

COMMONWEALTH OF MASSACHUSETTS



**CONTRACT DOCUMENTS
AND SPECIAL PROVISIONS**

PROPOSAL NO.	613116-127959
P.V. =	\$4,473,000.00
PLANS	NO

FOR

**Federal Aid Project No. HIP (BR)-003S(766)X
Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK),
State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook**

in the Town of

CUMMINGTON

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

This Proposal to be opened and read:

WEDNESDAY, OCTOBER 16, 2024 at 2:00 P.M.

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DOCUMENT 00010

TABLE OF CONTENTS

DOCUMENT 00010
TABLE OF CONTENTS 00010-1 through 4

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

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

DOCUMENT 00331
LOCUS MAP 00331-1 through 2

DOCUMENT 00439
CONTRACTOR PROJECT EVALUATION FORM 00439-1 through 2

DOCUMENT 00440
SUBCONTRACTOR PROJECT EVALUATION FORM 00440-1 through 2

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

DOCUMENT 00715
SUPPLEMENTAL SPECIFICATIONS 00715-1 through 22

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 00761
SPECIAL PROVISIONS FOR CERTIFICATION REGARDING DEBARMENT,
SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION 00761-1 through 4

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 00880
MINIMUM WAGES FOR FEDERAL AND FEDERALLY
ASSISTED CONTRACTS..... 00880-1 through 22

DOCUMENT A00801
SPECIAL PROVISIONS A00801-1 through 106

DOCUMENT A00802
DETAIL SHEETS A00802-1 through 6

DOCUMENT A00803
DRAWINGS AND SKETCHES A00803-1 through 40

DOCUMENT A00804
BRIDGE INSPECTION REPORTS A00803-1 through 102

DOCUMENT A00805
TEMPORARY TRAFFIC CONTROL PLANS..... A00805-1 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 A00870
MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE
NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM A00870-1 through 16

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

TABLE OF CONTENTS (Continued)

DOCUMENT B00420
PROPOSAL.....B00420-1 through 10

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

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

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

DOCUMENT B00856
JOINT VENTURE AFFIDAVITB00856-1 through 4

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DOCUMENT 00104

**NOTICE TO CONTRACTORS**

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

WEDNESDAY, OCTOBER 16, 2024 at 2:00 P.M. **
CUMMINGTON

Federal Aid Project No. HIP (BR)-003S(766)X
Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK),
State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook

****Date Subject to Change**

PROJECT VALUE = \$4,473,000.00

Bidders must be pre-qualified by the Department in the BRIDGE - CONSTRUCTION category to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by the Department prior to the opening of Proposals.

All prospective Bidders who intend to bid on this project must obtain "Request Proposal Form (R109)". The blank "Request Proposal Form (R109)" can be obtained at:
<https://www.mass.gov/prequalification-of-horizontal-construction-firms>.

All prospective Bidders must complete and e-mail an electronic copy of "Request Proposal Form (R109)" to the MassDOT Director of Prequalification for approval:
prequal.r109@dot.state.ma.us.

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

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

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

NOTICE TO CONTRACTORS (Continued)

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

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

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

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

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 \$575.00 per ton, Portland cement \$425.53 per ton, diesel fuel \$2.713 per gallon, and gasoline \$2.666 per gallon, and Steel Base Price Index 415.9. 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, AUGUST 31, 2024

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DOCUMENT 00210

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

July 1, 1981, updated October 2016

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

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

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

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

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

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

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

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

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

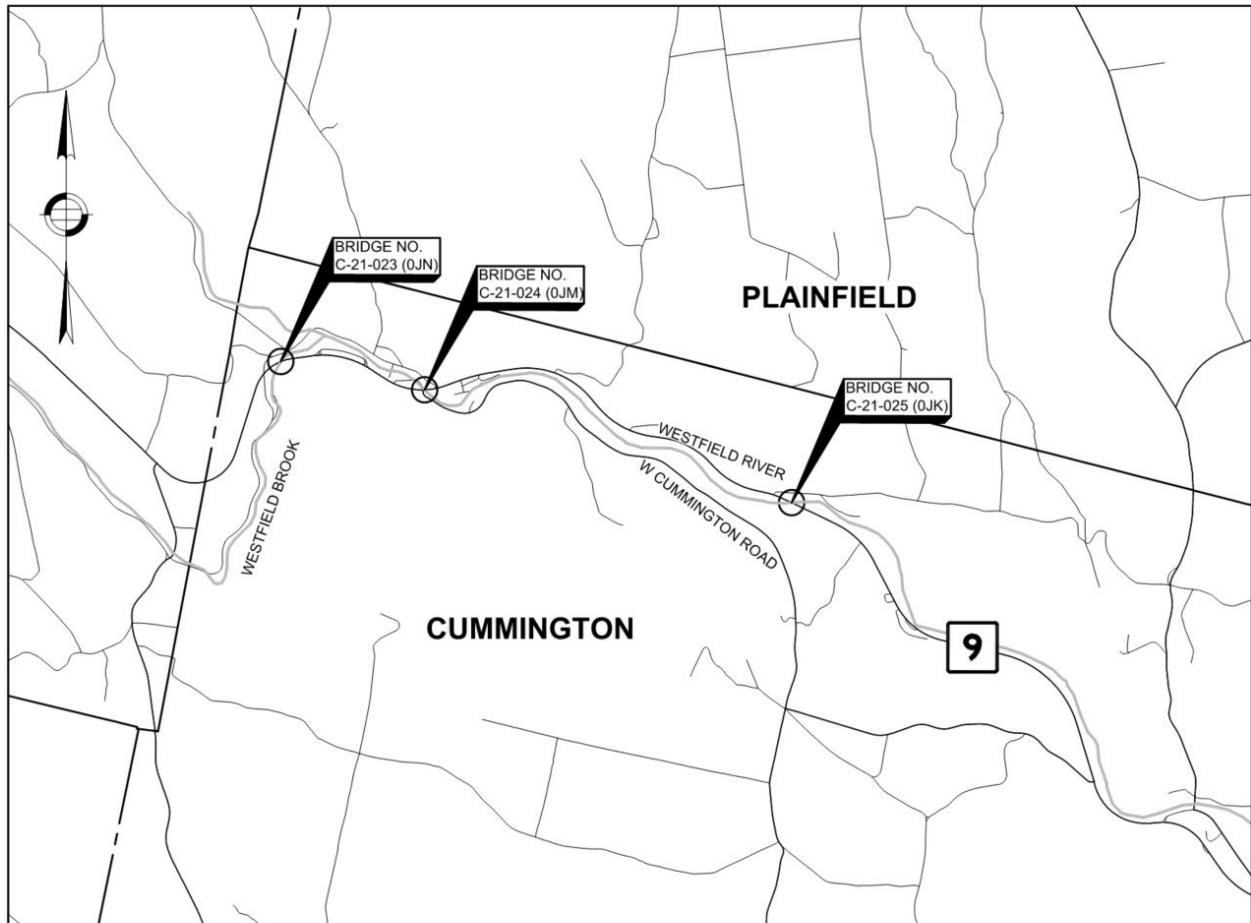
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DOCUMENT 00331

LOCUS MAP

CUMMINGTON

**Federal Aid Project No. HIP (BR)-003S(766)X
Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK),
State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook**



LOCUS

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DOCUMENT 00439



Final Report

Interim Report

CONTRACTOR PROJECT EVALUATION FORM

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

Date: _____

City/Town: _____ Contractor: _____

Project: _____ Address: _____

F.A. No. _____ Contract Number: _____

Bid Price: _____ Notice to Proceed: _____

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

Date Work Started: _____ Date Work Completed*: _____

Contractor's Superintendent: _____

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

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

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

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

District Construction Engineer's Signature/Date

Resident Engineer's Signature/Date

Contractor's Signature Acknowledging Report/Date

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

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



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: _____



Final Report

Interim Report

SUBCONTRACTOR PROJECT EVALUATION FORM

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

Date: _____

City/Town: _____

Subcontractor: _____

Project: _____

Address: _____

F.A. No.: _____

Contract Number: _____

Prime Contractor _____

Current Contract Completion Date: _____

Date Work Started: _____

Date Work Completed*: _____

Subcontractor's Superintendent: _____

Type of Work Performed by Subcontractor: _____

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

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

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

District Construction Engineer's Signature/Date

Resident Engineer's Signature/Date

Contractor Signature Acknowledging Report/Date

Subcontractor Signature Acknowledging Report/Date

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

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

Contractor's Comments: _____

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

NOTICE OF AVAILABILITY

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

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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

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

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

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

ALTERNATIVE DISPUTE RESOLUTION

Forum, Choice of Law and Mediations:

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

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DOCUMENT 00715



SUPPLEMENTAL SPECIFICATIONS

JUNE 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 4: SCOPE OF WORK

Subsection 4.06: Increased or Decreased Contract Quantities

Replace the second paragraph with the following.

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

DIVISION II

CONSTRUCTION DETAILS

DIVISION II: Construction Details

Replace M4.02.15 Cement Mortar with M4.04.0 Grout, Mortar, and Concrete Products where encountered, including in 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 ¾-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 (\leq 100 PSI)
- 160.2 Controlled Low-Strength Material – Cubic Yard
Mechanical Excavatable (101-300 PSI)
- 160.3 Controlled Low-Strength Material (>300 PSI) Cubic Yard

SECTION 200: DRAINAGE

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 403.64: 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.

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 11 %
(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.

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- (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.
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n. Prompt Payment.

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

9. SANCTIONS

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

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

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND CONFIDENTIALITY.

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

- (1) If you are a firm that does not meet the eligibility criteria of 49 CFR, Parts 26.61 to 26.73 (“subpart D”), that attempts to participate in a DOT- assisted program as a DBE on the basis of false, fraudulent, or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, MassDOT or FHWA may initiate suspension or debarment proceedings against you under 49 CFR Part 29.
 - (2) If you are a firm that, in order to meet DBE Contract participation goals or other DBE Program requirements, uses or attempts to use, on the basis of false, fraudulent or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, another firm that does not meet the eligibility criteria of subpart D, FHWA may initiate suspension or debarment proceedings against you under 49 CFR Part 29.
 - (3) In a suspension or debarment proceeding brought either under subparagraph a.(1) or b.(2) of this section, the concerned operating administration may consider the fact that a purported DBE has been certified by a recipient. Such certification does not preclude FHWA from determining that the purported DBE, or another firm that has used or attempted to use it to meet DBE participation goals, should be suspended or debarred.
 - (4) FHWA may take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, against any participant in the DBE Program whose conduct is subject to such action under 49 CFR Part 31.
 - (5) FHWA may refer to the Department of Justice, for prosecution under 18 U.S.C. 1001 or other applicable provisions of law, any person who makes a false or fraudulent statement in connection with participation of a DBE in any DOT-assisted program or otherwise violates applicable Federal statutes.
- b. Pursuant to 49 CFR Part 26.109, the rules governing information, confidentiality, cooperation, and intimidation or retaliation are as follows:
- (1) Availability of records.

 - (i) In responding to requests for information concerning any aspect of the DBE Program, FHWA complies with provisions of the Federal Freedom of Information and Privacy Acts (5 U.S.C. 552 and 552a). FHWA may make available to the public any information concerning the DBE Program release of which is not prohibited by Federal law.
 - (ii) MassDOT shall safeguard from disclosure to unauthorized persons information that may reasonably be considered as confidential business information, consistent with Federal and Massachusetts General Law (M.G.L. c. 66, § 10, M.G.L. c. 4, §7 (26), 950 CMR 32.00).
 - (2) Confidentiality of information on complainants. Notwithstanding the provisions of subparagraph b.(1) of this section, the identity of complainants shall be kept confidential, at their election. If such confidentiality will hinder the investigation, proceeding or hearing, or result in a denial of appropriate administrative due process to other parties, the complainant must be advised for the purpose of waiving the privilege. Complainants are advised that, in some circumstances, failure to waive the privilege may result in the closure of the investigation or dismissal of the proceeding or hearing.

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

11. LIST OF ADDITIONAL DOCUMENTS.

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

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

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

ATTACHMENTS

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

I. GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

6. Training and Promotion:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

10. Assurances Required:

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

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

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

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

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

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

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

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

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

III. NONSEGREGATED FACILITIES

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

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

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

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

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

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

1. Minimum wages (29 CFR 5.5)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2. Withholding (29 CFR 5.5)

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

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

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

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

3. Records and certified payrolls (29 CFR 5.5)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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

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

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

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

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

3. Withholding for unpaid wages and liquidated damages

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

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

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

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

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

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

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

VI. SUBLETTING OR ASSIGNING THE CONTRACT

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

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

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

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

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

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

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

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

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

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

VII. SAFETY: ACCIDENT PREVENTION

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

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

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

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

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

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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

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

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

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

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

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

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

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

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

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

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

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

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

1. Instructions for Certification – First Tier Participants:

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

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

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

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

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

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

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

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

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

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

* * * * *

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

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

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

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

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

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

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

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

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

3. Instructions for Certification - Lower Tier Participants:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

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

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

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

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

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

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

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

XII. USE OF UNITED STATES-FLAG VESSELS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DOCUMENT 00811

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

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

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

Base Price

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

Period Price

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

Price Adjustment Determination, Calculation and Payment

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

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

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

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

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

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

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DOCUMENT 00812

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

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

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

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

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

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

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

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

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

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

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DOCUMENT 00813

SPECIAL PROVISIONS

PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

August 21, 2024

This special provision applies to all projects containing the use of structural steel and/or reinforcing steel as specified elsewhere in the Contract work. It applies to all structural steel and all reinforcing steel, as defined below, on the project. Compliance with this provision is mandatory, i.e., there are no “opt-in” or “opt-out” clauses. Price adjustments will be handled as described below and shall only apply to unfabricated reinforcing steel bars and unfabricated structural steel material, consisting of rolled shapes, plate steel, sheet piling, pipe piles, steel castings and steel forgings.

Price adjustments will be variances between Base Prices and Period Prices. Base Prices and Period Prices are defined below.

Price adjustments will only be made if the variances between Base Prices and Period Prices are 5% or more. A variance can result in the Period Price being either higher or lower than the Base Price. Once the 5% threshold has been achieved, the adjustment will apply to the full variance between the Base Price and the Period Price.

Price adjustments will be calculated by multiplying the number of pounds of unfabricated structural steel material or unfabricated reinforcing steel bars on a project by the index factor calculated as shown below under Example of a Period Price Calculation.

Price adjustments will *not* include guardrail panels or the costs of shop drawing preparation, handling, fabrication, coatings, transportation, storage, installation, profit, overhead, fuel costs, fuel surcharges, or other such charges not related to the cost of the unfabricated structural steel and unfabricated reinforcing steel.

The weight of steel subject to a price adjustment shall not exceed the final shipping weight of the fabricated part by more than 10%.

Base Prices and Period Prices are defined as follows:

Base Prices of unfabricated structural steel and unfabricated reinforcing steel on a project are fixed prices determined by the Department and found in the table below. While it is the intention of the Department to make this table comprehensive, some of a project’s unfabricated structural steel and/or unfabricated reinforcing steel may be inadvertently omitted. Should this occur, the Contractor shall bring the omission to the Department’s attention so that a contract alteration may be processed that adds the missing steel to the table and its price adjustments to the Contract.

The Base Price Date is the month and year of the most recent finalized period price index at the time that MassDOT opened bids for the project. The Base Price Index for this contract is the Steel PPI listed in the Notice to Contractors.

Period Prices of unfabricated structural steel and unfabricated reinforcing steel on a project are variable prices that have been calculated using the Period Price Date and an index of steel prices to adjust the Base Price.

The Period Price Date is the date the steel was delivered to the fabricator as evidenced by an official bill of lading submitted to the Department containing a description of the shipped materials, weights of the shipped materials and the date of shipment. This date is used to select the Period Price Index.

The index used for the calculation of Period Prices is the U.S. Department of Labor Bureau of Labor Statistics Producer Price Index (PPI) Series ID WPU101702 (Not Seasonally Adjusted, Group: Metals and Metal Products, Item: Semi-finished Steel Mill Products.) As this index is subject to revision for a period of up to four (4) months after its original publication, no price adjustments will be made until the index for the period is finalized, i.e., the index is no longer suffixed with a “(P)”.

Period Prices are determined as follows:

Period Price = Base Price X Index Factor

Index Factor = Period Price Index / Base Price Index

Example of a Period Price Calculation:

Calculate the Period Price for December 2009 using a Base Price from March 2009 of \$0.82/Pound for 1,000 Pounds of ASTM A709 (AASHTO M270) Grade A36 Structural Steel Plate.

The Period Price Date is December 2009. From the PPI website*, the Period Price Index = 218.0.

The Base Price Date is March 2009. From the PPI website*, the Base Price Index = 229.4.

Index Factor = Period Price Index / Base Price Index = 218.0 / 229.4 = 0.950

Period Price = Base Price X Index Factor = \$0.82/Pound X 0.950 = \$0.78/Pound

Since \$0.82 - \$0.78 = \$0.04 is less than 5% of \$0.82, no price adjustment is required.

If the \$0.04 difference shown above was greater than 5% of the Base Price, then the price adjustment would be 1,000 Pounds X \$0.04/Pound = \$40.00. Since the Period Price of \$0.78/Pound is less than the Base Price of \$0.82/Pound, indicating a drop in the price of steel between the bid and the delivery of material, a credit of \$40.00 would be owed to MassDOT. When the Period Price is higher than the Base Price, the price adjustment is owed to the Contractor.

* To access the PPI website and obtain a Base Price Index or a Period Price Index, go to <http://data.bls.gov/cgi-bin/srgate>

End of example.

The Contractor will be paid for unfabricated structural steel and unfabricated reinforcing steel under the respective contract pay items for all components constructed of either structural steel or reinforced Portland cement concrete under their respective Contract Pay Items.

Price adjustments, as herein provided for, will be paid separately as follows:

Structural Steel

Pay Item Number 999.449 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.457 for negative (-) pay adjustments (credits to MassDOT Highway Division)

Reinforcing Steel

Pay Item Number 999.466 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.467 for negative (-) pay adjustments (credits to MassDOT Highway Division)

No price adjustment will be made for price changes after the Contract Completion Date, unless the MassDOT Highway Division has approved an extension of Contract Time for the Contract.

TABLE

Steel Type	Price per Pound	
1	ASTM A615/A615M Grade 60 (AASHTO M31 Grade 60 or 420) Reinforcing Steel	\$0.64
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note (8) below.)	\$0.88
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	\$0.88
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	\$0.91
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	\$0.98
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	\$0.90
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	\$0.98
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	\$0.90
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	\$1.02
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	\$0.91
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	\$1.02
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	\$0.91
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	\$1.06
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	\$1.13
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	\$1.74
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	\$1.02
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	\$0.91
18	ASTM A276 Type 316 Stainless Steel	\$5.18
19	ASTM A240 Type 316 Stainless Steel	\$5.18
20	ASTM A148 Grade 80/50 Steel Castings (See Note (8) below.)	\$1.79
21	ASTM A53 Grade B Structural Steel Pipe	\$1.13
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	\$1.13
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	\$0.89
24	ASTM 252, Grade 2 Permanent Steel Casing	\$0.89
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	\$0.96
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	\$1.71
27	ASTM A572 / A572M, Grade 50 Sheetpiling	\$1.71
28	ASTM A36/36M, Grade 50	\$0.98
29	ASTM A570, Grade 50	\$0.96
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	\$0.98
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	\$1.13
32	AREA 140 LB Rail and Track Accessories	\$0.59

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

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DOCUMENT 00814

SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

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

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

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

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

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

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

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

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

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

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DOCUMENT 00820

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

I. Definitions

For purposes of this contract,

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

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

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

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

II. Equal Opportunity, Non-Discrimination and Affirmative Action

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

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

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

The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151 B).

In connection with the performance of work under this contract, the Contractor shall undertake, in good faith, affirmative action measures to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. Such affirmative action measures shall entail positive and aggressive measures to ensure nondiscrimination and to promote equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, apprenticeship and on-the-job training programs. A list of positive and aggressive measures shall include, but not be limited to, advertising employment opportunities in minority and other community news media; notifying minority, women and other community-based organizations of employment opportunities; validating all job specifications, selection requirements, and tests; maintaining a file of names and addresses of each worker referred to the Contractor and what action was taken concerning such worker; and notifying the administering agency in writing when a union with whom the Contractor has a collective bargaining agreement has failed to refer a minority or woman worker. These and other affirmative action measures shall include all actions required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. One purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

III. Minority and Women Workforce Participation

Pursuant to his/her obligations under the preceding section, the Contractor shall strive to achieve on this project the labor participation goals contained herein. Said participation goals shall apply in each job category on this project including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers and those classes of work enumerated in Section 44F of Chapter 149 of the Massachusetts General Laws. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The participation goals, as set forth herein, shall not be construed as quotas or set-asides; rather, such participation goals will be used to measure the progress of the Commonwealth's equal opportunity, non-discrimination and affirmative action program. Additionally, the participation goals contained herein should not be seen or treated as a floor or as a ceiling for the employment of particular individuals or group of individuals.

IV. Liaison Committee

At the discretion of the agency that administers the contract for the construction project there may be established for the life of the contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering the contract for the construction project, hereinafter called the administering agency, a representative from the Office of Affirmative action, and such other representatives as may be designated by the administering agency. The Contractor (or his/her agent, if any, designated by him/her as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

V. Reports and Records

The Contractor shall prepare projected workforce tables on a quarterly basis when required by the administering agency. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also, when updated, to the administering agency and the Liaison Committee when required.

The Contractor shall prepare weekly reports in a form approved by the administering agency, unless information required is required to be reported electronically by the administering agency, the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority. Copies of these shall be provided at the end of each such week to the administering agency and the Liaison Committee.

Records of employment referral orders, prepared by the Contractor, shall be made available to the administering agency on request.

The Contractor will provide all information and reports required by the administering agency on instructions issued by the administering agency and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the administering agency to effect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary non-discrimination, equal opportunity and access and opportunity contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency and shall set forth what efforts he has made to obtain the information.

VI. Access to Work Site

A designee of the administering agency and a designee of the Liaison Committee shall each have a right to access the work site.

VII. Solicitations for Subcontracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and equal opportunity.

VIII. Sanctions

Whenever the administering agency believes the General or Prime Contractor or any subcontractor may not be operating in compliance with the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151B), the administering agency may refer the matter to the Massachusetts Commission Against Discrimination ("Commission") for investigation.

Following the referral of a matter by the administering agency to the Massachusetts Commission Against Discrimination, and while the matter is pending before the MCAD, the administering agency may withhold payments from contractors and subcontractors when it has documentation that the contractor or subcontractor has violated the Fair Employment Practices Law with respect to its activities on the Project, or if the administering agency determines that the contractor has materially failed to comply with its obligations and the requirements of this Section. The amount withheld shall not exceed a withhold of payment to the General or Prime Contractor of 1/100 or 1% of the contract award price or \$5,000, whichever sum is greater, or, if a subcontractor is in non-compliance, a withhold by the administering agency from the General Contractor, to be assessed by the General Contractor as a charge against the subcontractor, of 1/100 or 1% of the subcontractor price, or \$1,000 whichever sum is greater, for each violation of the applicable law or contract requirements. The total withheld from anyone General or Prime Contractor or subcontractor on a Project shall not exceed \$20,000 overall. No withhold of payments or investigation by the Commission or its agent shall be initiated without the administering agency providing prior notice to the Contractor.

If, after investigation, the Massachusetts Commission Against Discrimination finds that a General or Prime Contractor or subcontractor, in commission of a state construction contract or state-assisted construction contract, violated the provisions of the Fair Employment Practices Law, the administering agency may convert the amount withheld as set forth above into a permanent sanction, as a permanent deduct from payments to the General or Prime Contractor or subcontractor, which sanction will be in addition to any such sanctions, fines or penalties imposed by the Massachusetts Commission Against Discrimination.

No sanction enumerated under this Section shall be imposed by the administering agency except after notice to the General or Prime Contractor or subcontractor and an adjudicatory proceeding, as that term is used, under Massachusetts General Laws Chapter 30A, has been conducted.

IX. Severability

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

X. Contractor's Certification

After award and prior to the execution of any contract for a state construction contract or a state assisted construction contract, the Prime or General Contractor shall certify that it will comply with all provisions of this Document 00820 Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program, by executing Document 00859 Contractor/Subcontractor Certification Form.

XI. Subcontractor Requirements

Prior to the award of any subcontract for a state construction contract or a state assisted construction contract, the Prime or General Contractor shall provide all prospective subcontractors with a complete copy of this Document 00820 entitled "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" and will incorporate the provisions of this Document 00820 into any and all contracts or work orders for all subcontractors providing work on the Project. In order to ensure that the said subcontractor's certification becomes a part of all subcontracts under the prime contract, the Prime or General Contractor shall certify in writing to the administering agency that it has complied with the requirements as set forth in the preceding paragraph by executing Document 00859 Contractor/Subcontractor Certification Form.

Rev'd 03/07/14

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DOCUMENT 00821

ELECTRONIC REPORTING REQUIREMENTS
CIVIL RIGHTS PROGRAMS AND CERTIFIED PAYROLL

Implemented on March 2, 2009

Revised June 04, 2019

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

Contractor and Sub-Contractor EBO User Certification

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

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

Vetting of Firms and Designated Firm Individuals

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

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

Interim Reporting Requirements

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

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DOCUMENT 00859

CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ‡

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

_____ (Contractor) Date: _____

_____ (Subcontractor) District Approved Subcontractor

Contract No: 127959 Project No. 613116 Federal Aid No.: HIP (BR)-003S(766)X

Location: CUMMINGTON

Project Description: Bridge Preservation, C-21-023 (0jn), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook

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

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

This is not a Federally-aided construction project

Document #

- 00718 – Participation By Minority Or Women's Business Enterprises and SDVOBE†
- 00761 – Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
- 00820 – MA Supplemental Equal Employment Opportunity, Non-Discrimination, and Affirmative Action Program
- 00821 – Electronic Reporting Requirements, Civil Rights Programs, and Certified Payroll
- 00859 – Contractor/Subcontractor Certification Form (this document)
- 00860 – MA Employment Laws
- 00861 – Applicable State Wage Rates in the Contract Proposal**
- B00842 – MA Schedule of Participation By Minority or Women Business Enterprises (M/WBEs)†
- B00843 – MA Letter of Intent – M/WBEs†

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

† Applies only if Subcontractor is a M/WBE; only include these forms for the particular M/WBE Entity

- B00844 - Schedule of Participation By SDVOBE
- B00845 - Letter of Intent – SDVOBE
- B00846 – M/WBE or SDVOBE Joint Check Arrangement Approval Form
- B00847 – Joint Venture Affidavit

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

Document #

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



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

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

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

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

Signed this _____ Day of _____, 20____ Under The Pains And Penalties Of Perjury.

(Print Name and Title)

(Authorized Signature)

PART 2

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

1. This company recognizes that if this is a Federal-Aid Project, then this Contract is covered by the equal employment opportunity laws administered and enforced by the United States Department of Labor (“USDOL”), Office of Federal Contract Compliance Programs (“OFCCP”). By signing below, we acknowledge that this company has certain reporting obligations to the OFCCP, as specified by 41 CFR Part 60-4.2.
2. This company further acknowledges that any contractor with fifty (50) or more employees on a Federal-aid Contract with a value of fifty-thousand (\$50,000) dollars or more must annually file an EEO-1 Report (SF 100) to the EEOC, Joint Reporting Committee, on or before September 30th, each year, as specified by 41 CFR Part 60-1.7a.
3. For more information regarding the federal reporting requirements, please contact the USDOL, OFCCP Regional Office, at 1-646-264-3170 or EEO-1, Joint Reporting Committee at 1-866-286-6440. You may also find guidance at: <http://www.dol.gov/ofccp/TAGuides/consttag.pdf> or <http://www.wdol.gov/dba.aspx#0>.
4. This company has, has not, participated in a previous contract or subcontract subject to the Equal Opportunity clauses set forth in 41 CFR Part 60-4 and Executive Order 11246, and where required, has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance Programs or the EEO Commission all reports due under the applicable filing requirements.
5. This company is in full compliance with applicable Federal and Commonwealth of Massachusetts laws, rules, and regulations and is not currently debarred or disqualified from bidding on or participating in construction contracts in any jurisdiction of the United States. See : <https://www.mass.gov/service-details/contractors-and-vendors-suspended-or-debarred-by-massdot>
6. This company is properly registered and in good standing with the Office of the Secretary of the Commonwealth.

Signed this _____ Day of _____, 20____, Under The Pains And Penalties Of Perjury.

Firm: _____

Address: _____

(Print Name and Title)

Telephone Number: _____

Federal I.D. Number: _____

(Authorized Signature)

Estimated Start Date: _____

Estimated Completion Date: _____

Estimated Dollar Amount: _____

(Date)

DOCUMENT 00860

COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS

Revised February 20, 2019

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

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

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

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

The Prevailing Wage Rate generally includes the following:

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

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

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

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

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

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

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

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

STATEMENT OF COMPLIANCE

Date: _____

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

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

(Contractor or Subcontractor)

on the _____
(MassDOT Project Location and Contract Number)

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

Signature _____

Title _____

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

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

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

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

*** END OF DOCUMENT ***

DOCUMENT 00861

STATE PREVAILING WAGE RATES

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MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

Proposal No. 613116-127959
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: 127959 **City/Town:** CUMMINGTON
Description of Work: CUMMINGTON: Federal Aid Project No. HIP (BR)-003S(766)X Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK), State Rte 9 (Berkshire Trail) over Westfield River and Westfield Brook
Job Location: State Rte 9 (Berkshire Trail) over Westfield River

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The 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: 08/30/2024

Wage Request Number: 20240830-023

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$39.95	\$15.07	\$18.67	\$0.00	\$73.69
	12/01/2024	\$39.95	\$15.07	\$20.17	\$0.00	\$75.19
	01/01/2025	\$39.95	\$15.57	\$20.17	\$0.00	\$75.69
	06/01/2025	\$40.95	\$15.57	\$20.17	\$0.00	\$76.69
	12/01/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$78.30
	01/01/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$78.90
	06/01/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$79.90
	12/01/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$81.64
	01/01/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.02	\$15.07	\$18.67	\$0.00	\$73.76
	12/01/2024	\$40.02	\$15.07	\$20.17	\$0.00	\$75.26
	01/01/2025	\$40.02	\$15.57	\$20.17	\$0.00	\$75.76
	06/01/2025	\$41.02	\$15.57	\$20.17	\$0.00	\$76.76
	12/01/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$78.37
	01/01/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$78.97
	06/01/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$79.97
	12/01/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$81.71
	01/01/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.14	\$15.07	\$18.67	\$0.00	\$73.88
	12/01/2024	\$40.14	\$15.07	\$20.17	\$0.00	\$75.38
	01/01/2025	\$40.14	\$15.57	\$20.17	\$0.00	\$75.88
	06/01/2025	\$41.14	\$15.57	\$20.17	\$0.00	\$76.88
	12/01/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$78.49
	01/01/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$79.09
	06/01/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$80.09
	12/01/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$81.83
	01/01/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.98	\$9.65	\$14.53	\$0.00	\$56.16
	12/01/2024	\$32.79	\$9.65	\$14.53	\$0.00	\$56.97
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$34.06	\$9.65	\$15.60	\$0.00	\$59.31
	12/01/2024	\$35.24	\$9.65	\$15.60	\$0.00	\$60.49
	06/01/2025	\$36.48	\$9.65	\$15.60	\$0.00	\$61.73
	12/01/2025	\$37.71	\$9.65	\$15.60	\$0.00	\$62.96
	06/01/2026	\$39.75	\$9.65	\$15.60	\$0.00	\$65.00
	12/01/2026	\$41.04	\$9.65	\$15.60	\$0.00	\$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	06/01/2024	\$37.62	\$14.50	\$10.55	\$0.00	\$62.67
	12/01/2024	\$38.52	\$14.50	\$10.55	\$0.00	\$63.57
	06/01/2025	\$39.42	\$14.50	\$10.55	\$0.00	\$64.47
	12/01/2025	\$40.32	\$14.50	\$10.55	\$0.00	\$65.37

Proposal No. 613116-127959

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT RAKER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
For apprentice rates see "Apprentice- LABORER"						
BATCH/CEMENT PLANT - ON SITE <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.03	\$13.78	\$15.15	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.98	\$9.65	\$14.53	\$0.00	\$56.16
	12/01/2024	\$32.79	\$9.65	\$14.53	\$0.00	\$56.97
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$34.06	\$9.65	\$15.60	\$0.00	\$59.31
	12/01/2024	\$35.24	\$9.65	\$15.60	\$0.00	\$60.49
	06/01/2025	\$36.48	\$9.65	\$15.60	\$0.00	\$61.73
	12/01/2025	\$37.71	\$9.65	\$15.60	\$0.00	\$62.96
	06/01/2026	\$39.75	\$9.65	\$15.60	\$0.00	\$65.00
	12/01/2026	\$41.04	\$9.65	\$15.60	\$0.00	\$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2024	\$52.06	\$11.49	\$21.46	\$0.00	\$85.01
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	02/01/2025	\$53.36	\$11.49	\$21.46	\$0.00	\$86.31
	08/01/2025	\$55.51	\$11.49	\$21.46	\$0.00	\$88.46
	02/01/2026	\$56.86	\$11.49	\$21.46	\$0.00	\$89.81
	08/01/2026	\$59.06	\$11.49	\$21.46	\$0.00	\$92.01
	02/01/2027	\$60.46	\$11.49	\$21.46	\$0.00	\$93.41

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Springfield/Pittsfield

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$11.49	\$21.46	\$0.00	\$58.98
2	60	\$31.24	\$11.49	\$21.46	\$0.00	\$64.19
3	70	\$36.44	\$11.49	\$21.46	\$0.00	\$69.39
4	80	\$41.65	\$11.49	\$21.46	\$0.00	\$74.60
5	90	\$46.85	\$11.49	\$21.46	\$0.00	\$79.80

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.68	\$11.49	\$21.46	\$0.00	\$59.63
2	60	\$32.02	\$11.49	\$21.46	\$0.00	\$64.97
3	70	\$37.35	\$11.49	\$21.46	\$0.00	\$70.30
4	80	\$42.69	\$11.49	\$21.46	\$0.00	\$75.64
5	90	\$48.02	\$11.49	\$21.46	\$0.00	\$80.97

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL OPERATING <i>ENGINEERS LOCAL 98</i> For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$46.63	\$9.65	\$18.22	\$0.00	\$74.50
	12/01/2024	\$48.10	\$9.65	\$18.22	\$0.00	\$75.97
	06/01/2025	\$49.60	\$9.65	\$18.22	\$0.00	\$77.47
	12/01/2025	\$51.10	\$9.65	\$18.22	\$0.00	\$78.97
	06/01/2026	\$52.65	\$9.65	\$18.22	\$0.00	\$80.52
	12/01/2026	\$54.15	\$9.65	\$18.22	\$0.00	\$82.02
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
	12/01/2024	\$46.95	\$9.65	\$18.22	\$0.00	\$74.82
	06/01/2025	\$48.45	\$9.65	\$18.22	\$0.00	\$76.32
	12/01/2025	\$49.95	\$9.65	\$18.22	\$0.00	\$77.82
	06/01/2026	\$51.50	\$9.65	\$18.22	\$0.00	\$79.37
	12/01/2026	\$53.00	\$9.65	\$18.22	\$0.00	\$80.87
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS LOCAL 336 - HAMPDEN HAMPSHIRE FRANKLIN</i>	03/01/2024	\$41.41	\$7.91	\$18.15	\$0.00	\$67.47
	09/01/2024	\$42.36	\$7.91	\$18.15	\$0.00	\$68.42
	03/01/2025	\$43.26	\$7.91	\$18.15	\$0.00	\$69.32
	09/01/2025	\$44.21	\$7.91	\$18.15	\$0.00	\$70.27
	03/01/2026	\$45.11	\$7.91	\$18.15	\$0.00	\$71.17
	09/01/2026	\$46.06	\$7.91	\$18.15	\$0.00	\$72.12
	03/01/2027	\$46.96	\$7.91	\$18.15	\$0.00	\$73.02

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Local 336 Hampden Hampshire Franklin

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$18.63	\$7.91	\$1.40	\$0.00	\$27.94
2	45	\$18.63	\$7.91	\$1.40	\$0.00	\$27.94
3	55	\$22.78	\$7.91	\$2.76	\$0.00	\$33.45
4	55	\$22.78	\$7.91	\$2.76	\$0.00	\$33.45
5	70	\$28.99	\$7.91	\$15.39	\$0.00	\$52.29
6	70	\$28.99	\$7.91	\$15.39	\$0.00	\$52.29
7	80	\$33.13	\$7.91	\$16.77	\$0.00	\$57.81
8	80	\$33.13	\$7.91	\$16.77	\$0.00	\$57.81

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.06	\$7.91	\$1.40	\$0.00	\$28.37
2	45	\$19.06	\$7.91	\$1.40	\$0.00	\$28.37
3	55	\$23.30	\$7.91	\$2.76	\$0.00	\$33.97
4	55	\$23.30	\$7.91	\$2.76	\$0.00	\$33.97
5	70	\$29.65	\$7.91	\$15.39	\$0.00	\$52.95
6	70	\$29.65	\$7.91	\$15.39	\$0.00	\$52.95
7	80	\$33.89	\$7.91	\$16.77	\$0.00	\$58.57
8	80	\$33.89	\$7.91	\$16.77	\$0.00	\$58.57

Notes:

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	10/01/2023	\$25.55	\$7.02	\$4.80	\$0.00	\$37.37
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2024	\$26.65	\$7.02	\$4.80	\$0.00	\$38.47
	10/01/2025	\$27.75	\$7.02	\$4.80	\$0.00	\$39.57
	10/01/2026	\$28.85	\$7.02	\$4.80	\$0.00	\$40.67

All Aspects of New Wood Frame Work

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 10/01/2023

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

Effective Date - 10/01/2024

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

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

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	01/01/2024	\$44.68	\$12.90	\$18.66	\$1.25	\$77.49
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Apprentice - CEMENT MASONRY/PLASTERING - Springfield/Pittsfield

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.34	\$12.90	\$15.86	\$0.00	\$51.10
2	60	\$26.81	\$12.90	\$18.66	\$1.25	\$59.62
3	65	\$29.04	\$12.90	\$18.66	\$1.25	\$61.85
4	70	\$31.28	\$12.90	\$18.66	\$1.25	\$64.09
5	75	\$33.51	\$12.90	\$18.66	\$1.25	\$66.32
6	80	\$35.74	\$12.90	\$18.66	\$1.25	\$68.55
7	90	\$40.21	\$12.90	\$18.66	\$1.25	\$73.02

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

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
For apprentice rates see "Apprentice- LABORER"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.03	\$13.78	\$15.15	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CRANE OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$43.06	\$13.78	\$15.15	\$0.00	\$71.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 3</i>	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN (Including Core Drilling) <i>ELECTRICIANS LOCAL 7</i>	06/30/2024	\$50.01	\$13.00	\$14.86	\$0.00	\$77.87
	12/29/2024	\$51.06	\$13.25	\$15.06	\$0.00	\$79.37
	06/29/2025	\$52.16	\$13.50	\$15.21	\$0.00	\$80.87
	12/28/2025	\$53.26	\$13.75	\$15.36	\$0.00	\$82.37
	06/28/2026	\$54.41	\$14.00	\$15.46	\$0.00	\$83.87
	01/03/2027	\$55.56	\$14.25	\$15.56	\$0.00	\$85.37

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 7

Effective Date - 06/30/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.00	\$7.20	\$0.60	\$0.00	\$27.80
2	45	\$22.50	\$7.20	\$0.68	\$0.00	\$30.38
3	50	\$25.01	\$13.00	\$7.40	\$0.00	\$45.41
4	55	\$27.51	\$13.00	\$7.48	\$0.00	\$47.99
5	65	\$32.51	\$13.00	\$9.64	\$0.00	\$55.15
6	70	\$35.01	\$13.00	\$11.06	\$0.00	\$59.07

Effective Date - 12/29/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.42	\$7.35	\$0.61	\$0.00	\$28.38
2	45	\$22.98	\$7.35	\$0.69	\$0.00	\$31.02
3	50	\$25.53	\$13.25	\$7.47	\$0.00	\$46.25
4	55	\$28.08	\$13.25	\$7.54	\$0.00	\$48.87
5	65	\$33.19	\$13.25	\$9.74	\$0.00	\$56.18
6	70	\$35.74	\$13.25	\$11.19	\$0.00	\$60.18

Notes:

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

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

ELEVATOR CONSTRUCTOR	01/01/2024	\$61.98	\$16.18	\$20.96	\$0.00	\$99.12
ELEVATOR CONSTRUCTORS LOCAL 41	01/01/2025	\$62.83	\$16.28	\$21.36	\$0.00	\$100.47
	01/01/2026	\$63.68	\$16.38	\$21.76	\$0.00	\$101.82
	01/01/2027	\$64.53	\$16.48	\$22.16	\$0.00	\$103.17

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 41

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.99	\$16.18	\$0.00	\$0.00	\$47.17
2	55	\$34.09	\$16.18	\$20.96	\$0.00	\$71.23
3	65	\$40.29	\$16.18	\$20.96	\$0.00	\$77.43
4	70	\$43.39	\$16.18	\$20.96	\$0.00	\$80.53
5	80	\$49.58	\$16.18	\$20.96	\$0.00	\$86.72

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.42	\$16.28	\$0.00	\$0.00	\$47.70
2	55	\$34.56	\$16.28	\$21.36	\$0.00	\$72.20
3	65	\$40.84	\$16.28	\$21.36	\$0.00	\$78.48
4	70	\$43.98	\$16.28	\$21.36	\$0.00	\$81.62
5	80	\$50.26	\$16.28	\$21.36	\$0.00	\$87.90

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 41</i>	01/01/2024	\$43.39	\$16.18	\$20.96	\$0.00	\$80.53
	01/01/2025	\$43.98	\$16.28	\$21.36	\$0.00	\$81.62
	01/01/2026	\$44.58	\$16.38	\$21.76	\$0.00	\$82.72
	01/01/2027	\$45.17	\$16.48	\$22.16	\$0.00	\$83.81

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & BEAM RAIL ERECTOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.23	\$9.65	\$14.53	\$0.00	\$55.41
	12/01/2024	\$32.04	\$9.65	\$14.53	\$0.00	\$56.22

For apprentice rates see "Apprentice- LABORER"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79

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

FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$18.84	\$4.80	\$4.10	\$0.00	\$27.74
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$21.33	\$4.80	\$4.10	\$0.00	\$30.23
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$22.33	\$4.80	\$4.10	\$0.00	\$31.23

Proposal No. 613116-127959

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 7</i>	06/30/2024	\$50.01	\$13.00	\$14.86	\$0.00	\$77.87
	12/29/2024	\$51.06	\$13.25	\$15.06	\$0.00	\$79.37
	06/29/2025	\$52.16	\$13.50	\$15.21	\$0.00	\$80.87
	12/28/2025	\$53.26	\$13.75	\$15.36	\$0.00	\$82.37
	06/28/2026	\$54.41	\$14.00	\$15.46	\$0.00	\$83.87
	01/03/2027	\$55.56	\$14.25	\$15.56	\$0.00	\$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>/ COMMISSIONING ELECTRICIANS LOCAL 7</i>	06/30/2024	\$50.01	\$13.00	\$14.86	\$0.00	\$77.87
	12/29/2024	\$51.06	\$13.25	\$15.06	\$0.00	\$79.37
	06/29/2025	\$52.16	\$13.50	\$15.21	\$0.00	\$80.87
	12/28/2025	\$53.26	\$13.75	\$15.36	\$0.00	\$82.37
	06/28/2026	\$54.41	\$14.00	\$15.46	\$0.00	\$83.87
	01/03/2027	\$55.56	\$14.25	\$15.56	\$0.00	\$85.37
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.03	\$13.78	\$15.15	\$0.00	\$67.96

Apprentice - OPERATING ENGINEERS - Local 98 Class 3

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.42	\$13.78	\$15.15	\$0.00	\$52.35
2	70	\$27.32	\$13.78	\$15.15	\$0.00	\$56.25
3	80	\$31.22	\$13.78	\$15.15	\$0.00	\$60.15
4	90	\$35.13	\$13.78	\$15.15	\$0.00	\$64.06

Notes:

Steps 1-2 are 1000 hrs.; Steps 3-4 are 2000 hrs.

Apprentice to Journeyworker Ratio:1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$26.51	\$9.65	\$15.60	\$0.00	\$51.76
	12/01/2024	\$26.51	\$9.65	\$15.60	\$0.00	\$51.76
	06/01/2025	\$27.59	\$9.65	\$15.60	\$0.00	\$52.84
	12/01/2025	\$27.59	\$9.65	\$15.60	\$0.00	\$52.84
	06/01/2026	\$28.71	\$9.65	\$15.60	\$0.00	\$53.96
	12/01/2026	\$28.71	\$9.65	\$15.60	\$0.00	\$53.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE III</i>	03/01/2024	\$41.41	\$7.91	\$18.15	\$0.00	\$67.47
	09/01/2024	\$42.36	\$7.91	\$18.15	\$0.00	\$68.42
	03/01/2025	\$43.26	\$7.91	\$18.15	\$0.00	\$69.32
	09/01/2025	\$44.21	\$7.91	\$18.15	\$0.00	\$70.27
	03/01/2026	\$45.11	\$7.91	\$18.15	\$0.00	\$71.17
	09/01/2026	\$46.06	\$7.91	\$18.15	\$0.00	\$72.12
	03/01/2027	\$46.96	\$7.91	\$18.15	\$0.00	\$73.02

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone III

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.71	\$7.31	\$1.38	\$0.00	\$29.40
2	55	\$22.78	\$7.31	\$1.38	\$0.00	\$31.47
3	60	\$24.85	\$7.31	\$2.76	\$0.00	\$34.92
4	65	\$26.92	\$7.31	\$2.76	\$0.00	\$36.99
5	70	\$28.99	\$7.31	\$15.39	\$0.00	\$51.69
6	75	\$31.06	\$7.31	\$15.39	\$0.00	\$53.76
7	80	\$33.13	\$7.31	\$16.77	\$0.00	\$57.21
8	85	\$35.20	\$7.31	\$16.77	\$0.00	\$59.28

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.18	\$7.31	\$1.38	\$0.00	\$29.87
2	55	\$23.30	\$7.31	\$1.38	\$0.00	\$31.99
3	60	\$25.42	\$7.31	\$2.76	\$0.00	\$35.49
4	65	\$27.53	\$7.31	\$2.76	\$0.00	\$37.60
5	70	\$29.65	\$7.31	\$15.39	\$0.00	\$52.35
6	75	\$31.77	\$7.31	\$15.39	\$0.00	\$54.47
7	80	\$33.89	\$7.31	\$16.77	\$0.00	\$57.97
8	85	\$36.01	\$7.31	\$16.77	\$0.00	\$60.09

Notes: Steps are 750 hrs.
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$26.72.24/ 3&4 \$32.11/ 5&6 \$50.75/ 7&8 \$56.14

Apprentice to Journeyworker Ratio:1:1

FORK LIFT <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.25	\$13.78	\$15.15	\$0.00	\$68.18
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATORS/LIGHTING PLANTS <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$35.80	\$13.78	\$15.15	\$0.00	\$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2020	\$39.18	\$10.80	\$10.45	\$0.00	\$60.43

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - GLAZIER - Local 1333						
Effective Date - 06/01/2020						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.59	\$10.80	\$1.80	\$0.00	\$32.19
2	56	\$22.04	\$10.80	\$1.80	\$0.00	\$34.64
3	63	\$24.49	\$10.80	\$2.45	\$0.00	\$37.74
4	69	\$26.94	\$10.80	\$2.45	\$0.00	\$40.19
5	75	\$29.39	\$10.80	\$3.15	\$0.00	\$43.34
6	81	\$31.83	\$10.80	\$3.15	\$0.00	\$45.78
7	88	\$34.28	\$10.80	\$10.45	\$0.00	\$55.53
8	94	\$36.73	\$10.80	\$10.45	\$0.00	\$57.98

Notes:

Apprentice to Journeyworker Ratio:1:3

GRADER/TRENCHING MACHINE/DERRICK <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 63</i>	07/01/2024	\$40.98	\$12.20	\$18.74	\$2.13	\$74.05
	01/01/2025	\$42.23	\$12.20	\$18.74	\$2.13	\$75.30
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 7</i>	06/30/2024	\$50.01	\$13.00	\$14.86	\$0.00	\$77.87
	12/29/2024	\$51.06	\$13.25	\$15.06	\$0.00	\$79.37
	06/29/2025	\$52.16	\$13.50	\$15.21	\$0.00	\$80.87
	12/28/2025	\$53.26	\$13.75	\$15.36	\$0.00	\$82.37
	06/28/2026	\$54.41	\$14.00	\$15.46	\$0.00	\$83.87
	01/03/2027	\$55.56	\$14.25	\$15.56	\$0.00	\$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 63</i>	07/01/2024	\$40.98	\$12.20	\$18.74	\$2.13	\$74.05
	01/01/2025	\$42.23	\$12.20	\$18.74	\$2.13	\$75.30
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING - WATER) <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$34.06	\$9.65	\$15.60	\$0.00	\$59.31
	12/01/2024	\$35.24	\$9.65	\$15.60	\$0.00	\$60.49
	06/01/2025	\$36.48	\$9.65	\$15.60	\$0.00	\$61.73
	12/01/2025	\$37.71	\$9.65	\$15.60	\$0.00	\$62.96
	06/01/2026	\$39.75	\$9.65	\$15.60	\$0.00	\$65.00
	12/01/2026	\$41.04	\$9.65	\$15.60	\$0.00	\$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	09/01/2023	\$42.80	\$14.75	\$19.61	\$0.00	\$77.16
	09/01/2024	\$45.54	\$14.75	\$19.61	\$0.00	\$79.90
	09/01/2025	\$48.27	\$14.75	\$19.61	\$0.00	\$82.63
	09/01/2026	\$51.01	\$14.75	\$19.61	\$0.00	\$85.37

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

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.40	\$14.75	\$14.32	\$0.00	\$50.47
2	60	\$25.68	\$14.75	\$15.37	\$0.00	\$55.80
3	70	\$29.96	\$14.75	\$16.43	\$0.00	\$61.14
4	80	\$34.24	\$14.75	\$17.49	\$0.00	\$66.48

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.77	\$14.75	\$14.32	\$0.00	\$51.84
2	60	\$27.32	\$14.75	\$15.37	\$0.00	\$57.44
3	70	\$31.88	\$14.75	\$16.43	\$0.00	\$63.06
4	80	\$36.43	\$14.75	\$17.49	\$0.00	\$68.67

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)</i>	03/16/2024	\$40.66	\$8.25	\$22.70	\$0.00	\$71.61
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Apprentice - IRONWORKER - Local 7 Springfield

Effective Date - 03/16/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$24.40	\$8.25	\$22.70	\$0.00	\$55.35
2	70	\$28.46	\$8.25	\$22.70	\$0.00	\$59.41
3	75	\$30.50	\$8.25	\$22.70	\$0.00	\$61.45
4	80	\$32.53	\$8.25	\$22.70	\$0.00	\$63.48
5	85	\$34.56	\$8.25	\$22.70	\$0.00	\$65.51
6	90	\$36.59	\$8.25	\$22.70	\$0.00	\$67.54

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47

For apprentice rates see "Apprentice- LABORER"

LABORER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.23	\$9.65	\$14.53	\$0.00	\$55.41
	12/01/2024	\$32.04	\$9.65	\$14.53	\$0.00	\$56.22

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 4 Building and Site

Effective Date - 06/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.74	\$9.65	\$14.53	\$0.00	\$42.92
2	70	\$21.86	\$9.65	\$14.53	\$0.00	\$46.04
3	80	\$24.98	\$9.65	\$14.53	\$0.00	\$49.16
4	90	\$28.11	\$9.65	\$14.53	\$0.00	\$52.29

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.22	\$9.65	\$14.53	\$0.00	\$43.40
2	70	\$22.43	\$9.65	\$14.53	\$0.00	\$46.61
3	80	\$25.63	\$9.65	\$14.53	\$0.00	\$49.81
4	90	\$28.84	\$9.65	\$14.53	\$0.00	\$53.02

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	06/01/2024	\$33.31	\$9.65	\$15.60	\$0.00	\$58.56
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/01/2024	\$34.49	\$9.65	\$15.60	\$0.00	\$59.74
	06/01/2025	\$35.73	\$9.65	\$15.60	\$0.00	\$60.98
	12/01/2025	\$36.96	\$9.65	\$15.60	\$0.00	\$62.21
	06/01/2026	\$39.00	\$9.65	\$15.60	\$0.00	\$64.25
	12/01/2026	\$40.29	\$9.65	\$15.60	\$0.00	\$65.54

Apprentice - LABORER (Heavy and Highway) - Zone 4

Effective Date - 06/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.99	\$9.65	\$15.60	\$0.00	\$45.24
2	70	\$23.32	\$9.65	\$15.60	\$0.00	\$48.57
3	80	\$26.65	\$9.65	\$15.60	\$0.00	\$51.90
4	90	\$29.98	\$9.65	\$15.60	\$0.00	\$55.23

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.69	\$9.65	\$15.60	\$0.00	\$45.94
2	70	\$24.14	\$9.65	\$15.60	\$0.00	\$49.39
3	80	\$27.59	\$9.65	\$15.60	\$0.00	\$52.84
4	90	\$31.04	\$9.65	\$15.60	\$0.00	\$56.29

Notes:

Apprentice to Journeyworker Ratio:1:5

Proposal No. 613116-127959

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.23	\$9.65	\$14.53	\$0.00	\$55.41
	12/01/2024	\$32.04	\$9.65	\$14.53	\$0.00	\$56.22
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.23	\$9.65	\$14.53	\$0.00	\$55.41
	12/01/2024	\$32.04	\$9.65	\$14.53	\$0.00	\$56.22
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$30.89	\$9.65	\$14.41	\$0.00	\$54.95
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$33.23	\$9.65	\$14.53	\$0.00	\$57.41
	12/01/2024	\$34.04	\$9.65	\$14.53	\$0.00	\$58.22
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.23	\$9.65	\$14.53	\$0.00	\$55.41
	12/01/2024	\$32.04	\$9.65	\$14.53	\$0.00	\$56.22
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.23	\$9.65	\$14.53	\$0.00	\$55.41
	12/01/2024	\$32.04	\$9.65	\$14.53	\$0.00	\$56.22
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 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE</i>	08/01/2024	\$43.05	\$11.49	\$20.53	\$0.00	\$75.07
	02/01/2025	\$44.90	\$11.49	\$20.53	\$0.00	\$76.92
	08/01/2025	\$45.81	\$11.49	\$20.53	\$0.00	\$77.83
	02/01/2026	\$46.89	\$11.49	\$20.53	\$0.00	\$78.91
	08/01/2026	\$48.65	\$11.49	\$20.53	\$0.00	\$80.67
	02/01/2027	\$49.77	\$11.49	\$20.53	\$0.00	\$81.79

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MARBLE-TILE FINISHER-Local 3 Marble/Tile (Spr/Pitt)

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.53	\$11.49	\$20.53	\$0.00	\$53.55
2	60	\$25.83	\$11.49	\$20.53	\$0.00	\$57.85
3	70	\$30.14	\$11.49	\$20.53	\$0.00	\$62.16
4	80	\$34.44	\$11.49	\$20.53	\$0.00	\$66.46
5	90	\$38.75	\$11.49	\$20.53	\$0.00	\$70.77

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.45	\$11.49	\$20.53	\$0.00	\$54.47
2	60	\$26.94	\$11.49	\$20.53	\$0.00	\$58.96
3	70	\$31.43	\$11.49	\$20.53	\$0.00	\$63.45
4	80	\$35.92	\$11.49	\$20.53	\$0.00	\$67.94
5	90	\$40.41	\$11.49	\$20.53	\$0.00	\$72.43

Notes:

Apprentice to Journeyworker Ratio:1:5

MARBLE MASON/TILE LAYER(SP/PT)SeeBrick
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE

See "BRICK/STONE/ARTIFICIAL MASONRY(INCL.MASONRY WATERPROOFING)

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 98	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANIC/WELDER/BOOM TRUCK OPERATING ENGINEERS LOCAL 98	12/01/2023	\$39.03	\$13.78	\$15.15	\$0.00	\$67.96
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 - Zone 3	01/01/2024	\$41.20	\$10.08	\$21.22	\$0.00	\$72.50
	01/06/2025	\$43.48	\$10.08	\$21.22	\$0.00	\$74.78
	01/05/2026	\$45.76	\$10.08	\$21.22	\$0.00	\$77.06

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MILLWRIGHT - Local 1121 Zone 3

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.66	\$10.08	\$5.36	\$0.00	\$38.10
2	65	\$26.78	\$10.08	\$6.34	\$0.00	\$43.20
3	75	\$30.90	\$10.08	\$18.78	\$0.00	\$59.76
4	85	\$35.02	\$10.08	\$19.76	\$0.00	\$64.86

Effective Date - 01/06/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.91	\$10.08	\$5.36	\$0.00	\$39.35
2	65	\$28.26	\$10.08	\$6.34	\$0.00	\$44.68
3	75	\$32.61	\$10.08	\$18.78	\$0.00	\$61.47
4	85	\$36.96	\$10.08	\$19.76	\$0.00	\$66.80

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 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
For apprentice rates see "Apprentice- LABORER"	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
OILER <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$35.02	\$13.78	\$15.15	\$0.00	\$63.95
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS VI <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$32.74	\$13.78	\$15.15	\$0.00	\$61.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 3</i>	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2024	\$40.03	\$9.65	\$19.90	\$0.00	\$69.58
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	01/01/2025	\$41.23	\$9.65	\$19.90	\$0.00	\$70.78

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - Spray/Sandblast - New

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.02	\$9.95	\$0.00	\$0.00	\$29.97
2	55	\$22.02	\$9.95	\$4.43	\$0.00	\$36.40
3	60	\$24.02	\$9.95	\$4.83	\$0.00	\$38.80
4	65	\$26.02	\$9.95	\$5.23	\$0.00	\$41.20
5	70	\$28.02	\$9.95	\$17.49	\$0.00	\$55.46
6	75	\$30.02	\$9.95	\$17.89	\$0.00	\$57.86
7	80	\$32.02	\$9.95	\$18.29	\$0.00	\$60.26
8	90	\$36.03	\$9.95	\$19.10	\$0.00	\$65.08

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.62	\$9.95	\$0.00	\$0.00	\$30.57
2	55	\$22.68	\$9.95	\$4.43	\$0.00	\$37.06
3	60	\$24.74	\$9.95	\$4.83	\$0.00	\$39.52
4	65	\$26.80	\$9.95	\$5.23	\$0.00	\$41.98
5	70	\$28.86	\$9.95	\$17.49	\$0.00	\$56.30
6	75	\$30.92	\$9.95	\$17.89	\$0.00	\$58.76
7	80	\$32.98	\$9.95	\$18.29	\$0.00	\$61.22
8	90	\$37.11	\$9.95	\$19.10	\$0.00	\$66.16

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2024	\$37.35	\$9.95	\$19.90	\$0.00	\$67.20
PAINTERS LOCAL 35 - ZONE 3	01/01/2025	\$38.55	\$9.95	\$19.90	\$0.00	\$68.40

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - Spray/Sandblast - Repaint

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.68	\$9.95	\$0.00	\$0.00	\$28.63
2	55	\$20.54	\$9.95	\$4.43	\$0.00	\$34.92
3	60	\$22.41	\$9.95	\$4.83	\$0.00	\$37.19
4	65	\$24.28	\$9.95	\$5.23	\$0.00	\$39.46
5	70	\$26.15	\$9.95	\$17.49	\$0.00	\$53.59
6	75	\$28.01	\$9.95	\$17.89	\$0.00	\$55.85
7	80	\$29.88	\$9.95	\$18.29	\$0.00	\$58.12
8	90	\$33.62	\$9.95	\$19.10	\$0.00	\$62.67

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.28	\$9.95	\$0.00	\$0.00	\$29.23
2	55	\$21.20	\$9.95	\$4.43	\$0.00	\$35.58
3	60	\$23.13	\$9.95	\$4.83	\$0.00	\$37.91
4	65	\$25.06	\$9.95	\$5.23	\$0.00	\$40.24
5	70	\$26.99	\$9.95	\$17.49	\$0.00	\$54.43
6	75	\$28.91	\$9.95	\$17.89	\$0.00	\$56.75
7	80	\$30.84	\$9.95	\$18.29	\$0.00	\$59.08
8	90	\$34.70	\$9.95	\$19.10	\$0.00	\$63.75

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	07/01/2024	\$38.63	\$9.95	\$19.90	\$0.00	\$68.48
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	01/01/2025	\$39.83	\$9.95	\$19.90	\$0.00	\$69.68

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 3 - BRUSH NEW

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.32	\$9.95	\$0.00	\$0.00	\$29.27
2	55	\$21.25	\$9.95	\$4.43	\$0.00	\$35.63
3	60	\$23.18	\$9.95	\$4.83	\$0.00	\$37.96
4	65	\$25.11	\$9.95	\$5.23	\$0.00	\$40.29
5	70	\$27.04	\$9.95	\$17.49	\$0.00	\$54.48
6	75	\$28.97	\$9.95	\$17.89	\$0.00	\$56.81
7	80	\$30.90	\$9.95	\$18.29	\$0.00	\$59.14
8	90	\$34.77	\$9.95	\$19.10	\$0.00	\$63.82

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.92	\$9.95	\$0.00	\$0.00	\$29.87
2	55	\$21.91	\$9.95	\$4.43	\$0.00	\$36.29
3	60	\$23.90	\$9.95	\$4.83	\$0.00	\$38.68
4	65	\$25.89	\$9.95	\$5.23	\$0.00	\$41.07
5	70	\$27.88	\$9.95	\$17.49	\$0.00	\$55.32
6	75	\$29.87	\$9.95	\$17.89	\$0.00	\$57.71
7	80	\$31.86	\$9.95	\$18.29	\$0.00	\$60.10
8	90	\$35.85	\$9.95	\$19.10	\$0.00	\$64.90

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2024	\$35.95	\$9.95	\$19.90	\$0.00	\$65.80
PAINTERS LOCAL 35 - ZONE 3	01/01/2025	\$37.15	\$9.95	\$19.90	\$0.00	\$67.00

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - BRUSH REPAINT

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.98	\$9.95	\$0.00	\$0.00	\$27.93
2	55	\$19.77	\$9.95	\$4.43	\$0.00	\$34.15
3	60	\$21.57	\$9.95	\$4.83	\$0.00	\$36.35
4	65	\$23.37	\$9.95	\$5.23	\$0.00	\$38.55
5	70	\$25.17	\$9.95	\$17.49	\$0.00	\$52.61
6	75	\$26.96	\$9.95	\$17.89	\$0.00	\$54.80
7	80	\$28.76	\$9.95	\$18.29	\$0.00	\$57.00
8	90	\$32.36	\$9.95	\$19.10	\$0.00	\$61.41

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.58	\$9.95	\$0.00	\$0.00	\$28.53
2	55	\$20.43	\$9.95	\$4.43	\$0.00	\$34.81
3	60	\$22.29	\$9.95	\$4.83	\$0.00	\$37.07
4	65	\$24.15	\$9.95	\$5.23	\$0.00	\$39.33
5	70	\$26.01	\$9.95	\$17.49	\$0.00	\$53.45
6	75	\$27.86	\$9.95	\$17.89	\$0.00	\$55.70
7	80	\$29.72	\$9.95	\$18.29	\$0.00	\$57.96
8	90	\$33.44	\$9.95	\$19.10	\$0.00	\$62.49

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	06/01/2024	\$33.31	\$9.65	\$15.60	\$0.00	\$58.56
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/01/2024	\$34.49	\$9.65	\$15.60	\$0.00	\$59.74
	06/01/2025	\$35.73	\$9.65	\$15.60	\$0.00	\$60.98
	12/01/2025	\$36.96	\$9.65	\$15.60	\$0.00	\$62.21
	06/01/2026	\$39.00	\$9.65	\$15.60	\$0.00	\$64.25
	12/01/2026	\$40.29	\$9.65	\$15.60	\$0.00	\$65.54

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

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$43.53	\$9.40	\$23.12	\$0.00	\$76.05
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$43.53	\$9.40	\$23.12	\$0.00	\$76.05

Apprentice - PILE DRIVER - Local 56 Zone 3

Effective Date - 08/01/2020

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

Notes: Apprentice wages shall be no less than the following Steps;
(Same as set in Zone 1)
1\$57.06/2\$61.96/3\$66.87/4\$69.32/5\$71.78/6\$71.78/7\$76.68/8\$76.68

Apprentice to Journeyworker Ratio:1:5

PIPELAYER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i> For apprentice rates see "Apprentice- LABORER"	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i> For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79
PLUMBER & PIPEFITTER <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86

Apprentice - PLUMBER/PIPEFITTER - Local 104

Effective Date - 03/17/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.14	\$9.55	\$10.10	\$0.00	\$41.79
2	50	\$24.61	\$9.55	\$10.10	\$0.00	\$44.26
3	55	\$27.07	\$9.55	\$10.10	\$0.00	\$46.72
4	60	\$29.53	\$9.55	\$10.10	\$0.00	\$49.18
5	65	\$31.99	\$9.55	\$10.10	\$0.00	\$51.64
6	70	\$34.45	\$9.55	\$10.10	\$0.00	\$54.10
7	75	\$36.91	\$9.55	\$10.10	\$0.00	\$56.56
8	80	\$39.37	\$9.55	\$10.10	\$0.00	\$59.02
9	80	\$39.37	\$9.55	\$17.10	\$0.00	\$66.02
10	80	\$39.37	\$9.55	\$17.10	\$0.00	\$66.02

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

Apprentice to Journeyworker Ratio:**

Proposal No. 613116-127959

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$32.23	\$9.65	\$14.53	\$0.00	\$56.41
	12/01/2024	\$33.04	\$9.65	\$14.53	\$0.00	\$57.22
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$34.72	\$9.65	\$15.19	\$0.00	\$59.56
	12/01/2024	\$35.90	\$9.65	\$15.19	\$0.00	\$60.74
	06/01/2025	\$37.14	\$9.65	\$15.19	\$0.00	\$61.98
	12/01/2025	\$38.37	\$9.65	\$15.19	\$0.00	\$63.21
	06/01/2026	\$40.41	\$9.65	\$15.19	\$0.00	\$65.25
	12/01/2026	\$41.70	\$9.65	\$15.19	\$0.00	\$66.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.03	\$13.78	\$15.15	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 404 - Construction Service (Northampton)</i>	05/01/2024	\$26.14	\$11.82	\$7.25	\$0.00	\$45.21
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	06/01/2024	\$31.48	\$9.65	\$14.53	\$0.00	\$55.66
	12/01/2024	\$32.29	\$9.65	\$14.53	\$0.00	\$56.47
For apprentice rates see "Apprentice- LABORER"						
ROLLER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$38.42	\$13.78	\$15.15	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Coal tar pitch) <i>ROOFERS LOCAL 248</i>	07/16/2023	\$38.91	\$10.35	\$18.00	\$0.00	\$67.26
For apprentice rates see "Apprentice- ROOFER"						
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg) <i>ROOFERS LOCAL 248</i>	07/16/2023	\$38.41	\$10.35	\$18.00	\$0.00	\$66.76

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ROOFER - Local 248						
Effective Date - 07/16/2023						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.05	\$10.35	\$0.00	\$0.00	\$33.40
2	65	\$24.97	\$10.35	\$18.00	\$0.00	\$53.32
3	70	\$26.89	\$10.35	\$18.00	\$0.00	\$55.24
4	75	\$28.81	\$10.35	\$18.00	\$0.00	\$57.16
5	80	\$30.73	\$10.35	\$18.00	\$0.00	\$59.08
6	85	\$32.65	\$10.35	\$18.00	\$0.00	\$61.00
7	90	\$34.57	\$10.35	\$18.00	\$0.00	\$62.92
8	95	\$36.49	\$10.35	\$18.00	\$0.00	\$64.84

Notes:
Steps are 750 hrs.Roofeer(Tear Off)1:1; Same as above

Apprentice to Journeyworker Ratio:1:3

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 248</i>	07/16/2023	\$38.91	\$10.35	\$18.00	\$0.00	\$67.26
For apprentice rates see "Apprentice- ROOFER"						
SCRAPER <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$39.03	\$13.78	\$15.15	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$38.42	\$13.78	\$15.15	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-PROPELLED POWER BROOM <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$35.80	\$13.78	\$15.15	\$0.00	\$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 63</i>	07/01/2024	\$40.98	\$12.20	\$18.74	\$2.13	\$74.05
	01/01/2025	\$42.23	\$12.20	\$18.74	\$2.13	\$75.30

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 63

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$18.44	\$5.49	\$4.86	\$0.85	\$29.64
2	50	\$20.49	\$6.10	\$5.40	\$0.94	\$32.93
3	55	\$22.54	\$6.71	\$9.71	\$1.15	\$40.11
4	60	\$24.59	\$7.32	\$9.71	\$1.23	\$42.85
5	65	\$26.64	\$7.93	\$9.71	\$1.31	\$45.59
6	70	\$28.69	\$8.54	\$9.71	\$1.39	\$48.33
7	75	\$30.74	\$9.15	\$9.71	\$1.47	\$51.07
8	80	\$32.78	\$9.76	\$17.66	\$1.78	\$61.98
9	85	\$34.83	\$10.37	\$17.66	\$1.86	\$64.72
10	90	\$36.88	\$10.98	\$17.66	\$1.94	\$67.46

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.00	\$5.49	\$4.86	\$0.85	\$30.20
2	50	\$21.12	\$6.10	\$5.40	\$0.94	\$33.56
3	55	\$23.23	\$6.71	\$9.71	\$1.15	\$40.80
4	60	\$25.34	\$7.32	\$9.71	\$1.23	\$43.60
5	65	\$27.45	\$7.93	\$9.71	\$1.31	\$46.40
6	70	\$29.56	\$8.54	\$9.71	\$1.39	\$49.20
7	75	\$31.67	\$9.15	\$9.71	\$1.47	\$52.00
8	80	\$33.78	\$9.76	\$17.66	\$1.78	\$62.98
9	85	\$35.90	\$10.37	\$17.66	\$1.86	\$65.79
10	90	\$38.01	\$10.98	\$17.66	\$1.94	\$68.59

Notes:

Apprentice to Journeyworker Ratio:1:3

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.53	\$15.07	\$18.67	\$0.00	\$74.27
	12/01/2024	\$40.53	\$15.07	\$20.17	\$0.00	\$75.77
	01/01/2025	\$40.53	\$15.57	\$20.17	\$0.00	\$76.27
	06/01/2025	\$41.53	\$15.57	\$20.17	\$0.00	\$77.27
	12/01/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$78.88
	01/01/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$79.48
	06/01/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$80.48
	12/01/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$82.22
	01/01/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$82.82
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 669</i>	04/01/2023	\$47.43	\$11.45	\$16.61	\$0.00	\$75.49

Apprentice - SPRINKLER FITTER - Local 669

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.34	\$8.22	\$0.00	\$0.00	\$29.56
2	50	\$23.72	\$8.22	\$0.00	\$0.00	\$31.94
3	55	\$26.09	\$11.45	\$7.20	\$0.00	\$44.74
4	60	\$28.46	\$11.45	\$8.35	\$0.00	\$48.26
5	65	\$30.83	\$11.45	\$8.35	\$0.00	\$50.63
6	70	\$33.20	\$11.45	\$8.60	\$0.00	\$53.25
7	75	\$35.57	\$11.45	\$8.60	\$0.00	\$55.62
8	80	\$37.94	\$11.45	\$8.60	\$0.00	\$57.99
9	85	\$40.32	\$11.45	\$8.60	\$0.00	\$60.37
10	90	\$42.69	\$11.45	\$8.60	\$0.00	\$62.74

Notes:

Apprentice to Journeyworker Ratio:1:1

TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 7</i>	06/30/2024	\$50.01	\$13.00	\$14.86	\$0.00	\$77.87
	12/29/2024	\$51.06	\$13.25	\$15.06	\$0.00	\$79.37
	06/29/2025	\$52.16	\$13.50	\$15.21	\$0.00	\$80.87
	12/28/2025	\$53.26	\$13.75	\$15.36	\$0.00	\$82.37
	06/28/2026	\$54.41	\$14.00	\$15.46	\$0.00	\$83.87
	01/03/2027	\$55.56	\$14.25	\$15.56	\$0.00	\$85.37

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 7

Effective Date - 06/30/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.00	\$7.20	\$0.60	\$0.00	\$27.80
2	45	\$22.50	\$7.20	\$0.68	\$0.00	\$30.38
3	50	\$25.01	\$13.00	\$7.40	\$0.00	\$45.41
4	55	\$27.51	\$13.00	\$7.48	\$0.00	\$47.99
5	65	\$32.51	\$13.00	\$9.64	\$0.00	\$55.15
6	70	\$35.01	\$13.00	\$11.06	\$0.00	\$59.07

Effective Date - 12/29/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.42	\$7.35	\$0.61	\$0.00	\$28.38
2	45	\$22.98	\$7.35	\$0.69	\$0.00	\$31.02
3	50	\$25.53	\$13.25	\$7.47	\$0.00	\$46.25
4	55	\$28.08	\$13.25	\$7.54	\$0.00	\$48.87
5	65	\$33.19	\$13.25	\$9.74	\$0.00	\$56.18
6	70	\$35.74	\$13.25	\$11.19	\$0.00	\$60.18

Notes:

Steps are 800 hours

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/10/2026	\$68.24	\$11.49	\$23.59	\$0.00	\$103.32
	08/01/2026	\$70.44	\$11.49	\$23.59	\$0.00	\$105.52
	02/01/2027	\$71.84	\$11.49	\$23.59	\$0.00	\$106.92

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER-Local 3 Marble/Tile (Spr/Ptt)

Effective Date - 08/01/2024

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

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

Notes:

Apprentice to Journeyworker Ratio:1:5

TERRAZZO MECHANIC	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO MECH - Local 3 Marble/Tile (Spr/Pitt)

Effective Date - 08/01/2024

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

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

Notes:

Apprentice to Journeyworker Ratio:1:5

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

TRACTORS <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2023	\$38.42	\$13.78	\$15.15	\$0.00	\$67.35
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.82	\$15.07	\$18.67	\$0.00	\$74.56
	12/01/2024	\$40.82	\$15.07	\$20.17	\$0.00	\$76.06
	01/01/2025	\$40.82	\$15.57	\$20.17	\$0.00	\$76.56
	06/01/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$77.56
	12/01/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$79.17
	01/01/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$79.77
	06/01/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$80.77
	12/01/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$82.51
	01/01/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$83.11
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$57.71	\$9.65	\$19.00	\$0.00	\$86.36
	12/01/2024	\$59.18	\$9.65	\$19.00	\$0.00	\$87.83
	06/01/2025	\$60.68	\$9.65	\$19.00	\$0.00	\$89.33
	12/01/2025	\$62.18	\$9.65	\$19.00	\$0.00	\$90.83
	06/01/2026	\$63.73	\$9.65	\$19.00	\$0.00	\$92.38
	12/01/2026	\$65.23	\$9.65	\$19.00	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$59.71	\$9.65	\$19.00	\$0.00	\$88.36
	12/01/2024	\$61.18	\$9.65	\$19.00	\$0.00	\$89.83
	06/01/2025	\$62.68	\$9.65	\$19.00	\$0.00	\$91.33
	12/01/2025	\$64.18	\$9.65	\$19.00	\$0.00	\$92.83
	06/01/2026	\$65.73	\$9.65	\$19.00	\$0.00	\$94.38
	12/01/2026	\$67.23	\$9.65	\$19.00	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$49.78	\$9.65	\$19.00	\$0.00	\$78.43
	12/01/2024	\$51.25	\$9.65	\$19.00	\$0.00	\$79.90
	06/01/2025	\$52.75	\$9.65	\$19.00	\$0.00	\$81.40
	12/01/2025	\$54.25	\$9.65	\$19.00	\$0.00	\$82.90
	06/01/2026	\$55.80	\$9.65	\$19.00	\$0.00	\$84.45
	12/01/2026	\$57.30	\$9.65	\$19.00	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$51.78	\$9.65	\$19.00	\$0.00	\$80.43
	12/01/2024	\$53.25	\$9.65	\$19.00	\$0.00	\$81.90
	06/01/2025	\$54.75	\$9.65	\$19.00	\$0.00	\$83.40
	12/01/2025	\$56.25	\$9.65	\$19.00	\$0.00	\$84.90
	06/01/2026	\$57.80	\$9.65	\$19.00	\$0.00	\$86.45
	12/01/2026	\$59.30	\$9.65	\$19.00	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	06/01/2024	\$33.56	\$9.65	\$15.60	\$0.00	\$58.81
	12/01/2024	\$34.74	\$9.65	\$15.60	\$0.00	\$59.99
	06/01/2025	\$35.98	\$9.65	\$15.60	\$0.00	\$61.23
	12/01/2025	\$37.21	\$9.65	\$15.60	\$0.00	\$62.46
	06/01/2026	\$39.25	\$9.65	\$15.60	\$0.00	\$64.50
	12/01/2026	\$40.54	\$9.65	\$15.60	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Marine Drilling						
BLASTER <i>MARINE DRILLING</i>	01/01/2018	\$41.82	\$7.63	\$3.60	\$0.00	\$53.05
BOAT CAPTAIN <i>MARINE DRILLING</i>	01/01/2018	\$33.87	\$7.63	\$3.30	\$0.00	\$44.80
BOAT CAPTAIN / Over 1,000 hp <i>MARINE DRILLING</i>	01/01/2018	\$38.06	\$7.63	\$3.60	\$0.00	\$49.29
CORE DRILLER <i>MARINE DRILLING</i>	01/01/2018	\$31.43	\$7.63	\$2.90	\$0.00	\$41.96
CORE DRILLER HELPER <i>MARINE DRILLING</i>	01/01/2018	\$28.47	\$7.63	\$3.00	\$0.00	\$39.10
DRILLER <i>MARINE DRILLING</i>	01/01/2018	\$39.70	\$7.63	\$3.60	\$0.00	\$50.93
ENGINEER <i>MARINE DRILLING</i>	01/01/2018	\$39.69	\$7.63	\$3.50	\$0.00	\$50.82
HELPER <i>MARINE DRILLING</i>	01/01/2018	\$34.24	\$7.63	\$3.00	\$0.00	\$44.87
MACHINIST <i>MARINE DRILLING</i>	01/01/2018	\$38.88	\$7.63	\$3.30	\$0.00	\$49.81
OILER - MARINE DRILLING <i>MARINE DRILLING</i>	01/01/2018	\$34.24	\$7.63	\$3.00	\$0.00	\$44.87
TUG DECKHAND <i>MARINE DRILLING</i>	01/01/2018	\$27.61	\$7.63	\$3.00	\$0.00	\$38.24
WELDER <i>MARINE DRILLING</i>	01/01/2018	\$38.88	\$7.63	\$3.30	\$0.00	\$49.81
Op Eng Marine (Dredging Work)						
BOAT OPERATOR <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$29.26	\$7.63	\$3.30	\$0.00	\$40.19
CERTIFIED WELDER <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$31.09	\$7.63	\$3.60	\$0.00	\$42.32
CHIEF WELDER/ CHIEF MATE <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
DERRICK / SPIDER / SPILLBARGE OPERATOR <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
DRAG BARGE OPERATOR / WELDER / MATE <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$30.24	\$7.63	\$3.30	\$0.00	\$41.17
ENGINEER / ELECTRICIAN <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
LICENSED BOAT OPERATOR <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LICENSED TUG OPERATOR OVER 1000HP <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$38.18	\$7.63	\$3.60	\$0.00	\$49.41
MAINTENANCE ENGINEER <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.03	\$7.63	\$3.60	\$0.00	\$44.26
OILER - MARINE DIVISION <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$24.30	\$7.63	\$3.00	\$0.00	\$34.93
OPERATOR / LEVERMAN <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$38.18	\$7.63	\$3.60	\$0.00	\$49.41
RODMAN / SCOWMAN <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$24.30	\$7.63	\$3.00	\$0.00	\$34.93
SHOREMAN / DECKHAND <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$24.30	\$7.63	\$3.00	\$0.00	\$34.93

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)

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

** Multiple ratios are listed in the comment field.

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

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

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STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT
SPECIFICATIONS

(EXECUTIVE ORDER 11246)

Revised April 9, 2019

1. As used in these specifications:
 - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted:
 - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.
 - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
 - d. "Minority" includes:
 - (i) Black (all persons having origins in any of the black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$ 10,000 the provisions of the specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
 - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
 - d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
 - e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
 - f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
 - g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
 - h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

- i. Direct its recruitment efforts both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
 - j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
 - k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
 - l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
 - m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
 - n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
 9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
 10. The Contractor shall not use the goals and timetables of affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
 11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as many be required by the Government and keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

APPENDIX A

The following goals and timetables for female utilization shall be included in all Federal and federally assisted construction contracts and subcontracts in excess of \$ 10,000. The goals are applicable to the Contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal or federally-assisted construction contract or subcontract.

Area covered: Goal for Women apply nationwide

Goals and Timetables

Timetable

Goals (percent)

From Apr. 1, 1980 until further notice

6.9

APPENDIX B-80

Until further notice, the following goals for minority utilization in each construction craft and trade shall included in all Federal or federally assisted construction contracts and subcontracts in excess of \$ 10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor's total on- site construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally assisted or nonfederally related project, contract or subcontract.

Construction contractors participating in an approved Hometown Plan (see 41 CFR 6-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in this Appendix B-80.

Economic Areas

<u>STATE:</u>	<u>Goals (percent)</u>
MASSACHUSETTS	
004 Boston MA:	
SMSA Counties:	
1123 Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	4.0
MA Essex, MA Middlesex, MA Norfolk, MA Plymouth, MA Suffolk, NH Rockingham.	
5403 Fall River- New Bedford MA, Bristol	1.6
9243 Worcester-Fitchburg-Leominster, MA	1.6
6323 Springfield-Chicopee-Holyoke MA-CT MA Hampden, MA Hampshire	4.8
Non-SMSA Counties: MA Barnstable, MA Dukes, MA Nantucket	3.6
Non-SMSA Counties: MA Franklin	5.9

APPENDIX C

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

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

APPENDIX D

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

PERTINENT NON-DISCRIMINATION AUTHORITIES:

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

*** END OF DOCUMENT ***

DOCUMENT 00880

Revised January 12, 2022



DEPARTMENT OF LABOR

Employment Standards Administration

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

"General Decision Number: MA20240016 09/13/2024

Superseded General Decision Number: MA20230016

State: Massachusetts

Construction Type: Highway

County: Berkshire County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

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

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

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

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

Modification Number	Publication Date
0	01/05/2024
1	01/19/2024
2	03/01/2024
3	05/31/2024
4	06/21/2024
5	09/06/2024
6	09/13/2024

ENGI0004-019 06/01/2024

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

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

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

ENGI0098-010 06/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1.....	\$ 41.23	30.58+A
Group 2.....	\$ 40.92	30.58+A
Group 4.....	\$ 37.47	30.58+A

Footnote:

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

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

IRON0007-027 03/16/2024

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL)	\$ 39.51	32.98

LABO0473-007 12/01/2023

	Rates	Fringes
LABORER (Common or General)	\$ 30.41	24.98
TRAFFIC CONTROL (Flagger)	\$ 25.46	24.98

LABO0596-005 12/01/2021

	Rates	Fringes
LABORER (Form Work Only)	\$ 32.50	23.96

* PAIN0035-023 07/01/2024

	Rates	Fringes
PAINTER (Steel)	\$ 56.76	36.00

SUMA2014-006 01/11/2017

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

PAINTER: Spray (Linestriping)....	\$ 38.30	17.43
TRAFFIC CONTROL:		
Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 43.73	15.06
TRUCK DRIVER: Concrete Truck....	\$ 33.69	15.79
TRUCK DRIVER: Dump Truck.....	\$ 38.94	12.00
TRUCK DRIVER: Flatbed Truck.....	\$ 48.53	0.00

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

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

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

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

a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION"

"General Decision Number: MA20240010 09/13/2024

Superseded General Decision Number: MA20230010

State: Massachusetts

Construction Types: Heavy (Heavy and Marine)

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

HEAVY CONSTRUCTION PROJECTS; AND MARINE 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>	<ul style="list-style-type: none"> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
<p> 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>	<ul style="list-style-type: none"> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

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>.

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6	07/05/2024
7	09/06/2024
8	09/13/2024

BOIL0029-001 01/01/2021

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

BRMA0001-005 08/01/2023

SPRINGFIELD CHAPTER

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

BRMA0001-007 08/01/2023

SPRINGFIELD/PITTSFIELD CHAPTER
BERKSHIRE COUNTY

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

CARP0056-004 08/01/2022

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

CARP0056-009 08/01/2020

	Rates	Fringes
PILEDRIVERMAN.....	\$ 49.07	35.57

CARP0336-005 03/01/2024

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

	Rates	Fringes
CARPENTER.....	\$ 40.96	27.39

CARP0336-010 03/01/2024

BERKSHIRE

	Rates	Fringes
CARPENTER.....	\$ 40.96	27.39

CARP0336-012 03/01/2024

HAMPDEN; HAMPSHIRE; AND FRANKLIN (Remainder of County)

	Rates	Fringes
CARPENTER.....	\$ 40.96	27.39

CARP1121-004 01/01/2024

	Rates	Fringes
MILLWRIGHT.....	\$ 41.20	32.99

ELEC0007-002 12/31/2023

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

	Rates	Fringes
ELECTRICIAN.....	\$ 49.01	28.21

ELEC0007-003 12/31/2023

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

	Rates	Fringes
ELECTRICIAN.....	\$ 49.01	28.21

ENGI0098-007 06/01/2024

	Rates	Fringes
Power equipment operators:		
Group 1.....	\$ 41.23	30.58+A
Group 2.....	\$ 40.92	30.58+A
Group 3.....	\$ 40.70	30.58+A
Group 4.....	\$ 37.47	30.58+A
Group 5.....	\$ 36.35	30.58+A
Group 6.....	\$ 34.41	30.58+A
Group 7.....	\$ 52.73	30.58+A
Group 8.....	\$ 42.41	30.58+A
Group 9.....	\$ 42.72	30.58+A
Group 10.....	\$ 44.73	30.58+A
Group 11.....	\$ 45.73	30.58+A
Group 12.....	\$ 47.23	30.58+A
Group 13.....	\$ 48.23	30.58+A
Group 14.....	\$ 49.23	30.58+A
Group 15.....	\$ 50.73	30.58+A

HAZARDOUS WASTE PREMIUM \$2.00

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

Group 8 and Group 9 are per day wages.

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

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

Group 2: Rotary drill with mounted compressor; compressor house (3 to 6 compressors); rock and earth boring machines (excluding McCarthy and similar drills); front end loaders 4 cu yds to 5 1/2 cu yds); forklifts-7 ft lift and over 3 ton capacity; scraper 21 yds and over (struck load); sonic

hammer console; reclaimers road planer/milling machine; cal tracks; ballast regulators; rail anchor machines; switch tampers, asphalt pavers; mechanic; welder and transfer machine.

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

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

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

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

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

Group 8: Truck crane crews

Group 9: Oiler

Group 10: Master Mechanic

Group 11: Boom lengths over 150 feet including jib

Group 12: Boom lengths over 200 feet including jib

Group 13: Boom lengths over 250 feet including jib

Group 14: Boom lengths over 300 feet including jib

Group 15: Boom lengths over 350 feet including jib

IRON0007-014 03/16/2024

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

	Rates	Fringes
IRONWORKER.....	\$ 39.51	32.98

IRON0012-003 07/01/2024

BERKSHIRE (Lee)

	Rates	Fringes
IRONWORKER.....	\$ 38.50	28.46

IRON0012-004 07/01/2024

BERKSHIRE (Remainder of County)

	Rates	Fringes
Ironworkers:		
Sheeter.....	\$ 38.75	28.46
Structural, Ornamental, Reinforcing, Fence Erector, Machinery Mover, Rigger, Rodman, Stone Derrickman.....	\$ 38.50	28.46

LABO0022-002 12/01/2023

FRANKLIN (Orange, Warwick)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 37.86	27.59
GROUP 2.....	\$ 38.11	27.59
GROUP 3.....	\$ 38.61	27.59
GROUP 4.....	\$ 38.86	27.59
GROUP 5.....	\$ 38.61	27.59
GROUP 6.....	\$ 39.86	27.59

LABORERS CLASSIFICATIONS

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

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

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

GROUP 4: Blaster; powderman

GROUP 5: Precast floor and roof, plank erector

GROUP 6: Asbestos Abatement, Toxic and Hazardous waste laborers

LABO0473-005 12/01/2021

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

	Rates	Fringes
Laborers:		
Group 1.....	\$ 30.37	24.64
Group 2.....	\$ 30.62	24.64
Group 3.....	\$ 31.12	24.64
Group 4.....	\$ 31.37	24.64
Group 5.....	\$ 24.50	24.64
Group 6.....	\$ 32.37	24.64

LABORERS CLASSIFICATIONS

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

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

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

Group 4: Blasters, powdermen

Group 5: Flaggers

Group 6: Asbestos abatement, toxic and Hazardous waste laborers

LABO0473-006 12/01/2021

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

	Rates	Fringes
Laborers:		
Group 1.....	\$ 30.37	24.49
Group 2.....	\$ 30.62	24.49

Group 3.....	\$ 31.12	24.49
Group 4.....	\$ 31.37	24.49
Group 5.....	\$ 24.50	24.49
Group 6.....	\$ 32.37	24.49

LABORERS CLASSIFICATIONS

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

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

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

Group 4: Blasters, powdermen

Group 5: Flaggers

Group 6: Asbestos abatement, toxic and Hazardous waste laborers

LAB01421-002 12/01/2021

	Rates	Fringes
Laborers:		
Group 1.....	\$ 41.33	27.37
Group 2.....	\$ 42.08	27.35
Group 3.....	\$ 42.33	27.35
Group 4.....	\$ 37.33	27.35
Group 5.....	\$ 40.43	27.35
Group 6.....	\$ 41.33	27.37

Group 1: Adzeman, Wrecking Laborer.

Group 2: Burners, Jackhammers.

Group 3: Small Backhoes, Loaders on tracks, Bobcat Type Loaders, Hydraulic "Brock" Type Hammer Operators, Concrete Cutting Saws.

Group 4: Yardman (Salvage Yard Only).

Group 5: Yardman, Burners, Sawyers.

Group 6: Asbestos, Lead Paint, Toxic and Hazardous Waste.

* PAIN0035-010 07/01/2024

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		

Brush, Taper.....	\$ 38.78	31.85
Spray, Sandblast.....	\$ 39.48	31.85
REPAINT:		
Bridge.....	\$ 56.76	31.85
Brush, Taper.....	\$ 35.40	31.85
Spray, Sandblast.....	\$ 36.80	31.85

PLUM0004-003 03/01/2024

FRANKLIN (Orange)

	Rates	Fringes
Plumber and Steamfitter.....	\$ 53.95	28.42

PLUM0104-004 03/17/2024

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

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 47.51	29.35

FOOTNOTE:

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

PLUM0104-009 03/17/2024

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

	Rates	Fringes
Plumber and Steamfitter.....	\$ 47.51	29.35

FOOTNOTE FOR PLUMBERS & STEAMFITTERS:

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

TEAM0379-001 06/01/2024

	Rates	Fringes
Truck drivers:		
Group 1.....	\$ 39.78	35.24+a+b
Group 2.....	\$ 39.95	35.24+a+b

Group 3.....	\$ 40.02	35.24+a+b
Group 4.....	\$ 40.14	35.24+a+b
Group 5.....	\$ 40.24	35.24+a+b
Group 6.....	\$ 40.53	35.24+a+b
Group 7.....	\$ 40.82	35.24+a+b

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

TRUCK DRIVERS CLASSIFICATIONS

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

Group 2: Two axle equipment; & forklift operator

Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

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

Group 6: Specialized earth moving equipment over 35 tons

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

FOOTNOTES:

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

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

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this

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

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION"

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DOCUMENT A00801

SPECIAL PROVISIONS**CUMMMINGTON****Federal Aid Project No. HIP(BR)-003S(766)X
Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9
(Berkshire Trail) over Westfield River and Westfield Brook (613116)**

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 to be done at three (3) bridges under this Contract consists of:

- 1) Bridge C-21-023 (0JN) ST 9 (Berkshire Trail) over Westfield Brook:
Clean (full removal) and paint of steel superstructure and bearing assemblies. Concrete repairs to bridge pier walls, and abutments. Concrete repairs to the copings. Resetting of overexpanded or seized steel expansion bearings. Steel beam end, web stiffener, and end diaphragm repairs. Cleaning and coating of existing armored deck joints. Replacement of existing deck joint sealer. Replacement of deteriorated and missing bridge railing components in kind. Replacement of missing granite caps at existing masonry end posts. Replacement of damaged approach guardrail end treatment.
- 2) Bridge C-21-024 (0JM) ST 9 (Berkshire Trail) over Westfield River:
Cleaning (full removal) and painting of steel superstructure and bearing assemblies. Concrete repairs to bridge pier walls, abutments, and encased end diaphragms. Concrete repairs to the copings. Resetting of overexpanded or seized steel expansion bearing. Repairs to deteriorated steel keeper plates at existing expansion bearings. Steel beam end repair. Cleaning and coating of existing armored deck joints. Replacement of existing deck joint sealer.

SCOPE OF WORK (Continued)

3) Bridge C-21-025 (OJK) ST 9 (Berkshire Trail) over Westfield River: Cleaning (full removal) and painting of steel superstructure and bearing assemblies. Concrete repairs to bridge pier walls, abutments, and encased end diaphragms. Concrete repairs to the copings. Resetting of overexpanded or seized steel expansion bearings. Repairs to deteriorated steel keeper plates at existing expansion bearings. Steel beam end, and web stiffener repairs. Cleaning and coating of existing armored deck joint (pier joint only). Replacement of existing deck joint sealer (pier joint only). Replacement of missing bridge railing components in kind. Repair the cracked granite curb at the north curb pier joint.

Additionally, the following work is to be done at all three (3) bridges:

Field verify repair details provided in the Drawings and Sketches and notify the Engineer of any discrepancies found based on the field verification. No work shall be performed under this contract until specifically authorized and directed by the Engineer.

Provide and install temporary containment system/protective shielding as required to perform paint removal and concrete excavation in accordance with the respective special provisions.

Maintenance of traffic during all operations according to the Temporary Traffic Control Plans.

All work shall be performed within, and accessed by, existing State, City or Town roadway layouts. No rights to enter on, or occupy, private property or waterways have been acquired for this project.

SUBSECTION 7.05 INSURANCE REQUIREMENTS

B. Public Liability Insurance

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

Paragraphs 1 and 2

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

CONTRACTOR QUESTIONS AND ADDENDUM ACKNOWLEDGEMENTS

Prospective bidders are required to submit all questions to the Construction Contracts Engineer by 3:00 P.M. on the Tuesday of the previous week before the scheduled bid opening date. Any questions received after this time will not be considered for review by the Department.

Contractors should email questions and addendum acknowledgements to the following email address massdot specifications@dot.state.ma.us The MassDOT project file number and municipality is to be placed in the subject line.

SCHEDULE OF WORK

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

Daytime operations shall be done Monday through Friday, between the hours of 7:00 AM and 3:30 PM. Work may not proceed beyond the normal 8-hour day unless prior approval is obtained from the Engineer for that day. Approval to work beyond the scheduled work will only be given when special conditions exist that warrant working beyond the scheduled work as determined by the Engineer.

Contractor shall schedule work to expedite bridge work with a minimum disruption to road users and minimal impact to environmental resources while providing work zone safety. As a result, the Contractor is encouraged to perform concurrent work to facilitate on-time, on-budget project completion.

These time periods include the "set-up" and "breakdown" of the traffic pattern employed. No operations, personnel, or equipment will be allowed on the roadways except during working hours.

The Contractor shall schedule work to ensure the final coat of paint is not damaged by other operations. Any damage to coatings due to other operations shall be repaired at the Contractor's expense.

The Contractor shall schedule operations such that any beam requiring temporary support or jacking shall be performed efficiently and will be paid once per location. This will require concurrent substructure and superstructure repairs. No extra payment shall be made to re-install jacking and shoring at a beam end location that has already been removed.

Any jacking and shoring reused at the same bridge crossing shall be considered a remove and reset. Jacking and shoring removed and reset is not anticipated for this project, and no additional compensation will be made in the case where it is required. Jacking and shoring transported to a new location will be considered a new payment of the jacking and shoring Item.

The project involves bridge preservation at multiple locations. The Contractor shall be permitted to incorporate the Temporary Traffic Control Plans (TTCP) at each bridge to allow work to be performed concurrently across all bridges.

No work shall be performed from November 15th to April 15th unless otherwise approved by the Engineer. All components of the TTCP shall be removed from the site and existing traffic conditions shall be restored during this period. No compensation will be made for additional mobilization and/or demobilization due to winter closures.

HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09)

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

Below are the holiday work restrictions:

New Years Day (Federal Holiday)

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

Martin Luther King's Birthday (Federal Holiday)

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

President's Day (Federal Holiday)

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

Evacuation Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

Patriot's Day (State Holiday)

Work restrictions will be in place for Districts 3 and 6 along the entire Boston Marathon route and any other locations that the DHD in those districts determine are warranted so as to not to impact the marathon. All other districts work restrictions will be as per DHD.

Mother's Day

No work on Western Turnpike and Metropolitan Highway System from 5:00 AM on the Friday before, until the normal start of business on the following day.

Memorial Day (Federal Holiday)

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

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.

HOLIDAY WORK RESTRICTIONS (Continued)

Independence Day (Federal Holiday)

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

Labor Day (Federal Holiday)

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

Columbus Day (Federal Holiday)

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

Veterans' Day (Federal Holiday)

No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)

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

Christmas Day (Federal Holiday)

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

ENVIRONMENTAL PERMITTING

The proposed work (either temporary or permanent) does not occur in jurisdictional wetland resources subject to section 401 or section 404 of the Clean Water Act; therefore, the project does not require a Water Quality Certification from the Massachusetts Department of Environmental Protection or authorization from the US Army Corps of Engineers. As a supplement to Section 7.00 of the Standard Specifications, the Contractor is reminded that no debris of any type shall be allowed to enter water or wetland resource areas, either temporarily or permanently. The proposed work qualifies for the bridge exemption authorized in the Transportation Bond Bill and is therefore not subject to the Massachusetts Wetlands Protection Act, the Massachusetts Public Waterfront Act (Chapter 91), or the Massachusetts Environmental Policy Act.

If field conditions and/or Contractor-proposed erection, demolition, staging, or other procedures require work to occur in or otherwise impact water or wetland resource areas, the Contractor is advised that no associated work can occur until all required environmental permits have been obtained allowing such work. The Contractor must notify the District 1 Highway Director and the Engineer in writing at least 60 days prior to desired commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 1 Environmental Engineer. The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

COMPLIANCE WITH THE NATIONAL DEFENSE AUTHORIZATION ACT

(Supplementing Subsection 7.01)

On all projects, the “Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment” Regulation (2 CFR 200.216) prohibits the Contractor from using or furnishing the following telecommunications equipment or services:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Telecommunications or video surveillance services provided by such entities or using such equipment.
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

This prohibition applies to all products manufactured by the aforementioned companies, including any individual components or parts.

By submitting a bid on a project, the Contractor certifies that all work will be in compliance with the terms of 2 CFR 200.216. The Contractor shall submit a COC indicating compliance with the above provisions for all telecommunications equipment or services included in the Contract.

Payment for the item in which the materials are incorporated may be withheld until these COCs are received. Any cost involved in furnishing the certificate(s) shall be borne by the Contractor.

BIDDERS LIST

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

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

BUILD AMERICA BUY AMERICA PREFERENCE

On Federally-aid projects the Buy America (23.CFR § 635.410) and Build America, Buy America Act (Pub. L. No. 117-58, §§ 70901-52). requires the following,

- (1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Foreign steel and iron can be used if the cost of the materials does not exceed 0.1% of the total Contract cost or \$2,500, whichever is greater. The action of applying a coating to a covered material (i.e., steel and iron) is deemed a manufacturing process subject to Buy America. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to requirements of Build America, Buy America. Steel used for temporary support of excavation, including H piles, soldier piles, and sheeting when the steel is required to be left in place is subject to requirements of Build America, Buy America. Temporary steel, shall remain in place when it falls within the influence zone of the soil supporting any structure or railroad tracks.
- (2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and
- (3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. “Construction materials” includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:

BUILD AMERICA BUY AMERICA PREFERENCE (Continued)

- non-ferrous metals,
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
- glass (including optic glass),
- lumber; or
- drywall.

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

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

NOTICE TO OWNERS OF UTILITIES

District 1 Utility/Constructability Engineer
Mark Page (857) 368-1033
Mark.Page@dot.state.ma.us

The existing bridge plans indicate the location of the existing known utilities in the vicinity of the work. No survey was performed for this contract and as such, the accuracy and completeness of the plans are not guaranteed in any manner, it is the Contractor's responsibility to make an own investigation in order 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. The following website lists the names and addresses of the utilities that may be affected, but the completeness of the list is not guaranteed:

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

Select District 1

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.

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

BERKSHIRE GAS EMERGENCY TELEPHONE NUMBERS

GAS:

Outage/Emergency: 1-800-292-5012 or 413-499-1680

New Service: 1- 800-297-7144

Customer Support: 1-800-292-5012

**GENERAL REQUIREMENTS FOR DEMOLITION AND
WORK INVOLVING PAINTED STEEL**

(02/06/2020)

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

Work Involving Painted Steel.

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

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

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

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

Environmental

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

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

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

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

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

Cleaning/Removal

Cutting Or Burning Of Steel

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

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

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

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

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

Mechanical Disassembly Of Steel

All surfaces to be mechanically disassembled by shear cutting or removing bolts or rivets shall not require deleading. When shear cutting or removing bolts or rivets, the Contractor shall not use any method that will cause dust and/or particles to be emitted and/or dispersed into the environment to an extent that would expose the workers above the Action Levels of $30\mu\text{g}/\text{m}^3$.

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

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

PIGEON WASTE

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

EQUIVALENT SINGLE AXLE LOADS (ESALS)

The estimated traffic level to be used for SUPERPAVE HMA mixture designs for this contract, expressed in Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period, is 0.70 Million 18-kip (80-kn) ESALs.

NORTHERN LONG-EARED BAT PROTECTION

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

On September 20th, 2023, MassDOT Highway Division Environmental Services, conducted a northern long-eared bat bridge/structure bat assessment, in accordance with the USFWS guidelines. The assessment did not find presence of, or evidence of use by bats, and as stated within the guidelines, the assessment is valid for two years. Due to the 2-year validity of the negative presence/absence survey, it is recommended that the contractor conduct all activities that could result in stressors to the bats such as tree removal/trimming, bridge and/or structure removal/maintenance, lighting, or use of percussive, by September 20th, 2025. If bridge and/or structure work is not complete before by September 20th, 2025, assessment of the bridge and/or structure for the presence of, or evidence of use by, bats shall be completed by MassDOT Wildlife and Endangered Unit, or a qualified contractor/consultant prior to continuing bridge and/or structure work. The Contractor shall notify the MassDOT Wildlife Unit no later than thirty (30) days prior to September 20th, 2025, to provide adequate time for inspection. If bats are found to be present, or, if there is evidence of bat usage, work at the bridge and/or structure shall not commence until after the MassDOT Wildlife Unit has completed coordination with the US Fish and Wildlife Service to determine the appropriate follow up or mitigation actions.

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.

NORTHERN LONG-EARED BAT PROTECTION (Continued)

Due to the negative survey results, 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 USFWS NLAA**). Therefore, the project has completed Section 7 consultation through the Endangered Species Act, and the AMMs listed below.

General AMM

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

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 1 to October 31.**

Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*
- Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
- No tree cutting shall be conducted during the active season: **April 1 to October 31.**
- The Contractor shall ensure all personnel working on the project site are aware of all environmental commitments related to NLEB, including the **TOY** restriction. If this restriction needs to be waived at any location(s) the 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.

PRECAUTIONS FOR PROTECTION OF THE ENVIRONMENT

During the execution of work under this contract, the Contractor shall exercise care in the placement and storage of equipment, materials and debris as many of the sites are in environmentally sensitive areas. No equipment, materials or debris can be placed or stored in or near a resource or drainage area leading to a resource as directed by the Engineer.

The Contractor shall neither stockpile material or equipment nor perform maintenance or refueling of equipment in a wetland area, within 100 feet of a wetland, or within 200 feet of a river, stream, pond, or drainage area leading to a resource or other similar open body of water.

CONTAMINATED MATERIALS

When soil excavation may be conducted, the area to be excavated shall be evaluated for potential soil and/or groundwater contamination. The resulting information is to be communicated to the Engineer, District Environmental Engineer (DEE), or the project designee prior to initiating work. The Engineer, DEE, or project designee is responsible for assisting in the development of the required management procedures for hazardous/regulated wastes that may be generated during the project (including personal protective equipment, generation of manifest, collection/storage of wastes, transfer/disposal of wastes, and tracking manifest documentation). **No soil shall leave the project site without having been properly characterized for reuse or disposal and its destination approved of by the Engineer.**

PROPRIETARY PRODUCTS

MassDOT has approved the use of the following proprietary products on this contract pursuant to M.G.L. c. 30, § 39M(b):

Under ITEM 107.97 STRUCTURAL STEEL REPAIRS, prior to installing steel repair components, an epoxy-based metal filler compound shall be applied to existing deteriorated steel web surfaces and flanges in a manner which restores deteriorated sections to their original thicknesses to prevent voids between the filler surface and proposed repair plates. Filler material shall be applied as shown in the plans and as directed by the Engineer. Epoxy filler compound shall be:

- 1 ITW Philadelphia Resin Repair Compound (RRC)
<http://chockfast.com/products/repair-and-accessory-products/itw-repair-ompound/>
- 2 Sikadur 31, Hi-Mod Gel
<http://usa.sika.com>
- 3 Adhesives Technology Ultrabond 2100, Class C
<http://atcepoxy.com/medium-viscosity-bonding-agent-ultrabond-2100/>

Approval letter has been filed with MassDOT.

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.

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

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

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

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

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

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

SECTION 722 (Continued)

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

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

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

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

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

The Contractor shall use Primavera P6 computer scheduling software.

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

B. Scheduler Requirements

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

SECTION 722 (Continued)**CONSTRUCTION METHODS****722.60 General****A. Schedule Planning Session**

(Types A, B and C)

The Contractor shall conduct a schedule planning session within seven (7) Calendar Days after the Contractor receives the NTP and prior to submission of the Baseline Schedule. This session will be attended by the Department and its consultants. During this session, the Contractor shall present its planned approach to the project including, but not limited to:

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

This will be an interactive session and the Contractor shall answer all questions that the Department and its consultants may have. The Contractor shall provide a minimum of five (5) copies of a written summary of the information presented and discussed during the session to the Engineer. The Contractor's Baseline Schedule and accompanying Schedule Narrative shall incorporate the information discussed at this Schedule Planning Session.

B. Schedule Reviews by the Department (All Types)

1. Baseline Schedule Reviews

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

2. Contract Progress Schedule / Monthly Update Reviews

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

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

SECTION 722 (Continued)**722.61 Schedule Content and Preparation Requirements**
(Types A, B and C unless otherwise noted)

Each Contract Progress Schedule shall fully conform to these requirements.

A. LOGIC

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

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

B. ACTIVITIES

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

1. NTP
2. Each component of the Work defined by specific activities
3. Detailed activities to satisfy permit requirements
4. Procurement of fabricated materials and equipment with long lead times, including time for review and approval of submittals required before purchasing
5. The preparation and submission of shop drawings, procedures and other required submittals, with a planned duration that is to be demonstrated to the Engineer as reasonable
6. The review and return of shop drawings, procedures and other required submittals, approved or with comments, the duration of which shall be thirty (30) Calendar Days, unless otherwise specified or as approved by the Engineer
7. Interfaces with adjacent work, utility companies, other public agencies, sensitive abutters, and/or any other third party work affecting the Contract
8. The Critical Path, clearly defined and organized
9. Float shall be clearly identified
10. Access Restraints – restrictions on access to areas of the Work that are defined by the Department in the bid package, in Subsection 8.06 – Limitations of Operations or elsewhere in the Contract
11. Milestones listed in Subsection 8.03 - Prosecution of Work or elsewhere in the Contract Documents
12. Subcontractor approvals at fifteen (15) Calendar Days from submittal to response
13. Full Beneficial Use (FBU) Contract Milestone per the requirements of Subsection 8.03 - Prosecution of Work
14. Contractor's request for validation of FBU (ready to open to traffic)
15. The Department's confirmation of completed work to allow for FBU

SECTION 722 (Continued)

16. Substantial Completion Contract Milestone per the requirements of Subsections 7.15 - Claims Against Contractors for Payment of Labor, Materials and Other Purposes and 8.03 - Prosecution of Work
17. Contractor's request for validation of Substantial Completion
18. Punchlist Completion Period of at least thirty (30) Calendar Days per the requirements of Subsections 5.11 - Final Acceptance, 7.15 - Claims Against Contractors for Payment of Labor, Materials and Other Purposes and 8.03 - Prosecution of Work
19. Contractor confirmation that all punchlist work and documentation has been completed
20. Physical Completion of the Work Contract Milestone per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
21. Documentation Completion per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
22. Contractor Field Completion Contract Milestone per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
23. Utility work to be performed in accordance with the Project Utility Coordination (PUC) Form as provided in Section 8.14 - Utilities Coordination, Documentation and Monitoring Responsibilities
24. Traffic work zone set-up and removal, night work and phasing
25. Early Utility Relocation (by others) that has been identified in the Contract
26. Right-of-Way (ROW) takings that have been identified in the Contract
27. Material Certifications
28. Work Breakdown Structure in accordance with the MassDOT-Highway Division Contractor Construction Schedule Toolkit located on the MassDOT-Highway Division website at:
<https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit>
29. For Type A and B Contracts only: All items to be paid, including all Unit Price and Lump Sum pay items, shall be identified by activity. This shall include all non-construction activities such as engineering work; purchase of permanent materials and equipment, purchase of structural steel stock, equipment procurement, equipment delivery to the site or storage location and the representative amount of overhead/indirect costs that was included in the Contractor's Bid Prices.

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.

SECTION 722 (Continued)**D. DURATIONS**

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

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

E. MATERIALS ON HAND (for Types A and B only)

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

F. ACTIVITY DESCRIPTIONS

The Contractor shall use activity descriptions in all schedules that clearly describe the work to be performed using a combination of words, structure numbers, station numbers, bid item numbers, work breakdown structure (WBS) and/or elevations in a concise and compact label as specified in the MassDOT-Highway Division Contractor Construction Schedule Toolkit located on the MassDOT-Highway Division website at:

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

G. ACTIVITY IDENTIFICATION NUMBERS

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

H. ACTIVITY CODES

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

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.

SECTION 722 (Continued)

Examples of special calendars include, but are not limited to:

- Winter Shutdown Period, specific work is required by separate special provision to be performed during the winter. See Special Provision 8.03 (if applicable)
- Peak traffic hours on heavily traveled roadways. This shall be from 6:30 am to 9:30 am and from 3:30 pm to 7:00 pm, unless specified differently elsewhere in the Contract.
- Special requirements by sensitive abutters, railroads, utilities and/or other state agencies as defined in the Contract.
- Cape Cod and the Islands Summer Roadway Work Restrictions: A general restriction against highway and bridge construction is enforced between Memorial Day and Labor Day, unless otherwise directed by the Engineer. Refer to the Project Special Provisions for specific restrictions.
- Cape Ann Summer Roadway Work Restrictions: While there are no general restrictions for Cape Ann as there are for Cape Cod and the Islands, project-specific restrictions may be enforced. Refer to the Project Special Provisions for specific restrictions.
- Turtle and/or Fish Migration Periods and/or other in-water work restrictions: Refer to the Project Special Provisions for specific restrictions.
- Working over Waterways Restricted Periods: Refer to the Project Special Provisions for specific restrictions.
- Night-time paving and striping operations, traffic and temperature restrictions: Refer to the Project Special Provisions for specific restrictions.
- Utility Restrictions shall be as specified within the Contract.

J. FLOAT

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

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

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

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.

SECTION 722 (Continued)

4. The Engineer reserves the right to use the cost-loading as a means to resolve changes, disputes, time entitlement evaluations, increases or decreases in the scope of Work, unit price renegotiations and/or claims.
5. For all Type A and B Schedules, all subnets, fragnets, Proposal Schedules, and Recovery Schedules shall be cost and resource- loaded to help to quickly validate and monitor the duration of the Work to be performed.
6. For Type A Schedules, cost-loading of the schedule will also be used for cash flow projection purposes.
7. The cost-loading of each activity shall indicate the portion of the cost for that activity that is applicable to a specific bid item (cost account.) The total cost for each cost account must equal the bid item price.
8. For Type A Schedules, each month, the Contractor will be paid using the Cost-loaded CPM activities for Lump Sum payment items. This requirement supersedes any requirements elsewhere in this Contract regarding partial payments of schedule-of-values for all Lump Sum items.

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

1. Milestones or constraint dates not specified in the Contract
2. Scheduled work not required for the accomplishment of a Contract Milestone
3. Use of activity durations, logic ties and/or sequences deemed unreasonable by the Engineer
4. Delayed starts of follow-on trades
5. Float suppression techniques

722.62 Submittal Requirements

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

Each monthly Contract Progress Schedule submittal shall be uniquely identified.

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

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

SECTION 722 (Continued)**A. Narratives**

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

1. itemize and describe the flow of work for all activities on the Critical Path in a format that includes any changes made to the schedule since the previous Contract Progress Schedule / Monthly Update or the Baseline Schedule, whichever is most recent;
2. provide a description of any specification requirements that are not being followed. Identify those that are improvements and those that are not considered to be meeting the requirements;
3. provide all references to any Notice of Delay that has been issued, within the time period of the Contract Progress Schedule Update, by letter to the Engineer. Note that any Notice of Delay that is not issued by letter will not be recognized by the Engineer. See Subsection 722.64.A - Notice of Delay;
4. provide a description of each third-party utility's planned vs. actual progress and note any that are trending late or are late per the durations and commitments as provided in the PUC Form; provide a description of the five (5) most important responses needed from the Department and the need date for the responses in order to maintain the current Schedule of Record;
5. provide a description of all critical issues that are not within the control of the Contractor or the Department (third party) and any impact they had or may have on the Critical Path;
6. provide a description of any possible considerations to improve the probability of completing the project early or on-time;
7. compare Early and Late Dates for activities on the Critical Path and describe reasons for changes in the top three (3) most critical paths ;
8. describe the Contractor's plan, approach, methodologies and resources to be employed for completing the various operations and elements of the Work for the top three (3) most critical paths. For update schedules, describe and propose changes to those plans and verify that a Proposal Schedule is not required;
9. describe, in general, the need for shifts that are not 5 days/week, 8 hours/day, the holidays that are inserted into each calendar and a tabulation of each calendar that has been used in the schedule;
10. describe any out-of-sequence logic and provide an explanation of why each out-of-sequence activity does not require a correction, if one has not been provided, and an adequate demonstration that these changes represent the basis of how these activities will be built, including considerations for resources, dependencies and previously-approved production rates;
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.

SECTION 722 (Continued)**B. Bar Charts (Types A, B, C and D)**

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

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

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

C. Detailed Activity Schedule Comparisons

A Detailed Activity Schedule Comparison (DASC) is a simple reporting tool in the format of a graphical report that will provide Resident Engineers with immediate, timely and up-to-date information. The DASC consists of an updated bar chart that overlays the current time period's bar chart onto the previous time period's bar chart for an easily-read comparison of progress during the present and previous reporting periods. The DASC shall be prepared and submitted in accordance with the instructions contained in the Construction Schedule Toolkit located on the MassDOT-Highway Division website at:

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

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

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

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

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

1. activity ID and description,
2. forecast start and finish dates for each activity and,
3. when submitted as a revised schedule, actual start and finish dates for each completed activity.

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

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 (Types B, C and D)**

A Projected Spending Report (PSR) shall be prepared and submitted in accordance with the instructions listed at the end of this section. The PSR shall indicate the monthly spending (cash flow) projection for each month from NTP to Contractor Field Completion (CFC). Each month's actual spending shall be calculated using all CQEs paid during that month. If the difference between the Contractor's monthly projections vs. the actual spending is greater than 10%, the Contractor's monthly spending projection shall be revised and resubmitted within fifteen (15) Calendar Days.

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

<https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit> or consult with the District Construction Scheduler.

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

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

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

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

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 (Types A, B, C and D)**

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

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

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

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

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

Except as otherwise designated by a Contract Modification, no Contract Progress Schedule that extends performance beyond the Contract Time and/or beyond any Contract Milestone shall be approved by the Engineer. The Contractor shall submit a Recovery Schedule if any Contract Progress Schedule/Monthly Update indicates a failure to meet the Contract Dates.

D. Short-Term Construction Schedule

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

SECTION 722 (Continued)

The Short-Term Construction Schedule shall be submitted every two weeks. It shall display all work for a thirty-five (35) Calendar Day period consisting of completed work for the two (2) week period prior and all planned work for the following three (3) week period. The initial submission shall be provided no later than thirty (30) Calendar Days after NTP or as required by the Engineer.

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

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

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

The Contractor shall notify the Engineer in writing, with copies to the District and State Construction Engineers, within three (3) Calendar Days of the start of any delays to the Critical Path that are caused by actions or inactions that were not within the control of the Contractor. Delay notifications that are not provided in a letter to the Engineer, such as a delay notification in the schedule narrative, will not be recognized as contractual notice in the determination of any Time Extension related to the impacts to the work associated with this specific alleged delay. Should such delay continue for more than one (1) week, the Contractor shall note it in the Schedule Narrative until the delay is no longer impacting the Critical Path for the completion of the Contract Milestones. The Engineer will evaluate the alleged delay and its impact and will respond to the Contractor within ten (10) Calendar Days after receipt of a notice of delay.

B. Time Entitlement Analysis

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

TEAs shall be prepared and submitted in accordance with the requirements of 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 fourteen (14) Calendar Days after a request for a TEA by the Engineer for any other reason.

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

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

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

When accepted, the changes included in a TEA shall be incorporated into the next Contract Progress Schedule per the requirements of Subsection 722.63.C - Contract Progress Schedules / Monthly Updates.

During the review of any TEA, all Contract Progress Schedules shall continue to be submitted as required.

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

C. Recovery Schedules

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

SECTION 722 (Continued)

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

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

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

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

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

D. Proposal Schedules

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

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

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

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

Proposal Schedules shall clearly indicate any proposed overtime hours, additional shifts, and the resources that are proposed to be incorporated in the schedule. The Engineer shall have final discretion over the use of overtime hours and additional shifts.

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

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

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

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

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

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

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

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

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

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

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

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

SECTION 722 (Continued)

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

All Contract Progress Schedule Updates submitted later than ten (10) Calendar Days after the CQE (Contract Quantity Estimate) completion date, or greater than forty (40) Calendar Days from the Data Date of the previous submission, will be deemed to be no longer useful and will not qualify for payment. Late submittal of missed Contract Progress Monthly Updates will not result in recovery of the previously forfeited portion of the Schedule of Operations Fixed Price Payment Item.

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

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

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

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

Should there be a Time Extension granted to the Contractor, the Engineer may provide an Equitable Adjustment for additional Contract Progress Schedule Updates at intervals directed by the Engineer. Item 100. will be the basis for this Equitable Adjustment.

722.82 Payment Items

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

ITEM 106.88**JACKING AND SHORING****EACH**

The work under this item consists of jacking and shoring existing beams/girders as required by the Contract Plans and Details and/or as directed by work order or the Engineer. The work shall also include removal and resetting of jacking and shoring from installed locations to support other existing beams/girders as directed by the work order or Engineer.

Shoring materials may be new or second hand. The Contractor shall submit a plan of the proposed work showing the details and indicating the materials to be used. The submittal shall include shoring design computations based on information given in the Contract Plans, the bridge configurations and the working stresses of the materials used, sequence of operations, and all details incidental thereto. Unless otherwise directed by the Engineer, the proposed jacking and shoring system shall be designed to apply force in increments to the existing beam/girder to relieve load from the existing substructure/bearing. The jack(s) shall have a locking mechanism preventing the beam/girder from lowering in the event of loss of hydraulic pressure. All components of the system shall have load capacity greater than the total calculated load carried by the existing beam/girder during normal traffic operation, which includes but is not limited to, dead load, live load, and impact load.

Bridge Loads: The Contractor shall calculate jacking loads based on the loads shown on the Contract Plans. Loads given include the unfactored dead, live and impact load at each beam end. All materials (except jacks) shall be designed by working stress design (ASD). Type of jacks used, and factor of safety shall be per industry standards. Live loads and construction loads shall be removed from the bridge until jacking operations are complete and hydraulic jacks are locked.

Approval of this submission shall be obtained prior to the commencement of any work under this Item. The above plan and computations shall bear the seal and signature of a Professional Engineer of the appropriate discipline registered in Massachusetts.

Materials shall meet the following g:

Wood Products:	M9.05.1
Fastenings:	M8.01.5
Structural Steel:	M8.05.0

The Contractor shall remove and retain ownership of all materials and items furnished by him and not part of the permanent structure unless other prior arrangements are made with the Engineer for MassDOT to purchase all or some of the shoring elements.

All treated wood supplied by the Contractor shall meet the requirements of M9.05.1 for Wood Products, including the most recent versions of AWWA U1 and M4 which are incorporated by reference. No new wood shall be treated with inorganic arsenic (including chromated copper arsenate (CCA), ammoniacal copper arsenate (ACA), and ammoniacal copper zinc arsenate (ACZA)), creosote or pentachlorophenol in all project construction.

