

COMMONWEALTH OF MASSACHUSETTS



**CONTRACT DOCUMENTS
AND SPECIAL PROVISIONS**

PROPOSAL NO.	608857-125514
P.V. =	\$3,141,000.00
PLANS	YES

FOR

**Federal Aid Project No. STP(BR-OFF)-003S(725)X
Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook**

in the Town of

CHESHIRE

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

This Proposal to be opened and read:

TUESDAY, APRIL 23, 2024 at 2:00 P.M.

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DOCUMENT 00104

**NOTICE TO CONTRACTORS**

Electronic proposals for the following project will be received through the internet using 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, APRIL 23, 2024 at 2:00 P.M. **

CHESHIRE

**Federal Aid Project No. STP(BR-OFF)-003S(725)X
Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook
(608857)**

****Date Subject to Change**

PROJECT VALUE = \$3,141,000.00

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 \$637.50 per ton, Portland cement \$425.53 per ton, diesel fuel \$3.279 per gallon, and gasoline \$2.582 per gallon, and Steel Base Price Index 436.7. MassDOT posts the **Price Adjustments** on their Highway Division's website at:

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

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

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

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

BY: Monica G. Tibbits-Nutt, Secretary and CEO, MassDOT
Jonathan L. Gulliver, Administrator, MassDOT Highway Division
SATURDAY, MARCH 16, 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.

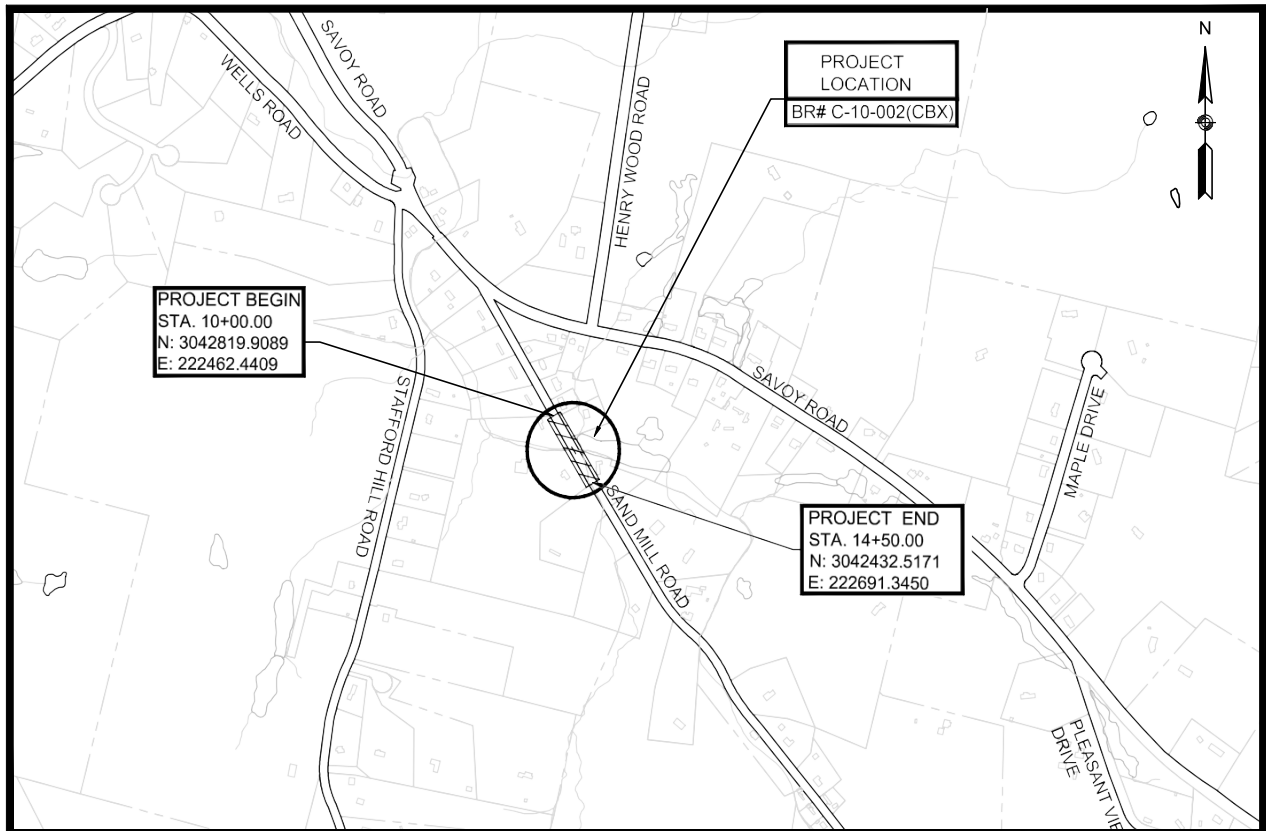
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DOCUMENT 00331

LOCUS MAP

CHESHIRE

**Federal Aid Project No. STP(BR-OFF)-003S(725)X
Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook**



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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): _____



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: 02/14/24

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2024, 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 00713

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

(March 31, 2022)

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

Replace this Subsection with the following:

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

DESCRIPTION

701.20: General

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

MATERIALS

701.30: General

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

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

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

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

A. Combined Aggregate System.

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

1. Tarantula Curve.

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

Table 701.30-1: Tarantula Curve Particle Size Distribution

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

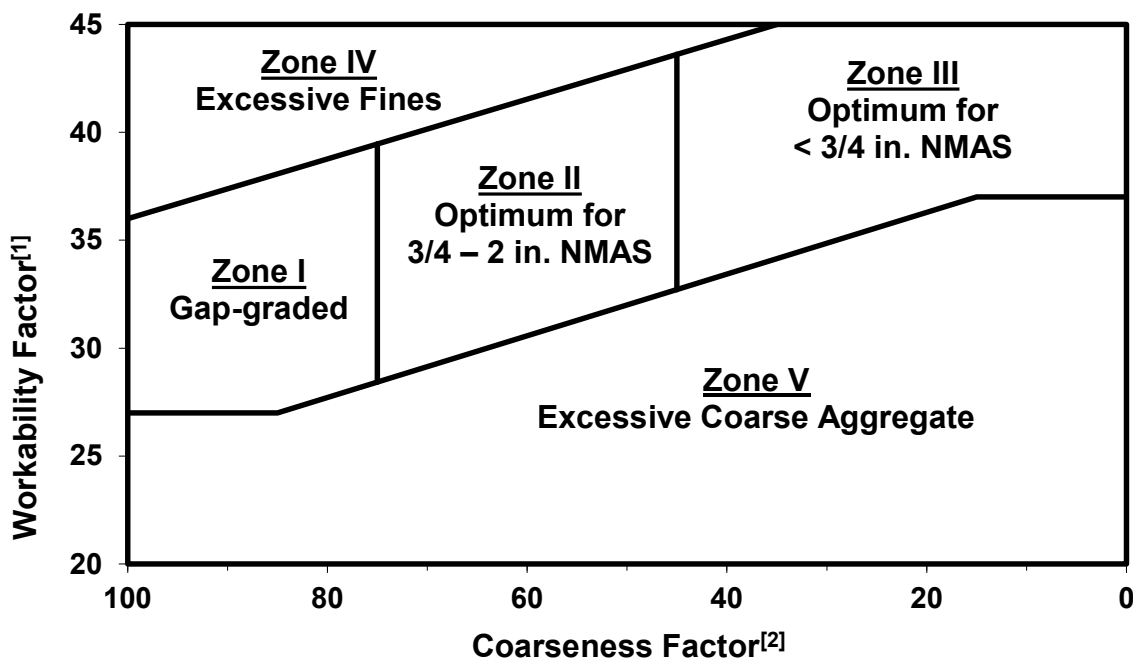
2. Shilstone Workability-Coarseness Chart.

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

Table 701.30-2: Shilstone Workability-Coarseness

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

Figure 701.30-1: Shilstone Workability-Coarseness Chart



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

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

3. Fineness Modulus.

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

4. Coarse Aggregate Content.

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

B. Paste System.

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

1. Water-Cementitious Ratio.

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

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

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

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

2. Air Content.

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

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

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

3. Cement and Supplementary Cementitious Materials Content.

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

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

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

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

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

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

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

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

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

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

4. Chemical Admixtures.

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

Table 701.30-7: Chemical Admixtures

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

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

5. Paste Content.

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

Table 701.30-8: Paste Content

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

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

$$\begin{aligned}
 V_{\text{CEMENT}} &= W_{\text{CEMENT}} / SG_{\text{CEMENT}} * D_{\text{WATER}} \\
 V_{\text{SCM}} &= W_{\text{SCM}} / SG_{\text{SCM}} * D_{\text{WATER}} \\
 V_{\text{ADMIXTURE}} &= V_{\text{ADMIXTURE in oz.}} / 957.5 \text{ oz. per cf} \\
 V_{\text{WATER}} &= V_{\text{WATER in gal.}} / 7.48 \text{ gal. per cf} \\
 V_{\text{COARSE}} &= W_{\text{COARSE}} / SG_{\text{COARSE}} * D_{\text{WATER}} \\
 V_{\text{FINE}} &= W_{\text{FINE}} / SG_{\text{FINE}} * D_{\text{WATER}} \\
 V_{\text{CONCRETE}} &= V_{\text{CEMENT}} + V_{\text{SCM}} + V_{\text{ADMIXTURE}} + V_{\text{WATER}} + V_{\text{COARSE}} + V_{\text{FINE}} + V_{\text{AIR}}
 \end{aligned}$$

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

$$\begin{aligned}
 V_{\text{PASTE}} &= V_{\text{CEMENT}} + V_{\text{SCM}} + V_{\text{ADMIXTURE}} + V_{\text{WATER}} \\
 PC_{\text{CONCRETE}} &= V_{\text{PASTE}} / V_{\text{CONCRETE}}
 \end{aligned}$$

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

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

$$\begin{aligned}
 VC_{\text{COARSE}} &= SG_{\text{COARSE}} * D_{\text{WATER}} - BD_{\text{COARSE}} / D_{\text{COARSE}} \\
 VC_{\text{FINE}} &= SG_{\text{FINE}} * D_{\text{WATER}} - BD_{\text{FINE}} / D_{\text{FINE}} \\
 VC_{\text{AGGREGATE}} &= [(V_{\text{COARSE}} / (V_{\text{COARSE}} + V_{\text{FINE}})) * VC_{\text{COARSE}} + (V_{\text{FINE}} / (V_{\text{COARSE}} + V_{\text{FINE}})) * VC_{\text{FINE}}] \\
 AVC_{\text{CONCRETE}} &= [VC_{\text{AGGREGATE}} * ((V_{\text{COARSE}} + V_{\text{FINE}}) / V_{\text{CONCRETE}})]
 \end{aligned}$$

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

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

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

C. Initial Curing Materials.

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

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

1. Liquid-Applied Evaporation Reducers.

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

D. Intermediate Curing Materials.

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

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

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

E. Final Curing Materials.

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

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

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

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

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

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

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

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

1. Saturated Covers.

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

2. Sheet Materials.

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

a. Polyethylene Film.

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

i. White Polyethylene Film.

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

ii. Clear and Black Polyethylene Films.

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

b. White Burlap-Polyethylene Sheeting.

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

c. Reinforced Impervious Paper.

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

3. Liquid Membrane-Forming Compounds.

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

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

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

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

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

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

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

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

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

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

a. Liquid Membrane-Forming Compounds for Curing.

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

Table 701.30-1: Types of Compounds for Curing

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

Table 701.30-2: Composition Class of Compounds for Curing

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

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

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

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

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

Type	Description
Type I	Clear or translucent
Type II	White pigmented

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

Type	Description
Class A	Non-yellowing

F. Protective Sealing Compounds.

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

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

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

G. Cold Weather Concreting Materials.

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

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

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

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

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

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

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

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

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

1. Insulating Materials.

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

2. Heaters.

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

a. Direct Fired Heaters.

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

b. Indirect Fired Heaters.

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

c. Hydronic Heaters.

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

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

3. Enclosures.

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

H. Hot Weather Concreting Materials.

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

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

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

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

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

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

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

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

CONSTRUCTION METHODS

701.40: Pre-Placement

A. Excavation.

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

B. Subgrade and Subbase.

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

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

C. Forms.

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

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

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

All forms shall be oiled before placing concrete.

701.41: Placement

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

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

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

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

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

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

701.42: Initial Curing

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

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

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

701.43: Finishing

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

701.44: Intermediate Curing

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

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

701.45: Final Curing

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

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

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

Table 701.45-1: Termination of Curing Cycle

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

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

701.46: Protective Sealing

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

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

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

701.47: Cold Weather Concreting

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

701.48: Hot Weather Concreting

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

CONTRACTOR QUALITY CONTROL**701.60: General**

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

701.61: Contractor Quality Control Plan

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

701.62: Production Personnel

A. Foreman.

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

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

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

Table 701.62-1: Minimum Foreman Activities

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

B. Operators.

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

Table 701.62-2: Minimum Operator Activities

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

^[1] Recommended number of operators.

Table 701.62-2: Minimum Operator Activities (Continued)

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

^[1] Recommended number of operators.

701.63: Quality Control Inspection

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

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

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

DEPARTMENT ACCEPTANCE

701.70: General

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

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

701.71: Acceptance of Contractor Quality Control Plan

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

701.72: Acceptance Inspection

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

701.73: Acceptance Sampling and Testing

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

Table 701.73-1: Minimum Acceptance Sampling and Testing Requirements

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

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

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

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

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

COMPENSATION

701.80: Method of Measurement

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

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

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

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

701.81: Basis of Payment

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

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

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

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

701.82: Payment Items

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

GUIDE TO THE INTERIM SUBSECTION 701 CEMENT CONCRETE SIDEWALK SPECIFICATION

MATERIALS ACTIVITIES

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

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

CONTRACTOR ACTIVITIES

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

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

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

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

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

DOCUMENT 00719

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

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

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POLICY

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

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

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

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

<i>Type of Info</i>	<i>Website</i>	<i>Description</i>
MassDOT Highway Division Policies and Info	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 10 %
(One half of this goal shall be met in the form of Subcontractor construction activity)

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

b. Bidders List

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

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

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

3. CONTRACTOR ASSURANCES

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

4. REQUIRED SUBCONTRACT PROVISIONS

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

5. ELIGIBILITY OF DBES

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

a. Massachusetts DBE Directory

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

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

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

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

b. DBE Certification

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

c. Joint Venture Approval

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

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

6. COUNTING DBE PARTICIPATION TOWARDS DBE PARTICIPATION GOALS

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

a. Commercially Useful Function

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

b. Counting Participation Toward The Contract Participation Goal

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

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

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

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

c. Joint Check Policy

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

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

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

Other factors MassDOT may consider:

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

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

d. Joint Check Procedure(s)

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

7. AWARD DOCUMENTATION AND PROCEDURES

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

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

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

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

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

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

8. COMPLIANCE

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

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

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

n. Prompt Payment.

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

9. SANCTIONS

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

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

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND CONFIDENTIALITY.

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

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

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

11. LIST OF ADDITIONAL DOCUMENTS.

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

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

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

ATTACHMENTS

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

I. GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

6. Training and Promotion:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

10. Assurances Required:

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

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

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

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

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

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

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

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

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

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

III. NONSEGREGATED FACILITIES

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

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

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

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

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

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

1. Minimum wages (29 CFR 5.5)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2. Withholding (29 CFR 5.5)

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

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

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

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

3. Records and certified payrolls (29 CFR 5.5)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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

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

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

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

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

3. Withholding for unpaid wages and liquidated damages

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

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

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

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

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

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

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

VI. SUBLETTING OR ASSIGNING THE CONTRACT

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

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

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

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

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

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

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

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

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

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

VII. SAFETY: ACCIDENT PREVENTION

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

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

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

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

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

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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

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

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

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

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

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

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

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

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

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

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

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

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

1. Instructions for Certification – First Tier Participants:

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

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

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

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

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

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

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

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

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

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

* * * * *

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

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

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

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

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

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

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

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

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

3. Instructions for Certification - Lower Tier Participants:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

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

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

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

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

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

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

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

XII. USE OF UNITED STATES-FLAG VESSELS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DOCUMENT 00811

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

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

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

Base Price

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

Period Price

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

Price Adjustment Determination, Calculation and Payment

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

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

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

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

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

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

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DOCUMENT 00812

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

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

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

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

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

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

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

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

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

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

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DOCUMENT 00813

SPECIAL PROVISIONS

PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

March 14, 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	\$0.68
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)	\$0.93
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	\$0.93
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	\$0.97
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	\$1.03
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	\$0.96
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	\$1.03
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	\$0.96
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	\$1.07
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	\$0.97
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	\$1.07
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	\$0.97
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	\$1.12
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	\$1.19
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	\$1.82
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	\$1.07
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	\$0.97
18	ASTM A276 Type 316 Stainless Steel	\$5.43
19	ASTM A240 Type 316 Stainless Steel	\$5.43
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	\$1.87
21	ASTM A53 Grade B Structural Steel Pipe	\$1.20
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	\$1.20
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	\$0.95
24	ASTM 252, Grade 2 Permanent Steel Casing	\$0.95
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	\$1.02
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	\$1.79
27	ASTM A572 / A572M, Grade 50 Sheetpiling	\$1.79
28	ASTM A36/36M, Grade 50	\$1.03
29	ASTM A570, Grade 50	\$1.02
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	\$1.03
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	\$1.20
32	AREA 140 LB Rail and Track Accessories	\$0.61

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: 125514 Project No. 608857 Federal Aid No.: STP(BR-OFF)-003S(725)

Location: CHESHIRE

Project Description: Bridge Replacement, C-10-002, Sand Mill Road over Dry 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 that two week before the anniversary of the Notice to Proceed date of the contract to allow for adequate processing by the Department of Labor Standards (DLS). The effective date for the new rates will be the anniversary date of the contract (i.e. the notice to proceed date), regardless of the date of issuance on the schedule from DLS.

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

*** END OF DOCUMENT ***

DOCUMENT 00861

STATE PREVAILING WAGE RATES

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MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

Proposal No. 608857-125514
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: 125514 **City/Town:** CHESHIRE
Description of Work: CHESHIRE: FAP No. STP(BR-OFF)-003S(725)X Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook
Job Location: Sand Mill Road over Dry Brook

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$38.95	\$15.07	\$18.67	\$0.00	\$72.69
	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>	01/01/2024	\$39.02	\$15.07	\$18.67	\$0.00	\$72.76
	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>	01/01/2024	\$39.14	\$15.07	\$18.67	\$0.00	\$72.88
	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>	12/01/2023	\$31.16	\$9.65	\$14.53	\$0.00	\$55.34
	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>	12/01/2023	\$32.87	\$9.65	\$15.60	\$0.00	\$58.12
	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)"						

Proposal No. 608857-125514

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	12/01/2023	\$36.72	\$14.50	\$10.55	\$0.00	\$61.77
	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
ASPHALT RAKER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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>	12/01/2023	\$32.37	\$9.65	\$15.60	\$0.00	\$57.62
	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>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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	\$13.38	\$15.15	\$0.00	\$67.56
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$31.16	\$9.65	\$14.53	\$0.00	\$55.34
	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>	12/01/2023	\$32.87	\$9.65	\$15.60	\$0.00	\$58.12
	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)	02/01/2024	\$50.81	\$11.49	\$21.46	\$0.00	\$83.76
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	08/01/2024	\$52.06	\$11.49	\$21.46	\$0.00	\$85.01
	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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.41	\$11.49	\$21.46	\$0.00	\$58.36
2	60	\$30.49	\$11.49	\$21.46	\$0.00	\$63.44
3	70	\$35.57	\$11.49	\$21.46	\$0.00	\$68.52
4	80	\$40.65	\$11.49	\$21.46	\$0.00	\$73.60
5	90	\$45.73	\$11.49	\$21.46	\$0.00	\$78.68

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

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL OPERATING	12/01/2023	\$39.56	\$13.78	\$15.15	\$0.00	\$68.49
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ENGINEERS LOCAL 98

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN LABORERS - FOUNDATION AND MARINE	12/01/2023	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
	06/01/2024	\$46.96	\$9.65	\$18.22	\$0.00	\$74.83
	12/01/2024	\$48.43	\$9.65	\$18.22	\$0.00	\$76.30
	06/01/2025	\$49.93	\$9.65	\$18.22	\$0.00	\$77.80
	12/01/2025	\$51.43	\$9.65	\$18.22	\$0.00	\$79.30
	06/01/2026	\$52.98	\$9.65	\$18.22	\$0.00	\$80.85
	12/01/2026	\$54.48	\$9.65	\$18.22	\$0.00	\$82.35

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER LABORERS - FOUNDATION AND MARINE	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
	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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
	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>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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 - BERKSHIRE COUNTY</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 Berkshire

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

Proposal No. 608857-125514

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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	\$13.38	\$15.15	\$0.00	\$67.56
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>	01/01/2024	\$56.06	\$9.95	\$23.95	\$0.00	\$89.96
	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 - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$9.95	\$0.00	\$0.00	\$37.98
2	55	\$30.83	\$9.95	\$6.66	\$0.00	\$47.44
3	60	\$33.64	\$9.95	\$7.26	\$0.00	\$50.85
4	65	\$36.44	\$9.95	\$7.87	\$0.00	\$54.26
5	70	\$39.24	\$9.95	\$20.32	\$0.00	\$69.51
6	75	\$42.05	\$9.95	\$20.93	\$0.00	\$72.93
7	80	\$44.85	\$9.95	\$21.53	\$0.00	\$76.33
8	90	\$50.45	\$9.95	\$22.74	\$0.00	\$83.14

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

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"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BURNERS <i>LABORERS - ZONE 4 (BUILDING & SITE)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
DEMO: WRECKING LABORER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
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>	12/31/2023	\$49.01	\$12.75	\$14.61	\$0.00	\$76.37
	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 - 12/31/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.60	\$7.65	\$0.59	\$0.00	\$27.84
2	45	\$22.05	\$7.65	\$0.66	\$0.00	\$30.36
3	50	\$24.51	\$12.75	\$7.34	\$0.00	\$44.60
4	55	\$26.96	\$12.75	\$7.41	\$0.00	\$47.12
5	65	\$31.86	\$12.75	\$9.52	\$0.00	\$54.13
6	70	\$34.31	\$12.75	\$10.90	\$0.00	\$57.96

Effective Date - 06/30/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.00	\$7.80	\$0.60	\$0.00	\$28.40
2	45	\$22.50	\$7.80	\$0.68	\$0.00	\$30.98
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

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>	12/01/2023	\$30.41	\$9.65	\$14.53	\$0.00	\$54.59
	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>	12/01/2023	\$32.37	\$9.65	\$15.60	\$0.00	\$57.62
	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
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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
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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
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 7</i>	12/31/2023	\$49.01	\$12.75	\$14.61	\$0.00	\$76.37
	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>LOCAL 7</i> / COMMISSIONING <i>ELECTRICIANS</i>	12/31/2023	\$49.01	\$12.75	\$14.61	\$0.00	\$76.37
	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	\$13.38	\$15.15	\$0.00	\$67.56

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	\$13.38	\$15.15	\$0.00	\$51.95
2	70	\$27.32	\$13.38	\$15.15	\$0.00	\$55.85
3	80	\$31.22	\$13.38	\$15.15	\$0.00	\$59.75
4	90	\$35.13	\$13.38	\$15.15	\$0.00	\$63.66

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>	12/01/2023	\$25.48	\$9.65	\$15.60	\$0.00	\$50.73
	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>	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 7</i>	12/31/2023	\$49.01	\$12.75	\$14.61	\$0.00	\$76.37
	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>	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING - WATER) <i>PLUMBERS & PIPEFITTERS LOCAL 104 WESTERN DIVISION</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 WESTERN DIVISION</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	12/01/2023	\$32.87	\$9.65	\$15.60	\$0.00	\$58.12
	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)

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 12</i>	07/01/2019	\$31.55	\$6.75	\$19.66	\$0.00	\$57.96
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 12

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.93	\$6.75	\$3.50	\$0.00	\$29.18
2	70	\$22.09	\$6.75	\$14.64	\$0.00	\$43.48
3	80	\$25.24	\$6.75	\$16.22	\$0.00	\$48.21
4	90	\$28.40	\$6.75	\$17.82	\$0.00	\$52.97

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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>	12/01/2023	\$30.41	\$9.65	\$14.53	\$0.00	\$54.59
	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

Apprentice - LABORER - Zone 4 Building and Site

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.25	\$9.65	\$14.53	\$0.00	\$42.43
2	70	\$21.29	\$9.65	\$14.53	\$0.00	\$45.47
3	80	\$24.33	\$9.65	\$14.53	\$0.00	\$48.51
4	90	\$27.37	\$9.65	\$14.53	\$0.00	\$51.55

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

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	12/01/2023	\$32.12	\$9.65	\$15.60	\$0.00	\$57.37
	06/01/2024	\$33.31	\$9.65	\$15.60	\$0.00	\$58.56
	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 - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.27	\$9.65	\$15.60	\$0.00	\$44.52
2	70	\$22.48	\$9.65	\$15.60	\$0.00	\$47.73
3	80	\$25.70	\$9.65	\$15.60	\$0.00	\$50.95
4	90	\$28.91	\$9.65	\$15.60	\$0.00	\$54.16

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

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$30.41	\$9.65	\$14.53	\$0.00	\$54.59
	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>	12/01/2023	\$30.41	\$9.65	\$14.53	\$0.00	\$54.59
	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
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For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER <i>LABORERS - ZONE 4 (BUILDING & SITE)</i>	12/01/2023	\$32.41	\$9.65	\$14.53	\$0.00	\$56.59
	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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	12/01/2023	\$32.37	\$9.65	\$15.60	\$0.00	\$57.62
	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>	12/01/2023	\$30.41	\$9.65	\$14.53	\$0.00	\$54.59
	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>	12/01/2023	\$30.41	\$9.65	\$14.53	\$0.00	\$54.59
	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>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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>	12/01/2023	\$32.37	\$9.65	\$15.60	\$0.00	\$57.62
	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>	02/01/2024	\$41.37	\$11.49	\$20.53	\$0.00	\$73.39
	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
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Apprentice - MARBLE-TILE FINISHER-Local 3 Marble/Tile (Spr/Pitt)

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.69	\$11.49	\$20.53	\$0.00	\$52.71
2	60	\$24.82	\$11.49	\$20.53	\$0.00	\$56.84
3	70	\$28.96	\$11.49	\$20.53	\$0.00	\$60.98
4	80	\$33.10	\$11.49	\$20.53	\$0.00	\$65.12
5	90	\$37.23	\$11.49	\$20.53	\$0.00	\$69.25

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

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	\$13.38	\$15.15	\$0.00	\$67.56
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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
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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 LABORERS - ZONE 4 (BUILDING & SITE)	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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"

OILER OPERATING ENGINEERS LOCAL 98	12/01/2023	\$35.02	\$13.78	\$15.15	\$0.00	\$63.95
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS VI OPERATING ENGINEERS LOCAL 98	12/01/2023	\$32.74	\$13.78	\$15.15	\$0.00	\$61.67
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Painter (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 3	01/01/2024	\$56.06	\$9.95	\$23.95	\$0.00	\$89.96
	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 - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$9.95	\$0.00	\$0.00	\$37.98
2	55	\$30.83	\$9.95	\$6.66	\$0.00	\$47.44
3	60	\$33.64	\$9.95	\$7.26	\$0.00	\$50.85
4	65	\$36.44	\$9.95	\$7.87	\$0.00	\$54.26
5	70	\$39.24	\$9.95	\$20.32	\$0.00	\$69.51
6	75	\$42.05	\$9.95	\$20.93	\$0.00	\$72.93
7	80	\$44.85	\$9.95	\$21.53	\$0.00	\$76.33
8	90	\$50.45	\$9.95	\$22.74	\$0.00	\$83.14

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2024	\$38.83	\$9.65	\$19.90	\$0.00	\$68.38
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	07/01/2024	\$40.03	\$9.65	\$19.90	\$0.00	\$69.58
	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 - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.42	\$9.95	\$0.00	\$0.00	\$29.37
2	55	\$21.36	\$9.95	\$4.43	\$0.00	\$35.74
3	60	\$23.30	\$9.95	\$4.83	\$0.00	\$38.08
4	65	\$25.24	\$9.95	\$5.23	\$0.00	\$40.42
5	70	\$27.18	\$9.95	\$17.49	\$0.00	\$54.62
6	75	\$29.12	\$9.95	\$17.89	\$0.00	\$56.96
7	80	\$31.06	\$9.95	\$18.29	\$0.00	\$59.30
8	90	\$34.95	\$9.95	\$19.10	\$0.00	\$64.00

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2024	\$36.15	\$9.95	\$19.90	\$0.00	\$66.00
PAINTERS LOCAL 35 - ZONE 3	07/01/2024	\$37.35	\$9.95	\$19.90	\$0.00	\$67.20
	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 - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.08	\$9.95	\$0.00	\$0.00	\$28.03
2	55	\$19.88	\$9.95	\$4.43	\$0.00	\$34.26
3	60	\$21.69	\$9.95	\$4.83	\$0.00	\$36.47
4	65	\$23.50	\$9.95	\$5.23	\$0.00	\$38.68
5	70	\$25.31	\$9.95	\$17.49	\$0.00	\$52.75
6	75	\$27.11	\$9.95	\$17.89	\$0.00	\$54.95
7	80	\$28.92	\$9.95	\$18.29	\$0.00	\$57.16
8	90	\$32.54	\$9.95	\$19.10	\$0.00	\$61.59

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	01/01/2024	\$37.43	\$9.95	\$19.90	\$0.00	\$67.28
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	07/01/2024	\$38.63	\$9.95	\$19.90	\$0.00	\$68.48
	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 - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.72	\$9.95	\$0.00	\$0.00	\$28.67
2	55	\$20.59	\$9.95	\$4.43	\$0.00	\$34.97
3	60	\$22.46	\$9.95	\$4.83	\$0.00	\$37.24
4	65	\$24.33	\$9.95	\$5.23	\$0.00	\$39.51
5	70	\$26.20	\$9.95	\$17.49	\$0.00	\$53.64
6	75	\$28.07	\$9.95	\$17.89	\$0.00	\$55.91
7	80	\$29.94	\$9.95	\$18.29	\$0.00	\$58.18
8	90	\$33.69	\$9.95	\$19.10	\$0.00	\$62.74

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2024	\$34.75	\$9.95	\$19.90	\$0.00	\$64.60
PAINTERS LOCAL 35 - ZONE 3	07/01/2024	\$35.95	\$9.95	\$19.90	\$0.00	\$65.80
	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 - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.38	\$9.95	\$0.00	\$0.00	\$27.33
2	55	\$19.11	\$9.95	\$4.43	\$0.00	\$33.49
3	60	\$20.85	\$9.95	\$4.83	\$0.00	\$35.63
4	65	\$22.59	\$9.95	\$5.23	\$0.00	\$37.77
5	70	\$24.33	\$9.95	\$17.49	\$0.00	\$51.77
6	75	\$26.06	\$9.95	\$17.89	\$0.00	\$53.90
7	80	\$27.80	\$9.95	\$18.29	\$0.00	\$56.04
8	90	\$31.28	\$9.95	\$19.10	\$0.00	\$60.33

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/01/2023	\$32.12	\$9.65	\$15.60	\$0.00	\$57.37
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	06/01/2024	\$33.31	\$9.65	\$15.60	\$0.00	\$58.56
	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	01/01/2024	\$38.78	\$15.07	\$18.67	\$0.00	\$72.52
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	06/01/2024	\$39.78	\$15.07	\$18.67	\$0.00	\$73.52
	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>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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"

PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	12/01/2023	\$32.37	\$9.65	\$15.60	\$0.00	\$57.62
	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)"

PLUMBER & PIPEFITTER <i>PLUMBERS & PIPEFITTERS LOCAL 104 WESTERN DIVISION</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 404 - Construction Service (Northampton)</i>	05/01/2023	\$25.24	\$11.57	\$7.00	\$0.00	\$43.81
	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>	12/01/2023	\$30.66	\$9.65	\$14.53	\$0.00	\$54.84
	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

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.Roofing(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	\$13.38	\$15.15	\$0.00	\$67.56
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>	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 63

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.71	\$4.79	\$4.76	\$0.92	\$30.18
2	50	\$21.90	\$5.32	\$5.29	\$1.03	\$33.54
3	55	\$24.09	\$5.85	\$5.82	\$1.13	\$36.89
4	60	\$26.28	\$6.38	\$6.35	\$1.23	\$40.24
5	65	\$28.47	\$6.92	\$6.88	\$1.33	\$43.60
6	70	\$30.66	\$7.45	\$7.41	\$1.44	\$46.96
7	75	\$32.85	\$7.98	\$7.94	\$1.54	\$50.31
8	80	\$35.04	\$8.51	\$15.42	\$1.64	\$60.61
9	85	\$37.23	\$9.04	\$15.95	\$1.74	\$63.96
10	90	\$39.42	\$9.58	\$16.48	\$1.85	\$67.33

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.27	\$4.79	\$4.76	\$0.92	\$30.74
2	50	\$22.53	\$5.32	\$5.29	\$1.03	\$34.17
3	55	\$24.78	\$5.85	\$5.82	\$1.13	\$37.58
4	60	\$27.03	\$6.38	\$6.35	\$1.23	\$40.99
5	65	\$29.28	\$6.92	\$6.88	\$1.33	\$44.41
6	70	\$31.54	\$7.45	\$7.41	\$1.44	\$47.84
7	75	\$33.79	\$7.98	\$7.94	\$1.54	\$51.25
8	80	\$36.04	\$8.51	\$15.42	\$1.64	\$61.61
9	85	\$38.29	\$9.04	\$15.95	\$1.74	\$65.02
10	90	\$40.55	\$9.58	\$16.48	\$1.85	\$68.46

Notes:

Apprentice to Journeyworker Ratio:1:3

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	01/01/2024	\$39.24	\$15.07	\$18.67	\$0.00	\$72.98
	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
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.53	\$15.07	\$18.67	\$0.00	\$73.27
	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>	12/31/2023	\$49.01	\$12.75	\$14.61	\$0.00	\$76.37
	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 - 12/31/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.60	\$7.05	\$0.59	\$0.00	\$27.24
2	45	\$22.05	\$7.05	\$0.66	\$0.00	\$29.76
3	50	\$24.51	\$12.75	\$7.34	\$0.00	\$44.60
4	55	\$26.96	\$12.75	\$7.41	\$0.00	\$47.12
5	65	\$31.86	\$12.75	\$9.52	\$0.00	\$54.13
6	70	\$34.31	\$12.75	\$10.90	\$0.00	\$57.96

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

Notes:

Steps are 800 hours

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2024	\$61.34	\$11.49	\$23.59	\$0.00	\$96.42
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/10/2026	\$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 - 02/01/2024

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

Effective Date - 08/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

TERRAZZO MECHANIC	02/01/2024	\$62.42	\$11.49	\$23.56	\$0.00	\$97.47
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2024

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

Effective Date - 08/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2023	\$48.33	\$9.65	\$18.22	\$0.00	\$76.20
	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>	12/01/2023	\$44.45	\$9.65	\$18.22	\$0.00	\$72.32
	06/01/2024	\$45.93	\$9.65	\$18.22	\$0.00	\$73.80
	12/01/2024	\$47.40	\$9.65	\$18.22	\$0.00	\$75.27
	06/01/2025	\$48.90	\$9.65	\$18.22	\$0.00	\$76.77
	12/01/2025	\$50.40	\$9.65	\$18.22	\$0.00	\$78.27
	06/01/2026	\$51.95	\$9.65	\$18.22	\$0.00	\$79.82
	12/01/2026	\$53.45	\$9.65	\$18.22	\$0.00	\$81.32

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
	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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS <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"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.82	\$15.07	\$18.67	\$0.00	\$73.56
	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>	12/01/2023	\$56.56	\$9.65	\$18.67	\$0.00	\$84.88
	06/01/2024	\$58.04	\$9.65	\$18.67	\$0.00	\$86.36
	12/01/2024	\$59.51	\$9.65	\$18.67	\$0.00	\$87.83
	06/01/2025	\$61.01	\$9.65	\$18.67	\$0.00	\$89.33
	12/01/2025	\$62.51	\$9.65	\$18.67	\$0.00	\$90.83
	06/01/2026	\$64.06	\$9.65	\$18.67	\$0.00	\$92.38
	12/01/2026	\$65.56	\$9.65	\$18.67	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2023	\$58.56	\$9.65	\$18.67	\$0.00	\$86.88
	06/01/2024	\$60.04	\$9.65	\$18.67	\$0.00	\$88.36
	12/01/2024	\$61.51	\$9.65	\$18.67	\$0.00	\$89.83
	06/01/2025	\$63.01	\$9.65	\$18.67	\$0.00	\$91.33
	12/01/2025	\$64.51	\$9.65	\$18.67	\$0.00	\$92.83
	06/01/2026	\$66.06	\$9.65	\$18.67	\$0.00	\$94.38
	12/01/2026	\$67.56	\$9.65	\$18.67	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2023	\$48.63	\$9.65	\$18.67	\$0.00	\$76.95
	06/01/2024	\$50.11	\$9.65	\$18.67	\$0.00	\$78.43
	12/01/2024	\$51.58	\$9.65	\$18.67	\$0.00	\$79.90
	06/01/2025	\$53.08	\$9.65	\$18.67	\$0.00	\$81.40
	12/01/2025	\$54.58	\$9.65	\$18.67	\$0.00	\$82.90
	06/01/2026	\$56.13	\$9.65	\$18.67	\$0.00	\$84.45
	12/01/2026	\$57.63	\$9.65	\$18.67	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2023	\$50.63	\$9.65	\$18.67	\$0.00	\$78.95
	06/01/2024	\$52.11	\$9.65	\$18.67	\$0.00	\$80.43
	12/01/2024	\$53.58	\$9.65	\$18.67	\$0.00	\$81.90
	06/01/2025	\$55.08	\$9.65	\$18.67	\$0.00	\$83.40
	12/01/2025	\$56.58	\$9.65	\$18.67	\$0.00	\$84.90
	06/01/2026	\$58.13	\$9.65	\$18.67	\$0.00	\$86.45
	12/01/2026	\$59.63	\$9.65	\$18.67	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.24	\$15.07	\$18.67	\$0.00	\$72.98
	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 4 (HEAVY & HIGHWAY)</i>	12/01/2023	\$32.37	\$9.65	\$15.60	\$0.00	\$57.62
	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 WESTERN DIVISION</i>	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - West						
EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	09/01/2019	\$44.67	\$8.00	\$12.55	\$0.00	\$65.22
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	09/01/2019	\$30.58	\$8.00	\$5.48	\$0.00	\$44.06
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN / TRUCK DRIVER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	09/01/2019	\$39.97	\$8.00	\$10.96	\$0.00	\$58.93
For apprentice rates see "Apprentice- LINEMAN"						
HEAVY EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	09/01/2019	\$47.01	\$8.00	\$13.22	\$0.00	\$68.23
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	09/01/2019	\$51.71	\$8.00	\$15.55	\$0.00	\$75.26

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - LINEMAN (Outside Electrical) - West Local 42

Effective Date - 09/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$31.03	\$8.00	\$3.43	\$0.00	\$42.46
2	65	\$33.61	\$8.00	\$3.51	\$0.00	\$45.12
3	70	\$36.20	\$8.00	\$3.59	\$0.00	\$47.79
4	75	\$38.78	\$8.00	\$5.16	\$0.00	\$51.94
5	80	\$41.37	\$8.00	\$5.24	\$0.00	\$54.61
6	85	\$43.95	\$8.00	\$5.32	\$0.00	\$57.27
7	90	\$46.54	\$8.00	\$7.40	\$0.00	\$61.94

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TRACTOR-TRAILER DRIVER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	09/01/2019	\$44.67	\$8.00	\$12.55	\$0.00	\$65.22

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	
Non-SMSA Counties: MA Barnstable, MA Dukes, MA Nantucket	3.6
Non-SMSA Counties: MA Franklin	5.9

APPENDIX C

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

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

APPENDIX D

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

PERTINENT NON-DISCRIMINATION AUTHORITIES:

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

*** END OF DOCUMENT ***

DOCUMENT 00875
TRAINEE SPECIAL PROVISIONS
Revised October, 2016

THE REQUIRED NUMBER OF TRAINEES TO BE TRAINED UNDER THIS CONTRACT WILL BE **1**

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

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

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

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

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

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

Reimbursement

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

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

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

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

Payment

Trainees will be paid:

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

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

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

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

*** END OF DOCUMENT ***

DOCUMENT 00880

Revised January 12, 2022



DEPARTMENT OF LABOR

Employment Standards Administration

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

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"General Decision Number: MA20240016 03/01/2024

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

ENGI0004-019 12/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1.....	\$ 48.73	29.25+A
GROUP 1.....	\$ 55.03	32.45
Group 2.....	\$ 48.23	29.25+A
GROUP 2.....	\$ 54.43	32.45

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 12/01/2016

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1.....	\$ 33.68	23.96+A
Group 2.....	\$ 33.37	23.96+A
Group 4.....	\$ 32.54	23.96+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 09/16/2023

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL)	\$ 39.05	32.42

* 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 07/01/2023

	Rates	Fringes
PAINTER (Steel)	\$ 55.51	35.10

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.

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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"General Decision Number: MA20240010 03/22/2024

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).

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:	. 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.
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:	. 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>.

Modification Number	Publication Date
0	01/05/2024
1	01/19/2024
2	02/09/2024
3	03/01/2024
4	03/22/2024

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

CARP0056-009 08/01/2020

	Rates	Fringes
PILED RIVERMAN.....	\$ 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 07/02/2023

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

Rates	Fringes
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ELECTRICIAN.....\$ 48.01 27.71

ELEC0007-003 07/02/2023

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

Rates Fringes

ELECTRICIAN.....\$ 48.01 27.71

ENGI0098-007 12/01/2016

Rates Fringes

Power equipment operators:

Group 1.....	\$ 33.68	23.96+A
Group 2.....	\$ 33.37	23.96+A
Group 3.....	\$ 33.15	23.96+A
Group 4.....	\$ 32.54	23.96+A
Group 5.....	\$ 29.92	23.96+A
Group 6.....	\$ 28.80	23.96+A
Group 7.....	\$ 26.86	23.96+A
Group 8.....	\$ 305.95	23.96+A
Group 9.....	\$ 230.69	23.96+A
Group 10.....	\$ 35.17	23.96+A
Group 11.....	\$ 38.18	23.96+A
Group 12.....	\$ 39.68	23.96+A
Group 13.....	\$ 40.68	23.96+A
Group 14.....	\$ 41.68	23.96+A
Group 15.....	\$ 43.18	23.96+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 09/16/2023

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

	Rates	Fringes
IRONWORKER.....	\$ 39.05	32.42

IRON0012-003 07/01/2023

BERKSHIRE (Lee)

	Rates	Fringes
IRONWORKER.....	\$ 34.50	26.83

IRON0012-004 07/01/2023

BERKSHIRE (Remainder of County)

	Rates	Fringes
Ironworkers:		
Sheeter.....	\$ 34.75	26.83
Structural, Ornamental, Reinforcing, Fence Erector, Machinery Mover, Rigger, Rodman, Stone Derrickman.....	\$ 34.50	26.83

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

LAB00473-005 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

LABO1421-002 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 07/01/2023

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		
Brush, Taper.....	\$ 36.93	31.10
Spray, Sandblast.....	\$ 38.33	31.10
REPAINT:		
Bridge.....	\$ 55.51	35.10
Brush, Taper.....	\$ 33.75	31.10
Spray, Sandblast.....	\$ 35.65	31.10

* 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
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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 06/01/2023

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

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

TRUCK DRIVERS CLASSIFICATIONS

- Group 1: Station wagons; panel trucks; and pickup trucks
- Group 2: Two axle equipment; & forklift operator
- Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

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

Group 6: Specialized earth moving equipment over 35 tons

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

FOOTNOTES:

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

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

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

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

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates

the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the

Branch of Construction Wage Determinations. Write to:

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

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

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

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

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

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

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

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END OF GENERAL DECISION"

DOCUMENT A00801

SPECIAL PROVISIONS**CESHIRE****Federal Aid Project No. STP(BR-OFF)-003S(725)X
Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook**

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 *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.

Bridge No. C-10-002 carries Sand Mill Road Over Dry Brook. The existing bridge is a single span structure with a 30-degree skewed length of 43ft-10½in and 20ft-0in clear roadway. The bridge was originally constructed in 1939 and rehabilitated in 2016. It comprised of a steel rolled beam superstructure with reinforced concrete deck and bituminous wearing surface founded on concrete gravity abutments with splayed wingwalls. The bridge is structurally deficient, posted for truck traffic.

The intent of the project is to replace the existing bridge with a new wider bridge founded on new abutments. The road will be closed to traffic during construction and a proposed detour is shown in the Contract Drawings.

The replacement structure will be a 28ft wide single span butted deck beam superstructure with a skewed length of 46ft, maintaining the 30-degree skew. The deck beams will support a reinforced concrete deck with bituminous wearing surface, safety curbs and a metal bridge rail. The new roadway width will be widened to 24ft-9in to accommodate two 10ft-0in lanes and lanes and 2ft-4½in shoulders. The substructure will be reinforced concrete cantilever abutments and wingwalls on spread footings supporting reinforced concrete approach slabs.

The proposed roadway cross section will transition to meet the existing approach roadway widths. There are no proposed bicycle lanes or sidewalks. Overhead utilities will be temporarily and permanently relocated by others.

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.

SECTION 6.00: CONTROL OF MATERIALS

Subsection 6.01: Source of Supply and Quality

Replace this subsection with the following:

The Engineer may approve material at the source of supply before delivery to the project.

The Department reserves the right to require approval of the source of supply for any material to be incorporated into the work prior to delivery or manufacture.

The Engineer reserves the right to prohibit the use of materials, products, or components which, in their opinion, may be supplied in a manner not reasonably consistent with contract requirements.

The determination of the Engineer shall be final upon all questions which pertain to supplier approval.

Fabricators of structural steel, miscellaneous steel and aluminum products, and producers of precast concrete and prestressed concrete must be on the Department's approved fabricators list on the date the bids are opened. Only approved fabricators will be allowed to perform work for the Department.

SECTION 6.00 (Continued)

The Contractor shall furnish all materials required for the work specified in the Contract. Said materials shall meet the requirements of the specifications for the kind of work involving their use. For any materials named or described in these specifications, an approved equivalent to that named or described in the said specifications, may be furnished.

Chapter 7, Section 22, Clause 17, of the General Laws, as amended, shall apply to the purchase by the Contractor of supplies and materials to be used in the execution of this Contract.

The rules referred to require a preference in the purchase of supplies and materials, other considerations being equal, in favor first, of supplies and materials manufactured and sold within the Commonwealth, and second, of supplies and materials manufactured and sold within the United States.

All iron and steel products, manufactured products, and construction materials shall comply with all Federal Buy America and Federal Build America Buy America (BABA) requirements, where applicable.

In Contracts requiring structural steel, precast, or prestress concrete, the Contractor shall furnish approved shop drawings, and fabrication procedures to the Department's inspector at the supply source or fabrication site. Materials for permanent construction shall be new, shall conform to the requirements of these specifications, and shall be approved by the Engineer.

Materials for temporary structures or supports adjacent to traveled ways, the failure of which would compromise the safety of the public or the traveled ways, need not be new but the Contractor shall be required to submit certification by a Structural Professional Engineer that the material meets the requirements for the intended use and shall be approved by the Engineer. Any fabrication shall conform to the requirements of these specifications. These requirements shall not apply to gantry systems and supports as well as other mechanized systems.

If testing finds that an approved supplier does not furnish a uniform product, or if the product from such source proves unacceptable at any time, the Contractor shall, at their own expense, take any and all steps necessary to furnish approved materials.

The Contractor shall submit to the Department for approval a notarized Certificate of Compliance (COC) from the Manufacturer or Supplier for each kind of manufactured or fabricated material furnished.

SECTION 6.00 (Continued)

The COC shall certify compliance with the specifications and shall contain the following information:

1. Contract Number, City or Town, Name of Road and Federal Aid Number;
2. Name of the Contractor to which the material is supplied;
3. Kind of material supplied;
4. Quantity of material represented by the certificate;
5. Means of definitively identifying the consignment, such as invoice number, lot number, bill of lading number, label, marking, etc.;
6. Date and method of shipment;
7. Statement indicating that the material has been tested and found in conformity with the pertinent parts of the Contract;
8. Statement indicating that the material meets the requirements of Buy America and BABA, where applicable;
9. Results of all required tests including the chemical analysis in the case of metal: or in lieu of furnishing the results a statement that results of all required tests pertinent to the certificate and not submitted shall be maintained available by the undersigned for a period of not less than three years from date of final acceptance or not less than three years from date of final payment (whichever period is the longest shall apply).
10. Signature of a person having legal authority to bind the supplier.

These COCs shall be delivered to the contract site at the same time that the materials are delivered and before such materials are incorporated into the work. The Contractor shall attach to the COC a document listing the contract bid item number(s), sub item(s), or lump sum breakdown item number(s), as applicable, under which the material will be compensated. Payment for the item in which the materials are incorporated may be withheld until these COCs are received in a form that meets the contract requirements.

If the Contractor has new materials purchased for use on a previous Department Contract which have never been used and which comply with the specifications, these materials may be furnished and used. The Contractor shall submit their own sworn statement certifying that such materials were purchased for use on a previous Contract (naming and identifying such Contract) and shall attach the original COC.

Any cost involved in furnishing the certificate shall be borne by the Contractor.

SECTION 6.00 (Continued)

Subsection 6.03: Delivery and Storage of Materials

Replace this Subsection with the following:

Materials and equipment shall be progressively delivered to or removed from the site so that there will be neither delay in the progress of the work nor an accumulation of materials that are not to be used or removed within a reasonable time. All materials shall be stored in pre-approved locations per the conditions of the property owner.

Delivered materials and materials originating from the site, shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection.

Approved portions of the State Highway Layout (SHLO) may be used for storage of project materials and for the placing of the Contractor's plant and equipment upon obtaining a state highway access permit. All storage sites shall be restored to their original condition by the Contractor. No additional compensation shall be given for the design, construction, preparation, or restoration of the storage site(s) or obtaining the access permit which may include but is not limited to a Traffic Management Plan (TMP), utilities, and lighting.

The application for a permit shall contain a locus map identifying the proposed location, a description of the specific activities and uses of the staging area, a TMP in accordance with Subsection 7.10 depicting minimum setbacks from the roadway and any existing structures for stored materials and equipment and how equipment will safely access and exit the staging area.

Any additional space required must be provided by the Contractor at their expense. Municipal, private, or other state-owned property shall not be used for storage purposes without written permission of the owner or lessee, and copies of such written permission shall be furnished to the Engineer.

HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09)

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

Below are the holiday work restrictions:

New Years Day (Federal Holiday)

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

Martin Luther King's Birthday (Federal Holiday)

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

President's Day (Federal Holiday)

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

Evacuation Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

Patriot's Day (State Holiday)

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

Mother's Day

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

Memorial Day (Federal Holiday)

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

HOLIDAY WORK RESTRICTIONS (Continued)

Bunker Hill Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

Juneteenth

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

Independence Day (Federal Holiday)

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

Labor Day (Federal Holiday)

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

Columbus Day (Federal Holiday)

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

Veterans' Day (Federal Holiday)

No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)

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

Christmas Day (Federal Holiday)

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

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 8.03 PROSECUTION OF WORK

Add/amend the following at the end of the Section:

Contractual Milestones

This Contract contains the following Contractual Milestones that are to be included in the Contractor's Baseline Contract Progress Schedule submission. The contractor shall identify the completion of the work pertaining to each Contractual Milestone through the inclusion of a Finish Milestone in the accepted baseline Contract Progress Schedule.

- **MS#01 – Contractor Field Completion:** The Contractor shall achieve Contractor Field Completion within 1257 calendar days from Notice to Proceed.

Contractor Field Completion shall be defined as the date that completion of all physical contract Work has been performed, including the completion of the punch-list work and the Contractor has fully de-mobilized from the field operations.

- **MS#02 –Substantial Completion:** The Contractor shall achieve Substantial Completion within 1,223 calendar days from Notice to Proceed.

Substantial Completion shall be described as the date that a walkthrough of the entire contract Work has been performed by the Resident Engineer, and the Work required by the Contract, including paperwork, has been completed, except for work having a contract price of less than one percent of the adjusted contract price, including overruns, under runs and all contract amendments. All Material submittals must have been received by the District Materials Lab.

- **MS#03 – Full Beneficial Use:** The Contractor shall achieve Full Beneficial Use within 866 calendar days from Notice to Proceed.

Full Beneficial Use shall be described as the date that the majority of the contract Work, including Phase 2 utility relocation, has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility.

SUBSECTION 8.06 LIMITATIONS OF OPERATIONS

Add/amend the following at the end of the Section:

Access Restraints

This contract will contain Access Restraint(s) to provide an anticipated start date of certain portions of the Work that are restrained by a Utility Party or other 3rd Parties. An Access Restraint is a restriction of physical work, of a specific area or operation in the Contract, to allow all bidders to evaluate anticipated work restrictions, equally, during the pre-bid planning stages. The Contract Time (duration) has considered these portions of the utility work and has been developed with the initial information that has been provided by the Utility Party, and accepted by MassDOT. The Contractor shall be required to communicate and coordinate with all affected Utilities, and may be required to perform support aspects of the utility relocation (as noted in the Contract Documents) well in advance of the start of the applicable utility relocation. The Contractor must clearly identify all aspects of this work in the preparation of the Construction Schedule and throughout the contract duration.

This contract contains the following Access Restraints that are to be included in the Contractor's Baseline Schedule submission:

- **AR#01 – Access Restraint #01:** The Contractor shall allow all Utility Companies 51 working days to complete their initial relocations and the Contractor cannot work on site during the utility relocations in accordance with the Project Utilities Coordination form. The Contractor will coordinate their work with the appropriate Utility Companies.
- **AR#02 – Access Restraint #02:** The Contractor shall not schedule work requiring closure of the roadway for demolition and construction of the new bridge until September 30, 2024.
- **AR#03 – Access Restraint #03:** The Contractor shall allow all Utility Companies 16 working days to complete their final relocations and the Contractor cannot work on site during the utility relocations in accordance with the Project Utilities Coordination form. The Contractor will coordinate their work with the appropriate Utility Companies.

Other

The Contractor is reminded that, in bidding this work, the Contractor is obligated to meet the Contract Milestones (Time) and is obligated to plan the successful completion of Work, prior to submitting the bid.

In submitting a bid price for this contract, the Contractor acknowledges that a detailed plan has been developed to meet the Contract Time for all aspects of the Contract; including shift work; extended work hour requirements/restrictions; all of the limitations of operations; utility coordination, as well as the planning of all subcontractor and supplier operations.

The contract time has been developed utilizing a 5 day, 8 hour work week.

A typical winter shutdown period between December 1st and March 15th of each calendar year has been assumed.

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.

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

BUILD AMERICA BUY AMERICA PREFERENCE (Continued)

(3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. “Construction materials” includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:

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

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

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

EMERALD ASH BORER ADVISORY

To the extent possible, all trees and brush shall be disposed on site, typically chipped and spread in place. When trees or brush must be removed, such as in urban, or otherwise populated areas, Contractor shall identify proposed location for disposal, and provide written notification to the Engineer for approval. Disposal shall be in city or town of project, or at minimum, within county, of construction operations.

EQUIVALENT SINGLE AXLE LOADS (ESALS)

The estimated traffic level to be used for SUPERPAVE HMA mixture designs for this contract, expressed in Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period, is 0.05 Million 18-kip (80-kn) ESALs.

ENVIRONMENTAL PERMITTING

The proposed work occurs in jurisdictional wetland resources subject to section 401 or section 404 of the Clean Water Act; therefore, a Water Quality Certification from the Massachusetts Department of Environmental Protection and/or authorization from the US Army Corps of Engineers has been obtained. The Contractor is advised that all terms and conditions within said permits shall be strictly adhered to. The proposed work qualifies for the bridge exemption authorized in the Transportation Bond Bill and is therefore not subject to the Massachusetts Wetlands Protection Act, the Massachusetts Public Waterfront Act (Chapter 91), or the Massachusetts Environmental Policy Act.

If field conditions and/or Contractor-proposed erection, demolition, staging, or other procedures require work to occur in or otherwise impact water or wetland resource areas, the Contractor is advised that no associated work can occur until all required environmental permits have been amended or obtained allowing such work. The Contractor must notify the District 1 Highway Director and Resident Engineer in writing at least 60 days prior to desire commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 1 Environmental Engineer. The Contractor shall 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.

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM CONDITIONS

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) has reviewed MassDOT Project 608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK at the project's 75% design milestone and has determined that the project as proposed will occur within the actual habitat of Massachusetts state-listed species. Based on the information provided to NHESP, the project must be conditioned to avoid a prohibited Take of state listed species. The conditions are as follows:

1. **Fisheries Protection:** To avoid impacts to state-listed fishes, no in water work shall occur during the period of **April 1 to July 31.** This includes the installation of cofferdams.

The Contractor shall refer to the appropriate Special Provisions to ensure these conditions are implemented. If the limit-of-work or project scope changes, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by NHESP. The Contractor shall contact the MassDOT Environmental Services Unit (David Paulson, Wildlife and Endangered Species Supervisor, David.j.paulson@dot.state.ma.us, 857-262-3378) no later than 60 days prior to the desired start of in water work to ensure all NHESP permit conditions are implemented.

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 July 11-14, 2022, BSC Group, on behalf of MassDOT Highway Division Environmental Services, conducted a northern long-eared bat summer presence/absence survey using acoustic detection methods, in accordance with the 2022 survey guidelines. The survey did not detect northern long-eared bat, and as stated within the survey guidelines, the survey is valid for five years. Due to the 5-year validity of the negative presence/absence survey, it is recommended that the contractor conduct all activities that could result in stressors to the bats such as tree removal/trimming, bridge and/or structure removal/maintenance, lighting, or use of percussive, by July 11, 2027. If additional stressor producing work is proposed by the Contractor past this date, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

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

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

NOTICE TO OWNERS OF UTILITIES

The bridge and highway plans indicate the location of the existing known utilities in the vicinity of the work. As the accuracy and completeness of the plans are not guaranteed in any manner, it is the Contractor's responsibility to make his 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 his/her intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations and the Contractor shall at that time file a copy of such notice with the Engineer.

A list of public and private utilities can be found on the MassDOT website at: <https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality>
Select District 1 on the webpage,
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. Town officials are shown at website <https://www.mass.gov/lists/massachusetts-cities-and-towns> and select the required City/Town website.

State Police are shown at website <https://www.mass.gov/orgs/massachusetts-state-police/locations>. Select the area of jurisdiction to find the local station.

The Contractor shall be responsible for informing the following officials in each area that he is assigned to work in:

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

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

ELECTRIC:

Outage/ Emergency: 1-800-465-1212

New Service: 1-800-375-7405

Customer Support: 1-800-322-3223

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

NOTICE TO OWNERS OF UTILITIES (Continued)

TOWN OF CHESHIRE TELEPHONE NUMBERS

HIGHWAY DEPARTMENT:

Corey Swistak, Superintendent: 413-743-3376

Brent Lancia, Superintendent: 413-743-3376

Emergency: 413-212-9471

e-mail: highway@cheshire-ma.gov

WATER DEPARTMENT:

Whitney Flynn: 413-743-1690 Ext. 101

Pump House: 413-743-3977

POLICE DEPARTMENT:

Non-Emergency: 413-743-1501

Michael Alibozek, Chief of Police

e-mail: cpd@cheshire-ma.gov

FIRE DEPARTMENT:

Non-Emergency: 413-743-3387

Thomas Francesconi, Fire Chief

e-mail: tfrancesconi@cheshire-ma.gov

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”.

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.

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

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.

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

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

Work under this item consists of furnishing, installing, removing and resetting, maintaining fence in a vertical and effective position at all times, and final removal of temporary fence.

The purpose of the fence is to prevent damage to tree roots, tree trunks, soil, and all other vegetation within a delineated Tree and Plant Protection Zone (TPPZ) as shown on the plans, as directed by the Engineer, and as described herein.

Protection shall be for the duration of the construction activities unless otherwise directed.

MATERIALS

Temporary Fence shall be such that it provides a minimum 48-inch-tall barrier that remains vertical and effective (not sagging) for the duration of period required. Fence shall be plastic orange safety fence (recommended where high visibility is necessary), wooden snow fencing, or other approved material.

Per the Engineer, additional posts, deeper post depths, and/or additional attachments will be used if the fabric or fence sags, leans or otherwise shows signs of failing to create a sufficient barrier to access.

REFERENCES

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

ESTABLISHMENT OF TPPZ

Fencing shall be used for construction areas, staging areas, and stockpile areas as shown on the plans and as directed by the Engineer to establish the Tree and Plant Protection Zone (TPPZ).

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

ITEM 102.521 (Continued)

The Contractor shall not engage in any construction activity within the TPPZ without the approval of the Engineer, including: operating, moving or storing equipment; storing supplies or materials; locating temporary facilities including trailers or portable toilets; and shall not permit employees to traverse the area to access adjacent areas of the project or use the area for lunch or any other work breaks.

METHOD OF WORK

Fence shall be installed prior to any construction work or staging activities and shall be installed and maintained in a vertical and effective position at all times.

Fence shall be repositioned where and as necessary for optimum effectiveness. Repositioning shall be incidental to this item. Fence shall not be moved without prior approval by the Engineer.

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

After construction activities are completed, or when directed by the Engineer, fence, stakes, and other materials shall be removed and disposed off-site by the Contractor.

Required Work within the TPPZ

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

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

Tree and Plant Damages or Loss

If the TPPZ is intruded upon, at the discretion of the Engineer, the Contractor will be required to provide a more durable barrier (e.g., Jersey Barriers) to secure the area. Cost of furnishing and installing additional or more durable barrier shall be borne by the Contractor.

If the Contractor intrudes into a TPPZ without approval, soil will be considered compacted and tree root damage will be assumed. Action will be taken as specified below.

ITEM 102.521 (Continued)

In the event that trees designated for protection under this item are damaged, including root damage from unapproved trespassing onto the root zone, the Contractor shall, at his own expense obtain an Arborist. The Arborist shall be approved by MassDOT. In the event of spills, compaction or damage, the Contractor shall take corrective action immediately using methods approved by the Engineer in coordination with the Arborist.

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

If the Engineer determines that damages are irreparable, the Contractor shall pay for the damages in the amount of \$500.00 per diameter inch at breast height (DBH) per tree.

Additionally, if the Engineer determines that the damages are such that the tree is sufficiently compromised as to pose a future safety hazard, the tree shall be removed. Tree removal will include cleanup of all wood parts, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil.

Shrubs will be replaced with a plant of similar species and equal size or the largest size plants reasonably available. The Engineer will approve the size and quality of the replacement plant. Replacement will include a minimum of one year of watering and care.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.521 will be measured and paid for payment by the foot of Tree and Plant Protection Fence, complete in place. This includes all labor, materials, equipment, maintenance, final removal and disposal of the protective materials, damages repair, and all incidental cost required to complete the work.

Payment of 40 percent of value will be made upon installation of Fence. The remaining 60 percent will be made when protection materials have been removed and disposed off-site.

No separate payment will be made for costs of remedial actions, including addition of more durable barriers, or arborist services, but all costs in connection therewith shall be included in the Contract unit price bid.

In the event of irreparable damage due to lack of proper protective measures being take there will be no compensation in addition to the \$500.00 per diameter inch penalty.

ITEM 114.1**DEMOLITION OF SUPERSTRUCTURE
OF BRIDGE NO. C-10-002 (03G)****LUMP SUM**

The work to be done under this Item shall conform to the relevant provisions of Subsections 112 and 120 of the Standard Specifications, amended and or supplemented as follows:

Work under this item shall include all materials, labor and equipment required to demolish and remove the existing superstructure as shown on the plans and as specified herein. The demolition includes, but is not limited to, steel beams and framing members, deck, bridge rail, curbs, and bituminous pavement to the grades and lines as shown on the plans.

All dimensions and details shown for the existing structure are not guaranteed. The contractor shall perform his own investigation of the structure to be demolished to verify all conditions and materials in the field and shall base his bid on his own findings without any additional compensation for variance from the Plans or these Special Provisions regarding actual conditions for items to be removed. Plans of the existing structure may be obtained from MassDOT Plans and Records Department.

Removal of painted steel components shall conform to the provisions under the General Requirements for Demolition and Work Involving Painted Steel and Subsection 961 of the Standard Specifications.

The Contractor is responsible for protecting all existing utility lines during these operations. If any utilities are damaged due to the Contractor's operations, he shall make repairs at his own expense.

Temporary protective shielding shall be constructed to help prevent debris from falling into the river. All precautions and costs to install shielding necessary to assure that this requirement is met shall be considered incidental to this item. The shielding shall extend the full length and width of the bridge and a sufficient distance beyond the deck overhang and vertically at the fascia's to an elevation above the railing height. The shielding shall have all spaces sealed along the perimeter and at the seams to prevent any dust or debris from escaping and falling below into the river. Shielding must be in place before any demolition work is started.

All materials removed in this demolition operation shall become the property of the Contractor and shall be properly disposed of offsite.

SUBMITTALS

Prior to commencing work, the Contractor shall submit a demolition procedure, schedule, and plan to the Engineer for review and approval describing the proposed sequence, method of demolition, protection of the river, and equipment for demolition and disposal of all materials.

ITEM 114.1 (Continued)

The demolition procedure, all calculations and drawings shall be stamped, dated, and signed by a Professional Engineer registered in the Commonwealth of Massachusetts certifying that all structural members are suitably braced and supported during all phases of demolition. River protection shall be detailed as part of the demolition plan. The Contractor shall not proceed with demolition work until the Engineer has given written acceptance of the demolition plan.

The Contractor shall also submit the crane capacity, location, radii of movement, etc. to the Engineer for approval for all stages of demolition. The submittal will specify that the requirements for equipment and all procedures utilized. The submittal shall include drawings and calculations of all loads and selection of crane and lifting hardware, as well as any effects to the existing abutments and structure, and shall be stamped, dated, and signed by a Registered Professional Engineering in the Commonwealth of Massachusetts. Submittal requirements, factor of safety for picks, wind loads, etc. shall be in accordance with the requirements of Subsection 960.61 – Erection in the Standard Specifications.

CONSTRUCTION METHODS

No demolition work shall commence until the Contractor has received written approval by the Engineer.

The Contractor shall install protective shielding below the bridge to protect the stream from debris. Any materials that are dropped into the stream shall be removed immediately by the Contractor by whatever means are necessary, without additional compensation.

The noise and dust created by demolition operations must be reduced to the maximum extent possible. Blasting will not be allowed without written permission from the District 1 Highway Director.

The contractor shall make adequate provisions for the protection of traffic, private property, and pedestrians from damage and injury during all phases of the demolition process.

BASIS OF PAYMENT

Item 114.1 will be paid for at the Contract unit price LUMP SUM, which price shall include all labor, materials, equipment, professional engineering costs, submittals, and all incidental costs required to complete the work.

Temporary protective shielding shall be measured and paid for under Item 994.1.

ITEM 127.1

REINFORCED CONCRETE EXCAVATION

CUBIC YARD

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

DESCRIPTION

The work shall include furnishing all material, labor, equipment, and tools necessary to perform the demolition, removal, and satisfactory disposal of the existing concrete substructure foundations and wingwalls, including but not limited to footings, stem walls, wingwalls, and backwalls, as shown on the Contract Plans or as directed by the Engineer.

Also included under this item is the concrete splash pad at the southwest corner of the bridge, immediately downstream of the bridge, in front of the wingwall.

CONSTRUCTION METHODS

The noise and dust created by demolition operations must be reduced to the maximum extent possible. Blasting will not be allowed without written permission from MassDOT.

METHOD OF MEASUREMENT

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

BASIS OF PAYMENT

Item 127.1 will be paid for at the Contract unit price per Cubic Yard, which price shall include all labor, materials, tools, equipment, staging, access, removals, storage, the cost of all field measurements and survey required, and all incidental costs required to complete the work.

ITEM 143.1

**CHANNEL EXCAVATION
FOR STREAMBED RESTORATION**

CUBIC YARD

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

Excavated material that is suitable for the streambed restoration shall be saved and stockpiled for reuse.

The contractor shall excavate the channel material and stockpile the suitable streambed restoration material in accordance with the requirements of Item 983.522 Streambed Restoration.

METHOD OF MEASUREMENT

Item 143.1 will be measured for payment by the Cubic Yard.

BASIS OF PAYMENT

Item 143.1 will be paid for at the Contract unit price per Cubic Yard, which price shall include all labor, materials, equipment, handling, stacking or rehandling or excavated material, and all incidental costs required to complete the work.

Streambed restoration will be paid for under Item 983.522 Streambed Restoration.

ITEM 156.2

CRUSHED STONE FOR SLOPE TREATMENT

TON

The work under this item shall conform to the relevant provisions of Subsections 150 and 983 of the Standard Specifications and the following:

The Contractor shall provide and place crushed stone for slope treatments. The material for this item shall meet the requirements of Subsection 150, crushed stone.

Crushed stone for slope treatment shall be placed to the depth and at the locations shown on the plans and as required by the Engineer.

METHOD OF MEASUREMENT

Item 156.2 will be measured per TON of crushed stone furnished and placed.

BASIS OF PAYMENT

Item 156.2 will be paid for at the contract unit price per TON, which price shall include all labor, materials, equipment, and incidentals necessary to complete the work.

ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM

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

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

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

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

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

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

ITEM 180.01 (Continued)

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

ITEM 180.02

PERSONAL PROTECTION LEVEL C UPGRADE

HOOR

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

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

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

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

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

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

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

ITEM 180.03 (Continued)

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

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

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

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

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

ITEM 180.03 (Continued)**Laboratory Testing in Support of LSP Services**

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

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

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

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

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

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

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

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

CLASSES OF CONTAMINATED SOILS

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

ITEMS 181.11 through 181.14 (Continued)

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3), in a restricted manner, such that they are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g. wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to MassDOT the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the MassDOT construction project limits is equal to or less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the item of work to which it pertains.

ITEMS 181.11 through 181.14 (Continued)

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

HAZARDOUS WASTE consists of materials which must be disposed of at a facility permitted and operated in full compliance with Federal Regulation 40 CFR 260-265, Massachusetts Regulation 310 CMR 30.000, Toxic Substances Control Act (TSCA) regulations, or the equivalent regulations of other states, and all other applicable local, state, and federal regulations. All excavated materials classified as hazardous waste shall be disposed of at an out-of-state permitted facility. This facility shall be a RCRA hazardous waste or TSCA facility, or RCRA hazardous waste incinerator. This type of facility shall be approved/permitted by the State in which it operates to accept hazardous waste in accordance with all applicable local, state and federal regulations and shall be permitted to accept all contamination which may be present in the soil excavate. The Contractor shall ensure that, when needed, the facility can accept TSCA waste materials i.e. polychlorinated biphenyls (PCBs). Hazardous waste must be removed from the site for disposal or treatment via an LSP approved Manifest.

MONITORING/SAMPLING/TESTING REQUIREMENTS

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.

ITEMS 181.11 through 181.14 (Continued)

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

WASTE TRACKING:

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the Contractor shall cooperate with MassDOT to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain.

DECONTAMINATION OF EQUIPMENT

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation item.

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

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

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including penalties and/or for fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

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

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

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

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

ITEMS 181.11 through 181.14 (Continued)

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

II. Stockpiling, Transport, and Disposal.

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

Excavation and Stockpiling Protocol:

Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

Disposal and Recycling Facilities:

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.
2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

Transportation:

The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

III. Material Tracking and Analytical Documentation for Reuse/Disposal.

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

ITEMS 181.11 through 181.14 (Continued)

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

Demolition Debris:

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

Soil/Sediment:

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

ITEMS 181.11 through 181.14 (Continued)**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

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

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

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

ITEM 482.31**SAWING AND SEALING JOINTS IN ASPHALT
PAVEMENT AT BRIDGES****FOOT**

The work to be done under this Item consists of making a sealed kerf across the full width of the finished asphalt pavement at bridge abutments where called for on the Plans. The shape, width, and depth of the kerf shall be as shown on the Plans.

Prior to the start of the asphalt pavement operation, the Contractor shall place a mark on each curb or barrier on either side of the paved roadway. These marks shall be aligned with the actual end of the bridge deck and shall be placed so that they will not be covered or otherwise obscured by the asphalt pavement.

After the completion of the paving operation, the Contractor shall snap a straight chalk line on the pavement between these two marks. The Contractor shall then saw cut the pavement along this line to the depth, width and shape as shown on the Plans. The equipment shall be approved by the Engineer prior to commencing work.

After completing the saw cutting, the Contractor shall clean the saw groove of any dust and debris with an oil free air blast. If the groove was wet sawn, the groove shall be cleaned with a water blast to remove any remaining slurry and debris, vacuumed with a Wet-or-Dry vacuum to remove any standing water, and then dried with an air blast from a Hot-Air-Lance.

Once the groove is clean and dry, the Contractor shall fill it completely with a hot-applied bituminous crack sealer meeting the requirements of M3.05.4 in accordance with the manufacturer's application instructions and restrictions regarding ambient and material temperatures. The crack sealer shall be thoroughly cured prior to opening the road to traffic. To reduce tackiness, only boiler slag aggregate (black beauty) shall be scattered over the sealer when required by the Engineer. Conventional sand shall not be used for this purpose.

METHOD OF MEASUREMENT

Item 482.31 will be measured for payment by the Foot, of the actual number of feet of kerf sawed and sealed in the asphalt pavement surface, complete in place.

BASIS OF PAYMENT

Item 482.31 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

ITEM 657.**TEMPORARY FENCE****FOOT**

The work to be done under this Item shall conform to the relevant provisions of Subsection 644 of the Standard Specifications and the following:

The work shall include furnishing, installing, adjusting and resetting, and subsequently removing a temporary chain link fence across the access to the work area as necessary for safety and security, and as directed by the Engineer.

All posts, including end, corner and intermediate brace posts and all access/egress gates and gate posts shall be included in the linear foot cost. The fencing height shall be 72 inches minimum. Material need not be new but shall not be deteriorated nor in any way jeopardize the security purposes intended. All fencing materials shall meet the approval of the Engineer.

Fence fabric shall be placed on the face of the post away from the work area. The top edge of the fabric shall be finished with a "Knuckled" selvage.

A 48" x 30" sign, conforming to the relevant provisions of Section 852, shall be mounted on each gate. The sign legend shall be 8"-high, bold-red font, printed on white background, and shall read as follows:

DANGER

AREA CLOSED TO VEHICLE, BICYCLE, AND PEDESTRIAN TRAFFIC

It may be necessary to remove and reset sections of temporary fence at times during construction to accommodate construction operations. This shall be considered incidental to the work.

Fence gates shall be secured closed with a padlock and chain at all times while the Contractor is not on site.

The Contractor is responsible for maintenance of the temporary fence; be responsible and cognizant that it remains secure, and that the area is sealed off to the general public at all times.

METHOD OF MEASUREMENT

Item 657. will be measured for payment by the Foot of temporary fence, including gates, installed.

BASIS OF PAYMENT

Item 657. will be paid for at the Contract unit prices per Foot, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

No separate payment will be made for all posts including end, corner, and intermediate brace posts, all gates and gate posts, removing and resetting of temporary fence for the convenience of the Contractor, the replacement and/or restoration of fence damaged due to construction accidents, vandalism and/or any other manner, and final removal, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 698.1 GEOTEXTILE FABRIC FOR STABILIZATION SQUARE YARD

The work under this Item shall conform to the requirements of Subsection M9.50.0, of the Standard Specifications of for the intended application, and the following:

The work under this Item includes the furnishing and installation of geotextile fabric for proposed slopes greater than two-foot horizontal per one-foot vertical (2H:1V), under the modified rockfill slope in accordance with the details shown on the Plans at the locations shown on the Plans, and as required by the Engineer.

The geotextile fabric shall be handled and installed per the manufacturer's recommendations and shall be from the MassDOT Qualified Construction Materials List and approved for the intended application. The geotextile fabric shall be installed below the layer of crushed stone as shown on the plans.

Adjacent geotextile sheets shall be jointed by either sewing or overlapping. Overlaps of adjacent rolls shall be a minimum of 1 foot in all instances.

Should the geotextile be damaged during installation, a geotextile patch shall be placed over the damaged area extending 3 feet beyond the limits of damage.

If during construction, including any time prior to final acceptance of the Project, the slope exhibits signs of failure, the slope shall be repaired and the geotextile fabric reinstalled or replaced by the Contractor, as required by the Engineer, at no additional compensation.

METHOD OF MEASUREMENT

Item 698.1 will be measured for payment by the square yard of geotextile fabric for stabilization furnished and installed, complete in place.

Measurement shall not include overlapping fabric.

BASIS OF PAYMENT

Item 698.1 will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

Any required excavation, embankment construction and crushed stone will be paid for under the applicable Contract bid Items.

ITEM 698.4 **GEOTEXTILE FABRIC FOR PERMANENT** **SQUARE YARD**
EROSION CONTROL

The work under this item shall consist of furnishing and placement of geotextile fabric for permanent erosion control at the locations shown on the Plans or as directed by the Engineer.

This work shall include the installation of geotextile fabric between the interface of the natural soil layer and the proposed crushed stone for bridge foundations beneath the abutment and wingwall footings, between the existing channel bottom and proposed crushed stone for scour protection as indicated on the Plans.

The geotextile fabric shall be handled and installed per the manufacture's recommendations.

Materials

The geotextile fabric shall be selected from the MassDOT Qualified Construction Materials List. The geotextile fabric shall conform to the requirements of Subsection M9.50.0 of the Standard Specifications, Class 3, for fabric used for permanent erosion control. Construction and installation shall be in accordance with AASHTO M 288 including Appendix A and the following.

Construction Methods

Atmospheric exposure of the geotextile fabric to the elements following lay down shall be limited to a maximum of 14 days.

For seams that are sewn in the field, the Contractor shall provide at least a six-foot length of sample sewn seam for the approval of the Engineer before the geotextile fabric is installed. The seams sewn for sampling shall be sewn using the same type of equipment and procedures as will be used for the production seams. If seams are sewn in both the machine and cross machine direction, samples of seams for both directions shall be provided. The seam assembly description shall be submitted by the Contractor along with the seam samples. This description shall include the seam type, stitch type, sewing thread, and stitch density. If the Contractor elects to sew seams instead of overlap, colored thread must be used.

Geotextile shall be placed in direct contact with soils without wrinkles or folds and shall be anchored on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch or tear it.

Adjacent geotextile sheets shall be joined by either sewing or overlapping. At roll ends, overlapped seams shall overlap a minimum of 12 inches, except when placed under water, where they shall overlap a minimum of 3 feet. Adjacent rolls shall overlap a minimum of 12 inches.

Care shall be taken during installation to prevent damage to the geotextile as a result of the installation process. Should the geotextile be damaged, a geotextile patch shall be placed over the damaged area extending a minimum of 3 feet beyond the limits of the damage.

ITEM 698.4 (Continued)

Care shall be taken during the placement of crushed stone and riprap to avoid stretching and subsequent tearing of the geotextile. Stones shall not be dropped from a height exceeding 3 feet.

Field monitoring shall be performed to verify that the crushed stone and riprap placement does not damage the geotextile.

Any section of fabric that is damaged shall be repaired in accordance with the manufacturer's requirements and AASHTO M 288 and to the satisfaction of the Engineer or it shall be replaced at the Contractor's expense.

If during construction, including any time prior to final acceptance of the project by MassDOT, the slope shall exhibit signs of failure, the slope shall be repaired and the geotextile fabric reinstalled or replaced by the Contractor, as required by the Engineer, at Contractor's expense.

METHOD OF MEASUREMENT

Item 698.4 will be measured for payment by the square yard complete in place. Overlapping for seams and joints shall be measured as one layer of fabric. Any embedment or wrapping at the toe or top of slope, applied per manufacturer's installation recommendations or the Engineer direction shall be measured for payment.

BASIS OF PAYMENT

Item 698.4 will be paid for at the Contract unit price per square yard which price shall include all labor, materials, equipment.

ITEM 711.01

IRON PIN REMOVED AND RESET

EACH

Work under this item shall conform to the relevant provisions of Subsection 710 of the Standard Specifications and the following:

The work shall include the careful removal of existing iron pin(s) as shown on the Contract Drawings and reset to same location and elevation.

The contractor shall take all necessary precautions not to damage or lose any of the pin(s) during the removal process. Damaged pin(s) shall be replaced by the Contractor at no cost to MassDOT or the Town of Cheshire.

Damaged pin(s) shall be legally disposed of by the Contractor.

METHOD OF MEASUREMENT

Item 711.01 will be measured for payment by the Each iron pin removed and reset.

BASIS OF PAYMENT

Item 711.01 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, removal, transportation, storage, installation, and all incidental costs required to complete the work.

ITEM 740. ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work under this Item shall conform to the relevant provisions of Subsection 740 of the Standard Specifications and the following:

Two computer systems and printer system meeting minimum requirements set forth below including installation, maintenance, power, paper, disks, and other supplies shall be provided at the Resident Engineer's Office:

All equipment shall be UL approved and Energy Star compliant.

The Computer System shall meet the following minimum criteria or better:

Processor:	Intel, 3.5 GHz
System Memory (RAM):	12 GB
Hard Drive:	500 GB
Optical Drive:	DVD-RW/DVD+RW/CD-RW/CD+RW
Graphics Card:	8 GB
Network Adapter:	10/100 Mbit/s
USB Ports:	6 USB 3.0 ports
Keyboard:	Generic
Mouse:	Optical mouse with scroll, MS-Mouse compliant
Video/Audio	the computer system shall be capable of allow video calling and recording:
Video camera	shall be High Definition 1080p widescreen capable video calling and recording with built in microphone. The microphone system shall capture natural audio while filtering out background noise.
Audio	shall be stereo multimedia speaker system delivering premium sound.
OS:	Latest Windows Professional with all security updates
Web Browser:	Latest Internet Explorer with all security updates
Applications:	Latest MS Office Professional with all security updates Latest Adobe Acrobat Professional with all security updates Latest Autodesk AutoCAD LT Antivirus software with all current security updates maintained through the life of the contract.
Monitors:	Two 27" LED with Full HD resolution. Max. resolution 1920 x 1080
Flash drives:	2 (two) - 128GB USB 3.0
Internet access:	High Speed (min. 24 mbps) internet access with wireless router.

ITEM 740. (Continued)

The Multifunction Printer System shall meet the following minimum criteria or better:

Color laser printer, fax, scanner, email and copier all in one with the following minimum capabilities:

- Estimated volume 8,000 pages per month
- LCD touch panel display
- 50 page reversing automatic document feeder
- Reduction/enlargement capability
- Ability to copy and print 11" x 17" paper size
- email and network pc connectivity
- Microsoft and Apple compatibility
- ability to overwrite latent images on hard drive
- 600 x 600 dpi capability
- 30 pages per minute print speed (color),
- 4 Paper Trays Standard (RADF) (not including the bypass tray)
- Automatic duplexing
- Finisher with staple functions
- Standard Ethernet. Print Controller
- Scan documents to PDF, PC and USB
- ability to print with authenticated access protection

The Contractor shall supply a maintenance contract for next day service, and all supplies (toner, staples, paper) necessary to meet estimated monthly usage.

The Engineer's Field Office and the equipment included herein including the computer 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 755.35**INLAND WETLAND REPLICATION AREA****LUMP SUM**

The work under this item shall conform to the relevant provisions of Subsections 120, 770, 771 of the Standard Specifications and the following:

Work under this item shall include furnishing material and the construction and maintenance of inland wetland replication areas as shown on the drawings and as required by the Engineer. Inland Wetland Replication Area shall hereafter be referred to as Replication Area. All work shall be in coordination with an approved Wetland Specialist as specified under that item.

Wetland Restoration work shall be as specified and compensated under that item. Construction of tidal wetlands shall be as specified under the appropriate item for tidal wetland mitigation.

The Replication Area shall be constructed prior to wetland impacts unless otherwise approved by the Engineer, specified herein, or specified in permit conditions and approvals. Construction schedule shall be appropriate to planting and seeding season (see below). Changes to this schedule will require written approval from the Engineer.

Scope of Work

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: **12+02.47± to 12+17.83±** Area = **87** sf.

Replication Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers Permit.

The Contractor is responsible for protection and preservation of natural areas adjacent to the Replication Area both within and outside the project limits and for the duration of the Contract; including but not limited to damage to soils or vegetation due to erosion, sedimentation, compaction, trampling, vehicles, storage of materials, or other negligence shall be repaired to the satisfaction of the Engineer and at the Contractor's expense.

The Wetland Specialist overseeing the Wetland Replication construction work shall not be from the same company as that which is performing planting, seeding, or participating in any aspect of the Wetland Replication construction.

SUBMITTALS**Documents****Request for Conditional Acceptance:**

As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

ITEM 755.35 (Continued)

Request for Certificate of Compliance (Partial or Full):

As specified below, shall be submitted to the Engineer for distribution to appropriate regulatory agencies.

