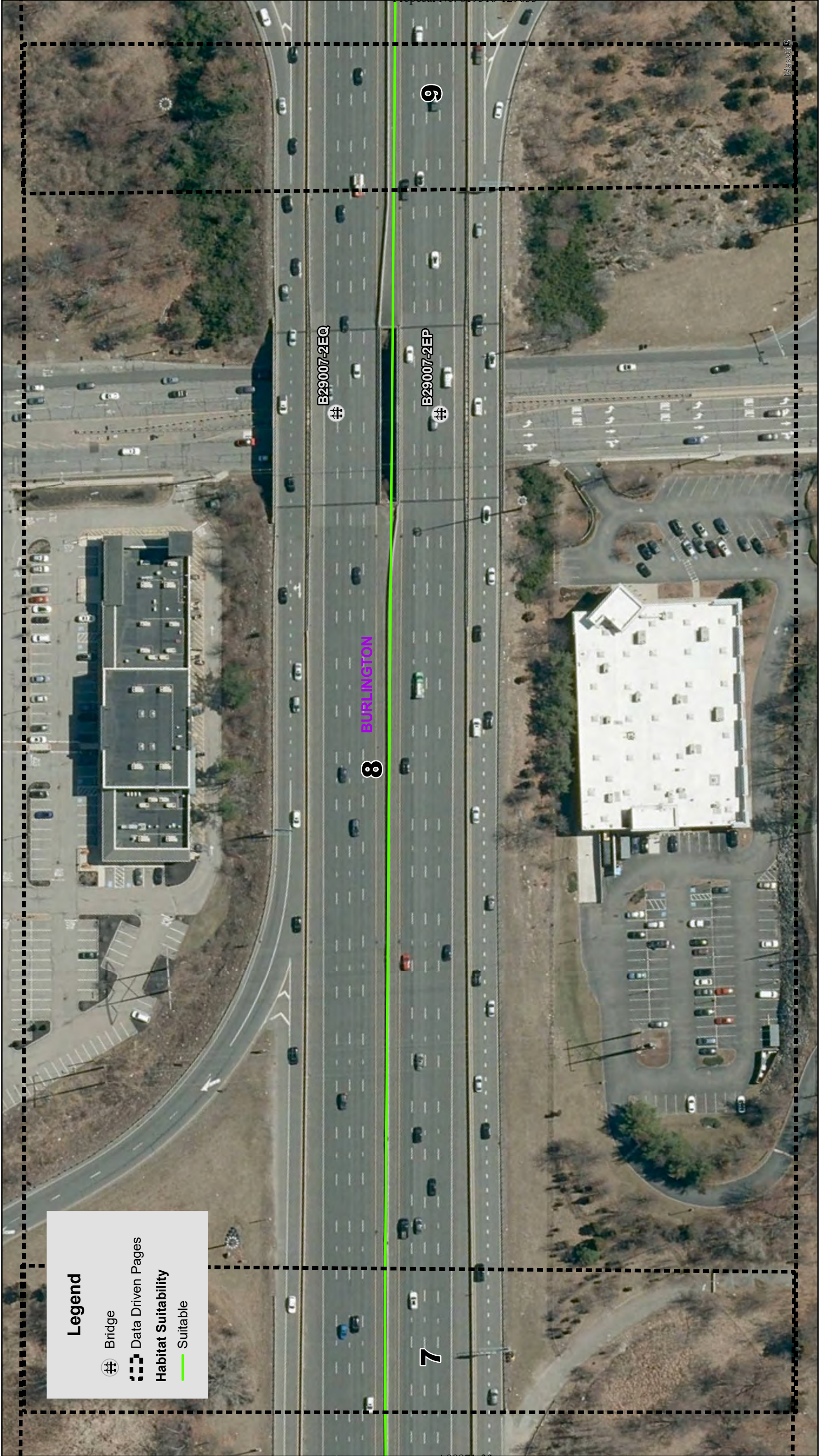
BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey



Legend

- Bridge
- Data Driven Pages
- Habitat Suitability**
- Suitable



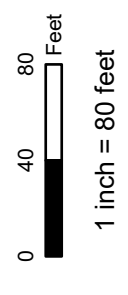
MassGIS

Contract - 609516

BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Page Number: 8

Basemap: MassGIS Aerial 2023



Northern Long-eared Bat
 Habitat Suitability
 Assessment and
 Presence/Absence Survey



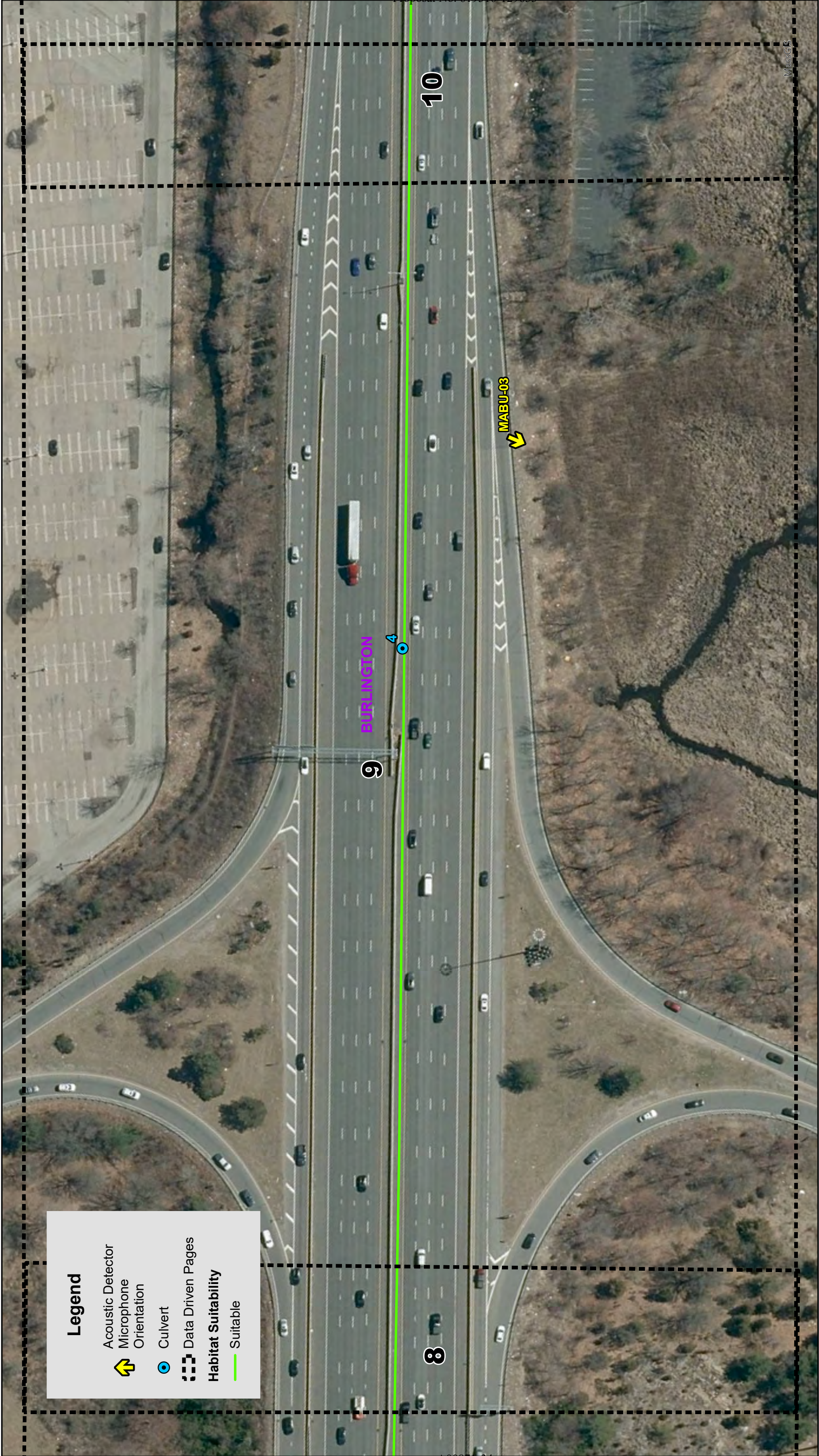
Legend

- Bridge
- Data Driven Pages
- Habitat Suitability**
- Suitable



Legend

-  Acoustic Detector Microphone Orientation
-  Culvert
-  Data Driven Pages
- Habitat Suitability**
-  Suitable



MassGIS

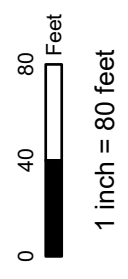
Contract - 609516

Page Number: 9

Basemap: MassGIS Aerial 2023



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey





Legend

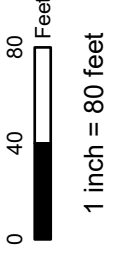
-  Acoustic Detector Microphone Orientation
-  Data Driven Pages
- Habitat Suitability**
-  Suitable

Northern Long-eared Bat
 Habitat Suitability
 Assessment and
 Presence/Absence Survey



BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

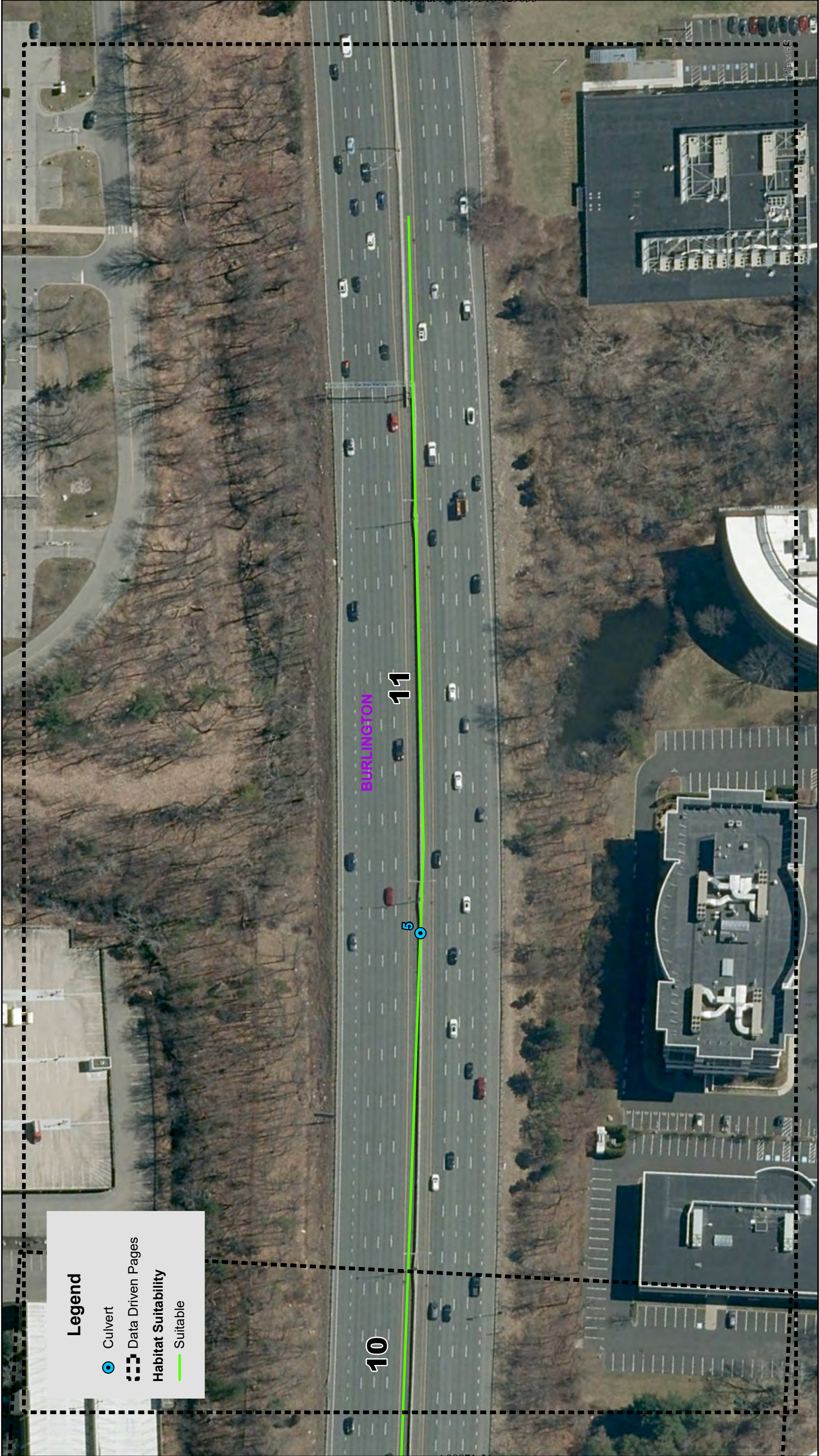
Page Number: 10






Contract - 609516

Basemap:
 MassGIS Aerial 2023





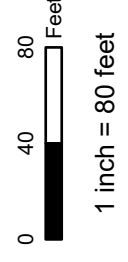
Legend

-  Culvert
-  Data Driven Pages
- Habitat Suitability**
-  Suitable

BURLINGTON - IMPROVEMENTS AT I-95 (ROUTE 128) / ROUTE 3 INTERCHANGE

Contract - 609516

Page Number: 11



Basemap:
MassGIS Aerial 2023

Northern Long-eared Bat
Habitat Suitability
Assessment and
Presence/Absence Survey