ITEM 106.88 (Continued)

The Contractor is alerted that one of the beams/girders at Bridge C-21-025 may have been temporarily shored by MassDOT personnel or by others. At such locations, the Contractor shall verify if the existing temporary shoring is engaged prior to removing. If engaged, the Contractor shall install a jacking support system before removing any temporary supports. The cost of removing and stacking the temporary supports at an on-site location, as directed by the Engineer, shall be considered incidental work hereunder with no additional compensation.

When in the opinion of the Engineer extensive repairs require temporarily supporting some of the beams/girders on one or both sides of a pier, or abutment(s), those beams/girders shall be jacked/shored all at once as one unit for the length of time required.

The work shall be performed as follows:

Erect supports under each beam/girder as directed by the Engineer. When possible, all supports shall be located on the beam seat in front of the bearing and aligned with the bearing centerline. In some cases, inadequate space or existing beam seat deterioration will prevent jacking in front of the bearing. At these locations, the Contractor shall install the end diaphragm retrofits as detailed in the Contract Plans prior to jacking and shoring from the end diaphragms. The Contractor shall clarify their intended method of jacking and shoring (i.e. in front of bearing or from retrofitted end diaphragms) in the jacking and shoring submittal. Under no circumstances shall the jacking and shoring system be located within the waterway.

In the case that both concrete beam seat repairs and bearing reset are required at the same beam end, the Contractor shall perform the work such that all work is completed under one jacking and shoring effort. No extra payment shall be made to re-install a temporary support at a beam end location that has already been removed. The Contractor is responsible for phasing the proposed work appropriately.

The successful prosecution, safety, and completion of the work in an acceptable manner is the responsibility of the Contractor. In the event of any damage to the structure due to inadequate supports, or Contractor negligence, the Contractor shall repair or replace any such damaged components at no cost to the department.

When the repairs are completed and the supports are no longer needed as determined by the Engineer, all supporting materials shall be removed and become the property of the Contractor unless other prior arrangements were previously made with MassDOT.

Each bridge will be kept open to traffic while the beams/girders are supported. The Contractor's attention is directed to the fact that Route 9 is a heavily traveled high-speed road with a high volume of truck traffic.

ITEM 106.88 (Continued)

METHOD OF MEASUREMENT

Item 106.88 will be measured for payment by the Each steel beam/girder end jacked and shored temporarily and jacking and shoring removed as required by the Engineer, complete in place and accepted.

BASIS OF PAYMENT

Item 106.88 will be paid for at the Contract unit price by the Each, which price shall include all labor, materials, tools, equipment, engineering services and incidental costs required to complete the work.

Contractor will only be compensated once per jacking and shoring location and shall sequence the work accordingly.

Bid pricing for this Item should be predicated on a typical shoring design.

ITEM 106.89**SHORING BEAM END****EACH**

The work under this Item consists of shoring existing beams/girders to temporary relieve bridge loads during concrete substructure repairs as required by the Contract Plans and Details and/or as directed by the Engineer. The work shall also include removal and resetting of shoring from installed locations to support other existing beams/girders as directed by work order or the Engineer.

The intent of this Item is to capture any locations that require temporary shoring as a result of concrete beam seat demolition extending beyond the critical limits specified in the Contract Plans, or as directed by the Engineer. No locations paid under Item 106.88 shall be considered for payment under this Item.

Shoring materials may be new or second hand. The Contractor shall submit a plan of the proposed work showing the details and indicating the materials to be used. The submittal shall include shoring design computations based on information given in the Contract Plans, the bridge configurations and the working stresses of the materials used, sequence of operations, and all details incidental thereto. Unless otherwise directed by the Engineer, the shoring system shall be designed to fully relieve load from the existing bearing. All components of the system shall have load capacity greater than the total calculated load carried by the existing beam/girder during normal traffic operation, which includes but is not limited to, dead load, live load, and impact load.

Bridge Loads: The Contractor shall design all components of the temporary shoring system based on the loads shown on the Contract Plans and by working stress design (ASD). Loads given include the unfactored dead, live and impact load at each beam end.

Approval of this submission shall be obtained prior to the commencement of any work under this Item. The above plan and computations shall bear the seal and signature of a Professional Engineer of the appropriate discipline registered in Massachusetts.

Materials shall meet the following g:

Wood Products:	M9.05.1
Fastenings:	M8.01.5
Structural Steel:	M8.05.0

The Contractor shall remove and retain ownership of all materials and items furnished by him and not part of the permanent structure unless other prior arrangements are made with the Engineer for MassDOT to purchase all or some of the shoring elements.

All treated wood supplied by the Contractor shall meet the requirements of M9.05.1 for Wood Products, including the most recent versions of AWPA U1 and M4 which are incorporated by reference. No new wood shall be treated with inorganic arsenic (including chromated copper arsenate (CCA), ammoniacal copper arsenate (ACA), and ammoniacal copper zinc arsenate (ACZA)), creosote or pentachlorophenol in all project construction.

ITEM 106.89 (Continued)

The work shall be performed as follows:

Erect supports under each beam/girder as directed by the Engineer. When possible, all supports shall be located on either side of the existing bearing directly underneath the existing end diaphragms. Two supports are required per beam end. Supports shall not be installed until the proposed end diaphragm retrofits have been installed in accordance with the Contract Plans and Details. Under no circumstances shall the shoring system be located within the waterway.

The successful prosecution, safety, and completion of the work in an acceptable manner is the responsibility of the Contractor. In the event of any damage to the structure due to inadequate supports, or Contractor negligence, the Contractor shall repair or replace any such damaged components at no cost to the department.

Under no circumstance shall this Item be used in the case that both concrete beam seat repairs and bearing reset are required at the same beam end. This work shall be performed under one phase of jacking and shoring and shall be compensated under Item 106.88. No extra payment shall be made to re-install a temporary support at a beam end location that has already been removed. The Contractor is responsible for phasing the proposed work appropriately.

When the repairs are completed and the supports are no longer needed as determined by the Engineer, all supporting materials shall be removed and become the property of the Contractor unless other prior arrangements were previously made with MassDOT.

Each bridge will be kept open to traffic while the beams/girders are supported. The Contractor's attention is directed to the fact that Route 9 is a heavily traveled high-speed road with a high volume of truck traffic.

METHOD OF MEASUREMENT

Item 106.89 will be measured for payment by the Each steel beam/girder end temporarily shored and shoring removed as required by the Engineer, complete in place and accepted.

BASIS OF PAYMENT

Item 106.89 will be paid for at the Contract unit price by the Each, which price shall include all labor, materials, tools, equipment, engineering services and incidental costs required to complete the work.

Contractor will only be compensated once per shoring location and shall sequence the work accordingly.

Bid pricing for this Item should be predicated on a typical shoring design.

ITEM 107.471**PRE-COMPRESSED IMPREGNATED FOAM
JOINT SEALER****FOOT**

The work to be done under this Item consists of removing the existing joint sealers and replacing them with new pre-compressed joint seals at the existing armored bridge deck joints identified on the Contract Plans and at the direction of the Engineer.

Removal of the existing joint material shall be considered incidental to this Item.

Prior to installation of new seals, all existing joints shall be cleaned by means of high-pressure oil free air hose or pressure washing with a non-phosphate, non-polluting detergent to remove all oil, grease, dirt, salt, guano, vegetation, and loose rust, concrete and paint. Deck joint cleaning and surface preparation shall be compensated under Item 962.19.

The Contractor shall schedule the work where possible to coincide with the encapsulation of the armored steel deck joints with corrosion inhibitor in accordance with Item 962.19.

MATERIALS

The material shall conform to the Materials Specification provided below or an approved equal/superior joint system, as approved by the Engineer. Alternate manufacturers and their products shall be considered, provided they are produced of materials that are equal to or superior, as approved by the Engineer, to those called for in the base product specification.

The work shall consist of furnishing and installing preformed, precompressed, self-expanding, sealant system with silicone pre-coated surface.

All joint sealing material shall be capable of accommodating movements of +50%, -50% (100% Total) of nominal material size.

The preformed, precompressed, self-expanding, sealant system with silicone pre-coated surface shall be comprised of three components: 1) cellular polyurethane foam impregnated with hydrophobic 100% acrylic (to be certified in writing by independent laboratory tested FTIR and DSC analysis to be free in composition of any waxes or wax compounds), water based emulsion, factory coated with highway-grade, fuel resistant silicone; 2) field-applied epoxy adhesive primer; 3) field-injected silicone sealant bands. Impregnation agent is to have proven non-migratory characteristics. Silicone coating to be highway-grade, low-modulus, fuel resistant silicone applied to the impregnated foam sealant at a width greater than maximum allowable joint extension and which when cured and compressed will form a bellow. Size of seal shall be as recommended by the manufacturer. The foam seal shall be installed into manufacturer's standard field-applied epoxy adhesive. The seal system is to be recessed from the surface such that after the field applied injection band of silicone is installed between the substrates and the foam, the highest part of the pre-applied silicone facing will be below the surface as shown on the drawings.

ITEM 107.471 (Continued)

Changes in plane and direction shall be executed using factory-fabricated or custom transition assemblies supplied by the same manufacturer of the preformed, precompressed, self-expanding, sealant system with silicone pre-coated surface. Transitions shall be warranted to be watertight at inside and outside corners through the full movement capabilities of the product.

FABRICATION

Seal profile shall be shipped in nominal five-foot standard lengths in manufacturer's standard shipping carton. Seals shall be cut to length on jobsite where required for straight lengths or directional change transitions utilizing appropriate tools, saws and miter boxes. All cuts shall be accurately measured and completed in a neat and workmanlike manner to ensure quality work.

CONSTRUCTION METHODS

Existing materials shall be removed from each joint gap to a minimum depth of compressed seal height plus 3/4". Existing preformed filler and hot poured sealer shall be removed by routing.

The Contractor shall produce the required gap width within the full depth of the existing joint in the safety curbs and coping walls. All surfaces to receive seals shall be free from dirt, water, frost and any loose foreign debris that may be detrimental to effective joint sealing. The sides of the joint gap shall be abrasive blasted to white metal for joints with existing steel angle armor, solvent wiped and primed with an approved adhesive. Installation of the seals shall be in accordance with the manufacturer's recommended procedures.

A manufacturer's field representative must be present at the start of work and until the representative and the Engineer are satisfied that the crew has mastered the technique of installing the system successfully.

The Contractor shall request a warranty for this joint through the Manufacturer.

No drilling, or screwing, or fasteners of any type are permitted to anchor the sealant system into the substrate.

The Contractor shall verify that seal profile is to be installed in the proper width opening for the appropriate temperature at time of installation. Variations in width or incorrect opening that may affect proper installation and product performance shall be brought to the attention of the Engineer prior to installation.

A watertight integrity test shall be required at each joint, performed according to the requirements of Sub-Section 972.67 of the Standard Specifications.

ITEM 107.471 (Continued)

METHOD OF MEASUREMENT

Item 107.471 will be measured for payment by the Foot along the centerline of the exposed surface of each joint, complete in place, and accepted by the Engineer.

BASIS OF PAYMENT

Item 107.471 will be paid for at the contract unit price per Foot along the centerline of the exposed surface of each complete joint and in place which shall be full compensation for all labor, equipment, the watertight integrity test, and materials necessary to complete the work. The Contractor shall be completely responsible for the expense of the service of the required field representative and the bid contract price shall be full compensation for all costs in connection therewith.

ITEM 107.85**SEALING RANDOM CRACKS IN CEMENT
CONCRETE PAVEMENT****FOOT**

The work under this Item shall conform to the relevant provisions of Subsections 476 and 901 of the Standard Specifications and the following:

The work under this Item shall include sealing and/or resealing longitudinal and transverse cracks on the cement concrete wearing surface of the exposed concrete bridge deck as directed by the Engineer.

After traffic has been removed from the work zone, the Engineer shall survey the deck within the work zone to determine if there are any cracks present. The Engineer shall determine width of cracks found using a crack width indicating comparator card made of clear plastic with lines of specified width on the cards. These cracks are assumed to be non-moving and to have been caused by inadequate control of shrinkage or temperature stresses during original curing. Cracks that are of structural concern shall be repaired by other methods determined by the Engineer.

In no instance shall this Item be used for the repair of any wearing surface cracks using epoxy injection.

The type of Cement Concrete crack sealing required shall be determined as a function of the surface type and maximum crack width as follows:

Top surfaces of exposed concrete bridge decks with slopes up to and including 15%:

- Cracks less than 0.006" (0.15 mm) wide shall be ignored;
- Cracks greater than or equal to 0.006" (0.15 mm) wide and less than 0.020" (0.50 mm) wide shall be sealed with an approved methacrylate;
- Cracks greater than or equal to 0.020" (0.50 mm) wide shall be sealed using methacrylate with a sand filler.

MATERIALS

The methacrylate crack sealer shall consist of a high molecular weight low viscosity methacrylate monomer. The methacrylate material shall, as a minimum, provide the following as applied properties:

Property	Value	Test
Viscosity	< 25 cps	ASTM D2393-86
Bond Strength	> 1500 psi	ASTM C882
Tensile Elongation	> 3%	ASTM D638

ITEM 107.85 (Continued)**CONSTRUCTION**

Before sealing, the concrete must be clean, sound, and free of any contaminants and surface moisture. Any other surface contaminants shall be removed by abrasive blast cleaning. Once all concrete surface contaminants are removed, the concrete shall be swept clean and blown off using oil-free compressed air immediately prior to applying the sealer.

Crack sealing materials shall be applied by skilled applicators under a supervisor with proven successful experience in applications with a similar scope of work. All crack sealing materials shall be applied strictly in accordance with the manufacturer's instructions within the allowable ambient temperature range restrictions. If a heated enclosure is used to accomplish this, the heating units shall be properly vented to the outside of the enclosure to prevent products of combustion from exhausting within the enclosure.

A dam shall be created on either side of the crack with silicone caulk. Methacrylate shall then be poured into the valley created by this dam. The methacrylate shall be refilled as necessary as it seeps into the crack to ensure the crack is completely filled. If large quantities of methacrylate are used and the crack is not getting filled, the crack should be filled with pre-bagged dried silica sand filler and the crack shall then be re-filled with methacrylate. Once the methacrylate stops seeping into the crack, the Contractor shall remove the silicone caulk dams and any remaining methacrylate contained within with a putty knife or other tool that can scrape them off the concrete surface. The use of silicone caulk shall be considered incidental to this Item.

After the methacrylate crack sealing has been completed, those deck areas where the repairs were made shall be ground down to the clean concrete substrate using a grinder in order to remove any cured methacrylate and/or epoxy paste remaining on top of the bridge deck surface. All surface mounted injection ports shall also be removed or ground down to the level of the surface of the bridge deck.

METHOD OF MEASUREMENT

Item 107.85 will be measured for payment by the Foot of cracked sealed in cement concrete pavement as described herein, complete in place and accepted by the Engineer.

BASIS OF PAYMENT

Item 107.85 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 107.97**STRUCTURAL STEEL REPAIRS****POUND**

The work under this Item shall conform to the relevant provisions of Subsection 960 and 961 of the Standard Specifications and the following:

The work shall include repair of steel beam ends, web stiffeners, and cross frame connection plates with section loss as directed by the Engineer. Additional steel repairs may be required following completion of the cleaning and priming of the steel. An inspection shall be performed by the Engineer following cleaning and priming of the steel and all limits confirmed at the time of inspection. The final limits for each of the repairs and additional in-kind replacement will be provided by the Engineer, after cleaning and priming of the steel.

The Contractor shall note that certain repair locations are known to have obstacles that are in conflict with the work that is to be performed. Work required to move, remove, replace, work around, or modify any obstacles interfering with the structural steel repair work, such as diaphragms, connection plates, and cross frames shall be included in this Item and be performed with no additional compensation, and shall be deemed incidental to the unit price bid for this Item.

Some proposed repair locations are in close proximity to beam end repairs and retrofits that have already been performed. The Contractor shall exercise caution when working at these locations not to compromise, supersede or otherwise affect the existing repair steel unless otherwise noted on the Contract Plans. All work to cope proposed repair steel around existing conditions shall be included in this Item and shall be deemed incidental to the unit price bid for this Item.

The Contractor shall retain existing diaphragms and cross frames and incorporate new connection plates as required unless otherwise specified on the Contract Plans and Details. The Contractor shall note the alternative procedure where diaphragm retrofits are proposed in accordance with Item 960.18. New structural steel for diaphragm retrofits, including new beams, channels, and connection plates, shall be compensated under Item 960.18.

Structural steel components damaged by the Contractor's operation shall be repaired in conformance with these specifications. The costs of such repairs shall be borne by the Contractor.

The Contractor shall submit to the Engineer a plan of the proposed repairs, showing the methods of procedures, materials, and equipment they intend to use. Approval of this submission shall be obtained prior to the commencement of any work under this Item.

All work shall be done per the contract plans and as directed by and to the satisfaction of the Engineer and in accordance with the details and sequence of construction supplied by the Contractor and approved by the Engineer.

MATERIALS

All new structural steel and new high strength bolts shall conform to the requirements of Sections M8.05.0 and M8.04.3 of the Specifications, respectively.

All structural steel shall be AASHTO M270, Grade 36 or Grade 50 steel.

ITEM 107.97 (Continued)

Repair steel for beam end and web stiffener repairs shall be considered main member and conform to the Charpy V - notch impact test requirements for AASHTO Temperature Zone T2.

All high strength bolts for bolted connections shall be slip critical and conform to the requirements of ASTM F3125 and installed in accordance with the Standard Specifications. All proposed nuts shall conform to ASTM A563. Washers shall conform to AASHTO F436 specifications for hardened steel washers. All bolts, nuts and washers shall be mechanically galvanized in accordance with requirements of ASTM B695, Class 50. Galvanized bolts shall be retested after galvanizing as required by ASTM F3125.

Prior to installing steel repair components, an epoxy-based metal filler compound shall be applied to existing deteriorated steel web surfaces and flanges in a manner which restores deteriorated sections to their original thicknesses to prevent voids between the filler surface and proposed repair plates. Filler material shall be applied as shown in the plans and as directed by the Engineer. Epoxy filler compound shall be "ITW Philadelphia Resin Repair Compound (RRC)" (web site: <http://chockfast.com/products/repair-and-accessory-products/itw-repair-compound/>), or Sikadur 31, Hi-Mod Gel (web site: <http://usa.sika.com>), or Adhesives Technology Ultrabond 2100, Class C (web site: <http://atcepoxy.com/medium-viscosity-bonding-agent-ultrabond-2100/>), or an approved equal. The filler compound shall be applied in strict accordance with the manufacturer's specifications.

The Contractor is alerted that the existing paint is likely lead-based. Any removal and disposal of paint for the operations described herein shall be performed in strict conformance with all State and Federal health and environmental regulations, as stipulated in these specifications.

CONSTRUCTION METHODS

All work shall be done as directed by and to the satisfaction of the Engineer and in accordance with the details approved by the Engineer.

The methods of procedures, materials, equipment, or anchorage proposed by the Contractor shall be submitted on a standard shop drawing for approval by the Engineer prior to the beginning of work for each location. All steel repair dimensions shall be field verified by the Contractor prior to developing shop drawings. Approval shall not relieve the Contractor of responsibility for the successful completion of the work.

Gouges in the steel shall be ground smooth on a slope of 1:10. All grinding shall be in direction of stress (along the length of the beam). Gouges greater than 1/4 inch deep in edges of beams or plates shall be repaired by welding. Gouges greater than 1/16 inch on surfaces of the steel shall be repaired by welding. The filler metal shall extend 1/16 inch above the surface and shall then be ground smooth.

ITEM 107.97 (Continued)

All steel superstructure members shall be cleaned to meet the requirements of SSPC SP-10, Near-White Blast Cleaning and receive a prime coat prior to beginning steel repairs, in accordance with Subsection 961, "Maintenance Painting of Steel Bridges". The Engineer shall verify the deterioration extents prior to fabrication of repair components. Subsequent to successful steel repairs at each span and primer touch up of repair areas, the superstructure steel shall be painted with the intermediate and final coats. All costs of cleaning, prime coating, and painting shall be paid for under Items 961.201, 961.202, and 961.203.

Welding

All welding shall conform to the latest edition of the Bridge Welding Code AASHTO/AWS D1.5 and shall meet the following requirements unless specified otherwise:

All welding required to complete the repairs will be considered incidental to the repair and no separate compensation will be allowed. All welders shall be certified. Welders' qualifications certificates must be submitted to the Engineer for approval. Electroslag and electro gas welding will not be permitted. Welding will not be permitted when the air temperature is below 35° F or when the surfaces to be welded are wet from condensation, rain, snow, or ice. When the temperature is between 35° F and 45° F, the surface within 3" of the point where the weld is to be started shall be heated to a temperature of approximately 100° F, and this temperature shall be maintained as a minimum within this distance until the bead is completed.

The Contractor shall submit for approval by the Engineer a welding procedure for each of the repair areas that will require welding.

Inspection and Non-Destructive Weld Testing

All welds are to be inspected and tested (non-destructively) in accordance with latest addition of AASHTO/AWS D1.5 and the applicable provisions of the Standard Specifications Subsection 960, and the specifications stipulated in these special provisions.

Inspection shall consist of checking the type, location, size, length, returns and profile of field welds and shop welds. Welds will be evaluated by their surface appearance, completeness for penetration and fusion, avoidance of undercutting, freedom from slag, inclusions, porosity, cracks and general appearance.

All welds that are found to be defective shall be corrected in accordance with the AWS procedures and to the satisfaction of the Engineer and shall then be re-inspected as outlined above. The expense of such corrective work shall be borne by the Contractor.

The Contractor shall be responsible for Quality Control Inspection and Non-Destructive Weld Testing of all shop welding and field welding of non-fracture-critical members in accordance with the requirements herein specified. These costs shall be considered incidental to the various steel repair pay items.

ITEM 107.97 (Continued)**Cutting of Steel**

Existing steel components that are directed for replacement by the Engineer shall be carefully removed by dismantling existing connections. Cutting of existing steel shall be performed with care to avoid undercutting, overheating, notching or other damage of material which is to remain. The Contractor shall use temperature-indicating crayons which meet the approval of the Engineer for 275° F and 300° F. These indicator crayons shall be used on surfaces of the web and beam adjacent to an area undergoing a process of cutting or grinding as ordered by the Engineer.

Cutting or grinding shall be discontinued temporarily, to allow cooling, if the temperature of the base steel in the girder web or flange exceeds 275° F.

If the Contractor damages materials to remain during cutting operations, he shall replace, repair, or reinforce the damaged area as may be needed to restore the materials to existing condition prior to damage. This work shall be performed by the Contractor as ordered by the Engineer at no additional cost to MassDOT, and to the satisfaction of the Engineer.

Environmental

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

During chemical stripping, a hand washing facility may be used in lieu of a decontamination/changing facility. Hazardous material shall be collected during the disassembly and disposed of as outlined in Subsection 961.68 "Handling of Hazardous Waste and Reporting Release Programs". Submittals shall be according to Section 961.69 "Submittals".

Additional Requirements

The edges of the existing steel to be repaired, as well as the faces that will meet the new steel, shall be ground smooth and primed prior to the installation of the new plates or shapes. Any Holes in steel shall be drilled, not punched or burned. Rust holes +/- 3" in diameters shall be drilled through prior to installation of repair plates. Isolated rust holes in the girder web panel shall be drilled through or coped to a consistent web thickness of 1/8". Edges of the holes or copes are to be ground smooth to the satisfaction of the Engineer. Filler plates cut to fit shall be installed in places of severe rust holes and drilled through prior to installation of repair plates. Filler plates are incidental to this Item with no additional compensation.

The Contractor shall note that there are errant holes located on various intermediate web stiffeners at Bridges C-21-023 (0JN) & C-21-025 (0JK). Contractor shall field verify locations and holes shall be filled with high strength steel bolts in accordance with the 2016 AASHTO/NSBA Guidelines for Resolution of Steel Bridge Fabrication Errors, Chapter 3.1. In no instance shall plug welds or steel pins be used to fill errant holes. This work is incidental to this Item with no additional compensation.

ITEM 107.97 (Continued)

The Contractor is fully responsible for the accuracy and fit of the work and thus shall determine what measurements are required and shall allow adequate time and resources for obtaining field measurements in developing the fabrication and construction.

The Contractor shall submit shop drawings utilizing the field measurements of the replacement/repair areas to verify fit of bridge components and all other repair dimensions. Fabrication shall not start prior to acceptance of shop drawings.

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

Adequate measures shall be taken by the Contractor to prevent work generated debris, tools, and/or materials from entering adjacent roadway lanes or dropping to the ground or waterway below the structure. All debris and any materials which accidentally fall into such areas shall be removed immediately at the Contractor's expense. Any damage from falling debris shall be repaired by the Contractor to the satisfaction of the Engineer, at the Contractor's own expense.

Except as otherwise specified, all removed steel and appurtenances shall become the property of the Contractor who shall remove and dispose of this material.

The Contractor shall take the necessary precautions such as flaggers, warning signs and/or temporary protective structures for the safety of vehicles or pedestrians using any area adjacent to or under the work areas. Any such structure shall be adequate for the purpose and shall be approved by the Engineer.

ITEM 107.97 (Continued)

METHOD OF MEASUREMENT

Item 107.97 will be measured by the actual net weight of new steel in Pounds, including nuts, bolt heads and permanent washers installed in the structure, completed, and accepted by the Engineer.

BASIS OF PAYMENT

Item 107.97 will be paid at the Contract unit price by the actual net weight of new steel in Pounds, including nuts, bolt heads and permanent washers installed in the structure, completed, and accepted by the Engineer.

Payment shall constitute full compensation for all materials, labor, submittal preparation, equipment, scaffolding, welding, tools, field inspection, submittal preparation, utility support, diaphragm and cross frame support, localized cleaning and paint removal required to perform pair, and other incidentals thereto.

Under no circumstance shall this Item be used for compensation of horizontal steel bridge railing repairs. Removal of deteriorated rails and installation of new horizontal rails shall be paid for under Items 974.301 and 975.01 respectively.

Under no circumstance shall this Item be used for compensation of new steel for diaphragm retrofits. Diaphragm retrofit steel shall be paid for under Item 960.18.

<u>ITEM 127.1</u>	<u>REINFORCED CONCRETE EXCAVATION</u>	<u>CUBIC YARD</u>
<u>ITEM 127.13</u>	<u>REINFORCED CONCRETE COPING EXCAVATION</u>	<u>CUBIC YARD</u>

The Work under these Items shall conform to the relevant provisions of Subsection 120 and 482 of the Standard Specifications and the following:

Concrete surfaces will be inspected via visual and, where practicable, hammer sounding to determine limits of excavation. Costs associated for providing apparatus and personnel for sounding to determine limits of reinforced concrete excavation are incidental to these Items with no additional compensation. ASTM D4580-03 Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding shall be followed. The Contractor shall provide personnel, as directed by the Engineer, to assist the Engineer with sounding. The Engineer will determine and mark the limits of reinforced concrete excavation at each of the locations.

The work to be done under Item 127.1 involves the removal of reinforced concrete for work associated with concrete encased end diaphragms.

The work to be done under Item 127.13 involves the removal of reinforced concrete on the topside, fascia and underside (herein referred to as horizontal, vertical and overhead repairs respectively) of the bridge deck overhang (herein referred to as the coping). Excavation depth shall not exceed 50% of the existing concrete deck slab thickness for overhead repairs, and 6" for horizontal and vertical repairs on the coping

Prior to excavation, the Contractor shall cover all drainage structures and install silt sacks within catch basins that may be affected by the work. The structures shall remain covered until the new concrete has set and the area has been cleaned.

The Contractor shall take all precautions necessary not to damage that portion of the deck, including reinforcing steel, which is to remain. This includes determining the concrete cover to the steel bars at the edge of each patch prior to excavating concrete.

The edges of all areas where concrete is removed under these Items shall be cut to neat lines by saw cutting or by methods approved by the Engineer, to a depth of $\frac{3}{4}$ inch, and all costs in connection with such work shall be incidental to the pertinent Item. Patch areas shall be made rectangular in shape [as much as possible], with horizontal and vertical edges and square corners.

In case the reinforcing bars are exposed, the minimum depth of all cement concrete areas to be excavated shall be one (1) inch below the bottom of the top layer of longitudinal reinforcing steel throughout the entire excavated area. No concrete shall be placed until approval of the Engineer is given.

Surface preparation and concrete removal equipment shall be of the following types:

Pneumatic and Power-Driven Chipping Hammers: In no event shall any pneumatic or power hammer weighing in excess of twenty-five (25) pounds be used for the removal of concrete. The Contractor will be restricted to fifteen (15) pound chipping hammers when work involves repairs to slabs of prestressed concrete adjacent deck or box beams, or when removing concrete from below any reinforcing bar.

ITEMS 127.1 and 127.13 (Continued)

Abrasive Blasting Equipment: Abrasive blasting equipment shall be capable of removing rust and old concrete from exposed reinforcing steel when deemed necessary by the Engineer.

During the prosecution of this work, the Engineer may reject the use of any method or equipment which causes undue vibration or possible damage to the structure or any part thereof.

Bobcats/Skid Steers will be allowed only to collect debris from the deck surface and will not be allowed to remove concrete from the patch area. All concrete debris shall be removed by hand or by using hand tools. The smaller pieces may be blown out using an oil free compressed air after first being wetted with water to control airborne particulates.

Also, included under these Items are all costs in connection with the cleaning, cutting, and bending of the existing reinforcing steel designated to be retained in the proposed construction. Any existing reinforcing steel damaged or otherwise made unsatisfactory for continued use as a result of the Contractor's operations shall be replaced at the Contractor's expense. All reinforcing steel with active rusting encountered in the excavation shall be thoroughly cleaned by abrasive blasting and coated with a zinc-rich primer conforming to MassDOT Spec. No. M7.04.11 or as directed by the Engineer. Any reinforcing steel that is unsuitable for further use through no fault of the Contractor shall be replaced under Item 910.1. All reinforcing steel that is loose shall be tied tightly together using wire ties. Ties are required at every other intersection of transverse and longitudinal reinforcing.

The Contractor shall exercise caution when excavating near existing guardrail anchor bolts that are to remain. Any existing anchor bolts damaged or otherwise made unsatisfactory for continued use as a result of the Contractor's operations shall be replaced at the Contractor's expense.

Temporary Protective Shielding must be used on bridges over the waterway during excavation and when, in the opinion of the Engineer, there is the possibility of dislodging concrete from the bottom of the deck. All temporary shielding shall be installed prior to beginning any concrete excavation.

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

The Contractor shall take all measures necessary to protect pedestrian, vehicular traffic, and waterway from the construction operations. No debris, tools or incidental equipment of any kind will be permitted to fall into the waterway below. Any material that accidentally falls into the waterway shall be removed immediately.

All excavated materials shall become the property of the Contractor and shall be removed from the job site.

ITEMS 127.1 and 127.13 (Continued)

METHOD OF MEASUREMENT

Items 127.1 and 127.13 will be measured for payment by the Cubic Yard, complete in place.

BASIS OF PAYMENT

Items 127.1 and 127.13 will be paid at the respective contract unit price per Cubic Yard. The quantity paid for these Items shall be the actual area or volume excavated to be removed and properly disposed according to all city, town, State and Federal rules, regulations, and requirements and as required by the Engineer.

Item 127.1 will compensate the Contractor for excavation performed on concrete encased end diaphragms.

Item 127.13 will compensate the Contractor for excavation performed on the bridge copings.

The Contractor will be compensated under either Item 127.1, or 127.13 for excavated concrete. In no case will the Contractor be compensated under more than one Item for the same excavated material.

Payment for temporary protective shielding shall be made under Item 994.1.

The removal of any existing shielding and formwork required to access areas for excavation shall be incidental to these Items.

The Contract unit price shall include all labor, tools and equipment, including the incidental removal of any bituminous concrete and waterproof membrane, and sawcutting necessary to complete the work as required by the Engineer.

ITEM 127.12 **REINFORCED CONCRETE SUBSTRUCTURE** **CUBIC YARD**
EXCAVATION

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

The work under this Item consists of the removal and disposal of all deteriorated, spalled, and scaled concrete as required to repair the existing concrete substructure elements to the general lines identified on the drawings and as directed by the Engineer.

During the prosecution of the Work, the Engineer may reject the use of any method or equipment which causes undue vibration or possible damage to the structure or any part thereof. Pneumatic hammers heavier than the nominal 25 pounds mass shall not be used unless approved by the Engineer.

Minimum depth of excavation to sound concrete shall be one inch (1") beyond the inner most layer of reinforcing steel, but not less than four inches (4") from the original surface. The Contractor shall stop excavating deteriorated concrete when the depth of excavation reaches six inches (6") and shall notify the Engineer immediately. The edges of the patch shall be cut to neat lines by saw cutting or by methods approved by the Engineer, to a depth of $\frac{3}{4}$ inch, and all costs in connection with such work shall be incidental to this Item. The patch areas shall be made rectangular in shape (as much as possible), with horizontal and vertical edges and avoid over cutting square corners.

The Contractor shall limit the extent of excavation of the pier walls as shown on the repair sequence Contract Plans. No additional compensation will be made for excavation limits exceeded and the resulting increased repair area. The Contractor may submit an alternate method of reinforced concrete excavation to be approved by the Engineer. The alternate method, if approved by the Engineer, shall not incur any additional costs to the Department, and Item 127.12 Reinforced Concrete Substructure Excavation will be paid at the contract unit price regardless of the method used to complete the work.

The Contractor shall note that certain deteriorated areas undermine or encroach an existing bearing. Where possible, repairs in these areas shall be coordinated with jacking and shoring for bearing reset as shown on the Contract Plans. In this case, temporary shoring shall be installed prior to excavation and shall be compensated under Item 106.88.

Where bearing reset is not proposed, but concrete deterioration undermines or encroaches an existing bearing, the Contractor shall note the following:

At locations called out on the Contract Plans, the Contractor shall immediately halt concrete excavation in the vicinity of an engaged bearing if the length of undermining below the masonry plate exceeds 3 inches in either direction. The Engineer shall be notified to evaluate the need for temporary shoring of the beam end before excavation is resumed. In this case, temporary shoring shall be compensated under Item 106.89.

ITEM 127.12 (Continued)

The Contractor shall take all precautions necessary so as not to damage those portions of the bridge including reinforcing steel that are to remain. This includes determining the concrete cover to the steel bars at the edge of each patch prior to excavating concrete. Any steel that is unsuitable for further use through no fault of the Contractor shall be replaced under Item 910.1 Steel Reinforcement for Structures – Epoxy Coated. All reinforcing steel that is loose shall be tied tightly together using epoxy coated wire ties.

Also, included under this Item are all costs in connection with the cleaning, cutting, and bending of the existing reinforcing steel designated to be retained in the proposed repair. Immediately before preparation for placement of new concrete, the exposed reinforcing steel and concrete area to be patched shall be free of all oil, grease, rust, or other foreign materials. These materials shall be removed by abrasive blasting or other methods approved by the Engineer.

PREPARATION FOR PLACEMENT OF NEW CONCRETE

Before placing new concrete, the existing surface must be cleaned with oil-free compressed air. After the surface preparation has been accepted, every effort should be made to thoroughly wet the concrete surface and all porous surfaces to be in contact with new concrete for 24 hours. This may be accomplished by continuous wetting with soaker hoses or the use of burlap/burlene, etc., where moisture can be maintained. If, in the opinion of the Engineer, conditions or the situation prohibits this, then the surfaces should be wetted for as long as possible. Surfaces must be wetted by means acceptable to the Engineer using potable water. Preparation of concrete surfaces is to be compensated under Item 905.

The Contractor shall remove any puddles of free-standing water with oil-free compressed air, and protect the surfaces from drying, so the existing concrete remains in a clean, saturated surface dry (SSD) condition until placement of the new concrete.

The Contractor shall take all measures necessary to protect pedestrian and vehicular traffic from the construction operations. No debris, tools, or incidental equipment of any kind will be permitted to fall where vehicular or pedestrian traffic exists. Any material that accidentally falls into such areas shall be removed immediately.

DISPOSAL OF EXCAVATED MATERIALS AND SITE CLEANING

Surplus materials obtained from reinforced concrete excavation and not needed for further use, as determined by the Engineer, shall become the property of the Contractor, and shall be properly disposed of by the Contractor outside the location at no additional compensation.

The Contractor is required to broom clean all work site areas after the removal of excavated debris regardless of preexisting conditions. This includes areas under the excavated repair area. Removal of debris, site cleaning, and disposal of debris are incidental to the Contract and no additional payment will be made.

ITEM 127.12 (Continued)

METHOD OF MEASUREMENT

Items 127.12 will be measured for payment by the Cubic Yard of substructure concrete excavated, removed, and properly disposed of.

BASIS OF PAYMENT

Item 127.12 will be paid for at the Contract unit price per Cubic Yard, which shall include all labor, tools, equipment, and incidental costs required to complete the work, and final disposal of the excavated material to the satisfaction of the Engineer.

Payment for temporary shoring shall be made under Item 106.88 or Item 106.89.

ITEM 226.9

CLEANING BRIDGE DECK JOINTS

FOOT

Work under this Item shall consist of cleaning existing bridge deck joints to the limits specified on the Contract Plans and as directed by the Engineer. The work under this Item shall only include cleaning joint seals that are not scheduled for replacement.

All joints to be cleaned under this Item shall be cleaned by means of high-pressure oil free air hose or pressure washing with a non-phosphate, non-polluting detergent to remove all oil, grease, dirt, salt, guano, vegetation, and loose rust, concrete and paint.

Any joint seals compromised due to Contractor's operation shall be entirely replaced at no cost to MassDOT.

METHOD OF MEASUREMENT

Item 226.9 will be measured for payment by the Foot of deck joint cleaned.

BASIS OF PAYMENT

Item 226.9 will be paid for at the Contract unit price per Foot, which price shall be full compensation for all labor, materials, equipment, containment of debris, legal disposal of all waste, lighting of work areas, and all other incidentals required to complete the work as required by the Engineer.

Under no circumstance shall this Item be used for compensation of bridge deck joints cleaned for installation of new joint seals.

ITEM 477.51

RUMBLE STRIP MILLED AND PATCHED

FOOT

The work under this Item shall conform to the relevant provisions of Subsection 415 Pavement Milling, Subsection 450 Quality Assurance of Hot Mix Asphalt specifications and the following:

The rumble strip shall be removed by continuous milling, leaving a trench or groove with a consistent rectangular cross section. The entire width of the existing rumble strip (16") plus 2" on either side (total 20" wide) shall be milled to a minimum depth of 1.5". The milling depth may be adjusted by the Engineer based on field conditions but shall not exceed a depth of 2.5". If there is a longitudinal pavement joint within 6" of the patch, the width of the patch shall be extended to that joint to minimize pavement joints.

This Item shall be used as directed by the Engineer to excavate by milling and patch existing rumble strips on paved shoulders in areas of lane shifts or as required to implement the traffic control plan. The rumble strip milled and patched shall be repaved flush with the existing shoulder with HMA in accordance with Section 450 prior to opening to traffic.

All cleaning, sweeping, asphalt emulsion for tack coat, and joint adhesive shall be incidental to this item. Pavement Millings resulting from the operation shall become the property of the Contractor and removed and disposed of off the project site in a manner approved by the Engineer.

METHOD OF MEASUREMENT

Item 477.51 will be measured for payment by the length in feet of rumble strips removed and patched to the limits established by the Engineer.

BASIS OF PAYMENT

Item 477.51 will be paid for at the Contract unit price per Foot, which price shall include furnishing all labor, materials and equipment required to complete the work, as required and accepted by the Engineer.

No separate payment will be made for the HMA patch material, joint adhesive, or asphalt emulsion for tack coat, but all such costs shall be included in the unit price bi

ITEM 657.
ITEM 657.5**TEMPORARY FENCE**
TEMPORARY FENCE REMOVED AND RESET**FOOT**
FOOT

The work under these Items shall conform to the relevant provisions of Section 600 of the Standard Specifications and includes installation of a chain link fence shown on the plans and the following:

The temporary 6 foot high chain link fence shall be placed around the work area for site security as required by the Engineer and shall meet the requirements of the Standard Specifications and the Construction Standards, except the material need not be in new condition. Gates shall be used at all locations that are to be opened on a regular basis.

Temporary fence shall be reset as often as required by Contractor activities to meet the project schedule and to stage the construction, as required by the Engineer. The Contractor shall submit a plan to the Engineer indicating the locations and the lengths of each of these Items that he/she anticipates he/she will provide for the project. The methods of installation(s) and fence detail(s) shall also be submitted for approval by the Engineer.

The Contractor shall inspect the condition of temporary fence on a daily basis. Temporary fence that is damaged shall be promptly replaced.

METHOD OF MEASUREMENT

Item 657. and Item 657.5 will be measured for payment per FOOT of Temporary Fence and Temporary Fence Removed and Reset respectively.

BASIS OF PAYMENT

Item 657. and Item 657.5 will be paid for at the Contract unit price per FOOT; which prices shall include all labor, materials, equipment, and incidental costs required to complete the work including posts, fence fabric, gates, bracing, and footings.

No payment will be made for the final removal of the temporary fence.

ITEM 740. ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work under this Item shall conform to the relevant provisions of Subsection 740 of the Standard Specifications and the following:

Two computer systems and printer system meeting minimum requirements set forth below including installation, maintenance, power, paper, disks, and other supplies shall be provided at the Resident Engineer's Office:

All equipment shall be UL approved and Energy Star compliant.

The Computer Systems 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 system, and printer shall remain the property of the Contractor at the completion of the project. Disks, flash drives, and card readers with cards shall become the property of the Department.

Compensation for this work will be made at the contract unit price per month which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

ITEM 850.44**TEMPORARY 6 INCH PLASTIC TAPE
PAVEMENT MARKING LINE****FOOT**

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

Work shall consist of furnishing and placing temporary plastic tape pavement markings at locations shown on the plans or as approved by the Engineer. Tape shall be white when used as a right edge line or lane line and shall be yellow when used as a left edge line. Tape shall be black when used to cover existing pavement markings. Lines shall be six inches wide.

Temporary raised pavement markers will not be allowed as a substitute for temporary plastic tape pavement marking lines unless approved by the Engineer for use as a transition between the existing pavement markings and the temporary plastic tape pavement marking lines. Temporary raised pavement markings may be used as a substitute for temporary tape pavement markings when the markings are immediately adjacent to a concrete barrier or guardrail such that the markings will not be subject to traffic. The temporary raised pavement markers will be measured for payment as temporary tape pavement markings when their use has been approved by the Engineer.

MATERIALS

This is a proprietary specification. The material to be used shall be 3M™ Stamark™ 710 All Weather Removable Tape or approved equal.

Temporary preformed wet-reflective pavement markings are composed of preformed thermoplastics, tape, or other materials premixed with pigments, glass spheres or other reflective materials, and other additives to control color, retroreflectivity, flexibility, and skid resistance.

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.

The pavement markings shall be certified by the manufacturer for installation on asphalt or concrete surfaces at temperatures of 50°F and rising or greater.

Post-installation, the surfaces of all temporary preformed wet-reflective pavement markings shall provide a minimum skid resistance value of 35 British Pendulum Number (BPN) when tested in accordance with ASTM E303, with exception to crosswalks, stop lines, and markings that delineate bicycle facilities, which shall provide a minimum of 55 BPN.

Temporary preformed wet-reflective pavement markings shall have a minimal tensile strength of 1,300 psi when tested in accordance with ASTM D638, using a Type I sample geometry and a strain rate of 12 in. per minute.

ITEM 850.44 (Continued)

Retroreflective properties shall be verified by an independent laboratory prior to installation. The average initial retroreflectance readings shall meet or exceed the following minimum values:

Test Method	*White Markings	*Yellow Markings
ASTM E1710 (Dry)	500 mcd/m ² /lux	300 mcd/m ² /lux
ASTM E2177 (Wet Recovery)	300 mcd/m ² /lux	250 mcd/m ² /lux
ASATM E2832 (Continuous Wetting)	250 mcd/m ² /lux	200 mcd/m ² /lux

*Observation Angle = 1.05°, Entrance Angle = 88.8°

Temporary preformed wet-reflective pavement markings shall be removable in large strips from asphalt or cement concrete at temperatures of 40°F or greater without the use of heat, solvents, grinding, or blasting.

The Contractor shall provide a Certificate of Compliance verifying the product supplied will meet the color, friction, and retroreflectivity requirements prior to installation.

CONSTRUCTION METHODS

The Contractor shall supply Shop Drawings to the Engineer for approval a minimum of 30 days in advance of installation. Shop Drawings shall include the product manufacturer's instructions, material safety data sheets (MSDS) for all components, including any primers, and all tools, equipment, and procedures to be used for the installation. No work shall commence until the Shop Drawings have been approved.

The Contractor shall follow all manufacturer's instructions for installation. Deviations shall only be allowed if exceptions are included in the approved Shop Drawings or otherwise directed in writing by the Engineer. A manufacturer's technical representative must be on site for the initial installation of temporary markings.

Temporary plastic tape pavement markings shall only be applied from April 15th to November 15th.

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 that are to remain and are damaged due to the installation of the temporary preformed wet-reflective pavement markings shall be removed and replaced by the Contractor at no additional cost.

Any and all surface preparation required by the manufacturer's instructions shall be completed prior to installation. Surface preparation shall be considered incidental to the cost of the item.

ITEM 850.44 (Continued)

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 temporary preformed wet-reflective pavement markings installation from vehicle and foot traffic throughout the minimum cure time recommended by the manufacturer.

The Contractor shall remove the temporary preformed wet-reflective pavement markings at the direction of the Engineer. The Contractor shall be responsible for the disposal of removed markings in accordance with all federal, state, and local regulations. The removal and disposal of these markings shall be considered incidental to the cost of the item.

METHOD OF MEASUREMENT

Item 850.44 shall be measured by the Foot. Removal of the Temporary Plastic Tape Pavement Marking lines shall be incidental to the item.

The measurement of temporary broken white lines will include the gaps when painted.

BASIS OF PAYMENT

Item 850.44 will be measured paid at the Contract price per foot. This price shall include all labor and materials to furnish, install and maintain the tape markings, in accordance with the manufacturer's specifications. The removal and disposal of the tape markings upon completion, as directed by the engineer, shall be considered incidental to the cost of the item.

ITEM 853.21**TEMPORARY BARRIER REMOVED AND RESET****FOOT**

Work under this item shall conform to the relevant provisions of Subsection 850 and shall consist of removing, transporting and resetting temporary barrier systems and limited deflection temporary barrier systems from alignments established along the roadway to new alignments in accordance with the details shown on the plans, as required by the construction and staged construction operations and as required by the Engineer for the channelization of traffic and/or work zone protection.

The work shall also include furnishing and installing all hardware and associated materials per the details and/or manufacturer's specifications. The work shall also include necessary patches and repairs caused by the temporary barrier system to damaged pavement surfaces or any adjacent longitudinal barrier once the system has been removed.

Temporary barrier systems and limited deflection temporary barrier systems shall be removed from existing locations and reset in accordance to the construction methods stated in the respective barrier items.

Damage to the pavement surface or adjacent permanent barriers caused by removing or resetting temporary barrier shall be repaired as directed by the Engineer at the Contractor's expense.

Method of Measurement and Basis of Payment

Item 853.21 will be measured and paid by the foot, in place which shall provide full compensation for removing, relocating, resetting, realigning, and transporting maintaining the temporary barrier system and/or limited deflection temporary barrier system. The Contractor will be paid for this item each time the barrier is relocated either to a new work zone, to off-season storage, or back to the project from storage. The Contractor will not be separately compensated for any work necessary to maintain or re-align units or replace damaged units. No payment will be made for removing and resetting barriers for the purpose of gaining access to the construction work zone. No payment will be made for removing, relocating and resetting any barriers moved for the convenience of the Contractor.

For temporary barrier systems that require anchorage systems, the cost of furnishing, installing and removing the anchorage and hardware and the restoration of pavement surfaces or adjacent permanent barrier systems to facilitate anchorage shall be considered incidental to the cost of this Item.

ITEM 853.33 TEMPORARY BARRIER - LIMITED DEFLECTION (TL-3) FOOT

The work under this Item shall conform to the relevant provisions of Subsection 850 of the Standard Specifications 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 temporary barrier systems shall have a maximum dynamic deflection of 24 inches or less and shall be used in areas where the available clear area behind the barrier system is 24 inches or less.

The Contractor shall use a temporary 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 limited deflection temporary 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 barrier system.

The Contractor shall supply shop drawings to confirm the available clear area behind the 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 limited deflection temporary barrier systems in conformance with the relevant provisions of Subsection 850.69 and shall be incidental to the temporary barrier systems.

Temporary impact attenuators that are listed on the Qualified Traffic Control Equipment List shall be used whenever a blunt end of the limited deflection temporary 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.

CONSTRUCTION METHODS

Limited deflection temporary barrier systems shall be placed in line with the drawings. Installation shall be per the manufacturer's specifications, details, and the approved shop drawings.

ITEM 853.33 (Continued)

The Contractor shall not place any breaks in the limited deflection temporary 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, limited deflection temporary 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 and/or bridge deck surface caused by the limited deflection temporary barrier during installation while in service and/or during removal shall be repaired as directed by the Engineer at the Contractor's expense.

METHOD OF MEASUREMENT

Item 853.33 will be measured for payment by the Foot of limited deflection temporary barrier installed in place.

BASIS OF PAYMENT

Item 853.33 will be paid for at the Contract unit price per Foot of limited deflection temporary barrier installed in place, including all incidental items. This price shall include the cost of furnishing, installing, maintaining and final removal of all limited deflection temporary barrier systems.

No separate payment will be made for barrier systems that require anchorage systems, the cost of furnishing and installing the anchorage and hardware and the restoration of pavement surfaces or adjacent permanent barrier systems to facilitate anchorage but all costs associated therewith shall be included in the Contract unit bid price.

Payment for limited deflection temporary barrier removed and reset will be made under Item 853.21.

ITEM 854.6**TEMPORARY PORTABLE RUMBLE STRIP****DAY**

Work under this Item consists of furnishing, deploying, maintaining proper operating conditions, and removing temporary portable rumble strips (TPRS) for temporary lane closures.

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 ordered to be 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 2™ 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)

D. 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

Item 854.6 shall be measured in arrays of three (3) temporary portable rumble strips which are 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

Item 854.6 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.

<u>ITEM 862.506</u>	<u>FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (6 INCH WHITE LINE)</u>	<u>FOOT</u>
<u>ITEM 862.512</u>	<u>FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (12 INCH WHITE LINE)</u>	<u>FOOT</u>
<u>ITEM 863.506</u>	<u>FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (6 INCH YELLOW LINE)</u>	<u>FOOT</u>

Work to be completed under these Items shall conform to the relevant provisions of Subsection 860 of the Standard Specifications and shall consist of furnishing and installing Multi-Component Wet Reflective Pavement Markings at the locations shown on the plans or as directed by the Engineer.

MATERIALS

Fast Dry Multi-Component Wet Reflective Pavement Markings shall consists of a liquid binder, first drop beads or elements to provide dry and wet retro reflectivity, and second drop glass beads to improve the durability of the pavement marking, reduce track-free times, and provide supplementary dry retro reflectivity. Multi-Component Pavement Marking binders are typically composed of, but not limited to, Epoxies, Polyureas, and Urethanes.

Classification of dry time is based upon the results of the test procedures found in ASTM D711 (73.5 ± 3.5°F at 50 ± 5% relative humidity) when applied with glass beads. Fast Dry Multi-Component Pavement Markings shall have a no track time of 10 minutes or less when tested under ASTM D711. The Contractor shall provide a Certificate of Compliance verifying the product supplied meets the specified dry time requirements per ASTM D711 prior to installation.

The Contractor shall select a liquid binder and bead/element combination that meets these performance specifications.

Second drop beads shall be manufactured from glass of a composition that is highly resistant to traffic wear and to the effects of weathering. If coating is required to meet the performance requirements, the second drop beads shall be coated to ensure satisfactory embedment and adhesion. Second drop beads retained on a No. 40 U.S. Standard Mesh Sieve shall have a minimum crush strength of 30 lbs. when tested in accordance with ASTM D1213.

Second drop beads passing the No. 30 sieve shall have a minimum of 75 percent true spheres when tested in accordance with ASTM D1155. All second drop beads retained on the No. 20 and No. 30 sieves shall have a minimum of 80 percent true spheres as determined by ASTM D1155.

ITEMS 862.506, 862.512 AND 863.506 (Continued)

Second drop beads shall meet the following gradation requirements when tested in accordance with ASTM D1214:

U.S. Standard Sieve No.	Percent Retained
20	3-10
30	15-35
50	45-75
70	0-10
Pan	0-5

CONSTRUCTION METHODS
Installation of Multi-Component Wet Reflective Pavement Markings

A manufacturer's technical representative must be onsite for the initial installation of the tape. Tape installation shall be done in strict accordance with manufacturer's requirements and the following:

Application rate for binder and all beads and elements shall consider final pavement surface composition and smoothness in advance of application to ensure proper wet film thickness and embedment of all beads and elements. The Contractor shall provide the Engineer with documentation from the Manufacturer with all recommended application rates in advance of any pavement marking installation.

The minimum uniform wet thickness for the multi-component binder shall be 25-30 mils. The line thickness shall be met across at least the middle $\frac{2}{3}$ of the pavement marking width. Depth plates shall be provided by the Contractor to the Engineer to assure that desired thickness is achieved.

The finished white color shall be free from tint, with good opacity and visibility under both daylight and artificial light. The finished yellow color shall be defined by Federal Test Standard 595 - Color Chip Number 13538, using Federal Test Standard 141 (Method 4252). The finished lines shall be uniform in color and have clean, well-defined edges.

First and second drop beads and/or elements shall be applied in a manner that does not induce rolling or bouncing, to ensure that exposed portions of beads are free of binder material. Beads and elements should be embedded in the binder to a depth of approximately 50% of their diameter.

Drop rate for first drop bead or element shall be per the Manufacturer's specifications.

Drop rate for second drop glass bead shall be 6.4-10.2 lbs. per gallon.

Newly installed pavement markings shall be protected from tracking during the setting period per Subsection 860.63.

ITEMS 862.506, 862.512 AND 863.506 (Continued)

Once the installed pavement markings have been open for traffic for a minimum of 48 hours, the Contractor shall perform retro reflectance readings per the measurement and sampling procedures contained in ASTM D7585 (Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments) using the Referee Evaluation Protocol found in section 6.4. 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 Retro reflectometer*); and
2. ASTM E2177 (*Standard Test Method for Measuring the Coefficient of Retroreflected Luminance (R_L) of Pavement Markings in a Standard Condition of Wetness*).

The average initial retro reflectance readings shall exceed the following minimum values:

	*White Markings	*Yellow Markings
ASTM E1710 (Dry)	475 mcd/lux/m ²	375 mcd/lux/m ²
ASTM E2177 (Wet Recovery)	375 mcd/lux/m ²	300 mcd/lux/m ²

*Observation Angle = 1.05°, Entrance Angle = 88.8°

Pavement markings with measured average initial retro reflectance 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 additional cost, unless otherwise instructed by the Engineer.

The Contractor shall be responsible for the maintenance and upkeep of the pavement markings for the duration of the project as well as any necessary restoration of damaged tape.

METHOD OF MEASUREMENT

Items 862.506, 862.512, and 863.506 will be measured per FOOT, complete in place, as specified under Subsection 860.80.

BASIS OF PAYMENT

Items 862.506, 862.512, and 863.506 will be paid for at the contract unit prices per FOOT, and shall include all material, labor, and equipment required or incidental to the satisfactory completion of the work.

<u>ITEM 866.706</u>	<u>6-INCH WHITE LINE WITH BLACK CONTRAST - RECESSED (PF, WR)</u>	<u>FOOT</u>
<u>ITEM 867.706</u>	<u>6-INCH YELLOW LINE WITH BLACK CONTRAST - RECESSED (PF, WR)</u>	<u>FOOT</u>

Work under these Items consists of furnishing and installing recessed pavement marking lines (Patterned, 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.

MATERIALS

This is a proprietary specification. 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 the 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 E03.

Retroreflective properties shall be verified by an independent laboratory prior to installation. The average initial retroreflectance readings shall meet or 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 black contrast shall be non-reflective and 1 to 2 in. wide, adding a total of 2 to 4 in. of nominal width to the line.

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.

ITEMS 866.706 AND 867.706 (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

Items 866.706 and 867.706 shall be measured per foot, complete in place, as specified under 860.80.

BASIS OF PAYMENT

Items 866.706 and 867.706 shall be paid for at the respective contract unit price per foot. The contract prices shall include all material, labor, and equipment required or incidental to the satisfactory completion of the work. The installation, inspection, and acceptance of the groove shall be considered incidental to the cost of the Items.

ITEM 905. **4000 PSI, 3/8 INCH, 660 CEMENT CONCRETE** **CUBIC YARD**

Work done under this Item shall conform to relevant provisions of Subsections 100 and 901 of the Standard Specifications and the following:

Work under this Item shall consist of forming and placing new concrete in areas that have been excavated, at the direction of the Engineer.

In no instance shall this Item be used for the repair of overhead patches located on the underside of the bridge deck overhang. Overhead repairs shall be filled with Overhead Repair Mortar for Patching and compensated under Item 905.001.

All concrete surfaces to be patched with new concrete must be thoroughly roughened, cleaned of all laitance, dirt, grease, oil, and other contaminants. The concrete shall have a surface profile of $\pm 1/16$ " with new exposed aggregate surface. Reinforcing steel shall be cleaned of all contaminants and rust. Reinforcing steel required to replace existing deteriorated reinforcing steel, which is intended to be retained, shall be paid under Item 910.1.

The Contractor shall use a high pressure (100 PSI) oil free air hose, and such additional means as may be required, to clean the existing concrete surfaces and to remove loosened particles of concrete.

After the surface preparation has been accepted, every effort should be made to thoroughly wet the concrete surface, and all porous surfaces to be in contact with new concrete, for 12 hours. This may be accomplished by continuous wetting with soaker hoses or the use of burlap/burlene, etc. where moisture can be maintained. If, in the opinion of the Engineer, conditions or the situation prohibits this, then the surfaces should be wetted for as long as possible. Surfaces must be wetted by a means acceptable to the Engineer using potable water.

The Contractor shall remove any puddles of free standing water with oil-free compressed air, and protect the surfaces from drying, so the existing concrete remains in a clean, saturated surface dry condition until placement of the new concrete

Any steel damaged or otherwise made unsatisfactory for continued use by the Contractor's operation shall be replaced by him at his own expense.

For concrete beam seat repairs extending to the face of backwall, a bead of methacrylate crack sealer in accordance with the manufacturer's requirements and the Standard Specifications shall be applied at the interface of beam seat and backwall along the length of repair as shown on the Contract Plans. Crack sealer shall be applied after the repair curing period is complete and in accordance with the manufacturer's requirements and the Standard Specifications.

ITEM 905. (Continued)

Control Joints

Where the existing construction joint is located through a repair to the bridge structure it shall be saw cut as soon as the concrete can be cut without plucking or spalling the aggregate. The saw cut shall be made to the maximum feasible depth without injuring the reinforcing steel.

Curing

Curing shall conform to Subsection 901.68: Protection, Curing, and Finishing, except that no spray-applied waterproof protective membranes may be used. Actual length of curing time will be determined by test cylinders.

METHOD OF MEASUREMENT

Item 905. will be measured for payment by the Cubic Yard, complete in place and accepted.

BASIS OF PAYMENT

Item 905. will be paid at the Contract unit price per Cubic Yard, which price shall include all labor, materials, formwork, tools, equipment, and incidentals required including any methods and means to complete the work.

The installation and subsequent removal of any formwork and coating of the steel reinforcing shall be incidental to Item 905.

The procurement and installation of methacrylate crack sealer for concrete bridge seat repairs shall be incidental to Item 905.

ITEM 905.001 OVERHEAD REPAIR MORTAR FOR PATCHING SQUARE FOOT

The work to be performed under this Item shall conform to the relevant provisions of Subsection 901 of the Standard Specifications, the Contract Construction Plans and the following:

The work shall consist of forming and placing single component shrinkage compensated mortar repair material that is pre-extended, polymer modified, and contains an integral corrosion inhibiting admixture. It shall be used for concrete repairs to the underside of the bridge coping (herein referred to as overhead repairs) at locations shown on the Contract Plans and as directed by the Engineer.

Under no circumstance shall this Item be used for horizontal or vertical applications on concrete substructure or coping repairs unless otherwise specified by the Engineer.

The Contractor shall remove all deteriorated or spalled concrete in the areas as shown on the Plans or as designated by the Engineer. Removal of all deteriorated and spalled concrete designated to be removed shall be compensated under Item 127.13.

The Contractor shall be experienced in this type of work and present proof of such experience by providing written documentation listing several projects on which single component shrinkage compensated micro concrete was satisfactorily placed under his supervision.

The mortar shall be applied by workmen who, in the judgment of the Engineer, are sufficiently experienced and skilled in this class of work.

MATERIAL

The repair mortar shall consist of pre-blended components that shall only require the addition of a prescribed quantity of potable water prior to mixing and placement in the forms. The repair mortar shall provide the following physical properties based on Independent Test Results performed within the last three (3) years.

PROPERTY	RESULTS	TEST METHODS
Fresh Wet Unit Weight	137 to 144 PCF	ASTM C 138
1 Day Compressive strength (2" Cubes)	2200 PSI	ASTM C 109
7 Day Compressive strength (2" Cubes)	5000 PSI	ASTM C 109
28 Day Compressive strength (2" Cubes)	6000 PSI	ASTM C 109
28 Day Compressive strength (3" x 6" Cylinders)	5000 PSI	ASTM C 39
Flexural Strength at 28 Days	1100 PSI	ASTM C 348
Slant Shear Bond Strength at 7 Days	1750 PSI	ASTM C882
Slant Shear Bond Strength at 28 Days	2400 PSI	(modified ¹)
Splitting Tensile Strength at 28 Days	500 PSI	ASTM C496
Drying Shrinkage at 28 Days	700 Micro Strain	ASTM C157 (modified)
Freeze/Thaw Resistance % RDM ²	95	ASTM C 666
Rapid Chloride Permeability at 28 Days	Less Than 1000 Coulombs	ASTM C 1202

ITEM 905.001 (Continued)

¹ No Bonding Agent

² Relative Dynamic Modulus

The repair mortar shall conform to EPA/USPHS Standards for surface contact with potable water, shall not produce a vapor barrier, and shall be thermally compatible with concrete.

The Contractor shall furnish notarized certification that all materials conform to the above requirements.

CONSTRUCTION METHODS**Mixing**

Thorough mixing of the repair mortar is required. A forced-action mixer is essential. Mixing in a suitably sized container using an appropriate paddle with a slow speed (400-500 rpm) heavy-duty drill is acceptable. Free-fall mixers must not be used. Only full bags shall be mixed and used. It is essential that machine mixing capacity and the crew size is adequate to enable the placing operation to be carried out continuously. Mechanically mix in appropriate sized mortar mixer or with electric drill and paddle.

Temperature Restrictions

The mixing shall be carried out in accordance with the manufacturer's specifications. The repair mortar shall not be mixed and placed when air or substrate temperatures are below 45°F. Cold weather protection shall be provided in accordance with Subsection 901.64 C of the Standards. Hot weather protection shall be provided in accordance with Subsection 901.64 A of the Standards.

Preparation of Substrate Surfaces

The edges of the areas to be repaired shall be saw cut to a minimum depth of 3/4" to avoid featheredging and to provide a squared edge. All deteriorated, scaling, loose or unsound concrete shall be removed by mechanical or hand chipping. The remaining surface shall be free of oil, grease, paint, corrosion deposits, dust, laitance or other surface contamination. The effectiveness of the cleaning shall be verified with a pull off test. No method of surface preparation shall be used that could damage sound concrete.

All reinforcing steel shall be abrasively blast cleaned in accordance with the ICRI Technical Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion"

The Contractor shall have the approval of the Engineer certifying that all spalled and deteriorated concrete has been removed prior to repairing the deteriorated areas; all reinforcing steel is satisfactorily cleaned.

ITEM 905.001 (Continued)**Forming and Placement of Repair Mortar**

1. All formwork shall be rigid and tight to prevent loss of material. All forming shall be designed by a Professional Engineer that is registered in Massachusetts. All elements of the formwork and anchorages shall be designed for a pressure of 12 PSI. All submittals shall be reviewed and approved by the District Bridge Engineer.
2. The forms shall be watertight with perimeters lined with foam gasket material.
3. Form ports for pumping the mortar shall be placed no greater than 4 feet on center. Venting ports shall be placed no more than 2 feet on center.
4. The formwork shall include drainage outlets for presoaking of the substrate.
5. Form detailing shall allow for a minimum of 1-1/2" cover over all steel.
6. A suitable form release agent shall be used to facilitate the removal of forms from the cast material.
7. The forms shall be filled with clean water 24 hours prior to the mortar placement.
8. Immediately before placing, the water shall be drained and the drainage outlets sealed, leaving the substrate saturated surface dry (SSD) with no ponded water remaining.
9. In jobsite circumstances where the formwork cannot be filled with water, spray the substrate with clean water to achieve a saturated surface dry (SSD) condition immediately before placing the mortar.
10. The pump shall be capable of continuous even flow of mortar into the repair cavity without having any line surge. Line surge will result in possible air voids and segregation.
11. Prior to pumping mortar, all hoses must be pre-wetted with clean water to ensure that initial flow properties are maintained.
12. The pumping distance must be kept to a minimum. The pumping hoses shall be a minimum diameter of 3 times to size of the largest aggregate and the minimum size permitted shall be 1" diameter.
13. The pump pressure shall be limited to the minimum necessary to completely fill the cavity with repair mortar.
14. Immediately after mixing, pump the repair mortar into the formed area.
15. District personnel shall cast (6) 2-inch by 2-inch cubes to determine that 1 and 7 day compressive strength results meet the requirements of the performance criteria.

Curing

1. Formwork shall remain in place until a minimum compressive strength of 2500 psi is reached, or 5 days, whichever is greater.
2. If the repair area is not to receive a protective coating, an approved curing compound shall be applied to the repair area upon form removal.
3. If the repair area is to receive a protective coating, polyethylene sheeting shall be applied to the repair area and the sheeting perimeter shall be taped down until the completion of a 7 day curing period.

ITEM 905.001 (Continued)

Manufacturer's Field Representative

1. The Contractor shall arrange with the mortar manufacturer to have the services of a competent field representative at the work site prior to any mixing of components to instruct the work crews in the proper mixing and application procedures. The field representative shall remain at the job site after work commences to instruct until she/he and the Engineer are satisfied that the crew has mastered the technique of installing the system successfully. The representative shall make periodic visits to the project as the work progresses and shall confer on each visit with the Engineer.
2. The Manufacturer's Field Representative must be fully qualified to perform the work and shall be subject to the approval of the Engineer.
3. The Contractor shall be completely responsible for the expense of the services of the required field representative and the bid contract price shall be full compensation for all costs in connection therewith.

METHOD OF MEASUREMENT

Item 905.001 will be measured by the Square Foot of repair area, completed in place and accepted by the Engineer. Forming of the repair areas and pre-wetting of the substrate shall be considered incidental to the work and shall not be measured for payment.

BASIS OF PAYMENT

Item 905.001 will be paid for at the Contract Unit Price per Square Foot as directed by the Engineer, complete in place and accepted.

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

The removal of deteriorated concrete will be paid for separately under Item 127.13, Reinforced Concrete Coping Excavation.

ITEM 913.2**CORING AND GROUTING ANCHOR BOLTS****EACH**

The work under this Item shall include coring and grouting new anchor bolts for the reinstallation of the south bridge railing at Bridge C-21-025 to its original location as shown on the Plans, or as directed by the Engineer.

The work under this Item shall also include drilling and grouting new anchor bolts for the installation of new keeper angle steel as shown on the Plans or as directed by the Engineer.

Temporary removal and resetting of the existing railing is included under Item 974.12.

All existing anchor bolts removed as part of the work under Item 974.12 shall be discarded. The geometry of all new anchor bolts and hardware installed, including bolt size, length, embedment depth, etc., are in accordance with the Contract Plans.

MATERIALS

All new anchor bolts and hardware to be installed under this Item shall conform to the requirements of ASTM F1554. All bolts, nuts and washers shall be mechanically galvanized in accordance with requirements of ASTM B695, Class 50. Galvanized bolts shall be retested after galvanizing as required by ASTM F3125.

The grout to be used for this work shall be a non-shrink cementitious mortar. Materials used to perform this work shall be listed on the MassDOT Qualified Construction Materials List. The Contractor shall submit proposed materials to the Engineer for review and approval.

METHODS

All existing anchor bolts shall be removed from the concrete via coring. The cored holes shall receive the new anchor bolts installed when resetting the existing bridge railing on top of the rehabilitated coping.

All holes shall be diamond core drilled where possible after all concrete coping repair areas have been completed and cured. The inner surfaces of diamond core drilled bolt holes shall be scored to develop sufficient keying action. The method of scoring the core hole's inner surfaces shall be subject to the approval of the Engineer. The depth and diameter of the drilled core holes shall be as shown on the Plans, except that the depth of drilled core hole shall be modified as required to comply with the minimum depth of hole specified in the product literature of the cementitious mortar by the Contractor. The holes shall be blown clear of any debris and shall have the approval of the Engineer prior to the placement of any grout material.

ITEM 913.2 (Continued)

The drilling operation shall be performed without causing damage to the portions of the structure that are to remain in place. The Contractor shall take care to avoid drilling through the existing reinforcing present in the coping. If during the drilling operation the Contractor hits existing rebar, the Contractor shall immediately notify the Engineer. Any drill holes that conflict with existing rebar shall be repaired as directed by the Engineer. Under no circumstances shall the existing anchor bolt layout or post spacing be altered. Any damage to any existing portions of the structure that are to remain in place shall be repaired to a condition equal to or better than existing condition prior to the beginning of the Contractor's operations and shall be repaired at the Contractor's expense.

The Contractor shall follow the recommendations of the manufacturer for mixing and placing the grout material prior to the placement of the anchor bolts. The Contractor shall, at a minimum, adhere to the ACI code requirements regarding minimum and maximum temperatures while placing the grout. Any excessive grout around the hole after placement of the bolt shall be struck off smooth while the grout is still fresh to maintain a level surface for the post baseplate.

SUBMITTALS

Prior to the commencement of any work under this Item, the Contractor shall submit to the Engineer for review and approval a submittal containing the grout manufacturer's literature completely describing the products to be utilized. The materials shall be delivered clearly marked with legible and intact labels containing the manufacturer's name, brand name, and identification of the areas where temperatures conform to manufacturer's instructions and recommendations.

METHOD OF MEASUREMENT

Item 913.2 will be measured for payment by Each drilled and grouted hole regardless of depth, length or size of bolts accepted by the Engineer, complete in place.

BASIS OF PAYMENT

Item 913.2 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for the furnishing, supply, and installation of new bolts, but all costs in connection therewith shall be included in the Contract unit price bid.

The Contractor shall have no claim for any variations in the diameter of the hole, the method of drilling the hole, or the type of grout used in anchoring the proposed bolts.

No payment will be made for cored holes that are not ultimately receiving an anchor bolt which anchors the bridge railing to the concrete curb.

ITEM 920.01

GRANITE CAPSTONE BRIDGE – NO. C-21-023

EACH

The work under this Item shall include the installation of new granite capstones on top of the existing masonry end posts at Bridge No. C-21-023 as shown on the Contract Plans.

METHODS

The Contractor shall furnish new granite capstones as shown on the original 1958 Bridge Plans and install at locations shown on the Contract Plans unless otherwise directed by the Engineer.

Any displaced masonry blocks shall be reset prior to installation of the capstone to ensure the original conditions are restored.

The new granite capstone shall be installed on a mortar bed measuring ¼” thick. New steel anchors shall be installed in the new granite capstones and drilled and dowelled into the existing end post. Size, quantity, and embedment of anchors shall be determined based on the original bridge plans.

METHOD OF MEASUREMENT

Item 920.01 will be measured for payment by the Each granite capstone installed, complete in place.

BASIS OF PAYMENT

Item 920.01 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment shall be made for new steel anchors and mortar bed, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 960.1

STRUCTURAL STEEL – COATED STEEL

POUND

The work under this Item shall conform to the relevant Provisions of Subsection 960 and 961 of the Standard Specifications and the following:

The work to be done under this Item shall consist of furnishing and installing new keeper plate steel at locations identified on the Contract Plans or as required by the Engineer. Drilling and grouting anchor bolts shall be compensated under 913.2.

The Contractor shall submit to the Engineer a plan of the proposed repairs, showing the methods of procedures, materials, and equipment they intend to use. Approval of this submission shall be obtained prior to the commencement of any work under this Item.

All new structural steel and anchor bolts shall conform to the requirements of Subsection M8.05.0 and M8.01.5 of the Standard Specifications respectively.

Contractor shall ensure keeper plate sits level on concrete bridge seat. Surface preparation to ensure level bearing, including but not limited to, grinding and cleaning shall be considered incidental to this Item. Fabrication and installation of neoprene pads shall also be considered incidental to this Item.

Contractor shall field verify length of keeper plate leg overlap to ensure proper clearance to the beam bottom flange prior to welding in accordance with the Contract Plans. Field welding shall be considered incidental to this Item.

New keeper plate steel shall be painted with the intermediate and final coats prior to successful installation. All costs of cleaning, prime coating, and painting shall be paid for under Items 961.201, 961.202 and 961.203.

METHOD OF MEASUREMENT

Item 960.1 will be measured for payment by the Pound of steel completed in place and accepted by the Engineer.

BASIS OF PAYMENT

Item 960.1 will be paid at the Contract unit price per Pound, which price shall include all labor, materials, tools, equipment, and incidentals required to complete the work.

ITEM 960.18 **STRUCTURAL STEEL – DIAPHRAGM RETROFIT** **POUND**

The work under this Item shall conform to the relevant requirements in Subsections 960 and 961 of the Standard Specifications, and the following:

The work under this Item shall consist of installing end diaphragm retrofits at locations shown in the Contract Drawings.

At locations of end diaphragm retrofits, the existing channel diaphragms, cross frames and connection plates shall be removed and discarded. New connection plates and steel beam diaphragms will be installed according to the diaphragm retrofit details contained in the Contract Plans. Where a beam end repair is proposed at the same location as a diaphragm retrofit, the Contractor shall ignore the proposed bent backer plates (herein referred to as connection plates) shown on the beam end repair detail and refer to the diaphragm retrofit details for alternate connection plates. Contractor shall confirm all diaphragm retrofit locations prior to submitting shop drawings to ensure the correct connection plates are fabricated.

The removal and satisfactory disposal of existing steel end diaphragms and connection plates shall be considered incidental to this Item.

All steel installed under this Item shall be painted in accordance with Items 961.201 through 961.203.

All faying surfaces under this Item shall be Class B surfaces for slip-critical connections.

METHOD OF MEASUREMENT

Item 960.18 will be measured by the actual net weight of steel in Pounds, including nuts, bolt heads and permanent washers installed in the structure, completed, and accepted by the Engineer.

The computed weights shall not include the weight of welds. The density of steel shall be assumed to be 490 pounds per cubic foot. The weight of the nuts and heads of bolts shall be included in the computed weight, assuming the weight to be as shown in Table 960.80-1 of the Standard Specifications.

All permanent washers will be paid for by the pound. The shank of a bolt will be considered as part of the material through which it passes and will paid for as that material. No allowance or payment will be made for that part of a bolt shank that extends through and past the nut.

BASIS OF PAYMENT

Item 960.18 Structural Steel – Diaphragm Retrofit will be paid at the Contract unit price by the actual net weight of steel in Pounds, including nuts, bolt heads and permanent washers installed in the structure, completed, and accepted by the Engineer.

Payment shall constitute full compensation for all materials, labor, submittal preparation, equipment, scaffolding, welding, tools, field inspection, and other incidentals thereto.

ITEM 960.91**SLIDING BEARING ADJUSTMENT****EACH**

The work under this Item shall conform to relevant provisions of Subsections 960 and 961 of the Standard Specifications and the following:

The work to be done under this Item shall consist of resetting steel expansion bearings at locations identified on the Contract Plans or as required by the Engineer. The work shall include removing the bronze sliding plate and sole plate, cleaning of the steel masonry plate, bronze sliding plate and steel sole plate, lubricating the surfaces and resetting the bearing assembly.

The bridge will be kept open to traffic while the beams are supported. Jacking and temporary shoring of the superstructure will be required to perform this work, and will be compensated separately under Item 106.88, Jacking and Shoring.

MATERIALS

Bearing surfaces shall be lubricated using a heavy duty anti-seize and extreme pressure lubricant.

The lubricant compound shall meet the requirements of MIL-A-907E and the following physical requirements:

Test	Test Method	Specification
Thickener Type		Calcium Complex
Flash Point, (DC)	ASTMD-92	>250
Salt Fog (hours)	ASTMB-117	4,000
Worked Penetration, 60 Strokes @ 25 DC	ASTMD-217	250-320
NLGI Grade	ASTMD-217	½
Dropping Point, (DC)	ASTMD-556	300
Bearing Rust Test	ASTMD-1743	Pass
Four Ball EP Load Wear Index (kg) Weld Load	ASTMD-2596	100 min. 800 kgf min.
Fretting Wear ml 23DC, 22 hours, mg loss	ASTMD-4170	10 max.

ITEM 960.91 (Continued)**CONSTRUCTION**

Bearing adjustment repair locations shall be as identified on the framing plans or as required by the Engineer. Work specific to the adjustment of each bearing assembly shall be performed as shown on the Plans and in accordance with the following:

- Install jacks and temporary shoring as required.
- Cut and grind smooth keeper angle legs that extend over the bottom flange to allow for jacking of the beam end.
- Jack the existing beam to an adequate height that frees the bronze sliding plate off the bearing assembly.
- Remove welded connection of sole plate to flange by grinding, and slide both the sole and bronze plates off the bearing assembly. Bearing masonry plate, keeper plates, and anchor bolts shall be kept in-place.
- Install blocking as required.
- Clean all bearing components.
- Weld sole plate back to its original location on the bottom flange.
- Reset bronze sliding plate to its centered position, preferably during ambient temperatures between 50 and 70° F. If work cannot be carried out within this temperature range, the Engineer must provide the reset distance to correct for thermal movement.
- Lubricate sliding surfaces.
- Release jack load and remove jack and shoring materials.

Keeper plate repairs proposed at bearings that are also to be reset shall not be performed until all work under this Item has been completed and accepted by the Engineer. Keeper plate repairs and all associated work will be compensated under Item 960.1, Structural Steel – Coated Steel.

The methods of procedures, materials, equipment, or anchorage proposed by the Contractor shall be submitted on a standard shop drawing for approval by the Engineer prior to beginning of work. Approval shall not relieve the Contractor of responsibility for the successful completion of the work.

The Contractor shall notify the Engineer upon completion of cleaning the bearings, prior to resetting. The Engineer shall inspect existing bearing assemblies to confirm anchor bolts and masonry plates are adequate for reuse and do not exhibit excessive section loss. The Engineer reserves the right to propose an alternative procedure if excessive section loss is observed.

The work shall be done by methods not likely to produce fracture or other injury to the steel members remaining in the structure. If, in the opinion of the Engineer, the Contractor's operations damage other members of the structure being repaired, he shall be required to change his methods of operations and make all necessary repairs as ordered by the Engineer at no extra cost to MassDOT.

ITEM 960.91 (Continued)

During the course of the work, it may be necessary to disconnect, support, or adjust steel which is to remain in the structure. For these situations, the Contractor shall submit his proposals for disconnecting, supporting, or adjusting the steel, as necessary, to the Engineer for approval. The Contractor's proposals shall be approved prior to the actual commencement of any disconnecting, supporting, or adjusting of steel.

All welding, including field welding, shall conform to the latest edition of the Bridge Welding Code AASHTO/AWS D1.5.

The Contractor's submittals shall address all issues that relate to the work of this Item in order to maintain the stability and integrity of the bridge during the work.

METHOD OF MEASUREMENT

Item 960.91 will be measured for payment by the Each bearing adjusted, complete in place, and accepted by the Engineer.

BASIS OF PAYMENT

Item 960.91 will be paid for at the Contract Unit Price per Each, which price shall include the cost of all materials, labor, equipment, field measurements, field adjustments, repairs, cleaning, lubricant, shop drawings, disposal of materials and all incidentals required to complete the work at the locations shown on the plans or as required by the Engineer.

The cleaning and painting of steel to be repaired shall be included in the work of Item 961.201 through 961.203 - Clean (Full Removal) and Paint Steel Bridges.

<u>ITEM 961.201</u>	<u>CLEAN (FULL REMOVAL) AND PAINT STEEL</u>	<u>LUMP SUM</u>
	<u>BRIDGE NO. C-21-023 (0JN)</u>	
<u>ITEM 961.202</u>	<u>CLEAN (FULL REMOVAL) AND PAINT STEEL</u>	<u>LUMP SUM</u>
	<u>BRIDGE NO. C-21-024 (0JM)</u>	
<u>ITEM 961.203</u>	<u>CLEAN (FULL REMOVAL) AND PAINT STEEL</u>	<u>LUMP SUM</u>
	<u>BRIDGE NO. C-21-025 (0JK)</u>	

The work under these Items shall conform to the relevant requirements in Subsections 960.63 and to 961, "Maintenance Painting of Steel Bridges" of the Standard Specifications, and the following:

This work shall consist of cleaning and painting exposed structural steel, which shall include but is not limited to stringers, girders, diaphragms, fixed and expansion bearings, and connection plates.

This work shall include cleaning the horizontal surfaces of the abutments and pier caps (herein referred to as bridge seats) of all debris. Debris may include, but is not limited to, sand, gravel, lead paint chips, loose rust and mill scale, existing construction debris, and bird guano. The Contractor shall take all precautions necessary to not have any guano or other debris fall into the water below.

Work under Item 961.201 shall include the cleaning (full removal) and painting of all exposed superstructure steel and steel bridge railings. All parts of the railing, including base plates, posts, rails, hardware, etc. shall be cleaned upon removal of the horizontal rails (as described in Item 974.301) and painted upon reinstallation of the horizontal rails (as described in Item 975.01). The remainder of the railings shall remain in place during the duration of painting.

Work under Items 961.202, and 961.203 shall include the cleaning (full removal) and painting of all exposed superstructure steel at the respective bridges.

Steel repairs, directed by the Engineer, shall be completed before steel surfaces receive the intermediate and topcoat applications. The Contractor shall be required to clean and prime beam ends prior to any structural steel repairs directed by the Engineer, which will be paid under Item 107.97.

Steel bridge railing repairs, directed by the Engineer, shall be completed before railings receive the intermediate and topcoat applications.

CONSTRUCTION METHODS

Structural Steel Inspection

The Contractor shall notify the Engineer if significant amounts of section loss are found on the structural steel during the cleaning and blasting process. If requested by the Engineer, the Contractor shall provide the access and time window to the Engineer to inspect and document the structural steel section loss after the cleaning and blasting operation.

ITEMS 961.201 through 961.203 (Continued)**Cleaning Bridge Seats**

Cleaning operations shall be accomplished by hand scrapers and pressure washing in accordance with these special provisions.

All dirt, oil, grease, tar, road salt, guano or other foreign material which has accumulated on surfaces shall be removed with a pressure washing equipment, which shall be the final phase of cleaning. Containment during pressure washing operations shall also include use of a micro-net type filter to screen all debris which is washed from the structure.

The Contractor shall use non phosphate, non-polluting detergent, acceptable to the Department, that will clean the surfaces in a satisfactory manner. It is estimated that 0.5% by weight of cleaning compound at the nozzle is sufficient. Concentrations above 0.75% could possibly remove sound paint, which, if utilized, shall require remedial work to be accomplished at the expense of the Contractor.

Once pressure washing work is underway, the Contractor shall change or adjust the compound or percentage of each to attain a clean surface properly prepared, without damage to any sound paint.

The Contractor shall be responsible for proper cleaning procedures, with the following serving only as a guideline to consider:

The operator should hold the face of the nozzle within six (6) inches of all surfaces and tilt it slightly in the direction of travel. The surface should first be wetted to allow the cleaning compound to loosen foreign matter which is later removed by a cleaning pass. The time interval between wetting and cleaning should be regulated according to the degree of dirt accumulations, but usually it is sufficient to go twice over an area that is conveniently reached from one position. The speed of pass over an area is comparable to that used in spray painting.

A properly cleaned surface will feel firm and somewhat tacky, but it should not be slick or grimy to the touch. In 90% of the cases, the areas that are properly cleaned can be verified by sight.

Excessive deposits of cleaning liquids remaining on surfaces that will not drain shall be flushed off with clean, fresh water without detergent. In as much as a certain amount of liquid will remain on horizontal surfaces after cleaning, the cleaning program should be followed through from top to bottom systematically. The last pass on any surface should be made with clean fresh water without detergent to remove surplus solution.

Cleaning operations shall be accomplished by hand scrapers and pressure washing in accordance with these special provisions.

All dirt, oil, grease, tar, road salt, guano or other foreign material which has accumulated on surfaces shall be removed with a pressure washing equipment, which shall be the final phase of cleaning. Containment during pressure washing operations shall also include use of a micro-net type filter to screen all debris which is washed from the structure.

ITEMS 961.201 through 961.203 (Continued)

The Public should be notified that pressure washing operations are being conducted. The Contractor shall be solely responsible for damages arising from the pressure washing operations.

The Contractor shall use non phosphate, non-polluting detergent, acceptable to the Department, that will clean the surfaces in a satisfactory manner. It is estimated that 0.5% by weight of cleaning compound at the nozzle is sufficient. Concentrations above 0.75% could possibly remove sound paint, which, if utilized, shall require remedial work to be accomplished at the expense of the Contractor.

Once pressure washing work is underway, the Contractor shall change or adjust the compound or percentage of each to attain a clean surface properly prepared, without damage to any sound paint.

The Contractor shall be responsible for proper cleaning procedures, with the following serving only as a guideline to consider:

The operator should hold the face of the nozzle within six (6) inches of all surfaces and tilt it slightly in the direction of travel. The surface should first be wetted to allow the cleaning compound to loosen foreign matter which is later removed by a cleaning pass. The time interval between wetting and cleaning should be regulated according to the degree of dirt accumulations, but usually it is sufficient to go twice over an area that is conveniently reached from one position. The speed of pass over an area is comparable to that used in spray painting.

A properly cleaned surface will feel firm and somewhat tacky, but it should not be slick or grimy to the touch. In 90% of the cases, the areas that are properly cleaned can be verified by sight.

Excessive deposits of cleaning liquids remaining on surfaces that will not drain shall be flushed off with clean, fresh water without detergent. In as much as a certain amount of liquid will remain on horizontal surfaces after cleaning, the cleaning program should be followed through from top to bottom systematically. The last pass on any surface should be made with clean fresh water without detergent to remove surplus solution.

ITEMS 961.201 through 961.203 (Continued)

BASIS OF PAYMENT

Items 961.201 through 961.203 Clean (Full Removal) and Paint Steel will be paid for at the contract Lump Sum price, which shall include all labor, materials and equipment required to complete the work to the satisfaction of the Engineer. Partial payments of the lump sum will be made in accordance with Section 961.80 of the Standard Specifications.

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

Incidental to these Items are all costs associated with the design, installation, and final removal of the required containment system/work platform. All costs associated with the safe removal and disposal of accumulated pigeon waste and other toxic contaminants are incidental to these Items and no additional compensation will be made.

SPECIAL NOTES REGARDING PREVAILING WAGE REQUIREMENTS

Note that the erection and dismantling of scaffolding, rigging, and containment for bridge painting work is subject to the “Painter (Bridges/Tanks)” prevailing wage rate. This includes surface preparation, including removal of all types of paint on bridges, the application of paint, and the clean-up of debris resulting from paint removal operation on bridges, pursuant to the determination by the Massachusetts Department of Labor Standards’ 12/23/2009 “Notice Concerning the Removal and Application of Paint on Bridges and Tanks.”

ITEM 962.19**STEEL ENCAPSULANT COATING
FOR ARMORED STEEL JOINTS****LUMP SUM**

Work under this Item shall consist of encapsulation of rusted or deteriorating armored steel at existing deck joints. Under no circumstances should encapsulation occur without approval from the Engineer. This Item shall involve the encapsulation of the exposed faces (topside and underside) of steel deck joint armor as shown on the Plans and as required by the Engineer. Encapsulation shall be applied by method of spraying or rolling as per manufacturer's recommendations.

PREPARATION AND APPLICATION

All armored steel joints to be encapsulated under this Item shall be cleaned by means of wire brush or pressure washing with a non-phosphate, non-polluting detergent to remove all oil, grease, dirt, salt, guano, loose rust, and loose paint. All surfaces to receive this application must be completely dry and free of all foreign materials. Existing joint seals shall be removed at locations specified on the Plans prior to coating. The coating shall be applied by spraying or rolling. The air temperature for the application should be between 40 – 90° F.

If a second coat is required by the Engineer, it should be applied no more than four hours after the first coat has been applied. Structural steel to be encapsulated shall be bonded by penetration with an encapsulation adhesive in accordance with the manufacturer's recommendations and the following. The Contractor shall submit manufacturer's literature completely describing products.

The materials shall be delivered clearly marked with legible and intact labels containing the manufacturer's name, brand name, and identification of the contents of containers. The materials shall be stored in areas where temperatures conform to the manufacturer's recommendations and instructions. The Contractor shall comply with the manufacturer's instructions and recommendations regarding safety and application of product. The surrounding work, vehicles, planting materials and Items of similar nature, shall be protected from damage by any materials or operations.

MATERIALS

The material used for the steel encapsulant coating shall be a water-based primer containing tannic acid and an organic polymer that undergoes a chemical reaction with the rust to create a black protective polymeric coating. The material shall be Black-Max manufactured by Rhomar Industries, Inc., Rust Converter manufactured by the Rust Store, Corotech Rust Arrestor manufactured by Benjamin Moore, or an approved equal. Acceptance of any approved equal submittal shall be the responsibility of the Engineer.

LIMITS OF WORK

The limit of work under this Item shall be limited to the exposed topside and underside armored steel joints at locations shown on the Contract Plans and as required by the Engineer.

ITEM 962.19 (Continued)

BASIS OF PAYMENT

Item 962.19 will be paid for at the contract Lump Sum price, which shall include the cost of all materials, equipment, tools, labor and all incidentals necessary to complete the work as specified. Partial payments of the lump sum will be made in accordance with Section 961.80 of the Standard Specifications.

Removal and replacement of bridge joint strip seals will be paid for separately under Item 107.471, Precompressed Impregnated Foam Joint Sealer.

**ITEM 974.11 THRIE BEAM BRIDGE RAILING REMOVED AND RESET FOOT
BRIDGE NO. C-21-023**

The work under this Item shall conform to the relevant provisions of Subsection 975 of the Standard Specifications and the following:

The work to be done under this Item consists of removing and reinstalling the existing thrie-beam bridge rail retrofit fastened to the original steel bridge railing at Bridge No. C-21-023 and all associated components such as offset blocks, fasteners and hardware as shown on the Contract Plans and as required by the Engineer. This work also includes installing new fasteners and hardware for re-assembling and resetting the thrie beam bridge rail.

The Contractor shall be responsible for field measuring the size and configuration of existing railing prior to removal.

The existing bridge rail retrofit shall be carefully disassembled within the limits necessary for the Contractor to complete his work. The Contractor shall take precautions to avoid damaging the retrofit and original steel bridge railing during the removal process. Prior to removal, the Contractor shall document the existing thrie-beam system, including offset block spacing and connection points to the original steel bridge rail.

The railings and offset blocks shall be stored on site and protected during construction activities. All existing fasteners and hardware removed shall be discarded and replaced. Any sections of railing that are damaged by the Contractor shall be replaced in-kind at no additional cost to MassDOT.

The Contractor shall note that the thrie beam bridge rail retrofit is bolted through the horizontal rails of the original steel bridge rail. These connections shall be re-established during installation unless directed otherwise by the Engineer.

The temporary traffic control plan shall be in-service at all times during the performance of this work.

METHOD OF MEASUREMENT

Item 974.11 will be measured for payment by the Foot, measured end to end along the centerline of the thrie beam bridge railing removed.

BASIS OF PAYMENT

Item 974.11 will be paid for at the contract unit price per Foot which price shall include removal and resetting, storage, replacement fasteners and hardware, and all other materials including equipment, tools, labor, clean-up, and any incidentals required to complete the work.

No separate payment will be made for new fasteners and hardware used to reset the thrie beam, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 974.12**ALUMINUM BRIDGE RAILING REMOVED
AND RESET BRIDGE C-21-025****FOOT**

The work under this Item shall conform to the relevant provisions of Subsection 975 of the Standard Specifications and the following:

The work to be done under this Item consists of removing and resetting the south aluminum bridge railing located along the south curb line of Bridge No. C-21-025 as shown on the Contract Plans and as required by the Engineer.

The Contractor shall be responsible for field measuring the size and configuration of existing railing prior to removal.

Existing railings shall be carefully disassembled within the limits necessary for the Contractor to complete his work. The Contractor shall take precautions to avoid damaging the railing during the removal process. Prior to railing removal, the Contractor shall document the existing railing, including post spacing and anchor bolts layout and submit to the Engineer to ensure the railing will be reinstalled to match existing conditions.

The railings and any associated hardware shall be stored on site and protected during construction activities. Any sections of railing that are damaged by the Contractor shall be replaced in-kind at no additional cost to the Owner.

The temporary traffic control plan shall be in-service at all times during the performance of this work.

Prior to resetting the railing, repairs to the concrete coping and overhang shall be performed. Excavation required for the coping repair shall be paid for under Item 127.13, and new concrete shall be paid for under Item 905. New anchor bolts cored and grouted for resetting the bridge railing shall be paid for under Item 913.2.

METHOD OF MEASUREMENT

Item 974.12 will be measured for payment by the Foot, measured end to end along the centerline of the aluminum bridge rail removed.

BASIS OF PAYMENT

Item 974.12 will be paid for at the contract unit price per Foot which price shall include removal and resetting, storage, replacement anchorages and hardware, and all other materials including equipment, tools, labor, clean-up, and any incidentals required to complete the work.

Coring and grouting new anchor bolts will be paid for separately under Item 913.2 – Coring and Grouting Anchor Bolts.

ITEM 974.301**STEEL BRIDGE RAILING – HORIZONTAL
RAILS REMOVED BRIDGE C-21-023****FOOT**

The work under this Item shall confirm to the relevant provisions of Subsection 975 of the Standard Specifications and the following:

The work to be performed under this Item shall include the removal of deteriorated horizontal rails and splices at the locations shown on the Contract Plans and as directed by the Engineer.

The Contractor is alerted that the existing paint is likely lead-based. Any removal and disposal of paint for the operations described herein shall be performed in strict conformance with all State and Federal health and environmental regulations, as stipulated in these specifications.

CONSTRUCTION METHODS

Existing horizontal rails shall be removed up to the nearest in-tact splice using a combination of cutting and grinding. The splice tube, no matter the condition, shall be removed and replaced in-kind upon removal of the horizontal rail segment. New splice tubes shall be incidental to Item 975.01.

The Contractor shall take care not to damage the adjacent segment of horizontal rail that is to remain during removal of the deteriorated rail segment and splice tube. Damages shall be repaired by the Contractor at no additional cost to MassDOT.

The Contractor shall note that existing three beam guardrails are fastened in front of the original steel bridge rails. Temporary full-length removal and reinstallation of the three beam will be required to perform this work and will be compensated under Item 974.11.

Cutting of Steel

Existing steel components that are directed for replacement by the Engineer shall be carefully removed by dismantling existing connections. Cutting of existing steel shall be performed with care to avoid undercutting, overheating, notching or other damage of material which is to remain. The Contractor shall use temperature-indicating crayons which meet the approval of the Engineer for 275° F and 300° F. These indicator crayons shall be used on surfaces of the bridge rail post adjacent to an area undergoing a process of cutting or grinding as ordered by the Engineer.

Cutting or grinding shall be discontinued temporarily, to allow cooling, if the temperature of the base steel in the post exceeds 275° F.

If the Contractor damages materials to remain during cutting operations, he shall replace, repair, or reinforce the damaged area as may be needed to restore the materials to existing condition prior to damage. This work shall be performed by the Contractor as ordered by the Engineer at no additional cost to MassDOT, and to the satisfaction of the Engineer.

ITEM 974.301 (Continued)

Additional Requirements

The surfaces that will be in contact with the new horizontal rails, including post connections, shall be ground smooth and primed prior to the installation.

The Contractor is fully responsible for the accuracy and fit of the work and thus shall determine what measurements are required and shall allow adequate time and resources for obtaining field measurements in developing the fabrication and construction.

Except as otherwise specified, all removed steel and appurtenances shall become the property of the Contractor who shall remove and dispose of this material.

METHOD OF MEASUREMENT

Item 974.301 will be measured for payment by the Foot of horizontal rail removed.

BASIS OF PAYMENT

Item 974.301 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.

No separate payment will be made for horizontal rail splices removed, but all costs in connection therewith shall be included in the Contract unit price bid.

Priming of existing steel guardrail surfaces to receive new steel shall be compensated under Item 961.201.

ITEM 975.01 **STEEL BRIDGE RAILING – HORIZONTAL RAILS** **FOOT**
BRIDGE NO. C-21-023

The work under this Item shall conform to Subsection 975 and M8.13.1 of the Standard Specifications and the following.

The work under this Item shall consist of replacing in-kind sections of steel bridge horizontal rail and splices for the locations shown on the drawings and as directed by the Engineer. The intent is to install all new elements in-kind, matching the existing adjacent in-tact members in geometry, spacing, and connections. Details taken from the existing record bridge drawings are provided on the plans for reference only. Removal and surface preparation for installing new horizontal rails shall be compensated under Item 974.301.

CONSTRUCTION METHODS

Upon acceptance of the work performed under Item 974.301, new horizontal rails shall be installed in-place of removed rail segments. Horizontal rails shall be installed as one continuous segment up to the existing splice. Field splicing of horizontal rail segments shall not be permitted.

The Contractor shall note that an existing thrie beam guardrails are fastened in front of the original steel bridge rails. Temporary full-length removal and reinstallation of the thrie beam will be required to perform this work and will be compensated under Item 974.11.

New horizontal rails installed shall be shop-drilled to re-establish bolted connections of the thrie beam guardrails to the original bridge rails.

The Contractor shall field measure and verify all existing geometry and conditions prior to developing shop drawings for replacement elements. Shop drawings must be submitted for review and approval by the Engineer prior to fabrication. Shops drawings shall indicate all locations where the horizontal rails and splice tubes will be replaced in-kind and provide all necessary railing component drawings and connection details.

Welding

All welding shall conform to the latest edition of the Bridge Welding Code ANSI/AWS D1.1 and shall meet the following requirements unless specified otherwise:

All welding required to complete the repairs will be considered incidental to the repair and no separate compensation will be allowed. All welders shall be certified. Welders' qualifications certificates must be submitted to the Engineer for approval. Electroslag and electro gas welding will not be permitted. Welding will not be permitted when the air temperature is below 35° F or when the surfaces to be welded are wet from condensation, rain, snow, or ice. When the temperature is between 35° F and 45° F, the surface within 3” of the point where the weld is to be started shall be heated to a temperature of approximately 100° F, and this temperature shall be maintained as a minimum within this distance until the bead is completed.

The Contractor shall submit for approval by the Engineer a welding procedure for each of the repair areas that will require welding.

ITEM 975.01 (Continued)**Inspection and Non-Destructive Weld Testing**

All welds are to be inspected and tested (non-destructively) in accordance with latest addition of ANSI/AWS D1.1 and the applicable provisions of the Standard Specifications Subsection 975, and the specifications stipulated in these special provisions.

Inspection shall consist of checking the type, location, size, length, returns and profile of field welds and shop welds. Welds will be evaluated by their surface appearance, completeness for penetration and fusion, avoidance of undercutting, freedom from slag, inclusions, porosity, cracks and general appearance.

All welds that are found to be defective shall be corrected in accordance with the AWS procedures and to the satisfaction of the Engineer and shall then be re-inspected as outlined above. The expense of such corrective work shall be borne by the Contractor.

The Contractor shall be responsible for Quality Control Inspection and Non-Destructive Weld Testing of all shop welding and field welding of non-fracture-critical members in accordance with the requirements specified herein. These costs shall be considered incidental to the various steel repair pay Items.

Steel Bridge Rail Inspection

The Contractor shall notify the Engineer if a significant amount of section loss is found on the existing horizontal rails during removal of the thrie beam. If requested by the Engineer, the Contractor shall provide the access and time window to the Engineer to inspect and document the deterioration and determine the need for additional horizontal rail repairs.

METHOD OF MEASUREMENT

Item 975.01 will be measured for payment by the Foot, measured end to end along the top rail of all newly installed rail sections.

BASIS OF PAYMENT

Item 975.01 will be paid for at the Contract unit price per Foot, measured end to end along the top rail of all newly installed rail sections.

Incidental to this Item will be all hardware for newly installed rails, including hardware replaced during any resetting of rail sections.

No separate payment shall be made for new splice tubes, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 975.21 **ALUMINUM BRIDGE RAILING – PICKET PANELS** **EACH**
BRIDGE NO. C-21-025

The work under this Item shall conform to Subsection 975 of the Standard Specifications as well as M8.13.0.

The work under this Item shall consist of replacing in-kind damaged or missing aluminum bridge rail pickets/balusters in between posts for the locations shown on the Contract Plans and as directed by the Engineer. The intent is to reinstall all new elements in-kind, matching the existing adjacent in-tact members in geometry, spacing, and connections. The original Type AL-3 Bridge Railing details are provided on the plans for reference only.

The Contractor shall field measure and verify all existing geometry and conditions prior to developing shop drawings for replacement elements. Shop drawings must be submitted for review and approval by the Engineer prior to fabrication. Shops drawings shall indicate all locations where the elements will be replaced in-kind, which sections of rail require removal and resetting as part of the replacement and provide all necessary railing component drawings and connections details.

METHOD OF MEASUREMENT

Item 975.21 will be measured for payment by each new panel (measured from post to post) of pickets installed.

BASIS OF PAYMENT

Item 975.21 will be paid for at the Contract unit price by each new panel of pickets installed, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 994.1 **TEMPORARY PROTECTIVE SHIELDING** **SQUARE FOOT**

The work under this Item shall provide for the protection of the waterways beneath the bridges from falling debris during the removal of the unsound concrete from bridge decks, parapets, copings and sidewalks. This shall be accomplished by the utilization of adequate shielding methods.

No portion of the bridge deck or coping shall be removed until the protective shielding is in place and complete.

Note that some of the bridges, due to their height (vertical clearance), may require special lifting equipment in order to place shielding for the assigned repair work. Any equipment necessary to erect forms will be considered incidental to these Items.

Any existing formwork on the bridge shall also be removed and disposed by the Contractor away from the job area, at no additional expense.

All shielding shall meet the following requirements:

1. Temporary Protective Shielding must be used on bridges during concrete excavation and when, in the opinion of the Engineer, there is the possibility of dislodging concrete from the bottom of the deck, parapets or coping. In some cases, the Contractor may be able to utilize the bottom flanges of existing steel beams as supports for the protective shielding. However, the Contractor will not be permitted to weld onto, drill into, or cut any existing structural steel beams.
2. The Contractor shall submit drawings and calculations stamped by a Professional Engineer of the appropriate discipline registered in Massachusetts of the proposed temporary shielding to the Engineer for approval prior to its installation. The drawings shall include details of all connections, brackets, and fasteners. However, when the spacing between existing steel beams is 70 inches or less, the Contractor may utilize a wood plank shielding scheme.
3. Shielding shall be designed to safely withstand all loads that it will be subjected to. The allowable design stresses shall be in accordance with AASHTO Standard Specifications for Highway Bridges, 17th Edition. The design shall also include a description of the equipment and construction methods proposed for the deck, parapet, or coping excavation and the maximum size of the area being excavated. The shielding shall also be designed to withstand the maximum size of the excavated area should it fall during excavation or removal. No debris shall be swung over traffic on the bridge.
4. Shielding shall be designed such that impact on traffic during installation and removal shall be minimal. The Contractor shall submit the traffic plan to the Engineer for approval.

ITEM 994.1 (Continued)

5. The shielding shall extend a sufficient distance above and beyond the deck overhang at the fascia where concrete excavation is required outside the fascia beams. The shielding shall extend the length of the damaged or distressed portion of the deck a length of sufficient distance to do the required deck demolition.
6. The area for shielding shall be approved by the Engineer prior to any installation of any shielding. The Contractor may utilize the bottom flanges of existing beams as supports for the protective shielding. However, the Contractor will not be permitted to weld onto, drill into, or cut any existing structural steel beams. All spaces along the perimeter of the shielding and at the seams shall be sealed to prevent dust, water, and debris from escaping and falling into the waterway below the bridge.
7. The Engineer may request that the shielding be designed so that it may also serve as false work (forms) for all areas of full-depth concrete replacement/repair.
8. The shielding shall be maintained and remain in place until the strength of the concrete used to repair the deck and coping has cured and reached the design strength requirement, except where shielding needs to be removed and reset to install forming for the areas of full depth repair. The shielding shall remain the property of the Contractor and shall be removed by the Contractor from the site when no longer needed.

If the Contractor's operations damage any existing portions of the bridge that are to remain, such damage shall be repaired at the Contractor's own expense.

All materials used in the temporary shielding system shall become the property of the Contractor and shall be removed from the site upon the completion of the project.

METHOD OF MEASUREMENT

Item 994.1 will be measured for payment by the Square Foot of shielding installed, maintained, and removed upon completion of repair work as required by the Engineer.

BASIS OF PAYMENT

Item 994.1 will be paid at the Contract unit price per Square Foot of shielding installed, maintained, and removed upon completion of repair work as directed by the Engineer.

The Contract price shall include all labor, materials, tools, equipment, and incidental costs required to complete the work as required by the Engineer.

60% of the Unit bid Price will be paid upon installation of the shielding and the remaining 40% will be paid upon removal. Compensation to provide Engineering Services shall be considered incidental to this Item.

ITEM 994.12 **TEMPORARY PROTECTIVE SHIELDING** **SQUARE FOOT**
REMOVED AND RESET

The work under this Item consists of removing and resetting protective shielding used for performing reinforced concrete repairs to the bridge copings.

The Contractor shall phase the work where possible such that concrete excavation is performed on one bridge coping at a time. Temporary protective shielding shall not be removed and reset to the opposite bridge coping until all proposed concrete excavation is complete.

Prior to commencing work, the Contractor shall submit to the Engineer for approval, proposed construction methods for removing and resetting the protective shielding.

Any debris that falls on the shielding shall be completely cleaned off from the protective shielding and disposed of offsite by the Contractor. Removal and disposal of materials will be subject to the regulations and requirements of local authorities governing the disposal of such materials. The disposal shall be done at no additional charge.

Any shielding damaged by the Contractor shall be replaced at the Contractor's expense. Any existing locations where protective netting has become damaged beyond the control of the Contractor, (in the opinion of the Engineer), may be replaced at the Engineer's discretion.

Compensation to provide new replacement protective netting will be made under Payment for Materials.

METHOD OF MEASUREMENT

Item 994.12 Temporary Protective Shielding Removed and Reset will be measured for payment by the Square Foot. The quantity paid for shall be the actual number of Square Foot of protective shielding removed and reset.

BASIS OF PAYMENT

Item 994.12 Temporary Protective Shielding Removed and Reset will be paid at the Contract unit price per Square Foot of protective shielding actually removed and reset. The Contract Price shall include all labor, materials, tools, equipment, and incidental costs required to complete the work as required by the Engineer.

END OF DOCUMENT

DOCUMENT A00802

DETAIL SHEETS

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THE COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION
 TEN PARK PLAZA, BOSTON, MA

-ESTIMATE OF QUANTITIES - DETAIL SHEET-

TOWN <u>Cummington</u>	YEAR <u>2024</u>
STA. <u>N/A</u>	ROAD <u>Berkshire Trail</u>
STA. <u>N/A</u>	CLASS <u>Rural Arterial</u>
Type of Project <u>Bridge Preservation</u>	DATE <u>August 7, 2024</u>

Earth Excavation	0 Cu Yards	Gravel for Subbase	0 Cu Yards
Class “A” Rock Excavation	0 Cu Yards	Gravel for Driveways	0 Cu Yards
Class “A” Trench Excavation	0 Cu Yards	Gravel for Sidewalks & Ramps	0 Cu Yards
Class “B” Rock Excavation	0 Cu Yards	Embankment + 15%	0 Cu Yards
Class “B” Trench Excavation	0 Cu Yards	Dense Graded Crushed Stone	0 Cu Yards

LIST OF BID ITEMS:

ITEM 106.89 SHORING BEAM END

A contingency Item to provide full temporary load relief (no jacking) of fixed bearings to accommodate concrete beam seat repairs that encroach or undermine the existing bearing. This Item does not apply to concrete beam seat repairs at expansion bearings. Refer to the special provisions for more information.

ITEM 127.1 REINFORCED CONCRETE EXCAVATION

To be used for excavating deteriorated concrete located on the end diaphragm encasements at Bridge C-21-024 (0JM). Refer to the special provisions for more information.

ITEM 127.12 REINFORCED CONCRETE SUBSTRUCTURE EXCAVATION

To be used at each bridge for excavating deteriorated concrete on the abutments and pier at locations shown on the plans and at the direction of the Engineer.

ITEM 127.13 REINFORCING CONCRETE COPING EXCAVATION

To be used at each bridge for excavating deteriorated concrete on the horizontal, vertical and overhead surfaces of the coping and the underside of the deck overhang at locations shown on the plans and at the direction of the Engineer. Refer to the special provisions for more information.

ITEM 477.1 MILLED RUMBLE STRIP (TYPE B)

To be used for the re-application of rumble strips after construction.

ITEM 477.51 RUMBLE STRIP MILLED AND PATCHED

To be used for the removal of rumble strips in conflict with lane shifts prior to construction.

ITEM 505. **GRANITE CURB TYPE VA5 – STRAIGHT**

To be used at Bridge C-21-025 to replace deteriorated granite curb adjacent to the pier joint along the north safety walk. Refer to the plans for more information.

ITEM 620.13 **GUARDRAIL, TL-3 (SINGLE FACED)**

To be used at Bridge C-21-023 to install new TL-3 guardrail between the proposed NCHRP 350 guardrail transition and trailing anchorage at the southeast approach.

ITEM 627.1 **TRAILING ANCHORAGE**

To be used at Bridge C-21-023 to replace the existing damaged trailing anchorage located at the southeast approach with a new unit complying to the current MassDOT Construction Standard Details.

ITEM 628.21 **TRANSITION TO NCHRP 350 GUARDRAIL**

To be used at Bridge C-21-023 to transition from the existing southeast approach guardrail to the proposed trailing anchorage. Transition will start one panel prior to the start of the existing damage as shown on the plans or otherwise directed by the Engineer.

ITEM 628.305 **TEMPORARY IMPACT ATTENUATOR NON-REDIRECTIVE, TL-3**

To be used at the ends of temporary barrier layouts as shown on the temporary traffic control plans.

ITEM 850.44 **TEMPORARY 6 INCH PLASTIC TAPE PAVEMENT MARKING LINE**

To be used for temporary pavement markings at each bridge, including blackout markings.

ITEM 851.1 **TRAFFIC CONES FOR TRAFFIC MANAGEMENT**

To be used at each bridge to direct traffic away from closed shoulders. Traffic cones will be used for thirty days during phases 1 and 2, and for five days during phase 3.

ITEM 852. **SAFETY SIGNING FOR TRAFFIC MANAGEMENT**

To be used for temporary traffic control at each bridge for proposed repairs. Refer to temporary traffic control plans for signing.

ITEM 853.1 **PORTABLE BREAKAWAY BARRICADE TYPE III**

To be used for temporary shoulder closures at each bridge for proposed repairs. Two barricades will be needed for each bridge.

ITEM 853.33 **TEMPORARY BARRIER – LIMITED DEFLECTION (TL-3)**

To be used for enclosing the work zones during phases 1 and 2 at each bridge.

ITEM 853.403 **TRUCK MOUNTED ATTENUATOR**

Truck mounted attenuators shall be used as shown on the temporary traffic control plans. During phases 1 and 2 of each bridge, two truck mounted attenuators will be required for two days. During phase 3 of each bridge, four truck mounted attenuators will be required for five days.

ITEM 854.6**TEMPORARY PORTABLE RUMBLE STRIP**

To be used during phase 3 at each bridge. Two temporary rumble strip units shall be used for five days each. An array of three rumble strips is considered one unit.

ITEM 856.**ARROW BOARD**

To be used for temporary shoulder closures at each bridge for proposed repairs. For each location, two signs will be used for two months.

ITEM 856.12**PORTABLE CHANGEABLE MESSAGE SIGN**

To be used for temporary shoulder closures at each bridge for proposed repairs. For each setup change, it is assumed that two signs will be used for fourteen days.

ITEM 859.**REFLECTORIZED DRUM**

To be used for each bridge for delineation of the work zone. During phases 1 and 2, reflectORIZED drums shall be used for thirty days. During phase 3, reflectORIZED drums shall be used for five days. Refer to temporary traffic control plans for layout of drums.

ITEM 862.506**FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (6" WHITE LINE)**

To be used for final pavement markings on the roadway, excluding the bridges.

ITEM 862.512**FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (12" WHITE LINE)**

To be used for final stop lines located near bridges C-21-024 and C-21-025.

ITEM 863.506**FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (6" YELLOW LINE)**

To be used for final pavement markings on the roadway, excluding the bridges.

ITEM 866.706**6-IN. WHITE LINE WITH BLACK CONTRAST – RECESSED (PF, WR)**

To be used for final pavement markings on the bridges.

ITEM 867.706**6-IN. YELLOW LINE WITH BLACK CONTRAST – RECESSED (PF, WR)**

To be used for final pavement markings on the bridges.

ITEM 905.**4000 PSI, 3/8 INCH, 660 CEMENT CONCRETE**

To be used at each bridge for patch repairs to the concrete substructure (abutments and pier), end diaphragm concrete encasements, and horizontal and vertical faces of the coping. Refer to the special provisions for more information.

ITEM 905.001**OVERHEAD REPAIR MORTAR FOR PATCHING**

To be used at each bridge for patch repairs on the overhead surfaces of the bridge deck overhang. Refer to the special provisions for more information.

ITEM 913.2

CORING AND GROUTING ANCHOR BOLTS

To be used to core and grout new bridge rail anchor bolts for removing and resetting the south bridge rail at Bridge C-21-025. This item will also be used to install new anchor bolts for bearing keeper angle repairs. Refer to the contract plans and special provisions for more information.

ITEM 920.01

GRANITE CAPSTONE – BRIDGE C-21-023 (0JN)

To be used at Bridge C-21-023 to replace missing granite caps located on top of the existing masonry end posts. Refer to the special provisions for more information.

ITEM 994.1

TEMPORARY PROTECTIVE SHIELDING

To be used at each bridge underneath the bridge copings and along the abutments and/or piers. Only one coping per bridge shall be shielded at a time under this Item. Refer to the special provisions for more information.

ITEM 994.12

TEMPORARY PROTECTIVE SHIELDING REMOVED AND RESET

To be used at each bridge to remove temporary protective shielding located along the underside of the bridge coping and reset to the opposite coping. Refer to the special provisions for more information.

END OF DOCUMENT

DOCUMENT A00803

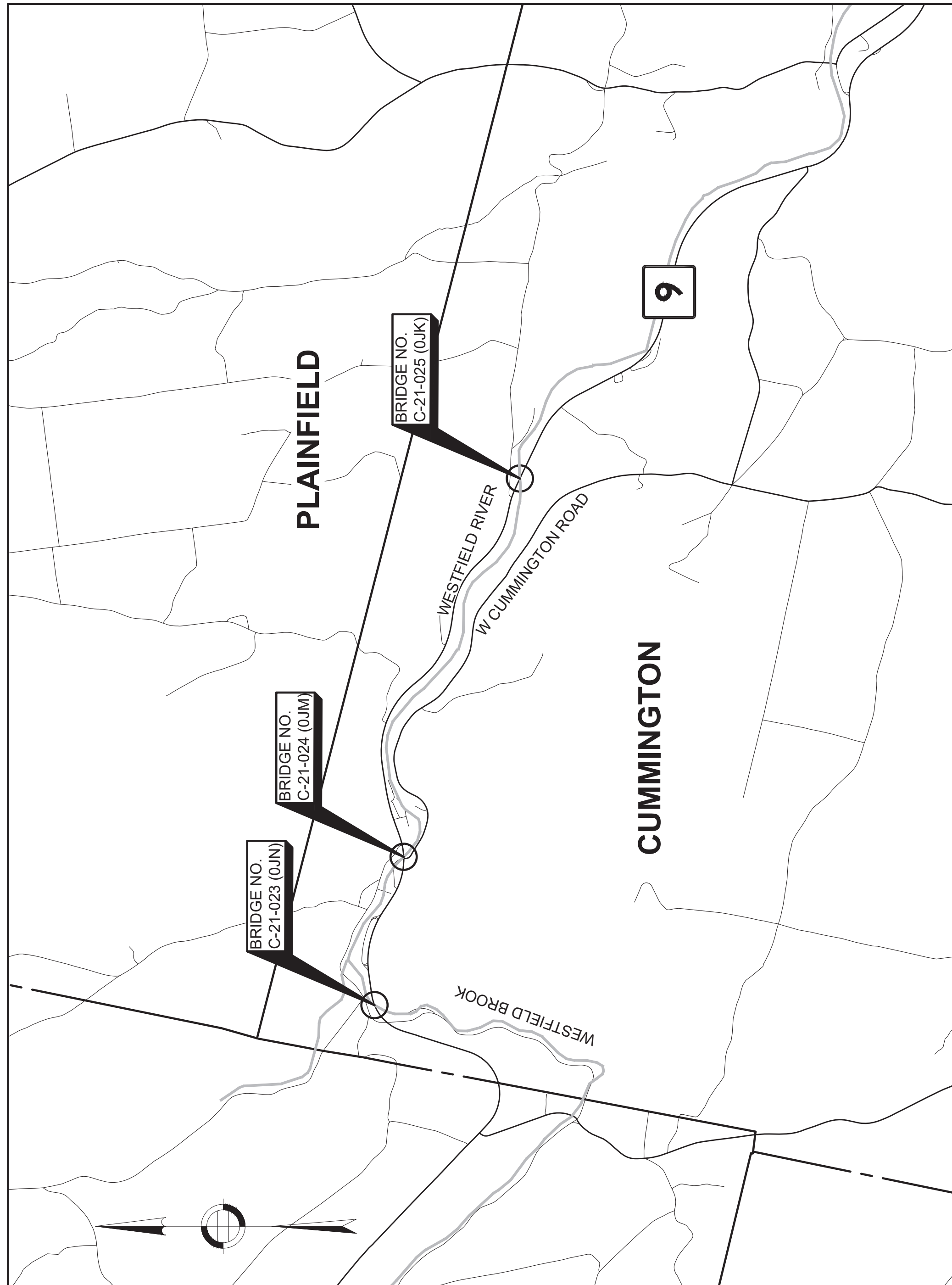
DRAWINGS AND SKETCHES

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CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	1	37
PROJECT FILE NO.		613116	

GENERAL NOTES, LOCUS, AND DRAWING LIST



SHEET NUMBER	DRAWING LIST	SHEET TITLE
1	GENERAL NOTES, LOCUS, AND DRAWING LIST	GENERAL NOTES, LOCUS, AND DRAWING LIST
2	C-21-023 (OJN) ST 9 OVER WESTFIELD BROOK	SCHEDULE OF ABUTMENT REPAIRS (1 OF 2)
3	SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)	SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)
4	SCHEDULE OF SUPERSTRUCTURE REPAIRS	SCHEDULE OF SUPERSTRUCTURE REPAIRS
5	SCHEDULE OF DECK REPAIRS	SCHEDULE OF DECK REPAIRS
6	C-21-024 (OJM) ST 9 OVER WESTFIELD RIVER	SCHEDULE OF ABUTMENT REPAIRS (1 OF 2)
7	SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)	SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)
8	SCHEDULE OF PIER REPAIRS	SCHEDULE OF PIER REPAIRS
9	SCHEDULE OF SUPERSTRUCTURE REPAIRS	SCHEDULE OF SUPERSTRUCTURE REPAIRS
10	SCHEDULE OF DECK REPAIRS	SCHEDULE OF DECK REPAIRS
11	C-21-025 (OJK) ST 9 OVER WESTFIELD RIVER	SCHEDULE OF ABUTMENT REPAIRS (1 OF 2)
12	SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)	SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)
13	SCHEDULE OF PIER REPAIRS	SCHEDULE OF PIER REPAIRS
14	SCHEDULE OF SUPERSTRUCTURE REPAIRS	SCHEDULE OF SUPERSTRUCTURE REPAIRS
15	SCHEDULE OF DECK REPAIRS	SCHEDULE OF DECK REPAIRS
16	CONSTRUCTION DETAILS	CONSTRUCTION DETAILS
17	CONCRETE SUBSTRUCTURE REPAIRS	CONCRETE SUBSTRUCTURE REPAIRS
18	TYPICAL BEARING DETAILS	TYPICAL BEARING DETAILS
19	BEAM END REPAIR DETAILS (1 OF 3)	BEAM END REPAIR DETAILS (1 OF 3)
20	BEAM END REPAIR DETAILS (2 OF 3)	BEAM END REPAIR DETAILS (2 OF 3)
21	BEAM END REPAIR DETAILS (3 OF 3)	BEAM END REPAIR DETAILS (3 OF 3)
22	CONCRETE COPING REPAIR	CONCRETE COPING REPAIR
23	MISCELLANEOUS DETAILS	MISCELLANEOUS DETAILS
24	JACKING AND SHORING DETAILS (1 OF 2)	JACKING AND SHORING DETAILS (1 OF 2)
25	JACKING AND SHORING DETAILS (2 OF 2)	JACKING AND SHORING DETAILS (2 OF 2)
26	TEMPORARY TRAFFIC CONTROL PLANS (TTCP)	TEMPORARY TRAFFIC CONTROL PLANS (TTCP)
27	TTCP GENERAL NOTES	TTCP GENERAL NOTES
28	C-21-023 TTCP (1 OF 3)	C-21-023 TTCP (1 OF 3)
29	C-21-023 TTCP (2 OF 3)	C-21-023 TTCP (2 OF 3)
30	C-21-023 TTCP (3 OF 3)	C-21-023 TTCP (3 OF 3)
31	C-21-023 SIGN SUMMARY	C-21-023 SIGN SUMMARY
32	C-21-024 TTCP (1 OF 3)	C-21-024 TTCP (1 OF 3)
33	C-21-024 TTCP (2 OF 3)	C-21-024 TTCP (2 OF 3)
34	C-21-024 TTCP (3 OF 3)	C-21-024 TTCP (3 OF 3)
35	C-21-024 SIGN SUMMARY	C-21-024 SIGN SUMMARY
36	C-21-025 TTCP (1 OF 3)	C-21-025 TTCP (1 OF 3)
37	C-21-025 TTCP (2 OF 3)	C-21-025 TTCP (2 OF 3)
38	C-21-025 TTCP (3 OF 3)	C-21-025 TTCP (3 OF 3)
39	C-21-025 SIGN SUMMARY	C-21-025 SIGN SUMMARY

GENERAL NOTES:
EXISTING CONDITIONS:
 THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIALS OR COMMENCE ANY FABRICATION UNTIL THE REQUIRED MEASUREMENTS HAVE BEEN MADE ON THE ACTUAL STRUCTURE AND THE ELEMENT OF PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

REPAIR QUANTITY SUMMARY TABLES SHOWN THROUGHOUT THIS PLANSET ARE ESTIMATED FROM THE LIMITS OF DETERIORATION AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL REFER TO THE SUBSTRUCTURE REPAIR DETAILS ON SHEET 16 TO ESTABLISH ACTUAL REPAIR QUANTITIES.
EXISTING BRIDGE PLANS:
 PLANS FOR THE EXISTING BRIDGES ARE AVAILABLE AND MAY BE REQUESTED ELECTRONICALLY FROM PLANS AND RECORDS.