Request for Final Acceptance:

As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Monitoring Reports:

Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.75 and 755.76.

Materials

Soil and Amendments

No soil, compost, or other soil amendment imported to the work site shall contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants.

At least sixty (60) days prior to installation and prior to ordering, the Contractor shall submit for approval sources of soil, compost, and amendments. Submittal shall include the supplier and location of the source. Off-site sources shall be identified and available for inspection by the Wetland Specialist prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

Samples of tested and approved wetland soil and soil amendments for soil texture, organic carbon content or other routine soil analysis parameters (e.g., pH, Cation Exchange Capacity, Percent Base Saturation) and Soil Organic Matter Analysis will be required if requested by the Engineer. The grab samples shall be collected by the Contractor or Wetland Specialist from multiple representative locations in the wetland topsoil mix following the “Umass Soil and Plant Tissue Testing Laboratory Sampling and Collection Protocols” (or equivalent certification paperwork provided by the soil supplier). The lab analysis shall be provided to the Engineer along with written certification from the Contractor or Wetland Specialist that the wetland topsoil was collected per the referenced protocol and meets the desired specification. The analysis and written certification of same shall be provided to the Engineer prior to placing the wetland topsoil in the Replication Area.

ITEM 755.35 (Continued)**Seed Mix**

Certificate of Materials from the supplier shall be submitted 30 days prior to seeding and must be approved prior to ordering materials. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

Bill of lading or notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Plant Certification

Plant Certification shall be per the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUND COVER, of the Standard Specifications. The nursery source shall certify the provenance or origin of all plants.

Other Material

Submittals shall be per the respective item.

MATERIALS**Sediment Control Barrier and Erosion Prevention Measures**

Sediment control barriers shall be per Item 767.121.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to jute mesh, seeding, and/or combinations thereof as approved by the Engineer.

Sediment controls and erosion prevention devices and measures shall be compensated under the respective items.

Wetland Soil

Soil appropriate for the Replication Area may be either hydric soil excavated from the impacted wetland, a manufactured mix of compost and on-site borrow, or a combination thereof, as approved by the Engineer.

ITEM 755.35 (Continued)

Hydric soil from the impacted wetland area may be spread on the surface of the constructed Replication Area as an inoculant or can be placed in a bulk fashion in a roughly 1:1 ratio of area and depth. Soil shall be handled such that the original soil structure is preserved and shall not be compacted, screened, or otherwise processed.

Hydric soil from the impacted wetland that is infested with invasive plant species identified on the Massachusetts Invasive Plant Advisory Group (MIPAG) shall not be used in the Replication Area unless approved by the Wetland Specialist and Engineer. To the extent possible, infested soil shall be disposed of within the project limits in an upland area outside of regulated areas and as approved by the Invasive Plant Management Strategy item (if in the contract) or by the Engineer.

A manufactured mix suitable for wetlands shall consist of on-site borrow from the proposed Replication Area (if approved by the Wetland Specialist and Engineer) thoroughly mixed with compost to achieve a target organic carbon content of 10-12% (up to 21% percent organic matter) by dry weight. The organic material used for mixing shall be well or partially decomposed. Clean leaf compost is the preferred soil amendment to achieve these standards though other materials may be used if approved by the Wetland Specialist and Engineer. Note that “clean” refers both to a negligible amount (<1%) of physical contaminants such as plastic and to the lack of chemical contaminants that might pose a hazard to plants or animals. Off-site borrow may be used for mixing if approved in advance by the Engineer.

No soil or soil amendment shall be brought on site without approval of the material source by the Wetland Specialist and the Engineer. Soils used in the replacement area shall be free of rocks greater than 4 inches in diameter.

Plants

Plant material shall conform to the applicable requirements of Section 771, PLANTING TREES, SHRUBS AND GROUNDCOVER, of the latest edition of the Standard Specifications and as amended below.

Plants shall be native species, not cultivars. To the extent possible, plants shall originate from the applicable EPA Level III Ecoregion.

Plant species and sizes to be included in the Replication Area shall be as specified below:

Install twenty-five (25) of the following spaced at 2 feet on center within the replication area:

790.717 DOGWOOD - SILKY 18-24 INCH / #1

Requests for substitutions shall be submitted in writing to the Engineer for review by the Wetland Specialist, MassDOT Landscape Architect, and, if required, the relevant regulatory agency at least thirty (30) days prior to planting. All proposed substitutes shall be in conformance with the requirements herein and suitable for the site conditions.

ITEM 755.35 (Continued)

Transplanting and plant material collected from the wild is prohibited unless approved in writing by the Engineer. Plants shall be selected from certified nurseries that have been inspected by state and/or federal agencies.

Seed Mix

Seeding shall conform to MassDOT Wetland Seed Mixes table as specified below:

Mix Description: 765.553 Wetland Seed – Riparian Mix

	<u>Botanical Name</u>	<u>Common Name</u>	<u>% PLS By Weight</u>
Grass	Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	14.00%
	Schizachyrium scoparium	Little Blue Stem	14.00%
	Elymus riparius	Riverbank Wild Rye	10.00%
	Elymus virginicus	Virginia Wild Rye	10.00%
	Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	9.00%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	8.00%
	Carex vulpinoidea	Fox Sedge	7.00%
	Panicum virgatum	Switchgrass	3.00%
	Juncus effusus	Soft Rush	2.00%
	Agrostis perennans	Upland Bentgrass	2.00%
	Scirpus atrovirens	Green Bulrush	1.00%
			<u>80.00%</u>
Herb/Forb	Chamaecrista fasciculata	Partridge Pea	3.00%
	Verbena hastata	Blue Vervain	3.00%
	Asclepias incarnata	Swamp Milkweed	3.00%
	Heliopsis helianthoides	Ox-Eye Sunflower	2.00%
	Eupatorium perfoliatum	Boneset	2.00%
	Aster umbellatus	Flat Topped White Aster	1.00%
	Aster prenanthoides	Zig Zag Aster	1.00%
	Aster puniceus	Aster – Swamp	1.00%
	Aster novae-angliae	New England Aster	1.00%
	Eupatorium maculatum	Joe-pye Weed	1.00%
	Monarda fistulosa	Wild Bergamot	1.00%
	Vernonia noveboracensis	New York Ironweed	1.00%
			<u>20.00%</u>
			100.00%

ITEM 755.35 (Continued)

Seeding Rate:

Species ecotype shall be as native to New England region as possible. Apply this mix at 20 lbs PLS/acre.

FOR USE WITH SLOPES: Add 30 lbs/acre of a cover crop if erosions is a concern. For a cover crop use either grain oats (1 Jan to 31 July) or grain rye (1 Aug to 31 Dec). Cover crop shall be incidental to seeding Mix.

Fertilizers shall not be used.

Water

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

Mulch/Compost Blanket for Seeding

Hydromulch shall be per the manufacturer's recommendations and shall be wood fiber or straw mulch only. Mulch shall be incidental to seeding.

Compost Blanket, if permitted by engineer and depending on water levels, may be used in lieu of mulch for seeding. Compost Blanket shall meet the material and submittal requirements of that Item and shall be applied as specified below. Compost Blanket shall be compensated under that item.

CONSTRUCTION METHODS & SEQUENCE

Site Protection Measurers

Minimizing Damage

The Contractor shall plan and execute operations in a manner minimizing the amount of excavated and exposed fill or other foreign materials that could be washed or otherwise carried into Replication Area and nearby resource areas.

Construction of and access to the Replication Area shall minimize damage to existing vegetation and soils as specified herein. Damage to soils or vegetation shall be repaired to the satisfaction of the Engineer and at the Contractor's expense. If required for soil remediation, tilling and the addition of compost shall be at the Contractor's expense.

ITEM 755.35 (Continued)

Wetland topsoil shall be deposited and graded in the Replication Area in a manner that minimizes travel and subsequent compaction of the subgrade (including any specified pit and mound topography) to the extent practicable, including use of track mounted excavators as appropriate. Should soils be compacted, they shall be loosened by a method such as disking, spring-tooth harrowing and/or rototilling. The Contractor shall use boards, timber or composite mats, or other approved materials as necessary, to protect existing and/or new wetlands from compaction due to heavy foot traffic or if equipment is required to travel over wetland soil. All labor and materials required for protection and preservation of site shall be incidental to this item.

Stockpiling of Soil

Stockpiling of soil, including hydric soil for replication, shall be at least 100 feet from the edge of the bordering and isolated vegetated wetlands and inland banks, unless approved otherwise by the Engineer. Stockpiled soils shall be securely stabilized and contained. Any areas of exposed soil or stockpiles within and adjacent to the Replication Area that will remain inactive for more than 7 calendar days shall be sown with a mix of rapid germinating annual grasses (e.g., annual rye) covered with a layer of straw mulch applied at a rate of 90 pounds per 1,000 square feet. As necessary, the mulch shall be anchored with a tacking coat (non-tar) applied by a hydro seeder or other method recommended by the Wetland Specialist in consultation with the Engineer. In the event that there is excess borrow, it shall be disposed of under Excavation, Item 120.

Sediment Barriers*Placement:*

Sediment barriers shall be installed along the downslope perimeter of the Replication Area beginning and ending in the surrounding upland so that no excavated material or disturbed soil can enter adjacent wetlands or waters. Where construction work is immediately upgradient of the wetland, barriers shall be located so as to protect the Replication Area until slopes are stabilized. Sediment barriers shall be in place and approved by the Engineer prior to excavation work. No work shall take place outside the barriers.

Maintenance:

The Contractor shall ensure that all sediment barriers function as intended and at all times per the specifications of those respective items.

Existing Trees to Remain

Tree protection shall be per the relevant specifications and as shown on the plans or as required by the Engineer. To protect root systems of existing trees to remain, the limits of the Replication Area may be adjusted, but, the total area of replication required by the permits shall not be reduced. Access route may be adjusted as required.

ITEM 755.35 (Continued)

Trees to be retained as snags (upright dead or dying trees left for wildlife habitat) within or adjacent to the Replication Area shall be as shown on the plans or as directed by the Wetland Specialist or Landscape Architect during the initial site walk. Trees to remain as snags shall be clearly marked prior to clearing. Trees that pose a potential fall hazard (i.e., are near a roadway) should have limbs and trunk cut such that the tree does not pose a fall hazard.

Coarse woody debris in the form of cut trees, stumps, logs, and brush shall be incorporated as shown on the plans or as directed by the Wetland Specialist or Landscape Architect. On site material shall be selected and marked by the Wetland Specialist, retained on the project site, and placed as specified below under Placement of Coarse Woody Debris.

All trees, stumps, or brush not specified to remain shall be removed and shall not be stockpiled in the wetland resource areas while awaiting disposal.

Work shall be coordinated with Clearing or Tree Removal Item and compensated under that Item.

Pre-Wetland Construction Site Walk***Delineating the Replication Area and Access Route:***

The Contractor shall stake out the Replication Area boundaries and the intended access route and set grade stakes for approval by the Wetland Specialist and Engineer. Following staking and demarcation of areas, the Engineer and Wetland Specialist shall approve or modify as necessary the limits of work, the access route, final location and configuration of replication, grade stake elevations, proposed location of sediment barriers, and review proposed construction methods.

As part of the delineation and approval process, the Wetland Specialist shall mark trees to be converted to snags, select course woody debris to be retained for re-use, and select rocks or other elements to be used for habitat features.

Invasive Plants:

As part of the initial site walk, the wetland to be impacted and the proposed replication site shall be inspected for the presence of invasive plants. If invasive plants are found they shall be addressed as described herein under Invasive Plants.

Soil Work

Final grades in the Replication Area shall meet the target elevations as shown on the Plans or as adjusted by the Wetland Specialist to achieve the desired hydrology and micro-habitat. If adjustments are required, a Request for Information (RFI) shall be submitted to the Engineer for approval. Adjustments shall be documented and included in the As-Built plans (if required) and/or other applicable required documents.

ITEM 755.35 (Continued)**Excavation & Grading**

When required by permits, the Wetland Specialist shall notify MADEP and the ACOE (as applicable) at least 72 hours prior to excavation.

Soil in the proposed wetland areas that must be removed for grades to conform to the proposed elevations shall be stripped and disposed of, or, if suitable for reuse, be stockpiled in an approved location. Stockpiled soils shall be kept wet and not allowed to dry out. Procedures for maintaining appropriate moisture levels shall be documented by the Wetland Specialist and provided to the Engineer and the Contractor.

Replication area shall be excavated as shown on the drawings. Where replication area is adjacent to existing reference wetland, finish grade of replication shall generally match existing grades and micro-topography, notwithstanding any deviations that are necessary to achieve the desired hydrology and habitat in the Replication Area.

Prior to placement of backfill, scarify subgrade to a depth of 4 to 6 inches.

Placement of Wetland Soil

Following excavation, scarification, and grading of sub-grade, and after the sub-grade elevations are approved by the Wetland Specialist, suitable soil previously removed or an evenly mixed organic/mineral soil created on-site shall be spread to the design depth and thickness over the proposed wetland areas as shown on the plans and as directed by the Wetland Specialist.

Vehicles used to transport soil from offsite shall be washed or cleaned with air pressure to prevent exotic or invasive seeds or root fragments from contaminating the Replication Area.

Final Grading

The finished grade of the Replication Area shall be at an elevation that will provide an unrestricted hydrologic connection between the Replication Area and adjacent resource areas. The hydrologic connection should be in keeping with restoring the intended function of the replacement wetland relative to the impacted reference wetland. The Contractor shall verify that this elevation is not at a level that could negatively alter the hydrology of an adjacent wetland. Microtopography in the form of hummocks, pits and mounds shall be as shown on the plans or as adjusted by the Wetland Specialist. Final elevations and grading of wetland soil shall be approved by the Wetland Specialist and the Engineer.

To avoid compaction once soil has been placed, no heavy equipment shall travel across placed soil and no work shall occur in wet or moist soil. Soil that is compacted due to construction activities shall be replaced with soil as specified herein and at the Contractor's expense.

ITEM 755.35 (Continued)**Restoring Vegetation****Placement of Coarse Woody Material**

If specified within this Contract or if directed by the Wetland Specialist or Landscape Architect during the initial site walk, woody debris shall be placed in the Replication Area and/or adjacent upland buffer. Material shall be placed as shown on the plans or as directed following placement of wetland soil and prior to application of compost and/or seed. Woody material shall cover a minimum of 5-20 percent of the Replication Area, depending on whether it is a meadow or woodland wetland and how much wood is available from construction clearing. Where trees are cut for construction purposes, logs of a minimum length of 8 feet must comprise a minimum of 50% of the woody material left on site. Brush shall be included along with logs and stumps as directed. Woody material shall be placed in a deliberate and naturalistic manner.

Planting

Following placement of wetland soil and approval of final grade and conditions, Replication Area shall be planted. Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUND COVER of the Division I Standard Specifications and as amended below.

Planting Season shall be May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Prior to planting, the Wetland Specialist shall approve the condition of the plant material and the method of installation and shall oversee the planting work. Replication Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer or Wetland Specialist and shall be replaced at the Contractor's expense.

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up. If previously approved species are not available at the time of planting, the Wetland Specialist may propose substitutions relative to species, size, and quantities for review and approval by the MassDOT Landscape Architect. Upon approval by MassDOT, substitutions shall be approved by the regulating authority, if and as necessary. Provisions shall be made for a growth warranty of at least two (2) calendar years from the date of Conditional Acceptance as described below or as required by permits.

ITEM 755.35 (Continued)**Seeding**

Following placement of wetland soil and planting (if included), the Replication Area shall be seeded using one of the following methods:

- Broadcast by hand or with a hand-held spreader followed by application of straw mulch. If necessary, seed shall be lightly raked to insure good seed-to-soil contact.
- Hydro-seeded with hydro mulch per the Standard Specifications and per the manufacturer's directions.
- Hand broadcast seed with Compost Blanket pneumatically applied at the same time to ensure light cover of soil topdressing over seed.

If spring conditions are drier than usual, supplemental watering may be required. If sowing during the summer months, supplemental watering will likely be required until germination.

If required, seeding limits for different seed mixes shall be determined by the Wetland Specialist.

PLANT ESTABLISHMENT AND INVASIVE MANAGEMENT

Plants shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

Seeding that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

Invasive Plants: Corrective measures shall be taken to remove or treat invasive plant species in the Replication Areas. Invasive plants shall include those listed as invasive by Massachusetts Invasive Plant Advisory Group (MIPAG) and the US Army Corp of Engineer's New England District's Compensatory Mitigation Guidance.

The strategy for chemical and/or manual removal shall be as directed by the Wetland Specialist, shall continue for the duration of the monitoring period, and shall be incidental to this item.

Conditional Acceptance of Work

Conditional Acceptance shall indicate approval of the wetland construction work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist demonstrating that the wetland replication construction work was done according to plans (or how modified) and meets required permit conditions. The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

ITEM 755.35 (Continued)

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Replication Area and surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The final finished target elevations have been met and maintained relative to the approved plans and reference wetland. Areas that are too high or too low should be identified along with suggested corrective measures.
- Hydrology meets performance standards.
- Specified seed mix has been seeded. If inspected 30 or more days after seeding, seeded species in the wetland and adjacent upland shall show signs of good germination and healthy growth.
- Planted woody and herbaceous species meet specifications and are establishing well.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- There are no invasive plants visible in the replication area.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Replication work is not approved, MassDOT will issue a rejection letter requiring corrective actions. The Wetland Specialist shall recommend corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

Request for Certificate of Compliance

If required, a request for a Certificate of Compliance (Partial or Full) pursuant to the Massachusetts Wetlands Protection Act regulations shall be prepared and submitted to MassDOT within 30 days following Conditional Acceptance.

The Request for Certificate of Compliance shall include the following:

- A brief narrative of the work on company letterhead signed by the Wetland Specialist. Narrative shall be prepared as a MS Word document and shall include substantive explanation that demonstrates compliance with EACH relevant permit condition. Narrative shall note variations from the originally permitted design.
- As-built Drawings signed by the Contractor's PE registered in the Commonwealth of Massachusetts. As-built drawings shall show hydrologic conditions, status of plantings and seeding, and shall include a narrative and minimum of 4 photographs documenting site conditions. Plans should note variations from the originally permitted design.

ITEM 755.35 (Continued)

When required, drawings shall meet the Army Corp of Engineer's New England District's Compensatory Replication Guidance, including: scale in the range of 1"=20' to 1" = 100', contours at 1' intervals, spot elevations for intermediate elevations, and polygons outlining each Replication Area, and, as applicable, plant community types. The As-built Drawings shall be provided to the Engineer electronically in Portable Document Format (PDF). If requested by the Engineer, the Drawings shall be provided in printed paper format (11" x 17" sheets, unless otherwise directed). Drawings must be scalable.

- Other documents as required.

Final Acceptance of Work

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Contractor, Wetland Specialist and regulatory representative (if required) shall assess the Replication Area. Final Acceptance will initiate the start of the Wetland Monitoring Period.

The following conditions shall be inspected and approved for acceptance and payment.

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover at least 95 percent of the Replication Area, excluding areas of open water areas or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

If the mitigation work does not meet the above condition and is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions. Work not approved will be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

Monitoring Reports for Regulatory Compliance

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

ITEM 755.35 (Continued)

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 95 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.35 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, submittals, maintenance, all required soil, site preparation, grading, wetland seeding, planting, mulching, watering, monitoring wells, registered surveyor, as-built plans, Request for Certificate of Compliance, and all incidental costs necessary to complete the work as required.

Payment shall be as follows:

- 60% upon Conditional Acceptance.
- 20% after receipt and acceptance of Certificate of Compliance by the Engineer and once all permit construction requirements have been met and approved.
- 20% upon Final Acceptance.

Excavation will be paid under Item 120.

Sediment Control Barrier will be paid under Item 767.121

Wetland Specialist will be paid under Item 755.75

Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

Jute Mesh will be considered incidental to 755.35

ITEM 755.75**WETLAND SPECIALIST****HOOR**

Work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Replication Ecologist, or other professional with similar qualifications hereafter referred to as the “Wetland Specialist.”

“Wetland Mitigation” shall be used herein for applicable wetland work. For this project, applicable wetland work is for replication after temporary impacts.

The Wetland Specialist shall demonstrate knowledge and expertise to coordinate and oversee all work associated with the Wetland Mitigation as defined herein, as shown on the Plans, as required by permits, and as specified under the relevant Wetland Mitigation items.

Regulatory monitoring reports following Final Acceptance of the Wetland Mitigation shall be per Item 755.76, Wetland Monitoring Reports.

For all onsite work, the Wetland Specialist shall sign in and sign out with the Engineer.

The Wetland Specialist shall not be from the same company as the company responsible for planting, seeding, and/or maintaining the wetland.

QUALIFICATIONS

The Wetland Specialist shall have a minimum of five (5) years of experience with construction and monitoring of wetland mitigation areas similar in size, type, and complexity to the Contract mitigation. When required by permits, at least ten (10) years of experience may be required. The Wetland Specialist shall be thoroughly versed in the Commonwealth of Massachusetts Wetlands Protection Act (MGL C.131, s.40), U.S. Army Corps of Engineers New England District Compensatory Mitigation Guidance, and all other relevant regulations of the Massachusetts Department of Environmental Protection and the U.S. Army Corps of Engineers New England District.

SUBMITTALS - QUALIFICATION

Within sixty (60) days following the Notice to Proceed, the Contractor shall provide proof of qualifications for the Wetland Specialist to the Engineer for approval. Submittals shall include, but not be limited to, the following:

- Resume of the individual on-site implementing the Wetland Specialist work. If the Wetland Specialist changes over the course of the project, the new individual shall submit resume and qualifications for approval 30 days prior to doing any work on-site.
- Resume of any personnel working on-site in place of the Wetland Specialist. Individual shall be approved prior to work on-site.
- Narrative describing the company, its expertise, technical qualifications and experience with wetland construction.

ITEM 755.75 (Continued)

- At least three (3) references from prior work of a similar nature completed in the last five (5) years and by the individuals who will perform the work. Provide contact information for each reference including address, phone number and email.
- A summary of each reference project including nature of the work, project size, dates, and period of construction and monitoring, methodologies used, and summary of success (or not) in terms of meeting performance objectives. Summary shall include a minimum of one before and one after photo for each project.

SUBMITTALS – DOCUMENTATION AND REPORTS**Wetland Construction Oversight**

Wetland Specialist shall provide documentation of pre-existing conditions and wetland construction as specified below and as part of fulfilling the Scope of Work described below. Documentation shall include photos that are clear and legible. Photos are incidental to this item.

- ***Site Walk Prior to Disturbance and Construction of Wetlands:*** Provide brief assessment with photos, including documentation of the existing wetlands to be impacted (both permanent and temporary), proposed wetland replication area, and reference/model wetland areas (typically an adjacent undisturbed wetland or the existing wetland to be impacted). Photos of existing wetlands that will be temporarily impacted shall include a view from at least 3 angles.
- ***Excavation and Grading:*** Documentation shall include minimum of two photos of the excavated wetland and two photos after final grading prior to planting and seeding. For replication areas, photos shall show soil preparation (i.e, tilling and grading), if applicable.
- ***Approval of Subgrades:*** The Wetland Specialist shall inspect the sub-grade of the Replication Area to ensure that proper hydrology is likely to be established and shall provide the Engineer with written confirmation and photographs upon completion of subgrade excavation work. Written confirmation shall include recommended field adjustments, based on field observations, to achieve the desired hydrology and designed wetland system.
- ***Planting and Seeding:*** Provide assessment and photos of vegetation upon completion of planting and seeding work.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance and for the, Water Quality Certifications, and other regulatory permits as required.

ITEM 755.75 (Continued)

Requests for Acceptance of Work & Regulatory Compliance

The Wetland Specialist shall submit the following documents if and as specified herein and under Item the relevant Wetland Mitigation items:

- Request for Conditional Acceptance.
- Request for Certificate of Compliance (Partial or Full) when applicable.
- Request for Final Acceptance.

SCOPE OF WORK

In the event of discrepancies with the applicable permits, the Wetland Specialist shall submit a Request for Information (RFI) to the Engineer.

General

The Wetland Specialist shall be responsible for the following:

- Review and have a comprehensive knowledge of the environmental permits relevant to the specific mitigation work being done so as to ensure compliance throughout the duration of the contract.
- Identify and inform the Contractor and Engineer of unique site conditions which may require adjustments to the schedule, design, or construction methods. For example, wildlife nesting, illegal dumping, or rare species.
- Identify and inform the Contractor and Engineer of any sediment or erosion control problems observed within mitigation areas.
- Advise so as to avoid impacts to adjacent areas and regulated wetland resources.
- Participate in necessary meetings as required by permits and when requested by the Engineer.

ITEM 755.75 (Continued)**Inspections & Construction Oversight**

The Wetland Specialist shall be responsible for, but not limited to, the following:

- Pre-Construction Site Walk
 - Following surveying, flagging, and staking of all relevant boundaries and elevations by the Contractor, the Wetland Specialist shall walk the site with the Engineer and the Contractor to review existing and proposed conditions, recommend changes if necessary, and approve the following: location and boundaries of the Mitigation Area, target elevations and grades, location of tree protection associated with the Mitigation Area, and final layout and limits of clearing for access route.
 - Select and mark snags, logs, and woody material to be retained for placement in the Wetland Mitigation, as appropriate.
 - Note invasive plants in and adjacent to Wetland Mitigation.
 - Provide summary report if and as specified under Wetland Mitigation items.
- Excavation, Soil Placement, Grading for Replication Areas
 - Approve excavated depth and grading for appropriate wetland hydrology, subsoil preparation, and finished grade of placed wetland soil.
 - Adjust grades as required and approve microtopography. If grades need to be adjusted, submit an RFI to the Engineer.
 - If requested by the Engineer, the Wetland Specialist shall inspect stockpiled wetland soil for moisture content and signs of undesirable weeds.
- Soil Protection and Replication Measures for Replication Areas.
 - Review and approve methods of soil protection and replication if required.
 - Confirm decompaction will adequately restore appropriate wetland hydrology. If decompaction measures need to be adjusted, submit an RFI to the Engineer.
- Re-vegetation of Mitigation Area
 - Placement of woody material to be re-used.
 - Verify seed used complies with specifications and site conditions, determine limits for wetland seeding based on elevations, approve seeding and mulching methods, and collect seed tags to submit with Request for Conditional Acceptance.
 - Review planting methods (if applicable) prior to installation and oversee layout of wetland plants.

ITEM 755.75 (Continued)**Conditional Acceptance**

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Replication areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation items.

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

ITEM 755.75 (Continued)

METHOD OF MEASUREMENT

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and replication oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time or time spent off-site on reports. Decimal Pay Limits will be 0.25 hours.

BASIS OF PAYMENT

Item 755.75 Wetland Specialist shall be paid at the Contractor bid price for each hour, or fraction thereof, spent on-site to perform the work as described above. Reports and photo documentation are required for payment.

Post wetland construction reports shall be per Item 755.76, Wetland Monitoring Reports.

ITEM 755.76**WETLAND MONITORING REPORTS****LUMP SUM**

Work under this item shall be for the submittal of Wetland Monitoring Reports following the completion of wetland construction and shall include all inspections, photos, and other work required to complete those reports as specified herein.

“Wetland Mitigation” shall be used herein for applicable wetland work, whether Wetland Replication (creation of a new wetland) and/or Wetland Restoration (restoration after temporary impacts).

The Contractor shall retain the services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications, hereafter referred to as the “Wetland Specialist,” to complete the Wetland Monitoring reports. Wetland Specialist shall meet requirements specified under Item 755.75 Wetland Specialist.

All on-site Wetland Specialist services required to complete the construction and revegetation of the wetland replication, including preparation and submission of monitoring reports during construction, shall be per Item 755.75 Wetland Specialist.

SCOPE OF WORK**Post-Construction Wetland Monitoring Reports**

Final Acceptance of the wetland construction work as specified under Item 755.35 shall initiate the beginning of the Monitoring Period.

Inspections and reports shall be performed to ensure compliance with mitigation requirements defined under the relevant Wetland Mitigation items and with all applicable environmental permits. Monitoring reports shall cover the following:

- Identification of all plant species present
- Percent cover for each plant species and overall percent surface area cover by indigenous wetland plant species for replication area and upland
- Description of the viability, health, and vigor of installed plants as well as volunteer plant species within the replication areas
- Description of remedial measures taken to ensure criteria are met
- Depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface and data loggers, as appropriate.
- A conclusion regarding the success of the wetland mitigation area relative to the performance standards at 310 CMR 10.55(4)(b) (unless varied), the design plans, and performance criteria established by MADEP in the variance conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.

ITEM 755.76 (Continued)

Reports shall be submitted to the Engineer as a digital copy in Portable Document Format (PDF) unless otherwise requested. Hard copies shall be provided as requested by the Engineer. All reports shall be marked with the applicable permit numbers and identifying information as required in the permits. Reports shall include photo documentation of the wetland/s being monitored and shall include a minimum of 3 views from different orientations. Views shall be labeled.

Spring Reports, when required, shall be submitted to the Engineer by July 1 for dispersal to the appropriate permitting agencies.

End of Year Reports (which may serve as the Fall Report) shall be based on inspections that occur prior to October 15th. Reports shall be submitted to the Engineer no later than November 1 of each year.

Monitoring Reports shall be as follows for 2 years:

- *MassDOT: 2 Reports Total – (Fall Report each year).*

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.76 Wetland Monitoring Reports and associated inspections shall be at the Contract unit price per Lump Sum and shall include all labor, materials, equipment, and all incidental costs required to complete the work. Lump Sum will be paid in equal installments of the Lump Sum divided by the number of reports submitted. Payment shall be upon submittal and acceptance of each report, based on the following schedule: (# reports is for report submitted, not # of inspections.)

- Year 1 = ***Fall Report***
- Year 2 = ***Fall Report***

ITEM 767.121**SEDIMENT CONTROL BARRIER****FOOT**

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. Photo-biodegradable fabric shall not be used.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, sedimentation fence shall be used in addition to compost filter tubes and straw bales and shall be compensated under that item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

MATERIALS AND CONSTRUCTION

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer's instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

ITEM 767.121 (Continued)**Compost Filter Tube**

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

Straw Bales

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

ITEM 767.121 (Continued)

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

Sedimentation Fence

Materials and Installation shall be per Section 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

MAINTENANCE

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

ITEM 767.121 (Continued)

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Sedimentation fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.121 will be measured and paid for at the contract unit price per foot of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Additional barrier, such as double or triple stacking of compost filter tubes, will be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damaged by construction activities shall be repaired or replaced as directed by the Engineer at the Contractor's expense.

Sedimentation fence used in conjunction with compost filter will be measured and paid for separately under Standard Item 697, Sedimentation Fence.

ITEM 859.1 **REFLECTORIZED DRUMS WITH SEQUENTIAL** **DAY**
FLASHING WARNING LIGHTS

The work under this Item shall conform the relevant provisions of Subsection 850 of the Standard Specifications and the following:

Work under this item consists of furnishing, installing, maintaining in proper operating conditions, and removing reflectorized drums, and any necessary ballast, equipped with sequential flashing warning lights.

MATERIALS

Reflectorized drums shall be listed on the MassDOT Qualified Traffic Control Equipment List. Reflective sheeting on drums shall meet or exceed ASTM D4956 Type VIII. All drums shall be maintained in a satisfactory manner including the removal of oils, dirt, and debris that may cause reduced retroreflectivity.

The Contractor shall use one of the following sequential flashing warning light systems unless otherwise approved by the Engineer:

1. Empco-Lite LWCSO.
2. pi-Lit® Sequential Barricade-Style Lamp; or
3. Unipart Dorman SynchroGUIDE.

Sequential flashing warning lights shall be secured to reflectorized drums per the light manufacturer's specifications.

CONSTRUCTION METHODS

The first ten (10) drums in any merging or shifting taper as designated in the Temporary Traffic Control Plan shall be equipped with sequential flashing warning lights. These lights shall be operating, at a minimum, between dusk and dawn when the taper is deployed.

The successive flashing of the sequential warning lights shall occur from the upstream end of the merging or shifting taper to the downstream end of the taper in order to identify the desired vehicle path. Each warning light in the sequence shall be flashed at a rate of not less than 55, nor more than 75 times per minute.

Warning lights shall be powered off when drums are not deployed in a taper.

ITEM 859.1 (Continued)

METHOD OF MEASUREMENT

A group of ten (10) reflectorized drums with sequential flashing warning lights is considered one (1) unit and will be measured by the day. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times that the drums are positioned, repositioned, removed, or returned to service.

BASIS OF PAYMENT

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the contract unit price per day, which shall include full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

<u>ITEM 860.104</u>	<u>4 INCH REFLECTORIZED WHITE LINE (PAINTED)</u>	<u>FOOT</u>
<u>ITEM 861.104</u>	<u>4 INCH REFLECTORIZED YELLOW LINE (PAINTED)</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 the following:

The work under these items shall consist of the furnishing and installation of 4 inch reflectorized white and yellow lines (painted) as shown on the drawings or as required by the Engineer.

All permanent pavement markings supplied under these Items shall conform to the applicable MassDOT' s standards for 6 Inch Reflectorized white and Yellow Line (Painted).

METHOD OF MEASUREMENT

Items 860.104 and 861.104 will be measured for payment per Foot, complete in place.

The length of lines will be obtained in accordance with the relevant provisions of Subsection 860.80.

BASIS OF PAYMENT

Items 860.104 and 861.104 will be paid for at the respective Contract unit price per Foot, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

ITEM 874.4

TRAFFIC SIGN REMOVED AND STACKED

EACH

The work under this item shall conform to the relevant provisions of Subsection 828 of the Standard Specifications amended or supplemented as follows:

CONSTRUCTION METHODS

The work to be done under this item shall consist of the dismantling, removing, and stacking of all existing regulatory and warning signs and their supports as noted on the Contract Plans and/or as directed by the Engineer. Work under this item also includes excavation of the existing foundations for regulatory and warning signs. At the Engineer's discretion, if the existing foundation will not interfere with new construction, it may be removed to a depth of 12 inches below the existing ground. The hole shall be backfilled with gravel and compacted, and the existing surfaces restored or replaced in kind.

Unless otherwise directed by the Engineer, the existing signs shall not be removed until the new replacement signs and structures are ready for installation.

Existing signs shall be removed and delivered to Town of Cheshire Highway Department yard at 6 Main Street, Cheshire MA, 01225 or to a location as directed by the Engineer.

METHOD OF MEASUREMENT

Item 874.4 will be measured for payment by the each existing sign (and support, unless otherwise noted on the plans) actually removed and stacked.

BASIS OF PAYMENT

Item 874.4 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, dismantling, removing and stacking of the signs and their supports, excavation, disposal of the existing foundation, supplying and placing of gravel backfill and compaction, restoration of disturbed surfaces, and all incidental costs required to complete the work.

ITEM 953.1**TEMPORARY SUPPORT OF EXCAVATION****LUMP SUM**

The work under this item shall conform to the relevant provisions of Subsection 950 of the Standard Specifications and the following:

Work under this Item consists of the design, furnishing, installation, maintenance, and removing of temporary support of excavation as required for the removal of the existing bridge and support for installation of the replacement bridge as shown on the Contract Drawings.

SUBMITTALS

The Contractor shall Submit a proposed Temporary Support of Excavation system with drawings and calculations stamped, signed, and dated by a registered Professional Engineer in the Commonwealth of Massachusetts. Installation of the Temporary Support of Excavation System may not begin until the submittal has been approval by the Engineer.

BASIS OF PAYMENT

Item 953.1 will be paid for at the Contract unit price Lump Sum, which price shall include all labor, materials, equipment, submittals, and all incidental costs required to complete the work.

Dewatering, if needed, will be considered incidental to this Item.

Payment of 75% of the Lump Sum price of this item will be made upon complete installation.

The remaining 25% of the Lump Sum price of this Item will be paid following complete removal of all the temporary support of excavation components from the site, as determined by the Engineer.

The Temporary Support of Excavation Systems shall be entirely removed from the job site after their function has been accomplished. Note the following:

All permanent and temporary support of excavation that protrudes into the soil that supports the bridge structure shall be left in place. Supporting soil shall be defined as all soil directly below the footing contained within a series of planes that originate at the perimeter of the bottom of the footing and project down and away from the footing at an angle of 45° from the horizontal.

Whether support of excavation is indicated on the Construction Drawings or not, the Contractor shall be informed by the Special Provisions that any part of the support system that protrudes into the supporting soil below the bridge structure, as defined by Paragraph 3.2.5.8, shall be cut off and left in place and no additional payment will be made for this part.

ITEM 983.522**STREAMBED RESTORATION****LUMP SUM**

This work shall consist of removing, stockpiling, and replacing stream bed material in the proposed bridge replacement and the upstream and downstream approaches in the limits of work. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, roughness, shape, profile, and appearance. The ultimate product will, to the extent possible, replicate the function and appearance of the natural stream channel.

The Contractor shall coordinate with his/her sub-contractors to ensure all required equipment is available on-site to complete the work in this manner. The streambed restoration is required to comply with environmental permits issued for the project. MassDOT Environmental Services will provide a Fluvial Geomorphologist (Geomorphologist) to provide a pre-construction meeting, on-site oversight during construction, and assistance during streambed restoration construction to ensure the restoration is constructed as shown on the Plans, as required by these Special Provisions and in accordance with permit requirements.

At least 30 days prior to the commencement of construction, the Contractor shall coordinate with David Paulson (MassDOT Wildlife Unit Supervisor, tel: (508) 389-6366; email: david.j.paulson@state.ma.us) to set up an initial (virtual or in person) meeting with MassDOT's Geomorphologist, Contractor, and Resident Engineer. At this meeting, the Geomorphologist will provide an overview of the restoration work. The Contractor should be prepared to discuss the anticipated means, methods, and schedule.

Process Approval:

In lieu of a mockup, the Contractor shall schedule an onsite meeting to discuss the streambed restoration with the Geomorphologist and respective parties from MassDOT. The Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Geomorphologist adequate access to observe, direct, and inspect the channel restoration work throughout the duration of the removal, stockpile, and reinstallation of the existing streambed material. If material is being brought to the site for streambed restoration, the Contractor shall provide the Geomorphologist with photographs to see the material.

MATERIAL

The top 1.5 feet of streambed material excavated from the existing streambed shall be removed and stockpiled to facilitate reinstallation and replication of the natural streambed. The excavated streambed material below the top 2 feet shall be stockpiled and reused to fill the voids in the proposed riprap placed below the top streambed restoration layer.

ITEM 983.522 (Continued)

In the event that the excavated material is not suitable or there is not enough available suitable material, additional streambed restoration material shall be locally sourced that matches the composition of the existing native streambed. The following gradation sampled from a similar streambed surface shall be used as a guide.

Stream Bed Material Gradation

Particle	Percent (%) Composition
Boulder	75
Cobble	20
Gravel	5
Sand	0

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

Related Items

Crushed Stone. Shall conform to the requirements of Item 156.2 Crushed Stone for Slope Treatment and shall be paid for under that item.

Riprap Stone shall conform to the requirements of Item 983. and shall be paid for under that item.

METHOD OF CONSTRUCTION**Channel**

The streambed material shall be reinstalled over riprap, as depicted on the plans, to an average thickness of 1 foot, with variations in thickness as necessary to replicate existing channel conditions. The initial placement of streambed material shall fill the voids in the underlying riprap. Fill voids by shaking stone with the teeth of an excavator bucket, hand tamping with metal tamping rods, and by spraying water to settle fines between large stones. Plate compactors shall not be used. The purpose of filling the voids is to prevent subsurface flow where surface water disappears into large voids between the stone fill below the channel bed surface during low flow conditions. The final streambed shape and appearance shall be finalized in the field as directed by the Geomorphologist.

Reinstallation of the stockpiled streambed material shall be placed on top of the riprap to restore streambed habitat and fish passage. The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

ITEM 983.522 (Continued)

Completion

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the cofferdams in such a way as to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

The final streambed shall maintain the general configuration of the existing streambed bedform and there shall be minimal subsurface flow upon final inspection by the Resident Engineer and Geomorphologist. The project must be passable by fish and other aquatic organism following construction.

The streambed restoration to be measured for payment will be the complete and accepted work for restoration of the streambed within the limits shown on the Plans as approved by the Resident Engineer and Geomorphologist.

BASIS OF PAYMENT

Item 983.522 will be paid for on a Lump Sum basis, which shall include full compensation for excavating, stockpiling, transporting, placing the material specified for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

ITEM 991.1**CONTROL OF WATER
STRUCTURE NO. C-10-002 (CBX)****LUMP SUM**

Work under this item shall conform to the relevant provisions of Subsection 140 of the Standard Specifications and these Special Provisions for all dewatering activities necessary for the project, including, but not limited, excavation, construction of abutments, and wingwalls, riprap installation, and proposed drainage outfall structures to ensure work will be performed in the dry.

Dewatering shall be conducted to ensure that all work, including structural concrete, is placed and cured in the dry. For demolition purposes, dewatering shall be conducted on an as needed basis as determined by the Contractor.

The Contractor's attention is directed to the section of these Special Provisions that addresses the Contractor's requirements for Sedimentation and Erosion Controls for this project.

The Contractor shall take all steps to fulfill the requirements the Massachusetts DEP Erosion and Sedimentation Controls guidelines and all environmental permits associated with this project.

The Contractor shall review the boring logs and site conditions to assess the bearing soils and determine the Contractor's methods for the control of water.

The Contractor should take precautions to reduce subgrade disturbance by diverting storm water run-off away from construction areas and maintaining effective dewatering.

As part of the work under this Item, it is the responsibility of the Contractor to determine the need and extent of stream diversions, sedimentation basins and dewatering techniques and sedimentation controls needed to control water and sediment at the site. Prior to the actual process of executing the excavation operations, the Contractor shall submit the methods and materials proposed to be used for the Engineer's approval.

The Contractor shall be responsible for design of the water control structure for placement in the stream as shown on the Contract Plans. The water control structure shall include an impermeable barrier to ensure sediments from construction operations do not migrate into the stream.

SUBMITTALS

Plans and calculations for the water control structure and dewatering measures shall be developed by the Contractor for this item, prepared and stamped by a Professional Engineer Registered in the Commonwealth of Massachusetts and submitted for the review of the Engineer prior to the start of construction.

This submittal shall include, but not be limited to, excavation support, dewatering and construction sequence designs to sufficiently address the channel flow caused by the control of water.

ITEM 991.1 Continued)

CONSTRUCTION METHODS

Stream diversions shall be conducted in such a manner as to minimize siltation and prevent contamination of the waterway.

Maximum screen sizes on the inlet side of all pumps shall not exceed 0.5 inch.

Recommended devices to control water at the site include, but are not limited to:

- Installation of precast concrete median barriers or blocks covered with sedimentation fabric and sandbags to reduce water infiltration.
- Sandbag dams installed at the top of the excavation to provide temporary control of water.
- Portable cofferdam system comprised of steel frames covered by an impervious fabric membrane.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Engineer has the right to order the Contractor to stop all excavation operations when in his judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

The Contractor shall provide the means of removing all sediment from water pumped from the excavation areas; this shall include the use of sedimentation basins, check dams, sedimentation fences or tanks as directed in the Special Provisions under Sedimentation and Erosion Controls.

BASIS OF PAYMENT

Item 991.1 will be paid for at the Contract unit price Lump Sum, which price shall include all labor, materials, equipment, submittals, and all incidental costs required to complete the work.

Payment of 75% of the Lump Sum price of this item will be made upon complete installation.

The remaining 25% of the Lump Sum price of this Item will be paid following complete removal of all temporary water control measures from the site

ITEM 994.1 TEMPORARY PROTECTIVE SHIELDING SQUARE FOOT

The work to be done under this Item shall provide for the protection of Dry Brook from falling debris during removal of concrete superstructure, beams, and from other demolition of appurtenances on bridge superstructure under Item 114.1.

This shall be accomplished by utilization of adequate shielding placed beneath the existing superstructure prior to demolition of the bridge.

All shielding shall meet the following requirements:

1. The Contractor is responsible for designing, furnishing, installing, maintaining, removing, and disposing of all shielding materials.
2. The Contractor shall submit for review Plans of proposed shielding stamped by a Professional Structural Engineer Registered in the Commonwealth of Massachusetts, for conformance to the Contract Documents, prior to installation of shielding. The drawings shall include details of all connections, brackets and fasteners and shall be submitted at the preconstruction conference.
3. Protective shielding shall not be installed until the Engineer's review has been completed and approved. No portion of the bridge deck shall be removed until the protective shielding is in place and complete.
4. The shielding shall extend a sufficient distance beyond the deck limits, and have walls sufficient to contain any debris. The shielding shall extend the full length of the bridge. The Contractor may utilize the existing abutments and piers as supports for the protective shielding. All spaces along the perimeter of the shielding and at the seams shall be sealed to prevent dust and debris from escaping and falling into the water below.
5. Shielding shall be designed to safely withstand all loads it would be subjected to during construction. The allowable design stresses shall be in accordance with AASHTO Standard Specifications for Highway Bridges. The design shall also include a complete description of the equipment and construction methods proposed for the deck removal and the maximum size of deck area excavated.
6. The shielding shall also be designed to withstand impact loads from the maximum size of concrete decking should it fall during removal.
7. The shielding shall be maintained and remain in place until the deck is completely removed. Shielding shall be removed only upon approval of the Engineer. After completion, the shielding shall be removed and disposed of the satisfaction of the Engineer.

ITEM 994.1 (Continued)

All materials used in the shielding system shall be the property of the Contractor and shall be properly removed from this site at the completion of the project.

METHOD OF MEASUREMENT

Item 994.1 will be measured for payment by the square foot of temporary protective shielding installed and properly removed.

BASIS OF PAYMENT

Item 994.1 will be at the Contract unit price per square foot, which price shall include all labor, materials, tools, equipment, submission preparation and submittal, and all incidental costs required to complete the work. Payment of 75% of the bid price of this item will be made upon complete installation to the satisfaction and approval of the Engineer. The remaining 25% of the bid price of this item will be paid following proper removal and disposal of the shielding from the project.

Temporary Protective Shielding shall be entirely removed from the job site after its function has been accomplished.

ITEM 995.01 BRIDGE STRUCTURE, BRIDGE NO. C-10-002 (CBX) LUMP SUM

The work under this item shall conform to the applicable provisions of Section 995 of the Standard Specifications and the specific requirements stipulated below for the component parts of this item. Where no specific requirement is identified for an item, the Standard Specifications shall apply, except for payment. Payment for all bridge components shall be included under the Lump Sum Price for this item, unless otherwise noted elsewhere as a separate item.

Work under this item shall include all materials, equipment and labor needed to construct the following for replacement of Bridge C-10-002 (CBX) Sand Mill Road over Dry Brook:

- Prestressed Concrete Butted Deck Beams;
- Cast-in-place reinforced concrete deck slab;
- Cast-in-place reinforced concrete abutments and wingwalls;
- Cast-in-place reinforced concrete approach slabs;
- Precast concrete transition bases and transitions;
- Cast-in place reinforced concrete safety curbs;
- S3-TL4 bridge rail;
- Elastomeric Bearing Pads;
- Membrane Waterproofing for Bridge Decks;
- Damp-Proofing.

Any item shown on the drawings, specified or implied and not specifically included for payment under another item shall be included for payment under this item. This work includes all labor, materials, and equipment necessary for, and incidental to, the completion of the structure in accordance with the schedule of items included hereinafter under "Basis of Payment."

Cement Concrete

The work to be done under this heading for the items identified below shall conform to the relevant provisions of the Standard Specifications, Section 901, these Special Provisions and the following:

4000 psi, 1.5 in, 565 Cement Concrete

4000 psi, 3/4 in, 610 Cement Concrete

5000 psi, 3/4 in, 685 HP Cement Concrete

Work considered incidental to the cement concrete items shall include closed cell foam, joint seal, epoxy coated chairs and ties, water stops, inserts, and any other work involved in furnishing and placing the concrete.

ITEM 995.01 (Continued)

The Contractor shall submit all pertinent information relative to placing concrete to the Engineer for approval at the time of shop drawing submittal. The information submitted shall include: method of concrete placement, the name of the retardant and other admixtures selected for use, manufacturer's product information on the admixtures, method of use and amount to be used.

Prestressed Concrete Deck Beams (S48-18)**A. General.**

The work under this Heading consists of fabricating, transporting and installing Prestressed Concrete Deck Beams (S48-18), and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The work shall conform to the MassDOT Standard Specifications and the requirements of the current AASHTO LRFD Bridge Construction Specifications, supplemented by the current relevant provisions of the latest edition of PCI MNL-116 (The Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products), except as noted herein. MassDOT contract documents shall take precedence over the AASHTO LRFD Bridge Construction Specifications and PCI MNL-116. Section 930, M4.02.14, and M4.03.00 through M4.03.14 of the MassDOT Standard Specifications are superseded in their entirety by the requirements specified below.

QUALITY ASSURANCE**A. General**

Quality Assurance includes all the planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service. It is an all-encompassing term that includes Quality Control (performed by the Fabricator) and Acceptance (performed by MassDOT). Quality Control is the system used by the Contractor and Fabricator to monitor and assess their production processes at the plant facility and installation activities at the project site to ensure that the final product will meet the specified level of quality. Acceptance includes all factors used by MassDOT to determine the corresponding value for the product. MassDOT Acceptance inspection at the plant facility is intended as a means of evaluation of compliance with contract requirements. Contractor and Fabricator Quality Control activities and MassDOT Acceptance activities shall remain independent from one another. MassDOT Acceptance activities shall not replace Fabricator Quality Control activities.

ITEM 995.01 (Continued)**B. Fabricator Quality Control**

Quality Control shall be performed by the Fabricator to ensure that the product is fabricated in conformance with the specifications herein. The Fabricator shall maintain a Quality Control system to monitor, assess, and adjust placement and fabrication processes to ensure the Prestressed Concrete Beam(s) meet the specified level of quality, through sufficient Quality Control sampling, testing, inspection, and corrective action (where required). The Fabricator's Quality Control system shall address all key activities during the placement and fabrication and shall be performed in conformance with the Fabricator's PCI Certification. Quality Control documentation shall meet the requirements of the *Fabricator Quality Control – Documentation* section below. Upon request, Fabricator Quality Control documentation shall be provided to the MassDOT Plant Inspector.

1. Plant

Prior to the fabrication of Prestressed Concrete Beams, the Fabricator's precast concrete plant shall obtain the following:

- (a) Certification by the Precast/Prestressed Concrete Institute (PCI) Plant Certification Program, for Prestressed Concrete Beam fabrication, Category B3 level or higher
- (b) MassDOT Prequalification
- (c) MassDOT Mix Design Approval

All concrete for a given Prestressed Concrete Beam shall be produced by a single company and plant, unless otherwise approved by the Engineer.

2. Personnel

The Fabricator shall provide adequate training for all QC personnel in accordance with PCI certification. There shall be sufficient personnel trained and certified to perform the tests listed under Subsection M4.02.13, Part D. At a minimum, the Fabricator's Quality Control Personnel shall maintain the following qualifications and certifications:

- (a) QC Manager with an active Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level II or higher, and a minimum of 5 years continuous experience in the manufacture of Prestressed Concrete Beams for state transportation departments. The QC Manager shall be on site while the batch plant is producing and placing concrete for MassDOT projects.
- (b) A Technician/Inspector having the Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level II or higher

The Contractor shall submit to the Engineer a copy of the Fabricator's Quality Control Personnel required qualifications, as specified above.

ITEM 995.01 (Continued)**3. Laboratory**

The Fabricator shall provide a room of sufficient size to house all equipment and to adequately perform all testing. The room shall have either a separate moisture storage room or curing box for concrete cylinders, and it shall be thermostatically controlled to maintain temperatures consistent with AASHTO T 23. It shall include a desk and file cabinet for proper record keeping, and have good lighting and ventilation. This room shall be kept for testing and quality control and not used for any other purpose. An additional desk and file cabinet shall be provided for exclusive use of the Engineer. No exception from these requirements will be allowed without the express written permission of the Engineer.

4. Testing Equipment

At a minimum, the Fabricator's plant facility shall have the following testing equipment:

- (a) Air Content Meter Type A or B: AASHTO T 152
- (b) Air Content Meter Volumetric Method: AASHTO T 196 (Required for Lightweight Concrete)
- (c) Slump Cone: AASHTO T 119
- (d) Cylinder Molds AASHTO M 205
- (e) Concrete Testing Machine: AASHTO T 22
- (f) Screening Sieve: AASHTO T 27, AASHTO T 11
- (g) Curing Box: AASHTO T 23
- (h) Spread Test Base Plate for Self-Consolidating Concrete (SCC): ASTM C1611
- (i) All other equipment prescribed by AASHTO and ASTM standards for the tests to be performed by the Fabricator as specified

5. Inspection

Quality Control personnel shall monitor and inspect the fabrication of each Prestressed Concrete Beam. Quality Control personnel shall report all inspection activities on Quality Control Inspection Reports and non-conformances on Non-Conformance Reports (NCRs) throughout the entire fabrication process, as specified herein.

6. Temperature Monitoring

At a minimum, the Fabricator shall monitor, record, and report the temperatures of the form, ambient temperatures surrounding the concrete, and temperatures of the concrete continuously, without interruption as specified below:

- (a) Prior to placement of concrete to verify that $T_i \geq 50^\circ\text{F}$.
- (b) Immediately after placement to verify that $T_i \geq 50^\circ\text{F}$ is maintained.
- (c) Throughout the entire duration of the curing cycle, at regular intervals not to exceed one hour until 100% Design Strength (f'_c) is attained and concrete has cooled to within 40°F of the ambient temperature surrounding the Prestressed Concrete Beam.

ITEM 995.01 (Continued)

At a minimum, the temperature measuring devices shall record and report the temperature of the concrete to the nearest 2°F. At least two temperature sensors (thermocouples) shall be positioned to record the maximum and minimum anticipated concrete temperatures. The anticipated minimum temperature shall be measured with one or more thermocouples at a distance no greater than 2 inches from the surface of the thinnest section. The anticipated maximum temperature shall be measured with one or more thermocouples at the center of the thickest section. Proposed temperature measurement locations shall be submitted to the Engineer for approval. Temperature recording devices shall be located within the curing enclosure and calibrated as required by PCI MNL-116 Section 4.18.4. Maximum heat increase and cool down rates shall comply with PCI MNL-116, Section 4.19. The Contractor shall furnish temperature logs recorded at a minimum frequency of once per hour to the Inspector as required, with each post-pour QC inspection report.

7. Sampling and Testing

At a minimum, the Fabricator shall perform random Quality Control sampling and testing as specified in *Table 1: Quality Control Sampling and Testing*. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during fabrication. Test Specimens shall conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60, with the exception of the Stripping (80% f'_c) set of cylinders. Stripping (80% f'_c) cylinders shall be cured in the same location and environment as the Prestressed Concrete Beam they represent. If approved by the Engineer, compressive strength cylinder match curing equipment, that maintains the same concrete conditions that the corresponding Prestressed Concrete Beam is exposed to, may be utilized in lieu of Stripping (80% f'_c) field cured cylinders, with the use of thermocouples, controllers, and heaters.

ITEM 995.01 (Continued)**Table 1: Quality Control Sampling and Testing**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer				
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22	Stripping Cylinders : One (1) set of Three (3) 4 x 8 in.	≥ 80% f _c at Stripping				
		7-day Cylinders : One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders : One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 28 days				
		56-day Cylinders : One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 56 days ^(b)				

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f_c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

ITEM 995.01 (Continued)**8. Certificate of Compliance**

The Fabricator shall provide a Certificate of Compliance in accordance with Standard Specifications, Division I, Section 6.01, stating that QC test cylinders have achieved the design strength, f'_c . A Certificate of Compliance shall accompany each shipment and shall be presented to the MassDOT Resident Engineer or designee upon delivery to the site.

9. Documentation

At a minimum, the Fabricator shall maintain a filing system for the following QC records and documentation. All QC records and documentation shall be made available to MassDOT upon the request of the Department.

- (a) Current MassDOT Approved Mix Design Sheet(s) and Approval Letter(s)
- (b) PCI Certification
- (c) Current Qualifications and Certifications for QC Manager(s) and QC Technician(s)
- (d) Most current set of Approved Shop Drawings
- (e) Approved Placement, Finishing and Curing Plan
- (f) Approved Dunnage Plan
- (g) Fabricator Certificate of Compliance for each fabricated Prestressed Concrete Beam
- (h) Admixture Manufacturer's Certification of Compliance for each approved Admixture
- (i) Completed QC Inspection Report for each fabricated Prestressed Concrete Beam
- (j) Identification Number for each fabricated Prestressed Concrete Beam
- (k) Time and date of casting of each fabricated Prestressed Concrete Beam
- (l) Date of stripping of each fabricated Prestressed Concrete Beam
- (m) Batch Ticket Printout reporting the quantity of concrete produced for each batch of concrete produced
- (n) Concrete temperature records for each fabricated Prestressed Concrete Beam
- (o) QC Test Report Forms for each subplot of concrete produced
- (p) Non-Conformance Reports (NCRs)
- (q) Documentation of Repairs (if applicable)

C. Acceptance

MassDOT will perform Acceptance inspection, sampling, and testing during fabrication and installation, to evaluate the quality and degree of compliance of the fabricated Prestressed Concrete Beam to MassDOT specifications. Additionally, MassDOT Inspectors will monitor the Fabricator's Quality Control activities to ensure the Fabricator is properly administering Quality Control in conformance with the Fabricator's NPCA or PCI Certification. Acceptance inspection and test results not meeting MassDOT specifications will result in Non-conformance Reports (NCR) being issued by MassDOT to the Fabricator or Contractor for corrective action. Final Acceptance for the fabricated Prestressed Concrete Beams shall be determined by MassDOT.

ITEM 995.01 (Continued)**1. Inspection**

A MassDOT MassDOT Inspector will be assigned to perform Acceptance activities during fabrication, which includes the inspection of the materials, work procedures, and Prestressed Concrete Beams. At least seven (7) days prior to the scheduled start of fabrication, the Fabricator shall contact the MassDOT Research and Materials Section (RMS) to provide notice of the scheduled fabrication start date. The Fabricator shall complete the following activities prior to notifying MassDOT RMS of the scheduled start date:

- (a) Receive approval for all submitted Fabricator cement concrete mix designs from the MassDOT Research and Materials Section for the current year, as specified under the *Mix Design* section and *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete shall meet the requirements of M4.02.17.
- (b) Receive approval for the submitted Fabricator Placement, Finishing, and Curing Plan from the MassDOT Research and Materials Section, as specified under the *Placement, Finishing, and Curing Plan* section.
- (c) Receive Engineer of Record approved shop drawings from the MassDOT Research and Materials Section as specified under the *Shop Drawings* section.
- (d) Participate in the pre-production meeting, as described under the *Pre-Production Meeting* section (if required).

Prior to the start of fabrication, the Fabricator shall review the fabrication schedule with the MassDOT Inspector. Fabrication shall only proceed when:

- (a) The QC Inspector and MassDOT Inspector are present to inspect the Prestressed Concrete Beam(s) being fabricated.
- (b) The QC Manager is present at the Fabricator's plant.

The Fabricator shall grant access to all required areas of the Fabricator's plant to the MassDOT Inspector, during the hours of fabrication. Fabrication without MassDOT Inspector access to required areas is prohibited, and will result in the rejection of the Prestressed Concrete Beam(s).

Additionally, the MassDOT Inspector will monitor the adequacy of the Fabricator's Quality Control activities. MassDOT Inspector Acceptance activities performed at the Fabricator's plant shall remain independent from the Fabricator, and does not replace the Fabricator's required Quality Control activities.

ITEM 995.01 (Continued)

2. Sampling and Testing

At a minimum, the MassDOT Inspector will perform random Acceptance sampling and testing for each Sublot of concrete produced as specified in *Table 2: Acceptance Sampling and Testing*. The MassDOT Inspector will also perform Acceptance sampling and testing on concrete that has been retempered with admixtures or hold-back water during production. Test Specimens will conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60.

Table 2: Acceptance Sampling and Testing

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer				
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22 AASHTO T 23	7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days	Total Quantity of Beams fabricated on a Contract, per Bid Item, per Mix Design	One (1) Beam	One (1) per Sublot or fraction thereof	Point of Discharge
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 56 days ^(b)				

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f_c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

ITEM 995.01 (Continued)**MATERIALS**

Materials shall meet the following specifications (if applicable):

General	M4.00.00
Portland Cement	M4.01.0
Blended Hydraulic Cements	M4.01.1
Fly Ash	M4.01.2
Cement Concrete	M4.02.00
Cement	M4.02.01
Cement Mortar	M4.02.15
Aggregates	M4.02.02
Lightweight Aggregates	M4.02.03
Water	M4.02.04
Cement Concrete Additives	M4.02.05
Proportioning	M4.02.06
Mixing and Delivery	M4.02.10
Test Specimens	M4.02.13
Mortar for Filling Keyways	M4.04.0
Slag	AASHTO M 302
High Performance Cement Concrete	M4.06.1
Self-Consolidating Concrete (SCC)	M4.02.17
Prestressing Strands	AASHTO M 203
Reinforcing Bars	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Welded Wire Reinforcement	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Strand Chuck	M8.15.0
Lifting Devices	PCI MNL-116

1. Cement Concrete Mix Design

The cement concrete shall be comprised of specified proportions of water and MassDOT approved aggregates, cement, supplementary cementitious materials (SCMs), and admixtures to form a homogenous composition. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

The Fabricator is responsible for developing the concrete mix to be used for fabricating prestressed beams and having it prequalified by the MassDOT Research and Materials Section. The mix design compressive strength shall be as shown on the plans and as prequalified by the MassDOT Research and Materials Section. Prequalification shall include the trial batch testing shown in Table 3. For previously prequalified mixes, the Fabricator shall perform any tests specified in Table 3 that were not previously performed.

ITEM 995.01 (Continued)

If the concrete mix has not been prequalified by the MassDOT Research and Materials Section, the Fabricator shall design and submit for approval, the proportions and test results for a concrete mix that shall attain the requirements specified in Table 3. The proposed mix design and all required test results shall be submitted to the MassDOT Research and Materials Section for approval. Requirements for additional testing and receipt of additional documentation from the Fabricator will be determined by RMS. Unsatisfactory results or other conditions identified during this additional testing and additional documentation review, will require re-submission of a new mix design for review and approval.

The mix shall be formulated with calcium nitrite corrosion inhibitors, which shall be added at a rate of 3 gallons per cubic yard of concrete in order to increase the active corrosion threshold to 9.9 pounds of chloride per cubic yard of concrete at the reinforcing bar level. Prior to production of cement concrete, the Fabricator shall report and submit all proposed mix design formulations and its constituent materials onto the MassDOT Cement Concrete Mix Design Sheet to the MassDOT Research and Materials Section for review and approval. All mix design yields shall be designed for 1.0 cubic yards of concrete, with an allowable tolerance of +/- 1.0 %. All liquids incorporated into the proposed mix design(s) shall include both water and admixtures in the liquid mass calculation.

During production of cement concrete, the Fabricator shall not alter the previously approved mix design formulation or its constituent materials. Proposed alterations in source, type, batch quantity, or gradation to any of the constituent materials of the previously approved mix design formulation shall require a new MassDOT Mix Design Sheet submission to the MassDOT Research and materials Section for review and approval. Fabrication shall not occur without prior MassDOT mix design approval. All concrete used for prestressed concrete beams shall be batched by the Fabricator producing the prestressed concrete beams. The use of ready-mix concrete batched by others shall not be permitted.

The Fabricator shall notify MassDOT RMS to schedule trial batch testing for the new mix design(s). Trial batch testing shall meet the following requirements:

- (a) Performed by a qualified laboratory and/or AASHTO accredited laboratory.
- (b) Performed and/or sampled in the presence of a MassDOT Inspector.
- (c) Meet the requirements as specified in *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete (SCC) shall meet M4.02.17.

Failure to perform all of the required trial batch testing or provide MassDOT RMS trial batch test results within the Specification Limits (as specified in Table 3) will result in the disqualification of the Fabricator's proposed mix design(s).

ITEM 995.01 (Continued)**Table 3: Trial Batch Sampling and Testing for New Mix Designs**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Performed By
Slump ^(a)	AASHTO T 119	Per AASHTO	Max. 8 inches or as approved by the Engineer	Quality Control
Air Content (AC)	AASHTO T 152	Per AASHTO	$5\% \leq AC \leq 8\%$	Quality Control
Temperature (°F)	AASHTO T 309	Per AASHTO	$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	Quality Control
Compressive Strength ^(b)	AASHTO T 22 AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Lab Mixed $f'_{cr} = 1.3 f'_c$ at 28 days Batch Mixed $f'_{cr} = 1.2 f'_c$ at 28 days	MassDOT
Alkali-Silica Reaction (ASR) ^(d)	ASTM C 1567	Per ASTM	M4.02.00	Quality Control
Resistance to Chloride Ion Penetration Chloride Ion Penetration ^(e)	AASHTO T 358 ^(f)	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Resistivity $\geq 21 \text{ k}\Omega\text{-cm}$ at 28 days	MassDOT
Freeze/Thaw Durability ^(c)	AASHTO T 161 (Procedure A)	Per AASHTO	Relative Dynamic Modulus of Elasticity after 300 cycles $\geq 80\%$	Quality Control

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) Trial batch compressive strength testing shall be performed by MassDOT. Acceptance will be based on compressive strength testing performed by MassDOT. For mixes requiring $f'_c > 8,000$ psi, three consecutive trial batches shall be performed, all achieving $f'_{cr} \geq 1.1 f'_c$, for MassDOT approval.
- (c) If an AASHTO accredited laboratory is preparing the trial batch test specimens, MassDOT Acceptance presence is not required. If the Fabricator is preparing the trial batch test specimens, MassDOT Acceptance presence is required during trial batch test specimen preparation.
- (d) Alkali Silica Reaction (ASR) testing shall meet the requirements of M4.02.00. Independent laboratories performing ASR testing shall be listed on the MassDOT Quality Construction Materials List (QCML).
- (e) Calcium nitrite shall be removed from mix designs containing the admixture and replaced by an equivalent quantity of water when preparing Chloride Ion Penetration resistance trial batch test specimens.
- (f) The Wenner probe tip spacing “a” shall be 1.5.

ITEM 995.01 (Continued)**2. Reinforcement and Prestressing Strands**

The size and grade of steel reinforcement and prestressing strands shall be as indicated on the plans. All reinforcing steel shall be epoxy coated, Grade 60. All prestressing strands shall be uncoated.

3. Transverse Ties

The transverse ties shall be low-relaxation strands meeting the requirements of AASHTO M 203. The size and grade shall be as indicated on the plans. The ties shall be supplied with a seamless polypropylene sheath which has corrosion inhibitor grease between the strand and sheath. The location of all transverse ties, shall be as shown on the plans.

4. Threaded Inserts

Threaded inserts are permissible in Prestressed Concrete Beams for installing formwork, utility supports, or deck drains. Threaded inserts shall be hot dip galvanized or made of stainless steel and shall not come in contact with the reinforcing steel. The number of threaded inserts installed for the Contractor's convenience shall be kept to a minimum.

CONSTRUCTION METHODS – PLANT FABRICATION**A. Shop Drawings**

Prior to performing any work under this Section, the Contractor shall receive approval for all shop drawings for the Prestressed Concrete Beam being worked on and any special Contract requirements, provided that a complete shop drawing package is provided. The Contractor shall not order materials or begin work before receiving approved shop drawings. MassDOT will reject any Prestressed Concrete Beams that deviate from the approved drawings or are fabricated prior to receiving written approval of the shop drawings. The Contractor shall bear full responsibility and costs for all materials ordered or work performed prior to the approval of the shop drawings or written authorization from MassDOT.

The Contractor shall submit scaled shop drawings to the Engineer of Record for review and approval. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24x36") paper copies of the Approved (or Approved As Noted) shop drawings to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. An approval stamp shall appear on every shop drawing sheet. Wet-stamping or wet-signing is not required, provided that the stamp and reviewer name are legible. The Fabricator's name and address shall appear on each sheet.

ITEM 995.01 (Continued)

Resubmittal of “Approved as Noted” shop drawings is not necessary for minor revisions, provided that the correction can be clearly understood and is unambiguous without possibility of misinterpretation. Shop drawings with questions or comments that require a response and/or additional information from the Fabricator must be resubmitted.

Detailed shop drawings shall be prepared in accordance with the relevant provisions of Subsection 5.02 and shall, at a minimum, contain the following:

- (a) Number and type of Prestressed Concrete Beams including overall length, width and height.
- (b) Skew angle.
- (c) Location and spacing of strands, draped strands and their geometry, and/or location and spacing of strands to be debonded including the length of each strand’s debondment.
- (d) Location, size and geometry of all steel reinforcement, and mechanical reinforcing bar splicers if called for on the plans.
- (e) Location and details of all inserts, anchors, and any other items required to be cast into the Prestressed Concrete Beams (whether detailed on the plans by the Engineer of Record or provided for the Contractor's convenience). Prestressed Concrete Beams shall not be fired or drilled into for attachment purposes. All hardware shall be galvanized except as noted.
- (f) Locations and details of the lifting devices, including supporting calculations, type and amount of any additional reinforcing required for lifting. The Fabricator shall design all lifting devices based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (7th edition).
- (g) The minimum compressive strength required prior to release of prestressing and prior to handling the Prestressed Concrete Beam.

The shop drawings shall not include procedures for placement, finishing, and curing of concrete. These details shall be included in the Placement, Finishing and Curing Plan that is to be submitted to MassDOT Research and Materials Section as described under *Placement, Finishing, and Curing Plan*.

B. Fabrication

All Prestressed Concrete Beams shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

ITEM 995.01 (Continued)**C. Placement, Finishing and Curing Plan**

At least 30 days prior to start of fabrication, the Contractor shall submit the Fabricator's proposed Placement, Finishing and Curing Plan to the Engineer for approval by MassDOT Research and Materials Section. This shall be an independent submittal, separate from the fabrication shop drawings. The Placement, Finishing and Curing Plan shall include the following:

- (a) Method of Mixing
- (b) Method of Placement
- (c) Method of Consolidation
- (d) Method of Finishing
- (e) Method of Initial Curing
- (f) Method of Intermediate Curing
- (g) Method of Final Curing
- (h) Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
- (i) Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
- (j) Temperature Monitoring, Recording, and Reporting

D. Dunnage Plan Shop Drawings

At least 30 days prior to the start of fabrication, the Contractor shall submit proposed Dunnage Plan Shop Drawings to the Engineer of Record for review and approval. This shall be an independent submittal, separate from the fabrication shop drawings. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24"x36") paper copies of the Approved (or Approved As Noted) Dunnage Plan Shop Drawings to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. The Dunnage Plan Shop Drawings shall include the following:

- (a) Proposed layout of the Prestressed Concrete Beams for storage in yard and during shipping
- (b) Support and blocking point locations
- (c) Support and blocking materials

E. Pre-Production Meeting

The Contractor shall notify the MassDOT Research and Materials Section to determine if a pre-production meeting will be required to review the specification, shop drawings, curing plan, schedule, and discuss any specific requirements. The meeting shall be held prior to scheduling a MassDOT Inspector (refer to Section *Quality Assurance – Precast Concrete, C. Acceptance, A. Inspection*), and at least seven (7) days prior to the scheduled casting of any Prestressed Concrete Beam or control section. The Contractor shall schedule the meeting, which shall include representatives of the Fabricator and MassDOT.

ITEM 995.01 (Continued)**F. Reinforcement**

The reinforcing bars shall be installed in accordance with Section 901.62 of the Supplemental Specifications, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

G. Placing and Tensioning Strands

Placing and tensioning strands shall be in accordance with PCI MNL-116. The location of all prestressing strands shall be as indicated on the plans.

H. Tolerances

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with 901.62. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

I. Forms

Concrete shall be cast in rigidly constructed forms, which will maintain the Prestressed Concrete Beams within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. Any defects or damage of more than "Category 2, Minor Defects" made to the concrete, due to form work, stripping or handling, shall be subject to repair or rejection, as defined in the *Repairs and Replacement* section. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

ITEM 995.01 (Continued)

Where applicable, the material used for forming voids in concrete deck beams and box beams shall be sufficiently strong and resistant to water to support the wet concrete, which is to be packed around the void forms, without collapsing. The void forms shall be securely anchored so that no movement will occur during placing and consolidation of the concrete. Void drains shall be installed at the locations shown on the plans and Fabricator shall ensure that the drains are in contact with the void form. After the beams have been cast and removed from the forms, the Fabricator shall check that the drains are still in contact with the void form by inserting a rigid probe into the drain for a distance greater than the thickness of the concrete at the void drain.

J. Mixing of Concrete

The concrete shall be proportioned and mixed in conformance with the Fabricator's MassDOT approved mix design and M4.02.10 Mixing and Delivery. Fabrication shall not occur without prior MassDOT mix design approval. The Fabricator shall provide copies of batch tickets to the MassDOT Plant Inspector. The MassDOT Plant Inspector will verify if the batch ticket quantities are within the tolerances of the Fabricator's MassDOT approved mix design.

K. Placement of Concrete

Prior to the placement of concrete, the temperature of the forms shall be greater than or equal to 50°F. Quality Control inspection shall be performed by the Fabricator as specified in the *Fabricator Quality Control* section. Placement of the concrete shall not proceed until the MassDOT Plant Inspector is present to perform inspection and begin monitoring Fabricator Quality Control inspection activities and is in compliance with specifications. The MassDOT Plant Inspector shall inspect and accept the placement of the reinforcing steel and prestressing strands prior to the placement of concrete into the forms. The Fabricator shall verify all materials and equipment required for protecting and curing the concrete are readily available and meet the requirements of the *Final Curing Methods* section below. All items encased in the concrete shall be accurately placed in the position shown on the Plans and firmly held during the placing and setting of the concrete. Clearance from the forms shall be maintained by supports, spacers, or hangers and shall be of approved shape and dimension.

During placement, the concrete shall maintain a concrete temperature range between 50°F and 90°F. The Fabricator shall minimize the time to concrete placement (measured from start of mixing to completion of placement). In no event shall time to placement exceed 90 minutes. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during the placement of the concrete as specified in the *Fabricator Quality Control* section above. Delays or shutdowns of over 30 minutes shall not be allowed during the continuous filling of individual forms.

ITEM 995.01 (Continued)**L. Consolidation of Concrete**

Suitable means shall be used for placing concrete to prevent segregation or displacement of reinforcing steel or forms. The concrete shall be thoroughly consolidated by external or internal vibrators or a combination of both. Vibrators shall not be used to move concrete within the forms. Vibrators shall be used as specified in 901.63C and as directed by the Engineer. Concrete shall be placed and consolidated in a way that minimizes the presence of surface voids or bug holes on the formed surfaces. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

M. Finishing of Concrete

The top of the prestressed concrete beams shall be given a rake finish with a ¼” amplitude applied transversely across the beam to the limits shown on the plans.

N. Exposed Surfaces of Prestressed Concrete Beams

As soon as conditions permit, before the concrete has fully hardened, all dirt, laitance, and loose aggregate shall be removed from the exposed concrete surfaces. Contractor shall not allow foot traffic on the uncured concrete until it has reached sufficient strength to prevent damage.

O. Exposed Surfaces of Shear Keys and Closure Pour Shear Keys

If the beams have shear keys cast in the sides of the beams, the surfaces of the shear keys shall be abrasive blasted prior to shipment. Fabricator may utilize a surface retarder with water blast, abrasive blast, or a combination of both to achieve the desired shear key finish. The abrasive blast shall use oil free compressed air. The profile of the shear key surfaces shall be similar to that of 60 grit sand paper. The closure pour shear key shall be prepared as called for in the UHPC Special Provision.

P. Initial Curing Methods

After the placement of concrete and prior to concrete finishing, the Fabricator shall initiate initial curing methods when the concrete surface begins to dry, to reduce moisture loss from the surface. Application of one or more of the following initial curing methods shall occur immediately after the bleed water sheen has disappeared.

1. Fogging

Fogging nozzles shall atomize water into a fog-like mist. The fog spray shall be directed and remain visibly suspended above the concrete surface, to increase the humidity of the air and reduce the rate of evaporation. Water from fogging shall not be worked into the surface during finishing operations and shall be removed or allowed to evaporate prior to finishing.

ITEM 995.01 (Continued)**2. Liquid-applied Evaporation Reducers**

Evaporation reducers shall be sprayed onto the freshly placed concrete surface to produce an effective monomolecular film that reduces the risk of plastic-shrinkage cracking and rate of evaporation of the bleed water from the concrete surface. Evaporation reducers shall be applied in accordance with manufacturer's recommendations.

Q. Intermediate Curing Methods

The Fabricator shall initiate intermediate curing methods if concrete finishing has taken place prior to the concrete reaching final set. The freshly finished concrete surface shall be protected from moisture loss, by the continuation of initial curing methods (fogging and evaporation reducers) until final curing methods are applied or by the use of liquid membrane-forming curing compounds (see *Liquid Membrane-Forming Compounds for Curing* section).

R. Final Curing Methods

The Fabricator shall initiate and apply final curing methods to the concrete immediately after the following conditions are met:

- (a) Completion of concrete finishing
- (b) Final set of concrete
- (c) Concrete has hardened sufficiently enough to prevent surface damage

During fabrication of Prestressed Concrete Beams, the Fabricator shall maintain the required concrete temperature ranges throughout the entire duration of the final curing method cycle as specified herein. Controlled and gradual termination of the final curing method shall occur after all specified conditions are met. The concrete temperature shall be reduced at a rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the final curing method enclosure. The Fabricator shall maintain a minimum concrete temperature of 40°F until 100% f'c is attained (see *Handling and Storage* section below).

1. Water Spray Curing.

All exposed concrete surfaces shall remain moist with a continuous fine spray of water throughout the entire duration of the final curing method cycle (see *Table 4: Final Curing Method Cycle for Water Spray*).

ITEM 995.01 (Continued)**Table 4: Final Curing Method Cycle for Water Spray**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Five (5) days	≥ 80% f _c

2. Saturated Covers for Curing

All exposed concrete surfaces shall remain moist with a continuous application of saturated covers throughout the entire duration of the final curing method cycle (see *Table 5: Final Curing Method Cycle for Saturated Covers*). Saturated covers shall be allowed to dry thoroughly before removal to provide uniform, slow drying of the concrete surface.

Table 5: Final Curing Method Cycle for Saturated Covers

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f _c

Saturated covers, such as burlap, cotton mats, and other coverings of absorbent materials shall meet the requirements of AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing concrete. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to the concrete. Saturated covers shall have sufficient thickness and proper positioning onto the concrete surface to maximize moisture retention.

Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of the concrete. Saturated covers shall be kept continuously moist so that a film of water remains on the concrete surface throughout the entire duration of the final curing method cycle. The Fabricator shall not permit the saturated covers to dry and absorb water from the concrete. Use of polyethylene film (see *Polyethylene Film* section) may be applied over the saturated cover to potentially decrease the need for continuous watering.

ITEM 995.01 (Continued)**3. Sheet Materials for Curing**

All exposed concrete surfaces shall remain moist with a continuous application of curing sheet materials throughout the entire duration of the final curing method cycle (see *Table 6: Final Curing Method Cycle for Curing Sheet Materials*).

Table 6: Final Curing Method Cycle for Sheet Materials

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f _c

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

(a) Polyethylene Film

Polyethylene film shall meet the requirements of ASTM C171, consist of a single sheet manufactured from polyethylene resins, be free of visible defects, and have a uniform appearance. Careful considerations shall be taken by the Fabricator to prevent the film from tearing during storage and application, so as to not disrupt the continuity of the film (polyethylene film reinforced with glass or other fibers is more durable and less likely to be torn). The Fabricator shall monitor the application of the film to prevent uneven spots from appearing (mottling) on the concrete surface, due to variations in temperature, moisture content, or both. The Fabricator shall prevent mottling from occurring on the concrete surface by applying additional water under the film or applying a combination of polyethylene film bonded to absorbent fabric to the concrete surface to retain and evenly distribute the moisture.

Immediately following final finishing, polyethylene film shall be placed over the surface of the fresh concrete surface, so as to not damage the surface of the concrete and shall be placed and weighted so that it remains in contact with the concrete throughout the entire duration of the final curing method cycle. The film shall extend beyond the edges of the concrete surface. The film shall be placed flat on the concrete surface, avoiding wrinkles, to minimize mottling. Edges of adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

ITEM 995.01 (Continued)

(b) White Burlap-Polyethylene Sheeting

White burlap-polyethylene sheeting shall meet the requirements of ASTM C171, be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete, and be applied in the same manner as the polyethylene film.

(c) Reinforced Impervious Paper

Reinforced impervious paper shall meet the requirements of ASTM C171, consist of two sheets of kraft paper cemented together with a bituminous adhesive and reinforced with embedded cords or strands of fiber running in both directions, and be white in color. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried.

Reinforced impervious paper can be reused so long as it is effective in retaining moisture on the concrete surface. The Fabricator shall visually inspect the reinforced impervious paper for all holes, tears, and pin holes from deterioration of the paper through repeated use by holding the paper up to the light. The paper shall be discarded and prohibited from use when the moisture is no longer retained.

After the concrete has hardened sufficiently to prevent surface damage, the concrete surface shall be thoroughly wetted prior to the application of the reinforced impervious paper, and be applied in the same manner as the polyethylene film.

4. Liquid Membrane-Forming Compounds for Curing

All exposed concrete surfaces shall remain moist with a continuous application of liquid membrane-forming compounds throughout the entire duration of the final curing method cycle (see *Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥ 80% f _c

Liquid membrane-forming compounds shall meet the requirements of ASTM C 1315, Type I, Class A and shall exhibit specific properties, such as alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light, in addition to moisture-retention capabilities. Liquid membrane-forming compounds shall consist of waxes, resins, chlorinated rubber, or other materials to reduce evaporation of moisture from concrete. Liquid membrane-forming compounds shall be applied in accordance with the manufacturer’s recommendations.

ITEM 995.01 (Continued)

Liquid membrane-forming compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. All exposed surfaces shall be wetted immediately after form removal and kept moist to prevent absorption of the compound, allowing the curing membrane to remain on the concrete surface for proper membrane moisture retention. The concrete shall reach a uniformly damp appearance with no free water on the surface prior to the application of the compound.

If patching or finishing repairs are to be performed prior to the application of the compound, the Precast Concrete Bridge Element shall be covered temporarily with saturated covers until the repairs are completed and the compound is applied. Only areas being repaired shall be uncovered during this period. While the saturated covers are removed to facilitate the patching process, the work shall continue uninterrupted. If for any reason the work is interrupted, saturated covers shall be placed onto the uncovered concrete surface, until the work continues and is completed, at which time the curing compound shall be applied to the repaired area.

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

The compound shall be applied in two applications at right angles to each other to ensure uniform and more complete coverage. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of a troweled or floated surface. In such cases, two separate applications may be needed, each at 200 ft²/gal., with the first being allowed to become tacky before the second is applied.

The curing compound shall be applied by power sprayer, using appropriate wands and nozzles with pressures between 25 and 100 psi. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller. The compound shall be stirred or agitated before use and applied uniformly in accordance with the manufacturer's recommended rate. The Fabricator shall verify the application rates are in accordance with the manufacturer's recommended rate.

When the concrete surface is to receive paint, finishes, or toppings that require positive bond to the concrete, it is critical that the curing procedures and subsequent coatings, finishes, or toppings be compatible to achieve the necessary bond

ITEM 995.01 (Continued)

After the termination of the final curing method cycle has occurred, liquid membrane-forming compounds shall be removed by blast-cleaning from any concrete surface that is to receive paint, finishes, plastic concrete from secondary pour, grout, or any other toppings that require bonding to the concrete surface. These surfaces shall be further blast-cleaned to remove the cement matrix down to exposed aggregate to ensure proper bonding to the material. The method used to remove the curing compound shall not damage the reinforcement and coating. Compounds are prohibited on any concrete surface that will have a penetrating or coating type treatment such as a sealer, stain, or waterproofing membrane applied to it.

5. Accelerated Curing

Accelerated curing shall use live steam or radiant heat with moisture in accordance with PCI MNL-116 as modified herein. The concrete temperature shall meet the maximum heat increase and cool down rates as specified herein. Concrete temperature monitoring shall meet the requirements of the *Temperature Monitoring* section. Excessive and fluctuating rates of heating and cooling shall be prohibited. The concrete temperature shall not exceed 158°F at any time. The Fabricator shall meet the following accelerated curing sequencing and requirements.

(a) Initial Delay Period

The initial delay period shall be defined as the duration immediately following the placement of the concrete and the attainment of initial set of the concrete. The Fabricator shall determine the time of initial set in accordance with AASHTO T 197 specifications. Throughout the entire duration of the initial delay period, initial curing shall be implemented. The temperature increase period (see *Temperature Increase Period* section) shall not occur until initial set of the concrete is attained. During the initial delay period, the concrete temperature shall meet the following requirements:

- i. Concrete temperature rate of increase shall not exceed 10°F per hour.
- ii. Total concrete temperature increase shall not exceed 40°F higher than the placement concrete temperature or 100°F, whichever is less

(b) Temperature Increase Period

The temperature increase period shall be defined as the duration immediately following the completion of the initial delay period (after initial set) and immediately prior to the start of the constant maximum temperature period. Application of steam to the enclosure shall not occur until the initial delay period is complete. After the initial delay period is complete, all exposed concrete surfaces shall be cured in a moist environment where the concrete temperature increases at a rate not to exceed 36°F per hour.