Photo No.: 1

Station: MABU-01

Direction: East

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing north towards habitat that contains a mixture of wetland bordered by trees. The trees are mostly maples that are 30–35 feet tall. The wetland is thick with Japanese winged-knotweed and cat-tail. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 2

Station: MABU-01

Direction: North

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing north towards habitat that contains a mixture of wetland bordered by trees. The trees are mostly maples that are 30–35 feet tall. The wetland is thick with Japanese winged-knotweed and cat-tail. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 3

Station: MABU-01

Direction: West

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing north towards habitat that contains a mixture of wetland bordered by trees. The trees are mostly maples that are 30–35 feet tall. The wetland is thick with Japanese winged-knotweed and cat-tail. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 4

Station: MABU-02

Direction: South

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing west. The highway is directly bordered by forest with a mixture of young and mature trees. Nearby woodlots have more mature trees. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 5

Station: MABU-02

Direction: South

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing west. The highway is directly bordered by forest with a mixture of young and mature trees. Nearby woodlots have more mature trees. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 6

Station: MABU-02

Direction: East

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing west. The highway is directly bordered by forest with a mixture of young and mature trees. Nearby woodlots have more mature trees. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 7

Station: MABU-02

Direction: North

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing west. The highway is directly bordered by forest with a mixture of young and mature trees. Nearby woodlots have more mature trees. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 8

Station: MABU-02

Direction: West

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing west. The highway is directly bordered by forest with a mixture of young and mature trees. Nearby woodlots have more mature trees. No snags detected. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 9

Station: MABU-03

Direction: East

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing south. The highway is directly bordered on both sides by a thin band of trees and shrubs. The general area is open with a wetland to the south and a shopping mall to the north. The surrounding area is suburban with moderate- to high-density residential and commercial development.

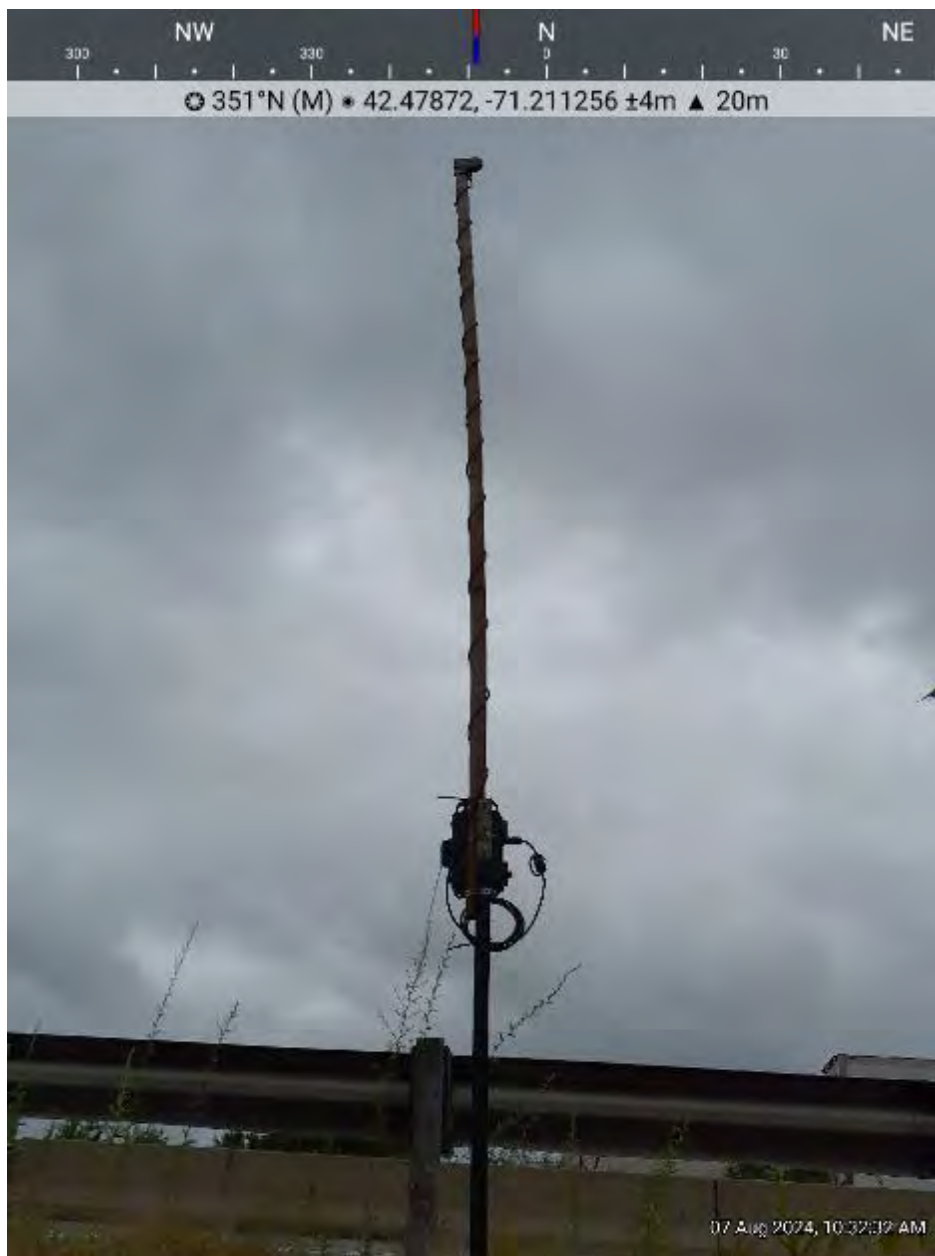


Photo No.: 10

Station: MABU-03

Direction: North

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing south. The highway is directly bordered on both sides by a thin band of trees and shrubs. The general area is open with a wetland to the south and a shopping mall to the north. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 11

Station: MABU-03

Direction: West

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing south. The highway is directly bordered on both sides by a thin band of trees and shrubs. The general area is open with a wetland to the south and a shopping mall to the north. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 12

Station: MABU-03

Direction: South

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing south. The highway is directly bordered on both sides by a thin band of trees and shrubs. The general area is open with a wetland to the south and a shopping mall to north. The surrounding area is suburban with moderate- to high-density residential and commercial development.



Photo No.: 13

Station: MABU-04

Direction: East

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing east. The highway is directly bordered on both sides by a narrow band of mostly small trees and shrubs. The general area is developed with forested and wetland habitat occurring further to the south. The surrounding area is suburban with moderate- to high-density commercial development.



Photo No.: 14

Station: MABU-04

Direction: North

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing east. The highway is directly bordered on both sides by a narrow band of mostly small trees and shrubs. The general area is developed with forested and wetland habitat occurring further to the south. The surrounding area is suburban with moderate- to high-density commercial development.



Photo No.: 15

Station: MABU-04

Direction: West

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing east. The highway is directly bordered on both sides by a narrow band of mostly small trees and shrubs. The general area is developed with forested and wetland habitat occurring further to the south. The surrounding area is suburban with moderate- to high-density commercial development.



Photo No.: 16

Station: MABU-04

Direction: South

Date: 8/7/2024

Comments: The detector placed beside interstate highway with microphone facing east. The highway is directly bordered on both sides by a narrow band of mostly small trees and shrubs. The general area is developed with forested and wetland habitat occurring further to the south. The surrounding area is suburban with moderate- to high-density commercial development.

**APPENDIX B. COMPLETED PHASE 1 SUMMER HABITAT
ASSESSMENT FOR ACOUSTIC DETECTORS**

NORTHERN LONG-EARED BAT HABITAT ASSESSMENT DATASHEET

Project Name: _____ Date: _____

Township/Range/Section: _____

Lat Long/UTM/ Zone: _____ Surveyor: _____

Brief Project Description

Project Area				
	Total Acres	Forest Acres		Open Acres
Project				
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

Vegetation Cover Types	
Pre-Project	Post-Project

Landscape within 5 mile radius
Flight corridors to other forested areas?
Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)

Proximity to Public Land
What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				Describe existing condition of water sources:
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

APPENDIX C. MAXIMUM LIKELIHOOD ESTIMATES (MLE) SUMMARY

Table C-1. Summary of Maximum Likelihood Estimates (MLE) for species presence by Kaleidoscope Pro 5.4.0 at Burlington - Improvements at I-95/Route 3 Interchange, MassDOT Project #609516 (August 2024). Significant MLE scores are highlighted in gray.

Station	Date	Big brown bat	Eastern red bat	Hoary bat	Silver-haired bat	Eastern small-footed bat	Little brown bat	Northern long-eared bat	Tricolored bat
MABU-01	8/7/2024	0.01102	0.00006	0.01319	0.81345	1.00000	1.00000	1.00000	0.21094
	8/8/2024	0.23997	0.03574	0.17710	1.00000	1.00000	1.00000	1.00000	1.00000
	8/9/2024	0.00000	0.00000	0.90870	0.34280	1.00000	1.00000	1.00000	0.80091
	8/10/2024	0.00000	0.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000
	8/11/2024	0.00000	0.00000	0.00000	0.46232	1.00000	1.00000	1.00000	0.94646
	8/12/2024	0.00001	0.00000	0.00421	0.00271	1.00000	1.00000	1.00000	1.00000
	8/13/2024	0.00000	0.00000	0.00000	0.00026	1.00000	0.99534	1.00000	0.99146
	8/14/2024	0.00000	0.00000	0.00004	0.00525	1.00000	0.99679	1.00000	1.00000
	8/15/2024	0.00000	0.00000	0.19841	0.01160	1.00000	1.00000	1.00000	0.64145
	8/7/2024	0.00821	0.00000	0.00008	1.00000	1.00000	1.00000	0.49611	1.00000
MABU-02	8/8/2024	1.00000	0.12412	1.00000	1.00000	1.00000	0.36922	1.00000	1.00000
	8/9/2024	0.00000	0.00000	0.01374	0.89439	1.00000	0.01082	1.00000	1.00000
	8/10/2024	0.00000	0.00000	0.00018	0.00000	1.00000	0.23714	1.00000	0.99589
	8/11/2024	0.00000	0.00000	0.00022	0.17008	1.00000	0.99553	1.00000	0.98816
	8/12/2024	0.00550	0.00000	0.00306	0.62254	1.00000	0.28995	1.00000	1.00000
	8/13/2024	0.00000	0.00000	0.13713	0.00030	1.00000	1.00000	1.00000	1.00000
	8/14/2024	0.00000	0.00000	0.47702	0.00066	1.00000	0.05203	1.00000	1.00000
	8/15/2024	0.00004	0.00002	0.01081	0.00762	1.00000	0.00002	1.00000	1.00000
	8/7/2024	0.00015	0.00009	0.00001	1.00000	1.00000	0.00000	1.00000	0.22092
	8/8/2024	1.00000	0.03574	0.00011	1.00000	1.00000	1.00000	1.00000	1.00000
MABU-03	8/9/2024	0.00218	0.03574	0.47103	0.97051	1.00000	1.00000	1.00000	1.00000
	8/10/2024	0.00000	0.00000	0.00000	0.00026	1.00000	0.07877	1.00000	0.61651

Station	Date	Big brown bat	Eastern red bat	Hoary bat	Silver-haired bat	Eastern small-footed bat	Little brown bat	Northern long-eared bat	Tricolored bat
MABU-04	8/11/2024	0.00000	0.00000	0.00000	0.30365	1.00000	0.01495	1.00000	0.16474
	8/12/2024	0.14638	0.00000	0.01721	0.14823	1.00000	0.15646	1.00000	0.29821
	8/13/2024	0.00000	0.00000	0.01507	0.14824	1.00000	0.06657	1.00000	1.00000
	8/14/2024	0.00000	0.00000	0.00002	0.02162	0.05763	0.00000	1.00000	1.00000
	8/15/2024	0.00001	0.00000	0.31420	0.37728	1.00000	0.00394	1.00000	0.02576
	8/7/2024	1.00000	0.12640	1.00000	1.00000	1.00000	0.41588	1.00000	0.39547
	8/8/2024	1.00000	0.03573	0.04851	1.00000	1.00000	1.00000	1.00000	1.00000
	8/9/2024	0.11764	1.00000	0.03686	0.94695	1.00000	0.12827	1.00000	0.11685
	8/10/2024	0.00001	0.00000	0.29470	0.00018	1.00000	1.00000	1.00000	1.00000
	8/11/2024	0.01040	0.00000	0.00421	0.32038	1.00000	1.00000	1.00000	1.00000
	8/12/2024	1.00000	0.00005	0.23171	0.18758	1.00000	1.00000	1.00000	1.00000
	8/13/2024	0.96784	0.00000	0.01120	0.02369	1.00000	0.98023	1.00000	1.00000
	8/14/2024	0.11245	0.00005	0.00126	0.48077	1.00000	0.31242	1.00000	1.00000
	8/15/2024	0.07442	0.12412	1.00000	0.66001	1.00000	0.36922	1.00000	1.00000

**APPENDIX D. BRIDGE/STRUCTURE BAT ASSESSMENT FORMS,
HABITAT ASSESSMENT FORMS, AND PHOTOGRAPHS**

NORTHERN LONG-EARED BAT HABITAT ASSESSMENT DATASHEET

Project Name: _____ Date: _____

Township/Range/Section: _____

Lat Long/UTM/ Zone: _____

Surveyor: _____

Ken Deshais, Kinsale McGrath, Nicholas Boulanger

Brief Project Description

--

Project Area

Project	Total Acres	Forest Acres		Open Acres
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

Vegetation Cover Types

Pre-Project	Post-Project

Landscape within 5 mile radius

Flight corridors to other forested areas?

Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same*

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR NORTHERN LONG-EARED BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 8/7/2024 13:15	DOT Project Number 609516	Route/Facility Carried I-95	County Middlesex
Federal Structure ID N/A Culvert 1	Structure Coordinates (latitude and longitude) 42.472044, -71.241858	Structure Height (approximate) 4ft	Structure Length 200ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> / <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input type="checkbox"/> Metal	<input type="checkbox"/> None / <input type="checkbox"/> Concrete
<input type="radio"/> Flat Slab/Box	<input type="radio"/> Steel I-beam	<input type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
Culvert Type		Culvert Material	
<input type="radio"/> Box	<input type="radio"/> Other Structure	<input type="checkbox"/> Metal	<input type="radio"/> Yes / <input checked="" type="radio"/> No
<input checked="" type="radio"/> Pipe/Round		<input checked="" type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:		<input type="checkbox"/> Plastic	Notes: Culvert inaccessible due to high water level.
		<input type="checkbox"/> Stone/Masonry	
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input checked="" type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input checked="" type="checkbox"/> Residential-urban	<input checked="" type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input type="checkbox"/> Road/trail - Type:	<input type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input checked="" type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present No evidence of bats found.	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)	<input type="checkbox"/> Not present No evidence of bats found.	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Spaces between walls, ceiling joists	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> All guiderails	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> All expansion joints	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible / <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
Name: Nicholas Boulanger & Ken Deshais		Signature:	

Digitally signed by Ken Deshais
DN: cn=Ken Deshais, email=ken.deshais@middlesexnj.gov, o=Middlesex County, ou=Middlesex County, c=US

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 8/7/2024 13:45	DOT Project Number 609516	Route/Facility Carried I-95	County Middlesex
Federal Structure ID N/A Culvert 2	Structure Coordinates (latitude and longitude) 42.472822, -71.239217	Structure Height (approximate) 4ft	Structure Length 200ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> / <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input type="checkbox"/> Metal	<input type="checkbox"/> None / <input type="checkbox"/> Concrete
<input type="radio"/> Flat Slab/Box	<input type="radio"/> Steel I-beam	<input type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
<i>Culvert Type</i>		<i>Culvert Material</i>	
<input type="radio"/> Box	<input type="radio"/> Other Structure	<input type="checkbox"/> Metal	<input type="radio"/> Yes / <input checked="" type="radio"/> No
<input checked="" type="radio"/> Pipe/Round		<input checked="" type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:		<input type="checkbox"/> Plastic	<i>Notes:</i>
		<input type="checkbox"/> Stone/Masonry	Culvert inaccessible due to high water level.
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input checked="" type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input checked="" type="checkbox"/> Residential-urban	<input checked="" type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input type="checkbox"/> Road/trail - Type:	<input type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input checked="" type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present No evidence of bats found.	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)	<input type="checkbox"/> Not present No evidence of bats found.	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Spaces between walls, ceiling joists	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> All guiderails	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> All expansion joints	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
Name: Nicholas Boulanger & Ken Deshais		Signature:	

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 2024-09-27 09:10	DOT Project Number 609516	Route/Facility Carried Grove St	County Middlesex
Federal Structure ID L10015 2LW	Structure Coordinates (latitude and longitude) 42.473079 -71.237746	Structure Height (approximate) 14 ft	Structure Length approx. 245 ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input type="checkbox"/> Metal	<input type="checkbox"/> None <input checked="" type="checkbox"/> Concrete
<input type="radio"/> Flat Slab/Box	<input checked="" type="radio"/> Steel I-beam	<input checked="" type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input checked="" type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
<i>Culvert Type</i>		<i>Culvert Material</i>	
<input type="radio"/> Box	<input type="radio"/> Other Structure	<input type="checkbox"/> Metal	<input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="radio"/> Pipe/Round		<input type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:		<input type="checkbox"/> Plastic	<i>Notes:</i>
		<input type="checkbox"/> Stone/Masonry	
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input type="checkbox"/> Residential-urban	<input checked="" type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input checked="" type="checkbox"/> Road/trail - Type: Interstate	<input checked="" type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input checked="" type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Spaces between walls, ceiling joists	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> All guiderails	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> All expansion joints	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
Name: Ken Deshais/Kinsale McGrath		Signature:	








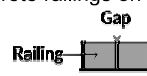

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 2024-10-13, 12:15	DOT Project Number 609516	Route/Facility Carried I-95	County Middlesex
Federal Structure ID N/A Culvert 3	Structure Coordinates (latitude and longitude) 42.473718, -71.23368	Structure Height (approximate) 42 inches	Structure Length unkwn, est. >200 ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> / <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input type="checkbox"/> Metal	<input type="checkbox"/> None / <input type="checkbox"/> Concrete
<input type="radio"/> Flat Slab/Box	<input type="radio"/> Steel I-beam	<input type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
<i>Culvert Type</i>	<i>Other Structure</i>	<i>Culvert Material</i>	
<input type="radio"/> Box	<input type="radio"/>	<input type="checkbox"/> Metal	<input type="radio"/> Yes / <input checked="" type="radio"/> No
<input checked="" type="radio"/> Pipe/Round	<input type="radio"/>	<input checked="" type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:	<input type="radio"/>	<input type="checkbox"/> Plastic	Notes:
		<input type="checkbox"/> Stone/Masonry	unsafe to enter - confined space, only downstream entrance assessed
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input checked="" type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input type="checkbox"/> Residential-urban	<input type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input type="checkbox"/> Road/trail - Type: Interstate highway	<input checked="" type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input checked="" type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Spaces between walls, ceiling joists	<input type="checkbox"/> Not present pipe joints inaccessible	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> All guiderails	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
<input type="checkbox"/> All expansion joints	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live #	<input type="checkbox"/> dead # / <input type="checkbox"/> Audible / <input type="checkbox"/> Odor / <input type="checkbox"/> Species / <input type="checkbox"/> Guano / <input type="checkbox"/> Photos / <input type="checkbox"/> Staining
Name: Ken Deshais		Signature:	

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 2024-09-27 10:30	DOT Project Number 609516	Route/Facility Carried Route 3	County Middlesex
Federal Structure ID B29006 2G2	Structure Coordinates (latitude and longitude) 42.476398 -71.220146	Structure Height (approximate) 14 ft	Structure Length 282 ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input checked="" type="checkbox"/> Metal	<input type="checkbox"/> None
<input type="radio"/> Flat Slab/Box	<input checked="" type="radio"/> Steel I-beam	<input type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input checked="" type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
<i>Culvert Type</i>		<i>Culvert Material</i>	
<input type="radio"/> Box	<input type="radio"/> Other Structure	<input type="checkbox"/> Metal	<input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="radio"/> Pipe/Round		<input type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:		<input type="checkbox"/> Plastic	<i>Notes:</i>
		<input type="checkbox"/> Stone/Masonry	
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input type="checkbox"/> Residential-urban	<input checked="" type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input checked="" type="checkbox"/> Road/trail - Type: major arterial	<input checked="" type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input checked="" type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck 	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> Spaces between walls, ceiling joists	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> All guiderails	<input type="checkbox"/> Not present Some inaccessible due to high traffic volume.	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
<input checked="" type="checkbox"/> All expansion joints	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Staining
Name: Ken Deshais/Kinsale McGrath		Signature:	

Bridge/Structure Bat Assessment Form

Date & Time of Assessment	2024-09-27 10:30	DOT Project Number	609516	Route/Facility Carried	Route 3	County	Middlesex
Federal Structure ID	B29006 2G3	Structure Coordinates (latitude and longitude)	42.476524 -71.219709	Structure Height (approximate)	14 ft	Structure Length	284 ft
Structure Type (check one)				Structure Material (check all that apply)			
<i>Bridge Construction Style</i>				<i>Deck Material</i>			
<input type="radio"/> Cast-in-place 		<input type="radio"/> Pre-stressed Girder 		<input checked="" type="checkbox"/> Metal <input type="checkbox"/> Concrete <input type="checkbox"/> Timber <input type="checkbox"/> Open grid <input type="checkbox"/> Other:		<input type="checkbox"/> None <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Timber <input type="checkbox"/> Other:	
<input type="radio"/> Flat Slab/Box 		<input checked="" type="radio"/> Steel I-beam 		<input type="checkbox"/> Concrete <input type="checkbox"/> Plastic <input type="checkbox"/> Stone/Masonry <input type="checkbox"/> Other:		<input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Timber <input type="checkbox"/> Stone/Masonry <input type="checkbox"/> Other:	
<input type="radio"/> Truss 		<input type="radio"/> Covered 		<input type="checkbox"/> Culvert Material		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown	
<input type="radio"/> Parallel Box Beam 		<input type="radio"/> Other:		<input type="checkbox"/> Metal <input type="checkbox"/> Concrete <input type="checkbox"/> Plastic <input type="checkbox"/> Stone/Masonry <input type="checkbox"/> Other:		Creosote Evidence <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Notes:	
Culvert Type				Other Structure			
<input type="radio"/> Box <input type="radio"/> Pipe/Round <input type="radio"/> Other:				<input type="radio"/> Other:			
Crossings Traversed (check all that apply)				Surrounding Habitat (check all that apply)			
<input type="checkbox"/> Bare ground <input type="checkbox"/> Rip-rap <input type="checkbox"/> Flowing water <input type="checkbox"/> Standing water <input type="checkbox"/> Seasonal water		<input type="checkbox"/> Open vegetation <input type="checkbox"/> Closed vegetation <input type="checkbox"/> Railroad <input checked="" type="checkbox"/> Road/trail - Type: major arterial <input type="checkbox"/> Other:		<input type="checkbox"/> Agricultural <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Residential-urban <input checked="" type="checkbox"/> Residential-rural <input checked="" type="checkbox"/> Woodland/forested		<input type="checkbox"/> Grassland <input type="checkbox"/> Ranching <input checked="" type="checkbox"/> Riparian/wetland <input type="checkbox"/> Mixed use <input type="checkbox"/> Other:	
Areas Assessed (check all that apply)							
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.							
Area (check if assessed)		Assessment Notes		Evidence of Bats (include photos if present)			
<input type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> Spaces between concrete end walls and the bridge deck		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck 		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input type="checkbox"/> Vertical surfaces on concrete I-beams		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> Spaces between walls, ceiling joists		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> All guiderails		<input type="checkbox"/> Not present Some inaccessible due to high traffic volume.		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> All expansion joints		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead # <input type="checkbox"/> Guano <input type="checkbox"/> Staining		<input type="checkbox"/> Audible <input type="checkbox"/> Odor <input type="checkbox"/> Photos <input type="checkbox"/> Species	
Name: Ken Deshais/Kinsale McGrath				Signature: 			