SCALES:
 DRAWINGS ARE TO SCALE FOR FULL SIZED SHEETS (24"x36") BUT ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF-SIZE PRINTS (A3).
UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.
CONCRETE REPAIR NOTES:

THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE. RATHER A SIGNIFICANT REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT SPALLED, DETERIORATED AND DELAMINATED CONCRETE AREAS TO BE APPROVED BY THE ENGINEER FOR REPAIR BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.

CONCRETE MIXES:
 4000 PSI, 3/4" 660 CEMENT CONCRETE; COPING REPAIRS (VERTICAL & HORIZONTAL), END DIAPHRAGM ENCASEMENT REPAIRS, SUBSTRUCTURE REPAIRS
 CEMENTITIOUS MORTAR FOR PATCHING: COPING REPAIRS (OVERHEAD)

STRUCTURAL STEEL:
 THE CONTRACTOR SHALL FIELD MEASURE EXISTING CONDITIONS (I.E. REINFORCED CONCRETE ENCASED DIAPHRAGM, CONNECTION PLATES, CROSS FRAMES, ETC.) PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE PROPER FIT UP OF THE REPAIR PLATES AND ANGLES. PROPOSED STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 UNLESS OTHERWISE NOTED. PERIMETER OF ALL REPAIR PLATES AND ANGLES SHALL BE SEALED USING SILICONE CAULK UPON COMPLETION OF THE REPAIRS. REFER TO MASSDOT LRFD BRIDGE MANUAL, PART II 5.1.9 FOR MORE CLIP/ WELDING INFORMATION.

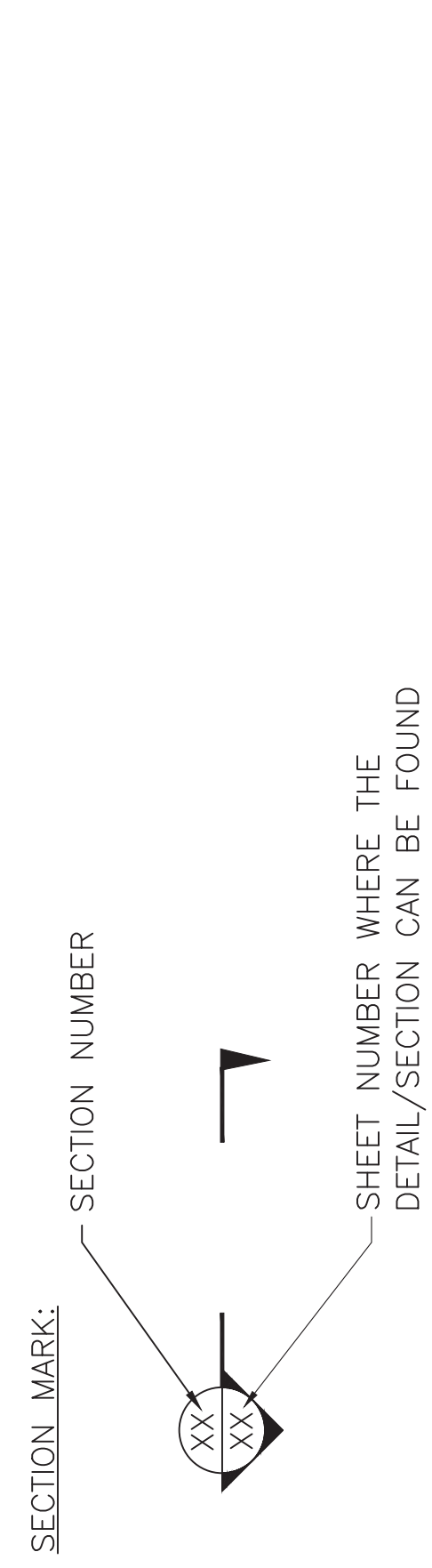
REINFORCEMENT:
 REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION:	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	19"	23"
2. 12" OF CONCRETE BELOW BAR	20"	25"	30"
3. EPOXY COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	23"	29"	34"
4. COATED BARS, ALL OTHER CASES	18"	23"	27"
5. CONDITION 2. AND 3.	26"	32"	39"
6. CONDITION 2. AND 4.	24"	30"	36"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.
 REINFORCEMENT IS TO BE PLACED AT A CLEAR DISTANCE OF TWO (2) INCHES FROM THE FACE OF CONCRETE, UNLESS OTHERWISE SHOWN ON THE PLANS.

UTILITIES:
 THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES.

SHOP DRAWINGS:
 THE CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS AS REQUIRED BY THE STANDARD SPECIFICATIONS AND THE LATEST MASSDOT BRIDGE MANUAL. PROPOSED COMPONENTS REQUIRING FIELD MEASUREMENTS SHALL BE DESIGNED, DETAILED, AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

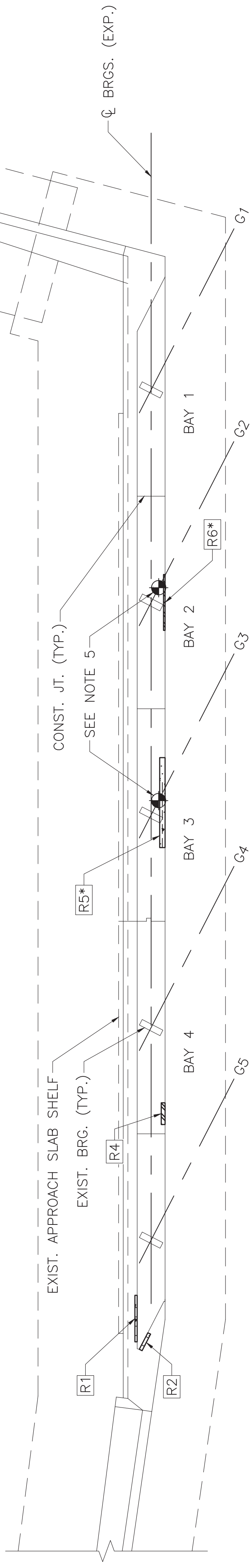


AUG. 13, 2024	PS&E R2
PROPOSED BRIDGE PRESERVATION CUMMINGTON 3 BRIDGES ALONG RT 9 OVER WESTFIELD RIVER & WESTFIELD BROOK MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION 10 PARK PLAZA BOSTON, MASS	
 282 Merrimack Street, 2nd Floor Lawrence, MA 01843	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	2	37
PROJECT FILE NO.		613116	

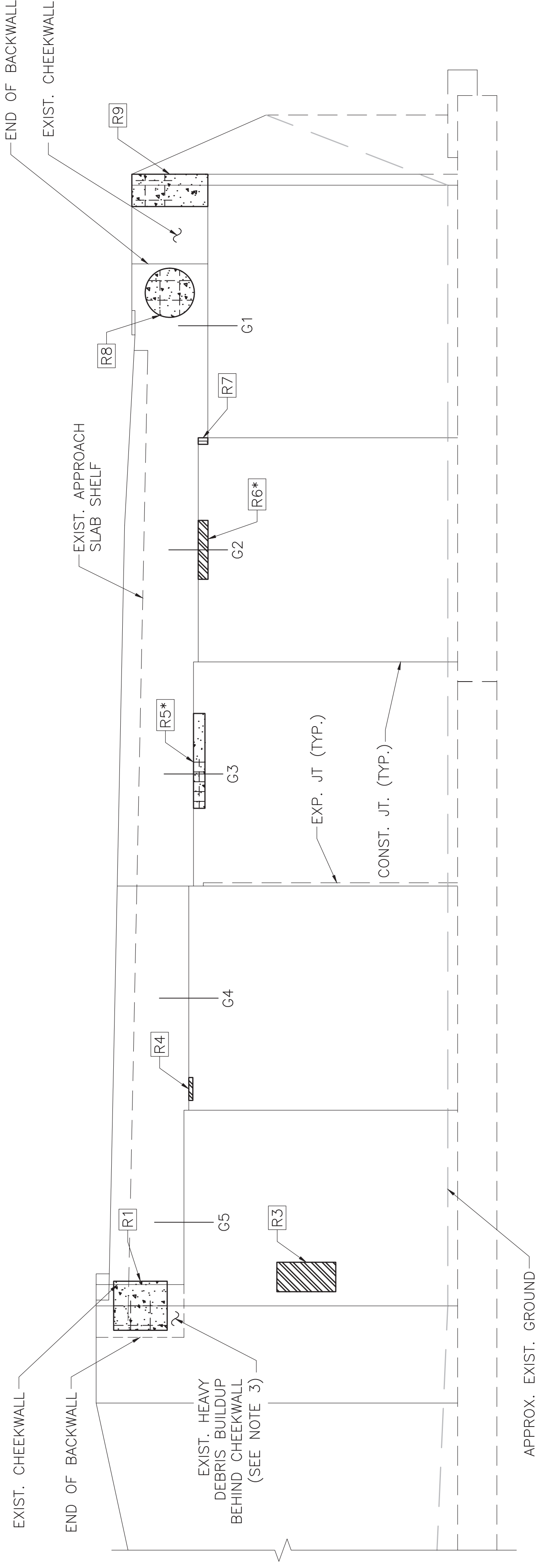
C-21-023 (OJN) ST 9 OVER WESTFIELD BROOK
SCHEDULE OF ABUTMENT REPAIRS (1 OF 2)



NOTE:
 EXISTING APPROACH SLAB NOT SHOWN FOR CLARITY.

WEST ABUTMENT PLAN

NOT TO SCALE



WEST ABUTMENT ELEVATION

NOT TO SCALE

DEFICIENCY LEGEND

- SPALL
- SPALL W/ EXPOSED REBAR
- DELAMINATION
- PROF. JACKING & SHORING FOR BEAM SEAT REPAIR (2 TOTAL)

- NOTES:**
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-02-2023.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF BRIDGE SEATS SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. BRIDGE SEAT CLEANING SHALL BE INCIDENTAL TO ITEM NO. 961.201.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.
 - MULTIPLE REPAIRS IN THE SAME LOCATION DESIGNATED FOR JACKING AND SHORING (I.E. BEAM SEAT, BEARING RESET) SHALL BE PERFORMED IN ONE PHASE. ALL JACKING AND SHORING SYSTEMS SHALL BE CONTRACTOR DESIGNED. CONTRACTOR SHALL NOTE THAT THIS SHEET ONLY IDENTIFIES JACK AND SHORE LOCATIONS ANTICIPATED FOR BEAM SEAT REPAIRS. SEE SHEET 4 FOR ADDITIONAL JACK AND SHORE LOCATIONS ANTICIPATED FOR SUPERSTRUCTURE REPAIR LOCATIONS. CONTRACTOR SHALL ONLY BE COMPENSATED FOR ONE JACKING AND SHORING SYSTEM PER LOCATION.

WEST ABUTMENT REPAIR SCHEDULE						
REPAIR NUMBER	DEFICIENCY	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)	
R1	SPALL W/ EXPOSED REBAR	60	72	3	30.0	
R2	SPALL W/ EXPOSED REBAR	24	18	4	3.0	
R3	DELAMINATION	36	72	-	18.0	
R4	DELAMINATION	28	5	-	1.0	
R5*	SPALL W/ EXPOSED REBAR	116	14	3	11.3	
R6*	DELAMINATION	72	6	-	3.0	
R7	SPALL W/ EXPOSED REBAR	4	12	3	0.4	
R8	SPALL W/ EXPOSED REBAR	60	60	2	25.0	
R9	SPALL W/ EXPOSED REBAR	54	93	5	34.9	

*JACKING AND SHORING OF BEAM END REQUIRED BEFORE REPAIR DUE TO PROXIMITY TO BEARING. TIMING OF REPAIR SHALL BE COORDINATED WITH JACKING AND SHORING FOR BEARING RESET (SEE NOTE 5).

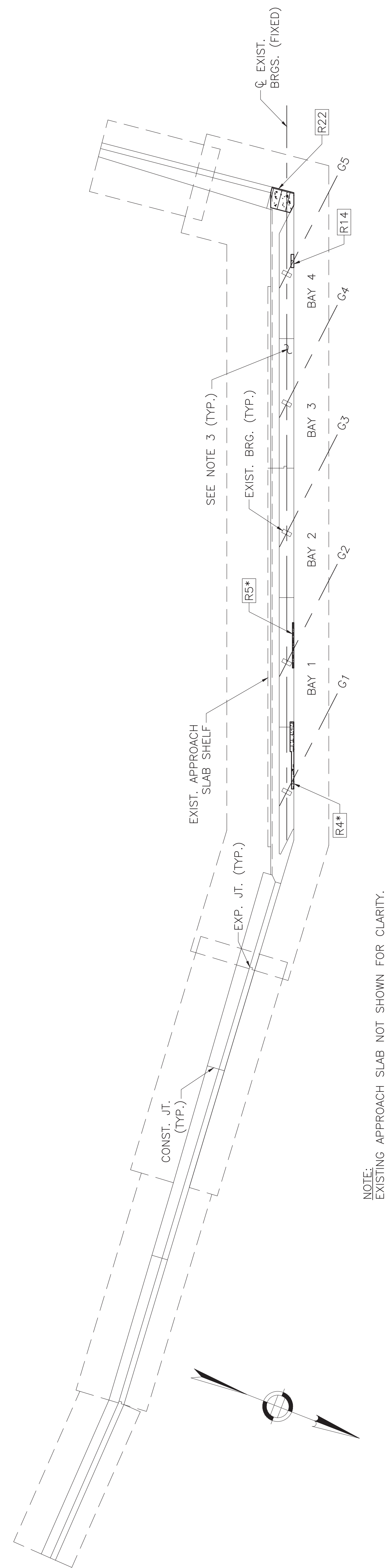
ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
SPALL W/ EXPOSED REBAR	105.0 SF
DELAMINATION	22.0 SF

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

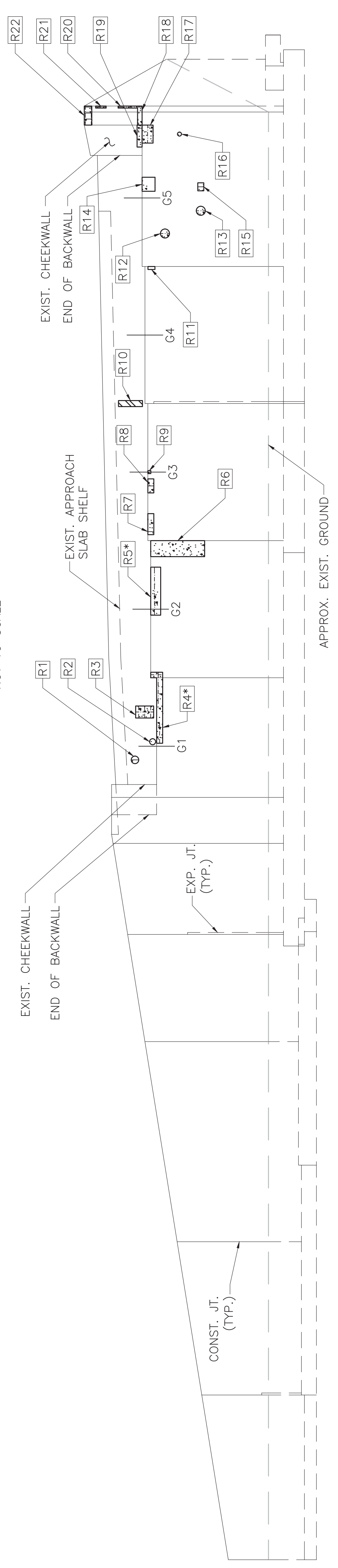
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	3	37
PROJECT FILE NO.		613116	

C-21-023 (OJN) ST 9 OVER WESTFIELD BROOK
SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)



EAST ABUTMENT PLAN

NOT TO SCALE



EAST ABUTMENT ELEVATION

NOT TO SCALE

- NOTES:
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-02-2023.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF BRIDGE SEATS SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. BRIDGE SEAT CLEANING SHALL BE INCIDENTAL TO ITEM NO. 961.201.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.
 - CONTRACTOR SHALL IMMEDIATELY HALT CONCRETE EXCAVATION IN THE VICINITY OF AN ENGAGED BEARING IF THE LENGTH OF UNDERMINING BELOW THE MASONRY PLATE EXCEEDS 3 INCHES IN EITHER DIRECTION. THE ENGINEER SHALL BE NOTIFIED TO EVALUATE THE NEED FOR TEMPORARY SHORING OF THE BEAM END BEFORE EXCAVATION IS RESUMED. IF TEMPORARY SHORING IS REQUIRED, END DIAPHRAGM RETROFITS SHALL BE INSTALLED AS DETAILED ON SHEETS 23 & 24.

DEFICIENCY LEGEND

	SPALL
	SPALL W/ EXPOSED REBAR
	DELAMINATION

REPAIR NUMBER	DEFICIENCY	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)
R1	SPALL W/ EXPOSED REBAR	16	16	2	1.8
R2	SPALL	12	12	1.5	1.0
R3	SPALL W/ EXPOSED REBAR	24	48	3	8.0
R4*	SPALL W/ EXPOSED REBAR	144	26	5	26.0
R5*	SPALL W/ EXPOSED REBAR	111	20	5.5	15.5
R6	SPALL	32	108	2	24.0
R7	SPALL W/ EXPOSED REBAR	42	12	3	3.5
R8	SPALL W/ EXPOSED REBAR	28	12	2	2.4
R9	DELAMINATION	6	6	-	0.3
R10	DELAMINATION	12	48	2	4.0
R11	SPALL W/ EXPOSED REBAR	6	14	3	0.6
R12	SPALL W/ EXPOSED REBAR	18	18	2	2.3
R13	SPALL W/ EXPOSED REBAR	18	18	2	2.3
R14	SPALL	34	26	2	6.2
R15	SPALL W/ EXPOSED REBAR	16	12	3	1.4
R16	SPALL	8	8	2	0.5
R17	SPALL W/ EXPOSED REBAR	20	12	3	1.7
R18	SPALL	72	8	6	4.0
R19	SPALL	44	10	3	3.1
R20	SPALL W/ EXPOSED REBAR	12	48	10	4.0
R21	SPALL W/ EXPOSED REBAR	4	21	3	0.6
R22	SPALL W/ EXPOSED REBAR	72	12	18	6.0

ESTIMATED REPAIR SUMMARY

DEFICIENCY	QUANTITY
SPALL	39.0 SF
SPALL W/ EXPOSED REBAR	77.0 SF
DELAMINATION	5.0 SF

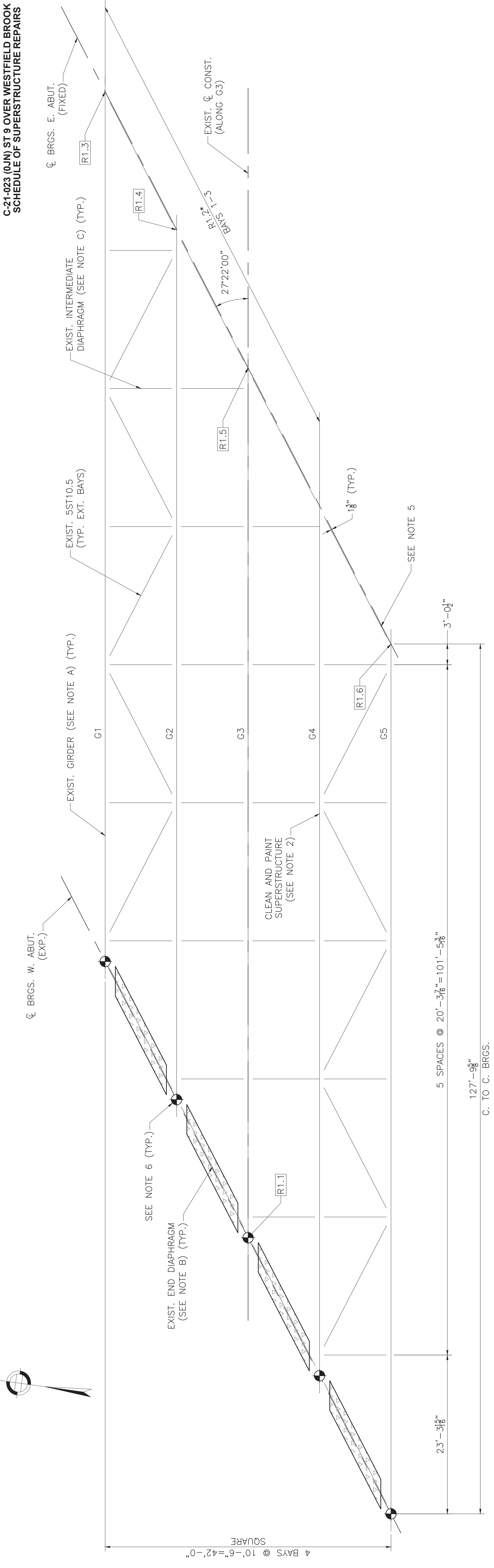
AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

*DETERIORATION ENCROACHES OR UNDERMINES AN EXISTING FIXED BEARING (SEE NOTE 5)

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	4	37
PROJECT FILE NO. 613116			

C-21-023 (OJN) ST 9 OVER WESTFIELD BROOK
SCHEDULE OF SUPERSTRUCTURE REPAIRS



FRAMING PLAN
 NOT TO SCALE

- LEGEND:**
- PROP. JACKING AND SHORING FOR BEARING RESET (5 TOTAL) (SEE NOTE 3)
 - PROP. DIAPHRAGM RETROFIT FOR JACKING AND SHORING (4 TOTAL) (SEE SHEETS 23 & 24)

- EXISTING CONDITIONS:**
- A. G1-G5: 72"x8" WEB PLATE; 18"x3/8" FLANGE PLATE AT BEAM ENDS (THICKNESS OF FLANGE PLATES VARY ALONG GIRDERS)
 - B. END DIAPHRAGMS: 18CS8.0 W/ L4x3x3/8" CROSS FRAMES
 - C. INTERMEDIATE DIAPHRAGMS: L4x3x3/8" CROSS FRAMES (W/ 5ST110.5 @ EXTERIOR BAYS ONLY)
 - D. BEARING STIFFENERS: 8"x8" PL
 - E. INTERMEDIATE STIFFENERS: 5"x8" PL

- NOTES:**
1. BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-02-2023.
 2. THE ENTIRE SUPERSTRUCTURE AND ALL EXISTING BEARINGS SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH ITEM NO. 961.201.
 3. EXISTING EXPANSION BEARING ASSEMBLY SHALL BE CLEANED, PAINTED, LUBRICATED AND RESET. SEE SHEET 17 FOR DETAILS.
 4. CONTRACTOR SHALL REMOVE ALL EXISTING FORMWORK AND ANY OTHER CONSTRUCTION DEBRIS FROM PREVIOUS REPAIRS.
 5. THE CONTRACTOR SHALL MEASURE EXISTING CONDITIONS (END DIAPHRAGMS, CONNECTION PLATES, CROSS FRAMES, ETC.) PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE PROPER FIT OF THE REPAIR PLATES AND ANGLES.
 6. MULTIPLE REPAIRS IN THE SAME LOCATION DESIGNATED FOR JACKING AND SHORING (I.E. BEAM SEAT, BEARING RESET) SHALL BE PERFORMED IN ONE PHASE. ALL JACKING AND SHORING SYSTEMS SHALL BE CONTRACTOR DESIGNED. CONTRACTOR SHALL NOTE THAT THIS SHEET ONLY IDENTIFIES JACKING AND SHORING LOCATIONS ANTICIPATED FOR BEARING RESETS. ADDITIONAL JACKING AND SHORING LOCATIONS ANTICIPATED FOR SUPERSTRUCTURE REPAIRS SHOWN ON SHEET 2. CONTRACTOR SHALL ONLY BE COMPENSATED FOR ONE JACKING AND SHORING SYSTEM PER LOCATION.

REPAIR NO.	BEAM NO.	LOCATION	REPAIR	ORIGINAL CONDITIONS	REPAIR DETAIL
R1.1	G3	W. ABUT.	WEB	72" x 7/16" WEB	A
R1.2*	G1-G4	E. ABUT.	END DIAPHRAGM	L4x3x5/16"	SHEET 22
R1.3	G1	E. ABUT.	BEARING STIFFENER	8" x 3/8" STIFFENER PLATE	B
R1.4	G2	E. ABUT.	WEB	72" x 7/16" WEB	A
R1.5	G3	E. ABUT.	WEB	72" x 7/16" WEB	A
R1.6	G5	E. ABUT.	BEARING STIFFENER	8" x 3/8" STIFFENER PLATE	B

*REPAIR R1.2 REPRESENTS A TYPICAL REPAIR THAT SHALL BE PERFORMED ON THE END DIAPHRAGMS IN BAYS 1-3 AT THE EAST ABUTMENT.

REPAIR SCHEDULE NOTES:

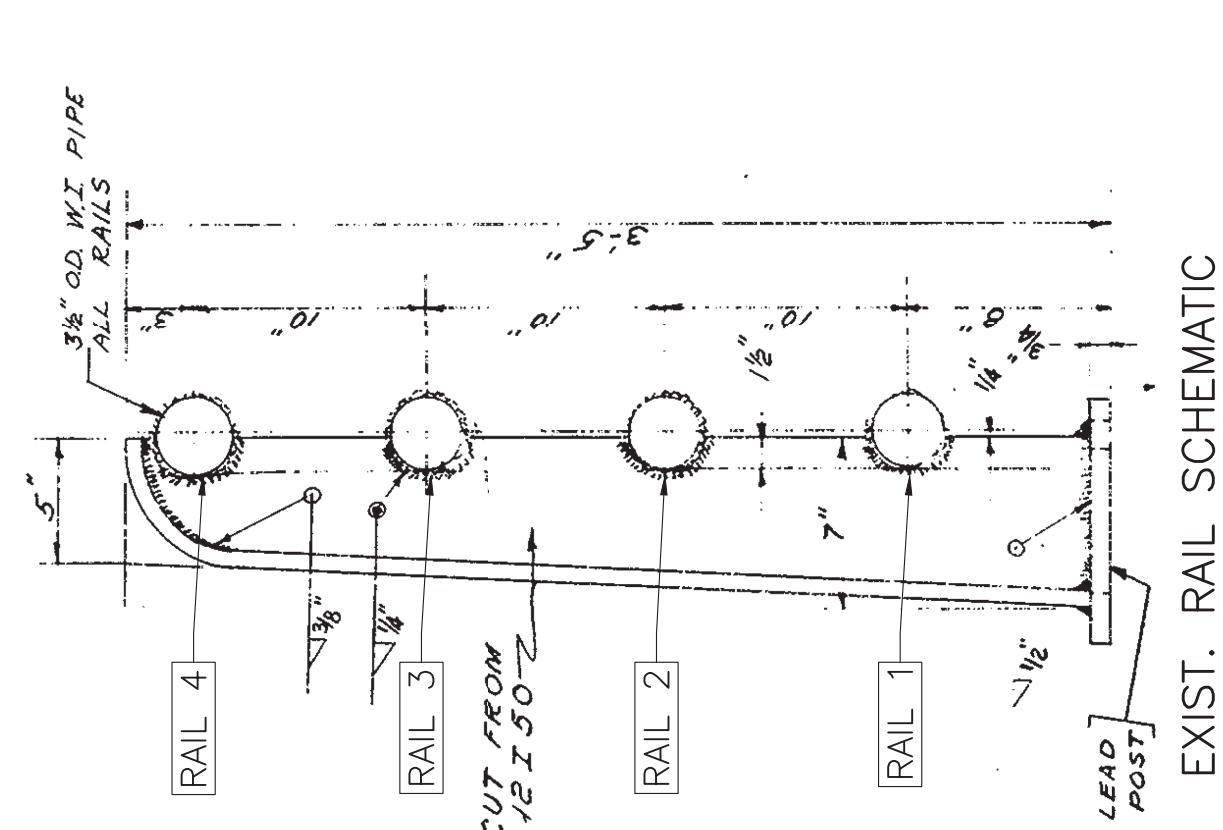
1. REFER TO THE BEAM END REPAIR DETAILS ON SHEETS 18 THROUGH 20 FOR MORE INFORMATION ON THE LIMITS OF REPAIR.
2. CONTRACTOR SHALL NOTE THAT VARIOUS EXISTING UNFILLED BOLT HOLES ARE PRESENT ON EXISTING INTERMEDIATE STIFFENERS. ANY UNFILLED BOLT HOLES SHALL BE FILLED WITH A HIGH STRENGTH, FULLY TENSIONED STEEL BOLT. CONTRACTOR SHALL FIELD LOCATE ALL UNFILLED BOLT HOLES. REFER TO ITEM 107.97 FOR MORE INFORMATION.

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE: MA
 FED. AID PROJ. NO.: HI(BR)-003(766)X
 SHEET NO.: 5
 TOTAL SHEETS: 37
 PROJECT FILE NO.: 613116

C-21-023 (OJN) ST 9 OVER WESTFIELD BROOK
SCHEDULE OF DECK REPAIRS

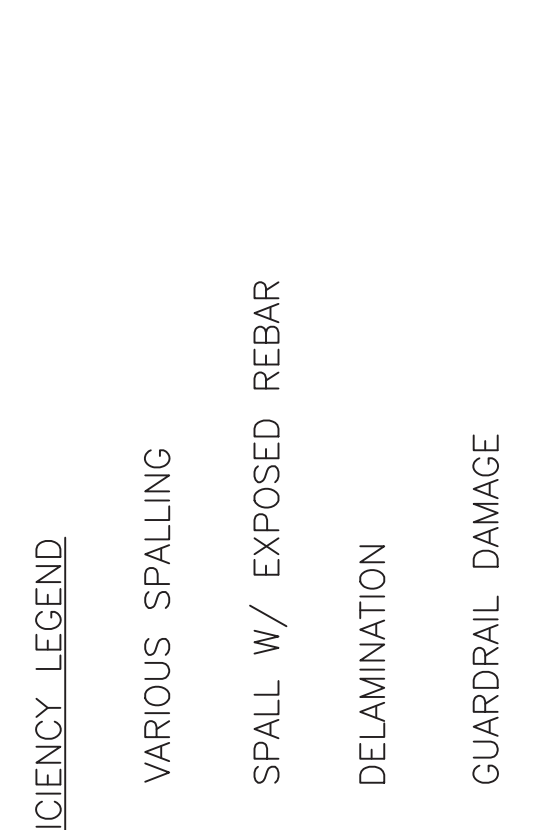


RAILING REPAIR SCHEDULE*

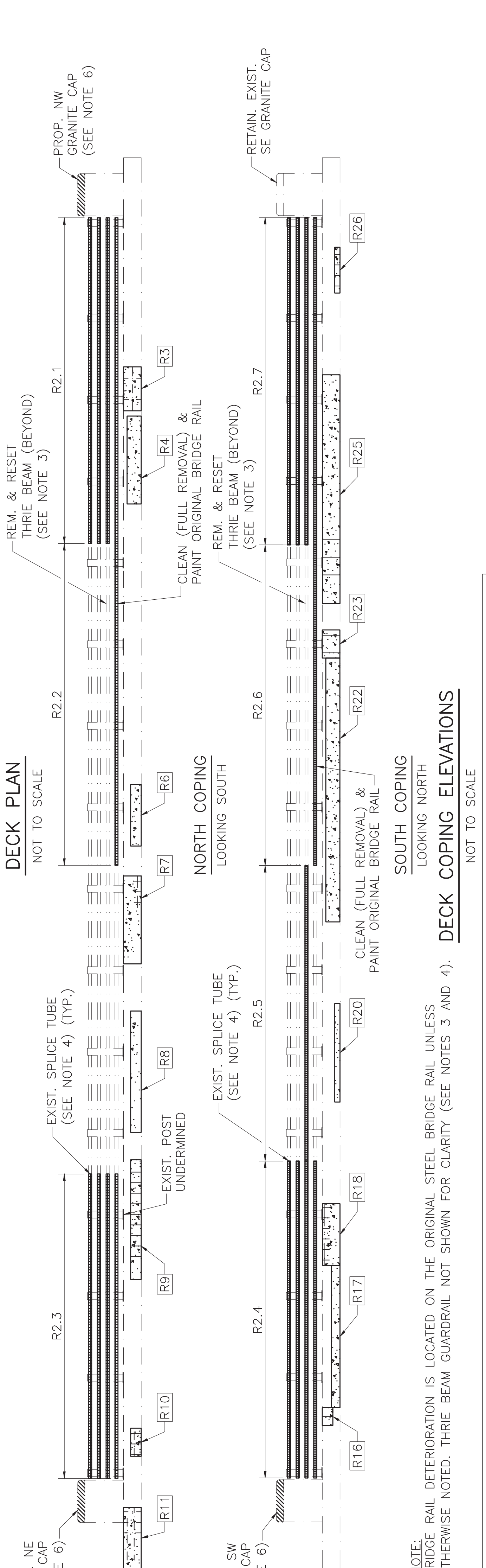
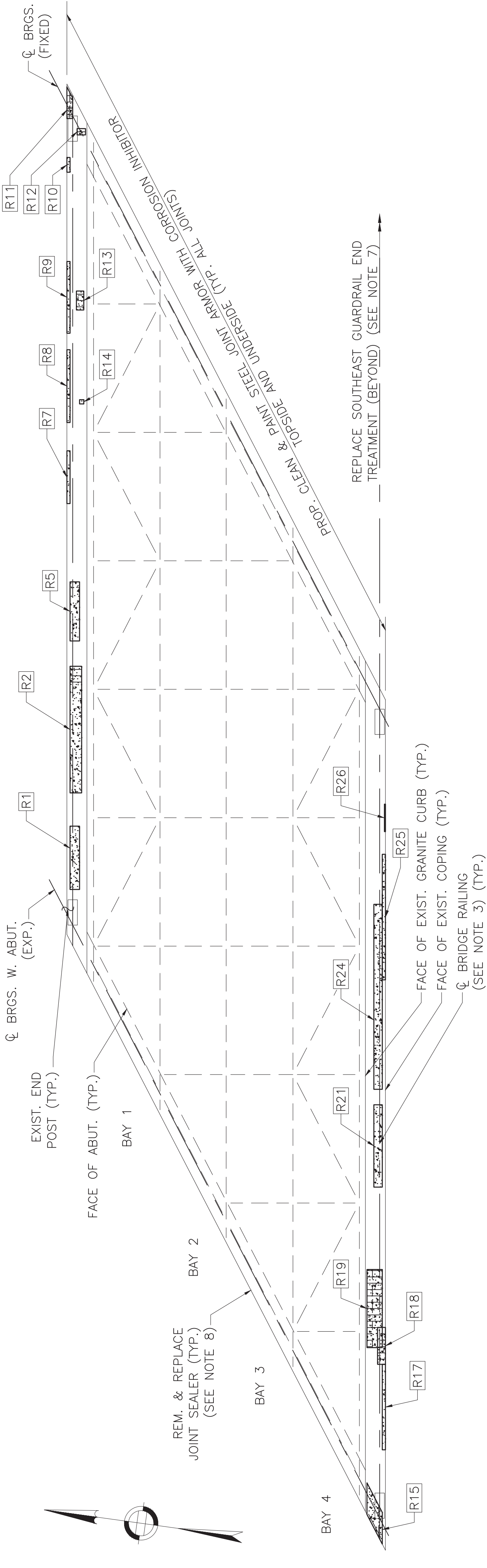
REPAIR NO.	RAIL(S)	DEFICIENCY	REPAIR QUANTITY
R2.1	1 THRU 4	DETERIORATED RAILS	123 FT
R2.2	1	DETERIORATED RAILS	31 FT
R2.3	1 THRU 4	DETERIORATED RAILS	109 FT
R2.4	1 THRU 4	DETERIORATED RAILS	120 FT
R2.5	2	DETERIORATED RAILS	29 FT
R2.6	1	DETERIORATED RAILS	31 FT
R2.7	1 THRU 4	DETERIORATED RAILS	124 FT

*SEE NOTE 4

ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
VARIOUS SPALLING	113.0 SF
SPALL W/ EXPOSED REBAR	229.0 SF
SPALL	35.0 SF
RAILING DAMAGE	567 FT



DATE	PS&E R2
AUG. 13, 2024	
USE ONLY PRINTS OF LATEST DATE	



NOTE: BRIDGE RAIL DETERIORATION IS LOCATED ON THE ORIGINAL STEEL BRIDGE RAIL UNLESS OTHERWISE NOTED. THRIE BEAM GUARDRAIL NOT SHOWN FOR CLARITY (SEE NOTES 3 AND 4).

DECK & COPING REPAIR SCHEDULE

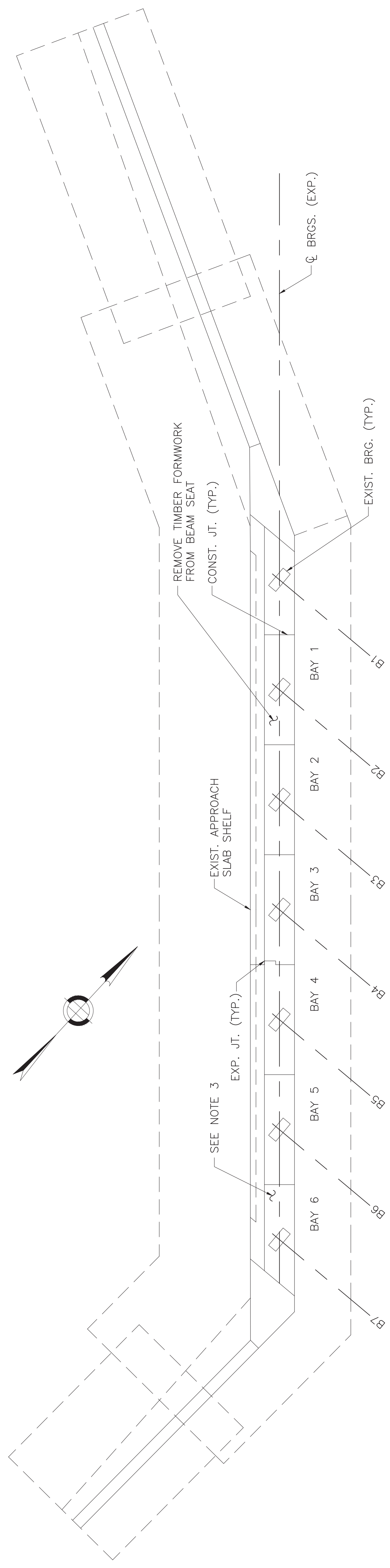
REPAIR NUMBER	DEFICIENCY	TYPE	WIDTH (IN)	LENGTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)
R1	VARIOUS SPALLING	UNDERSIDE	18.0	120.0	-	2.0	15.0
R2	SPALL W/ EXPOSED REBAR	UNDERSIDE	22.0	240.0	-	2.0	36.7
R3	SPALL W/ EXPOSED REBAR	FASCIA	-	50.0	20 (FH)	2.0	7.0
R4	VARIOUS SPALLING	FASCIA	-	100.0	16.0	3.0	11.2
R5	VARIOUS SPALLING	UNDERSIDE	18.0	112.0	-	2.0	14.0
R6	VARIOUS SPALLING	FASCIA	-	70.0	12.0	1.5	5.9
R7	SPALL W/ EXPOSED REBAR	FASCIA	-	100.0	20 (FH)	6.0	13.9
R8	VARIOUS SPALLING	FASCIA	-	138.0	12.0	6.0	11.5
R9	SPALL W/ EXPOSED REBAR	FASCIA	-	160.0	12.0	6.0	13.4
R10	SPALL W/ EXPOSED REBAR	FASCIA	-	32.0	12.0	6.0	2.7
R11	SPALL W/ EXPOSED REBAR	TOPSIDE/FASCIA	22.0	70.0	12.0	12.0	10.7
R12	SPALL	UNDERSIDE	12.0	16.0	-	2.0	1.4
R13	SPALL W/ EXPOSED REBAR	TOPSIDE	14.0	36.0	-	2.5	3.5
R14	SPALL W/ EXPOSED REBAR	TOPSIDE	8.0	8.0	-	3.0	0.5
R15	SPALL W/ EXPOSED REBAR	TOPSIDE	35 (FW)	60.0	-	5.0	14.6
R16	SPALL W/ EXPOSED REBAR	FASCIA	-	20.0	12.0	3.0	1.7
R17	VARIOUS SPALLING	FASCIA	-	162.0	10.0	6.0	11.3
R18	SPALL W/ EXPOSED REBAR	TOPSIDE/FASCIA	15.0	70.0	20 (FH)	2.0	17.1
R19	SPALL W/ EXPOSED REBAR	UNDERSIDE	35 (FW)	148.0	-	3.0	36.0
R20	VARIOUS SPALLING	FASCIA	-	112.0	6.0	2.0	4.7
R21	SPALL W/ EXPOSED REBAR	UNDERSIDE	16.0	156.0	-	2.0	17.4
R22	SPALL	FASCIA	-	300.0	16.0	2.0	33.4
R23	SPALL W/ EXPOSED REBAR	FASCIA	-	32.0	20 (FH)	3.0	4.5
R24	VARIOUS SPALLING	UNDERSIDE	16.0	350.0	-	3.0	38.9
R25	SPALL W/ EXPOSED REBAR	TOPSIDE/FASCIA	6.0	260.0	20 (FH)	6.0	47.0
R26	SPALL W/ EXPOSED REBAR	FASCIA	-	52.0	6.0	2.0	2.2

- NOTES:
- THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - REFER TO SHEET 21 FOR DECK/COPING REPAIR DETAILS.
 - THE EXISTING THRIE BEAM GUARDRAIL RETROFIT SHALL BE REMOVED PRIOR TO PERFORMING REPAIRS TO THE STEEL BRIDGE RAIL AND RESET WITH NEW HARDWARE AFTER SPOT REPAIRS ARE COMPLETE. CONTRACTOR SHALL NOT REMOVE THRIE BEAM UNTIL THE PROPOSED TTCIP IS IN PLACE.
 - CONTRACTOR SHALL MATCH EXISTING SPLICES, RAIL BREAKS, AND POST SPACING WHEN PERFORMING BRIDGE RAIL REPAIRS. ALL SPLICE TUBES AT THE PROPOSED HORIZONTAL RAIL REPLACEMENT LOCATIONS SHALL BE REPLACED IN-KIND. REFER TO SHEET 21 FOR BRIDGE RAIL REPAIR DETAILS.
 - VARIOUS SPALLING IN THE REPAIR SCHEDULE REFERS TO AN AREA OF MULTIPLE SPALLS, SOME WITH EXPOSED REBAR. DIMENSIONS ARE APPROXIMATE.
 - CONTRACTOR SHALL INSTALL NEW GRANITE CAPS AT THE NORTHWEST, NORTHEAST AND SOUTHEAST END POSTS IN KIND.
 - CONTRACTOR SHALL REPLACE THE DAMAGED APPROACH GUARDRAIL TRAILING ANCHORAGE AT THE SOUTHEAST CORNER. REFER TO SHEET 22 FOR REPAIR DETAIL.
 - BRIDGE JOINT SEALER SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH ITEM NO. 107.471.
 - TEMPORARY SHIELDING SHALL BE INSTALLED PRIOR TO PERFORMING ANY REPAIRS. FH = FULL HEIGHT OF COPING
FW = FULL WIDTH OF OVERHANG

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

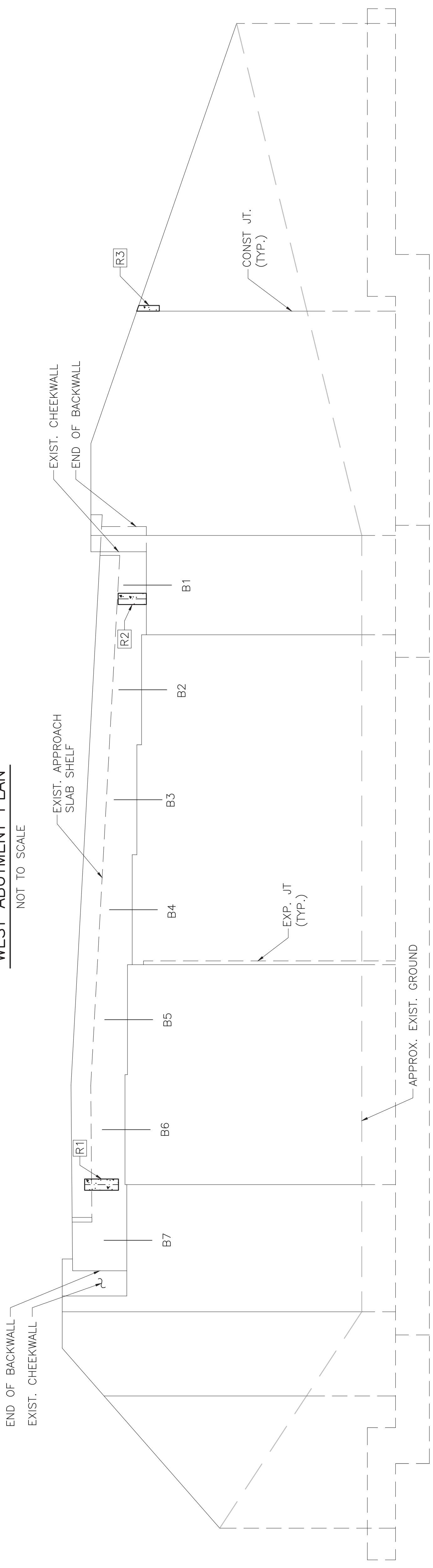
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(76)X	6	37
PROJECT FILE NO.		613116	

C-21-024 (OJM) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF ABUTMENT REPAIRS (1 OF 2)



NOTE:
 EXISTING APPROACH SLAB NOT SHOWN FOR CLARITY.

WEST ABUTMENT PLAN
 NOT TO SCALE



WEST ABUTMENT ELEVATION
 NOT TO SCALE

- DEFICIENCY LEGEND
- SPALL
 - SPALL W/ EXPOSED REBAR
- NOTES:
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-05-2023.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE. RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF BRIDGE SEATS SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. BRIDGE SEAT CLEANING SHALL BE INCIDENTAL TO ITEM 961.202.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.

REPAIR NUMBER	DEFICIENCY	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)
R1	SPALL W/ EXPOSED REBAR	12.0	36.0	1.5	3.0
R2	SPALL W/ EXPOSED REBAR	12.0	30.0	1.5	2.5
R3	SPALL	6.0	24.0	2.0	1.0

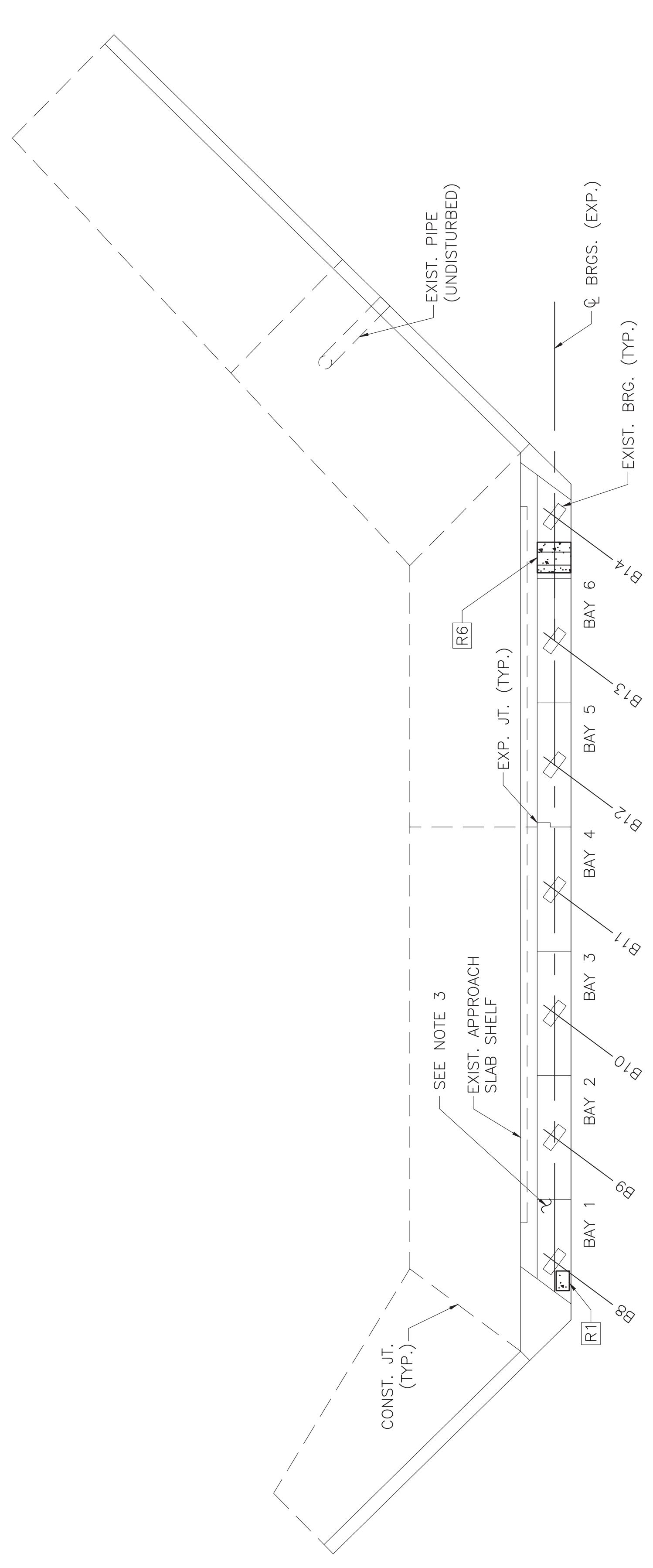
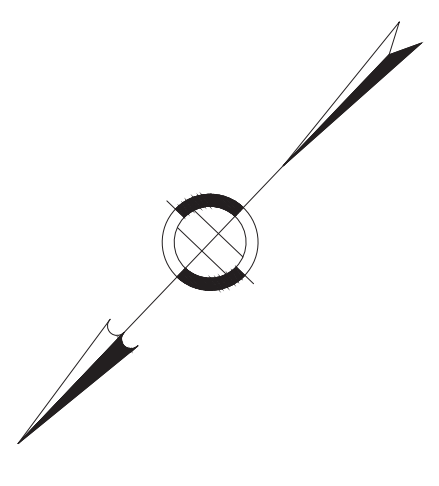
ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
SPALL	1.0 SF
SPALL W/ EXPOSED REBAR	6.0 SF

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	7	37
PROJECT FILE NO. 613116			

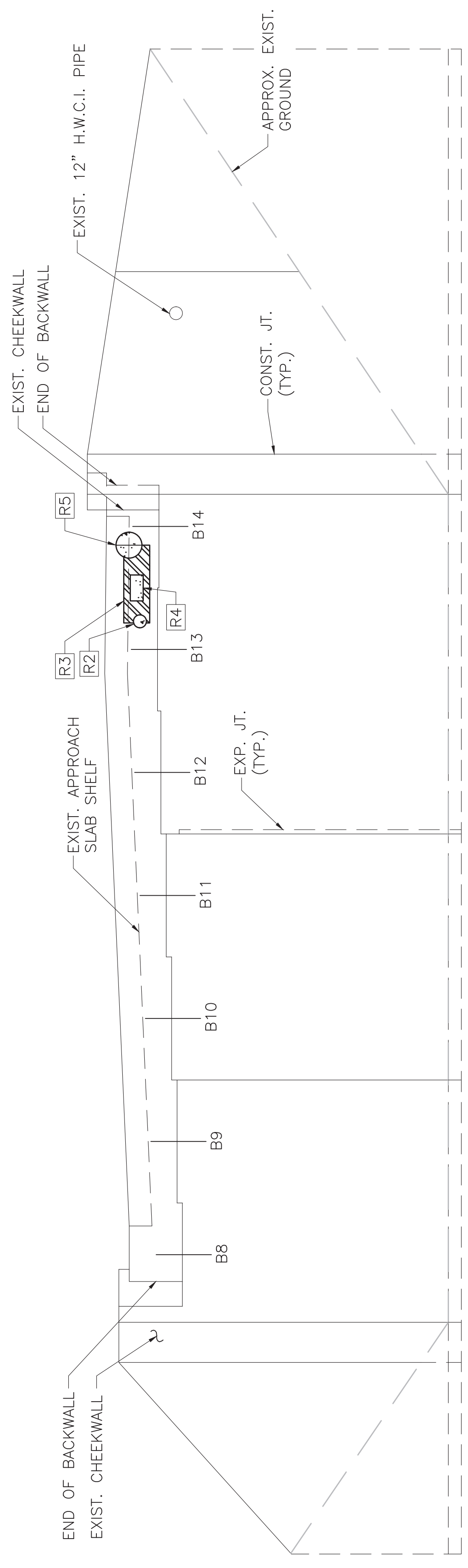
C-21-024 (OJM) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)



NOTE:
 EXISTING APPROACH SLAB NOT SHOWN FOR CLARITY.

EAST ABUTMENT PLAN

NOT TO SCALE



EAST ABUTMENT ELEVATION

NOT TO SCALE

DEFICIENCY LEGEND

- SPALL
- SPALL W/ EXPOSED REBAR
- DELAMINATION

- NOTES:
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-05-2023.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF BRIDGE SEATS SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. BRIDGE SEAT CLEANING SHALL BE INCIDENTAL TO ITEM 961.202.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.

REPAIR NUMBER	DEFICIENCY	WIDTH (IN)	HEIGHT/LENGTH (IN)	DEPTH (IN)	AREA (SF)
R1	SPALL	18.0	12.0	2.0	1.5
R2	SPALL	12.0	12.0	1.0	1.0
R3	DELAMINATION	72.0	24.0	-	12.0
R4	SPALL W/ EXPOSED REBAR	24.0	12.0	1.5	2.0
R5	SPALL W/ EXPOSED REBAR	24.0	24.0	3.0	4.0
R6	SPALL W/ EXPOSED REBAR	28.0	36.0 (FL)	3.0	7.0

FL = FULL LENGTH OF BEAM SEAT

ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
SPALL	2.5 SF
SPALL W/ EXPOSED REBAR	13.0 SF
DELAMINATION	12.0 SF

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

**CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	8	37
PROJECT FILE NO.		613116	

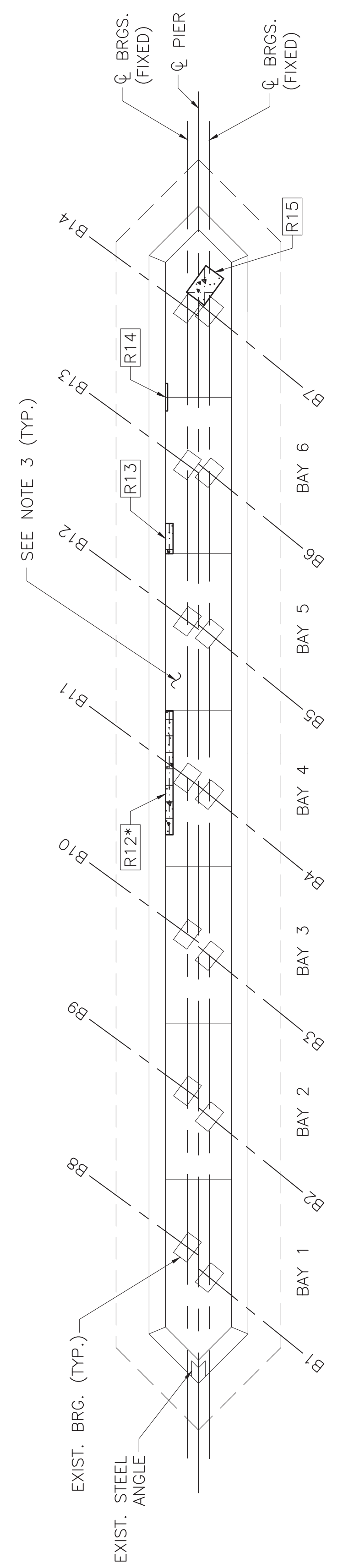
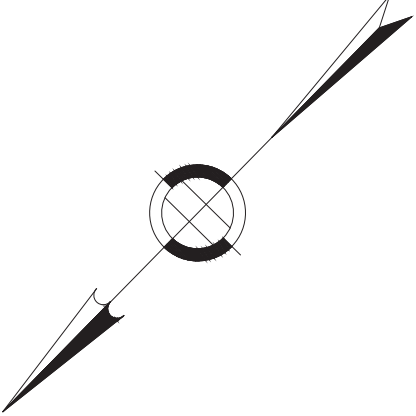
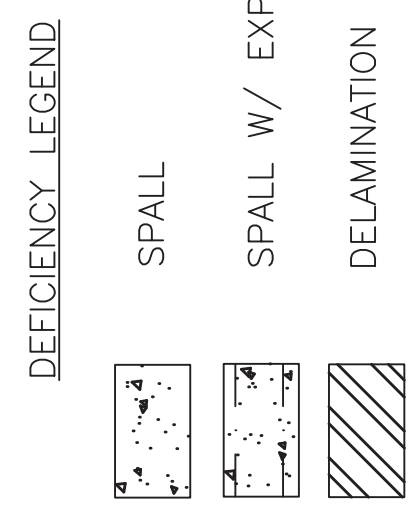
**C-21-024 (OJM) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF PIER REPAIRS**

PIER REPAIR SCHEDULE					
REPAIR NUMBER	DEFICIENCY	WIDTH (IN)	HEIGHT/LENGTH (IN)	DEPTH (IN)	AREA (SF)
R1	DELAMINATION	60.0	84.0	-	35.0
R2	SPALL	12.0	64.0	1.0	5.4
R3	SPALL	15.0	24.0	1.0	2.5
R4	DELAMINATION	72.0	108.0	-	54.0
R5	SPALL W/ EXPOSED REBAR	12.0	6.0	4.0	0.5
R6	SPALL	24.0	12.0	1.0	2.0
R7	SPALL W/ EXPOSED REBAR	12.0	12.0	2.0	1.0
R8	SPALL W/ EXPOSED REBAR	12.0	12.0	2.0	1.0
R9	DELAMINATION	40.0	68.0	-	18.9
R10	DELAMINATION	72.0	36.0	-	18.0
R11	SPALL	12.0	12.0	1.0	1.0
R12*	SPALL W/ EXPOSED REBAR	90.0	30.0	5.0	18.8
R13	SPALL W/ EXPOSED REBAR	22.0	16.0	4.5	2.5
R14	SPALL	20.0	6.0	4.0	0.9
R15	SPALL W/ EXPOSED REBAR	24.0	16.0	4.0	2.7

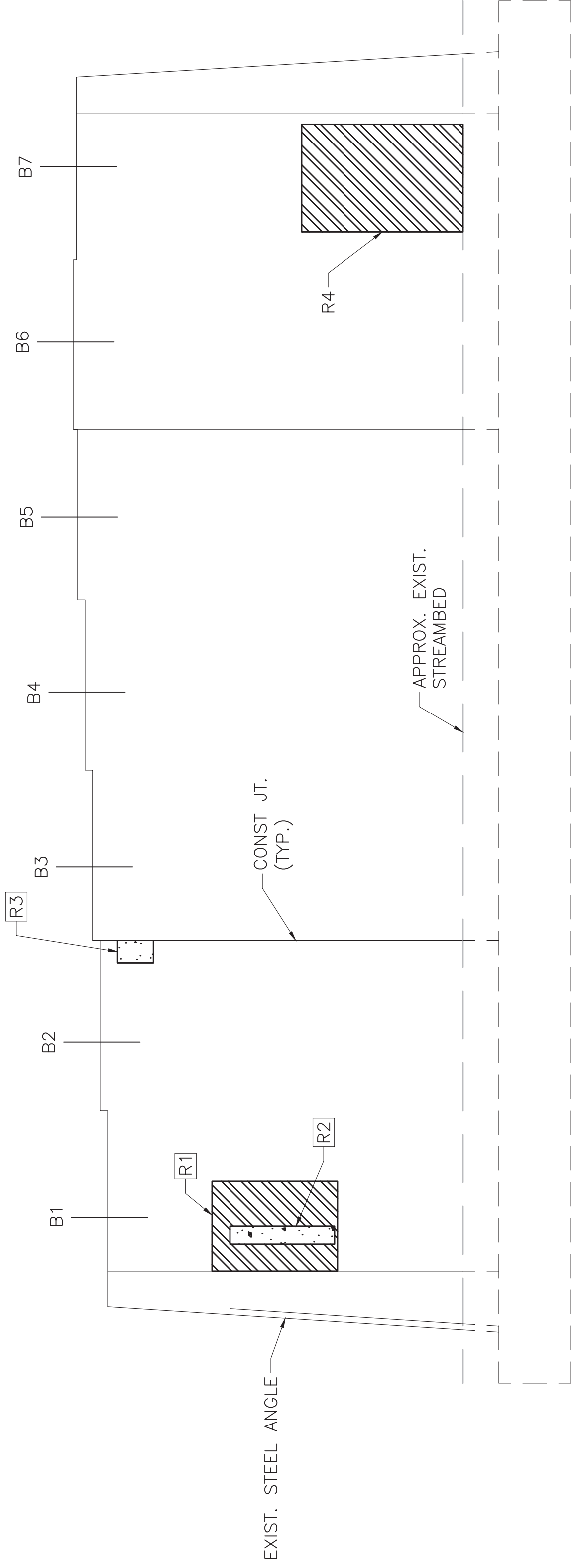
*DETERIORATION ENCROACHES OR UNDERMINES AN EXISTING FIXED BEARING (SEE NOTE 5)

ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
SPALL	12.0 SF
SPALL W/ EXPOSED REBAR	27.0 SF
DELAMINATION	126.0 SF

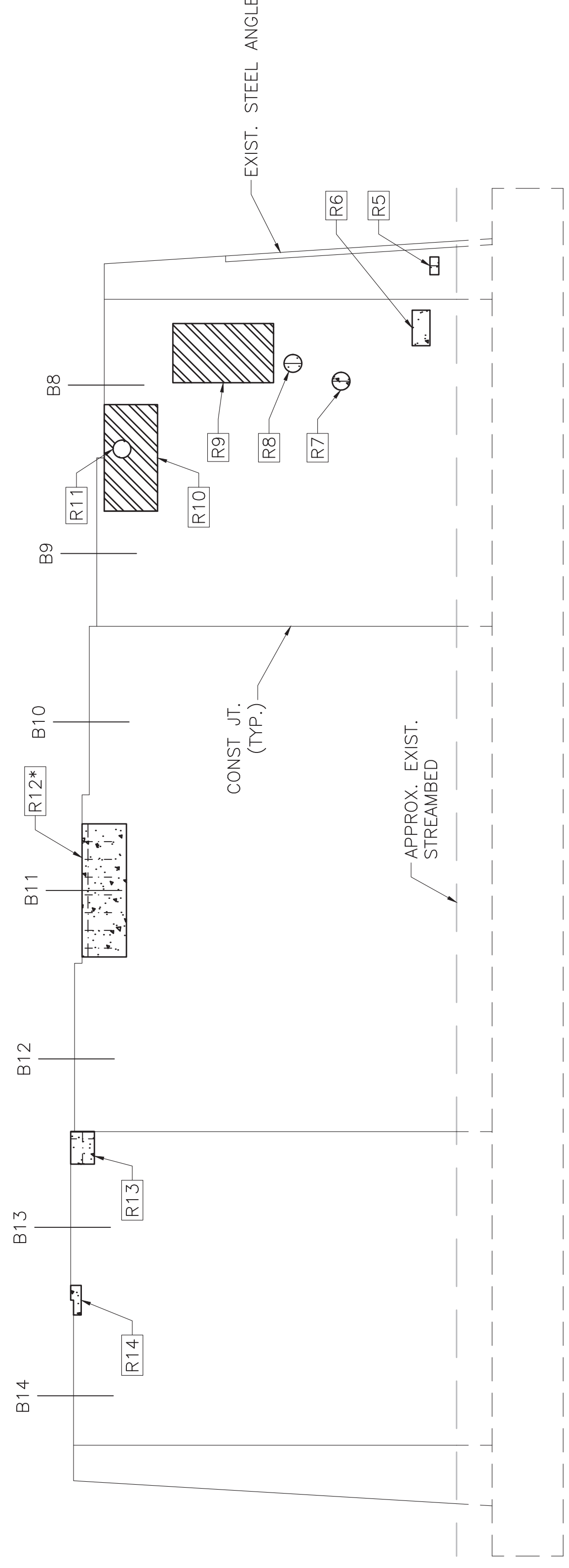
- NOTES:**
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-05-2023.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF PIER CAP SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. PIER CAP CLEANING SHALL BE INCIDENTAL TO ITEM 961.202.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.
 - CONTRACTOR SHALL IMMEDIATELY HALT CONCRETE EXCAVATION IN THE VICINITY OF AN ENGAGED BEARING IF THE LENGTH OF UNDERMINING BELOW THE MASONRY PLATE EXCEEDS 3 INCHES IN EITHER DIRECTION. THE ENGINEER SHALL BE NOTIFIED TO EVALUATE THE NEED FOR TEMPORARY SHORING OF THE BEAM END BEFORE EXCAVATION IS RESUMED. IF TEMPORARY SHORING IS REQUIRED, END DIAPHRAGM RETROFITS SHALL BE INSTALLED AS DETAILED ON SHEETS 23 & 24.



PIER - PLAN
NOT TO SCALE



PIER - WEST ELEVATION (LOOKING EAST)
NOT TO SCALE



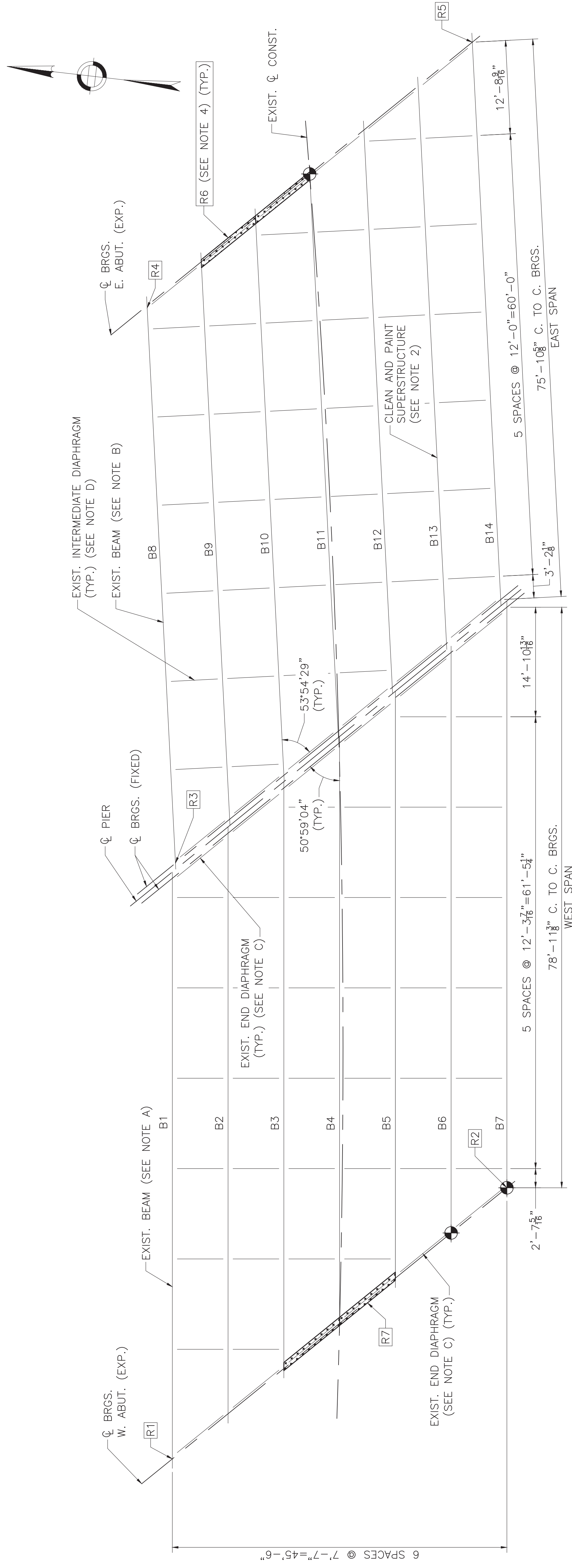
PIER - EAST ELEVATION (LOOKING WEST)
NOT TO SCALE

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	9	37
PROJECT FILE NO. 613116			

C-21-024 (OJM) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF SUPERSTRUCTURE REPAIRS



FRAMING PLAN
 NOT TO SCALE

- LEGEND:**
- PROP. JACKING AND SHORING FOR BEARING RESET (3 TOTAL) (SEE NOTE 3)
 - ▨ PROP. FULL BAY ENCASED END DIAPHRAGM CONCRETE REPAIR (4 TOTAL) (SEE NOTE 4)

- EXISTING CONDITIONS:**
- A. B1-B7: 36WF194 W/ 1 1/4" COVER PLATES (WEST SPAN)
 - B. B8-B14: 36WF194 W/ 1" COVER PLATES (EAST SPAN)
 - C. END DIAPHRAGMS: 15C33.9 (DIAPHRAGMS CONC. ENCASED AT ABUTMENTS ONLY)
 - D. INTERMEDIATE DIAPHRAGMS: 18C42.7

- NOTES:**
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 06-05-2023.
 - THE ENTIRE SUPERSTRUCTURE, INCLUDING THE EXISTING BEARINGS, SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH ITEM NO. 961.202.
 - EXISTING EXPANSION BEARING ASSEMBLY SHALL BE CLEANED, PAINTED, LUBRICATED AND RESET. SEE SHEET 17 FOR DETAILS.
 - SEE SHEET 22 FOR REPAIR DETAILS TO THE CONCRETE ENCASED END DIAPHRAGMS AT THE ABUTMENTS.
 - CONTRACTOR SHALL REMOVE ALL EXISTING FORMWORK AND ANY OTHER CONSTRUCTION DEBRIS FROM PREVIOUS REPAIRS.
 - THE CONTRACTOR SHALL FIELD MEASURE EXISTING CONDITIONS (END DIAPHRAGMS, CONNECTION PLATES, CROSS FRAMES, ETC.) PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE PROPER FIT OF THE REPAIR PLATES AND ANGLES.

REPAIR NO.	BEAM NO.	SPAN NO.	LOCATION		REPAIR	ORIGINAL CONDITIONS	REPAIR DETAIL
			W. ABUT.	E. ABUT.			
R1	1	WEST	W. ABUT.	KEEPER ANGLE	KEEPER ANGLE	-	SHEET 17
R2	7	WEST	W. ABUT.	KEEPER ANGLE	KEEPER ANGLE	-	SHEET 17
R3	8	EAST	PIER	WEB	36WF194	C	
R4	8	EAST	E. ABUT.	KEEPER ANGLE	KEEPER ANGLE	-	SHEET 17
R5	14	EAST	E. ABUT.	KEEPER ANGLE	KEEPER ANGLE	-	SHEET 17
R6	-	WEST	E. ABUT.	END DIAPHRAGM	15C33.9		SHEET 22
R7	-	WEST	W. ABUT.	END DIAPHRAGM	15C33.9		SHEET 22

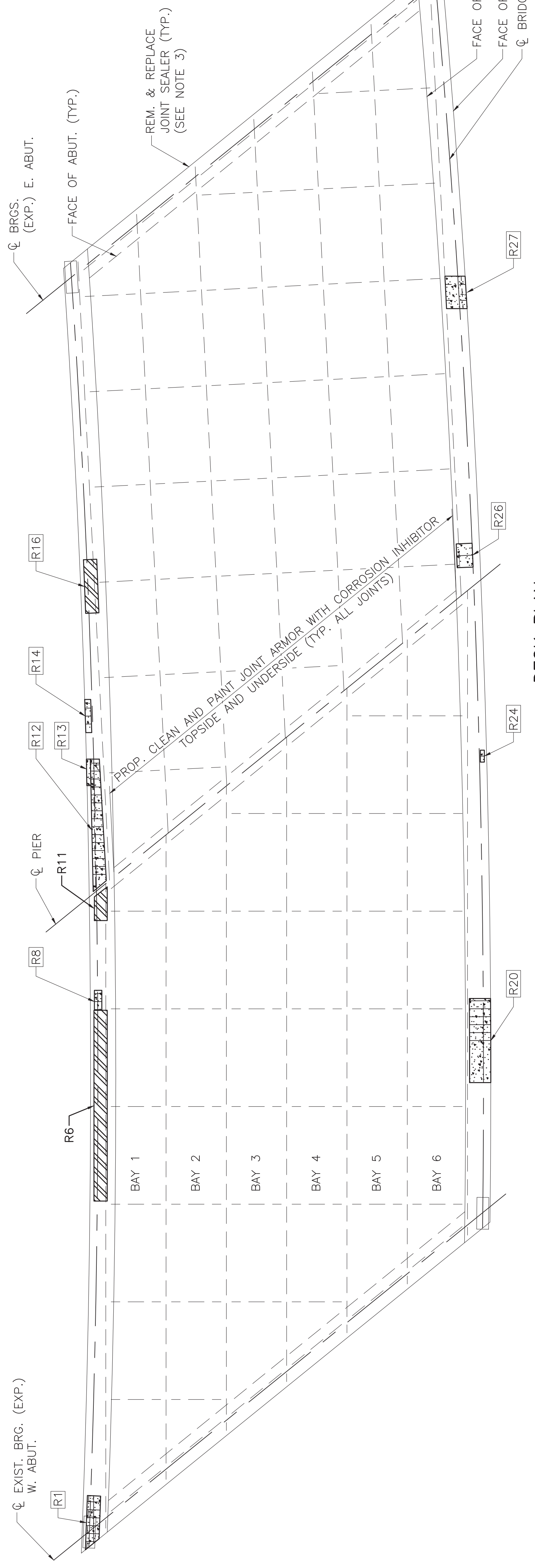
NOTE:
 REFER TO THE BEAM END REPAIR DETAILS ON SHEETS 18 THROUGH 20 FOR MORE INFORMATION ON THE LIMITS OF REPAIR.

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

**CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI16R1-003S/766X	10	37
PROJECT FILE NO. 613116			

**C-21-024 (QJM) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF DECK REPAIRS**



DECK PLAN
NOT TO SCALE

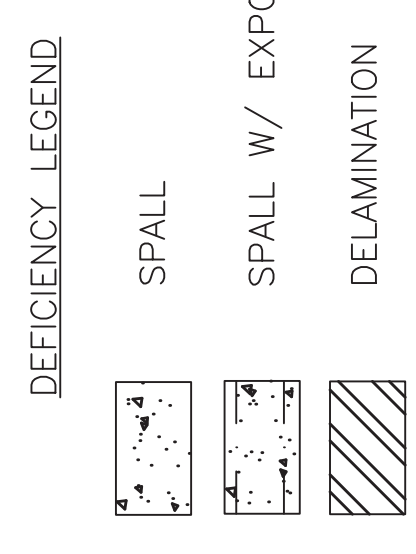
NORTH COPING
LOOKING SOUTH

SOUTH COPING
LOOKING NORTH



NOTE:
THREE BEAM BRIDGE RAIL
RETROFIT (PREVIOUSLY INSTALLED)
NOT SHOWN FOR CLARITY.

ESTIMATED REPAIR SUMMARY		QUANTITY
DEFICIENCY	VARIOUS SPALLING	86.0 SF
	SPALL	17.0 SF
	SPALL W/ EXPOSED REBAR	129.0 SF
	DELAMINATION	58.0 SF



DECK COPING ELEVATIONS
NOT TO SCALE

DECK & COPING REPAIR SCHEDULE									
REPAIR NUMBER	DEFICIENCY	TYPE	WIDTH (IN)	LENGTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)		
R1	SPALL W/ EXPOSED REBAR	UNDERSIDE	20 (FW)	72.0	-	2.0	10.0		
R2	VARIOUS SPALLING	FASCIA	-	64.0	12.0	2.0	5.4		
R3	SPALL	FASCIA	-	11.0	8.0	1.0	0.7		
R4	SPALL W/ EXPOSED REBAR	FASCIA	-	48.0	16.0	4.0	5.4		
R5	SPALL W/ EXPOSED REBAR	FASCIA	-	150.0	20 (FH)	3.0	20.9		
R6	DELAMINATION	UNDERSIDE	20 (FW)	288.0	-	-	40.0		
R7	VARIOUS SPALLING	FASCIA	-	150.0	6.0	1.0	6.3		
R8	SPALL W/ EXPOSED REBAR	UNDERSIDE	20 (FW)	30.0	-	2.0	4.2		
R9	SPALL W/ EXPOSED REBAR	FASCIA	-	24.0	13.0	1.5	2.2		
R10	SPALL W/ EXPOSED REBAR	FASCIA	-	24.0	6.0	1.5	1.0		
R11	DELAMINATION	UNDERSIDE	-	36.0	-	-	5.0		
R12	SPALL W/ EXPOSED REBAR	UNDERSIDE	20 (FW)	200.0	-	3.0	27.8		
R13	SPALL	UNDERSIDE	-	40.0	20 (FH)	4.0	5.6		
R14	SPALL W/ EXPOSED REBAR	TOPSIDE/FASCIA	9.00	60.0	6	2.0	6.3		
R15	SPALL	FASCIA	-	50.0	8.0	3.0	2.8		
R16	DELAMINATION	UNDERSIDE	20 (FW)	81.0	-	-	11.3		
R17	SPALL	FASCIA	-	57.0	6.0	3.0	2.4		
R18	SPALL	FASCIA	-	24.0	9.0	1.5	1.5		
R19	SPALL	FASCIA	-	15.0	9.0	1.5	1.0		
R20	VARIOUS SPALLING	TOPSIDE/FASCIA	32.00	205.0	20 (FH)	2.0	74.1		
R21	DELAMINATION	FASCIA	-	24.0	6.0	-	1.0		
R22	SPALL	FASCIA	-	21.0	20 (FH)	3.0	3.0		
R23	SPALL W/ EXPOSED REBAR	FASCIA	-	206.0	20 (FH)	3.0	28.7		
R24	SPALL W/ EXPOSED REBAR	TOPSIDE	6	18.0	-	3.0	0.8		
R25	SPALL W/ EXPOSED REBAR	FASCIA	-	92.0	12.0	2.0	7.7		
R26	SPALL W/ EXPOSED REBAR	TOPSIDE	24	36.0	-	5	6.0		
R27	SPALL W/ EXPOSED REBAR	UNDERSIDE	20 (FW)	50.0	6	2.0	7.0		
R28	SPALL W/ EXPOSED REBAR	FASCIA	-	9.0	6	6.0	0.4		

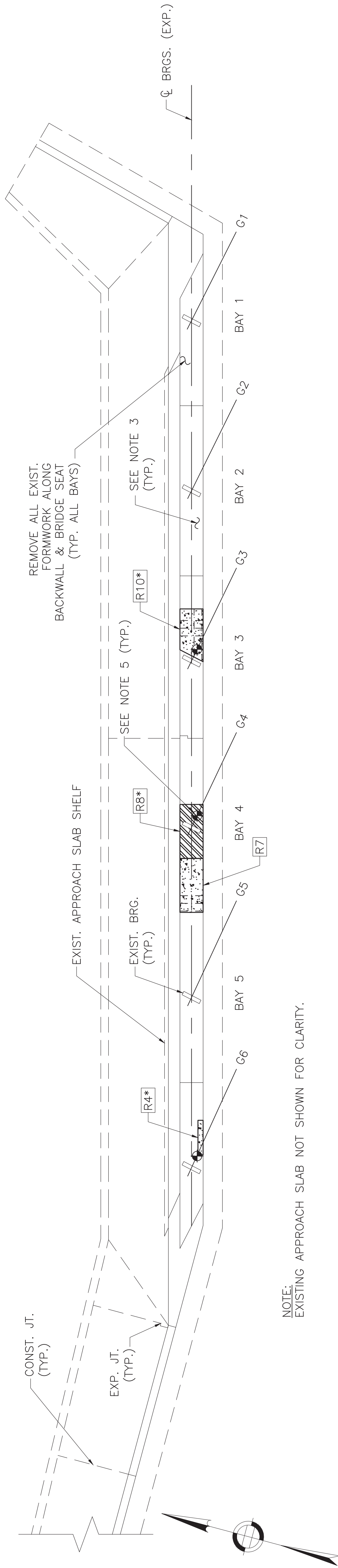
- NOTES:**
- THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - REFER TO SHEET 21 FOR DECK/COPING REPAIR DETAILS.
 - ALL EXISTING EXPANSION JOINT MATERIAL AT ALL DECK JOINTS SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH ITEM NO. 107.471.
 - VARIOUS SPALLING IN THE REPAIR SCHEDULE REFERS TO AN AREA OF MULTIPLE SPALLS, SOME WITH EXPOSED REBAR. DIMENSIONS ARE APPROXIMATE.
 - TEMPORARY TIMBER SHIELDING SHALL BE INSTALLED PRIOR TO PERFORMING ANY REPAIRS.
- FW = FULL HEIGHT OF COPING
FH = FULL WIDTH OF OVERHANG

DATE	PS&E R2
AUG. 13, 2024	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

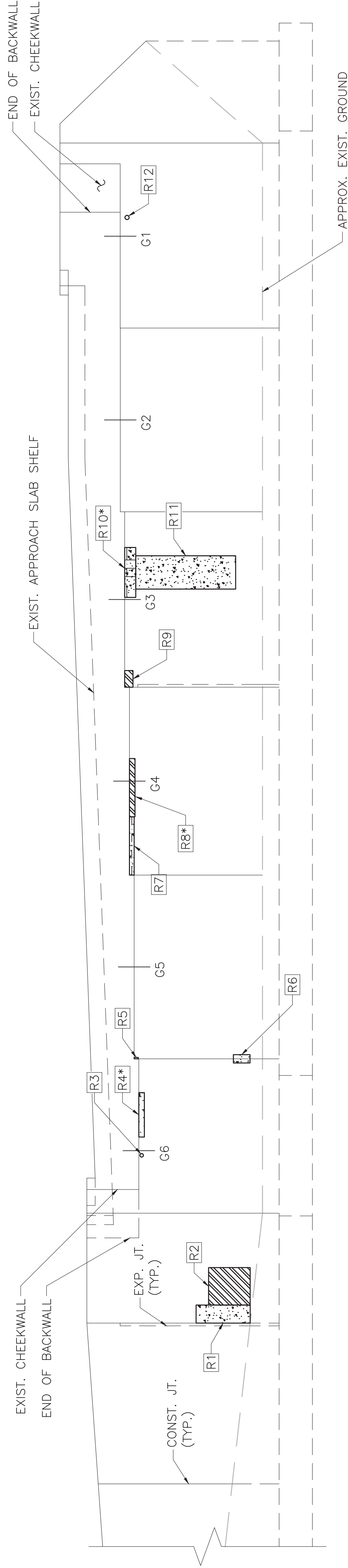
CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	11	37
PROJECT FILE NO.		613116	

C-21-025 (0JK) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF ABUTMENT REPAIRS (1 OF 2)



WEST ABUTMENT PLAN
NOT TO SCALE



WEST ABUTMENT ELEVATION
NOT TO SCALE

DEFICIENCY LEGEND

	SPALL
	SPALL W/ EXPOSED REBAR
	DELAMINATION
	PROP. JACKING & SHORING FOR BEAM SEAT REPAIR (3 TOTAL)

- NOTES:**
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 07-15-2022.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE. RATHER, A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF BRIDGE SEATS SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. BRIDGE SEAT CLEANING SHALL BE INCIDENTAL TO ITEM 961.203.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.
 - MULTIPLE REPAIRS IN THE SAME LOCATION DESIGNATED FOR JACKING AND SHORING (I.E. BEAM SEAT, BEARING RESET) SHALL BE PERFORMED IN ONE PHASE. ALL JACKING AND SHORING SYSTEMS SHALL BE CONTRACTOR DESIGNED. CONTRACTOR SHALL NOTE THAT THIS SHEET ONLY IDENTIFIES JACKING AND SHORING LOCATIONS ANTICIPATED FOR BEAM SEAT REPAIRS. SEE SHEET 14 FOR ADDITIONAL JACKING AND SHORING LOCATIONS ANTICIPATED FOR SUPERSTRUCTURE REPAIR LOCATIONS. CONTRACTOR SHALL ONLY BE COMPENSATED FOR ONE JACKING AND SHORING SYSTEM PER LOCATION.

WEST ABUTMENT REPAIR SCHEDULE

REPAIR NUMBER	DEFICIENCY	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)
R1	SPALL	-	26.0	78.0	13.0	14.1
R2	DELAMINATION	-	54.0	60.0	-	22.5
R3	SPALL	-	5.0	5.0	1.5	0.2
R4*	SPALL	8.0	54.0	8.0	3.0	6.0
R5	SPALL	-	6.0	2.0	1.0	0.1
R6	SPALL	-	12.0	24.0	4.0	2.0
R7	SPALL W/ EXPOSED REBAR	36 (FL)	84.0	8.0	6.0	25.7
R8*	DELAMINATION	36 (FL)	84.0	8.0	-	25.7
R9	DELAMINATION	12.0	24.0	12.0	-	4.0
R10*	SPALL W/ EXPOSED REBAR	36 (FL)	72.0	16.0	7.0	26.0
R11	SPALL	-	48.0	144.0	9.0	48.0
R12	SPALL	-	6.0	6.0	1.0	0.3

*JACKING AND SHORING OF BEAM END REQUIRED DURING REPAIR DUE TO PROXIMITY TO BEARING. TIMING OF REPAIR SHALL BE COORDINATED WITH JACKING AND SHORING FOR BEARING RESET (SEE NOTE 5).

FL = FULL LENGTH OF BEAM SEAT

ESTIMATED REPAIR SUMMARY

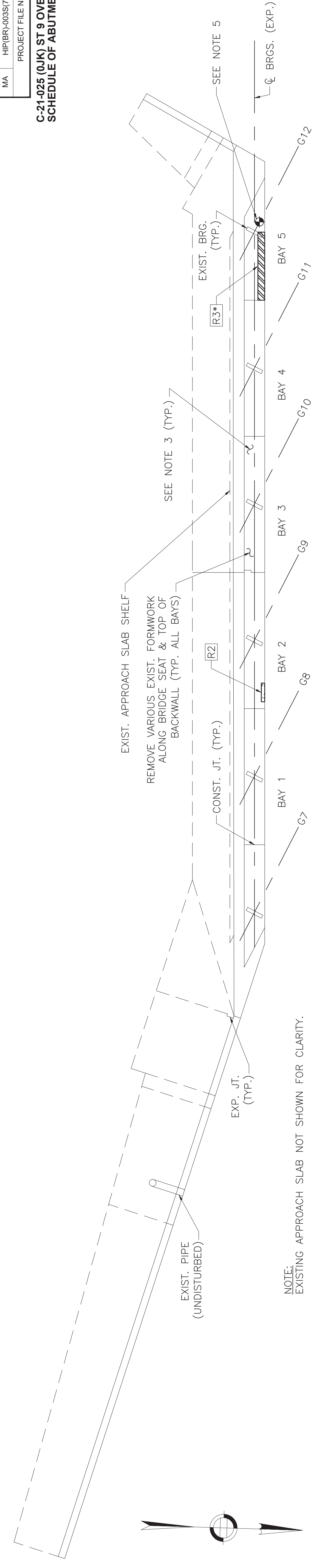
DEFICIENCY	QUANTITY
SPALL	71.0 SF
SPALL W/ EXPOSED REBAR	52.0 SF
DELAMINATION	52.0 SF

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

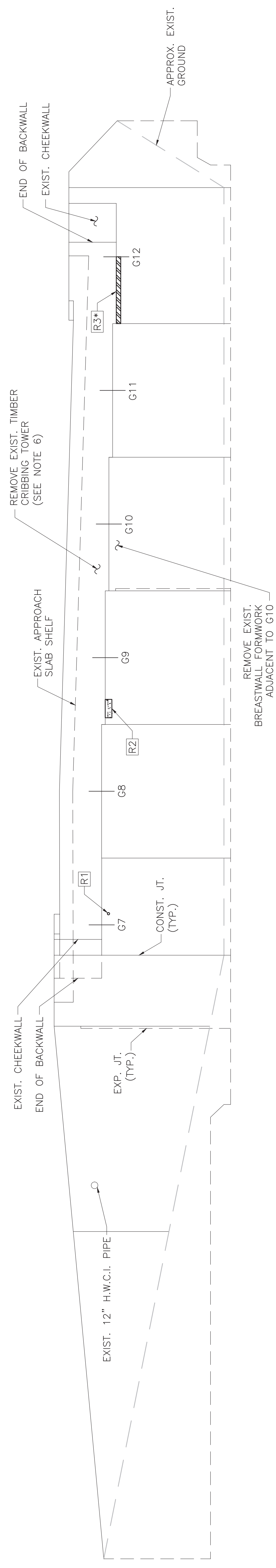
CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	12	37
PROJECT FILE NO. 613116			

C-21-025 (QJK) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF ABUTMENT REPAIRS (2 OF 2)



EAST ABUTMENT PLAN
NOT TO SCALE



EAST ABUTMENT ELEVATION
NOT TO SCALE

- DEFICIENCY LEGEND**
- SPALL W/ EXPOSED REBAR
 - DELAMINATION
 - PROP. JACKING & SHORING FOR BEAM SEAT REPAIR (1 TOTAL)
- NOTES:**
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 07-15-2022.
 - THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE, RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - ENTIRE LENGTH OF BRIDGE SEATS SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. BRIDGE SEAT CLEANING SHALL BE INCIDENTAL TO ITEM 961.203.
 - REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.
 - MULTIPLE REPAIRS IN THE SAME LOCATION DESIGNATED FOR JACKING AND SHORING (I.E. BEAM SEAT, BEARING RESET) SHALL BE PERFORMED IN ONE PHASE. ALL JACKING AND SHORING SYSTEMS SHALL BE CONTRACTOR DESIGNED. CONTRACTOR SHALL NOTE THAT THIS SHEET ONLY IDENTIFIES JACKING AND SHORING LOCATIONS ANTICIPATED FOR BEAM SEAT REPAIRS. SEE SHEET 14 FOR ADDITIONAL JACKING AND SHORING LOCATIONS ANTICIPATED FOR SUPERSTRUCTURE REPAIR LOCATIONS. CONTRACTOR SHALL ONLY BE COMPENSATED FOR ONE JACKING AND SHORING SYSTEM PER LOCATION.
 - TEC, INC. OBSERVED DURING QUANTITY VERIFICATION INSPECTIONS PERFORMED IN JUNE 2024 THAT THE EXISTING CRIBBING TOWER WAS UNENGAGED. CONTRACTOR SHALL VERIFY CRIBBING TOWER IS STILL UNENGAGED PRIOR TO REMOVING.

EAST ABUTMENT REPAIR SCHEDULE					
REPAIR NUMBER	DEFICIENCY	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)
R1	SPALL	-	4	4	1
R2	SPALL W/ EXPOSED REBAR	-	24.0	8.0	4.0
R3*	DELAMINATION	12.0	120.0	8	-

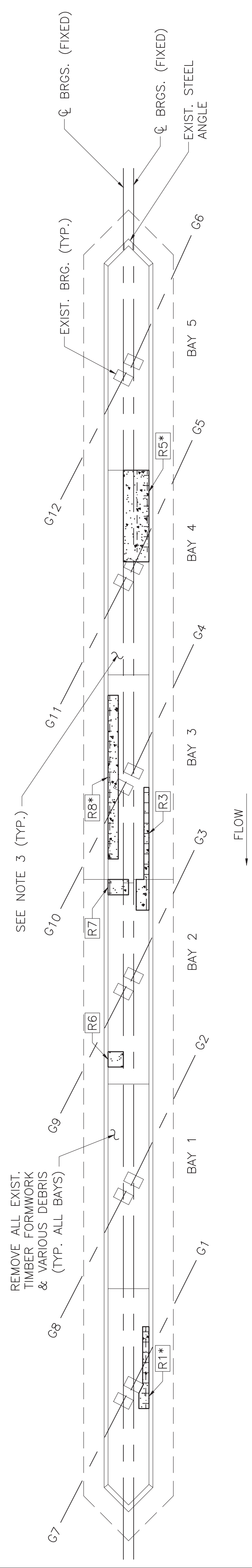
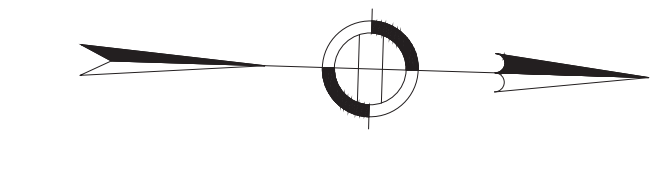
*JACKING AND SHORING OF BEAM END REQUIRED DURING REPAIR DUE TO PROXIMITY TO BEARING. TIMING OF REPAIR SHALL BE COORDINATED WITH JACKING AND SHORING FOR BEARING RESET (SEE NOTE 5).

ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
SPALL	1.0 SF
SPALL W/ EXPOSED REBAR	2.0 SF
DELAMINATION	17.0 SF

DATE	PS&E R2
AUG. 13, 2024	
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK
C-21-025 (0JK) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF PIER REPAIRS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI1BRH-003/766X	13	37
PROJECT FILE NO.		613116	



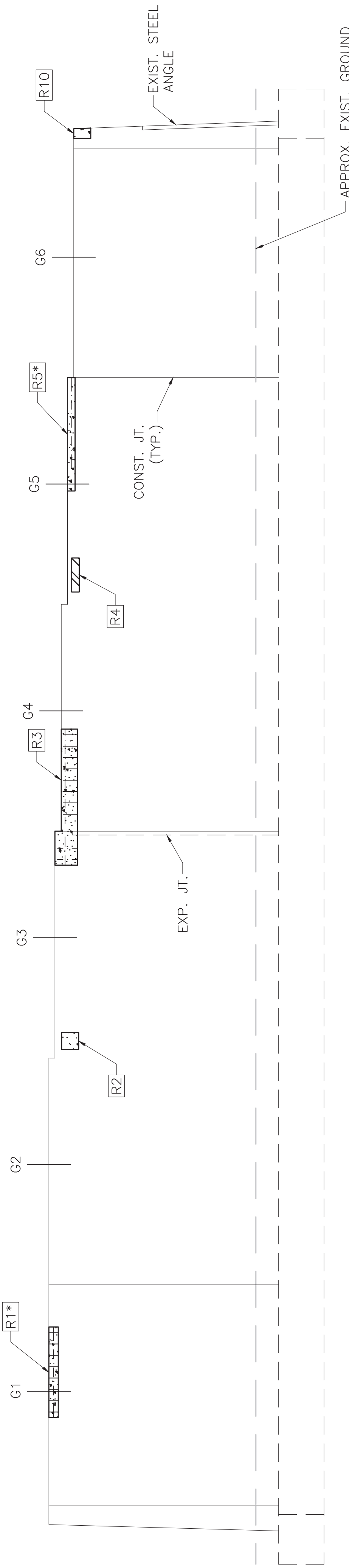
PIER - PLAN
 NOT TO SCALE

REPAIR NUMBER	DEFICIENCY	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)
R1*	SPALL W/ EXPOSED REBAR	12.0	96.0	12.0	6.0	16.0
R2	SPALL	18.0	18.0	1.0	1.0	2.4
R3	SPALL W/ EXPOSED REBAR	24.0	144.0	24.0	6.0	48.0
R4	DELMINATION	36.0	8.0	18.0	-	3.0
R5*	SPALL W/ EXPOSED REBAR	30.0	120.0	7.0	4.0	30.9
R6	SPALL	18.0	18.0	-	1.5	2.3
R7	SPALL W/ EXPOSED REBAR	24.0	18.0	18.0	3.0	5.3
R8*	SPALL W/ EXPOSED REBAR	12.0	192.0	16.0	4.0	37.4
R9	DELMINATION	-	108.0	6.0	-	4.5
R10	SPALL W/ EXPOSED REBAR	38.0	-	18.0	3.0	4.8

*DETERIORATION ENCROACHES OR UNDERMINES AN EXISTING FIXED BEARING (SEE NOTE 5)

ESTIMATED REPAIR SUMMARY	
DEFICIENCY	QUANTITY
SPALL	5.0 SF
SPALL W/ EXPOSED REBAR	143.0 SF
DELMINATION	8.0 SF

PIER - NORTH ELEVATION
 (LOOKING SOUTH)



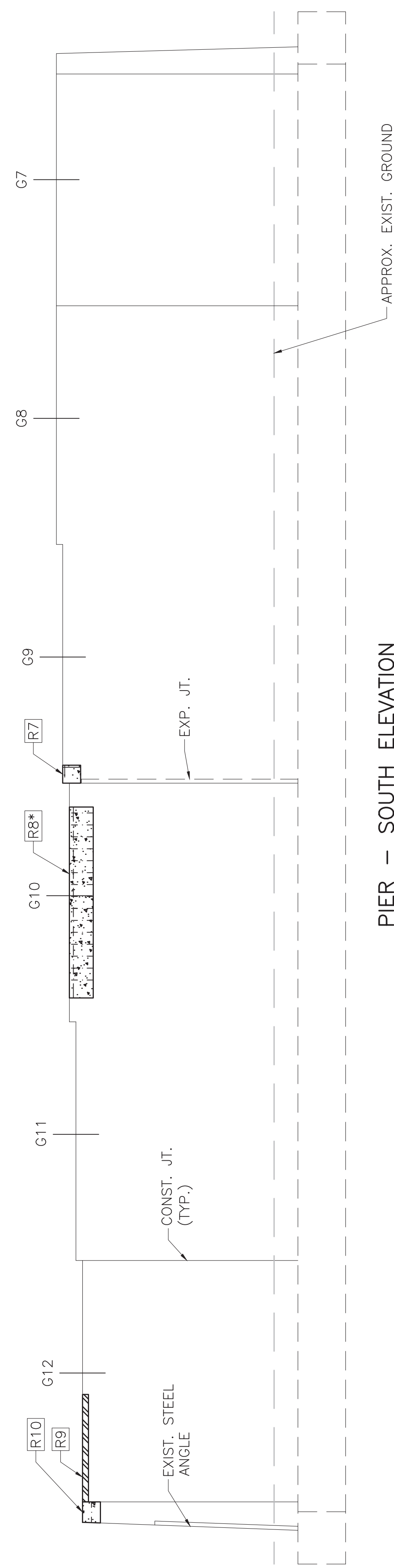
NOT TO SCALE

NOTES:
 1. BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 07-15-2022.
 2. THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE. RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 3. ENTIRE LENGTH OF PIER CAP SHALL BE CLEANED AND ALL DEBRIS SHALL BE REMOVED FROM THE AREA. PIER CAP CLEANING SHALL BE INCIDENTAL TO ITEM 961.203.
 4. REFER TO SHEET 16 FOR CONCRETE REPAIR DETAILS.
 5. CONTRACTOR SHALL IMMEDIATELY HALT CONCRETE EXCAVATION IN THE VICINITY OF AN ENGAGED BEARING IF THE LENGTH OF UNDERMINING BELOW THE MASONRY PLATE EXCEEDS 3 INCHES IN EITHER DIRECTION. THE ENGINEER SHALL BE NOTIFIED TO EVALUATE THE NEED FOR TEMPORARY SHORING OF THE BEAM END BEFORE EXCAVATION IS RESUMED. IF TEMPORARY SHORING IS REQUIRED, END DIAPHRAGM RETROFITS SHALL BE INSTALLED AS DETAILED ON SHEETS 23 & 24.

DEFICIENCY LEGEND



PIER - SOUTH ELEVATION
 (LOOKING NORTH)



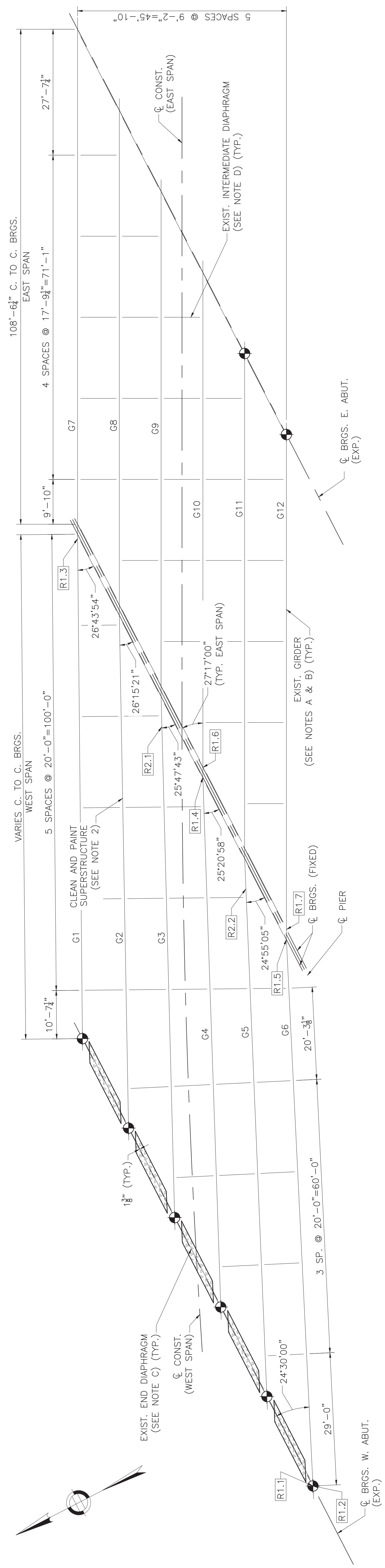
NOT TO SCALE

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(7/66)X	14	37
PROJECT FILE NO. 613116			

C-21-025 (0JK) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF SUPERSTRUCTURE REPAIRS



FRAMING PLAN
NOT TO SCALE

- LEGEND:**
- PROP. JACKING AND SHORING FOR BEARING RESET (8 TOTAL) (SEE NOTE 3)
 - ▽▽▽▽ PROP. DIAPHRAGM RETROFIT FOR JACKING AND SHORING (5 TOTAL) (SEE SHEETS 23 & 24)

- EXISTING CONDITIONS:**
- A. G1-G3, G6, G7-G12: 60"x8" WEB PLATE; 18"x3" FLANGE PLATE AT BEAM ENDS (THICKNESS OF FLANGE PLATES VARY ALONG GIRDERS)
 - B. G4, G5: 60"x8" WEB PLATE; 18"x1" FLANGE PLATE AT BEAM ENDS
 - C. END DIAPHRAGMS: 18CS8.0 W/ L4x3x1/8" CROSS FRAMES
 - D. INTERMEDIATE DIAPHRAGMS: L4x3x1/8" CROSS FRAMES
 - E. BEARING STIFFENERS: 8"x8" PL
 - F. INTERMEDIATE STIFFENERS: 5"x8 1/2" PL

- NOTES:**
- BRIDGE ORIENTATION AND LABELING IS PER THE MASSDOT INSPECTION REPORT DATED 07-15-2022.
 - THE ENTIRE SUPERSTRUCTURE AND ALL EXISTING BEARINGS SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH ITEM NO. 961.203.
 - EXISTING EXPANSION BEARING ASSEMBLY SHALL BE CLEANED, PAINTED, LUBRICATED AND RESET. SEE SHEET 17 FOR DETAILS.
 - CONTRACTOR SHALL REMOVE ALL EXISTING FORMWORK AND ANY OTHER CONSTRUCTION DEBRIS FROM PREVIOUS REPAIRS.
 - THE CONTRACTOR SHALL FIELD MEASURE EXISTING CONDITIONS (END DIAPHRAGMS, CONNECTION PLATES, CROSS FRAMES, EXISTING BEAM END REPAIRS ETC.) PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE PROPER FIT OF THE REPAIR PLATES AND ANGLES.
 - MULTIPLE REPAIRS IN THE SAME LOCATION DESIGNATED FOR JACKING AND SHORING (I.E. BEAM SEAT, BEARING RESET) SHALL BE PERFORMED IN ONE PHASE. ALL JACKING AND SHORING SYSTEMS SHALL BE CONTRACTOR DESIGNED. CONTRACTOR SHALL NOTE THAT THIS SHEET ONLY IDENTIFIES JACKING AND SHORING LOCATIONS ANTICIPATED FOR BEARING RESETS. ADDITIONAL JACKING AND SHORING LOCATIONS ANTICIPATED FOR SUPERSTRUCTURE REPAIRS SHOWN ON SHEETS 11 AND 12. CONTRACTOR SHALL ONLY BE COMPENSATED FOR ONE JACKING AND SHORING SYSTEM PER LOCATION.

BEAM END REPAIR SCHEDULE					
REPAIR NO.	BEAM NO.	SPAN NO.	LOCATION	REPAIR	REPAIR DETAIL
R1.1	6	WEST	W. ABUT.	WEB	60" x 3/8" WEB
R1.2	6	WEST	W. ABUT.	KEEPER ANGLE	E
R1.3	1	WEST	PIER	WEB	60" x 3/8" WEB
R1.4	4	WEST	PIER	WEB	D, TYPE II
R1.5	6	WEST	PIER	WEB	D, TYPE II
R1.6	10	EAST	PIER	WEB	D, TYPE I
R1.7	12	EAST	PIER	WEB	D, TYPE II

INTERMEDIATE STIFFENER REPAIR SCHEDULE					
REPAIR NO.	BEAM NO.	SPAN NO.	LOCATION	STIFFENER(S)	REPAIR DETAIL
R2.1	3	WEST	PIER	SOUTHERN FACE, NO. 3 THRU 6	5" x 5/16" STIFFENER PLATE
R2.2	5	WEST	PIER	SOUTHERN FACE, NO. 4 THRU 5	5" x 5/16" STIFFENER PLATE

- REPAIR SCHEDULE NOTES:**
- REFER TO THE BEAM END REPAIR DETAILS ON SHEETS 18 THROUGH 20 FOR MORE INFORMATION ON THE LIMITS OF REPAIR.
 - STIFFENER NUMBERING STARTS AT THE FIRST BEARING STIFFENER OF THE SPECIFIED BEAM END (I.E. THE FIRST INTERMEDIATE STIFFENER IS ALSO THE THIRD OVERALL STIFFENER FROM THE BEARING).
 - CONTRACTOR SHALL NOTE THAT VARIOUS EXISTING UNFILLED BOLT HOLES ARE PRESENT ON EXISTING INTERMEDIATE STIFFENERS. ANY UNFILLED BOLT HOLES SHALL BE FILLED WITH A HIGH STRENGTH, FULLY TENSIONED STEEL BOLT. CONTRACTOR SHALL FIELD LOCATE ALL UNFILLED BOLT HOLES. REFER TO ITEM 107.97 FOR MORE INFORMATION.

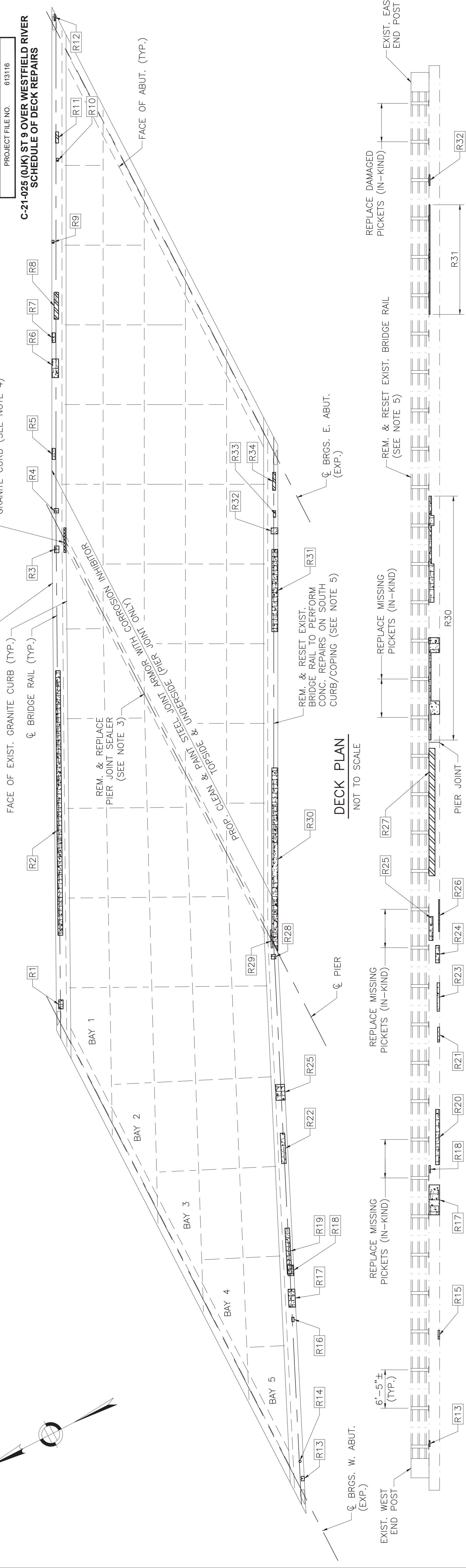
DATE	AUG. 13, 2024
DESCRIPTION	PS&E R2
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	15	37
PROJECT FILE NO. 613116			

C-21-025 (QJK) ST 9 OVER WESTFIELD RIVER
SCHEDULE OF DECK REPAIRS

REPLACE EXIST. CRACKED SECTIONS OF GRANITE CURB (SEE NOTE 4)



DECK PLAN
NOT TO SCALE

SOUTH COPING ELEVATION
NOT TO SCALE

ESTIMATED REPAIR SUMMARY

DEFICIENCY	QUANTITY
VARIOUS SPALLING	173.0 SF
SPALL	4.0 SF
SPALL W/ EXPOSED REBAR	125.0 SF
DELAMINATION	33.0 SF

DEFICIENCY LEGEND

	SPALL
	SPALL W/ EXPOSED REBAR
	DELAMINATION
	GRANITE CURB CRACKING

- NOTES:**
- THE DETERIORATED AREAS INDICATED HEREIN ARE BASED ON AVAILABLE INFORMATION AND ARE NOT INTENDED TO BE ALL INCLUSIVE. RATHER A REPRESENTATION OF THE REPAIRS TO BE PERFORMED. THE CONTRACTOR SHALL SOUND ALL CONCRETE SURFACES IN THE FIELD AND MARK OUT ALL REPAIR LOCATIONS TO BE APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR COMMENCES ANY REPAIRS.
 - REFER TO SHEET 21 FOR DECK/COPING REPAIR DETAILS.
 - EXISTING JOINT SEAL MATERIAL AT THE PIER JOINT ONLY SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH ITEM NO. 107.471. ABUTMENT JOINTS SHALL BE RETAINED AND CLEANED IN ACCORDANCE WITH ITEM NO. 226.9
 - DETERIORATED GRANITE CURB SHALL BE REPLACED IN-KIND UP TO THE NEAREST CURB JOINT. REFER TO SHEET 22 FOR GRANITE CURB DETAIL.
 - THE ENTIRE SOUTH BRIDGE RAIL SHALL BE TEMPORARILY REMOVED PRIOR TO PERFORMING REPAIRS ON THE SOUTH BRIDGE COPING. BRIDGE RAIL SHALL BE RESET IN-PLACE UPON COMPLETION OF CONCRETE REPAIRS. CONTRACTOR SHALL MATCH EXISTING EXPANSION JOINTS, RAIL BREAKS, AND POST SPACING WHEN PERFORMING GUARDRAIL REPAIRS. REFER TO SHEET 21 FOR GUARDRAIL AND COPING REPAIR DETAILS. CONTRACTOR SHALL NOT REMOVE BRIDGE RAIL UNTIL PROPOSED TTCIP IS IN PLACE.
 - VARIOUS SPALLING IN THE REPAIR SCHEDULE REFERS TO AN AREA OF MULTIPLE SPALLS, SOME WITH EXPOSED REBAR. DIMENSIONS ARE APPROXIMATE.
 - TEMPORARY TIMBER SHIELDING SHALL BE INSTALLED PRIOR TO PERFORMING ANY REPAIRS.

DECK & COPING REPAIR SCHEDULE

REPAIR NUMBER	DEFICIENCY	TYPE	WIDTH (IN)	LENGTH (IN)	HEIGHT (IN)	DEPTH (IN)	AREA (SF)
R1	SPALL W/ EXPOSED REBAR	UNDERSIDE	12 (FW)	24	-	3	2.0
R2	SPALL W/ EXPOSED REBAR	UNDERSIDE	12 (FW)	708.0	-	3.0	59.0
R3	SPALL W/ EXPOSED REBAR	UNDERSIDE	12 (FW)	18.0	-	1.5	1.5
R4	SPALL W/ EXPOSED REBAR	UNDERSIDE	12.0	6.0	-	1.5	0.5
R5	SPALL W/ EXPOSED REBAR	UNDERSIDE	10.0	30.0	-	3.0	2.1
R6	SPALL W/ EXPOSED REBAR	UNDERSIDE	12 (FW)	50.0	-	3.0	4.2
R7	SPALL W/ EXPOSED REBAR	UNDERSIDE	10.0	26.0	-	3.0	1.9
R8	DELAMINATION	UNDERSIDE	12 (FW)	72.0	-	-	6.0
R9	SPALL	FASCIA	-	8.0	3.0	2.0	0.2
R10	SPALL W/ EXPOSED REBAR	UNDERSIDE	6.0	6.0	-	1.0	0.3
R11	DELAMINATION	UNDERSIDE	8.0	30.0	-	-	1.7
R12	SPALL	UNDERSIDE	3.0	18.0	-	1.0	0.4
R13	SPALL	TOPSIDE	8.0	12.0	-	2.0	0.7
R14	DELAMINATION	UNDERSIDE	6.0	6.0	-	-	0.3
R15	SPALL	FASCIA	-	18.0	3.0	4.0	0.4
R16	DELAMINATION	UNDERSIDE	6.0	12.0	-	-	0.5
R17	SPALL W/ EXPOSED REBAR	TOPSIDE/FASCIA	16.0	60.0	21 (FH)	-	15.5
R18	SPALL W/ EXPOSED REBAR	TOPSIDE	16.0	15.0	-	3.0	1.7
R19	SPALL W/ EXPOSED REBAR	UNDERSIDE	12 (FW)	123.0	-	3.0	10.3
R20	SPALL W/ EXPOSED REBAR	FASCIA	-	111.0	8.0	6.0	6.2
R21	SPALL W/ EXPOSED REBAR	FASCIA	-	30.0	4.0	6.0	0.9
R22	VARIOUS SPALLING	UNDERSIDE	12 (FW)	81.0	-	3.0	6.8
R23	VARIOUS SPALLING	FASCIA	-	57.0	8.0	6.0	3.2
R24	SPALL W/ EXPOSED REBAR	FASCIA	-	35.0	8.0	5.0	2.0
R25	SPALL W/ EXPOSED REBAR	TOPSIDE/FASCIA	24.0	48.0	8.0	6.0	10.7
R26	VARIOUS SPALLING	FASCIA	-	64.0	2.0	6.0	0.9
R27	DELAMINATION	FASCIA	-	256.0	12.0	-	21.4
R28	SPALL W/ EXPOSED REBAR	UNDERSIDE	12 (FW)	12.0	-	2.00	1.0
R29	SPALL W/ EXPOSED REBAR	UNDERSIDE	9.0	48.0	-	3.0	3.0
R30	VARIOUS SPALLING	TOPSIDE/FASCIA	16.0	500.0	21 (FH)	-	128.5
R31	VARIOUS SPALLING	TOPSIDE/FASCIA	16.0	240.0	4.0	6.0	33.4
R32	SPALL	TOPSIDE	18.0	18.0	-	2.0	2.3
R33	SPALL W/ EXPOSED REBAR	UNDERSIDE	6.0	18.0	-	2.0	0.8
R34	DELAMINATION	UNDERSIDE	8.0	48.0	-	-	2.7

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

**CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI16R1-003/766X	16	37
PROJECT FILE NO.		6131116	

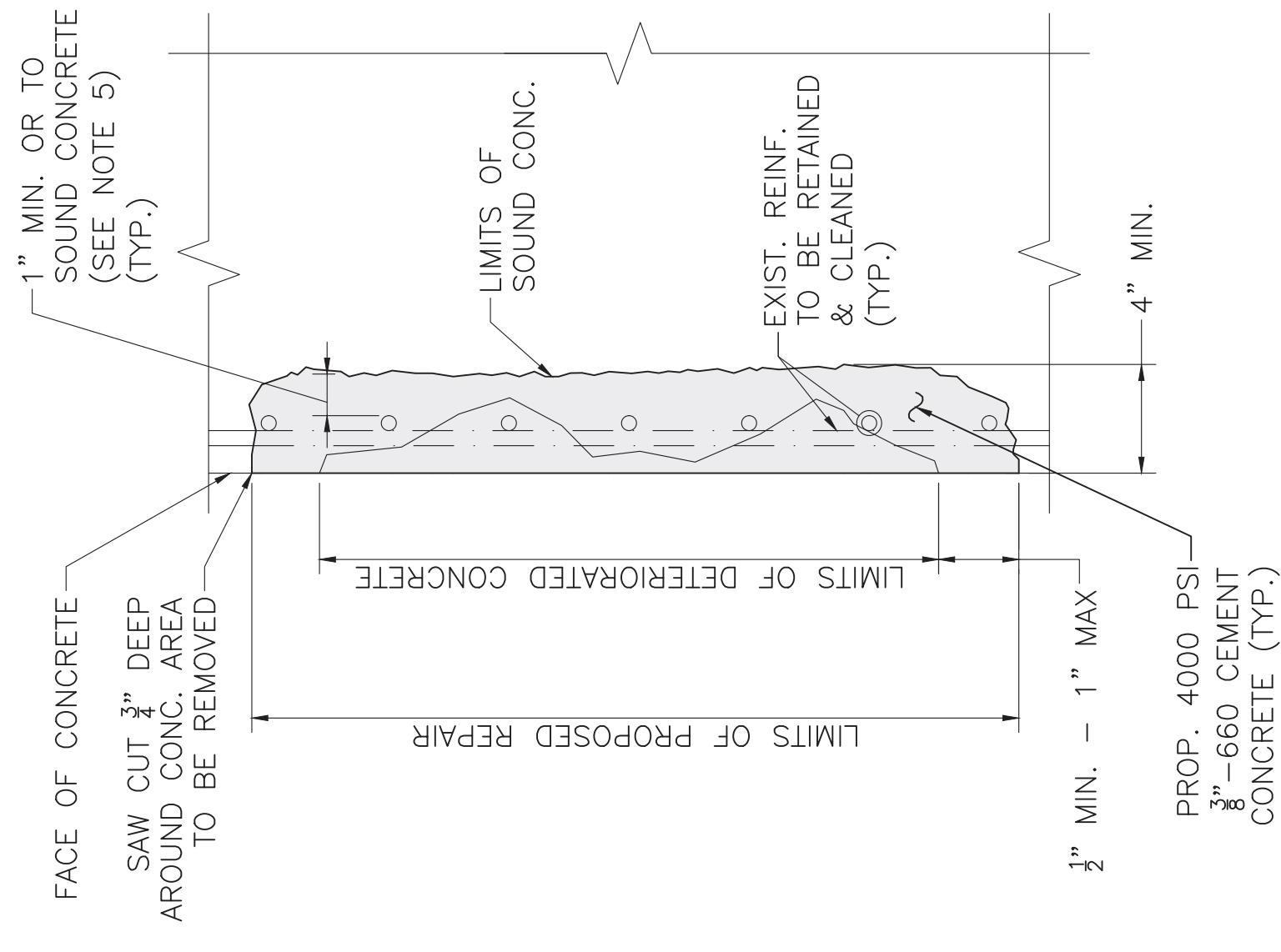
**CONSTRUCTION DETAILS
CONCRETE SUBSTRUCTURE REPAIRS**

EXCAVATION AND SURFACE PREPARATION NOTES:

1. THE CONTRACTOR SHALL EXERCISE CARE WHEN REMOVING CONCRETE AROUND REINFORCEMENT TO ONLY REMOVE DETERIORATED CONCRETE AND TO LIMIT THE SOUND CONCRETE REMOVED TO THE MINIMUM NECESSARY TO EFFECT A GOOD REPAIR.
2. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THE PLANS AND AT THE DIRECTION OF THE ENGINEER. THE LOCATIONS SHOWN ON THE PLANS ARE BASED UPON RECORDS OF BRIDGE INSPECTIONS AND FIELD INSPECTIONS AND ARE NOT GUARANTEED. THE LOCATION AND EXTENT OF ALL CONCRETE REPAIRS ARE TO BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT REPAIR AREAS. REPAIR CONFIGURATIONS SHOULD BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARE CORNERS.
3. THE LIMITS OF THE REPAIRS SHALL BE ALONG NEAT LINES TO A DEPTH OF 3/4" TO PRODUCE A CLEAN EDGE.
4. THE CONTRACTOR SHALL EXCAVATE A MINIMUM 1/2" AND MAXIMUM 1" OF SOUND CONCRETE IN EACH LATERAL DIRECTION BEYOND THE LIMITS OF DETERIORATED CONCRETE UNLESS APPROVED BY THE ENGINEER.
5. MINIMUM DEPTH OF EXCAVATION TO SOUND CONCRETE SHALL BE 1" BEYOND THE INNER MOST LAYER OF REINFORCING STEEL, BUT NOT LESS THAN 4" FROM THE ORIGINAL FACE OF CONCRETE. MAXIMUM EXCAVATION DEPTH OF DETERIORATED AND/OR UNSOUND CONCRETE SHALL BE 6".
6. EXPOSED REINFORCEMENT IS TO BE CLEANED BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WHICH WOULD INHIBIT BONDING), STEEL SHALL BE CLEANED BY ABRASIVE BLASTING AS DIRECTED BY THE ENGINEER.
7. MISSING OR DETERIORATED REINFORCING STEEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. AFTER REMOVAL AND EDGE PREPARATION ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO INSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
8. UNLESS OTHERWISE SPECIFIED, 4000 PSI 3/8 IN., 660 CEMENT CONCRETE SHALL BE USED TO PERFORM THE REPAIRS.
9. PRESOAK CONCRETE SUBSTRATE WITH A WATER HOSE FOR 24 HOURS OR AS LONG AS SITE CONSTRAINTS PERMIT. AT TIME OF REPAIR CONCRETE PLACEMENT, SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER.
10. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES.
11. IF AN EPOXY BONDING COMPOUND IS USED (AS DIRECTED BY THE ENGINEER), THE MATERIALS SHALL MEET AASHTO M235 TYPE V. GRADE AND CLASS SHALL BE SPECIFIED FOR EACH INDIVIDUAL APPLICATION. THE EPOXY COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IN NO CASE WILL THE EPOXY BONDING COMPOUND BE ALLOWED TO CURE TO A HARDENED STATE PRIOR TO CONCRETE PLACEMENT. IF THIS DOES OCCUR IT MUST BE COMPLETELY REMOVED.