ITEM 995.01 (Continued)**(c) Constant Maximum Temperature Period**

The constant maximum temperature period shall be defined as the duration immediately following the completion of the temperature increase period and immediately prior to the start of the temperature decrease period. After the temperature increase period is complete, all exposed concrete surfaces shall be cured in a moist environment at a controlled and constant elevated temperature throughout the entire duration of the constant maximum temperature period. Termination of the constant maximum temperature period and the start of the termination decrease period shall occur after all specified conditions are met (see *Table 8: Constant Maximum Temperature Period*).

Table 8: Constant Maximum Temperature Period

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
120°F ≤ °F ≤ 158°F	6 hrs ≤ Time ≤ 48 hrs	≥ 80% f _c

(d) Temperature Decrease Period

After the constant maximum temperature period is complete, the concrete temperature shall be cured in a moist environment at a controlled and reduced rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the curing enclosure.

S. Release

The Fabricator shall not release strands or handle the Prestressed Concrete Beam until Quality Control compressive strength cylinders attain a minimum compressive strength of 80% Design Strength (f_c) or the specified detensioning compression strength as indicated on the approved shop drawings has been achieved. All exposed concrete surfaces shall continue to be cured in conformance with the *Final Curing Methods* sections until completion.

T. Handling and Storage of Prestressed Concrete Beams

Prestressed Concrete Beams may be exposed to temperatures below freezing (32°F) when the chosen curing cycle has been completed, provided that the following conditions are met:

- (a) Prestressed Concrete Beams are protected from precipitation with polyethylene curing covers until 100% f_c is attained
- (b) Prestressed Concrete Beams maintain a minimum concrete temperature of 40°F until 100% f_c is attained

ITEM 995.01 (Continued)

Prestressed Concrete Beams damaged during handling and storage will be repaired or replaced at MassDOT's direction at no cost to MassDOT. Prestressed Concrete Beams shall be lifted at the designated points by approved lifting devices embedded in the concrete and in accordance with proper lifting and handling procedures. Storage areas shall be smooth and well compacted to prevent damage due to differential settlement. Prestressed Concrete Beams shall be supported on the ground by means of continuous blocking, in accordance with the approved dunnage plan.

Prestressed Concrete Beams shall be loaded on a trailer with blocking as described above, in accordance with the approved dunnage plan. Shock-absorbing cushioning material shall be used at all bearing points during transportation of the Prestressed Concrete Beams. Blocking shall be provided at all locations of tie-down straps. Prestressed Concrete Beams stored prior to shipment shall be inspected by the Contractor prior to being delivered to the site to identify damage that would be cause for repair or rejection.

U. Repairs and Replacement

In the event defects are identified, they shall be classified in the following categories and a non-conformance report (NCR) shall be filed if required. The NCR shall be submitted to MassDOT for review. Defects in all categories shall be documented by plant Quality Control personnel and made available to MassDOT upon request. Any required repairs shall utilize materials listed on the MassDOT QCML.

Where noted, defects shall be repaired according to the PCI Northeast Region Guidelines for Resolution of Non-Conformances in Prestressed Concrete Beams, Report Number PCINE-18-RNPCBE. Please note that reference to PCINE-18-RNPCBE is made for repair details only. In the case of conflicts with this Special Provision, this Special Provision shall govern.

1. Category 1, Surface Defects

Category 1 defects do not need to be repaired, and an NCR does not need to be filed. Surface defects are defined as the following:

- (a) Surface voids or bug holes that are less than 5/8-inch in diameter and less than 1/4-inch deep, except when classified as Category 4
- (b) Cracks less than or equal to 0.006 inches wide
- (c) Cracks less than or equal to 0.125 inches wide on surfaces that will receive a concrete overlay or spray-applied membrane waterproofing

ITEM 995.01 (Continued)**2. Category 2, Minor Defects**

Category 2 defects shall be repaired, but an NCR does not need to be filed. Minor defects are defined as the following:

- (a) Spalls, honeycombing, surface voids that are less than 2 inches deep and have no dimension greater than 12 inches
- (b) Cracks less than or equal to 0.016 inches that will not receive a concrete overlay or spray-applied membrane waterproofing
- (c) Broken or spalled corners that will be covered by field-cast concrete

Minor defects shall be repaired according to PCINE-18-RNPCBE. Cracks shall be sealed according to the PCI Repair Procedure #14 in PCINE-18-RNPCBE.

3. Category 3, Major Defects

For Category 3 defects, the Fabricator shall prepare an NCR that documents the defect and describes the proposed repair procedure. The NCR shall be submitted to MassDOT for approval prior to performing the repair. Major defects are defined as the following:

- (a) Spalls, honeycombing and surface voids that are deeper than 2 inches or have any dimension greater than 12 inches, when measured along a straight line
- (b) Concentrated area of defects consisting of four or more Category 2 Defects within a 4-square foot area
- (c) Exposed reinforcing steel
- (d) Cracks greater than 0.016 inches and less than or equal to 0.060 inches in width that will not receive a concrete overlay or spray-applied membrane waterproofing
- (e) Bearing area spalls with dimensions not exceeding 3 inches
- (f) Cracks, spalls and honeycombing that will be encased in cast in place concrete need not be repaired, but the limits and location of the defects shall be documented with an NCR

Upon MassDOT approval, defects and cracks shall be repaired according to PCINE-18-RNPCBE and this specification. All repairs shall be completed at the expense of the Contractor.

ITEM 995.01 (Continued)**4. Category 4, Rejectable Defects**

Rejectable defects as determined by the MassDOT Inspector, RMS, and Engineer may be cause for rejection. Fabricator may submit an NCR with a proposed repair procedure, requesting approval. Some rejectable defects are defined as the following:

- (a) Surface defects on more than 5% of the surface area which will be exposed to view after installation
- (b) Minor defects that in total make up more than 5% of the surface area of the unit
- (c) Cracks greater than 0.060 inches in width except as noted in Category 1
- (d) Elements fabricated outside of the specified tolerances
- (e) MassDOT compressive strength testing that does not meet the specified Design Strength, f'_c

V. Loading

Prior to the Fabricator loading the Precast Bridge Element on to the truck for shipping, the Fabricator shall provide the MassDOT Plant Inspector and RMS a minimum seven (7) days' notice of the Fabricator's intent to load the Precast Bridge Element. Inspection by the MassDOT Plant Inspector shall take place while the element is still on dunnage in the yard. The element shall not be loaded onto the truck until the MassDOT Plant Inspector has performed the inspection.

W. Shipping

Prior to shipment, the Fabricator shall perform the following actions and provide the required documentation to the MassDOT Plant Inspector:

- (a) Prestressed Concrete Beams shall remain at the Fabricator's plant for a minimum of 7 days after cast date.
- (b) QC Inspection Reports shall be signed by the Quality Control Manager and provided to the MassDOT Plant Inspector.
- (c) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Prestressed Concrete Beam's representative subplot shall be generated by the Fabricator and provided to the MassDOT Plant Inspector.
- (d) Certificate of Compliance shall be generated by the Fabricator as described under the Fabricator Quality Control section and provided to the MassDOT Plant Inspector.
- (e) All MassDOT RMS approved Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the MassDOT Plant Inspector and Quality Control Manager.
- (f) All NCRs shall be signed off by the Quality Control Manager, MassDOT Inspector and MassDOT RMS.

ITEM 995.01 (Continued)**X. Delivery**

Upon Delivery, the following documentation shall be provided to the MassDOT Resident Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Prestressed Concrete Beam's representative subplot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

The Contractor shall inspect the Prestressed Concrete Beams upon receipt at the site. Prestressed Concrete Beams damaged during delivery shall be repaired or replaced at MassDOT's direction at no cost to MassDOT.

CONSTRUCTION METHODS – FIELD CONSTRUCTION**A. General**

All of the Contractor's field personnel involved in the erection and assembly of the Prestressed Concrete Beams shall have knowledge of and follow the approved Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly.

Prior to installation, the following documentation shall be reviewed and confirmed by the MassDOT Resident Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Prestressed Concrete Beam's representative subplot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

Field construction staff shall verify that the Resident Engineer has accepted all Prestressed Concrete Beams prior to installation.

B. Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly

Prior to the erection, the Contractor shall submit an Erection Procedure and a Quality Control Plan for Prestressed Concrete Beam Assembly for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Prestressed Concrete Beams. The Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly shall, at a minimum, include the following:

ITEM 995.01 (Continued)**1. Erection Procedure**

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (seventh edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

- (a) Steel reinforcing details, and location and details of lifting devices
- (b) Minimum concrete compressive strength for handling the Prestressed Concrete Beams.
- (c) Concrete stresses during handling, transport, and erection.
- (d) Crane capacities, pick radii, sling geometry, and lifting hardware.
- (e) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
- (f) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Prestressed Concrete Beams and setting them on the abutments and piers.
- (g) Design of crane supports including verification of subgrade for support.
- (h) Location and design of all temporary bracing that will be required during erection.

2. Quality Control Plan for Prestressed Concrete Beam Assembly

The Quality Control Plan for Prestressed Concrete Beam Assembly is a document prepared and submitted by the Contractor prior to the start of work which requires the Contractor to identify and detail the sequence of construction in accordance with the project schedule and which clearly identifies all stages of field construction. The assembly procedures for the Prestressed Concrete Beams shall be submitted on full size 24"x36" sheets. This document will be treated as a Construction Procedure and will be reviewed by both the Designer and the District Construction Office.

ITEM 995.01 (Continued)

At a minimum, the Quality Control Plan for Prestressed Concrete Beam Assembly shall include the following:

- (a) Listing of the equipment, materials, and personnel including their assigned responsibilities that will be used to erect and assemble the Prestressed Concrete Beams on site.
- (b) Documentation of all preparatory work necessary for moving personnel, equipment, supplies, and incidentals to the project site before beginning work.
- (c) Detailed schedule showing the sequence of operations that the Contractor will follow to complete the field construction from setting working points and working lines to the casting of closure pours and the curing of the closure pour concrete, as described below and as called for on the plans.
- (d) For NEDBT and NEXT D beams, Contractor's means for ensuring that the Prestressed Concrete Beam shall align to the roadway profile and cross slope and means for adjusting the final deck slab elevation.
- (e) Timeline and descriptions of Quality Control activities to be followed throughout the field construction operations including methods and procedures for controlling tolerance limits both horizontally and vertically.

C. Survey and Layout

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. MassDOT reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

D. Adjacent Prestressed Concrete Deck or Box Beams**1. Beam Layout and Erection**

Prestressed concrete beams shall be installed to the line and grade shown on the plans in accordance with the Contractor's approved Erection Procedure and Assembly Plan. The location of the beams on the abutments and piers shall be laid out according to the nominal width of the beams as shown on the plans. Each beam shall be erected such that after erection, the beam shall lie entirely within the horizontal lines defined by its nominal width for its entire length and shall not infringe on the space allocated for any adjacent beam. The Contractor may adjust the width of the shear key between beams.

Immediately prior to erecting the beams, the keyway surfaces shall be cleaned at the job site of all dust, dirt, and carbonation using a high-pressure water blast.

After all beams are erected, the actual overall width of the beams as laid out shall not deviate from the nominal dimension shown on the framing plan beyond a tolerance of +0 inches and -1 inches.

After the beam layout has been accepted by the Engineer, the Contractor shall cut the lifting devices off below the top of the beam.

ITEM 995.01 (Continued)**2. Transverse Tie Tensioning**

Unless shown otherwise on the plans, the transverse ties shall be tensioned to 5,000 pounds before the keyways are filled. After the keyways are filled with mortar (M4.04.0) and the mortar has cured, the ties shall be tensioned as specified on the plans. No traffic or heavy equipment shall be allowed on the bridge until all transverse ties have been properly tensioned and the deck has been cast and cured.

3. Mortaring of Keyways

The precast concrete keyways that will receive mortar shall be free of materials such as paint, oil, curing compound, bond breaker, dirt etc. that will inhibit bonding. The precast concrete keyways shall be hydro-blasted with equipment that can remove asphaltic material, oils, dirt, rubber, curing compounds, paint carbonation, laitance, and other potentially detrimental materials, which may interfere with the bonding of the mortar and precast concrete.

Exposed reinforcing steel in the precast beam shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer.

Mortar (M4.04.0) shall be placed in strict accordance with the manufacturer's recommendations and instructions.

The keyways shall be filled flush to the top of the beams and any vertical misalignment between beams shall be feathered out on a slope of 1 to 12. Curing shall be performed in strict accordance with the manufacturer's recommendations. The keyways shall not be filled in cold weather when either the ambient temperature or the prestressed concrete beam's temperature is below the mortar manufacturer's recommendation. No localized heating of either the prestressed concrete beams or of the air surrounding the keyway will be permitted in an attempt to reach application temperatures.

If the keyways are not filled within five days after the beams are erected, the Contractor shall cover and protect the keyways from weather and debris until they are filled.

4. Concrete Deck Slab Placement

Prior to casting the concrete deck slab, the top of the beam shall be clean and free of all laitance or bond inhibiting agents. The concrete deck slab shall be placed after the transverse ties have been fully tensioned. Deck concrete shall be placed against the beam concrete without the use of any bonding agents.

After the formwork has been removed, all threaded inserts that have been cast into the beams for support of the formwork shall be plugged after use with a grout of the same color as that of the precast cement concrete.

ITEM 995.01 (Continued)**5. Backwalls, Curtain Walls and Keeper Blocks**

The backwalls, the curtain walls at the abutment bridge seats, and the keeper blocks shall be cast only after the beam layout has been accepted. Closed cell foam shall be attached to the bridge beams to the limits and thickness as shown on the plans and the backwall / curtain wall / keeper block concrete shall be placed directly against it. The sidewalk and safety curb may be cast after the curtain walls and exterior pier keeper blocks have been cast.

Precast Highway Guardrail Transition**A. General**

The work under this Heading consists of fabricating, transporting and installing Precast Highway Guardrail Transition and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The work shall conform with the MassDOT Standard, Supplemental, and Interim Specifications and the requirements of the current AASHTO LRFD Bridge Construction Specifications, supplemented by the current relevant provisions of the latest edition of PCI MNL-116 (The Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products), except as noted herein.

QUALITY ASSURANCE**A. General**

Quality Assurance includes all the planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service. It is an all-encompassing term that includes Quality Control (performed by the Fabricator) and Acceptance (performed by MassDOT). Quality Control is the system used by the Contractor and Fabricator to monitor and assess their production processes at the plant facility and installation activities at the project site to ensure that the final product will meet the specified level of quality. Acceptance includes all factors used by MassDOT to determine the corresponding value for the product. MassDOT Acceptance inspection at the plant facility is intended as a means of evaluation of compliance with contract requirements. Contractor and Fabricator Quality Control activities and MassDOT Acceptance activities shall remain independent from one another. MassDOT Acceptance activities shall not replace Fabricator Quality Control activities.

ITEM 995.01 (Continued)**B. Fabricator Quality Control**

Quality Control shall be performed by the Fabricator to ensure that the product is fabricated in conformance with the specifications herein. The Fabricator shall maintain a Quality Control system to monitor, assess, and adjust placement and fabrication processes to ensure the Precast Concrete Bridge Element(s) meet the specified level of quality, through sufficient Quality Control sampling, testing, inspection, and corrective action (where required). The Fabricator's Quality Control system shall address all key activities during the placement and fabrication and shall be performed in conformance with the Fabricator's NPCA or PCI Certification. Quality Control documentation shall meet the requirements of the *Fabricator Quality Control – Documentation* section below. Upon request, Fabricator Quality Control documentation shall be provided to the MassDOT Plant Inspector.

1. Plant

Prior to the fabrication of Precast Concrete Bridge Elements, the Fabricator's precast concrete plant shall obtain the following:

- (a) Certification by the National Precast Concrete Association (NPCA) Plant Certification Program or Precast/Prestressed Concrete Institute (PCI) Plant Certification Program, for the applicable types of Precast Concrete Bridge Element(s) being fabricated
- (b) MassDOT Prequalification
- (c) MassDOT Mix Design Approval

All concrete for a given Precast Concrete Bridge Element shall be produced by a single company and plant, unless otherwise approved by the Engineer.

2. Personnel

The Fabricator shall provide adequate training for all QC personnel in accordance with NPCA or PCI certification. There shall be sufficient personnel trained and certified to perform the tests listed under Subsection M4.02.13, Part D. At a minimum, the Fabricator's Quality Control Personnel shall maintain the following qualifications and certifications:

- (a) QC Manager with an active NETTCP Field Technician or ACI Concrete Field Testing Technician – Grade I certification or higher, and a minimum of 4 years continuous experience in the manufacture of Precast Concrete Bridge Elements for state transportation departments. The QC Manager shall be on site while the batch plant is producing and placing concrete for MassDOT projects.
- (b) A Technician/Inspector having the Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level I or NorthEast Transportation Training and Certification Program (NETTCP) Precast Concrete Inspector, or higher.

The Contractor shall submit to the Engineer a copy of the Fabricator's Quality Control Personnel required qualifications, as specified above.

ITEM 995.01 (Continued)**3. Laboratory**

The Fabricator shall provide a room of sufficient size to house all equipment and to adequately perform all testing. The room shall have either a separate moisture storage room or curing box for concrete cylinders, and it shall be thermostatically controlled to maintain temperatures consistent with AASHTO T 23. It shall include a desk and file cabinet for proper record keeping, and have good lighting and ventilation. This room shall be kept for testing and quality control and not used for any other purpose. An additional desk and file cabinet shall be provided for exclusive use of the Engineer. No exception from these requirements will be allowed without the express written permission of the Engineer.

4. Testing Equipment

At a minimum, the Fabricator's plant facility shall have the following testing equipment:

- (a) Air Content Meter Type A or B: AASHTO T 152
- (b) Air Content Meter Volumetric Method: AASHTO T 196 (Required for Lightweight Concrete)
- (c) Slump Cone: AASHTO T 119
- (d) Cylinder Molds AASHTO M 205
- (e) Concrete Testing Machine: AASHTO T 22
- (f) Screening Sieve: AASHTO T 27, AASHTO T 11
- (g) Curing Box: AASHTO T 23
- (h) Spread Test Base Plate for Self-Consolidating Concrete (SCC): ASTM C1611
- (i) All other equipment prescribed by AASHTO and ASTM standards for the tests to be performed by the Fabricator as specified

5. Inspection

Quality Control personnel shall monitor and inspect the fabrication of each Precast Concrete Bridge Element. Quality Control personnel shall report all inspection activities on Quality Control Inspection Reports and non-conformances on Non-Conformance Reports (NCRs) throughout the entire fabrication process, as specified herein.

6. Temperature Monitoring

At a minimum, the Fabricator shall monitor, record, and report the temperatures of the form, ambient temperatures surrounding the concrete, and temperatures of the concrete continuously, without interruption as specified below:

- (a) Prior to placement of concrete to verify that $T_i \geq 50^\circ\text{F}$.
- (b) Immediately after placement to verify that $T_i \geq 50^\circ\text{F}$ is maintained.
- (c) Throughout the entire duration of the curing cycle, at regular intervals not to exceed one hour until 100% Design Strength (f'_c) is attained and concrete has cooled to within 40°F of the ambient temperature surrounding the Precast Concrete Bridge Element.

ITEM 995.01 (Continued)

At a minimum, the temperature measuring devices shall record and report the temperature of the concrete to the nearest 2°F. At least two temperature sensors (thermocouples) shall be positioned to record the maximum and minimum anticipated concrete temperatures. The anticipated minimum temperature shall be measured with one or more thermocouples at a distance no greater than 2 inches from the surface of the thinnest section. The anticipated maximum temperature shall be measured with one or more thermocouples at the center of the thickest section. Proposed temperature measurement locations shall be submitted to the Engineer for approval. Temperature recording devices shall be located within the curing enclosure and calibrated as required by PCI MNL-116 Section 4.18.4. Maximum heat increase and cool down rates shall comply with PCI MNL-116, Section 4.19. The Contractor shall furnish temperature logs recorded at a minimum frequency of once per hour to the Inspector as required, with each post-pour QC inspection report.

7. Sampling and Testing

At a minimum, the Fabricator shall perform random Quality Control sampling and testing as specified in *Table 1: Quality Control Sampling and Testing*. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during fabrication. Test Specimens shall conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60, with the exception of the Stripping (80% f'_c) set of cylinders. Stripping (80 % f'_c) cylinders shall be cured in the same location and environment as the Precast Bridge Elements they represent. If approved by the Engineer, compressive strength cylinder match curing equipment, that maintains the same concrete conditions that the corresponding Precast Bridge Element is exposed to, may be utilized in lieu of Stripping (80 % f'_c) field cured cylinders, with the use of thermocouples, controllers, and heaters.

ITEM 995.01 (Continued)

Table 1: Quality Control Sampling and Testing

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer				
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22	Stripping Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 80% f _c at Stripping				
		7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 56 days ^(b)				

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f_c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

ITEM 995.01 (Continued)**8. Certificate of Compliance**

The Fabricator shall provide a Certificate of Compliance in accordance with Standard Specifications, Division I, Section 6.01, stating that QC test cylinders have achieved the design strength, f'_c . A Certificate of Compliance shall accompany each shipment and shall be presented to the MassDOT Resident Engineer or designee upon delivery to the site.

9. Documentation

At a minimum, the Fabricator shall maintain a filing system for the following QC records and documentation. All QC records and documentation shall be made available to MassDOT upon the request of the Department.

- (a) Current MassDOT Approved Mix Design Sheet(s) and Approval Letter(s)
- (b) PCI or NPCA Certification
- (c) Current Qualifications and Certifications for QC Manager(s) and QC Technician(s)
- (d) Most current set of Approved Shop Drawings
- (e) Approved Placement, Finishing and Curing Plan
- (f) Approved Dunnage Plan
- (g) Fabricator Certificate of Compliance for each fabricated Precast Concrete Bridge Element
- (h) Admixture Manufacturer's Certification of Compliance for each approved Admixture
- (i) Completed QC Inspection Report for each fabricated Precast Concrete Bridge Element
- (j) Identification Number for each fabricated Precast Concrete Bridge Element
- (k) Time and date of casting of each fabricated Precast Concrete Bridge Element
- (l) Date of stripping of each fabricated Precast Concrete Bridge Element
- (m) Batch Ticket Printout reporting the quantity of concrete produced for each batch of concrete produced
- (n) Concrete temperature records for each Precast Concrete Bridge Element fabricated
- (o) QC Test Report Forms for each subplot of concrete produced
- (p) Non-Conformance Reports (NCRs)
- (q) Documentation of Repairs (if applicable)

C. Acceptance

MassDOT will perform Acceptance inspection, sampling, and testing during fabrication and installation, to evaluate the quality and degree of compliance of the fabricated Precast Concrete Bridge Element to MassDOT specifications. Additionally, MassDOT Inspectors will monitor the Fabricator's Quality Control activities to ensure the Fabricator is properly administering Quality Control in conformance with the Fabricator's NPCA or PCI Certification. Acceptance inspection and test results not meeting MassDOT specifications will result in Non-conformance Reports (NCR) being issued by MassDOT to the Fabricator or Contractor for corrective action. Final Acceptance for the fabricated Precast Concrete Bridge Elements shall be determined by MassDOT.

ITEM 995.01 (Continued)**1. Inspection**

A MassDOT MassDOT Inspector will be assigned to perform Acceptance activities during fabrication, which includes the inspection of the materials, work procedures, and Precast Concrete Bridge Elements. At least seven (7) days prior to the scheduled start of fabrication, the Fabricator shall contact the MassDOT Research and Materials Section (RMS) to provide notice of the scheduled fabrication start date. The Fabricator shall complete the following activities prior to notifying MassDOT RMS of the scheduled start date:

- (a) Receive approval for all submitted Fabricator cement concrete mix designs from the MassDOT Research and Materials Section for the current year, as specified under the *Mix Design* section and *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete shall meet the requirements of M4.02.17.
- (b) Receive approval for the submitted Fabricator Placement, Finishing, and Curing Plan from the MassDOT Research and Materials Section, as specified under the *Placement, Finishing, and Curing Plan* section.
- (c) Receive Engineer of Record approved shop drawings from the MassDOT Research and Materials Section as specified under the *Shop Drawings* section.
- (d) Participate in the pre-production meeting, as described under the *Pre-Production Meeting* section (if required).

Prior to the start of fabrication, the Fabricator shall review the fabrication schedule with the MassDOT Inspector. Fabrication shall only proceed when:

- (a) The QC Inspector and MassDOT Inspector are present to inspect the Precast Concrete Bridge Element(s) being fabricated.
- (b) The QC Manager is present at the Fabricator's plant.

The Fabricator shall grant access to all required areas of the Fabricator's plant to the MassDOT Inspector, during the hours of fabrication. Fabrication without MassDOT Inspector access to required areas is prohibited, and will result in the rejection of the fabricated Precast Concrete Bridge Element(s).

Additionally, the MassDOT Inspector will monitor the adequacy of the Fabricator's Quality Control activities. MassDOT Inspector Acceptance activities performed at the Fabricator's plant shall remain independent from the Fabricator, and does not replace the Fabricator's required Quality Control activities.

2. Sampling and Testing

At a minimum, the MassDOT Inspector will perform random Acceptance sampling and testing for each Sublot of concrete produced as specified in *Table 2: Acceptance Sampling and Testing*. The MassDOT Inspector will also perform Acceptance sampling and testing on concrete that has been retempered with admixtures or hold-back water during production. Test Specimens will conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60.

ITEM 995.01 (Continued)

Table 2: Acceptance Sampling and Testing

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer	Total Quantity of Concrete (cy) produced on a Contract, per Type of Element fabricated, per Mix Design	20 cy	One (1) per Sublot or fraction thereof	Point of Discharge
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22 AASHTO T 23	7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 56 days ^(b)				

ITEM 995.01 (Continued)**Notes:**

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f'_{c}).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

MATERIALS

Materials shall meet the following specifications (if applicable):

General	M4.00.00
Portland Cement	M4.01.0
Blended Hydraulic Cements	M4.01.1
Fly Ash	M4.01.2
Cement Concrete	M4.02.00
Cement	M4.02.01
Cement Mortar	M4.02.15
Aggregates	M4.02.02
Lightweight Aggregates	M4.02.03
Water	M4.02.04
Cement Concrete Additives	M4.02.05
Proportioning	M4.02.06
Mixing and Delivery	M4.02.10
Test Specimens	M4.02.13
Mortar for Filling Keyways	M4.04.0
Slag	AASHTO M 302
High Performance Cement Concrete	M4.06.1
Self-Consolidating Concrete (SCC)	M4.02.17
Controlled Density Fill – Non-Excavatable	M4.08.0
Reinforcing Bars	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Galvanized Reinforcing Bars	M8.01.8
Welded Wire Reinforcement	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Lifting Devices	PCI MNL-116
Corrugated Metal Pipe	AASHTO M 36

ITEM 995.01 (Continued)**1. Cement Concrete Mix Design**

The cement concrete shall be comprised of specified proportions of water and MassDOT approved aggregates, cement, supplementary cementitious materials (SCMs), and admixtures to form a homogenous composition. Cement concrete for Precast Concrete Bridge Elements shall meet the requirements of M4.06.1 High Performance Cement Concrete, with the exception that the “Total Cementitious Content” specified shall be considered the “Maximum Allowable Cementitious Content”. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

Prior to production of cement concrete, the Fabricator shall report and submit all proposed mix design formulations and its constituent materials onto the MassDOT Cement Concrete Mix Design Sheet to the MassDOT Research and Materials Section for review and approval. All mix design yields shall be designed for 1.0 cubic yards of concrete, with an allowable tolerance of +/- 1.0 %. All liquids incorporated into the proposed mix design(s) shall include both water and admixtures in the liquid mass calculation.

During production of cement concrete, the Fabricator shall not alter the previously approved mix design formulation or its constituent materials. Proposed alterations in source, type, batch quantity, or gradation to any of the constituent materials of the previously approved mix design formulation shall require a new MassDOT Mix Design Sheet submission to the MassDOT Research and materials Section for review and approval. Fabrication shall not occur without prior MassDOT mix design approval.

The Fabricator shall notify MassDOT RMS to schedule trial batch testing for the new mix design(s). Trial batch testing shall meet the following requirements:

- (a) Performed by a qualified laboratory and/or AASHTO accredited laboratory.
- (b) Performed and/or sampled in the presence of a MassDOT Inspector.
- (c) Meet the requirements as specified in *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete (SCC) shall meet M4.02.17.

Failure to perform all of the required trial batch testing or provide MassDOT RMS trial batch test results within the Specification Limits (as specified in Table 3) will result in the disqualification of the Fabricator’s proposed mix design(s).

ITEM 995.01 (Continued)**Table 3: Trial Batch Sampling and Testing for New Mix Designs**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Performed By
Slump ^(a)	AASHTO T 119	Per AASHTO	Max. 8 inches or as approved by the Engineer	Quality Control
Air Content (AC)	AASHTO T 152	Per AASHTO	$5\% \leq AC \leq 8\%$	Quality Control
Temperature (°F)	AASHTO T 309	Per AASHTO	$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	Quality Control
Compressive Strength ^(b)	AASHTO T 22 AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Lab Mixed $f'_{cr} = 1.3 f'_c$ at 28 days Batch Mixed $f'_{cr} = 1.2 f'_c$ at 28 days	MassDOT
Alkali-Silica Reaction (ASR) ^(d)	ASTM C 1567	Per ASTM	M4.02.00	Quality Control
Resistance to Chloride Ion Penetration Chloride Ion Penetration ^(e)	AASHTO T 358 ^(f)	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Resistivity $\geq 21 \text{ k}\Omega\text{-cm}$ at 28 days	MassDOT
Freeze/Thaw Durability ^(c)	AASHTO T 161 (Procedure A)	Per AASHTO	Relative Dynamic Modulus of Elasticity after 300 cycles $\geq 80\%$	Quality Control

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) Trial batch compressive strength testing shall be performed by MassDOT. Laboratory mixed trial batch compressive strength results shall achieve 130% Design Strength (f'_c). Batch-mixed trial batch compressive results shall achieve 120% f'_c . Acceptance will be based on compressive strength testing performed by MassDOT.
- (c) If an AASHTO accredited laboratory is preparing the trial batch test specimens, MassDOT Acceptance presence is not required. If the Fabricator is preparing the trial batch test specimens, MassDOT Acceptance presence is required during trial batch test specimen preparation.
- (d) Alkali Silica Reaction (ASR) testing shall meet the requirements of M4.02.00. Independent laboratories performing ASR testing shall be listed on the MassDOT Quality Construction Materials List (QCML).
- (e) Calcium nitrite shall be removed from mix designs containing the admixture and replaced by an equivalent quantity of water when preparing Chloride Ion Penetration resistance trial batch test specimens.
- (f) The Wenner probe tip spacing “a” shall be 1.5.

ITEM 995.01 (Continued)

2. Vertical Adjustment Assembly

Vertical Adjustment Assembly details and material requirements shall be as shown on the plans. Alternate devices may be used provided that they are adjustable and can support the anticipated loads. The design of the leveling devices, with necessary calculations, shall be submitted to the Engineer of Record for approval.

3. Grout

Grout used for shear keys, vertical adjustment assembly voids, and hand holes shall be in accordance with M4.04.0.

4. Reinforcement

All reinforcing steel shall be coated Grade 60 unless otherwise noted on the plans. Mechanical reinforcing bar splicers shall be epoxy coated.

5. Threaded Inserts

Threaded inserts are permissible to facilitate forming the keyway pours. Threaded inserts shall be hot dip galvanized or made of stainless steel. The number of threaded inserts shall be minimized, and the inserts shall not come in contact with the reinforcing steel.

6. Corrugated Metal Pipe

Corrugated Metal Pipe to be used for forming voids as specified on the plans shall be fabricated from steel and shall have a protective metallic coating of zinc (galvanizing).

ITEM 995.01 (Continued)**CONSTRUCTION METHODS – PLANT FABRICATION****A. Shop Drawings**

Prior to performing any work under this Section, the Contractor shall receive approval for all shop drawings for the Precast Concrete Bridge Element being worked on and any special Contract requirements, provided that a complete shop drawing package is provided. The Contractor shall not order materials or begin work before receiving approved shop drawings. MassDOT will reject Precast Concrete Bridge Elements that deviate from the approved drawings or are fabricated prior to receiving written approval of the shop drawings. The Contractor shall bear full responsibility and costs for all materials ordered or work performed prior to the approval of the shop drawings or written authorization from MassDOT.

Contractor shall submit scaled shop drawings to the Engineer of Record for review and approval. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24x36”) paper copies of the Approved (or Approved As Noted) shop drawings to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. An approval stamp shall appear on every shop drawing sheet. Wet-stamping or wet-signing is not required, provided that the stamp and reviewer name are legible. The Fabricator’s name and address shall appear on each sheet.

Resubmittal of “Approved as Noted” shop drawings is not necessary for minor revisions, provided that the correction can be clearly understood and is unambiguous without possibility of misinterpretation. Shop drawings with questions or comments that require a response and/or additional information from the Fabricator must be resubmitted.

Detailed shop drawings shall be prepared in accordance with the relevant provisions of Subsection 5.02 and shall, at a minimum, contain the following:

- (a) Number and type and/or piece mark of the precast concrete bridge element including overall length, width and height.
- (b) Skew angle.
- (c) Location, size and geometry of all steel reinforcement, including mechanical reinforcing bar splicers to be used for connecting Precast Concrete Bridge Elements together in the field.
- (d) Location and details of all inserts, anchors, Vertical Adjustment Assemblies, and any other items required to be cast into the Precast Concrete Bridge Elements (whether detailed on the plans by the Engineer of Record or provided for the Contractor's convenience). Precast Concrete Bridge Elements shall not be fired or drilled into for attachment purposes. All hardware shall be galvanized except as noted.
- (e) Locations and details of the lifting devices, including supporting calculations, type and amount of any additional reinforcing required for lifting. The Fabricator shall design all lifting devices based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (7th edition).
- (f) The minimum compressive strength required prior to handling the precast concrete bridge element.

ITEM 995.01 (Continued)

The shop drawings shall not include procedures for placement, finishing, and curing of concrete. These details shall be included in the Placement, Finishing and Curing Plan that is to be submitted to MassDOT Research and Materials Section as described under *Placement, Finishing, and Curing Plan*.

B. Fabrication

All Precast Concrete Bridge Elements shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

C. Placement, Finishing and Curing Plan

At least 30 days prior to start of fabrication, the Contractor shall submit the Fabricator's proposed Placement, Finishing and Curing Plan to the Engineer for approval by MassDOT Research and Materials Section. This shall be an independent submittal, separate from the fabrication shop drawings. The Placement, Finishing and Curing Plan shall include the following:

- (a) Method of Mixing
- (b) Method of Placement
- (c) Method of Consolidation
- (d) Method of Finishing
- (e) Method of Initial Curing
- (f) Method of Intermediate Curing
- (g) Method of Final Curing
- (h) Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
- (i) Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
- (j) Temperature Monitoring, Recording, and Reporting

D. Dunnage Plan Shop Drawings

At least 30 days prior to the start of fabrication, the Contractor shall submit proposed Dunnage Plan Shop Drawings to the Engineer of Record for review and approval. This shall be an independent submittal, separate from the fabrication shop drawings. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24"x36") paper copies of the Approved (or Approved As Noted) Dunnage Plan to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. The Dunnage Plan shall include the following:

- (a) Proposed layout of the Precast Concrete Bridge Elements for storage in yard and during shipping
- (b) Support and blocking point locations
- (c) Support and blocking materials

ITEM 995.01 (Continued)**E. Pre-Production Meeting**

The Contractor shall notify the MassDOT Research and Materials Section to determine if a pre-production meeting will be required to review the specification, shop drawings, curing plan, schedule, and discuss any specific requirements. The meeting shall be held prior to scheduling a MassDOT Inspector (refer to Section *Quality Assurance – Precast Concrete, C. Acceptance, A. Inspection*), and at least seven (7) days prior to the scheduled casting of any Precast Concrete Bridge Element or control section. The Contractor shall schedule the meeting, which shall include representatives of the Fabricator and MassDOT.

F. Reinforcement

The reinforcing bars shall be installed in accordance with Section 901.62 of the Supplemental Specifications, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

Where reinforcing bars are to protrude from one Precast Concrete Bridge Element in order to mate with reinforcing bar splicers in a second precast concrete element, the fabricator shall set the reinforcing bars and the reinforcing bar splicers with a template in order to ensure proper fit up within the tolerances specified on the plans.

G. Tolerances

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with 901.62. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

H. Forms

Concrete shall be cast in rigidly constructed forms, which will maintain the Precast Concrete Bridge Elements within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. Any defects or damage of more than “Category 2, Minor Defects” made to the concrete, due to form work, stripping or handling, shall be subject to repair or rejection, as defined in the *Repairs and Replacement* section. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

ITEM 995.01 (Continued)**I. Mixing of Concrete**

The concrete shall be proportioned and mixed in conformance with the Fabricator's MassDOT approved mix design and M4.02.10 Mixing and Delivery Fabrication shall not occur without prior MassDOT mix design approval. The Fabricator shall provide copies of batch tickets to the MassDOT Plant Inspector. The MassDOT Plant Inspector will verify if the batch ticket quantities are within the tolerances of the Fabricator's MassDOT approved mix design.

J. Placement of Concrete

Prior to the placement of concrete, the temperature of the forms shall be greater than or equal to 50°F. Quality Control inspection shall be performed by the Fabricator as specified in the *Fabricator Quality Control* section. Placement of the concrete shall not proceed until the MassDOT Plant Inspector is present to perform inspection and begin monitoring Fabricator Quality Control inspection activities, and is in compliance with specifications. The MassDOT Plant Inspector shall inspect and accept the placement of the reinforcing steel prior to the placement of concrete into the forms. The Fabricator shall verify all materials and equipment required for protecting and curing the concrete are readily available and meet the requirements of the *Final Curing Methods* section below. All items encased in the concrete shall be accurately placed in the position shown on the Plans and firmly held during the placing and setting of the concrete. Clearance from the forms shall be maintained by supports, spacers, or hangers and shall be of approved shape and dimension.

During placement, the concrete shall maintain a concrete temperature range between 50°F and 90°F. The Fabricator shall minimize the time to concrete placement (measured from start of mixing to completion of placement). In no event shall time to placement exceed 90 minutes. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during the placement of the concrete as specified in the *Fabricator Quality Control* section above. Delays or shutdowns of over 30 minutes shall not be allowed during the continuous filling of individual forms.

K. Consolidation of Concrete

Suitable means shall be used for placing concrete to prevent segregation or displacement of reinforcing steel or forms. The concrete shall be thoroughly consolidated by external or internal vibrators or a combination of both. Vibrators shall not be used to move concrete within the forms. Vibrators shall be used as specified in 901.63C and as directed by the Engineer. Concrete shall be placed and consolidated in a way that minimizes the presence of surface voids or bug holes on the formed surfaces. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

ITEM 995.01 (Continued)**L. Finishing of Concrete**

The finish of the Precast Concrete Bridge Elements shall be as indicated on the plans. Where Precast Concrete Bridge Elements have keyways for grout or closure pours, the surfaces of these shear keys shall be abrasive blasted prior to shipment. The Fabricator may utilize a surface retarder with water blast, sandblast, or a combination of both to achieve the desired keyway finish. At a minimum, the profile of the keyway surfaces shall be similar to that of 60 grit sand paper. The exposed reinforcing steel in the precast slab shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer.

The Fabricator shall permanently mark each precast concrete bridge element with its type and/or piece mark, date of casting, and supplier identification either by stamp markings in fresh concrete, waterproof paint, or other approved means on a surface that will not be exposed after assembly.

M. Exposed Surfaces of Precast Concrete Bridge Elements

As soon as conditions permit, before the concrete has fully hardened, all dirt, laitance, and loose aggregate shall be removed from the exposed concrete surfaces. Contractor shall not allow foot traffic on the uncured concrete until it has reached sufficient strength to prevent damage.

N. Exposed Surfaces of Closure Pour Shear Keys

The closure pour shear key cast in the sides of the beam flanges shall have an exposed aggregate finish. The closure pour reinforcing steel and its coating shall not be damaged by the process for creating the exposed aggregate surface. Fabricator may utilize a surface retarder with water blast, abrasive blast, or a combination of both to achieve the desired shear key finish. The abrasive blast shall use oil free compressed air. The profile of the shear key surfaces shall be similar to that of 60 grit sand paper.

O. Initial Curing Methods

After the placement of concrete and prior to concrete finishing, the Fabricator shall initiate initial curing methods when the concrete surface begins to dry, to reduce moisture loss from the surface. Application of one or more of the following initial curing methods shall occur immediately after the bleed water sheen has disappeared.

1. Fogging

Fogging nozzles shall atomize water into a fog-like mist. The fog spray shall be directed and remain visibly suspended above the concrete surface, to increase the humidity of the air and reduce the rate of evaporation. Water from fogging shall not be worked into the surface during finishing operations and shall be removed or allowed to evaporate prior to finishing.

ITEM 995.01 (Continued)**2. Liquid-applied Evaporation Reducers**

Evaporation reducers shall be sprayed onto the freshly placed concrete surface to produce an effective monomolecular film that reduces the risk of plastic-shrinkage cracking and rate of evaporation of the bleed water from the concrete surface. Evaporation reducers shall be applied in accordance with manufacturer's recommendations.

P. Intermediate Curing Methods

The Fabricator shall initiate intermediate curing methods if concrete finishing has taken place prior to the concrete reaching final set. The freshly finished concrete surface shall be protected from moisture loss, by the continuation of initial curing methods (fogging and evaporation reducers) until final curing methods are applied or by the use of liquid membrane-forming curing compounds (see *Liquid Membrane-Forming Compounds for Curing* section).

Q. Final Curing Methods

The Fabricator shall initiate and apply final curing methods to the concrete immediately after the following conditions are met:

- (a) Completion of concrete finishing
- (b) Final set of concrete
- (c) Concrete has hardened sufficiently enough to prevent surface damage

During fabrication of Precast Concrete Bridge Elements, the Fabricator shall maintain the required concrete temperature ranges throughout the entire duration of the final curing method cycle as specified herein. Controlled and gradual termination of the final curing method shall occur after all specified conditions are met. The concrete temperature shall be reduced at a rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the final curing method enclosure. The Fabricator shall maintain a minimum concrete temperature of 40°F until 100% f'c is attained (see *Handling and Storage* section below).

ITEM 995.01 (Continued)**1. Water Spray Curing**

All exposed concrete surfaces shall remain moist with a continuous fine spray of water throughout the entire duration of the final curing method cycle (see *Table 4: Final Curing Method Cycle for Water Spray*).

Table 4: Final Curing Method Cycle for Water Spray

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Five (5) days	≥ 80% f _c

2. Saturated Covers for Curing

All exposed concrete surfaces shall remain moist with a continuous application of saturated covers throughout the entire duration of the final curing method cycle (see *Table 5: Final Curing Method Cycle for Saturated Covers*). Saturated covers shall be allowed to dry thoroughly before removal to provide uniform, slow drying of the concrete surface.

Table 5: Final Curing Method Cycle for Saturated Covers

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f _c

Saturated covers, such as burlap, cotton mats, and other coverings of absorbent materials shall meet the requirements of AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing concrete. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to the concrete. Saturated covers shall have sufficient thickness and proper positioning onto the concrete surface to maximize moisture retention.

Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of the concrete. Saturated covers shall be kept continuously moist so that a film of water remains on the concrete surface throughout the entire duration of the final curing method cycle. The Fabricator shall not permit the saturated covers to dry and absorb water from the concrete. Use of polyethylene film (see *Polyethylene Film* section) may be applied over the saturated cover to potentially decrease the need for continuous watering.

ITEM 995.01 (Continued)**3. Sheet Materials for Curing**

All exposed concrete surfaces shall remain moist with a continuous application of curing sheet materials throughout the entire duration of the final curing method cycle (see *Table 6: Final Curing Method Cycle for Curing Sheet Materials*).

Table 6: Final Curing Method Cycle for Sheet Materials

Sustained Concrete Temperature	Final Method Curing Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f _c

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

(a) Polyethylene Film

Polyethylene film shall meet the requirements of ASTM C171, consist of a single sheet manufactured from polyethylene resins, be free of visible defects, and have a uniform appearance. Careful considerations shall be taken by the Fabricator to prevent the film from tearing during storage and application, so as to not disrupt the continuity of the film (polyethylene film reinforced with glass or other fibers is more durable and less likely to be torn). The Fabricator shall monitor the application of the film to prevent uneven spots from appearing (mottling) on the concrete surface, due to variations in temperature, moisture content, or both. The Fabricator shall prevent mottling from occurring on the concrete surface by applying additional water under the film or applying a combination of polyethylene film bonded to absorbent fabric to the concrete surface to retain and evenly distribute the moisture.

Immediately following final finishing, polyethylene film shall be placed over the surface of the fresh concrete surface, so as to not damage the surface of the concrete and shall be placed and weighted so that it remains in contact with the concrete throughout the entire duration of the final curing method cycle. The film shall extend beyond the edges of the concrete surface. The film shall be placed flat on the concrete surface, avoiding wrinkles, to minimize mottling. Edges of adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

ITEM 995.01 (Continued)**(b) White Burlap-Polyethylene Sheeting**

White burlap-polyethylene sheeting shall meet the requirements of ASTM C171, be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete, and be applied in the same manner as the polyethylene film.

(c) Reinforced Impervious Paper

Reinforced impervious paper shall meet the requirements of ASTM C171, consist of two sheets of kraft paper cemented together with a bituminous adhesive and reinforced with embedded cords or strands of fiber running in both directions, and be white in color. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried.

Reinforced impervious paper can be reused so long as it is effective in retaining moisture on the concrete surface. The Fabricator shall visually inspect the reinforced impervious paper for all holes, tears, and pin holes from deterioration of the paper through repeated use by holding the paper up to the light. The paper shall be discarded and prohibited from use when the moisture is no longer retained.

After the concrete has hardened sufficiently to prevent surface damage, the concrete surface shall be thoroughly wetted prior to the application of the reinforced impervious paper, and be applied in the same manner as the polyethylene film.

4. Liquid Membrane-Forming Compounds for Curing

All exposed concrete surfaces shall remain moist with a continuous application of liquid membrane-forming compounds throughout the entire duration of the final curing method cycle (see *Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥ 80% f _c

Liquid membrane-forming compounds shall meet the requirements of ASTM C 1315, Type I, Class A and shall exhibit specific properties, such as alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light, in addition to moisture-retention capabilities. Liquid membrane-forming compounds shall consist of waxes, resins, chlorinated rubber, or other materials to reduce evaporation of moisture from concrete. Liquid membrane-forming compounds shall be applied in accordance with the manufacturer's recommendations.

ITEM 995.01 (Continued)

Liquid membrane-forming compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. All exposed surfaces shall be wetted immediately after form removal and kept moist to prevent absorption of the compound, allowing the curing membrane to remain on the concrete surface for proper membrane moisture retention. The concrete shall reach a uniformly damp appearance with no free water on the surface prior to the application of the compound.

If patching or finishing repairs are to be performed prior to the application of the compound, the Precast Concrete Bridge Element shall be covered temporarily with saturated covers until the repairs are completed and the compound is applied. Only areas being repaired shall be uncovered during this period. While the saturated covers are removed to facilitate the patching process, the work shall continue uninterrupted. If for any reason the work is interrupted, saturated covers shall be placed onto the uncovered concrete surface, until the work continues and is completed, at which time the curing compound shall be applied to the repaired area.

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

The compound shall be applied in two applications at right angles to each other to ensure uniform and more complete coverage. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of a troweled or floated surface. In such cases, two separate applications may be needed, each at 200 ft²/gal., with the first being allowed to become tacky before the second is applied.

The curing compound shall be applied by power sprayer, using appropriate wands and nozzles with pressures between 25 and 100 psi. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller. The compound shall be stirred or agitated before use and applied uniformly in accordance with the manufacturer's recommended rate. The Fabricator shall verify the application rates are in accordance with the manufacturer's recommended rate.

When the concrete surface is to receive paint, finishes, or toppings that require positive bond to the concrete, it is critical that the curing procedures and subsequent coatings, finishes, or toppings be compatible to achieve the necessary bond

ITEM 995.01 (Continued)

After the termination of the final curing method cycle has occurred, liquid membrane-forming compounds shall be removed by blast-cleaning from any concrete surface that is to receive paint, finishes, plastic concrete from secondary pour, grout, or any other toppings that require bonding to the concrete surface. These surfaces shall be further blast-cleaned to remove the cement matrix down to exposed aggregate to ensure proper bonding to the material. The method used to remove the curing compound shall not damage the reinforcement and coating. Compounds are prohibited on any concrete surface that will have a penetrating or coating type treatment such as a sealer, stain, or waterproofing membrane applied to it.

5. Accelerated Curing

Accelerated curing shall use live steam or radiant heat with moisture in accordance with PCI MNL-116 as modified herein. The concrete temperature shall meet the maximum heat increase and cool down rates as specified herein. Concrete temperature monitoring shall meet the requirements of the *Temperature Monitoring* section. Excessive and fluctuating rates of heating and cooling shall be prohibited. The concrete temperature shall not exceed 158°F at any time. The Fabricator shall meet the following accelerated curing sequencing and requirements.

(a) Initial Delay Period

The initial delay period shall be defined as the duration immediately following the placement of the concrete and the attainment of initial set of the concrete. The Fabricator shall determine the time of initial set in accordance with AASHTO T 197 specifications. Throughout the entire duration of the preset period, initial curing shall be implemented. The temperature increase period (see *Temperature Increase Period* section) shall not occur until initial set of the concrete is attained. During the initial delay period, the concrete temperature shall meet the following requirements:

- i. Concrete temperature rate of increase shall not exceed 10°F per hour.
- ii. Total concrete temperature increase shall not exceed 40°F higher than the placement concrete temperature or 100°F, whichever is less

(b) Temperature Increase Period

The temperature increase period shall be defined as the duration immediately following the completion of the initial delay period (after initial set) and immediately prior to the start of the constant maximum temperature period. Application of steam to the enclosure shall not occur until the initial delay period is complete. After the initial delay period is complete, all exposed concrete surfaces shall be cured in a moist environment where the concrete temperature increases at a rate not to exceed 36°F per hour.

ITEM 995.01 (Continued)**(c) Constant Maximum Temperature Period**

The constant maximum temperature period shall be defined as the duration immediately following the completion of the temperature increase period and immediately prior to the start of the temperature decrease period. After the temperature increase period is complete, all exposed concrete surfaces shall be cured in a moist environment at a controlled and constant elevated temperature throughout the entire duration of the constant maximum temperature period. Termination of the constant maximum temperature period and the start of the termination decrease period shall occur after all specified conditions are met (see *Table 8: Constant Maximum Temperature Period*).

Table 8: Constant Maximum Temperature Period

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
120°F ≤ °F ≤ 158°F	6 hrs ≤ Time ≤ 48 hrs	≥ 80% f _c

(d) Temperature Decrease Period.

After the constant maximum temperature period is complete, the concrete temperature shall be cured in a moist environment at a controlled and reduced rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the curing enclosure.

R. Stripping

The Fabricator shall not strip forms or handle the Precast Concrete Bridge Element until Quality Control compressive strength cylinders attain a minimum compressive strength of 80% Design Strength (f_c) or the value indicated on the approved drawings has been achieved. After removal from the form, all exposed concrete surfaces shall continue to be cured in conformance with the *Final Curing Methods* sections until completion.

ITEM 995.01 (Continued)**S. Handling and Storage of Precast Concrete Bridge Elements**

Precast Concrete Bridge Elements may be exposed to temperatures below freezing (32°F) when the chosen curing cycle has been completed, provided that the following conditions are met:

- (a) Precast Concrete Bridge Elements are protected from precipitation with polyethylene curing covers until 100% f'_c is attained
- (b) Precast Concrete Bridge Elements maintain a minimum concrete temperature of 40°F until 100% f'_c is attained

Precast Concrete Bridge Elements damaged during handling and storage will be repaired or replaced at MassDOT's direction at no cost to MassDOT. Precast Concrete Bridge Elements shall be lifted at the designated points by approved lifting devices embedded in the concrete and in accordance with proper lifting and handling procedures. Storage areas shall be smooth and well compacted to prevent damage due to differential settlement. Precast Concrete Bridge Elements shall be supported on the ground by means of continuous blocking, in accordance with the approved dunnage plan.

Precast Concrete Bridge Elements shall be loaded on a trailer with blocking as described above, in accordance with the approved dunnage plan. Shock-absorbing cushioning material shall be used at all bearing points during transportation of the Precast Concrete Bridge Elements. Blocking shall be provided at all locations of tie-down straps. Precast Concrete Bridge Elements stored prior to shipment shall be inspected by the Contractor prior to being delivered to the site to identify damage that would be cause for repair or rejection.

T. Repairs and Replacement

In the event defects are identified, they shall be classified in the following categories and a non-conformance report (NCR) shall be filed if required. The NCR shall be submitted to MassDOT for review. Defects in all categories shall be documented by plant Quality Control personnel and made available to MassDOT upon request. Any required repairs shall utilize materials listed on the MassDOT QCML.

Where noted, defects shall be repaired according to the PCI Northeast Region Guidelines for Resolution of Non-Conformances in Precast Concrete Bridge Elements, Report Number PCINE-18-RNPCBE. Please note that reference to PCINE-18-RNPCBE is made for repair details only. In the case of conflicts with this Special Provision, this Special Provision shall govern.

ITEM 995.01 (Continued)**1. Category 1, Surface Defects.**

Category 1 defects do not need to be repaired, and an NCR does not need to be filed. Surface defects are defined as the following:

- (a) Surface voids or bug holes that are less than 5/8-inch in diameter and less than 1/4-inch deep, except when classified as Category 4
- (b) Cracks less than or equal to 0.006 inches wide
- (c) Cracks less than or equal to 0.125 inches wide on surfaces that will receive a field-cast concrete overlay

2. Category 2, Minor Defects

Category 2 defects shall be repaired, but an NCR does not need to be filed. Minor defects are defined as the following:

- (a) Spalls, honeycombing, surface voids that are less than 2 inches deep and have no dimension greater than 12 inches
- (b) Cracks less than or equal to 0.016 inches that will not receive a concrete overlay
- (c) Broken or spalled corners that will be covered by field-cast concrete

Minor defects shall be repaired according to PCINE-18-RNPCBE. Cracks shall be sealed according to the PCI Repair Procedure #14 in PCINE-18-RNPCBE.

3. Category 3, Major Defects

For Category 3 defects, the Fabricator shall prepare an NCR that documents the defect and describes the proposed repair procedure. The NCR shall be submitted to MassDOT for approval prior to performing the repair. Major defects are defined as the following:

- (a) Spalls, honeycombing and surface voids that are deeper than 2 inches or have any dimension greater than 12 inches, when measured along a straight line
- (b) Concentrated area of defects consisting of four or more Category 2 Defects within a 4-square foot area.
- (c) Exposed reinforcing steel
- (d) Cracks greater than 0.016 inches and less than or equal to 0.060 inches in width that will not receive a concrete overlay
- (e) Bearing area spalls with dimensions not exceeding 3 inches
- (f) Cracks, spalls and honeycombing that will be encased in cast in place concrete need not be repaired, but the limits and location of the defects shall be documented with an NCR

Upon MassDOT approval, defects and cracks shall be repaired according to PCINE-18-RNPCBE and this specification. All repairs shall be completed at the expense of the Contractor.

ITEM 995.01 (Continued)**4. Category 4, Rejectable Defects**

Rejectable defects as determined by the MassDOT Inspector, RMS, and Engineer may be cause for rejection. Fabricator may submit an NCR with a proposed repair procedure, requesting approval. Some rejectable defects are defined as the following:

- (a) Surface defects on more than 5% of the surface area which will be exposed to view after installation
- (b) Minor defects that in total make up more than 5% of the surface area of the unit
- (c) Cracks greater than 0.060 inches in width except as noted in Category 1
- (d) Elements fabricated outside of the specified tolerances
- (e) MassDOT compressive strength testing that does not meet the specified Design Strength, f'_c

U. Loading

Prior to the Fabricator loading the Precast Bridge Element on to the truck for shipping, the Fabricator shall provide the MassDOT Plant Inspector and RMS a minimum seven (7) days' notice of the Fabricator's intent to load the Precast Bridge Element. Inspection by the MassDOT Plant Inspector shall take place while the element is still on dunnage in the yard. The element shall not be loaded onto the truck until the MassDOT Plant Inspector has performed the inspection.

V. Shipping

Prior to shipment, the Fabricator shall perform the following actions and provide the required documentation to the MassDOT Plant Inspector:

- (a) Precast Concrete Bridge Elements shall remain at the Fabricator's plant for a minimum of 7 days after cast date.
- (b) QC Inspection Reports shall be signed by the Quality Control Manager and provided to the MassDOT Plant Inspector.
- (c) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Precast Concrete Bridge Element's representative Sublot shall be generated by the Fabricator and provided to the MassDOT Plant Inspector.
- (d) Certificate of Compliance shall be generated by the Fabricator as described under the Fabricator Quality Control section and provided to the MassDOT Plant Inspector.
- (e) All MassDOT RMS approved Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the MassDOT Plant Inspector and Quality Control Manager.
- (f) All NCRs shall be signed off by the Quality Control Manager, MassDOT Inspector and MassDOT RMS.

ITEM 995.01 (Continued)**W. Delivery**

Upon Delivery, the following documentation shall be provided to the MassDOT Resident Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, $f'c$ for the Precast Concrete Bridge Element's representative subplot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

The Contractor shall inspect Precast Concrete Bridge Elements upon receipt at the site. Precast Concrete Bridge Elements damaged during delivery shall be repaired or replaced at MassDOT's direction at no cost to MassDOT.

CONSTRUCTION METHODS – FIELD CONSTRUCTION**A. General**

All of the Contractor's field personnel involved in the erection and assembly of the Precast Concrete Bridge Elements shall have knowledge of and follow the approved Erection Procedure.

Prior to installation, the following documentation shall be reviewed and confirmed by the MassDOT Resident Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, $f'c$ for the Precast Concrete Bridge Element's representative subplot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

Field construction staff shall verify that the Resident Engineer has accepted all Precast Concrete Bridge Elements prior to installation.

B. Erection Procedure

Prior to the erection, the Contractor shall submit an Erection Procedure for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Precast Concrete Bridge Elements. The Erection Procedure shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure shall, at a minimum, include the following:

ITEM 995.01 (Continued)**1. Erection Procedure**

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (seventh edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

- (a) Minimum concrete compressive strength for handling the Precast Concrete Bridge Elements.
- (b) Concrete stresses during handling, transport, and erection.
- (c) Crane capacities, pick radii, sling geometry, and lifting hardware.
- (d) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
- (e) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Precast Concrete Bridge Elements and setting them as shown on the plans.
- (f) Design of crane supports including verification of subgrade for support.
- (g) Location and design of all temporary bracing that will be required during erection.

Non-shrink grout and concrete materials, approved by the Engineer, shall be placed as shown on the plans. Fill joints, keyways, and voids, in strict accordance with the specifications and manufacturer's recommendations and instructions.

For footings, approach slabs and highway guardrail transitions, once these Precast Concrete Bridge Elements have been set to the correct horizontal and vertical alignment, the void between them and the supporting soil shall be filled with Controlled Density Fill – Non-Excavatable to the limits as shown on the plans. Add additional grout ports in the footings to facilitate the bedding process if required.

Joints shall be filled flush to the top with non-shrink grout, and any vertical misalignment between adjacent elements shall be feathered out on a slope of 1 to 12.

Curing of grout or concrete shall be performed in strict accordance with the specifications and manufacturer's recommendations. Filling shall not be completed in cold weather when either the ambient temperature or the precast member's temperature is below the manufacturer's recommendation. No localized heating of either the precast members or of the air surrounding the element will be permitted in an attempt to reach application temperatures.

If the joints or voids are not filled within five days after the Precast Bridge Elements are erected, the Contractor shall cover and protect the openings from weather and debris until they are filled.

ITEM 995.01 (Continued)**C. Survey and Layout**

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. MassDOT reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

D. Preparation of Closure Pour Keyways

Immediately prior to erecting the Precast Concrete Bridge Elements, the closure pour shear keys shall be cleaned at the job site of all dust, dirt, carbonation, laitance, and other potentially detrimental materials which may interfere with the bonding of the closure pour concrete and precast concrete using a high-pressure water blast. The exposed reinforcing steel in the precast concrete shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer. The surfaces of the shear keys shall be wetted so that the surfaces shall have a Saturated Surface Dry (SSD) condition for at least 24 hours prior to the placement of the closure pour concrete.

E. Erection.

The elements shall be placed in the sequence and according to the methods outlined in the Erection Procedure. As the erection proceeds, the Contractor shall constantly monitor the assembly to ensure that the precast concrete bridge element is within proper horizontal and vertical location and tolerances prior to releasing it from the crane and setting the next unit. The Contractor may use shims to maintain proper setting tolerances.

The concrete elements shall be lifted only by the lifting devices, and the utmost care shall be taken to prevent distortion of the elements during handling, transportation or storage.

Suitable spreaders shall be used during lifting so that only a vertical pull will be made on the lifting device. A non-vertical lifting force may be permitted if prior written approval is given by the Engineer. This approval will be contingent on the Contractor demonstrating by calculations, prepared by a Professional Engineer registered in Massachusetts, that the elements will not be damaged by the non-vertical lifting force and by documentation that the capacity of the lifting devices is adequate for the non-vertical lifting force.

Precast components shall be pre-bed with non-shrink grout thicker than shim stacks prior to placing other precast elements on top of them.

After all Precast Concrete Bridge Elements have been placed, the actual overall dimensions of the structure both horizontal and vertical, as laid out shall not deviate from the nominal dimensions shown on the plans beyond a tolerance of +0 inches and -1 inches. Once the layout of Precast Concrete Bridge Elements has been accepted by the Engineer, the Contractor shall cut all lifting devices off below the surfaces of the elements.

ITEM 995.01 (Continued)

F. Filling of Blockouts for Lifting Devices and Threaded inserts.

If the blockouts in the Precast Concrete Bridge Elements where the lifting devices were located will be exposed and visible after assembly is complete, the Contractor shall fill these blockouts with Cement Mortar (M4.02.15) or grout.

After the formwork has been removed, all threaded inserts that have been cast into the precast concrete bridge deck for support of the formwork shall be filled with a grout of the same color as that of the precast concrete.

SCHEDULE OF BASIS FOR PARTIAL PAYMENT

Within ten (10) days after Notice to Proceed, the Contractor shall submit on his/her proposal form a schedule of unit priced for the major component Sub-Items that make up Item 995.01 as well as his/her total bridge structure Lump Sum cost for Bridge Structure No. C-10-002 (CBX). The bridge structure Lump Sum breakdown quantities provided in the proposal form are estimated and not guaranteed. The total of all partial payments to the Contractor shall equal the Lump Sum contract price regardless of the accuracy of quantities furnished by the Engineer for the individual bridge components. The cost of labor and materials for any Item not listed but required to complete the work shall be considered incidental to Item 995.01 and no further compensation will be allowed.

The schedule on the proposal form applies only to Bridge Structure No. C-10-002 (CBX) . Payment for similar materials and construction at locations other than at this bridge structure shall not be included under this Item. Sub-Item numbering is presented for information only in coordination with MassDOT Standard Nomenclature.

ITEM 995.01 (Continued)

Sub-Item	Description	Qty.	Units
901.	4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE	310	CY
904.	4000 PSI, 3/4 INCH, 610 CEMENT CONCRETE	2	CY
904.3	5000 PSI, 3/4 INCH, 685 HP CEMENT CONCRETE	36	CY
904.31	PRECAST HIGHWAY GUARDRAIL TRANSITION	4	EA
910.	STEEL REINFORCEMENT FOR STRUCTURES	31000	LB
910.1	STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED	6200	LB
930.307	PRESTRESSED CONCRETE DECK BEAMS (S48-18)	340	FT
933.	ELASTOMERIC BRIDGE BEARING PAD	15	EA
965.	MEMBRANE WATERPROOFING FOR BRIDGE DECKS	1185	SF
970.	DAMP-PROOFING	1770	SF
975.1	METAL BRIDGE RAILING (3 RAIL), STEEL (TYPE S3-TL4)	105	FT

END OF DOCUMENT

DOCUMENT A00802

DETAIL SHEETS

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THE COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
TEN PARK PLAZA - BOSTON, MA

FINAL ESTIMATE OF QUANTITIES - DETAIL SHEET

CITY/TOWN: Cheshire YEAR: 2024
STA 10+00 to STA. 14+50 ROAD: Sand Mill Road
TYPE OF PROJECT: Bridge Replacement CLASS: Rural Local Road
DATE: February 2024

Earth Excavation:	550 CY	Gravel Borrow:	290 CY
Class A Rock Excavation:	30 CY	Class B Trench Excavation:	10 CY
Class B Rock Excavation:	70 CY		

PAVEMENT NOTES:

PROPOSED PAVEMENT MILLING AND OVERLAY: **AREA=150 SY**
1 1/2" SUPERPAVE BRIDGE SURFACE COURSE – 9.5 (SSC-B-9.5) OVER
1 1/2" PAVEMENT FINE MILLING AND VARIABLE DEPTH OVERLAY

PROPOSED FULL DEPTH PAVEMENT: **AREA=871 SY**
1 1/2" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B-9.5) OVER
2 1/2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER
4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5)
4" DENSE GRADED CRUSHED STONE
8" GRAVEL BORROW, TYPE B

PROPOSED HOT MIX ASPHALT DRIVEWAY: **AREA=65 SY**
1 1/2" SURFACE COURSE OVER
2 1/2" INTERMEDIATE COURSE OVER
8" GRAVEL BORROW, TYPE B

PROPOSED CEMENT CONCRETE DRIVEWAY: **AREA=82 SY**
6" CEMENT CONCRETE (4000 PSI, 3/4", 610) OVER
8" GRAVEL BORROW, TYPE B

ITEM 102. **SELECTIVE CLEARING AND THINNING**

<u>FROM</u>	<u>TO</u>	<u>OFFSET</u>
10+00	11+00	LT
11+12	12+00	RT
11+20	12+35	LT
11+94	12+60	RT
12+45	13+16	LT
13+95	14+19	RT
South of project limits		LT

ITEM 102.1 **TREE TRIMMING**

<u>FROM</u>	<u>TO</u>	<u>OFFSET</u>
10+00	11+00	LT
11+25	12+10	LT
12+70	13+15	LT
AROUND PROPOSED UP	14+00	RT

ITEM 203. **SPECIAL MANHOLE**

<u>STA</u>	<u>OFFSET</u>	<u>QTY</u>
12+56	RT	1

ITEM 504. **GRANITE CURB TYPE VA4 – STRAIGHT**

<u>STA</u>	<u>TO</u>	<u>STA</u>	<u>OFFSET</u>	<u>Length (LF)</u>
11+67.9		11+84.6	RT	17
11+82.0		11+98.9	LT	17
12+45.0		12+62.4	RT	17
12+59.3		12+77.7	LT	18

ITEM 509. **GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS – STRAIGHT**

SEE ITEM 504.
4 TRANSITION CURB UNITS AT EACH END (4 X 6.25 FT = 25 FT)

ITEM 620.12 **GUARDRAIL, TL-2 (SINGLE FACED)**

<u>STA</u>	<u>TO</u>	<u>STA</u>	<u>OFFSET</u>
10+80.0		11+54.0	RT
11+35.0		11+69.0	LT
12+91.0		13+53.0	LT

ITEM 701.1 CEMENT CONCRETE DRIVEWAY AT SIDEWALKS

<u>STA</u>	<u>OFFSET</u>
13+00	RT

ITEM 715. RURAL MAILBOX REMOVED AND RESET

<u>STA</u>	<u>OFFSET</u>	<u>QTY (EA)</u>
11+10	RT	2
12+78	RT	1

ITEM 751. LOAM FOR ROADSIDES

USED 4" DEPTH FOR LOAM

<u>STA</u>	<u>TO</u>	<u>STA</u>	<u>OFFSET</u>
10+00		10+45	RT
10+00		11+00	LT
10+56		11+90	RT
10+56		12+07	LT
12+40		12+85	RT
12+61		14+50	LT
13+20		14+23	RT
14+38		14+50	RT

ITEM 755.35 INLAND WETLAND REPLICATION AREA

<u>STA</u>	<u>to</u>	<u>STA</u>	<u>OFFSET</u>
12+02.47		12+17.83	RT

ITEM 765. SEEDING

SEE ITEM 751.

ITEM 769. PAVEMENT MILLING MULCH UNDER GUARD RAIL

<u>STA</u>	<u>to</u>	<u>STA</u>	<u>OFFSET</u>
10+67.5		11+84.6	RT
11+25.0		11+98.8	LT
12+45.0		12+85.0	RT
12+59.3		13+65.5	LT

ITEM 833.7

DELINEATION FOR GUARD RAIL TERMINI

<u>STA</u>	<u>COLOR</u>
10+67 RT	GREEN
11+35 LT	RED
12+85 RT	RED
13+65 LT	GREEN

ITEM 874.4

TRAFFIC SIGN REMOVED AND STACKED

2 EXISTING WEIGHT LIMIT SIGNS

<u>STA</u>	<u>QTY</u>
13+32 LT	1
11+54 RT	1

END OF DOCUMENT

DOCUMENT A00808

PROJECT UTILITY COORDINATION FORM

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Is enabling (prep) work by the Contractor, necessary prior to the start of the first series of utility relocations:	Yes	No
	X	
Has any of the utility work been identified to work concurrently	Yes	No
		X

10/3/2023
PRINTED



RESPONSIBLE PARTY C = Contractor U = Utility Co.	DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)		Concurrent / Exclusive Utility Work				Access Restraint & Limitations of Operations Notes	
		Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility)	Contractor Off-Site	Contractor Concurrent	Potential Access Restraint (Yes/No)	Reason/Note (optional)	
Phase 1	Enabling work by the Contractor includes: * 90-day initial lead time required prior to first pole set / scheduled move due to supply shortages. * Site clearing must be completed prior to DOT staking pole locations. * DOT will stake pole locations within 5 workdays of being notified clearing has been completed. * N. Grid requires 5 workdays after the staking for the poles to clear their DIG-SAFE. * Contractor to schedule a utility meeting to confirm all poles are staked correctly at least 30 days prior to first pole set / scheduled move. * The contractor is responsible for providing acceptable access for N. Grid to both set and remove the temporary poles on the east side of Sandhill Road. It is anticipated that removal of this access will delay the installation of the guardrail on the east side until the temporary utility poles have been removed.								
	UTILITY OPERATIONS - Pole Set / Overhead Relocation								
Task: 1	Utility Co. - Notional Grid								
	Install/Relocate/Replace: 8 poles (4, 4-1, 4-30, 4-50, 5-1-1, 5-50, 5-2 & 6) & 10 anchors	15		X		X		Yes	
	Install: - 6600ft 1/0 AAAC TW Primary conductor from PH4 to PH5-50 & Remove existing conductors	6		X		X		Yes	
	Install: - 450 1/0 Neutral conductor, - 230 1/0 Triplex secondary conductor	5		X		X		Yes	
	Services/Outlets: Midspan tap 10ft north H2TR1 SVC @HSE 1020, 75ft H2TR1 SVC from PH5-1-1 to HSE#1030	2		X		X		Yes	
	Equipment: Replace 25KVVA XFNR, Remove 65K FUSE @ PH5, Install 65K FUSE @ New midspan PH5-50	2		X		X		Yes	
	Sub-Total	30							
Task: 2	Utility Co. - Charter Communications								
	Attach strand and cable to the new poles	2		X		X		Yes	
	Splice new cable lines	2		X		X		Yes	
	Wreck out old aerial lines	2		X		X		Yes	
	Sub-Total	6							
Task: 3	Utility Co. - Verizon								
	Verizon Line - Place new PA & PP GUVWires	2		X		X		Yes	
	Verizon Line - Place new aerial CU Cable and CU Wire Term	2		X		X		Yes	
	Verizon Splice - Splice in New Aerial CU Cable and Wire Term	2		X		X		Yes	
	Verizon Line - Transfer/Relocate Aerial CU Cable	2		X		X		Yes	
	Verizon Splice - Trimout Aerial Copper Cable	1		X		X		Yes	
	Verizon Line - Remove Aerial Copper Cable	2		X		X		Yes	
	Verizon Line - Remove Aerial Service Wires	1		X		X		Yes	
	Verizon Line - Remove poles, GUVWires, and Anchors	3		X		X		Yes	
	Sub-Total	15							

RESPONSIBLE PARTY		DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)		Concurrent / Exclusive Utility Work				Access Restraint & Limitations of Operations Notes	
C = Contractor	U = Utility Co.		Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility Contractor and Utility are working on-site - but NOT in the same vicinity)	Contractor Off-site	Contractor Concurrent	Potential Access Restraint (Yes/No)	Should an AR be considered for the Contractor?	Reason/Note (optional)
Phase 2		Enabling work by the Contractor - Contractor to complete bridge construction, access to set final pole location for pole 4-50 should not be blocked off before utilities have relocated to the new pole.								
UTILITY OPERATIONS - Pole Set / Overhead Relocation										
Task: 1		Utility Co. - Notional Grid								
		Relocate PH4-50 to road (Verizon to remove: PH4-30&anchor, PH4-50&anchor, PH4&anchor)					X			Yes
		Transfer 1PH Primary conductor from temporary poles to permanent road poles 4 through 5					X			Yes
		Transfer secondary & neutral conductors from temporary to permanent road poles 4 through 5					X			Yes
		Sub-Total								
Task: 2		Utility Co. - Charter Communications								
		Move plant over to the permanent poles					X			Yes
		Splice lengthened cables					X			Yes
		Sub-Total								
Task: 3		Utility Co. - Verizon								
		Verizon Line - Transfer/Relocate Aerial CU Cable					X			Yes
		Verizon Line - Unlash Aerial CU Cable/Place Cable Slack at Designated Poles/Relash Aerial CU Cable					X			Yes
		Verizon Line - Remove PA & PP Guywires and Anchors					X			Yes
		Verizon Line - Remove Temporary Poles					X			Yes
		Sub-Total								
		Sub-Total								
IMPORTANT BASIS NOTES - FOR CONTRACTOR										
1	Unless otherwise specified in the MassDOT Construction Contract, or unless specifically noted within this PUC Form, these durations (herein) are based upon the Contractor providing <i>unimpeded access</i> to the Utility company to perform									
2	Utility relocations (see Note 5 - Access).									
3	"Concurrent Utilities" operations noted herein, are to signify those Utility Company operations that can be worked concurrently (e.g. Utility A and Utility B work on-site together) - MassDOT and the Contractor are to prepare NTPs to Utilities accordingly.									
4	"Potential Access Restraints" noted within this PUC Form are for planning purposes. See MassDOT Contract for Contractual Access Restraints (refer to subsections 8.02, 8.03, and/or 8.06 for Design Bid Build Contracts and Volume II Section 9 for Design Build Contracts).									
5	Utility non-work periods - For planning purposes, the durations above contain some non work days (contingency) for New England conditions (precipitation, high temperatures, low temperatures, snow, ice). Gas line work and underground conduit installations however, typically have a seasonal restriction and can NOT be installed from 15-November to 15-March. Municipally Owned Electric and Gas Utilities are also restricted from proceeding from 15-November to 15-March. The Contractor shall (and the CTD plan) reflect this calendar restriction within the schedule (unless otherwise note).									
6	Access - Unless otherwise noted in the Contract, and in addition to the 'enabling' notes above, the Contractor must provide safe and unimpeded access (for trucks, lifts, cranes, etc.) to the Utilities, to allow for the proposed relocation(s) - including but not limited to snow removal, clearing and grubbing, guard rail removal, barrier removal, tree removal, and grading. Any costs associated with these tasks are deemed to be incidental to the project.									
7	For all MassDOT construction contracts issued after January 2014, the new Utility Coordination/documentation specification is required. This is Section 8.14 in Design-Bid-Build Contracts (see Design-Build Index reference for applicable section #).									
8	Prior to starting any and all enabling work for Utilities, the Contractor is to plan in advance with submittals and approved durations.									
9	* Potential District Initiated Early Utility Relocation - If noted herein, the District reserves the right to initiate early utility relocation in advance of the Contract NTP. In submitting a bid price and in the development/basis of the Baseline Schedule, the Contractor shall not plan the Work with the potential benefit of any form of 'early utility relocation.' As a requirement of the Baseline submission, unless otherwise noted in this Specification, the earliest that the first Utility company is to receive the 30 days advance notification to mobilize to the site, will be 7 calendar days after the pre-construction meeting and never sooner than 7 days after the Contract NTP.									

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WORK ZONE SAFETY

Temporary Traffic Control

*Typical Details and
Massachusetts Guidelines
for MassDOT, Municipalities,
Utilities, and Contractors*

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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.

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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.

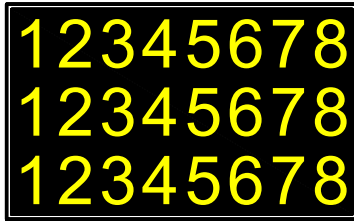
USE OF THIS GUIDE

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:

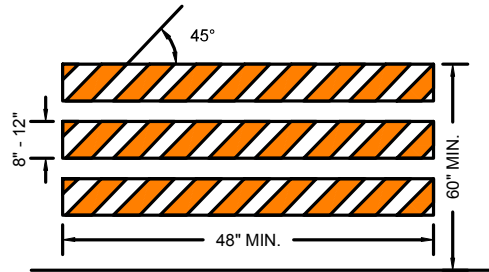
- 1) Turn to the Index. Consider the type of operations and the type of roadway upon which work will occur.
- 2) Select the figure that most closely matches the conditions where you plan to work. Remember that all diagrams represent minimum standards.
- 3) Read the title of the illustration to ensure 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.



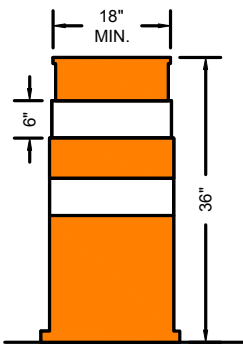
SIGN



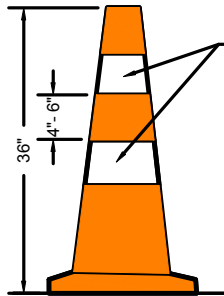
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



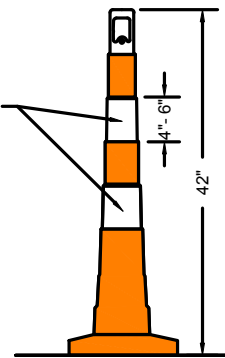
TYPE III BARRICADE



DRUM

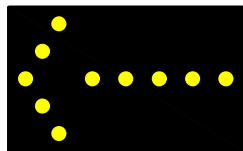


RETROFLECTIVE BANDS

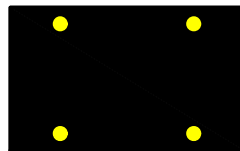


CONES

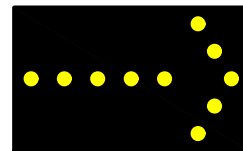
Cones may be used for all daytime operations. For night work, drums should be used to form the taper(s) and cones can be used along the tangent section of the work setup.



LEFT

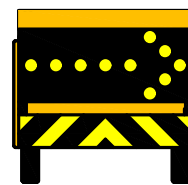


CAUTION



RIGHT

ARROW BOARD (WITH MODE)



TRUCK MOUNTED ATTENUATORS

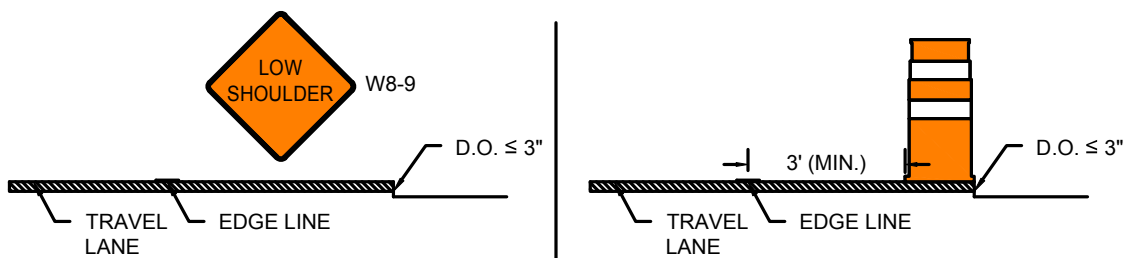
Truck Mounted Attenuators (TMA) shall be positioned between the start of the work area and the end of the designated buffer zone. The TMAs are to be positioned in each temporarily closed lane. This includes shoulders (≥ 8 feet) whether combined with a travel lane closure or being closed alone. These 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

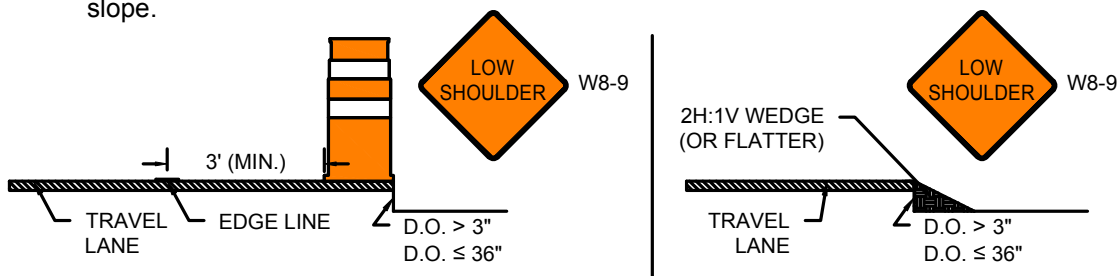
Note that this guidance is adopted from the Roadside Design Guide, 4th Edition.

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.

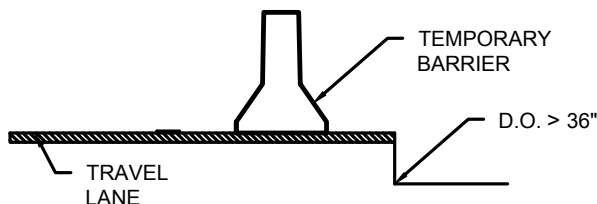
- Shoulder drop-offs 3" or less adjacent to a shoulder or active travel lane should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment; or
 - ✓ The placement of drums on the traffic side of the drop-off.



- 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.





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TYPICAL DEVICE SPACING

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	55
45-55	500 / 1000 / 1000	660	495	40	40
60-65	1000 / 1600 / 2600	780	645	40	50










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

MINIMUM SPACING OF ADVANCE WARNING SIGNS FOR URBAN ROADWAYS	
ROAD TYPE	DISTANCE BETWEEN SIGNS
URBAN (LOW SPEED)	100 FT
URBAN (HIGH SPEED)	350 FT

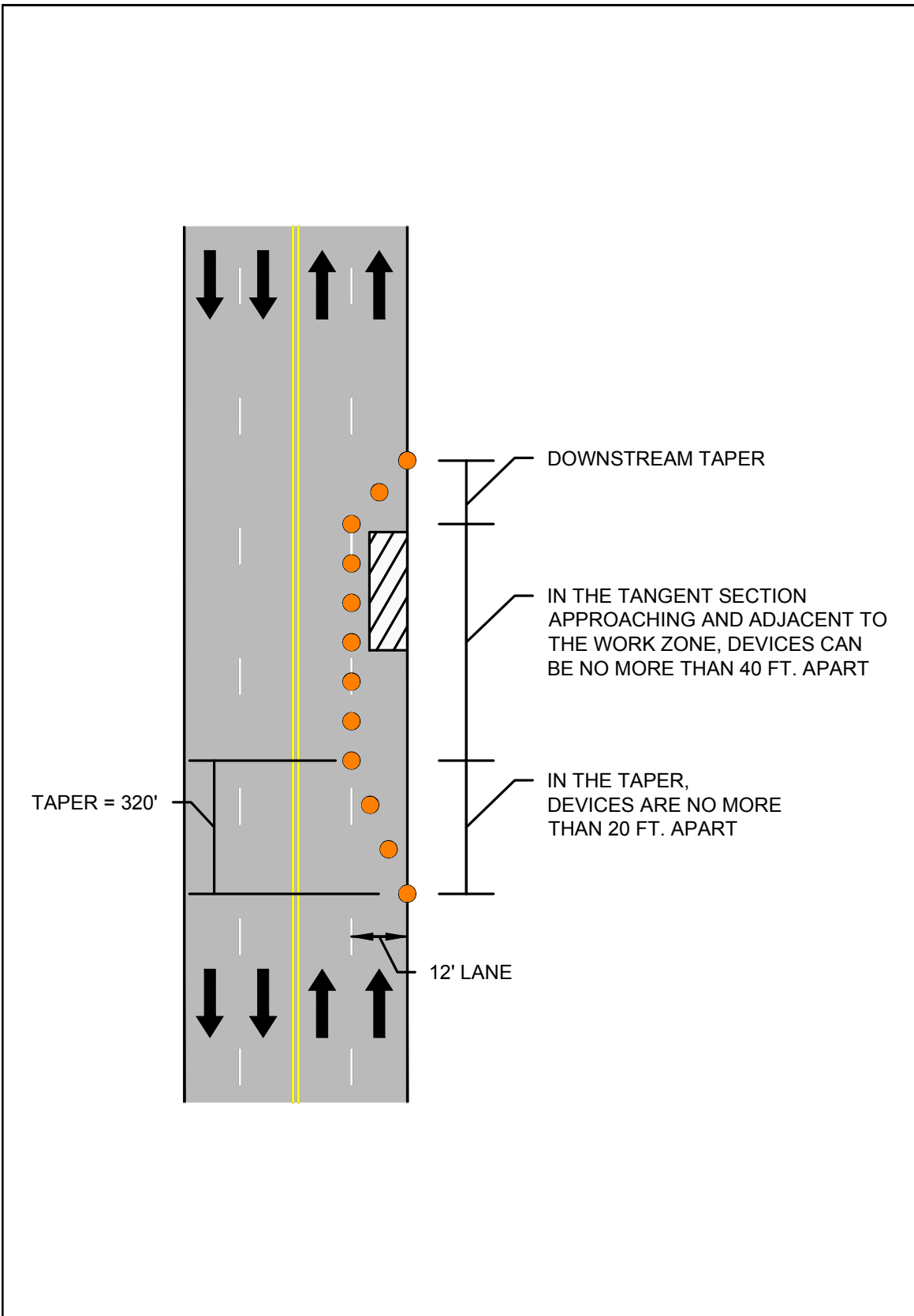
NOTES


1. 40 FT = 10 FT PAVEMENT MARKING + 30 FT SKIP

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 14</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FLAGGING GUIDANCE</p>
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Guidance for Flagging Operations

NOTE:

A flagger shall always be aware of their surroundings and have a good escape route. A flagger shall never be positioned directly beside or against construction equipment. When a flagger is required to direct traffic in an area where the escape route is partially blocked by a traversable obstruction such as a guardrail, the flagger shall be physically capable of traversing that obstruction. Prior to commencing a project, the supervisor in charge shall review the project, including guardrail areas, for safe flagging stations. The supervisor in charge shall clearly communicate with the flagger(s), indicating any locations where they cannot safely perform their duties.