Bridge/Structure Bat Assessment Form

Date & Time of Assessment	2024-09-27 12:30	DOT Project Number	609516	Route/Facility Carried	I-95	County	Middlesex
Federal Structure ID	B29007 2EP	Structure Coordinates (latitude and longitude)	42.477764 -71.215102	Structure Height (approximate)	14 ft	Structure Length	approx. 160 ft
Structure Type (check one)				Structure Material (check all that apply)			
<i>Bridge Construction Style</i>				<i>Deck Material</i>			
<input type="radio"/> Cast-in-place		<input type="radio"/> Pre-stressed Girder		<input type="checkbox"/> Metal		<input type="checkbox"/> None	
<input type="radio"/> Flat Slab/Box		<input checked="" type="radio"/> Steel I-beam		<input checked="" type="checkbox"/> Concrete		<input checked="" type="checkbox"/> Concrete	
<input type="radio"/> Truss		<input type="radio"/> Covered		<input type="checkbox"/> Timber		<input checked="" type="checkbox"/> Steel	
<input type="radio"/> Parallel Box Beam		<input type="radio"/> Other:		<input type="checkbox"/> Open grid		<input type="checkbox"/> Timber	
				<input type="checkbox"/> Other:		<input type="checkbox"/> Other:	
<i>Culvert Type</i>				<i>Culvert Material</i>			
<input type="radio"/> Box		<input type="radio"/> Other Structure		<input type="checkbox"/> Metal		<input type="checkbox"/> Yes <input checked="" type="radio"/> No	
<input type="radio"/> Pipe/Round				<input type="checkbox"/> Concrete		<input type="checkbox"/> Unknown	
<input type="radio"/> Other:				<input type="checkbox"/> Plastic		Notes:	
				<input type="checkbox"/> Stone/Masonry			
				<input type="checkbox"/> Other:			
Crossings Traversed (check all that apply)				Surrounding Habitat (check all that apply)			
<input type="checkbox"/> Bare ground		<input type="checkbox"/> Open vegetation		<input type="checkbox"/> Agricultural		<input type="checkbox"/> Grassland	
<input type="checkbox"/> Rip-rap		<input type="checkbox"/> Closed vegetation		<input checked="" type="checkbox"/> Commercial		<input type="checkbox"/> Ranching	
<input type="checkbox"/> Flowing water		<input type="checkbox"/> Railroad		<input type="checkbox"/> Residential-urban		<input type="checkbox"/> Riparian/wetland	
<input type="checkbox"/> Standing water		<input checked="" type="checkbox"/> Road/trail - Type: major arterial		<input type="checkbox"/> Residential-rural		<input type="checkbox"/> Mixed use	
<input type="checkbox"/> Seasonal water		<input type="checkbox"/> Other:		<input type="checkbox"/> Woodland/forested		<input type="checkbox"/> Other:	
Areas Assessed (check all that apply)							
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.							
Area (check if assessed)		Assessment Notes		Evidence of Bats (include photos if present)			
<input type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead #		<input type="checkbox"/> Audible <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)				<input type="checkbox"/> Guano		<input type="checkbox"/> Odor	
<input checked="" type="checkbox"/> Spaces between concrete end walls and the bridge deck				<input type="checkbox"/> Staining		<input type="checkbox"/> Photos	
<input checked="" type="checkbox"/> Crack between concrete railings on top of the bridge deck				<input type="checkbox"/> Visual - live # dead #		<input type="checkbox"/> Audible <input type="checkbox"/> Species	
<input type="checkbox"/> Vertical surfaces on concrete I-beams		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Guano		<input type="checkbox"/> Odor	
<input checked="" type="checkbox"/> Spaces between walls, ceiling joists				<input type="checkbox"/> Staining		<input type="checkbox"/> Photos	
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live # dead #		<input type="checkbox"/> Audible <input type="checkbox"/> Species	
<input checked="" type="checkbox"/> All guiderails		Some inaccessible due to high traffic volume.		<input type="checkbox"/> Guano		<input type="checkbox"/> Odor	
<input type="checkbox"/> All expansion joints		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Staining		<input type="checkbox"/> Photos	
Name: Ken Deshais/Kinsale McGrath				Signature:			

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 2024-09-27 12:30	DOT Project Number 609516	Route/Facility Carried I-95	County Middlesex
Federal Structure ID B29007 2EQ	Structure Coordinates (latitude and longitude) 42.4778004 -71.21523	Structure Height (approximate) 14 ft	Structure Length approx. 160 ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input type="checkbox"/> Metal	<input type="checkbox"/> None <input checked="" type="checkbox"/> Concrete
<input type="radio"/> Flat Slab/Box	<input checked="" type="radio"/> Steel I-beam	<input checked="" type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input checked="" type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
<i>Culvert Type</i>		<i>Culvert Material</i>	
<input type="radio"/> Box	<input type="radio"/> Other Structure	<input type="checkbox"/> Metal	<input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="radio"/> Pipe/Round		<input type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:		<input type="checkbox"/> Plastic	<i>Notes:</i>
		<input type="checkbox"/> Stone/Masonry	
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input type="checkbox"/> Residential-urban	<input type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input checked="" type="checkbox"/> Road/trail - Type: major arterial	<input type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input checked="" type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Crack between concrete railings on top of the bridge deck	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> Spaces between walls, ceiling joists	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input checked="" type="checkbox"/> All guiderails	<input type="checkbox"/> Not present Some inaccessible due to high traffic volume.	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> All expansion joints	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
		<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
Name: Ken Deshais/Kinsale McGrath		Signature:	

Copyright © 2012 by Ken Deshais
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Ken Deshais.

Bridge/Structure Bat Assessment Form

Date & Time of Assessment 2024-09-27, 14:00	DOT Project Number 609516	Route/Facility Carried I-95	County Middlesex
Federal Structure ID N/A Culvert #4	Structure Coordinates (latitude and longitude) -42.478791, -71.212083	Structure Height (approximate) 8 ft	Structure Length approx. 325 ft
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> <i>End/Back Wall Material</i>
<input type="radio"/> Cast-in-place	<input type="radio"/> Pre-stressed Girder	<input type="checkbox"/> Metal	<input type="checkbox"/> None <input type="checkbox"/> Concrete
<input type="radio"/> Flat Slab/Box	<input type="radio"/> Steel I-beam	<input type="checkbox"/> Concrete	<input type="checkbox"/> Concrete
<input type="radio"/> Truss	<input type="radio"/> Covered	<input type="checkbox"/> Timber	<input type="checkbox"/> Steel
<input type="radio"/> Parallel Box Beam	<input type="radio"/> Other:	<input type="checkbox"/> Open grid	<input type="checkbox"/> Timber
		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
Culvert Type		Culvert Material	Creosote Evidence
<input type="radio"/> Box	<input type="radio"/> Other Structure	<input checked="" type="checkbox"/> Metal	<input type="radio"/> Yes <input checked="" type="radio"/> No
<input checked="" type="radio"/> Pipe/Round		<input checked="" type="checkbox"/> Concrete	<input type="radio"/> Unknown
<input type="radio"/> Other:		<input type="checkbox"/> Plastic	Notes:
		<input type="checkbox"/> Stone/Masonry	
		<input type="checkbox"/> Other:	
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground	<input type="checkbox"/> Open vegetation	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Grassland
<input type="checkbox"/> Rip-rap	<input type="checkbox"/> Closed vegetation	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Ranching
<input checked="" type="checkbox"/> Flowing water	<input type="checkbox"/> Railroad	<input type="checkbox"/> Residential-urban	<input checked="" type="checkbox"/> Riparian/wetland
<input type="checkbox"/> Standing water	<input checked="" type="checkbox"/> Road/trail - Type: Interstate highway	<input type="checkbox"/> Residential-rural	<input type="checkbox"/> Mixed use
<input type="checkbox"/> Seasonal water	<input type="checkbox"/> Other:	<input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	<input type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)		<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
<input type="checkbox"/> Spaces between concrete end walls and the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
<input type="checkbox"/> Vertical surfaces on concrete I-beams	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
<input checked="" type="checkbox"/> Spaces between walls, ceiling joists	pipe joints/imperfections	<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Visual - live # dead #	<input type="checkbox"/> Audible <input type="checkbox"/> Species
<input type="checkbox"/> All guiderails	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Guano	<input type="checkbox"/> Odor
<input type="checkbox"/> All expansion joints	<input checked="" type="checkbox"/> Not present	<input type="checkbox"/> Staining	<input type="checkbox"/> Photos
Name: Ken Deshais/Kinsale McGrath		Signature:	

Bridge/Structure Bat Assessment Form

Date & Time of Assessment	2024-10-13 08:00	DOT Project Number	609516	Route/Facility Carried	I-95	County	Middlesex
Federal Structure ID	N/A Culvert #5	Structure Coordinates (latitude and longitude)	42.480901 -71.205366	Structure Height (approximate)	3 ft	Structure Length	approx. 200 ft
Structure Type (check one)				Structure Material (check all that apply)			
<i>Bridge Construction Style</i>				<i>Deck Material</i>			
<input type="radio"/> Cast-in-place		<input type="radio"/> Pre-stressed Girder		<input type="checkbox"/> Metal		<input type="checkbox"/> None	
<input type="radio"/> Flat Slab/Box		<input type="radio"/> Steel I-beam		<input type="checkbox"/> Concrete		<input type="checkbox"/> Concrete	
<input type="radio"/> Truss		<input type="radio"/> Covered		<input type="checkbox"/> Timber		<input type="checkbox"/> Steel	
<input type="radio"/> Parallel Box Beam		<input type="radio"/> Other:		<input type="checkbox"/> Open grid		<input type="checkbox"/> Timber	
				<input type="checkbox"/> Other:		<input type="checkbox"/> Other:	
<i>Culvert Type</i>				<i>Culvert Material</i>			
<input type="radio"/> Box		<input type="radio"/> Other Structure		<input type="checkbox"/> Metal		<input type="radio"/> Yes	
<input checked="" type="radio"/> Pipe/Round				<input checked="" type="checkbox"/> Concrete		<input checked="" type="radio"/> No	
<input type="radio"/> Other:				<input type="checkbox"/> Plastic		<input type="radio"/> Unknown	
				<input type="checkbox"/> Stone/Masonry		Notes:	
				<input type="checkbox"/> Other:		northern end approx. 50% blocked by sediment, stormwater culvert	
Crossings Traversed (check all that apply)				Surrounding Habitat (check all that apply)			
<input type="checkbox"/> Bare ground		<input type="checkbox"/> Open vegetation		<input type="checkbox"/> Agricultural		<input type="checkbox"/> Grassland	
<input type="checkbox"/> Rip-rap		<input type="checkbox"/> Closed vegetation		<input checked="" type="checkbox"/> Commercial		<input type="checkbox"/> Ranching	
<input type="checkbox"/> Flowing water		<input type="checkbox"/> Railroad		<input type="checkbox"/> Residential-urban		<input type="checkbox"/> Riparian/wetland	
<input type="checkbox"/> Standing water		<input checked="" type="checkbox"/> Road/trail - Type: Interstate highway		<input type="checkbox"/> Residential-rural		<input type="checkbox"/> Mixed use	
<input type="checkbox"/> Seasonal water		<input type="checkbox"/> Other:		<input type="checkbox"/> Woodland/forested		<input type="checkbox"/> Other:	
Areas Assessed (check all that apply)							
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.							
Area (check if assessed)		Assessment Notes		Evidence of Bats (include photos if present)			
<input type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
<input checked="" type="checkbox"/>				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input checked="" type="checkbox"/> Concrete surfaces (open roosting on concrete)		<input type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> Spaces between concrete end walls and the bridge deck		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> Vertical surfaces on concrete I-beams		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> Spaces between walls, ceiling joists		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
		pipe joints		<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> All guiderails		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
<input type="checkbox"/> All expansion joints		<input checked="" type="checkbox"/> Not present		<input type="checkbox"/> Visual - live #		<input type="checkbox"/> Audible	
				<input type="checkbox"/> dead #		<input type="checkbox"/> Odor	
				<input type="checkbox"/> Guano		<input type="checkbox"/> Photos	
				<input type="checkbox"/> Staining		<input type="checkbox"/> Species	
Name: Ken Deshais				Signature:			

Culvert 1: 48-inch, reinforced concrete pipe conveys water under Interstate 95 just east of State Routes 4/225 interchange in Burlington



Photo No.: 1 Date: 8/7/2024

Culvert 2: 48-inch, reinforced concrete pipe conveys a perennial stream under Interstate 95 just west of the Grove Street overpass in Burlington



Photo No.: 2 Date: 8/7/2024

Bridge L-10-015 is a vehicle overpass (Grove Street) that spans Interstate 95 in Burlington



Photo No.: 3 Date: 9/27/2024



Photo No.: 4 Date: 9/27/2024



Photo No.: 5 **Date:** 9/27/2024



Photo No.: 6 **Date:** 9/27/2024



Photo No.: 7 **Date:** 9/27/2024

Culvert 3: 42-inch, reinforced concrete pipe conveys water under Interstate 95 to a small pond immediately south of the highway in Burlington



Photo No.: 8 **Date:** 10/13/2024



Photo No.: 9 **Date:** 10/13/2024



Photo No.: 10 **Date:** 10/13/2024

Bridges B-29-006 2G2 and B-29-006 2G3 are vehicle overpasses (US Route 3) that span Interstate 95 in Burlington



Photo No.: 11 **Date:** 9/27/2024



Photo No.: 12 **Date:** 9/27/2024



Photo No.: 13 **Date:** 9/27/2024



Photo No.: 14 **Date:** 9/27/2024



Photo No.: 15 **Date:** 9/27/2024



Photo No.: 16 **Date:** 9/27/2024

Bridges B-29-007 2EP and B-29-007 2EQ are vehicle overpasses (Interstate 95) that span the Middlesex Turnpike in Burlington



Photo No.: 17 **Date:** 9/27/2024



Photo No.: 18 **Date:** 9/27/2024



Photo No.: 19 **Date:** 9/27/2024



Photo No.: 20 **Date:** 9/27/2024



Photo No.: 21 **Date:** 9/27/2024



Photo No.: 22 **Date:** 9/27/2024

Culvert 4: 96-inch, reinforced concrete and corrugated metal pipe conveys Vine Brook under Interstate 95 just east of Middlesex Turnpike interchange in Burlington



Photo No.: 23 **Date:** 9/27/2024



Photo No.: 24 **Date:** 9/27/2024



Photo No.: 25 **Date:** 9/27/2024



Photo No.: 26 **Date:** 9/27/2024

Culvert 4: 36-inch, reinforced concrete pipe conveys water under Interstate 95 in Burlington



Photo No.: 27 **Date:** 10/13/2024



Photo No.: 28 **Date:** 10/13/2024



Photo No.: 29 **Date:** 10/13/2024



Photo No.: 30 **Date:** 10/13/2024

APPENDIX E. RELEVANT STAFF RESUMES

EXPERIENCE SUMMARY

Nicholas Boulanger is a field biologist with 4 years of experience in wildlife biology, with an emphasis on bat monitoring projects. Nicholas's responsibilities have been focused on acoustic monitoring for pre-construction wind projects and presence/absence surveys for threatened and endangered bat species. Before joining Tetra Tech, Nicholas played a critical role in a significant post-construction wind fatality monitoring project evaluating the potential of different curtailment methods to reduce impacts on migrating bats.