METHACRYLATE SEALING NOTES:

1. METHACRYLATE CRACK SEALER SHALL BE APPLIED TO THE INTERFACE OF THE BACKWALL AND BEAM SEAT AFTER THE REPAIR CURING PERIOD IS COMPLETE AND IN ACCORDANCE WITH REQUIREMENTS OF MANUFACTURER AND THE STANDARD SPECIFICATIONS.
2. BEFORE SEALING, THE CONCRETE AT THE INTERFACE OF THE BACKWALL AND BEAM SEAT SHALL BE BRUSHED CLEAN AND BLOWN OFF USING OIL FREE COMPRESSED AIR IMMEDIATELY PRIOR TO APPLYING THE SEALER.
3. APPLY 3/4" HIGH BEAD OF SILICONE CAULKING COMPOUND ABOUT 1/4" FROM THE FACE OF THE BACKWALL.
4. METHACRYLATE SHALL THEN BE POURED INTO THE 3/4" WIDE GAP BETWEEN THE FACE OF THE BACKWALL AND THE BEAD OF CAULK.



NOTE:
IF THERE IS LESS THAN 1 1/2" CONCRETE COVER, THEN THE CONTRACTOR SHALL BUILD OUT THE FORM TO ENSURE A MINIMUM OF 1 1/2" COVER.

PARTIAL DEPTH SUBSTRUCTURE REPAIR

SCALE: 1 1/2" = 1'-0"

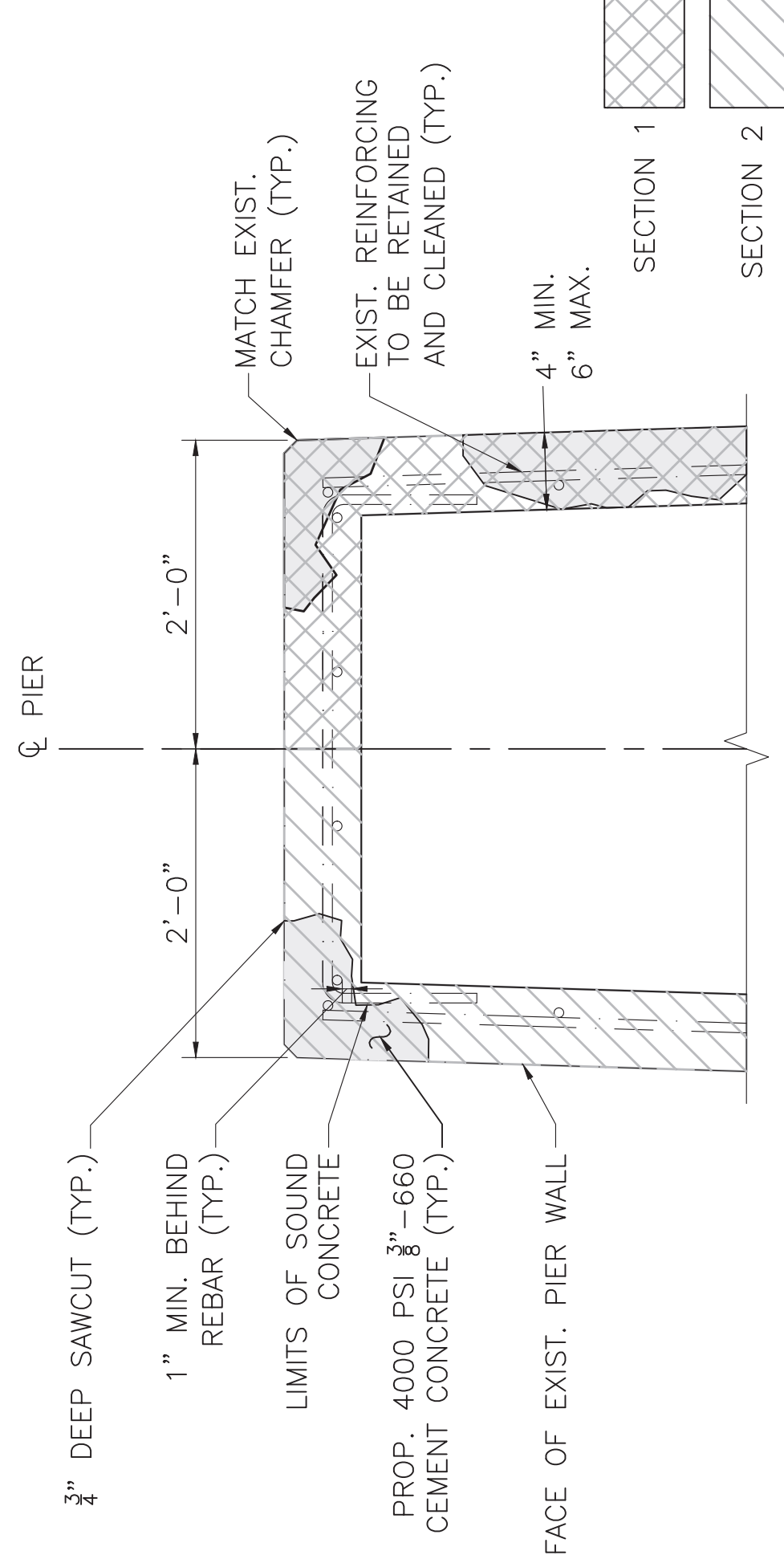
SUBSTRUCTURE REPAIR NOTES:

GENERAL:

1. REPAIRS TO THE PIERWALL AND PIER CAP SHALL BE PERFORMED IN SECTIONS AS SHOWN. THE CONTRACTOR SHALL NOT BE PERMITTED TO WORK ON BOTH FACES OF THE PIERWALL SIMULTANEOUSLY UNLESS APPROVED BY THE ENGINEER.
2. THE CONTRACTOR SHALL STAGE THE WORK SO THAT SUBSTRUCTURE SECTIONS IN POOREST CONDITION ARE REPAIRED FIRST, AS APPROVED BY THE ENGINEER.
3. THE CONTRACTOR SHALL STOP REMOVING DETERIORATED CONCRETE WHEN A MAXIMUM DEPTH OF 6 IN. IS REACHED. THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED IF SOUND CONCRETE IS NOT ENCOUNTERED AT THIS LIMIT.
4. THE CONTRACTOR SHALL NOT INSTALL TEMPORARY SHORING SYSTEMS ON TOP OF NEWLY REPAIRED AREAS UNTIL THEY HAVE REACHED FULL DESIGN STRENGTH, AS PROVEN BY STRENGTH TESTS PERFORMED BY THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR SEQUENCING THE WORK APPROPRIATELY.
5. THE CONTRACTOR SHALL WAIT 72 HOURS AFTER COMPLETING REPAIRS TO A SECTION BEFORE REPAIRS TO ADJACENT SECTIONS, HOWEVER HE/SHE MAY PERFORM WORK ON OTHER BRIDGE ELEMENTS.

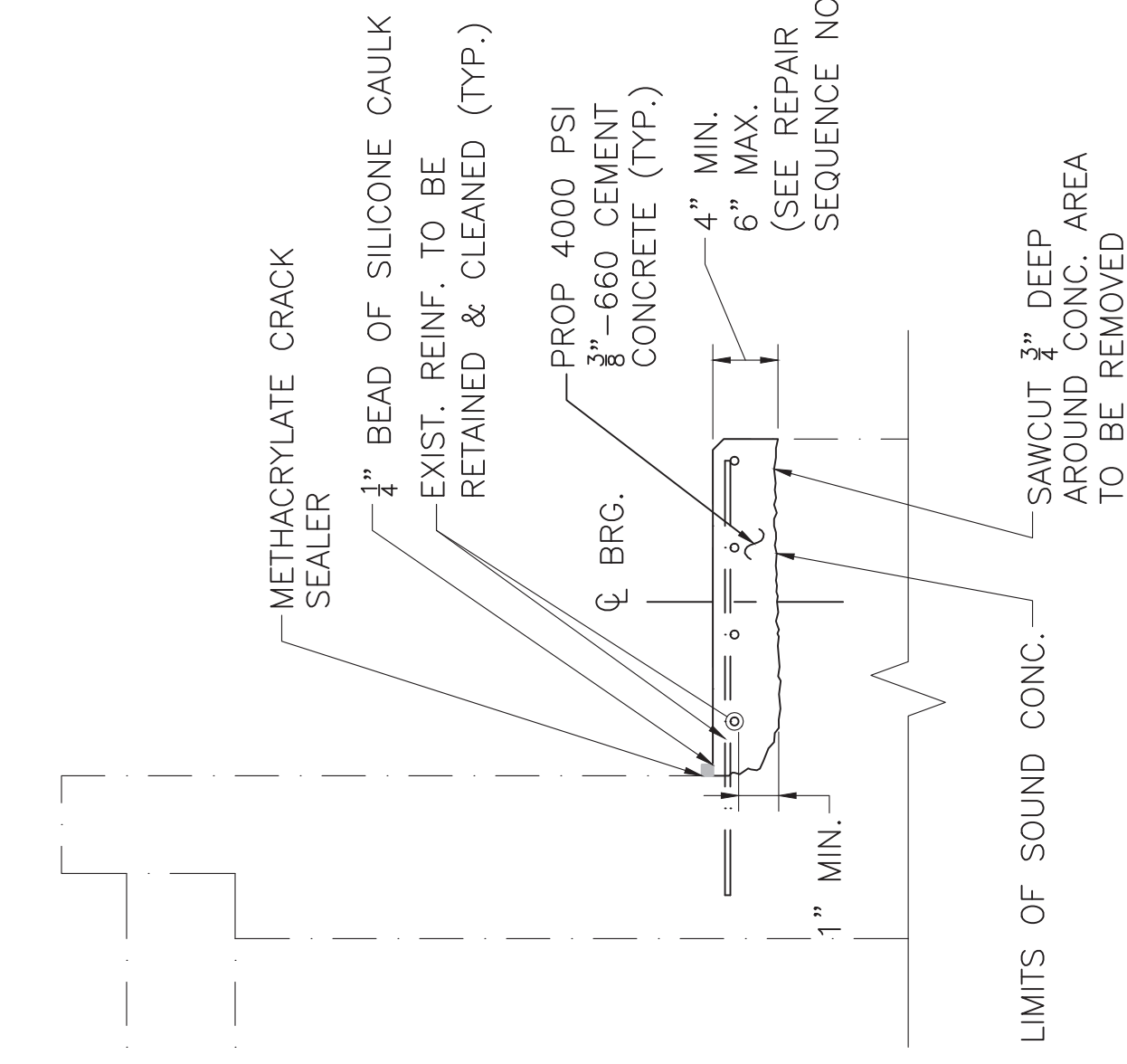
BEAM SEAT REPAIRS:

1. THE CONTRACTOR SHALL PROVIDE A TEMPORARY SHORING SYSTEM TO FULLY SUPPORT BEAM ENDS DURING BEAM SEAT REPAIRS WHERE CALLED FOR ON THE PLANS AND AS DIRECTED BY THE ENGINEER. ALL TEMPORARY SHORING SYSTEMS SHALL BE DESIGNED BY THE CONTRACTOR. THE TEMPORARY SHORING SYSTEM SHALL BE INSTALLED PRIOR TO PERFORMING REPAIRS. ADDITIONAL SHORING LOCATIONS SHALL BE DETERMINED BASED ON THE FOLLOWING NOTE.
2. CONTRACTOR SHALL IMMEDIATELY HALT CONCRETE EXCAVATION IN THE VICINITY OF AN ENGAGED BEARING IF THE LENGTH OF UNDERMINING BELOW THE MASONRY PLATE EXCEEDS 3 INCHES IN EITHER DIRECTION. THE ENGINEER SHALL BE NOTIFIED TO EVALUATE THE NEED FOR TEMPORARY SHORING OF THE BEAM END BEFORE EXCAVATION IS RESUMED.
3. CONTRACTOR SHALL BE COMPENSATED FOR JACKING AND SHORING IN ACCORDANCE WITH THE LOCATIONS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. TEMPORARY SHORING INSTALLED FOR THE CONTRACTOR'S CONVENIENCE SHALL BE INCIDENTAL AND NO ADDITIONAL COMPENSATION WILL BE MADE.



NOTE:
HEIGHT OF REPAIR VARIES AT EACH LOCATION. REFER TO PIER REPAIR SHEETS FOR EXTENTS OF DETERIORATION.

TOP OF PIER REPAIR SECTION



BEAM SEAT REPAIR DETAIL

SCALE: 3/4" = 1'-0"

SUBSTRUCTURE REPAIR SUMMARY			
BRIDGE	DEFICIENCY	QUANTITY	UNITS
C-21-023 (OJM)	SPALL	39.0	SF
	SPALL W/ EXPOSED REBAR DELAMINATION	182.0	SF
C-21-024 (OJM)	SPALL	16.0	SF
	SPALL W/ EXPOSED REBAR DELAMINATION	138.0	SF
C-21-025 (OJK)	SPALL	77.0	SF
	SPALL W/ EXPOSED REBAR DELAMINATION	197.0	SF

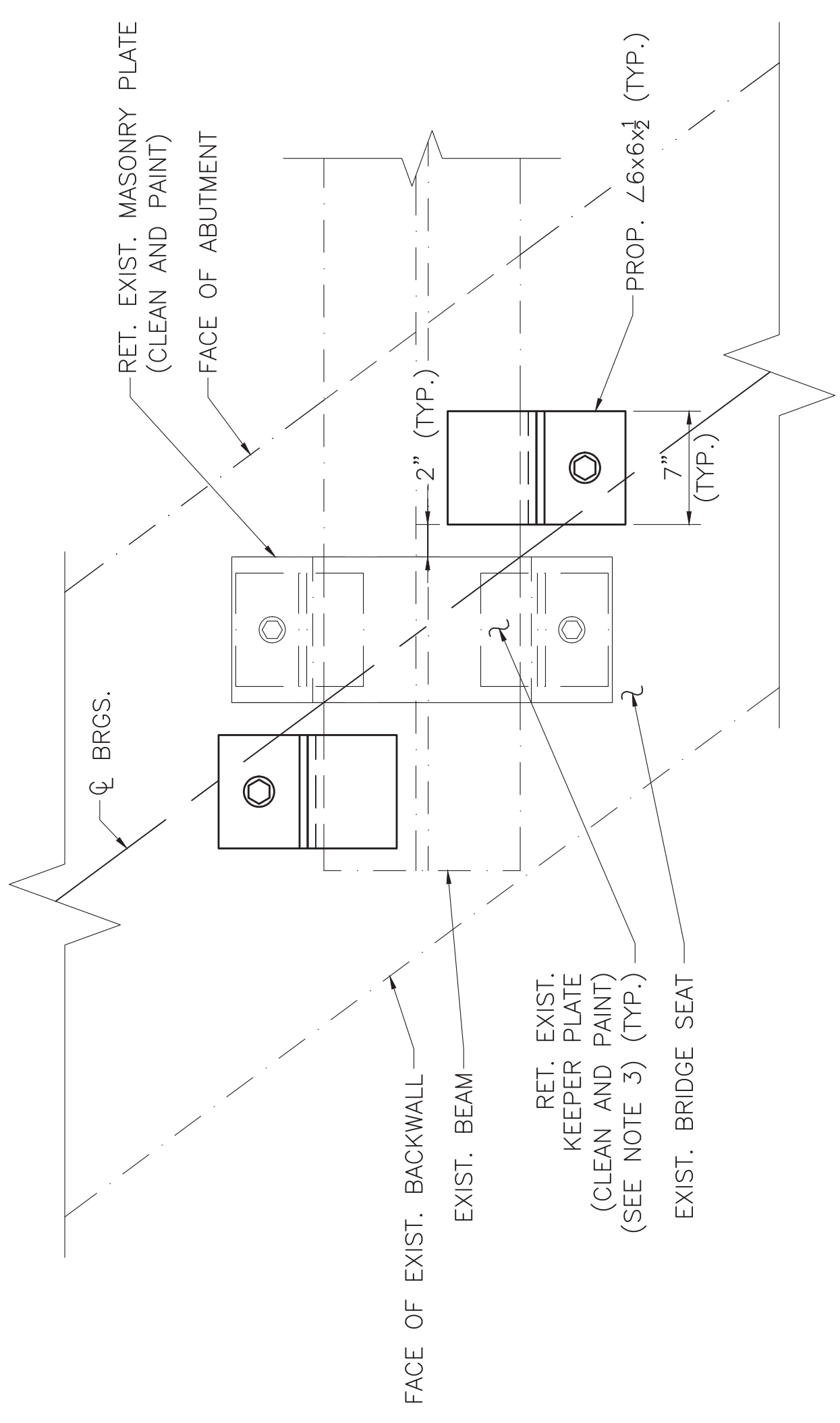
NOTE:
REPAIR QUANTITIES SHOWN ARE ESTIMATED FROM THE LIMITS OF DETERIORATION AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL REFER TO THE SUBSTRUCTURE REPAIR DETAILS ON THIS SHEET TO ESTABLISH ACTUAL REPAIR QUANTITIES.

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI1BRH-003S/766X	17	37
PROJECT FILE NO. 613116			

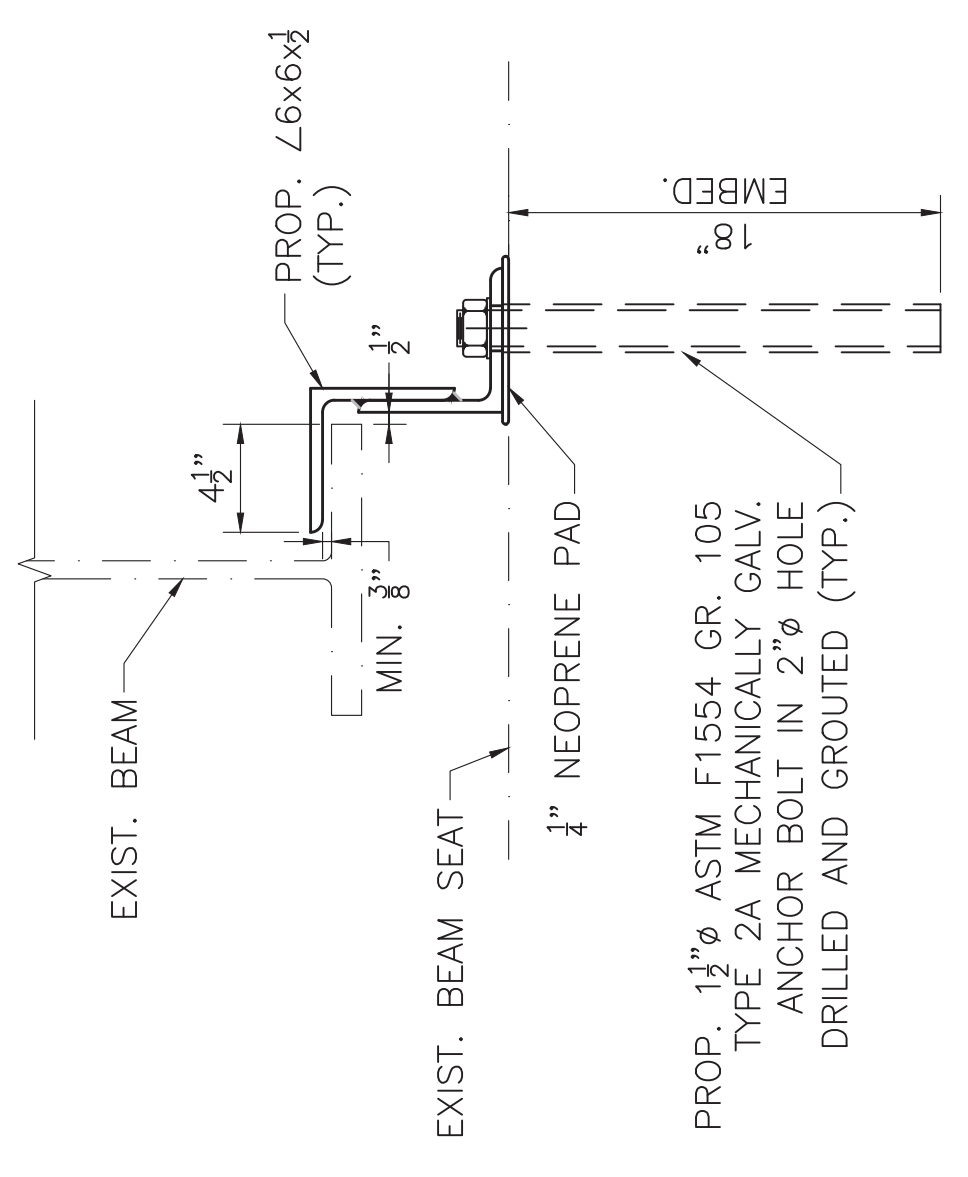
CONSTRUCTION DETAILS
TYPICAL BEARING DETAILS



- NOTES:**
- EXISTING GEOMETRY AT BRIDGE C-21-024 SHOWN. PROPOSED REPAIR SIMILAR AT ALL BRIDGES. SEE SUPERSTRUCTURE REPAIR SHEETS FOR REPAIR LOCATIONS.
 - THIS DETAIL SHALL BE UTILIZED AT ALL LOCATIONS WHERE KEEPER PLATE REPAIRS ARE PROPOSED.
 - PRIOR TO CLEANING AND PAINTING, CONTRACTOR SHALL REMOVE ANY DETERIORATED PORTIONS OF THE EXISTING KEEPER PLATES AS DIRECTED BY THE ENGINEER.

BEARING KEEPER PLATE REPAIR PLAN

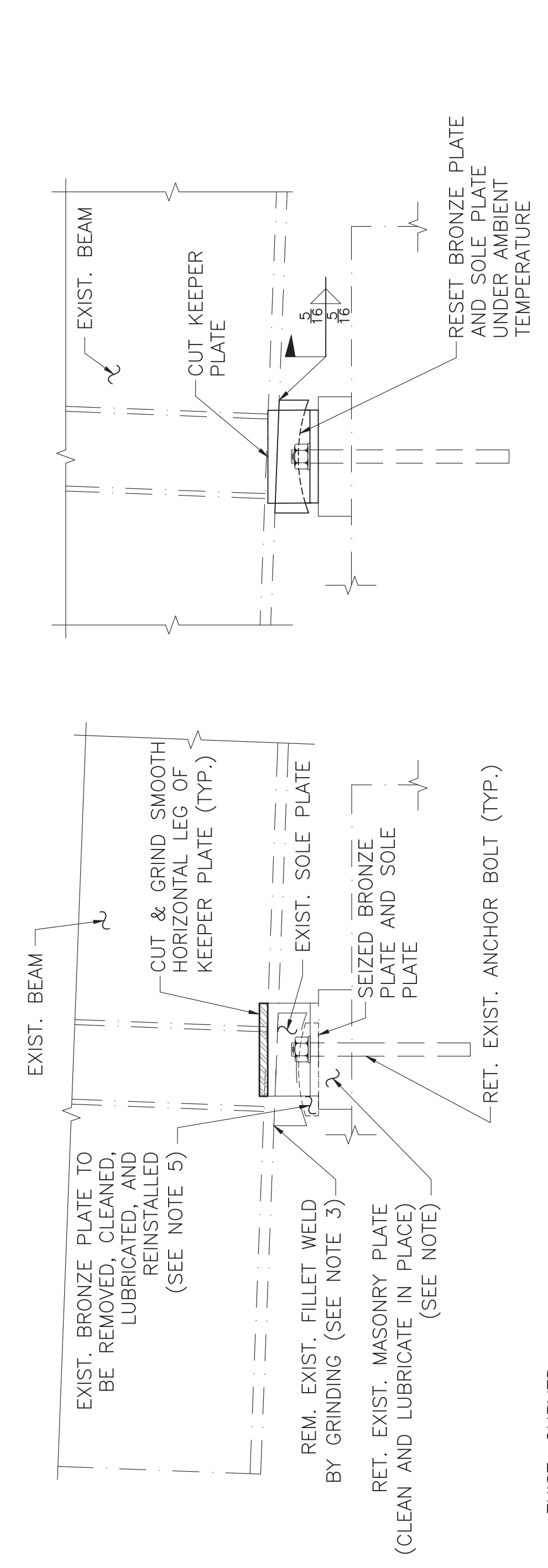
SCALE: 1/2" = 1'-0"



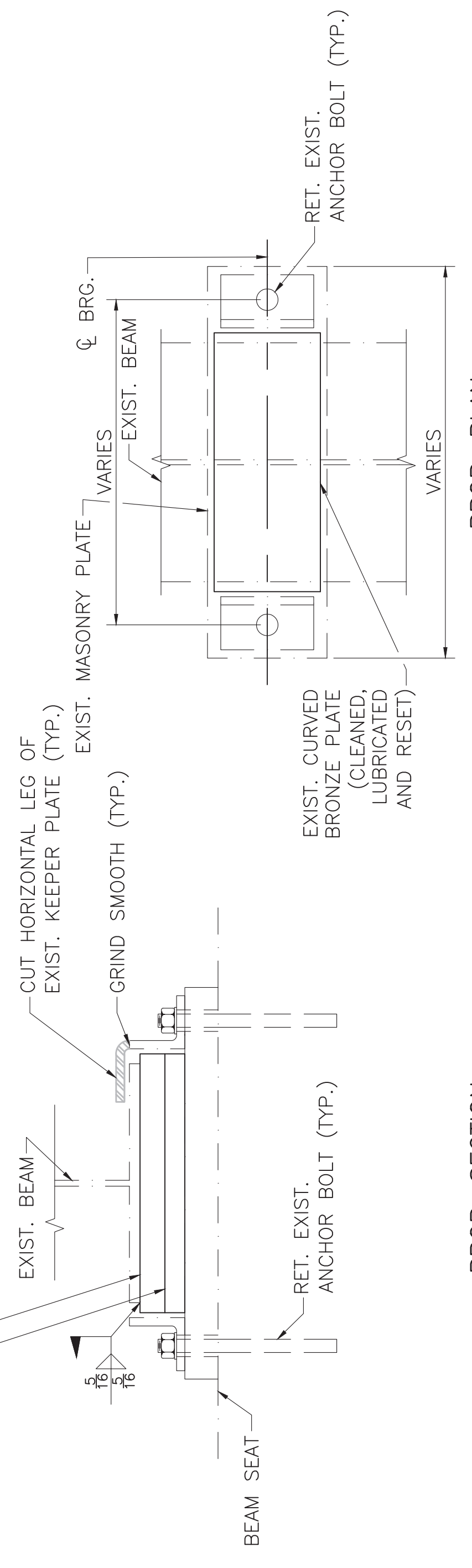
- NOTE:**
 ANGLE LEG OVERLAP SHALL BE ADJUSTED AS REQUIRED TO ACHIEVE MINIMUM CLEARANCE TO BEAM BOTTOM FLANGE.

KEEPER PLATE DETAIL

SCALE: 3" = 1'-0"



PROP. ELEVATION



PROP. SECTION

- NOTE:**
 IF MASONRY PLATE OR KEEPER PLATES ARE DETERIORATED UPON CLEANING, CONTRACTOR SHALL HALT WORK AND NOTIFY THE ENGINEER.

BEARING RESET DETAILS

SCALE: 1/2" = 1'-0"

- BEARING RESET NOTES:**
- LIVE LOAD SHALL BE REMOVED FROM THE ROADWAY ABOVE THE REPAIR LOCATION UNTIL JACKING IS COMPLETED AND HYDRAULIC JACKS ARE LOCKED. THE CONTRACTOR SHALL SUBMIT A TEMPORARY JACKING AND SHORING PLAN TO THE ENGINEER FOR APPROVAL. SEE SHEET 23 FOR CONCEPTUAL JACKING AND SHORING DETAILS.
 - AN ENTIRE LINE OF BEAM ENDS SHALL BE JACKED AND SHORED SIMULTANEOUSLY WHERE MULTIPLE BEARINGS REQUIRE RESETTING.
 - WELDED CONNECTION OF SOLE PLATE TO FLANGE SHALL BE REMOVED BY GRINDING TO ALLOW FOR BEARING DISASSEMBLY.
 - THE SURFACES OF THE BRONZE AND STEEL PLATES WHICH BEAR UPON EACH OTHER SHALL HAVE A SURFACE ROUGHNESS NOT EXCEEDING 125 MICRO INCHES WHEN MEASURED IN ACCORDANCE WITH AMERICAN STANDARDS ASSOCIATION B46.1 FOR SURFACE ROUGHNESS, WAVINESS AND LAY.
 - DURING THE BEARING RESET, CONTRACTOR SHALL ENSURE THAT THE BEARING IS NOT FROZEN AND THAT THE BRONZE PLATE CAN SLIDE FREELY.
 - REMOVE PACK RUST AND DEBRIS FROM THE BEARING AND BEARING SURFACE INTERFACES. REPAINT AND LUBRICATE CONTACT SURFACES. BRONZE PLATE SHALL BE REPLACED IF FRACTURED OR HEAVILY DEFORMED AS DETERMINED BY THE ENGINEER.
 - RESET BEARING SO THAT IT IS CENTERED AT AMBIENT TEMPERATURE BETWEEN 50 AND 70°F. IF WORK CANNOT BE CARRIED OUT WITHIN THIS TEMPERATURE RANGE, THE ENGINEER WILL PROVIDE THE RESET DISTANCE TO CORRECT FOR THERMAL MOVEMENT.
 - RE-WELD SOLE PLATE TO BOTTOM FLANGE PRIOR TO LOADING BEARING.
 - THE ENTIRE BEARING ASSEMBLY SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

KEEPER PLATE REPAIR NOTES:

- CONTRACTOR SHALL SEQUENCE KEEPER PLATE REPAIR WORK TO NOT INTERFERE WITH CONCRETE BEAM SEAT REPAIRS, BEARING RESET, SUPERSTRUCTURE CLEANING AND PAINTING, AND/OR BEAM END REPAIRS AT THE SAME LOCATION.
- CONTRACTOR SHALL NOT INSTALL NEW KEEPER PLATES UNTIL ALL CONTACT SURFACES HAVE BEEN CLEANED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- FILLET WELD SHALL TERMINATE 1/4" BEFORE ENDS OF ANGLE LEG.
- KEEPER PLATE SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- NEOPRENE PAD SHALL BE INCIDENTAL TO ITEM 960.1.

BEARING KEEPER PLATE REPAIR SECTION

SCALE: 1/2" = 1'-0"

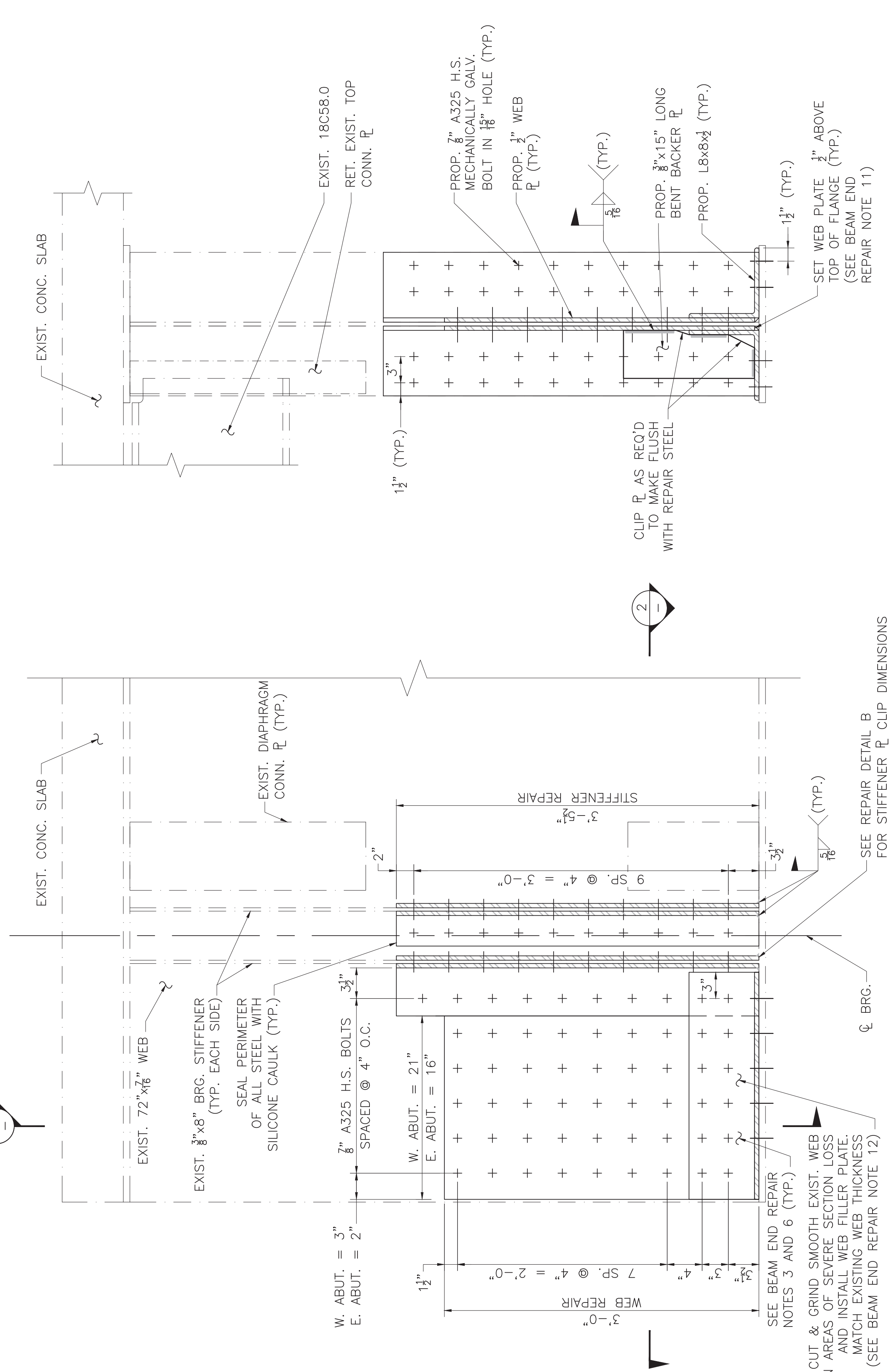
BRIDGE NO.	LOCATION	BEARING RESET SUMMARY	
		NO. OF EXPANSION BEARING RESETS/TOTAL BEAMS	JACK & SHORE ENTIRE BEAM LINE? (Y/N)
C-21-023 (OJN)	WEST ABUTMENT	5/5	Y
C-21-024 (OJM)	WEST ABUTMENT	2/7	N
	EAST ABUTMENT	1/7	N
C-21-025 (OJK)	WEST ABUTMENT	6/6	Y
	EAST ABUTMENT	2/6	N

NOTE:
 THE SUMMARY TABLE ABOVE ONLY REPRESENTS ANTICIPATED BEARING RESET LOCATIONS. ADDITIONAL JACK AND SHORE LOCATIONS FOR CONCRETE REPAIRS ARE SPECIFIED ON THE PREVIOUS SHEETS. CONTRACTOR SHALL ONLY BE COMPENSATED FOR ONE JACKING AND SHORING SYSTEM PER LOCATION AND IS RESPONSIBLE FOR SEQUENCING THE WORK APPROPRIATELY.

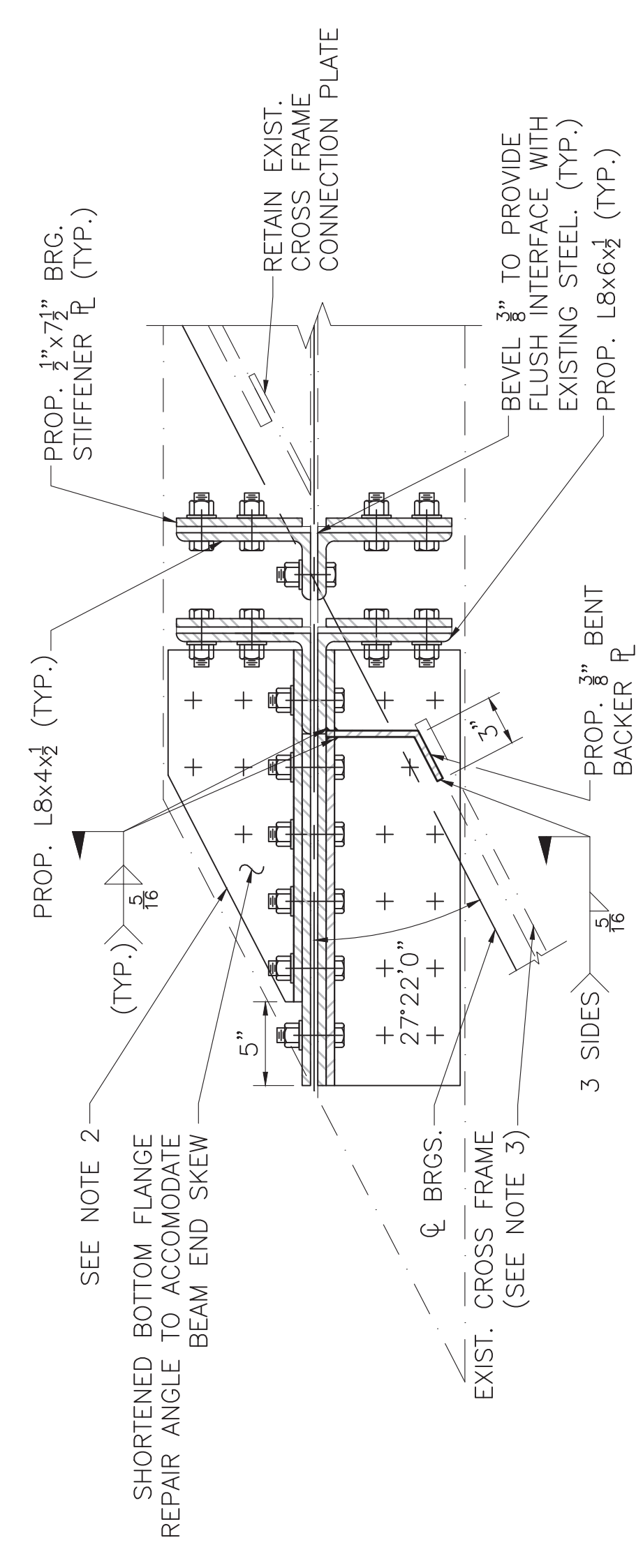
DATE	PS&E R2
AUG. 13, 2024	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON 3 BRIDGES ALONG RT 9 OVER WESTFIELD RIVER & WESTFIELD BROOK	
STATE	SHEET NO.
MA	18
FED. AID PROJ. NO.	TOTAL SHEETS
HI(BR)-003(766)X	37
PROJECT FILE NO. 613116	

**CONSTRUCTION DETAILS
BEAM END REPAIR DETAILS (1 OF 3)**



GIRDER SECTION 1
SCALE: 1/2" = 1'-0"



LONGITUDINAL SECTION 2
SCALE: 1/2" = 1'-0"

- NOTES:**
1. SECTION AT WEST ABUTMENT SHOWN. EAST ABUTMENT REPAIR SIMILAR, BUT MIRRORED.
 2. CONTRACTOR SHALL CUT REPAIR ANGLE LEG PARALLEL WITH BOTTOM FLANGE END.
 3. CONTRACTOR SHALL REMOVE AND RESET CROSS FRAMES AS REQUIRED TO PERFORM REPAIRS. THIS WORK SHALL BE INCIDENTAL TO ITEM NO. 107.97. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

- BEAM END REPAIR NOTES:**
1. ALL BEAM END REPAIR DETAILS SHOW EXISTING END DIAPHRAGMS AND CROSS FRAMES BEING RETAINED WITH NEW CONNECTION PLATES AS REQUIRED. CONTRACTOR SHALL REFER TO ALTERNATE DETAILS ON SHEET 23 & 24. WHEN DIAPHRAGM RETROFITS ARE REQUIRED FOR JACKING AND SHORING, WHERE DIAPHRAGM RETROFITS ARE REQUIRED, THE EXISTING CHANNEL, CROSS FRAMES AND CONNECTION PLATES WILL BE REMOVED AND DISCARDED.
 2. REMOVE ANY END DIAPHRAGM CONCRETE AND REINFORCING THAT INTERFERES WITH STEEL REPAIRS.
 3. CLEAN THE CONTACT SURFACES OF EXISTING STEEL IN ACCORDANCE WITH SPECIAL PROVISIONS. THE CONTACT SURFACES SHALL BE FREE OF PAINT, OIL, AND GREASE, AND SHALL PROVIDE THE NECESSARY SLIP RESISTANCE FOR CLASS A SLIP CRITICAL CONNECTIONS.
 4. ENGINEER TO INSPECT CLEANED REPAIR AREA AND VERIFY REPAIR LIMITS BASED ON CONDITIONS EXPOSED BY CLEANING.
 5. THE BEAM SHALL BE INSPECTED FOR DAMAGE DUE TO CONTRACTOR OPERATIONS. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTORS' EXPENSE.
 6. IN LOCATIONS WHERE HEAVY DETRIORATION HAS OCCURRED OR AS DIRECTED BY THE ENGINEER, EPOXY REPAIR FAIRING COMPOUND SHALL BE APPLIED OVER THE PRIME COAT AS FOLLOWS:
 - A. THE EPOXY REPAIR COMPOUND SHALL BE APPLIED TO THE DETRIORATED AREAS IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL THE METHODS, PROCEDURES, AND MATERIALS TO BE USED FOR THE WORK.
 - B. THE REPAIR COMPOUND SHALL ONLY BE APPLIED TO THOSE OF THE EXISTING STEEL THAT EXHIBIT SEVERE SECTION LOSS TO COMPLETELY FILL THE IRREGULARITIES IN THE EXISTING STEEL SURFACES SUCH THAT NO VOIDS REMAIN BETWEEN THE PILES OF THE EXISTING STEEL AND THE PROPOSED STRENGTHENING STEEL IN THE FINAL REPAIRED CONDITION.
 - C. THE PROPOSED REPAIR STEEL SHALL BE PROPERLY POSITIONED AND BROUGHT INTO FIRM CONTACT WITHIN THE WORKING TIME LIMITS OF THE EPOXY REPAIR COMPOUND. THE REPAIR STEEL SHALL BE SECURED IN PLACE USING POSITIONING BOLTS TENSIONED TO A SNUG TIGHT CONDITION AND CLAMPS OR OTHER MECHANICAL MEANS TO BRING THE PILES OF THE EXISTING STEEL AND NEW STEEL INTO FIRM CONTACT. WELDING IS NOT ALLOWED.
 - D. ONCE THE PROPOSED STEEL HAS BEEN SECURED INTO POSITION WITH THE POSITIONING BOLTS, AND THE EPOXY COMPOUND HAS CURED, THE REMAINING H.S. BOLTS SHALL BE INSTALLED FOLLOWING THE PROCEDURE OUTLINED IN THE GENERAL NOTES.

BEAM END REPAIR DETAIL A
SCALE: 1/2" = 1'-0"

7. STEEL ELEMENTS FOR REPAIR SHALL BE BOLTED TO EXISTING STEEL SURFACES.
8. STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GRADE 36. IT SHALL BE CONSIDERED A MAIN MEMBER AND CONFORM TO THE CHARPY V-NOTCH REQUIREMENTS OF AASHTO M270 ZONE 12.
9. + DENOTES 7/8" ASTM F3125 GRADE A325 HIGH STRENGTH BOLT IN 1/8" HOLE UNLESS OTHERWISE NOTED.
10. IN THE CASE THAT ANY STEEL REPAIR ANGLE INTERFERES WITH THE PROPOSED BEARING ASSEMBLY, A LEG OF THE ANGLE CAN BE COPED TO PROVIDE CLEARANCE AROUND THE EXISTING ANCHOR BOLT.
11. CONTRACTOR SHALL VERIFY EXISTING WELD SIZES PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE ADEQUATE CLEARANCE BETWEEN REPAIR STEEL AND EXISTING WELDS.
12. CONTRACTOR SHALL VERIFY SIZE AND LIMITS OF FILLER PLATE NEEDED TO COVER SEVERE SECTION LOSS. FILLER PLATES SHALL BE INSTALLED PRIOR TO INSTALLING REPAIR PLATES.
13. CLEAN AND PAINT REPAIRED AREA PER SPECIAL PROVISIONS.
14. SEAL PERIMETER OF ALL STEEL WITH SILICONE CAULK.
15. FASTENER ORIENTATION SHOWN IS CONCEPTUAL AND SHALL BE ADAPTED TO ACCOMMODATE FIELD VERIFIED CONDITIONS.
16. ALL FILLET WELDS SHALL TERMINATE 1/4" FROM PLATE ENDS UNLESS OTHERWISE NOTED.

- E. EPOXY COMPOUND FOR STRUCTURAL STEEL REPAIRS SHALL BE A SOLVENT FREE, MOISTURE TOLERANT, EPOXY PASTE ADHESIVE SYSTEM. THE EPOXY PASTE SHALL BE DEVELOPED SPECIFICALLY FOR FILLING, SMOOTHING, SEALING, OR FAIRING APPLICATIONS ON METALS. THE PASTE SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S LATEST WRITTEN INSTRUCTIONS. ACCEPTABLE PRODUCT SHALL BE ONE OF THE FOLLOWING OR AN APPROVED EQUAL: ITW PHILADELPHIA RESINS REPAIR COMPOUND MANUFACTURED BY: ITW PHILADELPHIA RESINS, SIKADUR 31, HI-MOD GEL MANUFACTURED BY: SIKA CORPORATION, DEVCON PLASTIC STEEL PUTTY (A) MANUFACTURED BY: ITW DEVCON, FX-738 METAL FILLED EPOXY MANUFACTURED BY: SIMPSON STRONG-TIE.

DATE	PS&E R2
AUG. 13, 2024	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-0035(76)X	19	37
PROJECT FILE NO. 613116			

CONSTRUCTION DETAILS
BEAM END REPAIR DETAILS (2 OF 3)

EXIST. END DIAPHRAGM & CONNECTION PLATES

CL BRG.

CL GIRDER

27'-22'-0"
C-21-023

3 SIDES

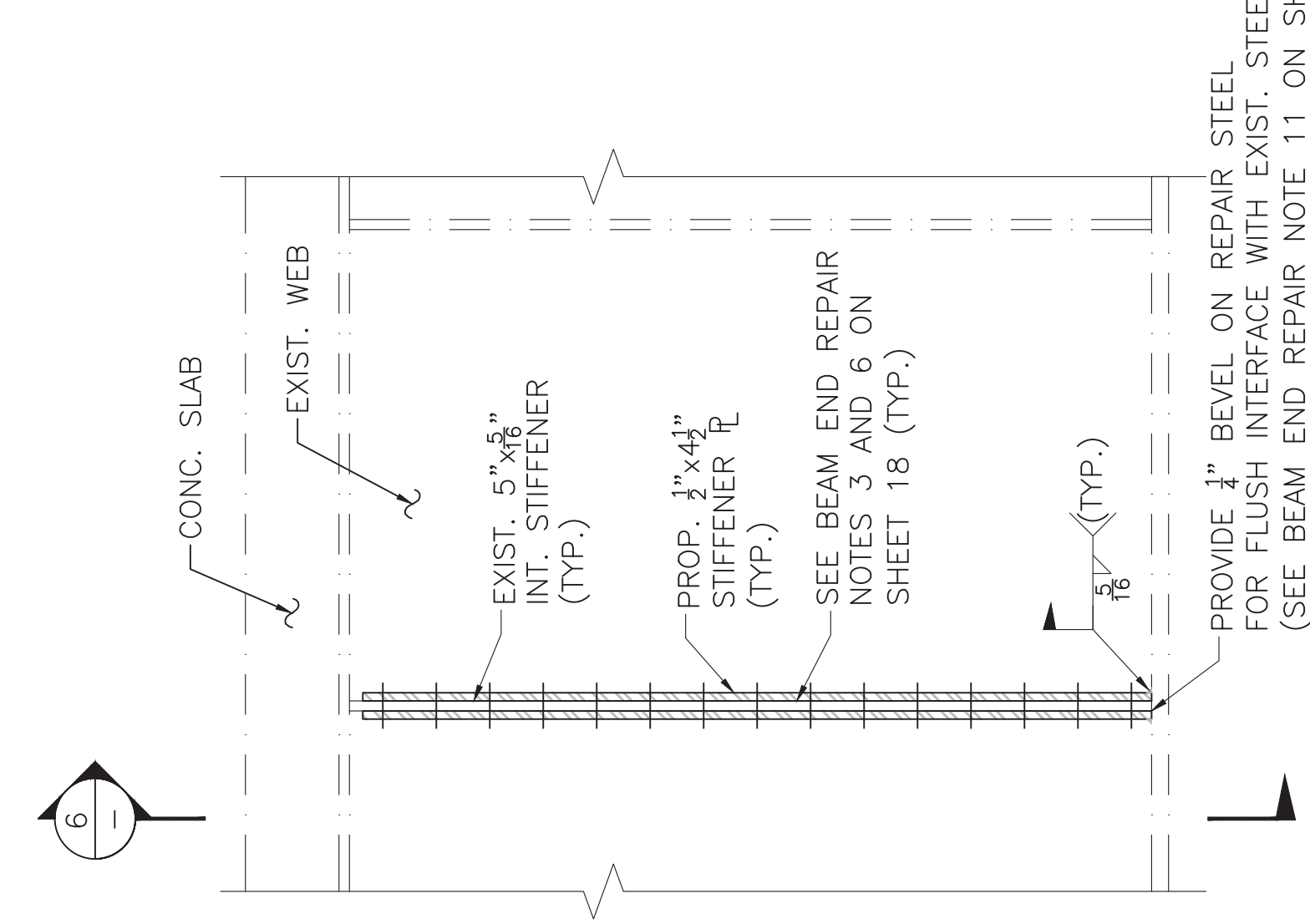
3"

1"

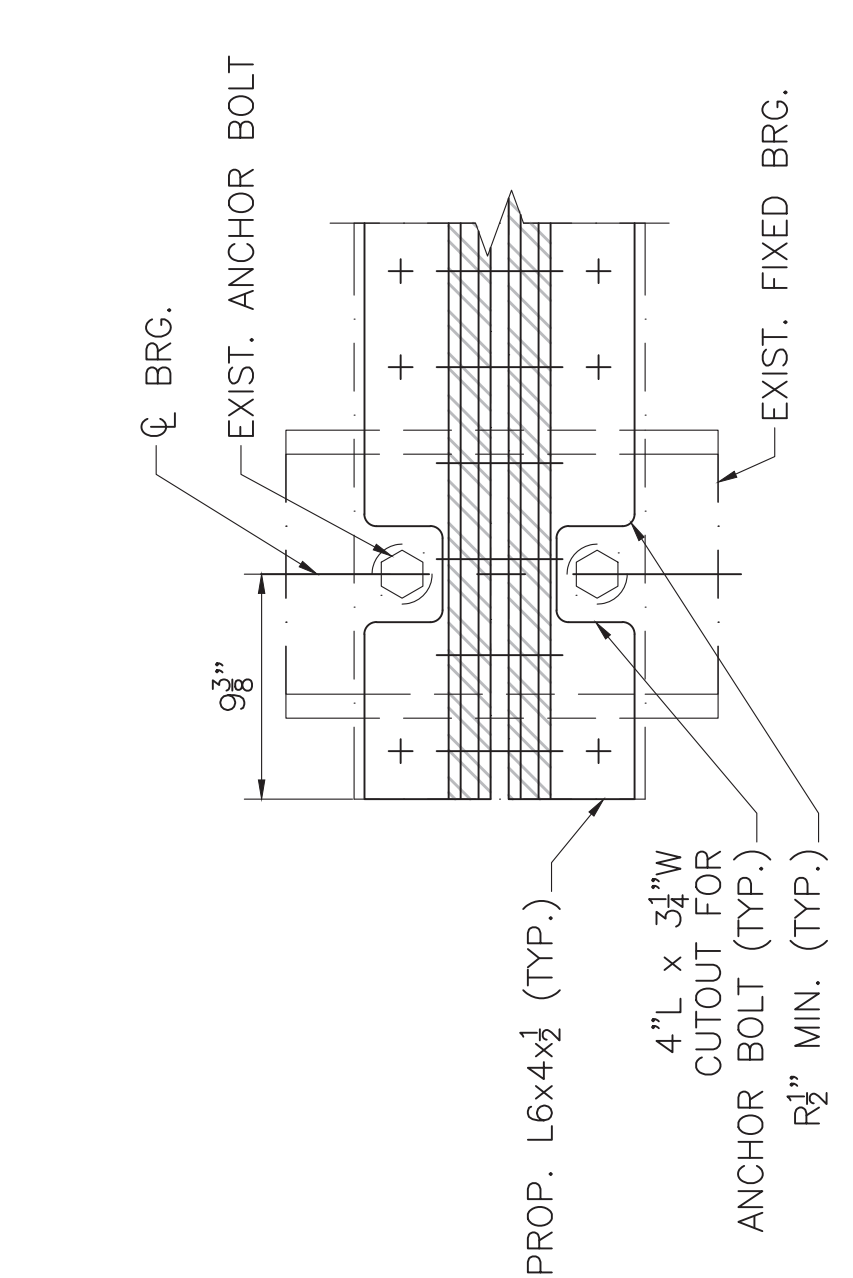
PROP. 3" BENT BACKER PLATES (TOP & BOTTOM) (MATCH EXISTING PLATE HEIGHTS) (SEE NOTE)

NOTE:
TOP CHANNEL REQUIRES TEMPORARY SHORING PRIOR TO PERFORMING THIS WORK. CROSS FRAMES SHALL BE REMOVED AND RESET AS REQUIRED. THIS WORK SHALL BE INCIDENTAL TO ITEM NO. 107.97. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

LONGITUDINAL SECTION 4
SCALE: 1/2" = 1'-0"



BEAM END REPAIR DETAIL B1
SCALE: 1" = 1'-0"

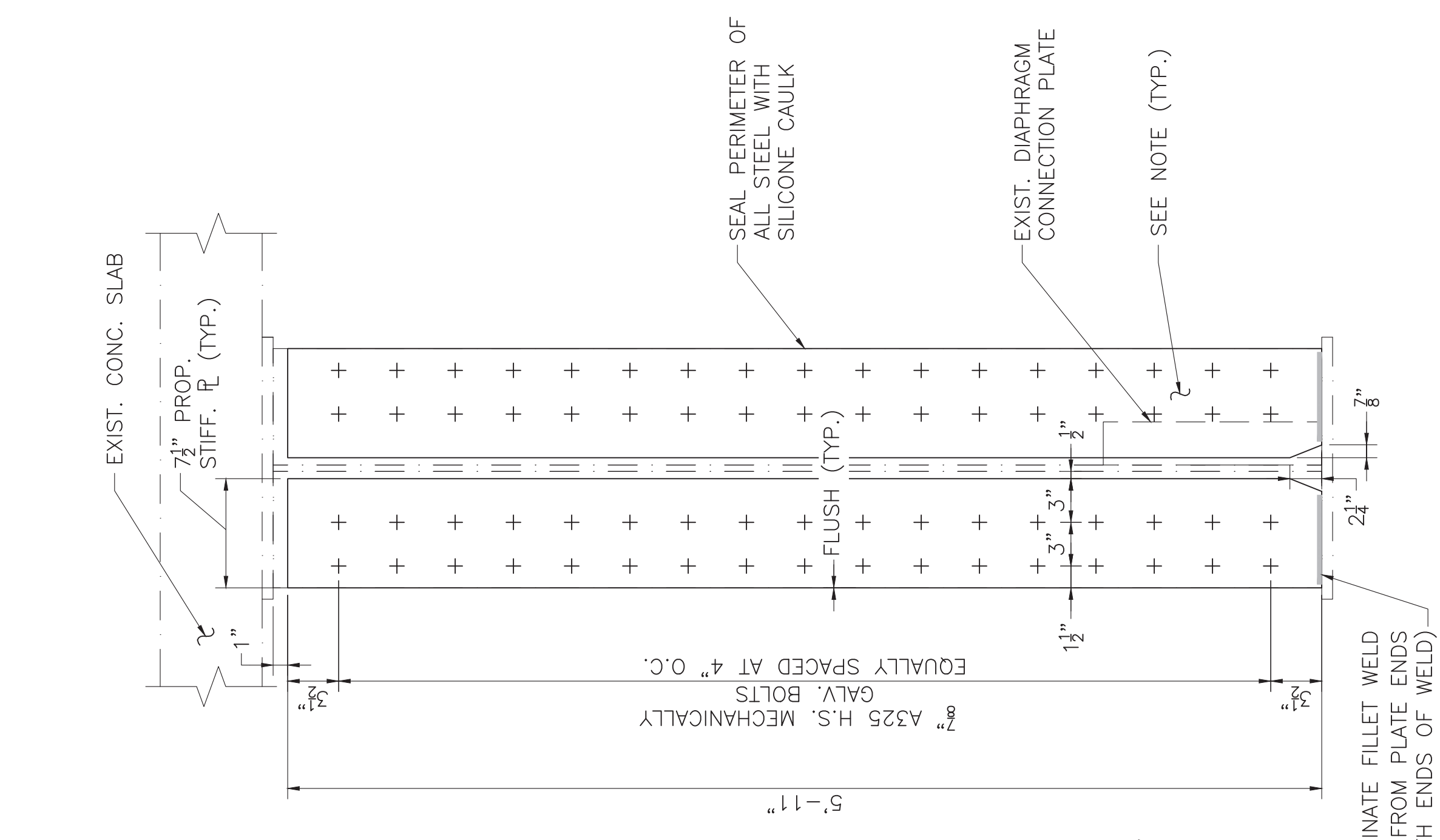


REPAIR ANGLE COPING DETAIL
SCALE: 1/2" = 1'-0"

SHEET 19 OF 37 SHEETS BRIDGE NOS. C-21-023 (OJN), C-21-024 (OJM) & C-21-025 (OJK)

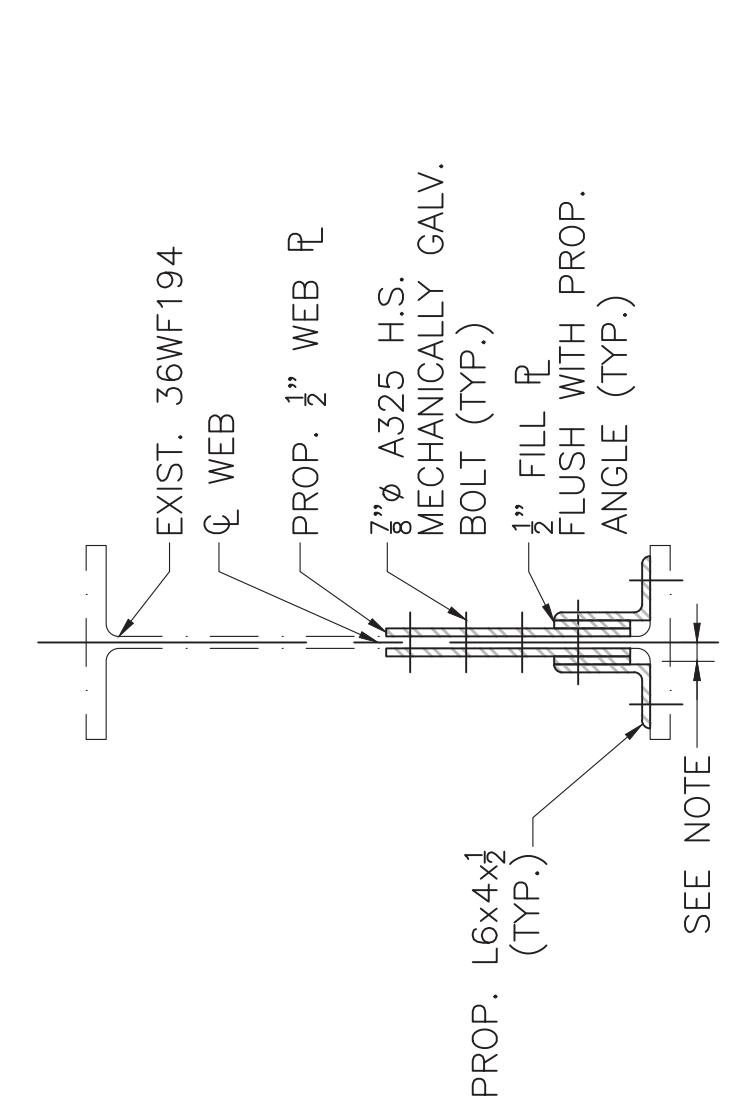
DATE	PS&E R2
AUG. 13, 2024	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

NOTE:
ALL BEAM END REPAIR DETAILS SHOW EXISTING END DIAPHRAGMS AND CROSS FRAMES BEING RETAINED WITH NEW CONNECTION PLATES AS REQUIRED. CONTRACTOR SHALL REFER TO ALTERNATE DETAILS ON SHEET 23 & 24 WHEN DIAPHRAGM RETROFITS ARE REQUIRED FOR JACKING AND SHORING. WHERE DIAPHRAGM RETROFITS ARE REQUIRED, THE EXISTING CHANNEL, CROSS FRAMES AND CONNECTION PLATES WILL BE REMOVED AND DISCARDED.



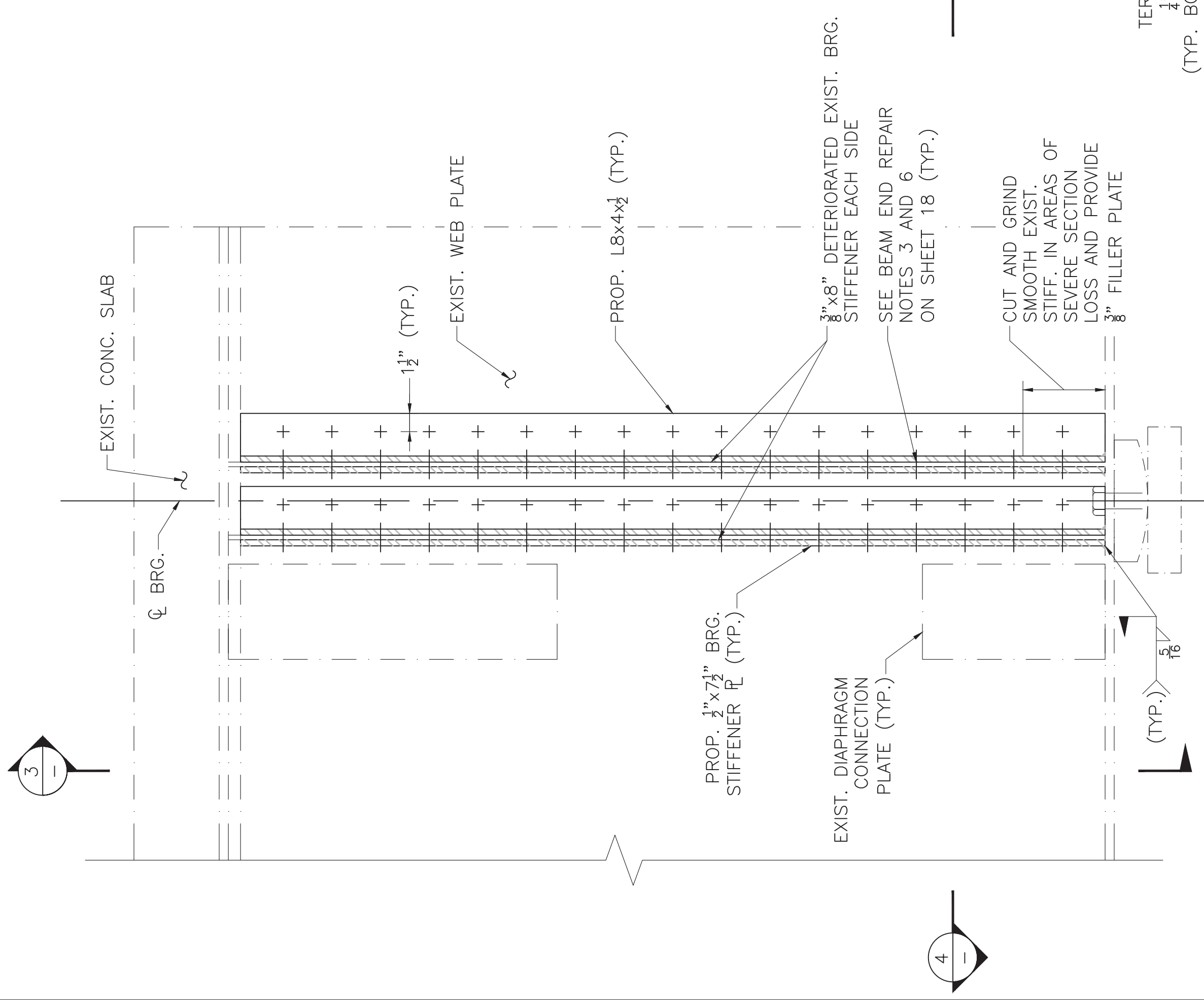
GIRDER SECTION WITH PROP. STIFF. PLATE 3
SCALE: 1/2" = 1'-0"

NOTE:
SOME GIRDERS ON BRIDGE NO. C-21-025 HAVE EXISTING BEAM END REPAIRS. COPE PROPOSED REPAIR PLATES AND ANGLES AS REQUIRED TO NOT INTERFERE WITH EXISTING REPAIRS. REFER TO DETAIL D FOR EXISTING REPAIR GEOMETRY.



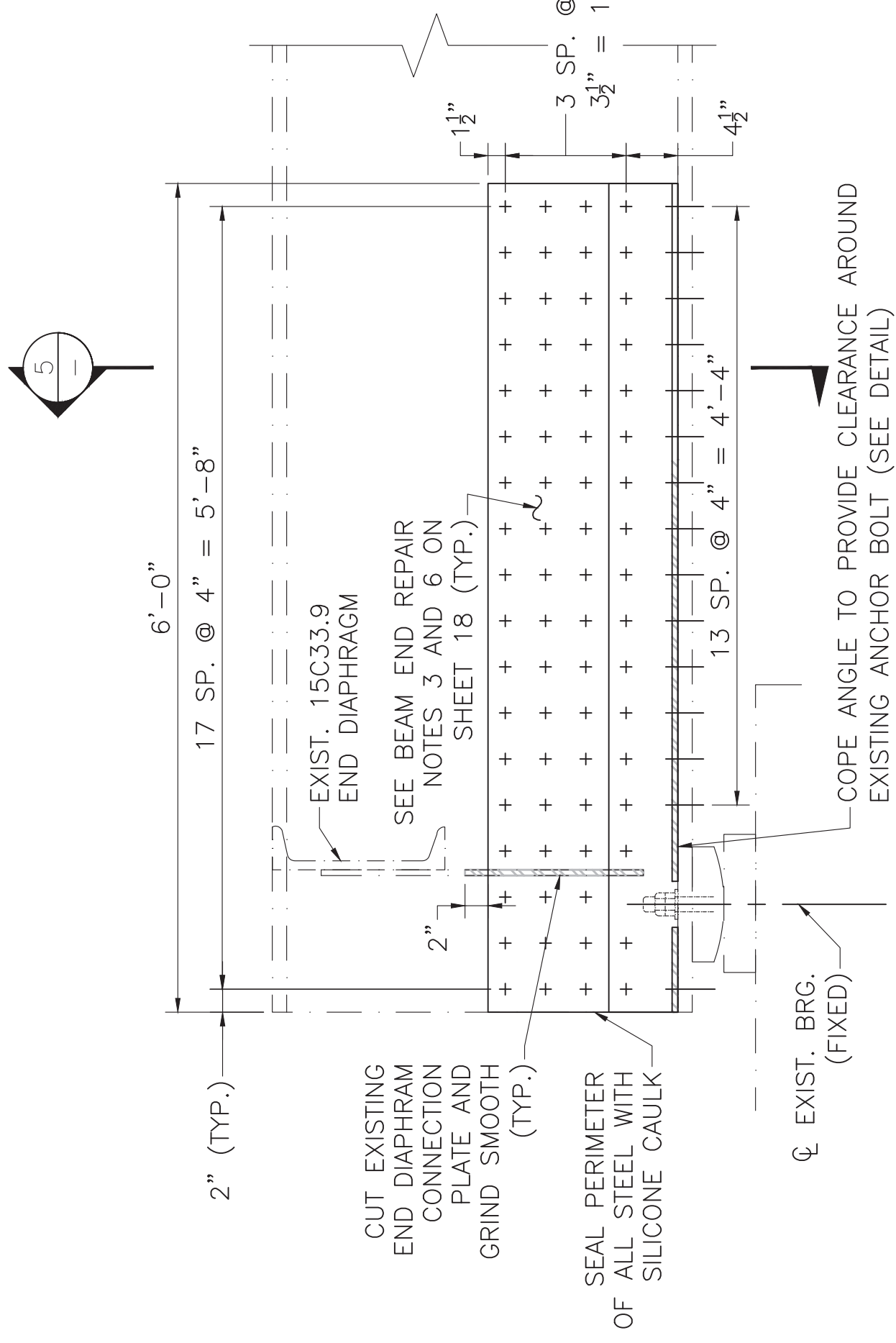
NOTE:
FILL PLATE SIZE IS BASED ON AN ASSUMED k1 VALUE FROM HISTORIC SHAPE GEOMETRY. GIVEN THE VARIABILITY IN MANUFACTURING AMONG HISTORICAL STEEL FABRICATORS, k1 MAY VARY. THE 1/2" PLATE SPECIFIED IS ADEQUATE FOR k1 VALUES UP TO 18". FILL PLATE THICKNESS SHALL BE INCREASED AS NEEDED FOR FIELD MEASUREMENTS OF k1 EXCEEDING THE ASSUMED VALUE. CONTRACTOR SHALL FIELD VERIFY FILLET PRIOR TO ORDERING FILL PLATE.

BEAM SECTION 5
SCALE: 1" = 1'-0"



BEAM END REPAIR DETAIL B
SCALE: 1/2" = 1'-0"

NOTE:
INTERIOR GIRDER SHOWN. EXTERIOR GIRDER REPAIR SIMILAR, BUT WITH DIAPHRAGM CONNECTION ON INTERIOR SIDE ONLY.



BEAM END REPAIR DETAIL C
SCALE: 1" = 1'-0"

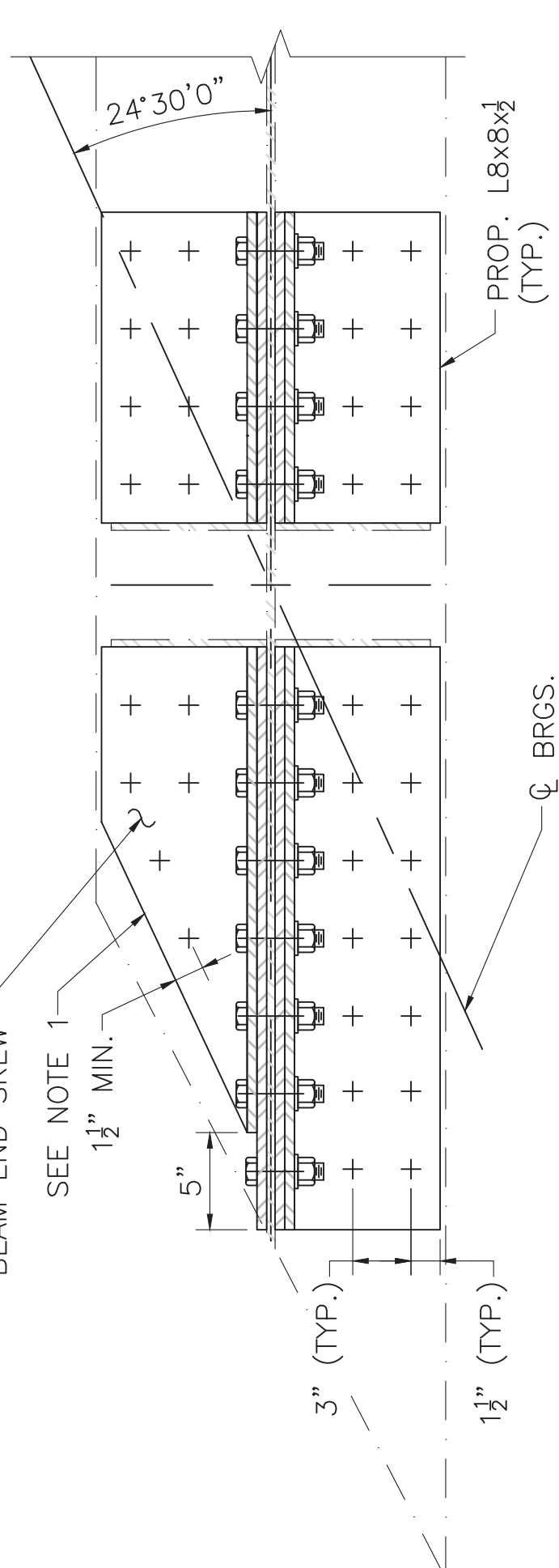
CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI18R-0035/766X	20	37
PROJECT FILE NO. 613116			

CONSTRUCTION DETAILS
BEAM END REPAIR DETAILS (3 OF 3)

NOTE:
 ALL BEAM END REPAIR DETAILS SHOW EXISTING END DIAPHRAGMS AND CROSS FRAMES BEING RETAINED WITH NEW CONNECTION PLATES AS REQUIRED. CONTRACTOR SHALL REFER TO ALTERNATE DETAILS ON SHEET 23 & 24 WHEN DIAPHRAGM RETROFITS ARE REQUIRED FOR JACKING AND SHORING. WHERE DIAPHRAGM RETROFITS ARE REQUIRED, THE EXISTING CHANNEL, CROSS FRAMES AND CONNECTION PLATES WILL BE REMOVED AND DISCARDED.

SHORTENED BOTTOM FLANGE REPAIR ANGLE TO ACCOMMODATE BEAM END SKEW



- NOTES:
- CONTRACTOR SHALL CUT REPAIR ANGLE LEG PARALLEL WITH BOTTOM FLANGE END.
 - EXISTING DIAPHRAGM NOT SHOWN FOR CLARITY. CONTRACTOR SHALL REMOVE EXISTING DIAPHRAGMS AND CROSS FRAMES PRIOR TO INSTALLING REPAIR AND END DIAPHRAGM RETROFIT. THIS WORK SHALL BE INCIDENTAL TO ITEM NO. 107.97. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

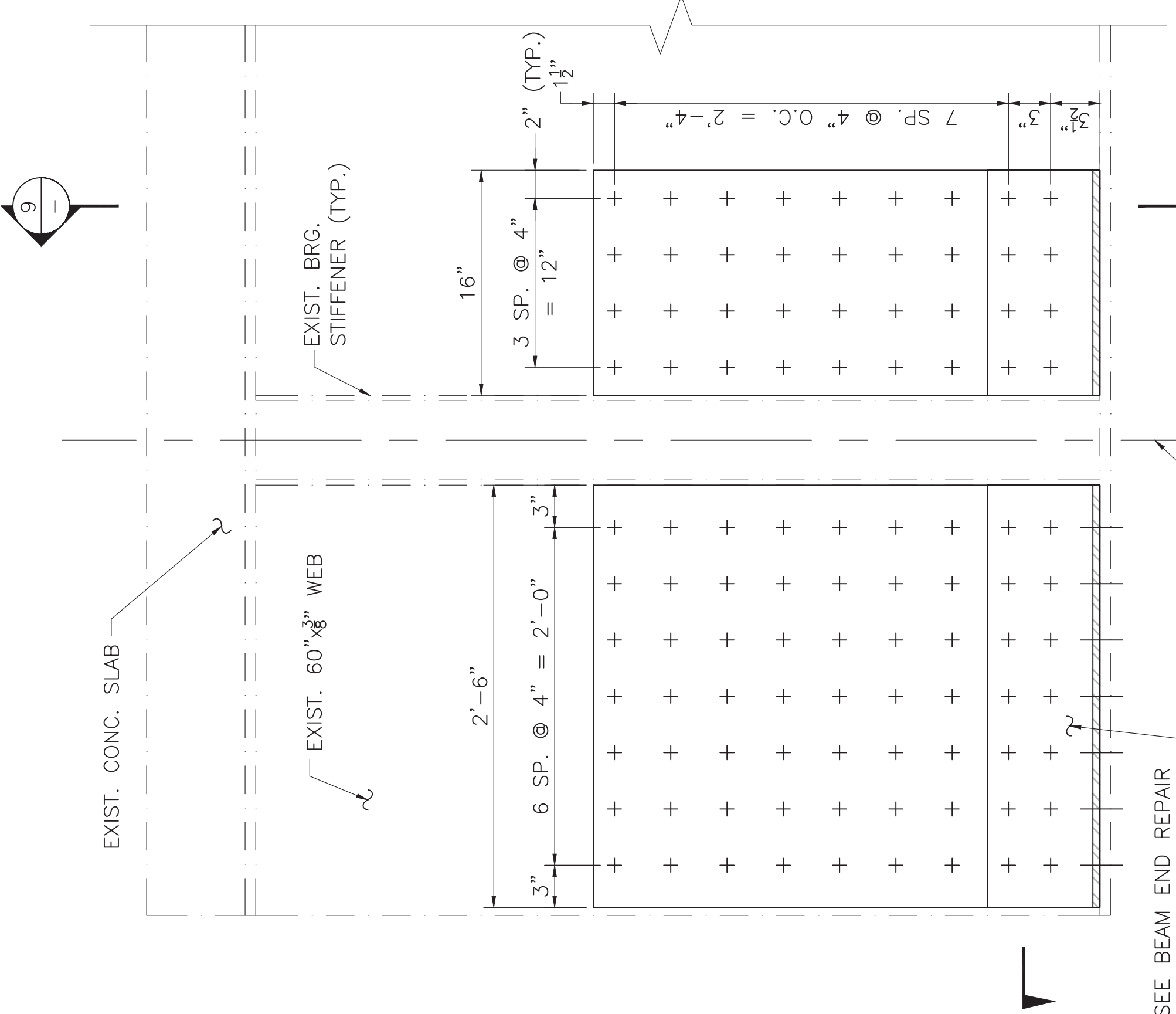
LONGITUDINAL SECTION 10
 SCALE: 1½" = 1'-0"

BRIDGE NO.	REPAIR TYPE	QUANTITY
C-21-023 (OJN)	A	3
	B	2
C-21-024 (OJM)	C	1
	B1	6
C-21-025 (OJK)	D, TYPE I	2
	D, TYPE II	3
	E	1

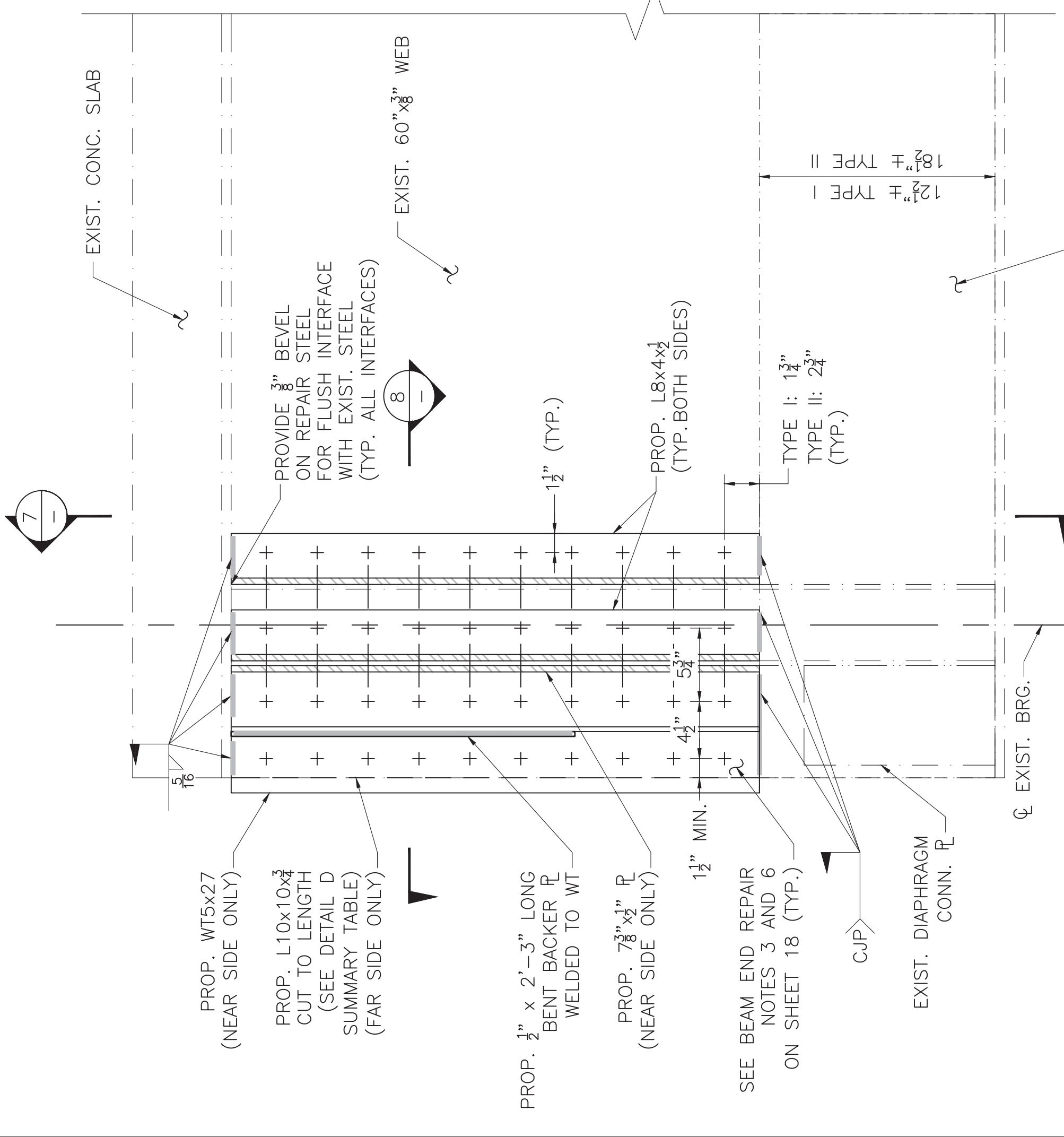
GIRDER NO.	REPAIR TYPE	DIMENSION X
G1	TYPE II	9½"
G4	TYPE II	9½"
G6	TYPE I	10"
G10	TYPE I	9"
G12	TYPE II	9"

NOTE:
 CONTRACTOR SHALL FIELD VERIFY WEB END DIMENSION PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE PROPOSED L10x10x½ IS FLUSH WITH END OF WEB.

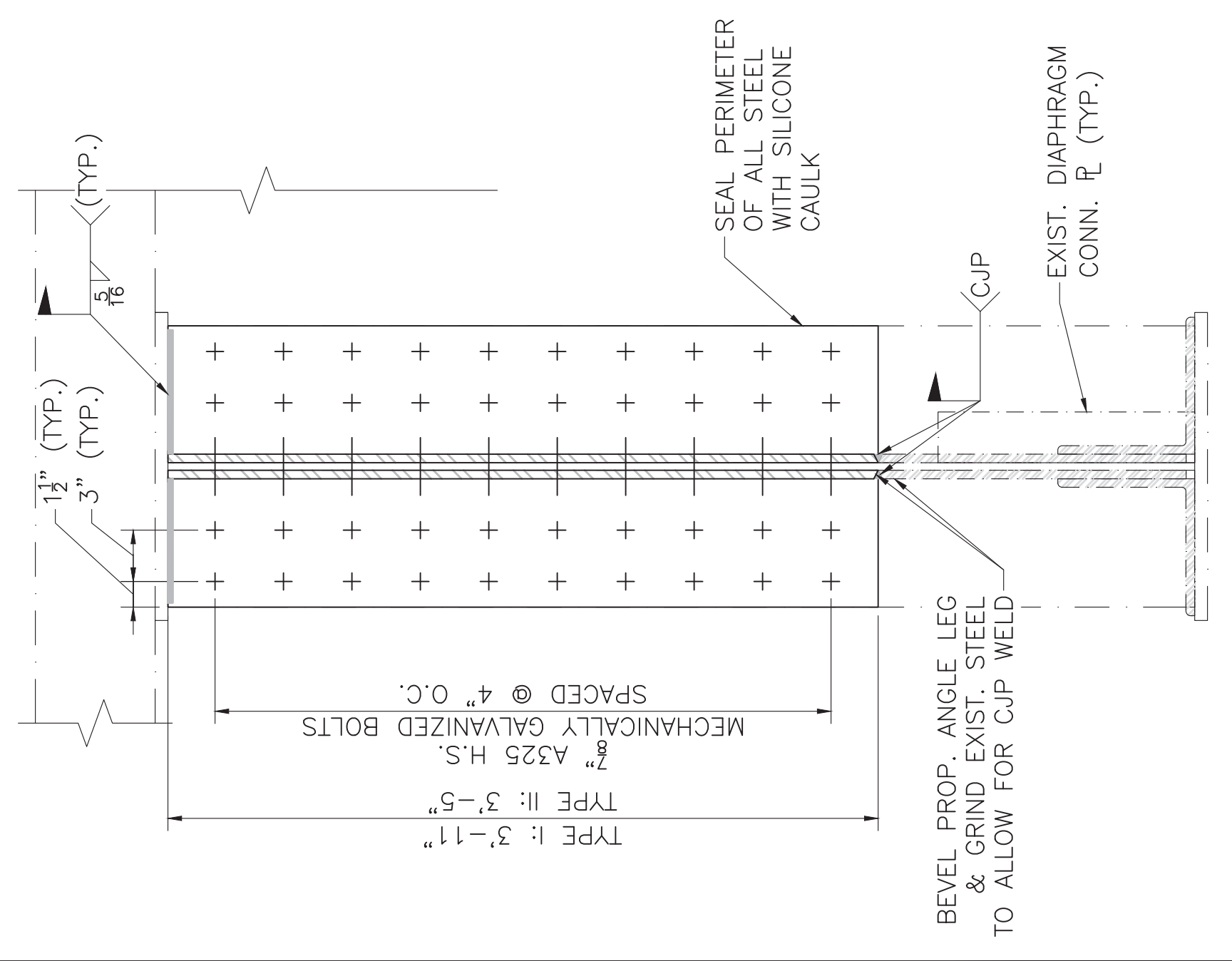
DATE	PS&E R2
AUG. 13, 2024	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



BEAM END REPAIR DETAIL E
 SCALE: 1½" = 1'-0"



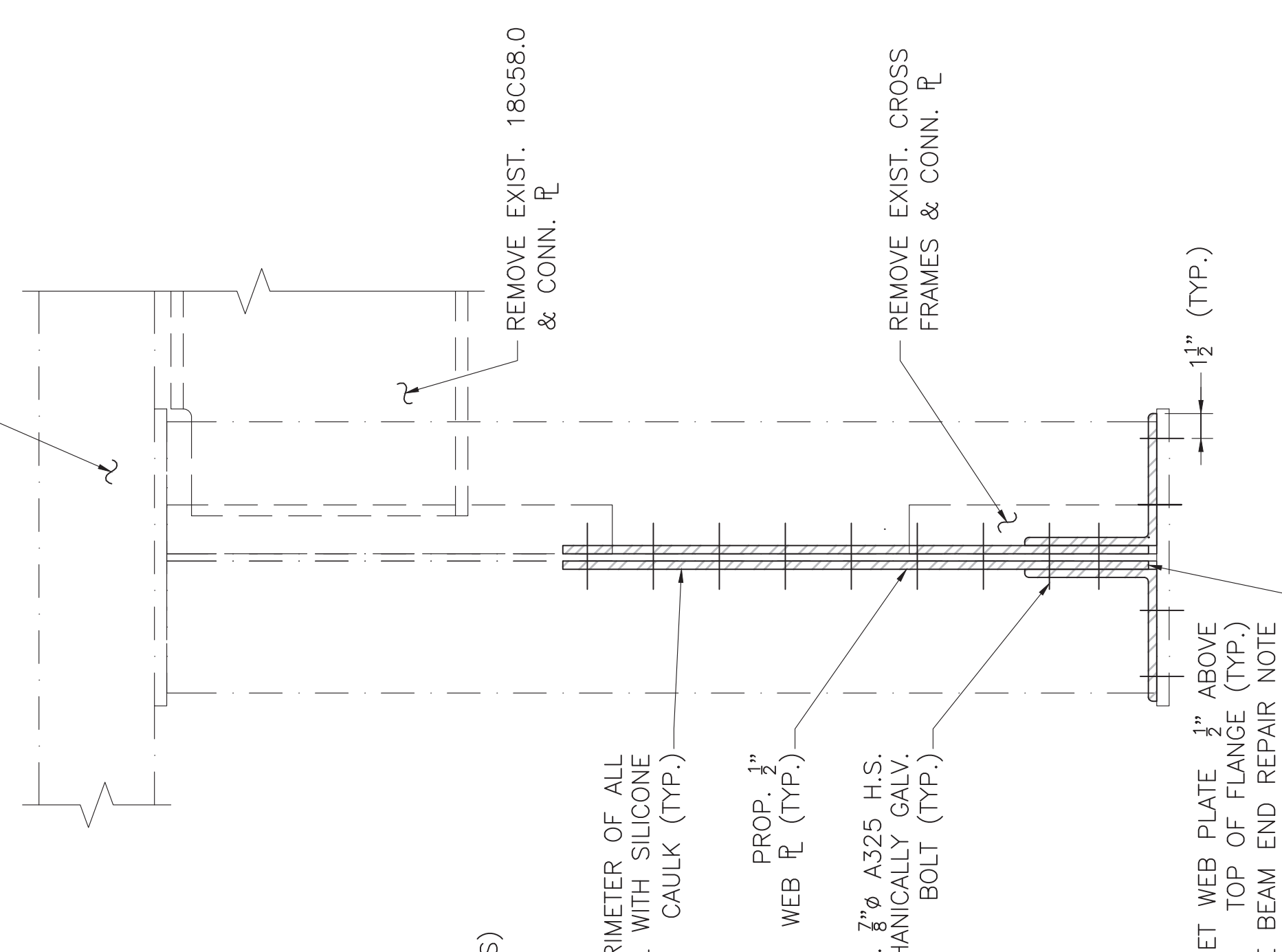
BEAM END REPAIR DETAIL D
 SCALE: 1½" = 1'-0"



GIRDER SECTION WITH PROP. STIFF. PLATE 7
 SCALE: 1½" = 1'-0"

- NOTES:
- INTERIOR GIRDER SHOWN. EXTERIOR GIRDER SIMILAR, BUT WITH END DIAPHRAGM ON ONLY ONE FACE. EAST SPAN AT PIER SHOWN, WEST SPAN AT PIER SIMILAR BUT MIRRORED.
 - CUT PROPOSED STEEL PLATE ANGLES AS REQUIRED TO MATCH EXISTING COPED BEARING STIFFENERS AT THE PIER.
 - CONTRACTOR SHALL MATCH EXISTING CONNECTION TO TOP CHANNEL. CONTRACTOR SHALL NOTE THAT EXTERIOR BAY END DIAPHRAGM CHANNELS AT THE PIER HAVE BEEN ALTERED BY PREVIOUS REPAIRS. TOP CHANNEL REQUIRES TEMPORARY SHORING PRIOR TO PERFORMING THIS WORK. THIS WORK SHALL BE INCIDENTAL TO ITEM NO. 107.97. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

LONGITUDINAL SECTION 8
 SCALE: 1½" = 1'-0"



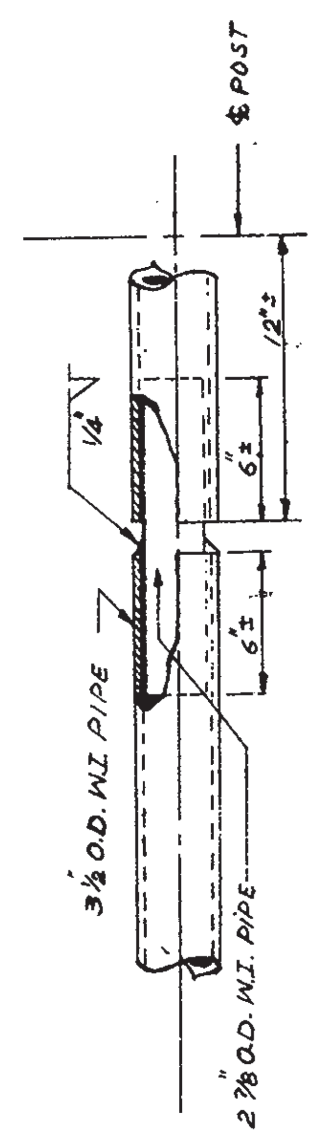
GIRDER SECTION 9
 SCALE: 1½" = 1'-0"

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	21	37
PROJECT FILE NO. 613116			

CONSTRUCTION DETAILS
CONCRETE COPING REPAIR

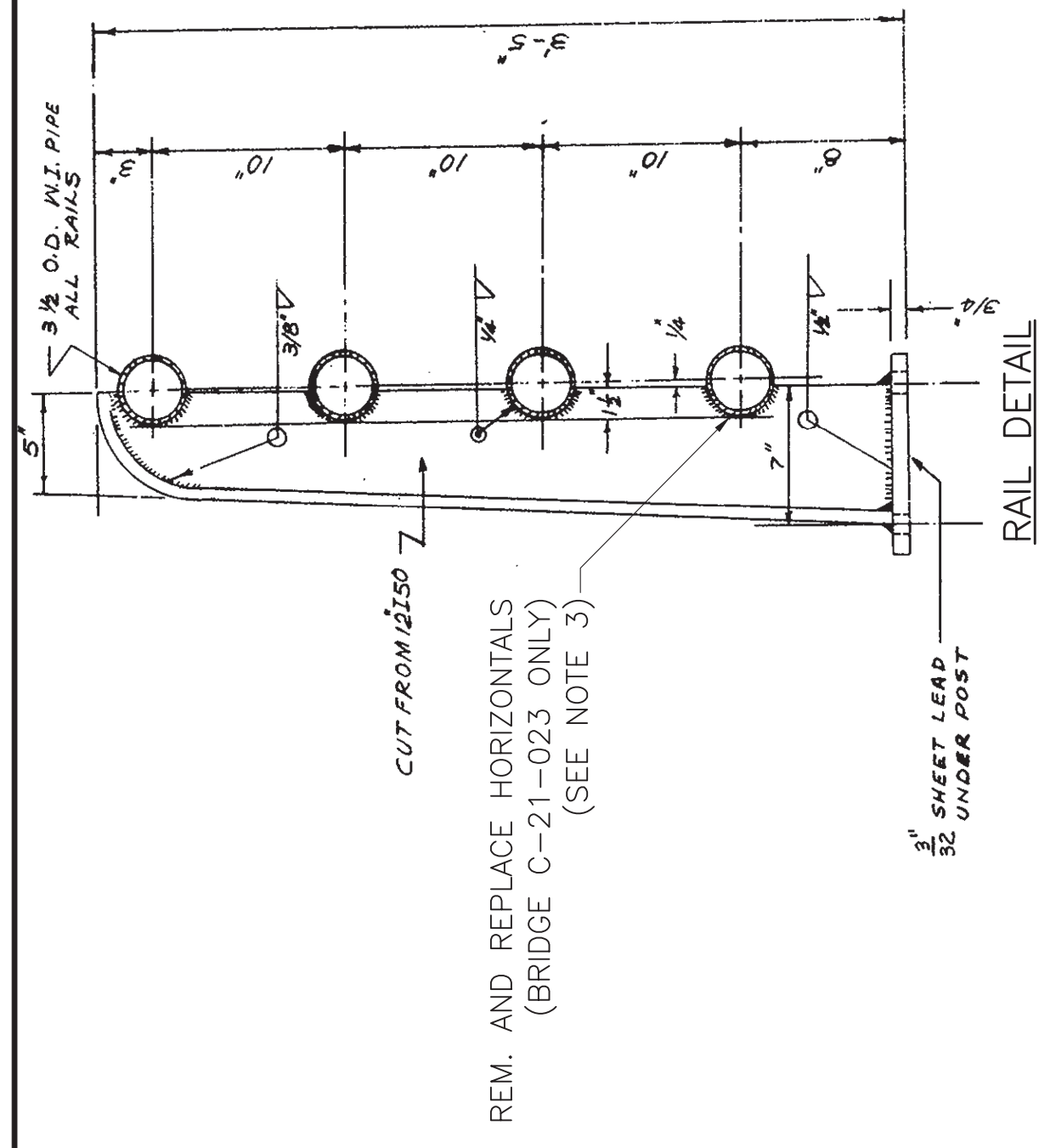
SPLICE DETAIL



- NOTES:
- BRIDGE RAIL DETAILS ARE TAKEN FROM THE EXISTING C-21-023 BRIDGE PLANS DATED 1957 BY DUFFILL ASSOCIATES INC.
 - EXISTING THRIE BEAM RETROFIT AT BRIDGE NO. C-21-023 SHALL BE REMOVED AND RESET WITH NEW CONNECTION HARDWARE FOLLOWING REPAIR OF THE STEEL RAIL.
 - DETERIORATED HORIZONTAL RAILS SHALL BE COMPLETELY REPLACED UP TO AND INCLUDING THE SPLICE TUBES. NEW HORIZONTALS SHALL BE RE-WELDED TO EXISTING POSTS USING WELD DETAILS FROM THE EXISTING PLANS.
 - RAILING REPAIRS SHALL OCCUR AFTER CLEANING THE EXISTING RAILING, BUT PRIOR TO PAINTING. CONTRACTOR IS RESPONSIBLE FOR SEQUENCING THE WORK APPROPRIATELY.
 - CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS (RAIL SIZES, POST TYPE AND SPACING, EXPANSION JOINT LOCATIONS ETC.) PRIOR TO SUBMITTING SHOP DRAWINGS TO ENSURE PROPER FIT.

EXISTING BRIDGE RAIL DETAILS

NOT TO SCALE

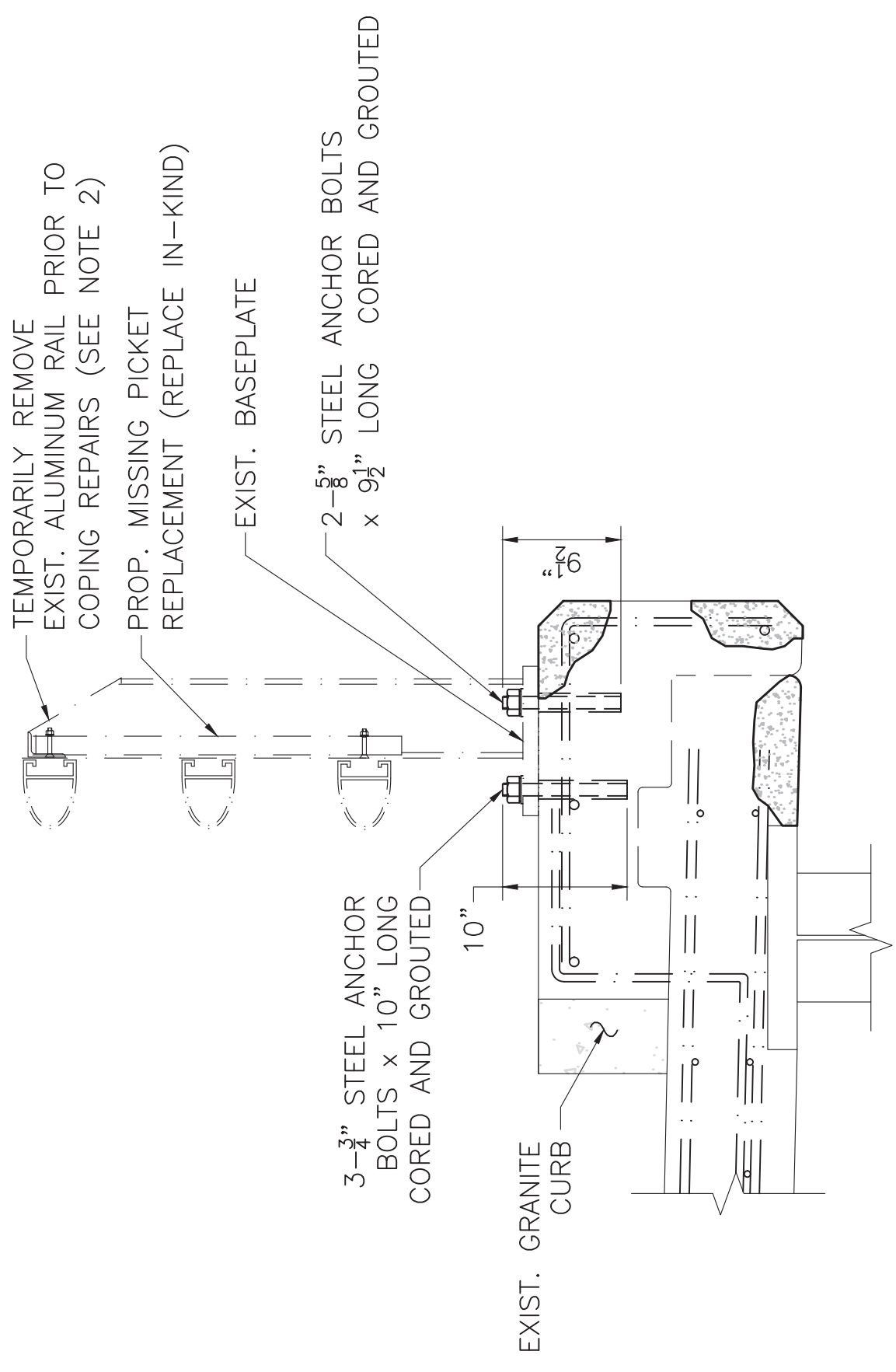


BRIDGE COPING REPAIR NOTES:

- TEMPORARY SHIELDING SHALL BE INSTALLED UNDERNEATH REPAIR AREAS PRIOR TO BEGINNING ANY DEMOLITION AND SHALL REMAIN FOR THE DURATION OF THE REPAIR.
- A MAXIMUM 1" PERIMETER OF SOUND CONCRETE SHALL BE REMOVED BEYOND THE EXISTING DETERIORATION LIMITS.
- CONTRACTOR SHALL HALT CONCRETE EXCAVATION AND NOTIFY THE ENGINEER IF BRIDGE RAIL ANCHOR BOLTS WITH SEVERE DETERIORATION ARE ENCOUNTERED. ANCHOR BOLTS SHALL BE REPLACED AT THE DIRECTION OF THE ENGINEER.
- THE SURFACE OF COPING REPAIRS SHALL BE FINISHED FLUSH WITH ADJACENT CONCRETE SURFACE.
- THE CONTRACTOR SHALL STOP REMOVING DETERIORATED CONCRETE WHEN A MAXIMUM DEPTH OF 6 IN. IS REACHED FOR VERTICAL AND HORIZONTAL REPAIRS AND 4 IN. FOR OVERHEAD REPAIRS. THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED IF UNSOUND CONCRETE IS NOT ENCOUNTERED AT THESE LIMITS.
- 4000 PSI, 3/8" 660 CEMENT CONCRETE SHALL BE USED FOR VERTICAL & HORIZONTAL REPAIRS. OVERHEAD REPAIR MORTAR FOR PATCHING SHALL BE USED FOR OVERHEAD REPAIRS.
- ALL EXISTING REINFORCING STEEL ANCHOR BOLTS AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED. FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 24 HOURS USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
- NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCING THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL OF ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL. THE CONTRACTOR SHALL BE PERMITTED TO USE COUPLERS WHERE THE LAP LENGTH REQUIREMENT EXTENDS BEYOND THE REPAIR AREA UPON APPROVAL FROM THE ENGINEER. COUPLERS SHALL BE INCIDENTAL TO ITEM 910.1, STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED.
- SIP FORMS SHALL NOT BE USED FOR ANY CONCRETE REPAIRS.

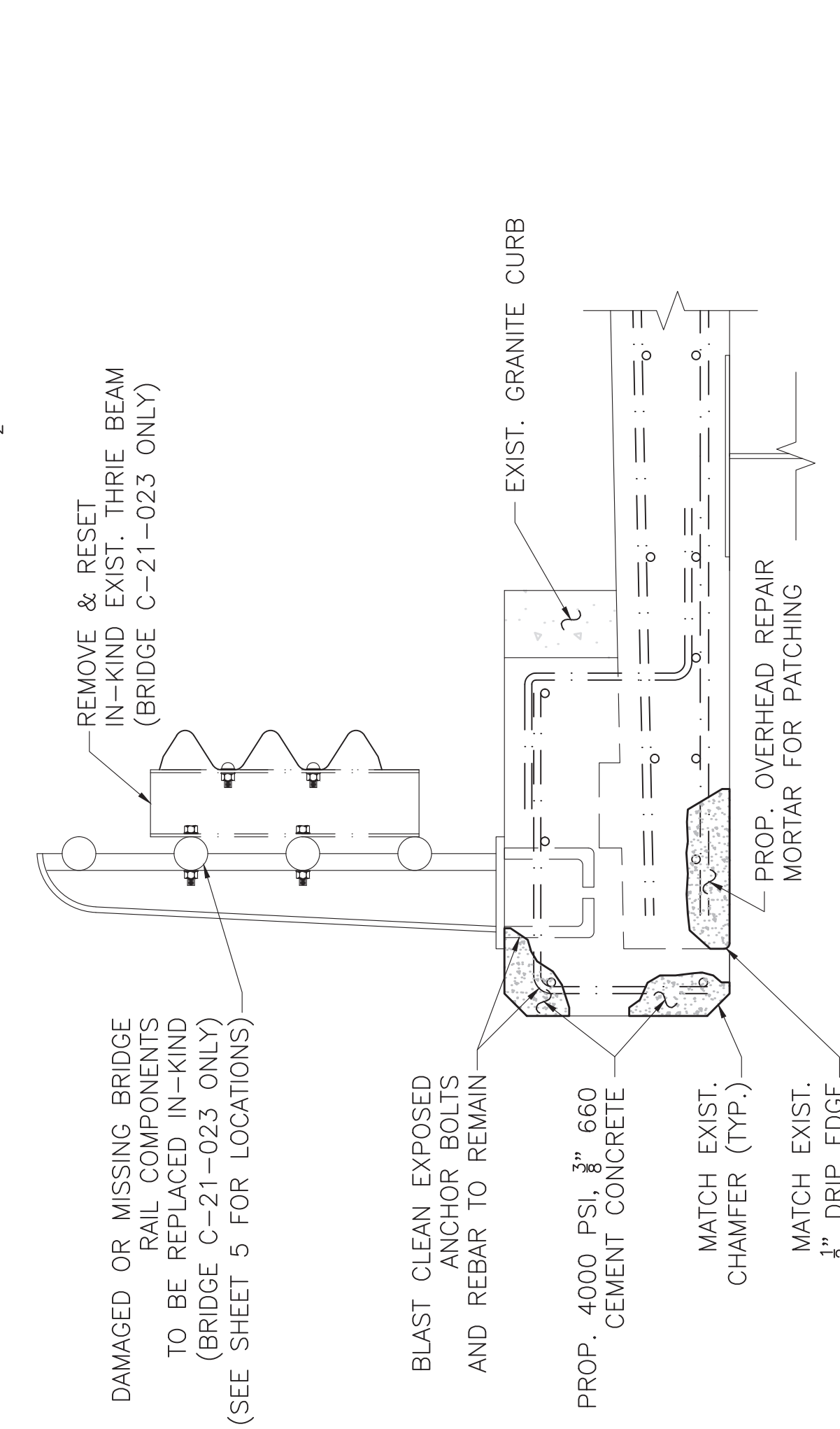
BRIDGE	DEFICIENCY	QUANTITY	UNITS
C-21-023 (OJN)	SPALL	148.0	SF
	SPALL W/ EXPOSED REBAR	229.0	SF
C-21-024 (OJM)	RAILING DAMAGE	567.0	FT
	SPALL	103.0	SF
C-21-025 (OJK)	SPALL W/ EXPOSED REBAR	129.0	SF
	DELAMINATION	58.0	SF
C-21-025 (OJK)	SPALL	177.0	SF
	SPALL W/ EXPOSED REBAR	124.0	SF
DELAMINATION		33.00	SF

NOTE: REPAIR QUANTITIES SHOWN ARE ESTIMATED FROM THE LIMITS OF DETERIORATION AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL REFER TO THE COPING REPAIR DETAILS ON THIS SHEET TO ESTABLISH ACTUAL REPAIR QUANTITIES.



TYPICAL COPING SPALL EXCAVATION SECTION

SCALE: 1 1/2" = 1'-0"



TYPICAL COPING REPAIR SECTION

SCALE: 1" = 1'-0"

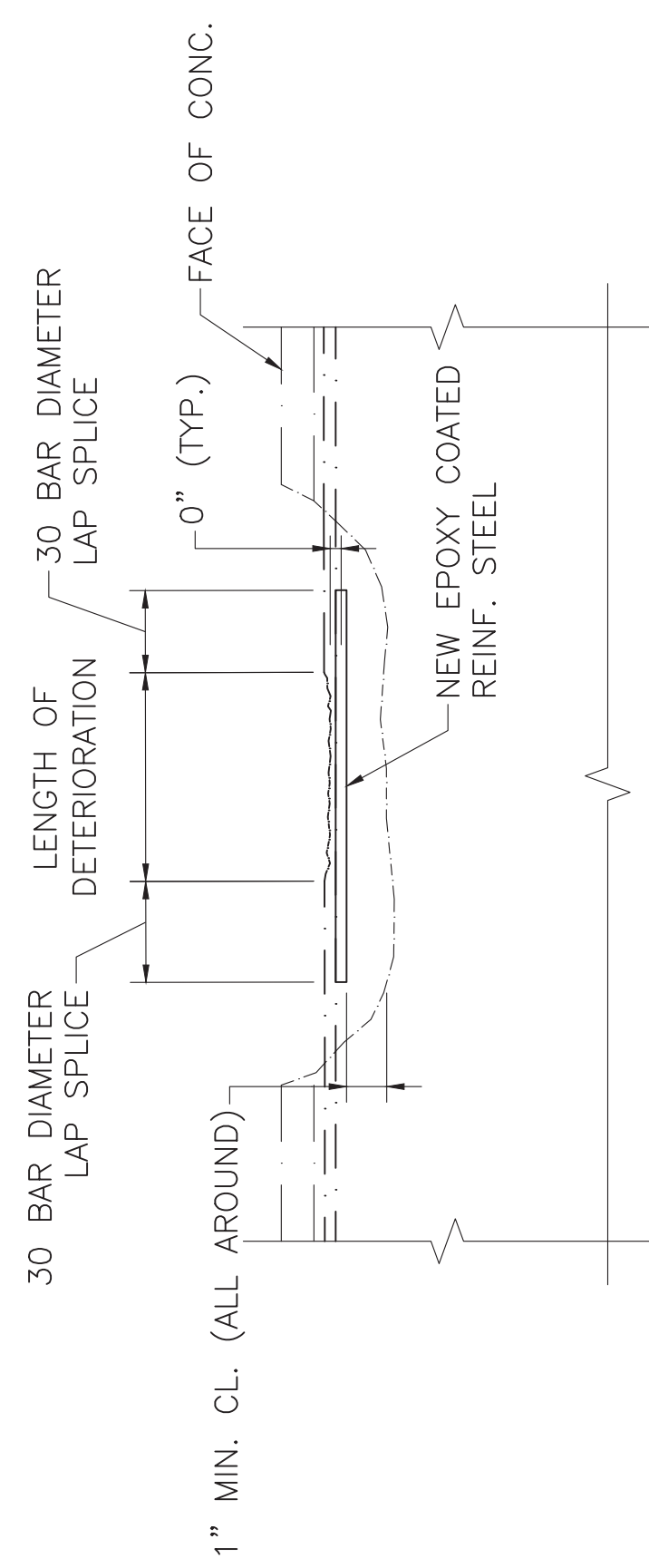
BRIDGE NO. C-21-025 SOUTH COPING REPAIR SECTION

SCALE: 1" = 1'-0"

- BRIDGE NO. C-21-025 SOUTH COPING REPAIR NOTES:**
- CONCRETE COPING REPAIR SHALL FOLLOW THE TYPICAL REPAIR SECTION UNLESS OTHERWISE NOTED.
 - COMPLETELY REMOVE THE EXISTING ALUMINUM BRIDGE RAIL FROM THE COPING BY CORING OUT THE EXISTING ANCHOR BOLTS. EXISTING ANCHOR BOLT HOLE LOCATIONS SHALL BE MAINTAINED FOR RESETTING THE BRIDGE RAIL. INSTALLING NEW ANCHOR BOLTS AND RESETTING THE BRIDGE RAIL SHALL NOT BE PERFORMED UNTIL CONCRETE REPAIRS ARE COMPLETE AND HAVE REACHED DESIGN STRENGTH. THE TEMPORARY TRAFFIC CONTROL PLAN MUST BE INSTALLED PRIOR TO PERFORMING THIS WORK.
 - CORE DIAMETER SHALL BE AS REQUIRED TO COMPLETELY REMOVE THE EXISTING ANCHOR BOLT WITHOUT CAUSING DAMAGE TO THE PORTIONS OF THE STRUCTURE THAT ARE TO REMAIN IN PLACE.
 - NEW ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 105 TYPE 2A AND MECHANICALLY GALVANIZED.
 - EXISTING CONCRETE END POSTS SHALL REMAIN IN PLACE.
 - 4000 PSI, 3/8" 660 CEMENT CONCRETE SHALL BE USED FOR VERTICAL & HORIZONTAL REPAIRS. OVERHEAD REPAIR MORTAR FOR PATCHING SHALL BE USED FOR OVERHEAD REPAIRS. ALL SURFACES SHALL BE FINISHED FLUSH WITH THE SURROUNDING COPING SURFACE.
 - CONTRACTOR SHALL MATCH EXISTING EXPANSION JOINTS, RAIL BREAKS, AND POST SPACING WHEN RESETTING THE BRIDGE RAIL.

TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR

SCALE: 1 1/2" = 1'-0"



NOTE: TRANSVERSE BARS NOT SHOWN FOR CLARITY.