Each flagger shall be equipped with the following high visibility clothing, signaling, and safety devices:

- 1) A white protective hard hat with a minimum level of reflectivity per the requirements of ANSI, Type I, Class E&G;
- 2) A clean, unfaded, untorn lime/yellow reflective safety vest and pants meeting the requirements of ANSI 107 Class 3 with the words "Traffic Control" on the front and rear panels in minimum two (2) inch (50 millimeter) high letters;
- 3) A 24 inch "STOP/SLOW" traffic paddle conforming to the requirements of Part 6E.03 of the Manual on Uniform Traffic Control Devices (MUTCD), a weighted, reflectorized red flag, flagger station advance warning signage, and two-way radios capable of providing clear communication within the work zone between flaggers, the Contractor, and the Engineer. The traffic paddle shall be mounted on a pole of sufficient length to be seven feet above the ground as measured from the bottom of the paddle;
- 4) A working flashlight with a minimum of 15,000 candlepower and a six inch red attachable wand, a whistle with a working lanyard, and a First Aid kit that complies with the requirements of ANSI Z308.1; and
- 5) An industrial/safety type portable air horn that complies with the requirements of the U.S. Coast Guard.

A "STOP/SLOW" paddle should be the primary hand-signaling device. It shall have an octagonal shape on a rigid handle. Flag use should be limited to emergency situations.

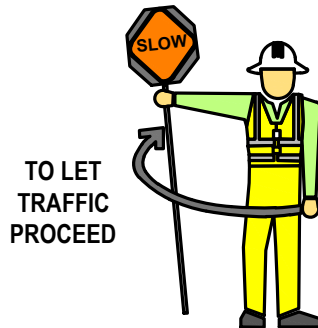


Properly Trained Flaggers

- Give clear messages to drivers.
- Allow distance for drivers to react.
- Coordinate with other flaggers.
- Use standard signaling methods.

Properly Equipped Flaggers

- Use approved stop/slow paddles.
- Use approved safety apparel.
- Use retroreflective equipment.
- Use hand held radios, as needed.
- All flaggers shall wear safety apparel that meets ANSI Class 3 requirements. The combination of vest and pants is required.



Proper Flagging Stations


- Good approach sight distance.
- Highly visible to traffic.
- Stand alone away from other machinery and people.
- Stand on right edge of pavement or shoulder- proceed to centerline only when first vehicle has come to stop.
- Have a good escape route.

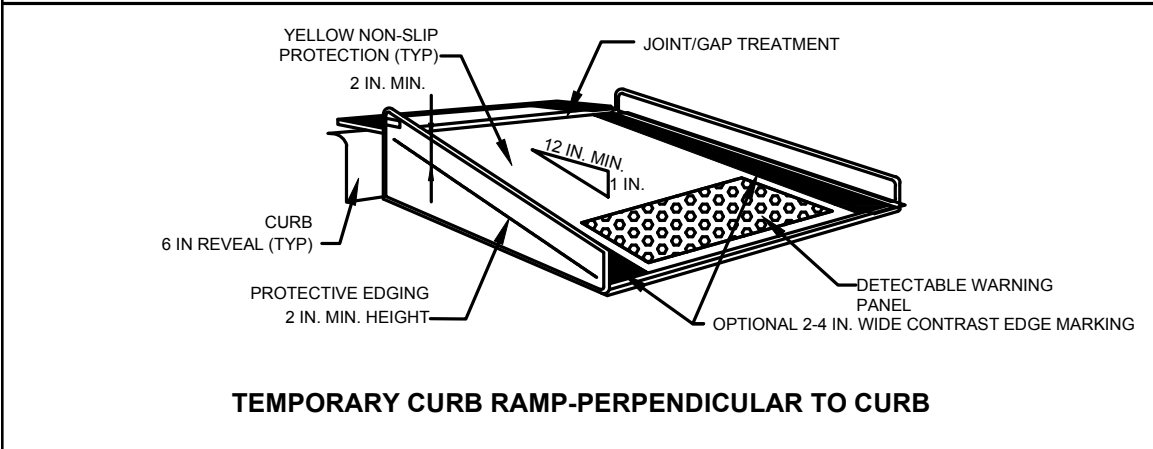
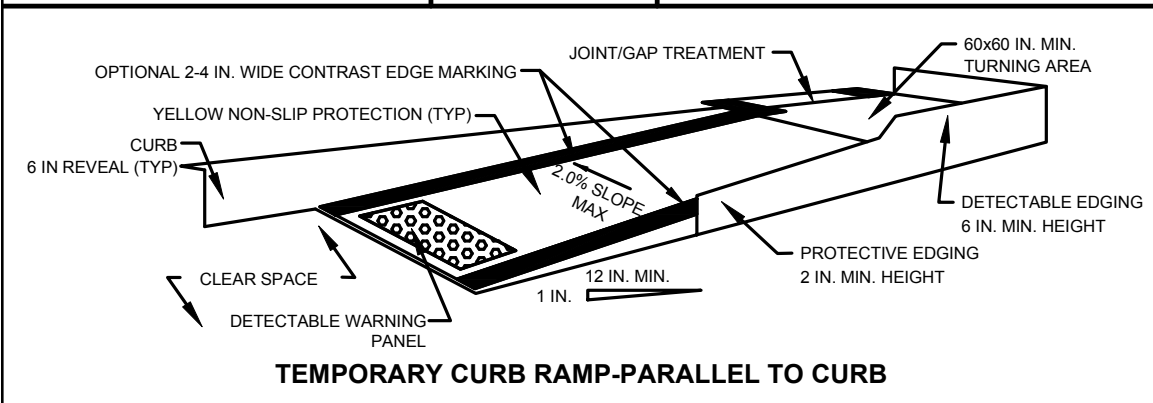


Proper Advance Warning Signs

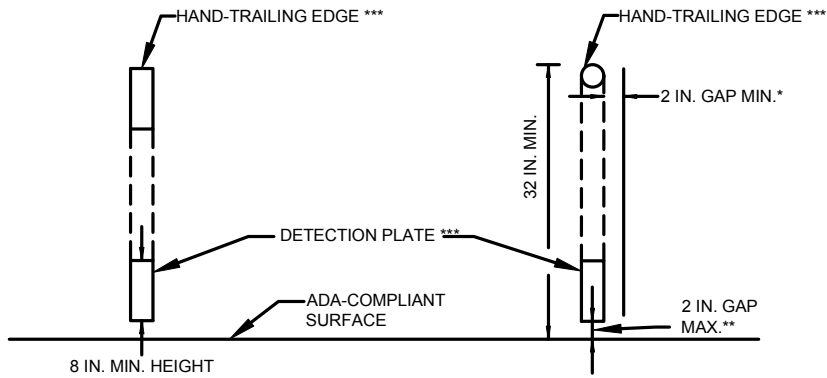
- Always use warning signs.
- Allow for reaction distance from signs.
- Remove signs if no longer necessary or not flagging.
- Use free hand in up-and-down motion to help slow traffic.



 <p>PAGE 16</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p style="text-align: center;">FIGURE 4 TYPICAL PEDESTRIAN DEVICES (1 OF 2) NOT TO SCALE</p>
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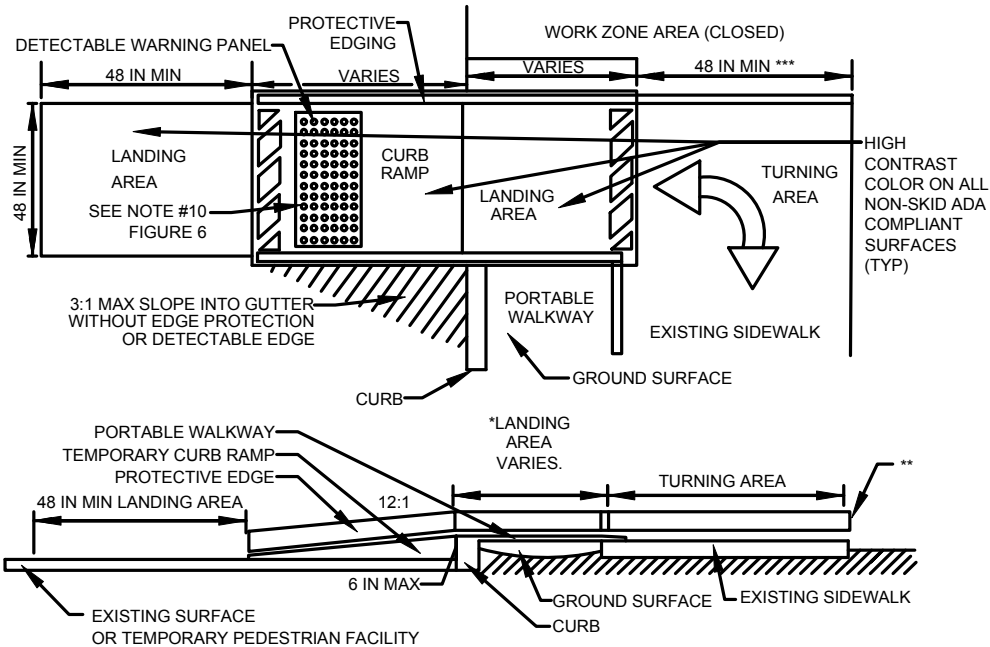
- NOTES:**
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE, AND NON-SLIP SURFACE.
 2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
 3. PROTECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
 4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
 5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
 6. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
 7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
 8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
 9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.
 10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.



CROSS SECTION VIEW


PEDESTRIAN CHANNELIZING DEVICE

- * THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.
- ** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.
- *** THE HAND-TRAILING EDGE AND DETECTION PLATE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE PATH SUCH THAT A PEDESTRIAN USER WITH A LONG CANE CAN FOLLOW IT.



TEMPORARY CURB RAMP

- * LANDING AREA USED TO OVERLAP NON-ADA COMPLIANT SURFACES.
- ** DETECTABLE EDGE REMOVED IF A CONTINUOUS SIDEWALK.
- *** 60 IN. IF AN OBSTRUCTION IS AT BACK OF SIDEWALK.

 <p>PAGE 17</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 5 TYPICAL PEDESTRIAN DEVICES (2 OF 2) NOT TO SCALE</p>
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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.

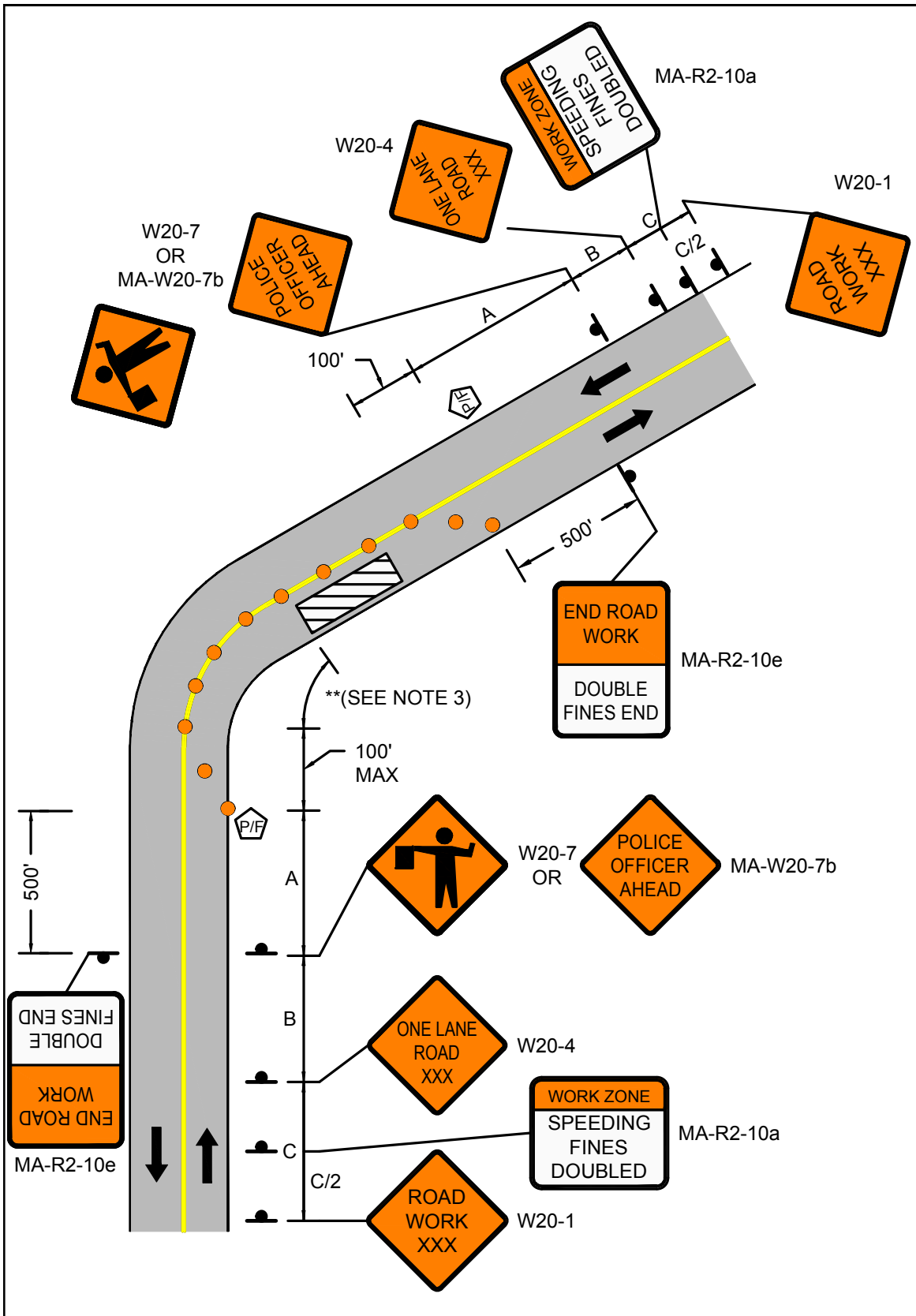
NOTES


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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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

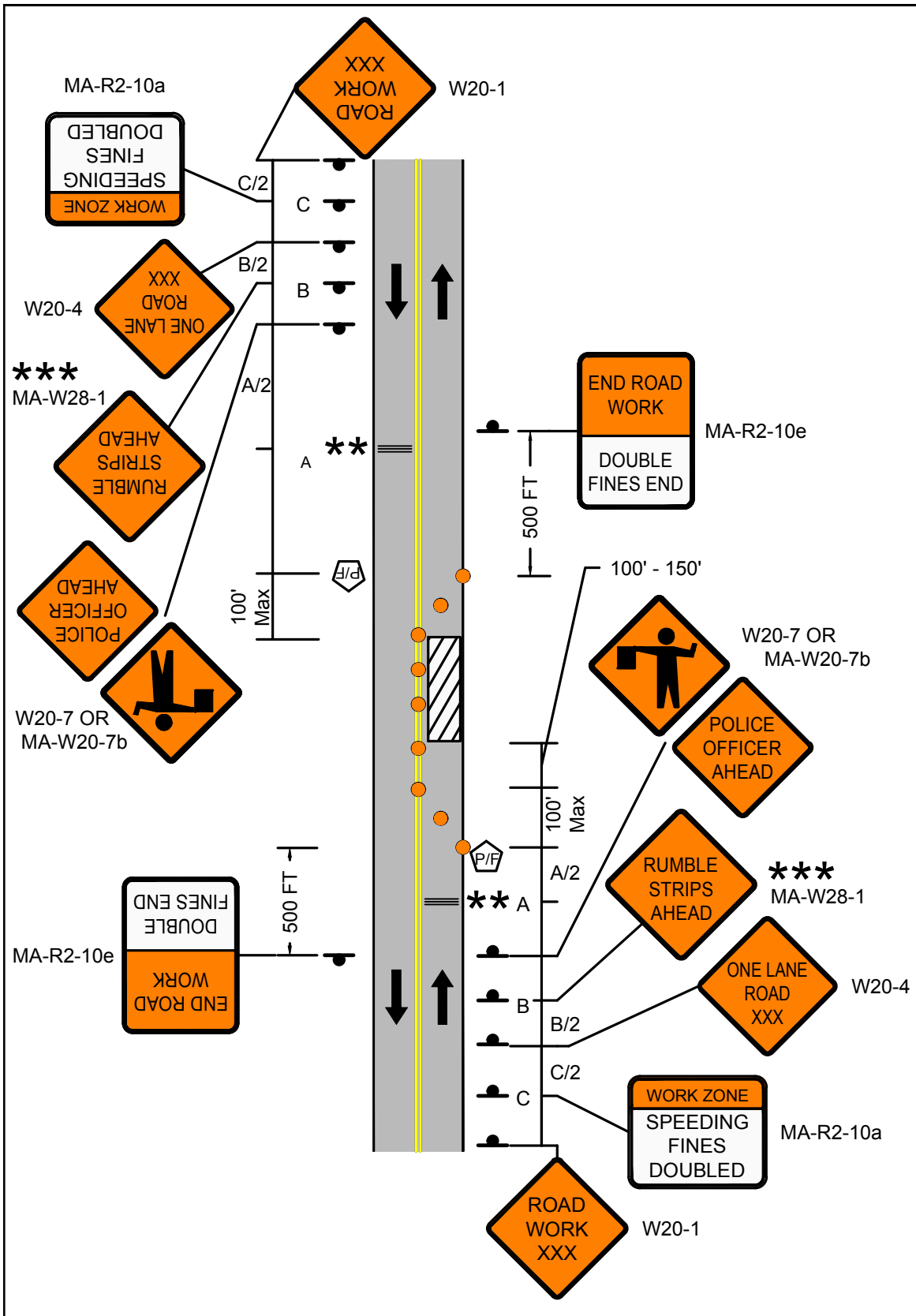
NOTES


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>Massachusetts Department of Transportation Highway Division</p> <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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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.

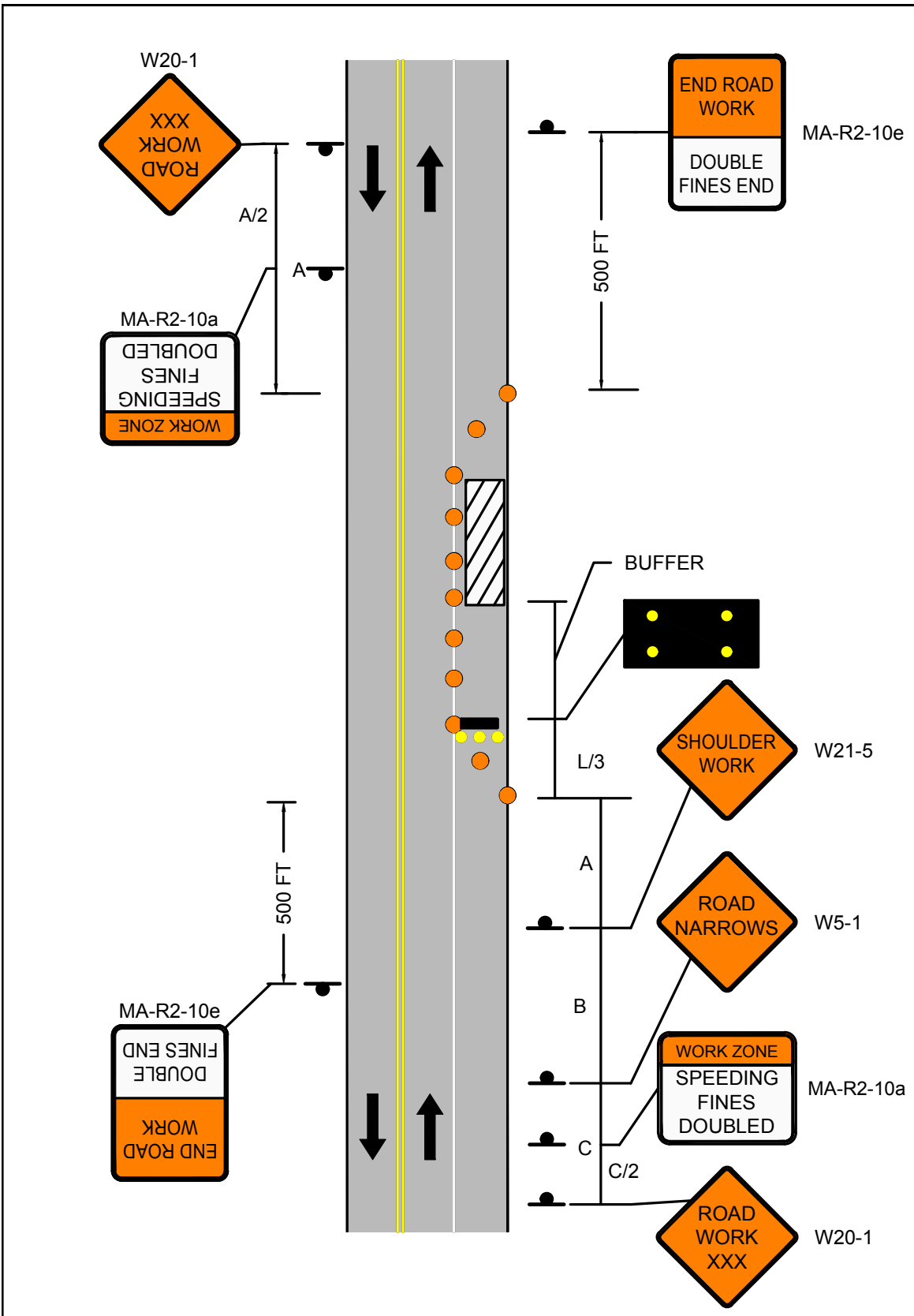
NOTES


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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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

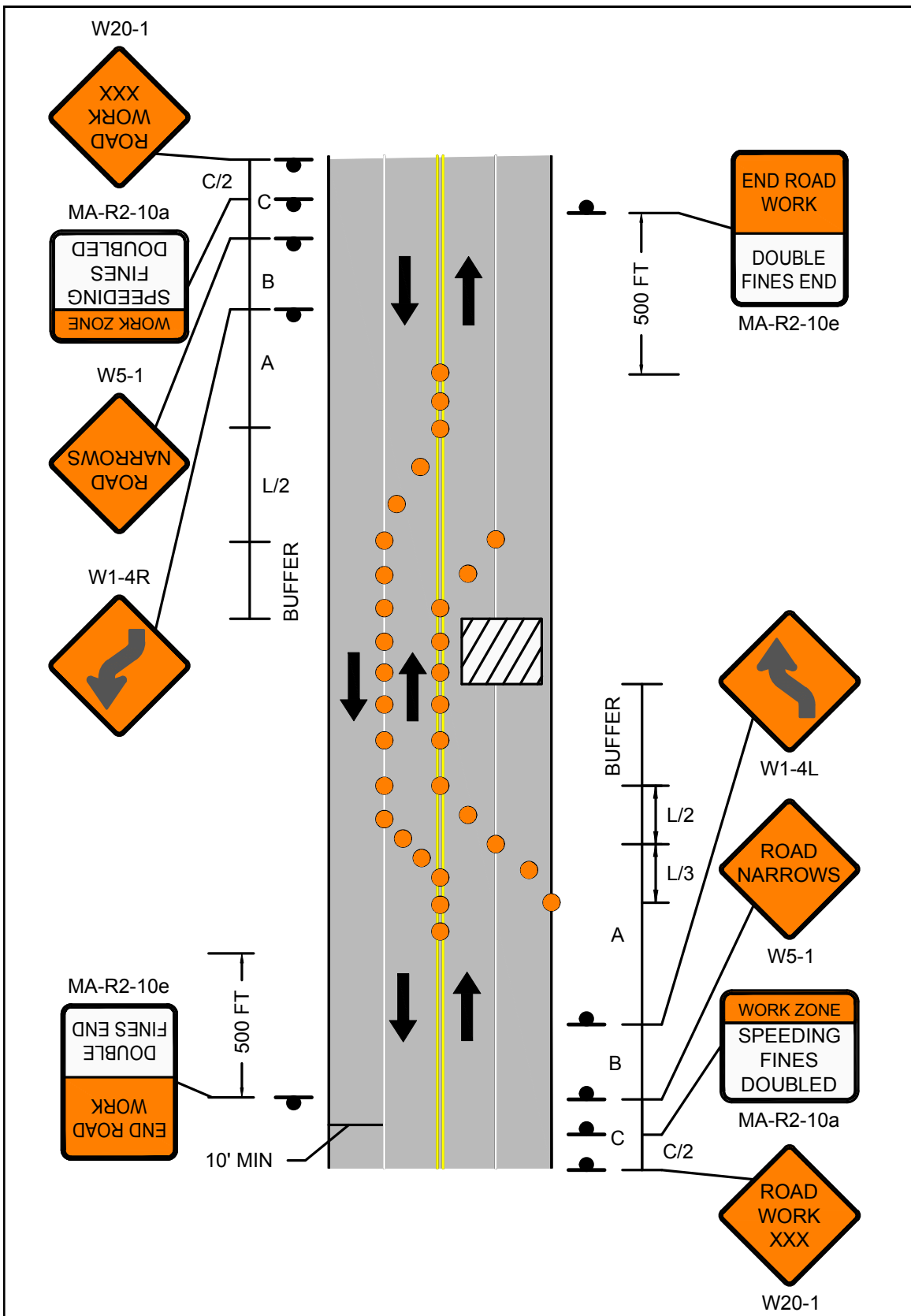


FIGURE 9
 STATIONARY OPERATIONS
 TWO LANE UNDIVIDED ROADWAY
 WITH TRAVERSABLE SHOULDER
 HALF OF ROADWAY CLOSED
 MAINTAIN TWO-WAY TRAFFIC



Work Zone Safety
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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

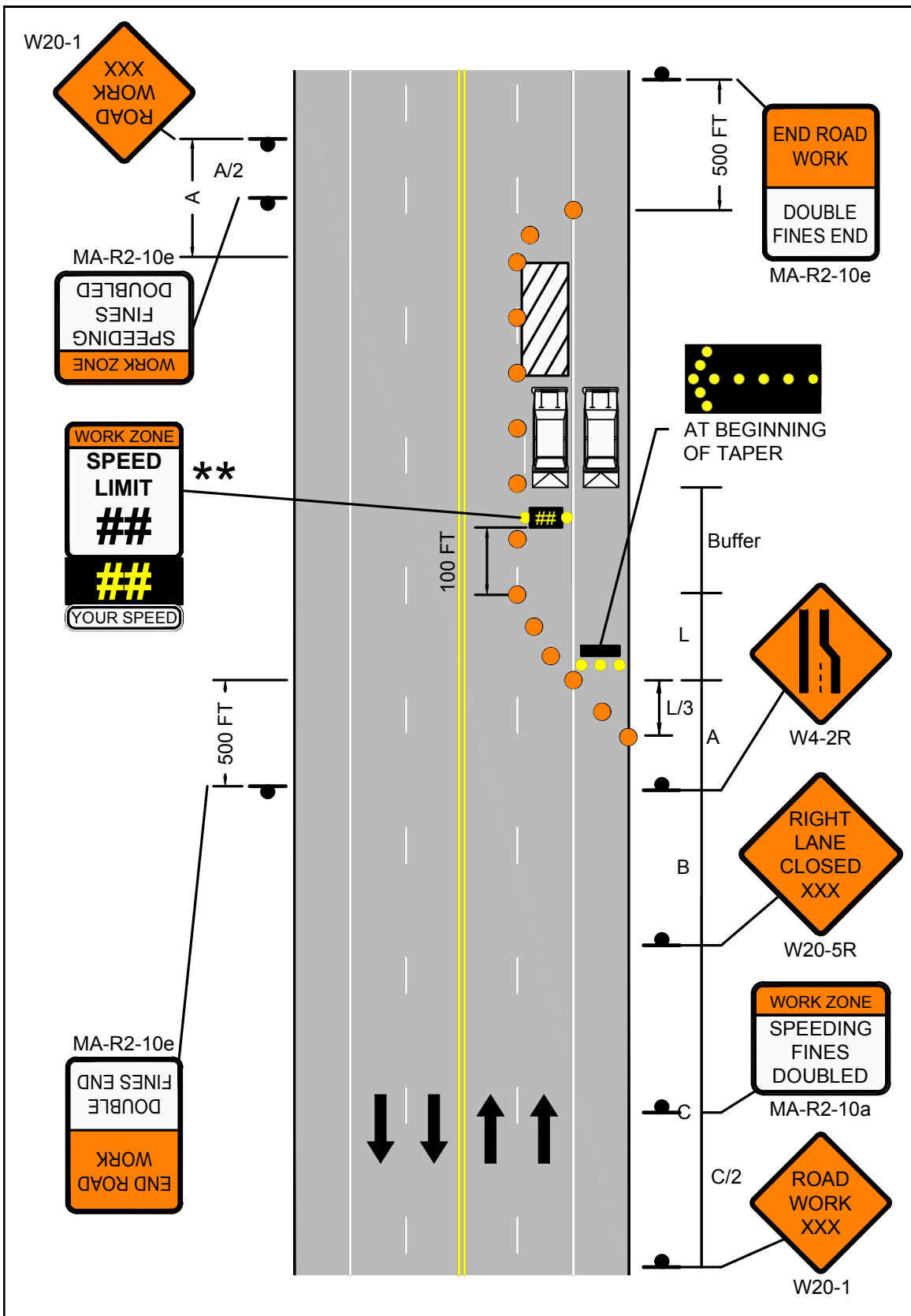
NOTES


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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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.

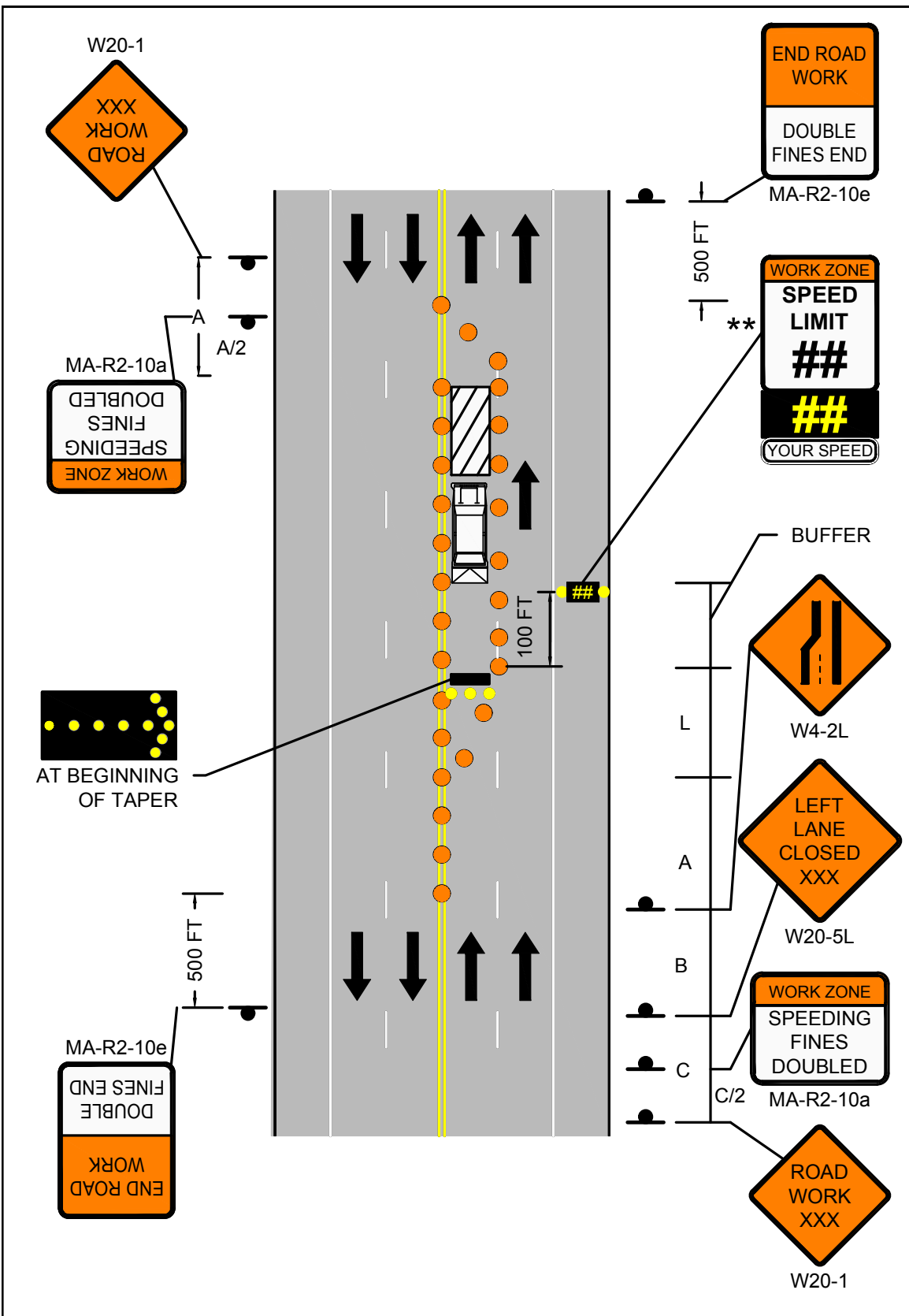
NOTES

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





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STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	160	305	20	140
45-55	220	660	330	495	40	120
60-65	260	780	390	645	40	140










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.
3. W1-4L SHALL BE PLACED AT THE MIDDLE OF THE TANGENT.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

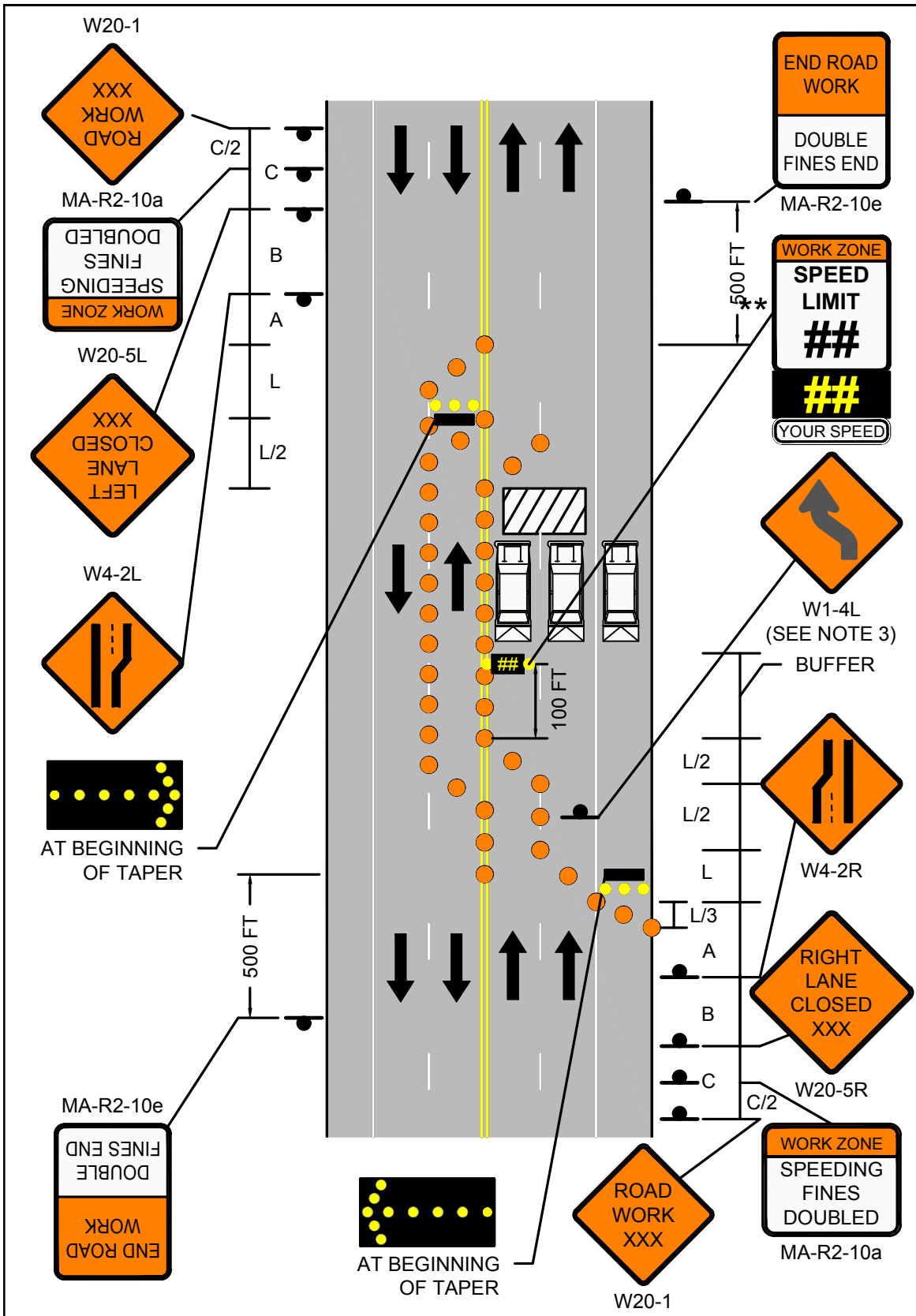


FIGURE 12
STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED





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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

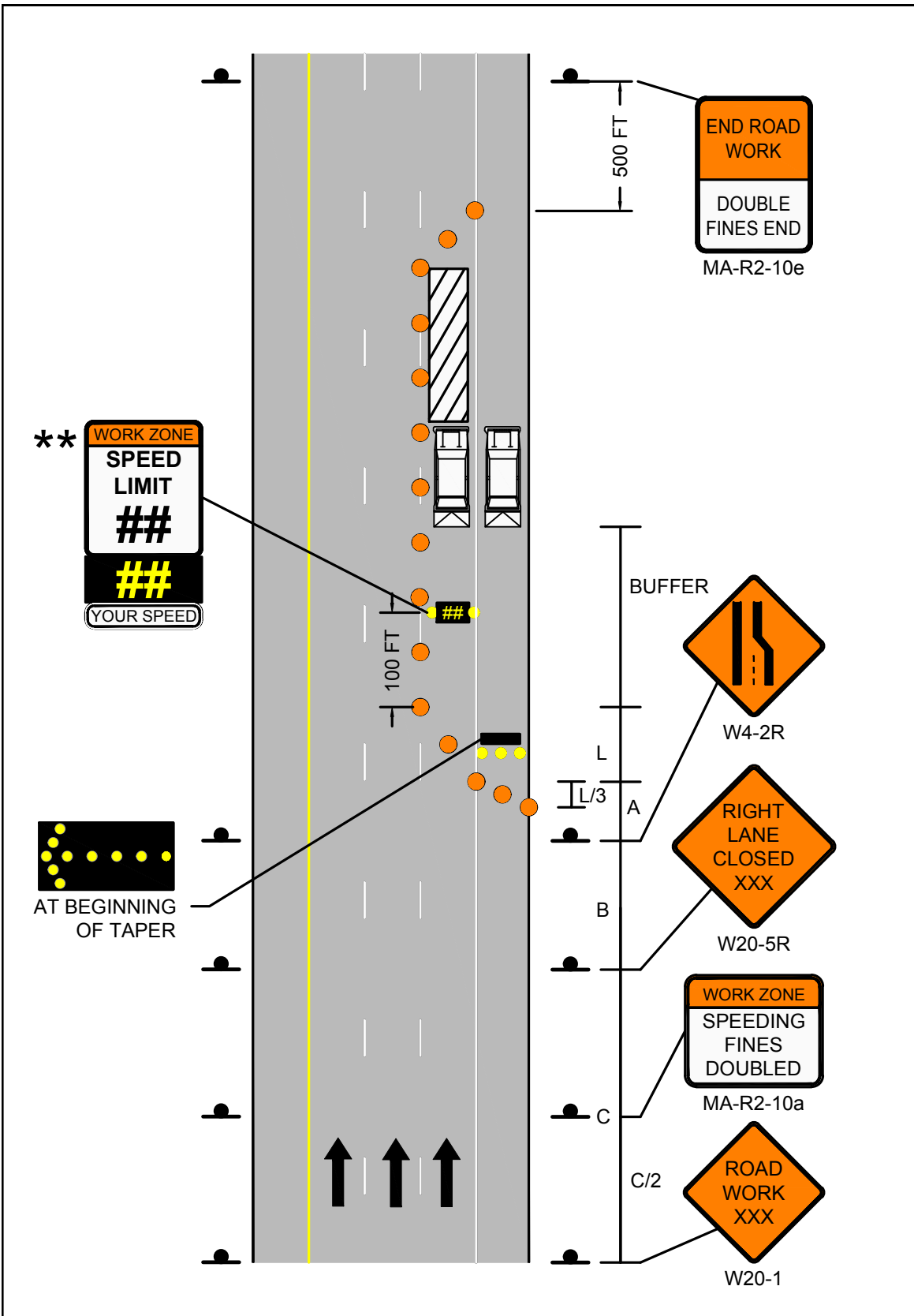
NOTES

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





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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

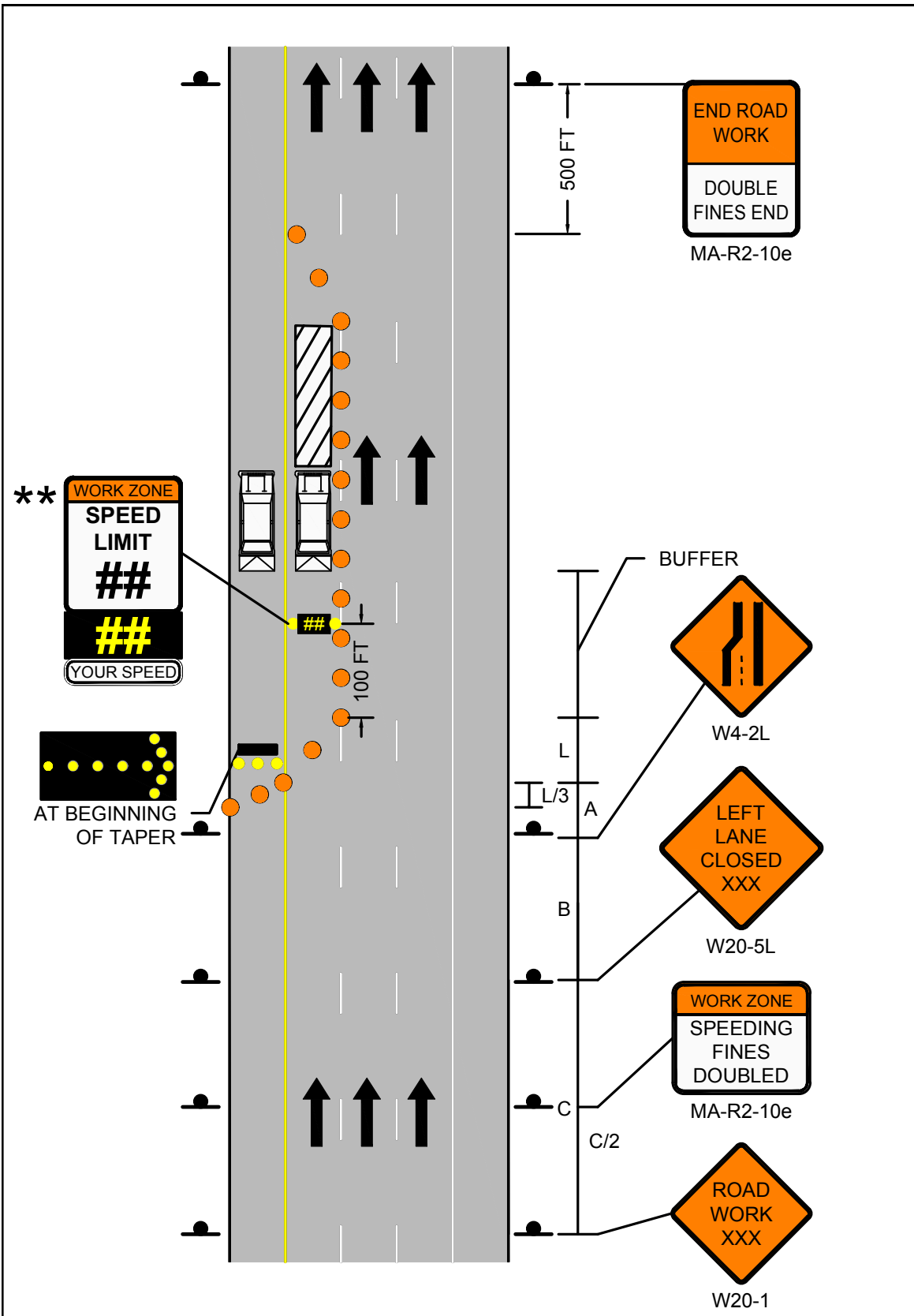
NOTES


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 36</p>	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR RIGHT/CENTER LANES CLOSED
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POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TANGENT LENGTH BETWEEN TAPERS T (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	640	305	20	110
45-55	220	660	1320	495	40	100
60-65	260	780	1560	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

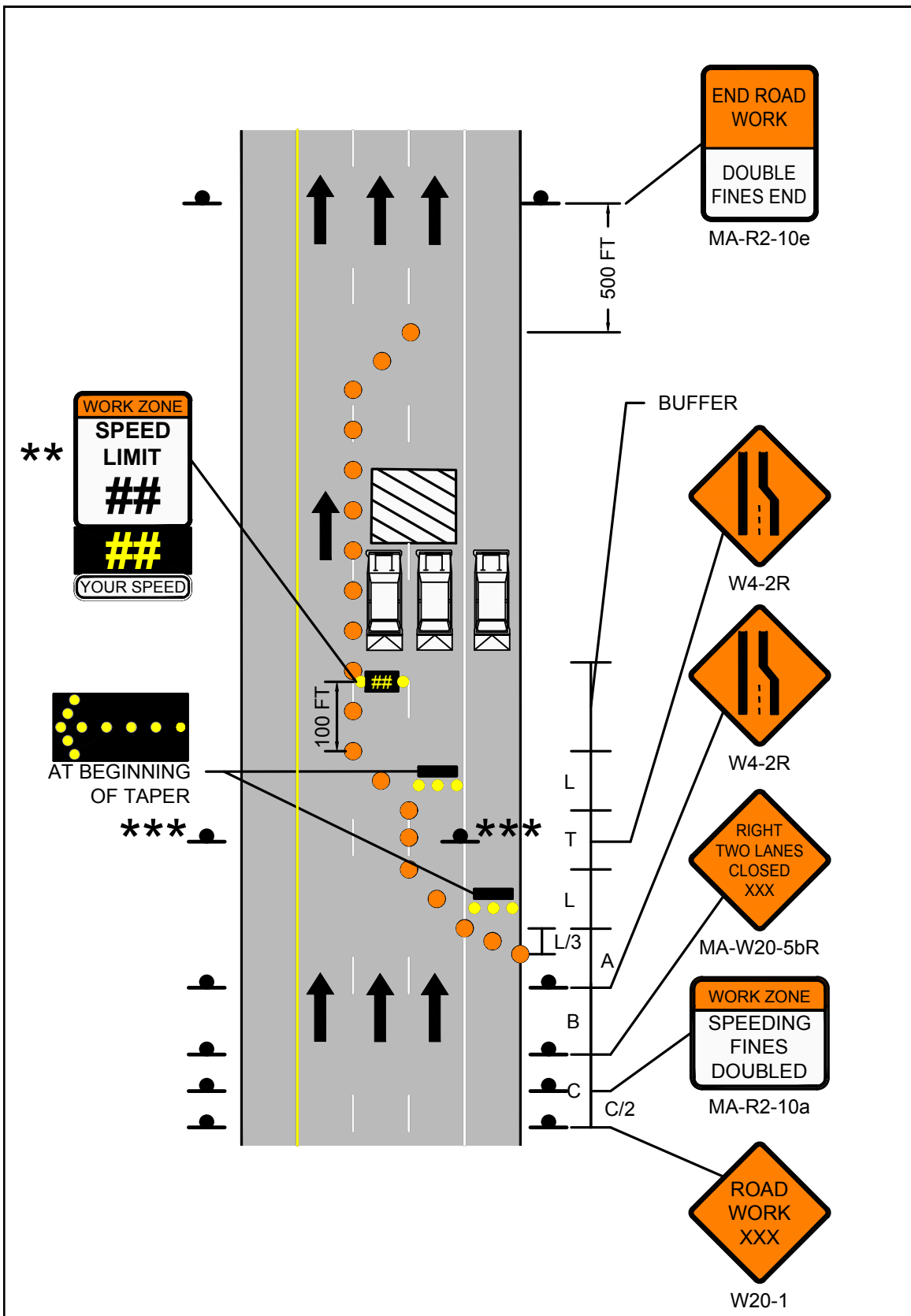
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. ***OPTIONAL AT THE ENGINEER'S DISCRETION.
3. ***THIS SET OF SIGNS SHALL BE LOCATED AT T/2.


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 37</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 15 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR RIGHT/CENTER LANES CLOSED</p>
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 <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

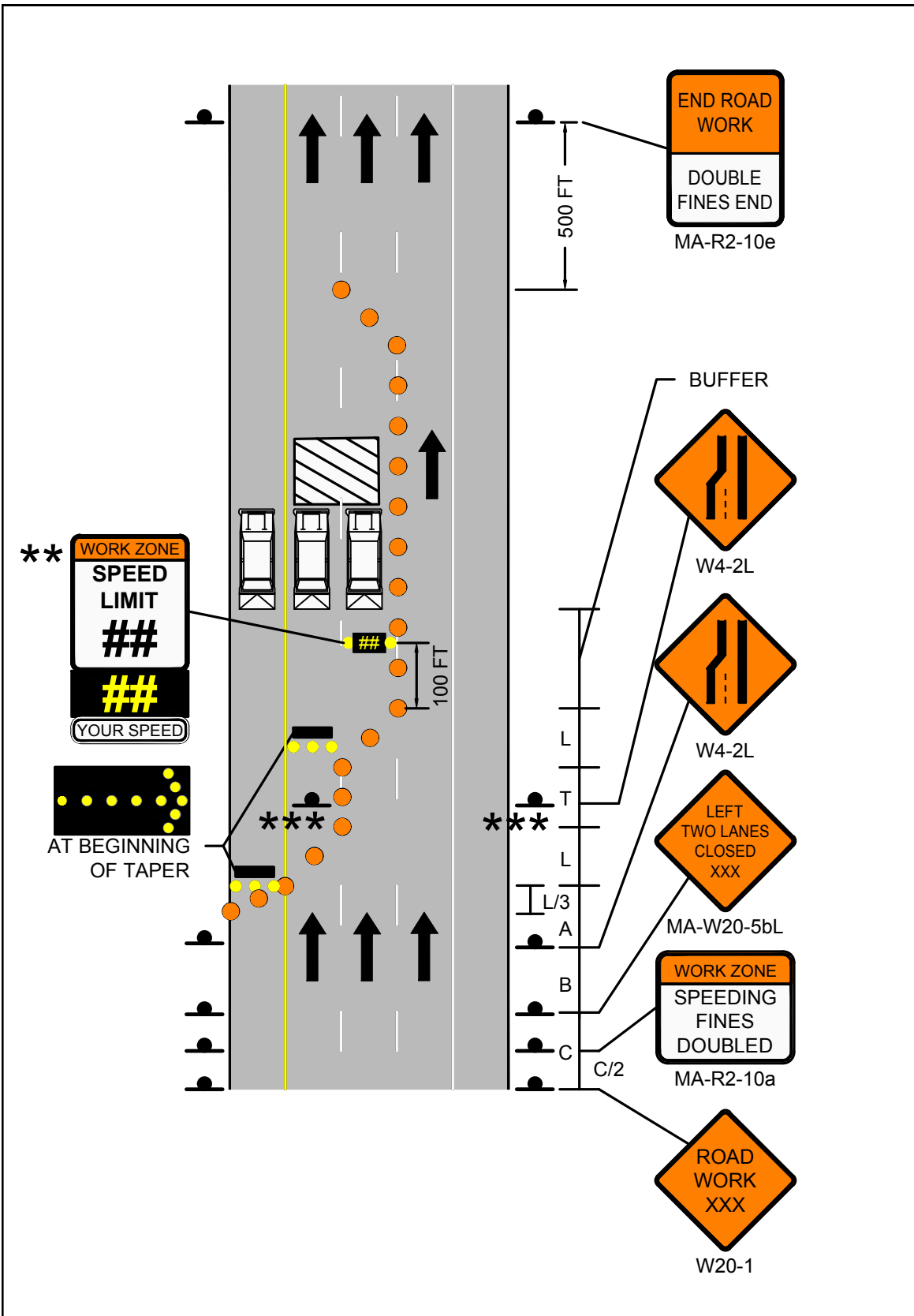
NOTES


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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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.

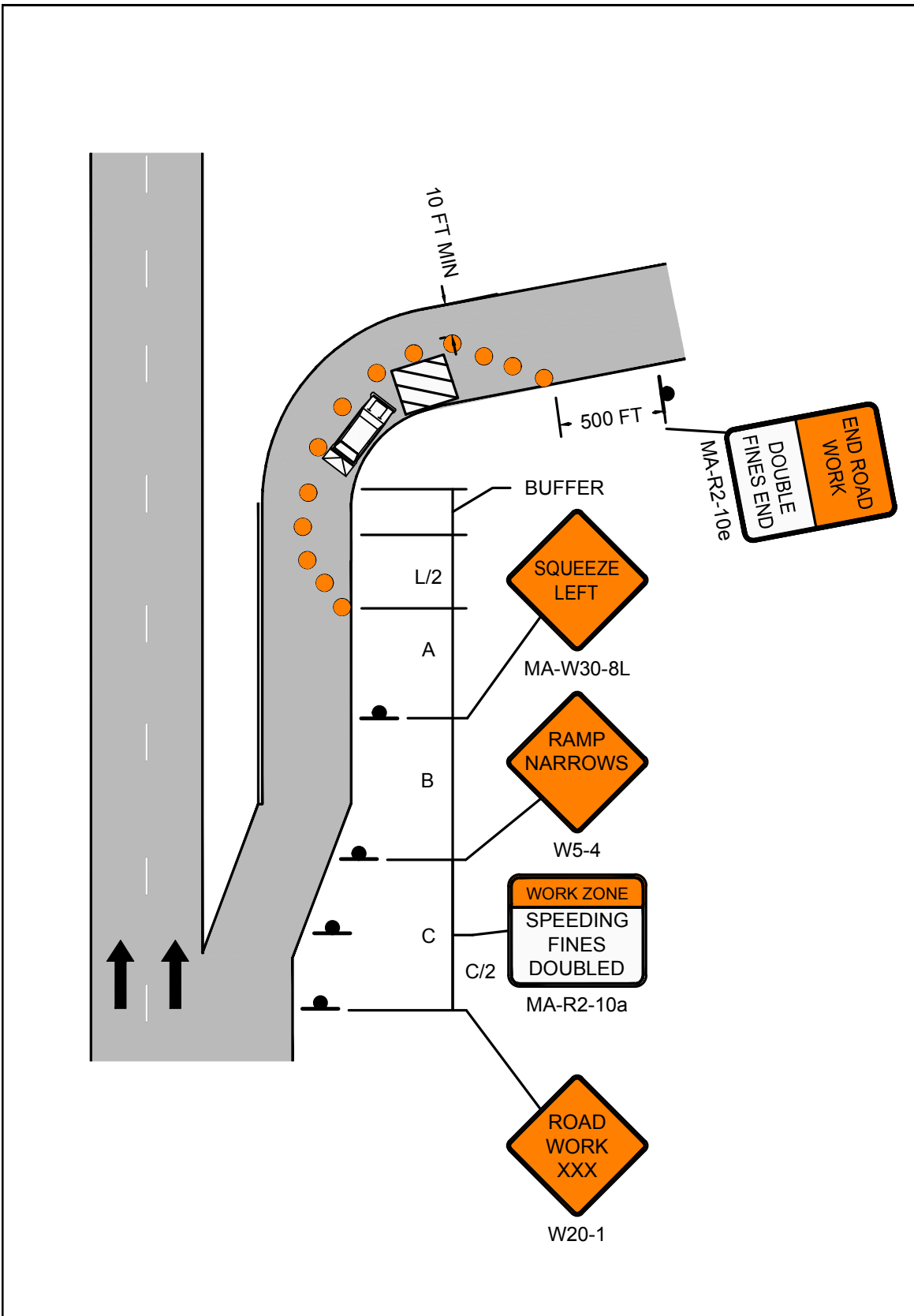
NOTES


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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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.

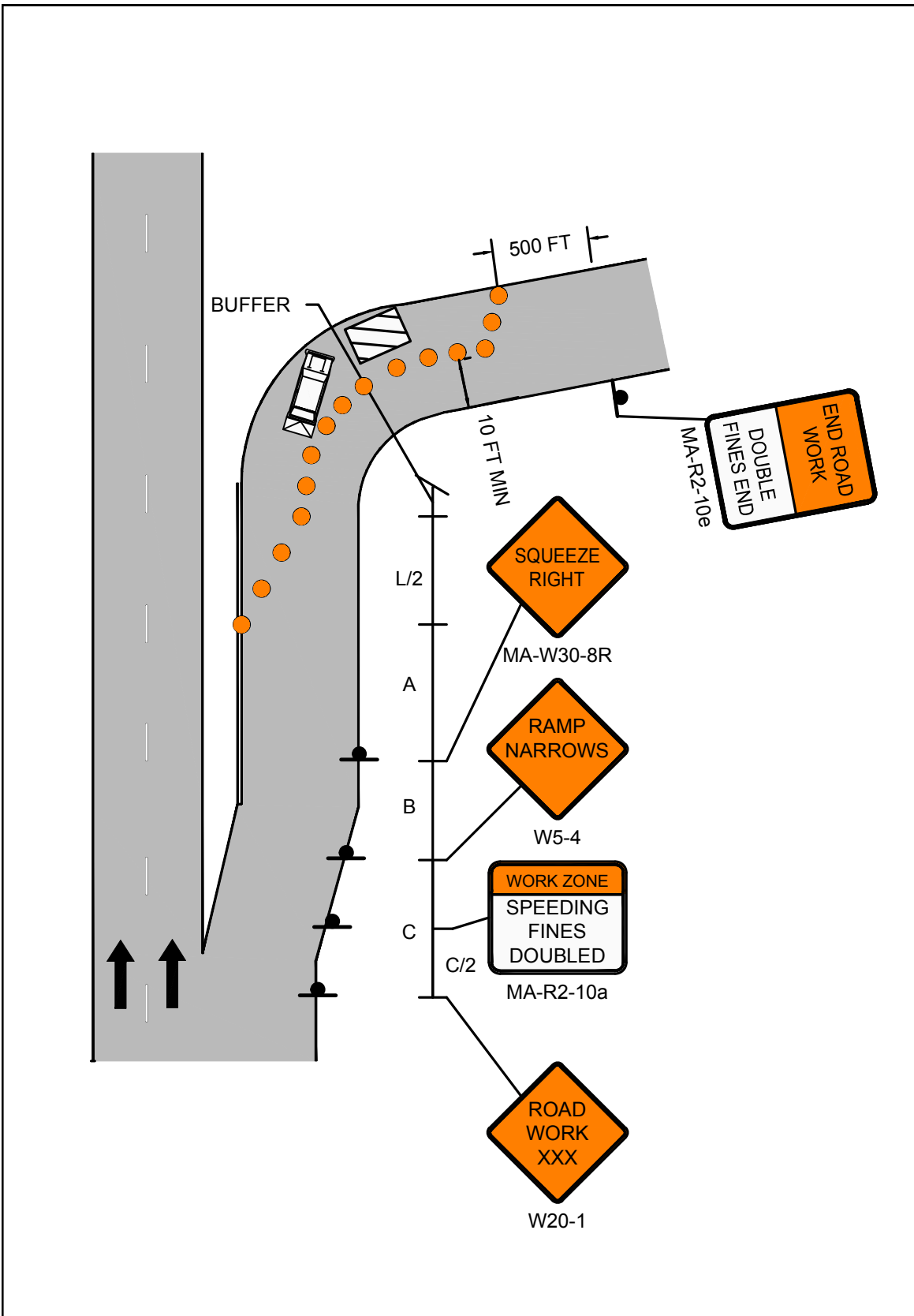
NOTES


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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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

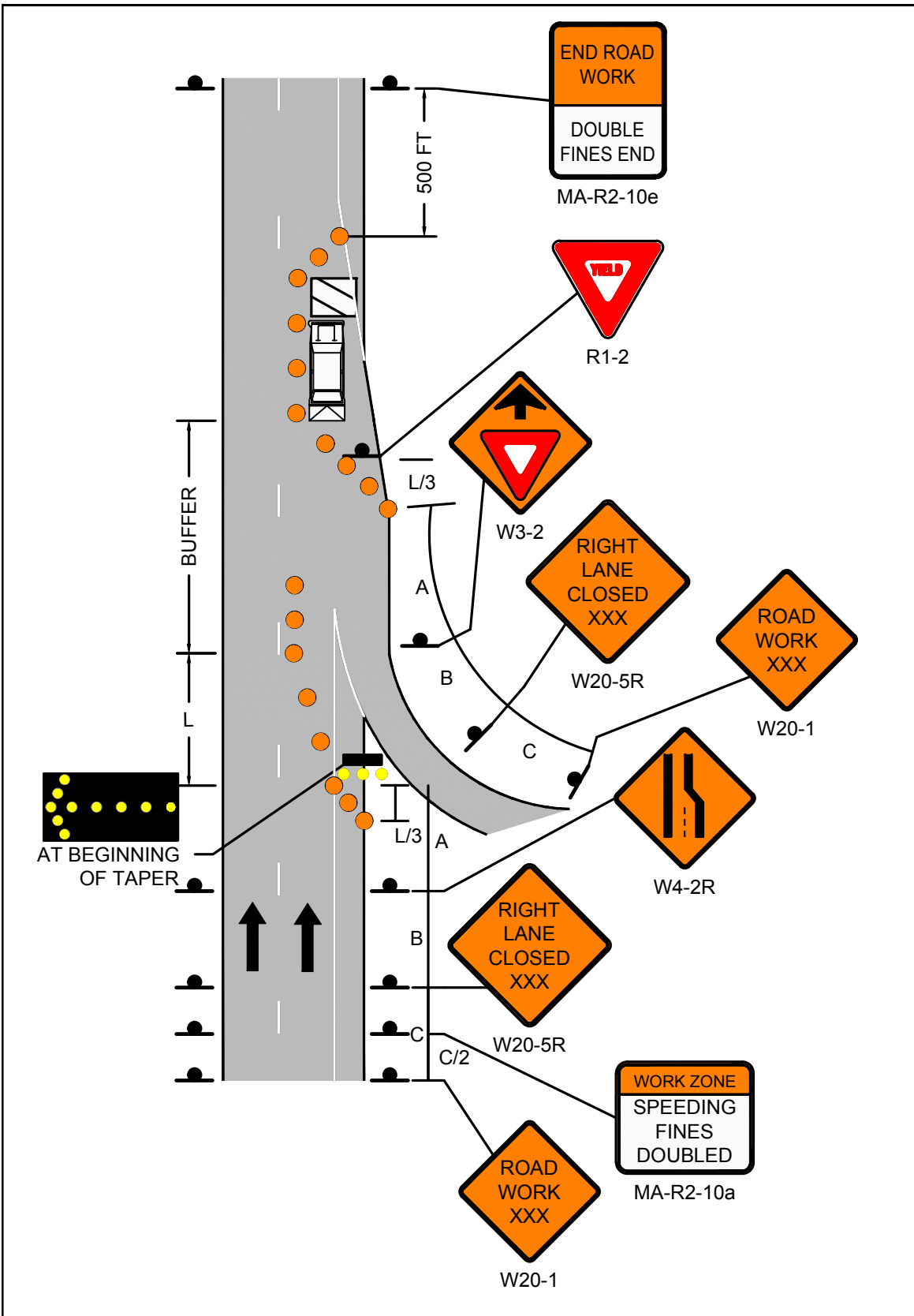
NOTES


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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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

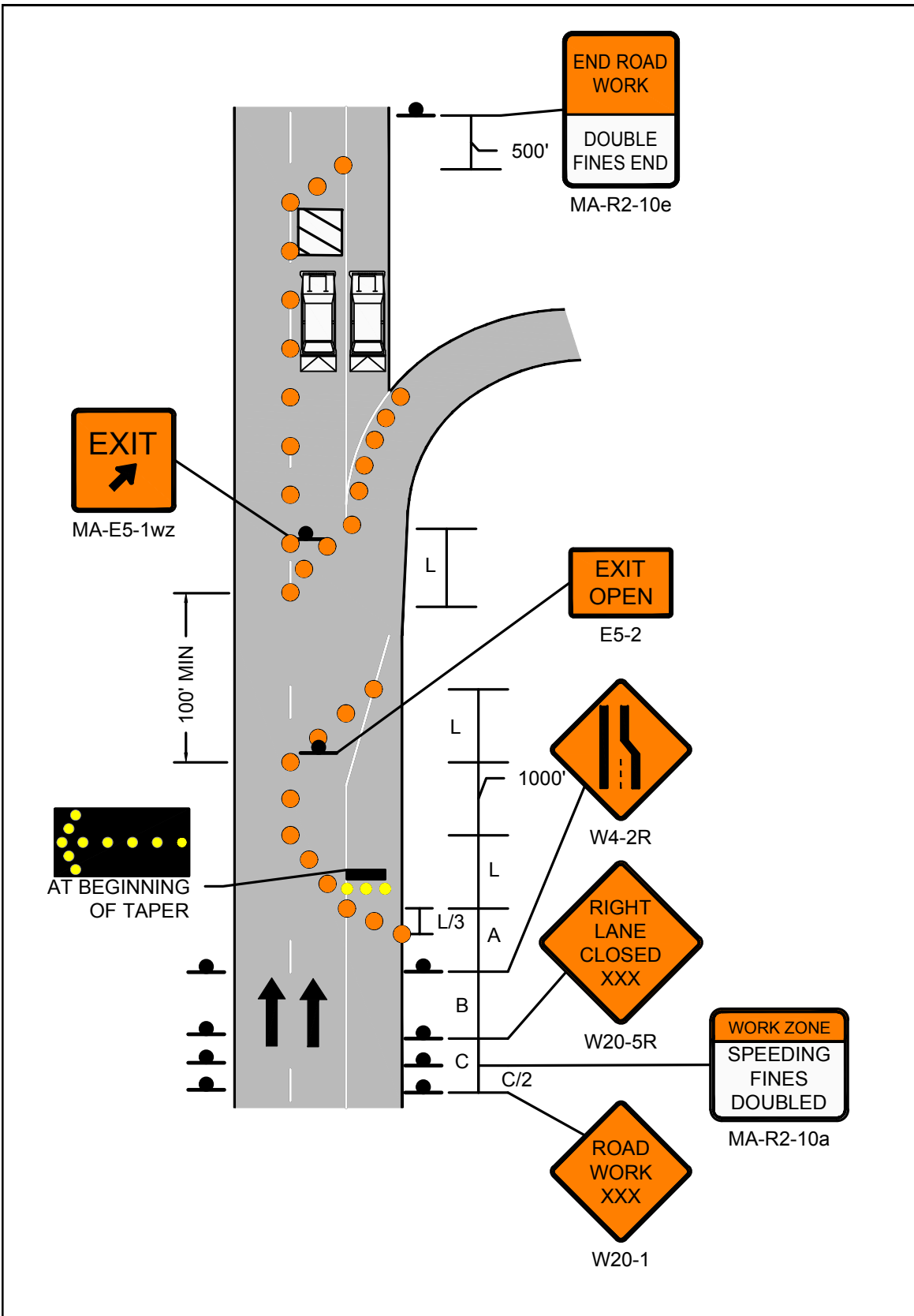
NOTES

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





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

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

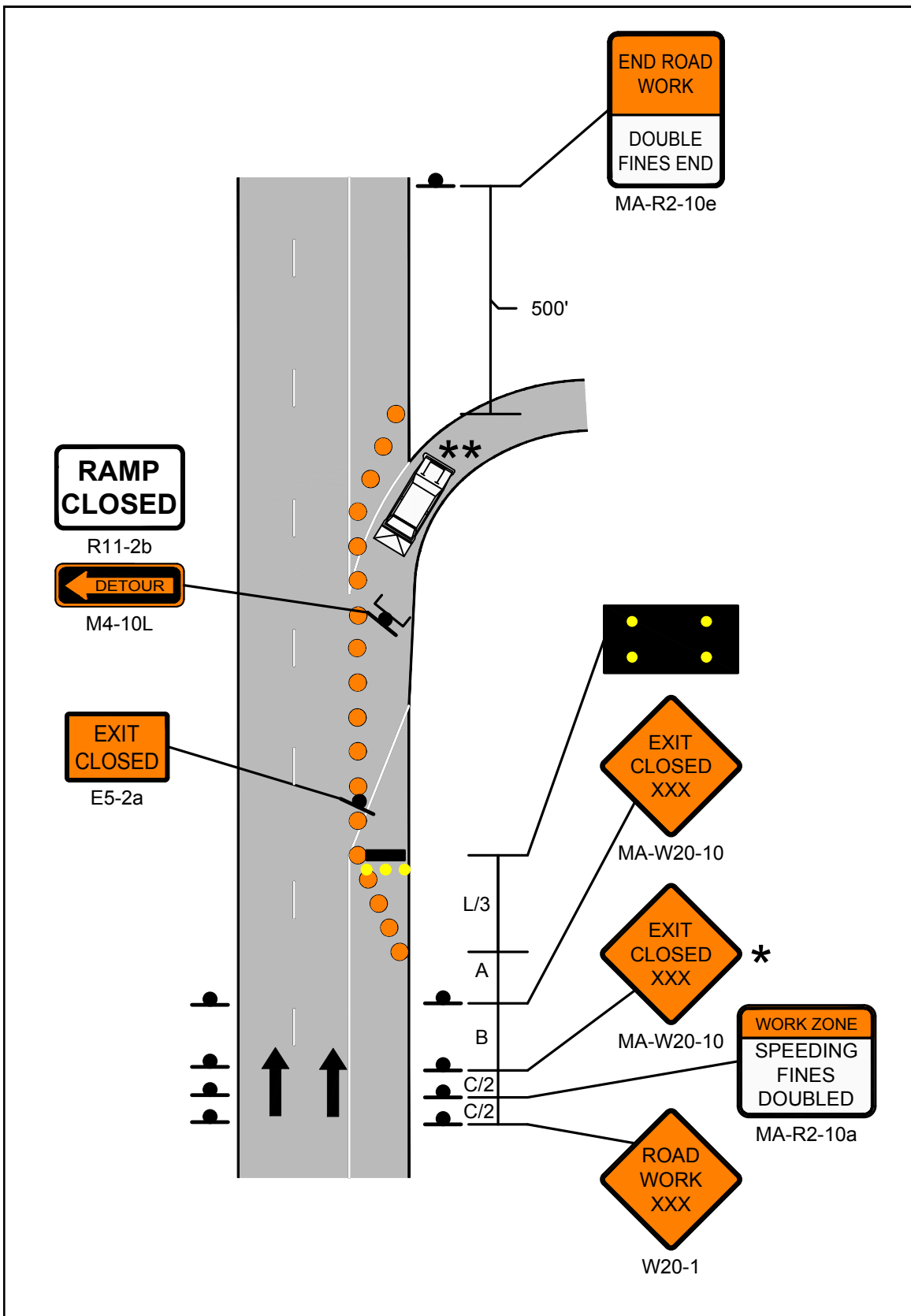
NOTES

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





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

MULTILANE DIVIDED ROADWAY
TYPICAL CLOVERLEAF RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

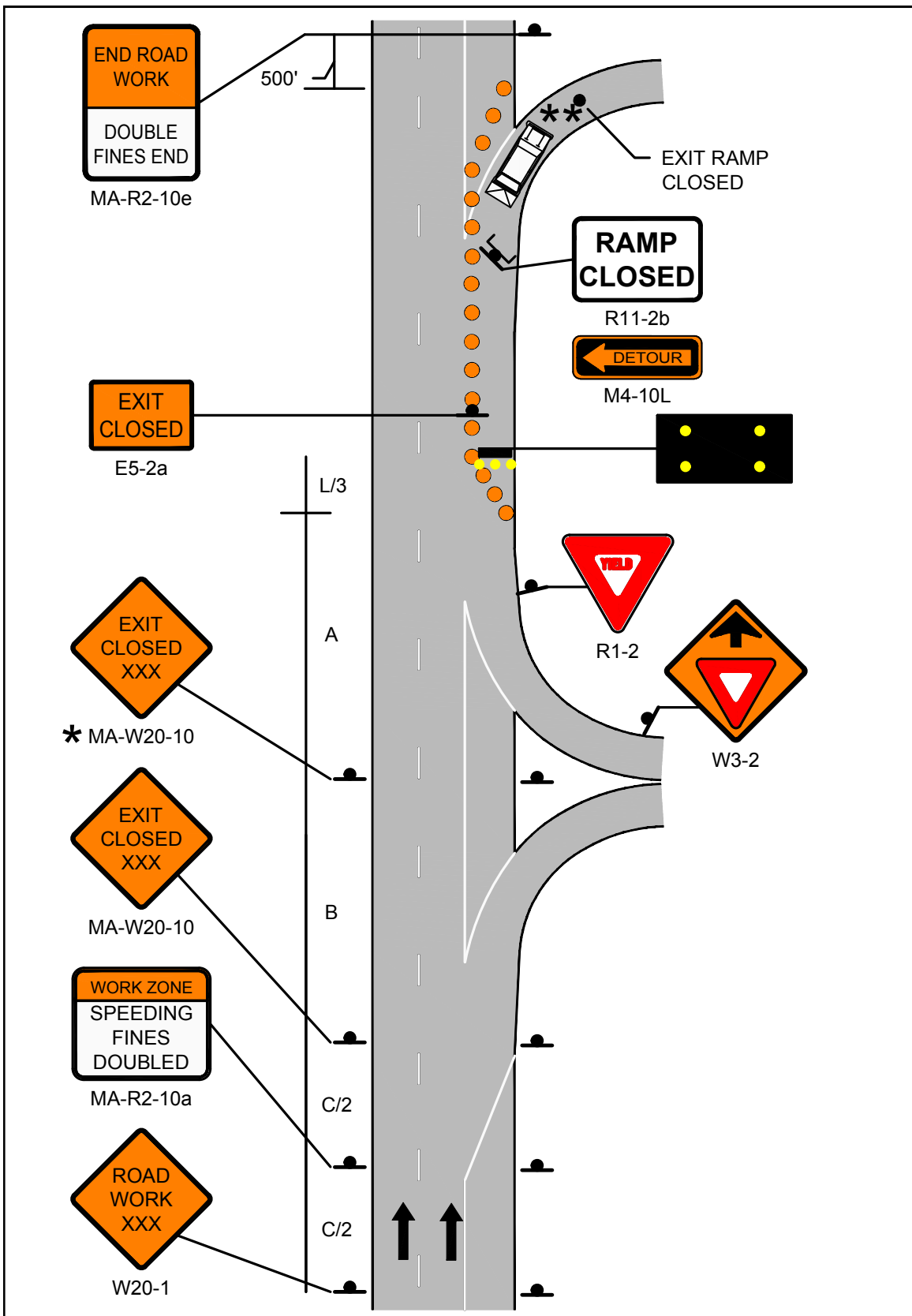
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 51</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 22 MULTILANE DIVIDED ROADWAY TYPICAL CLOVERLEAF RAMP CLOSURE</p>
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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

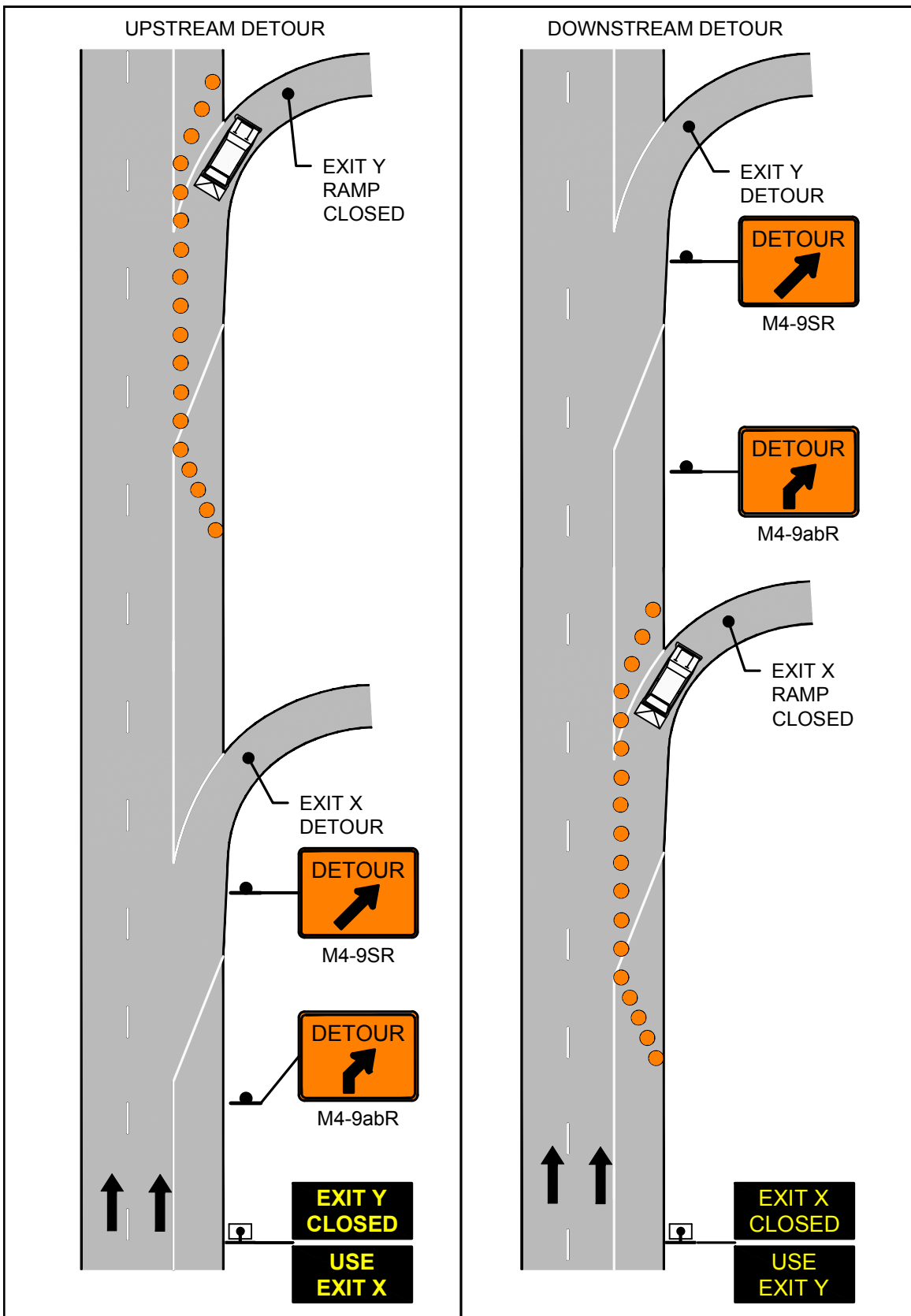




FIGURE 24-1
MULTILANE DIVIDED ROADWAY
PLACEMENT OF TEMPORARY
PORTABLE RUMBLE STRIPS
SHEET 1 OF 2




POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS
Above 55-mph	20-feet
36-mph to 55-mph	15-feet
35-mph and under	10-feet

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	TANGENT LENGTH BETWEEN TAPERS (T) (FT)
25-40	500 / 500 / 500	640
45-55	500 / 1000 / 1000	1320
60-65	1000 / 1600 / 2600	1560

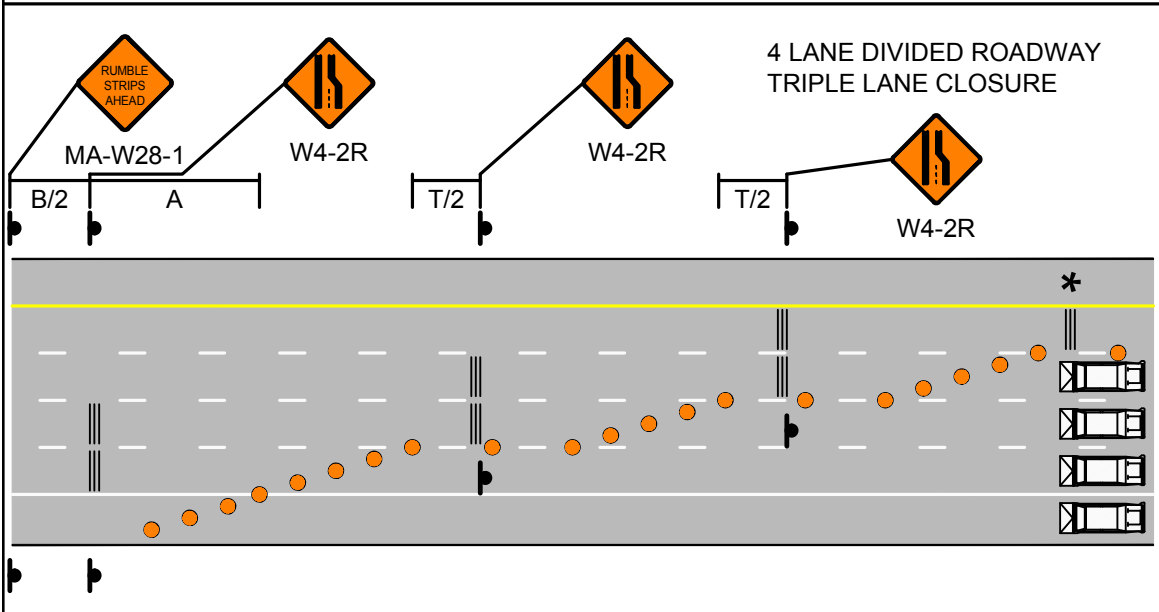
NOTES

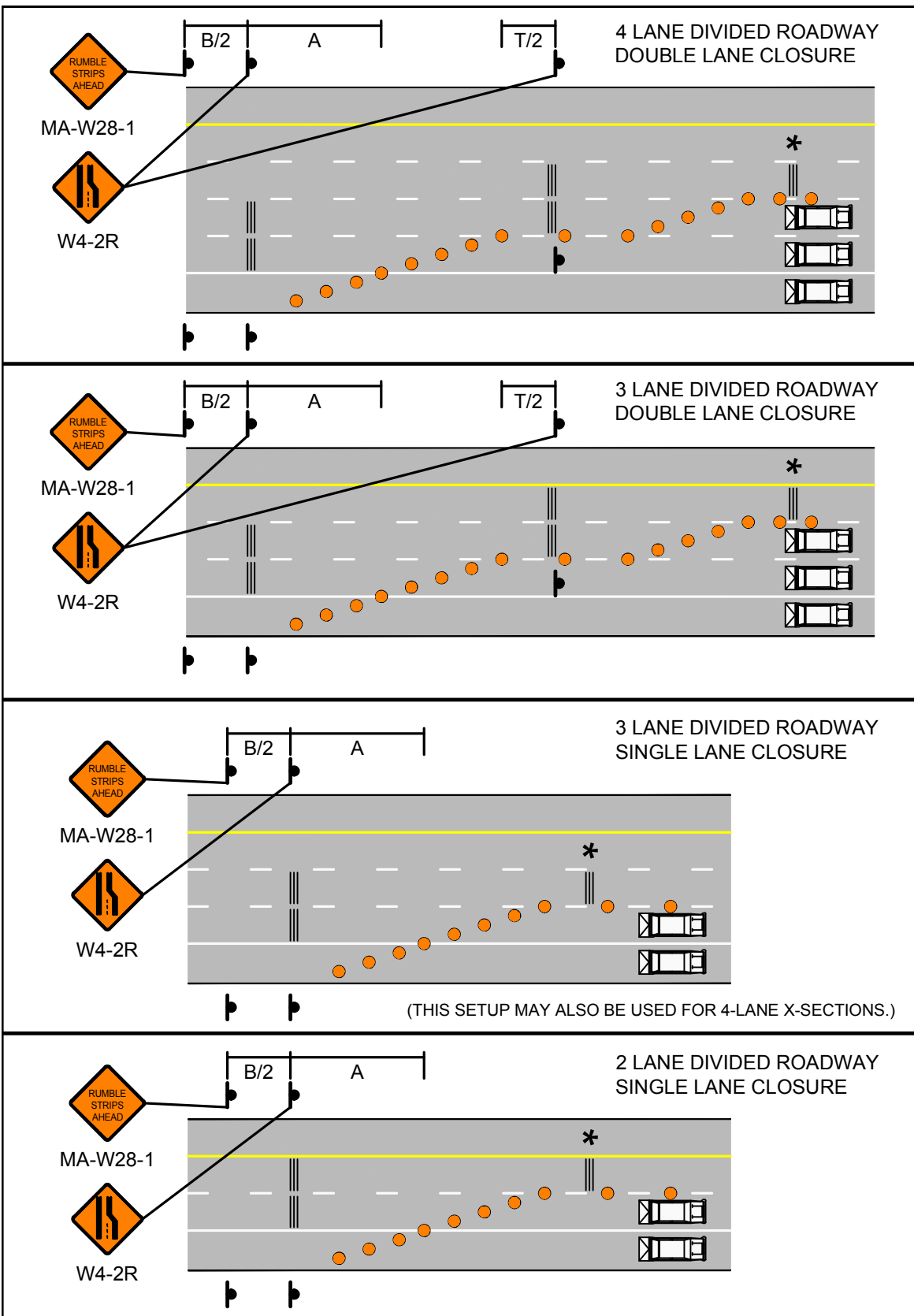
1. THE INTENTION OF THESE DETAILS IS ONLY TO DEPICT THE PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS (TPRS) IN RELATIONSHIP TO THE TAPER AND THE BUFFER OF A SINGLE- OR MULTI-LANE CLOSURE. THE DEPICTION OF THE NUMBER AND SPACING OF ALL OTHER TRAFFIC CONTROL DEVICES IS NOT TO SCALE. REFER TO OTHER DETAILS FOR LANE CLOSURES FOR THE PLACEMENT AND NUMBER OF ALL OTHER TRAFFIC CONTROL DEVICES.
2. THESE DETAILS ONLY DEPICT RIGHT LANE CLOSURES. LEFT LANE CLOSURES SHOULD UTILIZE A MIRROR IMAGE OF THESE SETUPS, STARTING WITH CLOSURE OF THE LEFTMOST LANE.
3. ★ THIS TPRS ARRAY IS OPTIONAL AT THE ENGINEER'S DISCRETION. IF USED, IT SHOULD BE PLACED ADJACENT TO THE BUFFER.
4. DETAILS SHOW THE MINIMUM NUMBER OF TPRS REQUIRED. ADDITIONAL MAY BE USED IF CONDITIONS WARRANT.