CORPORATE PROJECT EXPERIENCE

Field Biologist, April 2024

Little Blue II Wind, Hastings, NE

Deployed long-term acoustic monitoring stations for bats.

Field Biologist, April 2024

Platte River Wind, Ogallala, NE

Deployed long-term acoustic monitoring stations for bats.

Field Biologist, April 2024

North Fork Wind, NE

Deployed long-term acoustic monitoring stations for bats, including MET tower microphone deployment. Coordinated with client to resolve MET tower installation issues.

Field Biologist, March 2024

Blue Grama Wind, Limon, CO

Deployed long-term acoustic monitoring stations for bats.

Field Biologist, March 2024

Howling Ridge Wind, Seminole, OK

Deployed long-term acoustic monitoring stations for bats, including MET tower microphone deployment.

Field Biologist, March 2024

Prairie Wolf Wind, Seminole, OK

Deployed long-term acoustic monitoring stations for bats, including MET tower microphone deployment.

Field Technician, November 2023–January 2024

Empire Prairie Wind, MO

Ensured consistent and accurate data collection, following Tetra Tech procedures for quality control. Conducted statistical analysis of acoustic data. Took down detectors and equipment and retrieved them from the field at the conclusion of the survey.

Biological Science Technician, October–November 2023

Bollinger Solar Mist Netting Survey, MO

Prepared final report for project. Organized technical information and photographs from third-party sources, editing for neatness, clarity, and correctness. Reviewed relevant scientific literature to reference in the report.

EDUCATION

MS, Environmental Science & Policy, University of Wisconsin-Green Bay, 2020

BS, Conservation Biology, University of Wisconsin-Madison, 2016

AREA OF EXPERTISE

Wildlife Biology
Acoustic Surveys
Statistical Analysis
Bat Monitoring

TRAINING

CPR and First Aid; 2023
Acoustic ID of Northeastern Bat Species, 2021

OFFICE

Portland, ME

YEARS OF EXPERIENCE

3

YEARS WITHIN FIRM

1

Field Technician, September 2023-January 2024

Wild Horse Wind Acoustic Bat Survey, Lamar, CO

Deployed acoustic monitoring stations at MET towers. Prepared GIS data. Monitored data collection for quality control. Conducted statistical analysis of bat acoustic data.

Field Technician, August-December 2023

Sun Tribe Solar, Boston Hill Presence/Absence and Habitat Assessments, VA

Conducted northern long-eared bat and Indiana bat presence/absence surveys and habitat assessments according to U.S. Fish and Wildlife Service (USFW) 2023 Indiana Bat and Northern Long-Eared Bat (NLEB) Summer Survey Guidelines. Selected deployment locations for bat detectors in cooperation with local landowners.

Field Technician, August-December 2023

Sun Tribe Solar, Cumberland Presence/Absence and Habitat Assessments, VA

Conducted northern long-eared bat and Indiana bat presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines. Selected deployment locations for bat detectors in cooperation with local landowners.

Field Technician, July 2023

Empire Offshore Wind, Presence/Absence and Habitat Assessment, Island Park, NY

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines. Prepared GIS data.

Field Technician, July-December 2023

RIDOT, NLEB Presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, RI

Conducted NLEB presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Rhode Island.

Field Technician, June-December 2023

MassDOT, NLEB Presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, MA

Conducted NLEB presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Massachusetts.

Field Technician, June 2023

APV, Virginia Beach Presence/Absence and Habitat Assessment, Virginia Beach, VA

Conducted NLEB presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines.

Field Technician, May/June 2023

Woodridge Solar, Presence/Absence and Habitat Assessments, VA

Conducted bat presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines.

Field Technician, May/June 2023

Dominion, Beldale Solar Presence/Absence and Habitat Assessments, VA

Conducted bat presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines.

Field Technician, May/June 2023

Dominion, Finneywood Solar Presence/Absence and Habitat Assessments, VA

Conducted bat presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines.

Field Technician, May/June 2023

Dominion, Laurel Branch Solar Presence/Absence and Habitat Assessments, VA

Conducted bat presence/absence surveys and habitat assessments according to USFW 2023 Indiana Bat and NLEB Summer Survey Guidelines.

Field Technician, May 2023

Bluepoint Wind, Acoustic Bat Survey, Brooklyn, NY

Installed bat detector on an ocean vessel for monitoring offshore bat activity.

Field Technician, May 2023-January 2024

Flickertail Wind LIC, Acoustic Bat Survey, Carrington, ND

Deployed long-term acoustic monitoring stations for bats. Prepared GIS data. Monitored data collection for quality control. Conducted statistical analysis of bat acoustic data.

Field Technician, March 2023-January 2024

White Oak Wind, Acoustic Bat Survey, King County, TX

Deployed long-term acoustic monitoring stations for bats, including MET tower microphone deployment. Prepared reports, conducted statistical analysis and manually vetted acoustic data.

Field Technician, March 2023

CVOW, Commercial Project

Performed QAQC for acoustic data collected during the 2022 field season.

PREVIOUS EXPERIENCE

Site Leader, May 2022 – Dec 2022

Bat Conservation International, Orient, IA

Managed a major post-construction fatality monitoring project researching bats & wind energy. Coordinated with wind site staff and local landowners to ensure carcass searches proceeded on schedule. Identified carcasses found to species, sex and age and estimated time of death. Set up and maintained thermal camera arrays, acoustic detectors, and weather stations with accompanying solar power installations. Ensured the safety of search crews by monitoring weather hazards and pesticide exposure risks.



Baxter Seguin Bat Biologist

EXPERIENCE SUMMARY

Baxter Seguin is a wildlife biologist with over 11 years of experience in projects in various states including Colorado, Kansas, Maine, Missouri, Montana, Nebraska, New York, New Jersey, Ohio, Texas and Virginia. He has a broad background in environmental science and wildlife research. He has a particular emphasis in mammalogy with a primary focus on bat biology and ecology. He has been especially involved with bat acoustic monitoring, bat mist netting and data analysis for his entire career. Specializing in manual vetting for northern long-eared bat, tricolored bat, little brown bat, and Indiana bat. Before joining Tetra Tech Mr. Seguin played a lead role in implementing the NABat program throughout the state of Nebraska to determine long term trends in population and habitat usage of bats. More recently Mr. Seguin has provided data analysis and report writing according to the U.S. Fish and Wildlife Service guidelines related to bats for development projects throughout the United States.

CORPORATE PROJECT EXPERIENCE

Wildlife Biologist, 2024

MassDOT, NLEB Presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, MA

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2024 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Massachusetts. Conducted autclassification using Kaleidoscope Pro and manual vetting of bat echolocation data using Sonobat.

Wildlife Biologist, 2024

RiDOT, NLEB Presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, RI

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2024 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Rhode Island. Conducted autclassification using Kaleidoscope Pro and manual vetting of bat echolocation data using Sonobat.

Wildlife Biologist, 2024

Bat Acoustic Survey, Wind Farm, Western, NE

Determined site selection for bat acoustic detectors and conducted habitat assessments for a proposed wind farm in Western Nebraska. Conducted long-term acoustic monitoring, data analysis and manual vetting for multiple sites.

Wildlife Biologist, 2024

Bat Acoustic Survey, Wind Farm, Eastern, NE

EDUCATION

MSc, Natural Resource Science, University of Nebraska-Lincoln, 2019

BA, Environmental Studies, Green Mountain College, 2013

AREA OF EXPERTISE

Bat Acoustic Surveying
 Bat Acoustic Manual Vetting
 Bat Habitat and Risk Assessments
 Bat Mist Netting
 GIS

REGISTRATIONS/ CERTIFICATIONS

40 Hour HAZWOPER; 2015
 8 Hour HAZWOPER oil spill response; 2015
 Wilderness First Responder; 2015

TRAINING

Advanced Bat Acoustics Training – Sonobat; 2024
 Acoustic Survey Methods – Bat Survey Solutions - 2023
 Bat Acoustics Training and Analysis Course; 2017

OFFICE

Portland, OR

YEARS OF EXPERIENCE

11

YEARS WITHIN FIRM

2

Determined site selection for bat acoustic detectors and conducted habitat assessments for a proposed wind farm in Eastern Nebraska. Conducted long-term acoustic monitoring, data analysis and manual vetting for multiple sites.

Wildlife Biologist, 2023 and 2024

Bat Acoustic Survey, Wind and Solar Project, Western, MO

Determined site selection for bat acoustic detectors and conducted habitat assessments for a proposed wind and solar project in Western Missouri. Conducted long-term acoustic monitoring for multiple sites.

Wildlife Biologist, 2023

Bat Acoustic Survey, Solar Project, Southeastern, MO

Determined site selection for bat acoustic detectors and conducted habitat assessments for a proposed solar project in Southeastern Missouri. Conducted long-term acoustic monitoring for multiple sites.

Wildlife Biologist, 2023

MassDOT, NLEB presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, MA

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2022 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Massachusetts. Conducted autoclassification and manual vetting of bat echolocation data.

Wildlife Biologist, 2023

RiDOT, NLEB Presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, RI

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2022 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Rhode Island. Conducted autoclassification and manual vetting of bat echolocation data.

Wildlife Biologist, 2023

NLEB Presence/Absence and Habitat Assessments, Solar Facility, VA

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2022 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for a large solar facility in Virginia. Conducted autoclassification and manual vetting of bat echolocation data.

Wildlife Biologist, 2023

NLEB Presence/Absence and Habitat Assessments, Solar Facility, VA

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2022 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for a large solar facility in Virginia. Conducted autoclassification and manual vetting of bat echolocation data.

Wildlife Biologist, 2023

Bat Acoustic Survey, Wind Farm, CO

Determined site selection for bat acoustic detectors for a proposed wind farm in Northeastern Colorado. Conducted long-term acoustic monitoring, data analysis and manual vetting for multiple sites.

Wildlife Biologist, 2023

Bat Acoustic Survey, Wind Project in MT

Developed a bat acoustics report for a wind and solar development project in Montana. Acoustics consisted of 4 detectors that collected data for a year using SM4 bat detectors. Conducted autoclassification using Kaleidoscope Pro and manually vetted bat passes for each species detected at the site using Sonobat 4.

Wildlife Biologist, 2023

Bat Acoustic Survey, Wind Project in KS

Bat acoustic survey for a 300 turbine wind energy development project in Kansas. Analyzed data from a total of 6 bat detectors were deployed for most of 2022. Conducted autoclassification using Kaleidoscope Pro and manually vetted bat passes for each species detected at the site using Sonobat 4.

Wildlife Biologist, 2023**Long-term Biological Assessment, Army National Guard, MA**

Conducted biological assessment on 8 years of acoustic data across two Army National Guard bases. Work included acoustic data vetting and trend analysis utilizing a large dataset.

Wildlife Biologist, 2023**Bat Acoustic Survey, Wind Farm, TX**

Determined site selection for bat acoustic detectors for a proposed wind farm in Northern Texas. Conducted long-term acoustic monitoring for multiple sites.

Wildlife Biologist, 2023**Bat Acoustic Survey, Energy Storage Facility, NY**

Determined site selection for bat acoustic detectors for a proposed energy storage facility in Eastern New York State. Conducted presence/probable absence surveys at multiple sites following IBAT and NLEB guidelines.

Wildlife Biologist, 2022**MassDOT, NLEB presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, MA**

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2022 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Massachusetts. Conducted autoclassification and manual vetting of bat echolocation data.

Wildlife Biologist, 2022**RiDOT, NLEB Presence/Absence and Habitat Assessments, Various Road and Bridge Improvement Projects, RI**

Conducted northern long-eared bat presence/absence surveys and habitat assessments according to USFW 2022 Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Prepared reports and summarized data for projects throughout the state of Rhode Island. Conducted autoclassification and manual vetting of bat echolocation data.