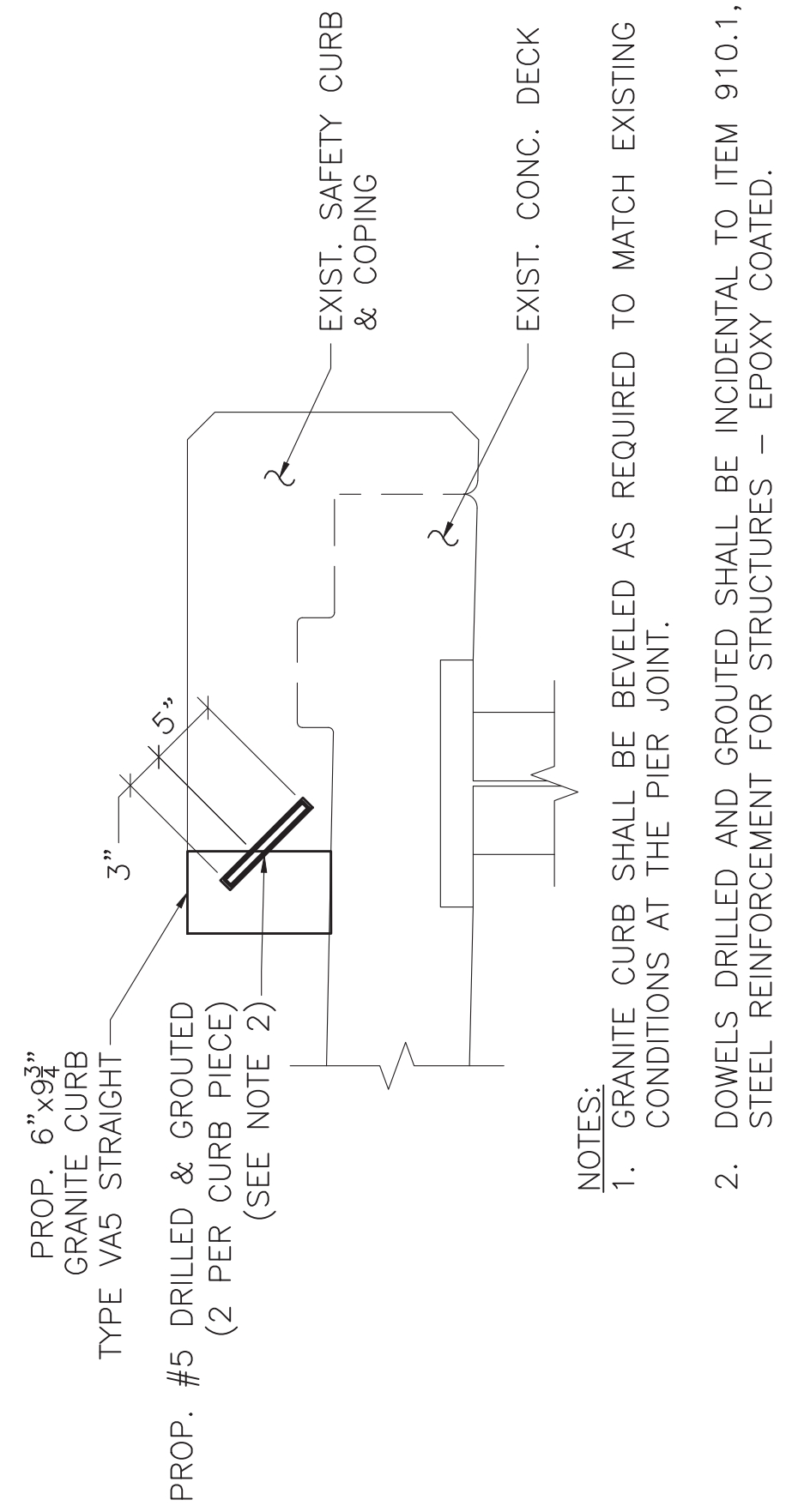
DATE	PS&E R2
AUG. 13, 2024	DESCRIPTION

USE ONLY PRINTS OF LATEST DATE

**CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK**

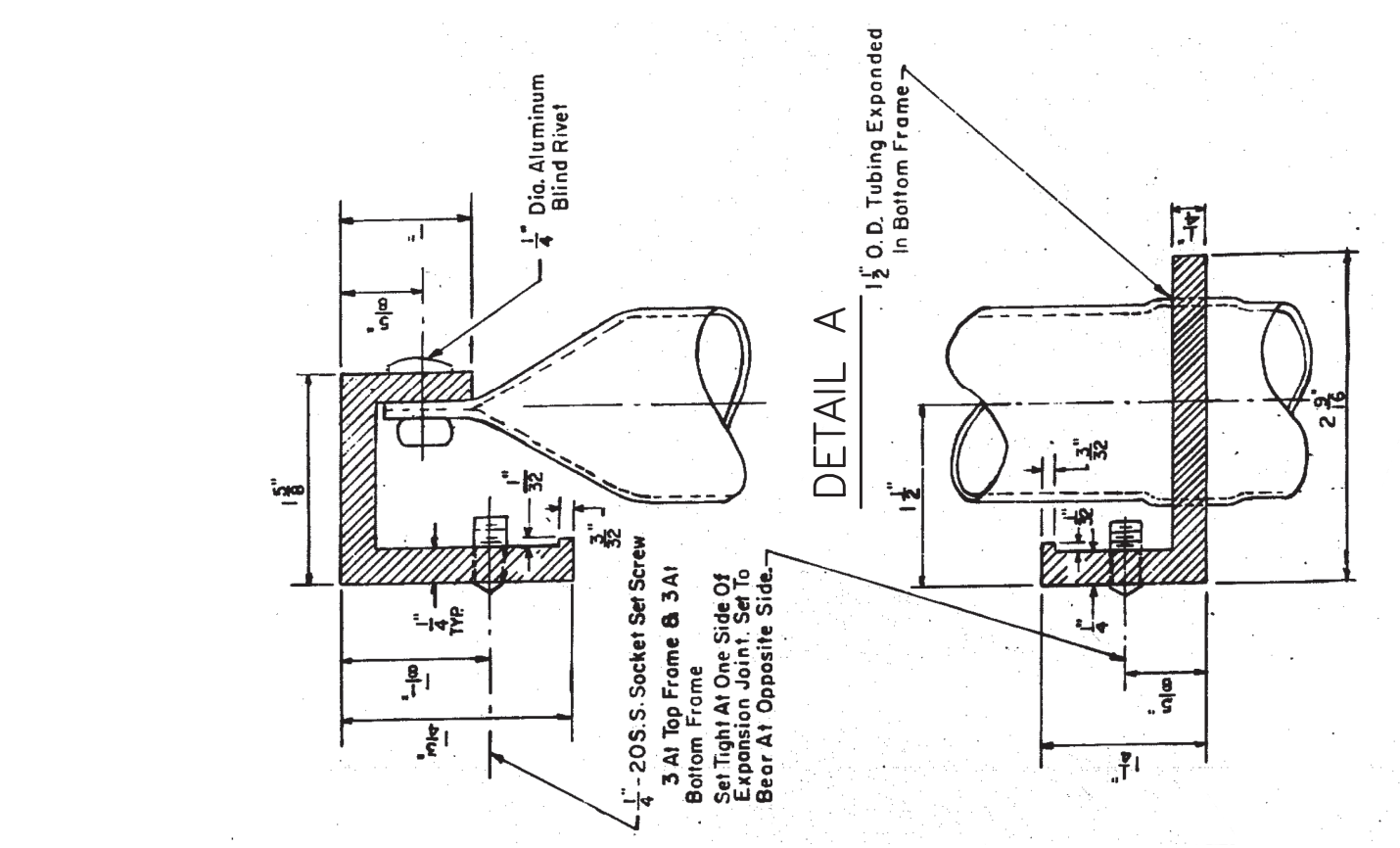
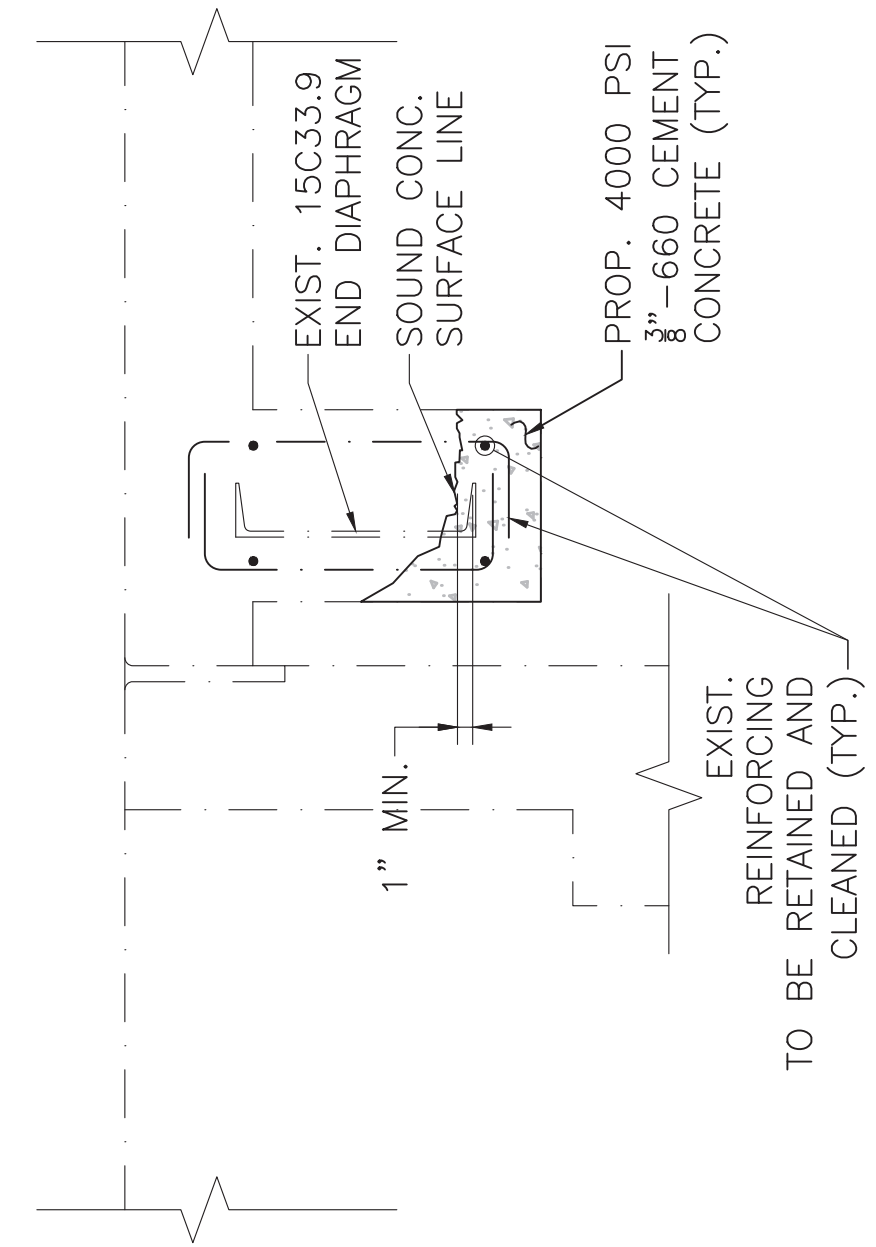
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	22	37
PROJECT FILE NO. 613116			

**CONSTRUCTION DETAILS
MISCELLANEOUS DETAILS**



BRIDGE NO. C-21-025 GRANITE CURB DETAIL

SCALE: 1" = 1'-0"



PICKET SECTION C-C

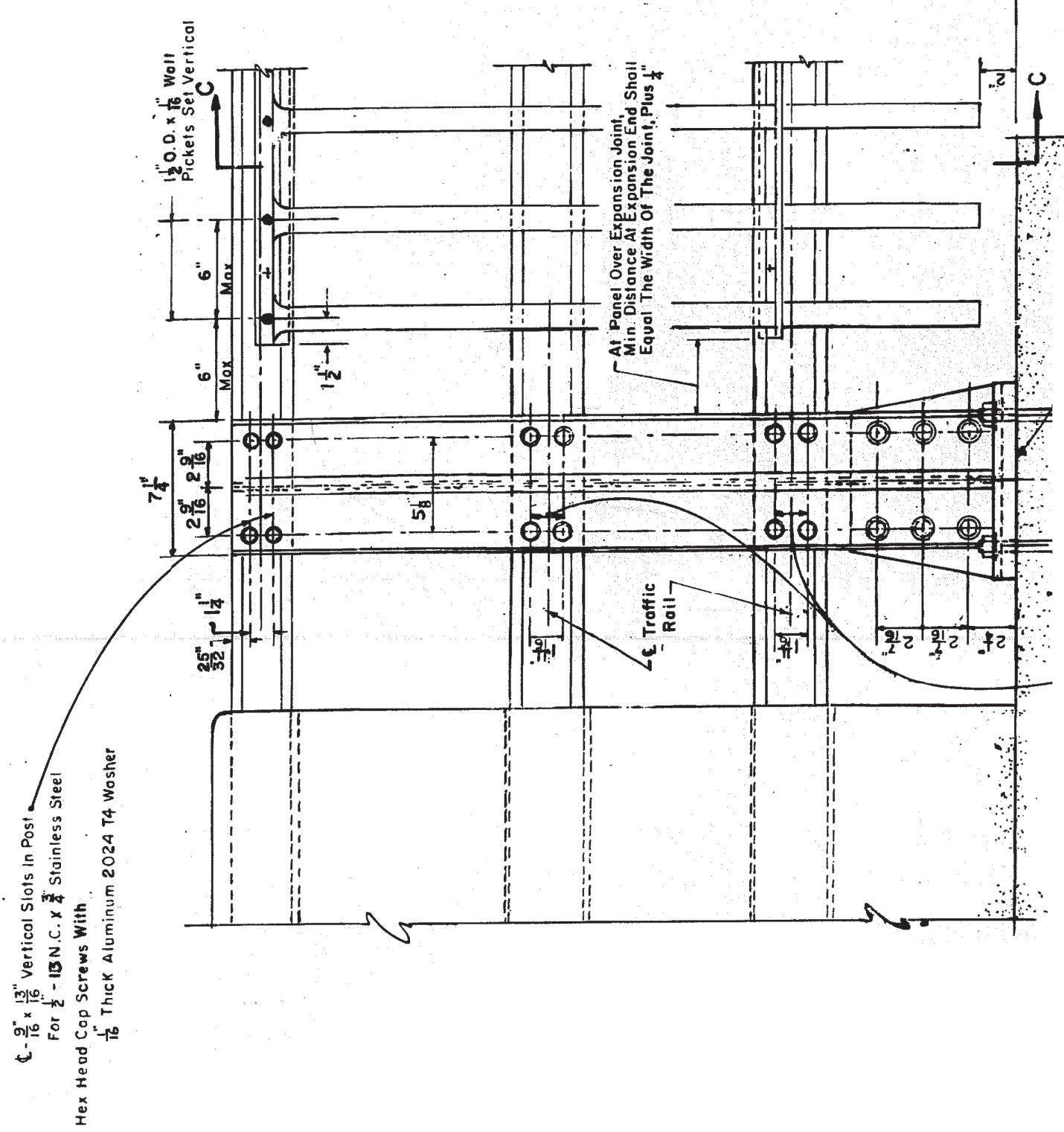
DETAIL A

DETAIL B

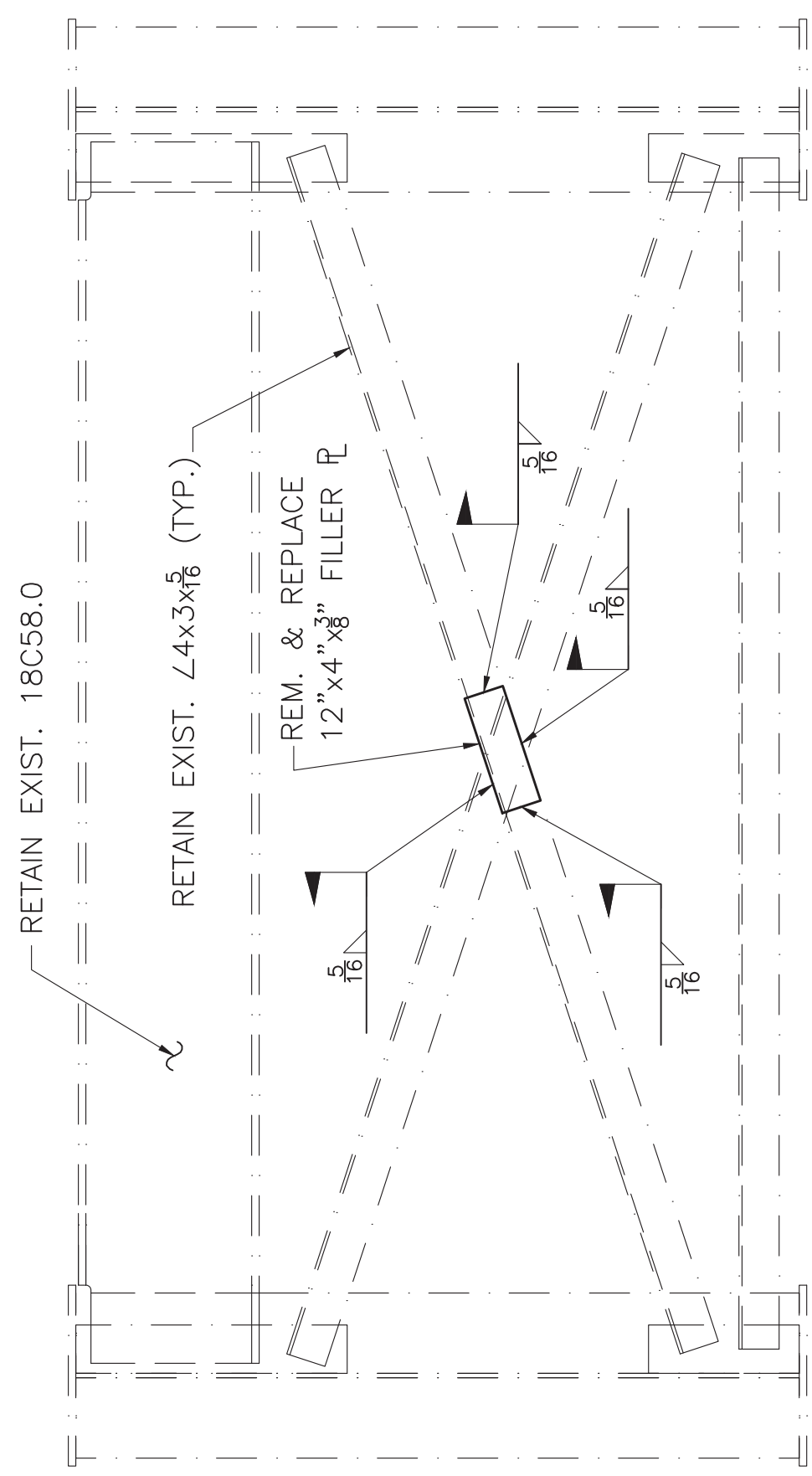
NOTE:
ALUMINUM BRIDGE RAIL (TYPE AL-3) DETAILS ARE TAKEN FROM THE 1978 MASSDOT STANDARD DETAILS AND SHALL BE USED FOR REFERENCE ONLY. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AT BRIDGE NO. C-21-025 (ANCHOR BOLT LAYOUT, POST SPACING, PICKET SIZES, ETC.) PRIOR TO ORDERING SHOP DRAWINGS TO ENSURE PROPER FIT.

**EXISTING BRIDGE RAIL DETAILS (TYPE AL-3)
BRIDGE NO. C-21-025**

NOT TO SCALE



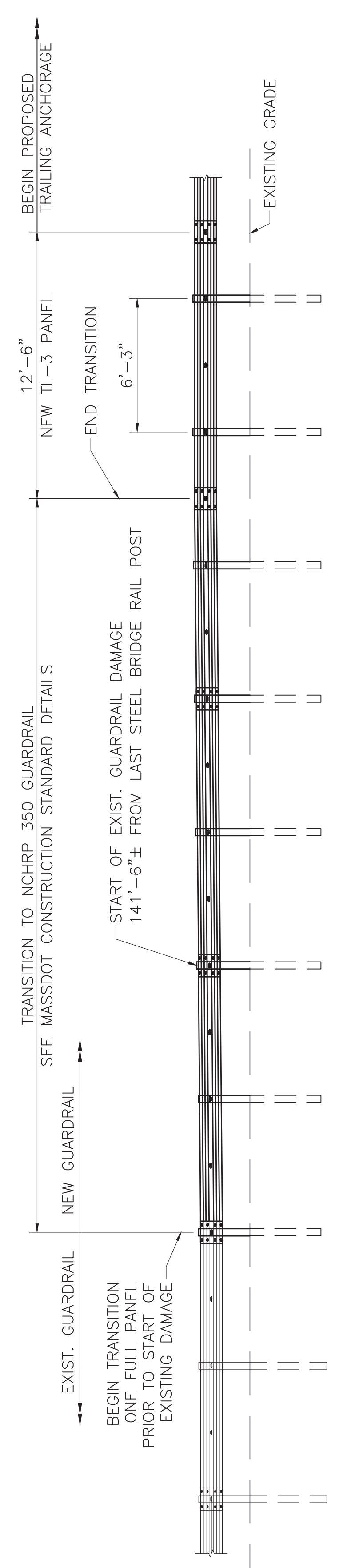
ELEVATION



NOTES:
1. REPAIR SHALL NOT BE PERFORMED UNTIL THE CROSS FRAMES HAVE BEEN CLEANED, BUT PRIOR TO PAINTING.
2. ALL END DIAPHRAGMS AND CROSS FRAMES SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

END DIAPHRAGM CROSS FRAME REPAIR DETAIL

SCALE: 3/4" = 1'-0"



NOTE:
PROPOSED GUARDRAIL TRANSITION AND TRAILING ANCHORAGE SHALL BE INSTALLED IN ACCORDANCE WITH THE MASSDOT STANDARD SPECIFICATIONS.

**SOUTHEAST GUARDRAIL END TREATMENT REPAIR DETAIL
BRIDGE NO. C-21-023**

NOT TO SCALE

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

**CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(76)X	23	37
PROJECT FILE NO. 6131116			

**CONSTRUCTION DETAILS
JACKING AND SHORING DETAILS (1 OF 2)**

BRIDGE LOAD NOTES:

- LOADS PROVIDED INCLUDE THE UNFACTORED DEAD LIVE AND IMPACT LOADS EXERTED ON EACH BEAM END. LIVE LOAD IS BASED ON AN H20 TRUCK PLUS A LANE LOAD IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 17TH EDITION.
- CONSTRUCTION DEAD AND LIVE LOADS ARE NOT INCLUDED IN THE PROVIDED LOADS. CONTRACTOR IS RESPONSIBLE FOR INCORPORATING APPROPRIATE FACTORS OF SAFETY TO ACCOUNT FOR CONSTRUCTION LOADS.
- SELF WEIGHT OF PROPOSED DIAPHRAGM RETROFIT AND CONNECTION PLATES NOT INCLUDED IN TABULATED DEAD LOAD VALUES.

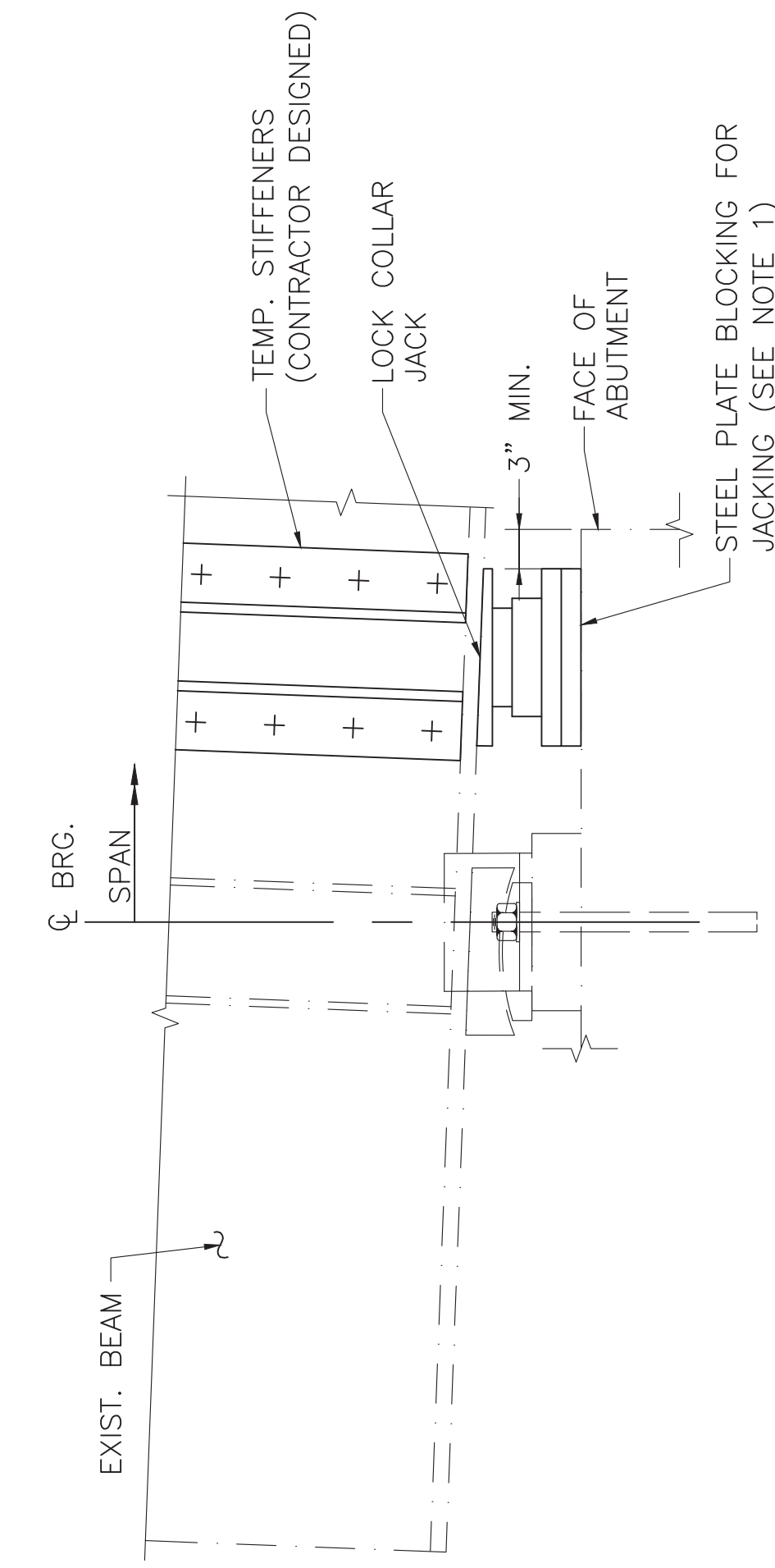
TEMPORARY JACKING AND SHORING NOTES

- ALL JACKING AND SHORING SYSTEMS SHALL BE CONTRACTOR DESIGNED. CONTRACTOR SHALL SUBMIT FOR APPROVAL A TEMPORARY SHORING PLAN SHOWING SYSTEM, PLACEMENT, AND SEQUENCE. SUBMITTAL SHALL BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE REGISTERED IN MASSACHUSETTS.
- THE CONTRACTOR SHALL BE PERMITTED TO JACK AND SHORE BEAM ENDS FROM THE CONCRETE BEAM SEAT WHERE POSSIBLE. CONTRACTOR IS PERMITTED TO JACK AND SHORE FROM THE END DIAPHRAGMS WHERE THERE IS INADEQUATE SPACE OR DETERIORATED CONCRETE IN FRONT OF THE BEARING. END DIAPHRAGMS SHALL BE STRENGTHENING IN ACCORDANCE WITH THE DETAILS ON THIS SHEET PRIOR TO JACKING AND SHORING WITH THIS METHOD. FOR ANTICIPATED DIAPHRAGM RETROFIT LOCATIONS, REFER TO THE SUPERSTRUCTURE REPAIR SHEETS.
- JACKS SELECTED SHALL PROVIDE FULL DEAD LOAD RELIEF. JACK BEAM $\pm\frac{1}{2}$ " TO ACCOMMODATE EXPANSION BEARING RESETS.
- SOME BEAM LINES REQUIRE SIMULTANEOUS JACKING AND SHORING FOR EXPANSION BEARING RESETS. REFER TO THE BEARING RESET SUMMARY ON SHEET 17 FOR MORE INFORMATION.
- LIVE LOAD SHALL BE REMOVED FROM THE ROADWAY ABOVE THE REPAIR LOCATION UNTIL JACKING IS COMPLETED AND HYDRAULIC JACKS ARE LOCKED.
- THE PROPOSED JACKING AND SHORING SYSTEM SHALL NOT BE LOCATED IN THE STREAMBED OR OTHERWISE AFFECT THE EXISTING CONDITIONS OF WATER CROSSING.
- MULTIPLE REPAIRS IN THE SAME LOCATION DESIGNATED FOR JACKING AND SHORING (I.E. BEAM SEAT, BEARING RESET) SHALL BE PERFORMED IN ONE PHASE. CONTRACTOR IS RESPONSIBLE FOR SEQUENCING THE WORK APPROPRIATELY.

BRIDGE C-21-023 CALCULATED LOADS			
GIRDER NO.	DEAD LOAD	LIVE LOAD	+ IMPACT
1 (EXTERIOR)	117.99 KIPS	49.60 KIPS	49.60 KIPS
2 (INTERIOR)	120.86 KIPS	83.94 KIPS	83.94 KIPS
3 (INTERIOR)	120.86 KIPS	83.94 KIPS	83.94 KIPS
4 (INTERIOR)	120.86 KIPS	83.94 KIPS	83.94 KIPS
5 (EXTERIOR)	117.99 KIPS	49.60 KIPS	49.60 KIPS

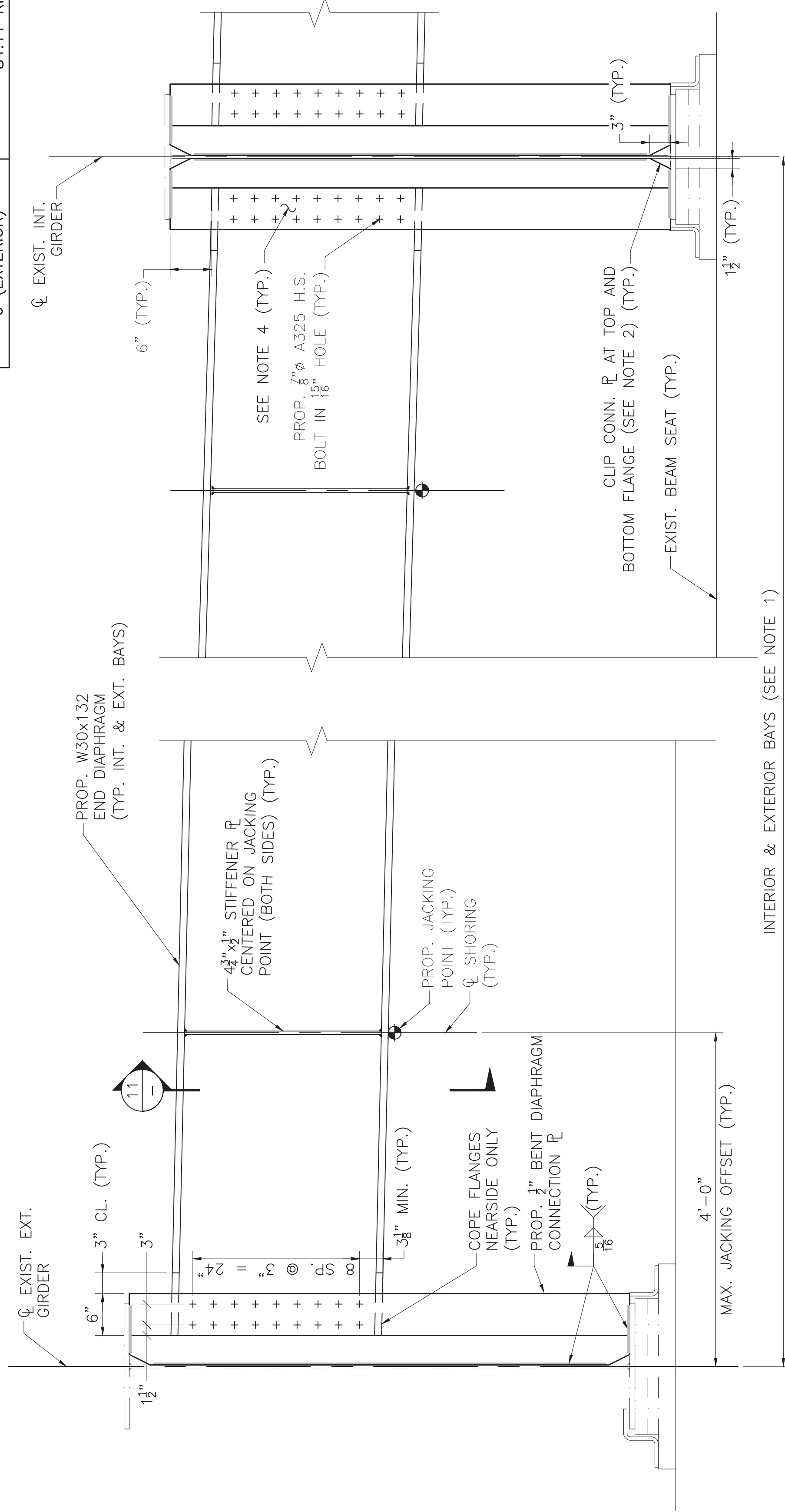
BRIDGE C-21-024 CALCULATED LOADS			
BEAM NO.	DEAD LOAD	LIVE LOAD	+ IMPACT
1 (EXTERIOR)	45.33 KIPS	21.24 KIPS	21.24 KIPS
2 (INTERIOR)	48.93 KIPS	56.03 KIPS	56.03 KIPS
3 (INTERIOR)	48.93 KIPS	56.03 KIPS	56.03 KIPS
4 (INTERIOR)	48.93 KIPS	56.03 KIPS	56.03 KIPS
5 (INTERIOR)	48.93 KIPS	56.03 KIPS	56.03 KIPS
6 (INTERIOR)	48.93 KIPS	56.03 KIPS	56.03 KIPS
7 (EXTERIOR)	45.33 KIPS	21.24 KIPS	21.24 KIPS

BRIDGE C-21-025 CALCULATED LOADS			
GIRDER NO.	DEAD LOAD	LIVE LOAD	+ IMPACT
1 (EXTERIOR)	84.11 KIPS	27.40 KIPS	27.40 KIPS
2 (INTERIOR)	98.18 KIPS	73.93 KIPS	73.93 KIPS
3 (INTERIOR)	98.18 KIPS	73.93 KIPS	73.93 KIPS
4 (INTERIOR)	98.18 KIPS	73.93 KIPS	73.93 KIPS
5 (INTERIOR)	98.18 KIPS	73.93 KIPS	73.93 KIPS
6 (EXTERIOR)	84.11 KIPS	27.40 KIPS	27.40 KIPS



- NOTE:
- STEEL PLATE BLOCKING USED SHALL BE SIZED TO BE AT LEAST THE EQUIVALENT PLAN AREA OF THE EXISTING BEARING MASONRY PLATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 - REFER TO JACKING AND SHORING NOTE 2 FOR MORE INFORMATION.

JACKING AND SHORING FROM BEAM SEAT
NOT TO SCALE

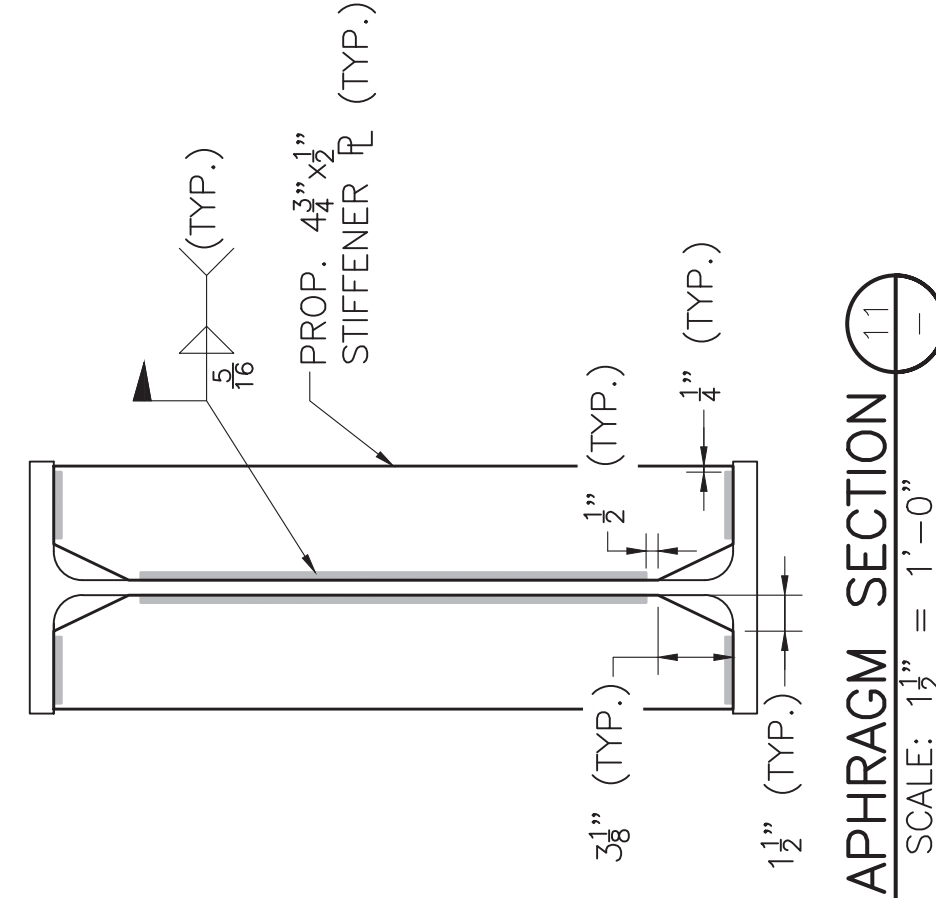


NOTES:

- BAY SPACING AND BRIDGE GEOMETRY VARIES. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO ORDERING STEEL TO ENSURE PROPER FIT.
- CONTRACTOR SHALL CLIP CONNECTION PLATES AS REQUIRED TO NOT INTERFERE WITH EXISTING AND PROPOSED BEAM END REPAIRS. REFER TO DETAILS ON SHEET 24 FOR ADDITIONAL INFORMATION.
- REMOVE EXISTING END DIAPHRAGMS STEEL PRIOR TO PERFORMING DIAPHRAGM RETROFIT. REMOVAL OF EXISTING DIAPHRAGM STEEL SHALL BE INCIDENTAL TO ITEM 960.18.
- PREPARE FAYING SURFACES ON THE BENT PLATE AND PROPOSED DIAPHRAGM TO CLASS B SURFACE CONDITION.
- ALL FILLET WELDS SHALL TERMINATE $\frac{1}{4}$ " FROM ENDS OF PLATES UNLESS OTHERWISE NOTED.

**END DIAPHRAGM RETROFIT
BRIDGES C-21-023 & C-21-025**

SCALE: 1" = 1'-0"



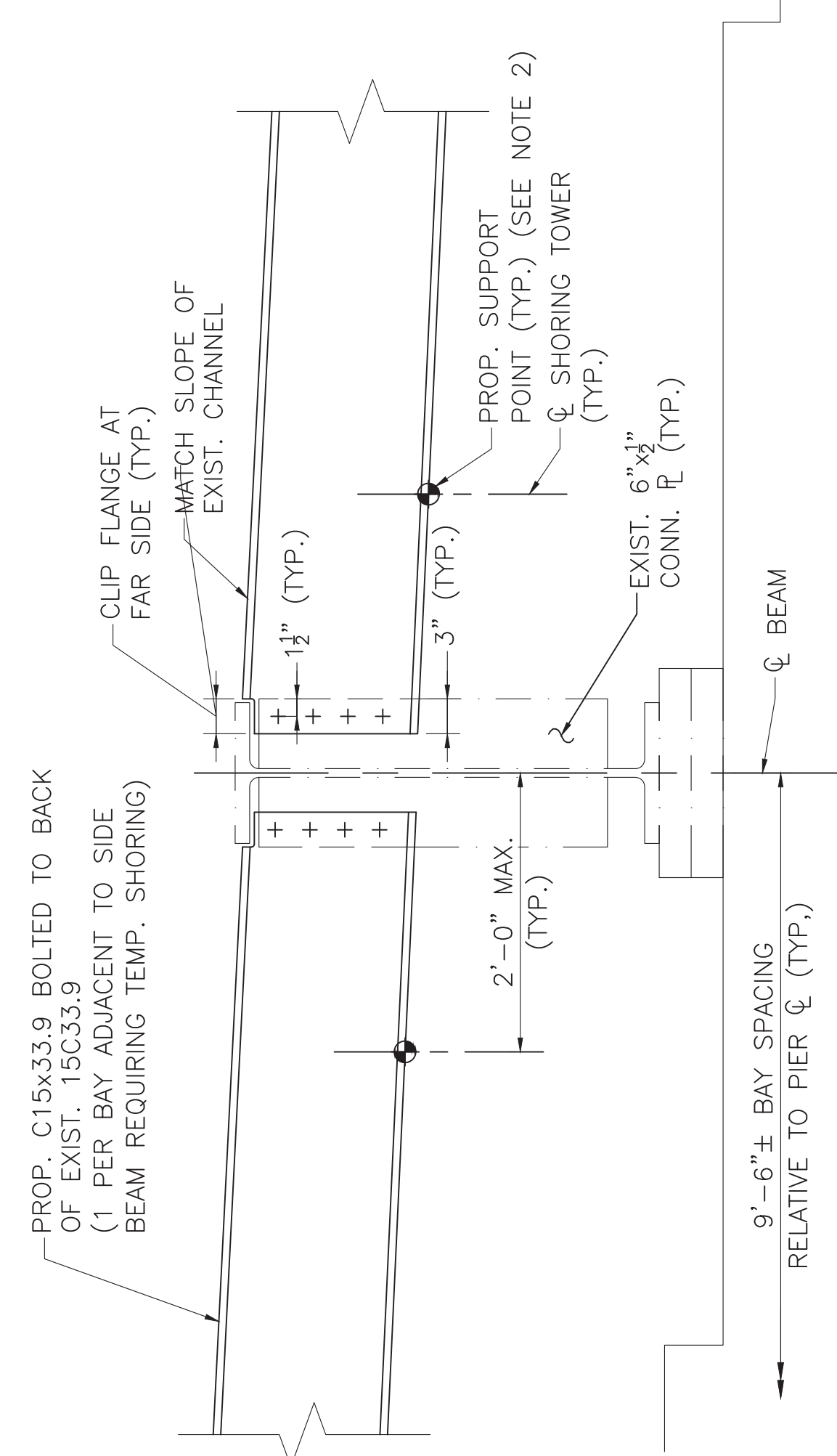
DIAPHRAGM SECTION
SCALE: 1/2" = 1'-0"

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

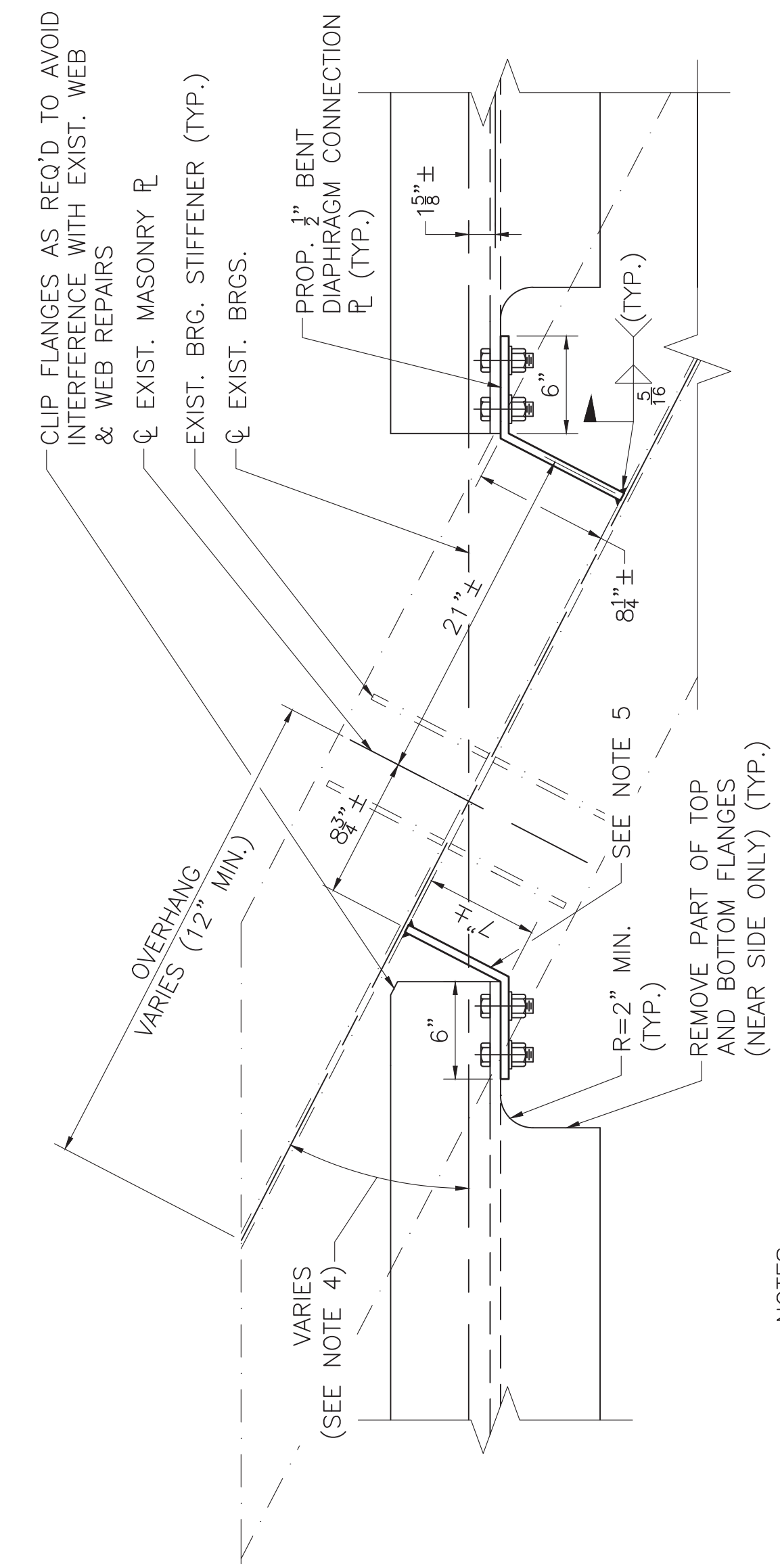
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI1BR1-003S/766X	24	37
PROJECT FILE NO. 613116			

CONSTRUCTION DETAILS
JACKING AND SHORING DETAILS (2 OF 2)



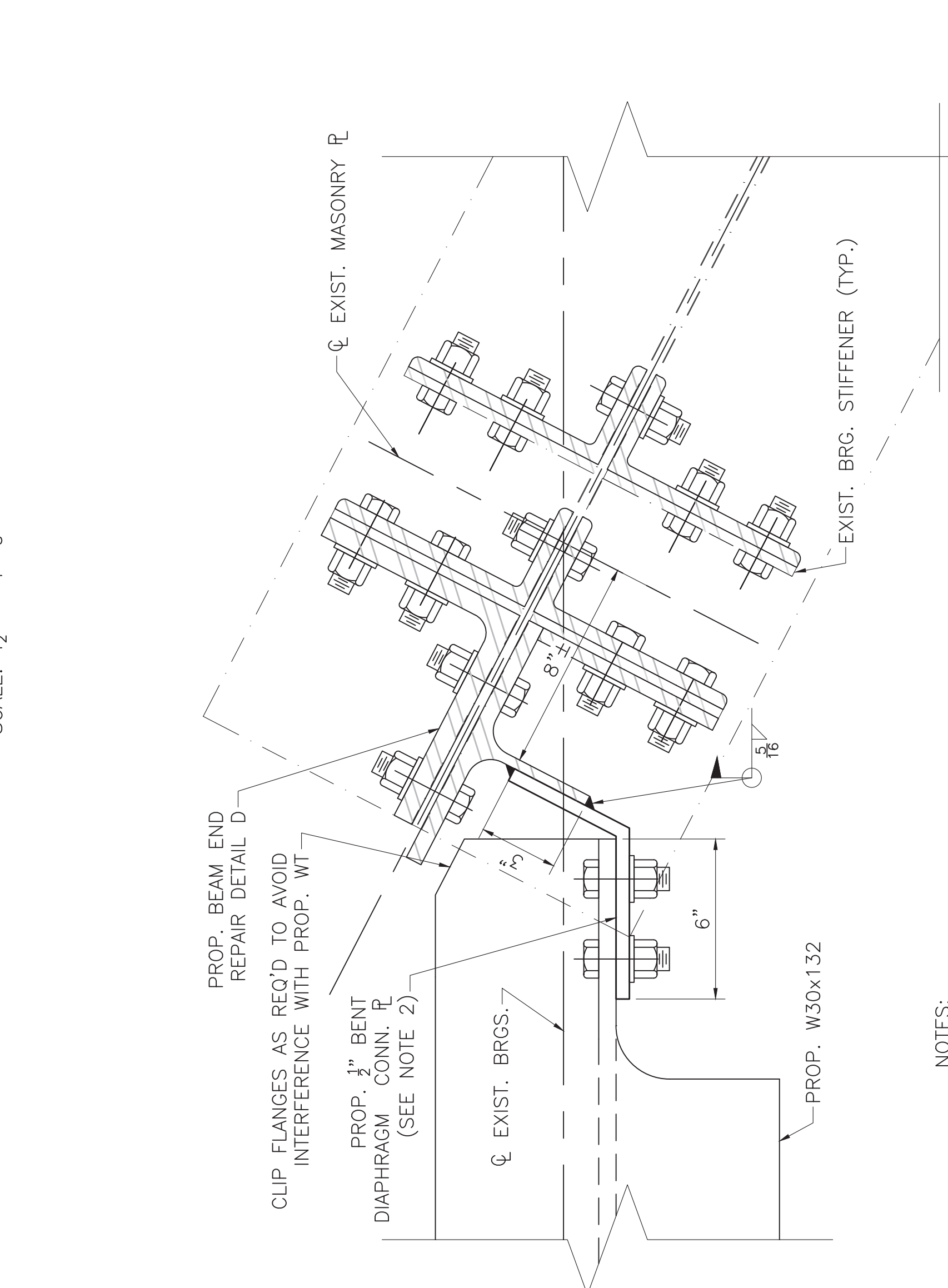
NOTES:
1. + INDICATES 7/8" ASTM F3125 GRADE A325 HIGH STRENGTH BOLT IN 1 1/8" HOLE UNLESS OTHERWISE NOTED. EXISTING BOLT HOLES SHALL BE REUSED WHERE POSSIBLE AND ENLARGED TO ACCOMMODATE NEW BOLT.
2. CONTRACTOR SHALL ENSURE THAT SHORING IS CENTERED UNDERNEATH BOTH CHANNELS. CONTRACTOR SHALL SHIM UNDERNEATH CHANNELS AS REQUIRED TO ENSURE LEVEL BEARING.

DIAPHRAGM RETROFIT SECTION 12
SCALE: 1" = 1'-0"



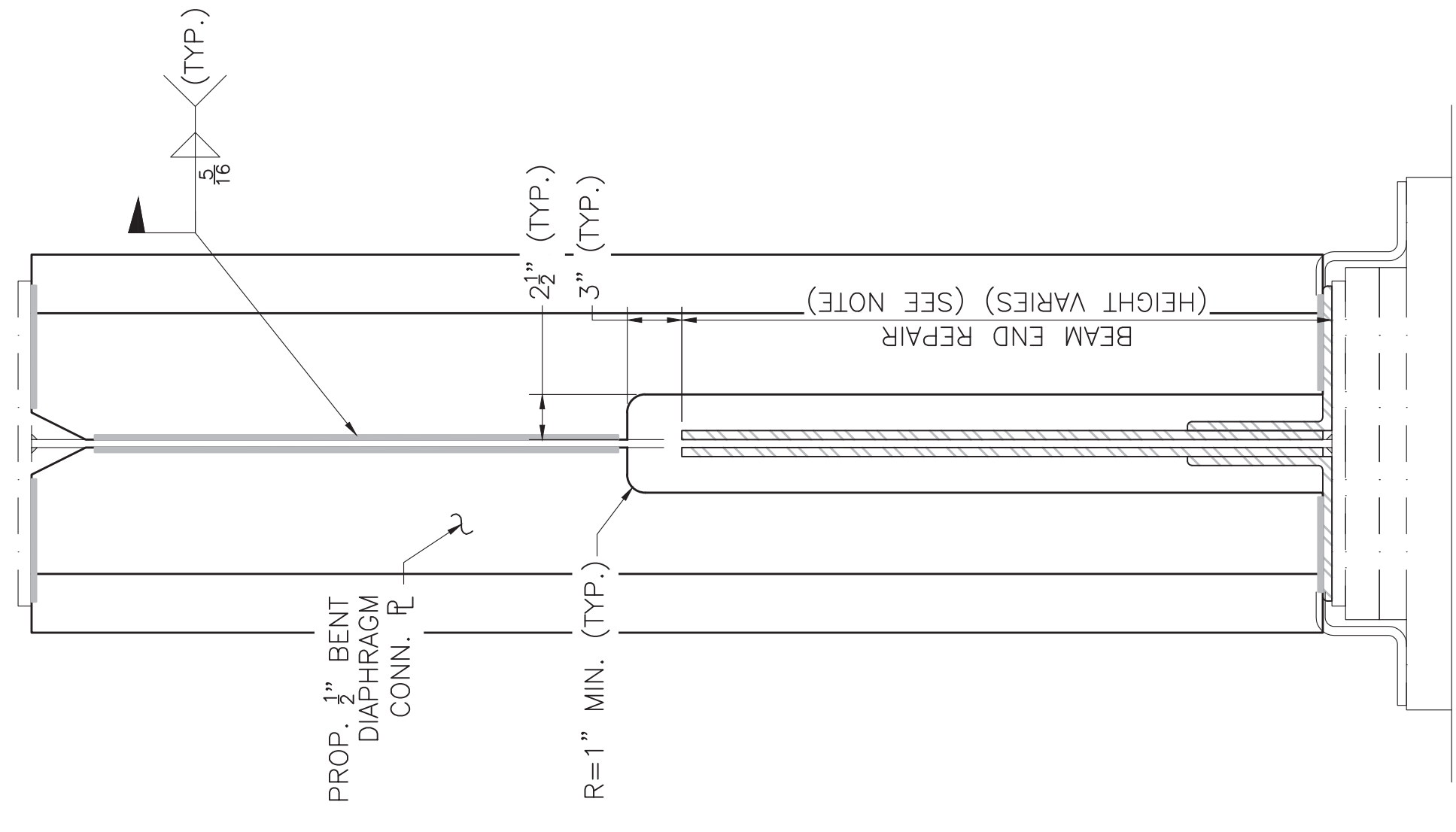
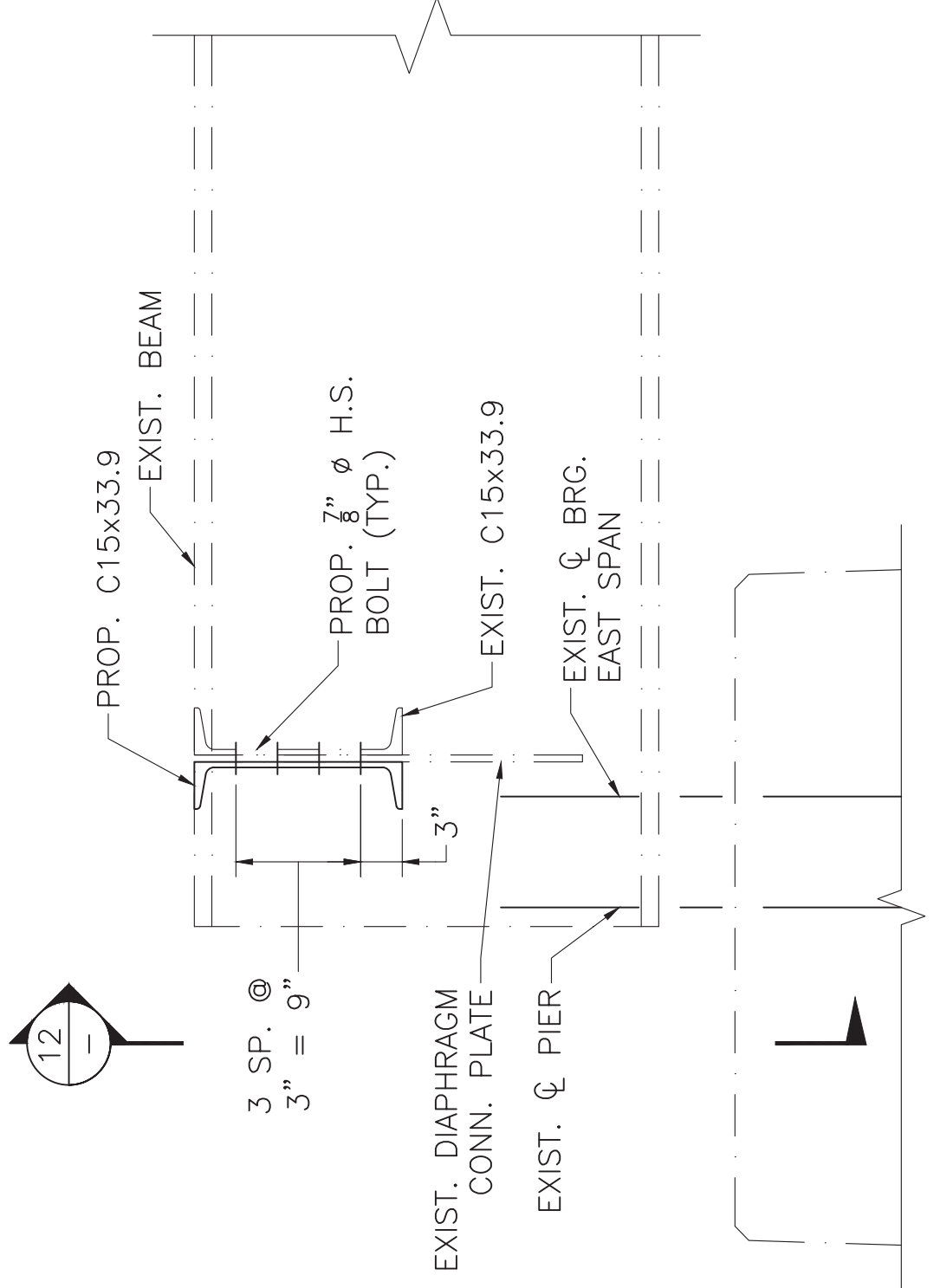
NOTES:
1. SECTION AT WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR, BUT MIRRORED.
2. EXISTING DIAPHRAGM STEEL TO BE REMOVED NOT SHOWN FOR CLARITY.
3. PROPOSED CONNECTION PLATES HAVE BEEN POSITIONED TO NOT INTERFERE WITH EXISTING CONDITIONS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO ORDERING DIAPHRAGM RETROFIT STEEL AND NOTIFY THE ENGINEER OF ANY INTERFERENCES.
4. CONTRACTOR SHALL FIELD VERIFY CONNECTION PLATE BEND ANGLE AND LENGTH NEEDED TO CONNECT PERPENDICULARLY TO WEB.
5. SEE DETAILS THIS SHEET FOR ALTERNATE CONNECTION PLATE DETAIL WHEN DIAPHRAGM RETROFIT IS PROPOSED AT THE SAME LOCATIONS AS BEAM END REPAIR DETAILS A AND D.

LONGITUDINAL SECTION OF END DIAPHRAGM RETROFIT
BRIDGES C-21-023 & C-21-025
SCALE: 1 1/2" = 1'-0"

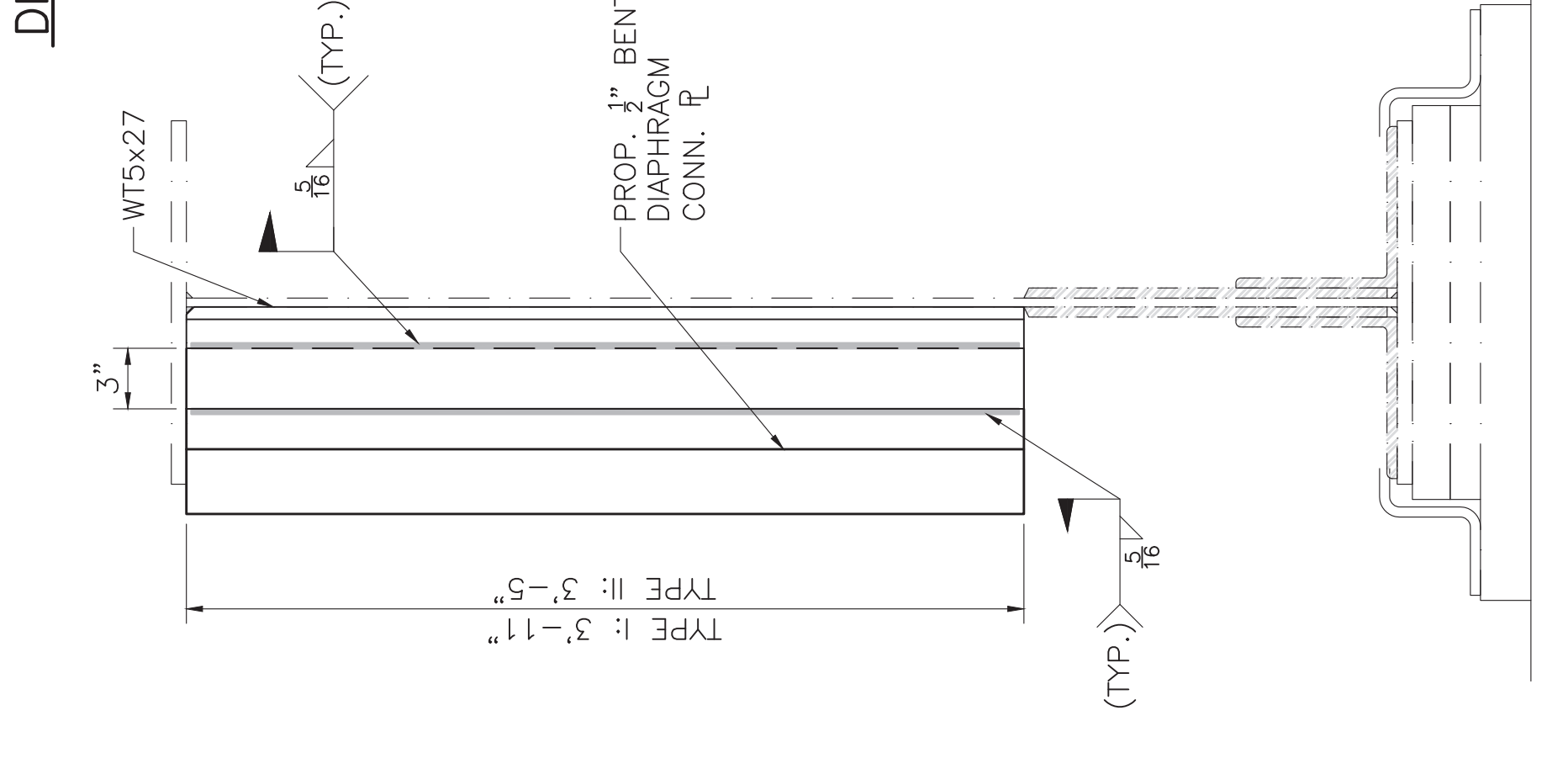


NOTE:
BENT PLATE CLIP DETAIL AT PROPOSED BEAM END REPAIR A SHOWN. CONTRACTOR SHALL NOTE THAT EXISTING BEAM END REPAIRS ON BRIDGE C-21-025 MAY INTERFERE WITH PROPOSED RETROFIT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND CLIP PLATE AS SHOWN AROUND EXISTING REPAIR.
PLATE CLIP DETAIL AT BEAM END REPAIR
BRIDGE C-21-023 & C-21-025
SCALE: 1 1/2" = 1'-0"

C-21-024 DIAPHRAGM RETROFIT - INTERIOR BAYS AT PIER
SCALE: 1" = 1'-0"



NOTE:
BENT PLATE CLIP DETAIL AT PROPOSED BEAM END REPAIR A SHOWN. CONTRACTOR SHALL NOTE THAT EXISTING BEAM END REPAIRS ON BRIDGE C-21-025 MAY INTERFERE WITH PROPOSED RETROFIT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND CLIP PLATE AS SHOWN AROUND EXISTING REPAIR.
PLATE CLIP DETAIL AT BEAM END REPAIR
BRIDGE C-21-023 & C-21-025
SCALE: 1 1/2" = 1'-0"



CONNECTION PLATE DETAIL AT REPAIR D
BRIDGE C-21-025
SCALE: 1 1/2" = 1'-0"

AUG. 13, 2024	DATE	PS&E R2	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE			

TEMPORARY TRAFFIC CONTROL NOTES:

- INDIVIDUAL FREEWAY TEMPORARY TRAFFIC CONTROL IS DEFINED IN THE NOTES FOR EACH BRIDGE LOCATION. NOTE THAT THE INDIVIDUAL TEMPORARY TRAFFIC CONTROL LAYOUTS ARE AN ASSUMPTION BASED ON THE NOTED WORK BUT ADDITIONAL OR SLIGHTLY MODIFIED SET-UPS MAY BE USED BY THE CONTRACTOR WITH CONSULTATION FROM MASSDOT AND THE ENGINEER.
- THE TIMEFRAME AND DAY-BY-DAY PLACEMENT OF TEMPORARY TRAFFIC CONTROL FOR EACH BRIDGE IS DEFINED ON THE SPECIFIC TEMPORARY TRAFFIC CONTROL PLAN FOR EACH BRIDGE.
- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS, OR AS OTHERWISE REQUIRED BY THE ENGINEER, AND SHALL BE MOUNTED IN THE PUBLIC RIGHT-OF-WAY.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC. PHASE 1 AND PHASE 2 SHALL REMAIN IN PLACE 24 HOURS A DAY.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN THE "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A MERGING TAPER, BOTH ALONG THE SECONDARY ROADWAY OR THE FREEWAY, SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS ONLY IF DRUMS ARE TO REMAIN IN PLACE OVERNIGHT.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- ALL DRUMS AND/OR CONES SHALL BE SET AT 40' O.C. MAXIMUM UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
- MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN.
- NO SHORT-TERM LANE CLOSURES SHALL BE PERMITTED DURING PEAK HOUR TRAFFIC. PEAK HOUR IS CONSIDERED TO BE FROM 7:00-9:00 AM AND 3:00-6:00 PM ON WEEKDAYS. PHASE 3 SHALL ONLY OCCUR BETWEEN 9:00AM AND 3:00PM.
- TEMPORARY FACILITIES, INCLUDING BUT NOT LIMITED TO, TEMPORARY PEDESTRIAN PASSAGEWAYS AROUND A CONSTRUCTION SITE, SHALL COMPLY WITH 521 CMR WHICH STATES, "NO ALTERATION SHALL BE UNDERTAKEN WHICH DECREASES OR HAS THE EFFECT OF DECREASING ACCESSIBILITY OR USABILITY OF A FACILITY BELOW THE REQUIREMENTS FOR NEW CONSTRUCTION."
- FINAL PAVEMENT MARKINGS SHALL MATCH EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
- TEMPORARY PAVEMENT MARKINGS SHALL BE INSTALLED USING APPROVED METHODS. A MANUFACTURER'S TECHNICAL REPRESENTATIVE MUST BE ON SITE FOR THE INITIAL INSTALLATION OF TEMPORARY MARKINGS.
- LIMITS OF TEMPORARY FENCING NOT SHOWN ON THE PLANS. CONTRACTOR SHALL DETERMINE PLACEMENT AS NEEDED FOR SITE SECURITY AND PROTECTION OF MATERIALS.
- CONTRACTOR SHALL NOT BLOCK SIGHT DISTANCE TO AND FROM SIDE STREETS WHEN STORING EQUIPMENT BEHIND THE BARRIERS.
- TRUCK MOUNTED ATTENUATORS SHALL BE USED FOR INSTALLATION OF PHASE 1 AND PHASE 2.

TEMPORARY TRAFFIC CONTROL LEGEND

	WORK ZONE		WORK VEHICLE AND/OR TMA (TRUCK MOUNTED ATTENUATOR)
	DIRECTION OF TRAVEL		REFLECTORIZED DRUM W/ SEQUENTIAL FLASHING LIGHTS
	SIGN		CONSTRUCTION BARRIER
	POLICE DETAIL		CONSTRUCTION BARRIER W/ TEMPORARY FENCING, REFLECTORS, OR WARNING LIGHTS
	IMPACT ATTENUATOR		REFLECTORIZED PLASTIC DRUM OR 36" CONE
	ARROW BOARD		

**CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	25	37
PROJECT FILE NO.		613116	

**TEMPORARY TRAFFIC CONTROL PLANS
GENERAL NOTES & DETAILS**

FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	L = WS

WHERE:
 L = TAPER LENGTH IN FEET
 W = WIDTH OF OFFSET IN FEET
 S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (MPH)	DISTANCE (FT)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED
 THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF THE LONGITUDINAL BUFFER SPACES.
 THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L')
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN., 100 FT. MAX.
DOWNSTREAM TAPER	50 FT MIN., 100 FT. MAX. PER LANE

TEMPORARY PAVEMENT MARKING NOTES:

- TEMPORARY PAVEMENT MARKINGS SHALL BE TAPED.
- EXISTING PAVEMENT MARKINGS SHALL BE COVERED WITH BLACK OUT TAPE.
- RUMBLE STRIPS IN CONFLICT WITH LANE SHIFTS SHALL BE MILLED AND PATCHED (ITEM 477.51)

FINAL PAVEMENT MARKING NOTES:

- FINAL PAVEMENT MARKINGS SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS AND SHALL BE PERFORMED AFTER FINAL REMOVAL OF ALL TEMPORARY PAVEMENT MARKING TAPE.
- FINAL PAVEMENT MARKINGS ON THE ASPHALT ROADWAY SHALL BE FAST DRY MULTI-COMPONENT WET REFLECTIVE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- FINAL PAVEMENT MARKINGS ON THE CONCRETE DECK SHALL BE CONTRAST TAPE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- MILLED RUMBLE STRIPS SHALL BE INSTALLED WITH MASSDOT STANDARD DETAILS E105.5.0 AND E105.7.0.

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350	350	350
MOST OTHER ROADWAYS*	500	500	500
FREEWAYS AND EXPRESSWAYS*	1,000	1,500	2,640

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

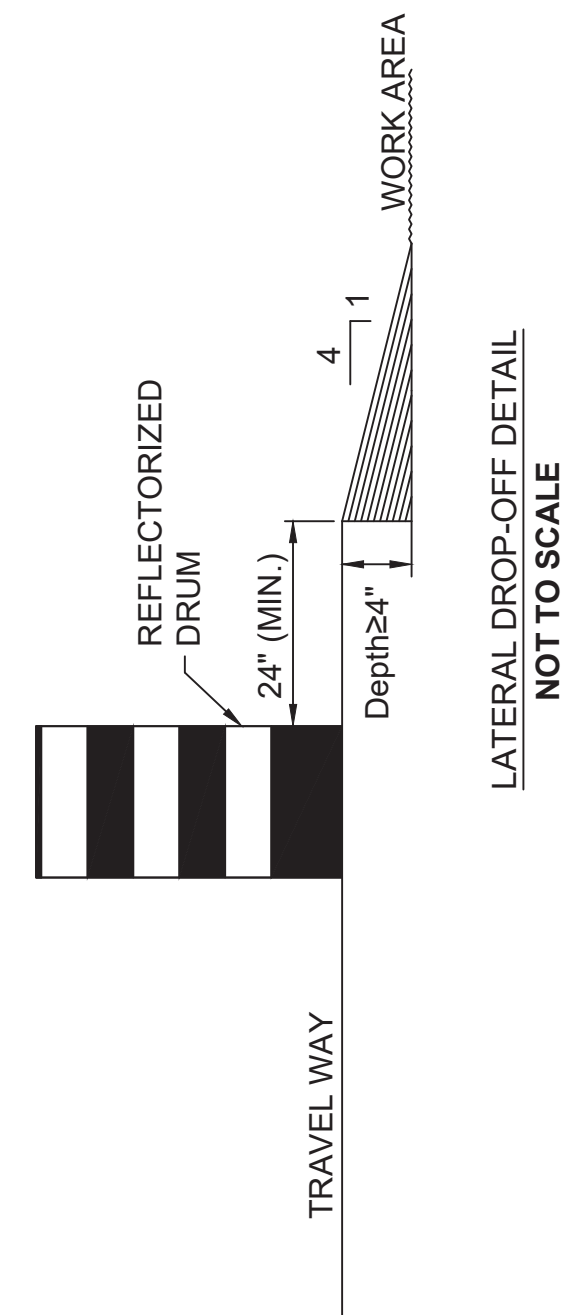
** DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTOP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (i.e. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

MA-R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

MA-R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS FOR WORK ZONES.



AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

TEMPORARY TRAFFIC CONTROL LEGEND

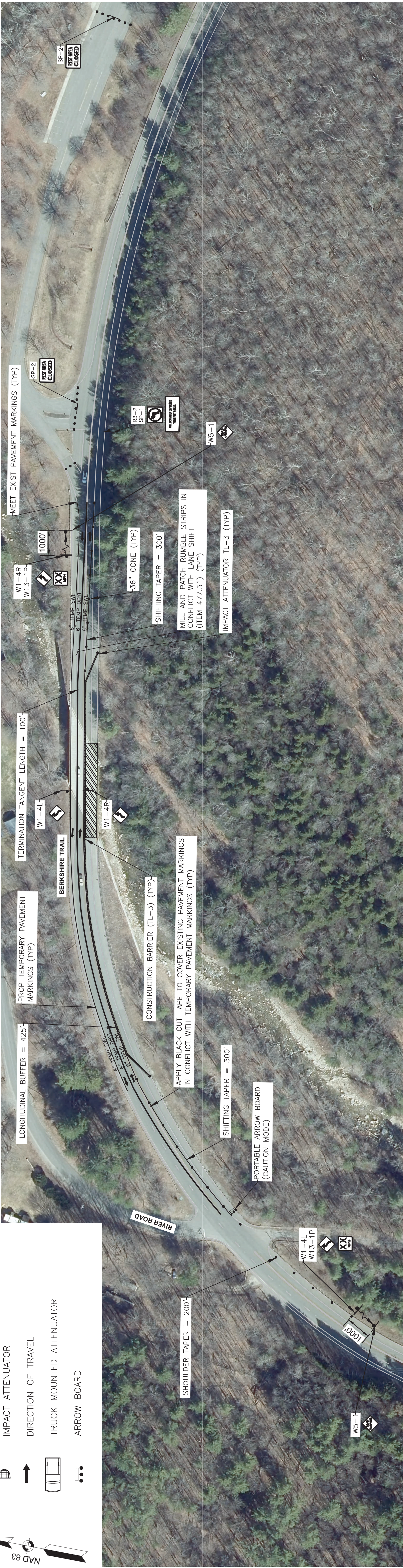
- WORK ZONE
- SIGN
- REFLECTORIZED DRUM OR 36" CONE
- CONSTRUCTION BARRIER W/ TEMPORARY FENCING, REFLECTORS, OR WARNING LIGHTS
- IMPACT ATTENUATOR
- DIRECTION OF TRAVEL
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD

SHIFTING TAPER LENGTH (FT) = $L/2 = (WS)/2 = 300$ FT
 SHOULDER TAPER LENGTH (FT) = $L/3 = (WS)/3 = 200$ FT
 W = WIDTH OF OFFSET = 12 FT
 S = POSTED SPEED LIMIT = 50 MPH

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

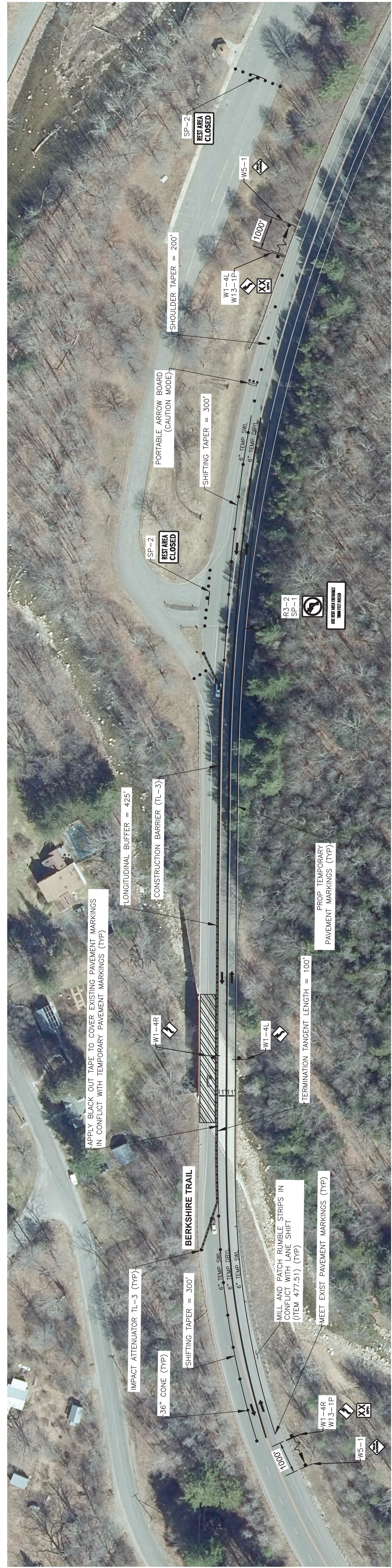
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-0035(766)X	26	37
PROJECT FILE NO. 613116			

TEMPORARY TRAFFIC CONTROL PLANS
C-21-023 (1 OF 3)



PHASE 1 - PARTIAL BRIDGE CLOSURE (EASTBOUND WORK ZONE)

SCALE: 1" = 80'



PHASE 2 - PARTIAL BRIDGE CLOSURE (WESTBOUND WORK ZONE)

SCALE: 1" = 60'

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

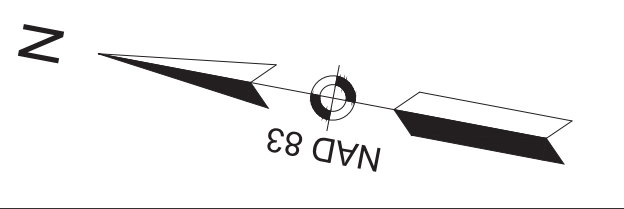
CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	27	37
PROJECT FILE NO. 613116			

TEMPORARY TRAFFIC CONTROL PLANS
C-21-023 (2 OF 3)

SHIFTING TAPER LENGTH (FT) = $L/2 = (WS)/2 = 300$ FT
 SHOULDER TAPER LENGTH (FT) = $L/3 = (WS)/3 = 200$ FT
 W = WIDTH OF OFFSET = 12 FT
 S = POSTED SPEED LIMIT = 50 MPH

- TEMPORARY TRAFFIC CONTROL LEGEND**
- SIGN
 - REFLECTORIZED DRUM OR 36" CONE
 - DIRECTION OF TRAVEL
 - POLICE DETAIL
 - WORK ZONE
 - TRUCK MOUNTED ATTENUATOR
 - TEMPORARY RUMBLE STRIP



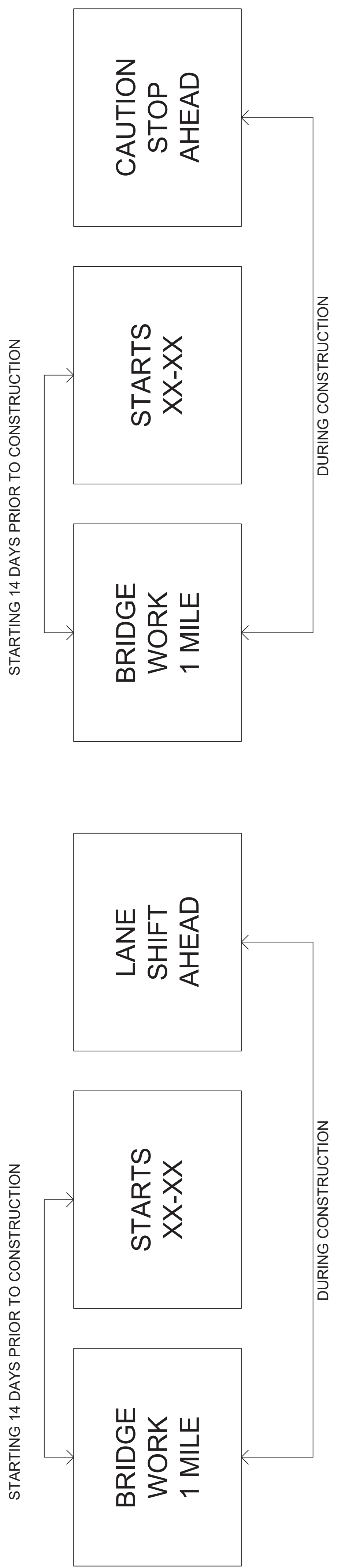
PHASE 3 - TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC
 SCALE: 1" = 60'

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	28	37
PROJECT FILE NO.		613116	

TEMPORARY TRAFFIC CONTROL PLANS
C-21-023 (3 OF 3)



STARTING 14 DAYS PRIOR TO CONSTRUCTION

STARTS XX-XX

BRIDGE WORK 1 MILE

LANE SHIFT AHEAD

STARTS XX-XX

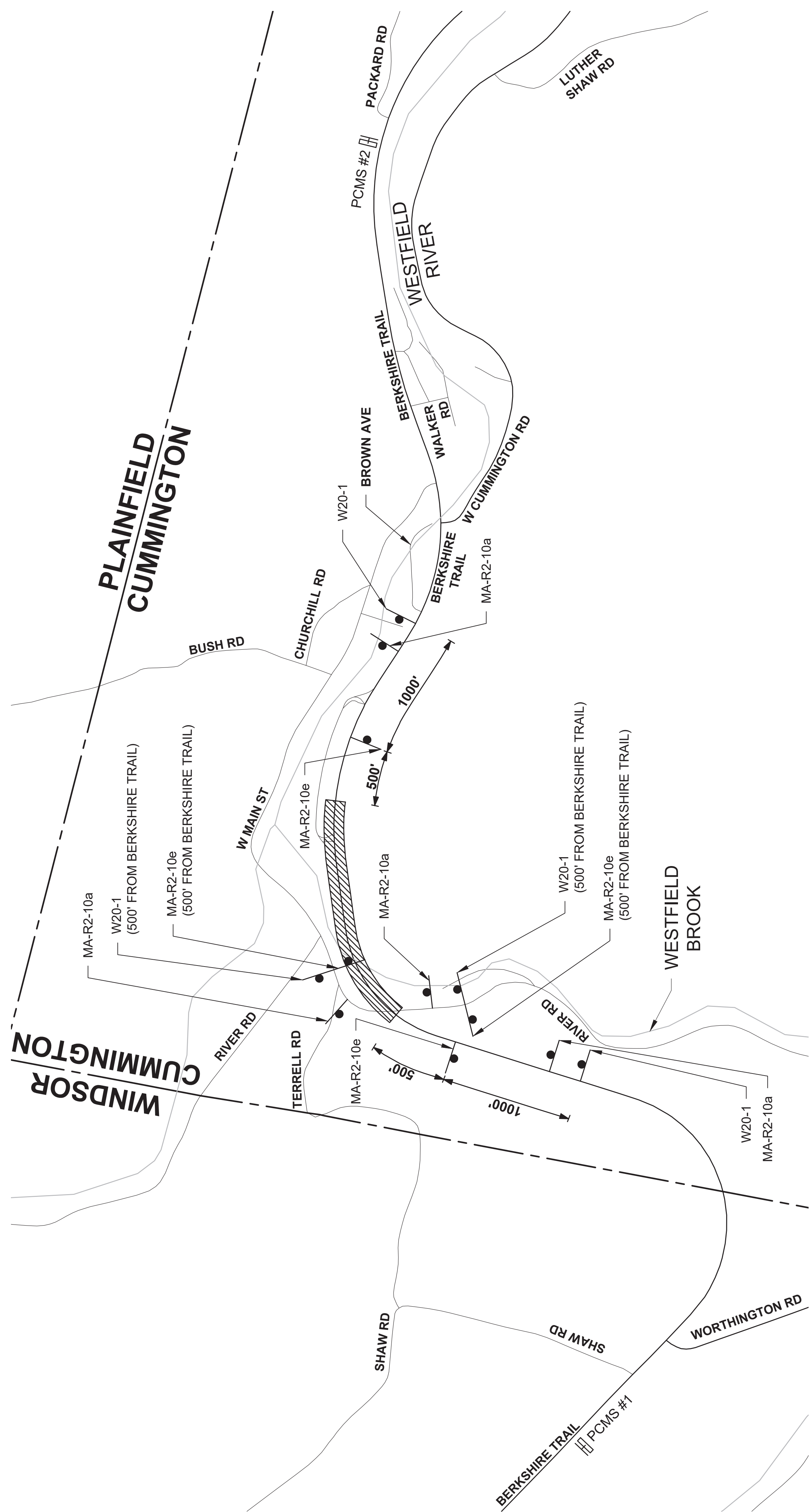
BRIDGE WORK 1 MILE

CAUTION STOP AHEAD

DURING CONSTRUCTION

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS #1 & #2 FOR PHASES 1 & 2

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS #1 & #2 FOR PHASE 3



ADVANCE WARNING SIGN PLAN SCHEMATIC FOR PHASES 1-3
 N.T.S.

- GENERAL NOTES:
1. THE POSTED SPEED LIMIT IS 50 MPH.
 2. WORK ZONES FOR PHASES 1 & 2 ARE ESTABLISHED FOR 24-HOURS A DAY. WORK ZONE FOR PHASE 3 SHALL BE ESTABLISHED BETWEEN 9:00AM AND 3:00PM.
 3. TALL CONES OR DRUMS SHALL BE USED AT THE SHIFTING AND SHOULDER TAPERS. ALL TALL CONES OR DRUMS SHALL BE SET @ 40' O.C. MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
 4. * INDICATES THAT NOTICE OF LANE CLOSURE CHANGE IS TO BE UPDATED ON DAY OF WORK BASED ON SET-UP.

TEMPORARY TRAFFIC CONTROL LEGEND

- WORK ZONE
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	29	37
PROJECT FILE NO.		613116	

TEMPORARY TRAFFIC CONTROL PLANS
C-21-023 SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RITE. MKR.		BACK-GROUND	LEGEND	BORDER	
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			4	FL. ORANGE / WHITE	BLACK	BLACK	48.00
MA-R2-10e	36	48					4	FL. ORANGE / WHITE	BLACK	BLACK	48.00
R3-2	24	30		①			1	WHITE	BLACK	BLACK	5.00
SP-1	60	24		4B 4B		N/A	1	WHITE	BLACK	BLACK	10.00
SP-2	48	30		8B 8D		N/A	2	WHITE	BLACK	BLACK	20.00
W1-4R	36	36		①			2	FL. ORANGE	BLACK	BLACK	18.00
W1-4L	36	36					2	FL. ORANGE	BLACK	BLACK	18.00
W5-1	36	36					2	FL. ORANGE	BLACK	BLACK	18.00
W13-1P	18	18					2	FL. ORANGE	BLACK	BLACK	4.50
W20-1	48	48					4	FL. ORANGE	BLACK	BLACK	64.00
W20-4	48	48					2	FL. ORANGE	BLACK	BLACK	32.00
MA-W20-7b	48	48		MASSDOT STANDARD SIGN			2	FL. ORANGE	BLACK	BLACK	32.00

- SIGN SUMMARY NOTES:**
- ① CONTRACTOR SHALL FURNISH SIGNS CONSISTENT WITH 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
 - SIGNS MAY BE RELOCATED FROM CURRENT WORK ZONE SET-UP.

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

TEMPORARY TRAFFIC CONTROL LEGEND

- WORK ZONE
- SIGN
- REFLECTORIZED DRUM OR 36" CONE
- CONSTRUCTION BARRIER W/ TEMPORARY FENCING, REFLECTORS, OR WARNING LIGHTS
- IMPACT ATTENUATOR
- DIRECTION OF TRAVEL
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD

SHIFTING TAPER LENGTH (FT) = $L/2 = (WS)/2 = 300$ FT
 SHOULDER TAPER LENGTH (FT) = $L/3 = (WS)/3 = 200$ FT
 W = WIDTH OF OFFSET = 12 FT
 S = POSTED SPEED LIMIT = 50 MPH

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

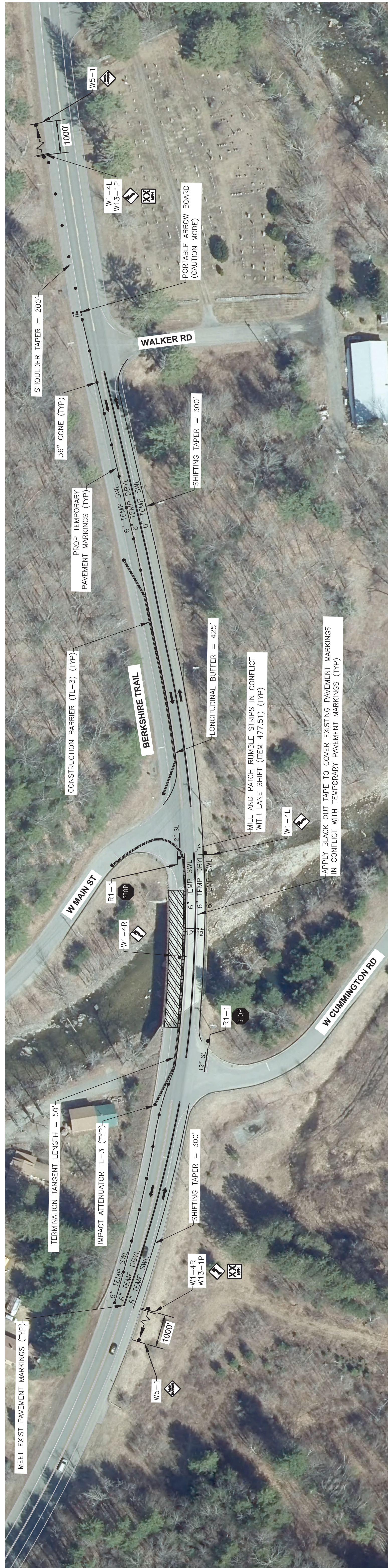
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	30	37
PROJECT FILE NO. 613116			

TEMPORARY TRAFFIC CONTROL PLANS
C-21-024 (1 OF 3)



PHASE 1 - PARTIAL BRIDGE CLOSURE (EASTBOUND WORK ZONE)

SCALE: 1" = 60'



PHASE 2 - PARTIAL BRIDGE CLOSURE (WESTBOUND WORK ZONE)

SCALE: 1" = 60'

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

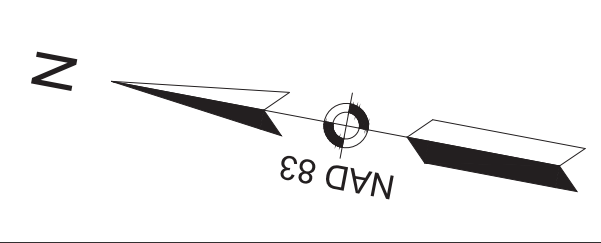
CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-0035(766)X	31	37
PROJECT FILE NO. 613116			

TEMPORARY TRAFFIC CONTROL PLANS
C-21-024 (2 OF 3)

SHIFTING TAPER LENGTH (FT) = $L/2 = (WS)/2 = 300$ FT
 SHOULDER TAPER LENGTH (FT) = $L/3 = (WS)/3 = 200$ FT
 W = WIDTH OF OFFSET = 12 FT
 S = POSTED SPEED LIMIT = 50 MPH

- TEMPORARY TRAFFIC CONTROL LEGEND**
- SIGN
 - REFLECTORIZED DRUM OR 36" CONE
 - ➔ DIRECTION OF TRAVEL
 - Ⓟ POLICE DETAIL
 - ▨ WORK ZONE
 - ▩ TRUCK MOUNTED ATTENUATOR
 - ▬ TEMPORARY RUMBLE STRIP



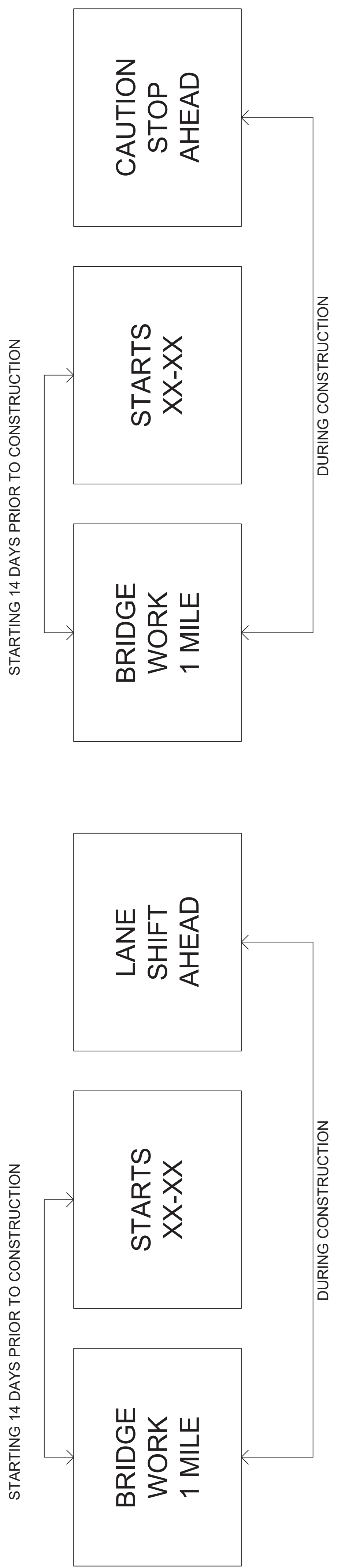
PHASE 3 - TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC
 SCALE: 1" = 60'

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	32	37
PROJECT FILE NO.		613116	

TEMPORARY TRAFFIC CONTROL PLANS
C-21-024 (3 OF 3)

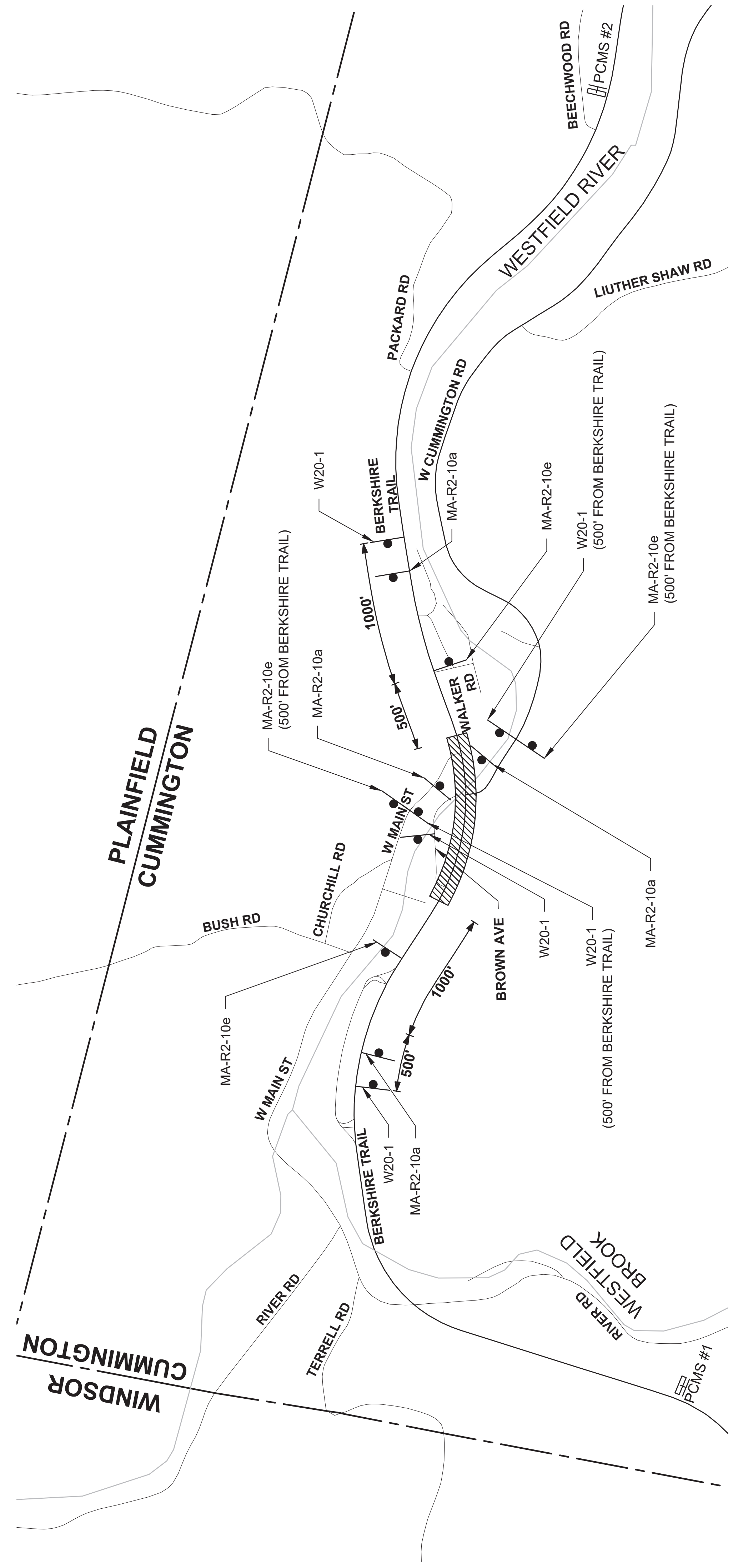


STARTING 14 DAYS PRIOR TO CONSTRUCTION

DURING CONSTRUCTION

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS #1 & #2 FOR PHASES 1 & 2

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS #1 & #2 FOR PHASE 3



ADVANCE WARNING SIGN PLAN FOR PHASES 1-3
 N.T.S.

TEMPORARY TRAFFIC CONTROL LEGEND

- WORK ZONE
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)









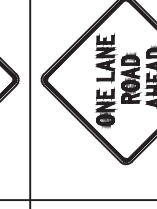

- GENERAL NOTES:
1. THE POSTED SPEED LIMIT IS 50 MPH.
 2. WORK ZONES FOR PHASES 1 & 2 ARE ESTABLISHED FOR 24-HOURS A DAY. WORK ZONE FOR PHASE 3 SHALL BE ESTABLISHED BETWEEN 9:00AM AND 3:00PM.
 3. TALL CONES OR DRUMS SHALL BE USED AT THE SHIFTING AND SHOULDER TAPERS. ALL TALL CONES OR DRUMS SHALL BE SET @ 40' O.C. MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
 4. * INDICATES THAT NOTICE OF LANE CLOSURE CHANGE IS TO BE UPDATED ON DAY OF WORK BASED ON SET-UP.

AUG. 13, 2024	PS&E R2
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CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	33	37
PROJECT FILE NO.		613116	

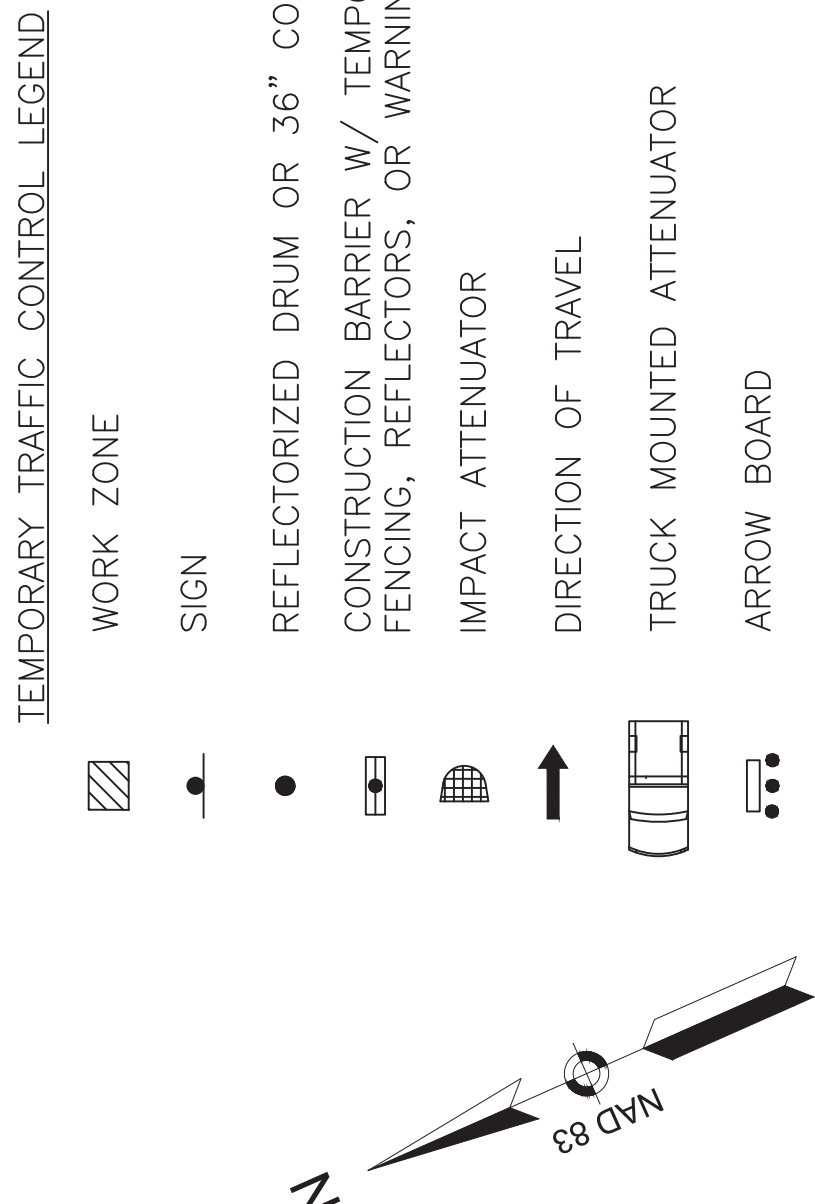
TEMPORARY TRAFFIC CONTROL PLANS
C-21-024 SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			AREA IN SQUARE FEET	
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RITE. MKR.		BACK-GROUND	LEGEND	BORDER		UNIT AREA (S.F.)
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			4	FL. ORANGE / WHITE	BLACK	BLACK	12.00	48.00
MA-R2-10e	36	48					4	FL. ORANGE / WHITE	BLACK	BLACK	12.00	48.00
R1-1	18	18		①			2	RED	WHITE	WHITE	2.25	4.50
W1-4R	36	36					2	FL. ORANGE	BLACK	BLACK	9.00	18.00
W1-4L	36	36					2	FL. ORANGE	BLACK	BLACK	9.00	18.00
W5-1	36	36					2	FL. ORANGE	BLACK	BLACK	9.00	18.00
W13-1P	18	18					2	FL. ORANGE	BLACK	BLACK	2.25	4.50
W20-1	48	48					5	FL. ORANGE	BLACK	BLACK	16.00	80.00
W20-4	48	48					2	FL. ORANGE	BLACK	BLACK	16.00	32.00
MA-W20-7b	48	48		MASSDOT STANDARD SIGN			2	FL. ORANGE	BLACK	BLACK	16.00	32.00

SIGN SUMMARY NOTES:

- ① CONTRACTOR SHALL FURNISH SIGNS CONSISTENT WITH 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
- 2. SIGNS MAY BE RELOCATED FROM CURRENT WORK ZONE SET-UP.

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



SHIFTING TAPER LENGTH (FT) = $L/2 = (WS)/2 = 300$ FT
 SHOULDER TAPER LENGTH (FT) = $L/3 = (WS)/3 = 200$ FT
 W = WIDTH OF OFFSET = 12 FT
 S = POSTED SPEED LIMIT = 50 MPH

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI16R-003S/766X	34	37
PROJECT FILE NO. 613116			

TEMPORARY TRAFFIC CONTROL PLANS
C-21-025 (1 OF 3)



AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

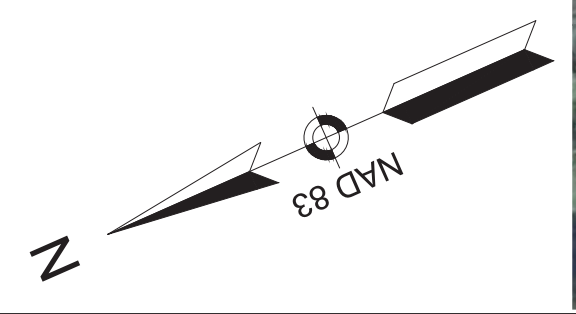
CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	35	37
PROJECT FILE NO. 613116			

TEMPORARY TRAFFIC CONTROL PLANS
C-21-025 (2 OF 3)

SHIFTING TAPER LENGTH (FT) = $L/2 = (WS)/2 = 300$ FT
 SHOULDER TAPER LENGTH (FT) = $L/3 = (WS)/3 = 200$ FT
 W = WIDTH OF OFFSET = 12 FT
 S = POSTED SPEED LIMIT = 50 MPH

- TEMPORARY TRAFFIC CONTROL LEGEND**
- SIGN
 - REFLECTORIZED DRUM OR 36" CONE
 - ➔ DIRECTION OF TRAVEL
 - Ⓟ POLICE DETAIL
 - ▨ WORK ZONE
 - ▩ TRUCK MOUNTED ATTENUATOR
 - TEMPORARY RUMBLE STRIP



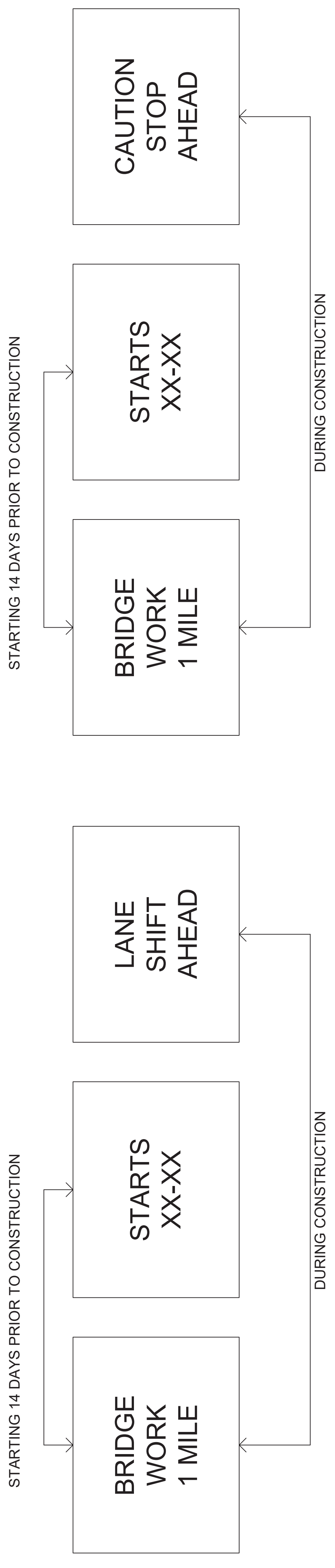
PHASE 3 - TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC
 SCALE: 1" = 60'

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
 3 BRIDGES ALONG RT 9 OVER
 WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003(766)X	36	37
PROJECT FILE NO.		613116	

TEMPORARY TRAFFIC CONTROL PLANS
 C-21-025 (2 OF 2)



STARTING 14 DAYS PRIOR TO CONSTRUCTION

BRIDGE WORK 1 MILE

LANE SHIFT AHEAD

STARTS XX-XX

CAUTION STOP AHEAD

STARTING 14 DAYS PRIOR TO CONSTRUCTION

BRIDGE WORK 1 MILE

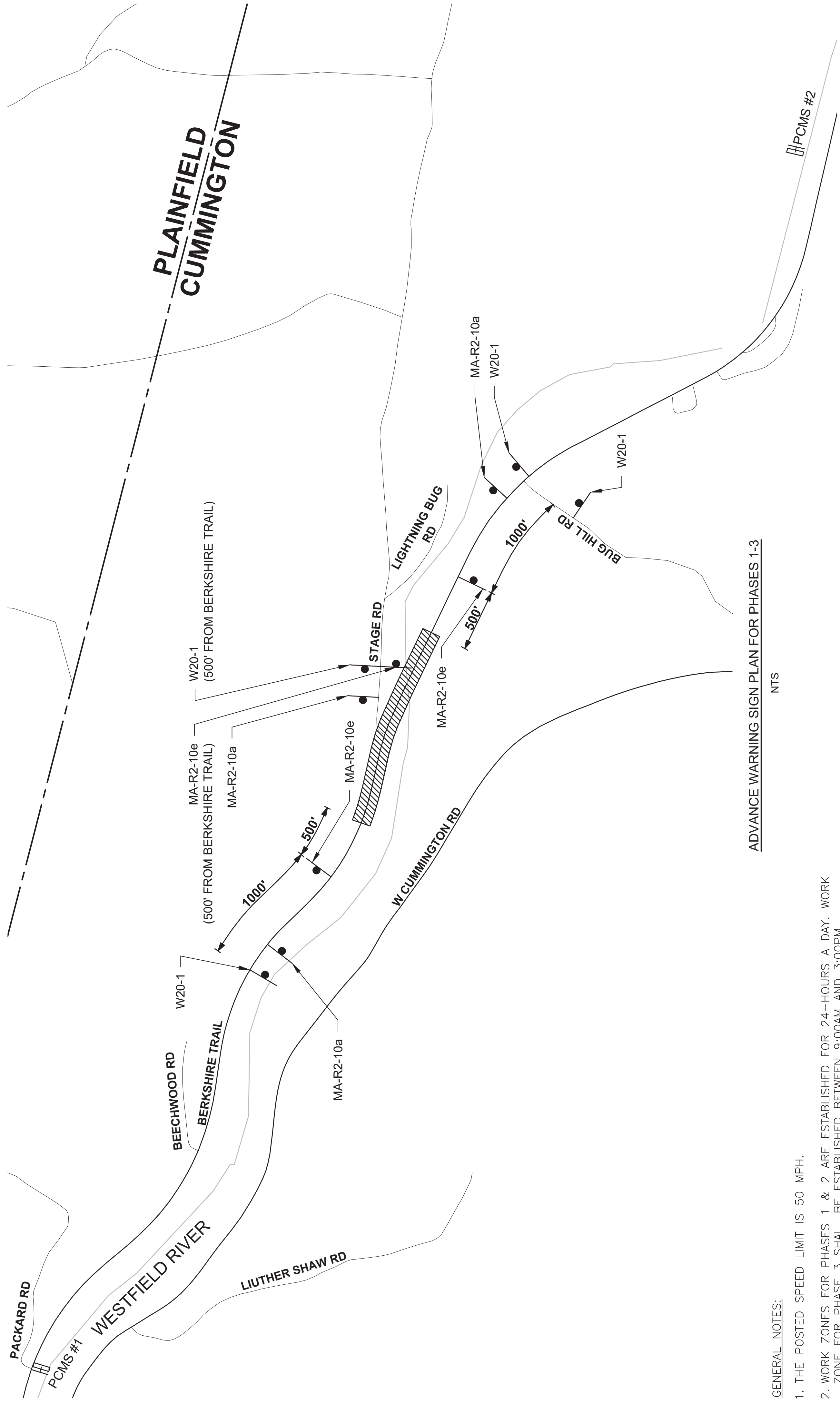
STARTS XX-XX

CAUTION STOP AHEAD

DURING CONSTRUCTION

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS #1 & #2 FOR PHASES 1 & 2

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS #1 & #2 FOR PHASE 3



ADVANCE WARNING SIGN PLAN FOR PHASES 1-3
 NTS

- GENERAL NOTES:
1. THE POSTED SPEED LIMIT IS 50 MPH.
 2. WORK ZONES FOR PHASES 1 & 2 ARE ESTABLISHED FOR 24-HOURS A DAY. WORK ZONE FOR PHASE 3 SHALL BE ESTABLISHED BETWEEN 9:00AM AND 3:00PM.
 3. TALL CONES OR DRUMS SHALL BE USED AT THE SHIFTING AND SHOULDER TAPERS. ALL TALL CONES OR DRUMS SHALL BE SET @ 40' O.C. MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
 4. * INDICATES THAT NOTICE OF LANE CLOSURE CHANGE IS TO BE UPDATED ON DAY OF WORK BASED ON SET-UP.

TEMPORARY TRAFFIC CONTROL LEGEND

- WORK ZONE
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

CUMMINGTON
3 BRIDGES ALONG RT 9 OVER
WESTFIELD RIVER & WESTFIELD BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	HI(BR)-003S(766)X	37	37
PROJECT FILE NO.		613116	

TEMPORARY TRAFFIC CONTROL PLANS
C-21-025 SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER	
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			3	FL. ORANGE / WHITE	BLACK	BLACK	36.00
MA-R2-10e	36	48					3	FL. ORANGE / WHITE	BLACK	BLACK	36.00
R1-1	18	18		①			1	RED	WHITE	WHITE	2.25
SP-2	48	30		8B 8D	5 4 5	N/A	1	WHITE	BLACK	BLACK	10.00
W1-4R	36	36		①			2	FL. ORANGE	BLACK	BLACK	18.00
W1-4L	36	36					2	FL. ORANGE	BLACK	BLACK	18.00
W5-1	36	36					2	FL. ORANGE	BLACK	BLACK	18.00
W13-1P	18	18					2	FL. ORANGE	BLACK	BLACK	4.50
W20-1	48	48					4	FL. ORANGE	BLACK	BLACK	64.00
W20-4	48	48					2	FL. ORANGE	BLACK	BLACK	32.00
MA-W20-7b	48	48		MASSDOT STANDARD SIGN			2	FL. ORANGE	BLACK	BLACK	32.00

SIGN SUMMARY NOTES:

- ① CONTRACTOR SHALL FURNISH SIGNS CONSISTENT WITH 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
- SIGNS MAY BE RELOCATED FROM CURRENT WORK ZONE SET-UP.

AUG. 13, 2024	PS&E R2
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

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DOCUMENT A00804

BRIDGE INSPECTION REPORTS

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STRUCTURES INSPECTION FIELD REPORT

ROUTINE INSPECTION

2-DIST
01

B.I.N.
0JN

BR. DEPT. NO.
C-21-023

CITY/TOWN CUMMINGTON	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	11-Kilo. POINT 028.102	41-STATUS A:OPEN	90-ROUTINE INSP. DATE JUN 2, 2023
07-FACILITY CARRIED ST 9 BERKSHIRE TR	MEMORIAL NAME/LOCAL NAME	27-YR BUILT 1958	106-YR REBUILT 0000	YR REHAB'D (NON 106) 0000
06-FEATURES INTERSECTED WATER WESTFIELD BROOK	26-FUNCTIONAL CLASS Rural Arterial	DIST. BRIDGE INSPECTION ENGINEER L. A. Briggs		
43-STRUCTURE TYPE 302 : Steel Stringer/Girder	22-OWNER State Highway Agency	21-MAINTAINER State Highway Agency	TEAM LEADER R. Mancari	
107-DECK TYPE 1 : Concrete Cast-in-Place	WEATHER Sunny	TEMP. (air) 17°C	TEAM MEMBERS E. GEMINDER, W. A REYNOLDS	

ITEM 58	6	
DECK		DEF
1. Wearing Surface	N	-
2. Deck Condition	6	S-P
3. Stay in Place Forms	N	-
4. Curbs	7	-
5. Median	N	-
6. Sidewalks	N	-
7. Parapets	N	-
8. Railing	5	S-A
9. Anti Missile Fence	N	-
10. Drainage System	N	-
11. Lighting Standards	N	-
12. Utilities	N	-
13. Deck Joints	6	M-P
14.	N	-
15.	N	-
16.	N	-
CURB REVEAL (In millimeters)	N 190	S 190

APPROACHES		DEF
a. Appr. Pavement Condition	6	-
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.	N	-

OVERHEAD SIGNS (Attached to bridge)	(Y/N)	N
		DEF
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

ITEM 59	5	
SUPERSTRUCTURE		DEF
1. Stringers	N	-
2. Floorbeams	N	-
3. Floor System Bracing	6	M-P
4. Girders or Beams	5	M-P
5. Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6. Pin & Hangers	N	-
7. Conn Plt's, Gussets & Angles	7	-
8. Cover Plates	N	-
9. Bearing Devices	6	M-P
10. Diaphragms/Cross Frames	7	-
11. Rivets & Bolts	N	-
12. Welds	7	-
13. Member Alignment	7	-
14. Paint/Coating	5	M-P
15.	N	-

Year Painted **1989**

COLLISION DAMAGE: Please explain
None (X) Minor () Moderate () Severe ()

LOAD DEFLECTION: Please explain
None () Minor (X) Moderate () Severe ()

LOAD VIBRATION: Please explain
None () Minor (X) Moderate () Severe ()

Any Fracture Critical Member: (Y/N) **N**

Any Cracks: (Y/N) **N**

ITEM 60	6			
SUBSTRUCTURE		DEF		
1. Abutments	Dive	Cur	6	
a. Pedestals	N	N		-
b. Bridge Seats	N	5		S-P
c. Backwalls	N	5		S-P
d. Breastwalls	N	6		M-P
e. Wingwalls	N	5		S-P
f. Slope Paving/Rip-Rap	N	N		-
g. Pointing	N	N		-
h. Footings	N	7		-
i. Piles	N	N		-
j. Scour	N	6		M-P
k. Settlement	N	6		M-P
l.	N	N		-
m.	N	N		-
2. Piers or Bents			N	
a. Pedestals	N	N		-
b. Caps	N	N		-
c. Columns	N	N		-
d. Stems/Webs/Pierwalls	N	N		-
e. Pointing	N	N		-
f. Footing	N	N		-
g. Piles	N	N		-
h. Scour	N	N		-
i. Settlement	N	N		-
j.	N	N		-
k.	N	N		-
3. Pile Bents			N	
a. Pile Caps	N	N		-
b. Piles	N	N		-
c. Diagonal Bracing	N	N		-
d. Horizontal Bracing	N	N		-
e. Fasteners	N	N		-

UNDERMINING (Y/N) If YES please explain **N**

COLLISION DAMAGE:
None (X) Minor () Moderate () Severe ()

SCOUR: Please explain
None () Minor (X) Moderate () Severe ()

I-60 (Dive Report): **N** I-60 (This Report): **6**

93B-U/W (DIVE) Insp **00/00/0000**

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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ITEM 61 6

CHANNEL & CHANNEL PROTECTION

	Dive	Cur	DEF
1.Channel Scour	N	6	M-P
2.Embankment Erosion	N	7	-
3.Debris	N	8	-
4.Vegetation	N	8	-
5.Utilities	N	N	-
6.Rip-Rap/Slope Protection	N	7	-
7.Aggradation	N	6	M-P
8.Fender System	N	N	-

STREAM FLOW VELOCITY:
Tidal () High () Moderate () Low (X) None ()

ITEM 61 (Dive Report): N ITEM 61 (This Report): 6

93b-U/W INSP. DATE:

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	0	5	S-A
B. Transitions	0	6	M-P
C. Approach Guardrail	0	6	M-P
D. Approach Guardrail Ends	0	5	S-P

WEIGHT POSTING Not Applicable X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: EJDMT Date:

At bridge		Other Advance	
E	W	E	W
/	/	/	/

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility

CLEARANCE POSTING

	N		S		meter
	ft	in	ft	in	
Actual Field Measurement		0		0	
Posted Clearance		0		0	

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility

At bridge		Advance	
N	S	N	S
/	/	/	/

ACCESSIBILITY (Y/N/P)

	Needed	Used
Lift Bucket	N	N
Ladder	P	N
Boat	N	N
Waders	P	Y
Inspector 50	Y	Y
Rigging	N	N
Staging	N	N
Traffic Control	Y	Y
RR Flagger	N	N
Police	Y	Y
Other:		
	N	N

TOTAL HOURS 80

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

List of field tests performed:

RATING

Rating Report (Y/N): Y

Date:

Inspection data at time of existing rating
I 58: 4 I 59: 6 I 60: 6 Date :05/08/1986

Recommend for Rating or Rerating (Y/N): N Y

If YES please give priority:
HIGH () MEDIUM () LOW ()

REASON: _____

CONDITION RATING GUIDE (For Items 58, 59, 60 and 61)

CODE	CONDITION	DEFECTS
N	NOT APPLICABLE	
G 9	EXCELLENT	Excellent condition.
G 8	VERY GOOD	No problem noted.
G 7	GOOD	Some minor problems.
F 6	SATISFACTORY	Structural elements show some minor deterioration.
F 5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P 4	POOR	Advanced section loss, deterioration, spalling or scour.
P 3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C 2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C 1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

BRIDGE ORIENTATION

State Route 9 (The Berkshire Trail) travels west and east. Westfield Brook flows from south to north. This single span structure consists of five welded plate steel girders, supporting a reinforced concrete deck, with no wearing surface. The beams and bays are numbered from north to south, downstream to upstream, in accordance with the plans and the 1988 Rating Report. See sketch 1 and photos 1 & 2.

ITEM 58 - DECK

Item 58.2 - Deck Condition

Topside

The topside has scattered sealed transverse cracks, up to 10' long x 1/4" wide. See photo 3.

Underside

All bays have scattered transverse hairline cracks, some with efflorescence and rust staining. See photo 2.

In all bays, there are patched areas, with many overfilled or bulging due to poor formwork. See photos 2 & 4.

In both deck overhangs and fascias, there are scattered longitudinal and transverse cracks, some with efflorescence. Also, there are widespread hollow/spalled areas, up to full width x full height x 3" deep, with exposed rebar. See photos 5 & 6.

In the north deck fascia, at the east end, there is a spall, 5' long x full height x full depth with exposed, rusted rebar and hollow areas surrounding. The spall undermines the northeast end post, 5" long x 5" wide. The spall also undermines the first bridge guardrail post, with one anchor bolt fully exposed. See photo 7.

Item 58.8 - Railing

The original bridge rails have widespread heavy surface rust, with corrosion holes, up to 3' long, concentrated at the northeast and southeast end posts. See photo 8.

The northeast, northwest, and southwest granite end posts have loose and missing stones and masonry caps. See photo 8.

At the north rail base, there is a spall, 3' long x 14" wide x up to 2-1/2" deep, which undermines the fourth bridge railing post from the east end, full length x 4" wide, with two exposed anchor bolts. See photo 9.

At north rail base fascia, at the sixth bridge railing post from the east end, there is a spall, 6" long x 8" wide x 1" deep, with undermines the railing post, 1" long x 1" wide at the southwest corner.

The northeast end post is undermined by a spall in the deck fascia, 5" long x 5" wide. See photo 7.

Item 58.13 - Deck Joints

Both the east and west deck joint armor plates have light surface rust and minor debris impactation. There are also scattered areas of minor separation between the joint seals and headers. See photo 10.

At the east deck joint in the eastbound lanes, there is a 3/8" vertical difference between the armoring plates, with the east plate being higher.

Under the east deck joint, in bays 1 and 2, the deck joint armor plates have heavy laminar rust.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

APPROACHES

Approaches a - Appr. Pavement Condition

Both the west and east approaches have scattered longitudinal and transverse cracks, up to 3/16" wide.

In the west approach, along the deck joint, there is a concentration of transverse cracks, full width x up to 1/16". See photo 10.

Approaches b - Appr. Roadway Settlement

Both the west and east approaches have minor settlement.

ITEM 59 - SUPERSTRUCTURE

Item 59.3 - Floor System Bracing

In bays 1 and 4, at both abutments, there is pack rust between the lateral bracing and the top of the bottom flanges, up to 1/2" thick. See Photo 11.

Item 59.4 - Girders or Beams

The girders have scattered areas of light to moderate surface rust. See photo 2.

The girders have random timber pieces resting on top of the bottom flanges.

Throughout the girders, especially at the bearing ends, there are scattered heavy pigeon droppings and nests.

At isolated locations near the abutments, there are web stiffeners with several misdrilled holes.

There are random bearing stiffeners that are bent out of plane by up to 1/8".

At the east abutment, all beam ends have heavy rust with delamination and minor section loss along the bottom flanges and bottoms of the webs.

Girder 1, at the west end, the top flange is bent downward from the deck by 1/2". At this location, the south web stiffener, at the bottom, is bent to the west by 1/8".

Girder 1, above the east bearing, the stiffener has a hole, up to 1" diameter.

Girder 2, at the east abutment, beyond the bearing, the two south web stiffeners, have section loss at the bottom, with holes up to 8" high x full width.

Girder 2, at the east abutment, beyond the bearing, the web has isolated severe section loss and holes along the bottom, 18" long x 3" high. See photo 12.

Girder 3, at the east abutment, 10-1/2" from front face of bearing, the bottom flange is bent upward by 3/16". See photo 13.

Girder 3, at the west abutment, beyond the bearing, the south bottom flange has delaminated rust with minor section loss. See photo 14.

Girder 3, at the west abutment, the back south bearing stiffener is bent out of plane approximately 1/8".

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

Girder 5, at the east bearing, the north flange has rusting with delamination and minor section loss.

Item 59.9 - Bearing Devices

The bearings at both abutments have moderate surface rust. All four bearings at the fascia beams have heavy delaminated rust.

At the west abutment, several bearings are overexpanded, with the sole plates expanded past the curved bearing plates by up to 1-1/2". See photo 15.

At the west abutment, several keeper plates are bent outward, up to 2", due to pack rust.

In the east abutment, at girder 2, there is a spall that undermines the bearing, full width x 2" deep.

In the west abutment, at girder 2, there is a spall that undermines the bearing masonry plate, 2" wide x 1" deep.

In the west abutment, at girder 3, there is a spall which undermines the bearing masonry plate, full width x up to 3" deep. See photo 14.

Item 59.10 - Diaphragms/Cross Frames

The cross frames, at both abutments, have scattered areas of light to moderate surface rust.

In bays 1-3, at the east abutment, there are broken welds at the cross frames due to pack rust. See photo 16.

In bay 1, at the east abutment, the cross frame vibrates severely under live load.

In bay 2, at the east abutment, the bottom chord has heavy delaminated rust with up to 1/16" of section loss to the horizontal angle leg.

Item 59.14 - Paint/Coating

The welded steel plate girders have scattered areas of light to moderate surface rust. The flanges and stiffeners typically have areas of missing paint due to corrosion. The remainder of the structure paint system is dull and chalky. See photos 2 & 12.

SuperStructure Load Deflection Notes

The structure deflects under heavy truck traffic.

SuperStructure Load Vibration Notes

The structure has moderate vibration under heavy truck traffic.

ITEM 60 - SUBSTRUCTURE

Item 60.1 - Abutments

Item 60.1.b - Bridge Seats

The bridge seats, at both abutments, have moderate debris buildup, with heavy debris buildup at the corners.

At the west abutment, below girder 3, there is a spall at the edge of the bridge seat, 18" long x 7' wide x 14" high x 3" deep that undermines the bearing. See photo 14.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

At the east abutment, below girder 2, there is a spall at the edge of the bridge seat, 3" long x 8' wide x 15" high x 3" deep, that undermines the bearing.

Item 60.1.c - Backwalls

West Backwall

In all bays, there are random spalls and scaled areas, up to 2' diameter x up to 1" deep.