LEGEND

-  CHANNELIZATION DEVICE
-  TRUCK MOUNTED ATTENUATOR
-  TEMPORARY PORTABLE RUMBLE STRIP

NOT TO SCALE

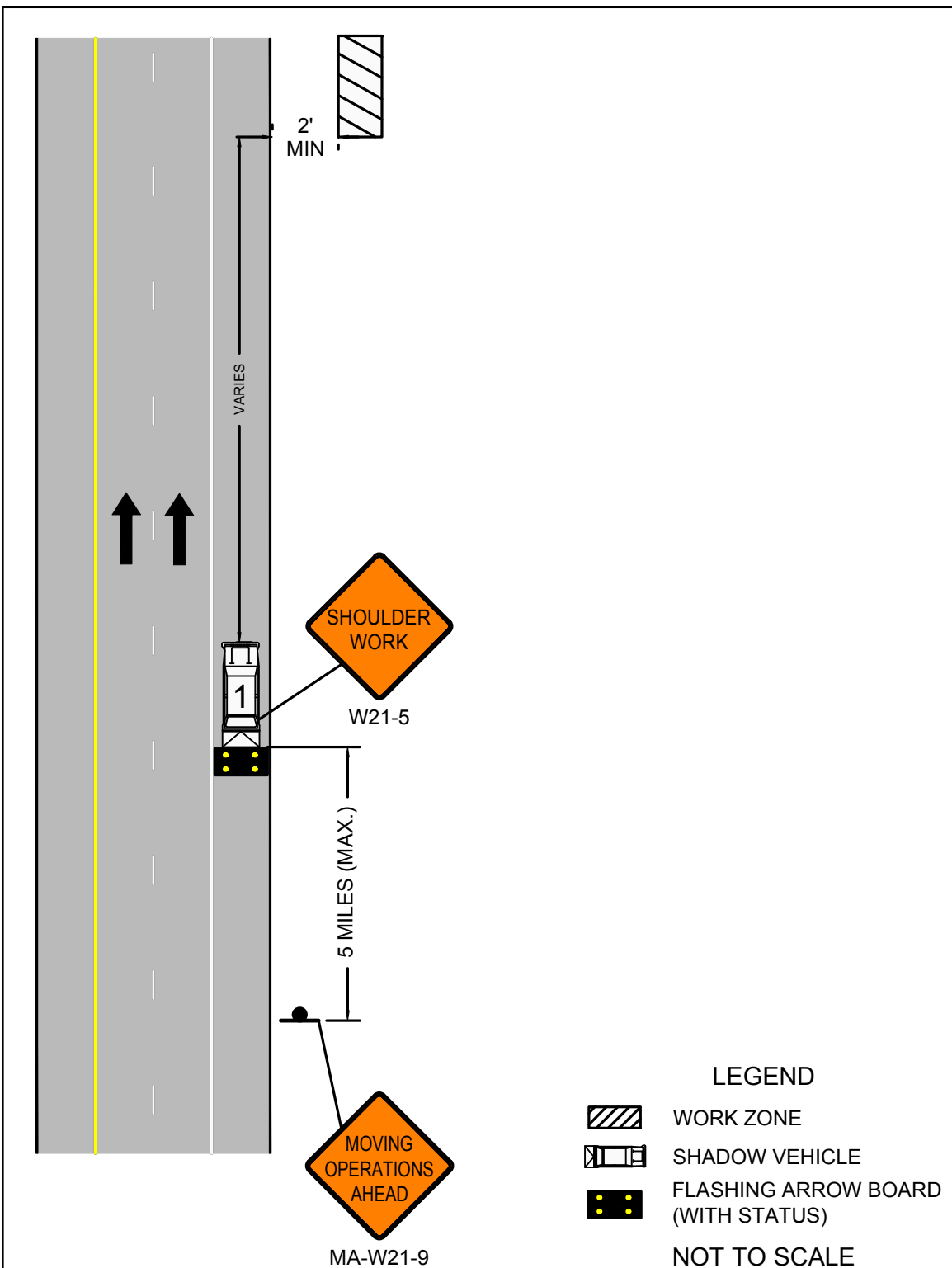




 <p>PAGE 56</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>NOTES FOR MOBILE OPERATIONS</p>
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Notes for Mobile Operations

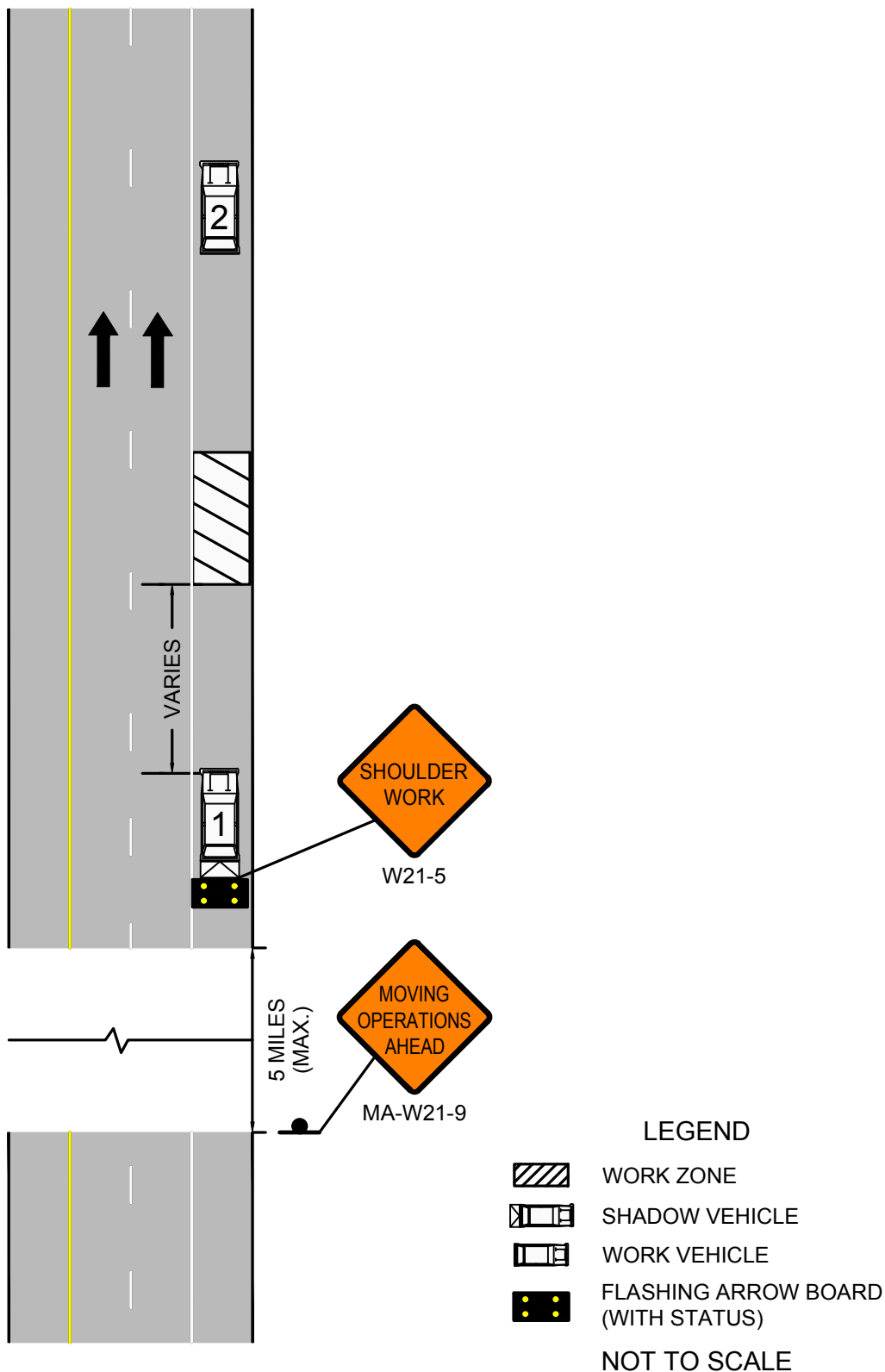
- Unless otherwise stated, these notes shall apply to all Mobile Operation setups.
 - Additional, setup-specific notes may be found on individual sheets.
1. The Supervisor shall travel the designated roadway prior to scheduling the work to ensure that sufficient and appropriate traffic control devices will be available. Special consideration shall be exercised to ensure that appropriate traffic controls be placed in areas that will have limited visibility of the work areas or any associated traffic queues.
 2. Vehicles used for these operations shall be made highly visible with appropriate equipment such as flashing lights, rotating beacons, flags, signs, flashing arrow boards, and/or portable changeable message signs. Any signs mounted to these vehicles shall not obscure the visibility of other devices.
 3. All vehicles shown may not be required based upon roadway conditions. However, when needed and practical, additional shadow vehicles and equipment to warn and protect motorists and workers should be used. Based upon roadway conditions, the addition of a police detail with cruiser may be used for additional protection or warning for the traveling public.
 4. The distance between the work and shadow vehicle(s) may vary according to the terrain and other factors. Shadow vehicles are used to warn traffic of the operations ahead. Whenever adequate sight distance exists, the shadow vehicle(s) should maintain the minimum appropriate distance and maintain the same speed to prevent non-work related vehicles from entering the work convoy. If this formation cannot be maintained then additional traffic control devices should be deployed in advance of any vertical or horizontal curves that may restrict the sight distance of an oncoming vehicle to either the work vehicle or associated traffic queue.
 5. All shadow vehicles shall be equipped with a truck or trailer mounted attenuator (TMA) and a flashing arrow board.
 6. Signs should be covered or turned from view when work is not in progress.
 7. Portable changeable message signs may be used in lieu of MA-W21-9 signs and any signs mounted directly to a shadow vehicle.



NOTES

1. IF THE WORK AREA IS SUFFICIENTLY AWAY FROM THE EDGE OF ROADWAY (20' MINIMUM) THEN SIGNS AND VEHICLES MAY NOT BE REQUIRED.

 <p>PAGE 57</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 25 MOBILE OPERATIONS ANY ROADWAY BEYOND RIGHT SHOULDER</p>
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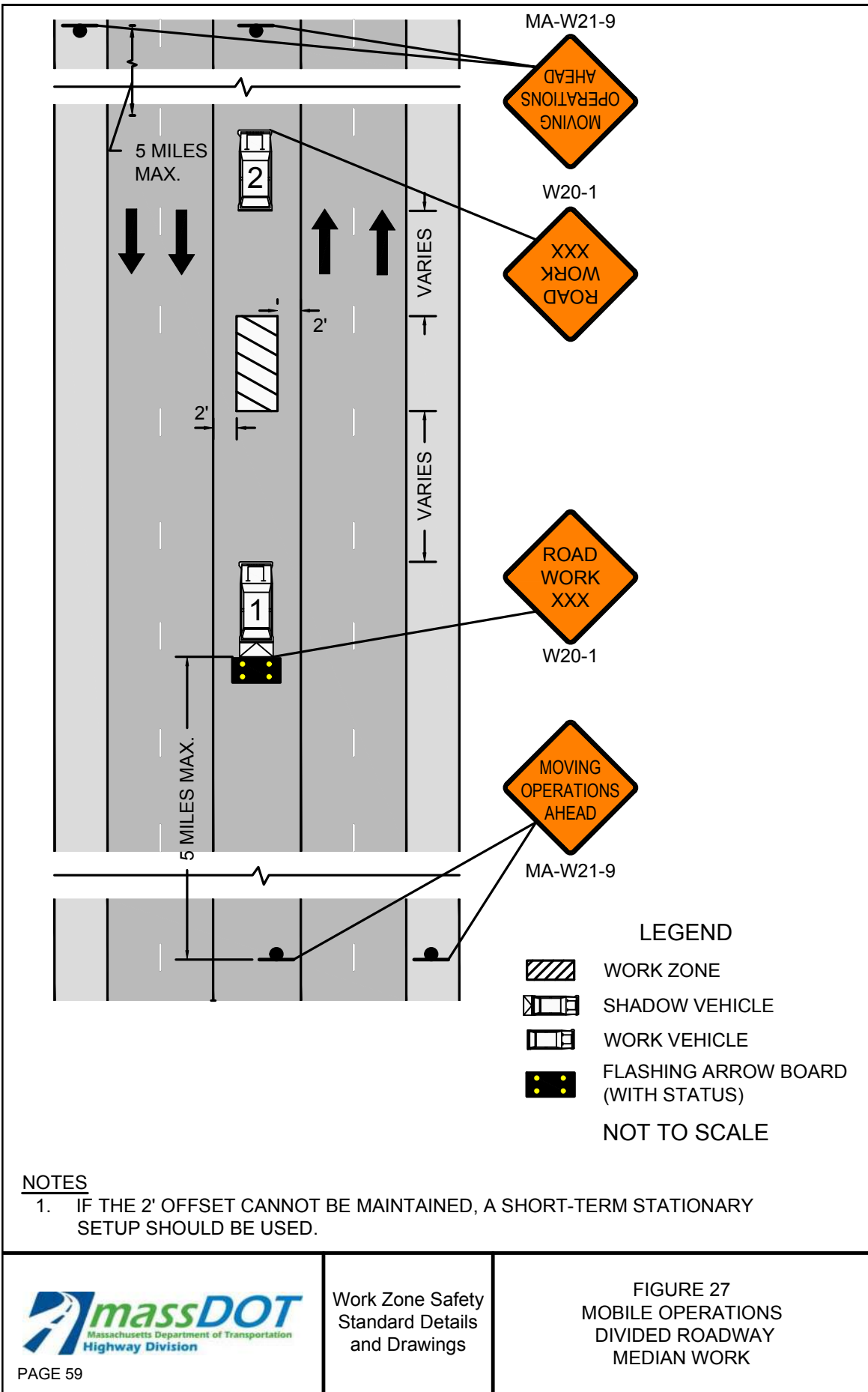
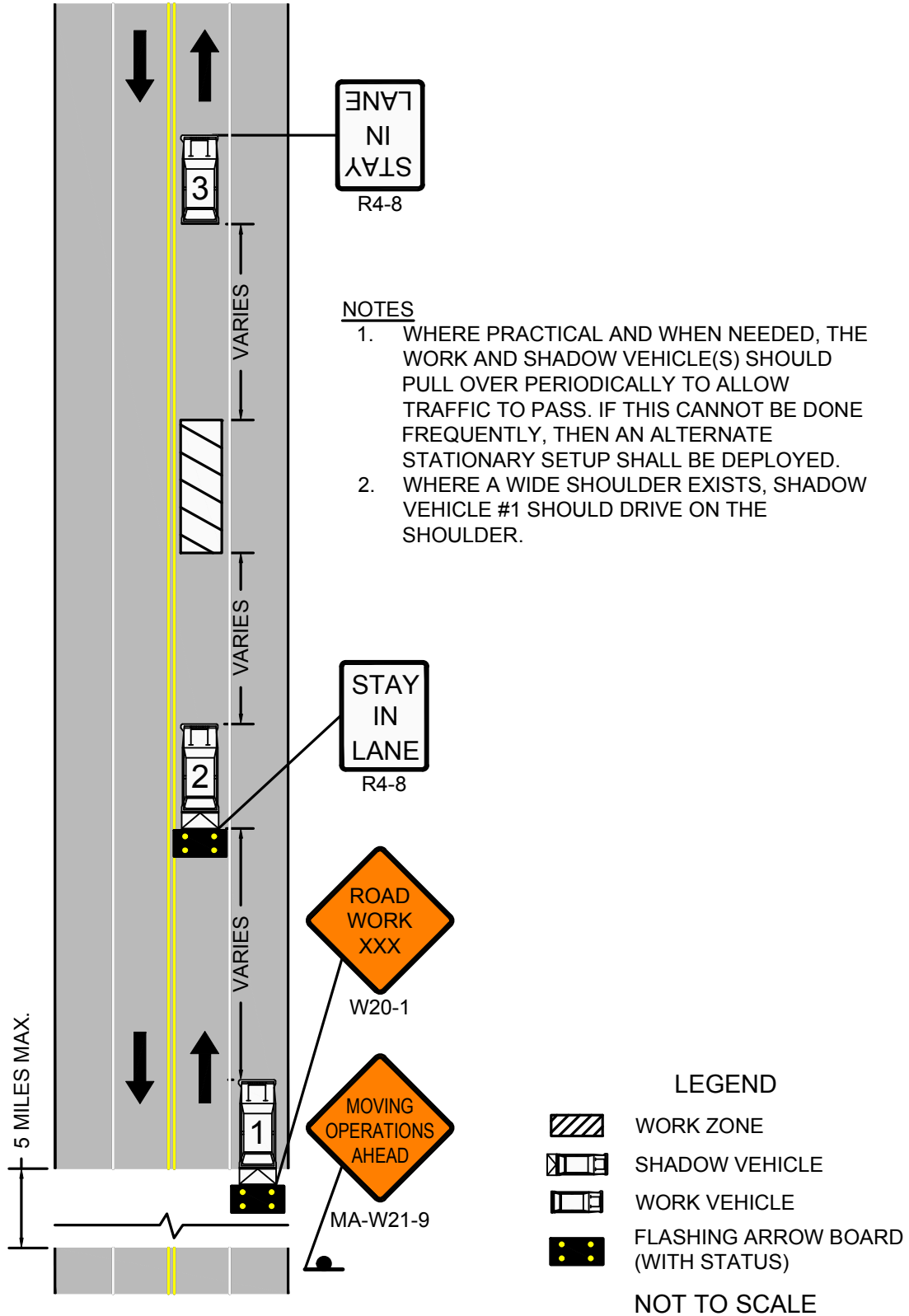




FIGURE 28
MOBILE OPERATIONS
UNDIVIDED TWO LANE ROADWAY
HALF OF ROADWAY CLOSED



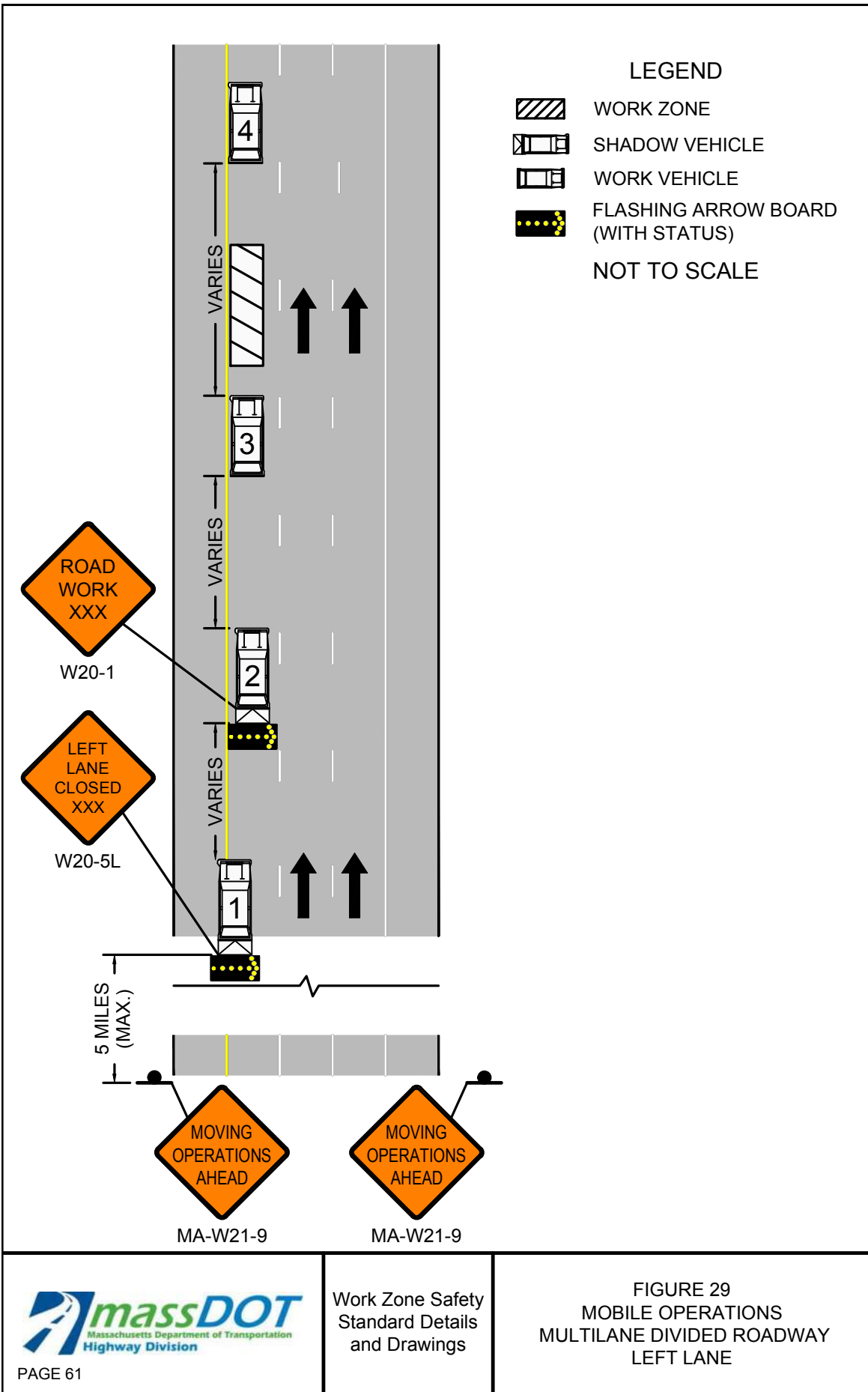
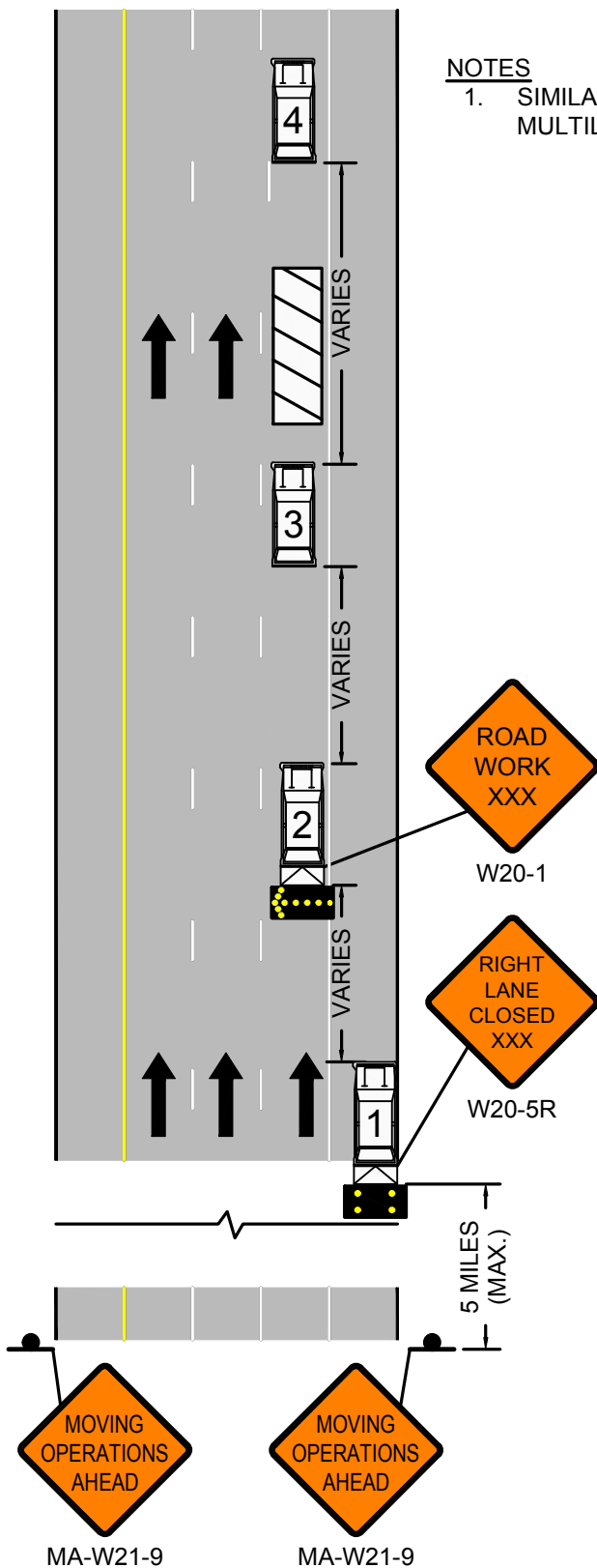




FIGURE 30 MOBILE OPERATIONS MULTILANE DIVIDED ROADWAY RIGHT LANE



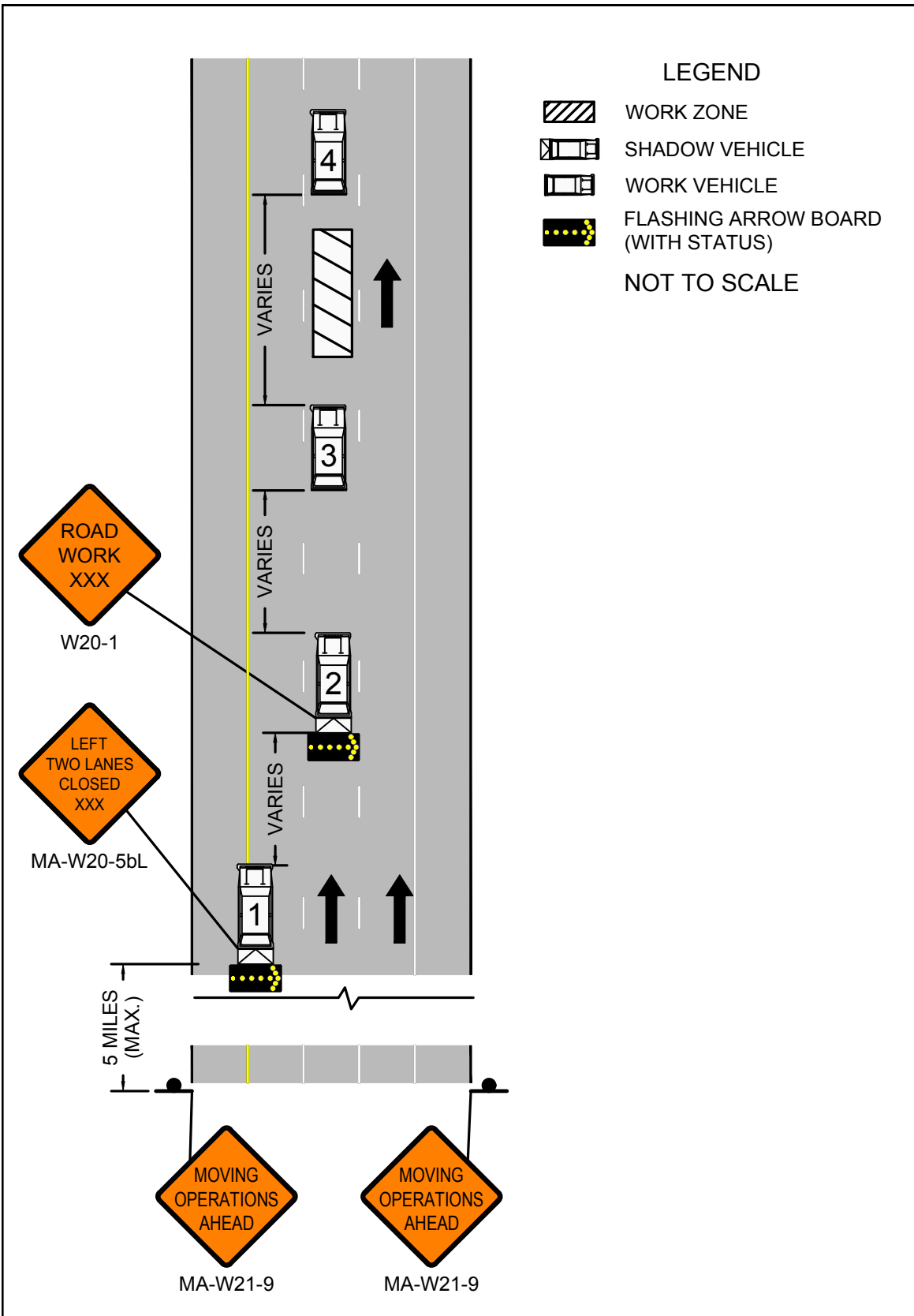
NOTES


1. SIMILAR SETUP MAY BE USED FOR A MULTILANE UNDIVIDED HIGHWAY.

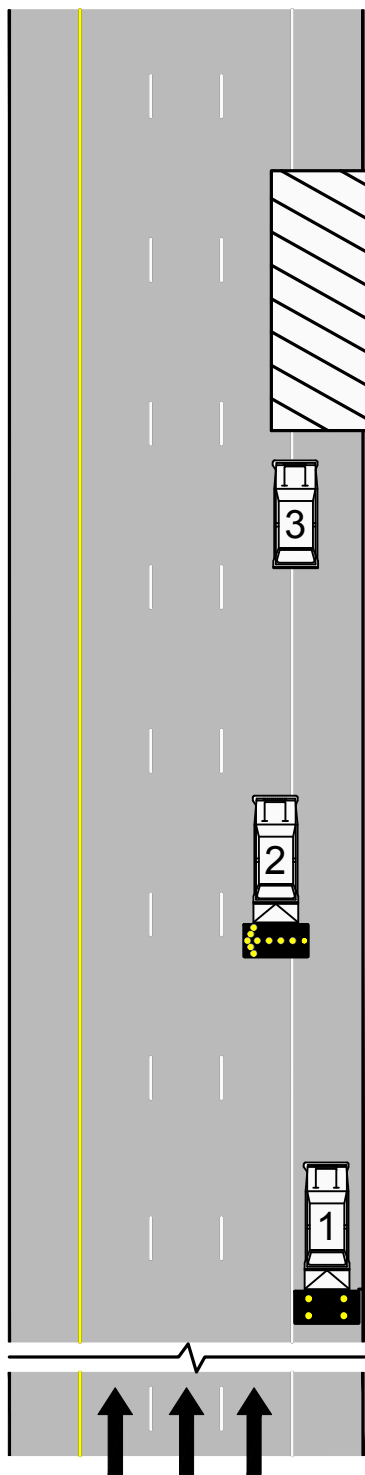
LEGEND

- WORK ZONE
- SHADOW VEHICLE
- WORK VEHICLE
- FLASHING ARROW BOARD (WITH STATUS)

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 63</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 31 MOBILE OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE</p>
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CLEARING ZONE
(VARIES)

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.



MA-W21-9

5 MILES
(MAX.)

LEGEND

- WORK ZONE
- SHADOW VEHICLE
- WORK VEHICLE
- FLASHING ARROW BOARD (WITH STATUS)

NOT TO SCALE

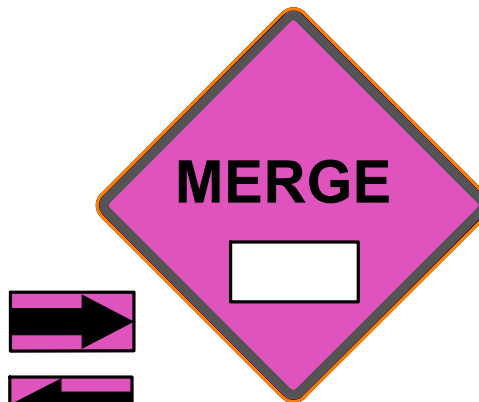
Notes for Traffic Emergency or Incident Operations

- The goal is to increase awareness of during traffic emergencies or incidents.
- These signs are to be used to differentiate from the traditional construction work zone and an emergency or incident.
- Upon arrival MassDOT First Responders shall assess the magnitude of the scene to determine if the incident is likely to last an hour or more in duration which would trigger the requirement to use these signs.
- Place the “Emergency Ahead” sign on the same side of the road as the incident, if possible, for up to an hour. Emergency response signs should be put up for all incidents and emergencies as soon as possible.
- Place the emergency sign 500 to 1000 feet before the first channelization devices.
- As an incident evolves this sign would be used as a secondary sign with all other emergency controls put in place.
- Only use “MERGE” signs where applicable (Not on 2 lane roads).
- Use MERGE signs on Multi-lane Roads to move traffic away from the incident and keep them in a safe lane.
- Place the MERGE sign about 500 feet before the closure.
- If additional signs are available, they should be placed accordingly as a sign informing people coming in the other direction or on the opposite side of the roadway.
- Use 12 emergency cones spaced 40 to 80 feet apart to form a taper and protect the scene.
- Sequential flashing lights/flares may be used in lieu of or to supplement cones.
- During a major incident that will last for a long duration, the EMERGENCY AHEAD sign should be moved back before an intersecting road or ramp to alert travelers and give them an option of using an alternate route. (Be sure all other devices are in place before moving this sign).

Standard Emergency Signs (36"x36" or 48"x48")



MA-W20-9






MA-W4-2aR/L



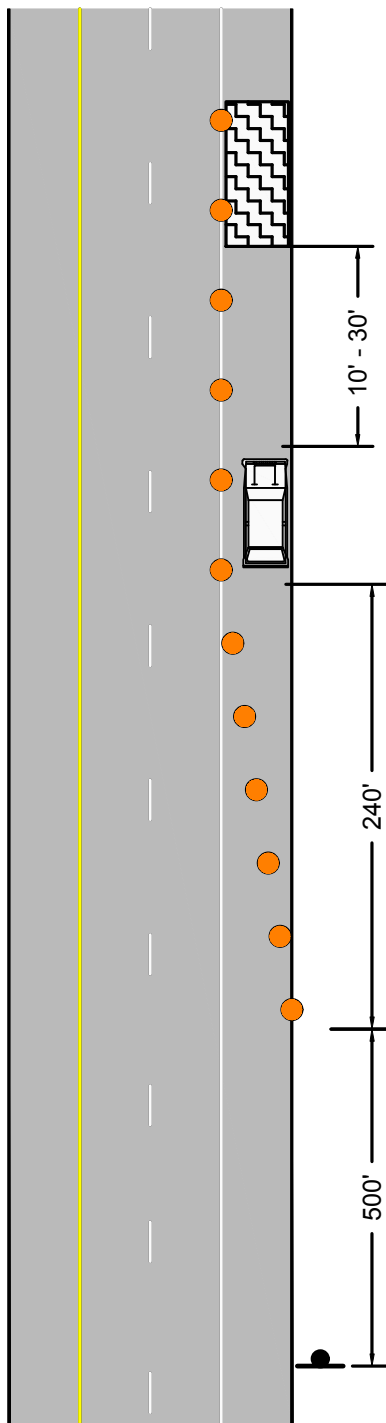


FIGURE 33
EMERGENCY RESPONSE
ANY ROADWAY
SHOULDER ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE



ORDER OF RESPONSE ACTIVITIES

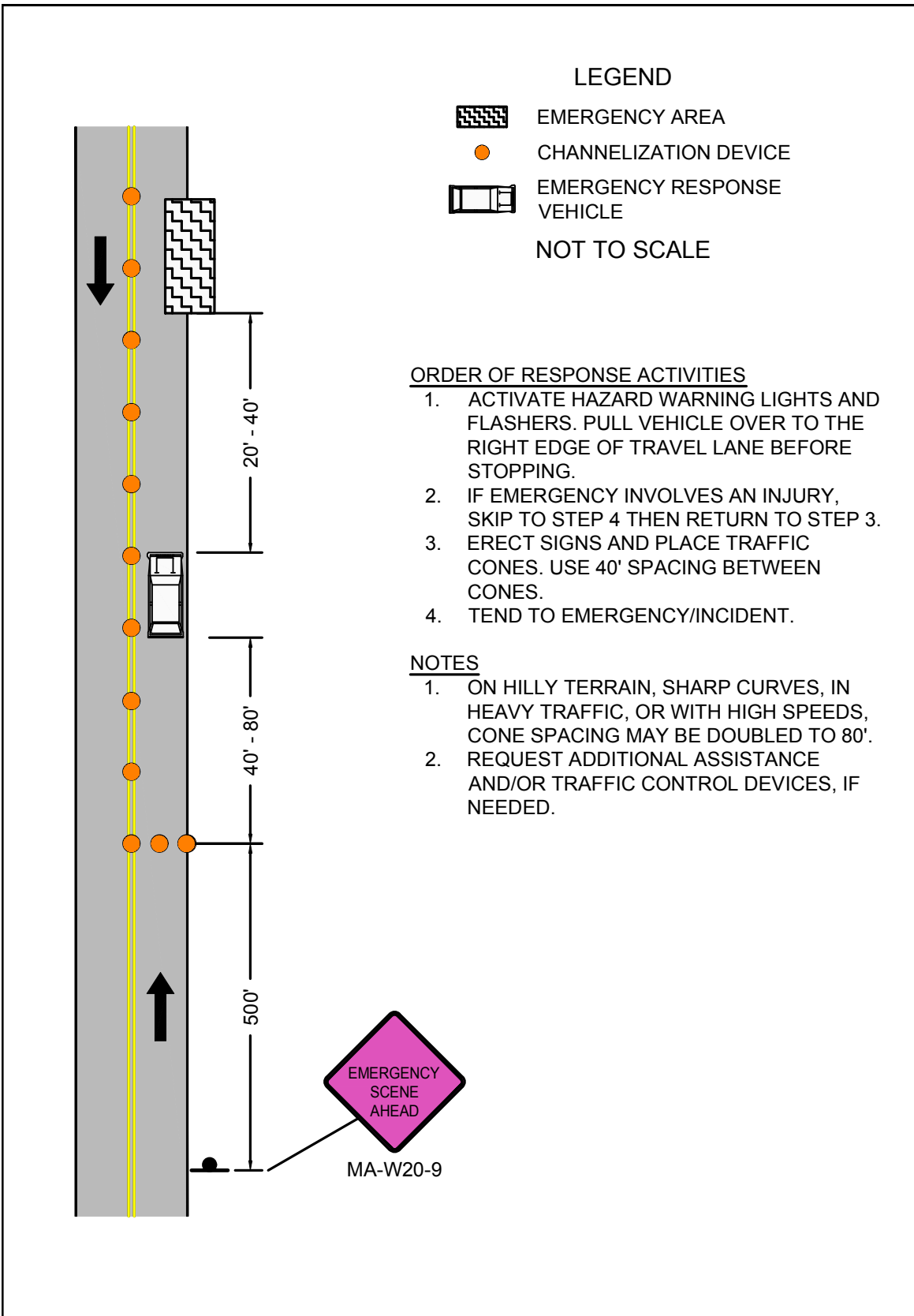
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9







 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PAGE 67	Work Zone Safety Standard Details and Drawings	FIGURE 34 EMERGENCY RESPONSE TWO LANE ROADWAY NO SHOULDER TRAVEL LANE ENCROACHMENT
--	--	---

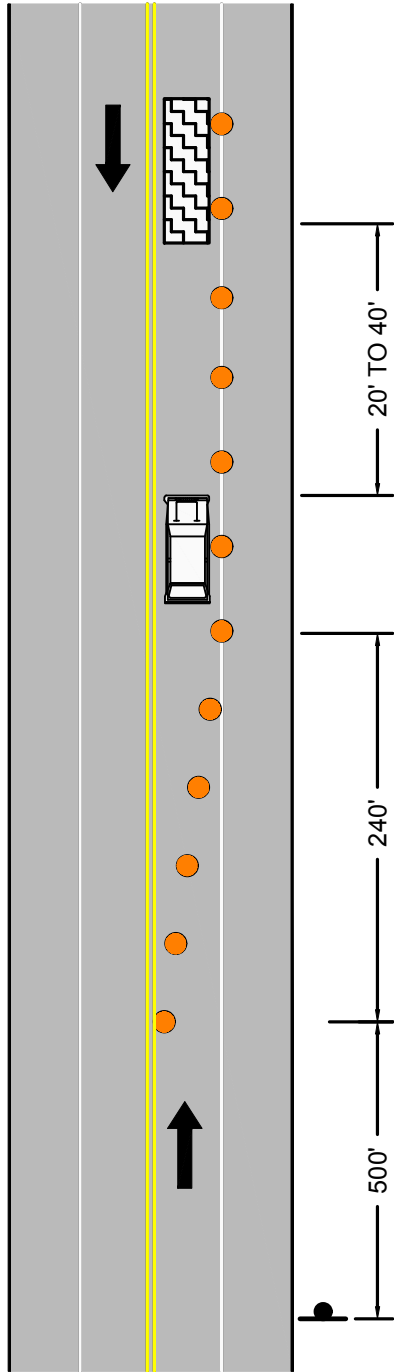


FIGURE 35
EMERGENCY RESPONSE
TWO LANE ROADWAY
TRAVERSABLE SHOULDER
SINGLE LANE ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE

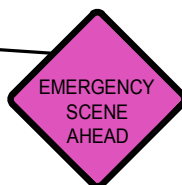


ORDER OF RESPONSE ACTIVITIES

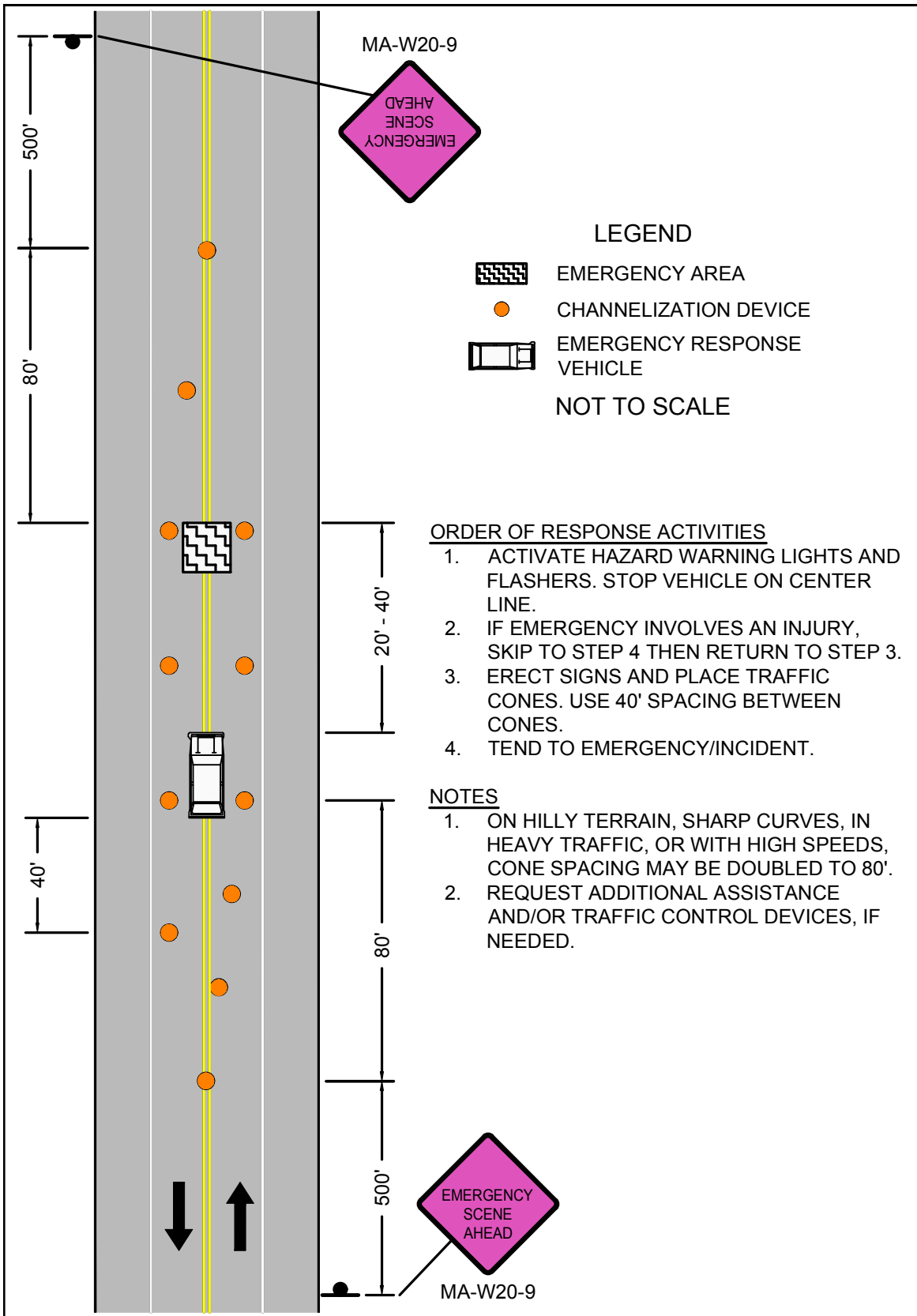
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE LEFT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9




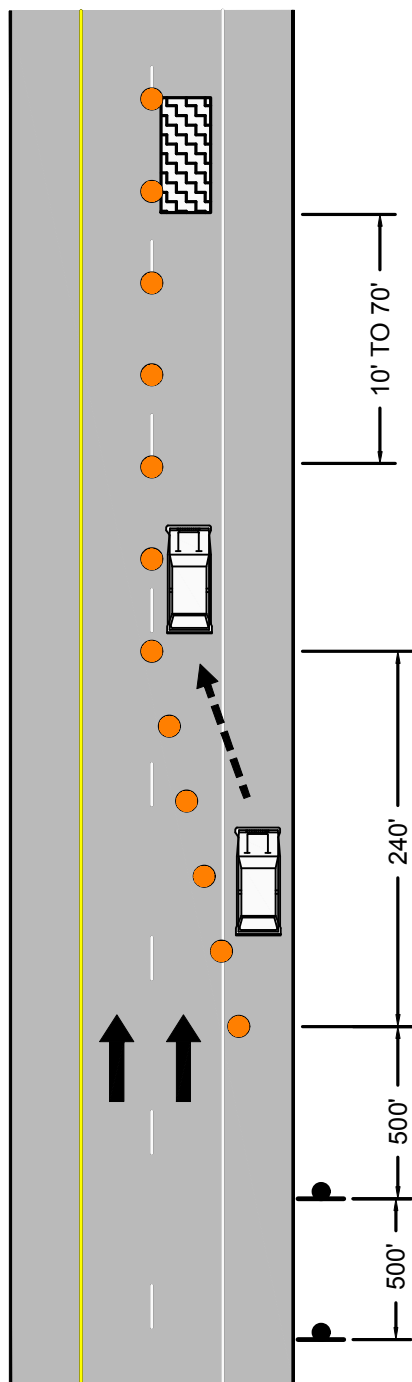




 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 69</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 36 EMERGENCY RESPONSE TWO LANE ROADWAY TRAVERSABLE SHOULDER CENTER OF ROADWAY</p>
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FIGURE 37
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
RIGHT LANE



LEGEND

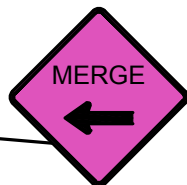
-  EMERGENCY AREA
 -  CHANNELIZATION DEVICE
 -  EMERGENCY RESPONSE VEHICLE
 -  RESPONSE VEHICLE MOVEMENT
- NOT TO SCALE

ORDER OF RESPONSE ACTIVITIES

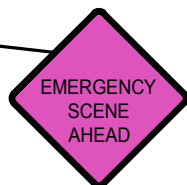
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. STOP VEHICLE IN BREAKDOWN LANE.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 6 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. MOVE RESPONSE VEHICLE BEHIND EMERGENCY.
5. PLACE ADDITIONAL CONES.
6. TEND 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

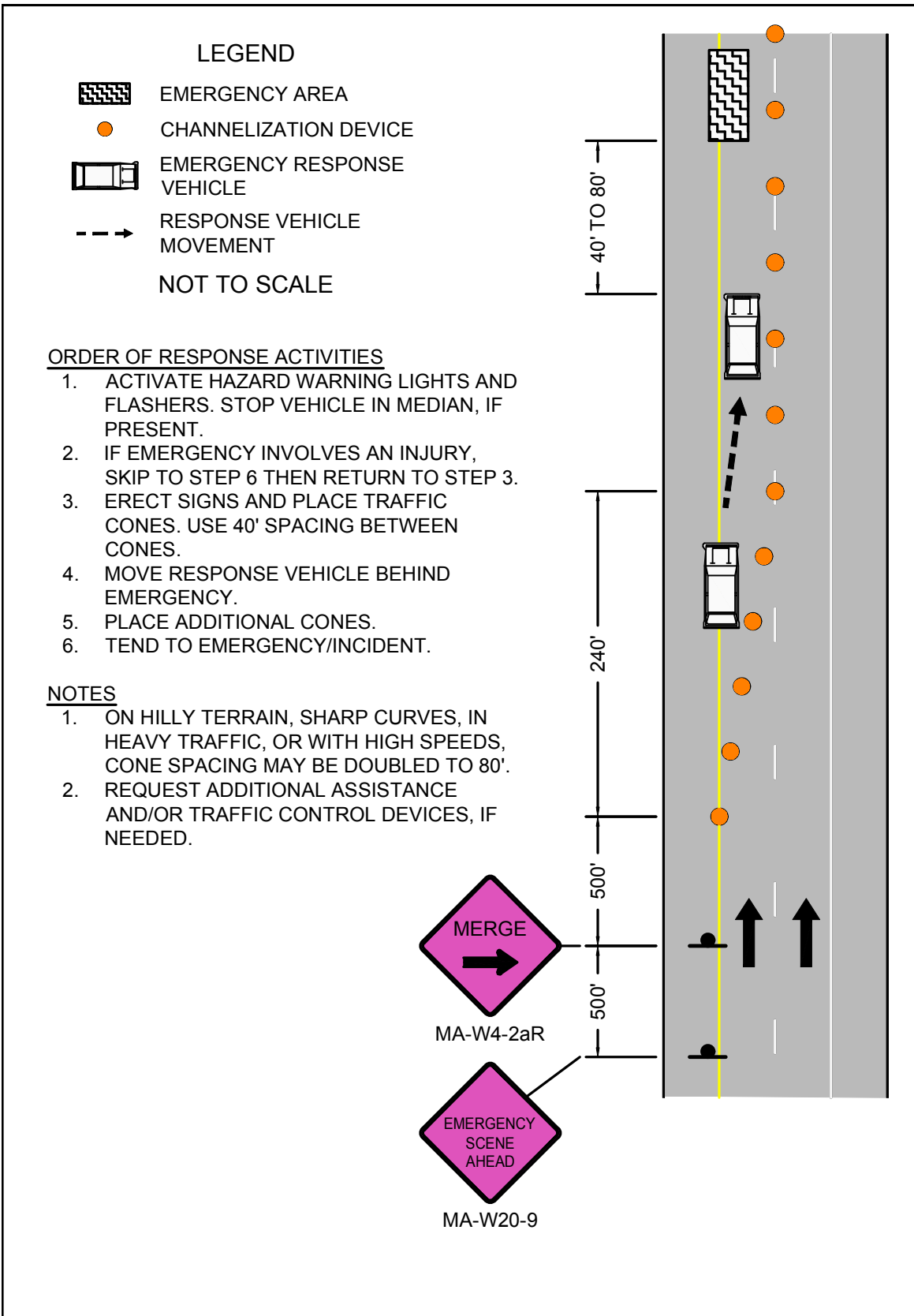
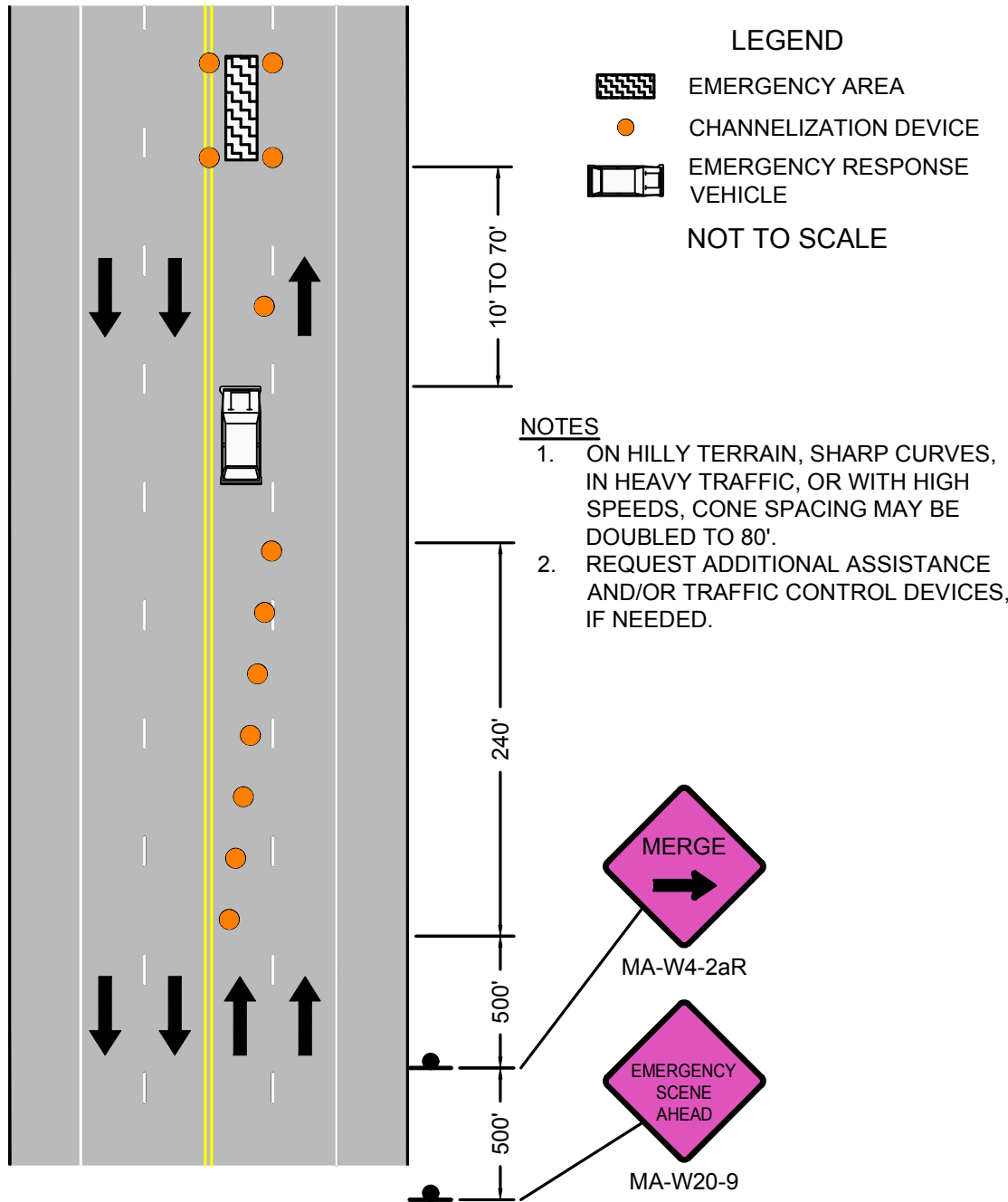


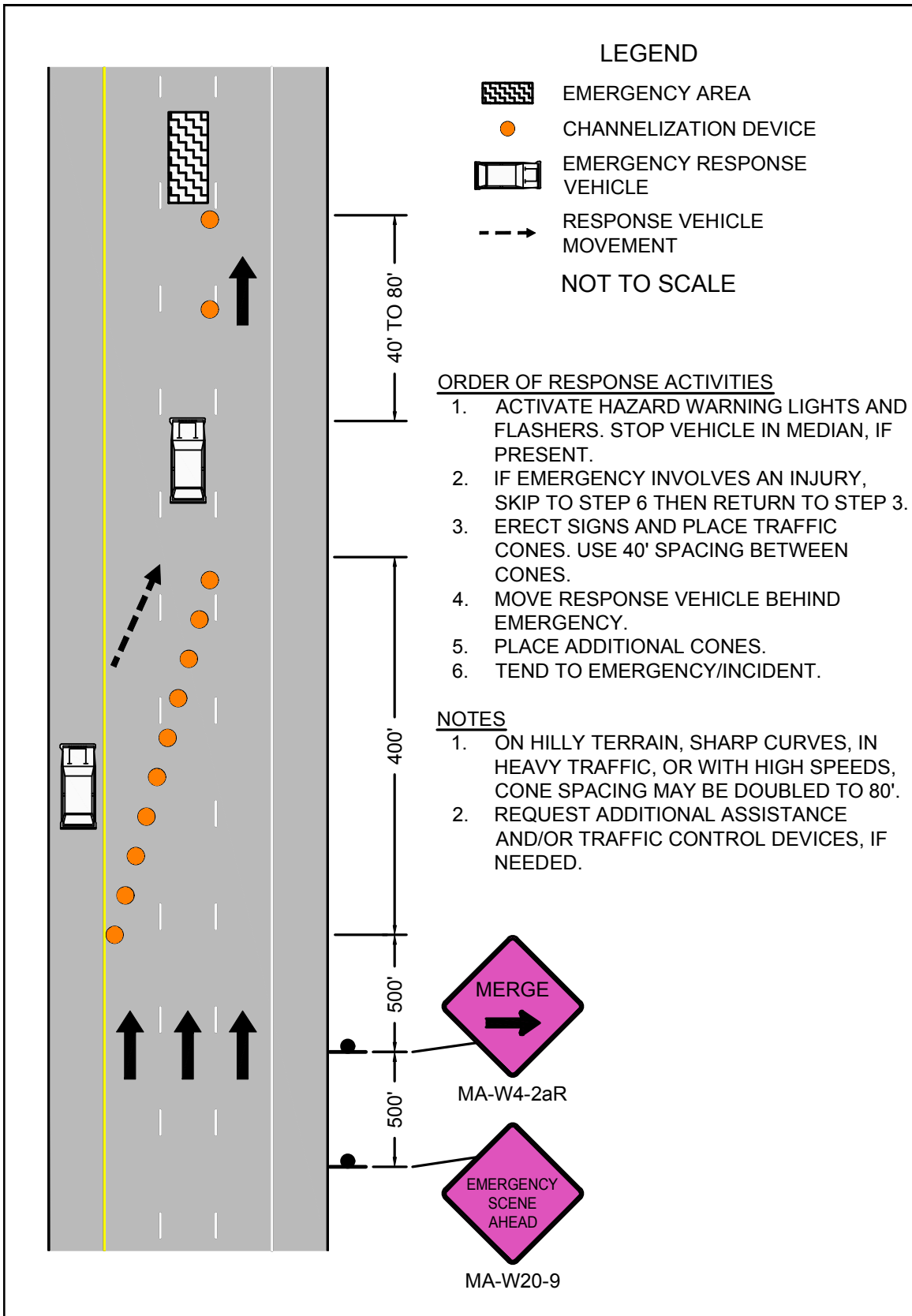


FIGURE 39
EMERGENCY RESPONSE
MULTILANE UNDIVIDED
ROADWAY
LEFT LANE



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.




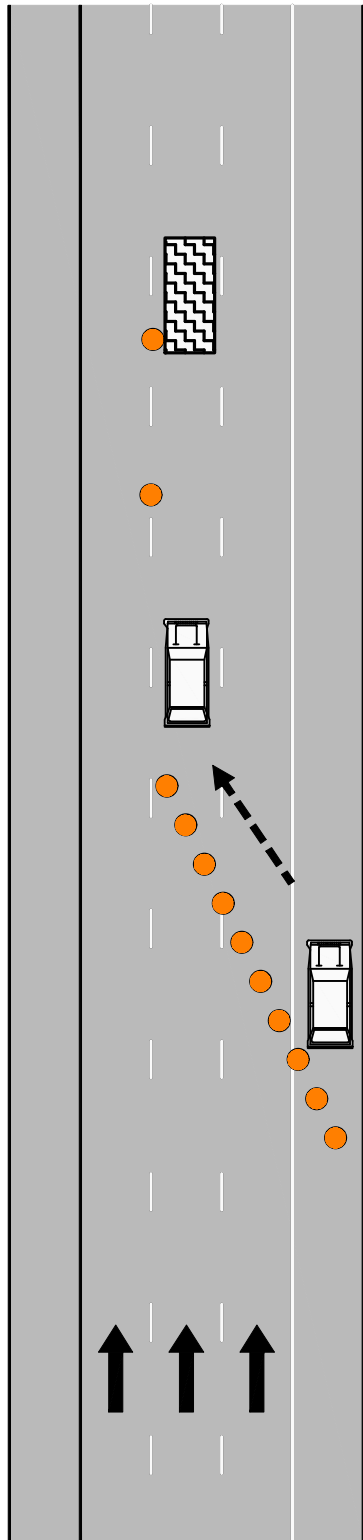




 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PAGE 73	Work Zone Safety Standard Details and Drawings	FIGURE 40 EMERGENCY RESPONSE MULTILANE DIVIDED ROADWAY MIDDLE LANE APPROACH FROM LEFT
--	--	--



FIGURE 41
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
MIDDLE LANE
APPROACH FROM RIGHT



LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE
-  RESPONSE VEHICLE MOVEMENT

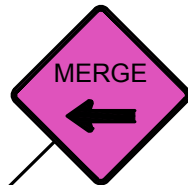
NOT TO SCALE

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

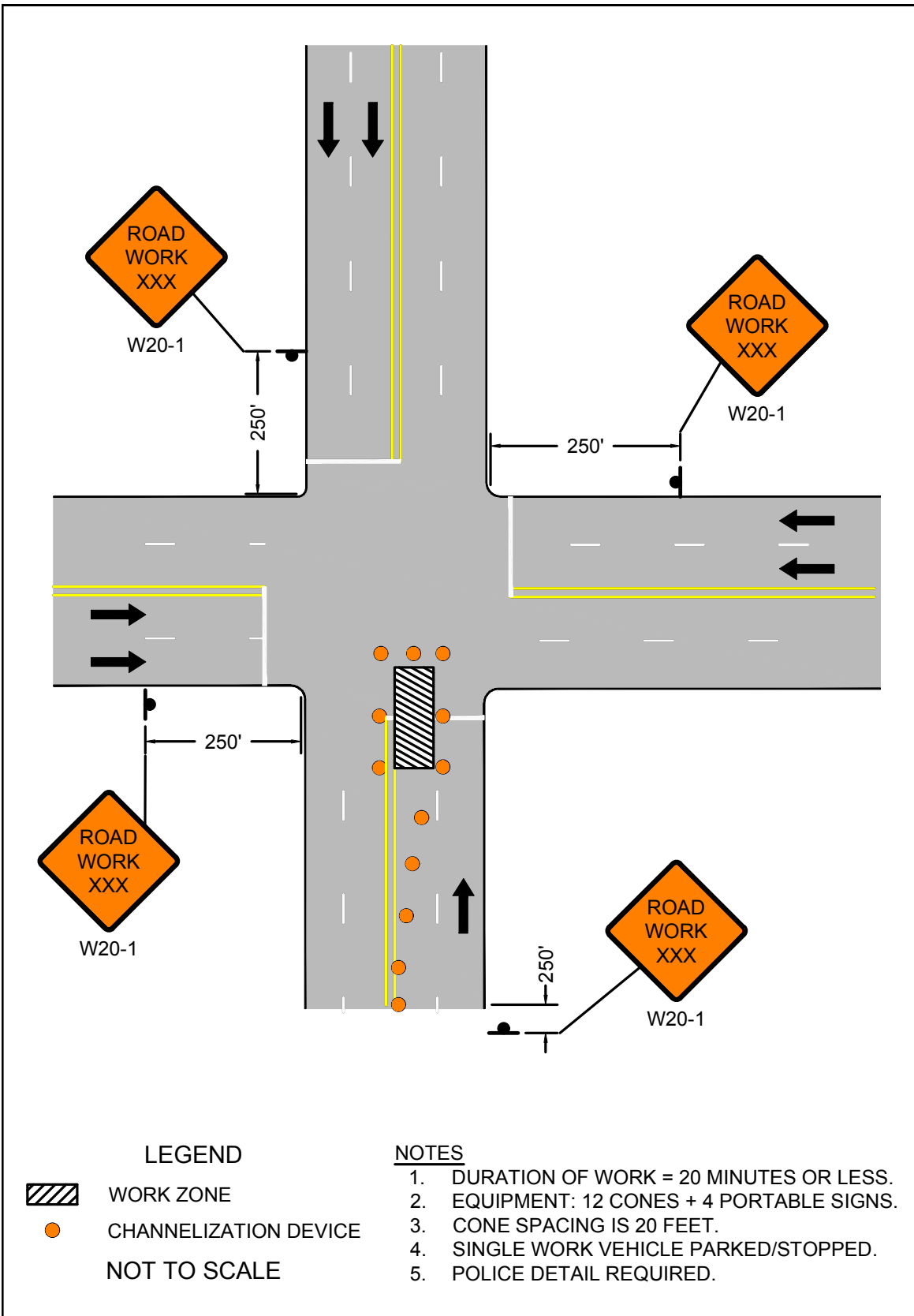
1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W4-2aL



MA-W20-9

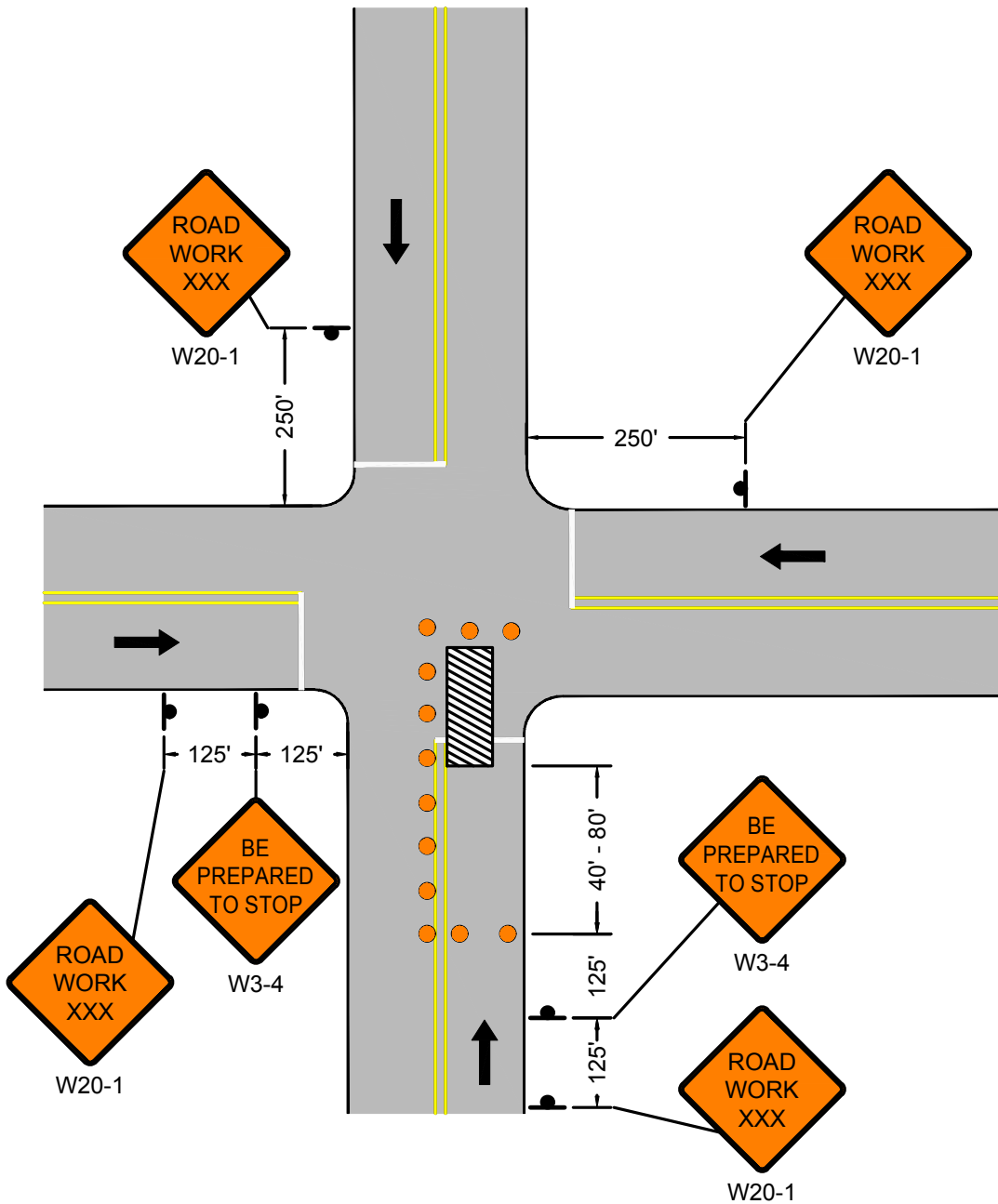






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Work Zone Safety Standard Details and Drawings

FIGURE 43
TRAFFIC SIGNAL REPAIR WORK
TWO LANE UNDIVIDED ROADWAY
ONE LEG OF INTERSECTION

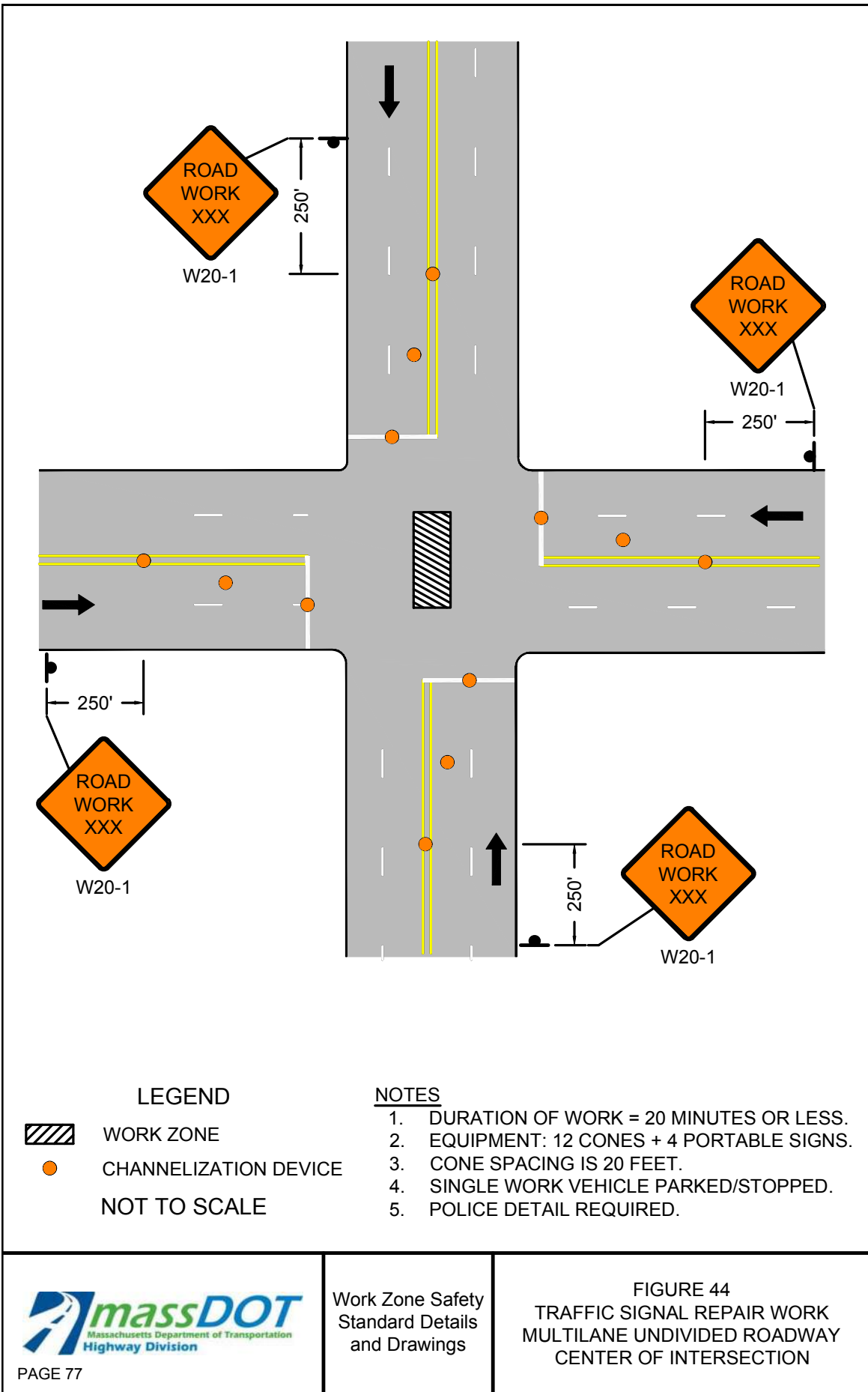


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
- NOT TO SCALE

NOTES

1. DURATION OF WORK = 20 MINUTES OR LESS.
2. EQUIPMENT: 12 CONES + 6 PORTABLE SIGNS.
3. CONE SPACING IS 20 FEET.
4. SINGLE WORK VEHICLE PARKED/STOPPED.
5. POLICE DETAIL REQUIRED.

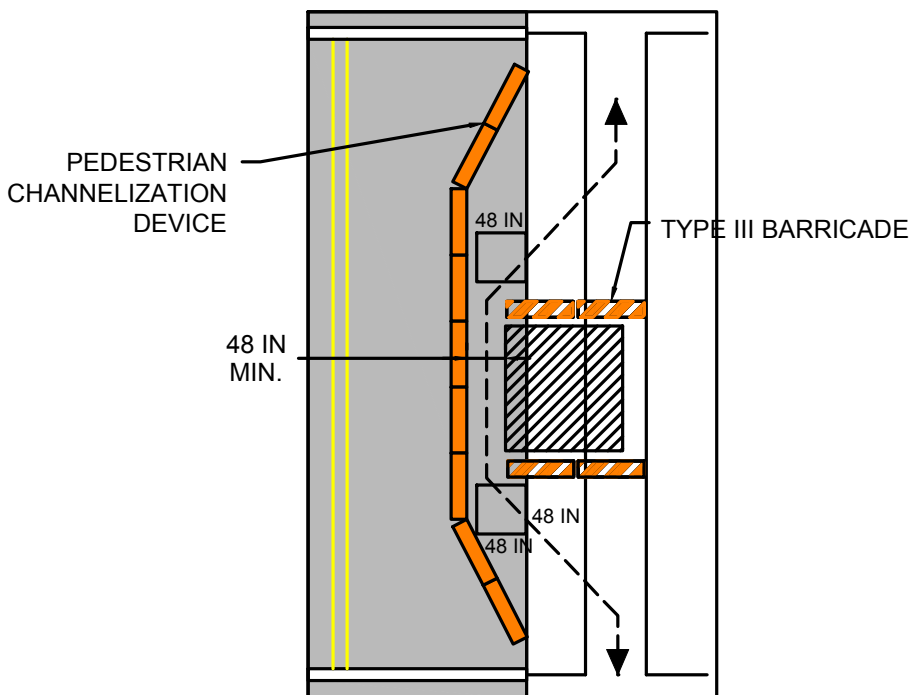




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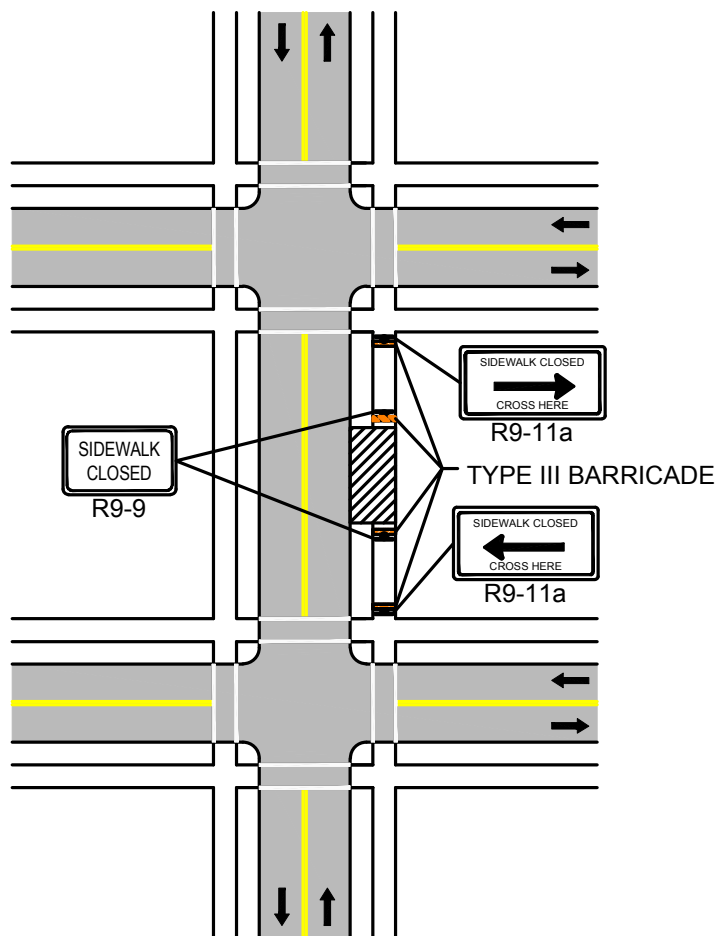
Work Zone Safety
Standard Details
and Drawings

FIGURE 45
PEDESTRIAN BYPASS



NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. A PEDESTRIAN CHANNELIZATION DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ALONG THE FULL LENGTH OF THE TEMPORARY PEDESTRIAN ROUTE.
3. WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT.
4. THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
5. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THE SIDEWALK EXCEEDS 200 FEET THEN A 5 FOOT BY 5 FOOT PASSING ZONE SHALL BE PROVIDED NEAR THE MID-POINT OF THE CLOSURE.
6. THE PROTECTIVE REQUIREMENTS OF A TTC WORK ZONE MAY HAVE AN IMPACT IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN PROVIDING PEDESTRIAN DELINEATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
7. ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL TO ASSIST WITH NAVIGATION AROUND THE CLOSURE/WORK AREA MAY BE CONSIDERED AS AN OPTION IN PLACE OF PROVIDING ADA/AAB DEVICES FOR WORK FOR CLOSURES LASTING 4 HOURS OR LESS.
8. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN; VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE. THESE DETAILS ARE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DETERMINED BY THE ENGINEER.



NOTES:

1. CLOSURE OF A SIDEWALK FACILITY SHALL CONSTITUTE THE PROVISION FOR MANAGING PEDESTRIAN TRAFFIC AND ACCOMMODATING ALL USERS. IF THE EXISTING PEDESTRIAN ACCESS ROUTE(S) CAN BE TEMPORARILY RELOCATED ALONG THE EXISTING SIDEWALK , AND SAID FACILITY PROVIDES A MINIMUM WIDTH OF 48-INCHES OF SOLID, SMOOTH UNOBSTRUCTED SURFACE, THEN NO DETOURING OF THE ROUTE SHALL BE REQUIRED. DELINEATION OF THE WORK AREA IS STILL REQUIRED.
2. IF IT IS NECESSARY TO DIVERT PEDESTRIAN TRAFFIC TO AN ALTERNATE ROUTE ACROSS THE ROADWAY FROM THE EXISTING FACILITY, THE FIGURE ABOVE SHALL BE FOLLOWED TO PROVIDE ADEQUATE DIRECTION TO PEDESTRIANS. ALTERNATE ROUTE SHALL PROVIDE THE SAME LEVEL OF ACCOMMODATION AS THE FACILITY THAT IS BEING DETOURED AND RETAIN ADA COMPLIANCE IN ITS ENTIRETY.
3. FOR EMERGENCY OR SHORT-DURATION SIDEWALK CLOSURES OF 4-HOURS OR LESS, IT IS OPTIONAL TO HAVE ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL AVAILABLE AT ALL TIMES DURING THE CLOSURE TO ASSIST THOSE MOBILITY CHALLENGED PERSONS WHO REQUIRE ADDITIONAL ASSISTANCE TO SAFELY NAVIGATE AROUND THE WORK AREA IN LIEU OF A FULL DETOUR.