Wildlife Biologist, 2022**Bat Acoustic Survey, Wind Project, CO**

Acoustic survey for predevelopment of a 365 turbine wind farm in Colorado. Acoustics consisted of 4 detectors that collected data for most of 2022 using SM4 bat detectors. Conducted autoclassification using Kaleidoscope Pro and manually vetted bat passes for each species detected at the site using Sonobat 4.

PREVIOUS EXPERIENCE**Nebraska and Wyoming NABat Coordinator, 2016-2020****Nebraska Fish and Wildlife Research Unit, Nebraska Game and Parks Commission, Lincoln, NE**

As NABat Coordinator, designed and implemented Nebraska specific NABat program through out the state. Supervised and coordinated over 30 individuals across the program. Conducted all acoustic analysis on bat echolocation data.

Bat Acoustic Specialist, 2016-2020**Nebraska Game and Parks Commission, Chadron, NE**

As bat acoustic specialist, provided bat acoustic analysis for projects in the northeastern corner of Nebraska. Provided acoustic analysis training to various Nebraska Game and Parks and U.S. Forest Service employees.

Gave budgetary and research recommendations for the region regarding bat research and protection. Presented bat related research to public entities and potential state collaborators.

Bat Field Technician, 2013 and 2015

Biodiversity Research Institute, Portland, ME

As bat field technician, conducted summer bat surveys for Indiana bat (*Myotis sodalists*) and northern long-eared bat (*Myotis septentrionalis*) in multiple states. Conducted mist netting, ground and airplane radio telemetry, and stationary acoustic surveys. Worked in national parks, private land, and military bases.

OTHER INFORMATION (ADDITIONAL TRAINING, PUBLICATION(S), AWARD(S), ETC.)

PUBLICATIONS & PRESENTATIONS

Hogan, K.F.E., Fogarty, D.T., Ellerman, H., Fill, C., Morales, D., Seguin, B., Uden, D., Allen, C. 2022. Rangelands in a fragmented grass-dominated landscape are vulnerable to tree invasion from roadsides. Biological Invasions. Lincoln, NE.

Seguin, B. 2019. Implementing the North American Bat Monitoring Program in Nebraska: An Assessment of Nebraska Bats with an Emphasis on Citizen Science. M.S. Thesis, University of Nebraska-Lincoln.



Kenneth A. Deshais, CPSS

Senior Project Scientist

EXPERIENCE SUMMARY

Mr. Deshais is a Senior Project Scientist with over 30 years of experience conducting environmental assessments in the eastern United States. As a permitting and wetland specialist, he prepares permits in accordance with local, state and federal regulations, and presents findings to permitting authorities. Mr. Deshais is also responsible for soil and vegetation investigations, construction supervision, erosion and sediment control planning, resource area identification, wildlife habitat evaluations and vernal pool surveys. In addition, he completes investigations and reports for stormwater management, land use/zoning, impact evaluation and mitigation planning projects.

RELEVANT EXPERIENCE

Geotechnical Support Services, Massachusetts Water Resources Authority (MWRA), Boston, MA, 2022 to Present. Permit Specialist for the Metropolitan Water Tunnel Program (MWTP) Geotechnical Support Services contract. The MWTP includes 14 miles of deep rock tunnels and surface connections to provide critical redundancy to the water supply in the Boston area. Responsible for project permitting including Massachusetts Wetlands Protection Act and Massachusetts Department of Conservation and Recreation Access permitting.

Vernal Pool Restoration, Hanover, MA, 2021 to 2023. Performed pre-construction existing conditions surveys, review of proposed restoration grading plan, restoration plant selection, and construction oversight of restoration activities associated with the remediation of an approximately 1.5-acre contaminated vernal pool.

Rushy Marsh Farm Expansion, Cotuit, MA, 2014 to Present. As Senior Project Scientist, providing environmental permitting support for the proposed expansion of an operating farm within a coastal community on Cape Cod. The project includes several buildings and facility renovations on property that extends from the coastal banks of Nantucket Sound inland to the tidal estuary of Fullers Marsh.

Boulder Brook Drainage Improvements, MassDOT, Wellesley, MA, 2023. MassDOT recently awarded the first project under its new Resiliency Program to Tetra Tech, the design of drainage improvements along Route 9 and culvert replacements over Boulder Brook. Senior Project Scientist supporting the evaluation of the preferred alternative. The preferred design alternative for the culvert replacements developed more than a decade ago by Tetra Tech will be reevaluated using current precipitation and streamflow data adjusted for climate change and applying current environmental regulations and wetland resource area conditions.

Wetland Reconnaissance, Solar Energy Facilities, Various Locations, NH. 2022. Managed Tetra Tech wetland staff for and performed



Education

MS, Soil Science, University of Massachusetts Amherst, 1995

BS, Environmental Science, University of Massachusetts Amherst 1992

BS, Wildlife Management, University of Massachusetts Amherst, 1987

Registrations/Affiliations

Soil Science Society of America Certified Professional Soil Scientist (CPSS) No. 15285

Society of Soil Scientist of So. New England Registered Professional Soil Scientist

Association of MA Wetland Scientists

Soil Science Society of America

Society of Wetland Scientists

Society of Soil Scientists of So. New England, Special Assistant to the Board (2003-2004); Alternate Board Member (2001-2002)

Grafton Planning Board (1999)

Monson Conservation Commission, (1992-1996)

Training/Certifications

HAZWOPER, 40-Hour OSHA Training; 10-Hour OSHA Construction Training

Adult First Aid/ CPR/ AED

EPA NPDES Construction General Permit Certified Site Inspector

Office

Marlborough, MA

Years' Experience/with firm

31/30

Contact

Kenneth.Deshais@tetratech.com

reconnaissance-level walk of multiple sites ranging in size up to 300 acres to determine the presence/absence and approximate extent of state and federal jurisdictional wetlands based on a three (3) parameter approach as required by New Hampshire Department of Environmental Services, namely hydric soils, hydrophytic vegetation and hydrology. The location and extent of wetlands were approximated and located by GPS unit with sub-meter accuracy. Following the site reconnaissance, oversaw preparation of a technical memorandum summarizing the type of potential federal and state jurisdictional wetland resources identified on each site and areas observed to be potential vernal pools including aerial figures depicting the proposed site layout, GIS data layer information, and field reconnaissance data.

MassDOT Highway Division, NLEB Presence/Absence Habitat Assessment and Detector Deployment, Various Road and Bridge Improvement Projects, MA, 2018 to Present. Assist with and deploy detectors, conduct habitat assessments, and bridge inspections at multiple location throughout the state according to USFWS Indiana Bat and Northern Long-Eared Bat Summer Survey Guidelines. Summarized and wrote technical memorandums.

I-495/I-90 Interchange Improvements, MassDOT Highway Division, Hopkinton and Westborough, MA, 2016 to Present. Senior Project Scientist for improvements to the I-495/I-90 interchange within an Area of Critical Environmental Concern (ACEC) and impacts to state designated Outstanding Resource Waters. Tetra Tech evaluated natural resources of the project area, confirmed the wetland delineation, compiled data for certification of vernal pools, prepared environmental review and permitting documents; contributing to the development of the design of the highway and bridge preferred alternative. Responsible for the preparation of the Project's Conceptual Wetland Mitigation Plan for the preferred alternative and review of the Design-Builder submittals for compliance with project permits and specifications.

Bay State Wind Offshore Wind Farm, Dong Energy, MA and RI, 2017 to 2020. Senior Project Scientist for wetland reconnaissance and for the onshore transmission cable routes and wetland resource identification and delineation for preferred cable route and onshore substation location. Prepared existing wetland resource assessment report for the and impact analysis for inclusion in the Project's COP.

Wetland Mitigation Monitoring Woods Memorial Bridge Replacement and Transportation Improvements, MassDOT, Medford, MA, 2016 to 2021. Senior Project Scientist responsible for conducting annual monitoring and preparation of annual reports and the final assessment report in compliance with the United States Army Corps of Engineers permit, the Massachusetts Department of Environmental Protection's Water Quality Certification, and the Medford Conservation Commission permit requirements.

Statewide Impaired Waters Support Services, MassDOT Highway Division, 2013 to Present. Supporting a multi-year contract to provide MassDOT with a range of wetland and stormwater compliance measures including the design and permitting of stormwater BMPs under the Impaired Waters Program, National Pollutant Discharge Elimination System (NPDES) permit compliance and reporting activities, Illicit Discharge Detection and Elimination (IDDE), Construction Oversight and general Stormwater Consulting and Environmental Services. Responsible for soil and vegetation investigations, wetlands delineation and preparation of permits in accordance with local, state and federal regulations.

Statewide On-Call Environmental Services, MassDOT Highway Division, 2011 to Present. Supporting a multi-year contract for MassDOT that involved anything from routine roadway projects to major transportation improvement projects. Assignments supported under this contract included impaired water bodies watershed assessments, stormwater Best Management Practice (BMP) design plans, construction specifications and special provisions; preparation of environmental permit applications including Massachusetts Environmental Policy Act (MEPA) documentation, state and federal wetlands permits, and Chapter 91 Waterways licenses and permits; and public outreach including meetings with federal and state agencies, city/town officials and community groups. Responsible for soil and vegetation investigations, wetlands delineation and preparation of permits in accordance with local, state and federal regulations, and construction compliance inspections.

Route 18 Corridor Widening, MassDOT Highway Division, 2002 to Present. Wetlands Scientist for wetland resource area investigation, wetland mitigation design, and wildlife habitat evaluation of properties within an

approximate five-mile section of Route 18. The project required a variance from wetlands regulations. Due to the inability to mitigate wetlands within the project limits, an off-site wetland mitigation site was identified, and approvals obtained from the U.S. Army Corps of Engineers and the Massachusetts Department of Environmental Protection. Responsible for review of Contractor's submittals for compliance with project permits and specifications.

River's Edge Mixed Use Development, Preotle, Lane & Associates, Ltd., Medford, Malden and Everett, MA, 2005 to 2018. Provided wetland mitigation design and wetland mitigation post-construction monitoring for the 32-acre River's Edge mixed-use business park. Assisted in obtaining state approvals from the DEP Wetlands and Waterways Divisions, MEPA and the Massachusetts Water Resources Authority. An Individual Water Quality Certification was also obtained from the DEP Wetlands Division for the wetland fill and wetland mitigation plan. Federal permits included US Army Corp of Engineers (ACOE) Individual Permits for the wetland fill, mitigation design and the removal of an abandoned barge that was located within the Federal Channel of the Malden River.

Belle Isle Marsh Boardwalk, Sterling Suffolk Racecourse, LLC, East Boston, MA, 2013 to 2017. Project Scientist responsible for site selection of an approximately 100-foot long helical pile supported boardwalk over a freshwater wetland at the Massachusetts Department of Conservation and Recreation's (DCR) Belle Isle Marsh Reservation. Prepared an Environmental Notification Form pursuant to the Massachusetts Environmental Policy Act, a DEP Water Quality Certification application, a Notice of Intent in accordance with the Massachusetts Wetlands Protection Act, and a DCR Construction/Access Permit application, Provided environmental compliance and construction oversight during project implementation.

I-93 and Route 110/Route 113 Interchange Reconstruction Project, MassDOT Highway Division, Methuen, MA, 2008 to 2018. Wetlands delineation for the widening of I-93 and the construction of a new interchange, six interchange ramps, and improved bike/pedestrian facilities. Project included a variance from Massachusetts Wetlands Protection Act Regulations for design of a 13-acre wetland mitigation area to compensate for unavoidable project impacts. The plan featured 5.3 acres of Bordering Vegetated Wetlands creation/restoration including 2.4 acres of forested habitat, 1.7 acres of scrub/shrub habitat, 1.1 acres of emergent habitat, 0.1 acres of riverine habitat, and 555 linear feet of recreated waterway bank.

I-95/Whittier Bridge Improvements, MassDOT Highway Division, Newburyport, Amesbury, Salisbury, MA, 2009 to November 2018. Supported the EIR for the reconstruction of a 4-mile segment of I-95 and the replacement of Whittier Bridge over the Merrimack River. Involved in preparation of MEPA ENF, a combined NEPA EA and a MEPA EIR, and permits, leading to a design/build RFP package. Key issues relating to the joint filings included rare species, wetlands, historic and archaeological resources, and water supply protection. EA/EIR and permit applications were prepared under a tight timeframe to meet the Accelerated Bridge Program (ABP) schedule.

Greenbush Commuter Rail Design/Build Project, MBTA, South Shore, MA, 2002 to 2010. Project Scientist responsible for coordinating environmental permitting and natural resource impact evaluations for the 18.5-mile rail construction project. Provided support to MBTA in acquiring wetland and endangered species permits. Lead Scientist for impact analysis associated with increasing tidal flushing to the approximately 68-acre Home Meadows complex in Hingham. Provided design and construction supervision of 4.6 acres of freshwater wetland and 6.5 acres of salt marsh creation, and identified adverse effects on aquatic resources including erosion control, sediment retention from surface water, cofferdam installation and removal and dewatering activities. Supervised wetland resource area studies, including removal of wetland soils from areas to be filled, storage of excavate, transportation of soils and plant materials, and planting and monitoring of wetland replication areas.