Between girder 1 and the northwest cheek wall, there is a spalled area, 5' diameter x 2" deep, with exposed rebar, and scaled and hollow areas surrounding. See photo 17.

In bays 1 and 2, there are full height vertical hairline cracks with efflorescence.

In bay 1, there is timber formwork left in place.

Between girder 5 and the southwest cheek wall, there is heavy scaling, 3' wide x full height x 3" deep with exposed rebar. See photo 18.

East Backwall

All bays have heavy rust staining from the joint above, and random hairline cracking with efflorescence, scaling, and numerous patches.

Behind girder 1 and in bay 1, there are random spalls, up to 2' diameter x up to 3" deep, with exposed, rusted rebar, and rust staining. See photo 16.

In bays 1 and 2, there are random vertical hairline cracks, up to 4' long.

In bay 3 where the backwall meets the bridge seat, there is a spall, 8' wide x 4" high x 2" deep.

In bay 3 at the expansion joint, there are two full height vertical cracks, up to 3/8" wide.

Item 60.1.d - Breastwalls

At both abutments, there are scattered full height vertical hairline cracks, some with efflorescence and rust staining.

At several locations along both abutments, construction joint material is sticking out or missing.

In the west breastwall, at the south end at mid-height, there is a delaminated area 3' wide x 6' high.

In the east breastwall, along the top, there are numerous spalled, cracked, and delaminated areas, up to 6' long x up to 8' high x 3" deep, will exposed, rusted rebar. See photo 19.

In the east breastwall, along the waterline, there is minor abrasion, full length x 18" high.

In the east breastwall. at the south end, and extending into the wingwall, there is mapcracking, 8' wide x full height, with scaling, rust staining, and efflorescence. See photo 20.

Item 60.1.e - Wingwalls

In the southwest cheekwall, there is scaling, 4' diameter x up to 3" deep. See photo 21.

In the northwest cheekwall, there is a spall, up to 4' diameter x 3" deep, with exposed, rusted rebar, and areas of scale surrounding. See photo 22.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

In the northwest wingwall, there is a 16' long diagonal crack, which is closed at the bottom and 1/16" wide at the top, with efflorescence. See photo 22.

The northwest wingwall is leaning towards the channel by up to 1".

In the southeast cheekwall, there is an area of continuous spalls and scaling along the bridge seat and into the wingwall joint, 4' long x 18" high x 4" deep, with exposed, rusted rebar. See photo 23.

The southeast wingwall has widespread diagonal cracking, up to full height x up to 1/8" wide.

At the southeast wingwall, at mid-height, there is a spall, 5' wide x 12" high x 2" deep. There is mapcracking and scaling throughout the remainder of the wingwall. See photo 23.

In the northeast wingwall, the second construction joint from the east abutment is misaligned, with a maximum displacement of 3" at the top of the wall.

The northeast wingwall has random spalls along the construction joint, up to 6" wide x up to 3' high x up to 5" deep.

Item 60.1.h - Footings

The top of the east abutment footing is exposed, full length, with heavy abrasion, and is flush with the streambed. See photo 24.

Item 60.1.j - Scour

Refer to Item 60.1.h Footings.

Item 60.1.k - Settlement

Refer to Item 60.1.e - Wingwalls.

SubStructure Scour Notes

Refer to item 60.1.j - Scour.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour

Refer to chart 1.

Item 61.7 - Aggradation

There is heavy aggradation in the west side of the channel, with evidence of stream migration to the east. See photo 25.

TRAFFIC SAFETY

Item 36a - Bridge Railing

The original bridge railings consist of four steel pipe rails mounted to steel T-posts and are not tied into the blunt stone masonry end posts. The original railings have been retrofitted with single steel thrie beam panels mounted on steel blockouts attached to the face of the original bridge rails. Refer to Item 58.8 - Railing.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

Item 36b - Transitions

The transitions consist of nested steel W-beam panels, mounted on steel posts with steel blockouts, spaced at 3'. The transitions are continuous with the thrie beam bridge railing retrofit. At the northwest and southwest transitions, the posts are spaced at 8'. See photo 26.

The northwest transition guardrail is detached from the post at the deck end.

Item 36c - Approach Guardrail

The approach guardrails consist of single steel W-beam panels mounted on steel posts with steel blockouts, spaced at 6'.

The northwest approach guardrail has two rusted areas with 100% section loss, up to 3'-6" long x 6" high.

Item 36d - Approach Guardrail Ends

The northeast guardrail has a steel terminal end that is swept away from traffic.

The southeast guardrail has a buried end. There is severe collision damage to the southeast guardrail near the guardrail end. See photo 27.

The southwest and northwest guardrails are continuous with the roadway guardrails.

Sketch / Chart / Photo Log

- Sketch 1 : Framing plan.
- Chart 1 : Channel profile readings.
- Photo 1 : General topside looking west.
- Photo 2 : Typical underside, looking west.
- Photo 3 : Wearing surface with transverse cracking. Typical.
- Photo 4 : Bay 2, overfilled concrete patches. Typical.
- Photo 5 : South deck fascia and overhang.
- Photo 6 : North deck fascia with several spalls.
- Photo 7 : Northeast deck fascia spall with exposed rebar. Note undermining of masonry end post and guardrail post.
- Photo 8 : Northwest corner rail with corrosion holes in original bridge rails. Also note deteriorated cap and loose concrete blocks in end post.
- Photo 9 : Spall in north rail base, undermining bridge railing post, with two anchor bolts exposed.
- Photo 10 : West deck joint with surface rust and debris. Note cracking in concrete joint header and in the approaches.
- Photo 11 : Girder 4 at west abutment, with pack rust between bottom lateral bracing and bottom flange (typical).
- Photo 12 : Girder 2 beyond the east bearing, with severe section loss and holes.
- Photo 13 : Girder 3 at west abutment, with heavy rust in bottom flange. Also note spall in bridge seat undermining the bearing.
- Photo 15 : Girder 3 at east abutment, bottom flange bent upward.
- Photo 15 : Bearing overexpanded, girder 5 bearing at west abutment.
- Photo 16 : Bay 2 at east abutment, cross frame with broken weld at joint plate (typical). Also note spalling, rust staining and delamination in the backwall.
- Photo 17 : West backwall at northwest cheekwall.
- Photo 18 : Southwest cheekwall and backwall, Note heavy scaling and spalling with exposed rebar, and heavy debris buildup on bridge seat.
- Photo 19 : East breastwall.
- Photo 20 : East breastwall at south end.

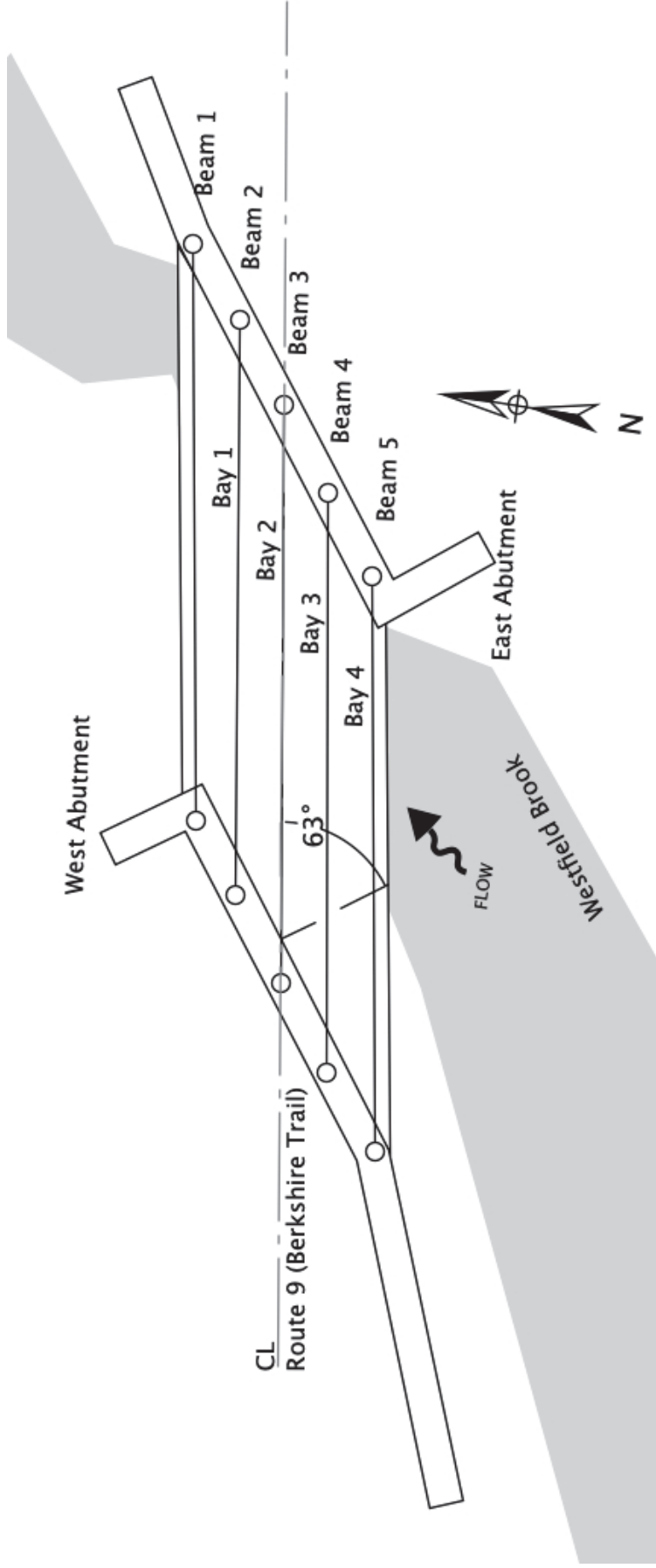
CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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REMARKS

- Photo 21 : Southwest cheekwall.
- Photo 22 : Northwest cheekwall, with spalls. Note diagonal crack in wingwall.
- Photo 23 : Southeast breastwall, cheekwall and wingwall.
- Photo 24 : East abutment footing exposed and flush with streambed.
- Photo 25 : Aggradation in west half of channel, stream migrated to the east.
- Photo 26 : Guardrail posts improperly spaced at southwest guardrail transition.
- Photo 27 : Collision damage at southeast guardrail end.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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SKETCHES



Sketch 1: Framing plan.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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CHARTS

C21023 Channel Profile Readings														
		South Face					North Face							
DATE	West Abutment	X-frame 1	X-frame 2	X-frame 3	X-frame 4	X-frame 5	East abutment	West Abutment	X-frame 1	X-frame 2	X-frame 3	X-frame 4	X-frame 5	East abutment
6/2/23	22.9	22.0	22.0	23.7	24.8	24.3	24.3	23.3	22.7	21.5	22.3	22.8	22.6	21.3

NOTES:
 *All readings in decimal feet.
 **Readings taken at intersection of X-frames and fascia beam.

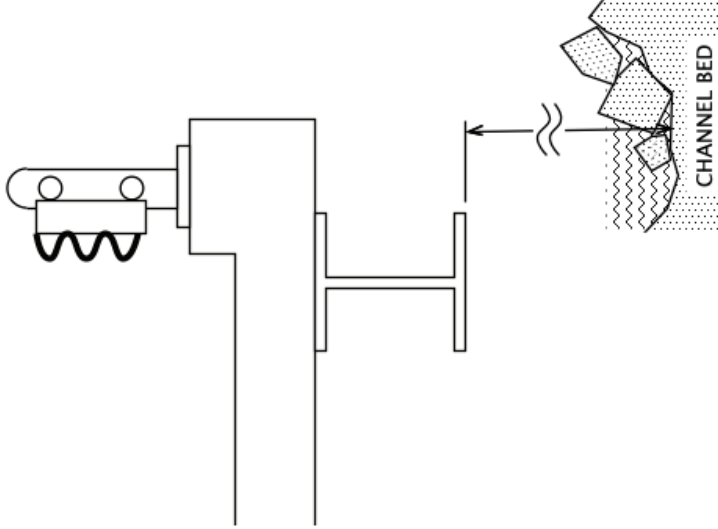


Chart 1: Channel profile readings.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 1: General topside looking west.



Photo 2: Typical underside, looking west.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 3: Wearing surface with transverse cracking. Typical.



Photo 4: Bay 2, overfilled concrete patches. Typical.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

PHOTOS



Photo 5: South deck fascia and overhang.



Photo 6: North deck fascia with several spalls.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 7: Northeast deck fascia spall with exposed rebar. Note undermining of masonry end post and guardrail post.



Photo 8: Northwest corner rail with corrosion holes in original bridge rails. Also note deteriorated cap and loose concrete blocks in end post.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 9: Spall in north rail base, undermining bridge railing post, with two anchor bolts exposed.



Photo 10: West deck joint with surface rust and debris. Note cracking in concrete joint header and in the approaches.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 11: Girder 4 at west abutment, with pack rust between bottom lateral bracing and bottom flange (typical).



Photo 12: Girder 2 beyond the east bearing, with severe section loss and holes.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 13: Girder 3 at west abutment, with heavy rust in bottom flange. Also note spall in bridge seat undermining the bearing.



Photo 15: Girder 3 at east abutment, bottom flange bent upward.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 15: Bearing overexpanded, girder 5 bearing at west abutment.

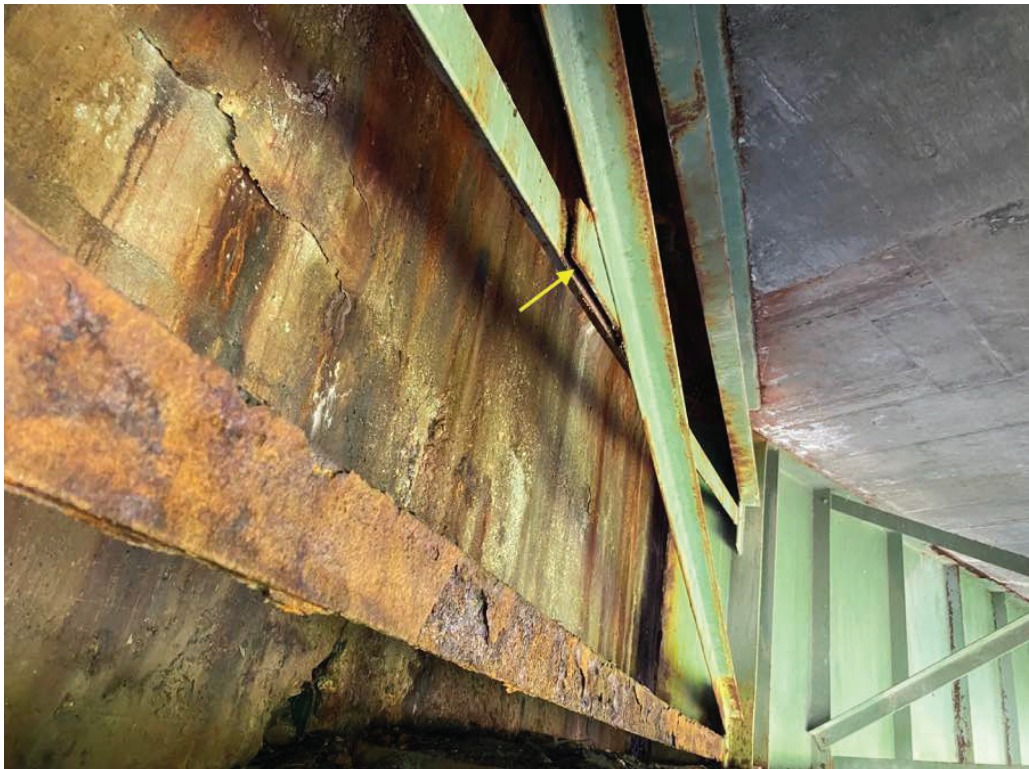


Photo 16: Bay 2 at east abutment, cross frame with broken weld at joint plate (typical). Also note spalling, rust staining and delamination in the backwall.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 17: West backwall at northwest cheekwall.



Photo 18: Southwest cheekwall and backwall, Note heavy scaling and spalling with exposed rebar, and heavy debris buildup on bridge seat.

CITY/TOWN CUMMINGTON	B.I.N. 0JN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 19: East breastwall.



Photo 20: East breastwall at south end.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 21: Southwest cheekwall.



Photo 22: Northwest cheekwall, with spalls. Note diagonal crack in wingwall.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 23: Southeast breastwall, cheekwall and wingwall.



Photo 24: East abutment footing exposed and flush with streambed.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 25: Aggradation in west half of channel, stream migrated to the east.



Photo 26: Guardrail posts improperly spaced at southwest guardrail transition.

CITY/TOWN CUMMINGTON	B.I.N. OJN	BR. DEPT. NO. C-21-023	8.-STRUCTURE NO. C21023-0JN-DOT-NBI	INSPECTION DATE JUN 2, 2023
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PHOTOS



Photo 27: Collision damage at southeast guardrail end.

National Bridge Element Inspection

BDEPT# **C-21-023**

Date **06/02/2023**

B.I.N. **0JN**

District Bridge Inspection Eng'r **Laurie A. Briggs**

Item 8 **C21023-0JN-DOT-NBI**

Inspecting Agency **Mass. Highway Dept.**

Span Group **1**

Team Leader **Reed Mancari**

Town **Cummington**

Team **Eli Geminder, William A**

District **1**

Member(s) **Reynolds**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
12	Re Concrete Deck	sq feet	2	6,669.000	<input type="checkbox"/> %		5,769.000	900.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	sq feet	2	3,669.000	<input type="checkbox"/> %		2,769.000	900.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	sq feet	2	3,000.000	<input type="checkbox"/> %		3,000.000		
Notes :									
107	Steel Opn Girder/Beam	feet	2	613.000	<input type="checkbox"/> %	552.000	61.000		
Notes :									
> 1000	<i>Corrosion</i>	feet	2	61.000	<input type="checkbox"/> %		61.000		
Notes :									
> 515	Steel Protective Coating	sq feet	2	10,625.000	<input type="checkbox"/> %		9,400.000	1,000.000	225.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	2	10,625.000	<input type="checkbox"/> %		9,400.000	1,000.000	225.000
Notes :									
107	Steel Opn Girder/Beam	feet	3	50.000	<input type="checkbox"/> %		30.000	20.000	
Notes :									
> 1000	<i>Corrosion</i>	feet	3	45.000	<input type="checkbox"/> %		25.000	20.000	
Notes :									
> 1900	<i>Distortion</i>	feet	3	5.000	<input type="checkbox"/> %		5.000		
Notes :									
> 515	Steel Protective Coating	sq feet	3	867.000	<input type="checkbox"/> %			800.000	67.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	867.000	<input type="checkbox"/> %			800.000	67.000
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-023**
 B.I.N. **0JN**
 Item 8 **C21023-0JN-DOT-NBI**
 Span Group **1**
 Town **Cummington**
 District **1**

Date **06/02/2023**
 District Bridge Inspection Eng'r **Laurie A. Briggs**
 Inspecting Agency **Mass. Highway Dept.**
 Team Leader **Reed Mancari**
 Team Member(s) **Eli Geminder, William A Reynolds**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
215	Re Conc Abutment	feet	3	243.000	<input type="checkbox"/> %	66.000	112.000	65.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	feet	3	77.000	<input type="checkbox"/> %		12.000	65.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	feet	3	100.000	<input type="checkbox"/> %		100.000		
Notes :									
300	Strip Seal Exp Joint	feet	2	192.000	<input type="checkbox"/> %	97.000	95.000		
Notes :									
> 2310	<i>Leakage</i>	feet	2	95.000	<input type="checkbox"/> %		95.000		
Notes :									
311	Moveable Bearing	each	3	5	<input type="checkbox"/> %		5		
Notes :									
> 1000	<i>Corrosion</i>	each	3	5	<input type="checkbox"/> %		5		
Notes :									
> 515	Steel Protective Coating	sq feet	3	20.000	<input type="checkbox"/> %		10.000		10.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	20.000	<input type="checkbox"/> %		10.000		10.000
Notes :									
313	Fixed Bearing	each	3	5	<input type="checkbox"/> %		5		
Notes :									
> 1000	<i>Corrosion</i>	each	3	5	<input type="checkbox"/> %		5		
Notes :									
> 515	Steel Protective Coating	sq feet	3	20.000	<input type="checkbox"/> %		10.000		10.000
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-023**
 B.I.N. **0JN**
 Item 8 **C21023-0JN-DOT-NBI**
 Span Group **1**
 Town **Cummington**
 District **1**

Date **06/02/2023**
 District Bridge Inspection Eng'r **Laurie A. Briggs**
 Inspecting Agency **Mass. Highway Dept.**
 Team Leader **Reed Mancari**
 Team Member(s) **Eli Geminder, William A Reynolds**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	20.000	<input type="checkbox"/> %		10.000		10.000
Notes :									
330	Metal Bridge Railing	feet	2	249.000	<input type="checkbox"/> %				249.000
Notes :									
> 1000	<i>Corrosion</i>	feet	2	249.000	<input type="checkbox"/> %				249.000
Notes :									
> 515	Steel Protective Coating	sq feet	2	1,743.000	<input type="checkbox"/> %				1,743.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	2	1,743.000	<input type="checkbox"/> %				1,743.000
Notes :									
334	Masonry Bridge Railing	feet	2	16.000	<input type="checkbox"/> %		4.000	12.000	
Notes :									
> 1640	<i>Masonry Displacement</i>	feet	2	16.000	<input type="checkbox"/> %		4.000	12.000	
Notes :									

State Information				Classification				Code			
BDEPT# = C21023	Agency Br.No.			(112) NBIS Bridge Length				Y			
Town = Cummington	L.O. MHD			(104) Highway System				Y			
B.I.N = 0JN	AASHTO= 070.0			(26) Functional Class -	Rural Arterial			02			
RANK = 2401	H.I. = 79.0 %	FHWA Select List= N (6/21/2017)		(100) Defense Highway				0			
Identification				(101) Parallel Structure				N			
(8) Structure Number	C210230JNDOTNBI			(102) Direction of Traffic -	2-way traffic			2			
(5) Inventory Route	131000090			(103) Temporary Structure				N			
(2) State Highway Department District	01			(105) Federal Lands Highways				0			
(3) County Code 015	(4) Place code	16040		(110) Designated National Network				N			
(6) Features Intersected	WATER WESTFIELD BROOK			(20) Toll -	On free road			3			
(7) Facility Carried	ST 9 BERKSHIRE TR			(21) Maintain -	State Highway Agency			01			
(9) Location	.8 M E WINDSOR T.L.			(22) Owner -	State Highway Agency			01			
(11) Kilometerpoint	0028.102			(37) Historical Significance	built after 1949 presumed to be not eligi			Z			
(12) Base Highway Network	Y			Condition				Code			
(13) LRS Inventory Route & Subroute	000000000000			(58) Deck				6			
(16) Latitude	42 DEG 29 MIN 27.15 SEC			(59) Superstructure				5			
(17) Longitude	72 DEG 58 MIN 30.80 SEC			(60) Substructure				6			
(98) Border Bridge State Code	Share %			(61) Channel & Channel Protection				6			
(99) Border Bridge Structure No. #				(62) Culverts				N			
Structure Type and Material				Load Rating and Posting				Code			
(43) Structure Type Main:	Steel	Code 302		(31) Design Load -	H 20=M 18			4			
Stringer/Girder	Jointless bridge type: Not applicable			(63) Operating Rating Method -	Allowable Stress (AS)			2			
(44) Structure Type Appr:				(64) Operating Rating				44.8			
Other	Code 000			(65) Inventory Rating Method -	Allowable Stress (AS)			2			
(45) Number of spans in main unit	001			(66) Inventory Rating				19.2			
(46) Number of approach spans	0000			(70) Bridge Posting				5			
(107) Deck Structure Type -	Concrete Cast-in-Place	Code 1		(41) Structure -	Open			A			
(108) Wearing Surface / Protective System:				Appraisal				Code			
A) Type of wearing surface -	None	Code 0		(67) Structural Evaluation				5			
B) Type of membrane -	None	Code 0		(68) Deck Geometry				7			
C) Type of deck protection -	None	Code 0		(69) Underclearances, vert. and horiz.				N			
Age and Service				Inspections							
(27) Year Built	1958			(90) Inspection Date	06/02/23			(91) Frequency	24 MO		
(106) Year Reconstructed	0000			(92) Critical Feature Inspection:				(93) CFI DATE			
(42) Type of Service: On -	Highway			(A) Fracture Critical Detail	N	00	MO A)	00/00/00			
Under -	Waterway	Code 15		(B) Underwater Inspection	N	00	MO B)	00/00/00			
(28) Lanes: On Structure	02	Under structure	00	(C) Other Special Inspection	N	00	MO C)	09/03/10			
(29) Average Daily Traffic	002820			(*) Other Inspection (Flood)	N	00	MO *)	01/10/12			
(30) Year of ADT	2016	(109) Truck ADT	10 %	(*) Closed Bridge	N	00	MO *)	00/00/00			
(19) Bypass, detour length	002 KM			(*) UW Special Inspection	N	00	MO *)	00/00/00			
Geometric Data				Rating Loads							
(48) Length of maximum span	0037.3 M			Report Date	01/01/88	H20	Type 3	Type 3S2	Type HS		
(49) Structure Length	00040.8 M			Operating	46.0	62.0	71.0	0.0			
(50) Curb or sidewalk:	Left	00.0 M	Right	Inventory	25.0	26.0	30.0	0.0			
(51) Bridge Roadway Width Curb to Curb	013.4 M			Field Posting							
(52) Deck Width Out to Out	015.3 M			Status	LEGAL	Posting Date			03/09/88		
(32) Approach Roadway Width (w/shoulders)	013.4 M			2 Axle	3 Axle	5 Axle	Single				
(33) Bridge Median -	No median	Code 0		Actual							
(34) Skew	63 DEG	(35) Structure Flared	N	Recommended							
(10) Inventory Route MIN Vert Clear	99.99 M			Missing Signs	N						
(47) Inventory Route Total Horiz Clear	13.4 M			Misc.							
(53) Min Vert Clear Over Bridge Rdwy	99.99 M			Bridge Name	N Anti-missile fence N Acrow Panel N Jointless Bridge						
(54) Min Vert Underclear ref	N	00.0 M		Freeze/Thaw	N : Not Applicable						
(55) Min Lat Underclear RT ref	N	00.0 M		# Stairs On/Adjacent	0	Stair Owner(s)					
(56) Min Lat Underclear LT	00.0 M			Accessibility (Needed/Used)							
Navigation Data				N / N	Liftbucket	N / N	Rigging	N / N Other			
(38) Navigation Control -	No navigation control on waterway			P / N	Ladder	N / N	Staging				
(111) Pier Protection	Code 0			N / N	Boat	Y / Y	Traffic Control				
(39) Navigation Vertical Clearance	000.0 M			P / Y	Wader	N / N	RR Flagperson	Inspection			
(116) Vert-lift Bridge Nav Min Vert Clear	M			Y / Y	Inspector 50	Y / Y	Police	Hours: 080			
(40) Navigation Horizontal Clearance	0000.0 M										

STRUCTURES INSPECTION FIELD REPORT

2-DIST
01

B.I.N.
0JM

ROUTINE INSPECTION

BR. DEPT. NO.
C-21-024

CITY/TOWN CUMMINGTON	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	11-Kilo. POINT 031.059	41-STATUS A:OPEN	90-ROUTINE INSP. DATE JUN 5, 2023
07-FACILITY CARRIED ST 9 BERKSHIRE TR	MEMORIAL NAME/LOCAL NAME	27-YR BUILT 1958	106-YR REBUILT 0000	YR REHAB'D (NON 106) 0000
06-FEATURES INTERSECTED WATER WESTFIELD RIVER	26-FUNCTIONAL CLASS Rural Arterial	DIST. BRIDGE INSPECTION ENGINEER L. A. Briggs		
43-STRUCTURE TYPE 302 : Steel Stringer/Girder	22-OWNER State Highway Agency	21-MAINTAINER State Highway Agency	TEAM LEADER M. P.E. McCabe	
107-DECK TYPE 1 : Concrete Cast-in-Place	WEATHER Sunny	TEMP. (air) 15°C	TEAM MEMBERS E. GEMINDER, S. B LEVINE	

ITEM 58	5	
DECK		DEF
1. Wearing Surface	7	-
2. Deck Condition	5	S-P
3. Stay in Place Forms	N	-
4. Curbs	6	M-P
5. Median	N	-
6. Sidewalks	N	-
7. Parapets	N	-
8. Railing	7	-
9. Anti Missile Fence	N	-
10. Drainage System	7	-
11. Lighting Standards	N	-
12. Utilities	N	-
13. Deck Joints	5	M-P
14.	N	-
15.	N	-
16.	N	-
CURB REVEAL (In millimeters)	N 180	S 190

APPROACHES		DEF
a. Appr. Pavement Condition	6	M-P
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.	N	-

OVERHEAD SIGNS (Attached to bridge)	(Y/N)	N
		DEF
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

ITEM 59	6	
SUPERSTRUCTURE		DEF
1. Stringers	N	-
2. Floorbeams	N	-
3. Floor System Bracing	N	-
4. Girders or Beams	6	M-P
5. Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6. Pin & Hangers	N	-
7. Conn Plt's, Gussets & Angles	N	-
8. Cover Plates	6	-
9. Bearing Devices	5	M-P
10. Diaphragms/Cross Frames	5	M-P
11. Rivets & Bolts	7	-
12. Welds	7	-
13. Member Alignment	7	-
14. Paint/Coating	5	M-P
15.	N	-

Year Painted **1989**

COLLISION DAMAGE: Please explain
None (X) Minor () Moderate () Severe ()

LOAD DEFLECTION: Please explain
None () Minor (X) Moderate () Severe ()

LOAD VIBRATION: Please explain
None () Minor (X) Moderate () Severe ()

Any Fracture Critical Member: (Y/N) **N**

Any Cracks: (Y/N) **N**

ITEM 60	6		
SUBSTRUCTURE		DEF	
1. Abutments	Dive	Cur	6
a. Pedestals	N	N	-
b. Bridge Seats	N	6	-
c. Backwalls	N	6	M-P
d. Breastwalls	N	6	-
e. Wingwalls	N	6	M-P
f. Slope Paving/Rip-Rap	N	N	-
g. Pointing	N	N	-
h. Footings	N	H	-
i. Piles	N	N	-
j. Scour	N	7	-
k. Settlement	N	7	-
l.	N	N	-
m.	N	N	-
2. Piers or Bents			6
a. Pedestals	N	N	-
b. Caps	N	N	-
c. Columns	N	N	-
d. Pierwalls	N	6	M-P
e. Pointing	N	N	-
f. Footing	N	7	-
g. Piles	N	N	-
h. Scour	N	6	M-P
i. Settlement	N	7	-
j.	N	N	-
k.	N	N	-
3. Pile Bents			N
a. Pile Caps	N	N	-
b. Piles	N	N	-
c. Diagonal Bracing	N	N	-
d. Horizontal Bracing	N	N	-
e. Fasteners	N	N	-

UNDERMINING (Y/N) If YES please explain **N**

COLLISION DAMAGE:
None (X) Minor () Moderate () Severe ()

SCOUR: Please explain
None () Minor (X) Moderate () Severe ()

I-60 (Dive Report): **N** I-60 (This Report): **6**

93B-U/W (DIVE) Insp **00/00/0000**

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

ITEM 61 6

CHANNEL & CHANNEL PROTECTION

	Dive	Cur	DEF
1.Channel Scour	N	7	-
2.Embankment Erosion	N	7	-
3.Debris	N	6	M-P
4.Vegetation	N	6	M-P
5.Utilities	N	N	-
6.Rip-Rap/Slope Protection	N	7	-
7.Aggradation	N	6	M-P
8.Fender System	N	N	-

STREAM FLOW VELOCITY:
Tidal () High (X) Moderate () Low () None ()

ITEM 61 (Dive Report): N ITEM 61 (This Report): 6

93b-U/W INSP. DATE:

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	0	7	-
B. Transitions	0	6	M-P
C. Approach Guardrail	0	6	M-P
D. Approach Guardrail Ends	N	N	-

WEIGHT POSTING Not Applicable X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: EJDMT Date:

At bridge		Other Advance	
E	W	E	W
/	/	/	/

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility

CLEARANCE POSTING N S

	N		S		meter
	ft	in	ft	in	
Actual Field Measurement		0		0	
Posted Clearance		0		0	

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility

At bridge		Advance	
N	S	N	S
/	/	/	/

ACCESSIBILITY (Y/N/P)

	Needed	Used
Lift Bucket	N	N
Ladder	N	N
Boat	N	N
Waders	P	Y
Inspector 50	Y	Y
Rigging	N	N
Staging	N	N
Traffic Control	Y	Y
RR Flagger	N	N
Police	Y	Y
Other:		
	N	N

TOTAL HOURS 24

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

List of field tests performed:
D-meter

RATING

Rating Report (Y/N): Y

Date:

Inspection data at time of existing rating
I 58: 3 I 59: 5 I 60: 5 Date :05/08/1986

Recommend for Rating or Rerating (Y/N): Y If YES please give priority:
HIGH () MEDIUM (X) LOW ()

REASON: Change in curb reveals; deck repairs since last rating.

CONDITION RATING GUIDE (For Items 58, 59, 60 and 61)

CODE	CONDITION	DEFECTS
N	NOT APPLICABLE	
G 9	EXCELLENT	Excellent condition.
G 8	VERY GOOD	No problem noted.
G 7	GOOD	Some minor problems.
F 6	SATISFACTORY	Structural elements show some minor deterioration.
F 5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P 4	POOR	Advanced section loss, deterioration, spalling or scour.
P 3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C 2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C 1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

REMARKS

BRIDGE ORIENTATION

State Route 9 (Berkshire Trail) travels east and west. The East Branch of the Westfield River flows from north to south. This two span structure consists of seven simply supported beams in each span, supporting a reinforced concrete deck with no wearing surface. The beams and bays are labeled from north to south, upstream to downstream, in accordance with the plans and the 1988 Rating Report. See sketch 1 and photos 1 & 2.

ITEM 58 - DECK

Item 58.1 - Wearing Surface

The modified concrete wearing surface has numerous random transverse cracks, up to 7' long. All of the cracks are sealed.

Item 58.2 - Deck Condition

In both spans, there are random repaired areas, with concentrations of hairline mapcracking and construction related pop outs.

In both spans, both deck overhangs have areas of severe scaling, up to 6' long x full width (underside) x full height (fascia) x up to 4" deep.

In both spans, bays 2 & 3, along the construction joints, have minor spalls and poorly consolidated concrete.

West Span

The north overhang, at the west abutment, has a large spall, 5' long x full width x 3" deep, with exposed rebar. See photo 3. Also, at the pier, the overhang has severe spalling, up to 15' long x full width x 2" deep, with exposed rebar. At both locations, the rebar has section loss.

Bays 3 & 4, near mid-span, have several construction related spalls (pop outs), up to 24" diameter x 3" deep.

The south overhang, at the pier, has a spall, 2' long x 18" wide x 2" deep, exposed rebar.

East Span

Bay 1, at the east abutment, at the end of the repaired area, has a hollow area, 6" long x 12" wide.

Bay 1, at 10' from the east end, adjacent to beam 8, has a spall and hollow area, 18" long x 10" wide x 3-1/2" deep. See photo 4.

Between beam 3 and the patched area in bay 3 at the abutment, there is a spall 6" wide x 1-1/2" deep.

Bay 5, near mid-span, has several pop outs and unsealed sawcuts.

Item 58.4 - Curbs

Both curbs have scrapes and gouges with missing mortar between the curb sections, full length.

Item 58.8 - Railing

The original railing has been permanently taken out of service due to the placement of the thrie beam railing.

The original railings have heavy rusting throughout with severe section loss and large holes at the northwest and southeast corners. Also, all anchor bolts and nuts have severe rusting with section loss.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

REMARKS

Item 58.13 - Deck Joints

All joints, on the topside, have minor gouges and debris impaction. Along the shoulders, there is a heavy buildup of sand and debris.

Under all joints, there is evidence of leakage including dampness and excessive rust staining.

The east and west abutment joints, in the concrete headers, have minor cracking and spalling.

The pier expansion joint, on the underside, has widespread rusting and delamination. Also, in most bays, there is timber formwork left in place.

The east abutment expansion joint has widespread severe gouges, nearly full length. See photo 5.

APPROACHES

Approaches a - Appr. Pavement Condition

Both approaches have scattered transverse and longitudinal cracks, up to 1/4" wide.

At the deck ends, the approaches have concentrations of transverse cracking. See photo 5.

The east approach, in the westbound lane, has a pothole, 16" square x 1" deep.

ITEM 59 - SUPERSTRUCTURE

Item 59.4 - Girders or Beams

All beams have random areas of minor rusting, mostly along the bottom flanges and bottom of the webs. The highest concentration of rusting appears at the beam ends.

West Span

All beams, at the west ends, have moderate rusting with delamination and pitting, up to 10" long x 12" high x 1/8" deep.

Beam 1, at the west end, mostly on the south face, has an area of moderate rusting with delamination and pitting, concentrated on the bottom of the web and bottom flange, 8' long x 6" high x 1/8" deep.

Beams 2 - 6, at the east ends, in the bottom of the webs, have rusting with delamination and pitting, 3' long x 3" high x 1/8" deep.

Beam 3, at 5' from the east end, has a small plate welded to the top of the bottom flange. Pack rust is bending the plate upward. See photo 6.

Beam 3, at the east end of the cover plate, has an area of moderate surface rusting, 3' long.

Beam 7, at 10' from the west end (near the scupper pipe), has an area of rusting and paint peeling.

East Span

Beams 8 - 12, at the east end, have moderate rusting with pitting, mostly in the bottom of the web, up to 10" long x full height x 1/8" deep.

Beam 8, at the west end, has an area of severe rusting with delamination and section loss. See sketch 2.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

REMARKS

Beam 10, at 2' from the west end, on the south face, the lower web has an area of moderate rusting and pitting, 4' long x up to 6" high x up to 1/16" deep.

Item 59.8 - Cover Plates

All cover plates, at mid-span, have a large, transverse, field welded splice. Some of the weld passes have porosity and irregularity.

The beam 3 cover plate is rusted on the bottom, nearly full length.

Item 59.9 - Bearing Devices

All bearings are heavily rusted with areas of pack rust forming and section loss to the masonry plates, sole plates, and anchor bolts. Also, the keepers have severe section loss at the connection with the masonry plates. See photo 7.

Bearing 7, at the west abutment, has shifted west, with the back edge of the bronze plate flush with the back of the masonry plate.

Item 59.10 - Diaphragms/Cross Frames

End Diaphragms

Over both abutments, all bays have cracks along the bottoms of the concrete end diaphragms. The cracks are up to full length x 1/16" wide, with the remaining concrete hollow surrounding these cracks. See photo 8.

At the west abutment, the bays 2 & 3 end diaphragms have spalling, 3' long x 6" high x 6" deep. See photo 8.

At the east abutment, the bays 2 & 3 end diaphragms have spalling, up to 6' long x 12" wide x 6" deep.

Intermediate Diaphragms

The intermediate diaphragms and end diaphragms have random locations with one (1) missing connection bolt. These bolts remain from the original construction process of the structure.

Random diaphragms have minor surface rusting. See photo 2.

Item 59.11 - Rivets & Bolts

At all interior diaphragms, there are nuts and bolts in place from the original construction process, connecting the diaphragms to the beams.

Item 59.12 - Welds

Many of the welds for the diaphragm connections and cover plates are irregular or have visible porosity.

Item 59.14 - Paint/Coating

There are areas of paint failure throughout each span of the bridge, mostly to the bottom of the beam webs, with the highest concentration at the beam ends. See photo 2.

Beam 14, on the north fascia, in the east half, has an area of severe paint peeling with bare steel exposed. See photo 9.

SuperStructure Load Deflection Notes

There is minor deflection under live load.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

REMARKS

SuperStructure Load Vibration Notes

There is minor vibration under live load.

ITEM 60 - SUBSTRUCTURE

Item 60.1 - Abutments

Item 60.1.b - Bridge Seats

Along the west abutment, mostly in bays 1 - 3, there is a large buildup of construction related debris and dirt.

The east seat, at beam 8, has a spall, 12" diameter x 2" deep.

Item 60.1.c - Backwalls

There is moderate rust staining, efflorescence, and mapcracking from the deck joints, full length.

West Backwall

Bays 1 and 6 have multiple areas of scaling and spalling, up to 12" long x 28" high x 1" deep.

East Backwall

Bay 6 has two spalls, up to 4' long x 3' high x 4" deep. See photo 10.

Item 60.1.d - Breastwalls

Both breastwalls have minor vertical and horizontal hairline cracks, area of light scaling, and rust staining. Also, the lower 3', along the waterline, has moderate abrasion.

The east breastwall, near the north end, has an area of scaling, 12' long x 2' high x 6" deep. See photo 11.

Item 60.1.e - Wingwalls

The northeast wingwall has hairline mapcracking with efflorescence throughout the top two-thirds.

The northwest wingwall, at the construction joint, has multiple spalls, up to 2' high x 6" wide x 2" deep.

The southeast wingwall, on the lower portion, near the center, has an area of mapcracking, 16' long x 13' high.

The southwest wingwall, at the south end, has a horizontal crack, 10' long x 1/16" wide.

The southwest cheekwall, adjacent to the deck overhang, has an area of scaling, 3' long x 10" high x 1" deep.

Item 60.1.h - Footings

The footings are hidden.

Item 60.2 - Piers

Item 60.2.d - Pierwalls

On both faces, there is widespread vertical and horizontal cracking with rust stains and isolated hollow areas.

East Face

Along the waterline, there is moderate abrasion, full length x up to 18" high.

At the north nose, near the waterline, there is a spall, 12" long x 6" high x 4" deep. See photo 12.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

REMARKS

Near the north end, there are multiple spalls up to 12" diameter x up to 2" deep. At the waterline, there are two spalls, 2' long x 12" high x 12" deep.

Below bay 1, at the top of the pier, there is an area of cracking and delamination, 6' long x up to 3' high.

Below bay 4, at the top of the pier, there is a spall, 27" long x 4" high x 2" deep. Adjacent to the spall, there is hollow and delaminated area, 7' long x 3' high.

Below bay 5, at the top of the pier, there is a spall, 22" long x 16" high x 5-1/2" deep.

Below bay 6, at the top of the pier, there is a spall, 20" long x 6" high x 1-1/2" deep.

At bearing 7, on the top face, there is a spall, 8" diameter x 2" deep.

West Face

At the north end, there are scattered areas of cracking with rust staining and minor scaling, up to 2' diameter x 1/2" deep.

Below beam 1, the pier has widespread cracking with a large hollow and spalled area, 4' long x 8' high x up to 2" deep.

Below bay 2, at the top of the pier, there is a spall, 15" long x 3" high x 1" deep.

Below bay 3, at the waterline, there is an area of scaling with exposed rebar, 6' long x 9" high x 3" deep.

Item 60.2.f - Footing

On the west face of the pier, at the north end, the exposed portions of the footing have minor abrasion.

Item 60.2.h - Scour

At the upstream nose of the pier, there is a scour hole, approximately 3' deep partially filled with some river bed material and debris. The west side of the pier footing is exposed in this area, 10' long x up to 6" high. See photo 12.

SubStructure Scour Notes

Refer to Item 60.2.h - Scour.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour

The main flow favors the west span. In the east span, the flow favors the east abutment. The channel is 1' lower in this area. Refer to chart 1.

Item 61.3 - Debris

At the upstream (north) end of the pier, there is a tree lodged at the bottom of the nose, 18" diameter x approximately 20' long. The tree is causing a local eddy current / scour at the north nose of the pier. See photo 12.

Item 61.4 - Vegetation

There is heavy vegetation growth on the gravel buildup extending downstream (south) from the pier. See photo 13.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-OJM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	---	---------------------------------------

REMARKS

Item 61.7 - Aggradation

Starting on the east side of the pier and becoming more prevalent as it extends south (downstream), there is an aggradation bar composed mainly of gravel and boulders, up to 300' long x 6' wide x up to 5' high. See photo 13.

TRAFFIC SAFETY

Item 36a - Bridge Railing

The bridge railings consist of single steel thrie beam panels, continuous with the approach guardrails, mounted on steel posts with plastic blockouts. This is in front of the out of service railing that consists of steel posts and pipe rails, not tied into the end posts. Refer to Item 58.8 - Railing.

Item 36b - Transitions

The transitions consist of nested steel thrie beam panels mounted on timber posts with timber blockouts, spaced at 3'.

In the transitions, all timber posts have minor rot and most guardrail panels have minor collision damage.

Item 36c - Approach Guardrail

The approach guardrails consist of single steel W-beam panels mounted on steel posts with steel blockouts, spaced at 6'.

In the northeast approach, the guardrail has a severe gouge in one panel and moderate damage to two panels. See photo 14.

Item 36d - Approach Guardrail Ends

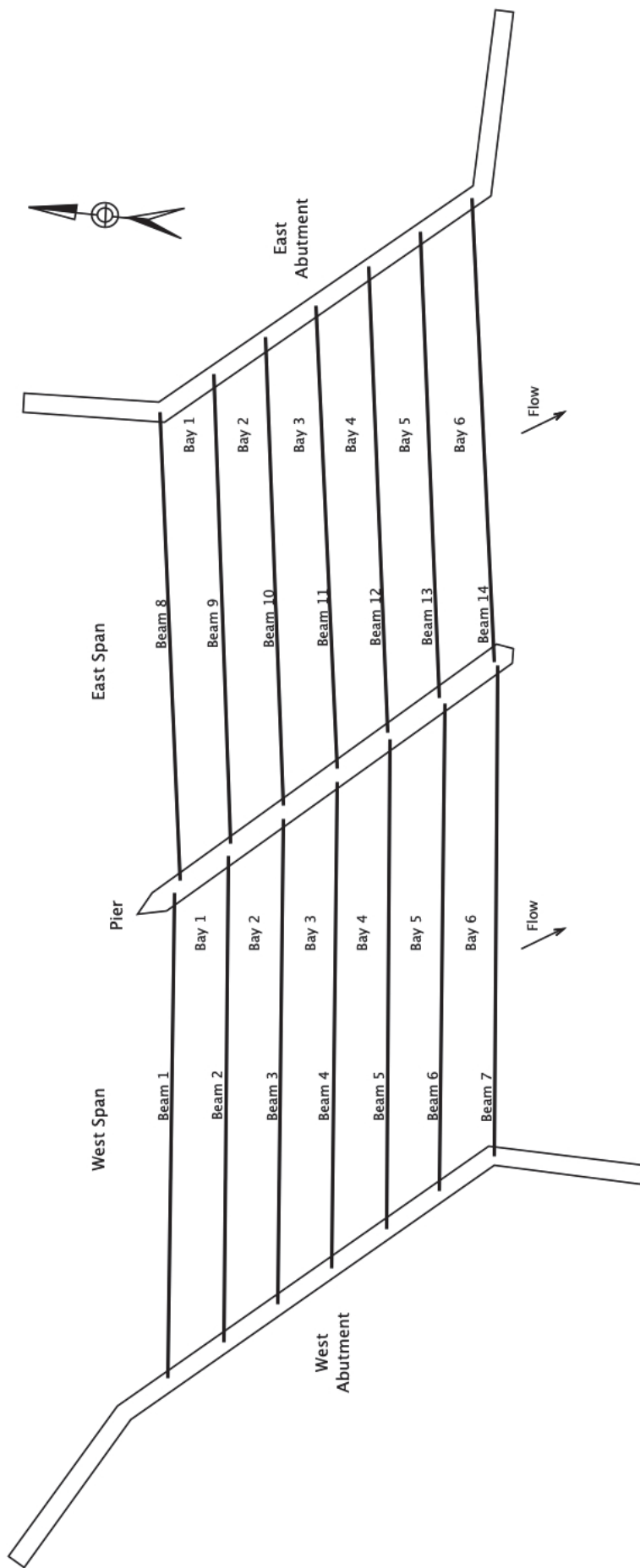
All approach guardrails continue away from the bridge along Route 9 and the adjacent side roads.

Sketch / Chart / Photo Log

- Sketch 1 : Framing plan.
- Sketch 2 : Beam 8, west end, section loss.
- Chart 1 : Channel profile readings.
- Photo 1 : General topside, looking west.
- Photo 2 : Typical underside, looking west (east span shown).
- Photo 3 : Spalling at the west end of the north overhang at the west abutment.
- Photo 4 : Spall and hollow area adjacent to beam 8, near the east end.
- Photo 5 : Gouges throughout the east abutment joint. Also, note the cracking in the adjacent approach pavement.
- Photo 6 : Plate welded to the top of the bottom flange near the east end of beam 3.
- Photo 7 : Bearing 8, east abutment, with pack rust and section loss to the keepers (typical).
- Photo 8 : Typical cracking and spalling of the end diaphragms, bay 3 at the west abutment shown.
- Photo 9 : Area of missing paint on the south face of beam 14.
- Photo 10 : Spalling in the east backwall, bay 6.
- Photo 11 : East breastwall, north end, scaling along the waterline.
- Photo 12 : Spalling at the nose of the pier. Also, note the scour and debris at the north end.
- Photo 13 : Aggradation and vegetation in the downstream channel, extending south from the pier.
- Photo 14 : Minor damage to guardrail panels in the northeast approach guardrail.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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SKETCHES

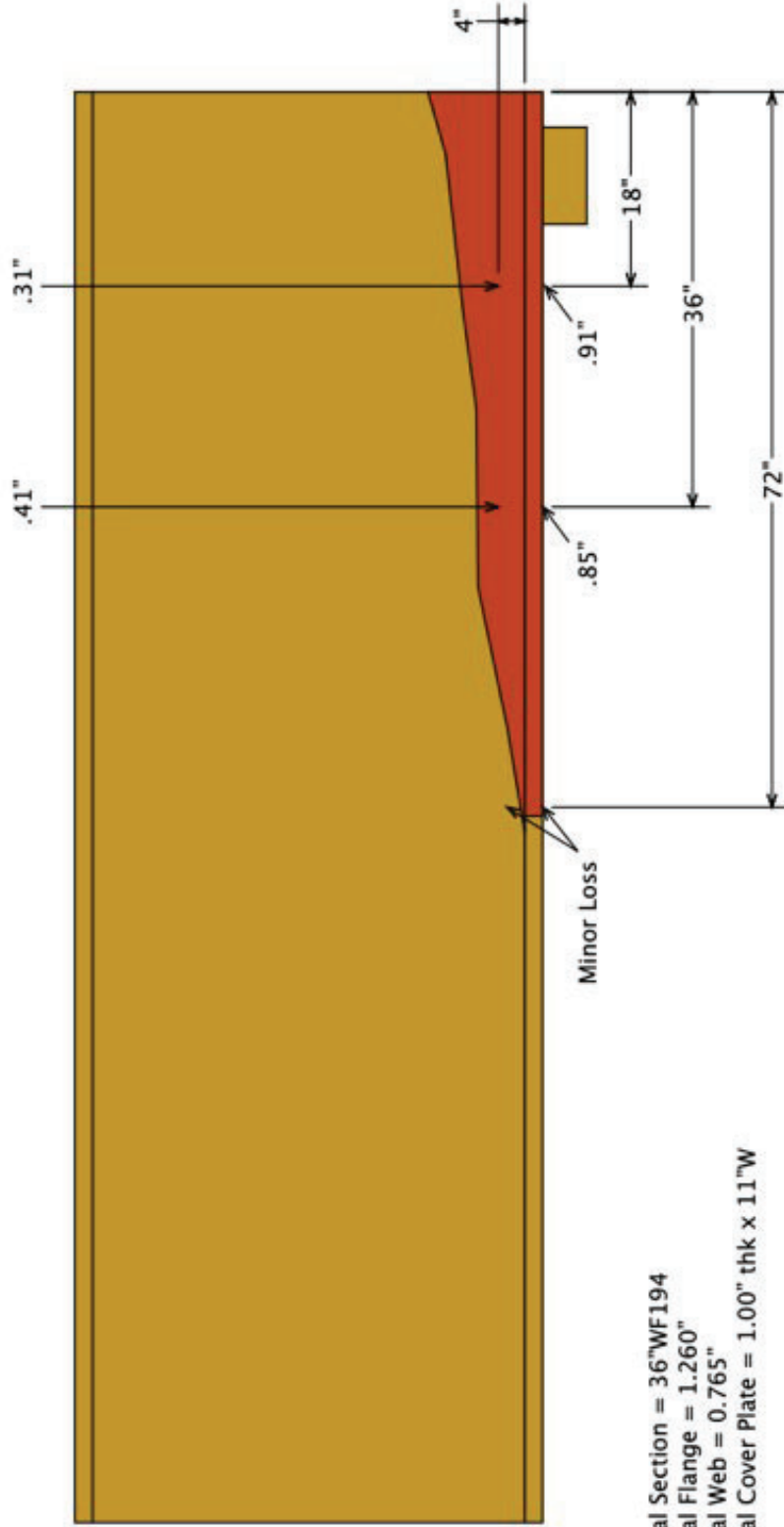


Sketch 1: Framing plan.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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SKETCHES

Beam 8 at Pier
North Elevation



Original Section = 36" WF194
 Original Flange = 1.260"
 Original Web = 0.765"
 Original Cover Plate = 1.00" thk x 11"W

Sketch 2: Beam 8, west end, section loss.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
--------------------------------	----------------------	----------------------------------	--	---------------------------------------

CHARTS

Scour Profile Readings (ft)

DATE	W. Abut	1/3 span	2/3 span	Pier (W. face)	Pier (E. face)	1/3 span	2/3 span	E. Abut	W. Abut	1/3 span	2/3 span	Pier (W. face)	Pier (E. face)	1/3 span	2/3 span	E. Abut	
6/5/23	North Fascia	19.4	19.8	18.6	22.3	19.6	19.5	19.3	20.1	South Fascia	21.0	20.7	21.3	20.3	20.3	21.4	23.4

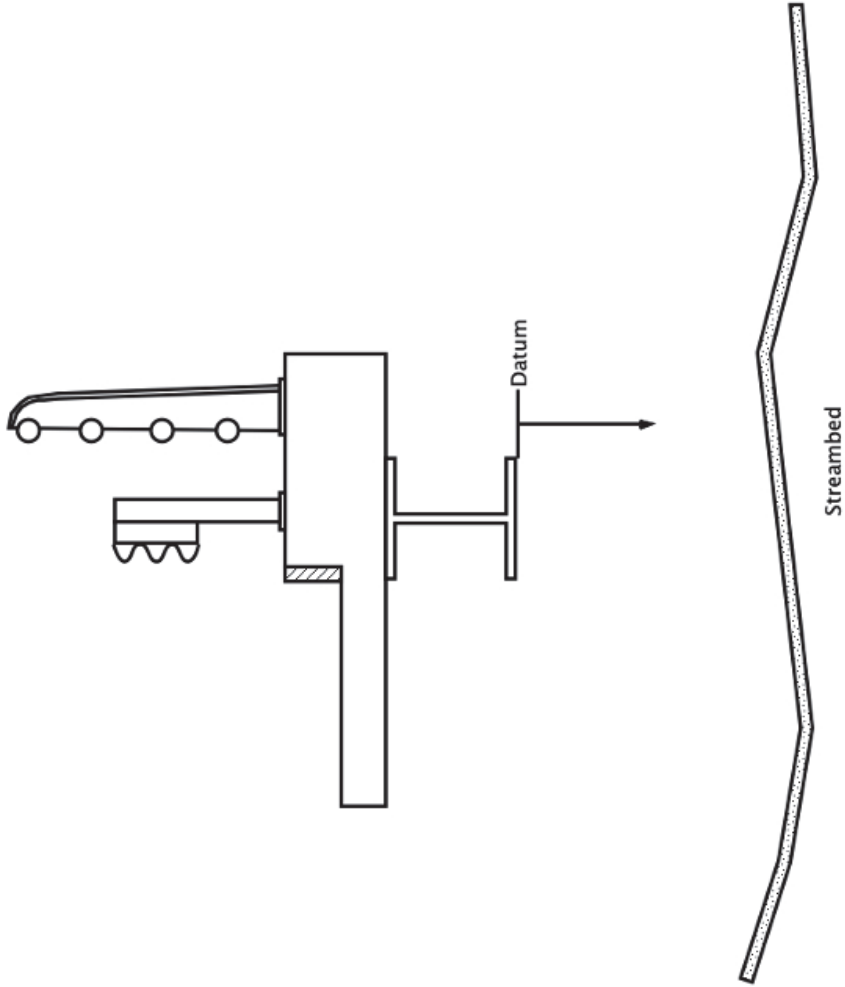


Chart 1: Channel profile readings.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 1: General topside, looking west.



Photo 2: Typical underside, looking west (east span shown).

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-OJM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 3: Spalling at the west end of the north overhang at the west abutment.



Photo 4: Spall and hollow area adjacent to beam 8, near the east end.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 5: Gouges throughout the east abutment joint. Also, note the cracking in the adjacent approach pavement.



Photo 6: Plate welded to the top of the bottom flange near the east end of beam 3.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 7: Bearing 8, east abutment, with pack rust and section loss to the keepers (typical).



Photo 8: Typical cracking and spalling of the end diaphragms, bay 3 at the west abutment shown.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 9: Area of missing paint on the south face of beam 14.



Photo 10: Spalling in the east backwall, bay 6.

CITY/TOWN CUMMINGTON	B.I.N. 0JM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-0JM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 11: East breastwall, north end, scaling along the waterline.

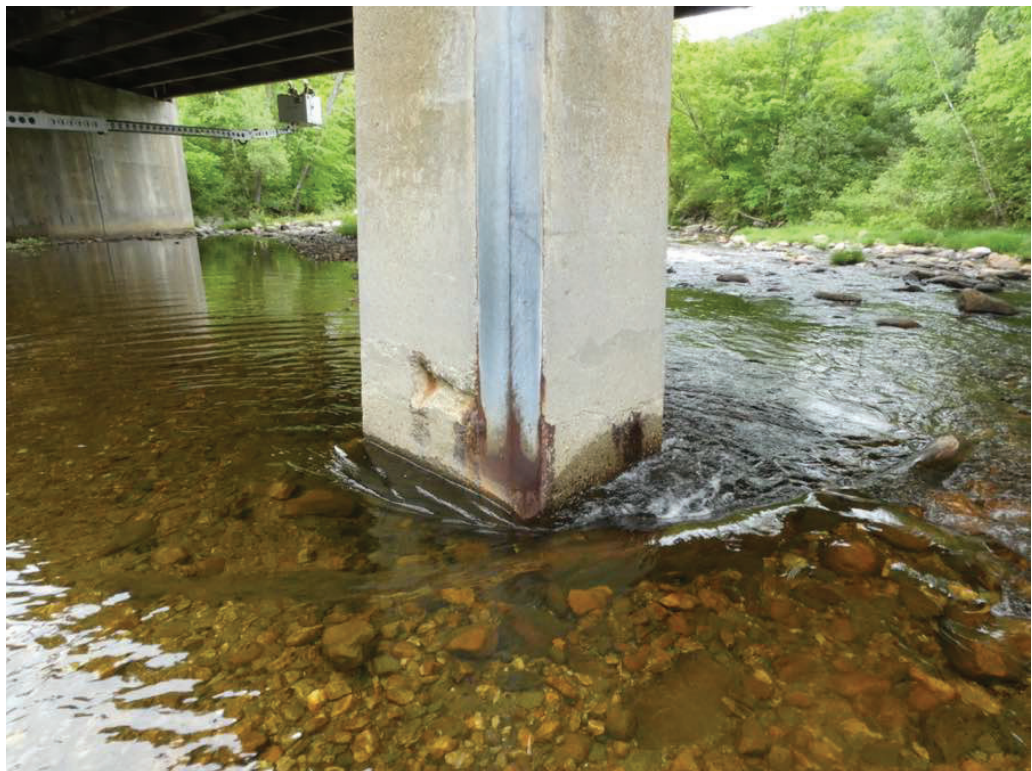


Photo 12: Spalling at the nose of the pier. Also, note the scour and debris at the north end.

CITY/TOWN CUMMINGTON	B.I.N. OJM	BR. DEPT. NO. C-21-024	8.-STRUCTURE NO. C21024-OJM-DOT-NBI	INSPECTION DATE JUN 5, 2023
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PHOTOS



Photo 13: Aggradation and vegetation in the downstream channel, extending south from the pier.



Photo 14: Minor damage to guardrail panels in the northeast approach guardrail.

National Bridge Element Inspection

BDEPT# **C-21-024**

Date **06/05/2023**

B.I.N. **0JM**

District Bridge Inspection Engr **Laurie A. Briggs**

Item 8 **C21024-0JM-DOT-NBI**

Inspecting Agency **Mass. Highway Dept.**

Span Group **1**

Team Leader **Michael P.E. McCabe**

Town **Cummington**

Team Member(s) **Eli Geminder, Seth B Levine**

District **1**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
12	Re Concrete Deck	sq feet	2	8,156.000	<input type="checkbox"/> %	2,656.000	5,000.000	500.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	sq feet	2	1,500.000	<input type="checkbox"/> %		1,000.000	500.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	sq feet	2	4,000.000	<input type="checkbox"/> %		4,000.000		
Notes :									
107	Steel Opn Girder/Beam	feet	2	1,117.000	<input type="checkbox"/> %	917.000	200.000		
Notes :									
> 1000	<i>Corrosion</i>	feet	2	200.000	<input type="checkbox"/> %		200.000		
Notes :									
> 515	Steel Protective Coating	sq feet	2	11,047.000	<input type="checkbox"/> %		9,747.000	1,000.000	300.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	2	11,047.000	<input type="checkbox"/> %		9,747.000	1,000.000	300.000
Notes :									
107	Steel Opn Girder/Beam	feet	3	140.000	<input type="checkbox"/> %		120.000	20.000	
Notes :									
> 1000	<i>Corrosion</i>	feet	3	140.000	<input type="checkbox"/> %		120.000	20.000	
Notes :									
> 515	Steel Protective Coating	sq feet	3	1,385.000	<input type="checkbox"/> %		1,065.000	300.000	20.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	1,385.000	<input type="checkbox"/> %		1,065.000	300.000	20.000
Notes :									
210	Re Conc Pier Wall	feet	2	77.000	<input type="checkbox"/> %	37.000	30.000	10.000	
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-024**

Date **06/05/2023**

B.I.N. **0JM**

District Bridge Inspection Eng'r **Laurie A. Briggs**

Item 8 **C21024-0JM-DOT-NBI**

Inspecting Agency **Mass. Highway Dept.**

Span Group **1**

Team Leader **Michael P.E. McCabe**

Town **Cummington**

Team Member(s) **Eli Geminder, Seth B Levine**

District **1**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> 1080	<i>Delamination/Spall/Patched Area</i>	feet	2	10.000	<input type="checkbox"/> %			10.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	feet	2	30.000	<input type="checkbox"/> %		30.000		
Notes :									
215	Re Conc Abutment	feet	3	251.000	<input type="checkbox"/> %	139.000	100.000	12.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	feet	3	12.000	<input type="checkbox"/> %			12.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	feet	3	100.000	<input type="checkbox"/> %		100.000		
Notes :									
300	Strip Seal Exp Joint	feet	2	171.000	<input type="checkbox"/> %	71.000	100.000		
Notes :									
> 2350	<i>Debris Impaction</i>	feet	2	50.000	<input type="checkbox"/> %		50.000		
Notes :									
> 2370	<i>Metal Deterioration or Damage</i>	feet	2	50.000	<input type="checkbox"/> %		50.000		
Notes :									
311	Moveable Bearing	each	3	14	<input type="checkbox"/> %			14	
Notes :									
> 1000	<i>Corrosion</i>	each	3	14	<input type="checkbox"/> %			14	
Notes :									
> 515	Steel Protective Coating	sq feet	3	42.000	<input type="checkbox"/> %		21.000		21.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	42.000	<input type="checkbox"/> %		21.000		21.000
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-024**

Date **06/05/2023**

B.I.N. **0JM**

District Bridge Inspection Eng'r **Laurie A. Briggs**

Item 8 **C21024-0JM-DOT-NBI**

Inspecting Agency **Mass. Highway Dept.**

Span Group **1**

Team Leader **Michael P.E. McCabe**

Town **Cummington**

Team **Eli Geminder, Seth B Levine**

District **1**

Member(s)

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
313	Fixed Bearing	each	3	14	<input type="checkbox"/> %			14	
Notes :									
> 1000	<i>Corrosion</i>	each	3	14	<input type="checkbox"/> %			14	
Notes :									
> 515	Steel Protective Coating	sq feet	3	42.000	<input type="checkbox"/> %		21.000		21.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	42.000	<input type="checkbox"/> %		21.000		21.000
Notes :									
330	Metal Bridge Railing	feet	2	310.000	<input type="checkbox"/> %	310.000			
Notes :									
> 515	Steel Protective Coating	sq feet	2	1,240.000	<input type="checkbox"/> %	1,240.000			
Notes :									

State Information				Classification				Code			
BDEPT# = C21024	Agency Br.No.			(112) NBIS Bridge Length				Y			
Town = Cummington	L.O. MHD			(104) Highway System				Y			
B.I.N = 0JM	AASHTO= 074.6			(26) Functional Class -	Rural Arterial			02			
RANK = 2214	H.I. = 79.0 %	FHWA Select List= N (6/21/2017)		(100) Defense Highway				0			
Identification				(101) Parallel Structure				N			
(8) Structure Number	C210240JMDOTNBI			(102) Direction of Traffic -	2-way traffic			2			
(5) Inventory Route	131000090			(103) Temporary Structure				N			
(2) State Highway Department District	01			(105) Federal Lands Highways				0			
(3) County Code 015	(4) Place code	16040		(110) Designated National Network				N			
(6) Features Intersected	WATER WESTFIELD RIVER			(20) Toll -	On free road			3			
(7) Facility Carried	ST 9 BERKSHIRE TR			(21) Maintain -	State Highway Agency			01			
(9) Location	100' W JCT W MAIN ST.			(22) Owner -	State Highway Agency			01			
(11) Kilometerpoint	0031.059			(37) Historical Significance	built after 1949 presumed to be not eligi			Z			
(12) Base Highway Network	Y			Condition							
(13) LRS Inventory Route & Subroute	000000000000			(58) Deck				5			
(16) Latitude	42 DEG 29 MIN 20.48 SEC			(59) Superstructure				6			
(17) Longitude	72 DEG 57 MIN 48.41 SEC			(60) Substructure				6			
(98) Border Bridge State Code	Share %			(61) Channel & Channel Protection				6			
(99) Border Bridge Structure No. #				(62) Culverts				N			
Structure Type and Material				Load Rating and Posting				Code			
(43) Structure Type Main:	Steel	Code 302		(31) Design Load -	H 20=M 18			4			
Stringer/Girder	Jointless bridge type: Not applicable			(63) Operating Rating Method -	Allowable Stress (AS)			2			
(44) Structure Type Appr:				(64) Operating Rating				36.8			
Other	Code 000			(65) Inventory Rating Method -	Allowable Stress (AS)			2			
(45) Number of spans in main unit	002			(66) Inventory Rating				16.8			
(46) Number of approach spans	0000			(70) Bridge Posting				5			
(107) Deck Structure Type -	Concrete Cast-in-Place	Code 1		(41) Structure -	Open			A			
(108) Wearing Surface / Protective System:				Appraisal				Code			
A) Type of wearing surface -	Latex Concrete	Code 3		(67) Structural Evaluation				4			
B) Type of membrane -	None	Code 0		(68) Deck Geometry				7			
C) Type of deck protection -	None	Code 0		(69) Underclearances, vert. and horiz.				N			
Age and Service				(71) Waterway adequacy				9			
(27) Year Built	1958			(72) Approach Roadway Alignment				8			
(106) Year Reconstructed	0000			(36) Traffic Safety Features	0 0 0			N			
(42) Type of Service: On -	Highway			(113) Scour Critical Bridges				4			
Under -	Waterway	Code 15		Inspections							
(28) Lanes: On Structure	02	Under structure 00		(90) Inspection Date	06/05/23			(91) Frequency	24 MO		
(29) Average Daily Traffic	002820			(92) Critical Feature Inspection:				(93) CFI DATE			
(30) Year of ADT	2016	(109) Truck ADT	10 %	(A) Fracture Critical Detail	N	00	MO A)	00/00/00			
(19) Bypass, detour length	002 KM			(B) Underwater Inspection	N	00	MO B)	00/00/00			
Geometric Data				(C) Other Special Inspection	N	00	MO C)	00/00/00			
(48) Length of maximum span	0023.0 M			(*) Other Inspection (Flood)	N	00	MO *)	01/10/12			
(49) Structure Length	00049.0 M			(*) Closed Bridge	N	00	MO *)	00/00/00			
(50) Curb or sidewalk:	Left	00.0 M	Right 00.0 M	(*) UW Special Inspection	N	00	MO *)	00/00/00			
(51) Bridge Roadway Width Curb to Curb	013.4 M			(*) Damage Inspection				MO *)	00/00/00		
(52) Deck Width Out to Out	015.3 M			Rating Loads							
(32) Approach Roadway Width (w/shoulders)	013.4 M			Report Date	01/01/88	H20	Type 3	Type 3S2	Type HS		
(33) Bridge Median -	No median	Code 0		Operating	35.0	45.0	58.0	0.0			
(34) Skew	40 DEG	(35) Structure Flared	N	Inventory	19.0	20.0	26.0	0.0			
(10) Inventory Route MIN Vert Clear	99.99 M			Field Posting							
(47) Inventory Route Total Horiz Clear	13.4 M			Status	WAIVED			Posting Date	03/09/88		
(53) Min Vert Clear Over Bridge Rdwy	99.99 M							2 Axle	3 Axle	5 Axle	Single
(54) Min Vert Underclear ref	N	00.0 M		Actual							
(55) Min Lat Underclear RT ref	N	00.0 M		Recommended							
(56) Min Lat Underclear LT	00.0 M			Missing Signs	N						
Navigation Data				Misc.							
(38) Navigation Control -	No navigation control on waterway			Bridge Name	N Anti-missile fence			N Acrow Panel	N Jointless Bridge		
(111) Pier Protection	Code 0			Freeze/Thaw	N : Not Applicable						
(39) Navigation Vertical Clearance	000.0 M			# Stairs On/Adjacent	0			Stair Owner(s)			
(116) Vert-lift Bridge Nav Min Vert Clear	M			Accessibility (Needed/Used)							
(40) Navigation Horizontal Clearance	0000.0 M			N / N	Liftbucket	N / N	Rigging	N / N	Other		
				N / N	Ladder	N / N	Staging				
				N / N	Boat	Y / Y	Traffic Control				
				P / Y	Wader	N / N	RR Flagperson	Inspection			
				Y / Y	Inspector 50	Y / Y	Police	Hours:	024		

STRUCTURES INSPECTION FIELD REPORT

2-DIST
01

B.I.N.
0JK

ROUTINE INSPECTION

BR. DEPT. NO.
C-21-025

CITY/TOWN CUMMINGTON	8.-STRUCTURE NO. C21025-0JK-DOT-NBI	11-Kilo. POINT 031.945	41-STATUS A:OPEN	90-ROUTINE INSP. DATE JUL 10, 2024
07-FACILITY CARRIED ST 9 BERKSHIRE TR	MEMORIAL NAME/LOCAL NAME	27-YR BUILT 1958	106-YR REBUILT 0000	YR REHAB'D (NON 106) 2015
06-FEATURES INTERSECTED WATER WESTFIELD RIVER	26-FUNCTIONAL CLASS Rural Arterial	DIST. BRIDGE INSPECTION ENGINEER M. P.E. McCabe		
43-STRUCTURE TYPE 302 : Steel Stringer/Girder	22-OWNER State Highway Agency	21-MAINTAINER State Highway Agency	TEAM LEADER D. McDonald	PROJ MGR BL Companies
107-DECK TYPE 1 : Concrete Cast-in-Place	WEATHER Clear	TEMP. (air) 27°C	TEAM MEMBERS D. HODGKINS	

ITEM 58	5	
DECK		DEF
1. Wearing Surface	N	-
2. Deck Condition	5	S-P
3. Stay in Place Forms	N	-
4. Curbs	6	M-P
5. Median	N	-
6. Sidewalks	4	S-A
7. Parapets	N	-
8. Railing	4	S-A
9. Anti Missile Fence	N	-
10. Drainage System	N	-
11. Lighting Standards	N	-
12. Utilities	N	-
13. Deck Joints	6	M-P
14.	N	-
15.	N	-
16.	N	-
CURB REVEAL (In millimeters)	N 220	S 230

APPROACHES		DEF
a. Appr. Pavement Condition	6	M-P
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.	N	-

OVERHEAD SIGNS (Attached to bridge)	(Y/N)	N
		DEF
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

ITEM 59	5	
SUPERSTRUCTURE		DEF
1. Stringers	N	-
2. Floorbeams	N	-
3. Floor System Bracing	N	-
4. Girders or Beams	5	S-P
5. Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6. Pin & Hangers	N	-
7. Conn Plt's, Gussets & Angles	6	M-P
8. Cover Plates	N	-
9. Bearing Devices	5	S-P
10. Diaphragms/Cross Frames	6	M-P
11. Rivets & Bolts	7	-
12. Welds	7	-
13. Member Alignment	7	-
14. Paint/Coating	5	S-P
15.	N	-

Year Painted **1978**

COLLISION DAMAGE: Please explain
None (X) Minor () Moderate () Severe ()

LOAD DEFLECTION: Please explain
None () Minor (X) Moderate () Severe ()

LOAD VIBRATION: Please explain
None () Minor (X) Moderate () Severe ()

Any Fracture Critical Member: (Y/N) **N**

Any Cracks: (Y/N) **N**

ITEM 60	5			
SUBSTRUCTURE		DEF		
1. Abutments	Dive	Cur	5	
a. Pedestals	N	N		-
b. Bridge Seats	N	5		S-A
c. Backwalls	N	6		M-P
d. Breastwalls	N	5		S-P
e. Wingwalls	N	6		M-P
f. Slope Paving/Rip-Rap	N	N		-
g. Pointing	N	N		-
h. Footings	N	7		-
i. Piles	N	N		-
j. Scour	N	6		M-P
k. Settlement	N	7		-
l.	N	N		-
m.	N	N		-
2. Piers or Bents			5	
a. Pedestals	N	N		-
b. Caps	N	N		-
c. Columns	N	N		-
d. Pierwalls	N	5		S-P
e. Pointing	N	N		-
f. Footing	N	H		-
g. Piles	N	N		-
h. Scour	N	7		-
i. Settlement	N	7		-
j.	N	N		-
k.	N	N		-
3. Pile Bents			N	
a. Pile Caps	N	N		-
b. Piles	N	N		-
c. Diagonal Bracing	N	N		-
d. Horizontal Bracing	N	N		-
e. Fasteners	N	N		-

UNDERMINING (Y/N) If YES please explain **N**

COLLISION DAMAGE:
None (X) Minor () Moderate () Severe ()

SCOUR: Please explain
None (X) Minor () Moderate () Severe ()

I-60 (Dive Report): **N** I-60 (This Report): **5**

93B-U/W (DIVE) Insp **00/00/0000**

CITY/TOWN CUMMINGTON	B.I.N. 0JK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-0JK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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ITEM 61 6

CHANNEL & CHANNEL PROTECTION

	Dive	Cur	DEF
1.Channel Scour	N	7	-
2.Embankment Erosion	N	7	-
3.Debris	N	6	M-P
4.Vegetation	N	7	-
5.Utilities	N	N	-
6.Rip-Rap/Slope Protection	N	7	-
7.Aggradation	N	6	M-P
8.Fender System	N	N	-

STREAM FLOW VELOCITY:
Tidal () High () Moderate () Low (X) None ()

ITEM 61 (Dive Report): N ITEM 61 (This Report): 6

93b-U/W INSP. DATE:

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	0	4	S-A
B. Transitions	0	6	M-P
C. Approach Guardrail	0	6	M-P
D. Approach Guardrail Ends	1	6	M-P

WEIGHT POSTING Not Applicable X

H 3 3S2 Single

Actual Posting: N N N N

Recommended Posting: N N N N

Waived Date: EJDMT Date:

At bridge: E W Other Advance: E W

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility:

CLEARANCE POSTING

Not X

Actual Field Measurement: ft in ft in meter

Posted Clearance:

At bridge: N S Advance: N S

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility:

ACCESSIBILITY (Y/N/P)

	Needed	Used
Lift Bucket	N	N
Ladder	P	N
Boat	N	N
Waders	Y	Y
Inspector 50	Y	Y
Rigging	N	N
Staging	N	N
Traffic Control	Y	Y
RR Flagger	N	N
Police	Y	Y
Other:		
	N	N

TOTAL HOURS 116

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

List of field tests performed:
D-Meter

RATING

Rating Report (Y/N): Y

Date:

Inspection data at time of existing rating
I 58: 6 I 59: 4 I 60: 6 Date : 07/02/2014

Recommend for Rating or Rerating (Y/N): N Y

If YES please give priority:
HIGH () MEDIUM () LOW ()

REASON: _____

CONDITION RATING GUIDE (For Items 58, 59, 60 and 61)

CODE	CONDITION	DEFECTS
N	NOT APPLICABLE	
G 9	EXCELLENT	Excellent condition.
G 8	VERY GOOD	No problem noted.
G 7	GOOD	Some minor problems.
F 6	SATISFACTORY	Structural elements show some minor deterioration.
F 5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P 4	POOR	Advanced section loss, deterioration, spalling or scour.
P 3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C 2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C 1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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REMARKS

BRIDGE ORIENTATION

Bridge No. C-21-025 (OJK) is a two span simply supported bridge that carries ST 9 (Berkshire Trail) over the Westfield River in Cummington. The Westfield River flows from south to north, the approaches, spans, and abutments are labeled west and east, the girders are numbered from north to south beginning with Girder 1 in the West Span and Girder 7 in the East Span, and the bays are numbered from north to south beginning with Bay 1 in each span (**See Sketch 1**). The labeling/numbering is consistent with the construction drawings and the previous report.

GENERAL REMARKS

The superstructure consists of a bare reinforced concrete deck supported by six steel plate girders in each span seated on two gravity type concrete abutments on a spread footing at the West Abutment and on ledge at the East Abutment, and a reinforced concrete pierwall on a spread footing.

Access – A 62’ UBI was deployed off both sides of the bridge.

ITEM 58 - DECK

Item 58.2 - Deck Condition

The top of the reinforced concrete deck exhibits random transverse hairline cracks up to 10’ long, some of which have been epoxy filled with locations of failing epoxy (**See Photo 1**). The underside of the deck exhibits concrete patches up to 12’ long x full bay width, transverse hairline cracks up to full bay width with efflorescence and rust stains, longitudinal cracks up to 6’ long x 1/16” wide with and without rust stains on both overhangs (**See Photos 4 and 9**), and additional deficiencies noted as follows:

West Span –

North Overhang –

Near the West Abutment – There is a spall, 2’ long x full width x 3” deep with exposed rebar.

At Midspan – There is a spall, 59’ long x full width x 3” deep with exposed rebar (**See Photo 2**).

At the Pier – There is a spall, 18” long x full width x 3” deep with exposed rebar (**See Photo 3**).

Bay 1 –

Between the First and Second Intermediate Cross Frames from the West Abutment – Adjacent to Girder 2, there is a spall, 6” diameter x 1” deep.

Bay 4 –

Between the Fourth and Fifth Intermediate Cross Frames from the West Abutment – Adjacent to Girder 4, there is a spall, 6” diameter x 2” deep with exposed rebar.

Near the Pier – Adjacent to Girder 4, there are three spalls, 6” diameter x 3” deep with exposed rebar.

South Overhang –

Near the West Abutment – There is a hollow area, 6” diameter.

Between the First and Second Intermediate Cross Frames from the West Abutment – There are two hollow areas up to 1’ long x 6” wide (**See Photo 4**).

At the Second Intermediate Cross Frame from the West Abutment – There is a spall, 9’ long x full width x 3” deep with exposed rebar (**See Photo 5**).

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

Between the Third and Fourth Intermediate Cross Frames from the West Abutment – There is a spall, 57” long x full width x 3” deep with exposed rebar **(See Photo 6)**.

At the Pier – There is a spall, 1’ long x full width x 2” deep with exposed rebar **(See Photo 7)**.

East Span –

North Overhang –

Near the Pier – There are two spalls, 6” diameter x 1-1/2” deep with exposed rebar **(See Photo 3)**.

Between the First and Second Intermediate Cross Frames from the Pier – There is a spall, 30” long x 10” wide x 3” deep with exposed rebar **(See Photo 3)**.

Between the Second and Third Intermediate Cross Frames from the Pier – There are two spalls, 50” long x full width x 3” deep with exposed rebar and 26” long x 10” wide x 3” deep with exposed rebar **(See Photo 8)**.

Between the Third and Fourth Intermediate Cross Frames from the Pier – There is a hollow area, 6’ long x full width.

Near the East Abutment – There is a spall, 6” diameter x 1” deep with exposed rebar and an adjacent hollow area, 30” long x 8” wide.

At the East Abutment – There is a spall, 18” long x 3” wide x 1” deep.

Bay 1 –

Near the Pier – Adjacent to Girder 8, there are two spalls, 4” diameter x 1” deep and 6” diameter x 2” deep with exposed rebar.

South Overhang –

At the Pier – There are two spalls, 4’ long x 9” wide x 3” deep with exposed rebar and 3’ long x full width x 3” deep with exposed rebar **(See Photos 7 and 10)**.

At the First Intermediate Cross Frame from the Pier – There is a spall, 1’ long x 8” wide x 1” deep with exposed rebar and an adjacent hollow area, 6” diameter **(See Photo 10)**.

Between the Fourth and Fifth Intermediate Cross Frames from the Pier – There are three spalls up to 6” diameter x 2” deep with exposed rebar.

Near the East Abutment – There are random hollow areas up to 8” diameter.

Item 58.4 - Curbs

There are granite curbs along both sides of the bridge, which exhibit random vertical hairline cracks up to full height, rust stains, isolated locations of missing material at the curb joints with vegetation growth **(See Photo 12)**, and additional deficiencies noted as follows:

North Curb –

Northwest Approach Curb – Adjacent to the bridge, there is a section of broken curb with a vertical crack, full height x 1/4” wide **(See Photo 11)**.

West Span –

Second Section from the West Abutment – There is a chip, 4” long x 1” wide x 3” high x 1” deep.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

At the Pier – There is a 2’ long section of broken curb **(See Photo 12)**.

South Curb –

Southeast Approach Curb – Adjacent to the bridge at the base, there is a spall, 2’ long x 6” high x 4” deep.

Item 58.6 - Sidewalks

There are concrete safetywalks along both sides of the bridge, which exhibit random areas of scaling up to 1’ diameter x 1/2” deep and additional deficiencies noted as follows:

North Safetywalk (Topside) –

West Span –

At the Pier – There is a spall, 2’ long x 10” wide x 4” deep **(See Photo 12)**.

East Span –

At the Seventeenth Post from the Pier – There is a concrete patch, 1’ diameter.

At the East Abutment – There is a longitudinal crack, 5’ long x 1/8” wide with peripheral spalling up to 3” wide x 3/4” deep.

North Safetywalk (Vertical Face) –

East Span –

Between the Fourth and Fifth Intermediate Cross Frames from the Pier – There is a spall, 8” long x 3” high x 2” deep and an area of scaling, 1’ long x 4” high x 1/2” deep.

South Safetywalk (Topside) –

West Span –

At the First Post from the West Abutment – There is a spall, 1’ long x 8” wide x 2” deep.

(S-A Deficiency) Between the Seventh and Eighth Post from the West Abutment – There is a spall, 3’ long x 2’ wide x 4” deep with exposed and debonded rebar that continues full height onto the vertical face and undermines the seventh post and exposes anchor bolts (See Photos 4 and 13).

Between the Eighth and Ninth Post from the West Abutment – There is a spall, 1’ long x 18” wide x 2” deep with exposed rebar.

Between the Fourteenth and Fifteenth Post from the West Abutment – There is a spall, 4’ long x 2’ wide x 6” deep with exposed and debonded rebar **(See Photo 14)**.

Between the Fifteenth and Sixteenth Post from the West Abutment – There is an area of scaling, 5’ long x 18” wide x 1” deep.

East Span –

At the Pier – There is a spall, 2’ long x 4” wide x 3” deep with exposed rebar **(See Photo 15)**.

Between the First and Second Post from the Pier – There is a spall, 8’ long x 2’ wide x 2” deep with exposed rebar **(See Photo 15)**.

(S-A Deficiency) Between the Second and Third Post from the Pier – There is a spall, 4’ long x 2’ wide x 6” deep with exposed and debonded rebar that continues full height onto the vertical face and undermines the third post and exposes anchor bolts (See Photos 10 and 15).

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

Between the Third and Fourth Post from the Pier – There is an area of scaling, 4’ long x 30” wide x 2” deep **(See Photo 16)**.

(S-A Deficiency) At the Fourth Post from the Pier – There is a spall, 3’ long x 30” wide x 6” deep with exposed and debonded rebar that continues 8” high onto the vertical face and undermines the post and exposes anchor bolts (See Photos 10 and 16).

(S-A Deficiency) At the Fifth Post from the Pier – There is a spall, 4’ long x 2’ wide x 4” deep with exposed and debonded rebar that undermines the post and exposes anchor bolts (See Photo 17).

(S-A Deficiency) At the Sixth Post from the Pier – There is a spall, 6’ long x 2’ wide x 6” deep with exposed and debonded rebar that undermines the post and exposes anchor bolts (See Photo 17).

Between the Eleventh and Twelfth Post from the Pier – There is an area of scaling, 1’ diameter x 1” deep with exposed rebar.

(S-A Deficiency) Between the Twelfth and Thirteenth Post from the Pier – There is a spall, 8’ long x 2’ wide x 5” deep with exposed and debonded rebar that undermines the posts and exposes anchor bolts (See Photo 18).

Between the Thirteenth and Fourteenth Post from the Pier – There is a spall, 1’ diameter x 1-1/2” deep with exposed rebar **(See Photo 18)**.

(S-A Deficiency) At the Fourteenth Post from the Pier – There is a spall, 3’ long x 2’ wide x 3” deep with exposed rebar that undermines the post and exposes anchor bolts (See Photo 18).

(S-A Deficiency) At the Fifteenth Post from the Pier – There is a spall, 18” diameter x 2” deep with exposed rebar that undermines the post and exposes anchor bolts.

**South Safetywalk (Vertical Face) –
West Span –**

At the Second Intermediate Cross Frame from the West Abutment – There is a spall, 8’ long x 8” high x 6” deep with exposed rebar **(See Photo 5)**.

Between the Third and Fourth Intermediate Cross Frames from the West Abutment – There are three spalls, 2’ long x 2” high x 3” deep with exposed rebar that continues 6” wide onto the underside, 18” long x 8” high x 4” deep with exposed rebar that continues 6” wide onto the underside, and 1’ long x 1” high x 2” deep with exposed rebar that continues 4” wide onto the underside **(See Photo 6)**.

Near the Pier – There is a hollow area, 21’ long x 1’ high.

East Span –

Near the Pier – There is a spall, 1’ long x 4” high x 2” deep **(See Photos 7 and 10)**.

Item 58.8 - Railing

There are type AL-3 aluminum bridge railings anchored to the tops of both safetywalks that are bolted to concrete end posts at all four corners of the bridge. The concrete end posts exhibit random vertical hairline cracks up to 1’ long x 1/4” wide, the north railing exhibits isolated areas of light rust, and the south railing exhibits random perforations up to 1/4” diameter in the horizontal rails, with additional deficiencies noted as follows:

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

South Railing –

(S-A Deficiency) West Span – The eighth and fourteenth sections from the West Abutment are missing all the pickets (See Photo 19).

(S-A Deficiency) East Span – The first section from the Pier is missing all the pickets (See Photo 15).

(S-A Deficiency) In addition, several post base plates are undermining due to safetywalk spalls. Refer to Item 58.6 entitled “Sidewalks”.

Item 58.13 - Deck Joints

There are compression seal deck joints at both abutments and the pier, which exhibit isolated buildups of sand, locations of vegetation growth in the safetywalks, light rust on the steel safetywalk headers, and the concrete approach side headers at the abutments have random transverse hairline cracks, some of which are patched **(See Photos 20 and 21)**. Additional deficiencies are noted as follows:

West Abutment Deck Joint –

In the North Safetywalk – The steel joint headers are covered in concrete **(See Photo 11)**.

Pier Deck Joint –

In the Eastbound Lane – Approximately 2’ from the solid white line, there is a 30” length of depressed joint material with tears **(See Photo 21)**.

In Both Shoulders – The steel joint headers exhibit heavy rust **(See Photo 12 and 21)**.

In Both Safetywalks – The steel joint headers have laminated rust **(See Photo 12)**.

Below the North Safetywalk – There are steel plates in contact with the Girder 1 and 7 top flanges with up to 2” of pack rust, bending the top flanges downward **(See Photo 25)**.

East Abutment Deck Joint –

In the Westbound Lane – Approximately 6’ from the solid white line, there is a 1’ length of depressed joint material with tears.

APPROACHES

Approaches a - Appr. Pavement Condition

The bituminous concrete approach pavements exhibit cracks noted as follows:

West Approach –

The pavement exhibits random transverse and longitudinal cracks up to 4’ long x 1/16” wide **(See Photo 22)**.

East Approach –

The pavement exhibits random transverse and longitudinal cracks up to 8’ long x 1/8” wide.

ITEM 59 - SUPERSTRUCTURE

Item 59.4 - Girders or Beams

The girders exhibit random areas of light to moderate rust and areas of heavy rust with isolated locations of laminated rust at the ends and along the tops of the outside legs of the bottom flanges of the fascia girders **(See Photo 30)**. Additional deficiencies are noted as follows:

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

West Span –

At the West Abutment –

All Girders – The bottom flanges beyond the bearings are bent upward (**See Photos 23 and 24**).

Girder 1 – In front of the bearing, the bottom flange is bent upward 1” over a 1’ length and the underside of the bottom flange repair has a missing nut (**See Photo 23**).

Girder 6 – The lower web has a 1” diameter drilled hole and areas of minor section loss (**See Sketch 2 and Photo 24**).

Approximately 16’ from the West Abutment –

Several girders have initials welded into the bottom flange underside, causing locations of pitting up to 1/4” deep.

At the Pier –

Several girder webs exhibit random drilled holes up to 1” diameter with rust forming around, and there are isolated gaps up to 5/8” wide between the steel repair angles and bottom flanges (**See Photo 28**).

Girder 1 – The top of the web at the end has a rust hole, 5” long x 1” high and the upper half of the west 3/8” thick bearing stiffener on the south side has an area of section loss, full width x 30” high x 3/16” deep (**See Photo 25**).

Girder 2 – Approximately 2’ from the bearing, the south side of the web at the base has areas of minor section loss, and the base of the second stiffener from the bearing has a rust hole, 4” wide x 2” high (**See Photo 26**).

Girder 3 – Approximately 2’ from the bearing, the south side of the 3/8” thick web at the base has an area of section loss, 5’ long x up to 1’ high x 1/16” deep, and the bases of the second, third and fourth stiffeners from the bearing have rust holes up to 4” wide x 3” high (**See Photo 27**).

Girders 3 through 5 – The upper halves of the webs exhibit out of plane bending up to 3/4”.

Girder 4 – The top of the web at the end has a rust hole, 3” long x 1” high.

Girder 5 – Approximately 4’ from the bearing, the south side of the 3/8” thick web at the base has an area of section loss, 3’ long x up to 1’ high x 1/16” deep, and the base of the third stiffener from the bearing has a rust hole, full width x 4” high (**See Photo 29**).

Girder 6 – The top of the web at the end has a rust hole, 7” long x 7” high and the top of the east 3/8” thick bearing stiffener on the south side has a rust hole, 4” wide x 7” high and is slightly bent (**See Photo 7**).

East Span –

At the Pier –

Several girder webs exhibit random drilled holes up to 1” diameter with adjacent rust, and there are isolated gaps up to 5/8” wide between the steel repair angles and bottom flanges.

Girders 8 through 11 – The upper halves of the webs exhibit out of plane bending up to 3/4”.

Girder 10 – The top of the web at the end has a rust hole, 6” long x 1” high and there are isolated areas of minor painted over section loss.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

Girder 12 – The top of the web at the end has a rust hole, 8” long x 7” high (**See Photo 7**).

Approximately 16’ from the East Abutment –

Several girders have initials welded into the bottom flange underside, causing locations of pitting up to 1/4” deep (**See Photo 31**).

At the East Abutment –

All Girders – The bottom flanges beyond the bearings are bent upward.

Girder 11 – On the south side, the fifth stiffener from the bearing at the East Abutment is bent 1-1/2” to the west over a 1’ height near mid-height (**See Photo 32**).

Item 59.7 - Conn Plt's, Gussets & Angles

The cross frame connection plates exhibit random areas of light to moderate rust and areas of heavy rust with isolated locations of laminated rust at the pier.

Item 59.9 - Bearing Devices

There are moveable bearings at both abutments, which are all in expansion position at 80 degrees Fahrenheit, and fixed bearings at the pier in both spans. The bearings exhibit areas of moderate to heavy rust with additional deficiencies noted as follows:

Moveable Bearings at the West Abutment –

Girders 1, 4 and 6 – The bearings exhibit laminated rust (**See Photos 23 and 24**).

Girder 2 – The bearing is expanded and overhanging the masonry plate by 1/2” (**See Photo 33**).

Girder 6 – The south keeper plate has a rust hole, 3” long x 1” high and is bent (**See Photo 24**).

Fixed Bearings at the Pier in Span 1 –

Girder 1 – The northwest corner is undermined, 1’ wide x 1-1/4” deep (**See Photo 44**).

Girders 1 through 6 – The bearings exhibit laminated rust with up to 1/2” thick pack rust between the sole and masonry plates (**See Photos 28 and 44**).

Fixed Bearings at the Pier in Span 2 –

Girders 7 through 12 – The bearings exhibit laminated rust with up to 1/2” thick pack rust between the sole and masonry plates (**See Photo 28**).

Moveable Bearings at the East Abutment –

Girders 7, 10 and 12 – The bearings exhibit laminated rust.

Girder 12 – The bearing is expanded and overhanging the masonry plate by 1/4” and there is pack rust between the keeper plates and sliding plate, causing the keeper plates to bend.

Item 59.10 - Diaphragms/Cross Frames

The cross frames exhibit random areas of light to moderate rust and areas of heavy rust with isolated locations of laminated rust at the pier (**See Photo 34**). Additional deficiencies are noted as follows:

In Bay 1 – The end cross frames at the pier and the abutments have random mis-drilled holes.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

In Bay 4 – At the pier, there is formwork in place between the end cross frames in both spans (**See Photo 34**).

Item 59.12 - Welds

In both spans approximately 16' from the abutments, several girders have initials welded into the bottom flange underside, causing locations of pitting up to 1/4" deep (**See Photo 31**). In addition, there are several uneven butt welds in the bottom flanges and webs with minor pitting.

Item 59.13 - Member Alignment

In both spans, the girders appear to have a slight negative camber at mid-span.

Item 59.14 - Paint/Coating

The girders and diaphragms exhibit random areas of peeling and missing paint for approximately 10% of the steel surfaces, with most of these areas present at the abutments and at the pier (**See Photos 7, 23 through 32 and 34**).

SuperStructure Load Deflection Notes

The bridge deflects slightly under heavy loads.

SuperStructure Load Vibration Notes

The bridge vibrates when vehicles pass over it.

ITEM 60 - SUBSTRUCTURE

Item 60.1 - Abutments

Item 60.1.b - Bridge Seats

The abutment bridge seats have moderate to heavy accumulations of debris with additional deficiencies noted as follows:

West Abutment –

In Front of Girder 1 – There is a spall, 6" diameter x 1" deep that continues 1" high onto the breastwall.

(S-A Deficiency) Below Bay 2 – Adjacent to Girder 3, there is a spall with punky concrete, 6' long x full seat width x 7" deep with exposed, debonded and broken rebar with up to 25% section loss, that continues 16" high onto the breastwall (See Photos 35 and 36).

Below Bay 3 – At the construction joint, there is a horizontal crack, 1' long x 1/8" wide (**See Photo 37**).

(S-A Deficiency) Below Bay 4 – Adjacent to Girder 4, there is a hollow area, 9' long x full seat width that continues 8" high onto the breastwall and an adjacent spall, 7' long x full seat width x 6" deep with exposed and debonded rebar with laminated rust and up to 50% section loss that continues 8" high onto the breastwall (See Photo 38).

Below Bay 5 – Near Girder 6, there is a spall, 54" long x 8" wide x 3" deep that continues 8" high onto the breastwall.

East Abutment –

Below Bay 3 – There is timber cribbing (**See Photo 41**).

Below Girder 10 – There is timber formwork left in place.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

Item 60.1.c - Backwalls

The abutment backwalls exhibit random vertical and diagonal hairline cracks up to full height with and without efflorescence and rust stains, and there are locations of timber formwork left in place near the joints. Additional deficiencies are noted as follows:

West Abutment –

Below the North Deck Overhang – There is an 8” length of shallow rebar.

Below Bay 1 – There is a diagonal crack, full height x 1/4” wide with efflorescence and adjacent hollow areas.

Below Bay 2 – There is an area of moderate scaling, 10’ long x full height.

Below the South Deck Overhang – There is an area of severe scaling, 3’ long x 18” high (**See Photo 42**).

East Abutment –

Below Bay 2 – Near Girder 10, there is an area of moderate scaling, 4’ long x full height.

Item 60.1.d - Breastwalls

The abutment breastwalls exhibit random hairline cracks with and without efflorescence and rust stains, moderate abrasion along the waterline, and additional deficiencies noted as follows:

West Abutment –

Below Bay 2 – Near Girder 3, there is a spall, 4’ long x 12’ high x 9” deep (**See Photo 35**).

Below Bay 3 – At the top adjacent to the construction joint, there is a hollow area, 2’ long x 1’ high that continues 1’ wide onto the seat, and below there is an area of heavy scaling, 6’ diameter (**See Photo 37**).

Below Bay 4 – Adjacent to the hollow area at Girder 4, there is a 1/8” wide boundary crack with peripheral spalling up to 2” wide x 1-1/2” deep (**See Photo 38**).

Below Bay 5 – At the top, there is a concrete patch, 1’ long x 1’ high.

Below Girder 6 – At the top, there is a spall, 5” diameter x 1-1/2” deep.

At the South Angle Point – There are three areas of scaling up to 8” long x 6” high x 1” deep (**See Photo 39**).

East Abutment –

Below Girder 7 – At the top, there is a spall, 4” diameter x 1” deep with exposed rebar.

Below Bay 2 – At the top, there is a spall, 2’ long x 8” high x 4” deep with exposed rebar that continues 1’ wide onto the seat (**See Photo 40**).

Below Girder 10 – There is timber formwork left in place.

Below Bay 4 – At the top, there is a horizontal crack, 4’ long x 1/8” wide with rust stains.

Below Bay 5 – At the top between the construction joint and Girder 12, there is a hollow area, 10’ long x 8” high that continues 1’ wide onto the seat.

Item 60.1.e - Wingwalls

The wingwalls are assessed beginning at the angle points and exhibit deficiencies noted as follows:

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

Northwest Wingwall –

At the top there is an area of scaling, 6’ diameter x 1” deep and two vertical cracks up to 5’ long x 1/16” wide with and without efflorescence, and below there is an area of hairline map cracking, 6’ long x 5’ high with efflorescence and rust stains (**See Photo 43**).

Southwest Wingwall –

Between the angle point and the first construction joint there is hairline map cracking and areas of moderate scaling. At the first construction joint, there is spall, 26” long x 78” high x up to 13” deep and an adjacent hollow area, 54” long x 5’ high (**See Photo 39**).

Northeast Wingwall –

There are two full height vertical hairline cracks with efflorescence.

Item 60.1.h - Footings

The exposed portion of the East Abutment footing exhibits no deficiencies. Refer to Item 60.1j entitled “Scour”.

Item 60.1.j - Scour

Beginning at the south end, the top of the East Abutment footing is exposed for approximately 60’, flush with the streambed.

The plans indicate the East Abutment is fully founded on ledge.

Item 60.2 - Piers

Item 60.2.d - Pierwalls

Both sides of the pierwall exhibit random hairline cracks with and without efflorescence and rust stains, moderate abrasion along the groundline, and moderate accumulations of debris on the topside. Additional deficiencies are noted as follows:

West Side –

Below Girder 1 – At the top, there is a spall, 8’ long x 1’ high x 6” deep with exposed rebar that continues 1’ wide onto the topside (**See Photo 44**).

Below Bay 2 – At the top, there is a spall, 18” long x 1’ high x 1-1/2” deep that continues 18” wide onto the topside.

Below Bay 3 – At the top, there is a spall, 12’ long x 2’ high x 6” deep with exposed rebar with laminated rust and minor section loss, that continues 2’ wide onto the topside and has adjacent hollow sounding concrete (**See Photo 45**).

Below Bay 4 – At the top, there is a spall, 3’ long x 8” high x 2” deep that continues 18” wide onto the topside.

Below Bay 5 – At the top near Girder 5, there is a spall, 10’ long x 7” high x 4” deep with exposed rebar with laminated rust and minor section loss, that continues 30” wide onto the topside and has adjacent hollow sounding concrete (**See Photo 46**).

Below Girder 6 – Near the top, there is an area of hairline map cracking, 30” long x 6’ high.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

REMARKS

At the South End – At the top, there is a spall, 38” long x 18” high x 3” deep with exposed rebar and an adjacent area of map cracking, 2’ long x 4’ high with cracks up to 1/16” wide and efflorescence (**See Photo 47**).

East Side –

Below Bay 3 – At the top at the construction joint, there is a spall, 18” long x 18” high x 3” deep with exposed rebar that continues 2’ wide onto the topside (**See Photo 48**).

Below Girder 10 – At the top, there is a spall, 16’ long x 16” high x 4” deep with exposed rebar with laminated rust and minor section loss, that continues 1’ wide onto the topside (**See Photo 48**).

At the South End – At the top, there is a hollow area, 9’ long x 6” high and an adjacent area of hairline map cracking, 3’ diameter with efflorescence.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour

The channel bottom consists of small to medium sized rocks and sand. No deficiencies were noted.

Item 61.3 - Debris

There is a 3’ diameter tree lodged against the south side of the pier that continues into the West Span up to the West Abutment (**See Photo 49**).

Item 61.4 - Vegetation

The embankments are heavily vegetated and there is moderate vegetation growth in the area of aggradation below the West Span (**See Photo 49**).

Item 61.7 - Aggradation

Below the West Span, the channel has aggradation buildup and is up to 2’ higher than in the East Span, which continues upstream and downstream of the bridge (**See Photo 49**).

TRAFFIC SAFETY

Item 36a - Bridge Railing

See Item 58.8 entitled “Railing” for the condition of the bridge railing. The type AL-3 aluminum bridge railings do not comply with current MassDOT safety criteria.

Item 36b - Transitions

The transitions consist of steel W-beam guardrail bolted to the inside face of the concrete end posts, with missing posts at all four transitions (**See Photo 50**). The transitions do not comply with current MassDOT safety criteria.

Item 36c - Approach Guardrail

The approach guardrails consist of W-beam guardrail mounted on steel posts with steel blockouts along the south side of the west approach and the north side of the east approach and mounted on steel posts with plastic blockouts along the north side of the west approach and the south side of the east approach. The guardrails exhibit random locations of minor rust with an additional deficiency noted as follows:

Northwest Guardrail – The third post from the end is disconnected from the guardrail (**See Photo 51**).

The steel posts with steel blockouts do not comply with current MassDOT safety criteria.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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REMARKS

Item 36d - Approach Guardrail Ends

The northwest and southeast approach guardrails have breakaway cable ends swept away from traffic and the southwest and northeast approach guardrails continue well beyond the approach limits. The end of the northwest guardrail is loose and slightly leaning toward the roadway (**See Photo 51**). The approach guardrail ends comply with current MassDOT safety criteria.

Sketch / Photo Log

- Sketch 1 : Orientation Sketch.
- Sketch 2 : Girder 6 Section Loss at the West Abutment.
- Photo 1 : Top of the deck, looking northeast. Note the cracks.
- Photo 2 : Underside of the North Deck Overhang in the West Span near midspan, looking west. Note the spalls.
- Photo 3 : Underside of the North Deck Overhang at the Pier, looking southwest. Note the spalls.
- Photo 4 : Underside of the South Deck Overhang in the West Span between the first and second intermediate cross frames from the West Abutment, looking north. Note the hollow areas, cracks, and the spall.
- Photo 5 : Underside of the South Deck Overhang in the West Span at the second intermediate cross frame from the West Abutment, looking north. Note the spalls on the deck underside and the safetywalk.
- Photo 6 : Underside of the South Deck Overhang in the West Span between the third and fourth intermediate cross frames from the West Abutment, looking north. Note the spalls on the deck and the safetywalk.
- Photo 7 : Underside of the South Deck Overhang at the Pier, looking north. Note the spalls on the deck underside and the vertical face of the safetywalk, and the rust holes on Girders 6 and 12.
- Photo 8 : Underside of the North Deck Overhang in the East Span, looking southeast. Note the spalls.
- Photo 9 : Underside of the deck in the East Span in Bay 3, looking west. Note the concrete patches and the cracks with efflorescence and rust stains.
- Photo 10 : Underside of the South Deck Overhang in the East Span, looking northeast. Note the spalls on the deck underside and the vertical face of the safetywalk.
- Photo 11 : Northwest Approach Curb adjacent to the bridge, looking north. Note the crack and section of broken curb, and the safetywalk deck joint covered in concrete.
- Photo 12 : North Curb and Safetywalk at the Pier, looking north. Note the broken curb, vegetation, safetywalk spall, and the rust on the deck joint.
- Photo 13 : South Safetywalk in the West Span between the seventh and eighth post from the West Abutment, looking southwest. Note the spall and undermined post.
- Photo 14 : South Safetywalk in the West Span between the fourteenth and fifteenth post from the West Abutment, looking south. Note the spall.
- Photo 15 : South Safetywalk in the East Span between the first and third post from the Pier, looking southwest. Note the spalls, undermined post, and missing pickets.
- Photo 16 : South Safetywalk in the East Span between the third and fifth post from the Pier, looking southwest. Note the spalls and undermined post.
- Photo 17 : South Safetywalk in the East Span between the fifth and seventh post from the Pier, looking southwest. Note the spalls and undermined posts.
- Photo 18 : South Safetywalk in the East Span between the twelfth and fourteenth post from the Pier, looking southeast. Note the spalls and undermined posts.
- Photo 19 : South Bridge Railing in the West Span, looking southwest. Note the missing pickets.
- Photo 20 : West Abutment Deck Joint in the South Safetywalk, looking southwest. Note the rust on the steel headers and the vegetation growth.
- Photo 21 : Pier Deck Joint, looking northeast. Note the rust on the steel headers, buildups of sand, and depressed joint material with tears.
- Photo 22 : West Approach Pavement, looking northeast. Note the cracks.

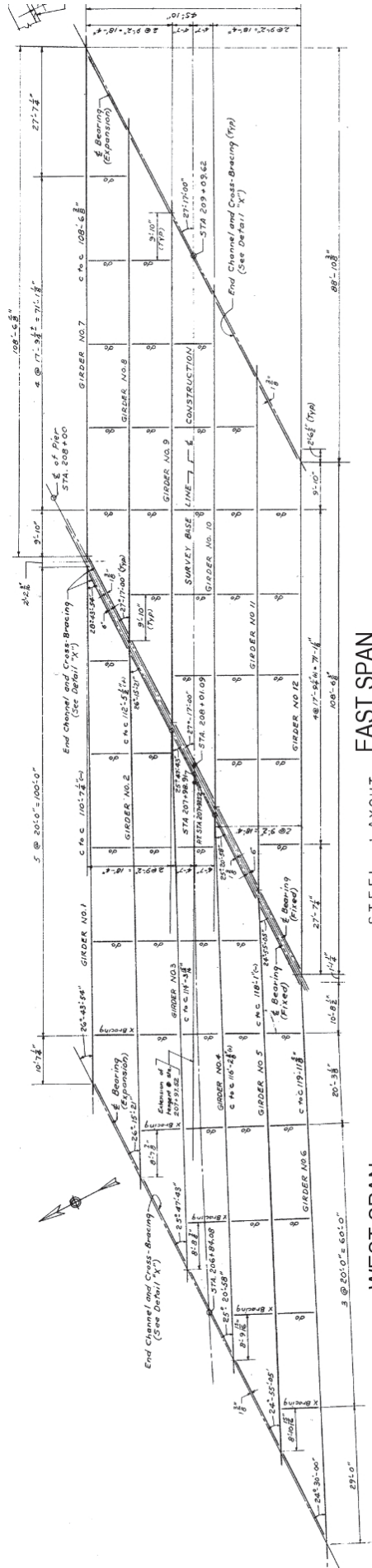
CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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REMARKS

- Photo 23 : South side of Girder 1 and the bearing at the West Abutment, looking northwest. Note the bent bottom flange, missing bottom flange repair nut, and rusted bearing.
- Photo 24 : South side of Girder 6 and the bearing at the West Abutment, looking northwest. Note the bent bottom flange, section loss, drilled hole in the web, rusted bearing, and bent keeper plate with a rust hole.
- Photo 25 : North side of Girder 1 at the Pier, looking south. Note the rust hole and deck joint steel plates in contact with the girder top flanges.
- Photo 26 : South side of Girder 2 at the Pier, looking northeast. Note the areas of section loss and the stiffener rust hole.
- Photo 27 : South side of Girder 3 at the Pier, looking northeast. Note the areas of section loss and the stiffener rust holes.
- Photo 28 : North side of Girders 4 and 10 and the bearings at the Pier, looking southeast. Note the gap between the bottom flange and repair angle for Girder 10 and the rusted bearings.
- Photo 29 : South side of Girder 5 at the Pier, looking northeast. Note the areas of section loss and the stiffener rust hole.
- Photo 30 : North side of Girder 7, looking southwest. Note the areas of heavy and laminated rust.
- Photo 31 : Underside of Girder 8 near the East Abutment, looking west. Note the welded initials.
- Photo 32 : South side of Girder 11 near the East Abutment, looking northeast. Note the bent stiffener.
- Photo 33 : Girder 2 bearing at the West Abutment, looking west. Note the overhanging sliding plate.
- Photo 34 : End cross frames at the Pier in Bay 4, looking northeast. Note the areas of heavy and laminated rust and the formwork.
- Photo 35 : West Abutment below Bay 2, looking northwest. Note the spalls.
- Photo 36 : West Abutment below Bay 2 near Girder 3, looking west. Note the spall with exposed, debonded and broken rebar.
- Photo 37 : West Abutment below Bay 2, looking west. Note the crack, hollow area, and scaling.
- Photo 38 : West Abutment below Bay 4, looking northwest. Note the spalls, exposed and debonded rebar, hollow area, and crack.
- Photo 39 : West Abutment at the South Angle Point and the Southwest Wingwall, looking west. Note the spall, scaling, and cracking.
- Photo 40 : East Abutment below Bay 2, looking northeast. Note the spall.
- Photo 41 : East Abutment below Bay 3, looking northeast. Note the timber cribbing.
- Photo 42 : West Abutment backwall below the South Deck Overhang, looking southwest. Note the scaling.
- Photo 43 : Northwest Wingwall, looking west. Note the scaling and cracking.
- Photo 44 : West side of the Pierwall below Girder 1, looking southeast. Note the spall and the undermined and rusted bearing.
- Photo 45 : West side of the Pierwall below Bay 3, looking southeast. Note the spall.
- Photo 46 : West side of the Pierwall below Bay 5, looking northeast. Note the spall.
- Photo 47 : West side of the Pierwall at the south end, looking east. Note the spall and cracking.
- Photo 48 : East side of the Pierwall below Bays 3 and 4, looking southwest. Note the spalls.
- Photo 49 : Channel below the West Span, looking south. Note the aggradation, vegetation, and the tree.
- Photo 50 : Northeast guardrail transition, looking north. Note the missing post.
- Photo 51 : End of the northwest guardrail, looking west. Note the disconnected post and the loose/leaning end.

CITY/TOWN CUMMINGTON	B.I.N. 0JK	BR. DEPT. NO. C-21-025	8-STRUCTURE NO. C21025-0JK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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SKETCHES



STEEL LAYOUT EAST SPAN

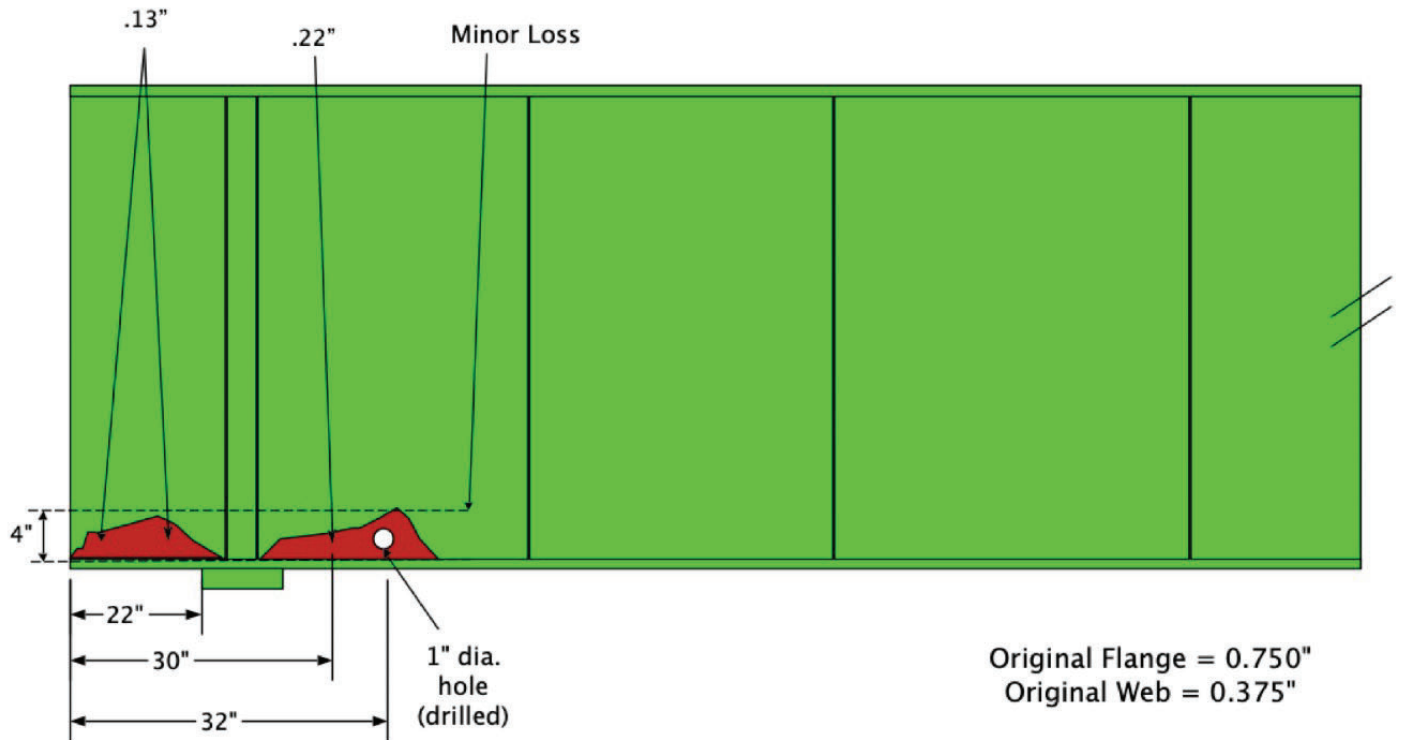
WEST SPAN

Sketch 1: Orientation Sketch.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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SKETCHES

Girder 6, West end



Original Flange = 0.750"
Original Web = 0.375"

① NO CHANGE SINCE PREVIOUS INSPECTION (07/10/24)

Sketch 2: Girder 6 Section Loss at the West Abutment.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 1: Top of the deck, looking northeast. Note the cracks.



Photo 2: Underside of the North Deck Overhang in the West Span near midspan, looking west. Note the spalls.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 3: Underside of the North Deck Overhang at the Pier, looking southwest. Note the spalls.



Photo 4: Underside of the South Deck Overhang in the West Span between the first and second intermediate cross frames from the West Abutment, looking north. Note the hollow areas, cracks, and the spall.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 5: Underside of the South Deck Overhang in the West Span at the second intermediate cross frame from the West Abutment, looking north. Note the spalls on the deck underside and the safetywalk.



Photo 6: Underside of the South Deck Overhang in the West Span between the third and fourth intermediate cross frames from the West Abutment, looking north. Note the spalls on the deck and the safetywalk.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 7: Underside of the South Deck Overhang at the Pier, looking north. Note the spalls on the deck underside and the vertical face of the safetywalk, and the rust holes on Girders 6 and 12.



Photo 8: Underside of the North Deck Overhang in the East Span, looking southeast. Note the spalls.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 9: Underside of the deck in the East Span in Bay 3, looking west. Note the concrete patches and the cracks with efflorescence and rust stains.



Photo 10: Underside of the South Deck Overhang in the East Span, looking northeast. Note the spalls on the deck underside and the vertical face of the safetywalk.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 11: Northwest Approach Curb adjacent to the bridge, looking north. Note the crack and section of broken curb, and the safetywalk deck joint covered in concrete.



Photo 12: North Curb and Safetywalk at the Pier, looking north. Note the broken curb, vegetation, safetywalk spall, and the rust on the deck joint.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 13: South Safetywalk in the West Span between the seventh and eighth post from the West Abutment, looking southwest. Note the spall and undermined post.



Photo 14: South Safetywalk in the West Span between the fourteenth and fifteenth post from the West Abutment, looking south. Note the spall.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 15: South Safetywalk in the East Span between the first and third post from the Pier, looking southwest. Note the spalls, undermined post, and missing pickets.



Photo 16: South Safetywalk in the East Span between the third and fifth post from the Pier, looking southwest. Note the spalls and undermined post.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 17: South Safetywalk in the East Span between the fifth and seventh post from the Pier, looking southwest. Note the spalls and undermined posts.



Photo 18: South Safetywalk in the East Span between the twelfth and fourteenth post from the Pier, looking southeast. Note the spalls and undermined posts.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 19: South Bridge Railing in the West Span, looking southwest. Note the missing pickets.



Photo 20: West Abutment Deck Joint in the South Safetywalk, looking southwest. Note the rust on the steel headers and the vegetation growth.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS

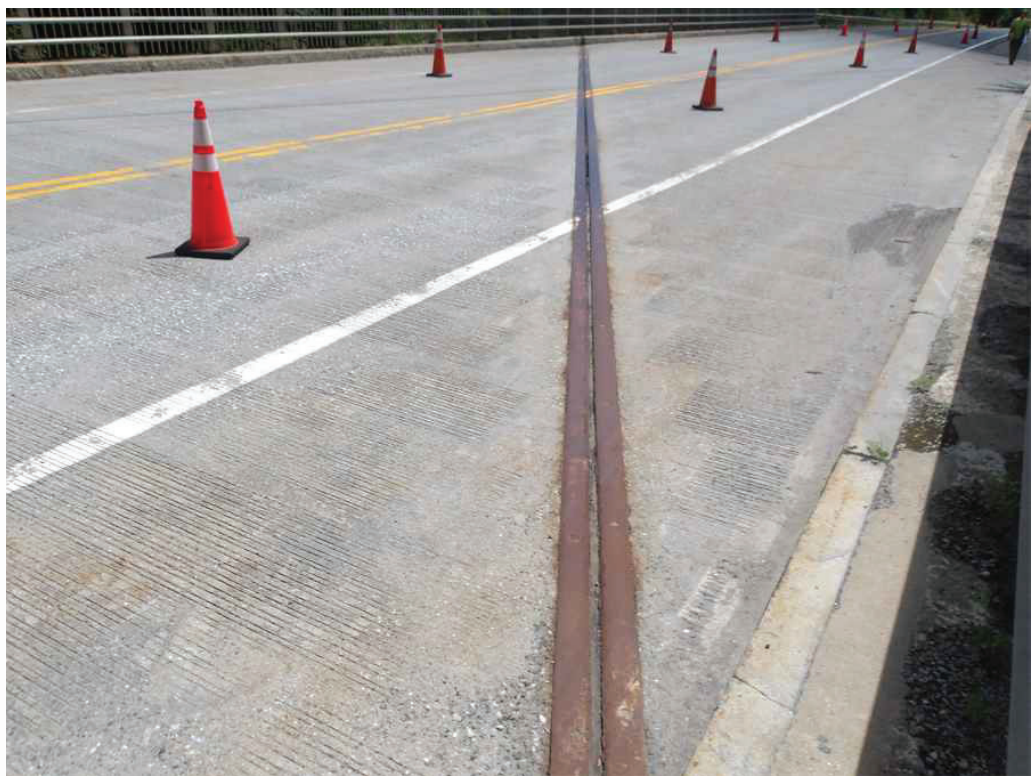


Photo 21: Pier Deck Joint, looking northeast. Note the rust on the steel headers, buildups of sand, and depressed joint material with tears.



Photo 22: West Approach Pavement, looking northeast. Note the cracks.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 23: South side of Girder 1 and the bearing at the West Abutment, looking northwest. Note the bent bottom flange, missing bottom flange repair nut, and rusted bearing.



Photo 24: South side of Girder 6 and the bearing at the West Abutment, looking northwest. Note the bent bottom flange, section loss, drilled hole in the web, rusted bearing, and bent keeper plate with a rust hole.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 25: North side of Girder 1 at the Pier, looking south. Note the rust hole and deck joint steel plates in contact with the girder top flanges.



Photo 26: South side of Girder 2 at the Pier, looking northeast. Note the areas of section loss and the stiffener rust hole.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 27: South side of Girder 3 at the Pier, looking northeast. Note the areas of section loss and the stiffener rust holes.



Photo 28: North side of Girders 4 and 10 and the bearings at the Pier, looking southeast. Note the gap between the bottom flange and repair angle for Girder 10 and the rusted bearings.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 29: South side of Girder 5 at the Pier, looking northeast. Note the areas of section loss and the stiffener rust hole.