PAGE 80

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
BIKE LANE CLOSURE










POSTED SPEED LIMIT (MPH)	SPACING FOR BIKE ADVANCE WARNING SIGNS (FT) (A,B))	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRANSITION LENGTH (L/3)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	150 / 150	100	305	20	45
45-55	150 / 150	220	495	40	35
60-65	150 / 150	260	645	40	40

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

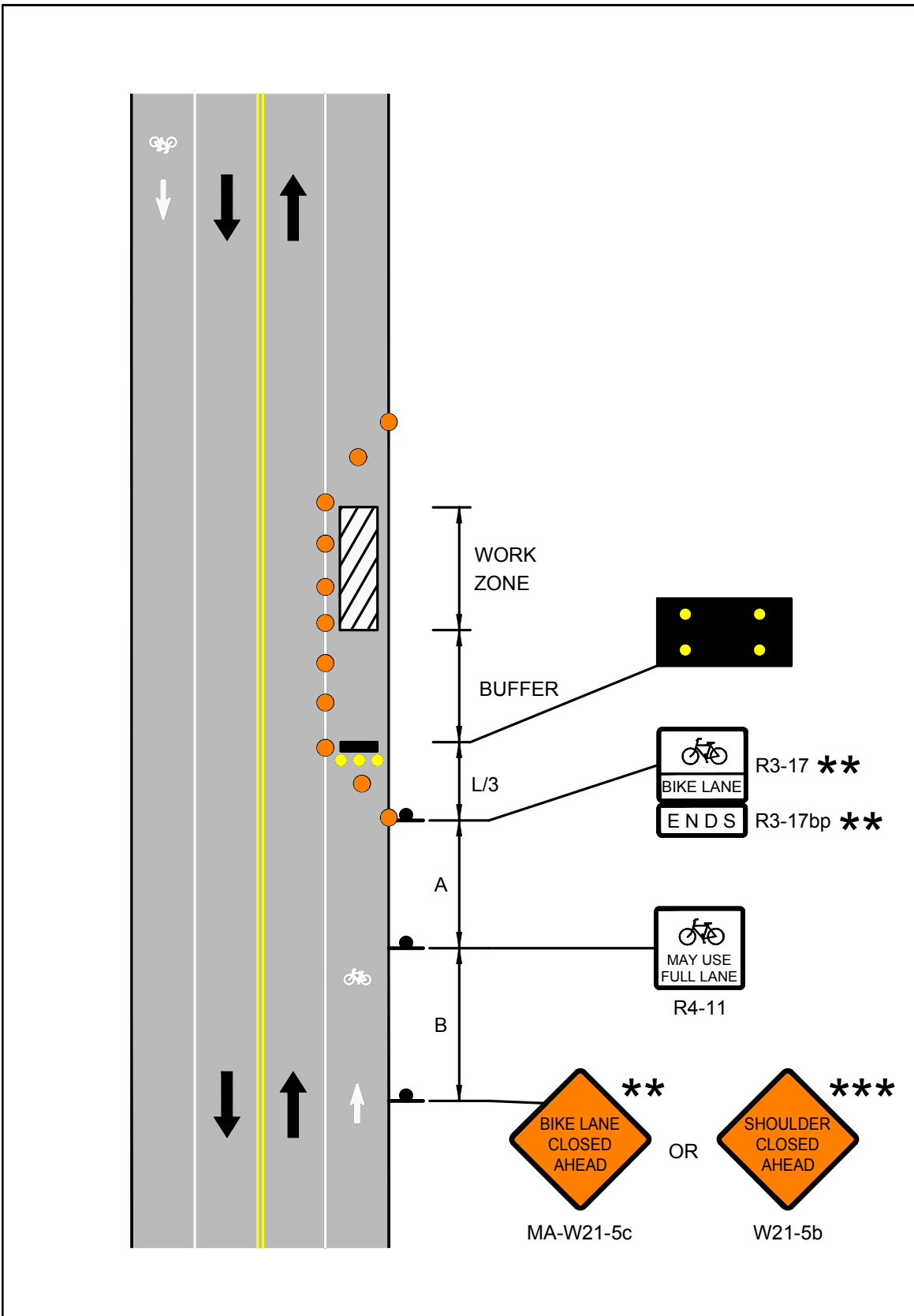
NOTES


1. DETAIL SHALL BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS. SIGNING SHOWN ONLY FOR BIKE TRAFFIC. FOLLOW ALL OTHER RELEVANT DETAILS FOR TTC DEVICES FOR VEHICULAR TRAFFIC.
2. ** SIGN SHALL BE USED ONLY IF THERE IS A MARKED BIKE LANE.
3. *** SIGN SHALL BE USED ONLY IF THERE IS NO MARKED BIKE LANE.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 81</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 48 STATIONARY OPERATIONS BIKE LANE CLOSURE</p>
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Safety is everyone's business

Rev. June, 2017

DOCUMENT A00820

**Massachusetts Department of Transportation
Conditions of Custody**

REQUEST FOR RELEASE OF MASSDOT AUTOCAD FILES FORM

(Only to be used following award of contract)

City/Town: CHESHIRE Project File Number: 608857

Contract Number: 125514

Project Description: Bridge Replacement, C-10-002, Sand Mill Road over Dry 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 A00830

**ARMY CORPS OF ENGINEERS 404 PERMIT /
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION 401 WQC
PERMIT APPLICATIONS**

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Joint ACOE/401 WQC



September 2023

MASSDOT CHESHIRE BRIDGE

PREPARED FOR:
MASSDOT

SUBMITTED TO:
ARMY CORPS OF ENGINEERS & THE
DEPARTMENT OF ENVIRONMENTAL
PROTECTION



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LIST OF APPENDICES

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Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbitts-Nutt, Acting Secretary & CEO
Jonathan L. Gulliver, Highway Administrator



September 14, 2023

Heidi Davis
Massachusetts Department of Environmental Protection 100
Cambridge Street, Suite 900
Boston, MA 02114

RE: Pre-Construction Notification Application: Bridge Replacement (C-10-002), Sand Mill Road
over Dry Brook
Cheshire, MA
MassDOT Project 608857

Dear Ms. Davis,

The Massachusetts Department of Transportation, Highway Division (MassDOT) is submitting this Water Quality Certification (WQC) for the proposed bridge replacement (C-10-002) at Sand Mill Road over Dry Brook.

The purpose of the project is to replace the existing Bridge No. C-10-002 due to the deteriorating condition of the substructure and superstructure. The project requires a 401 WQC and authorization under Section 404 as the proposed project will permanently impact approximately 821 Square Feet of Waters of the US and temporarily impact approximately 607 Square Feet of Waters of the US. Additionally, the project will permanently impact 80 Square Feet of Bordering Vegetated Wetlands and temporarily impact 75 Square Feet of Bordering Vegetated Wetlands. The permanent impacts to Bordering Vegetated Wetlands will be mitigated with an 87 Square Foot wetland replication area.

A pre-application meeting for this project was held on October 21, 2022 with the Massachusetts Department of Environmental Protection. The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

If you require any additional information regarding the project, please contact me at (857) 262-0757 or by email at courtney.l.walker@dot.state.ma.us.

Sincerely,

A handwritten signature in black ink that reads "Courtney Walker".

Courtney Walker
Wetlands & Water Resources Coordinator
MassDOT Highway Division, Environmental Services

CC: Caitlin Marshall - MassDOT Project Manager,
Melissa Lenker - MassDOT Wetlands and Water Resources Supervisor,
Tyler Lewis - MassDEP,
Ryan Morrison - MassDEP,
Dan Vasconcelos - Army Corps of Engineers,
Cheshire Conservation Commission

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot



Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbitts-Nutt, Acting Secretary & CEO
Jonathan L. Gulliver, Highway Administrator



September 14, 2023

Dan Vasconcelos
Regulatory Division, Department of the Army
New England District, Corps of Engineers
696 Virginia Road
Concord, MA 01742

RE: Pre-Construction Notification Application: Bridge Replacement (C-10-002), Sand Mill Road over Dry Brook
Cheshire, MA
MassDOT Project 608857

Dear Mr. Vasconcelos,

The Massachusetts Department of Transportation, Highway Division (MassDOT) is submitting this Application for Pre-Construction Notification authorization for the proposed bridge replacement (C-10-002) at Sand Mill Road over Dry Brook.

The purpose of the project is to replace the existing Bridge No. C-10-002 due to the deteriorating condition of the substructure and superstructure. The project requires a 401 WQC and authorization under Section 404 as the proposed project will permanently impact approximately 821 Square Feet of Waters of the US and temporarily impact approximately 607 Square Feet of Waters of the US. Additionally, the project will permanently impact 80 Square Feet of Bordering Vegetated Wetlands and temporarily impact 75 Square Feet of Bordering Vegetated Wetlands. The permanent impacts to Bordering Vegetated Wetlands will be mitigated with an 87 Square Foot wetland replication area.

If you require any additional information regarding the project, please contact me at (857) 262-0757 or by email at courtney.l.walker@dot.state.ma.us.

Sincerely,

A handwritten signature in black ink that reads "Courtney Walker". The signature is written in a cursive, flowing style.

Courtney Walker
Wetlands & Water Resources Coordinator
MassDOT Highway Division, Environmental Services

CC: Heidi Davis – MassDEP,
Caitlin Marshall – MassDOT Project Manager,
Melissa Lenker – MassDOT Wetlands and Water Resources Coordinator

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot



Enter your transmittal number →

X289762
Transmittal Number

Your unique Transmittal Number can be accessed online: <http://mass.gov/dep/service/online/trasmfrm.shtml>

**Massachusetts Department of Environmental Protection
Transmittal Form for Permit Application and Payment**

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: DEP, P.O. Box 4062, Boston, MA 02211.

3. Three copies of this form will be needed.

Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA
02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

BRP WW 08 401 Water Quality Certificate
 1. Permit Code: 7 or 8 character code from permit instructions 2. Name of Permit Category
 bridge replacement
 3. Type of Project or Activity

B. Applicant Information – Firm or Individual

MassDOT - Highway Division
 1. Name of Firm - Or, if party needing this approval is an individual enter name below:
 2. **Last Name** of Individual 3. **First Name** of Individual 4. MI
 10 Park Plaza, Room 7360
 5. Street Address
 Boston MA 02116 857-262-0757
 6. City/Town 7. State 8. Zip Code 9. Telephone # 10. Ext. #
 Courtney Walker courtney.l.walker@dot.state.ma.us
 11. Contact Person 12. e-mail address (optional)

C. Facility, Site or Individual Requiring Approval

Sand Mill Road over Dry Brook
 1. Name of Facility, Site Or Individual
 Sand Mill Road
 2. Street Address
 Cheshire MA 01225
 3. City/Town 4. State 5. Zip Code 6. Telephone # 7. Ext. #
 8. DEP Facility Number (if Known) 9. Federal I.D. Number (if Known) 10. BWSC Tracking # (if Known)

D. Application Prepared by (if different from Section B)*

Weston & Sampson
 1. Name of Firm Or Individual
 55 Walkers Brook Drive, Suite 100
 2. Address
 Reading MA 01867 978-532-1900
 3. City/Town 4. State 5. Zip Code 6. Telephone # 7. Ext. #
 Alexandra Gaspar
 8. Contact Person 9. LSP Number (BWSC Permits only)

E. Permit - Project Coordination

1. Is this project subject to MEPA review? yes no
 If yes, enter the project's EOEA file number - assigned when an Environmental Notification Form is submitted to the MEPA unit:
EOEA File Number

F. Amount Due

Special Provisions:

1. **Fee Exempt** (city, town or municipal housing authority)(state agency if fee is \$100 or less).
There are no fee exemptions for BWSC permits, regardless of applicant status.
2. **Hardship Request** - payment extensions according to 310 CMR 4.04(3)(c).
3. **Alternative Schedule Project** (according to 310 CMR 4.05 and 4.10).
4. **Homeowner** (according to 310 CMR 4.02).

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Check Number Dollar Amount Date



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways

X289762
 Transmittal Number #

BRP WW 07, 08 Dredging

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
 Dredging or Disposal of Dredged Material

A. Applicant Information

1. For which permit category are you applying?

- BRP WW 07 BRP WW 08

2. Applicant:

MassDOT - Hwy Division

Name

10 Park Plaza, Room 7360

Street Address

Boston

City

02116

Zip Code

MA

State

Courtney Walker

Contact person

857-262-0757

Telephone Number (work)

Telephone Number (home)

3. Authorized Agent:

Weston & Sampson Engineers

Name

55 Walkers Brook Dr Suite 100

Street Address

Reading

City

01867

Zip Code

978-532-1900

Telephone Number (home)

MA

State

Alexandra Gaspar

Contact person

Telephone Number (work)

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



B. Project Information

1. Project Location:

Sand Mill Road

Street Address

Dry Brook

Nearest or Adjacent Waterbody

Cheshire

City

2. Project Name (if any):

Bridge Replacement - C-10-002, Sand Mill Road over Dry Brook



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways

X289762

Transmittal Number #

BRP WW 07, 08 Dredging

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
 Dredging or Disposal of Dredged Material

B. Project Information (cont.)

3. Will the proposed project occur in any wetlands or waters designated as “Outstanding Resource Waters”?

Yes No

If yes, has public notice been published in the Environmental Monitor?

Yes No

 To be published

Date of Publication

4. Identify the loss, or alteration, in square feet of each type of resource area (see Application instructions for additional information.):

a. Land under water: 821 sf permanent, 607 sf temporary, 265 cy dredged
 square feet

b. Other Resources: 125 sf BVW (50 permanent, 75 temporary),
 square feet 156 lf (127 permanent, 29 temporary) of Bank

5. Does this project require a license from the Federal Energy Regulatory Commission?

Yes No If yes, see Application Instructions for additional information needed.

6. Is the project categorically subject to MEPA? If yes, has final action been taken?

Yes No Yes No

If yes, please include copy of MEPA certificate.

7. Is any of your proposed work exempt from the Massachusetts Wetlands Protection Act or taking place in a federal non-state wetland?

Yes No If yes, see Application Instructions for additional information needed.

C. Description of Proposed Dredging Site

1. a. Describe in general the proposed project or activity, including the purpose and intended use of the project, and the duration of the work within any waterbody:

The proposed work for the project includes reconstruction of the bridge over Dry Brook with a new wider bridge, abutments, retaining walls, guardrails and a roadway typical section consisting of (2) 10'-0" wide travel lanes and (2) 2'-4 1/2" wide shoulders. This will allow for safe passage of vehicles and give a safer offset to the bridge parapet. The proposed wider roadway cross section will transition to meet the existing approach roadway width.

The contractor will excavate to subgrade after dewatering the area.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways

BRP WW 07, 08 Dredging

X289762
 Transmittal Number #

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
 Dredging or Disposal of Dredged Material

C. Description of Proposed Dredging Site (cont.)

- b. Date activity is to commence: July 26, 2024
- c. What is the expected frequency of maintenance dredging of this project? _____

2. Attach plan(s) of the proposed project as follows:

- Include a copy of the appropriate portion from the USGS quadrangle map for this project site. Include the identification number and name of the USGS quad map.

Plan view.

The plan view of the proposed activity should show the following:

- | | |
|---|--|
| <input type="checkbox"/> Existing shorelines. | <input type="checkbox"/> Ebb and flood in tidal waters and direction of flow in rivers. |
| <input checked="" type="checkbox"/> North arrow. | <input checked="" type="checkbox"/> Graphic and numerical scale. |
| <input type="checkbox"/> Mean high and low water lines if the proposed activity is located in tidal areas. | <input checked="" type="checkbox"/> Ordinary high water line for inland water. |
| <input type="checkbox"/> Water depths around the project. | <input type="checkbox"/> Principal dimensions of the structure or work and extent of encroachment beyond the applicable high water line. |
| <input type="checkbox"/> Seaward distance from an existing permanent fixed structure or object. | <input type="checkbox"/> Harbor lines, if established and known. |
| <input type="checkbox"/> Distance between proposed activity and navigation channel, where applicable. | <input checked="" type="checkbox"/> Location of any vegetated wetlands or wetland resource areas. |
| <input checked="" type="checkbox"/> Location of structures, if any, in navigable waters immediately adjacent to the proposed activity | <input type="checkbox"/> Proximity to any designated Areas of Critical Environmental Concern. |

Elevation and/or Section View.

The elevation and/or section view of the proposed project should show the following:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Same water elevations as the plan view. | <input type="checkbox"/> Depth at waterward face of proposed work. Show dredging grade. |
| <input checked="" type="checkbox"/> Graph and numerical scale. | <input type="checkbox"/> Cross-section of excavation including approximate side slopes. |

3. a. What are the length, width, depth and volume of the proposed project?

Length: <u>151'</u> Feet	Width: <u>8'</u> Feet
Depth: <u>5'</u> Feet	Volume: <u>265</u> Cubic yards



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways

BRP WW 07, 08 Dredging

X289762
 Transmittal Number #

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
 Dredging or Disposal of Dredged Material

C. Description of Proposed Dredging Site (cont.)

b. Is the proposed project considered:

i. a new project,

Yes No

ii. maintenance of an existing project?

Yes No

iii. when was the project last dredged?

not known/applicable
 Date

 Permit/License Name and Number

c. Describe in complete detail the physical dredging operation including descriptions of the type of dredge equipment, i.e., hopper dredge, hydraulic dredge, etc., the type of transportation to be used from the dredge site to the disposal site, the method of release of the dredged material into the disposal site. and the name of the contractor if other than the applicant.

The project is under design, an award has not been made, so the Contractor is not known. However, it is assumed that typical construction sized equipment will be used for this project: dump trucks and excavators. Dewatering is anticipated prior to excavation. Sumps can be placed in all four (4) corners of the excavation area and 2” sump pumps can be installed for dewatering purposes. A Stone Construction entrance according to BMPs is expected for trucks entering and leaving the site. Approximately 265CY of dredging will occur.

d. Describe all measures designed to avoid and minimize adverse impacts of the project on aquatic life and the aquatic ecosystem. Where impacts cannot be avoided or minimized, what mitigation measures are proposed? (See Application Instructions.)

Only portions of the stream will be dewatered at a time. This will allow for fish passage through the stream during construction.

4. Historical Parameters:

To the best of your knowledge, does the proposed project are have any past history of:

a. chemical or oil spills of discharge? Yes No

b. Upstream or on-site industrial or municipal discharge within 1,000 feet of the proposed project? Yes No

c. chronic pollutant loading from port or harbor use and/or other sources of pollutants? (eg. CSO or POTW discharges) Yes No



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways

X289762
 Transmittal Number #

BRP WW 07, 08 Dredging

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
 Dredging or Disposal of Dredged Material

C. Description of Proposed Dredging Site (cont.)

If yes to any questions in Item C-4, provide as much historical information as you have, including dates, amounts, concentrations, etc. of such spills or discharge. Attach additional sheets if necessary.

D. Description of Material to be Dredged

1. Grain Size Analysis:

See application for sampling and analysis requirements.

Percentage of total by weight passing

89.5	49.5
No. 4 Sieve	No. 60 Sieve
83	23.5
No. 10 Sieve	No. 200 Sieve
62	
No. 40 Sieve	

2. Chemical Analysis of Sediment:

See application instructions for sampling and analysis requirements. List constituents in mg/kg (ppm) dry weight unless otherwise indicated.

ND	ND
arsenic	cadmium
8.75	12
chromium	copper
9.55	ND
lead	mercury
11	44.5
nickel	zinc
ND	1.41
PCBs (polychlorinated biphenyls)	PAHs (polynuclear aromatic hydrocarbons)
140	1.37
TPH (total petroleum hydrocarbons)	EPH (extractable petroleum hydrocarbons)
69.8%	30%
volatile solids (percent)	water (percent)



Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wetlands and Waterways

BRP WW 07, 08 Dredging

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
Dredging or Disposal of Dredged Material

X289762
Transmittal Number #

E. Description of the Disposal Site for Dredged Material

1. For ocean disposal sites: Not applicable

a. Location of proposed disposal site and its physical boundaries.

b. Has the site been designated by the state of E.P.A. as a dredge disposal site?

Yes No

If no, give a description of the characteristics of the proposed disposal site and an explanation as to why no currently designated site is feasible for this project.

c. Is the anticipated disposal site located within a designated ocean sanctuary as established by federal law or G.L.c. 132A, sec. 13?

Yes No

If yes, which sanctuary?

2. For disposal sites or dewatering sites on land (landward of mean high water), see instructions

a. Location of proposed disposal and dewatering sites and physical boundaries.

b. Indicate drainage characteristics of dewatering and disposal sites from the results of test pits, borings, and percolation tests as applicable.

See attached Sediment Characterization Memorandum.

c. How long are the dewatering and disposal sites estimated to be in use from this project? From future projects?

See attached Sediment Characterization Memorandum.



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wetlands and Waterways**

BRP WW 07, 08 Dredging

X289762
Transmittal Number #

401 Water Quality Certification – Projects Proposing More Than 100 Cubic Yards
Dredging or Disposal of Dredged Material

E. Description of the Disposal Site for Dredged Material (cont.)

- d. Include plans for effluent control at the dewatering and disposal sites.
- 3. For proposed dewatering of dredged sediment on a barge, provide plans for adequate containment

F. Certification

Application is hereby made for Water Quality Certification concerning the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities.

9/12/2023

Date

Signature of Applicant or Authorized Agent

The application must be signed by the applicant; however, it may be signed by a duly authorized agent (named in Item 2) if this form is accompanied by a statement by the applicant designating the agent and agreeing to furnish upon request, supplemental information in support of the application.



Enter your transmittal number →

X289593

Transmittal Number

Your unique Transmittal Number can be accessed online: <http://mass.gov/dep/service/online/trasmfrm.shtml>

Massachusetts Department of Environmental Protection Transmittal Form for Permit Application and Payment

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: DEP, P.O. Box 4062, Boston, MA 02211.

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Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA
02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

BRP WW 11

1. Permit Code: 7 or 8 character code from permit instructions

bridge replacement

3. Type of Project or Activity

401 Water Quality Certificate

2. Name of Permit Category

B. Applicant Information – Firm or Individual

MassDOT - Highway Division

1. Name of Firm - Or, if party needing this approval is an individual enter name below:

2. Last Name of Individual

10 Park Plaza, Room 7360

5. Street Address

Boston

6. City/Town

Courtney Walker

11. Contact Person

3. First Name of Individual

MA

7. State

02116

8. Zip Code

857-262-0757

9. Telephone #

courtney.l.walker@dot.state.ma.us

12. e-mail address (optional)

4. MI

10. Ext. #

C. Facility, Site or Individual Requiring Approval

Sand Mill Road over Dry Brook

1. Name of Facility, Site Or Individual

Sand Mill Road

2. Street Address

Cheshire

3. City/Town

MA

4. State

01225

5. Zip Code

6. Telephone #

7. Ext. #

8. DEP Facility Number (if Known)

9. Federal I.D. Number (if Known)

10. BWSC Tracking # (if Known)

D. Application Prepared by (if different from Section B)*

Weston & Sampson

1. Name of Firm Or Individual

55 Walkers Brook Drive, Suite 100

2. Address

Reading

3. City/Town

Alexandra Gaspar

8. Contact Person

MA

4. State

01867

5. Zip Code

978-532-1900

6. Telephone #

7. Ext. #

9. LSP Number (BWSC Permits only)

E. Permit - Project Coordination

1. Is this project subject to MEPA review? yes no
If yes, enter the project's EOE file number - assigned when an Environmental Notification Form is submitted to the MEPA unit:

EOEA File Number

F. Amount Due

Special Provisions:

1. Fee Exempt (city, town or municipal housing authority)(state agency if fee is \$100 or less).
There are no fee exemptions for BWSC permits, regardless of applicant status.
2. Hardship Request - payment extensions according to 310 CMR 4.04(3)(c).
3. Alternative Schedule Project (according to 310 CMR 4.05 and 4.10).
4. Homeowner (according to 310 CMR 4.02).

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Check Number

Dollar Amount

Date



Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wetlands and Waterways
BRP WW 10 Major Project Certification
BRP WW 11 Minor Project Certification
401 water Quality Certification for Fill and excavation
Projects in waters and Wetlands

X289593
 Transmittal Number #

A. Applicant Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Which permit category are you applying for?

- BRP WW 10 BRP WW 11

2. Applicant/Owner:

MassDOT - Highway Division

Name

10 Park Plaza, Room 7360

Address

Boston

City/Town

MA

State

02116

Zip Code

Courtney Walker

Contact Person

Telephone (home)

857-262-0757

(work)

3. Authorized Agent

Weston & Sampson

Name

55 Walkers Brook Drive, Suite 100

Address

Reading

City/Town

MA

State

01966

Zip Code

Alexandra Gaspar

Contact Person

Telephone (home)

978-532-1900

(work)



Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wetlands and Waterways
BRP WW 10 Major Project Certification
BRP WW 11 Minor Project Certification
401 water Quality Certification for Fill and excavation
Projects in waters and Wetlands

X289593
Transmittal Number #

B. Project Information

1. Project Location:

Sand Mill Road Over Dry Brook (near 1020 Sand Mill Road)

Address

Cheshire

MA

01225

City/Town

State

Zip Code

Dry Brook

Nearest or Adjacent Waterbody

2. Project Name (if any):

Sand Mill Road over Dry Brook Bridge Replacement (Bridge No. C-10-002)

3. a. Describe project purpose:

To replace the bridge at Sand Mill Road over Dry Brook (See Appendix B for additional information)

b. Is the project

water-dependent

non water-dependent



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways
BRP WW 10 Major Project Certification
BRP WW 11 Minor Project Certification
401 water Quality Certification for Fill and excavation
Projects in waters and Wetlands

X289593
 Transmittal Number #

B. Project Information (cont.)

4. a. provide a brief description of the proposed project (See Application Instructions and include a copy of the Notice of intent, if any.):

Bridge replacement at Sand Mill Road over Dry Brook (See Appendix B for additional information)

b. Notice of Intent File number (if any): N/A

5. Identify the loss in square feet of each type of resource area (see Application Instructions for additional information.):

a. Bordering vegetated wetland:	<u>80 permanent, 75 temporary</u> square feet
b. Isolated vegetated wetland:	<u>0</u> square feet
c. Land under water:	<u>821 permanent, 607 temporary</u> square feet
d. Total cumulative loss of a. + b. + c.:	<u>901 permanent, 682 temporary = 1,583 sf total</u> square feet
e. Salt marsh:	<u>0</u> square feet

6. a. Will the proposed project occur in any wetlands or waters designated as “Outstanding Resource Waters”?

Yes No

If yes has public notice been published in the Environmental Monitor?

Yes No

To be determined
Date of Publication

b. Is this project a subdivision or any part of a subdivision? Yes No

c. Is the project categorically subject to MEPA? Yes No

If yes, has final action been taken? Yes No

If yes, please include copy of MEPA certificate.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Wetlands and Waterways
BRP WW 10 Major Project Certification
BRP WW 11 Minor Project Certification
401 water Quality Certification for Fill and excavation
Projects in waters and Wetlands

X289593
 Transmittal Number #

B. Project information (cont.)

7. Alternatives Analysis:

As related to the project purpose, attach a detailed description of alternatives to the proposed project that were considered and why none are available that avoid adverse impacts to wetlands and waters.

If no alternatives are available, describe how the activity will minimize or mitigate the adverse impacts to wetlands and waters.

See application instructions for information required. Attach required documentation.

C. Additional Information

1. Is any of your proposed work exempt from the Massachusetts Wetlands Protection Act or taking place in a federal non-state wetland?

Yes No

If yes, see Application Instructions for additional information needed.

2. Public notice to a newspaper of general circulation within the area of the proposed activity must be published within 10 days of the date of this application. Is proof of public notice submitted?

Yes No

(See Application Instructions for additional information)

D. Certification

Application is hereby made for water quality certification.

"I certify that I am familiar with the work proposed and that to the best of my knowledge and belief the information contained in this application is true, complete, and accurate"

Courtney Walker

Applicant's Signature

Courtney Walker

Print name

Alexandra Gaspar

Agent's Signature

Alexandra Gaspar

Print Name

9/12/2023

Date

**U.S. Army Corps of Engineers (USACE), New England District (NAE)
PRE-CONSTRUCTION NOTIFICATION (PCN)**

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

Principal Purpose The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

Routine Uses This information may be shared with other federal, state, and local government agencies during the application review process. Submission of requested information is voluntary. However, if information is not provided the PCN application cannot be fully evaluated nor can USACE render a permit decision.

Disclosure

Instructions The applicant must complete ALL required sections of this document before their submission to USACE. The PCN submission to USACE shall include one set of drawings which show the location and character of the proposed activity, statements that address each required field below, and documentation that supports each field (e.g., emails, letters, description/narrative, phone calls, surveys, reports, etc.). Electronic submissions to the following address are strongly preferred: cenae-r-ma@usace.army.mil. The email subject line shall contain the following: General Permit #, PCN, City/Town, and date submitted. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY USACE)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Courtney Middle - Last - Walker Company - MassDOT - Highway Division E-mail Address - Courtney.l.walker@dot.state.ma.us	8. AUTHORIZED AGENT'S NAME AND TITLE (<i>agent is not required</i>) First - Alexandra Middle - Last - Gaspar Company - Weston & Sampson Engineers, Inc. E-mail Address - gaspara@wseinc.com
6. APPLICANT'S ADDRESS: Address- 10 Park Plaza, Room 7360 City - Boston State - MA Zip - 02116 Country - US	9. AGENT'S ADDRESS: Address- 55 Walkers Brook Dr Suite 100 City - Reading State - MA Zip - 0186 Country - US
7. APPLICANT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile 978-429-1772	10. AGENT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile 9785321900

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Alexandra Gaspar to act on my behalf as my agent in the processing of this general permit PCN application and to furnish, upon request, supplemental information in support of this general permit PCN application.



 SIGNATURE OF APPLICANT

9/20/23

 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (<i>see instructions</i>) MassDOT Project #608857 Sand Mill Road over Dry Brook Bridge Replacement (Bridge No. C-10-002)	
13. NAME OF WATERBODY, IF KNOWN (<i>if applicable</i>) Dry Brook	14. PROPOSED ACTIVITY STREET ADDRESS (<i>if applicable</i>) near 1020 Sandmill Road City: Cheshire State: MA Zip: 01225
15. LOCATION OF PROPOSED ACTIVITY (<i>see instructions</i>) Latitude: 42deg37'55.13 °N Longitude: 70deg46'42.848 °W 4"	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: _____ Municipality: _____

Section: _____ Township: _____ Range: _____

17. DIRECTIONS TO THE SITE.

Follow I-91 to MA-2 W
 Take exit 43 from I-91 S/MA-2 W
 Follow MA-2W, MA-8A S and MA-116N to Sand Mill Road
Destination is near 1020 Sand Mill Road

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:
 23. Linear Transportation Projects and Wetland/Stream Crossings

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

The proposed work for the project includes reconstruction of the bridge over Dry Brook with a new wider bridge, abutments, retaining walls, guardrails and a roadway typical section consisting of (2) 10'-0" wide travel lanes and (2) 2'-4 1/2" wide shoulders. This will allow for safe passage of vehicles and give a safer offset to the bridge parapet. The proposed wider roadway cross section will transition to meet the existing approach roadway width. See attached project description for additional information.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

Appropriate sediment and erosion controls will be utilized around the limit of work. Natural stream bed material will be installed upon completion of dredging.

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

The purpose of this project is to replace a deteriorating bridge on Sand Mill Road over Dry Brook. (See Appendix B for additional information)

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration	Purpose
80 (wetland)			permanent	Grading/installation of riprap
75(wetland)			temporary	Installation of temp. water control
821 (Dry Brook)			permanent	Grading/instsallation of riprap
607 (Dry Brook)			temporary	Installation of temp. water control
				see table in project description for addtl areas.

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

n/a

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

n/a

25. Is Any Portion of the General Permit Activity Already Complete? Yes No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (see instructions)
n/a

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (see instructions)
n/a

28. For a proposed GP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":
n/a

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project? Yes No
If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.
Yes - the submission is a Joint 401/PCN. Please see attached BRP forms for 401 WQC information.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.


SIGNATURE OF APPLICANT

9/20/23
DATE

 Digitally signed by Alexandra Gaspar
DN: C=US, E=gaspara@wseinc.com, O=Weston & Sampson Engineers, CN=Alexandra Gaspar
Date: 2023.09.23 11:57:25-04'00'
SIGNATURE OF AGENT

DATE

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a
Department of the Army
General Permit (GP) Pre-Construction Notification (PCN)**

Blocks 1 through 4. To be completed by the U.S. Army Corps of Engineers.

Block 5. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific General Permit(s) You Propose to Use. List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

Block 19. Description of the Proposed General Permit Activity. Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20: Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

Block 21. Purpose of General Permit Activity. Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity. For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including its banks, that are directly affected by the structures or fills. The duration of impact should be identified as temporary (xx days) or permanent. The impact purpose should briefly describe what structure or fill is responsible for the impact.

Block 23. Identify Any Other General Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity. List any other GP(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by these GPs that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

Block 24. Compensatory Mitigation Statement for Losses Greater Than the New England District Compensatory Mitigation Thresholds. New England District requires compensatory mitigation at a minimum one for one replacement ratio or greater for all aquatic resource losses that require a PCN and exceed the New England District Compensatory Mitigation Thresholds, unless USACE determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed GP activity are no more than minimal without compensatory mitigation, and provides an activity specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than the New England District Compensatory Mitigation Thresholds or provide an explanation of why USACE should not require wetland compensatory mitigation for the proposed GP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

Block 25. Is Any Portion of the General Permit Activity Already Complete? Describe any work that has already been completed for the GP activity.

Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the General Permit Activity. If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed GP activity, or if the proposed GP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

Block 27. List Any Historic Properties that Have the Potential to be Affected by the General Permit Activity. If you are not a federal agency, and if any historic properties have the potential to be affected by the proposed GP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed GP activity. Provide all relevant documentation about these historic properties in the PCN submittal. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the General Permit Activity Would Occur in such a River. If the proposed GP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a "study river" under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit <http://www.rivers.gov/>

Block 29. General Permit Activities that also Require Permission from the USACE Under 33 U.S.C. 408. If the proposed GP activity also requires permission from the USACE under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a USACE federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the USACE district having jurisdiction over that project.

Block 30. 401 Water Quality Certification. As described above, specify if the activity requires a 401 WQC from the certifying authority.

Block 31. Other Information Required For General Permit Pre Construction Notifications. The terms of some of the General Permits include additional information requirements for preconstruction notifications:

- * Maintenance – information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
- * Temporary Construction, Access, and Dewatering – a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
- * Repair of Uplands Damaged by Discrete Events – documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
- * Commercial Shellfish Aquaculture Activities – (1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this GP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required). Dredging – (1) a proposed sampling and analysis plan shall be provided to USACE for approval prior to its execution. Pre-application meetings are encouraged.
- * Beach Nourishment – sediment grain size should be determined for the length of the beach where nourishment is proposed. The frequency and locations of sediment sampling shall be sufficient to identify the sediment composition of the beach profile. This data shall be consolidated to generate a sediment gradation curve for each sampled transect. Each sampled transect should also be identified on the project plans (drawings).

If more space is needed, attach an extra sheet of paper marked Box 31.

Block 32. Signature of Applicant or Agent. The PCN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the GP activity (including compliance with special conditions, mitigation, etc.).

DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the USACE. The permittee may ask the USACE to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the USACE does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 60-day PCN review period will not start until a delineation has been completed.

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one copy of all drawings on 8½ x 11 inch plain white paper (electronic submissions preferred). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

ADDITIONAL INFORMATION AND REQUIREMENTS

For proposed GP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived. Some States, Tribes, or EPA have issued water quality certification for one or more GPs. Please check the New England District website to see if water quality certification has already been issued for the GP(s) you wish to use. For proposed GP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur. Some States have issued Coastal Zone Management Act consistency concurrences for one or more GPs. Please check the New England District website to see if Coastal Zone Management Act consistency concurrence has already been issued for the GP(s) you wish to use.

APPENDIX A
PROJECT DESCRIPTION

PROJECT DESCRIPTION

Background

Sand Mill Road in Cheshire is classified as a Non-National Highway System Rural Local Road. Bridge C-10-002 ("the Bridge") over Dry Brook on Sand Mill Road has a history of structural deterioration and was rehabilitated in 2016. The bridge carries two (2) travel lanes. There are no shoulders or sidewalks on the bridge.

Complete replacement of the deteriorated Bridge superstructure and substructure is proposed. The new Bridge structure will be of similar span length on the same footprint as the existing facility, and it will include bridge rails, guardrails, and pavement markings to meet current MassDOT standards. The project is exempt from state permitting as it is a footprint bridge project. As a bridge replacement, this project will meet the stream crossing standards to the maximum extent practicable.

Submission of a Clean Water Act Section 404 Pre-Construction Notification form to the United States Army Corps of Engineers New England Regulatory Division ("the Army Corps") and a Section 401 Water Quality Certification (WQC) BRP WW11 form to the Massachusetts Department of Environmental Protection ("MassDEP") are both required since the Project will include placement of fill in Waters of the U.S. Submission of a Section 401 WQC form BRP WW 08 to the MassDEP is also required since dredging of 265 cubic yards (more than 100 cubic yards) is proposed. Proper erosion and sediment controls will be utilized to mitigate impacts to surrounding wetland resource areas.

1 Existing Conditions

The Bridge is on Sand Mill Road (near #1031 Sand Mill Road) in Cheshire and spans Dry Brook. It was constructed in 1939 and was rehabilitated in 2016. It is currently open to traffic. There is no sidewalk on Sandmill Road or on the Bridge. The speed limit on Sandmill Road is 35 mph.

The Bridge is in a residential neighborhood and overhead utility lines are present on poles located on both the northeast and southeast corners of the Project site. No utilities are located on the Bridge itself. Adjoining properties have manicured lawns and forested areas.

Bordering Vegetated Wetland areas have been identified in the project area. Dominant vegetation within the wetland resource area includes black willow (*Salix nigra*), silky dogwood (*Cornus amomum*), and goldenrod (*Solidago* spp.), species that generally thrive in wet conditions. Soils within the BVW's are composed of fine sandy loam. Other indicators of wetland hydrology include saturation and water stained leaves. In addition, Dry Brook is a Cold-Water Fishery and is considered NHESP habitat. No Areas of Critical Environmental Concern ("ACECs") or Outstanding Resource Waters ("ORWs") are located in the project area.

The Bridge was closed on 3/27/15 due to steel girder deterioration resulting in poor load ratings of beams #1, #2 and #6. Steel and concrete repairs were made, and the bridge was reopened in 2016.

The Bridge has an overall width of 23'-0", an overall span length (skewed) of 43'-10½" and curb-to-curb width of 20'-0" with 18" wide curbs on both the east and west sides. There is a 24"

corrugated metal pipe (“CMP”) stormwater outfall that discharges via a small channel into Dry Brook approximately 45’ upstream of the bridge.

Another 24” CMP stormwater outfall discharges into Dry Brook through a concrete headwall approximately 25’ downstream from the Bridge. Dry Brook flows east to west under the bridge. The bankfull width is approximately 38’.

The width of the Dry Creek channel in the immediate vicinity of the Bridge varies from approximately 31’ upstream to an average of 22’ downstream within 100’ of the Bridge. The channel width widens to approximately 31’ about 170’ downstream after the bridge.

The channel width immediately under the bridge is approximately 36’ and the depth of the channel immediately under the bridge is generally less than 1’, although it is deeper close to the north abutment. Some parts of the North abutment footing are currently exposed indicating some scour.

The channel depth closer to the south abutment is shallower. The channel alignment at the Bridge is skewed and flows east to west. The banks of the channel are rocky with a variety of plant species including black willow and goldenrod. A small Bordering Vegetated Wetland is located adjacent to the southern bank, on the west side of Sand Mill Road.

2 Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools

Based on MassGIS data layers, the proposed work area is NOT located in the following resource areas:

- Outstanding resource water (ORW)
- Area of critical environmental concern (ACEC)
- Potential or certified vernal pools

Dry Brook, in the Project area, is mapped as a Coldwater fishery as well as a habitat of threatened or endangered state species based on the MassGIS NHESP Priority Habitats of Rare Species and the NHESP Estimated Habitats of Rare Wildlife data layers. The Long-Nosed Sucker Fish is reported to be in Dry Creek.

According to the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) online mapping tool, the Northern Long Eared Bat (NLEB) (*Myotis Septentrionalis*) may be found within the project limits. Coordination has been undertaken with the USFWS and it has been determined that the project is Not Likely to Adversely Effect the species.

3 Proposed Conditions

The proposed work for the project includes reconstruction of the Bridge over Dry Brook with a new wider bridge, abutments, retaining walls, guardrails and a roadway typical section consisting of (2) 10’-0” wide travel lanes and (2) 2’-4 1/2” wide shoulders. This will allow for safe passage of vehicles and give a safer offset to the bridge parapet. The proposed wider roadway cross section will transition to meet the existing approach roadway width.

The proposed Bridge will have a cast-in-place substructure with a precast concrete deck beam superstructure. Construction of the substructure will require excavation of 265 cubic yards of riverbed material in the areas of the new abutments and limited dewatering of these excavated areas. Dewatering methodology will be selected by the Project contractor but will minimize impacts to water quality through use of appropriate best management practices. The bankfull width of Dry Creek will remain the same in the post-construction condition as in the pre-construction condition. Equipment used during excavation and demolition of the existing abutments will be, but not limited to, excavators, dump trucks, possibly a hoe ram to break up the concrete, and possibly a skid steer for work at grade.

Streambed material that is temporarily removed to facilitate construction of the new cast in place abutments will be retained and returned to the streambed once the abutment construction has been completed. This important mitigation component of Project design will allow MassDOT to retain the pre-construction coldwater fisheries habitat characteristics in the immediate vicinity of the Bridge to the maximum extent practicable.

To further mitigate project impacts within areas jurisdictional under Sections 404 and 401 of the Clean Water Act, the Project has been designed to minimize the amount of riprap introduced to Dry Creek while achieving MassDOT's goal of maintaining the structural integrity of the Bridge throughout its design life. While coffer dams will be required so work can occur on the abutments, only part of the stream will be dewatered. Stream flow will be maintained throughout construction to limit disruption of natural streamflow conditions.

4 Alternatives Analysis

The following alternatives were considered by MassDOT for replacement of the Bridge with the goal of avoiding and minimizing environmental impacts while still achieving the Project purpose and need.

Alternative #1: No Action

Taking no action to address the deteriorated condition of the Bridge would result in continuing deterioration and eventual failure of the facility. Portions of the Bridge would eventually begin to fail, which would take it out of service, eliminate vehicular access over Dry Creek at this location, and have negative impacts on the habitat and resource area values provided by Dry Creek in the Project area.

Alternative #2: Replace Superstructure Only

Replacement of only the Bridge superstructure was also considered but not pursued since this would not achieve the Project purpose. The existing Bridge abutments exhibit evidence of Alkali-silica reaction, and it is therefore anticipated that the substructure would continue to crack in the future, thus limiting the total lifespan of the Bridge even if the superstructure were replaced.

Alternative #3: Replace entire bridge (preferred alternative)

Replacement of the entire bridge was advanced as the preferred alternative since this alternative best meets the project purpose. The project has been designed and will be constructed using a methodology that minimizes resource area impacts subject to regulation under the Clean Water Act.

4.1 MassDEP Stormwater Standards

The existing Bridge does not have stormwater management structures and features country drainage. The Proposed structure, as replacement of the existing Bridge subject to the Massachusetts Footprint Bridge Exemption, is considered a Redevelopment Project in the context of the MassDEP Stormwater Standards. No new stormwater management structures are proposed and drainage of the new Bridge will be via overland flow.

As noted earlier in this Project Narrative, there is a 24” CMP that discharges via a small channel into Dry Brook approximately 45’ upstream of the bridge. Another 24” CMP discharges into Dry Brook through a concrete headwall approximately 25’ downstream from the bridge. Dry Brook flows east to west under the bridge.

Please note that while no new drainage work is proposed with this Project, MassDOT has included accommodation of an existing drainage outlet pipe that serves several abutting properties by extending this drainage pipe through the proposed wing wall at the southeast corner of the bridge.

Below please find the MassDEP Stormwater Standards and an explanation as to how this project addresses each standard.

1. No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

No new outfalls are proposed as part of this project. Standard 1 is met.

2. Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

As this project is a redevelopment, this standard is required to be met only to the maximum extent practicable. The impervious area within the project limits will increase by approximately 1,054 square feet due to the widening of the bridge to achieve safe two-way travel width and tapering of pavement from the proposed bridge to existing roadway width. Since there is a minor increase in impervious area, post-development peak discharge rates will slightly exceed pre-development peak discharge rates. Although there is a small increase in peak discharge rates, the installation of structural BMP’s capable of reducing peak discharge rate are not practicable in this area due to the right-of-way limitations.

3. Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

This project will minimize loss of annual recharge to groundwater to the maximum extent practicable. There will be approximately 1150 sf of additional impervious area resulting from the widening of the roadway. Standard 3 will be met to the maximum extent practicable.

4. Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:
 - a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
 - b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
 - c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

The existing roadway does not contain any drainage structures and utilizes country drainage to sheet flow off the roadway and along adjacent vegetated shoulders, directly into the Dry Brook. Because of right-of-way space constraints at the site, installation of additional BMPs is not feasible. The stormwater drainage in the proposed design will mimic pre-development hydrologic conditions and will take advantage of treatment capability of vegetated shoulders. Water quality treatment will be improved to the maximum extent practicable by the installation of additional riprap along the Dry Brook adjacent to the new bridge, which will dissipate the flow and decrease velocities of stormwater runoff allowing more opportunity for infiltration. During construction, appropriate BMPs will be used to minimize sedimentation and soil erosion from construction activities.

5. For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Standard 5 is not applicable. This project does not involve land use with higher potential pollutant loads.

6. Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area,

require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A “storm water discharge” as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Standard 6 is not applicable. This project is not occurring in a Zone II, an IWPA or any other critical area.

7. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

As this is a redevelopment project, Standards 2, 3 and 4 will be met to the maximum extent practicable. Standards 5 and 6 are not applicable and Standards 1, 8, 9, and 10 will be met.

8. A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Compost filter tubes or equivalent will be used around the limit of work. Inlet protection will be used in all surrounding catch basins. Standard 8 will be met.

9. A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Accommodation by MassDOT of an existing stormwater pipe (owned and operated by abutting property owners) by including an extension of that pipe through the proposed wingwall of the Bridge will not create a need for a MassDOT O+M plan. Responsibility for operation and maintenance of this existing stormwater conveyance will remain with the abutting landowner. Standard 9 will be met.

10. All illicit discharges to the stormwater management system are prohibited.

The Project has been designed to prevent illicit discharges to any offsite stormwater management systems. Standard 10 will be met.

5 Anticipated Construction Sequence

While the following is the suggested sequencing, the means and methods are ultimately up to the contractor. The anticipated construction sequence generally includes installation of the full traffic detour (~2 miles), installation of erosion control measures, clearing and grubbing and temporary relocation of overhead utilities. Demolition of the existing bridge substructure, including abutments and wingwalls, can be completed after the superstructure is removed and the water control structure and temporary support of excavation are installed. It is anticipated that each abutment will be demolished with excavators and pneumatic hammers. All existing concrete will be removed and reconstructed, one end at a time to limit the restriction of Dry Brook. Backfilling, placing riprap and natural channel material in the Brook will be completed prior to removing the temporary support of excavation and water control structure and before mobilizing to the other abutment. The superstructure can be constructed after both abutments have been constructed and the channel work in Dry Brook has been completed. Roadway approach reconstruction will be completed including paving, striping, installing guardrail and establishing vegetation of all disturbed areas within the project limits. The road may be opened to traffic after the overhead utilities are transferred to their final locations and the erosion control measures and the full traffic detour have been removed.

6 Wetland Impacts

A perennial stream (Dry Brook) flows through the bridge abutment. Bordering Vegetated Wetlands (BVW) associated with Dry Brook are also present in the general vicinity of one of the bridge abutments. Impacts are a result of the complete replacement of the existing bridge, both the superstructure and the concrete substructure. The existing concrete abutments and wingwalls will be removed in their entirety and new concrete abutments and wingwalls will be constructed. This work shall occur in the dry and since the excavation will be below the ground water elevation and below the bottom of Dry Brook, a temporary water control structure will be installed. Once the new concrete footings, stem walls and wingwalls are constructed, riprap, topped with existing channel material, will be installed to closely match the existing stream bed elevation of 1166.6. Excavation and construction within Dry Brook will be contained within temporary water control structures.

There will be both temporary and permanent impact areas along the banks and associated bordering vegetated wetland within the project limits. The wetland replication plan can be found in the attached plan set. The impact to replication ratio is approximately 1:1, with a proposed replication area of 87 square feet. Adjacent to and in front of the wingwalls, will be sloped riprap to the edge of the brook or top of bank at all four corners. The surface in the brook within the boundaries of the top of banks will be restored with natural channel material. All other disturbed areas within the project limits, along the banks and behind guardrail, will be restored with loam and seed providing established vegetation.

Impacts identified on the Environmental Impact plan (Appendix F) reflect temporary and permanent impacts.

Impacts are as follows:

RESOURCE AREA	Square Feet	PERMANENT OR	CAUSE
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	(SF)/Linear Feet (LF) OF IMPACT	TEMPORARY	
Vegetated Wetlands	80 SF	Permanent	Grading and installation of riprap adjacent to proposed abutments
	75 SF	Temporary	Installation of temporary water control adjacent to existing abutments
	+87 SF	Replication	
Waterbodies/Waters of the US	821 SF	Permanent	Grading and installation of riprap
	607 SF	Temporary	Installation of temporary water control within Dry Brook
	265 CY Dredging	Permanent	
Bank Associated with Dry Brook	127 LF	Permanent	Grading and installation of riprap
	29 LF	Temporary	Installation of temporary water control

MA Stream Crossing Standard

Below please find the Stream Crossing Standards and an explanation as to how this project addresses each standard.

1. TYPE OF CROSSING

- General: Spans (bridges, 3-sided box culverts, open bottom culverts or arches) are strongly preferred.
- Optimum: Use a bridge.

This project is a bridge, and therefore meets the optimum “Type of Crossing” standard.

2. EMBEDMENT

- All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%.
- If pipe culverts cannot be embedded this deep, then they should not be used.
- When embedment material includes elements >15 inches in diameter, embedment depths should be at least twice the D84 (particle width larger than 84% of particles) of the embedment material.

The culvert will be embedded over 2’ and will thus meet this standard.

3. CROSSING SPAN

- General: Spans channel width (a minimum of 1.2 times the bankfull width of the stream).

- Optimum: Spans the streambed and banks (at least 1.2 times bankfull width) with sufficient headroom to provide dry passage for wildlife.

The bankfull width at the project site is 38'.

This project will be met to the maximum extent practicable, but is unable to meet this standard entirely for the following reasons:

- **Site constraints (driveway and private property and fitting in guardrail).**
- **The hydraulic report does not indicate any hydraulic concerns with the hydraulic opening remaining the same (maintain low chord and span length).**
- **The project's intent is to restore the natural streambed and establish a thalweg which should provide adequate passage for aquatic wildlife (the long nose sucker fish is referenced in the scoping checklist).**
- **The 1.2 bankfull width is intended to provide safe passage for terrestrial wildlife. The stream is shallow enough to allow safe passage during low flow despite not meeting the 1.2 bankfull width criteria.**

4. OPENNESS

- General: Openness ratio (cross-sectional area/crossing length) of at least 0.82 feet (0.25 meters). The crossing should be wide and high relative to its length.
- Optimum: Openness ratio of at least 1.64 feet (0.5 meters) and minimum height of 6 feet. If conditions significantly reduce wildlife passage near a crossing (e.g., steep embankments, high traffic volumes, and physical barriers), maintain a minimum height of 8 feet (2.4 meters) and openness ratio of 2.46 feet (0.75 meters).

This project meets this standard. The openness ratio is approximately 9.8 feet. The bridge will have a width of approximately 28' with a height of 14'.

5. SUBSTRATE

- Natural bottom substrate should be used within the crossing, and it should match the upstream and downstream substrates. The substrate and design should resist displacement during floods and maintain an appropriate bottom during normal flows.

A natural bottom substrate is being used for this project, and therefore this standard is met.

6. WATER DEPTH AND VELOCITY

- Water depths and velocities are comparable to those found in the natural channel at a variety of flows.

Water depths and velocities will be comparable to those found in the natural channel.

7 Sedimentation Control

Compost filter tubes or equivalent will be used around the limit of work and along the banks of Dry Brook to prevent sediment migration into environmental resources. Temporary water

control will also be utilized. Inlet control will be placed in all catch basins in the area. Exact limits of sedimentation control can be seen on the attached plans.

8 Dewatering

This project proposes excavation of about 5-6 feet below the bottom of the brook. Dewatering is anticipated prior to excavation. Sumps will be placed in all four (4) corners of the excavation area and 2" sump pumps can be installed for dewatering purposes. While coffer dams will be required so work can occur on the abutments, only part of the stream will be dewatered. The contractor, once on-board, will prepare a dewatering plan.

9 MassDEP 310 CMR 9.40, Standards for Dredging and Dredged Material Disposal

Below please find the Standards for Dredging and Dredged Material Disposal and how this project complies to each standard.

1. Limitations on Dredging and Disposal Activity
 - a. The project shall not include any dredging of channels, mooring basins, or turnaround basins to a mean low water depth greater than 20 feet, unless said project:
 - i. is located within a Designated Port Area; or
 - ii. serves a commercial navigation purpose of state, regional, or federal significance, and cannot reasonably be located in a Designated Port Area.

While this project involves dredging within a channel, it will not be dredged to a mean low water depth greater than 20 feet.

- b. If the project is located in an ACEC, the project shall not include any of the following activities:
 - i. improvement dredging, unless the dredging is: for the sole purpose of fisheries or wildlife enhancement; part of an Ecological Restoration Project; or conducted by a public entity for the sole purpose of the maintenance or restoration of historic, safe navigation channels or turnaround basins of a minimum length, width and depth consistent with a Resource Management Plan adopted by the municipalities and approved by the Secretary.
 - ii. dredged material disposal, except for the sole purpose of beach nourishment, dune construction, reconstruction or stabilization with proper vegetative cover, the enhancement of fishery or wildlife resources, or unless the dredged material disposal is part of an Ecological Restoration Project in accordance with 314 CMR 9.07(1)(c) and 310 CMR 10.11(6)(b) and 310 CMR 40.000: Massachusetts Contingency Plan, if applicable, provided that any fill or dredged material used in an Ecological Restoration Project may not contain a chemical above the RCS-1 concentration, as defined in 310 CMR 40.000: Massachusetts Contingency Plan

This project is not located within an ACEC.

2. Resource Protection Requirements.

- a. The design and timing of dredging and dredged material disposal activity shall be such as to avoid interference with anadromous/catadromous fish runs. At a minimum, no such activity shall occur in such areas between March 15 and June 15 of any year, except upon a determination by the Division of Marine Fisheries, pursuant to M.G.L. c. 130, § 19, that such an activity will not obstruct or hinder the passage of fish.

DFW is being consulted as a part of this project to ensure that this activity does not obstruct or hinder the passage of fish. All time of year restrictions shall be adhered to.

- b. The design and timing of dredging and dredged material disposal activity shall be such as to minimize adverse impacts on shellfish beds, fishery resource areas, and submerged aquatic vegetation. The Department may consult with the Department of Fish and Game or the natural resource officer of the municipality regarding the assessment of such impacts.

DFW is being consulted as a part of this project to ensure that this activity does not obstruct or hinder the passage of fish. All time of year restrictions shall be adhered to.

3. Operational Requirements for Dredging

- a. The extent of dredging shall not exceed that reasonably necessary to accommodate the navigational requirements of the project and provide adequate water circulation.

This project will meet this standard. Dredging will not exceed that reasonably necessary.

- b. The shoreward extent of dredging shall be a sufficient distance from the edge of adjacent marshes to avoid slumping. In general, for improvement dredging projects the edge of the dredging footprint, including any side cuts, should be at least 25 feet from any marsh boundary. In areas where significant wake or wash will be generated by vessel traffic, increased setbacks may be incorporated based on appropriate design calculations.

Not applicable, no marshes are present on site.

- c. In general, no basin, canal, or channel shall be dredged deeper than the main channel to which it is connected.

The brook will not be dredged deeper than the main channel to which it is connected.

- d. To the maximum reasonable extent, basins shall have wide openings and short entrance channels to promote tidal exchange within the basin.

This is an inland waterway. There is no tidal exchange here.

- e. In general, hydraulic dredging shall be favored over mechanical methods, except when open water disposal of fine-grained material is proposed.

The contractor will use excavators and heavy equipment to remove the existing abutments and dredge in front of the existing abutments to prepare the subgrade for the proposed abutments. Sump pumps will be installed for dewatering.

- 4. Operational Requirements for Dredged Material Disposal.
 - a. Where determined to be reasonable by the Department, clean dredged material shall be disposed of in a manner that serves the purpose of beach nourishment, in accordance with the following provisions:
 - i. in the case of a publicly-funded dredging project, such material shall be placed on publicly-owned eroding beaches; if no appropriate site can be located, private eroding beaches may be nourished if easements for public access below the existing high water mark can be secured by the applicant from the owner of the beach to be nourished; or
 - ii. in the case of a privately funded dredging project, such material may be placed on any eroding beach.

Representative analytical results of the sediment proposed for removal as part of this project meet COMM-97-001 limits, therefore the surplus sediments may be disposed of at in-state landfills. As analyte concentrations were also below RCS-1 comparison standards, approval for re-use at a MassDEP Administrative Consent Order (ACO) facility could be pursued.

- b. In the event ocean disposal of dredged material is determined to be appropriate by the Department, the licensee or permittee shall:
 - i. publish in the Notice to Mariners the date, time, and proposed route of all ocean disposal activities and the coordinates of the ocean disposal site, as deemed appropriate by the U.S. Coast Guard;
 - ii. ensure that transport vessels are not loaded beyond capacity; are equipped with sudden, high volume release mechanisms; and are at a complete stop when the material is released; and
 - iii. ensure that disposal occurs within the boundaries of an approved or otherwise formally designated ocean disposal site; and that the discharge location is marked during disposal operations by a buoy equipped with a flashing light and radar reflectors which allow it to be located under variable sea/weather conditions.

Representative analytical results of the sediment proposed for removal as part of this project meet COMM-97-001 limits, therefore the surplus sediments may be disposed of at in-state landfills. As analyte concentrations were also below RCS-1 comparison standards, approval for re-use at a MassDEP Administrative Consent Order (ACO) facility could be pursued.

- 5. Supervision of Dredging and Disposal Activity.

- a. The licensee or permittee shall inform the Department in writing at least three days before commencing any authorized dredging or dredged material disposal.

Noted.

- b. The licensee or permittee shall provide, at his or her expense, a dredging inspector approved by the Department who shall accompany the dredged material while in transit and during discharges, either upon the scows containing the dredged material or upon the boat towing them, for the following activities:
 - i. any offshore disposal;
 - ii. any onshore disposal of dredged material greater than 10,000 cubic yards; or
 - iii. the disposal of materials defined by the Department as potentially degrading or hazardous.

Noted.

- c. The name, address, and qualifications of the dredging inspector shall be submitted to the Department as part of the license or permit application for approval.

Noted.

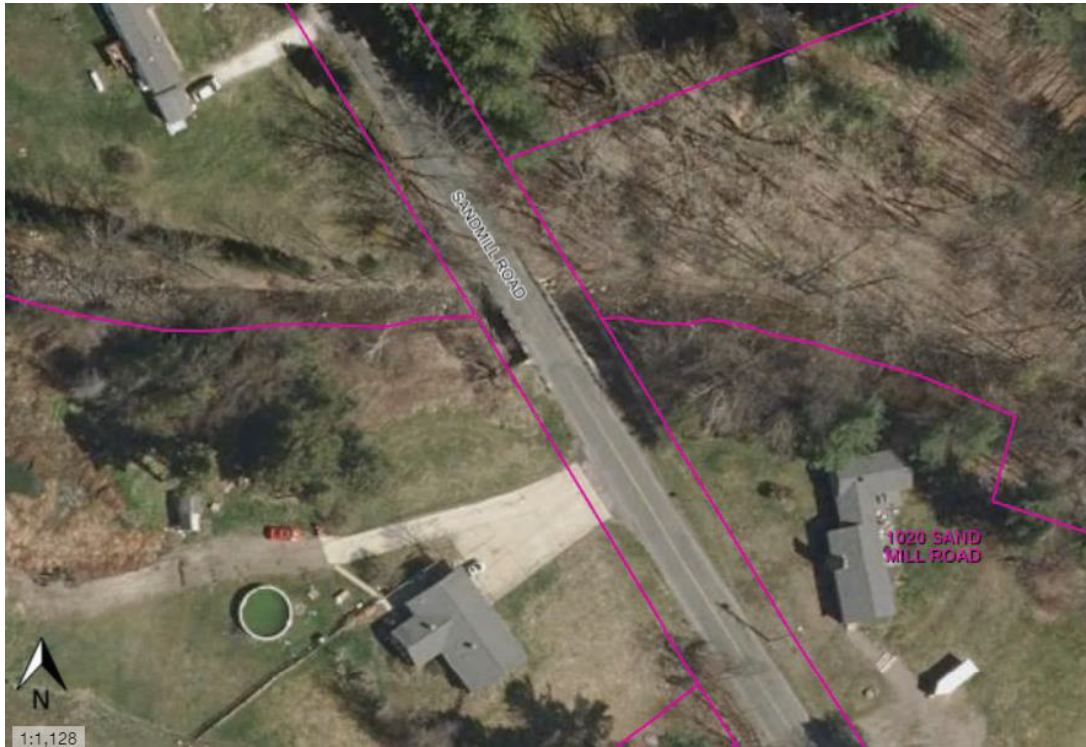
- d. Within 30 days after the completion of the dredging, a report shall be submitted to the Department certified by the dredging inspector, including daily logs of the dredging operation indicating volume of dredged material, point of origin, point of destination, and other appropriate information.

Noted.

Overall, this work is necessary to preserve the safety and structural integrity of the bridge. The applicant respectfully requests that MassDEP find these measures adequately protective of the interests identified in the 401 Water Quality Regulations and issue a Water Quality Certificate approving the work shown on the accompanying plan set.

APPENDIX B
PHOTOGRAPHS

PHOTOGRAPHS



Photograph #1. Aerial



Photograph #2: Sand Mill Road Bridge from northwest



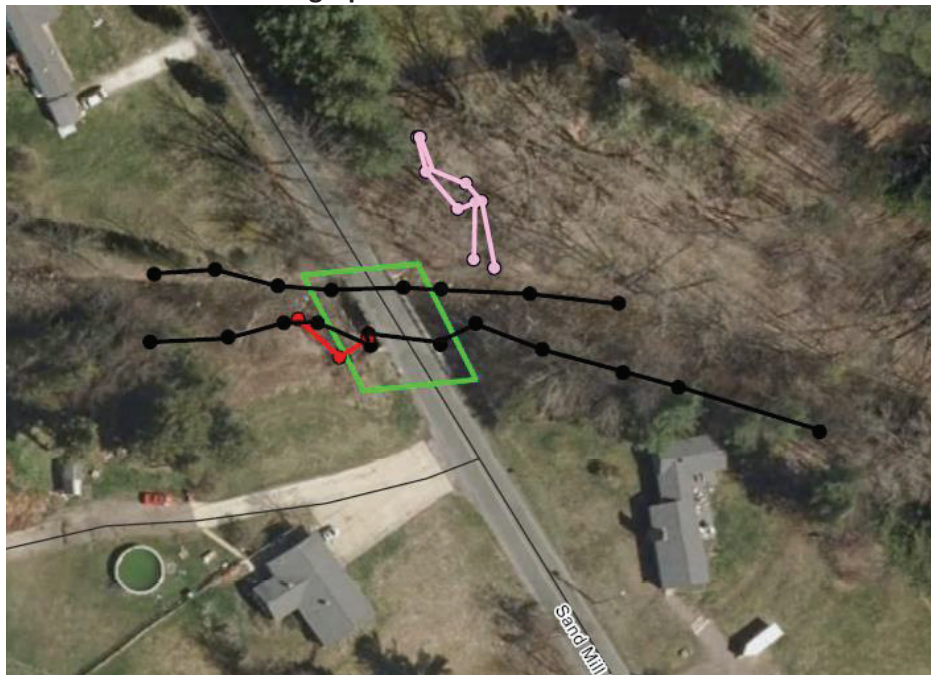
Photograph #3: Sand Mill Road facing northeast



Photograph 4: Abutment deterioration



Photograph 5: Abutment Deterioration



- resource
- BVW
 - Intermittent Stream Bank
 - Perennial Stream Bank
 - Work Area

Photograph 5: Wetland Resources on Site



Photograph 6: Low Flow Conditions (Sand Mill Road bridge from southeast)

APPENDIX C
FIGURES



Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

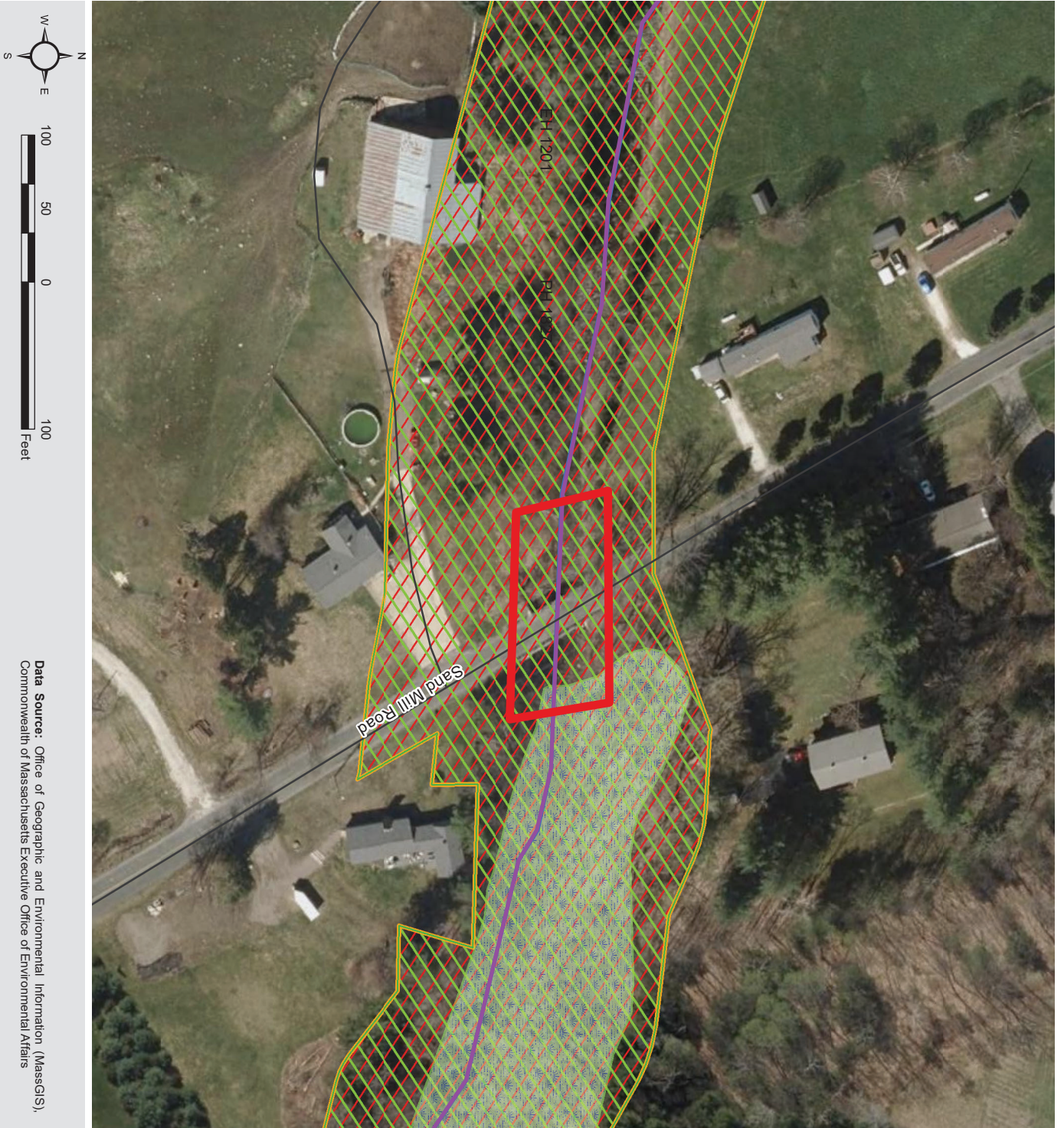
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Legend
 Work Area

FIGURE 1

MassDOT
 Sandmill Road
 Cheshire MA
 Locus Map





Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

- Legend**
- Work Area
 - Cold Water Fisheries
 - Perennial Stream
 - Intermittent Stream
 - Marsh/Bog
 - Wooded marsh
 - Cranberry Bog
 - Salt Marsh
 - Open Water
 - Reservoir (with PWSID)
 - Tidal Flats
 - Beach/Dune
 - ACECs
 - ACECs
 - NHESP Habitats
 - NHESP Estimated Habitats of Rare Wildlife
 - NHESP Priority Habitats of Rare Species
 - NHESP Certified Vernal Pools
 - NHESP Potential Vernal Pools
 - Outstanding Resource Waters
 - Public Water Supply Contributor
 - ORW for ACEC
 - ORW for both Water Supply and Other

FIGURE 2

MassDOT
Sandmill Road
Cheshire MA

Environmental Receptors Map





Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend
 Work Area
Flood Zones (From Paper FIRMS)
ZONE

-  A
-  AE
-  AH
-  ANI
-  AO
-  D
-  UNDES
-  V
-  VE
-  X500

FIGURE 3

MassDOT
 Sandmill Road
 Cheshire MA
 FEMA Flood Map



APPENDIX D
EOEA ADVISORY OPINION LETTER



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Matthew A. Beaton
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
<http://www.mass.gov/eea>

April 15, 2016

Kevin Walsh, Director of Environmental Services
MassDOT, Highway Division
10 Park Plaza, Suite 4160
Boston, MA 02116

Re: Request for Advisory Opinion
Massachusetts Department of Transportation - Statewide

Dear Mr. Walsh:

I am writing in response to your Request for an Advisory Opinion dated December 12, 2015 in which you requested a determination as to whether review under the Massachusetts Environmental Policy Act (MEPA) would be required for certain projects proposed by the Massachusetts Department of Transportation (MassDOT) that are eligible for the Bridge Exemption (Section 22 of Chapter 242 of the Acts of 2012) and include a release of an interest in land that is protected by Article 97 of the of the Amendments to the Massachusetts Constitution (Article 97).

MEPA Review

Projects are subject to MEPA review if they require a State Agency Action and meet or exceed a related review threshold. Agency Action includes public projects proposed or funded by a State Agency and private projects that require a State Agency Permit, include Financial Assistance or involve a Land Transfer from the State. MassDOT is a State Agency and proposed bridge projects include State Funding; therefore, MEPA jurisdiction is established over these projects. State funding confers broad scope jurisdiction and, therefore, any project that exceeds a MEPA review threshold would trigger MEPA review. Land review thresholds include *conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97 (301 CMR 11.03 (1)(b)(3))*.

Article 97

Article 97 confers to citizens of the Commonwealth "the right to clean air and water, freedom from excessive and unnecessary noise, and the natural scenic, historic, and esthetic qualities of their environment." The February 19, 1998 Energy and Environmental Affairs (EAA) Article 97 Land Disposition Policy was introduced to ensure no net loss of Article 97 lands under the ownership and control of the Commonwealth and its political subdivisions and establish exceptional conditions under which EEA Agencies may consider dispositions. The Article 97 Policy defines a land disposition as:

1. any transfer or conveyance of ownership or other interests;
2. any change in physical or legal control; and
3. any change in use, in and to Article 97 land or interests in Article 97 land owned or held by the Commonwealth or its political subdivisions, whether by deed, easement, lease or any other instrument effectuating such transfer, conveyance or change.

The Policy requires that, prior to a Land Transfer, the Proponent must:

- Evaluate all other feasible and substantially equivalent alternatives;
- Coordinate with the subject EEA agency (including acquiring any access permits or lease agreements);
- File special legislation; and
- Acquire land by purchase or otherwise of equal interests to the land disposed

Overview of Bridge Exemption and Its Limitations

The Bridge Exemption legislation exempts MassDOT projects from the following Massachusetts General Laws relating to the repair, reconstruction, replacement or demolition of existing state highway and municipally-owned bridges and their immediate approaches necessary to connect to adjacent roadway and rail systems, provided the proposed design is substantially the functional equivalent of, and in similar alignment to, the existing structure:

- Chapter 30 - MEPA (301 CMR 11.00);
- Section 40 of Chapter 131- Massachusetts Wetlands Protection Act (WPA) (310 CMR 10.00); and
- Chapter 91 (c.91) - Massachusetts Public Waterfront Act (310 CMR 9.00).

Notably, Section 22 of Chapter 242 indicates that projects requiring a mandatory Environmental Impact Report (EIR) in accordance with the MEPA regulations are **not** exempt from MEPA review. In addition, it indicates that any projects (including bridge and roadway approach work) crossing the Charles River for the Central Artery/Tunnel (CA/T) Project are **not** exempt from MEPA, WPA or c. 91.

Your letter addresses the applicability of the Article 97 review threshold to Bridge Exemption projects. To support this request, your letter provides information on how and to what extent MassDOT applies the Bridge Exemption, including the types of bridge projects, definitions and descriptions of the terms of the legislation (i.e. bridge, bridge approach, and

functional equivalence). It also identifies projects that have required dispositions of Article 97 Land and the conditions by which the land was disposed.

The MassDOT Bridge Exemption applies to any structure spanning and providing passage over water, railroad right-of-way, public or private way, other vehicular facility, or other area, including the bridge approach. The applicability of the Exemption is not contingent upon the dimensions of the structure, but the function it provides. Your letter indicates that when the opportunity arises to repair, reconstruct, or replace a structurally deficient and/or functionally obsolete bridge, MassDOT considers a context-sensitive design that enhances the overall function and capacity of the bridge. These factors dictate the level of restoration/enhancements possible.

Impacts associated with such projects include, but are not limited to wetland impacts, cultural/historical impacts, temporary traffic controls, and/or right-of-way (ROW) requirements. In accordance with the Bridge Exemption, neither WPA nor Chapter 91 apply to wetland impacts, temporary traffic controls, or ROW requirements, when these impacts are incidental to the bridge work.

Dispositions associated with Bridge Exemption projects have included ROW necessary to construct bridge abutments, connection of pedestrian and bicycle access to adjacent parkland, and areas needed for stormwater management. Your letter indicates that MassDOT complies with its obligations under Article 97 of the Amendments to the Massachusetts Constitution and with the EEA Article 97 Policy, including analysis of alternatives to avoid a disposition and alternatives to minimize the size of the disposition. If adequate alternatives are not available, mitigation is identified in consultation with the jurisdictional agency or municipality. MassDOT (or the municipality) identifies replacement land to mitigate the loss of protected property. Your letter indicates that, in all cases, the amount swapped in compensation has been larger than the area of land required for the bridge replacements. For instance, for a project in Brookfield MassDOT swapped approximately $\frac{1}{2}$ acre of land for approximately $\frac{1}{4}$ acre of land required for the bridge replacement (TR-1 documentation for the Brookfield). In addition to providing replacement land, that project included the construction of a scenic overlook and a boat access ramp for increased recreational use on a Department of Fish and Game property.

Conclusion

Your letter requests my concurrence that a project that otherwise meets the criteria for the Bridge Exemption pursuant to Section 22 of Chapter 242 would not be subject to MEPA review, notwithstanding exceedance of the Land threshold at 301 CMR 11.03 (3)(b)(3). A bridge project that requires a disposition of Article 97 land from a State Agency could, on its own, trigger individual MEPA review but for applicability of the Bridge Exemption. Based on the information you presented, I agree that the intent and effect of the Bridge Exemption legislation is to exempt bridge projects that meet the legislative criteria from MEPA review, including those that include a disposition of land protected by Article 97, provided that MassDOT complies with the requirement to obtain a 2/3 vote of the legislature to release the land and complies with the EEA Article 97 Land Disposition Policy.

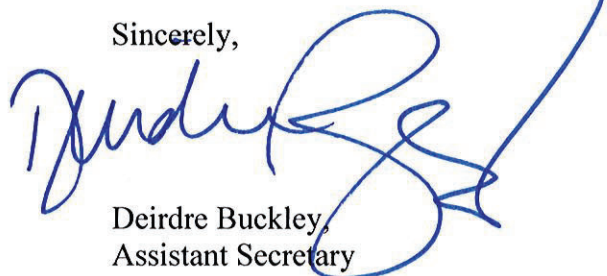
EEA takes very seriously its obligation to avoid loss of Article 97 land. The Bridge Exemption does not exempt MassDOT or a municipality from the requirement to obtain a 2/3

vote of the legislature to release an interest in Article 97 Land nor does it provide an exemption from the EEA Article 97 Land Disposition Policy, including analysis of alternatives to a disposition and provision of mitigation, which may be satisfied with compensatory land.

As both the constitutional provision and the EEA Policy continue to apply notwithstanding the exemption from MEPA review, MassDOT shall, at a minimum, immediately notify the Secretary and/or his designee and the landholding Agency when MassDOT identifies potential Article 97 dispositions associated with a project that will be proposed pursuant to the Bridge Exemption. This notification will facilitate management of dispositions for MassDOT and EEA and ensure conformance with obligations pursuant to Article 97 of the Amendments to the Massachusetts Constitution and the EEA Policy. In addition, to the extent that MassDOT can present dispositions comprehensively rather than on a project by project basis, staff time can be used more effectively to identify and evaluate mitigation.

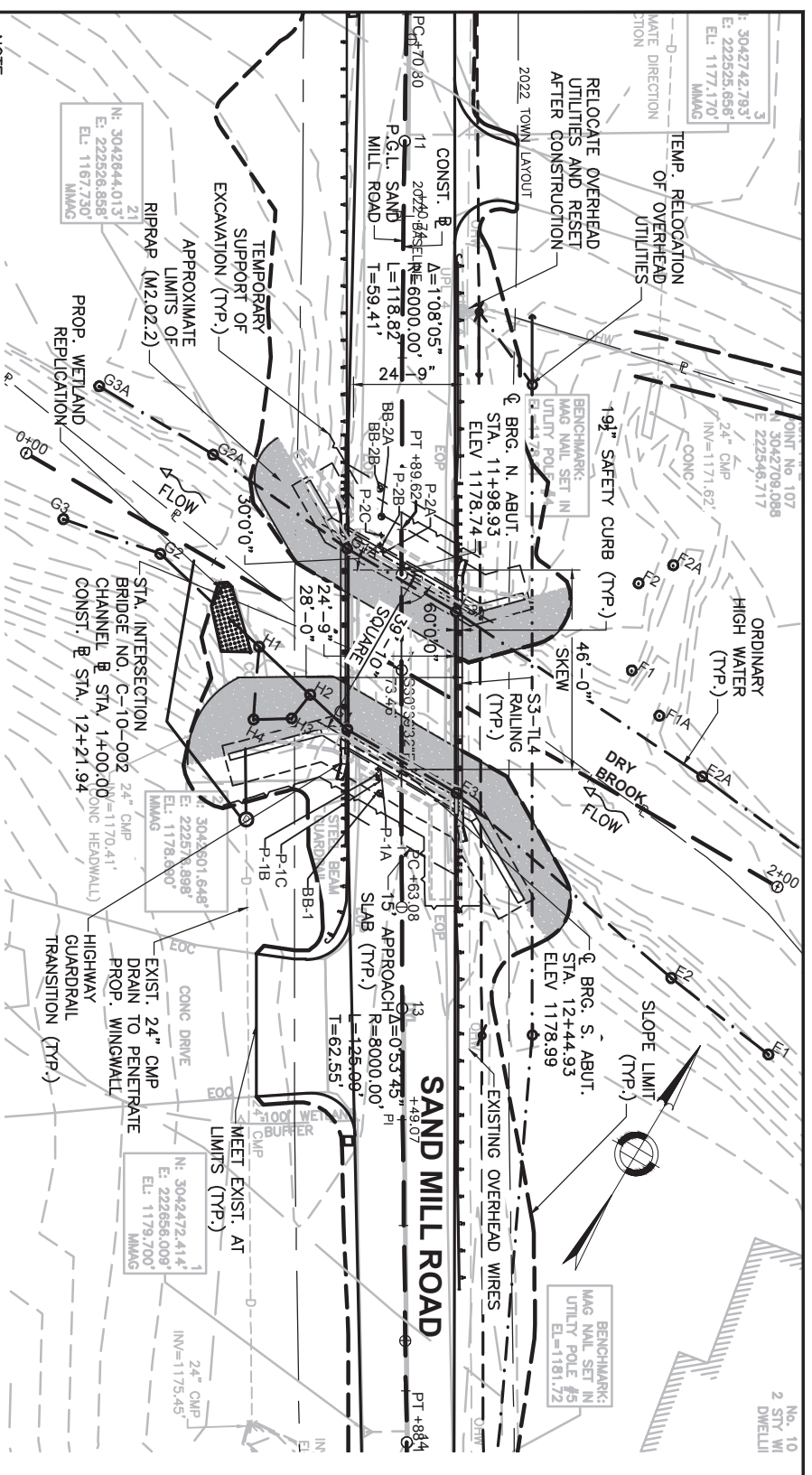
I appreciate your interest in ensuring an open and transparent process for application of the Bridge Exemption to MassDOT projects. If you have any questions regarding this Advisory Opinion or the applicability of MEPA review to specific bridge projects, please contact me at (617) 626-1044 or deirdre.buckley@state.ma.us.

Sincerely,

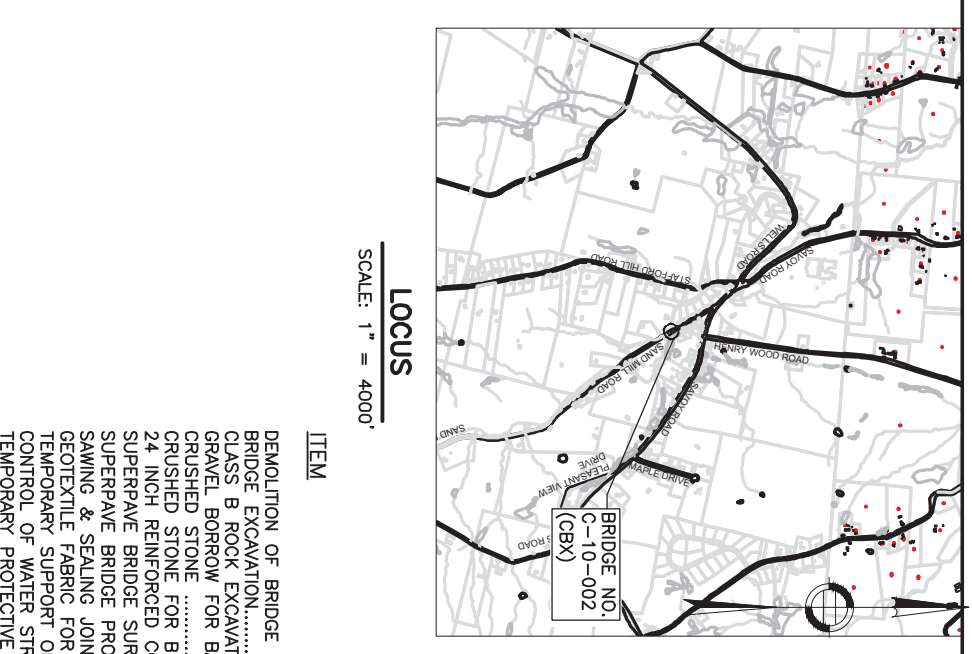


Deirdre Buckley,
Assistant Secretary

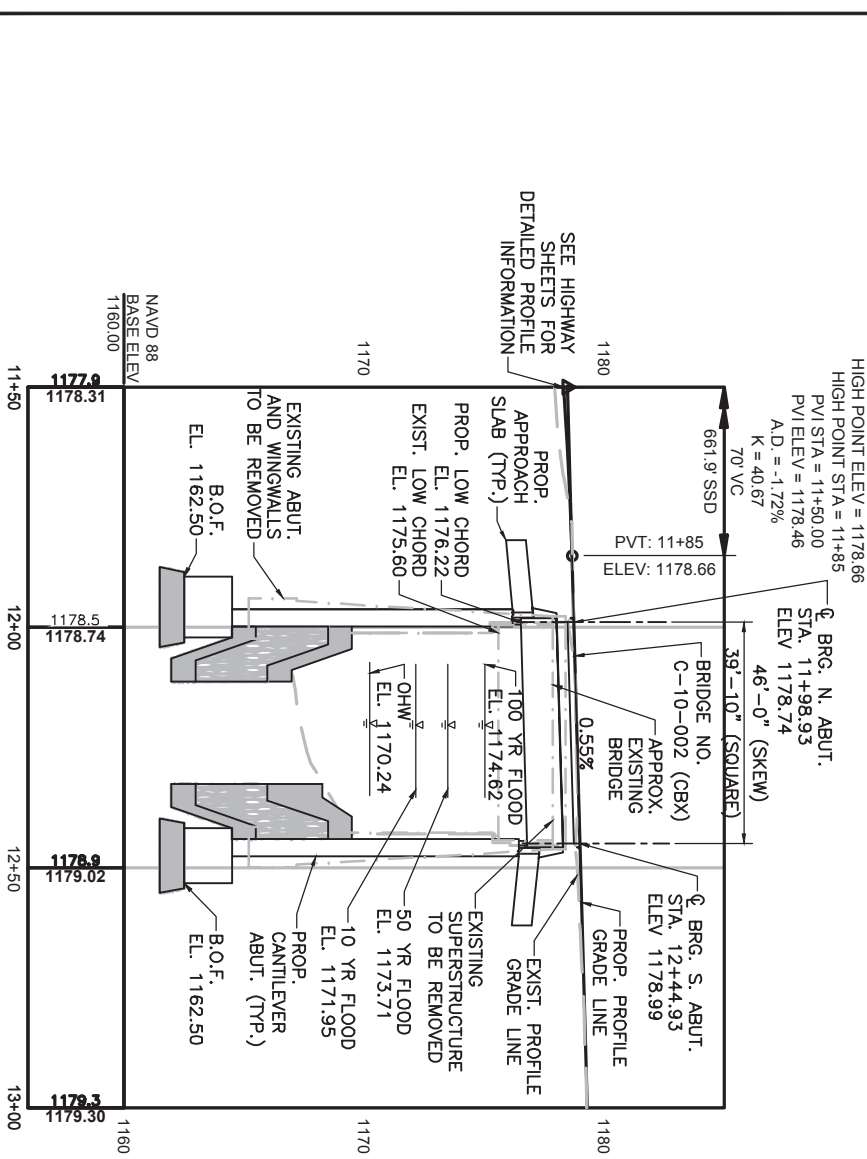
APPENDIX E
PROJECT PLANS



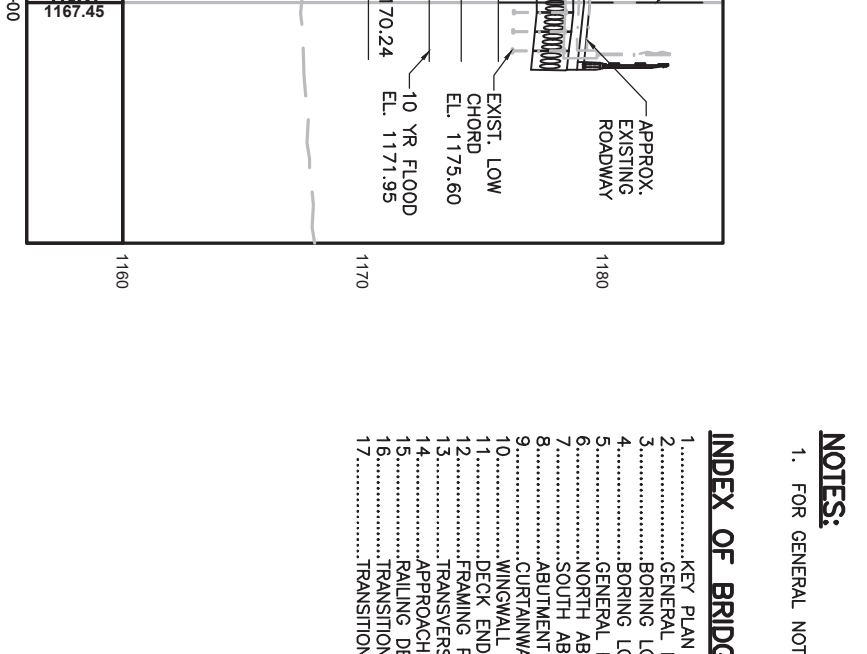
KEY PLAN
 SCALE: 1" = 40'



LOCUS
 SCALE: 1" = 4000'



PROFILE - SAND MILL ROAD
 HORIZONTAL SCALE: 1" = 8'
 VERTICAL SCALE: 1" = 8'



PROFILE - DRY BROOK
 HORIZONTAL SCALE: 1" = 8'
 VERTICAL SCALE: 1" = 8'

NOTE:
 FEMA ZONE A FLOOD HAZARD AREA NOT SHOWN ON THE PLANS DUE TO LACK OF AVAILABLE GIS DATA.