Blue Hills Covered Storage, MWRA, Quincy, MA, 1997 to 2010. Prepared an Expanded Environmental Notification Form and the Single and Final Environmental Impact Reports outlining the potential impacts of the 20-million-gallon storage system in the Blue Hills Reservoir within the Blue Hills Reservation. Responsible for preparing a US Army Corps of Engineers Individual Permit application, DEP Water Quality Certification application, and other applications in accordance with the Massachusetts Wetlands Protection Act, including a

Notice of Intent, Request for Superseding Order of Conditions, and Request for Variance. Reviewed contractor's design documents, including the SWPPP for the approximately 18-acre construction site.

Federal Correctional Institution, US Department of Justice, Bureau of Prisons, Berlin, NH, 2007 to 2009. As part of the Bell-Heery Joint Venture, Lead Scientist for the design of four wetland restoration areas and four vernal pools to provide mitigation for impacts to wetlands associated with the construction of the correctional facility. Responsible for annual post construction monitoring of the wetland mitigation areas to assess long-term viability and the project's impact to wetlands.

Gillette Stadium and Economic Development Area, New England Patriots, Foxborough, MA, 1999 to 2007. Developed application materials and multiple SWPPPs for the NPDES General Permit for Stormwater Discharges from Construction Activities and implementation of erosion and sediment controls. Lead Scientist responsible for the relocation and day lighting of approximately 1,000 feet of the Neponset River, including characterization of existing conditions and construction supervision.

Relocation of Route 57, MassDOT Highway Division, Agawam and Southwick, MA, 1998 to 2000. Responsible for the technical aspects of wetlands replication and environmental permitting for the relocation of Route 57. This project was to include 2.5 miles of four-lane divided highway, three major bridges, an animal passageway, noise barriers and a diamond ramp. The wetland impacts were to be among the largest proposed in the state.

Preliminary Screening Report, Water Supply Plan, Connecticut Water Department, Bristol, CT, 1999. Identified potential impacts to the natural and cultural environment associated with four of the Water Department's Water Supply Plan alternatives. The assessment included field inspection and review of existing information. Under review were wetlands and water quality, floodplain, wildlife, air quality, noise and traffic as well as historic, archaeological and cultural considerations.

Brightman Street Bridge Replacement Project, MassDOT Highway Division, Fall River and Somerset, MA, 1995 to 1997. Environmental Scientist for environmental permitting for the relocation of the Brightman Street Bridge. Responsible for the review of natural resources within the project area, including soils, vegetation and wildlife. Evaluation of impacts to inland and tidal resources and preparation of permit applications. Responsible for the mitigation design, including site selection based on soil and hydrologic characteristics; and excavation, soil and vegetation specification.

Biological Assessment, Massachusetts Port Authority, Shawsheen River, Hanscom Air Force Base, Bedford, MA, 1995. Environmental Scientist for the biological assessment of approximately one-half mile of the Shawsheen River. This assessment was conducted following methods outlined in the US Environmental Protection Agency's Rapid Bioassessment Protocol I – Benthic Macro Invertebrates, performed to evaluate the apparent health of the ecosystem. The assessment included the characterization of river substrate and banks, aquatic and terrestrial vegetation, water quality, aquatic macro invertebrate populations, and habitat use by other wildlife species.

Metropolitan District Commission, Belchertown, MA, 1986. Assistant Wildlife Biologist whose responsibilities consisted of wildlife management practices, habitat classification mapping. Controlled nuisance wildlife, such as beaver and deer. Performed small mammal census and avian surveys as well as analysis of forest cutting damage.

Student Conservation Association at Moosehorn Wildlife Refuge, Baring, ME, 1985. Performed wildlife management practices including restoration of broken forest structure and maintenance of migratory waterfowl impoundments. Invoked capture, banding, and telemetry of woodcock. Conducted rehabilitation of injured birds and supervised Youth Conservation Corps workers.



Kinsale McGrath
Environmental Scientist

EXPERIENCE SUMMARY

Ms. McGrath is an Environmental Scientist at Tetra Tech who supports environmental assessment and local, state, and federal permitting for a variety of public and private client projects.

RELEVANT EXPERIENCE

Magna Metals, Peekskill, NY, 2024. Responsible for leading a team to perform sampling of potentially contaminated soil, sediment, and water. Managed data collection of soil/sediment cores and water samples and input all data in ArcGIS Field Maps application. Responsible for quality assurance and quality control of collected cores, samples, and associated data before being analyzed and sampled for the lab. Analyzed layers in soil and sediment cores, record data in ArcGIS Survey 123 application, and train coworkers.

MassDOT Highway Division, NLEB Presence/Absence Habitat Assessment and Detector Deployment, Various Road and Bridge Improvement Projects, MA, 2021 to Present. Assist with and deploy detectors, conduct habitat assessments, and bridge inspections at multiple location throughout the state according USFWS Indiana Bat Summer Survey Guidelines. Summarized and wrote technical memorandums. Responsible for creating and maintaining ArcGIS Pro file.

I-495/I-90 Interchange Improvements, MassDOT Highway Division, Hopkinton and Westborough, MA, 2020 to Present. Wetland Scientist for improvements to the I-495/I-90 interchange within an Area of Critical Environmental Concern (ACEC) and impacts to state designated Outstanding Resource Waters. Tetra Tech evaluated natural resources of the project area, confirmed wetland delineation, inventoried vernal pools (both previously certified and potential), prepared environmental review and permitting documents, and continue contribution to the development of the design of the highway and bridge preferred alternative. Responsible for water level monitoring in wetlands and preparing a response matrix for MassDEP’s request for additional information.

I-90 Allston Multimodal Project, MassDOT Highway Division, Allston/Brighton, MA, 2020 to Present. Environmental Scientist for the \$1.9B I-90/Allston Multimodal Improvement Project. Tetra Tech is providing conceptual development, traffic analysis, environmental documentation and permitting, and highway and bridge design services. Prepared a matrix that outlines graphic submittal statuses and creating NEPA DEIS Chapter Review Summary submittals outline. Responsible for quality assurance and quality control for response to comments made on the Draft Environmental Impact Report (DEIR) and Notice of Project



Education

BS, Environmental Science, Worcester State University, 2019

Area of Expertise

Environmental assessment and permitting

Registrations/Affiliations

Society of Wetland Scientist
Massachusetts Association of Conservation Commissions (MACC)
Association of Massachusetts Wetland Scientists (AMWS)

Training/Certifications

Hazardous Waste and Emergency Response (HAZWOPER), 40-Hour OSHA Training
Construction Safety and Health, 10-Hour OSHA Training
Adult First Aid/ CPR/ AED
EPA CGP Site Inspector

Office

Marlborough, MA

Years of Experience

Four

Years within firm

Four

Contact

Kinsale.McGrath@tetrattech.com

Change. Responsible for quality assurance and quality control on Hazardous Material Assessment.

I- 90 Superstructure Replacements Woodland, Cordaville, Parkerville, and Flanders Roads, MassDOT Highway Division, Southborough and Westborough, MA, 2020 to 2021. The "Acceler-8" project seeks to replace eight bridges on I-90. Assisted with wetland delineation and completion of Stormwater Pollution Prevention Plan (SWPPP) pursuant to the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Activities. Responsible for collection of wetland delineation points and entering data into the Collector Application for ArcGIS. Responsible for filing MassDEP WM15-NPDES Notice of Intent Application.

Redevelopment of Former Quincy Hospital, FoxRock Properties, 114 Whitwell, Quincy, MA, 2020 to 2021. Responsible for assisting with the preparation of the Stormwater Pollution Prevention Plan (SWPPP) pursuant to the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Activities. Responsible for filing the EPA NETCGP: NET-NPDES Stormwater Construction General Permit.

200 Libbey Industrial Parkway, Weymouth, MA FoxRock 200 Libbey, LLC, 2020 to 2021. Responsible for filing MassDEP WPA Form 3 Notice of Intent and the Weymouth Wetlands Protection Ordinance and assisting with preparing the Notice of Intent (NOI) for work within the buffer zone to bordering vegetated wetland (BVW) and bank. Assisted with wetland delineation and data collection for the Collector Application for ArcGIS.

Sohier Street, Route 3A, Cohasset, MA, 2020. Assisted with wetland delineation and responsible for data collection on the Collector Application for ArcGIS and on the Ecobot App.

River's Edge Mixed Use Development, Preotle, Lane & Associates, Ltd., Medford, Malden and Everett, MA, 2020. Responsible for creating ArcGIS file showcasing vegetation delineation in a wetland mitigation area associated with MassDOT's Woods Memorial Bridge project.

DOCUMENT A00875

**POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002**

THIS PAGE INTENTIONALLY LEFT BLANK



Number: P-22-001
Date: 9/23/22

POLICY DIRECTIVE

Jonathan Gulliver (signature on original)

HIGHWAY ADMINISTRATOR

Off-Site Stockpiling of Soil from MassDOT Construction Projects

Purpose

The purpose of this Policy Directive is to formally establish a policy and procedures for managing and stockpiling soil generated and transported from MassDOT construction projects. This Policy Directive does not supersede any Federal, State, or Local regulations.

Date of Effect

This Policy Directive is effective immediately for all projects, including active construction projects.

For active construction projects and for other projects advertised prior to October 15, 2022, changes to the contract documents needed to implement the requirements of this Policy Directive will be considered on a case-by-case basis and shall be approved by the District Highway Director, as necessary.

For projects advertised on or after October 15, 2022, MassDOT will include the requirements and implementation procedures of this Policy Directive in the construction contract documents.

Policy Requirements

This policy is intended to prevent the off-site relocation of excavated soil generated from MassDOT projects to areas near residential receptors and to control potential fugitive dusts and/or contaminants. To that end, excavated soil may not be moved from the project site without knowledge of the content of the material. Knowledge may include visual field observations for presence of staining, odor, and/or debris, screening with a photoionization detector (PID), laboratory analysis, and/or site history. Pavement millings and other non-soil materials are not subject to the requirements of this Policy Directive.

Moving soil from a MassDOT project site to a temporary off-site storage location must be approved in writing by the District Highway Director.

The Contractor must select a storage location that is at least 500 feet away from residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially

zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

Implementation Procedures

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

1. Off-Site Stockpile Storage Locations

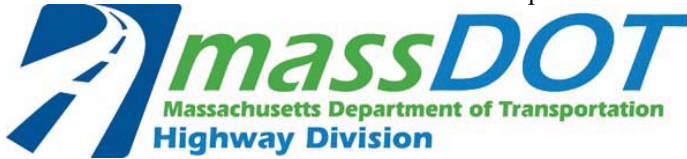
- a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
- b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
- c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
- d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
- e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
 - i. A description of material to be stored off-site, including available analytical data;
 - ii. A figure of the location with distances to residences and residential receptors; and
 - iii. Anticipated duration of temporary storage.
- f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
 - i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

- g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
- h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

2. Off-Site Stockpile Management

- a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
- b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
 - i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
- c. The Contractor shall label stockpiles with signs, including:
 - i. Location of origin (including any Release Tracking Numbers)
 - ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
 - iii. Date of initial accumulation
 - iv. Applicable telephone numbers for the Contractor and MassDOT.
- d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
- e. The Contractor shall remedy noncompliance with this policy within 48 hours.
- f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
- g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
- h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

THIS PAGE INTENTIONALLY LEFT BLANK



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

BURLINGTON

For: **Improvements at I-95 (Route 128)/Route 3 Interchange**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of BURLINGTON in Middlesex County, in the Commonwealth of Massachusetts, and is shown by the locus map (Document 00331) in the Proposal Pamphlet, the work locations extend as follows:

I-95 (Route 128)

Beginning Pavement Limits – Station 111+00.00 +/-

Ending –Station 178+62.00 +/-

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 **612 CALENDAR DAYS** upon receipt of a Notice to Proceed, except that if the completion date falls between December 1 and March 15 then the same number of days beyond December 1st will be extended after March 15th.

The Work of this project is described by the following Items and quantities.