Photo 30: North side of Girder 7, looking southwest. Note the areas of heavy and laminated rust.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 31: Underside of Girder 8 near the East Abutment, looking west. Note the welded initials.



Photo 32: South side of Girder 11 near the East Abutment, looking northeast. Note the bent stiffener.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 33: Girder 2 bearing at the West Abutment, looking west. Note the overhanging sliding plate.



Photo 34: End cross frames at the Pier in Bay 4, looking northeast. Note the areas of heavy and laminated rust and the formwork.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 35: West Abutment below Bay 2, looking northwest. Note the spalls.



Photo 36: West Abutment below Bay 2 near Girder 3, looking west. Note the spall with exposed, debonded and broken rebar.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 37: West Abutment below Bay 2, looking west. Note the crack, hollow area, and scaling.



Photo 38: West Abutment below Bay 4, looking northwest. Note the spalls, exposed and debonded rebar, hollow area, and crack.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 39: West Abutment at the South Angle Point and the Southwest Wingwall, looking west. Note the spall, scaling, and cracking.



Photo 40: East Abutment below Bay 2, looking northeast. Note the spall.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 41: East Abutment below Bay 3, looking northeast. Note the timber cribbing.



Photo 42: West Abutment backwall below the South Deck Overhang, looking southwest. Note the scaling.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
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PHOTOS



Photo 43: Northwest Wingwall, looking west. Note the scaling and cracking.



Photo 44: West side of the Pierwall below Girder 1, looking southeast. Note the spall and the undermined and rusted bearing.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 45: West side of the Pierwall below Bay 3, looking southeast. Note the spall.



Photo 46: West side of the Pierwall below Bay 5, looking northeast. Note the spall.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 47: West side of the Pierwall at the south end, looking east. Note the spall and cracking.



Photo 48: East side of the Pierwall below Bays 3 and 4, looking southwest. Note the spalls.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 49: Channel below the West Span, looking south. Note the aggradation, vegetation, and the tree.



Photo 50: Northeast guardrail transition, looking north. Note the missing post.

CITY/TOWN CUMMINGTON	B.I.N. OJK	BR. DEPT. NO. C-21-025	8.-STRUCTURE NO. C21025-OJK-DOT-NBI	INSPECTION DATE JUL 10, 2024
--------------------------------	----------------------	----------------------------------	---	--

PHOTOS



Photo 51: End of the northwest guardrail, looking west. Note the disconnected post and the loose/leaning end.

National Bridge Element Inspection

BDEPT# **C-21-025**
 B.I.N. **0JK**
 Item 8 **C21025-0JK-DOT-NBI**
 Span Group **1**
 Town **Cummington**
 District **1**

Date **07/10/2024**
 District Bridge Inspection Eng'r **Michael P.E. McCabe**
 Inspecting Agency **BL Companies**
 Team Leader **Daniel McDonald**
 Team Member(s) **Daniel Hodgkins**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
12	Re Concrete Deck	sq feet	2	11,387.000	<input type="checkbox"/> %	10,565.000	155.000	667.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	sq feet	2	585.000	<input type="checkbox"/> %		100.000	485.000	
Notes :									
> 1090	<i>Exposed Rebar</i>	sq feet	2	100.000	<input type="checkbox"/> %			100.000	
Notes :									
> 1120	<i>Efflorescence/Rust Staining</i>	sq feet	2	55.000	<input type="checkbox"/> %		55.000		
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	sq feet	2	82.000	<input type="checkbox"/> %			82.000	
Notes :									
107	Steel Opn Girder/Beam	feet	2	1,267.000	<input type="checkbox"/> %	1,207.000	60.000		
Notes :									
> 1000	<i>Corrosion</i>	feet	2	60.000	<input type="checkbox"/> %		60.000		
Notes :									
> 515	Steel Protective Coating	sq feet	2	20,267.000	<input type="checkbox"/> %	19,354.000		913.000	
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	2	913.000	<input type="checkbox"/> %			913.000	
Notes :									
107	Steel Opn Girder/Beam	feet	3	120.000	<input type="checkbox"/> %	51.000	24.000	45.000	
Notes :									
> 1000	<i>Corrosion</i>	feet	3	60.000	<input type="checkbox"/> %		16.000	44.000	
Notes :									
> 1020	<i>Connection</i>	feet	3	1.000	<input type="checkbox"/> %			1.000	
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-025**

Date **07/10/2024**

B.I.N. **0JK**

District Bridge Inspection Eng'r **Michael P.E. McCabe**

Item 8 **C21025-0JK-DOT-NBI**

Inspecting Agency **BL Companies**

Span Group **1**

Team Leader **Daniel McDonald**

Town **Cummington**

Team **Daniel Hodgkins**

District **1**

Member(s)

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> 1900	<i>Distortion</i>	feet	3	8.000	<input type="checkbox"/> %		8.000		
Notes :									
> 515	Steel Protective Coating	sq feet	3	2,506.000	<input type="checkbox"/> %	2,072.000		434.000	
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	434.000	<input type="checkbox"/> %			434.000	
Notes :									
210	Re Conc Pier Wall	feet	3	123.000	<input type="checkbox"/> %	31.000	26.000	66.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	feet	3	15.000	<input type="checkbox"/> %		9.000	6.000	
Notes :									
> 1090	<i>Exposed Rebar</i>	feet	3	51.000	<input type="checkbox"/> %			51.000	
Notes :									
> 1120	<i>Efflorescence/Rust Staining</i>	feet	3	2.000	<input type="checkbox"/> %			2.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	feet	3	7.000	<input type="checkbox"/> %			7.000	
Notes :									
> 1190	<i>Abrasion(PSC/RC)</i>	feet	3	17.000	<input type="checkbox"/> %		17.000		
Notes :									
215	Re Conc Abutment	feet	2	70.000	<input type="checkbox"/> %	43.000	13.000	14.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	feet	2	12.000	<input type="checkbox"/> %		10.000	2.000	
Notes :									
> 1120	<i>Efflorescence/Rust Staining</i>	feet	2	10.000	<input type="checkbox"/> %			10.000	
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-025**

Date **07/10/2024**

B.I.N. **0JK**

District Bridge Inspection Eng'r **Michael P.E. McCabe**

Item 8 **C21025-0JK-DOT-NBI**

Inspecting Agency **BL Companies**

Span Group **1**

Team Leader **Daniel McDonald**

Town **Cumington**

Team **Daniel Hodgkins**

District **1**

Member(s)

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> 1130	<i>Cracking (RC and Other)</i>	feet	2	5.000	<input type="checkbox"/> %		3.000	2.000	
Notes :									
215	Re Conc Abutment	feet	3	244.000	<input type="checkbox"/> %	97.000	50.000	97.000	
Notes :									
> 1080	<i>Delamination/Spall/Patched Area</i>	feet	3	43.000	<input type="checkbox"/> %		10.000	33.000	
Notes :									
> 1090	<i>Exposed Rebar</i>	feet	3	24.000	<input type="checkbox"/> %			24.000	
Notes :									
> 1120	<i>Efflorescence/Rust Staining</i>	feet	3	10.000	<input type="checkbox"/> %			10.000	
Notes :									
> 1130	<i>Cracking (RC and Other)</i>	feet	3	30.000	<input type="checkbox"/> %			30.000	
Notes :									
> 1190	<i>Abrasion(PSC/RC)</i>	feet	3	40.000	<input type="checkbox"/> %		40.000		
Notes :									
302	Compressn Joint Seal	feet	2	295.000	<input type="checkbox"/> %	171.000	114.000	10.000	
Notes :									
> 2330	<i>Seal Damage</i>	feet	2	4.000	<input type="checkbox"/> %		4.000		
Notes :									
> 2350	<i>Debris Impaction</i>	feet	2	100.000	<input type="checkbox"/> %		100.000		
Notes :									
> 2370	<i>Metal Deterioration or Damage</i>	feet	2	20.000	<input type="checkbox"/> %		10.000	10.000	
Notes :									
311	Moveable Bearing	each	3	12	<input type="checkbox"/> %		5	6	1
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-025**
 B.I.N. **0JK**
 Item 8 **C21025-0JK-DOT-NBI**
 Span Group **1**
 Town **Cumington**
 District **1**

Date **07/10/2024**
 District Bridge Inspection Eng'r **Michael P.E. McCabe**
 Inspecting Agency **BL Companies**
 Team Leader **Daniel McDonald**
 Team Member(s) **Daniel Hodgkins**

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> 1000	<i>Corrosion</i>	each	3	9	<input type="checkbox"/> %		3	6	
Notes :									
> 2220	<i>Alignment</i>	each	3	2	<input type="checkbox"/> %		2		
Notes :									
> 2240	<i>Loss of Bearing Area</i>	each	3	1	<input type="checkbox"/> %				1
Notes :									
> 515	Steel Protective Coating	sq feet	3	36.000	<input type="checkbox"/> %			28.000	8.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	36.000	<input type="checkbox"/> %			28.000	8.000
Notes :									
313	Fixed Bearing	each	3	12	<input type="checkbox"/> %			12	
Notes :									
> 1000	<i>Corrosion</i>	each	3	11	<input type="checkbox"/> %			11	
Notes :									
> 2240	<i>Loss of Bearing Area</i>	each	3	1	<input type="checkbox"/> %			1	
Notes :									
> 515	Steel Protective Coating	sq feet	3	36.000	<input type="checkbox"/> %				36.000
Notes :									
> > 3440	<i>Eff (Stl Protect Coat)</i>	sq feet	3	36.000	<input type="checkbox"/> %				36.000
Notes :									
330	Metal Bridge Railing	feet	2	444.000	<input type="checkbox"/> %	352.000	20.000	72.000	
Notes :									
> 1000	<i>Corrosion</i>	feet	2	20.000	<input type="checkbox"/> %		20.000		
Notes :									

National Bridge Element Inspection

BDEPT# **C-21-025**

Date **07/10/2024**

B.I.N. **0JK**

District Bridge Inspection Eng'r **Michael P.E. McCabe**

Item 8 **C21025-0JK-DOT-NBI**

Inspecting Agency **BL Companies**

Span Group **1**

Team Leader **Daniel McDonald**

Town **Cummington**

Team **Daniel Hodgkins**

District **1**

Member(s)

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> 1020	Connection	feet	2	40.000	<input type="checkbox"/> %			40.000	
Notes :									
> 1900	Distortion	feet	2	16.000	<input type="checkbox"/> %			16.000	
Notes :									
> 7000	Damage	feet	2	16.000	<input type="checkbox"/> %			16.000	
Notes :									

State Information				Classification				Code			
BDEPT# = C21025	Agency Br.No.			(112) NBIS Bridge Length				Y			
Town = Cummington	L.O. MHD			(104) Highway System				Y			
B.I.N = 0JK	AASHTO= 085.3			(26) Functional Class -	Rural Arterial			02			
RANK = 2451	H.I. = 84.8 %	FHWA Select List= N (6/21/2017)		(100) Defense Highway				0			
Identification				(101) Parallel Structure				N			
(8) Structure Number	C210250JKDOTNBI			(102) Direction of Traffic -	2-way traffic			2			
(5) Inventory Route	131000090			(103) Temporary Structure				N			
(2) State Highway Department District	01			(105) Federal Lands Highways				0			
(3) County Code 015	(4) Place code	16040		(110) Designated National Network				N			
(6) Features Intersected	WATER WESTFIELD RIVER			(20) Toll -	On free road			3			
(7) Facility Carried	ST 9 BERKSHIRE TR			(21) Maintain -	State Highway Agency			01			
(9) Location	200' E JCT STAGE RD.			(22) Owner -	State Highway Agency			01			
(11) Kilometerpoint	0031.945			(37) Historical Significance	built after 1949 presumed to be not eligi			Z			
(12) Base Highway Network	Y			Condition				Code			
(13) LRS Inventory Route & Subroute	000000000000			(58) Deck				5			
(16) Latitude	42 DEG 28 MIN 56.47 SEC			(59) Superstructure				5			
(17) Longitude	72 DEG 55 MIN 57.23 SEC			(60) Substructure				5			
(98) Border Bridge State Code	Share %			(61) Channel & Channel Protection				6			
(99) Border Bridge Structure No. #				(62) Culverts				N			
Structure Type and Material				Load Rating and Posting				Code			
(43) Structure Type Main:	Steel	Code 302		(31) Design Load -	H 20=M 18			4			
Stringer/Girder	Jointless bridge type: Not applicable			(63) Operating Rating Method -	Load Factor (LF)			1			
(44) Structure Type Appr:				(64) Operating Rating				63.2			
Other	Code 000			(65) Inventory Rating Method -	Load Factor (LF)			1			
(45) Number of spans in main unit	002			(66) Inventory Rating				37.8			
(46) Number of approach spans	0000			(70) Bridge Posting				5			
(107) Deck Structure Type -	Concrete Cast-in-Place	Code 1		(41) Structure -	Open			A			
(108) Wearing Surface / Protective System:				Appraisal				Code			
A) Type of wearing surface -	Latex Concrete	Code 3		(67) Structural Evaluation				5			
B) Type of membrane -	None	Code 0		(68) Deck Geometry				7			
C) Type of deck protection -	None	Code 0		(69) Underclearances, vert. and horiz.				N			
Age and Service				(71) Waterway adequacy				8			
(27) Year Built	1958			(72) Approach Roadway Alignment				8			
(106) Year Reconstructed	0000			(36) Traffic Safety Features	0 0 0 1						
(42) Type of Service: On -	Highway			(113) Scour Critical Bridges				4			
Under -	Waterway	Code 15		Inspections							
(28) Lanes: On Structure	02	Under structure	00	(90) Inspection Date	07/10/24	(91) Frequency	24	MO			
(29) Average Daily Traffic	002685			(92) Critical Feature Inspection:				(93) CFI DATE			
(30) Year of ADT	2018	(109) Truck ADT	10 %	(A) Fracture Critical Detail	N	00	MO A)	00/00/00			
(19) Bypass, detour length	005 KM			(B) Underwater Inspection	N	00	MO B)	00/00/00			
Geometric Data				(C) Other Special Inspection	N	00	MO C)	12/25/17			
(48) Length of maximum span	0033.8 M			(*) Other Inspection (Flood)	N	00	MO *)	01/10/12			
(49) Structure Length	00070.1 M			(*) Closed Bridge	N	00	MO *)	00/00/00			
(50) Curb or sidewalk:	Left	00.5 M	Right 00.5 M	(*) UW Special Inspection	N	00	MO *)	00/00/00			
(51) Bridge Roadway Width Curb to Curb	013.4 M			(*) Damage Inspection				MO *) 00/00/00			
(52) Deck Width Out to Out	015.3 M			Rating Loads							
(32) Approach Roadway Width (w/shoulders)	013.4 M			Report Date	06/01/16	H20	Type 3	Type 3S2	Type HS		
(33) Bridge Median -	No median	Code 0		Operating	57.0	61.0	71.0	63.0			
(34) Skew	63 DEG	(35) Structure Flared	N	Inventory	29.0	31.0	36.0	32.0			
(10) Inventory Route MIN Vert Clear	99.99 M			Field Posting							
(47) Inventory Route Total Horiz Clear	13.4 M			Status	WAIVED	Posting Date		07/08/16			
(53) Min Vert Clear Over Bridge Rdwy	99.99 M			2 Axle		3 Axle	5 Axle	Single			
(54) Min Vert Underclear ref	N	00.00 M		Actual							
(55) Min Lat Underclear RT ref	N	00.0 M		Recommended							
(56) Min Lat Underclear LT	00.0 M			Missing Signs				N			
Navigation Data				Misc.							
(38) Navigation Control -	No navigation control on waterway			Bridge Name				N Anti-missile fence N Acrow Panel N Jointless Bridge			
(111) Pier Protection	Code 0			Freeze/Thaw				N : Not Applicable			
(39) Navigation Vertical Clearance	000.0 M			# Stairs On/Adjacent				0 Stair Owner(s)			
(116) Vert-lift Bridge Nav Min Vert Clear	M			Accessibility (Needed/Used)							
(40) Navigation Horizontal Clearance	0000.0 M			N / N	Liftbucket	N / N	Rigging	N / N Other			
				P / N	Ladder	N / N	Staging				
				N / N	Boat	Y / Y	Traffic Control				
				Y / Y	Wader	N / N	RR Flagperson	Inspection			
				Y / Y	Inspector 50	Y / Y	Police	Hours: 012			



**WORK
ZONE
SAFETY**

Temporary Traffic Control

*Typical Details and
Massachusetts Guidelines
for MassDOT, Municipalities,
Utilities, and Contractors*

SHEET INDEX (1 OF 3)

<u>GENERAL</u>	<u>PAGE</u>
NOTES AND GUIDELINES.....	1-9
FIG. 1: TYPICAL TRAFFIC CONTROL DEVICES.....	10
FIG. 2: PAVEMENT EDGE DROP-OFF GUIDANCE.....	11
FIG. 3: TYPICAL DEVICE SPACING; (AT 30 MPH).....	12-13
FLAGGING GUIDANCE.....	14-15
FIG. 4-5: TYPICAL PEDESTRIAN DEVICES.....	16-17
 <u>STATIONARY OPERATIONS</u>	
FIG. 6: TWO LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED; WORK NEAR CURVE.....	18-19
FIG. 7: TWO LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED.....	20-21
FIG. 8: TWO LANE UNDIVIDED ROADWAY; SHOULDER CLOSED.....	22-23
FIG. 9: TWO LANE UNDIVIDED ROADWAY WITH TRAVERSABLE SHOULDER; HALF OF ROADWAY CLOSED; MAINTAIN TWO-WAY TRAFFIC.....	24-25
FIG. 10: FOUR LANE UNDIVIDED ROADWAY; RIGHT LANE CLOSED.....	26-27
FIG. 11: FOUR LANE UNDIVIDED ROADWAY; LEFT LANE CLOSED.....	28-29
FIG. 12: FOUR LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED.....	30-31
FIG. 13: MULTILANE DIVIDED ROADWAY; RIGHT LANE CLOSED.....	32-33
FIG. 14: MULTILANE DIVIDED ROADWAY; LEFT LANE CLOSED.....	34-35
FIG. 15: MULTILANE DIVIDED ROADWAY; CENTER LANE OR RIGHT/CENTER LANES CLOSED.....	36-37
FIG. 16: MULTILANE DIVIDED ROADWAY; CENTER LANE OR LEFT/CENTER LANES CLOSED.....	38-39

SHEET INDEX (2 OF 3)

<u>STATIONARY OPERATIONS (CONT.)</u>	<u>PAGE</u>
FIG. 17: MULTILANE DIVIDED ROADWAY; RIGHT SIDE OF OFF RAMP CLOSED.....	40-41
FIG. 18: MULTILANE DIVIDED ROADWAY; LEFT SIDE OF OFF RAMP CLOSED.....	42-43
FIG. 19: MULTILANE DIVIDED ROADWAY; ROADWORK BEYOND ON RAMP.....	44-45
FIG. 20: MULTILANE DIVIDED ROADWAY; ROADWORK BEYOND OFF RAMP.....	46-47
FIG. 21: MULTILANE DIVIDED ROADWAY; TYPICAL RAMP CLOSURE.....	48-49
FIG. 22: MULTILANE DIVIDED ROADWAY; TYPICAL CLOVERLEAF RAMP CLOSURE.....	50-51
FIG. 23: MULTILANE DIVIDED ROADWAY; TYPICAL RAMP CLOSURE; ADVANCE SIGNING.....	52-53
FIG. 24: FOR MULTILANE DIVIDED ROADWAY; PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS.....	54-55
 <u>MOBILE OPERATIONS</u>	
NOTES FOR MOBILE OPERATIONS.....	56
FIG. 25: ANY ROADWAY; BEYOND RIGHT SHOULDER.....	57
FIG. 26: ANY ROADWAY; SHOULDER.....	58
FIG. 27: DIVIDED ROADWAY; MEDIAN WORK.....	59
FIG. 28: UNDIVIDED TWO LANE ROADWAY; HALF OF ROADWAY CLOSED.....	60
FIG. 29: MULTILANE DIVIDED ROADWAY; LEFT LANE.....	61
FIG. 30: MULTILANE DIVIDED ROADWAY; RIGHT LANE.....	62
FIG. 31: MULTILANE DIVIDED ROADWAY; CENTER LANE.....	63
FIG. 32: POST-STORM CLEANUP OPERATION.....	64

SHEET INDEX (3 OF 3)

<u>EMERGENCY RESPONSE</u>	<u>PAGE</u>
NOTES FOR TRAFFIC EMERGENCY/INCIDENT OPERATIONS...	65
FIG. 33: ANY ROADWAY; SHOULDER ENCROACHMENT.....	66
FIG. 34: TWO LANE ROADWAY; NO SHOULDER; TRAVEL LANE ENCROACHMENT.....	67
FIG. 35: TWO LANE ROADWAY; TRAVERSABLE SHOULDER; SINGLE LANE ENCROACHMENT.....	68
FIG. 36: TWO LANE ROADWAY; TRAVERSABLE SHOULDER; CENTER OF ROADWAY.....	69
FIG. 37: MULTILANE DIVIDED ROADWAY; RIGHT LANE.....	70
FIG. 38: MULTILANE DIVIDED ROADWAY; LEFT LANE.....	71
FIG. 39: MULTILANE UNDIVIDED ROADWAY; LEFT LANE.....	72
FIG. 40: MULTILANE DIVIDED ROADWAY; MIDDLE LANE; APPROACH FROM LEFT.....	73
FIG. 41: MULTILANE DIVIDED ROADWAY; MIDDLE LANE; APPROACH FROM RIGHT.....	74
 <u>TRAFFIC SIGNAL REPAIR WORK AT INTERSECTION</u>	
FIG. 42: MULTILANE UNDIVIDED ROADWAY; LEFTMOST OR LEFT TURN LANE.....	75
FIG. 43: TWO LANE UNDIVIDED ROADWAY; ONE LEG OF INTERSECTION.....	76
FIG. 44: MULTILANE UNDIVIDED ROADWAY; CENTER OF INTERSECTION.....	77
 <u>PEDESTRIAN DETAILS</u>	
FIG. 45: PEDESTRIAN BYPASS.....	78
FIG. 46: TEMPORARY SIDEWALK CLOSURE.....	79
 <u>BIKE LANE DETAILS</u>	
FIG. 47: BIKE LANE CLOSURE.....	80-81

INTRODUCTION

This guide has been prepared to assist in the planning and installing of temporary traffic controls in maintenance, utility, or short-term construction work areas (work lasting 10 hours or less). This guide serves to assist with the many decisions that must be made for each work site. Special planning for traffic control is necessary on a case by case basis because conditions can vary widely among work locations. **Since this guide cannot cover every situation, representative illustrations covering typical short-term construction, maintenance, and utility operations are presented.**

All typical traffic control device setups illustrated should be considered as guides. The traffic control devices that are shown, the arrangement or position of the devices, and the distances prescribed in the tables are based on the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) and the Massachusetts Amendments to the MUTCD (MA Amendments), but these illustrations only present minimum standards. The provision of safe work zones for all roadway users and roadway workers affected by these activities is paramount. Traffic controls may be expanded or improved upon whenever deemed necessary. Traffic movement through the work site all traffic control devices shall be periodically observed and inspected at all locations.

If necessary, Part 6 of the MUTCD and the MA Amendments, Chapter 17 (Work Zone Management) of MassDOT's Project Development & Design Guide, and the "Traffic Engineering and Safety Section" of the MassDOT web site: (<https://www.massdot.state.ma.us/highway/Departments/TrafficandSafetyEngineering.aspx>), as well as MassDOT District offices can provide additional guidance, information, and suggestions for work zone setups.

RESPONSIBILITIES FOR TRAFFIC CONTROL

Short-term construction, maintenance, and utility work on or near the roadway creates a potentially hazardous situation, typically requiring the use of temporary traffic controls. These controls are important to protect both work crews and the road users. It is the responsibility of each maintenance foreman to establish and maintain safe and effective controls.

Usually the supervisor, working with the crew, plans the traffic control procedures for proposed work sites. The foreman is responsible for re-requesting, storing, and maintaining all traffic control devices necessary for their crews.

The foreman is responsible for placing the devices according to these guidelines. They must inspect each installation and observe traffic flow through the area. The foreman is generally authorized to make adjustments to the original installations that, in their judgment, are necessary to improve the control of traffic and establish greater safety.

All necessary traffic control devices must be installed before work begins and properly maintained during the work period. They must also be removed as soon as they are no longer relevant to the roadway conditions.

PAGE 2

In situations such as night time road or lane closures, detours, or other unusual conditions on state highways, the District Traffic Maintenance Engineer (DTME) should be advised. If the DTME is absent, the section foreman shall follow the instructions of the District Maintenance Engineer.

TRAFFIC CONTROL DEVICES

Traffic control devices regulate the movement of road users, warn of unexpected or unusual roadway conditions, and inform them how to maneuver safely through or around the work area. All signs, channelizing devices, barricades, and other miscellaneous traffic control devices should work together to guide traffic safely and efficiently. Common temporary traffic control devices are outlined and described below.

Signs

Temporary traffic control zone (TTCZ) signs are the primary means of providing information and directions to roadway users. All signs must be retroreflective per MassDOT's latest standard.

Warning signs call attention to unexpected conditions and to situations that might not be readily apparent to road users on or adjacent to a roadway. Warning signs alert road users to conditions that might call for a reduction of speed or an action in the interest of safety and efficient traffic operations. Nearly all warning signs for construction and work areas have black legends and borders on a fluorescent orange background.

Regulatory signs shall be used to inform road users of selected traffic laws or regulations and indicate the applicability of the legal requirements. Regulatory signs typically have black legends and borders on a white background.

Channelizing Devices

When used properly, traffic cones, reflectorized plastic drums, and barricades guide traffic through the work area along an appropriate travel path. It takes roadway users a certain distance along the roadway to safely move away from the upcoming active work site. These transition distances are based on the following taper length (L) formulas:

$L = WS^2/60$ for speeds of 40 mph or less; or

$L = WS$ for speeds of 45 mph or more; where

- L = minimum length of taper in feet,
- S = posted speed limit or typical travel speed in miles per hour prior to the work, and
- W = width of lane closure in feet.

The spacing of channelizing devices (in feet) is approximately equal to the existing speed of traffic (in mph).

Warning Lights

Rotating beacons and other flashing lights mounted on work vehicles, signs, or channelizing devices help alert roadway users to the work area. They may also be used to warn roadway users of hazards within the work area. The first 10 drums in any taper shall be equipped with sequential flashing lights.

Arrow Boards

Arrow boards are a special type of sign that are highly visible work zone warning devices. They are particularly effective on highways, where both speed and volume are high. Arrow boards in the non-directional, CAUTION, mode (four corner flashing) may be used to indicate that a shoulder is closed. Arrow boards in the arrow mode shall only be used when a travel lane is dropped on a multi-lane road and one lane of traffic must merge with another. All arrow boards should be located at the beginning of each lane or shoulder closure taper without extending outside of it. Arrow boards shall flash at a rate of 25 to 40 flashes per minute. Arrow boards shall not be used to indicate a lane shift.

BASIC REQUIREMENTS

In every work situation, the temporary traffic control setup must: Give roadway users sufficient advance warning of the work area; advise roadway users of the proper actions to take and travel paths to follow; and provide protection to roadway users, workers, and the work area. These three general requirements can be met as outlined below.

Provide Advance Warning

Warning devices along the approaches to a work area alert roadway Users to changes to road and operating conditions. Roadway users are usually alerted to these dangers via a sign or series of signs installed in the same order as the roadway user generally would expect to see them on long-term construction projects.

The initial project limit sign is usually a general warning such as "ROAD WORK 1500 FT". Other operational warning signs then provide the roadway user with more specific information about the situation. A minimum of three advance warning signs (the initial project limit sign and two operational warning signs) is recommended when work is located on the traveled way. Warning lights and flags can be used to attract attention to the signs. A highly visible work area helps reinforce the advance warnings.

Advise and Direct Travelers

Operational warning signs provide information to the road-way user such as the type of work being performed, special conditions to watch for, or actions to take. These include signs such as, SHOULDER WORK, RIGHT LANE CLOSED, DETOUR 500 FT, ROAD CLOSED to THRU TRAFFIC, POLICE OFFICER AHEAD, etc. All of these signs must be located far enough in advance of the work area that the roadway user has sufficient time to react to them appropriately. For projects in Urban Areas, see detail: Typical Device Spacing for minimum sign spacing.

Protect Travelers, Workers, and the Work Area

The primary protection of any work area is its own visibility. Traffic cones, reflectorized plastic drums, portable breakaway barricades, etc. are used to make the work area visible and separate workers from traffic.

PAGE 4

Other devices, such as flashing lights, flags, delineators, temporary lighting, and portable changeable message signs (PCMS) can be used to provide additional emphasis and visibility.

Workers must protect themselves by being alert to their work situation, wearing safety vests and hard hats, and by facing traffic whenever possible.

Work vehicles can also add protection when they are equipped with truck mounted attenuators, rotating beacons, flashing lights, flashing arrow boards, etc. and are parked between workers and oncoming traffic. However, workers should not position themselves between two closely parked vehicles. No private personal vehicles are allowed within the work site.

PLANNING GUIDELINES

Decisions regarding selection of work area traffic control devices require a knowledge and understanding of the specifics of each work zone. As there may be vast differences between situations, three main variables need to be considered prior to determining the need for, or the selection of, traffic control devices: 1) location of work, 2) type of roadway, and 3) speed of traffic.

Compiling information about these variables will help with planning a safe work area control. Each of these variables is explained below.

Location of Work

The choice of traffic controls needed for a short-term construction, maintenance, or utility operation depends upon the work zone's location. As a general rule, the closer the active work site is to the roadway, the more control devices are needed. Work can take place:

- Away from the shoulder or edge of pavement. No special devices are needed if work is confined to an area 15 or more feet from the edge of the shoulder. A general warning sign, such as ROAD WORK AHEAD, should be used if workers and equipment must occasionally move closer to the roadway.
- On or near the shoulder/ edge of pavement. This area should be signed as if work were on the road itself, since it is part of the roadway users' recovery area. Advance warning and operational signs are needed, as well as channelization devices to direct traffic and keep the work area visible to roadway users.
- On the median of a divided highway. Work in this location may require traffic control in both directions of traffic. Advance warning and channelization devices should be used if the median is narrow.
- On the roadway. This condition requires detailed protection for workers and sufficient warning to roadway users. Advance warning must provide a general message that work is taking place as well as information about specific hazards and specific actions the roadway user must take.

TYPE OF ROADWAY

The characteristics of the roadway also have an important influence on the selection of work area traffic control. The roadway, itself, may present special hazards. You should plan for maximum protection, using the worst hazard present as your guide to signing the work area. Some general considerations are described below for road conditions.

One-way roads: A one-way road requires signage on both sides of the road if it carries two or more lanes in one direction, ensuring roadway users in all lanes are alerted and informed.

Two-way roads:

- **Undivided:** Two-way, undivided roads will usually require controls for both directions of traffic. When the active work site is well off the roadway, controls for the opposite lane may be eliminated.
- **Divided:** Work on divided multi-lane roadways can often be handled as work along a one-way road (i.e. signs are provided along both sides of the roadway along the direction affected). If the work is in the median, both directions of traffic must be controlled, and both approaches should be double signed (i.e. have all 3 advance warning signs on both sides of each direction).

EFFECTS OF SPEED ON WORK ZONES

Speed is an important consideration in the use of work area traffic control devices. As a general rule, the greater the speed of traffic approaching a work area, the greater the size, number, and spacing of control devices.

Size. The standard size for most warning signs is 36 x 36 inches on conventional roadways and 48 x 48 inches on freeways and expressways. Signs larger than the standard 36 x 36 inches may be desirable on high-speed conventional roads.

Position. Install signs far enough in advance of the work area so the roadway users have time to react to them (see charts associated with diagrams for spacing).

OTHER FACTORS

Sight Obstructions. To ensure safety, work areas must be visible. Assess the placement of the temporary traffic control devices by driving through the area, and determine if the devices can be easily seen and provide sufficient time for roadway users to react in a safe manner. Extra precaution should be enacted in areas where horizontal or vertical curves may obstruct a roadway user's clear view of road activities ahead.

Police/Flaggers. It should be noted that the MUTCD does not require police/flaggers for stationary setups. If police/flaggers are used, a police/flagger ahead sign should be used in advance of any point where the police/flagger is stationed to control road users.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL

1. PLAN YOUR WORK

Inspect location of work area and its surroundings.

Analyze:

- Location of work in relation to the traveled way, intersecting road-ways, driveways, and sight distances;
- Type of roadway and traffic involved; and
- Volume and speed of traffic.

Meet and discuss the work and necessary traffic control with the crew.

Study representative illustrations in this guide to develop a temporary traffic control plan (TTCP).

Other Considerations:

- Base your traffic control plan on the premise that all roadway users are unfamiliar with the area.
- The closer the work area location is to traffic, the more controls are needed.
- Plan for maximum protection.
- Select and inspect the temporary control devices needed (including all warning signs), if they are not in good condition, REPLACE THEM!
- Then collect and transport them to the work site.
- Determine their proper placement.
- Install signs and other traffic control devices prior to allowing personnel or equipment onto the roadway.
- Make sure signs are reflective, accurate, clean, and meet specifications. Completely cover any existing permanent signs that will conflict with the messages of the new work area control signs.

2. INSTALLING/REMOVING TEMP. TRAFFIC CONTROL DEVICES

Care must be exercised when installing and removing temporary traffic control (TTC) devices. The traffic control needed to perform the operation safely is dictated by the location on the roadway the operation will occur: in a shoulder or a lane, in the left lane or right, etc. In all cases, installing TTC begins and ends as a mobile operation.

A shadow vehicle with a truck mounted attenuator (TMA) shall be used to protect workers installing and removing TTC devices on all roadways with a posted speed limit of 45 MPH or greater as directed by the engineer. TTC devices shall not be installed or removed from a shadow vehicle with a TMA. TTC devices shall be installed or removed from a work operation vehicle only and a shadow vehicle with a TMA shall be used to protect the workers installing or removing the devices.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

3. INSTALL TRAFFIC CONTROL DEVICES AT WORK SITE FOR LOWER SPEED (≤ 40 MPH) ROADWAYS:

- 1) All devices shall be installed in order with the flow of traffic.
- 2) Where one direction of traffic is being affected, the first sign installed should be the sign farthest from the work site, and on the same side as the work.
- 3) Where two directions of traffic are affected, install signs for opposing traffic first, starting with the sign farthest from the work area. When signs for opposing traffic have been installed, install signs on the same side as the work area, again beginning with the sign farthest from the active work site.
- 4) Once signs are in place, other traffic control devices shall be installed in the same manner as the signs.

FOR HIGHER SPEED (≥ 45 MPH) ROADWAYS:

- 1) All devices shall be installed in order with the flow of traffic.
- 2) Install all advance warning signs, beginning with the ROAD WORK XXX (W20-1) sign and ending with the END ROAD WORK/DOUBLE FINES END (MA-R2-10E) sign.
- 3) Install all signs beginning with the opposite side which will be closed (for a right lane closure; first, install all signs on the left side (shoulder) and then install all signs on the right side (shoulder). No signs shall be erected on the roadway unless delineated by traffic control devices.
- 4) If required, install shoulder taper as the mobile operation advances.
- 5) Install arrow board on the shoulder prior to the merging taper or as close to the beginning of the merging taper as possible.
- 6) Install channelizing devices to form a merging taper. Use of a shadow vehicle with a TMA during installation is required on roads with speed limits of 45 MPH or greater or as directed by the Engineer.
- 7) Install traffic control devices along the buffer space at the appropriate spacing.
- 8) Continue placing devices along the work space at the appropriate spacing.
- 9) Install devices for the termination area as necessary.
- 10) Place the shadow vehicle with a TMA in advance of the first work crew or hazard approached by motorists. Multiple shadow vehicles may be required based on the number of lane and shoulder closures implemented.

4. INSPECT WORK AREA SIGNING AND CONTROL DEVICES

- 1) Assess the placement of the temporary traffic control devices by driving through the work area. All approaches to the work zone should be checked.
- 2) Ensure roadway users will have sufficient time to read signs and react in a safe manner.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

- 3) Check visibility of entire work area. If approaching roadway users can't see the work area well, or if they can't see ahead to traffic that may already be queued on the approach because of the work, additional traffic control devices should be deployed.
- 4) Check to ensure the proper temporary traffic control devices are positioned to protect workers from traffic (where possible).
- 5) Ensure all workers wear safety vests, hard hats, and all other necessary safety equipment. All worker safety gear should be in good condition. All reflective gear should be clean and highly visible in the dark.
- 6) Record in the log book the number and location of all signs and devices.

Considerations:

- Work area signs should never be blocked from view or obscured by vegetation, existing signs, or other obstructions.
- Flags, flashing lights, and edge line traffic cones can be used to improve visibility.

5. REMOVE TRAFFIC CONTROL DEVICES AT WORK SITE

All workers and equipment should be clear from work site BEFORE removing signs and other devices.

FOR LOWER SPEED (≤ 40 MPH) ROADWAYS:

- 1) Remove signs and other devices within the delineated area when work is complete.
- 2) Remove other traffic control devices in the reverse order in which they were installed
- 3) Remove signs in the reverse order in which they were installed (i.e. sign closest to the work area to be removed first).
- 4) When the operation is complete, uncover any existing permanent signs covered in Step 2.
- 5) Record in the log book the time at which the signs were removed.

FOR HIGHER SPEED (≥ 45 MPH) ROADWAYS:

All TTC devices for a stationary lane closure on a multi-lane roadway, except advance warning signs, should be removed against the flow of traffic in the following sequence:

- 1) Remove the channelizing devices starting from the end of the activity area working back to the widest part of the merging taper.
- 2) A shadow vehicle with TMA shall be positioned to protect workers removing devices and work backwards as the setup is removed from the roadway.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

- 3) Place the removal vehicle on the shoulder, and remove the channelizing devices from the merging taper by hand onto the work vehicle.
- 4) Remove the arrow board once traffic is clear and it is safe to do so.
- 5) Circle back and moving with the flow of traffic, remove the advance warning signs starting with the opposite side from previous lane closure first.
- 6) At no time shall workers run across the multilane roadway to remove signs on both sides of the road simultaneously.
- 7) Record in the log book the time at which the signs were removed

RAMP FACILITIES

At all times it is necessary to control the on and off-ramp traffic during the installation and breakdown of traffic control devices. Use of temporary traffic slow-downs or rolling roadblocks is recommended to allow for the safety of workers handing temporary traffic control devices on ramp facilities. A shadow vehicle with a TMA shall be used to protect the workers installing or removing the devices. At no time shall the work operation vehicle be used as the shadow vehicle with the TMA.

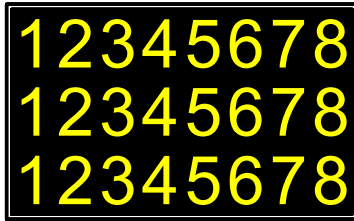
USE OF THIS GUIDE

Illustrations showing minimum standards for short-term construction, maintenance, and utility operations are arranged in this guide by type of operation. The users of this guide should compare all illustrated examples and examine their differences. After gathering information about the work zones using the general guidelines as outlined, proceed as follows:

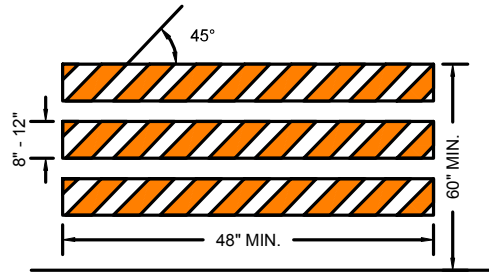
- 1) Turn to the Index. Consider the type of operations and the type of roadway upon which work will occur.
- 2) Select the figure that most closely matches the conditions where you plan to work. Remember that all diagrams represent minimum standards.
- 3) Read the title of the illustration to ensure that it is appropriate to your location. Study the layout of traffic control devices and read all notes.
- 4) Consult the appropriate tables, as directed on each illustration to determine taper length and proper spacing of signs. Notice that distances change when speeds change. Also note that these are guidelines, only, and they must be adapted to your specific work area.
- 5) Use the **“PROCEDURES FOR WORK AREA TRAFFIC CONTROL”** for assistance in completing all necessary steps to provide effective and safe work area traffic control.



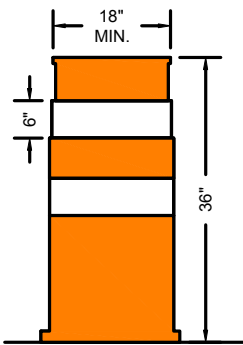
SIGN



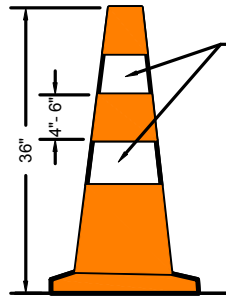
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



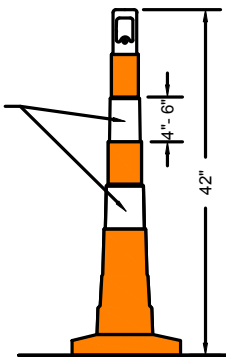
TYPE III BARRICADE



DRUM

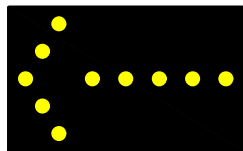


RETROFLECTIVE BANDS

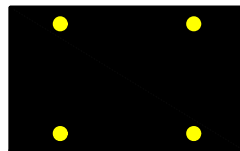


CONES

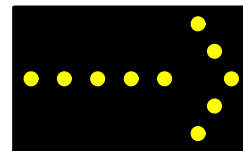
Cones may be used for all daytime operations. For night work, drums should be used to form the taper(s) and cones can be used along the tangent section of the work setup.



LEFT

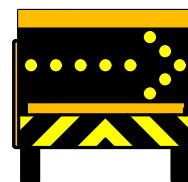


CAUTION



RIGHT

ARROW BOARD (WITH MODE)



TRUCK MOUNTED ATTENUATORS

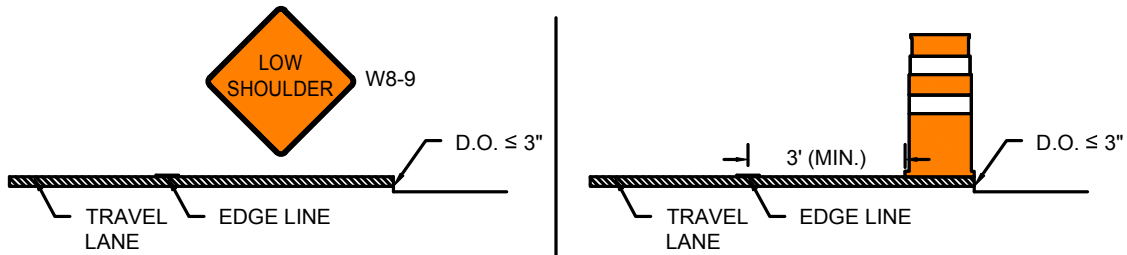
Truck Mounted Attenuators (TMA) shall be positioned between the start of the work area and the end of the designated buffer zone. The TMAs are to be positioned in each temporarily closed lane. This includes shoulders (≥ 8 feet) whether combined with a travel lane closure or being closed alone. These TMA conditions are required on roadways with speeds of 45 MPH or greater. TMAs can be used on other roadways at the discretion of the engineer. TMAs shall be used for the deployment and removal of all traffic control devices, including all advance warning signs.

SHORT-TERM PAVEMENT EDGE DROP-OFFS

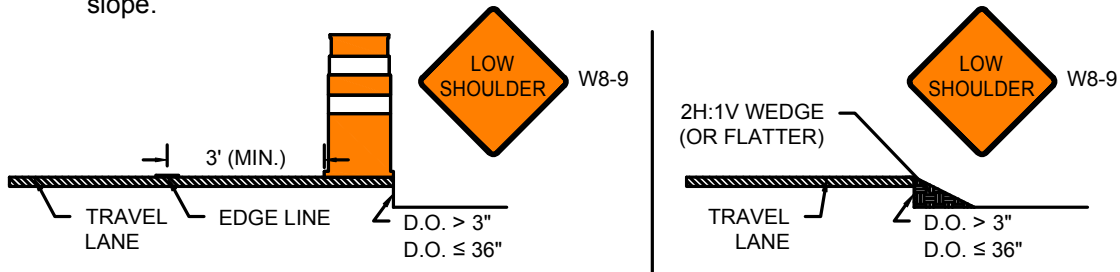
Note that this guidance is adopted from the Roadside Design Guide, 4th Edition.

Pavement drop-offs may occur during paving, excavation, and other construction activities. Drop-offs create hazards for vehicles if not properly mitigated. The following applies for all roads with speed limits greater than 30 mph; for roads with speed limits of 30 mph or less, treatments for pavement edge drop-offs are at the discretion of the Engineer. Drop-offs between adjacent, open travel lanes should not exceed 2", and any drop-off in excess of 3" should not be left unattended without one of these mitigation measures applied.

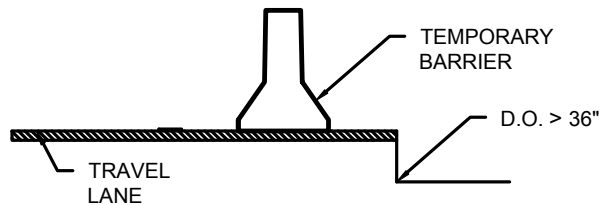
- Shoulder drop-offs 3" or less adjacent to a shoulder or active travel lane should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment; or
 - ✓ The placement of drums on the traffic side of the drop-off.



- Shoulder drop-offs greater than 3" but less than or equal to 36" should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment and the placement of drums on the traffic side off the drop-off, offset at least 3' from the travel lane; or
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment and the placement of a temporary wedge of material along the face of the drop-off. The wedge should consist of stable material placed on a 2H:1V or flatter slope.



- Shoulder drop-offs greater than 36" must be protected by temporary barrier.





POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	55
45-55	500 / 1000 / 1000	660	495	40	40
60-65	1000 / 1600 / 2600	780	645	40	50










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

MINIMUM SPACING OF ADVANCE WARNING SIGNS FOR URBAN ROADWAYS	
ROAD TYPE	DISTANCE BETWEEN SIGNS
URBAN (LOW SPEED)	100 FT
URBAN (HIGH SPEED)	350 FT

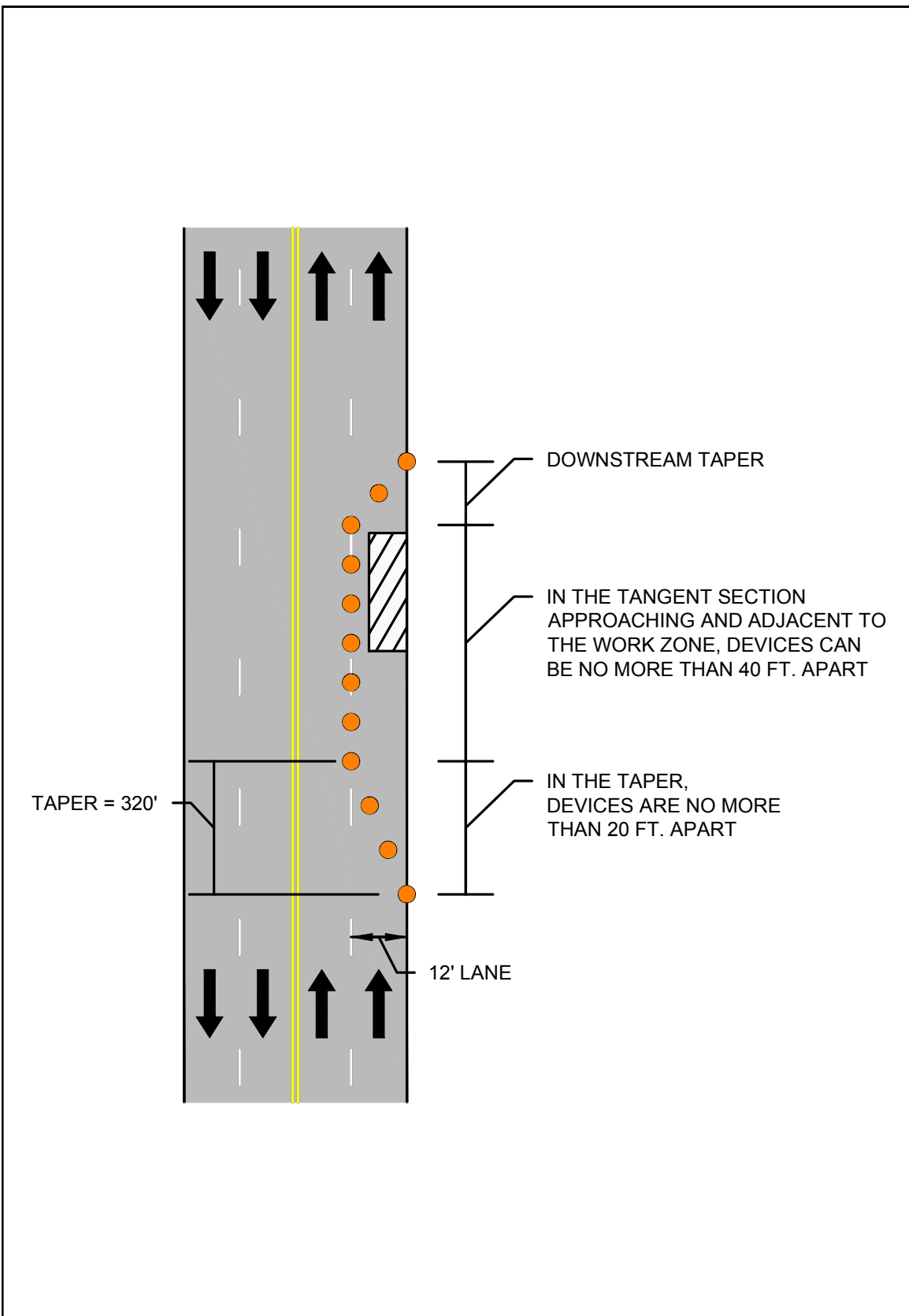
NOTES


1. 40 FT = 10 FT PAVEMENT MARKING + 30 FT SKIP

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 14</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FLAGGING GUIDANCE</p>
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Guidance for Flagging Operations

NOTE:

A flagger shall always be aware of their surroundings and have a good escape route. A flagger shall never be positioned directly beside or against construction equipment. When a flagger is required to direct traffic in an area where the escape route is partially blocked by a traversable obstruction such as a guardrail, the flagger shall be physically capable of traversing that obstruction. Prior to commencing a project, the supervisor in charge shall review the project, including guardrail areas, for safe flagging stations. The supervisor in charge shall clearly communicate with the flagger(s), indicating any locations where they cannot safely perform their duties.

Each flagger shall be equipped with the following high visibility clothing, signaling, and safety devices:

- 1) A white protective hard hat with a minimum level of reflectivity per the requirements of ANSI, Type I, Class E&G;
- 2) A clean, unfaded, untorn lime/yellow reflective safety vest and pants meeting the requirements of ANSI 107 Class 3 with the words "Traffic Control" on the front and rear panels in minimum two (2) inch (50 millimeter) high letters;
- 3) A 24 inch "STOP/SLOW" traffic paddle conforming to the requirements of Part 6E.03 of the Manual on Uniform Traffic Control Devices (MUTCD), a weighted, reflectorized red flag, flagger station advance warning signage, and two-way radios capable of providing clear communication within the work zone between flaggers, the Contractor, and the Engineer. The traffic paddle shall be mounted on a pole of sufficient length to be seven feet above the ground as measured from the bottom of the paddle;
- 4) A working flashlight with a minimum of 15,000 candlepower and a six inch red attachable wand, a whistle with a working lanyard, and a First Aid kit that complies with the requirements of ANSI Z308.1; and
- 5) An industrial/safety type portable air horn that complies with the requirements of the U.S. Coast Guard.

A "STOP/SLOW" paddle should be the primary hand-signaling device. It shall have an octagonal shape on a rigid handle. Flag use should be limited to emergency situations.

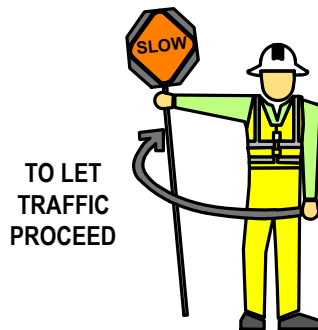


Properly Trained Flaggers

- Give clear messages to drivers.
- Allow distance for drivers to react.
- Coordinate with other flaggers.
- Use standard signaling methods.

Properly Equipped Flaggers

- Use approved stop/slow paddles.
- Use approved safety apparel.
- Use retroreflective equipment.
- Use hand held radios, as needed.
- All flaggers shall wear safety apparel that meets ANSI Class 3 requirements. The combination of vest and pants is required.



Proper Flagging Stations

- Good approach sight distance.
- Highly visible to traffic.
- Stand alone away from other machinery and people.
- Stand on right edge of pavement or shoulder- proceed to centerline only when first vehicle has come to stop.
- Have a good escape route.



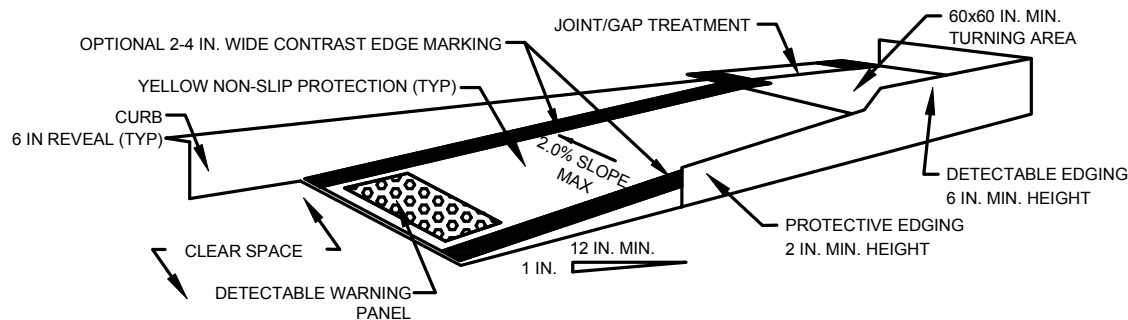
Proper Advance Warning Signs

- Always use warning signs.
- Allow for reaction distance from signs.
- Remove signs if no longer necessary or not flagging.
- Use free hand in up-and-down motion to help slow traffic.

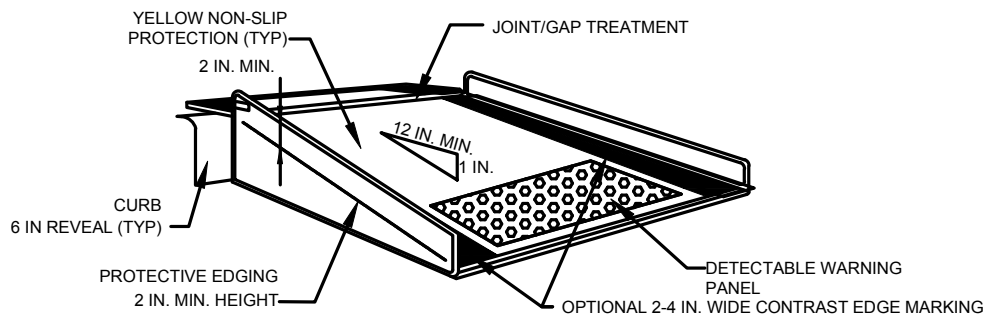




FIGURE 4
TYPICAL PEDESTRIAN DEVICES
(1 OF 2)
NOT TO SCALE



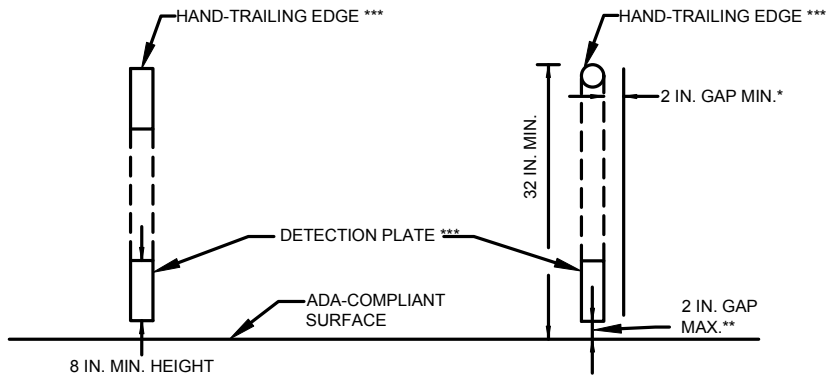
TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

NOTES:

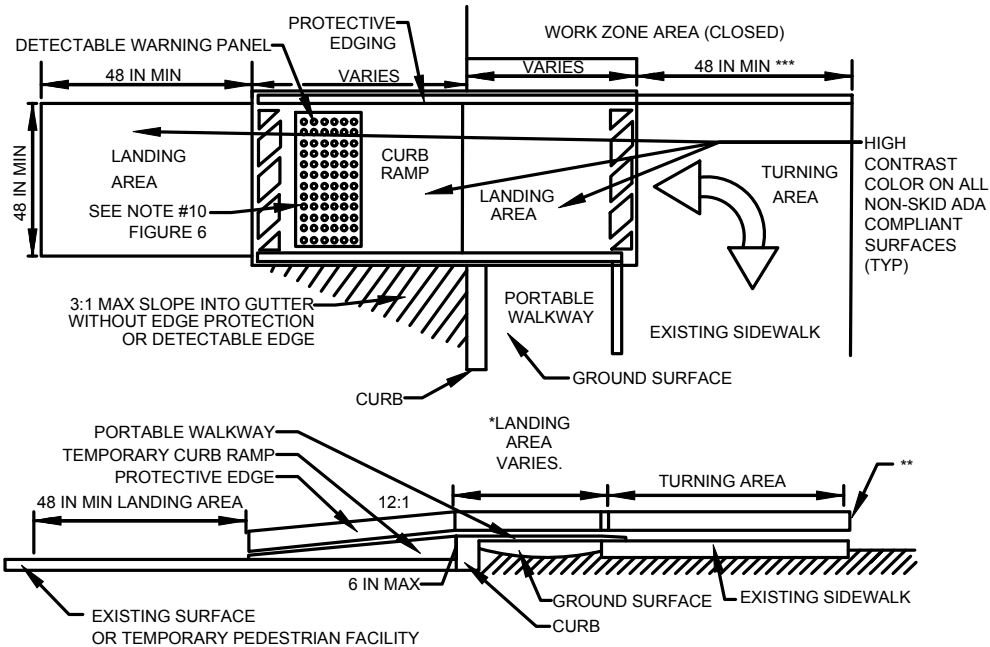
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE, AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING 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.

 Massachusetts Department of Transportation Highway Division	Work Zone Safety Standard Details and Drawings	FIGURE 5 TYPICAL PEDESTRIAN DEVICES (2 OF 2) NOT TO SCALE
PAGE 17		



PAGE 18

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED
WORK NEAR CURVE










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	50	100	20	30
45-55	500 / 1000 / 1000	100	150	40	20

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

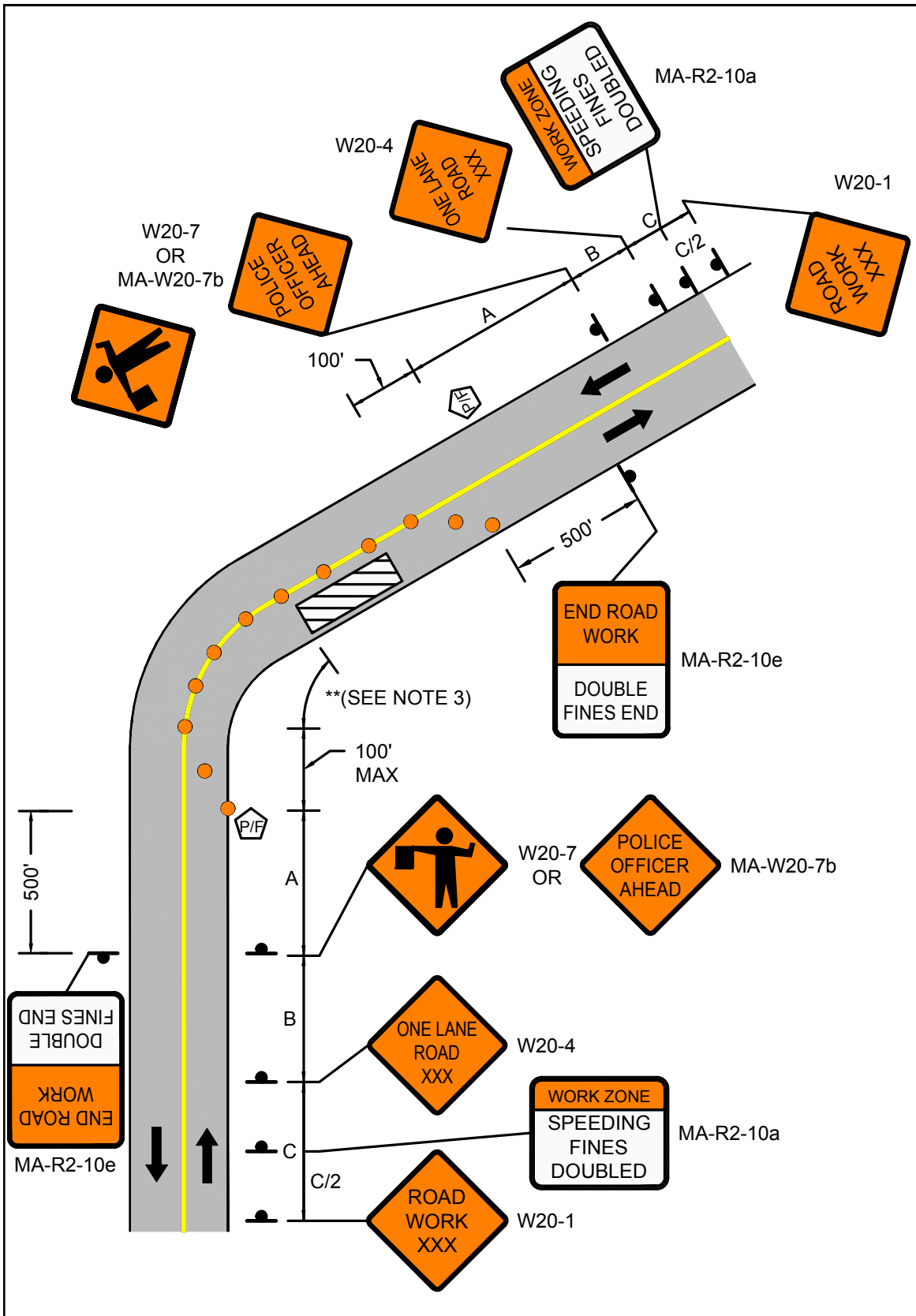
NOTES


1. IF POLICE DETAIL/UNIFORMED FLAGGER SUPPORT IS REQUIRED, PROVIDE TWO UNITS.
2. MA-R2-10a LOCATED AT C/2.
3. ** = EXTEND ENOUGH SO TAPER IS BEFORE CURVE

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 19</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 6 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED WORK NEAR CURVE</p>
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PAGE 20

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	50	100	20	30
45-55	500 / 1000 / 1000	100	150	40	20










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS
36-mph to 55-mph	15-feet
35-mph and under	10-feet

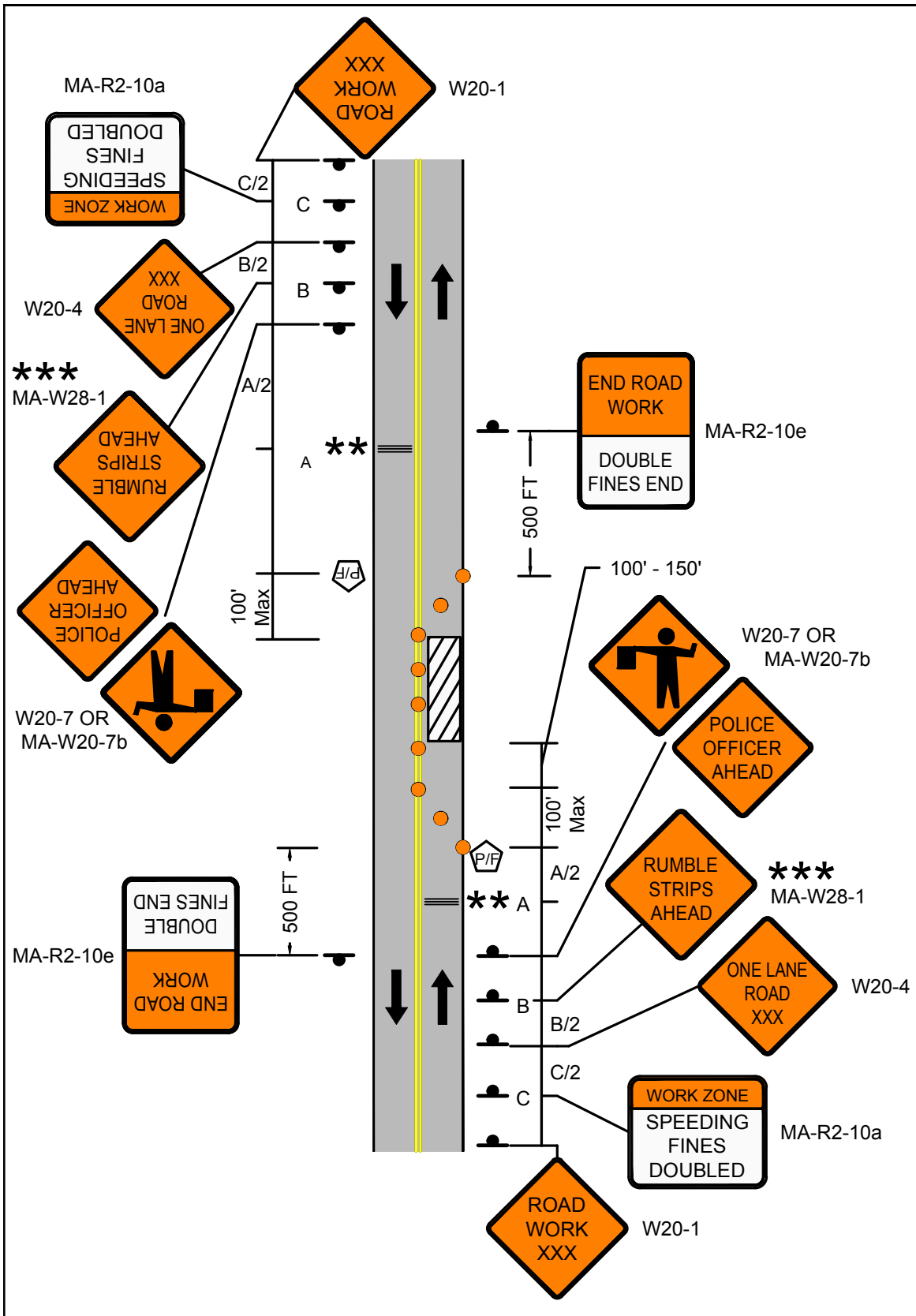
NOTES


1. IF POLICE DETAIL/UNIFORMED FLAGGER SUPPORT IS REQUIRED, PROVIDE TWO UNITS.
2. MA-R2-10a LOCATED AT C/2.
3. ** OPTIONAL AT THE ENGINEER'S DISCRETION.
4. *** SHALL BE DEPLOYED IF RUMBLE STRIPS ARE PRESENT.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 21</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 7 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED</p>
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PAGE 22

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
SHOULDER CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

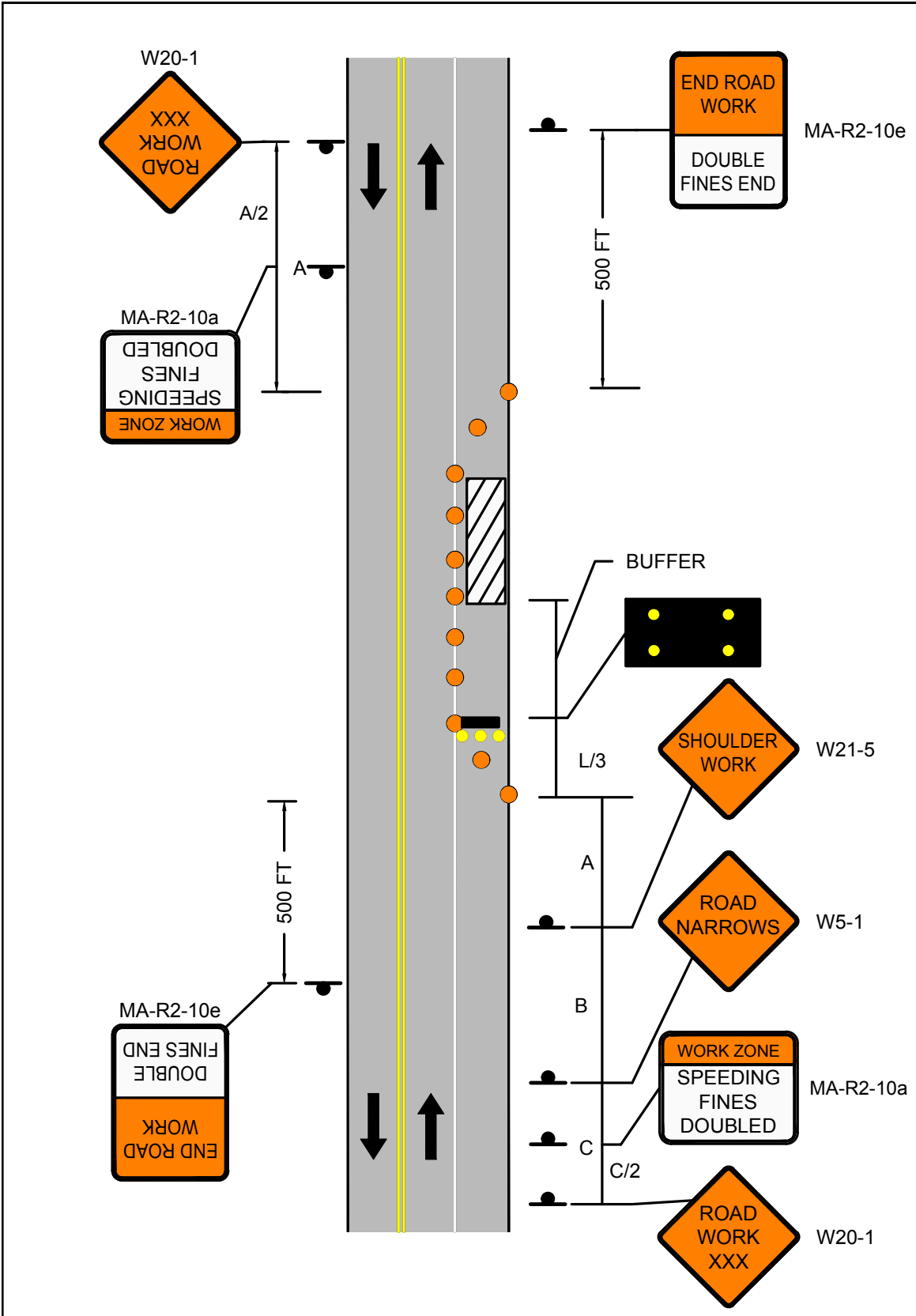
NOTES


1. MA-R2-10a at C/2 and A/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>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>
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PAGE 24

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
WITH TRAVERSABLE SHOULDER
HALF OF ROADWAY CLOSED
MAINTAIN TWO-WAY TRAFFIC

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	160	305	20	125
45-55	220	330	495	40	100
60-65	260	390	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

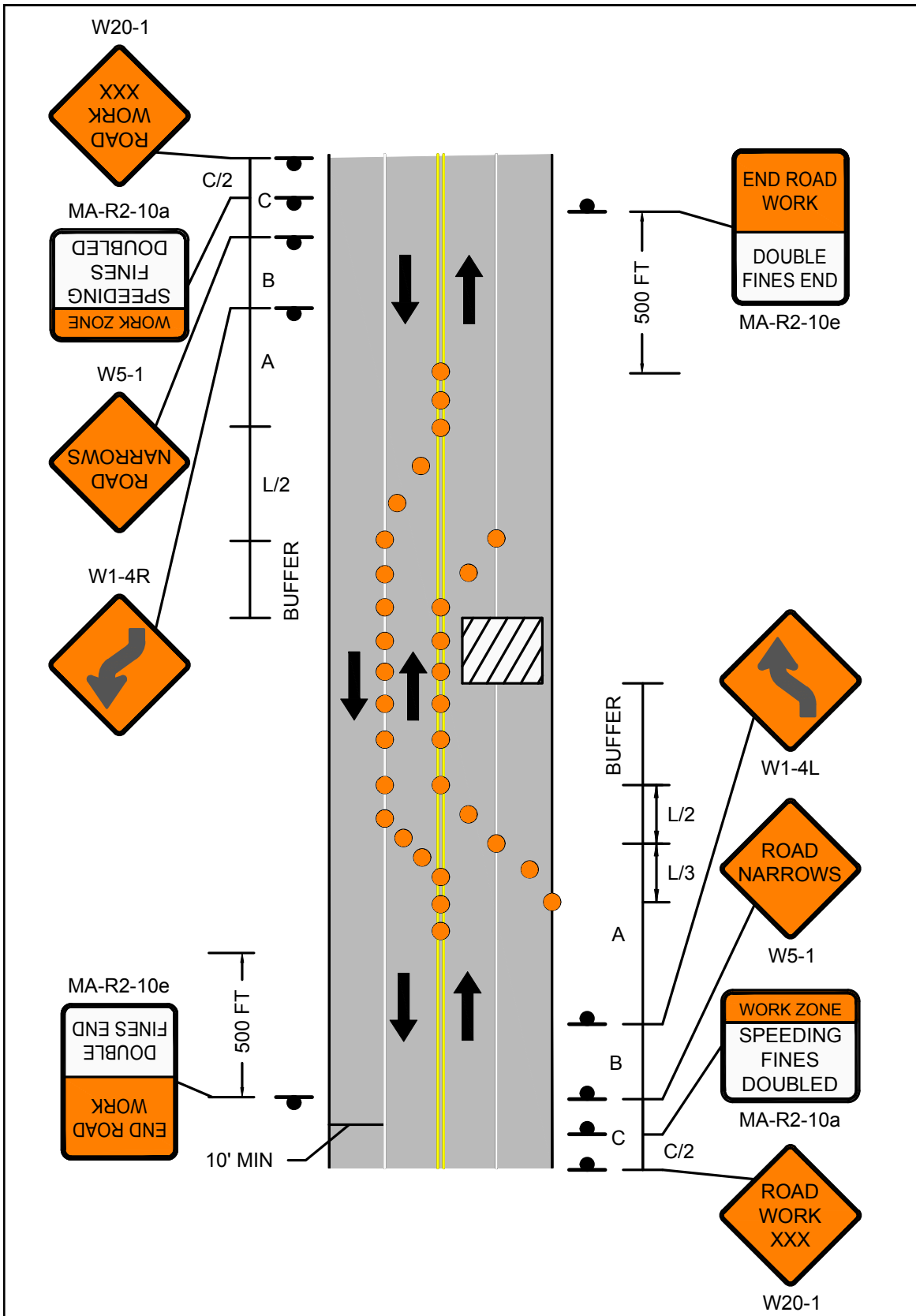


FIGURE 9
 STATIONARY OPERATIONS
 TWO LANE UNDIVIDED ROADWAY
 WITH TRAVERSABLE SHOULDER
 HALF OF ROADWAY CLOSED
 MAINTAIN TWO-WAY TRAFFIC



Work Zone Safety
 Standard Details
 and Drawings



PAGE 26

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
RIGHT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

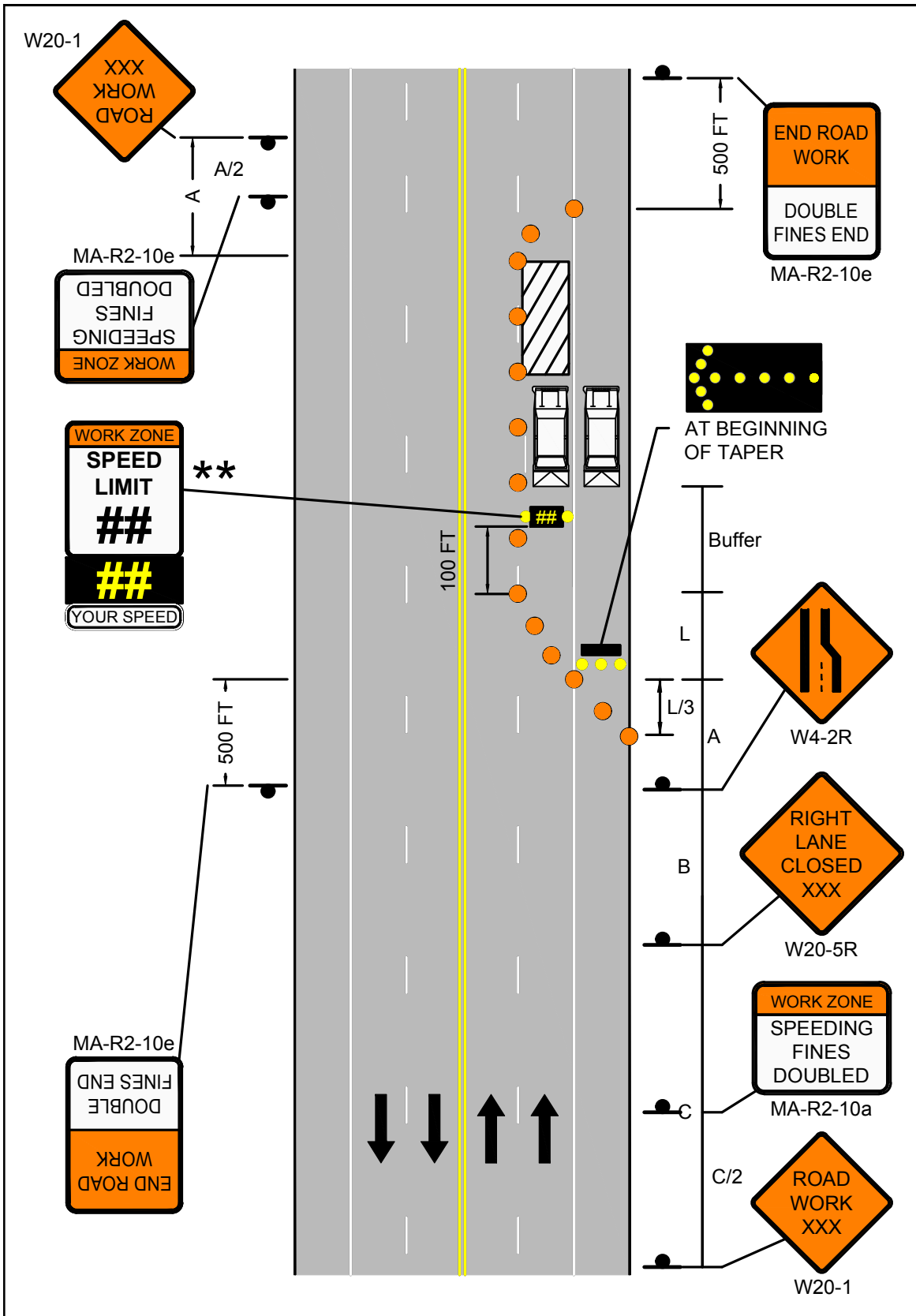
NOTES


1. MA-R2-10a LOCATED AT A/2 AND C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 27</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 10 STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY RIGHT LANE CLOSED</p>
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PAGE 28

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
LEFT LANE CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	105
45-55	500 / 1000 / 1000	660	495	40	80
60-65	1000 / 1600 / 2600	780	645	40	100

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

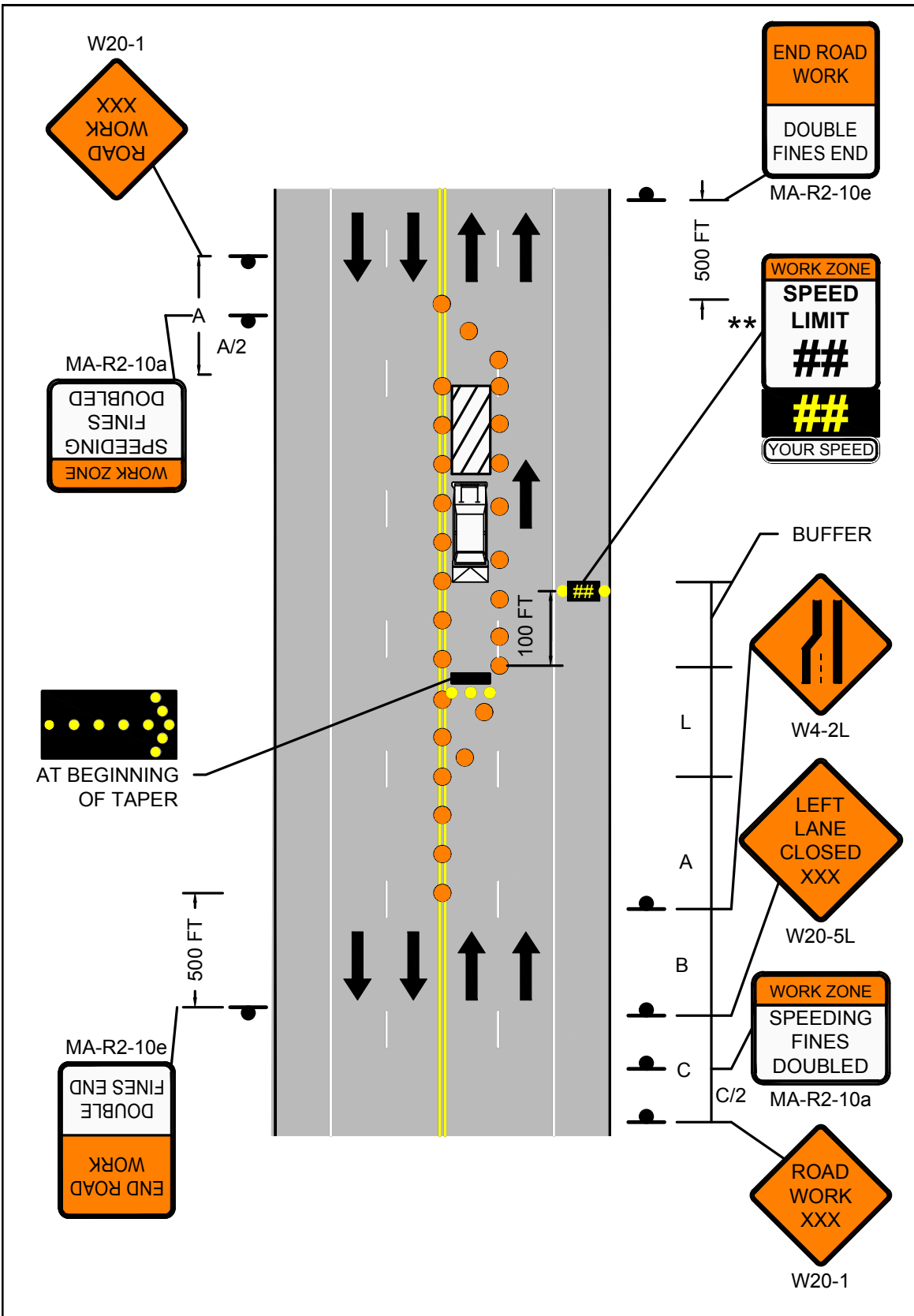
NOTES

1. MA-R2-10a LOCATED AT A/2 AND C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION. 2' OFFSET FROM EDGE OF TRAVEL LANE TO RADAR SPEED FEEDBACK BOARD IS REQUIRED. BOARD MAY BE MOVED FULLY OR PARTIALLY OFF PAVED SHOULDER, IF REQUIRED.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE






Work Zone Safety Standard Details and Drawings

FIGURE 11
STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
LEFT LANE CLOSED

PAGE 29

 PAGE 30	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED
--	--	--

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

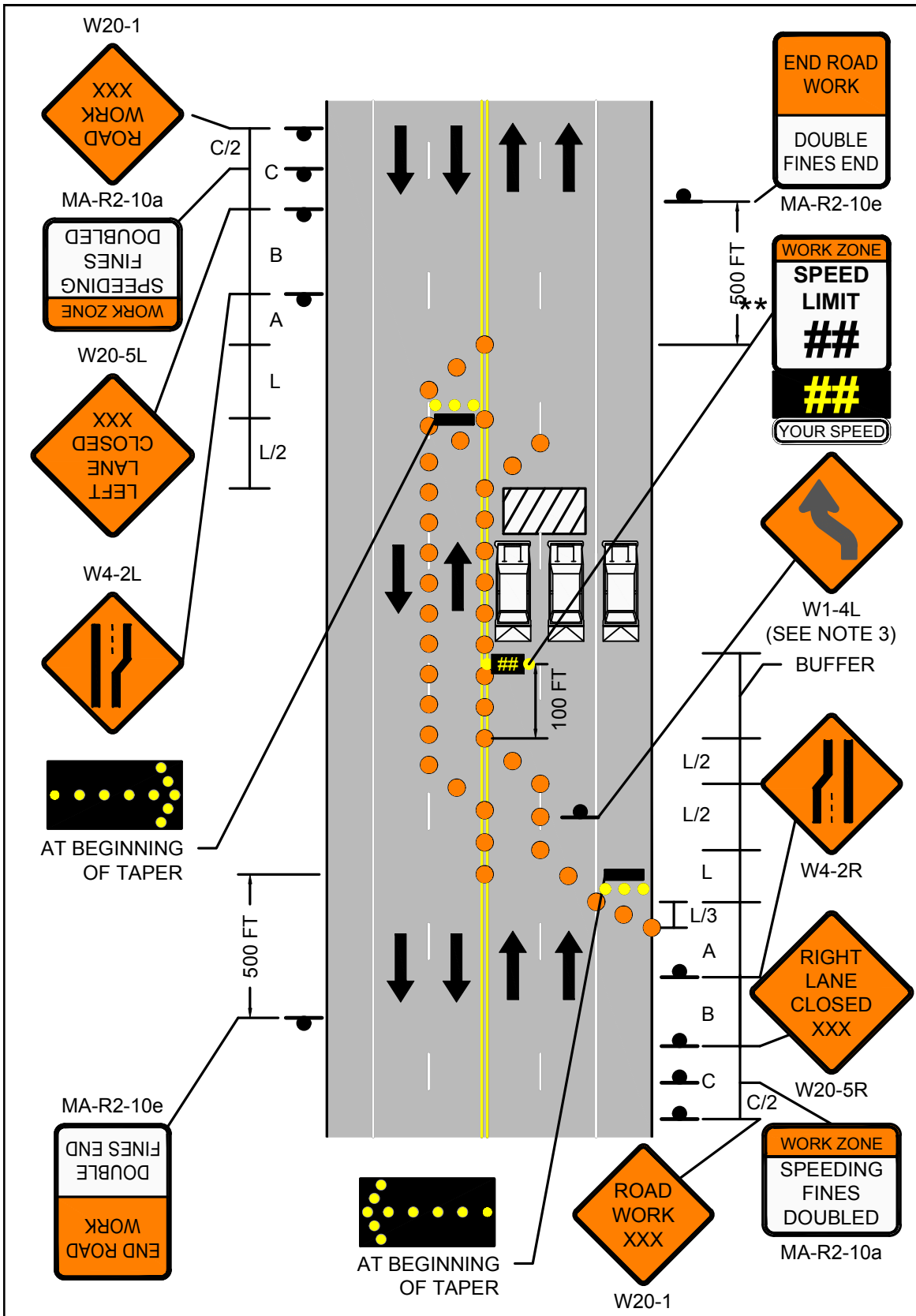
NOTES


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



 <p>PAGE 31</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 12 STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED</p>
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PAGE 32

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

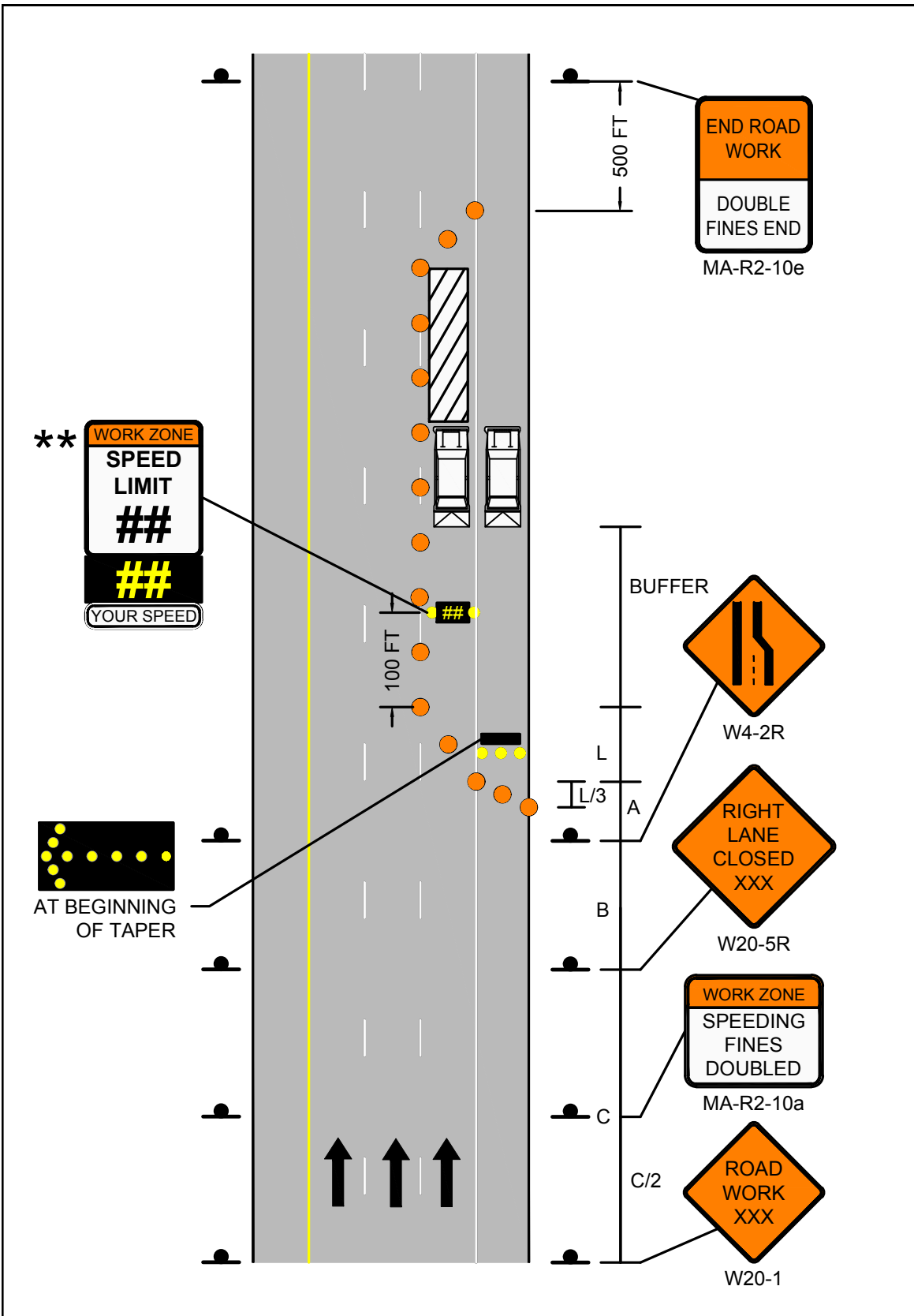
NOTES

1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





PAGE 34

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
LEFT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

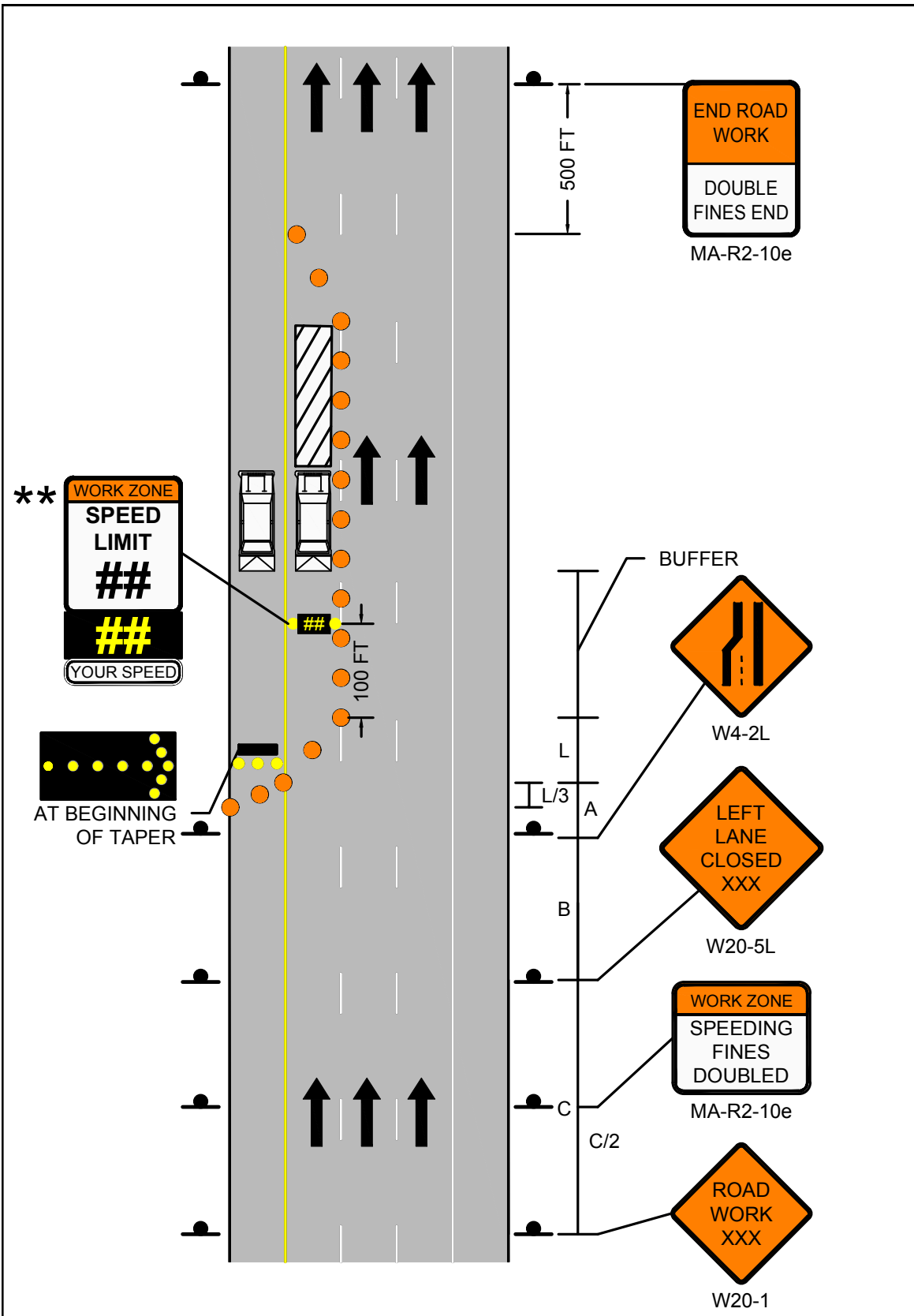
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 35</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 14 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY LEFT LANE CLOSED</p>
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PAGE 36

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

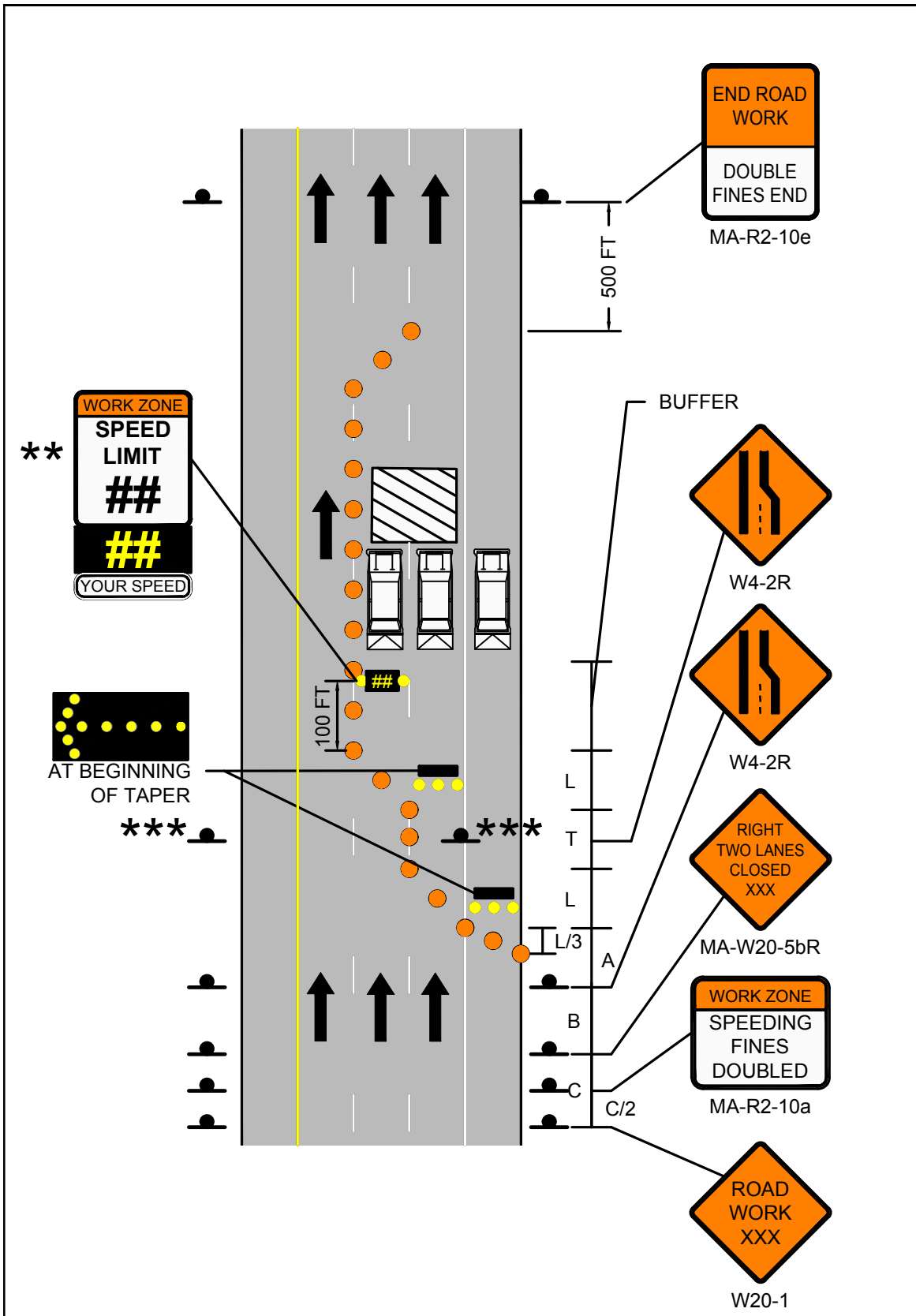



FIGURE 15
STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
CENTER LANE OR RIGHT/CENTER
LANES CLOSED



 <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>
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POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TANGENT LENGTH BETWEEN TAPERS T (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	640	305	20	110
45-55	220	660	1320	495	40	100
60-65	260	780	1560	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

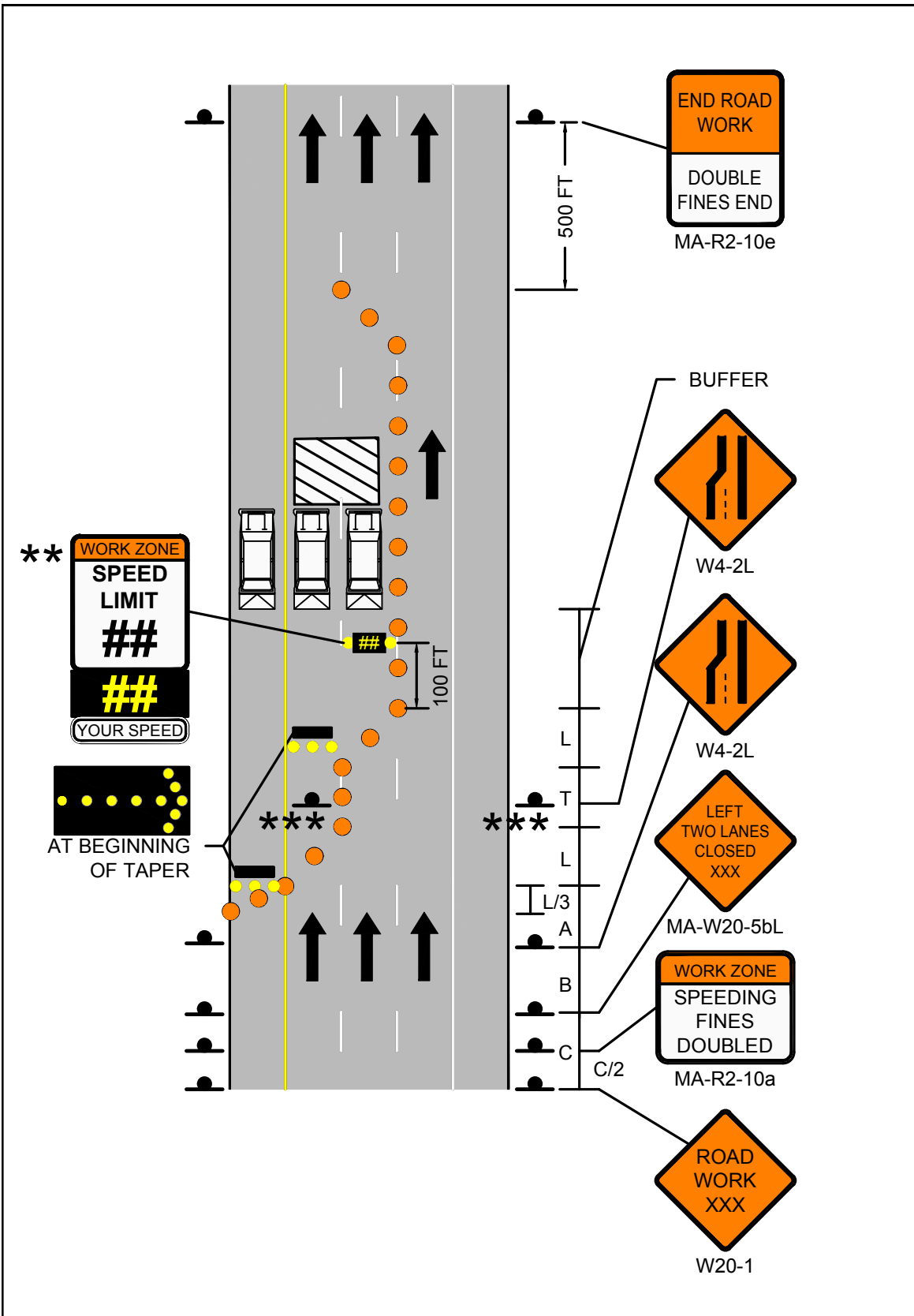
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. ***OPTIONAL AT THE ENGINEER'S DISCRETION.
3. ***THIS SET OF SIGNS SHALL BE LOCATED AT T/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 39</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 16 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR LEFT/CENTER LANES CLOSED</p>
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PAGE 40

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT SIDE OF OFF RAMP CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	160	305	20	45
45-55	500 / 1000 / 1000	330	495	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

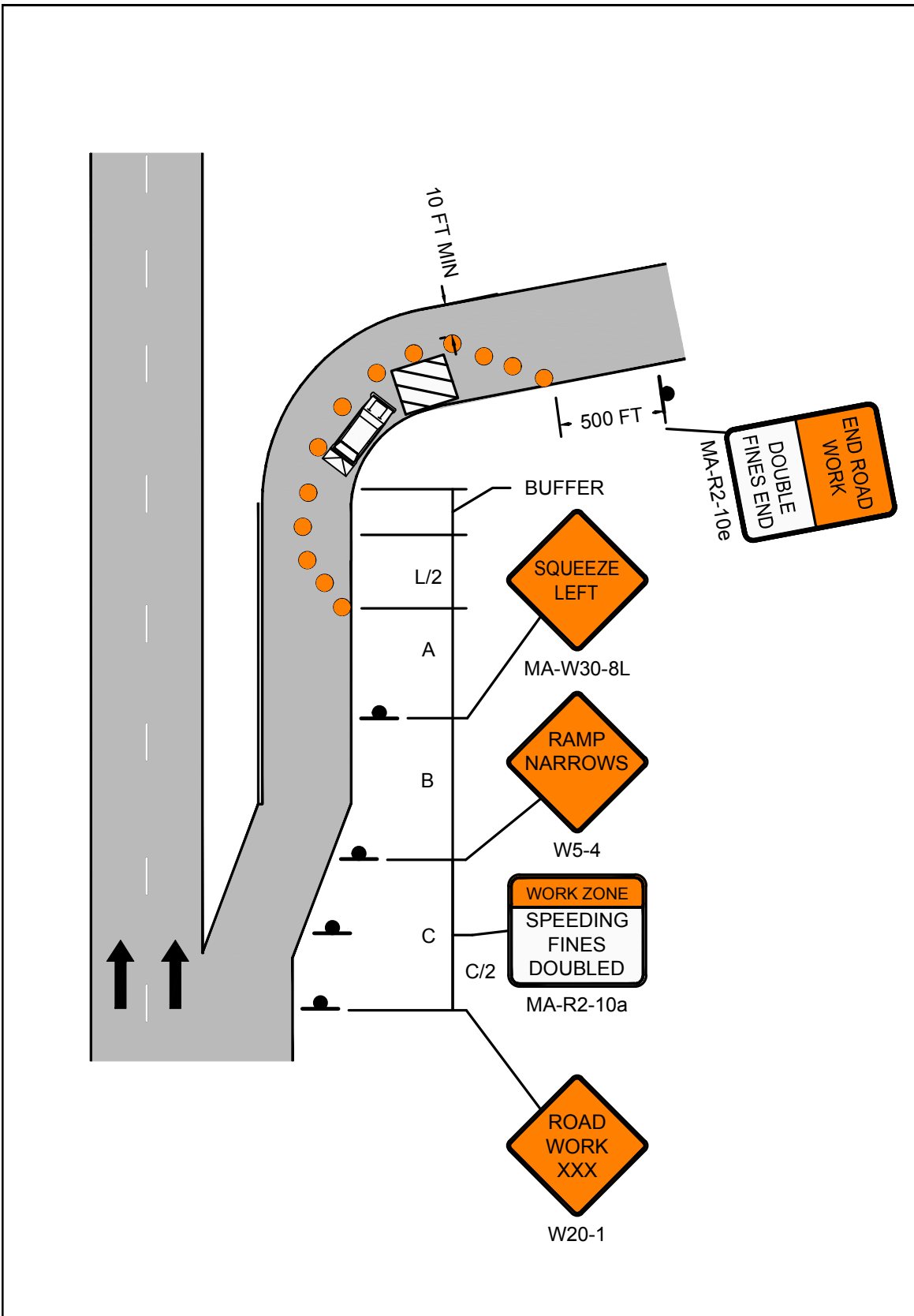
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 41</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 17 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY RIGHT SIDE OF OFF RAMP CLOSED</p>
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PAGE 42

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
LEFT SIDE OF OFF RAMP CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	160	305	20	45
45-55	500 / 1000 / 1000	330	495	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

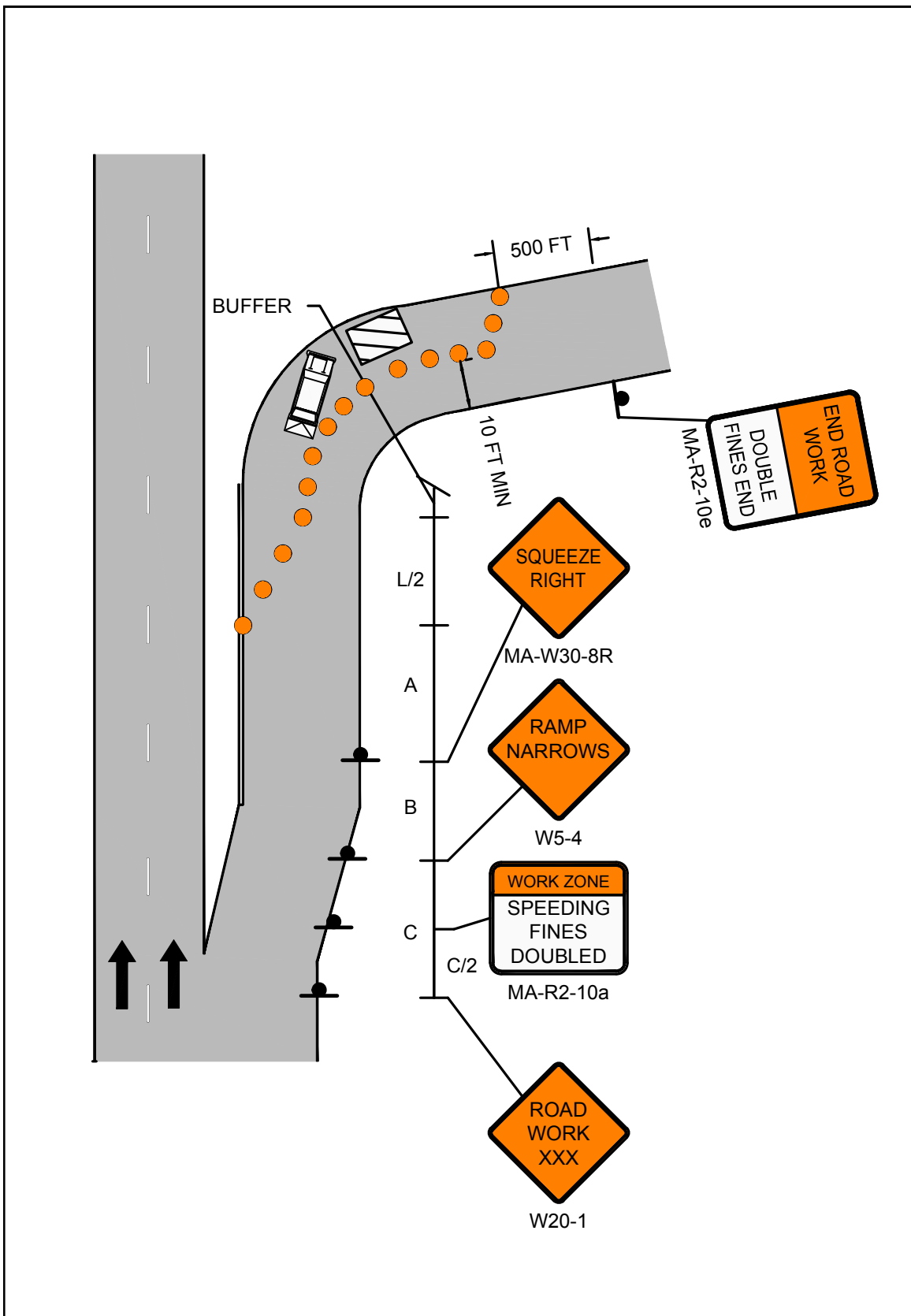
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



	<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>
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PAGE 44

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
ROADWORK BEYOND ON RAMP

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	175
45-55	220	660	495	40	135
60-65	260	780	645	40	155










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

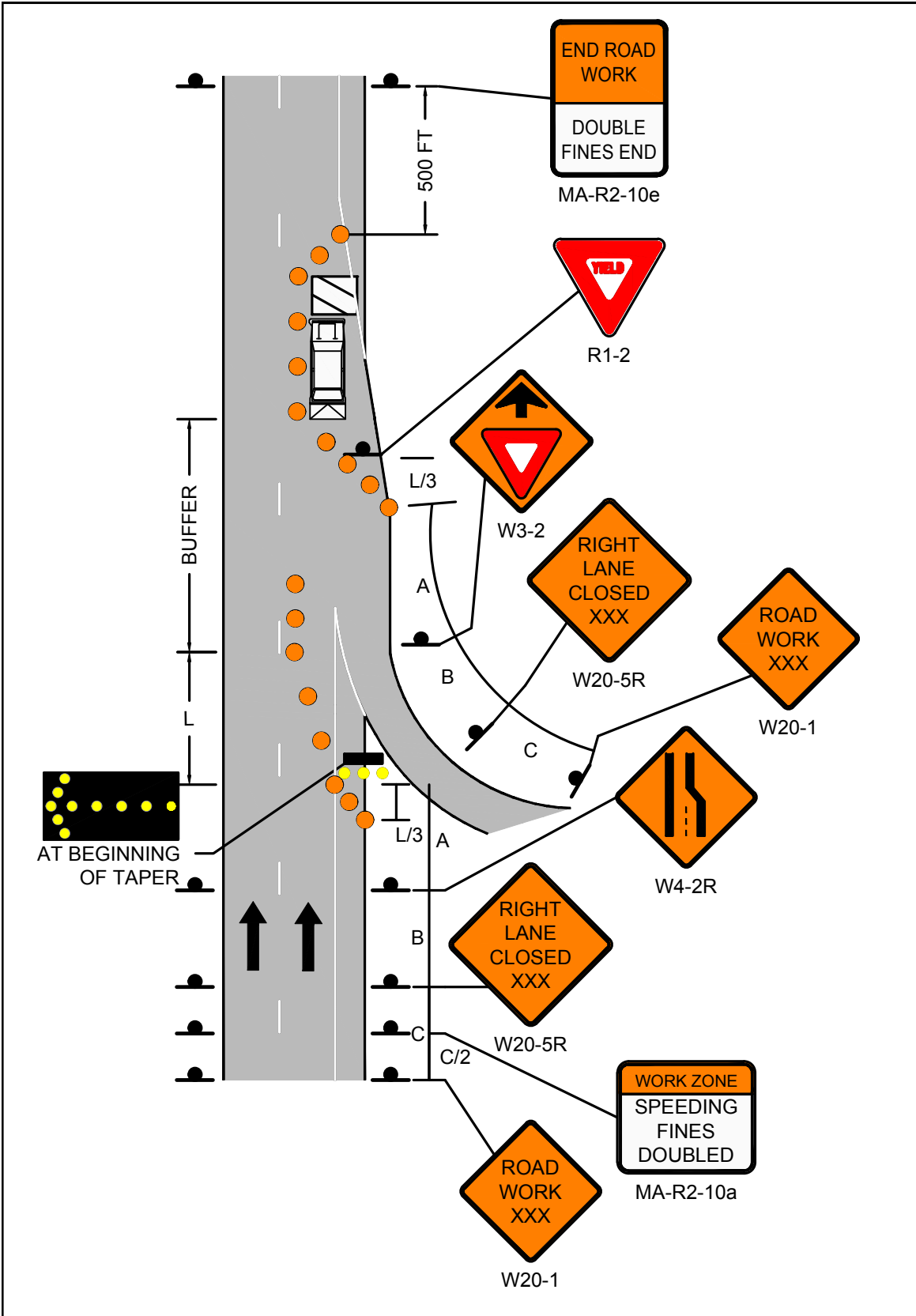
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 45</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 19 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY ROADWORK BEYOND ON RAMP</p>
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PAGE 46

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
ROADWORK BEYOND OFF RAMP

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	160	305	20	70
45-55	220	660	330	495	40	55
60-65	260	780	390	645	40	65










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

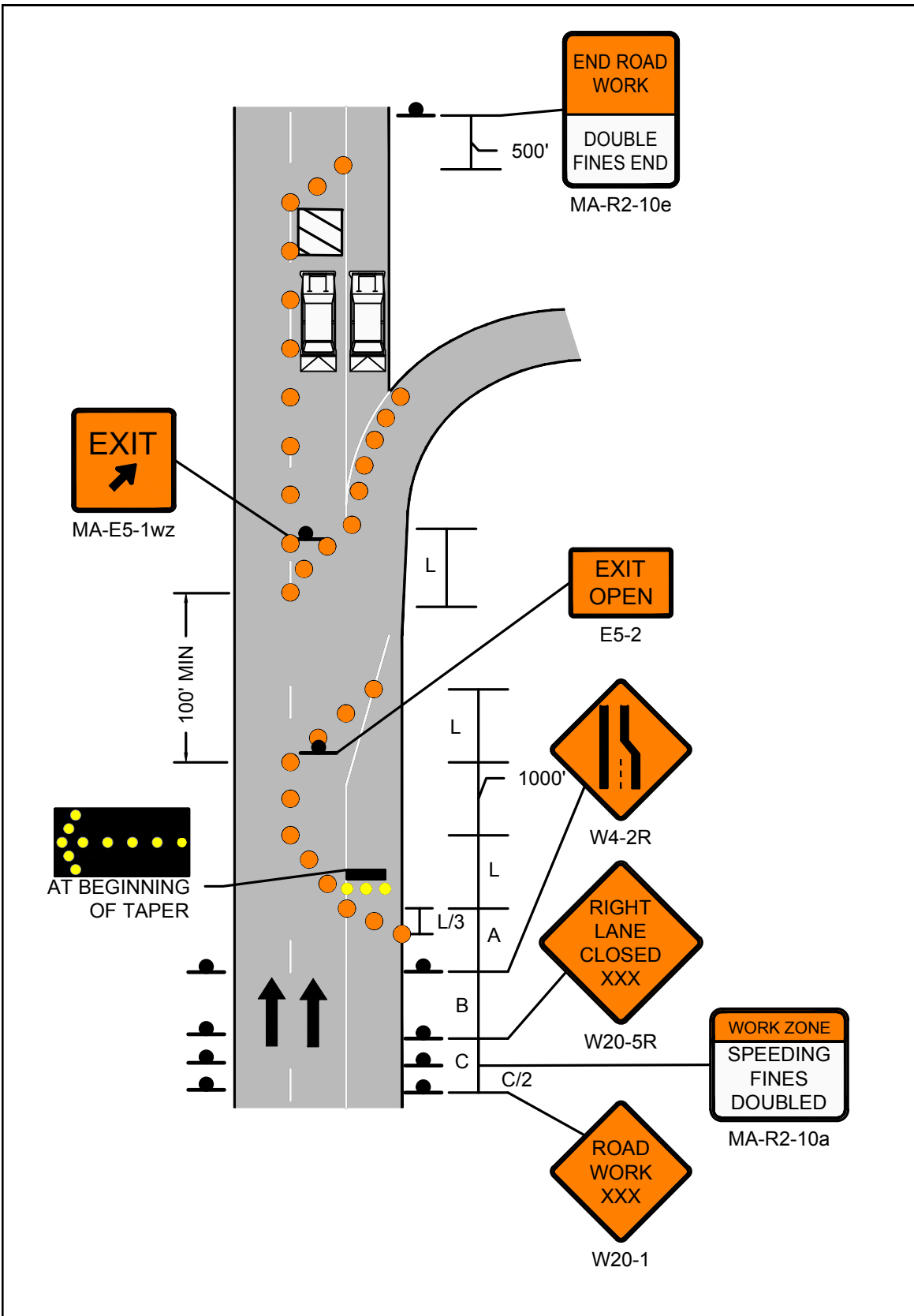
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 47</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 20 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY ROADWORK BEYOND OFF RAMP</p>
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PAGE 48