INDEX OF BRIDGE SHEETS:

1.....	KEY PLAN AND PROFILES	1
2.....	GENERAL NOTES	1
3.....	BORING LOGS (SHEET 1 OF 2)	1
4.....	BORING LOGS (SHEET 2 OF 2)	1
5.....	GENERAL PLAN AND ELEVATION	1
6.....	NORTH ABUTMENT PLAN AND ELEVATION	1
7.....	SOUTH ABUTMENT PLAN AND ELEVATION	1
8.....	ABUTMENT DETAILS	1
9.....	CURTAINWALL DETAILS	1
10.....	WINGWALL DETAILS	1
11.....	DECK END DETAILS	1
12.....	FRAMING PLAN AND BEAM DETAILS	1
13.....	TRANSVERSE SECTION AND DECK DETAILS	1
14.....	APPROACH SLAB DETAILS	1
15.....	RAILING DETAILS	1
16.....	TRANSITION BASE DETAILS	1
17.....	TRANSITION DETAILS	1

NOTES:

- FOR GENERAL NOTES SEE SHEET 2.

ESTIMATED QUANTITIES (NOT GUARANTEED)

ITEM	QUANTITY
DEMOLITION OF BRIDGE NO. C-10-002.....	1 LS
BRIDGE EXCAVATION.....	1393 CY
CLASS B ROCK EXCAVATION.....	70 CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.....	720 CY
CRUSHED STONE.....	325 TON
CRUSHED STONE FOR BRIDGE FOUNDATIONS.....	77 TON
24 INCH REINFORCED CONCRETE PIPE.....	15 FT
SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B-9.5).....	98 TON
SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B-9.5).....	12 TON
SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES.....	60 FT
GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL.....	700 SY
TEMPORARY SUPPORT OF EXCAVATION.....	190 SY
CONTROL OF WATER STRUCTURE C-10-002.....	1 LS
TEMPORARY PROTECTIVE SHIELDING.....	960 SF
BRIDGE STRUCTURE, BRIDGE NO. C-10-002.....	1 LS

FOR PERMIT REVIEW ONLY
 09/11/2023

CHESHIRE SAND MILL ROAD OVER DRY BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	4

ENVIRONMENTAL IMPACT PLAN
 SHEET 1 OF 4
 SEPTEMBER 11, 2023

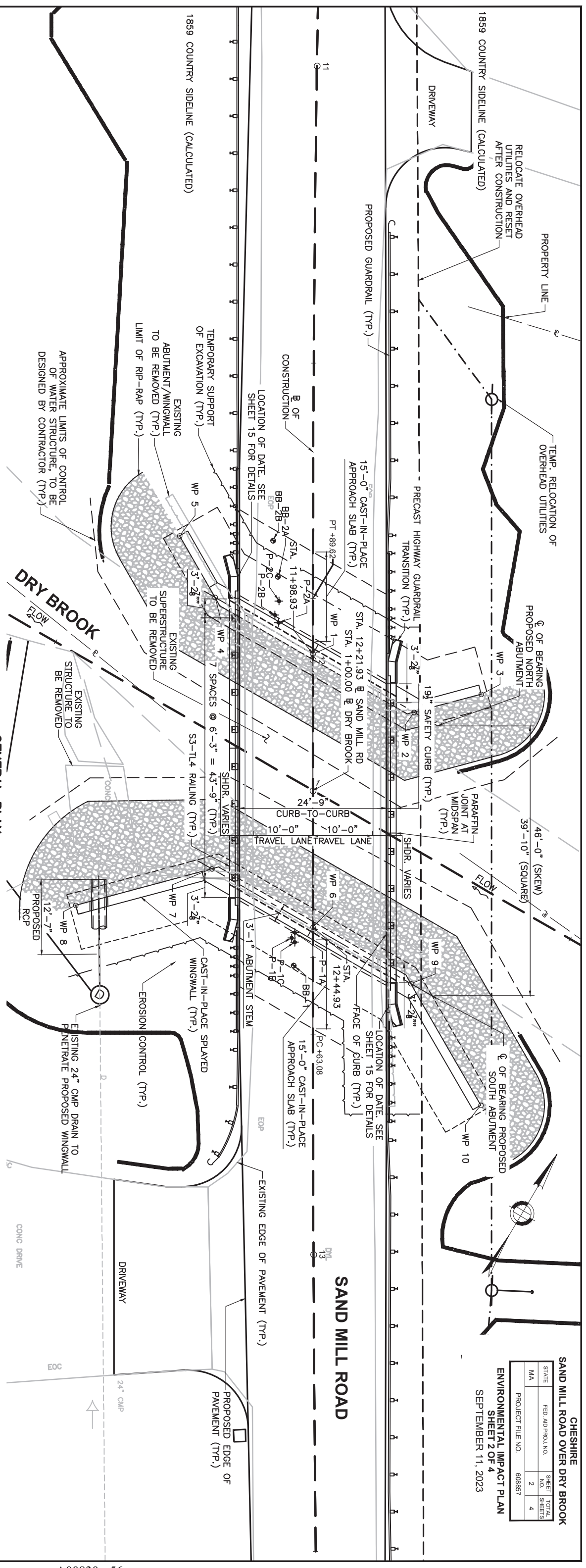
PROJECT FILE NO.	608857
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CHESHIRE
SAND MILL ROAD OVER DRY BROOK

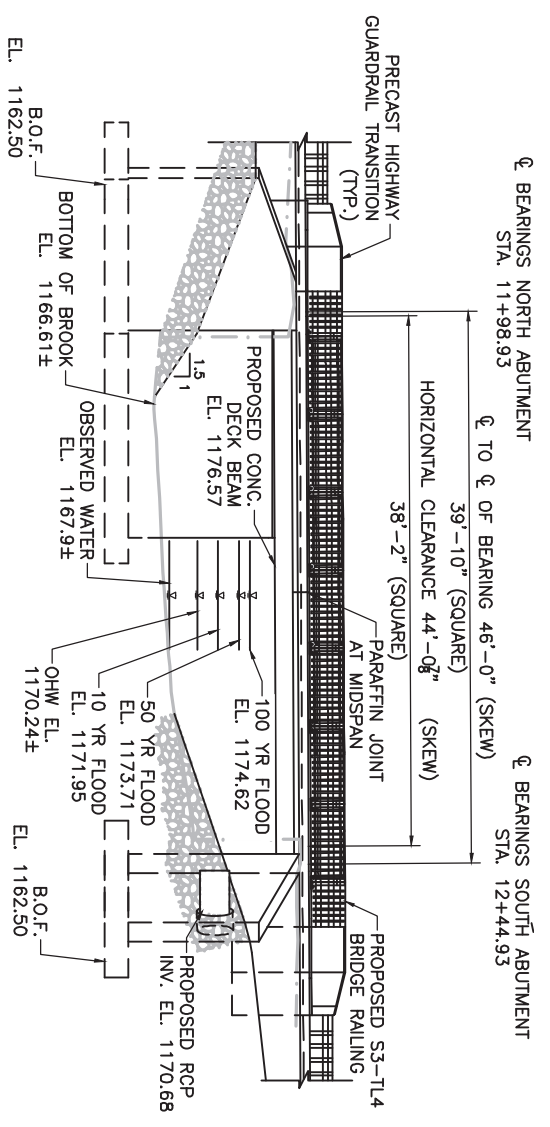
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		2	4

PROJECT FILE NO. 608857

ENVIRONMENTAL IMPACT PLAN
 SHEET 2 OF 4
 SEPTEMBER 11, 2023

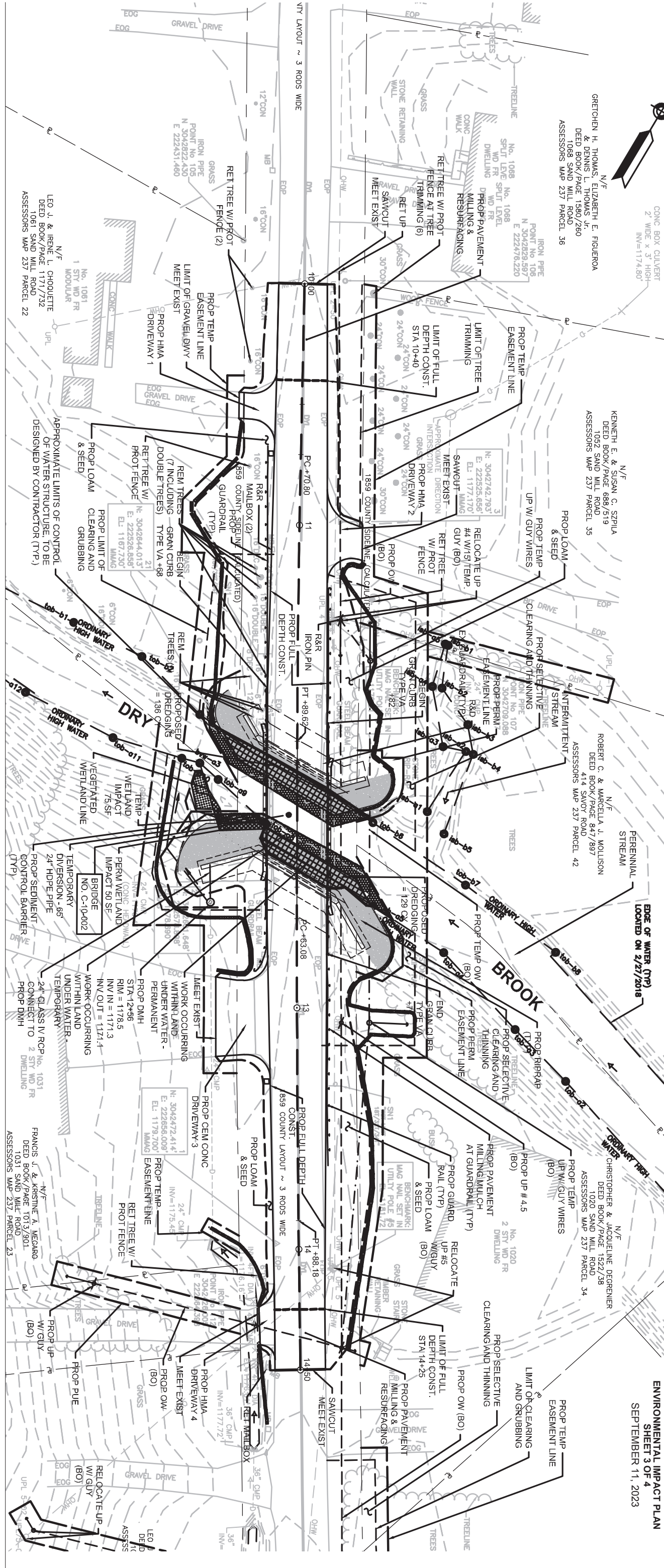


GENERAL PLAN
 SCALE: 1/8" = 1'-0"



GENERAL ELEVATION
 SCALE: 1/8" = 1'-0"

FOR PERMIT REVIEW ONLY
 09/11/2023



ENVIRONMENTAL IMPACTS

- TOTAL STREAM IMPACT AREA (TEMPORARY AND PERMANENT) _____ 1,428 SF
- WORK OCCURRING IN LAND UNDER WATERS OF U.S. - PERMANENT _____ 821 SF
- WORK OCCURRING IN LAND UNDER WATERS OF U.S. - TEMPORARY _____ 607 SF
- BORDERING VEGETATED WETLAND IMPACT - PERMANENT _____ 80 SF
- BORDERING VEGETATED WETLAND IMPACT - TEMPORARY _____ 75 SF
- WORK OCCURRING ALONG BANK _____ 156 FT
- WORK OCCURRING ALONG BANK - TEMPORARY _____ 29 FT
- WORK OCCURRING ALONG BANK - PERMANENT _____ 127 FT
- VOLUME OF DREDGING _____ 266 CY

LEGEND:

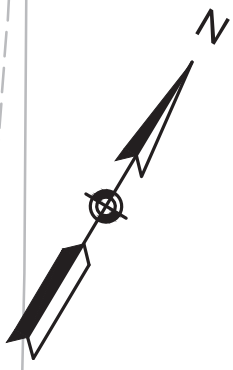
- BORDERING VEGETATED WETLAND IMPACT - PERMANENT
- BORDERING VEGETATED WETLAND IMPACT - TEMPORARY
- PERMANENT WORK OCCURRING IN LAND UNDER WATERS OF U.S.
- TEMPORARY WORK OCCURRING IN LAND UNDER WATERS OF U.S.
- WORK OCCURRING ALONG BANK



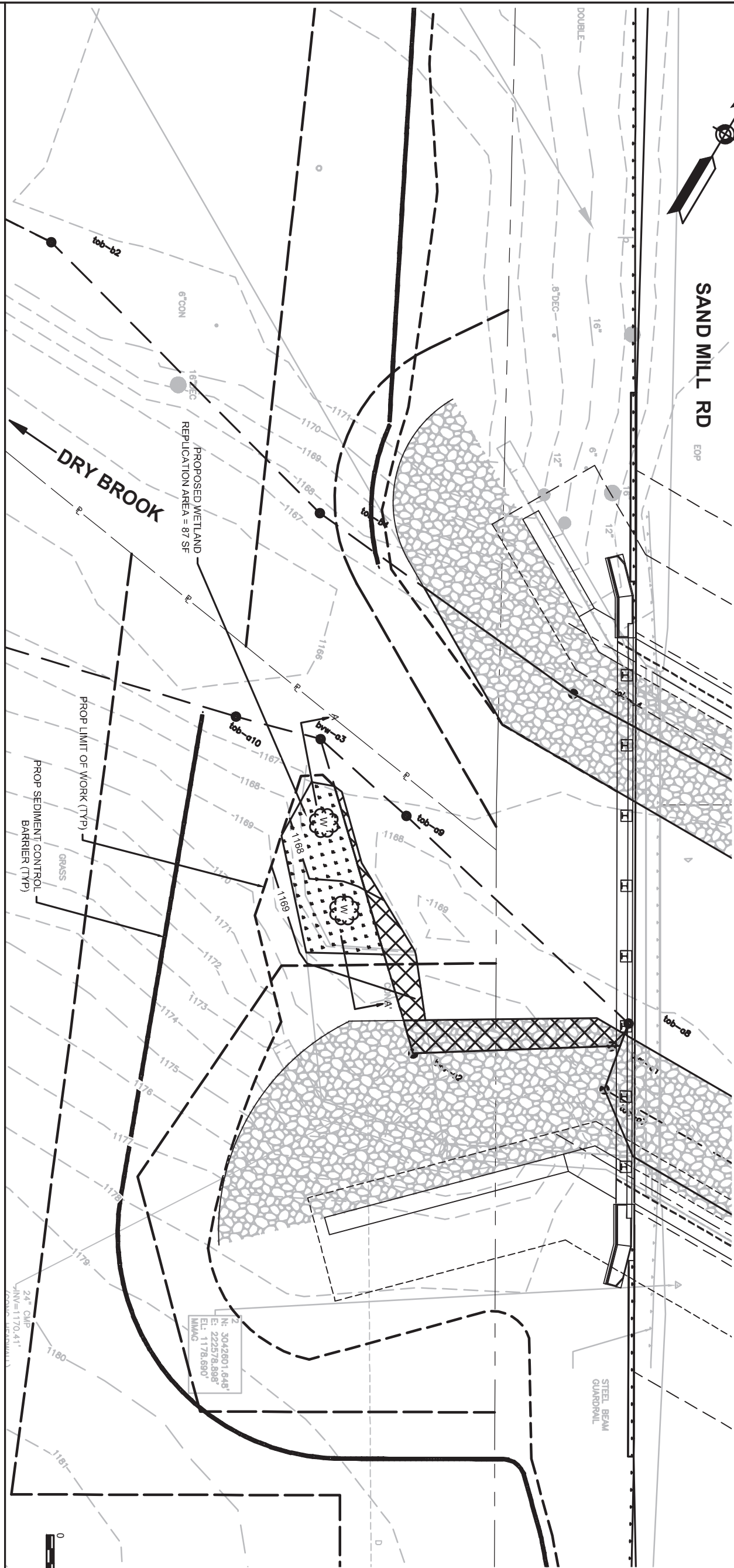
FOR PERMIT REVIEW ONLY
09/11/2023

CHESHIRE SAND MILL ROAD OVER DRY BROOK			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		3	4
PROJECT FILE NO.		608857	

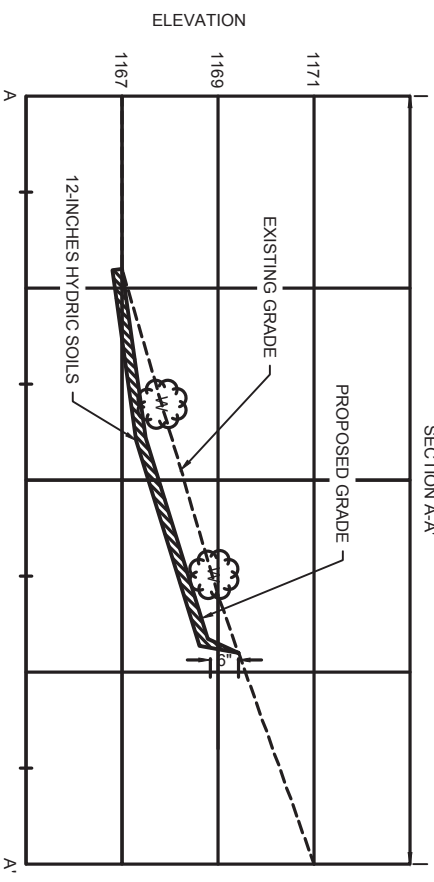
ENVIRONMENTAL IMPACT PLAN
SHEET 3 OF 4
SEPTEMBER 11, 2023



SAND MILL RD
EOP



- LEGEND:**
- WETLAND SEED MIX
 - WILLOW PLANTINGS - 2 EA AT APPROX. 8' SPACING
 - BORDERING VEGETATED WETLAND IMPACT - PERMANENT = 80 SF



WETLAND REPLICATION PROFILE
NOT TO SCALE



FOR PERMIT REVIEW ONLY
09/11/2023

CHESHIRE
SAND MILL ROAD OVER DRY BROOK

STATE	FED. AID PROJ. NO.	SHEET TOTAL
MA		NO. SHEETS
		4 4

PROJECT FILE NO. 608857

WETLAND REPLICATION PLAN
SHEET 4 OF 4
SEPTEMBER 11, 2023

APPENDIX F
SEDIMENT ANALYSIS PLAN MEMORANDUM

MEMORANDUM

TO: Alexandra Gaspar

FROM: Daron Kurkjian, PE (MA)

DATE: April 10, 2023

SUBJECT: Sediment Analytical Results
Bridge C-10-002 Replacement
Sand Mill Road over Dry Brook
Cheshire, Massachusetts

On behalf the Massachusetts Department of Transportation (MassDOT), Weston & Sampson Engineers, Inc. (Weston & Sampson) prepared this memorandum to summarize sediment sampling for the proposed bridge replacement over Dry Brook at Sand Mill Road in Cheshire, Massachusetts (the “site” or “project”). We understand that the project will include construction of new abutments and channel improvements. The project is anticipated to generate approximately 265 cubic yards (CY) of surplus sediment requiring off-site transport and recycling or disposal. This memo summarizes the sediment sampling required by the Massachusetts Department of Environmental Protection (MassDEP) for 401 Water Quality Certification permitting. Permitting and disposal characterization analytical results and disposal requirements are also presented in this memo.

Sediment Sampling

On January 10, 2023, Weston & Sampson collected sediment samples from Dry Brook. Six discrete grab sediment samples were collected, three north of the bridge and three south of the bridge. These grab samples were combined to create two composite sediment samples, identified as “COMP-SED-N” and “COMP-SED-S”. Please refer to the attached Figure 1 for a graphical depiction of the approximate grab sample locations.

Weston & Sampson advanced the sediment cores and collected samples from areas representative of the future project dredging. The brook water depths at sediment sampling locations were up to two feet. The maximum depth of sediment coring via hand tools was 32-inches below grade. The sediment was generally identified as brown, fine silty sand with occasional gravel and organics. Cobbles were also present in the brook. No visual or olfactory evidence of contamination was observed. PID readings were below instrument detection limits.

The sediment samples were submitted for laboratory analysis for MassDEP 401 Water Quality Certification parameters (as required per 310 CMR 9.00) and COMM-97-001 disposal characterization parameters. Discrete grab samples were collected and submitted for volatile organic compound (VOC) analysis. Analytical results are presented in the following section.

Analytical Results

The composite samples were analyzed at by Pace Analytical Laboratory in East Longmeadow, Massachusetts. Sediment sampling results are summarized in Table 1 – Summary of Sediment Analytical Results. Laboratory analytical reports are included as Attachment 1.

Sediment analytical results were compared to the Massachusetts Contingency Plan (MCP) RCS-1 soil standards or COMM-97-001 in-state disposal limits. While not applicable to sediment, the RCS-1 soil standards are used for comparison purposes by receiving facilities to evaluate surplus sediment. No analyte concentrations were detected above the MassDEP comparison standards and limits.

Low concentrations of polychlorinated biphenyl (PCB) congeners, semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), extractable petroleum hydrocarbons (EPH), and metals were detected. The concentrations of VOCs and PCB Aroclors were below laboratory reporting limits. Based on results, the disposal requirements are as follows.

Disposal Requirements

Representative analytical results of the sediment proposed for removal as part of this project meet COMM-97-001 limits, therefore the surplus sediments may be disposed of at in-state landfills. As analyte concentrations were also below RCS-1 comparison standards, approval for re-use at a MassDEP Administrative Consent Order (ACO) facility could be pursued by MassDOT. Appropriate shipping documentation should be utilized to document the proper handling and recycling/disposal of the material. The analytical data indicate the sediment does not meet the unrestricted re-use criteria and should therefore be properly recycled or disposed of.

Weston & Sampson recommends that the surplus sediment generated during construction be transported off-site to an in-state recycling or disposal facility. As the stream transports sediments over time, additional disposal characterization may be required during future construction, which may change the findings of this memo.



LEGEND:
 ▲ SEDIMENT SAMPLE GRAB LOCATION

NOTES:
 1. BASE PLAN IS REFERENCED FROM "MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PLAN OF TOPOGRAPHIC SURVEY OF SAND MILL ROAD OVER DRY BROOK, C-10, TOWN: CHESHIRE, AS ORDERED BY MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, SCALE: FEET TO THE INCH" CREATED BY GCG ASSOCIATES OF WILMINGTON, MASSACHUSETTS ON APRIL 4, 2018.

FIGURE 1
 SAND MILL ROAD BRIDGE C-10-002 OVER DRY BROOK
 CHESHIRE, MASSACHUSETTS
SITE PLAN
 SCALE: 1"=100'

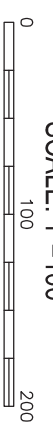


Table 1
Summary of Sediment Analytical Results
Massachusetts Department of Transportation
Cheshire Bridge C-10-002
Cheshire, Massachusetts

Parameter ¹	Reportable Concentrations (RCs)	Reuse & Disposal of Contaminated Soil at Massachusetts Landfills (Policy #COMM-97-001)		Units	Sample ID and Date		
	RCS-1*	Lined Landfill	Unlined Landfill		COMP-SED-S 10-Jan-23	COMP-SED-N 10-Jan-23	
Polychlorinated Biphenyls (PCBs) Congeners							
C12-BZ#9	~	~	~	µg/kg	<0.094	0.16	
C15-BZ#118	~	~	~	µg/kg	0.10	<0.097	
C16-BZ#153	~	~	~	µg/kg	0.15	0.19	
C16-BZ#138	~	~	~	µg/kg	0.13	0.21	
C17-BZ#180	~	~	~	µg/kg	<0.094	0.13	
C17-BZ#193	~	~	~	µg/kg	<0.094	0.11	
C110-BZ#209	~	~	~	µg/kg	0.19	<0.14	
Total PCB Congeners	1000	<2000	<2000	µg/kg	0.57	0.80	
Volatile Organic Compounds (VOCs)							
Total VOCs	~	10	4	mg/Kg	ND	ND	
Semi-volatile Organic Compounds (SVOCs)							
Fluoranthene	1000	~	~	mg/Kg	<0.24	0.40	
Pyrene	1000	~	~	mg/Kg	<0.24	0.30	
Total SVOCs	~	100	100	mg/Kg	ND	0.70	
Organochloride Pesticides							
Total Organochloride Pesticides	~	~	~	mg/Kg	ND	ND	
Chlorinated Herbicides							
Total Chlorinated Herbicides	~	~	~	mg/kg	ND	ND	
PCB Aroclors							
Total PCBs	1	<2	<2	mg/Kg	ND	ND	
Total Petroleum Hydrocarbons (TPH)							
TPH (C9-C36)	1000	5000	2500	mg/Kg	230	50	
Extractable Petroleum Hydrocarbons (EPH)							
C11-C22 Aromatics	1000	~	~	mg/Kg	15	<14	
Benzo(a)anthracene	7	~	~	mg/Kg	<0.14	0.15	
Benzo(a)pyrene	2	~	~	mg/Kg	0.53	0.15	
Benzo(b)fluoranthene	7	~	~	mg/Kg	0.17	0.23	
Benzo(g,h,i)perylene	1000	~	~	mg/Kg	<0.14	0.15	
Chrysene	70	~	~	mg/Kg	<0.14	0.18	
Fluoranthene	1000	~	~	mg/Kg	0.20	0.38	
Phenanthrene	10	~	~	mg/Kg	<0.14	0.16	
Pyrene	1000	~	~	mg/Kg	0.19	0.33	
Metals							
Barium	1000	~	~	mg/Kg	110	47	
Beryllium	90	~	~	mg/Kg	0.59	0.62	
Chromium	100	1000	1000	mg/Kg	8.1	9.4	
Copper	1000	~	~	mg/Kg	12	12	
Lead	200	2000	1000	mg/Kg	10	9.1	
Nickel	600	~	~	mg/Kg	10	12	
Vanadium	400	~	~	mg/Kg	12	14	
Zinc	1000	~	~	mg/Kg	44	45	
General Chemistry Parameters							
% Solids	~	~	~	% Weight	70.7	69	
Specific Conductance	~	8000	4000	µmhos/cm	27	17	
Total Organic Carbon	~	~	~	mg/Kg	46000	28000	

QC by WVS

Notes:

- Parameters with detections are shown in this Table only. For full analytical results, please refer to the laboratory analytical reports.
- Soil Reportable Concentrations (RCs) S-1 (RCS-1) standards are shown for comparison purposes only and do not apply to sediment.

Abbreviations:

µg/kg = micrograms per Kilogram
 µmhos/cm = microohms per centimeter
 mg/Kg = milligrams per Kilogram
 ND = not detected



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

January 23, 2023

Daron Kurkjian
Weston & Sampson
712 Brook Street, Suite 103
Rocky Hill, CT 06067

Project Location: Sandmill Rd, Cheshire, MA
Client Job Number:
Project Number: [none]
Laboratory Work Order Number: 23A0923

Enclosed are results of analyses for samples as received by the laboratory on January 10, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Rebecca Faust". The signature is fluid and cursive.

Rebecca Faust
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

 Weston & Sampson
 712 Brook Street, Suite 103
 Rocky Hill, CT 06067
 ATTN: Daron Kurkjian

REPORT DATE: 1/23/2023

PURCHASE ORDER NUMBER:

PROJECT NUMBER: [none]

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23A0923

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Sandmill Rd, Cheshire, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
COMP-SED-S	23A0923-01	Soil		ASTM D6913	GAI-LAP-20-1996/AASH TO
				MADEP EPH rev 2.1	
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SM21-23 2510B Modified	
				SW 846 9060A	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8081B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8151	MA M-CT007/CT PH-0618/NY 11301
				SW-846 8260D	
				SW-846 8270E	
COMP-SED-N	23A0923-02	Soil		ASTM D6913	GAI-LAP-20-1996/AASH TO
				MADEP EPH rev 2.1	GAI-LAP-20-1996/AASH TO
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SM21-23 2510B Modified	
				SW 846 9060A	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8081B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8151	MA M-CT007/CT PH-0618/NY 11301
				SW-846 8260D	
				SW-846 8270E	
				SW-846-8270M	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332
SW 846 9060A

Qualifications:**L-07**

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:**Total Organic Carbon**

B328559-BS1

MS-11

Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:**Total Organic Carbon**

23A0923-02[COMP-SED-N], B328559-MS1

SW-846 6010D**Qualifications:****L-07**

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:**Arsenic**

B328339-BS1

MS-07

Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:**Antimony**

23A0923-01[COMP-SED-S], B328339-MS1

Selenium

23A0923-01[COMP-SED-S], B328339-MS1

MS-19

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:**Barium**

23A0923-01RE1[COMP-SED-S], B329105-MS1

R-02

Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.

Analyte & Samples(s) Qualified:**Barium**

B329105-DUP1

SW-846 7471B**Qualifications:****L-07**

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:**Mercury**

B328274-BSD1

R-05

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:**Mercury**

B328271-BSD1

SW-846 8081B**Qualifications:**



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DL-03

Elevated reporting limit due to matrix interference.

Analyte & Samples(s) Qualified:

23A0923-01[COMP-SED-S]

R-06

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

Analyte & Samples(s) Qualified:**4,4'-DDD [2C]**

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

4,4'-DDE

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

4,4'-DDE [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

4,4'-DDT

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

4,4'-DDT [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Alachlor

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Alachlor [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Aldrin

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Aldrin [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

alpha-BHC

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

alpha-BHC [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

beta-BHC [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Chlordane

23A0923-02[COMP-SED-N]

Chlordane [2C]

23A0923-02[COMP-SED-N]

delta-BHC

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

delta-BHC [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Dieldrin [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endosulfan I

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endosulfan I [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endosulfan II

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endosulfan II [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endosulfan Sulfate

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endosulfan Sulfate [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endrin Aldehyde

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endrin Aldehyde [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endrin Ketone

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Endrin Ketone [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

gamma-BHC (Lindane)

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

gamma-BHC (Lindane) [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

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R-06

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

Analyte & Samples(s) Qualified:**Heptachlor**

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Heptachlor [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Heptachlor Epoxide [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Hexachlorobenzene [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Methoxychlor

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

Methoxychlor [2C]

23A0923-02[COMP-SED-N], B328265-MS1, B328265-MSD1

SW-846 8082A

Qualifications:**O-32**

A dilution was performed as part of the standard analytical procedure.

Analyte & Samples(s) Qualified:

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N]

SW-846 8100 Modified

Qualifications:**S-26**

Surrogate outside of control limits.

Analyte & Samples(s) Qualified:**2-Fluorobiphenyl**

B328703-BLK1

SW-846 8260D

Qualifications:**V-05**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:**Bromomethane**

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N], B328333-BLK1, B328333-BS1, B328333-BSD1, S081778-CCV1

V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:**1,4-Dioxane**

S081778-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**2-Butanone (MEK)**

B328333-BS1, B328333-BSD1, S081778-CCV1

Carbon Disulfide

B328333-BS1, B328333-BSD1, S081778-CCV1

Chloroethane

B328333-BS1, B328333-BSD1, S081778-CCV1

Dichlorodifluoromethane (Freon 12)

B328333-BS1, B328333-BSD1, S081778-CCV1

SW-846 8270E

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Qualifications:**L-04**

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:**Aniline**

23A0923-02[COMP-SED-N], B328705-BLK1, B328705-BS1, B328705-BSD1

MS-07A

Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:**3,3-Dichlorobenzidine**

B328705-MS1, B328705-MSD1

4-Chloroaniline

B328705-MS1, B328705-MSD1

Pyridine

B328705-MS1, B328705-MSD1

R-05

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:**2,4-Dinitrophenol**

23A0923-01RE1[COMP-SED-S], B329001-BLK1, B329001-BS1, B329001-BSD1

Di-n-octylphthalate

23A0923-01RE1[COMP-SED-S], B329001-BLK1, B329001-BS1, B329001-BSD1

S-07

One associated surrogate standard recovery is outside of control limits but the other(s) is/are within limits. All recoveries are > 10%.

Analyte & Samples(s) Qualified:**p-Terphenyl-d14**

B328705-BLK1

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:**2,4-Dinitrophenol**

23A0923-01RE1[COMP-SED-S], B329001-BLK1, B329001-BS1, B329001-BSD1, S082150-CCV1

Aniline

23A0923-01RE1[COMP-SED-S], 23A0923-02[COMP-SED-N], B328705-BLK1, B328705-BS1, B328705-BSD1, B328705-MS1, B328705-MSD1, B329001-BLK1, B329001-BS1, B329001-BSD1, S082001-CCV1, S082150-CCV1

Pentachlorophenol

23A0923-01RE1[COMP-SED-S], B329001-BLK1, B329001-BS1, B329001-BSD1, S082150-CCV1

V-06

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:**Biphenyl**

B329001-BLK1, B329001-BS1, B329001-BSD1, S082150-CCV1

Bis(2-chloroisopropyl)ether

23A0923-01RE1[COMP-SED-S], B329001-BLK1, B329001-BS1, B329001-BSD1, S082150-CCV1

SW-846-8270M

Qualifications:**V-05**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:**CH10-BZ#209**

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N], S082026-CCV1

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V-06

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:**C11-BZ#1**

S082026-CCV1

C12-BZ#15

S081958-CCV1, S082026-CCV1

C12-BZ#4/#10

S082026-CCV1

C13-BZ#37

S081958-CCV1, S082026-CCV1

C14-BZ#81

S081958-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**C11-BZ#1**

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N]

C12-BZ#15

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N]

C12-BZ#4/#10

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N]

C13-BZ#37

23A0923-01[COMP-SED-S], 23A0923-02[COMP-SED-N]

V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:**C18-BZ#195**

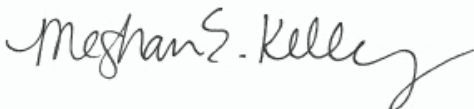
S081958-CCV1

SW-846 8100 Modified

TPH (C9-C36) is quantitated against a calibration made with a diesel standard.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C11-BZ#1	ND	0.047	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C11-BZ#2	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C11-BZ#3	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#4/#10	ND	0.094	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#9	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#7	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#6	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#5	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#8	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#19	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#14	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#30	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#18	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#11	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#17	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#12	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#27	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#13	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#24	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#16	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#32	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C12-BZ#15	ND	0.047	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#34	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#54	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#23	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#29	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#50	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#26	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#25	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#53	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#31	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#28	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#33/#21/#20	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#51	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#45	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#22	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#46	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#73	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#69	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#43	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#36	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#52	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#48	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#49	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C15-BZ#104	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#47/#65/#62	ND	0.28	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#75	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#39	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#38	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#44	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#59	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#42	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#71	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#35	ND	0.047	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#41	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#96	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#72	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#103	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#64	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#40/#68	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C13-BZ#37	ND	0.14	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#100	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#94	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#57	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#67/#58	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#102	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#61	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#98	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#93	ND	0.47	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#76	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#63	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#88/#95	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#121	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#74	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#155	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#70	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#91	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#66	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#80/#55	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#92	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#89/#84	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#56	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#90/#101	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#113	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#60	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#99	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#150	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#152	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C15-BZ#119/#83	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#125/#112/#86	ND	0.28	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#109	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#145	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#97	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#148	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#79	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#116	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#87	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#78	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#154/#136	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#111/#117/#115	ND	0.28	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#85	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#120/#110	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#81	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#151	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#135	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#82	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#144	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#147/#149	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C14-BZ#77	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#143/#139	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#140	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#124	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#108	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#123/#107	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#188	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#134	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#106	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#142	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#133/#131	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#118	0.10	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#184	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#165	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#146	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#122	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#161	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#114	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#168	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#153	0.15	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#132	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#179	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#141	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C17-BZ#176	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#105	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#137	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#186	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#127	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#130/#164	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#178	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#138	0.13	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#160/#129/#163	ND	0.28	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#158	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#182/#175	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#187	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#183	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#166	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#159	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C15-BZ#126	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#185	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#128/#162	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#174	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#202	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#167	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#181	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#177	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#200/#204	ND	0.28	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#171	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#173	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#197	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#172	ND	0.28	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#156	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#192	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#157	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#180	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#193	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#199	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#191	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#198	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#201	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#170	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C17-BZ#190	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#196	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#203	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C16-BZ#169	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C19-BZ#208	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C19-BZ#207	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C17-BZ#189	ND	0.094	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#195	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#194	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C18-BZ#205	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C19-BZ#206	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 11:38	SPF
C110-BZ#209	0.19	0.14	µg/kg dry	1	V-05	SW-846-8270M	1/12/23	1/17/23 11:38	SPF
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Tetrachloro-m-xylene	140		40-140					1/17/23 11:38	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.16	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Benzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Bromobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Bromochloromethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Bromodichloromethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Bromoform	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Bromomethane	ND	0.016	mg/Kg dry	1	V-05	SW-846 8260D	1/11/23	1/11/23 10:24	MFF
2-Butanone (MEK)	ND	0.066	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
n-Butylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
sec-Butylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
tert-Butylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Carbon Disulfide	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Carbon Tetrachloride	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Chlorobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Chlorodibromomethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Chloroethane	ND	0.033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Chloroform	ND	0.0066	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Chloromethane	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
2-Chlorotoluene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
4-Chlorotoluene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2-Dibromoethane (EDB)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Dibromomethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2-Dichlorobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,3-Dichlorobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,4-Dichlorobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1-Dichloroethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2-Dichloroethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1-Dichloroethylene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
cis-1,2-Dichloroethylene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
trans-1,2-Dichloroethylene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2-Dichloropropane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,3-Dichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
2,2-Dichloropropane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1-Dichloropropene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
cis-1,3-Dichloropropene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
trans-1,3-Dichloropropene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Diethyl Ether	ND	0.033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Diisopropyl Ether (DIPE)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,4-Dioxane	ND	0.16	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Ethylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
2-Hexanone (MBK)	ND	0.033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Isopropylbenzene (Cumene)	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0066	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Methylene Chloride	ND	0.033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Naphthalene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
n-Propylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Styrene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1,1,2-Tetrachloroethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1,1,2,2-Tetrachloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Tetrachloroethylene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Tetrahydrofuran	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Toluene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2,3-Trichlorobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2,4-Trichlorobenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1,1-Trichloroethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,1,2-Trichloroethane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Trichloroethylene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Trichlorofluoromethane (Freon 11)	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2,3-Trichloropropane	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,2,4-Trimethylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
1,3,5-Trimethylbenzene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
Vinyl Chloride	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
m+p Xylene	ND	0.0066	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF
o-Xylene	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:24	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	107	70-130	1/11/23 10:24
Toluene-d8	100	70-130	1/11/23 10:24
4-Bromofluorobenzene	98.5	70-130	1/11/23 10:24

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.095	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Acenaphthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Acenaphthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Acenaphthylene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Acenaphthylene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Acetophenone	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Aniline	ND	0.48	mg/Kg dry	1	V-05	SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(a)anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(a)anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(a)pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(a)pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(b)fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(b)fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(g,h,i)perylene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(g,h,i)perylene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(k)fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Benzo(k)fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Bis(2-chloroethoxy)methane	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Bis(2-chloroethyl)ether	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Bis(2-chloroisopropyl)ether	ND	0.48	mg/Kg dry	1	V-06	SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Bis(2-Ethylhexyl)phthalate	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
4-Bromophenylphenylether	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Butylbenzylphthalate	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
4-Chloroaniline	ND	0.93	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2-Chloronaphthalene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2-Chlorophenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Chrysene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Chrysene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Dibenz(a,h)anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Dibenz(a,h)anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Dibenzofuran	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Di-n-butylphthalate	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
1,2-Dichlorobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
1,3-Dichlorobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
1,4-Dichlorobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
3,3-Dichlorobenzidine	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2,4-Dichlorophenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Diethylphthalate	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2,4-Dimethylphenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Dimethylphthalate	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2,4-Dinitrophenol	ND	0.93	mg/Kg dry	1	R-05, V-05	SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2,4-Dinitrotoluene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2



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Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2,6-Dinitrotoluene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Di-n-octylphthalate	ND	0.48	mg/Kg dry	1	R-05	SW-846 8270E	1/18/23	1/19/23 17:20	AR2
1,2-Diphenylhydrazine/Azobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Fluorene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Fluorene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Hexachlorobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Hexachlorobutadiene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Hexachloroethane	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Indeno(1,2,3-cd)pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Indeno(1,2,3-cd)pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Isophorone	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2-Methylnaphthalene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2-Methylnaphthalene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2-Methylphenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
3/4-Methylphenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Naphthalene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Naphthalene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Nitrobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2-Nitrophenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
4-Nitrophenol	ND	0.93	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Pentachlorophenol	ND	0.48	mg/Kg dry	1	V-05	SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Phenanthrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Phenanthrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Phenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
Pyridine	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
1,2,4-Trichlorobenzene	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2,4,5-Trichlorophenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2
2,4,6-Trichlorophenol	ND	0.48	mg/Kg dry	1		SW-846 8270E	1/18/23	1/19/23 17:20	AR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual
2-Fluorophenol	72.2	30-130	1/19/23 17:20
Phenol-d6	80.2	30-130	1/19/23 17:20
Nitrobenzene-d5	72.4	30-130	1/19/23 17:20
Nitrobenzene-d5	72.4	30-130	1/19/23 17:20
2-Fluorobiphenyl	81.0	30-130	1/19/23 17:20
2-Fluorobiphenyl	81.0	30-130	1/19/23 17:20
2,4,6-Tribromophenol	79.3	30-130	1/19/23 17:20
p-Terphenyl-d14	77.2	30-130	1/19/23 17:20
p-Terphenyl-d14	77.2	30-130	1/19/23 17:20



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Sample Flags: DL-03

Organochloride Pesticides by GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Alachlor [1]	ND	0.14	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Aldrin [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
alpha-BHC [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
beta-BHC [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
delta-BHC [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
gamma-BHC (Lindane) [1]	ND	0.014	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Chlordane [1]	ND	0.14	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
4,4'-DDD [1]	ND	0.028	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
4,4'-DDE [1]	ND	0.028	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
4,4'-DDT [1]	ND	0.028	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Dieldrin [1]	ND	0.028	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Endosulfan I [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Endosulfan II [1]	ND	0.057	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Endosulfan sulfate [1]	ND	0.057	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Endrin [1]	ND	0.057	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Endrin aldehyde [1]	ND	0.057	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 21:41	TG
Endrin ketone [1]	ND	0.057	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Heptachlor [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Heptachlor epoxide [1]	ND	0.035	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Hexachlorobenzene [1]	ND	0.042	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Methoxychlor [1]	ND	0.35	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Toxaphene [1]	ND	0.71	mg/Kg dry	5		SW-846 8081B	1/11/23	1/16/23 13:27	TG
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		77.1	30-150					1/16/23 13:27	
Decachlorobiphenyl [2]		84.4	30-150					1/16/23 13:27	
Tetrachloro-m-xylene [1]		100	30-150					1/16/23 13:27	
Tetrachloro-m-xylene [2]		74.9	30-150					1/16/23 13:27	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 20:47	FAT
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		77.8	30-150					1/14/23 20:47	
Decachlorobiphenyl [2]		75.7	30-150					1/14/23 20:47	
Tetrachloro-m-xylene [1]		82.9	30-150					1/14/23 20:47	
Tetrachloro-m-xylene [2]		86.1	30-150					1/14/23 20:47	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	230	59	mg/Kg dry	5		SW-846 8100 Modified	1/14/23	1/17/23 11:56	SFM
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2-Fluorobiphenyl	127	40-140			1/17/23 11:56				

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
C19-C36 Aliphatics	ND	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Unadjusted C11-C22 Aromatics	16	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
C11-C22 Aromatics	15	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Acenaphthene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Acenaphthylene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Anthracene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Benzo(a)anthracene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Benzo(a)pyrene	0.53	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Benzo(b)fluoranthene	0.17	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Benzo(g,h,i)perylene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Benzo(k)fluoranthene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Chrysene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Dibenz(a,h)anthracene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Fluoranthene	0.20	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Fluorene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Indeno(1,2,3-cd)pyrene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
2-Methylnaphthalene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Naphthalene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Phenanthrene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB
Pyrene	0.19	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:57	GJB

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Chlorooctadecane (COD)	81.6	40-140	
o-Terphenyl (OTP)	83.5	40-140	
2-Bromonaphthalene	91.1	40-140	
2-Fluorobiphenyl	90.9	40-140	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.3	mg/Kg dry	1	MS-07	SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Arsenic	ND	4.6	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Barium	110	2.3	mg/Kg dry	1	MS-19	SW-846 6010D	1/18/23	1/19/23 19:33	ATP
Beryllium	0.59	0.23	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Cadmium	ND	0.46	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Chromium	8.1	0.92	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Copper	12	0.92	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Lead	10	0.69	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Mercury	ND	0.035	mg/Kg dry	1		SW-846 7471B	1/11/23	1/13/23 10:31	AAJ
Nickel	10	0.92	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Selenium	ND	4.6	mg/Kg dry	1	MS-07	SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Silver	ND	0.46	mg/Kg dry	1		SW-846 6010D	1/11/23	1/18/23 16:10	ATP
Thallium	ND	2.3	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Vanadium	12	0.92	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP
Zinc	44	0.92	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:04	ATP



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	70.7		% Wt	1		SM 2540G	1/11/23	1/11/23 12:55	AMZ
Specific conductance @21.6°C	27	2.0	µmhos/cm	1		SM21-23 2510B Modified	1/17/23	1/17/23 10:00	DRA
Total Organic Carbon	46000	140	mg/Kg dry	1		SW 846 9060A	1/13/23	1/13/23 10:36	IS



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2,4-D	ND	0.077	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
2,4-DB	ND	0.039	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
2,4,5-TP (Silvex)	ND	0.039	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
2,4,5-T	ND	0.039	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dalapon	ND	0.039	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dicamba	ND	0.039	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dichloroprop	ND	0.058	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dinoseb	ND	0.039	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
MCPA	ND	3.1	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
MCPP	ND	3.1	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-S

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	-		%	1		ASTM D6913		1/20/23 0:00	GTE

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C11-BZ#1	ND	0.048	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C11-BZ#2	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C11-BZ#3	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#4/#10	ND	0.097	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#9	0.16	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#7	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#6	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#5	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#8	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#19	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#14	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#30	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#18	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#11	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#17	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#12	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#27	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#13	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#24	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#16	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#32	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C12-BZ#15	ND	0.048	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#34	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#54	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#23	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#29	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#50	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#26	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#25	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#53	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#31	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#28	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#33/#21/#20	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#51	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#45	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#22	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#46	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#73	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#69	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#43	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#36	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#52	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#48	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#49	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C15-BZ#104	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#47/#65/#62	ND	0.29	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#75	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#39	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#38	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#44	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#59	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#42	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#71	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#35	ND	0.048	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#41	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#96	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#72	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#103	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#64	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#40/#68	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C13-BZ#37	ND	0.14	µg/kg dry	1	V-20	SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#100	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#94	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#57	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#67/#58	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#102	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#61	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#98	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#93	ND	0.48	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#76	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#63	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#88/#95	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#121	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#74	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#155	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#70	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#91	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#66	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#80/#55	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#92	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#89/#84	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#56	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#90/#101	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#113	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#60	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#99	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#150	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#152	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C15-BZ#119/#83	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#125/#112/#86	ND	0.29	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#109	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#145	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#97	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#148	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#79	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#116	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#87	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#78	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#154/#136	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#111/#117/#115	ND	0.29	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#85	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#120/#110	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#81	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#151	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#135	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#82	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#144	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#147/#149	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C14-BZ#77	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#143/#139	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#140	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#124	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#108	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#123/#107	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#188	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#134	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#106	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#142	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#133/#131	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#118	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#184	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#165	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#146	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#122	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#161	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#114	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#168	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#153	0.19	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#132	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#179	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#141	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF

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Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C17-BZ#176	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#105	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#137	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#186	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#127	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#130/#164	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#178	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#138	0.21	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#160/#129/#163	ND	0.29	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#158	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#182/#175	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#187	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#183	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#166	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#159	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C15-BZ#126	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#185	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#128/#162	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#174	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#202	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#167	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#181	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#177	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#200/#204	ND	0.29	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#171	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#173	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#197	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#172	ND	0.29	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#156	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#192	ND	0.19	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#157	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#180	0.13	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#193	0.11	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#199	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#191	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#198	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#201	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#170	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C17-BZ#190	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#196	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#203	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C16-BZ#169	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C19-BZ#208	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C19-BZ#207	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF



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Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

PCB Congeners in Soil by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C17-BZ#189	ND	0.097	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#195	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#194	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C18-BZ#205	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C19-BZ#206	ND	0.14	µg/kg dry	1		SW-846-8270M	1/12/23	1/17/23 13:25	SPF
C110-BZ#209	ND	0.14	µg/kg dry	1	V-05	SW-846-8270M	1/12/23	1/17/23 13:25	SPF
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Tetrachloro-m-xylene	132		40-140			1/17/23 13:25			

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Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.12	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Benzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Bromobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Bromochloromethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Bromodichloromethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Bromoform	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Bromomethane	ND	0.012	mg/Kg dry	1	V-05	SW-846 8260D	1/11/23	1/11/23 10:49	MFF
2-Butanone (MEK)	ND	0.049	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
n-Butylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
sec-Butylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
tert-Butylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Carbon Disulfide	ND	0.012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Carbon Tetrachloride	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Chlorobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Chlorodibromomethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Chloroethane	ND	0.024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Chloroform	ND	0.0049	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Chloromethane	ND	0.012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
2-Chlorotoluene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
4-Chlorotoluene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2-Dibromoethane (EDB)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Dibromomethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2-Dichlorobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,3-Dichlorobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,4-Dichlorobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1-Dichloroethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2-Dichloroethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1-Dichloroethylene	ND	0.0049	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
cis-1,2-Dichloroethylene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
trans-1,2-Dichloroethylene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2-Dichloropropane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,3-Dichloropropane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
2,2-Dichloropropane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1-Dichloropropene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
cis-1,3-Dichloropropene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
trans-1,3-Dichloropropene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Diethyl Ether	ND	0.024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Diisopropyl Ether (DIPE)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,4-Dioxane	ND	0.12	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Ethylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
2-Hexanone (MBK)	ND	0.024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Isopropylbenzene (Cumene)	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0049	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Methylene Chloride	ND	0.024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Naphthalene	ND	0.0049	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
n-Propylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Styrene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1,1,2-Tetrachloroethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1,2,2-Tetrachloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Tetrachloroethylene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Tetrahydrofuran	ND	0.012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Toluene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2,3-Trichlorobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2,4-Trichlorobenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1,1-Trichloroethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,1,2-Trichloroethane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Trichloroethylene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Trichlorofluoromethane (Freon 11)	ND	0.012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2,3-Trichloropropane	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,2,4-Trimethylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
1,3,5-Trimethylbenzene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
Vinyl Chloride	ND	0.012	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
m+p Xylene	ND	0.0049	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF
o-Xylene	ND	0.0024	mg/Kg dry	1		SW-846 8260D	1/11/23	1/11/23 10:49	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	106	70-130	1/11/23 10:49
Toluene-d8	99.2	70-130	1/11/23 10:49
4-Bromofluorobenzene	97.2	70-130	1/11/23 10:49

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.097	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Acenaphthene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Acenaphthene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Acenaphthylene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Acenaphthylene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Acetophenone	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Aniline	ND	0.49	mg/Kg dry	1	L-04, V-05	SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Anthracene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Anthracene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(a)anthracene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(a)anthracene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(a)pyrene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(a)pyrene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(b)fluoranthene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(b)fluoranthene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(g,h,i)perylene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(g,h,i)perylene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(k)fluoranthene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Benzo(k)fluoranthene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Bis(2-chloroethoxy)methane	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Bis(2-chloroethyl)ether	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Bis(2-chloroisopropyl)ether	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Bis(2-Ethylhexyl)phthalate	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
4-Bromophenylphenylether	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Butylbenzylphthalate	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
4-Chloroaniline	ND	0.96	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2-Chloronaphthalene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2-Chlorophenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Chrysene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Chrysene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Dibenz(a,h)anthracene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Dibenz(a,h)anthracene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Dibenzofuran	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Di-n-butylphthalate	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
1,2-Dichlorobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
1,3-Dichlorobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
1,4-Dichlorobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
3,3-Dichlorobenzidine	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2,4-Dichlorophenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Diethylphthalate	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2,4-Dimethylphenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Dimethylphthalate	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2,4-Dinitrophenol	ND	0.96	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2,4-Dinitrotoluene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2,6-Dinitrotoluene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Di-n-octylphthalate	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
1,2-Diphenylhydrazine/Azobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Fluoranthene	0.40	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Fluoranthene	0.40	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Fluorene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Fluorene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Hexachlorobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Hexachlorobutadiene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Hexachloroethane	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Indeno(1,2,3-cd)pyrene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Indeno(1,2,3-cd)pyrene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Isophorone	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2-Methylnaphthalene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2-Methylnaphthalene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2-Methylphenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
3/4-Methylphenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Naphthalene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Naphthalene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Nitrobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2-Nitrophenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
4-Nitrophenol	ND	0.96	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Pentachlorophenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Phenanthrene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Phenanthrene	ND	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Phenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Pyrene	0.30	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Pyrene	0.30	0.25	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
Pyridine	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
1,2,4-Trichlorobenzene	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2,4,5-Trichlorophenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2
2,4,6-Trichlorophenol	ND	0.49	mg/Kg dry	1		SW-846 8270E	1/14/23	1/17/23 11:41	AR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual
2-Fluorophenol	83.7	30-130	1/17/23 11:41
Phenol-d6	87.4	30-130	1/17/23 11:41
Nitrobenzene-d5	87.2	30-130	1/17/23 11:41
Nitrobenzene-d5	87.2	30-130	1/17/23 11:41
2-Fluorobiphenyl	92.3	30-130	1/17/23 11:41
2-Fluorobiphenyl	92.3	30-130	1/17/23 11:41
2,4,6-Tribromophenol	97.0	30-130	1/17/23 11:41
p-Terphenyl-d14	99.1	30-130	1/17/23 11:41
p-Terphenyl-d14	99.1	30-130	1/17/23 11:41

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Organochloride Pesticides by GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Alachlor [1]	ND	0.029	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Aldrin [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
alpha-BHC [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
beta-BHC [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
delta-BHC [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
gamma-BHC (Lindane) [1]	ND	0.0029	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Chlordane [1]	ND	0.029	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
4,4'-DDD [1]	ND	0.0058	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
4,4'-DDE [2]	ND	0.0058	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
4,4'-DDT [1]	ND	0.0058	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Dieldrin [2]	ND	0.0058	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Endosulfan I [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Endosulfan II [1]	ND	0.012	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Endosulfan sulfate [1]	ND	0.012	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Endrin [1]	ND	0.012	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Endrin aldehyde [1]	ND	0.012	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 22:08	TG
Endrin ketone [1]	ND	0.012	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Heptachlor [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Heptachlor epoxide [1]	ND	0.0072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Hexachlorobenzene [1]	ND	0.0087	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Methoxychlor [1]	ND	0.072	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Toxaphene [1]	ND	0.14	mg/Kg dry	1	R-06	SW-846 8081B	1/11/23	1/16/23 13:54	TG
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		70.5	30-150					1/16/23 13:54	
Decachlorobiphenyl [2]		70.4	30-150					1/16/23 13:54	
Tetrachloro-m-xylene [1]		84.0	30-150					1/16/23 13:54	
Tetrachloro-m-xylene [2]		66.3	30-150					1/16/23 13:54	



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Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1221 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1232 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1242 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1248 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1254 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1260 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1262 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Aroclor-1268 [1]	ND	0.12	mg/Kg dry	4		SW-846 8082A	1/11/23	1/14/23 21:04	FAT
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		73.1	30-150					1/14/23 21:04	
Decachlorobiphenyl [2]		71.0	30-150					1/14/23 21:04	
Tetrachloro-m-xylene [1]		73.2	30-150					1/14/23 21:04	
Tetrachloro-m-xylene [2]		76.1	30-150					1/14/23 21:04	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	50	12	mg/Kg dry	1		SW-846 8100 Modified	1/14/23	1/17/23 10:54	SFM
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
2-Fluorobiphenyl		44.3	40-140					1/17/23 10:54	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
C19-C36 Aliphatics	ND	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Unadjusted C11-C22 Aromatics	15	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
C11-C22 Aromatics	ND	14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Acenaphthene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Acenaphthylene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Anthracene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Benzo(a)anthracene	0.15	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Benzo(a)pyrene	0.15	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Benzo(b)fluoranthene	0.23	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Benzo(g,h,i)perylene	0.15	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Benzo(k)fluoranthene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Chrysene	0.18	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Dibenz(a,h)anthracene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Fluoranthene	0.38	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Fluorene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Indeno(1,2,3-cd)pyrene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
2-Methylnaphthalene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Naphthalene	ND	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Phenanthrene	0.16	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB
Pyrene	0.33	0.14	mg/Kg dry	1		MADEP EPH rev 2.1	1/11/23	1/17/23 11:38	GJB

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Chlorooctadecane (COD)	80.1	40-140	1/17/23 11:38
o-Terphenyl (OTP)	87.9	40-140	1/17/23 11:38
2-Bromonaphthalene	94.5	40-140	1/17/23 11:38
2-Fluorobiphenyl	94.6	40-140	1/17/23 11:38



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.4	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Arsenic	ND	4.8	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Barium	47	2.4	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Beryllium	0.62	0.24	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Cadmium	ND	0.48	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Chromium	9.4	0.96	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Copper	12	0.96	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Lead	9.1	0.72	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Mercury	ND	0.037	mg/Kg dry	1		SW-846 7471B	1/11/23	1/13/23 11:20	AAJ
Nickel	12	0.96	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Selenium	ND	4.8	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Silver	ND	0.48	mg/Kg dry	1		SW-846 6010D	1/11/23	1/17/23 16:17	ATP
Thallium	ND	2.4	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Vanadium	14	0.96	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP
Zinc	45	0.96	mg/Kg dry	1		SW-846 6010D	1/11/23	1/13/23 23:11	ATP



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	69.0		% Wt	1		SM 2540G	1/11/23	1/11/23 12:55	AMZ
Specific conductance @22.3°C	17	2.0	µmhos/cm	1		SM21-23 2510B Modified	1/17/23	1/17/23 10:00	DRA
Total Organic Carbon	28000	140	mg/Kg dry	1	MS-11	SW 846 9060A	1/13/23	1/13/23 11:03	IS



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Semivolatile Organic Compounds by GC

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2,4-D	ND	0.066	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
2,4-DB	ND	0.033	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
2,4,5-TP (Silvex)	ND	0.033	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
2,4,5-T	ND	0.033	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dalapon	ND	0.033	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dicamba	ND	0.033	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dichloroprop	ND	0.049	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
Dinoseb	ND	0.033	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
MCPA	ND	3.3	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL
MCPP	ND	3.3	mg/kg	2		SW-846 8151		1/18/23 0:00	PEL



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Sandmill Rd, Cheshire, MA

Sample Description:

Work Order: 23A0923

Date Received: 1/10/2023

Field Sample #: COMP-SED-N

Sampled: 1/10/2023 00:00

Sample ID: 23A0923-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	-		%	1		ASTM D6913		1/20/23 0:00	GTE

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data
Prep Method: SW-846 3546 Analytical Method: MADEP EPH rev 2.1

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328385	20.0	2.00	01/11/23
23A0923-02 [COMP-SED-N]	B328385	20.0	2.00	01/11/23

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
23A0923-01 [COMP-SED-S]	B328247	01/11/23
23A0923-02 [COMP-SED-N]	B328247	01/11/23

SM21-23 2510B Modified

Lab Number [Field ID]	Batch	Initial [g]	Date
23A0923-01 [COMP-SED-S]	B328841	1.00	01/17/23
23A0923-02 [COMP-SED-N]	B328841	1.00	01/17/23

SW 846 9060A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328559	1.00	1.00	01/13/23
23A0923-02 [COMP-SED-N]	B328559	1.00	1.00	01/13/23

Prep Method: SW-846 3050B Analytical Method: SW-846 6010D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328339	1.53	50.0	01/11/23
23A0923-02 [COMP-SED-N]	B328339	1.52	50.0	01/11/23

Prep Method: SW-846 3050B Analytical Method: SW-846 6010D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01RE1 [COMP-SED-S]	B329105	1.53	50.0	01/18/23

Prep Method: SW-846 7470A/7471A Analytical Method: SW-846 7471B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-02 [COMP-SED-N]	B328271	0.595	50.0	01/11/23

Prep Method: SW-846 7470A/7471A Analytical Method: SW-846 7471B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328274	0.609	50.0	01/11/23

Prep Method: SW-846 3546 Analytical Method: SW-846 8081B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data
Prep Method: SW-846 3546 Analytical Method: SW-846 8081B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328265	10.0	10.0	01/11/23
23A0923-02 [COMP-SED-N]	B328265	10.0	10.0	01/11/23

Prep Method: SW-846 3546 Analytical Method: SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328266	10.0	10.0	01/11/23
23A0923-02 [COMP-SED-N]	B328266	10.0	10.0	01/11/23

Prep Method: SW-846 3546 Analytical Method: SW-846 8100 Modified

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328703	30.0	1.00	01/14/23
23A0923-02 [COMP-SED-N]	B328703	30.0	1.00	01/14/23

Prep Method: SW-846 5035 Analytical Method: SW-846 8260D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328333	4.31	10.0	01/11/23
23A0923-02 [COMP-SED-N]	B328333	5.97	10.0	01/11/23

Prep Method: SW-846 3546 Analytical Method: SW-846 8270E

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-02 [COMP-SED-N]	B328705	30.0	1.00	01/14/23

Prep Method: SW-846 3546 Analytical Method: SW-846 8270E

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01RE1 [COMP-SED-S]	B329001	30.0	1.00	01/18/23

Prep Method: SW-846 3540C Analytical Method: SW-846-8270M

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23A0923-01 [COMP-SED-S]	B328466	30.0	1.00	01/12/23
23A0923-02 [COMP-SED-N]	B328466	30.0	1.00	01/12/23

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
PCB Congeners in Soil by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328466 - SW-846 3540C
Blank (B328466-BLK1)

Prepared: 01/12/23 Analyzed: 01/16/23

C11-BZ#1	ND	0.033	µg/kg wet							
C11-BZ#2	ND	0.033	µg/kg wet							
C11-BZ#3	ND	0.033	µg/kg wet							
C12-BZ#4/#10	ND	0.067	µg/kg wet							
C12-BZ#9	ND	0.067	µg/kg wet							
C12-BZ#7	ND	0.033	µg/kg wet							
C12-BZ#6	ND	0.033	µg/kg wet							
C12-BZ#5	ND	0.033	µg/kg wet							
C12-BZ#8	ND	0.033	µg/kg wet							
C13-BZ#19	ND	0.033	µg/kg wet							
C12-BZ#14	ND	0.033	µg/kg wet							
C13-BZ#30	ND	0.033	µg/kg wet							
C13-BZ#18	ND	0.033	µg/kg wet							
C12-BZ#11	ND	0.067	µg/kg wet							
C13-BZ#17	ND	0.033	µg/kg wet							
C12-BZ#12	ND	0.033	µg/kg wet							
C13-BZ#27	ND	0.033	µg/kg wet							
C12-BZ#13	ND	0.033	µg/kg wet							
C13-BZ#24	ND	0.033	µg/kg wet							
C13-BZ#16	ND	0.033	µg/kg wet							
C13-BZ#32	ND	0.033	µg/kg wet							
C12-BZ#15	ND	0.033	µg/kg wet							
C13-BZ#34	ND	0.033	µg/kg wet							
C14-BZ#54	ND	0.067	µg/kg wet							
C13-BZ#23	ND	0.033	µg/kg wet							
C13-BZ#29	ND	0.033	µg/kg wet							
C14-BZ#50	ND	0.067	µg/kg wet							
C13-BZ#26	ND	0.033	µg/kg wet							
C13-BZ#25	ND	0.033	µg/kg wet							
C14-BZ#53	ND	0.067	µg/kg wet							
C13-BZ#31	ND	0.033	µg/kg wet							
C13-BZ#28	ND	0.033	µg/kg wet							
C13-BZ#33/#21/#20	ND	0.10	µg/kg wet							
C14-BZ#51	ND	0.067	µg/kg wet							
C14-BZ#45	ND	0.067	µg/kg wet							
C13-BZ#22	ND	0.033	µg/kg wet							
C14-BZ#46	ND	0.067	µg/kg wet							
C14-BZ#73	ND	0.067	µg/kg wet							
C14-BZ#69	ND	0.067	µg/kg wet							
C14-BZ#43	ND	0.067	µg/kg wet							
C13-BZ#36	ND	0.033	µg/kg wet							
C14-BZ#52	ND	0.067	µg/kg wet							
C14-BZ#48	ND	0.067	µg/kg wet							
C14-BZ#49	ND	0.067	µg/kg wet							
C15-BZ#104	ND	0.067	µg/kg wet							
C14-BZ#47/#65/#62	ND	0.20	µg/kg wet							
C14-BZ#75	ND	0.067	µg/kg wet							
C13-BZ#39	ND	0.033	µg/kg wet							
C13-BZ#38	ND	0.033	µg/kg wet							
C14-BZ#44	ND	0.067	µg/kg wet							
C14-BZ#59	ND	0.067	µg/kg wet							
C14-BZ#42	ND	0.067	µg/kg wet							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
PCB Congeners in Soil by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328466 - SW-846 3540C
Blank (B328466-BLK1)

Prepared: 01/12/23 Analyzed: 01/16/23

C14-BZ#71	ND	0.067	µg/kg wet							
C13-BZ#35	ND	0.033	µg/kg wet							
C14-BZ#41	ND	0.067	µg/kg wet							
C15-BZ#96	ND	0.067	µg/kg wet							
C14-BZ#72	ND	0.067	µg/kg wet							
C15-BZ#103	ND	0.067	µg/kg wet							
C14-BZ#64	ND	0.067	µg/kg wet							
C14-BZ#40/#68	ND	0.13	µg/kg wet							
C13-BZ#37	ND	0.10	µg/kg wet							
C15-BZ#100	ND	0.067	µg/kg wet							
C15-BZ#94	ND	0.067	µg/kg wet							
C14-BZ#57	ND	0.067	µg/kg wet							
C14-BZ#67/#58	ND	0.13	µg/kg wet							
C15-BZ#102	ND	0.067	µg/kg wet							
C14-BZ#61	ND	0.067	µg/kg wet							
C15-BZ#98	ND	0.067	µg/kg wet							
C15-BZ#93	ND	0.33	µg/kg wet							
C14-BZ#76	ND	0.067	µg/kg wet							
C14-BZ#63	ND	0.067	µg/kg wet							
C15-BZ#88/#95	ND	0.13	µg/kg wet							
C15-BZ#121	ND	0.067	µg/kg wet							
C14-BZ#74	ND	0.067	µg/kg wet							
C16-BZ#155	ND	0.067	µg/kg wet							
C14-BZ#70	ND	0.067	µg/kg wet							
C15-BZ#91	ND	0.067	µg/kg wet							
C14-BZ#66	ND	0.067	µg/kg wet							
C14-BZ#80/#55	ND	0.13	µg/kg wet							
C15-BZ#92	ND	0.067	µg/kg wet							
C15-BZ#89/#84	ND	0.13	µg/kg wet							
C14-BZ#56	ND	0.067	µg/kg wet							
C15-BZ#90/#101	ND	0.13	µg/kg wet							
C15-BZ#113	ND	0.067	µg/kg wet							
C14-BZ#60	ND	0.067	µg/kg wet							
C15-BZ#99	ND	0.067	µg/kg wet							
C16-BZ#150	ND	0.067	µg/kg wet							
C16-BZ#152	ND	0.067	µg/kg wet							
C15-BZ#119/#83	ND	0.13	µg/kg wet							
C15-BZ#125/#112/#86	ND	0.20	µg/kg wet							
C15-BZ#109	ND	0.067	µg/kg wet							
C16-BZ#145	ND	0.067	µg/kg wet							
C15-BZ#97	ND	0.067	µg/kg wet							
C16-BZ#148	ND	0.067	µg/kg wet							
C14-BZ#79	ND	0.067	µg/kg wet							
C15-BZ#116	ND	0.067	µg/kg wet							
C15-BZ#87	ND	0.067	µg/kg wet							
C14-BZ#78	ND	0.067	µg/kg wet							
C16-BZ#154/#136	ND	0.13	µg/kg wet							
C15-BZ#111/#117/#115	ND	0.20	µg/kg wet							
C15-BZ#85	ND	0.067	µg/kg wet							
C15-BZ#120/#110	ND	0.13	µg/kg wet							
C14-BZ#81	ND	0.067	µg/kg wet							
C16-BZ#151	ND	0.067	µg/kg wet							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
PCB Congeners in Soil by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328466 - SW-846 3540C
Blank (B328466-BLK1)

Prepared: 01/12/23 Analyzed: 01/16/23

C16-BZ#135	ND	0.067	µg/kg wet							
C15-BZ#82	ND	0.067	µg/kg wet							
C16-BZ#144	ND	0.067	µg/kg wet							
C16-BZ#147/#149	ND	0.13	µg/kg wet							
C14-BZ#77	ND	0.067	µg/kg wet							
C16-BZ#143/#139	ND	0.13	µg/kg wet							
C16-BZ#140	ND	0.067	µg/kg wet							
C15-BZ#124	ND	0.067	µg/kg wet							
C15-BZ#108	ND	0.067	µg/kg wet							
C15-BZ#123/#107	ND	0.13	µg/kg wet							
C17-BZ#188	ND	0.067	µg/kg wet							
C16-BZ#134	ND	0.067	µg/kg wet							
C15-BZ#106	ND	0.067	µg/kg wet							
C16-BZ#142	ND	0.067	µg/kg wet							
C16-BZ#133/#131	ND	0.13	µg/kg wet							
C15-BZ#118	ND	0.067	µg/kg wet							
C17-BZ#184	ND	0.067	µg/kg wet							
C16-BZ#165	ND	0.067	µg/kg wet							
C16-BZ#146	ND	0.067	µg/kg wet							
C15-BZ#122	ND	0.067	µg/kg wet							
C16-BZ#161	ND	0.067	µg/kg wet							
C15-BZ#114	ND	0.067	µg/kg wet							
C16-BZ#168	ND	0.067	µg/kg wet							
C16-BZ#153	ND	0.067	µg/kg wet							
C16-BZ#132	ND	0.067	µg/kg wet							
C17-BZ#179	ND	0.067	µg/kg wet							
C16-BZ#141	ND	0.067	µg/kg wet							
C17-BZ#176	ND	0.067	µg/kg wet							
C15-BZ#105	ND	0.067	µg/kg wet							
C16-BZ#137	ND	0.067	µg/kg wet							
C17-BZ#186	ND	0.067	µg/kg wet							
C15-BZ#127	ND	0.067	µg/kg wet							
C16-BZ#130/#164	ND	0.13	µg/kg wet							
C17-BZ#178	ND	0.067	µg/kg wet							
C16-BZ#138	ND	0.067	µg/kg wet							
C16-BZ#160/#129/#163	ND	0.20	µg/kg wet							
C16-BZ#158	ND	0.067	µg/kg wet							
C17-BZ#182/#175	ND	0.13	µg/kg wet							
C17-BZ#187	ND	0.067	µg/kg wet							
C17-BZ#183	ND	0.067	µg/kg wet							
C16-BZ#166	ND	0.067	µg/kg wet							
C16-BZ#159	ND	0.067	µg/kg wet							
C15-BZ#126	ND	0.067	µg/kg wet							
C17-BZ#185	ND	0.067	µg/kg wet							
C16-BZ#128/#162	ND	0.13	µg/kg wet							
C17-BZ#174	ND	0.067	µg/kg wet							
C18-BZ#202	ND	0.10	µg/kg wet							
C16-BZ#167	ND	0.067	µg/kg wet							
C17-BZ#181	ND	0.067	µg/kg wet							
C17-BZ#177	ND	0.067	µg/kg wet							
C18-BZ#200/#204	ND	0.20	µg/kg wet							
C17-BZ#171	ND	0.067	µg/kg wet							

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QUALITY CONTROL

PCB Congeners in Soil by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328466 - SW-846 3540C

Blank (B328466-BLK1)

Prepared: 01/12/23 Analyzed: 01/16/23

C17-BZ#173	ND	0.067	µg/kg wet							
C18-BZ#197	ND	0.10	µg/kg wet							
C17-BZ#172	ND	0.20	µg/kg wet							
C16-BZ#156	ND	0.067	µg/kg wet							
C17-BZ#192	ND	0.13	µg/kg wet							
C16-BZ#157	ND	0.067	µg/kg wet							
C17-BZ#180	ND	0.067	µg/kg wet							
C17-BZ#193	ND	0.067	µg/kg wet							
C18-BZ#199	ND	0.10	µg/kg wet							
C17-BZ#191	ND	0.067	µg/kg wet							
C18-BZ#198	ND	0.10	µg/kg wet							
C18-BZ#201	ND	0.10	µg/kg wet							
C17-BZ#170	ND	0.067	µg/kg wet							
C17-BZ#190	ND	0.067	µg/kg wet							
C18-BZ#196	ND	0.10	µg/kg wet							
C18-BZ#203	ND	0.10	µg/kg wet							
C16-BZ#169	ND	0.067	µg/kg wet							
C19-BZ#208	ND	0.10	µg/kg wet							
C19-BZ#207	ND	0.10	µg/kg wet							
C17-BZ#189	ND	0.067	µg/kg wet							
C18-BZ#195	ND	0.10	µg/kg wet							
C18-BZ#194	ND	0.10	µg/kg wet							
C18-BZ#205	ND	0.10	µg/kg wet							
C19-BZ#206	ND	0.10	µg/kg wet							
C110-BZ#209	ND	0.10	µg/kg wet							

Surrogate: Tetrachloro-m-xylene	8.87		µg/kg wet	6.67		133	40-140			
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LCS (B328466-BS1)

Prepared: 01/12/23 Analyzed: 01/16/23

C12-BZ#8	1.50	0.033	µg/kg wet	1.67		90.0	40-140			
C13-BZ#18	1.44	0.033	µg/kg wet	1.67		86.2	40-140			
C13-BZ#28	1.30	0.033	µg/kg wet	1.67		78.3	40-140			
C14-BZ#52	1.56	0.067	µg/kg wet	1.67		93.8	40-140			
C14-BZ#44	1.59	0.067	µg/kg wet	1.67		95.3	40-140			
C14-BZ#66	1.56	0.067	µg/kg wet	1.67		93.5	40-140			
C15-BZ#90/#101	1.44	0.13	µg/kg wet	1.67		86.1	40-140			
C14-BZ#81	1.71	0.067	µg/kg wet	1.67		103	40-140			
C15-BZ#123/#107	1.38	0.13	µg/kg wet	1.67		82.8	40-140			
C15-BZ#118	1.48	0.067	µg/kg wet	1.67		89.0	40-140			
C15-BZ#114	1.44	0.067	µg/kg wet	1.67		86.2	40-140			
C16-BZ#153	1.54	0.067	µg/kg wet	1.67		92.3	40-140			
C15-BZ#105	1.40	0.067	µg/kg wet	1.67		84.1	40-140			
C16-BZ#138	1.57	0.067	µg/kg wet	1.67		94.2	40-140			
C17-BZ#187	1.34	0.067	µg/kg wet	1.67		80.7	40-140			
C15-BZ#126	1.22	0.067	µg/kg wet	1.67		73.2	40-140			
C16-BZ#128/#162	1.09	0.13	µg/kg wet	1.67		65.6	40-140			
C16-BZ#167	1.48	0.067	µg/kg wet	1.67		88.9	40-140			
C16-BZ#156	1.49	0.067	µg/kg wet	1.67		89.7	40-140			
C16-BZ#157	1.48	0.067	µg/kg wet	1.67		89.0	40-140			
C17-BZ#180	1.45	0.067	µg/kg wet	1.67		86.7	40-140			
C17-BZ#170	1.40	0.067	µg/kg wet	1.67		83.9	40-140			
C16-BZ#169	1.67	0.067	µg/kg wet	1.67		100	40-140			
C17-BZ#189	1.46	0.067	µg/kg wet	1.67		87.8	40-140			

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QUALITY CONTROL
PCB Congeners in Soil by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328466 - SW-846 3540C										
LCS (B328466-BS1)										
					Prepared: 01/12/23 Analyzed: 01/16/23					
Cl8-BZ#195	1.24	0.10	µg/kg wet	1.67		74.7	40-140			
Cl9-BZ#206	1.20	0.10	µg/kg wet	1.67		71.9	40-140			
Cl10-BZ#209	1.15	0.10	µg/kg wet	1.67		69.1	40-140			
Surrogate: Tetrachloro-m-xylene	7.86		µg/kg wet	6.67		118	40-140			
LCS Dup (B328466-BSD1)										
					Prepared: 01/12/23 Analyzed: 01/16/23					
Cl2-BZ#8	1.53	0.033	µg/kg wet	1.67		91.6	40-140	1.75	30	
Cl3-BZ#18	1.48	0.033	µg/kg wet	1.67		88.8	40-140	2.98	30	
Cl3-BZ#28	1.34	0.033	µg/kg wet	1.67		80.5	40-140	2.86	30	
Cl4-BZ#52	1.59	0.067	µg/kg wet	1.67		95.3	40-140	1.61	30	
Cl4-BZ#44	1.64	0.067	µg/kg wet	1.67		98.4	40-140	3.14	30	
Cl4-BZ#66	1.61	0.067	µg/kg wet	1.67		96.8	40-140	3.45	30	
Cl5-BZ#90/#101	1.47	0.13	µg/kg wet	1.67		88.3	40-140	2.47	30	
Cl4-BZ#81	1.78	0.067	µg/kg wet	1.67		107	40-140	3.70	30	
Cl5-BZ#123/#107	1.42	0.13	µg/kg wet	1.67		85.1	40-140	2.69	30	
Cl5-BZ#118	1.53	0.067	µg/kg wet	1.67		91.6	40-140	2.95	30	
Cl5-BZ#114	1.49	0.067	µg/kg wet	1.67		89.2	40-140	3.39	30	
Cl6-BZ#153	1.59	0.067	µg/kg wet	1.67		95.6	40-140	3.52	30	
Cl5-BZ#105	1.46	0.067	µg/kg wet	1.67		87.4	40-140	3.87	30	
Cl6-BZ#138	1.62	0.067	µg/kg wet	1.67		97.3	40-140	3.27	30	
Cl7-BZ#187	1.39	0.067	µg/kg wet	1.67		83.5	40-140	3.50	30	
Cl5-BZ#126	1.27	0.067	µg/kg wet	1.67		75.9	40-140	3.71	30	
Cl6-BZ#128/#162	1.14	0.13	µg/kg wet	1.67		68.5	40-140	4.33	30	
Cl6-BZ#167	1.54	0.067	µg/kg wet	1.67		92.3	40-140	3.71	30	
Cl6-BZ#156	1.54	0.067	µg/kg wet	1.67		92.5	40-140	3.09	30	
Cl6-BZ#157	1.54	0.067	µg/kg wet	1.67		92.4	40-140	3.72	30	
Cl7-BZ#180	1.50	0.067	µg/kg wet	1.67		90.2	40-140	3.99	30	
Cl7-BZ#170	1.46	0.067	µg/kg wet	1.67		87.7	40-140	4.44	30	
Cl6-BZ#169	1.73	0.067	µg/kg wet	1.67		104	40-140	3.72	30	
Cl7-BZ#189	1.51	0.067	µg/kg wet	1.67		90.8	40-140	3.43	30	
Cl8-BZ#195	1.29	0.10	µg/kg wet	1.67		77.6	40-140	3.84	30	
Cl9-BZ#206	1.24	0.10	µg/kg wet	1.67		74.5	40-140	3.63	30	
Cl10-BZ#209	1.17	0.10	µg/kg wet	1.67		70.3	40-140	1.67	30	
Surrogate: Tetrachloro-m-xylene	7.92		µg/kg wet	6.67		119	40-140			

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328333 - SW-846 5035										
Blank (B328333-BLK1)										
Prepared & Analyzed: 01/11/23										
Acetone	ND	0.10	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet							
Benzene	ND	0.0020	mg/Kg wet							
Bromobenzene	ND	0.0020	mg/Kg wet							
Bromochloromethane	ND	0.0020	mg/Kg wet							
Bromodichloromethane	ND	0.0020	mg/Kg wet							
Bromoform	ND	0.0020	mg/Kg wet							
Bromomethane	ND	0.010	mg/Kg wet							V-05
2-Butanone (MEK)	ND	0.040	mg/Kg wet							
n-Butylbenzene	ND	0.0020	mg/Kg wet							
sec-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet							
Carbon Disulfide	ND	0.010	mg/Kg wet							
Carbon Tetrachloride	ND	0.0020	mg/Kg wet							
Chlorobenzene	ND	0.0020	mg/Kg wet							
Chlorodibromomethane	ND	0.0010	mg/Kg wet							
Chloroethane	ND	0.020	mg/Kg wet							
Chloroform	ND	0.0040	mg/Kg wet							
Chloromethane	ND	0.010	mg/Kg wet							
2-Chlorotoluene	ND	0.0020	mg/Kg wet							
4-Chlorotoluene	ND	0.0020	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet							
Dibromomethane	ND	0.0020	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.020	mg/Kg wet							
1,1-Dichloroethane	ND	0.0020	mg/Kg wet							
1,2-Dichloroethane	ND	0.0020	mg/Kg wet							
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
1,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,3-Dichloropropane	ND	0.0010	mg/Kg wet							
2,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,1-Dichloropropene	ND	0.0020	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
Diethyl Ether	ND	0.020	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet							
1,4-Dioxane	ND	0.10	mg/Kg wet							
Ethylbenzene	ND	0.0020	mg/Kg wet							
Hexachlorobutadiene	ND	0.0020	mg/Kg wet							
2-Hexanone (MBK)	ND	0.020	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet							
Methylene Chloride	ND	0.020	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet							
Naphthalene	ND	0.0040	mg/Kg wet							