THIS PAGE INTENTIONALLY LEFT BLANK

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
101.	1	CLEARING AND GRUBBING AT _____ PER ACRE		
102.1	155	TREE TRIMMING AT _____ PER FOOT		
120.	6,300	EARTH EXCAVATION AT _____ PER CUBIC YARD		
120.99	980	REMOVE AND DISPOSE CONCRETE MEDIAN BARRIER AT _____ PER FOOT		
129.3	510	OLD PAVEMENT EXCAVATION AT _____ PER CUBIC YARD		
141.1	45	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		
146.	12	DRAINAGE STRUCTURE REMOVED AT _____ EACH		
150.	425	ORDINARY BORROW AT _____ PER CUBIC YARD		
151.	5,000	GRAVEL BORROW AT _____ PER CUBIC YARD		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
151.2	120	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD		
156.	8	CRUSHED STONE AT _____ PER TON		
170.	4,000	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		
180.02	24	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		
180.03	1,040	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	1,430	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		
181.12	3,810	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		
181.13	3,810	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
181.14	476	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		
201.	23	CATCH BASIN AT _____ EACH		
201.7	2	CATCH BASIN - DOUBLE GRATE AT _____ EACH		
202.	7	MANHOLE AT _____ EACH		
220.	48	DRAINAGE STRUCTURE ADJUSTED AT _____ EACH		
220.3	4	DRAINAGE STRUCTURE CHANGE IN TYPE AT _____ EACH		
220.5	2	DRAINAGE STRUCTURE REMODELED AT _____ EACH		
221.1	11	FRAME AND COVER - SECURED AT _____ EACH		
222.	31	FRAME AND GRATE - MASSDOT BAR TYPE AT _____ EACH		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
223.2	8	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED AT _____ EACH		
224.12	24	12 INCH HOOD AT _____ EACH		
227.3	20	REMOVAL OF DRAINAGE STRUCTURE SEDIMENT AT _____ PER CUBIC YARD		
227.31	50	REMOVAL OF DRAINAGE PIPE SEDIMENT AT _____ PER FOOT		
227.4	2	MASONRY PLUG AT _____ PER SQUARE FOOT		
230.11	5	10 INCH CORRUGATED METAL PIPE 14 GAGE AT _____ PER FOOT		
230.212	15	12 INCH CORRUGATED METAL PIPE 14 GAGE AT _____ PER FOOT		
241.12	800	12 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
241.21	10	21 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
269.04	30	4 INCH SLOT PERFORATED CORRUGATED PLASTIC PIPE (SUBDRAIN) AT _____ PER FOOT		
402.	390	DENSE GRADED CRUSHED STONE FOR SUB-BASE AT _____ PER CUBIC YARD		
415.2	21,000	PAVEMENT FINE MILLING AT _____ PER SQUARE YARD		
431.	390	HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE AT _____ PER SQUARE YARD		
443.	39	WATER FOR ROADWAY DUST CONTROL AT _____ PER 1000 GALLONS		
450.231	2,500	SUPERPAVE SURFACE COURSE - 12.5 POLYMER (SSC - 12.5 - P) AT _____ PER TON		
450.311	560	SUPERPAVE INTERMEDIATE COURSE - 12.5 POLYMER (SIC -12.5 - P) AT _____ PER TON		
450.321	560	SUPERPAVE INTERMEDIATE COURSE - 19.0 POLYMER (SIC - 19.0 - P) AT _____ PER TON		
450.42	1,000	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) AT _____ PER TON		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
451.	237	HMA FOR PATCHING AT _____ PER TON		
452.	3,400	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		
453.	7,750	HMA JOINT ADHESIVE AT _____ PER FOOT		
470.	185	HOT MIX ASPHALT BERM AT _____ PER TON		
472.	100	TEMPORARY ASPHALT PATCHING AT _____ PER TON		
477.	9,000	MILLED RUMBLE STRIP (TYPE A) AT _____ PER FOOT		
482.5	1,700	SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING AT _____ PER FOOT		
511.1	4,600	GRANITE EDGING TYPE SB - STRAIGHT AT _____ PER FOOT		
512.1	20	GRANITE EDGING TYPE SB (RADIUS 10 FEET OR LESS) AT _____ PER FOOT		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
620.13	5,600	GUARDRAIL, TL-3 (SINGLE FACED) AT _____ PER FOOT		
627.1	3	TRAILING ANCHORAGE AT _____ EACH		
627.83	3	GUARDRAIL TANGENT END TREATMENT, TL-3 AT _____ EACH		
628.21	9	TRANSITION TO NCHRP 350 GUARDRAIL AT _____ EACH		
628.305	2	TEMPORARY IMPACT ATTENUATOR, NON-REDIRECTIVE, TL-3 AT _____ EACH		
628.4	2	TEMPORARY IMPACT ATTENUATOR, REMOVED AND RESET AT _____ EACH		
630.2	6,400	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ PER FOOT		
697.1	47	SILT SACK AT _____ EACH		
701.	25	CEMENT CONCRETE SIDEWALK AT _____ PER SQUARE YARD		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
702.	70	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ PER TON		
722.3	1	SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE \$49500 AT Forty Nine Thousand Five Hundred Dollars LUMP SUM	\$49,500.00	\$49,500.00
740.	21	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.	425	LOAM FOR ROADSIDES AT _____ PER CUBIC YARD		
756.	1	NPDES STORMWATER POLLUTION PREVENTION PLAN AT _____ LUMP SUM		
765.	3,825	SEEDING AT _____ PER SQUARE YARD		
767.121	7,500	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
769.	6,300	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
828.03	3	OVERHEAD GUIDE SIGN REMOVED AT _____ EACH		
828.06	1	OVERHEAD GUIDE SIGN AND SUPPORT REMOVE AND DISCARDED AT _____ EACH		
828.1	1,770	OVERHEAD GUIDE SIGN - ALUMINUM PANEL (TYPE B) AT _____ PER SQUARE FOOT		
829.	90	ROADSIDE GUIDE SIGN (G) - ALUMINUM PANEL (TYPE B) AT _____ PER SQUARE FOOT		
829.06	2	ROADSIDE GUIDE SIGN AND SUPPORT REMOVED AND DISCARDED AT _____ EACH		
829.07	160	ROADSIDE GUIDE SIGN (G) REMOVED AND RESET AT _____ PER SQUARE FOOT		
829.1	170	REFLECTIVE SIGN OVERLAY AT _____ PER SQUARE FOOT		
832.	410	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
840.103	1	SUPPORTS FOR OVERHEAD GUIDE SIGN (OD-3) STEEL AT _____ LUMP SUM		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
844.101	1	SUPPORTS FOR GUIDE SIGN (G1) STEEL AT _____ LUMP SUM		
846.1	2	SUPPORT FOR GUIDE SIGN (E5-1A) STEEL AT _____ EACH		
846.2	1	S-BEAM SUPPORT AND FOUNDATION AT _____ EACH		
847.1	9	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL AT _____ EACH		
848.1	27	SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES-STEEL AT _____ EACH		
852.	1,040	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
853.21	2,500	TEMPORARY BARRIER REMOVED AND RESET AT _____ PER FOOT		
853.33	2,600	TEMPORARY BARRIER - LIMITED DEFLECTION (TL-3) AT _____ PER FOOT		
853.403	7	TRUCK MOUNTED ATTENUATOR AT _____ PER DAY		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
853.8	360	TEMPORARY ILLUMINATION FOR WORK ZONE AT _____ PER DAY		
854.016	16,750	TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED) AT _____ PER FOOT		
854.036	6,000	TEMPORARY PAVING MARKINGS - 6 INCH (TAPE) AT _____ PER FOOT		
854.1	4,000	PAVEMENT MARKING REMOVAL AT _____ PER SQUARE FOOT		
854.6	120	TEMPORARY PORTABLE RUMBLE STRIP AT _____ PER DAY		
856.	1,200	ARROW BOARD AT _____ PER DAY		
856.12	1,560	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
859.	60,000	REFLECTORIZED DRUM AT _____ PER DAY		
864.04	630	PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC) AT _____ PER SQUARE FOOT		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
864.31	70	SLOTTED PAVEMENT MARKER ONE-WAY WHITE AT _____ EACH		
864.34	120	SLOTTED PAVEMENT MARKER TWO-WAY YELLOW/RED AT _____ EACH		
868.106	10,685	6 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
868.107	1,025	6 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (TAPE) AT _____ PER FOOT		
868.112	6,265	12 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
868.113	920	12 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (TAPE) AT _____ PER FOOT		
868.114	3,980	24 INCH DURABLE WET RECESSED REFLECTIVE WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
869.106	4,260.11	6 INCH DURABLE WET RECESSED REFLECTIVE YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT		
874.2	4	TRAFFIC SIGN REMOVED AND RESET AT _____ EACH		

Project # 609516		Contract # 129633		
Location : BURLINGTON				
Description : IMPROVEMENTS AT I-95 (ROUTE 128)/ROUTE 3 INTERCHANGE				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
874.41	33	TRAFFIC SIGN REMOVED AND DISCARDED AT _____ EACH		
Total Qty:		239,681.11		

THIS PAGE IS LEFT BLANK INTENTIONALLY

DOCUMENT B00853

SCHEDULE OF PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES (DBES)

PRIME BIDDER: _____

DATE OF BID OPENING: _____ PROJECT NO.: 609516

FEDERAL AID PROJECT NO. NHP(NHS)-0954(006)X

PROJECT LOCATION: BURLINGTON

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.: 609516 FEDERAL AID PROJECT NO.: NHP(NHS)-0954(006)X

PROJECT LOCATION: BURLINGTON

DATE OF BID OPENING: _____

I, _____, *Print Name* authorized signatory of the above-referenced DBE firm hereby declare:

1. My company is currently certified as a Disadvantaged Business Enterprise (DBE) by the Massachusetts Supplier Diversity Office (“SDO”), formerly known as the State Office of Minority and Women Business Assistance (SOMWBA), as a: (check all applicable, see Section 1 of the Special Provisions For Participation By Disadvantaged Business Enterprises, MassDOT Document 00719 additional guidance is available at Title 49, Code of Federal Regulations, Part 26.55 (49 CFR Part 26.55)):

- CONTRACTOR REGULAR DEALER BROKER
- MANUFACTURER TRUCKING OPERATIONS PROFESSIONAL SERVICES

2. My firm has the ability to manage, supervise and perform the activity described on page 2 of this Letter of Intent. If you are awarded the contract, my company intends to enter into a contract with your firm to perform the items of work or other activity described on the following sheet for the prices indicated.

3. There have been no changes affecting the ownership, control or independence of my company since my last certification review on _____, 20___. If any such change is planned or occurs prior to my company's completion of this proposed work, I will give prior written notification to your firm and to the Massachusetts Department of Transportation (“MassDOT”) Office of Civil Rights and SDO.

4. I have read the MassDOT proposal for the Project which may be entitled “Project Contract Documents and Special Provisions” or the draft “Contract” which includes MassDOT Document 00719, and acknowledge that my company will comply with that document and the requirements of 49 CFR Part 26.

5. For the purpose of obtaining subcontractor approval from MassDOT, my firm will provide to you:

A. The following construction work:

- (i) a resume, stating the qualifications and experience, of the superintendent or foreperson who will supervise on site-work;
- (ii) a list of equipment owned or leased by my firm for use on this project; and
- (iii) a list of all projects (public or private) upon which my firm is currently performing, is committed to perform, or intends to make a commitment to perform. I shall also include, for each project: the name and telephone number of a contact person for the contracting authority, person, or organization; the dollar value of the work; a description of the work; and my firm's work schedule for the project.

B. The following services, materials or supplies:

- (i) a written agreement and invoices for the materials or supplies, and any other documents evidencing the terms of providing such items;
- (ii) information concerning brokers fees and commissions for providing services or materials; and
- (iii) a statement concerning whether my firm intends or will be required to use a joint check arrangement; and any other documents that may be required by MassDOT.

DBE Company Authorized Signature

Date _____

**DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION
LETTER OF INTENT**
(To be completed by the DBE – Page 2 of 2)

DATE OF BID OPENING: _____

PROJECT NUMBER: 609516

FEDERAL AID PROJECT NUMBER: NHP(NHS)-0954(006)X

PROJECT LOCATION: BURLINGTON

PRIME BIDDER: _____

DBE COMPANY NAME: _____

<u>Item number</u> if applicable	<u>NAICS</u> <u>Code</u>	<u>Description of Activity</u> with notations such as Services, or Brokerage, Installation Only, Material Only, or Complete	<u>Quantity</u>	<u>Unit Price</u>	<u>Amount</u>
				TOTAL AMOUNT:	

Please give full explanations, attach additional sheets if necessary.

I HEREBY VERIFY THAT _____ WILL SOLELY
(DBE company name)
PERFORM THE WORK, OR PROVIDE THE SERVICES OR MATERIALS, AS DESCRIBED ABOVE.

DBE AUTHORIZED SIGNATURE: _____

NAME AND TITLE (PRINT): _____

TELEPHONE NUMBER: _____ FAX NUMBER: _____

EMAIL ADDRESS: _____

*** END OF DOCUMENT ***

Rev'd 9/20/19

DOCUMENT B00855

DBE JOINT CHECK ARRANGEMENT APPROVAL FORM

(to be submitted by Prime Contractor)

Contract No: 129633 Project No. 609516 Federal Aid No.: NHP(NHS)-0954(006)X

Location: BURLINGTON Bid Opening Date: _____

Project Description: Improvements at I-95 (Route 128)/Route 3 Interchange

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 ***