Work Zone Safety
Standard Details
and Drawings










MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

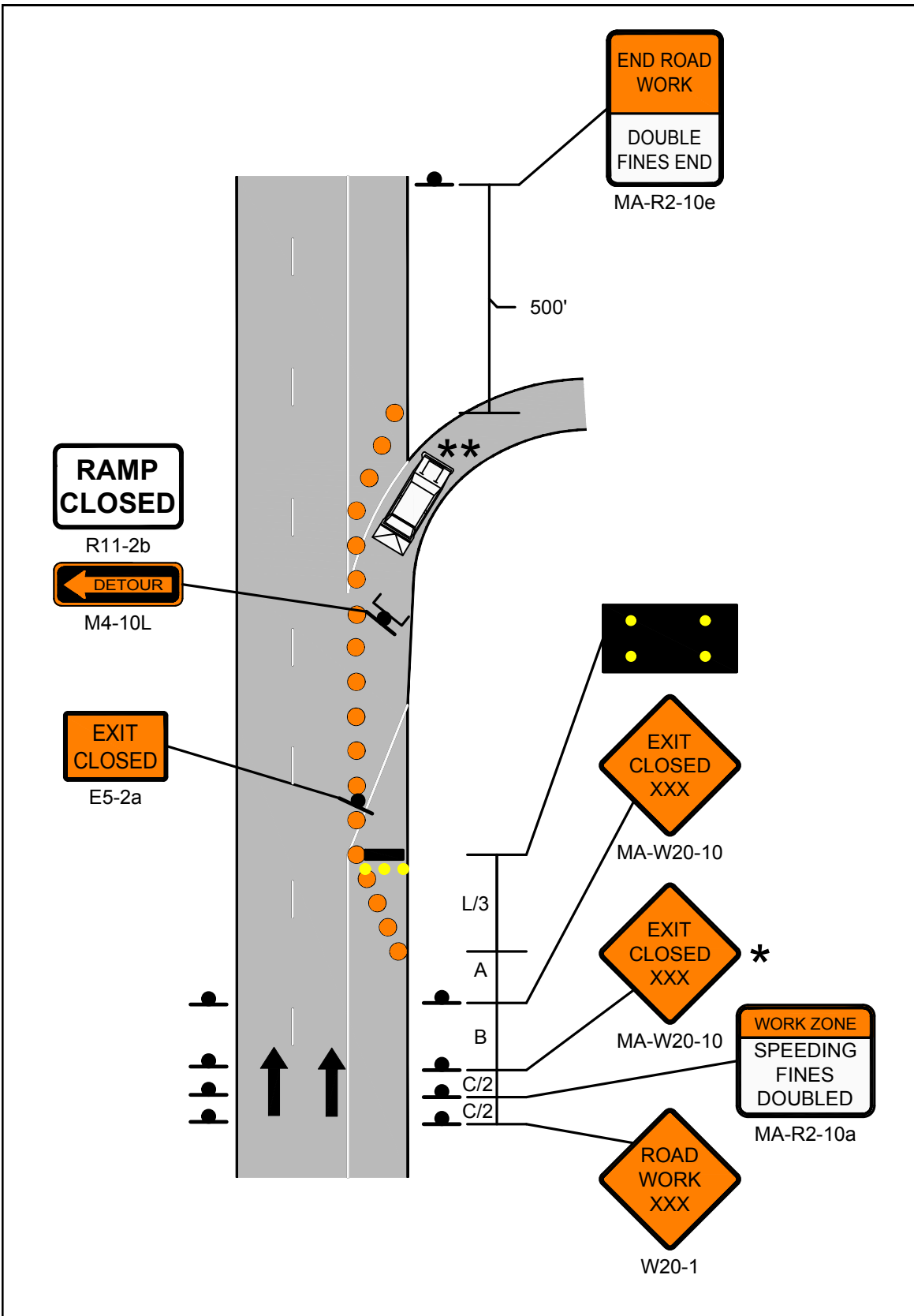
NOTES

1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





PAGE 50

Work Zone Safety
Standard Details
and Drawings










MULTILANE DIVIDED ROADWAY
TYPICAL CLOVERLEAF RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

NOTES

1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



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

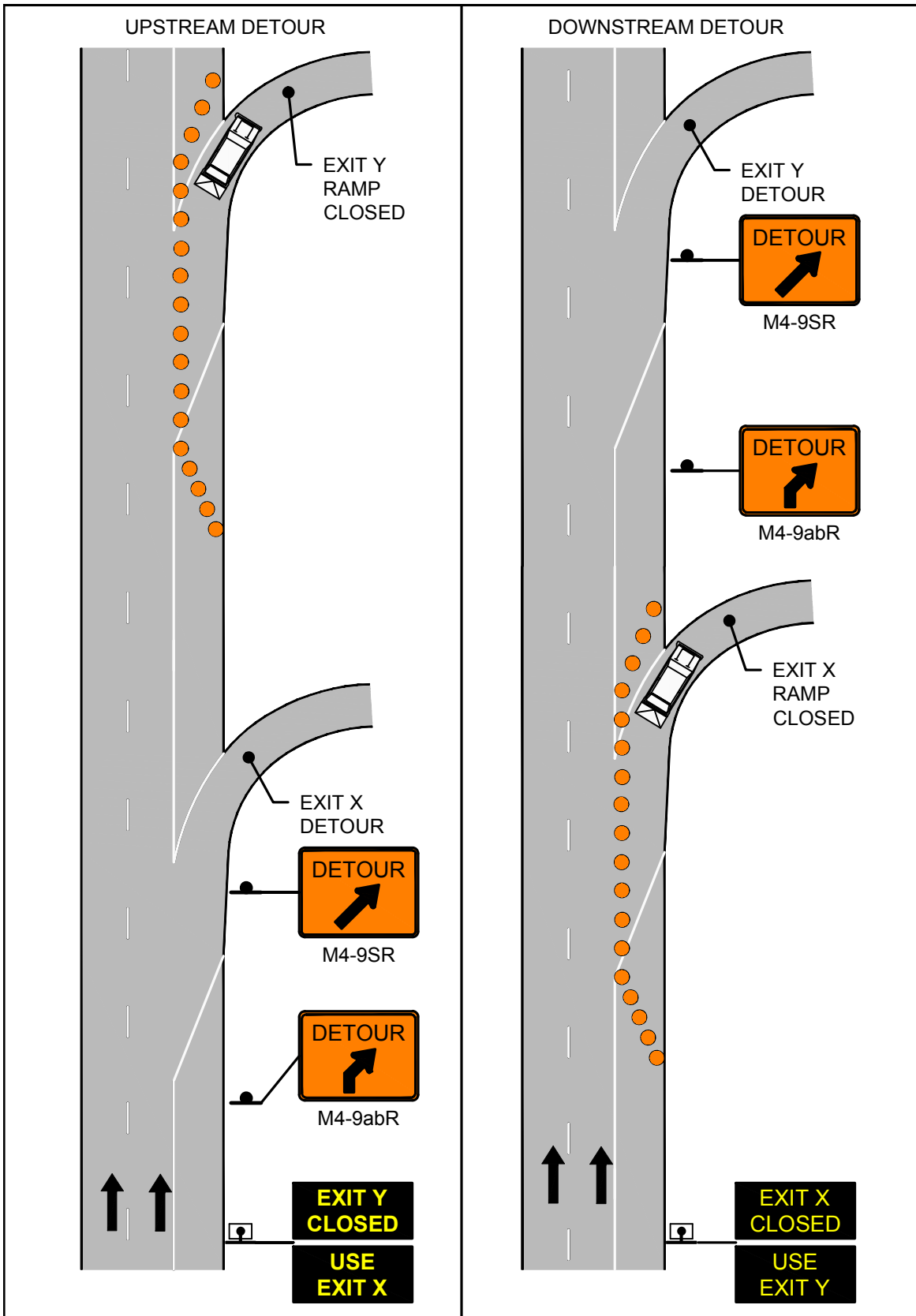



FIGURE 23
MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE
ADVANCE SIGNING

 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
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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

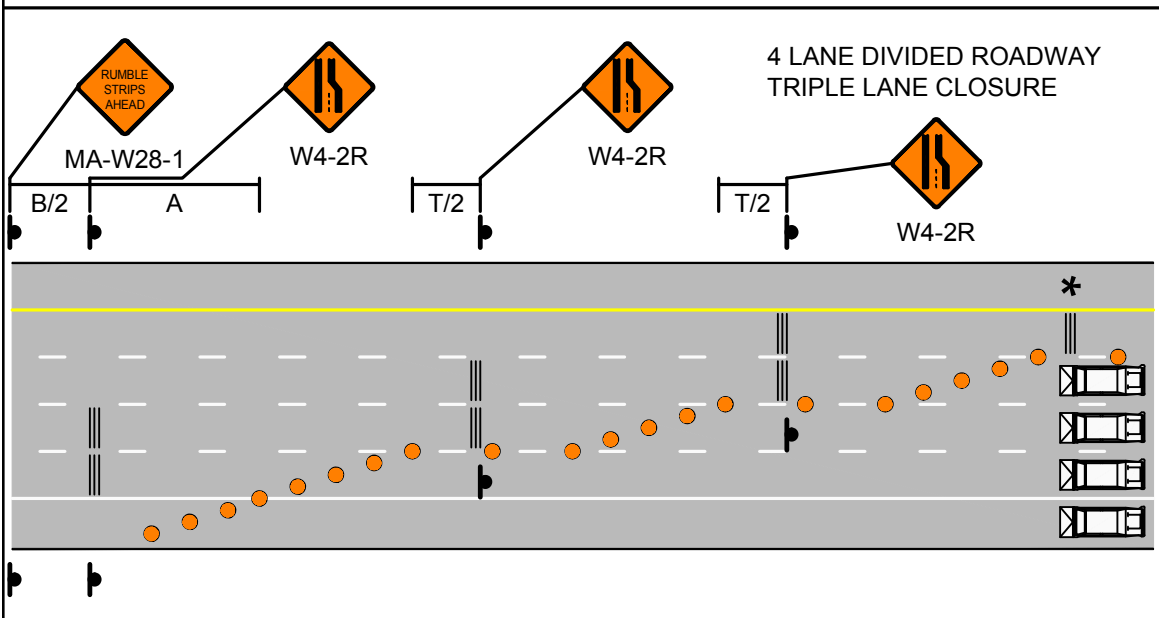
NOTES

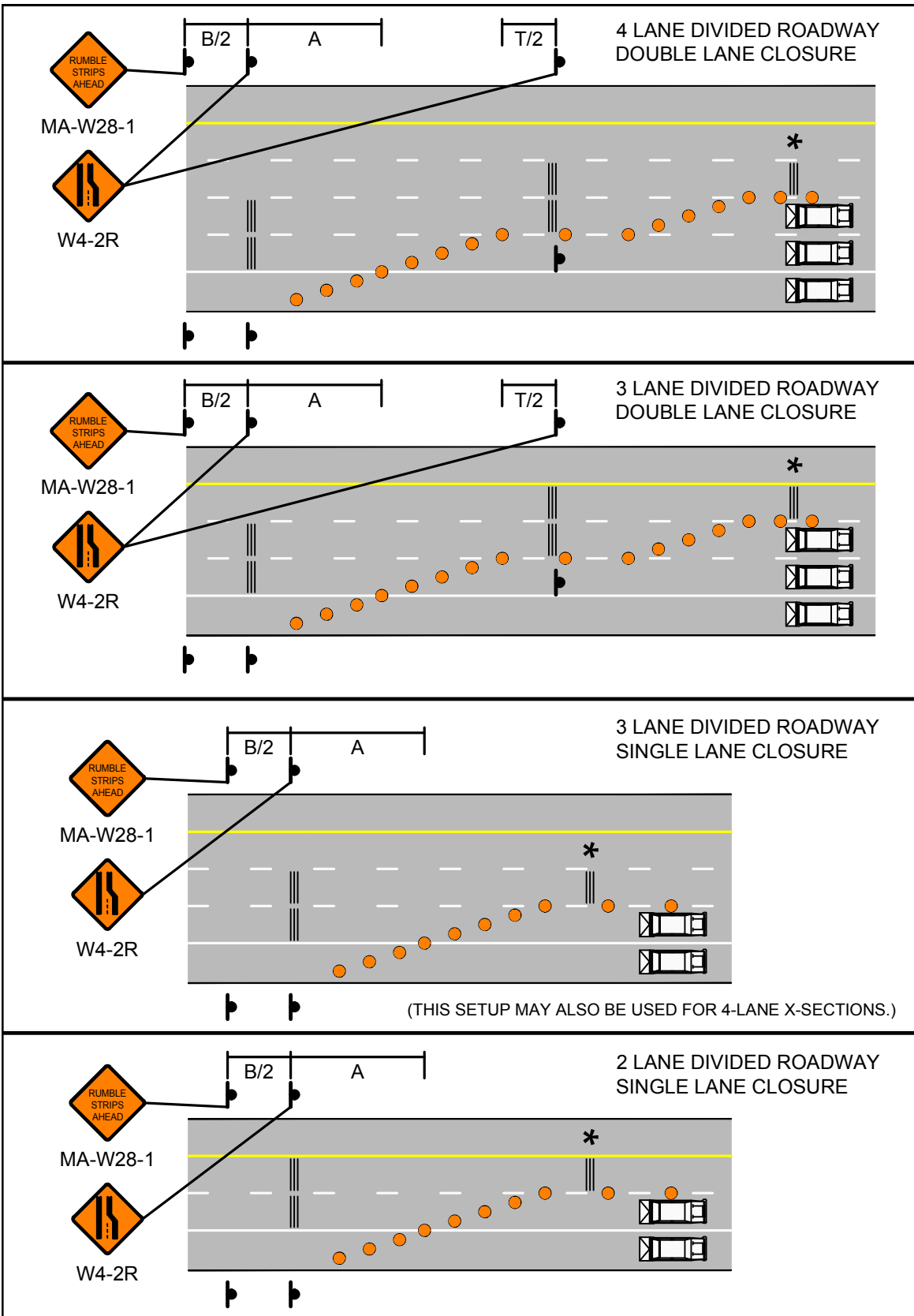
1. THE INTENTION OF THESE DETAILS IS ONLY TO DEPICT THE PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS (TPRS) IN RELATIONSHIP TO THE TAPER AND THE BUFFER OF A SINGLE- OR MULTI-LANE CLOSURE. THE DEPICTION OF THE NUMBER AND SPACING OF ALL OTHER TRAFFIC CONTROL DEVICES IS NOT TO SCALE. REFER TO OTHER DETAILS 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

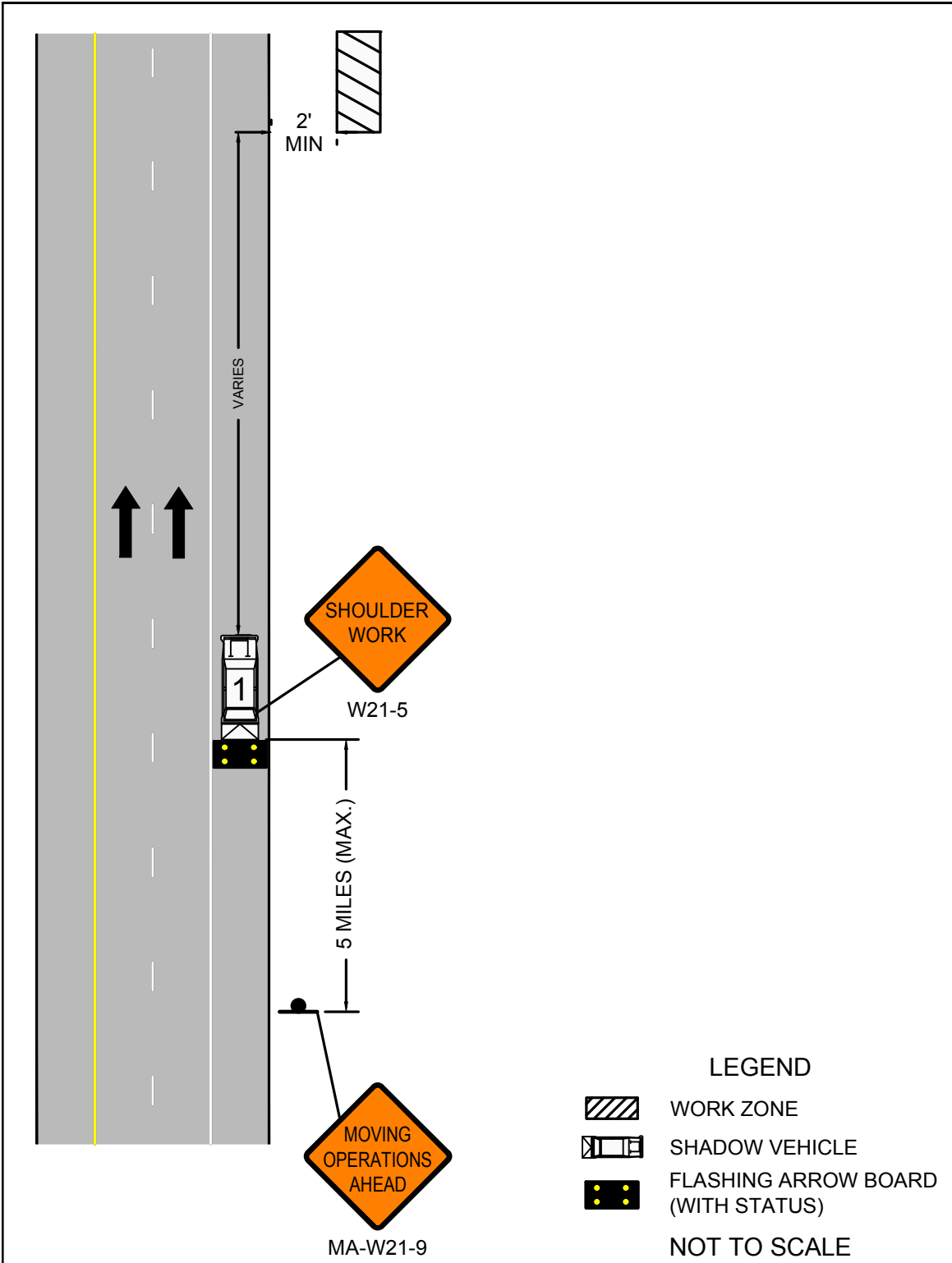




 <p>PAGE 56</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>NOTES FOR MOBILE OPERATIONS</p>
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Notes for Mobile Operations

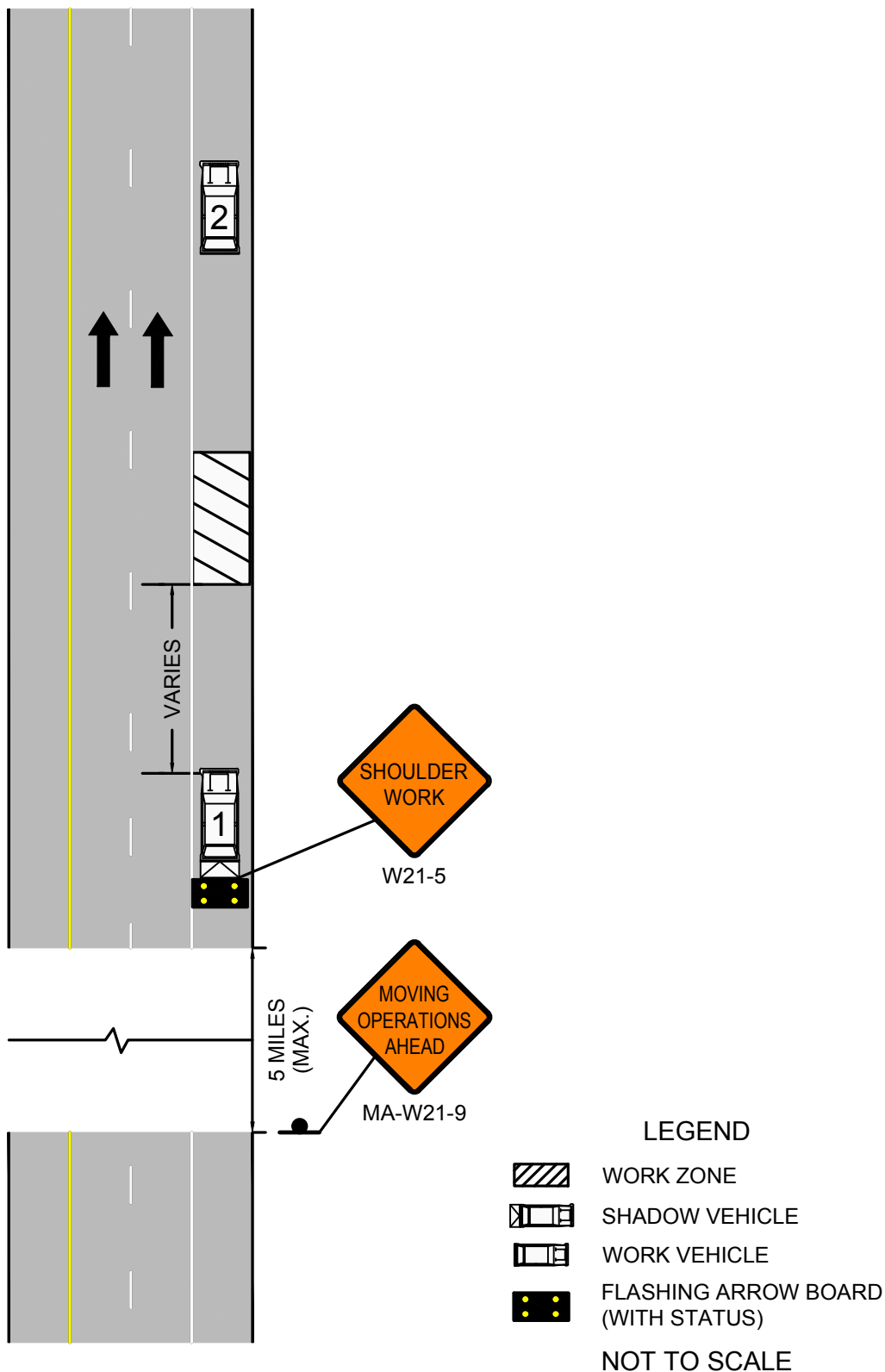
- Unless otherwise stated, these notes shall apply to all Mobile Operation setups.
 - Additional, setup-specific notes may be found on individual sheets.
1. The Supervisor shall travel the designated roadway prior to scheduling the work to ensure that sufficient and appropriate traffic control devices will be available. Special consideration shall be exercised to ensure that appropriate traffic controls be placed in areas that will have limited visibility of the work areas or any associated traffic queues.
 2. Vehicles used for these operations shall be made highly visible with appropriate equipment such as flashing lights, rotating beacons, flags, signs, flashing arrow boards, and/or portable changeable message signs. Any signs mounted to these vehicles shall not obscure the visibility of other devices.
 3. All vehicles shown may not be required based upon roadway conditions. However, when needed and practical, additional shadow vehicles and equipment to warn and protect motorists and workers should be used. Based upon roadway conditions, the addition of a police detail with cruiser may be used for additional protection or warning for the traveling public.
 4. The distance between the work and shadow vehicle(s) may vary according to the terrain and other factors. Shadow vehicles are used to warn traffic of the operations ahead. Whenever adequate sight distance exists, the shadow vehicle(s) should maintain the minimum appropriate distance and maintain the same speed to prevent non-work related vehicles from entering the work convoy. If this formation cannot be maintained then additional traffic control devices should be deployed in advance of any vertical or horizontal curves that may restrict the sight distance of an oncoming vehicle to either the work vehicle or associated traffic queue.
 5. All shadow vehicles shall be equipped with a truck or trailer mounted attenuator (TMA) and a flashing arrow board.
 6. Signs should be covered or turned from view when work is not in progress.
 7. Portable changeable message signs may be used in lieu of MA-W21-9 signs and any signs mounted directly to a shadow vehicle.



NOTES

1. IF THE WORK AREA IS SUFFICIENTLY AWAY FROM THE EDGE OF ROADWAY (20' MINIMUM) THEN SIGNS AND VEHICLES MAY NOT BE REQUIRED.





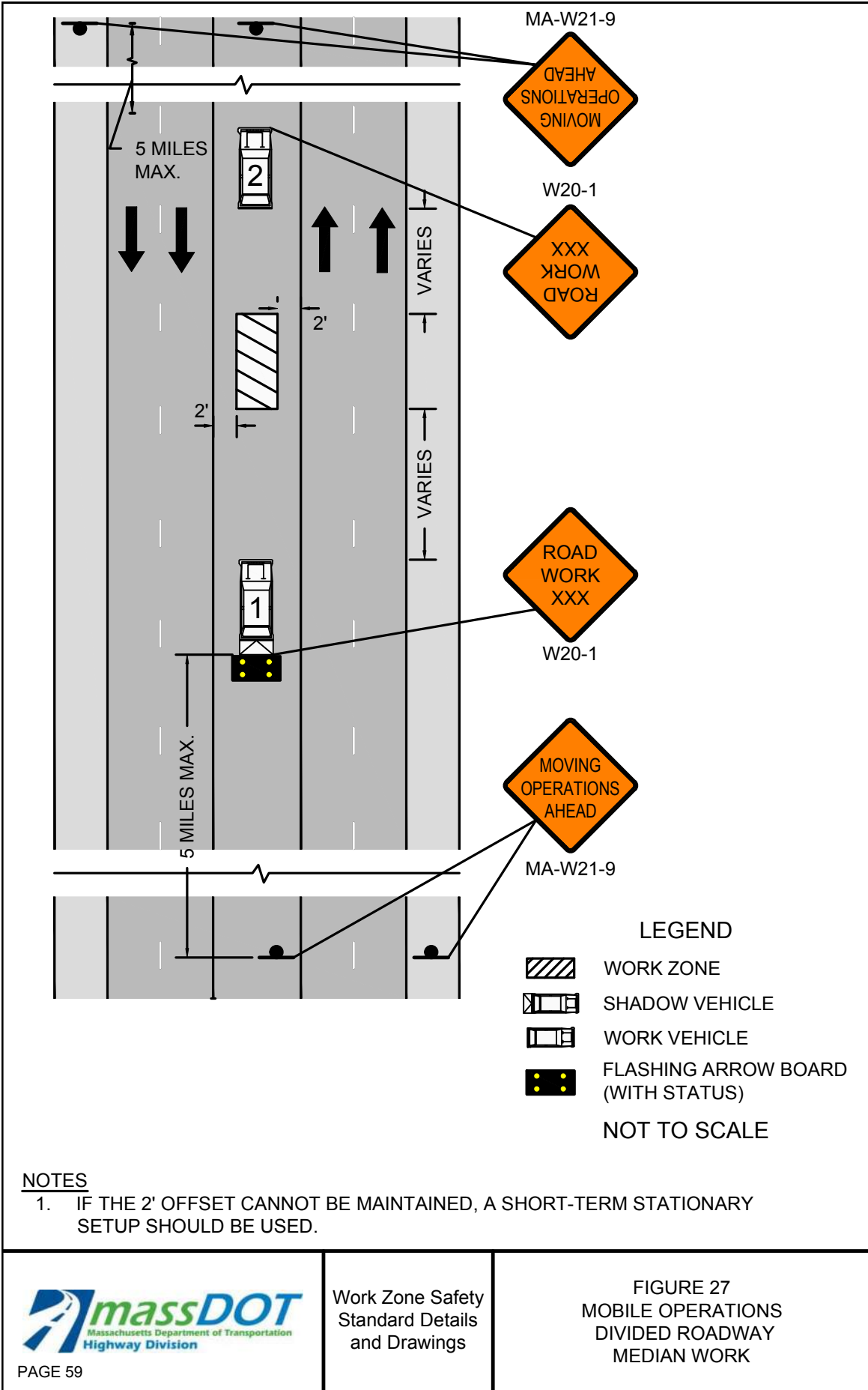
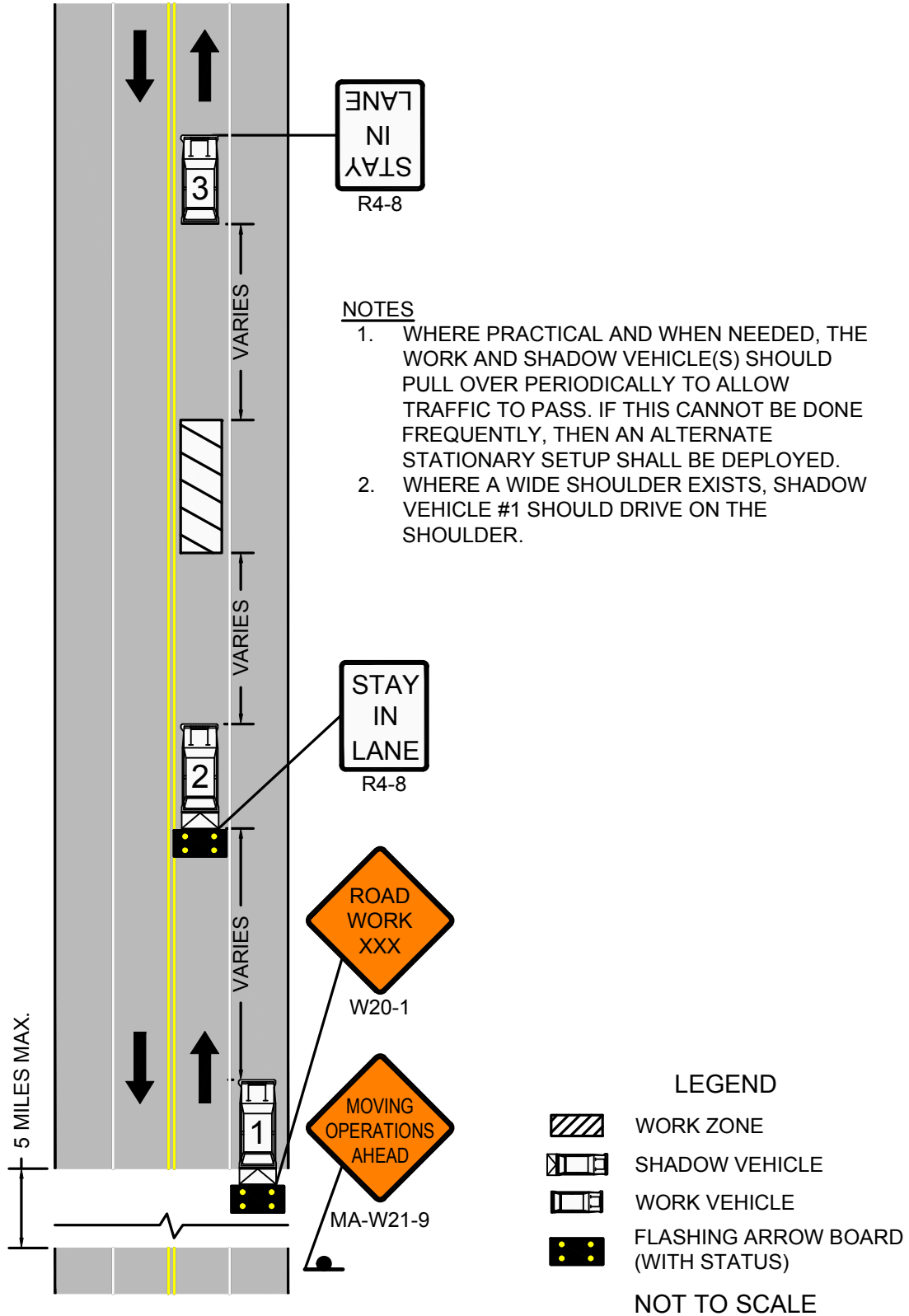




FIGURE 28
MOBILE OPERATIONS
UNDIVIDED TWO LANE ROADWAY
HALF OF ROADWAY CLOSED



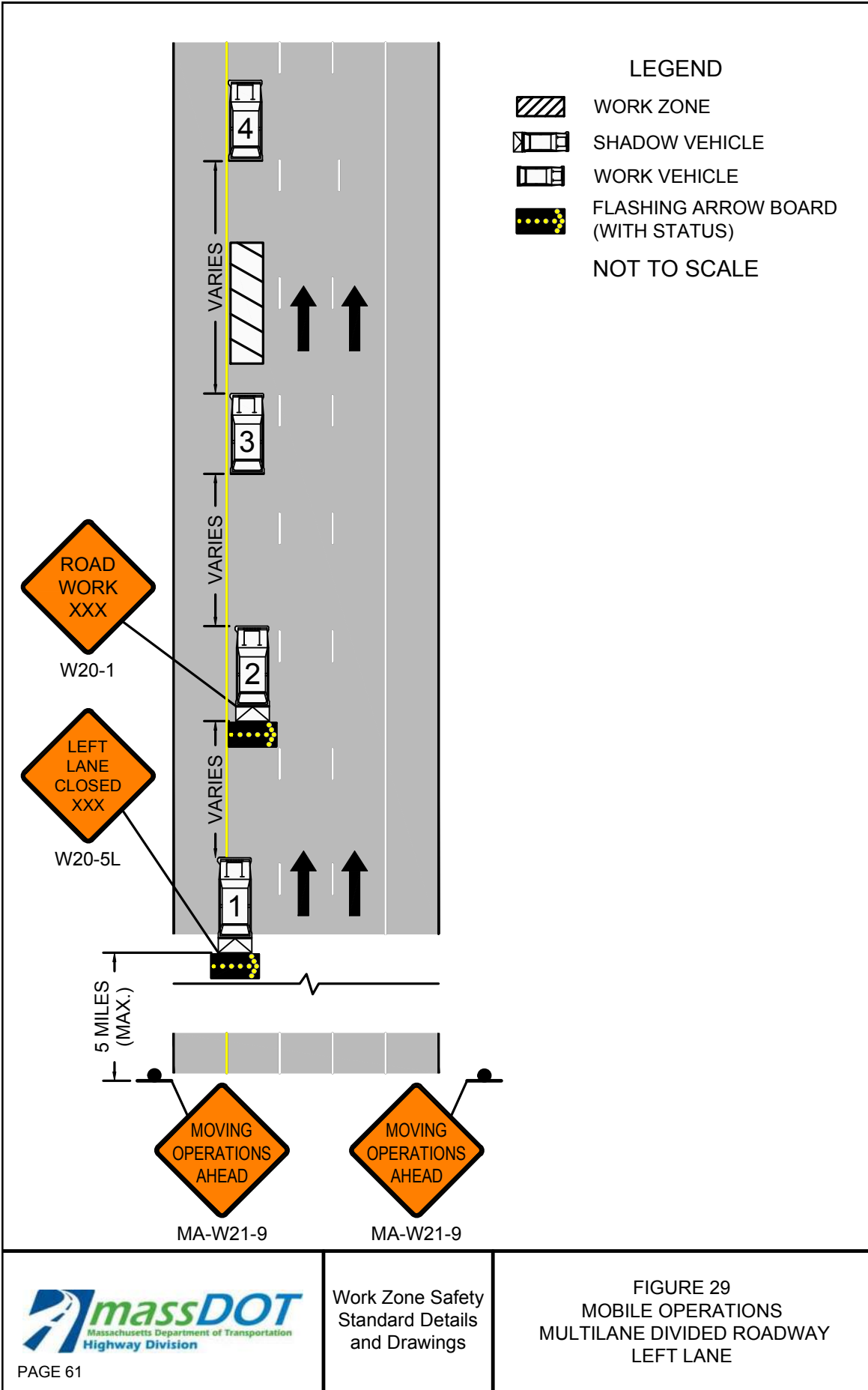
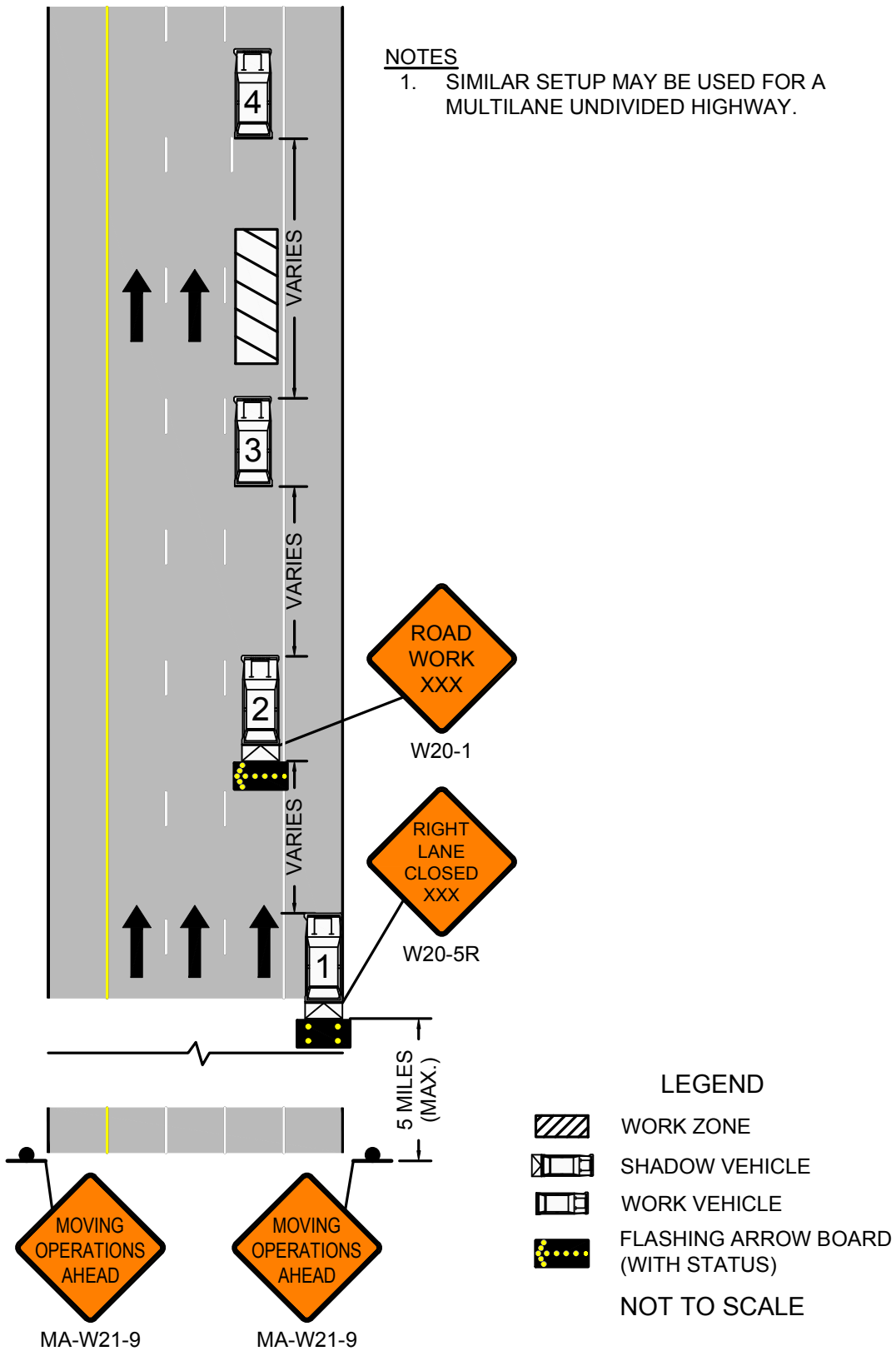
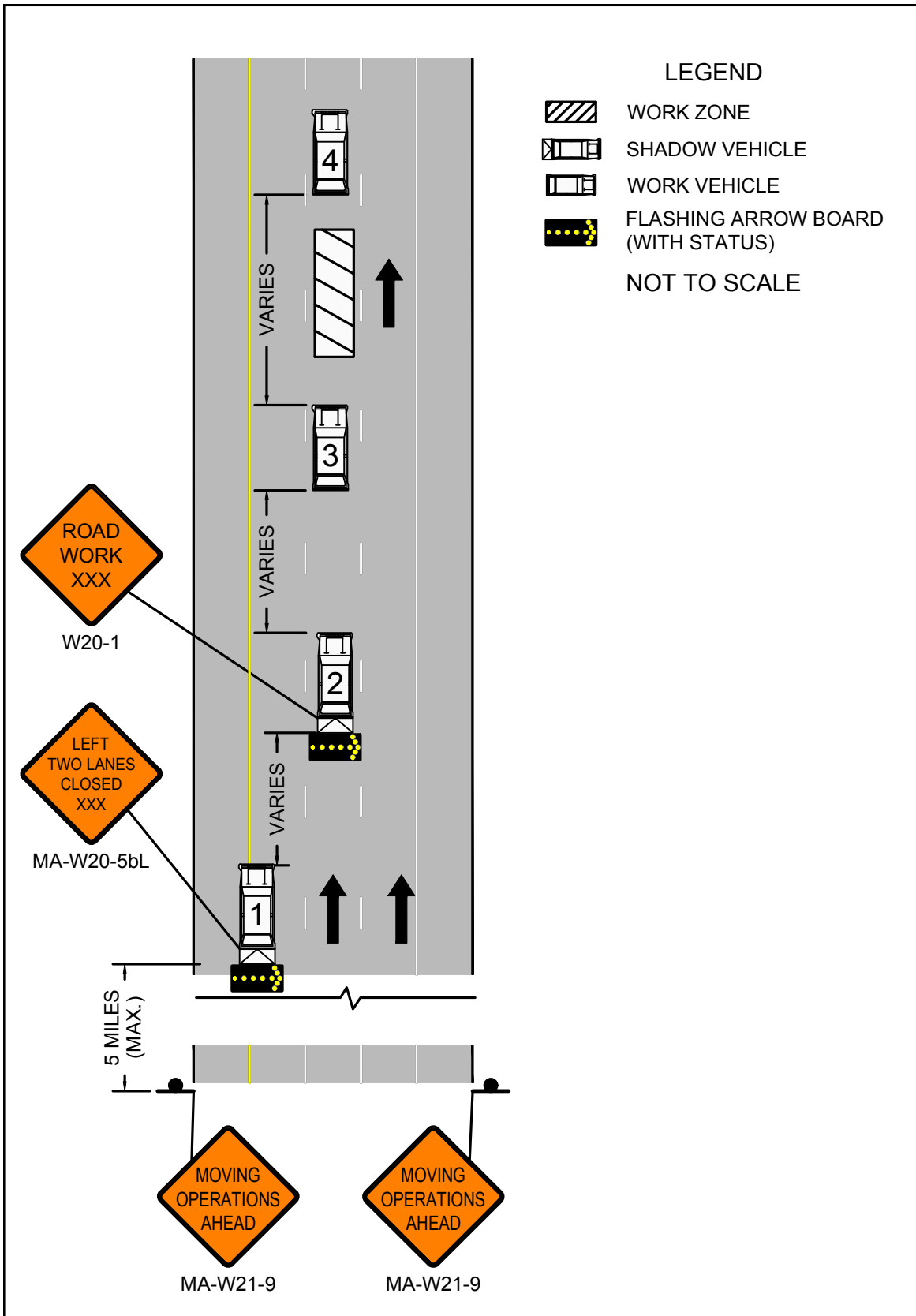
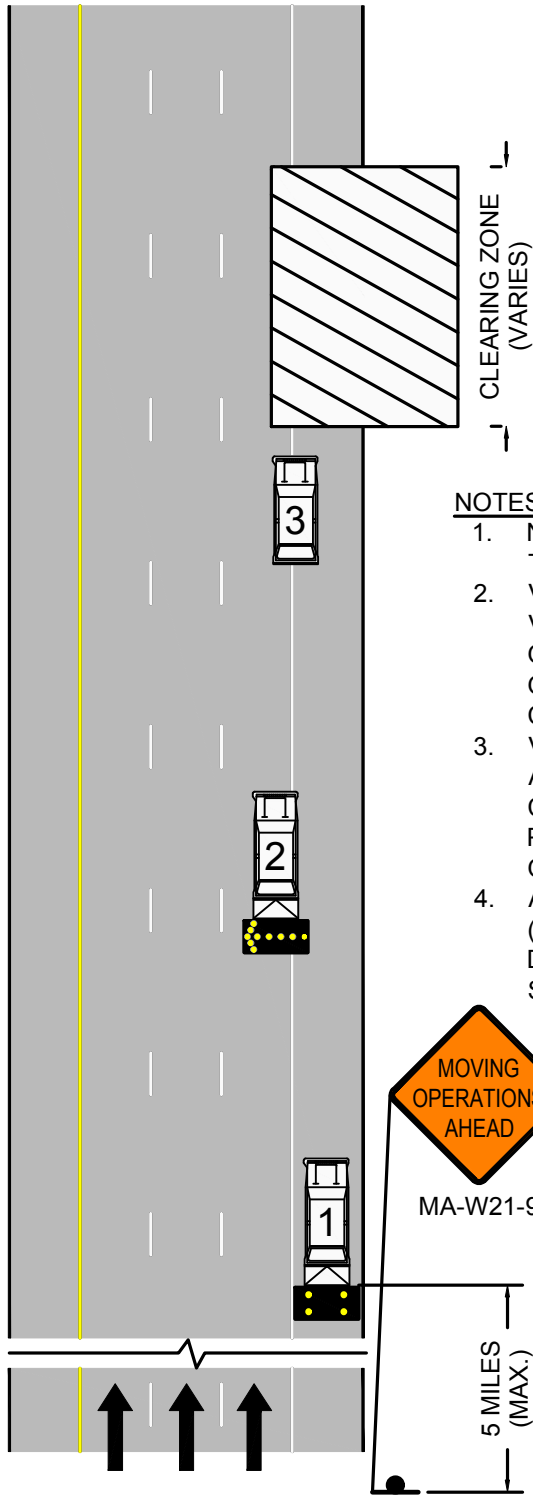




FIGURE 30
MOBILE OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT LANE







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

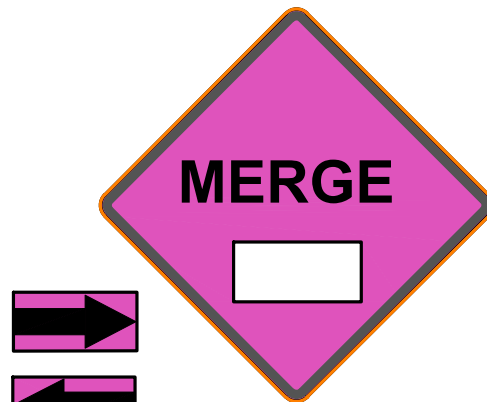
Notes for Traffic Emergency or Incident Operations

- 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





 <p>PAGE 65</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>NOTES FOR TRAFFIC EMERGENCY/ INCIDENT OPERATIONS</p>
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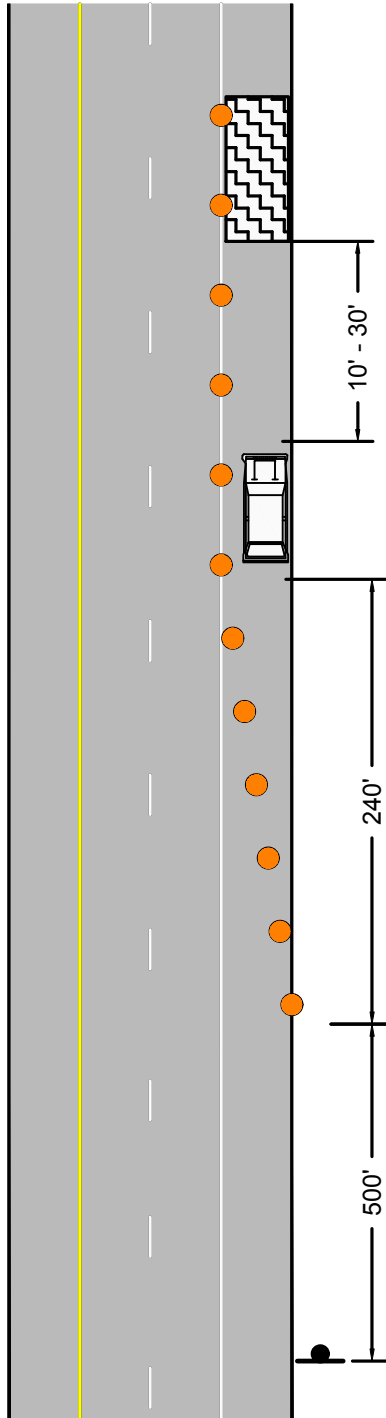


FIGURE 33
EMERGENCY RESPONSE
ANY ROADWAY
SHOULDER ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE



ORDER OF RESPONSE ACTIVITIES

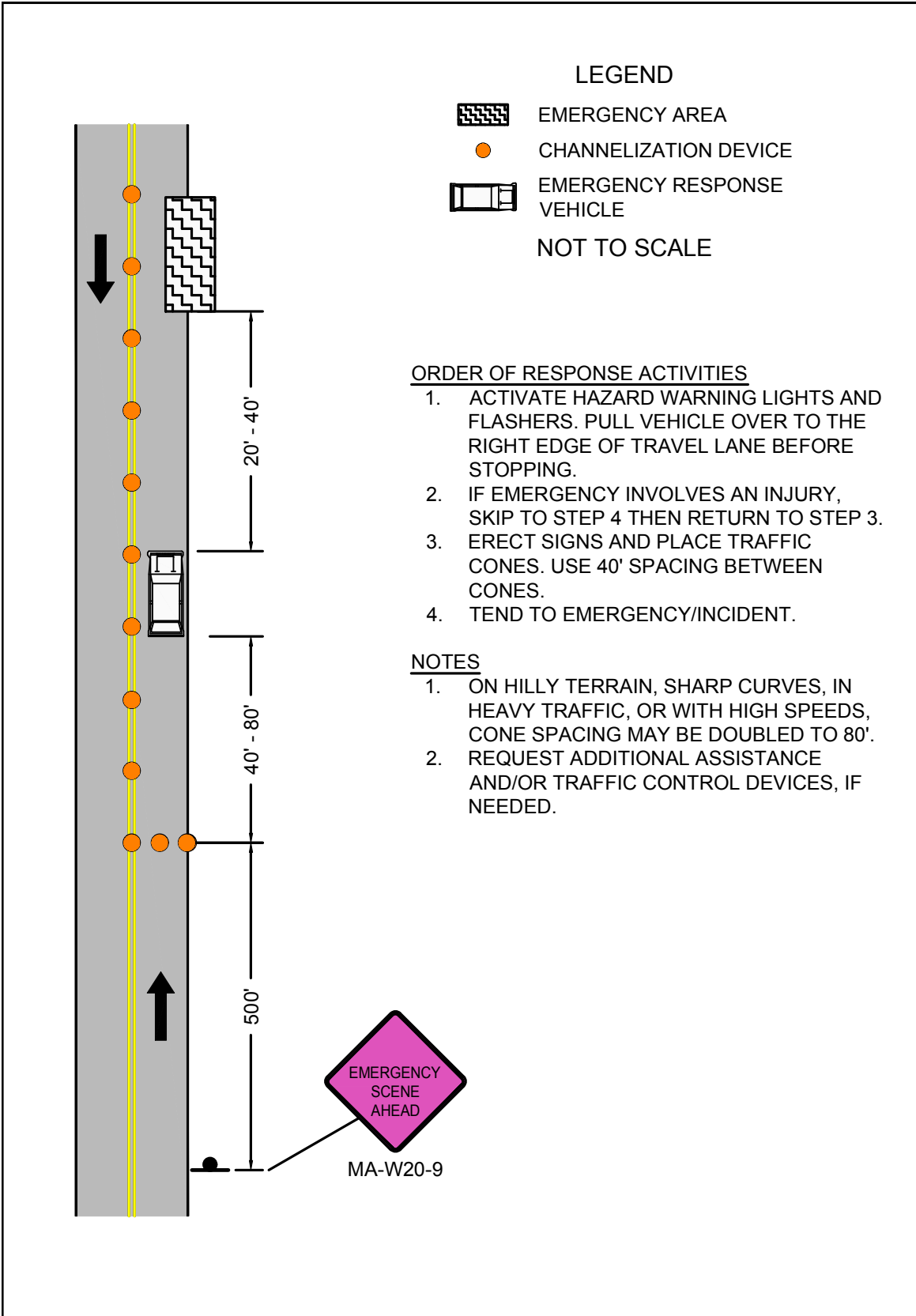
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9







 Massachusetts Department of Transportation Highway Division PAGE 67	Work Zone Safety Standard Details and Drawings	FIGURE 34 EMERGENCY RESPONSE TWO LANE ROADWAY NO SHOULDER TRAVEL LANE ENCROACHMENT
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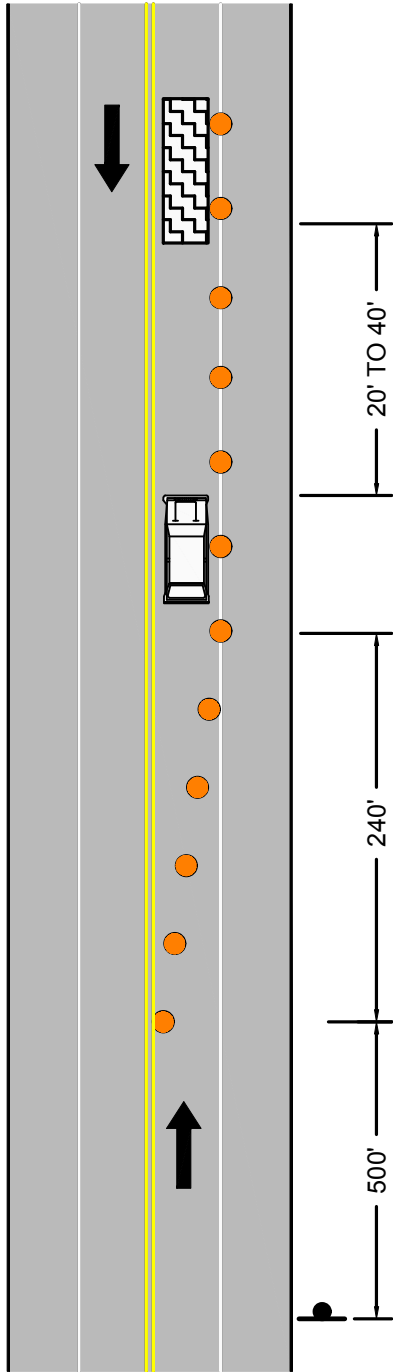


FIGURE 35
EMERGENCY RESPONSE
TWO LANE ROADWAY
TRAVERSABLE SHOULDER
SINGLE LANE ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE



ORDER OF RESPONSE ACTIVITIES

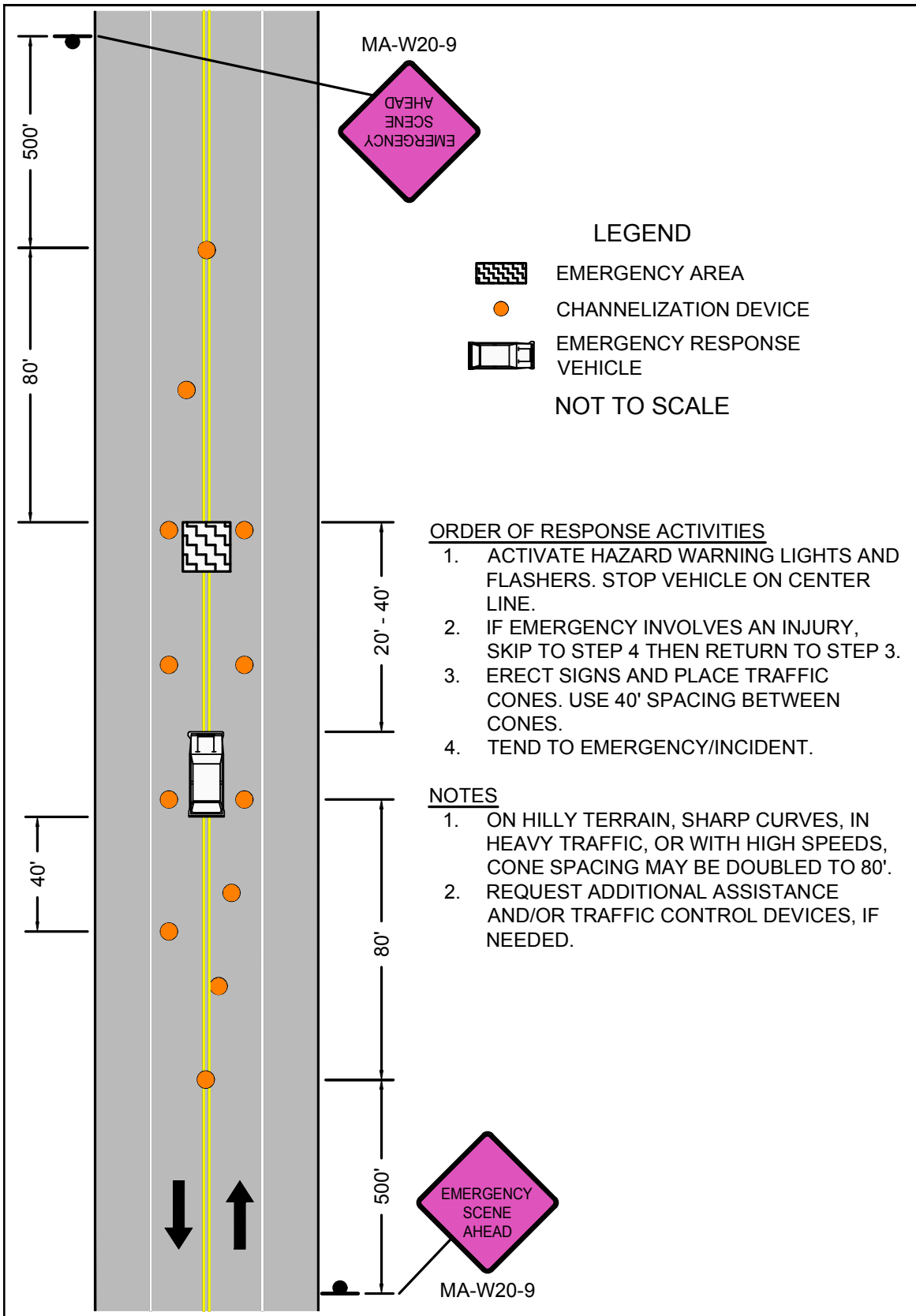
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE LEFT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9




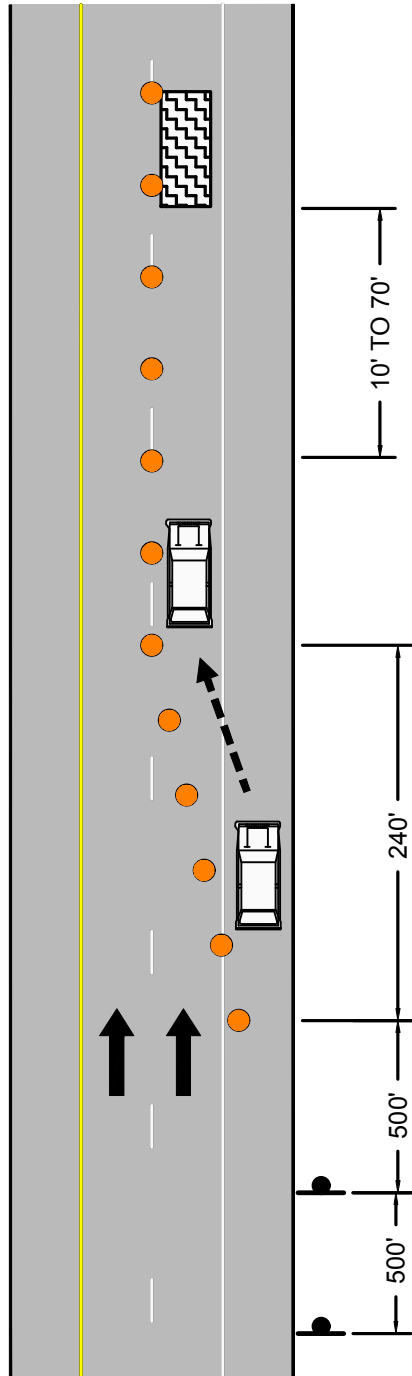




 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 69</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 36 EMERGENCY RESPONSE TWO LANE ROADWAY TRAVERSABLE SHOULDER CENTER OF ROADWAY</p>
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FIGURE 37
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
RIGHT LANE



LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE
-  RESPONSE VEHICLE MOVEMENT

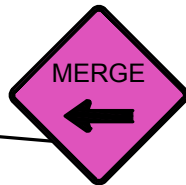
NOT TO SCALE

ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. STOP VEHICLE IN BREAKDOWN LANE.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 6 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. MOVE RESPONSE VEHICLE BEHIND EMERGENCY.
5. PLACE ADDITIONAL CONES.
6. TEND TO EMERGENCY.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W4-2aL



MA-W20-9

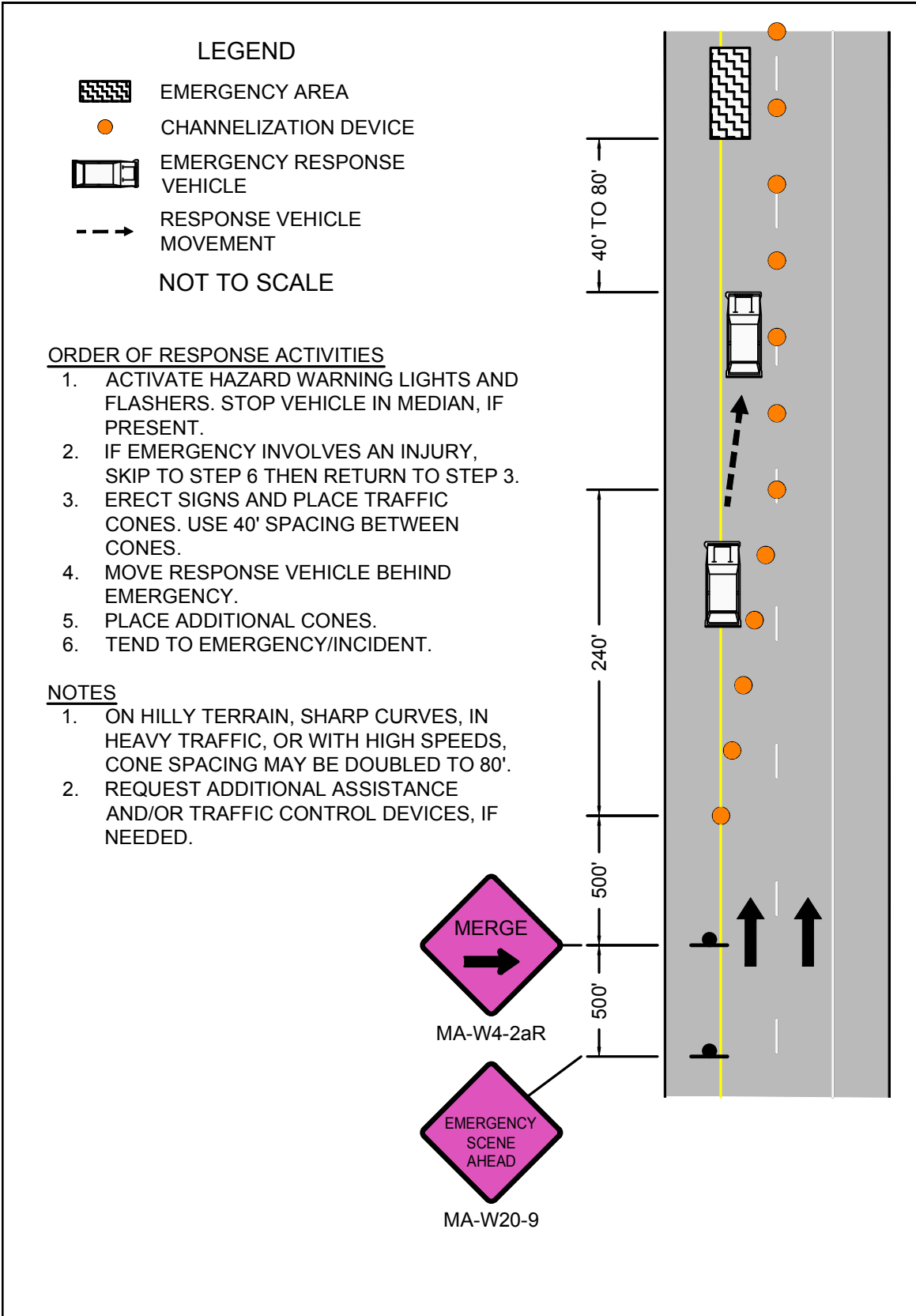
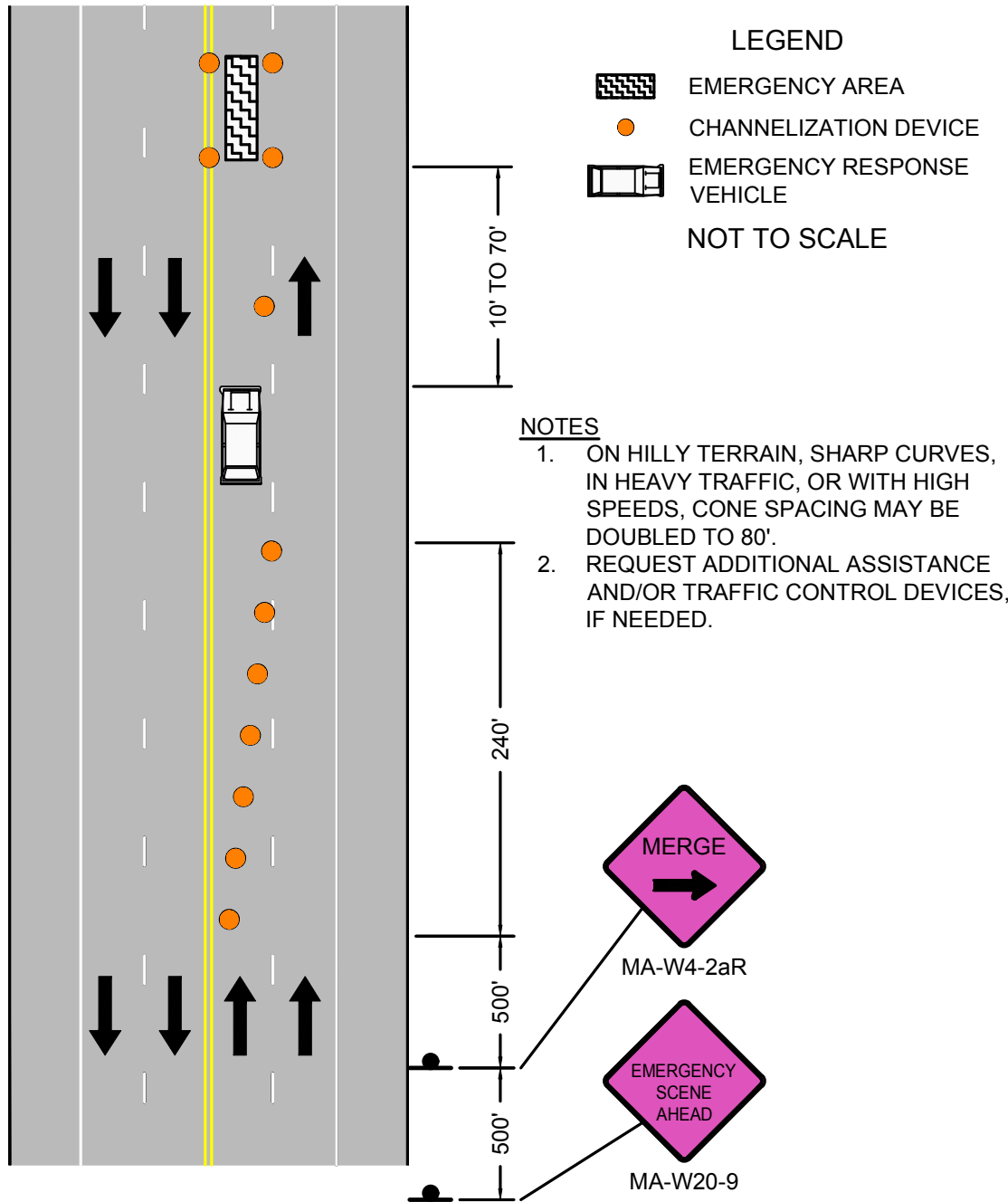


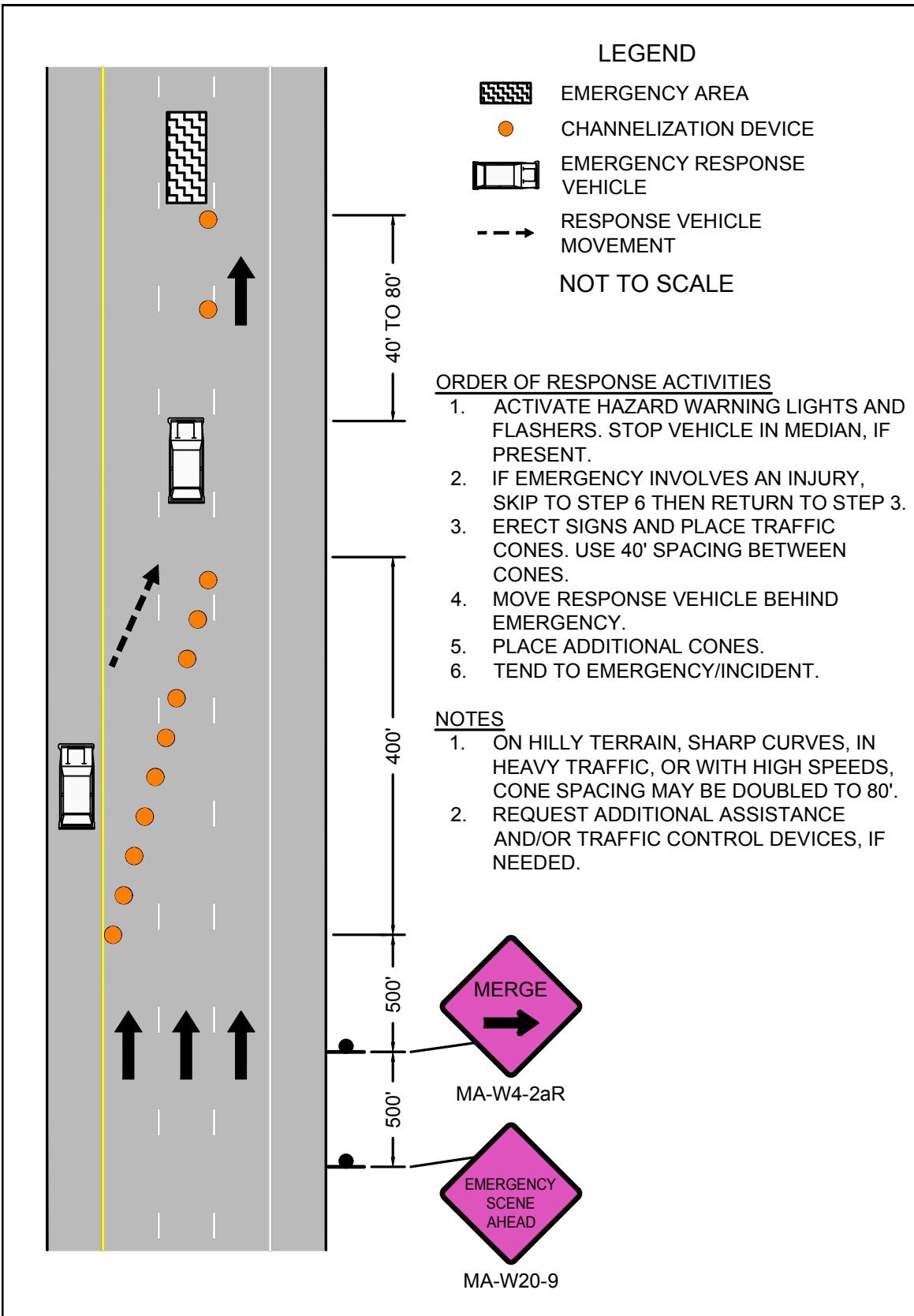


FIGURE 39
EMERGENCY RESPONSE
MULTILANE UNDIVIDED
ROADWAY
LEFT LANE



ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF BREAKDOWN LANE OR SHOULDER OR, IF NOT PRESENT, RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.




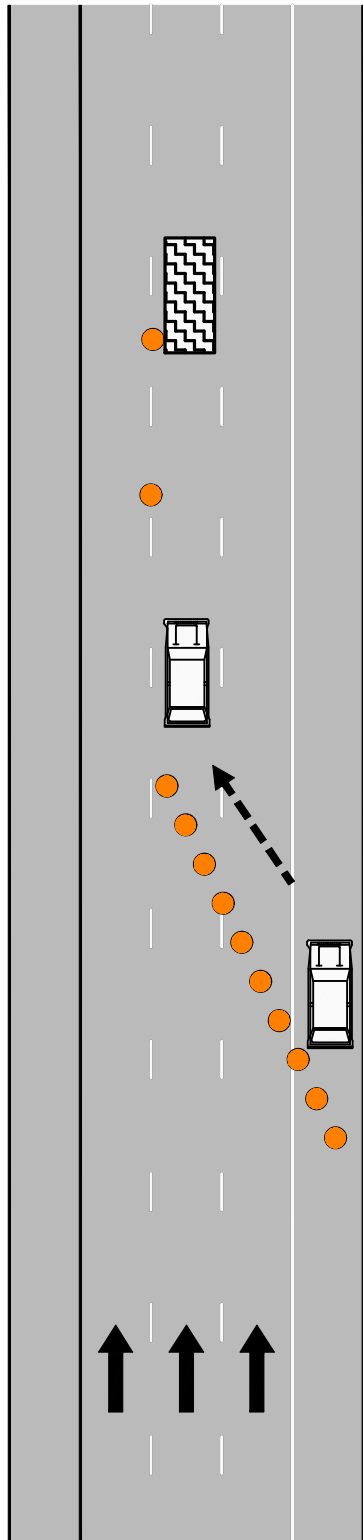




 <p>Massachusetts Department of Transportation Highway Division</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 40 EMERGENCY RESPONSE MULTILANE DIVIDED ROADWAY MIDDLE LANE APPROACH FROM LEFT</p>
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FIGURE 41
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
MIDDLE LANE
APPROACH FROM RIGHT



LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE
-  RESPONSE VEHICLE MOVEMENT

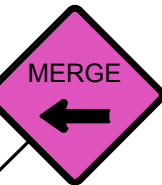
NOT TO SCALE

ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. STOP VEHICLE IN BREAKDOWN LANE.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 6 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. MOVE RESPONSE VEHICLE BEHIND EMERGENCY.
5. PLACE ADDITIONAL CONES.
6. TEND TO EMERGENCY.

NOTES

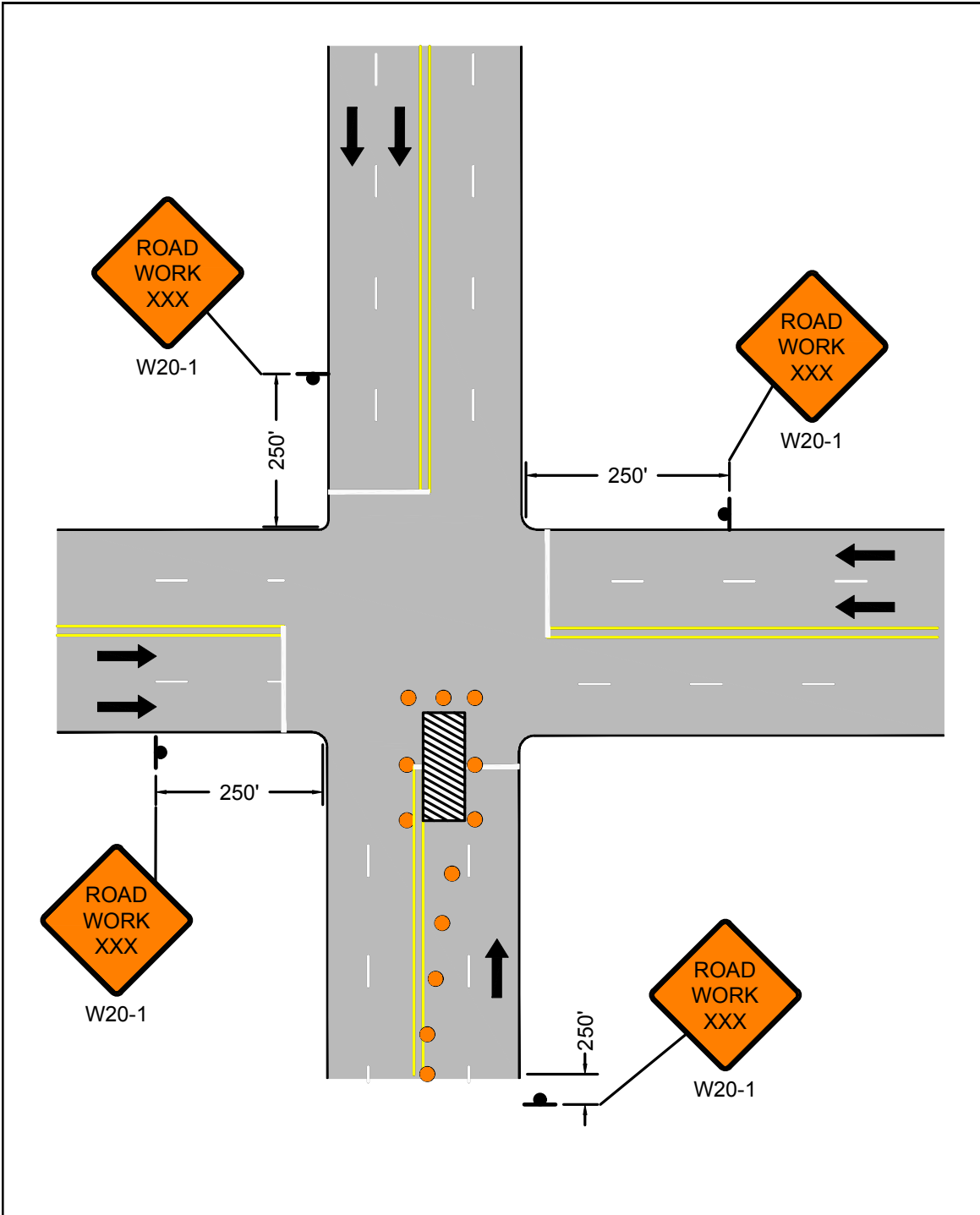
1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.





MA-W4-2aL



MA-W20-9



LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE

NOT TO SCALE

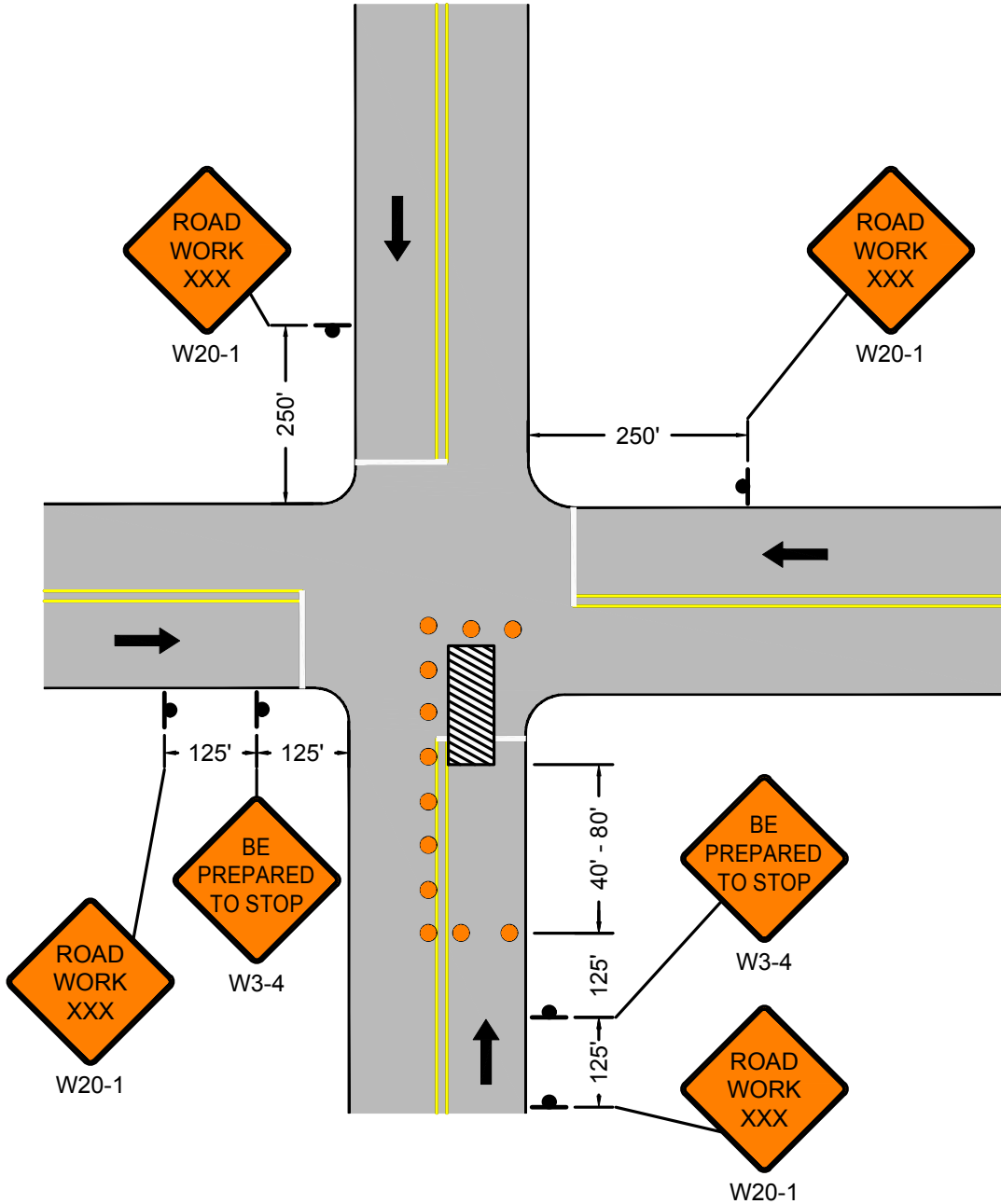
NOTES

1. DURATION OF WORK = 20 MINUTES OR LESS.
2. EQUIPMENT: 12 CONES + 4 PORTABLE SIGNS.
3. CONE SPACING IS 20 FEET.
4. SINGLE WORK VEHICLE PARKED/STOPPED.
5. POLICE DETAIL REQUIRED.







FIGURE 43
TRAFFIC SIGNAL REPAIR WORK
TWO LANE UNDIVIDED ROADWAY
ONE LEG OF INTERSECTION



LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
- NOT TO SCALE

NOTES

1. DURATION OF WORK = 20 MINUTES OR LESS.
2. EQUIPMENT: 12 CONES + 6 PORTABLE SIGNS.
3. CONE SPACING IS 20 FEET.
4. SINGLE WORK VEHICLE PARKED/STOPPED.
5. POLICE DETAIL REQUIRED.

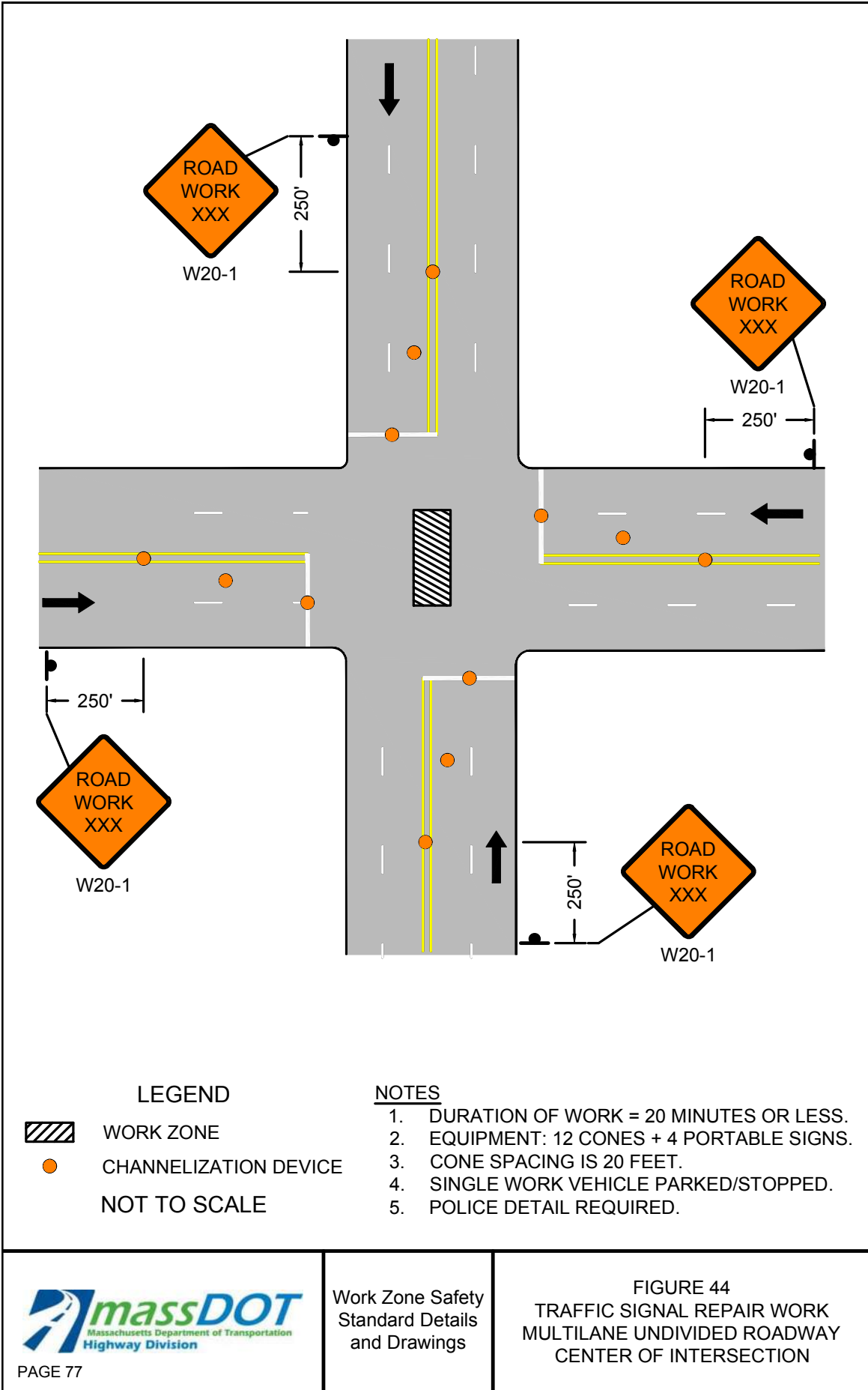
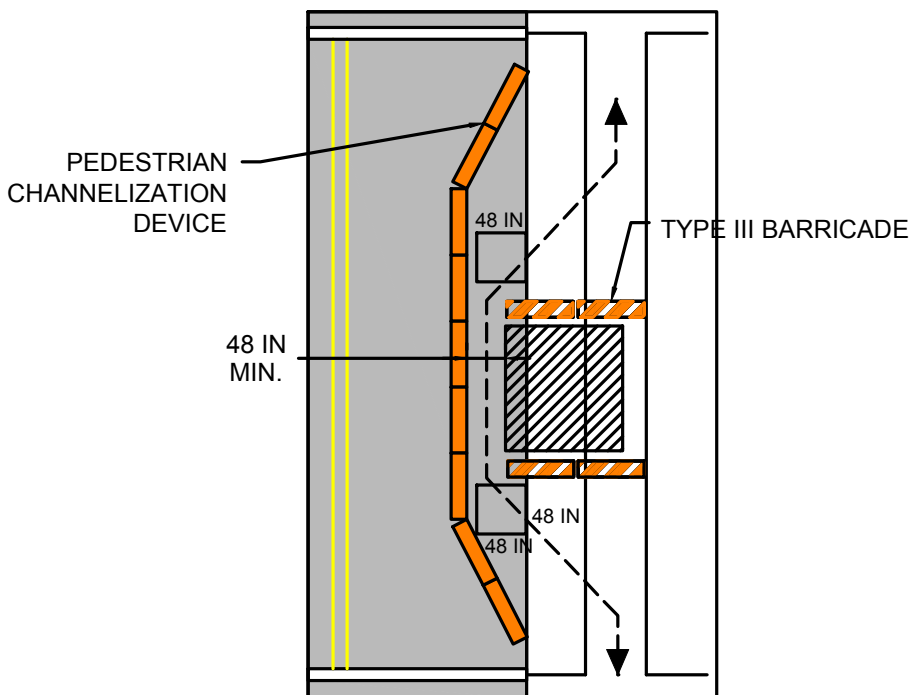


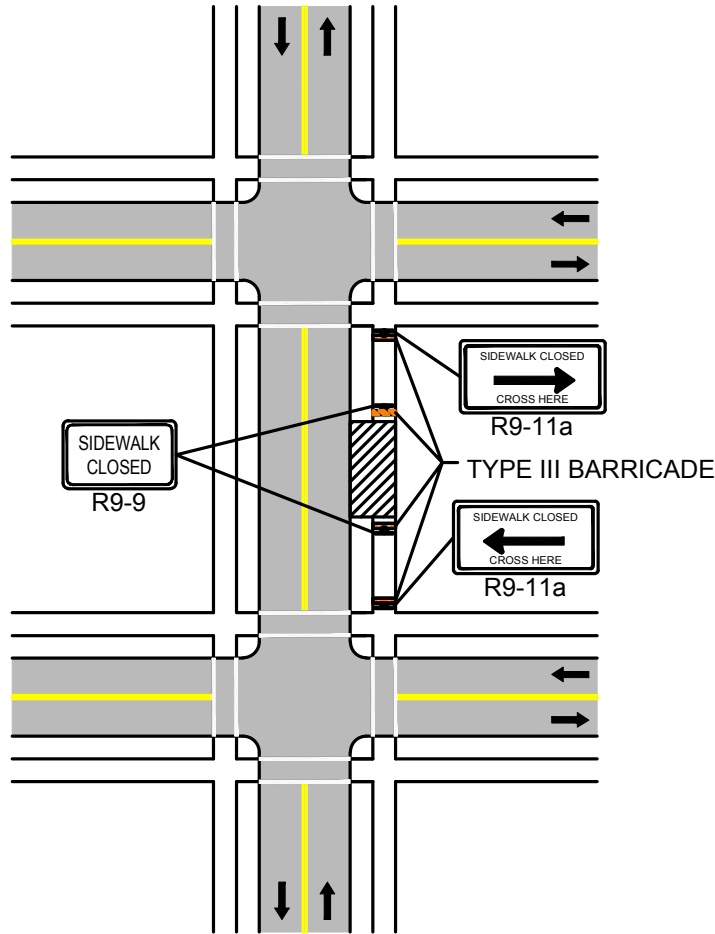


FIGURE 45
PEDESTRIAN BYPASS



NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. A PEDESTRIAN CHANNELIZATION DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ALONG THE FULL LENGTH OF THE TEMPORARY PEDESTRIAN ROUTE.
3. WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT.
4. THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
5. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THE SIDEWALK EXCEEDS 200 FEET THEN A 5 FOOT BY 5 FOOT PASSING ZONE SHALL BE PROVIDED NEAR THE MID-POINT OF THE CLOSURE.
6. THE PROTECTIVE REQUIREMENTS OF A TTC WORK ZONE MAY HAVE AN IMPACT IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN PROVIDING PEDESTRIAN DELINEATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
7. ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL TO ASSIST WITH NAVIGATION AROUND THE CLOSURE/WORK AREA MAY BE CONSIDERED AS AN OPTION IN PLACE OF PROVIDING ADA/AAB DEVICES FOR WORK FOR CLOSURES LASTING 4 HOURS OR LESS.
8. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN; VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE. THESE DETAILS ARE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DETERMINED BY THE ENGINEER.



NOTES:

1. CLOSURE OF A SIDEWALK FACILITY SHALL CONSTITUTE THE PROVISION FOR MANAGING PEDESTRIAN TRAFFIC AND ACCOMMODATING ALL USERS. IF THE EXISTING PEDESTRIAN ACCESS ROUTE(S) CAN BE TEMPORARILY RELOCATED ALONG THE EXISTING SIDEWALK , AND SAID FACILITY PROVIDES A MINIMUM WIDTH OF 48-INCHES OF SOLID, SMOOTH UNOBSTRUCTED SURFACE, THEN NO DETOURING OF THE ROUTE SHALL BE REQUIRED. DELINEATION OF THE WORK AREA IS STILL REQUIRED.
2. IF IT IS NECESSARY TO DIVERT PEDESTRIAN TRAFFIC TO AN ALTERNATE ROUTE ACROSS THE ROADWAY FROM THE EXISTING FACILITY, THE FIGURE ABOVE SHALL BE FOLLOWED TO PROVIDE ADEQUATE DIRECTION TO PEDESTRIANS. ALTERNATE ROUTE SHALL PROVIDE THE SAME LEVEL OF ACCOMMODATION AS THE FACILITY THAT IS BEING DETOURED AND RETAIN ADA COMPLIANCE IN ITS ENTIRETY.
3. FOR EMERGENCY OR SHORT-DURATION SIDEWALK CLOSURES OF 4-HOURS OR LESS, IT IS OPTIONAL TO HAVE ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL AVAILABLE AT ALL TIMES DURING THE CLOSURE TO ASSIST THOSE MOBILITY CHALLENGED PERSONS WHO REQUIRE ADDITIONAL ASSISTANCE TO SAFELY NAVIGATE AROUND THE WORK AREA IN LIEU OF A FULL DETOUR.





PAGE 80

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
BIKE LANE CLOSURE










POSTED SPEED LIMIT (MPH)	SPACING FOR BIKE ADVANCE WARNING SIGNS (FT) (A,B))	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRANSITION LENGTH (L/3)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	150 / 150	100	305	20	45
45-55	150 / 150	220	495	40	35
60-65	150 / 150	260	645	40	40

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

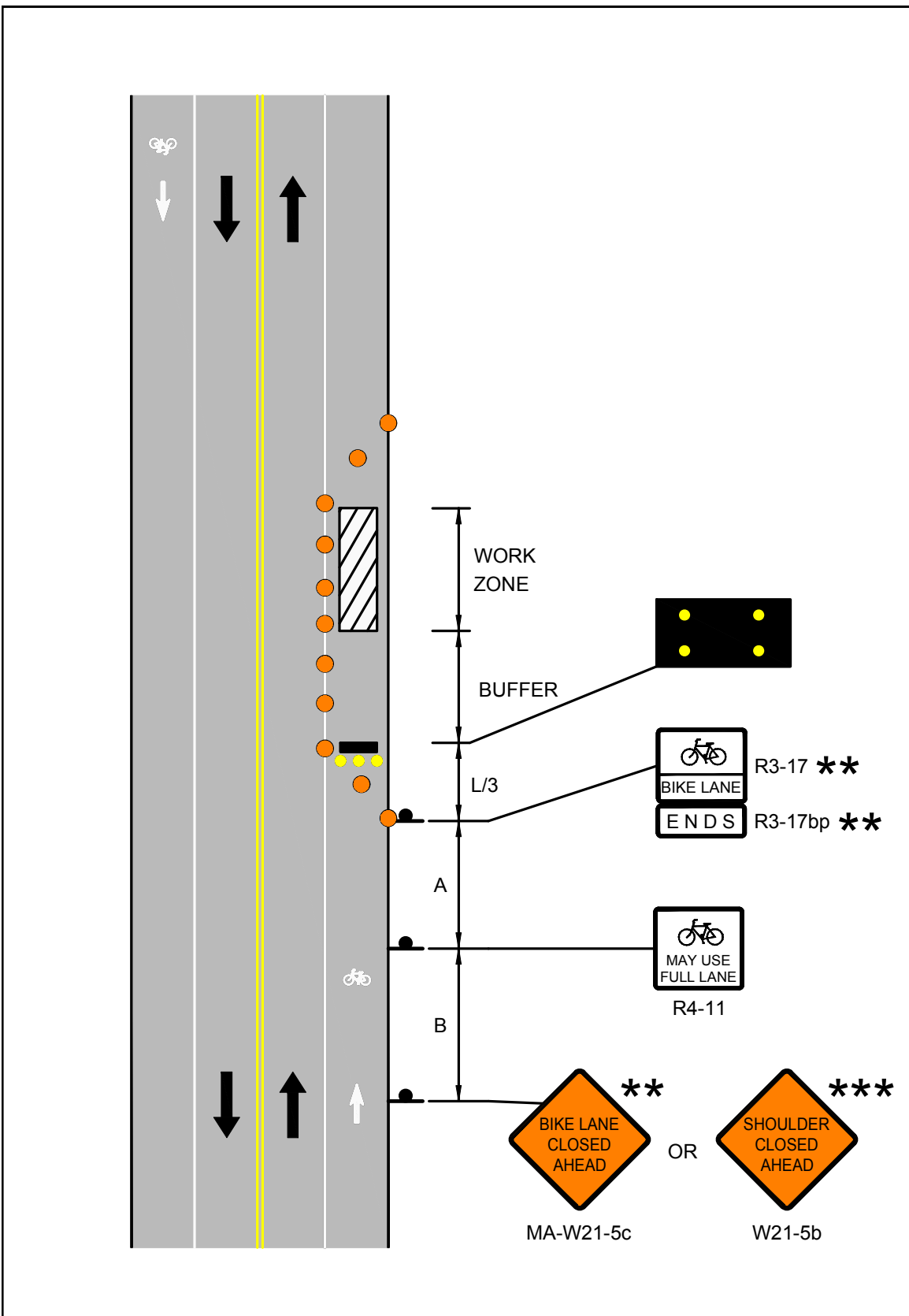
NOTES

1. DETAIL SHALL BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS. SIGNING SHOWN ONLY FOR BIKE TRAFFIC. FOLLOW ALL OTHER RELEVANT DETAILS FOR TTC DEVICES FOR VEHICULAR TRAFFIC.
2. ****** SIGN SHALL BE USED ONLY IF THERE IS A MARKED BIKE LANE.
3. ******* SIGN SHALL BE USED ONLY IF THERE IS NO MARKED BIKE LANE.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





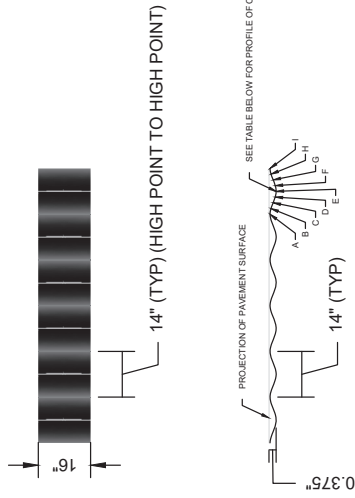
Safety is everyone's business

Rev. June, 2017

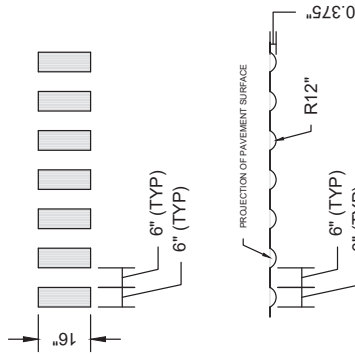
DOCUMENT A00816

RUMBLE STRIP DETAILS

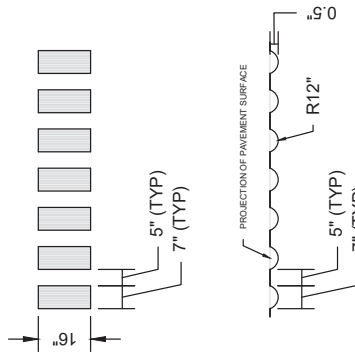
TYPE C
CONTINUOUS SINUSOIDAL
RUMBLE STRIP



TYPE B
CYLINDER RUMBLE STRIP
(BICYCLE TRAVEL PERMITTED)



TYPE A
CYLINDER RUMBLE STRIP
(BICYCLE TRAVEL PROHIBITED)



- NOTES:**
1. NOT TO SCALE. SOME LINE WORK EXAGGERATED FOR CLARITY.
 2. SEE PLANS FOR LOCATION(S) AND START AND END STATIONS FOR ALL RUMBLE STRIP INSTALLATIONS.
 3. HIGH POINT OF SINUSOIDAL RUMBLE STRIP LOCATED $\frac{1}{16}$ " BELOW PAVEMENT SURFACE.

DESIGN OF CURVE PROFILE FOR SINUSOIDAL RUMBLE STRIP

POINT	A	B	C	D	E	F	G	H	I
DEPTH FROM PAVEMENT SURFACE (IN.)	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{7}{32}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{11}{32}$	$\frac{7}{32}$	$\frac{1}{8}$	$\frac{1}{16}$
DISTANCE FROM HIGH POINT "A" (IN.)	0	1.75	3.5	5.25	7	8.75	10.5	12.25	14

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: CUMMINGTON Project File Number: 613116

Contract Number: 127959

Project Description: Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK),
State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook

All AutoCAD files are provided solely as a courtesy to facilitate public access to information. MassDOT attempts to provide current and accurate information but cannot guarantee so. MassDOT provides such documents, files or other data “as is” without any warranty of any kind, either expressed or implied, including but not limited to, accuracy, reliability, omissions, completeness and currentness. The Commonwealth of Massachusetts and its Consultants shall not be liable for any claim for damages, including lost profits or other consequential, exemplary, incidental, indirect or special damages, relating in any way to the documents, files or other data accessible from this file, including, but not limited to, claims arising out of or related to electronic access or transmission of data or viruses. Because data stored on electronic media can deteriorate undetected or be modified without our knowledge, MassDOT cannot be held liable for its completeness or correctness. MassDOT makes no representation as to the compatibility of these files beyond the version of the stated CAD software.

By signing this form, I agree that it shall be my responsibility to reconcile this electronic data with the conformed contract documents, and that only the conformed contract documents shall be regarded as legal documents for this Project. I understand that this authorization does not give me the right to distribute the files. I agree to the terms above and wish to receive the AutoCAD files.

This signed form shall be emailed to the Highway Design Engineer at the MassDOT -Highway Division at the following email address:

DOTHighwayDesign@dot.state.ma.us
Attn: AutoCAD Files

Name of person requesting AutoCAD files: _____

Affiliation/Company: _____

Address: _____

Telephone number: _____

Email address: _____

Signature/Date: _____

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DOCUMENT A00870

**MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE**

**NATURAL HERITAGE AND
ENDANGERED SPECIES
PROGRAM**

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

December 04, 2023

Project code: 2024-0022446

Project Name: 613116 CUMMINGTON- BRIDGE PRESERVATION, ROUTE 9 OVER WESTFIELD RIVER

Subject: Concurrence verification letter for the '613116 CUMMINGTON- BRIDGE PRESERVATION, ROUTE 9 OVER WESTFIELD RIVER' 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 December 04, 2023 to verify that the **613116 CUMMINGTON- BRIDGE PRESERVATION, ROUTE 9 OVER WESTFIELD RIVER** (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

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

613116 CUMMINGTON- BRIDGE PRESERVATION, ROUTE 9 OVER WESTFIELD RIVER

DESCRIPTION

613116 CUMMINGTON- BRIDGE PRESERVATION, C-21-023 (0JN), C-21-024 (0JM), AND C-21-025 (0JK), STATE ROUTE 9 (BERKSHIRE TRAIL) OVER WESTFIELD RIVER AND WESTFIELD BROOK

This preservation project will aim to address existing deficiencies to ensure the adequacy and performance of the structures, as recommended by the State Bridge Preservation Engineer. 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/@42.48663635,-72.94616438806447,14z>



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.

No

12. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

13. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

14. 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?

B) During the inactive season

15. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

16. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

17. Are *all* trees that are being removed clearly demarcated?

Yes

18. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

19. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

20. Does the project include slash pile burning?

No

21. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

22. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

23. Has a bridge assessment^[1] been conducted **within** the last 24 months^[2] to determine if the bridge is being used by bats?

[1] See [User Guide Appendix D](#) for bridge/structure assessment guidance

[2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

Yes

SUBMITTED DOCUMENTS

- 613116 Bridge Assessment final.pdf <https://ipac.ecosphere.fws.gov/project/7CLBMYAH4NFP7ENBI6DDBN2XCU/projectDocuments/135404466>

24. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)^[1]?

[1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

No

25. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

No

26. 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

27. Will the project involve the use of **temporary** lighting *during* the active season?

Yes

28. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting will be used?

Yes

29. Will the project install new or replace existing **permanent** lighting?

No

30. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

Yes

31. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

32. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

33. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

34. Will the project raise the road profile **above the tree canopy**?

No

35. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

36. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

37. Is the habitat removal portion of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the tree removal/trimming that occurs outside of the NLEB's active season occurs greater than 0.5 miles from the nearest hibernaculum, is less than 100 feet from the existing road/rail surface, includes clear demarcation of the trees that are to be removed, and does not alter documented roosts and/or surrounding summer habitat within 0.25 miles of a documented roost.

38. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

39. **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

40. **Tree Removal AMM 1**

Can *all* phases/aspects of the project (e.g., temporary work areas, alignments) be modified, to the extent practicable, to avoid tree removal^[1] in excess of what is required to implement the project safely?

Note: Tree Removal AMM 1 is a minimization measure, the full implementation of which may not always be practicable. Projects may still be NLAA as long as Tree Removal AMMs 2, 3, and 4 are implemented and LAA as long as Tree Removal AMMs 3, 5, 6, and 7 are implemented.

[1] The word "trees" as used in the AMMs refers to trees that are suitable habitat for each species within their range. See the USFWS' current summer survey guidance for our latest definitions of suitable habitat.

Yes

41. **Tree Removal AMM 3**

Can tree removal be 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)?

Yes

42. **Tree Removal AMM 4**

Can the project avoid cutting down/removal of *all* (1) **documented**^[1] Indiana bat or NLEB roosts^[2] (that are still suitable for roosting), (2) trees **within** 0.25 miles of roosts, and (3) documented foraging habitat any time of year?

[1] The word documented means habitat where bats have actually been captured and/or tracked.

[2] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

Yes

43. **Lighting AMM 1**

Will *all* **temporary** lighting be directed away from suitable habitat during the active season?

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.

0.1

4. Please describe the proposed bridge work:

The project will address existing deficiencies to ensure the adequacy and performance of the structures, as recommended by the State Bridge Preservation Engineer including: deteriorating deck joints, guardrails, spalling concrete on piers and end walls, and beam-end deficiencies.

5. Please state the timing of all proposed bridge work:

Spring 2024-Fall 2025

6. Please enter the date of the bridge assessment:

9/20/2023

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

TREE REMOVAL AMM 1

Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to avoid tree removal.

LIGHTING AMM 1

Direct temporary lighting away from suitable habitat during the active season.

TREE REMOVAL AMM 2

Apply time of year restrictions for tree removal when bats are not likely to be present, or limit tree removal 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; visual emergence survey must be conducted with no bats observed.

TREE REMOVAL AMM 3

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).

TREE REMOVAL AMM 4

Do not remove **documented** Indiana bat or NLEB roosts that are still suitable for roosting, or trees within 0.25 miles of roosts, or **documented** foraging habitat any time of year.

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on October 30, 2023. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion \(dated March 23, 2023\) for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation

Name: Trevor Burns

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email: trevor.b.burns@dot.state.ma.us

Phone: 8573010759

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

DOCUMENT A00875

**POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002**

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zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

Implementation Procedures

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

1. Off-Site Stockpile Storage Locations

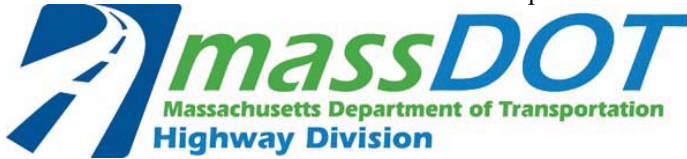
- a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
- b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
- c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
- d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
- e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
 - i. A description of material to be stored off-site, including available analytical data;
 - ii. A figure of the location with distances to residences and residential receptors; and
 - iii. Anticipated duration of temporary storage.
- f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
 - i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

- g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
- h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

2. Off-Site Stockpile Management

- a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
- b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
 - i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
- c. The Contractor shall label stockpiles with signs, including:
 - i. Location of origin (including any Release Tracking Numbers)
 - ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
 - iii. Date of initial accumulation
 - iv. Applicable telephone numbers for the Contractor and MassDOT.
- d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
- e. The Contractor shall remedy noncompliance with this policy within 48 hours.
- f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
- g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
- h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

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Number: P-22-002
Date: 9/23/22

POLICY DIRECTIVE

Jonathan Gulliver (signature on original)

HIGHWAY ADMINISTRATOR

Use of MassDOT Property for Staging and other Construction-Related Operations

Purpose

This Policy Directive is intended to address the use of MassDOT property by MassDOT Contractors for construction staging and other construction-related operations that are not specifically defined in the construction contract. Such use of MassDOT property will only be allowed if permitted by the District Office in accordance with 700 CMR 13.00, Approval of Access to MassDOT Highways and Other Property. This includes the use of MassDOT property for staging, laydown, and storage of equipment and materials, including soil excavated from a project site.

This Policy Directive requires the Contractor/applicant to obtain a Non-Vehicular Access Permit from MassDOT to use MassDOT property for these purposes.

This Policy Directive is effective immediately and applies to all MassDOT construction projects.

General Permit Considerations and Conditions

In addition to other normal MassDOT Access Permit procedures, MassDOT shall consider the following during the application, review, implementation and monitoring processes of Access Permits required by this Policy Directive:

- Storage and placement of the Contractor’s equipment and materials should not be allowed within the clear zone of the roadway.
- Stockpiled soils should not be located within 500 feet of residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.
- The Contractor/applicant shall identify the access/egress locations of the proposed storage areas. MassDOT will only approve locations determined to be safe for roadway users, construction workers and the general public.
- The Contractor may be required to submit a Traffic Management Plan and/or Lighting Plan for MassDOT review and approval as part of the permit application, depending on the proposed use of the area.

- The Contractor shall submit the permit application through MassDOT's online State Highway Access Permit System (SHAPS).
- MassDOT will waive the permit application fee for any application received from a MassDOT Contractor for any permit required by this Policy Directive and will waive any subsequent amendment and extension fees that may otherwise be required.
- MassDOT will review the permit application in accordance with applicable standard procedures and will apply standard permit terms and conditions, as necessary.
- The Resident Engineer will verify that the permit is approved before allowing the Contractor to use the affected area for the requested purpose.
- Areas permitted are for use by the approved applicant only and are not to be shared with or used by other vendors. Subcontractors specifically engaged with the applicant working on the specific MassDOT project will be allowed to use the area in accordance with the terms of the permit.
- Permits are issued on an annual basis and will require the Contractor to file for an extension each year to continue use.

Exemptions from Permit Requirements

Equipment and materials being used for active construction operations and located within the work zone of the construction contract are exempt from this permit requirement, provided they do not interfere with the safety or operation of the roadway or the work zone. Examples of these types of exempt uses are:

- Equipment and materials parked or stored within a protected (barriered) work zone.
- Materials placed in the work zone prior to same-day installation or use.
- Soils excavated temporarily and scheduled to be replaced, such as for trenching operations or for installation of drainage structures.

DOCUMENT B00420

PROPOSAL

CUMMINGTON

For: **Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK),
State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of CUMMINGTON in Hampshire 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:

State Route 9 (Berkshire Trail)

Bridge No. C-21-023 (0JN)

Bridge No. C-21-024 (0JM)

Bridge No. C-21-025 (0JK)

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 **730 CALENDAR DAYS** upon receipt of a Notice to Proceed, except that if the completion date falls between December 1 and March 15 then the same number of days beyond December 1st will be extended after March 15th.

The Work of this project is described by the following Items and quantities.

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Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
100.	1	SCHEDULE OF OPERATIONS - FIXED PRICE \$35500 AT Thirty Five Thousand Five Hundred Dollars LUMP SUM	\$35,500.00	\$35,500.00
106.88	16	JACKING AND SHORING AT _____ EACH		
106.89	6	SHORING BEAM END AT _____ EACH		
107.471	535	PRE-COMPRESSED IMPREGNATED FOAM JOINT SEALER AT _____ PER FOOT		
107.85	50	SEALING RANDOM CRACKS IN CEMENT CONCRETE PAVEMENT AT _____ PER FOOT		
107.97	10,000	STRUCTURAL STEEL REPAIRS AT _____ PER POUND		
127.1	1	REINFORCED CONCRETE EXCAVATION AT _____ PER CUBIC YARD		
127.12	15	REINFORCED CONCRETE SUBSTRUCTURE EXCAVATION AT _____ PER CUBIC YARD		
127.13	13.5	REINFORCED CONCRETE COPING EXCAVATION AT _____ PER CUBIC YARD		

Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
226.9	240	CLEANING BRIDGE DECK JOINTS AT _____ PER FOOT		
477.1	5,200	MILLED RUMBLE STRIP (TYPE B) AT _____ PER FOOT		
477.51	5,200	RUMBLE STRIP MILLED AND PATCHED AT _____ PER FOOT		
505.	15	GRANITE CURB TYPE VA5 - STRAIGHT AT _____ PER FOOT		
620.13	12.5	GUARDRAIL, TL-3 (SINGLE FACED) AT _____ PER FOOT		
627.1	1	TRAILING ANCHORAGE AT _____ EACH		
628.21	1	TRANSITION TO NCHRP 350 GUARDRAIL AT _____ EACH		
628.305	8	TEMPORARY IMPACT ATTENUATOR, NON-REDIRECTIVE, TL-3 AT _____ EACH		
628.4	8	TEMPORARY IMPACT ATTENUATOR, REMOVED AND RESET AT _____ EACH		

Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
630.2	60	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ PER FOOT		
657.	1,500	TEMPORARY FENCE AT _____ PER FOOT		
657.5	1,500	TEMPORARY FENCE REMOVED AND RESET AT _____ PER FOOT		
740.	24	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
850.44	50,000	TEMPORARY 6 INCH PLASTIC TAPE PAVEMENT MARKING LINE AT _____ PER FOOT		
851.1	200	TRAFFIC CONES FOR TRAFFIC MANAGEMENT AT _____ PER DAY		
852.	1,000	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
853.1	6	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		

Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
853.21	2,400	TEMPORARY BARRIER REMOVED AND RESET AT _____ PER FOOT		
853.33	2,400	TEMPORARY BARRIER - LIMITED DEFLECTION (TL-3) AT _____ PER FOOT		
853.403	84	TRUCK MOUNTED ATTENUATOR AT _____ PER DAY		
854.6	30	TEMPORARY PORTABLE RUMBLE STRIP AT _____ PER DAY		
856.	60	ARROW BOARD AT _____ PER DAY		
856.12	252	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
859.	5,100	REFLECTORIZED DRUM AT _____ PER DAY		
862.506	9,000	FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (6 INCH WHITE LINE) AT _____ PER FOOT		
862.512	50	FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (12 INCH WHITE LINE) AT _____ PER FOOT		

Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
863.506	8,600	FAST DRY MULTI-COMPONENT PAVEMENT MARKINGS, WET REFLECTIVE (6 INCH YELLOW LINE) AT _____ PER FOOT		
866.706	1,200	6 INCH WHITE LINE WITH BLACK CONTRACT - RECESSED (PF, WR) AT _____ PER FOOT		
867.706	1,200	6 INCH YELLOW LINE WITH BLACK CONTRAST - RECESSED (PF, WR) AT _____ PER FOOT		
905.	26	4000 PSI, 3/8 INCH, 660 CEMENT CONCRETE AT _____ PER CUBIC YARD		
905.001	275	OVERHEAD REPAIR MORTAR FOR PATCHING AT _____ PER SQUARE FOOT		
910.1	3,400	STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED AT _____ PER POUND		
913.2	160	CORING AND GROUTING ANCHOR BOLTS AT _____ EACH		
920.01	3	GRANITE CAPSTONE BRIDGE – C-21-023 AT _____ EACH		
960.1	120	STRUCTURAL STEEL - COATED STEEL AT _____ PER POUND		

Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
960.18	55,000	STRUCTURAL STEEL - DIAPHRAGM RETROFIT AT _____ PER POUND		
960.91	16	SLIDING BEARING ADJUSTMENT AT _____ EACH		
961.201	1	CLEAN (FULL REMOVAL) AND PAINT STEEL BRIDGE NO. C-21-023 (0JN) AT _____ LUMP SUM		
961.202	1	CLEAN (FULL REMOVAL) AND PAINT STEEL BRIDGE NO. C-21-024 (0JM) AT _____ LUMP SUM		
961.203	1	CLEAN (FULL REMOVAL) AND PAINT STEEL BRIDGE NO. C-21-025 (0JK) AT _____ LUMP SUM		
962.19	1	STEEL ENCAPSULANT COATING FOR ARMORED STEEL JOINTS AT _____ LUMP SUM		
974.11	255	THRIE BEAM BRIDGE RAILING REMOVED AND RESET BRIDGE NO. C-21-023 AT _____ PER FOOT		
974.12	230	ALUMINUM BRIDGE RAILING REMOVED AND RESET BRIDGE C-21-025 AT _____ PER FOOT		
974.301	580	STEEL BRIDGE RAILING - HORIZONTAL RAILS REMOVED BRIDGE C-21-023 AT _____ PER FOOT		

Project # 613116		Contract # 127959		
Location : CUMMINGTON				
Description : Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), And C-21-025 (0JK), State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
975.01	580	STEEL BRIDGE RAILING - HORIZONTAL RAILS BRIDGE NO. C-21-023 AT _____ PER FOOT		
975.21	4	ALUMINUM BRIDGE RAILING - PICKET PANELS BRIDGE NO. C-21-025 AT _____ EACH		
994.1	8,900	TEMPORARY PROTECTIVE SHIELDING AT _____ PER SQUARE FOOT		
994.12	4,000	TEMPORARY PROTECTIVE SHIELDING REMOVED AND RESET AT _____ PER SQUARE FOOT		
Total Qty:		179,543		

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DOCUMENT B00853

SCHEDULE OF PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES (DBES)

PRIME BIDDER: _____

DATE OF BID OPENING: _____ PROJECT NO.: 613116

FEDERAL AID PROJECT NO. HIP (BR)-003S(766)X

PROJECT LOCATION: CUMMINGTON

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 ***

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**DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION
LETTER OF INTENT**
(To be completed by the DBE – Page 2 of 2)

DATE OF BID OPENING: _____

PROJECT NUMBER: 613116

FEDERAL AID PROJECT NUMBER: HIP (BR)-003S(766)X

PROJECT LOCATION: CUMMINGTON

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: 127959 Project No. 613116 Federal Aid No.: HIP (BR)-003S(766)X

Location: CUMMINGTON Bid Opening Date: _____

Project Description: Bridge Preservation, C-21-023 (0JN), C-21-024 (0JM), and C-21-025 (0JK),
State Route 9 (Berkshire Trail) over Westfield River and Westfield Brook

We have received the attached request for the use of a joint check arrangement from _____, a DBE on the above- referenced Contract and _____, a Material Supplier/Vendor for the subject Contract.

The DBE has complied with the requirements of 49 CFR Part 26.55(c)(1). In particular, the DBE has:

- a written agreement with the material supplier/vendor;
- applied for credit with the subject material supplier and has supplied the vendor's response;
- shown that it will place all orders to the subject material supplier/vendor;
- made and retains all decision-making responsibilities concerning the materials; and
- provided a Joint Check Agreement that is acceptable to MassDOT;

As the Contractor for the Project, we agree to issue joint checks (made payable to the Material Supplier/Vendor and the DBE) for payment of sums due pursuant to invoices from the Supplier/Vendor and DBE.

Contractor:

Company Name

Signature
Duly Authorized

Printed Name

Date

Title

SubContractor:

Company Name

Signature –
Duly Authorized

Printed Name

Date

Title

*** END OF DOCUMENT ***

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DOCUMENT B00856

JOINT VENTURE AFFIDAVIT
(All Firms)

- All Information Requested By This Schedule Must Be Answered. Additional Sheets May Be Attached.
- If, there is any change in the information submitted, the Joint Venture parties must inform MassDOT Pre-Qualifications Office (and, if one of the companies is a DBE, the Director of Contract Compliance, Office of Civil Rights) *prior* to such change, in writing, either directly or through the Prime Contractor if the Joint Venture is a subcontractor.
- If the Joint Venture Entity will be the bidder on a prime Contract, it must bid and submit all required documents (insurance, worker’s compensation, bonds, etc.) in the name of the Joint Venture Entity.

I. Name of Joint Venture: _____
 Type of Entity if applicable (Corp., LLC): _____ Filing State _____
 Address of joint venture: _____

 Phone No(s) for JV Entity: _____ E-mail: _____
 Contact Person(s) _____
 Tax ID/EIN of Joint Venture: _____ Vendor Code: _____

II. Identify each firm or party to the Joint Venture:
 Name of Firm: _____
 Address: _____
 Phone : _____ E-mail: _____
 Contact person(s) _____
 Name of Firm: _____
 Address: _____
 Phone: _____ E-mail: _____
 Contact Person(s) _____

III. Describe the role(s) of the each party to the Joint Venture:

IV. Attach a copy of the Joint Venture Agreement. The proposed Joint Venture Agreement should include specific details including, but not limited to: (1) the contributions of capital and equipment; (2) work items to be performed by each company’s forces, (3) work items to be performed under the supervision of any DBE Venturer; (4) the commitment of management, supervisory and operative personnel employed by the DBE to be dedicated to the performance of the Project; and (5) warranty, guaranty, and indemnification clauses.

V. Attach any applicable Corporate or LLC Votes, Authorizations, etc.

VI. Ownership of the Joint Venture:

A. What is the percentage(s) of each company’s ownership in the Joint Venture?

ownership percentage(s): _____

ownership percentage(s): _____

B. Specify percentages for each of the following (provide narrative descriptions and other detail as applicable):

1. Sharing of profit and loss: _____

2. Capital contributions:

(a) Dollar amounts of initial contribution: _____

(b) Dollar amounts of anticipated on-going contributions: _____

(c) Contributions of equipment (specify types, quality and quantities of equipment to be provided by each firm): _____

4. Other applicable ownership interests, including ownership options or other agreements, which restrict or limit ownership and/or control:

5. Provide copies of all other written agreements between firms concerning bidding and operation of this Project or projects or contracts.

6. Identify all current contracts and contracts completed during the past two (2) years by either of the Joint Venture partners to this Joint Venture:

VII. Control of and Participation in the Joint Venture. Identify by name and firm those individuals who are, or will be, responsible for and have the authority to engage in the following management functions and policy decisions. (Indicate any limitations to their authority such as dollar limits and co-signatory requirements.):

A. Joint Venture check signing:

B. Authority to enter Contracts on behalf of the Joint Venture:

C. Signing, co-signing and/or collateralizing loans:

D. Acquisition of lines of credit:

E. Acquisition and indemnification of payment and performance bonds:

F. Negotiating and signing labor agreements:

G. Management of contract performance. *(Identify by name and firm only):*

1. Supervision of field operations: _____
2. Major purchases: _____
3. Estimating: _____
4. Engineering: _____

VIII. Financial Controls of Joint Venture:

A. Which firm and/or individual will be responsible for keeping the books of account?

B. Identify the "Managing Partner," if any, and describe the means and measure of their compensation:

C. What authority does each firm have to commit or obligate the other to insurance and bonding companies, financing institutions, suppliers, subcontractors, and/or other parties participating in the performance of this Contract or the work of this Project?

IX. Personnel of Joint Venture: State the approximate number of personnel (by trade) needed to perform the Joint Venture's work under this Contract. Indicate whether they will be employees of the majority firm, DBE firm, or the Joint Venture.

	Firm 1 (number)	Firm 2 (number)	Joint Venture (number)
Trade			
Professional			
Administrative/Clerical			
Unskilled Labor			

Will any personnel proposed for this Project be employees of the Joint Venture?: _____

If so, who: _____

A. Are any proposed Joint Venture employees currently employed by either firm?

Employed by Firm 1: _____ Employed by firm 2 _____

B. Identify by name and firm the individual who will be responsible for Joint Venture hiring: _____

X. Additional Information. Please state any material facts and additional information pertinent to the control and structure of this Joint Venture.

XI. AFFIDAVIT OF JOINT VENTURE PARTIES. The undersigned affirm that the foregoing statements and attached documents are correct and include all material information necessary to identify and explain the terms and operations of our Joint Venture and the intended participation of each firm in the undertaking. Further, the undersigned covenant and agree to provide to MassDOT current, complete and accurate information regarding actual Joint Venture work, payments, and any proposed changes to any provisions of the Joint Venture, or the nature, character of each party to the Joint Venture. We understand that any material misrepresentation will be grounds for terminating any Contract awarded and for initiating action under Federal or State laws concerning false statements.

Firm 1

Firm 2

Signature
Duly Authorized

Signature
Duly Authorized

Printed Name and Title

Printed Name and Title

Date

Date

*** END OF DOCUMENT ***