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328333 - SW-846 5035										
Blank (B328333-BLK1)										
Prepared & Analyzed: 01/11/23										
n-Propylbenzene	ND	0.0020	mg/Kg wet							
Styrene	ND	0.0020	mg/Kg wet							
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet							
Tetrachloroethylene	ND	0.0020	mg/Kg wet							
Tetrahydrofuran	ND	0.010	mg/Kg wet							
Toluene	ND	0.0020	mg/Kg wet							
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet							
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet							
Trichloroethylene	ND	0.0020	mg/Kg wet							
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet							
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet							
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet							
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet							
Vinyl Chloride	ND	0.010	mg/Kg wet							
m+p Xylene	ND	0.0040	mg/Kg wet							
o-Xylene	ND	0.0020	mg/Kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0525		mg/Kg wet	0.0500		105	70-130			
Surrogate: Toluene-d8	0.0501		mg/Kg wet	0.0500		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.0495		mg/Kg wet	0.0500		98.9	70-130			
LCS (B328333-BS1)										
Prepared & Analyzed: 01/11/23										
Acetone	0.229	0.10	mg/Kg wet	0.200		115	40-160			†
tert-Amyl Methyl Ether (TAME)	0.0226	0.0010	mg/Kg wet	0.0200		113	70-130			
Benzene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130			
Bromobenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.5	70-130			
Bromochloromethane	0.0230	0.0020	mg/Kg wet	0.0200		115	70-130			
Bromodichloromethane	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130			
Bromoform	0.0194	0.0020	mg/Kg wet	0.0200		96.8	70-130			
Bromomethane	0.0143	0.010	mg/Kg wet	0.0200		71.4	40-160			V-05 †
2-Butanone (MEK)	0.267	0.040	mg/Kg wet	0.200		133	40-160			L-14, V-20 †
n-Butylbenzene	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130			
sec-Butylbenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.7	70-130			
tert-Butylbenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.6	70-130			
tert-Butyl Ethyl Ether (TBEE)	0.0223	0.0010	mg/Kg wet	0.0200		111	70-130			
Carbon Disulfide	0.214	0.010	mg/Kg wet	0.200		107	70-130			V-20
Carbon Tetrachloride	0.0184	0.0020	mg/Kg wet	0.0200		92.1	70-130			
Chlorobenzene	0.0193	0.0020	mg/Kg wet	0.0200		96.6	70-130			
Chlorodibromomethane	0.0196	0.0010	mg/Kg wet	0.0200		98.1	70-130			
Chloroethane	0.0257	0.020	mg/Kg wet	0.0200		128	70-130			V-20
Chloroform	0.0201	0.0040	mg/Kg wet	0.0200		100	70-130			
Chloromethane	0.0216	0.010	mg/Kg wet	0.0200		108	40-160			†
2-Chlorotoluene	0.0194	0.0020	mg/Kg wet	0.0200		97.1	70-130			
4-Chlorotoluene	0.0198	0.0020	mg/Kg wet	0.0200		99.0	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.0186	0.0020	mg/Kg wet	0.0200		92.8	70-130			
1,2-Dibromoethane (EDB)	0.0210	0.0010	mg/Kg wet	0.0200		105	70-130			
Dibromomethane	0.0211	0.0020	mg/Kg wet	0.0200		105	70-130			
1,2-Dichlorobenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.4	70-130			
1,3-Dichlorobenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.3	70-130			
1,4-Dichlorobenzene	0.0193	0.0020	mg/Kg wet	0.0200		96.5	70-130			

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328333 - SW-846 5035										
LCS (B328333-BS1)										
Prepared & Analyzed: 01/11/23										
Dichlorodifluoromethane (Freon 12)	0.0179	0.020	mg/Kg wet	0.0200		89.4	40-160			V-20 †
1,1-Dichloroethane	0.0211	0.0020	mg/Kg wet	0.0200		105	70-130			
1,2-Dichloroethane	0.0213	0.0020	mg/Kg wet	0.0200		106	70-130			
1,1-Dichloroethylene	0.0206	0.0040	mg/Kg wet	0.0200		103	70-130			
cis-1,2-Dichloroethylene	0.0215	0.0020	mg/Kg wet	0.0200		107	70-130			
trans-1,2-Dichloroethylene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130			
1,2-Dichloropropane	0.0205	0.0020	mg/Kg wet	0.0200		103	70-130			
1,3-Dichloropropane	0.0225	0.0010	mg/Kg wet	0.0200		112	70-130			
2,2-Dichloropropane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130			
1,1-Dichloropropene	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130			
cis-1,3-Dichloropropene	0.0205	0.0010	mg/Kg wet	0.0200		102	70-130			
trans-1,3-Dichloropropene	0.0207	0.0010	mg/Kg wet	0.0200		103	70-130			
Diethyl Ether	0.0222	0.020	mg/Kg wet	0.0200		111	70-130			
Diisopropyl Ether (DIPE)	0.0227	0.0010	mg/Kg wet	0.0200		114	70-130			
1,4-Dioxane	0.229	0.10	mg/Kg wet	0.200		114	40-160			†
Ethylbenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.7	70-130			
Hexachlorobutadiene	0.0182	0.0020	mg/Kg wet	0.0200		91.1	70-130			
2-Hexanone (MBK)	0.257	0.020	mg/Kg wet	0.200		129	40-160			†
Isopropylbenzene (Cumene)	0.0193	0.0020	mg/Kg wet	0.0200		96.3	70-130			
p-Isopropyltoluene (p-Cymene)	0.0193	0.0020	mg/Kg wet	0.0200		96.4	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0223	0.0040	mg/Kg wet	0.0200		111	70-130			
Methylene Chloride	0.0211	0.020	mg/Kg wet	0.0200		106	70-130			
4-Methyl-2-pentanone (MIBK)	0.258	0.020	mg/Kg wet	0.200		129	40-160			†
Naphthalene	0.0210	0.0040	mg/Kg wet	0.0200		105	70-130			
n-Propylbenzene	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130			
Styrene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130			
1,1,1,2-Tetrachloroethane	0.0192	0.0020	mg/Kg wet	0.0200		95.8	70-130			
1,1,1,2,2-Tetrachloroethane	0.0221	0.0010	mg/Kg wet	0.0200		110	70-130			
Tetrachloroethylene	0.0194	0.0020	mg/Kg wet	0.0200		96.9	70-130			
Tetrahydrofuran	0.0255	0.010	mg/Kg wet	0.0200		128	70-130			
Toluene	0.0211	0.0020	mg/Kg wet	0.0200		106	70-130			
1,2,3-Trichlorobenzene	0.0195	0.0020	mg/Kg wet	0.0200		97.5	70-130			
1,2,4-Trichlorobenzene	0.0186	0.0020	mg/Kg wet	0.0200		93.0	70-130			
1,1,1-Trichloroethane	0.0195	0.0020	mg/Kg wet	0.0200		97.5	70-130			
1,1,2-Trichloroethane	0.0209	0.0020	mg/Kg wet	0.0200		104	70-130			
Trichloroethylene	0.0196	0.0020	mg/Kg wet	0.0200		98.0	70-130			
Trichlorofluoromethane (Freon 11)	0.0205	0.010	mg/Kg wet	0.0200		102	70-130			
1,2,3-Trichloropropane	0.0226	0.0020	mg/Kg wet	0.0200		113	70-130			
1,2,4-Trimethylbenzene	0.0196	0.0020	mg/Kg wet	0.0200		97.8	70-130			
1,3,5-Trimethylbenzene	0.0198	0.0020	mg/Kg wet	0.0200		98.8	70-130			
Vinyl Chloride	0.0201	0.010	mg/Kg wet	0.0200		101	70-130			
m+p Xylene	0.0399	0.0040	mg/Kg wet	0.0400		99.8	70-130			
o-Xylene	0.0200	0.0020	mg/Kg wet	0.0200		99.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0534		mg/Kg wet	0.0500		107	70-130			
Surrogate: Toluene-d8	0.0510		mg/Kg wet	0.0500		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.0493		mg/Kg wet	0.0500		98.6	70-130			

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328333 - SW-846 5035										
LCS Dup (B328333-BSD1)										
Prepared & Analyzed: 01/11/23										
Acetone	0.225	0.10	mg/Kg wet	0.200		112	40-160	1.87	20	†
tert-Amyl Methyl Ether (TAME)	0.0227	0.0010	mg/Kg wet	0.0200		114	70-130	0.441	20	
Benzene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130	0.00	20	
Bromobenzene	0.0230	0.0020	mg/Kg wet	0.0200		115	70-130	18.7	20	
Bromochloromethane	0.0228	0.0020	mg/Kg wet	0.0200		114	70-130	0.961	20	
Bromodichloromethane	0.0200	0.0020	mg/Kg wet	0.0200		99.8	70-130	0.200	20	
Bromoform	0.0190	0.0020	mg/Kg wet	0.0200		94.8	70-130	2.09	20	
Bromomethane	0.0155	0.010	mg/Kg wet	0.0200		77.4	40-160	8.06	20	V-05 †
2-Butanone (MEK)	0.266	0.040	mg/Kg wet	0.200		133	40-160	0.0826	20	L-14, V-20 †
n-Butylbenzene	0.0198	0.0020	mg/Kg wet	0.0200		99.1	70-130	0.202	20	
sec-Butylbenzene	0.0193	0.0020	mg/Kg wet	0.0200		96.3	70-130	0.625	20	
tert-Butylbenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.7	70-130	1.16	20	
tert-Butyl Ethyl Ether (TBEE)	0.0224	0.0010	mg/Kg wet	0.0200		112	70-130	0.626	20	
Carbon Disulfide	0.214	0.010	mg/Kg wet	0.200		107	70-130	0.0560	20	V-20
Carbon Tetrachloride	0.0186	0.0020	mg/Kg wet	0.0200		93.2	70-130	1.19	20	
Chlorobenzene	0.0194	0.0020	mg/Kg wet	0.0200		96.8	70-130	0.207	20	
Chlorodibromomethane	0.0198	0.0010	mg/Kg wet	0.0200		98.8	70-130	0.711	20	
Chloroethane	0.0248	0.020	mg/Kg wet	0.0200		124	70-130	3.41	20	V-20
Chloroform	0.0200	0.0040	mg/Kg wet	0.0200		99.8	70-130	0.699	20	
Chloromethane	0.0200	0.010	mg/Kg wet	0.0200		100	40-160	7.78	20	†
2-Chlorotoluene	0.0194	0.0020	mg/Kg wet	0.0200		96.9	70-130	0.206	20	
4-Chlorotoluene	0.0197	0.0020	mg/Kg wet	0.0200		98.6	70-130	0.405	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.0186	0.0020	mg/Kg wet	0.0200		93.0	70-130	0.215	20	
1,2-Dibromoethane (EDB)	0.0208	0.0010	mg/Kg wet	0.0200		104	70-130	0.670	20	
Dibromomethane	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130	1.51	20	
1,2-Dichlorobenzene	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	1.61	20	
1,3-Dichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.8	70-130	0.523	20	
1,4-Dichlorobenzene	0.0193	0.0020	mg/Kg wet	0.0200		96.5	70-130	0.00	20	
Dichlorodifluoromethane (Freon 12)	0.0179	0.020	mg/Kg wet	0.0200		89.3	40-160	0.112	20	V-20 †
1,1-Dichloroethane	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130	1.43	20	
1,2-Dichloroethane	0.0212	0.0020	mg/Kg wet	0.0200		106	70-130	0.188	20	
1,1-Dichloroethylene	0.0209	0.0040	mg/Kg wet	0.0200		104	70-130	1.35	20	
cis-1,2-Dichloroethylene	0.0217	0.0020	mg/Kg wet	0.0200		108	70-130	1.11	20	
trans-1,2-Dichloroethylene	0.0205	0.0020	mg/Kg wet	0.0200		102	70-130	0.196	20	
1,2-Dichloropropane	0.0203	0.0020	mg/Kg wet	0.0200		101	70-130	1.37	20	
1,3-Dichloropropane	0.0220	0.0010	mg/Kg wet	0.0200		110	70-130	2.16	20	
2,2-Dichloropropane	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	0.597	20	
1,1-Dichloropropene	0.0207	0.0020	mg/Kg wet	0.0200		103	70-130	1.54	20	
cis-1,3-Dichloropropene	0.0202	0.0010	mg/Kg wet	0.0200		101	70-130	1.18	20	
trans-1,3-Dichloropropene	0.0207	0.0010	mg/Kg wet	0.0200		103	70-130	0.0968	20	
Diethyl Ether	0.0219	0.020	mg/Kg wet	0.0200		110	70-130	1.09	20	
Diisopropyl Ether (DIPE)	0.0229	0.0010	mg/Kg wet	0.0200		114	70-130	0.702	20	
1,4-Dioxane	0.229	0.10	mg/Kg wet	0.200		115	40-160	0.253	20	†
Ethylbenzene	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130	0.202	20	
Hexachlorobutadiene	0.0177	0.0020	mg/Kg wet	0.0200		88.7	70-130	2.67	20	
2-Hexanone (MBK)	0.255	0.020	mg/Kg wet	0.200		128	40-160	0.765	20	†
Isopropylbenzene (Cumene)	0.0193	0.0020	mg/Kg wet	0.0200		96.6	70-130	0.311	20	
p-Isopropyltoluene (p-Cymene)	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130	0.520	20	
Methyl tert-Butyl Ether (MTBE)	0.0219	0.0040	mg/Kg wet	0.0200		110	70-130	1.63	20	
Methylene Chloride	0.0214	0.020	mg/Kg wet	0.0200		107	70-130	1.41	20	
4-Methyl-2-pentanone (MIBK)	0.256	0.020	mg/Kg wet	0.200		128	40-160	0.763	20	†
Naphthalene	0.0207	0.0040	mg/Kg wet	0.0200		104	70-130	1.25	20	

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328333 - SW-846 5035										
LCS Dup (B328333-BSD1)										
Prepared & Analyzed: 01/11/23										
n-Propylbenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.4	70-130	0.507	20	
Styrene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130	0.791	20	
1,1,1,2-Tetrachloroethane	0.0191	0.0020	mg/Kg wet	0.0200		95.3	70-130	0.523	20	
1,1,2,2-Tetrachloroethane	0.0219	0.0010	mg/Kg wet	0.0200		110	70-130	0.727	20	
Tetrachloroethylene	0.0193	0.0020	mg/Kg wet	0.0200		96.3	70-130	0.621	20	
Tetrahydrofuran	0.0254	0.010	mg/Kg wet	0.0200		127	70-130	0.472	20	
Toluene	0.0193	0.0020	mg/Kg wet	0.0200		96.6	70-130	8.81	20	
1,2,3-Trichlorobenzene	0.0190	0.0020	mg/Kg wet	0.0200		95.2	70-130	2.39	20	
1,2,4-Trichlorobenzene	0.0183	0.0020	mg/Kg wet	0.0200		91.5	70-130	1.63	20	
1,1,1-Trichloroethane	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130	1.43	20	
1,1,2-Trichloroethane	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130	2.52	20	
Trichloroethylene	0.0194	0.0020	mg/Kg wet	0.0200		96.8	70-130	1.23	20	
Trichlorofluoromethane (Freon 11)	0.0202	0.010	mg/Kg wet	0.0200		101	70-130	1.28	20	
1,2,3-Trichloropropane	0.0221	0.0020	mg/Kg wet	0.0200		110	70-130	2.42	20	
1,2,4-Trimethylbenzene	0.0195	0.0020	mg/Kg wet	0.0200		97.4	70-130	0.410	20	
1,3,5-Trimethylbenzene	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130	0.101	20	
Vinyl Chloride	0.0201	0.010	mg/Kg wet	0.0200		101	70-130	0.00	20	
m+p Xylene	0.0401	0.0040	mg/Kg wet	0.0400		100	70-130	0.400	20	
o-Xylene	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	0.100	20	
Surrogate: 1,2-Dichloroethane-d4	0.0536		mg/Kg wet	0.0500		107	70-130			
Surrogate: Toluene-d8	0.0512		mg/Kg wet	0.0500		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.0490		mg/Kg wet	0.0500		98.0	70-130			

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328705 - SW-846 3546
Blank (B328705-BLK1)

Prepared: 01/14/23 Analyzed: 01/17/23

Biphenyl	ND	0.067	mg/Kg wet							
Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Acetophenone	ND	0.34	mg/Kg wet							
Aniline	ND	0.34	mg/Kg wet							L-04, V-05
Anthracene	ND	0.17	mg/Kg wet							
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Bis(2-chloroethoxy)methane	ND	0.34	mg/Kg wet							
Bis(2-chloroethyl)ether	ND	0.34	mg/Kg wet							
Bis(2-chloroisopropyl)ether	ND	0.34	mg/Kg wet							
Bis(2-Ethylhexyl)phthalate	ND	0.34	mg/Kg wet							
4-Bromophenylphenylether	ND	0.34	mg/Kg wet							
Butylbenzylphthalate	ND	0.34	mg/Kg wet							
4-Chloroaniline	ND	0.66	mg/Kg wet							
2-Chloronaphthalene	ND	0.34	mg/Kg wet							
2-Chlorophenol	ND	0.34	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Dibenzofuran	ND	0.34	mg/Kg wet							
Di-n-butylphthalate	ND	0.34	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.34	mg/Kg wet							
3,3-Dichlorobenzidine	ND	0.17	mg/Kg wet							
2,4-Dichlorophenol	ND	0.34	mg/Kg wet							
Diethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dimethylphenol	ND	0.34	mg/Kg wet							
Dimethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dinitrophenol	ND	0.66	mg/Kg wet							
2,4-Dinitrotoluene	ND	0.34	mg/Kg wet							
2,6-Dinitrotoluene	ND	0.34	mg/Kg wet							
Di-n-octylphthalate	ND	0.34	mg/Kg wet							
1,2-Diphenylhydrazine/Azobenzene	ND	0.34	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Hexachlorobenzene	ND	0.34	mg/Kg wet							
Hexachlorobutadiene	ND	0.34	mg/Kg wet							
Hexachloroethane	ND	0.34	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
Isophorone	ND	0.34	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							
2-Methylphenol	ND	0.34	mg/Kg wet							
3/4-Methylphenol	ND	0.34	mg/Kg wet							
Naphthalene	ND	0.17	mg/Kg wet							
Nitrobenzene	ND	0.34	mg/Kg wet							
2-Nitrophenol	ND	0.34	mg/Kg wet							
4-Nitrophenol	ND	0.66	mg/Kg wet							
Pentachlorophenol	ND	0.34	mg/Kg wet							

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328705 - SW-846 3546										
Blank (B328705-BLK1)										
Prepared: 01/14/23 Analyzed: 01/17/23										
Phenanthrene	ND	0.17	mg/Kg wet							
Phenol	ND	0.34	mg/Kg wet							
Pyrene	ND	0.17	mg/Kg wet							
Pyridine	ND	0.34	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.34	mg/Kg wet							
2,4,5-Trichlorophenol	ND	0.34	mg/Kg wet							
2,4,6-Trichlorophenol	ND	0.34	mg/Kg wet							
Surrogate: 2-Fluorophenol	6.78		mg/Kg wet	6.67		102	30-130			
Surrogate: Phenol-d6	6.64		mg/Kg wet	6.67		99.6	30-130			
Surrogate: Nitrobenzene-d5	3.72		mg/Kg wet	3.33		111	30-130			
Surrogate: 2-Fluorobiphenyl	3.54		mg/Kg wet	3.33		106	30-130			
Surrogate: 2,4,6-Tribromophenol	7.74		mg/Kg wet	6.67		116	30-130			
Surrogate: p-Terphenyl-d14	4.35		mg/Kg wet	3.33		131	* 30-130			S-07
LCS (B328705-BS1)										
Prepared: 01/14/23 Analyzed: 01/17/23										
Biphenyl	1.33	0.067	mg/Kg wet	1.67		79.7	40-140			
Acenaphthene	1.25	0.17	mg/Kg wet	1.67		74.9	40-140			
Acenaphthylene	1.25	0.17	mg/Kg wet	1.67		74.7	40-140			
Acetophenone	1.19	0.34	mg/Kg wet	1.67		71.1	40-140			
Aniline	0.578	0.34	mg/Kg wet	1.67		34.7	* 40-140			L-04, V-05
Anthracene	1.31	0.17	mg/Kg wet	1.67		78.7	40-140			
Benzo(a)anthracene	1.23	0.17	mg/Kg wet	1.67		73.5	40-140			
Benzo(a)pyrene	1.12	0.17	mg/Kg wet	1.67		67.0	40-140			
Benzo(b)fluoranthene	1.15	0.17	mg/Kg wet	1.67		68.7	40-140			
Benzo(g,h,i)perylene	1.13	0.17	mg/Kg wet	1.67		67.6	40-140			
Benzo(k)fluoranthene	1.20	0.17	mg/Kg wet	1.67		72.3	40-140			
Bis(2-chloroethoxy)methane	1.14	0.34	mg/Kg wet	1.67		68.3	40-140			
Bis(2-chloroethyl)ether	1.12	0.34	mg/Kg wet	1.67		67.0	40-140			
Bis(2-chloroisopropyl)ether	1.49	0.34	mg/Kg wet	1.67		89.4	40-140			
Bis(2-Ethylhexyl)phthalate	1.28	0.34	mg/Kg wet	1.67		77.0	40-140			
4-Bromophenylphenylether	1.21	0.34	mg/Kg wet	1.67		72.6	40-140			
Butylbenzylphthalate	1.32	0.34	mg/Kg wet	1.67		79.0	40-140			
4-Chloroaniline	0.733	0.66	mg/Kg wet	1.67		44.0	15-140			†
2-Chloronaphthalene	1.09	0.34	mg/Kg wet	1.67		65.3	40-140			
2-Chlorophenol	1.11	0.34	mg/Kg wet	1.67		66.5	30-130			
Chrysene	1.22	0.17	mg/Kg wet	1.67		73.1	40-140			
Dibenz(a,h)anthracene	1.16	0.17	mg/Kg wet	1.67		69.9	40-140			
Dibenzofuran	1.28	0.34	mg/Kg wet	1.67		76.8	40-140			
Di-n-butylphthalate	1.38	0.34	mg/Kg wet	1.67		82.9	40-140			
1,2-Dichlorobenzene	1.06	0.34	mg/Kg wet	1.67		63.5	40-140			
1,3-Dichlorobenzene	1.01	0.34	mg/Kg wet	1.67		60.4	40-140			
1,4-Dichlorobenzene	1.02	0.34	mg/Kg wet	1.67		61.5	40-140			
3,3-Dichlorobenzidine	0.961	0.17	mg/Kg wet	1.67		57.7	40-140			
2,4-Dichlorophenol	1.20	0.34	mg/Kg wet	1.67		71.9	30-130			
Diethylphthalate	1.20	0.34	mg/Kg wet	1.67		72.0	40-140			
2,4-Dimethylphenol	1.32	0.34	mg/Kg wet	1.67		79.2	30-130			
Dimethylphthalate	1.27	0.34	mg/Kg wet	1.67		76.3	40-140			
2,4-Dinitrophenol	0.643	0.66	mg/Kg wet	1.67		38.6	15-140			†
2,4-Dinitrotoluene	1.31	0.34	mg/Kg wet	1.67		78.7	40-140			
2,6-Dinitrotoluene	1.37	0.34	mg/Kg wet	1.67		82.0	40-140			
Di-n-octylphthalate	1.10	0.34	mg/Kg wet	1.67		66.3	40-140			
1,2-Diphenylhydrazine/Azobenzene	1.29	0.34	mg/Kg wet	1.67		77.4	40-140			

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328705 - SW-846 3546										
LCS (B328705-BS1)										
					Prepared: 01/14/23 Analyzed: 01/17/23					
Fluoranthene	1.37	0.17	mg/Kg wet	1.67		82.4	40-140			
Fluorene	1.27	0.17	mg/Kg wet	1.67		76.3	40-140			
Hexachlorobenzene	1.28	0.34	mg/Kg wet	1.67		76.9	40-140			
Hexachlorobutadiene	1.05	0.34	mg/Kg wet	1.67		63.0	40-140			
Hexachloroethane	1.00	0.34	mg/Kg wet	1.67		60.2	40-140			
Indeno(1,2,3-cd)pyrene	1.22	0.17	mg/Kg wet	1.67		73.2	40-140			
Isophorone	1.26	0.34	mg/Kg wet	1.67		75.5	40-140			
2-Methylnaphthalene	1.19	0.17	mg/Kg wet	1.67		71.2	40-140			
2-Methylphenol	1.19	0.34	mg/Kg wet	1.67		71.1	30-130			
3/4-Methylphenol	1.34	0.34	mg/Kg wet	1.67		80.6	30-130			
Naphthalene	1.17	0.17	mg/Kg wet	1.67		70.3	40-140			
Nitrobenzene	1.13	0.34	mg/Kg wet	1.67		67.8	40-140			
2-Nitrophenol	1.16	0.34	mg/Kg wet	1.67		69.7	30-130			
4-Nitrophenol	1.41	0.66	mg/Kg wet	1.67		84.4	15-140			†
Pentachlorophenol	0.936	0.34	mg/Kg wet	1.67		56.1	30-130			
Phenanthrene	1.29	0.17	mg/Kg wet	1.67		77.5	40-140			
Phenol	1.19	0.34	mg/Kg wet	1.67		71.5	15-140			†
Pyrene	1.34	0.17	mg/Kg wet	1.67		80.6	40-140			
Pyridine	0.598	0.34	mg/Kg wet	1.67		35.9	30-140			†
1,2,4-Trichlorobenzene	1.07	0.34	mg/Kg wet	1.67		64.1	40-140			
2,4,5-Trichlorophenol	1.24	0.34	mg/Kg wet	1.67		74.4	30-130			
2,4,6-Trichlorophenol	1.21	0.34	mg/Kg wet	1.67		72.7	30-130			
Surrogate: 2-Fluorophenol	4.90		mg/Kg wet	6.67		73.4	30-130			
Surrogate: Phenol-d6	5.13		mg/Kg wet	6.67		77.0	30-130			
Surrogate: Nitrobenzene-d5	2.50		mg/Kg wet	3.33		75.0	30-130			
Surrogate: 2-Fluorobiphenyl	2.86		mg/Kg wet	3.33		85.9	30-130			
Surrogate: 2,4,6-Tribromophenol	5.66		mg/Kg wet	6.67		85.0	30-130			
Surrogate: p-Terphenyl-d14	3.20		mg/Kg wet	3.33		95.9	30-130			
LCS Dup (B328705-BS1)										
					Prepared: 01/14/23 Analyzed: 01/17/23					
Biphenyl	1.34	0.067	mg/Kg wet	1.67		80.2	40-140	0.650	20	
Acenaphthene	1.25	0.17	mg/Kg wet	1.67		74.8	40-140	0.187	30	
Acenaphthylene	1.33	0.17	mg/Kg wet	1.67		79.5	40-140	6.20	30	
Acetophenone	1.27	0.34	mg/Kg wet	1.67		76.2	40-140	6.87	30	
Aniline	0.667	0.34	mg/Kg wet	1.67		40.0	40-140	14.2	30	L-04, V-05
Anthracene	1.27	0.17	mg/Kg wet	1.67		76.0	40-140	3.54	30	
Benzo(a)anthracene	1.20	0.17	mg/Kg wet	1.67		72.1	40-140	1.98	30	
Benzo(a)pyrene	1.12	0.17	mg/Kg wet	1.67		67.2	40-140	0.298	30	
Benzo(b)fluoranthene	1.12	0.17	mg/Kg wet	1.67		67.0	40-140	2.62	30	
Benzo(g,h,i)perylene	1.17	0.17	mg/Kg wet	1.67		70.0	40-140	3.46	30	
Benzo(k)fluoranthene	1.18	0.17	mg/Kg wet	1.67		71.1	40-140	1.67	30	
Bis(2-chloroethoxy)methane	1.10	0.34	mg/Kg wet	1.67		66.1	40-140	3.30	30	
Bis(2-chloroethyl)ether	1.18	0.34	mg/Kg wet	1.67		71.1	40-140	5.85	30	
Bis(2-chloroisopropyl)ether	1.56	0.34	mg/Kg wet	1.67		93.6	40-140	4.61	30	
Bis(2-Ethylhexyl)phthalate	1.31	0.34	mg/Kg wet	1.67		78.4	40-140	1.72	30	
4-Bromophenylphenylether	1.24	0.34	mg/Kg wet	1.67		74.1	40-140	2.07	30	
Butylbenzylphthalate	1.26	0.34	mg/Kg wet	1.67		75.6	40-140	4.37	30	
4-Chloroaniline	0.802	0.66	mg/Kg wet	1.67		48.1	15-140	9.04	30	†
2-Chloronaphthalene	1.11	0.34	mg/Kg wet	1.67		66.9	40-140	2.42	30	
2-Chlorophenol	1.16	0.34	mg/Kg wet	1.67		69.9	30-130	4.96	30	
Chrysene	1.19	0.17	mg/Kg wet	1.67		71.4	40-140	2.44	30	
Dibenz(a,h)anthracene	1.19	0.17	mg/Kg wet	1.67		71.1	40-140	1.76	30	

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328705 - SW-846 3546										
LCS Dup (B328705-BSD1)										
					Prepared: 01/14/23 Analyzed: 01/17/23					
Dibenzofuran	1.31	0.34	mg/Kg wet	1.67		78.6	40-140	2.42	30	
Di-n-butylphthalate	1.31	0.34	mg/Kg wet	1.67		78.3	40-140	5.71	30	
1,2-Dichlorobenzene	1.13	0.34	mg/Kg wet	1.67		68.0	40-140	6.85	30	
1,3-Dichlorobenzene	1.06	0.34	mg/Kg wet	1.67		63.6	40-140	5.26	30	
1,4-Dichlorobenzene	1.09	0.34	mg/Kg wet	1.67		65.5	40-140	6.24	30	
3,3-Dichlorobenzidine	1.04	0.17	mg/Kg wet	1.67		62.5	40-140	8.06	30	
2,4-Dichlorophenol	1.22	0.34	mg/Kg wet	1.67		73.5	30-130	2.15	30	
Diethylphthalate	1.23	0.34	mg/Kg wet	1.67		73.9	40-140	2.58	30	
2,4-Dimethylphenol	1.29	0.34	mg/Kg wet	1.67		77.3	30-130	2.38	30	
Dimethylphthalate	1.28	0.34	mg/Kg wet	1.67		76.7	40-140	0.471	30	
2,4-Dinitrophenol	0.550	0.66	mg/Kg wet	1.67		33.0	15-140	15.6	30	†
2,4-Dinitrotoluene	1.36	0.34	mg/Kg wet	1.67		81.8	40-140	3.86	30	
2,6-Dinitrotoluene	1.39	0.34	mg/Kg wet	1.67		83.3	40-140	1.60	30	
Di-n-octylphthalate	1.08	0.34	mg/Kg wet	1.67		64.8	40-140	2.23	30	
1,2-Diphenylhydrazine/Azobenzene	1.22	0.34	mg/Kg wet	1.67		73.0	40-140	5.85	30	
Fluoranthene	1.33	0.17	mg/Kg wet	1.67		79.9	40-140	3.06	30	
Fluorene	1.32	0.17	mg/Kg wet	1.67		79.0	40-140	3.45	30	
Hexachlorobenzene	1.31	0.34	mg/Kg wet	1.67		78.4	40-140	1.91	30	
Hexachlorobutadiene	1.07	0.34	mg/Kg wet	1.67		64.5	40-140	2.29	30	
Hexachloroethane	1.06	0.34	mg/Kg wet	1.67		63.8	40-140	5.90	30	
Indeno(1,2,3-cd)pyrene	1.20	0.17	mg/Kg wet	1.67		72.3	40-140	1.32	30	
Isophorone	1.24	0.34	mg/Kg wet	1.67		74.6	40-140	1.17	30	
2-Methylnaphthalene	1.26	0.17	mg/Kg wet	1.67		75.3	40-140	5.68	30	
2-Methylphenol	1.22	0.34	mg/Kg wet	1.67		73.2	30-130	2.86	30	
3/4-Methylphenol	1.36	0.34	mg/Kg wet	1.67		81.6	30-130	1.31	30	
Naphthalene	1.22	0.17	mg/Kg wet	1.67		73.1	40-140	3.91	30	
Nitrobenzene	1.12	0.34	mg/Kg wet	1.67		67.1	40-140	0.979	30	
2-Nitrophenol	1.16	0.34	mg/Kg wet	1.67		69.8	30-130	0.143	30	
4-Nitrophenol	1.40	0.66	mg/Kg wet	1.67		83.8	15-140	0.761	30	†
Pentachlorophenol	0.920	0.34	mg/Kg wet	1.67		55.2	30-130	1.65	30	
Phenanthrene	1.28	0.17	mg/Kg wet	1.67		76.7	40-140	1.06	30	
Phenol	1.24	0.34	mg/Kg wet	1.67		74.6	15-140	4.21	30	†
Pyrene	1.17	0.17	mg/Kg wet	1.67		70.4	40-140	13.6	30	
Pyridine	0.631	0.34	mg/Kg wet	1.67		37.9	30-140	5.37	30	†
1,2,4-Trichlorobenzene	1.15	0.34	mg/Kg wet	1.67		68.8	40-140	7.14	30	
2,4,5-Trichlorophenol	1.26	0.34	mg/Kg wet	1.67		75.3	30-130	1.26	30	
2,4,6-Trichlorophenol	1.23	0.34	mg/Kg wet	1.67		73.7	30-130	1.34	30	
Surrogate: 2-Fluorophenol	5.05		mg/Kg wet	6.67		75.8	30-130			
Surrogate: Phenol-d6	5.24		mg/Kg wet	6.67		78.6	30-130			
Surrogate: Nitrobenzene-d5	2.49		mg/Kg wet	3.33		74.6	30-130			
Surrogate: 2-Fluorobiphenyl	2.89		mg/Kg wet	3.33		86.6	30-130			
Surrogate: 2,4,6-Tribromophenol	5.87		mg/Kg wet	6.67		88.0	30-130			
Surrogate: p-Terphenyl-d14	2.80		mg/Kg wet	3.33		83.9	30-130			

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328705 - SW-846 3546										
Matrix Spike (B328705-MS1)	Source: 23A0923-02			Prepared: 01/14/23 Analyzed: 01/17/23						
Biphenyl	1.87	0.097	mg/Kg dry	2.41	ND	77.2	40-140			
Acenaphthene	1.56	0.25	mg/Kg dry	2.41	ND	64.7	40-140			
Acenaphthene	1.56	0.25	mg/Kg dry	2.41	ND	64.7	40-140			
Acenaphthylene	1.66	0.25	mg/Kg dry	2.41	ND	68.8	40-140			
Acenaphthylene	1.66	0.25	mg/Kg dry	2.41	ND	68.8	40-140			
Acetophenone	1.58	0.49	mg/Kg dry	2.41	ND	65.5	40-140			
Aniline	2.54	0.49	mg/Kg dry	2.41	ND	105	40-140			V-05
Anthracene	1.72	0.25	mg/Kg dry	2.41	ND	71.2	40-140			
Anthracene	1.72	0.25	mg/Kg dry	2.41	ND	71.2	40-140			
Benzo(a)anthracene	1.73	0.25	mg/Kg dry	2.41	0.161	65.0	40-140			
Benzo(a)anthracene	1.73	0.25	mg/Kg dry	2.41	0.161	65.0	40-140			
Benzo(a)pyrene	1.45	0.25	mg/Kg dry	2.41	0.157	53.6	40-140			
Benzo(a)pyrene	1.45	0.25	mg/Kg dry	2.41	0.157	53.6	40-140			
Benzo(b)fluoranthene	1.55	0.25	mg/Kg dry	2.41	0.210	55.5	40-140			
Benzo(b)fluoranthene	1.55	0.25	mg/Kg dry	2.41	0.210	55.5	40-140			
Benzo(g,h,i)perylene	1.40	0.25	mg/Kg dry	2.41	ND	57.9	40-140			
Benzo(g,h,i)perylene	1.40	0.25	mg/Kg dry	2.41	ND	57.9	40-140			
Benzo(k)fluoranthene	1.55	0.25	mg/Kg dry	2.41	0.0860	60.8	40-140			
Benzo(k)fluoranthene	1.55	0.25	mg/Kg dry	2.41	0.0860	60.8	40-140			
Bis(2-chloroethoxy)methane	1.34	0.49	mg/Kg dry	2.41	ND	55.5	40-140			
Bis(2-chloroethyl)ether	1.40	0.49	mg/Kg dry	2.41	ND	57.9	40-140			
Bis(2-chloroisopropyl)ether	1.96	0.49	mg/Kg dry	2.41	ND	81.1	40-140			
Bis(2-Ethylhexyl)phthalate	1.90	0.49	mg/Kg dry	2.41	ND	78.8	40-140			
4-Bromophenylphenylether	1.72	0.49	mg/Kg dry	2.41	ND	71.1	40-140			
Butylbenzylphthalate	1.76	0.49	mg/Kg dry	2.41	ND	72.9	40-140			
4-Chloroaniline	0.818	0.96	mg/Kg dry	2.41	ND	33.9	* 40-140			MS-07A
2-Chloronaphthalene	1.46	0.49	mg/Kg dry	2.41	ND	60.3	40-140			
2-Chlorophenol	1.46	0.49	mg/Kg dry	2.41	ND	60.5	30-130			
Chrysene	1.69	0.25	mg/Kg dry	2.41	0.168	63.2	40-140			
Chrysene	1.69	0.25	mg/Kg dry	2.41	0.168	63.2	40-140			
Dibenz(a,h)anthracene	1.57	0.25	mg/Kg dry	2.41	ND	65.1	40-140			
Dibenz(a,h)anthracene	1.57	0.25	mg/Kg dry	2.41	ND	65.1	40-140			
Dibenzofuran	1.66	0.49	mg/Kg dry	2.41	ND	68.6	40-140			
Di-n-butylphthalate	1.77	0.49	mg/Kg dry	2.41	ND	73.3	40-140			
1,2-Dichlorobenzene	1.35	0.49	mg/Kg dry	2.41	ND	56.0	40-140			
1,3-Dichlorobenzene	1.27	0.49	mg/Kg dry	2.41	ND	52.7	40-140			
1,4-Dichlorobenzene	1.30	0.49	mg/Kg dry	2.41	ND	53.7	40-140			
3,3-Dichlorobenzidine	0.747	0.25	mg/Kg dry	2.41	ND	30.9	* 40-140			MS-07A
2,4-Dichlorophenol	1.59	0.49	mg/Kg dry	2.41	ND	65.7	30-130			
Diethylphthalate	1.58	0.49	mg/Kg dry	2.41	ND	65.4	40-140			
2,4-Dimethylphenol	1.51	0.49	mg/Kg dry	2.41	ND	62.7	30-130			
Dimethylphthalate	1.66	0.49	mg/Kg dry	2.41	ND	68.9	40-140			
2,4-Dinitrophenol	0.886	0.96	mg/Kg dry	2.41	ND	36.7	30-130			
2,4-Dinitrotoluene	1.69	0.49	mg/Kg dry	2.41	ND	70.1	40-140			
2,6-Dinitrotoluene	1.78	0.49	mg/Kg dry	2.41	ND	73.5	40-140			
Di-n-octylphthalate	1.59	0.49	mg/Kg dry	2.41	ND	66.0	40-140			
1,2-Diphenylhydrazine/Azobenzene	1.62	0.49	mg/Kg dry	2.41	ND	67.2	40-140			
Fluoranthene	2.11	0.25	mg/Kg dry	2.41	0.397	70.9	40-140			
Fluoranthene	2.11	0.25	mg/Kg dry	2.41	0.397	70.9	40-140			
Fluorene	1.68	0.25	mg/Kg dry	2.41	ND	69.4	40-140			
Fluorene	1.68	0.25	mg/Kg dry	2.41	ND	69.4	40-140			
Hexachlorobenzene	1.80	0.49	mg/Kg dry	2.41	ND	74.6	40-140			

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328705 - SW-846 3546										
Matrix Spike (B328705-MS1)	Source: 23A0923-02			Prepared: 01/14/23 Analyzed: 01/17/23						
Hexachlorobutadiene	1.35	0.49	mg/Kg dry	2.41	ND	55.9	40-140			
Hexachloroethane	1.15	0.49	mg/Kg dry	2.41	ND	47.5	40-140			
Indeno(1,2,3-cd)pyrene	1.53	0.25	mg/Kg dry	2.41	ND	63.6	40-140			
Indeno(1,2,3-cd)pyrene	1.53	0.25	mg/Kg dry	2.41	ND	63.6	40-140			
Isophorone	1.50	0.49	mg/Kg dry	2.41	ND	62.3	40-140			
2-Methylnaphthalene	1.42	0.25	mg/Kg dry	2.41	ND	58.6	40-140			
2-Methylnaphthalene	1.42	0.25	mg/Kg dry	2.41	ND	58.6	40-140			
2-Methylphenol	1.57	0.49	mg/Kg dry	2.41	ND	64.9	30-130			
3/4-Methylphenol	1.75	0.49	mg/Kg dry	2.41	ND	72.5	30-130			
Naphthalene	1.53	0.25	mg/Kg dry	2.41	ND	63.3	40-140			
Naphthalene	1.53	0.25	mg/Kg dry	2.41	ND	63.3	40-140			
Nitrobenzene	1.34	0.49	mg/Kg dry	2.41	ND	55.7	40-140			
2-Nitrophenol	1.34	0.49	mg/Kg dry	2.41	ND	55.6	30-130			
4-Nitrophenol	1.92	0.96	mg/Kg dry	2.41	ND	79.6	30-130			
Pentachlorophenol	1.13	0.49	mg/Kg dry	2.41	ND	46.8	30-130			
Phenanthrene	1.75	0.25	mg/Kg dry	2.41	0.141	66.7	40-140			
Phenanthrene	1.75	0.25	mg/Kg dry	2.41	0.141	66.7	40-140			
Phenol	1.54	0.49	mg/Kg dry	2.41	ND	63.7	30-130			
Pyrene	2.17	0.25	mg/Kg dry	2.41	0.303	77.2	40-140			
Pyrene	2.17	0.25	mg/Kg dry	2.41	0.303	77.2	40-140			
Pyridine	0.705	0.49	mg/Kg dry	2.41	ND	29.2 *	40-140			MS-07A
1,2,4-Trichlorobenzene	1.40	0.49	mg/Kg dry	2.41	ND	58.0	40-140			
2,4,5-Trichlorophenol	1.67	0.49	mg/Kg dry	2.41	ND	69.1	30-130			
2,4,6-Trichlorophenol	1.61	0.49	mg/Kg dry	2.41	ND	66.5	30-130			
Surrogate: 2-Fluorophenol	6.30		mg/Kg dry	9.66		65.2	30-130			
Surrogate: Phenol-d6	6.72		mg/Kg dry	9.66		69.6	30-130			
Surrogate: Nitrobenzene-d5	2.98		mg/Kg dry	4.83		61.6	30-130			
Surrogate: Nitrobenzene-d5	2.98		mg/Kg dry	4.83		61.6	30-130			
Surrogate: 2-Fluorobiphenyl	3.68		mg/Kg dry	4.83		76.3	30-130			
Surrogate: 2-Fluorobiphenyl	3.68		mg/Kg dry	4.83		76.3	30-130			
Surrogate: 2,4,6-Tribromophenol	7.42		mg/Kg dry	9.66		76.8	30-130			
Surrogate: p-Terphenyl-d14	4.36		mg/Kg dry	4.83		90.3	30-130			
Surrogate: p-Terphenyl-d14	4.36		mg/Kg dry	4.83		90.3	30-130			
Matrix Spike Dup (B328705-MSD1)	Source: 23A0923-02			Prepared: 01/14/23 Analyzed: 01/17/23						
Biphenyl	1.67	0.097	mg/Kg dry	2.41	ND	69.0	40-140	11.3	30	
Acenaphthene	1.51	0.25	mg/Kg dry	2.41	ND	62.6	40-140	3.33	30	
Acenaphthene	1.51	0.25	mg/Kg dry	2.41	ND	62.6	40-140	3.33	30	
Acenaphthylene	1.57	0.25	mg/Kg dry	2.41	ND	65.0	40-140	5.68	30	
Acenaphthylene	1.57	0.25	mg/Kg dry	2.41	ND	65.0	40-140	5.68	30	
Acetophenone	1.55	0.49	mg/Kg dry	2.41	ND	64.1	40-140	2.07	30	
Aniline	2.41	0.49	mg/Kg dry	2.41	ND	99.6	40-140	5.37	30	V-05
Anthracene	1.67	0.25	mg/Kg dry	2.41	ND	69.2	40-140	2.85	30	
Anthracene	1.67	0.25	mg/Kg dry	2.41	ND	69.2	40-140	2.85	30	
Benzo(a)anthracene	1.62	0.25	mg/Kg dry	2.41	0.161	60.3	40-140	6.78	30	
Benzo(a)anthracene	1.62	0.25	mg/Kg dry	2.41	0.161	60.3	40-140	6.78	30	
Benzo(a)pyrene	1.49	0.25	mg/Kg dry	2.41	0.157	55.1	40-140	2.56	30	
Benzo(a)pyrene	1.49	0.25	mg/Kg dry	2.41	0.157	55.1	40-140	2.56	30	
Benzo(b)fluoranthene	1.55	0.25	mg/Kg dry	2.41	0.210	55.4	40-140	0.0624	30	
Benzo(b)fluoranthene	1.55	0.25	mg/Kg dry	2.41	0.210	55.4	40-140	0.0624	30	
Benzo(g,h,i)perylene	1.32	0.25	mg/Kg dry	2.41	ND	54.7	40-140	5.58	30	
Benzo(g,h,i)perylene	1.32	0.25	mg/Kg dry	2.41	ND	54.7	40-140	5.58	30	

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328705 - SW-846 3546										
Matrix Spike Dup (B328705-MSD1)										
		Source: 23A0923-02		Prepared: 01/14/23 Analyzed: 01/17/23						
Benzo(k)fluoranthene	1.67	0.25	mg/Kg dry	2.41	0.0860	65.4	40-140	6.99	30	
Benzo(k)fluoranthene	1.67	0.25	mg/Kg dry	2.41	0.0860	65.4	40-140	6.99	30	
Bis(2-chloroethoxy)methane	1.51	0.49	mg/Kg dry	2.41	ND	62.6	40-140	12.1	30	
Bis(2-chloroethyl)ether	1.35	0.49	mg/Kg dry	2.41	ND	55.9	40-140	3.37	30	
Bis(2-chloroisopropyl)ether	1.81	0.49	mg/Kg dry	2.41	ND	75.1	40-140	7.63	30	
Bis(2-Ethylhexyl)phthalate	1.81	0.49	mg/Kg dry	2.41	ND	74.9	40-140	5.05	30	
4-Bromophenylphenylether	1.50	0.49	mg/Kg dry	2.41	ND	62.2	40-140	13.3	30	
Butylbenzylphthalate	1.84	0.49	mg/Kg dry	2.41	ND	76.2	40-140	4.37	30	
4-Chloroaniline	0.791	0.96	mg/Kg dry	2.41	ND	32.8	* 40-140	3.36	30	MS-07A
2-Chloronaphthalene	1.49	0.49	mg/Kg dry	2.41	ND	61.6	40-140	2.07	30	
2-Chlorophenol	1.42	0.49	mg/Kg dry	2.41	ND	58.9	30-130	2.81	30	
Chrysene	1.61	0.25	mg/Kg dry	2.41	0.168	59.7	40-140	5.09	30	
Chrysene	1.61	0.25	mg/Kg dry	2.41	0.168	59.7	40-140	5.09	30	
Dibenz(a,h)anthracene	1.43	0.25	mg/Kg dry	2.41	ND	59.2	40-140	9.43	30	
Dibenz(a,h)anthracene	1.43	0.25	mg/Kg dry	2.41	ND	59.2	40-140	9.43	30	
Dibenzofuran	1.61	0.49	mg/Kg dry	2.41	ND	66.7	40-140	2.78	30	
Di-n-butylphthalate	1.65	0.49	mg/Kg dry	2.41	ND	68.2	40-140	7.15	30	
1,2-Dichlorobenzene	1.30	0.49	mg/Kg dry	2.41	ND	53.9	40-140	3.93	30	
1,3-Dichlorobenzene	1.22	0.49	mg/Kg dry	2.41	ND	50.5	40-140	4.19	30	
1,4-Dichlorobenzene	1.25	0.49	mg/Kg dry	2.41	ND	51.9	40-140	3.30	30	
3,3-Dichlorobenzidine	0.827	0.25	mg/Kg dry	2.41	ND	34.2	* 40-140	10.1	30	MS-07A
2,4-Dichlorophenol	1.59	0.49	mg/Kg dry	2.41	ND	65.7	30-130	0.0305	30	
Diethylphthalate	1.54	0.49	mg/Kg dry	2.41	ND	63.7	40-140	2.63	30	
2,4-Dimethylphenol	1.59	0.49	mg/Kg dry	2.41	ND	65.8	30-130	4.73	30	
Dimethylphthalate	1.59	0.49	mg/Kg dry	2.41	ND	66.0	40-140	4.33	30	
2,4-Dinitrophenol	0.966	0.96	mg/Kg dry	2.41	ND	40.0	30-130	8.71	30	
2,4-Dinitrotoluene	1.66	0.49	mg/Kg dry	2.41	ND	68.9	40-140	1.73	30	
2,6-Dinitrotoluene	1.71	0.49	mg/Kg dry	2.41	ND	70.7	40-140	3.85	30	
Di-n-octylphthalate	1.54	0.49	mg/Kg dry	2.41	ND	63.6	40-140	3.74	30	
1,2-Diphenylhydrazine/Azobenzene	1.62	0.49	mg/Kg dry	2.41	ND	67.0	40-140	0.298	30	
Fluoranthene	1.84	0.25	mg/Kg dry	2.41	0.397	59.6	40-140	13.8	30	
Fluoranthene	1.84	0.25	mg/Kg dry	2.41	0.397	59.6	40-140	13.8	30	
Fluorene	1.64	0.25	mg/Kg dry	2.41	ND	67.8	40-140	2.39	30	
Fluorene	1.64	0.25	mg/Kg dry	2.41	ND	67.8	40-140	2.39	30	
Hexachlorobenzene	1.61	0.49	mg/Kg dry	2.41	ND	66.8	40-140	11.0	30	
Hexachlorobutadiene	1.35	0.49	mg/Kg dry	2.41	ND	55.9	40-140	0.0716	30	
Hexachloroethane	1.12	0.49	mg/Kg dry	2.41	ND	46.6	40-140	2.08	30	
Indeno(1,2,3-cd)pyrene	1.41	0.25	mg/Kg dry	2.41	ND	58.6	40-140	8.15	30	
Indeno(1,2,3-cd)pyrene	1.41	0.25	mg/Kg dry	2.41	ND	58.6	40-140	8.15	30	
Isophorone	1.60	0.49	mg/Kg dry	2.41	ND	66.1	40-140	5.92	30	
2-Methylnaphthalene	1.70	0.25	mg/Kg dry	2.41	ND	70.2	40-140	18.0	30	
2-Methylnaphthalene	1.70	0.25	mg/Kg dry	2.41	ND	70.2	40-140	18.0	30	
2-Methylphenol	1.50	0.49	mg/Kg dry	2.41	ND	62.2	30-130	4.15	30	
3/4-Methylphenol	1.71	0.49	mg/Kg dry	2.41	ND	70.9	30-130	2.23	30	
Naphthalene	1.48	0.25	mg/Kg dry	2.41	ND	61.4	40-140	3.14	30	
Naphthalene	1.48	0.25	mg/Kg dry	2.41	ND	61.4	40-140	3.14	30	
Nitrobenzene	1.42	0.49	mg/Kg dry	2.41	ND	59.0	40-140	5.79	30	
2-Nitrophenol	1.45	0.49	mg/Kg dry	2.41	ND	60.2	30-130	7.91	30	
4-Nitrophenol	1.86	0.96	mg/Kg dry	2.41	ND	77.1	30-130	3.16	30	
Pentachlorophenol	1.09	0.49	mg/Kg dry	2.41	ND	45.2	30-130	3.44	30	
Phenanthrene	1.71	0.25	mg/Kg dry	2.41	0.141	64.8	40-140	2.62	30	
Phenanthrene	1.71	0.25	mg/Kg dry	2.41	0.141	64.8	40-140	2.62	30	

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328705 - SW-846 3546
Matrix Spike Dup (B328705-MSD1)
Source: 23A0923-02

Prepared: 01/14/23 Analyzed: 01/17/23

Phenol	1.50	0.49	mg/Kg dry	2.41	ND	62.2	30-130	2.41	30	
Pyrene	2.24	0.25	mg/Kg dry	2.41	0.303	80.4	40-140	3.53	30	
Pyrene	2.24	0.25	mg/Kg dry	2.41	0.303	80.4	40-140	3.53	30	
Pyridine	0.698	0.49	mg/Kg dry	2.41	ND	28.9 *	40-140	0.964	30	MS-07A
1,2,4-Trichlorobenzene	1.38	0.49	mg/Kg dry	2.41	ND	57.0	40-140	1.77	30	
2,4,5-Trichlorophenol	1.61	0.49	mg/Kg dry	2.41	ND	66.7	30-130	3.54	30	
2,4,6-Trichlorophenol	1.52	0.49	mg/Kg dry	2.41	ND	63.0	30-130	5.44	30	
Surrogate: 2-Fluorophenol	6.17		mg/Kg dry	9.66		63.8	30-130			
Surrogate: Phenol-d6	6.55		mg/Kg dry	9.66		67.8	30-130			
Surrogate: Nitrobenzene-d5	3.19		mg/Kg dry	4.83		66.1	30-130			
Surrogate: Nitrobenzene-d5	3.19		mg/Kg dry	4.83		66.1	30-130			
Surrogate: 2-Fluorobiphenyl	3.55		mg/Kg dry	4.83		73.5	30-130			
Surrogate: 2-Fluorobiphenyl	3.55		mg/Kg dry	4.83		73.5	30-130			
Surrogate: 2,4,6-Tribromophenol	7.13		mg/Kg dry	9.66		73.8	30-130			
Surrogate: p-Terphenyl-d14	4.54		mg/Kg dry	4.83		94.1	30-130			
Surrogate: p-Terphenyl-d14	4.54		mg/Kg dry	4.83		94.1	30-130			

Batch B329001 - SW-846 3546
Blank (B329001-BLK1)

Prepared: 01/18/23 Analyzed: 01/19/23

Biphenyl	ND	0.067	mg/Kg wet							V-06
Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Acetophenone	ND	0.34	mg/Kg wet							
Aniline	ND	0.34	mg/Kg wet							V-05
Anthracene	ND	0.17	mg/Kg wet							
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Bis(2-chloroethoxy)methane	ND	0.34	mg/Kg wet							
Bis(2-chloroethyl)ether	ND	0.34	mg/Kg wet							
Bis(2-chloroisopropyl)ether	ND	0.34	mg/Kg wet							V-06
Bis(2-Ethylhexyl)phthalate	ND	0.34	mg/Kg wet							
4-Bromophenylphenylether	ND	0.34	mg/Kg wet							
Butylbenzylphthalate	ND	0.34	mg/Kg wet							
4-Chloroaniline	ND	0.66	mg/Kg wet							
2-Chloronaphthalene	ND	0.34	mg/Kg wet							
2-Chlorophenol	ND	0.34	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Dibenzofuran	ND	0.34	mg/Kg wet							
Di-n-butylphthalate	ND	0.34	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.34	mg/Kg wet							
3,3-Dichlorobenzidine	ND	0.17	mg/Kg wet							
2,4-Dichlorophenol	ND	0.34	mg/Kg wet							
Diethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dimethylphenol	ND	0.34	mg/Kg wet							
Dimethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dinitrophenol	ND	0.66	mg/Kg wet							

R-05, V-05

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B329001 - SW-846 3546										
Blank (B329001-BLK1)										
Prepared: 01/18/23 Analyzed: 01/19/23										
2,4-Dinitrotoluene	ND	0.34	mg/Kg wet							
2,6-Dinitrotoluene	ND	0.34	mg/Kg wet							
Di-n-octylphthalate	ND	0.34	mg/Kg wet							R-05
1,2-Diphenylhydrazine/Azobenzene	ND	0.34	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Hexachlorobenzene	ND	0.34	mg/Kg wet							
Hexachlorobutadiene	ND	0.34	mg/Kg wet							
Hexachloroethane	ND	0.34	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
Isophorone	ND	0.34	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							
2-Methylphenol	ND	0.34	mg/Kg wet							
3/4-Methylphenol	ND	0.34	mg/Kg wet							
Naphthalene	ND	0.17	mg/Kg wet							
Nitrobenzene	ND	0.34	mg/Kg wet							
2-Nitrophenol	ND	0.34	mg/Kg wet							
4-Nitrophenol	ND	0.66	mg/Kg wet							
Pentachlorophenol	ND	0.34	mg/Kg wet							V-05
Phenanthrene	ND	0.17	mg/Kg wet							
Phenol	ND	0.34	mg/Kg wet							
Pyrene	ND	0.17	mg/Kg wet							
Pyridine	ND	0.34	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.34	mg/Kg wet							
2,4,5-Trichlorophenol	ND	0.34	mg/Kg wet							
2,4,6-Trichlorophenol	ND	0.34	mg/Kg wet							
Surrogate: 2-Fluorophenol	5.16		mg/Kg wet	6.67		77.4	30-130			
Surrogate: Phenol-d6	5.34		mg/Kg wet	6.67		80.1	30-130			
Surrogate: Nitrobenzene-d5	2.72		mg/Kg wet	3.33		81.6	30-130			
Surrogate: 2-Fluorobiphenyl	2.67		mg/Kg wet	3.33		80.0	30-130			
Surrogate: 2,4,6-Tribromophenol	5.42		mg/Kg wet	6.67		81.3	30-130			
Surrogate: p-Terphenyl-d14	2.79		mg/Kg wet	3.33		83.8	30-130			
LCS (B329001-BS1)										
Prepared: 01/18/23 Analyzed: 01/19/23										
Biphenyl	1.06	0.067	mg/Kg wet	1.67		63.4	40-140			V-06
Acenaphthene	0.919	0.17	mg/Kg wet	1.67		55.1	40-140			
Acenaphthylene	0.951	0.17	mg/Kg wet	1.67		57.1	40-140			
Acetophenone	1.07	0.34	mg/Kg wet	1.67		64.1	40-140			
Aniline	0.694	0.34	mg/Kg wet	1.67		41.6	40-140			V-05
Anthracene	0.993	0.17	mg/Kg wet	1.67		59.6	40-140			
Benzo(a)anthracene	0.948	0.17	mg/Kg wet	1.67		56.9	40-140			
Benzo(a)pyrene	0.849	0.17	mg/Kg wet	1.67		51.0	40-140			
Benzo(b)fluoranthene	0.873	0.17	mg/Kg wet	1.67		52.4	40-140			
Benzo(g,h,i)perylene	0.803	0.17	mg/Kg wet	1.67		48.2	40-140			
Benzo(k)fluoranthene	0.930	0.17	mg/Kg wet	1.67		55.8	40-140			
Bis(2-chloroethoxy)methane	0.961	0.34	mg/Kg wet	1.67		57.7	40-140			
Bis(2-chloroethyl)ether	1.04	0.34	mg/Kg wet	1.67		62.5	40-140			
Bis(2-chloroisopropyl)ether	1.30	0.34	mg/Kg wet	1.67		78.3	40-140			V-06
Bis(2-Ethylhexyl)phthalate	0.976	0.34	mg/Kg wet	1.67		58.6	40-140			
4-Bromophenylphenylether	0.895	0.34	mg/Kg wet	1.67		53.7	40-140			
Butylbenzylphthalate	0.909	0.34	mg/Kg wet	1.67		54.5	40-140			
4-Chloroaniline	0.815	0.66	mg/Kg wet	1.67		48.9	15-140			†

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B329001 - SW-846 3546										
LCS (B329001-BS1)										
Prepared: 01/18/23 Analyzed: 01/19/23										
2-Chloronaphthalene	0.947	0.34	mg/Kg wet	1.67		56.8	40-140			
2-Chlorophenol	0.993	0.34	mg/Kg wet	1.67		59.6	30-130			
Chrysene	0.885	0.17	mg/Kg wet	1.67		53.1	40-140			
Dibenz(a,h)anthracene	0.834	0.17	mg/Kg wet	1.67		50.0	40-140			
Dibenzofuran	0.896	0.34	mg/Kg wet	1.67		53.8	40-140			
Di-n-butylphthalate	0.983	0.34	mg/Kg wet	1.67		59.0	40-140			
1,2-Dichlorobenzene	0.944	0.34	mg/Kg wet	1.67		56.7	40-140			
1,3-Dichlorobenzene	0.893	0.34	mg/Kg wet	1.67		53.6	40-140			
1,4-Dichlorobenzene	0.915	0.34	mg/Kg wet	1.67		54.9	40-140			
3,3-Dichlorobenzidine	0.859	0.17	mg/Kg wet	1.67		51.5	40-140			
2,4-Dichlorophenol	0.945	0.34	mg/Kg wet	1.67		56.7	30-130			
Diethylphthalate	0.839	0.34	mg/Kg wet	1.67		50.4	40-140			
2,4-Dimethylphenol	1.14	0.34	mg/Kg wet	1.67		68.5	30-130			
Dimethylphthalate	0.988	0.34	mg/Kg wet	1.67		59.3	40-140			
2,4-Dinitrophenol	0.486	0.66	mg/Kg wet	1.67		29.2	15-140			R-05, V-05 †
2,4-Dinitrotoluene	0.966	0.34	mg/Kg wet	1.67		58.0	40-140			
2,6-Dinitrotoluene	1.05	0.34	mg/Kg wet	1.67		62.9	40-140			
Di-n-octylphthalate	0.858	0.34	mg/Kg wet	1.67		51.5	40-140			R-05
1,2-Diphenylhydrazine/Azobenzene	0.892	0.34	mg/Kg wet	1.67		53.5	40-140			
Fluoranthene	1.00	0.17	mg/Kg wet	1.67		60.2	40-140			
Fluorene	0.889	0.17	mg/Kg wet	1.67		53.4	40-140			
Hexachlorobenzene	0.947	0.34	mg/Kg wet	1.67		56.8	40-140			
Hexachlorobutadiene	0.940	0.34	mg/Kg wet	1.67		56.4	40-140			
Hexachloroethane	0.899	0.34	mg/Kg wet	1.67		53.9	40-140			
Indeno(1,2,3-cd)pyrene	0.862	0.17	mg/Kg wet	1.67		51.7	40-140			
Isophorone	1.05	0.34	mg/Kg wet	1.67		63.1	40-140			
2-Methylnaphthalene	0.979	0.17	mg/Kg wet	1.67		58.7	40-140			
2-Methylphenol	1.01	0.34	mg/Kg wet	1.67		60.4	30-130			
3/4-Methylphenol	1.13	0.34	mg/Kg wet	1.67		67.6	30-130			
Naphthalene	0.982	0.17	mg/Kg wet	1.67		58.9	40-140			
Nitrobenzene	0.972	0.34	mg/Kg wet	1.67		58.3	40-140			
2-Nitrophenol	0.996	0.34	mg/Kg wet	1.67		59.7	30-130			
4-Nitrophenol	0.931	0.66	mg/Kg wet	1.67		55.8	15-140			†
Pentachlorophenol	0.581	0.34	mg/Kg wet	1.67		34.9	30-130			V-05
Phenanthrene	1.01	0.17	mg/Kg wet	1.67		60.7	40-140			
Phenol	1.04	0.34	mg/Kg wet	1.67		62.2	15-140			†
Pyrene	0.948	0.17	mg/Kg wet	1.67		56.9	40-140			
Pyridine	0.556	0.34	mg/Kg wet	1.67		33.4	30-140			†
1,2,4-Trichlorobenzene	0.893	0.34	mg/Kg wet	1.67		53.6	40-140			
2,4,5-Trichlorophenol	0.856	0.34	mg/Kg wet	1.67		51.4	30-130			
2,4,6-Trichlorophenol	0.836	0.34	mg/Kg wet	1.67		50.2	30-130			
Surrogate: 2-Fluorophenol	4.47		mg/Kg wet	6.67		67.0	30-130			
Surrogate: Phenol-d6	4.50		mg/Kg wet	6.67		67.6	30-130			
Surrogate: Nitrobenzene-d5	2.19		mg/Kg wet	3.33		65.7	30-130			
Surrogate: 2-Fluorobiphenyl	2.04		mg/Kg wet	3.33		61.3	30-130			
Surrogate: 2,4,6-Tribromophenol	4.00		mg/Kg wet	6.67		60.0	30-130			
Surrogate: p-Terphenyl-d14	2.16		mg/Kg wet	3.33		64.8	30-130			

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B329001 - SW-846 3546										
LCS Dup (B329001-BSD1)										
					Prepared: 01/18/23 Analyzed: 01/19/23					
Biphenyl	1.25	0.067	mg/Kg wet	1.67		75.2	40-140	17.0	20	V-06
Acenaphthene	1.10	0.17	mg/Kg wet	1.67		66.2	40-140	18.3	30	
Acenaphthylene	1.18	0.17	mg/Kg wet	1.67		71.0	40-140	21.8	30	
Acetophenone	1.17	0.34	mg/Kg wet	1.67		70.1	40-140	8.95	30	
Aniline	0.736	0.34	mg/Kg wet	1.67		44.2	40-140	5.92	30	V-05
Anthracene	1.18	0.17	mg/Kg wet	1.67		70.9	40-140	17.4	30	
Benzo(a)anthracene	1.11	0.17	mg/Kg wet	1.67		66.5	40-140	15.7	30	
Benzo(a)pyrene	1.03	0.17	mg/Kg wet	1.67		61.6	40-140	19.0	30	
Benzo(b)fluoranthene	1.10	0.17	mg/Kg wet	1.67		65.7	40-140	22.6	30	
Benzo(g,h,i)perylene	1.01	0.17	mg/Kg wet	1.67		60.5	40-140	22.6	30	
Benzo(k)fluoranthene	1.14	0.17	mg/Kg wet	1.67		68.7	40-140	20.7	30	
Bis(2-chloroethoxy)methane	1.16	0.34	mg/Kg wet	1.67		69.7	40-140	18.8	30	
Bis(2-chloroethyl)ether	1.11	0.34	mg/Kg wet	1.67		66.6	40-140	6.38	30	
Bis(2-chloroisopropyl)ether	1.42	0.34	mg/Kg wet	1.67		85.3	40-140	8.53	30	V-06
Bis(2-Ethylhexyl)phthalate	1.15	0.34	mg/Kg wet	1.67		68.7	40-140	16.0	30	
4-Bromophenylphenylether	1.17	0.34	mg/Kg wet	1.67		70.4	40-140	26.9	30	
Butylbenzylphthalate	1.15	0.34	mg/Kg wet	1.67		69.2	40-140	23.7	30	
4-Chloroaniline	0.839	0.66	mg/Kg wet	1.67		50.3	15-140	2.90	30	†
2-Chloronaphthalene	1.13	0.34	mg/Kg wet	1.67		68.0	40-140	17.9	30	
2-Chlorophenol	1.10	0.34	mg/Kg wet	1.67		66.1	30-130	10.4	30	
Chrysene	1.13	0.17	mg/Kg wet	1.67		67.8	40-140	24.3	30	
Dibenz(a,h)anthracene	1.03	0.17	mg/Kg wet	1.67		61.6	40-140	20.7	30	
Dibenzofuran	1.21	0.34	mg/Kg wet	1.67		72.5	40-140	29.6	30	
Di-n-butylphthalate	1.19	0.34	mg/Kg wet	1.67		71.4	40-140	19.1	30	
1,2-Dichlorobenzene	1.04	0.34	mg/Kg wet	1.67		62.5	40-140	9.77	30	
1,3-Dichlorobenzene	1.07	0.34	mg/Kg wet	1.67		64.3	40-140	18.1	30	
1,4-Dichlorobenzene	1.08	0.34	mg/Kg wet	1.67		64.5	40-140	16.1	30	
3,3-Dichlorobenzidine	0.963	0.17	mg/Kg wet	1.67		57.8	40-140	11.4	30	
2,4-Dichlorophenol	1.16	0.34	mg/Kg wet	1.67		69.7	30-130	20.5	30	
Diethylphthalate	1.13	0.34	mg/Kg wet	1.67		68.0	40-140	29.7	30	
2,4-Dimethylphenol	1.15	0.34	mg/Kg wet	1.67		68.8	30-130	0.466	30	
Dimethylphthalate	1.17	0.34	mg/Kg wet	1.67		70.1	40-140	16.7	30	
2,4-Dinitrophenol	0.662	0.66	mg/Kg wet	1.67		39.7	15-140	30.7	* 30	R-05, V-05 †
2,4-Dinitrotoluene	1.20	0.34	mg/Kg wet	1.67		72.0	40-140	21.6	30	
2,6-Dinitrotoluene	1.28	0.34	mg/Kg wet	1.67		76.9	40-140	20.0	30	
Di-n-octylphthalate	1.17	0.34	mg/Kg wet	1.67		70.0	40-140	30.5	* 30	R-05
1,2-Diphenylhydrazine/Azobenzene	1.11	0.34	mg/Kg wet	1.67		66.7	40-140	21.9	30	
Fluoranthene	1.23	0.17	mg/Kg wet	1.67		73.8	40-140	20.4	30	
Fluorene	1.19	0.17	mg/Kg wet	1.67		71.2	40-140	28.6	30	
Hexachlorobenzene	1.21	0.34	mg/Kg wet	1.67		72.8	40-140	24.7	30	
Hexachlorobutadiene	1.06	0.34	mg/Kg wet	1.67		63.6	40-140	12.1	30	
Hexachloroethane	0.986	0.34	mg/Kg wet	1.67		59.2	40-140	9.23	30	
Indeno(1,2,3-cd)pyrene	1.06	0.17	mg/Kg wet	1.67		63.7	40-140	20.7	30	
Isophorone	1.14	0.34	mg/Kg wet	1.67		68.2	40-140	7.71	30	
2-Methylnaphthalene	1.04	0.17	mg/Kg wet	1.67		62.5	40-140	6.14	30	
2-Methylphenol	1.13	0.34	mg/Kg wet	1.67		67.8	30-130	11.6	30	
3/4-Methylphenol	1.22	0.34	mg/Kg wet	1.67		73.5	30-130	8.36	30	
Naphthalene	1.18	0.17	mg/Kg wet	1.67		71.1	40-140	18.7	30	
Nitrobenzene	1.11	0.34	mg/Kg wet	1.67		66.5	40-140	13.1	30	
2-Nitrophenol	1.07	0.34	mg/Kg wet	1.67		64.2	30-130	7.23	30	
4-Nitrophenol	1.19	0.66	mg/Kg wet	1.67		71.2	15-140	24.2	30	†
Pentachlorophenol	0.711	0.34	mg/Kg wet	1.67		42.7	30-130	20.2	30	V-05

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QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B329001 - SW-846 3546										
LCS Dup (B329001-BSD1)										
					Prepared: 01/18/23 Analyzed: 01/19/23					
Phenanthrene	1.16	0.17	mg/Kg wet	1.67		69.4	40-140	13.4	30	
Phenol	1.16	0.34	mg/Kg wet	1.67		69.6	15-140	11.3	30	†
Pyrene	1.21	0.17	mg/Kg wet	1.67		72.5	40-140	24.1	30	
Pyridine	0.629	0.34	mg/Kg wet	1.67		37.7	30-140	12.3	30	†
1,2,4-Trichlorobenzene	1.09	0.34	mg/Kg wet	1.67		65.2	40-140	19.6	30	
2,4,5-Trichlorophenol	1.12	0.34	mg/Kg wet	1.67		67.3	30-130	26.8	30	
2,4,6-Trichlorophenol	1.10	0.34	mg/Kg wet	1.67		65.8	30-130	27.0	30	
Surrogate: 2-Fluorophenol	4.80		mg/Kg wet	6.67		72.0	30-130			
Surrogate: Phenol-d6	4.94		mg/Kg wet	6.67		74.1	30-130			
Surrogate: Nitrobenzene-d5	2.42		mg/Kg wet	3.33		72.6	30-130			
Surrogate: 2-Fluorobiphenyl	2.67		mg/Kg wet	3.33		80.1	30-130			
Surrogate: 2,4,6-Tribromophenol	5.34		mg/Kg wet	6.67		80.2	30-130			
Surrogate: p-Terphenyl-d14	2.64		mg/Kg wet	3.33		79.1	30-130			

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QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328265 - SW-846 3546										
Blank (B328265-BLK1)										
						Prepared: 01/11/23 Analyzed: 01/16/23				
alpha-Chlordane	ND	0.0050	mg/Kg wet							
alpha-Chlordane [2C]	ND	0.0050	mg/Kg wet							
gamma-Chlordane	ND	0.0050	mg/Kg wet							
gamma-Chlordane [2C]	ND	0.0050	mg/Kg wet							
Alachlor	ND	0.020	mg/Kg wet							
Alachlor [2C]	ND	0.020	mg/Kg wet							
Aldrin	ND	0.0050	mg/Kg wet							
Aldrin [2C]	ND	0.0050	mg/Kg wet							
alpha-BHC	ND	0.0050	mg/Kg wet							
alpha-BHC [2C]	ND	0.0050	mg/Kg wet							
beta-BHC	ND	0.0050	mg/Kg wet							
beta-BHC [2C]	ND	0.0050	mg/Kg wet							
delta-BHC	ND	0.0050	mg/Kg wet							
delta-BHC [2C]	ND	0.0050	mg/Kg wet							
gamma-BHC (Lindane)	ND	0.0020	mg/Kg wet							
gamma-BHC (Lindane) [2C]	ND	0.0020	mg/Kg wet							
Chlordane	ND	0.020	mg/Kg wet							
Chlordane [2C]	ND	0.020	mg/Kg wet							
4,4'-DDD	ND	0.0040	mg/Kg wet							
4,4'-DDD [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDE	ND	0.0040	mg/Kg wet							
4,4'-DDE [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDT	ND	0.0040	mg/Kg wet							
4,4'-DDT [2C]	ND	0.0040	mg/Kg wet							
Dieldrin	ND	0.0040	mg/Kg wet							
Dieldrin [2C]	ND	0.0040	mg/Kg wet							
Endosulfan I	ND	0.0050	mg/Kg wet							
Endosulfan I [2C]	ND	0.0050	mg/Kg wet							
Endosulfan II	ND	0.0080	mg/Kg wet							
Endosulfan II [2C]	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate [2C]	ND	0.0080	mg/Kg wet							
Endrin	ND	0.0080	mg/Kg wet							
Endrin [2C]	ND	0.0080	mg/Kg wet							
Endrin Aldehyde	ND	0.0080	mg/Kg wet							
Endrin Aldehyde [2C]	ND	0.0080	mg/Kg wet							
Endrin Ketone	ND	0.0080	mg/Kg wet							
Endrin Ketone [2C]	ND	0.0080	mg/Kg wet							
Heptachlor	ND	0.0050	mg/Kg wet							
Heptachlor [2C]	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide [2C]	ND	0.0050	mg/Kg wet							
Hexachlorobenzene	ND	0.0060	mg/Kg wet							
Hexachlorobenzene [2C]	ND	0.0060	mg/Kg wet							
Methoxychlor	ND	0.050	mg/Kg wet							
Methoxychlor [2C]	ND	0.050	mg/Kg wet							
Toxaphene	ND	0.10	mg/Kg wet							
Toxaphene [2C]	ND	0.10	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.178		mg/Kg wet	0.200		88.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.179		mg/Kg wet	0.200		89.5	30-150			
Surrogate: Tetrachloro-m-xylene	0.223		mg/Kg wet	0.200		111	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.147		mg/Kg wet	0.200		73.4	30-150			

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QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328265 - SW-846 3546										
LCS (B328265-BS1)										
					Prepared: 01/11/23 Analyzed: 01/16/23					
alpha-Chlordane	0.11	0.0050	mg/Kg wet	0.100		106	40-140			
alpha-Chlordane [2C]	0.082	0.0050	mg/Kg wet	0.100		82.3	40-140			
gamma-Chlordane	0.11	0.0050	mg/Kg wet	0.100		110	40-140			
gamma-Chlordane [2C]	0.084	0.0050	mg/Kg wet	0.100		83.9	40-140			
Alachlor	0.098	0.020	mg/Kg wet	0.100		98.4	40-140			
Alachlor [2C]	0.074	0.020	mg/Kg wet	0.100		74.2	40-140			
Aldrin	0.12	0.0050	mg/Kg wet	0.100		116	40-140			
Aldrin [2C]	0.081	0.0050	mg/Kg wet	0.100		80.8	40-140			
alpha-BHC	0.12	0.0050	mg/Kg wet	0.100		123	40-140			
alpha-BHC [2C]	0.078	0.0050	mg/Kg wet	0.100		78.1	40-140			
beta-BHC	0.11	0.0050	mg/Kg wet	0.100		107	40-140			
beta-BHC [2C]	0.072	0.0050	mg/Kg wet	0.100		72.3	40-140			
delta-BHC	0.11	0.0050	mg/Kg wet	0.100		110	40-140			
delta-BHC [2C]	0.075	0.0050	mg/Kg wet	0.100		74.6	40-140			
gamma-BHC (Lindane)	0.12	0.0020	mg/Kg wet	0.100		122	40-140			
gamma-BHC (Lindane) [2C]	0.080	0.0020	mg/Kg wet	0.100		80.3	40-140			
4,4'-DDD	0.11	0.0040	mg/Kg wet	0.100		115	40-140			
4,4'-DDD [2C]	0.10	0.0040	mg/Kg wet	0.100		101	40-140			
4,4'-DDE	0.12	0.0040	mg/Kg wet	0.100		115	40-140			
4,4'-DDE [2C]	0.090	0.0040	mg/Kg wet	0.100		89.8	40-140			
4,4'-DDT	0.11	0.0040	mg/Kg wet	0.100		114	40-140			
4,4'-DDT [2C]	0.091	0.0040	mg/Kg wet	0.100		90.6	40-140			
Dieldrin	0.11	0.0040	mg/Kg wet	0.100		108	40-140			
Dieldrin [2C]	0.088	0.0040	mg/Kg wet	0.100		88.2	40-140			
Endosulfan I	0.11	0.0050	mg/Kg wet	0.100		106	40-140			
Endosulfan I [2C]	0.083	0.0050	mg/Kg wet	0.100		82.5	40-140			
Endosulfan II	0.11	0.0080	mg/Kg wet	0.100		106	40-140			
Endosulfan II [2C]	0.087	0.0080	mg/Kg wet	0.100		87.3	40-140			
Endosulfan Sulfate	0.11	0.0080	mg/Kg wet	0.100		107	40-140			
Endosulfan Sulfate [2C]	0.095	0.0080	mg/Kg wet	0.100		94.9	40-140			
Endrin	0.11	0.0080	mg/Kg wet	0.100		115	40-140			
Endrin [2C]	0.090	0.0080	mg/Kg wet	0.100		90.5	40-140			
Endrin Aldehyde	0.099	0.0080	mg/Kg wet	0.100		99.0	40-140			
Endrin Aldehyde [2C]	0.099	0.0080	mg/Kg wet	0.100		98.6	40-140			
Endrin Ketone	0.11	0.0080	mg/Kg wet	0.100		105	40-140			
Endrin Ketone [2C]	0.097	0.0080	mg/Kg wet	0.100		97.2	40-140			
Heptachlor	0.12	0.0050	mg/Kg wet	0.100		119	40-140			
Heptachlor [2C]	0.081	0.0050	mg/Kg wet	0.100		81.1	40-140			
Heptachlor Epoxide	0.11	0.0050	mg/Kg wet	0.100		113	40-140			
Heptachlor Epoxide [2C]	0.082	0.0050	mg/Kg wet	0.100		81.8	40-140			
Hexachlorobenzene	0.12	0.0060	mg/Kg wet	0.100		117	40-140			
Hexachlorobenzene [2C]	0.075	0.0060	mg/Kg wet	0.100		74.9	40-140			
Methoxychlor	0.11	0.050	mg/Kg wet	0.100		106	40-140			
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		105	40-140			
Surrogate: Decachlorobiphenyl	0.182		mg/Kg wet	0.200		91.1	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.186		mg/Kg wet	0.200		93.0	30-150			
Surrogate: Tetrachloro-m-xylene	0.242		mg/Kg wet	0.200		121	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.150		mg/Kg wet	0.200		75.1	30-150			

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QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328265 - SW-846 3546										
LCS Dup (B328265-BSD1)										
					Prepared: 01/11/23 Analyzed: 01/16/23					
alpha-Chlordane	0.10	0.0050	mg/Kg wet	0.100		101	40-140	4.08	30	
alpha-Chlordane [2C]	0.081	0.0050	mg/Kg wet	0.100		81.3	40-140	1.29	30	
gamma-Chlordane	0.11	0.0050	mg/Kg wet	0.100		106	40-140	3.69	30	
gamma-Chlordane [2C]	0.083	0.0050	mg/Kg wet	0.100		82.6	40-140	1.45	30	
Alachlor	0.092	0.020	mg/Kg wet	0.100		92.3	40-140	6.45	30	
Alachlor [2C]	0.070	0.020	mg/Kg wet	0.100		70.5	40-140	5.09	30	
Aldrin	0.11	0.0050	mg/Kg wet	0.100		112	40-140	3.30	30	
Aldrin [2C]	0.079	0.0050	mg/Kg wet	0.100		78.7	40-140	2.63	30	
alpha-BHC	0.12	0.0050	mg/Kg wet	0.100		119	40-140	2.67	30	
alpha-BHC [2C]	0.074	0.0050	mg/Kg wet	0.100		73.8	40-140	5.68	30	
beta-BHC	0.10	0.0050	mg/Kg wet	0.100		103	40-140	4.23	30	
beta-BHC [2C]	0.069	0.0050	mg/Kg wet	0.100		68.6	40-140	5.30	30	
delta-BHC	0.096	0.0050	mg/Kg wet	0.100		96.4	40-140	13.0	30	
delta-BHC [2C]	0.066	0.0050	mg/Kg wet	0.100		65.9	40-140	12.3	30	
gamma-BHC (Lindane)	0.12	0.0020	mg/Kg wet	0.100		117	40-140	3.69	30	
gamma-BHC (Lindane) [2C]	0.075	0.0020	mg/Kg wet	0.100		75.5	40-140	6.21	30	
4,4'-DDD	0.11	0.0040	mg/Kg wet	0.100		112	40-140	2.26	30	
4,4'-DDD [2C]	0.10	0.0040	mg/Kg wet	0.100		102	40-140	1.08	30	
4,4'-DDE	0.11	0.0040	mg/Kg wet	0.100		113	40-140	1.74	30	
4,4'-DDE [2C]	0.090	0.0040	mg/Kg wet	0.100		89.9	40-140	0.135	30	
4,4'-DDT	0.11	0.0040	mg/Kg wet	0.100		111	40-140	2.25	30	
4,4'-DDT [2C]	0.092	0.0040	mg/Kg wet	0.100		91.5	40-140	1.02	30	
Dieldrin	0.10	0.0040	mg/Kg wet	0.100		104	40-140	3.70	30	
Dieldrin [2C]	0.087	0.0040	mg/Kg wet	0.100		87.3	40-140	0.949	30	
Endosulfan I	0.097	0.0050	mg/Kg wet	0.100		97.2	40-140	8.75	30	
Endosulfan I [2C]	0.079	0.0050	mg/Kg wet	0.100		78.7	40-140	4.79	30	
Endosulfan II	0.099	0.0080	mg/Kg wet	0.100		98.7	40-140	6.73	30	
Endosulfan II [2C]	0.084	0.0080	mg/Kg wet	0.100		84.1	40-140	3.70	30	
Endosulfan Sulfate	0.099	0.0080	mg/Kg wet	0.100		99.4	40-140	7.47	30	
Endosulfan Sulfate [2C]	0.091	0.0080	mg/Kg wet	0.100		90.5	40-140	4.68	30	
Endrin	0.11	0.0080	mg/Kg wet	0.100		111	40-140	3.40	30	
Endrin [2C]	0.090	0.0080	mg/Kg wet	0.100		90.0	40-140	0.525	30	
Endrin Aldehyde	0.11	0.0080	mg/Kg wet	0.100		107	40-140	7.38	30	
Endrin Aldehyde [2C]	0.090	0.0080	mg/Kg wet	0.100		89.8	40-140	9.30	30	
Endrin Ketone	0.098	0.0080	mg/Kg wet	0.100		97.9	40-140	7.28	30	
Endrin Ketone [2C]	0.094	0.0080	mg/Kg wet	0.100		93.8	40-140	3.49	30	
Heptachlor	0.12	0.0050	mg/Kg wet	0.100		116	40-140	2.62	30	
Heptachlor [2C]	0.078	0.0050	mg/Kg wet	0.100		78.1	40-140	3.69	30	
Heptachlor Epoxide	0.11	0.0050	mg/Kg wet	0.100		109	40-140	3.63	30	
Heptachlor Epoxide [2C]	0.080	0.0050	mg/Kg wet	0.100		80.1	40-140	2.06	30	
Hexachlorobenzene	0.12	0.0060	mg/Kg wet	0.100		116	40-140	0.826	30	
Hexachlorobenzene [2C]	0.073	0.0060	mg/Kg wet	0.100		72.8	40-140	2.90	30	
Methoxychlor	0.10	0.050	mg/Kg wet	0.100		104	40-140	2.03	30	
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		105	40-140	0.0570	30	
Surrogate: Decachlorobiphenyl	0.179		mg/Kg wet	0.200		89.6	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.182		mg/Kg wet	0.200		90.9	30-150			
Surrogate: Tetrachloro-m-xylene	0.238		mg/Kg wet	0.200		119	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.142		mg/Kg wet	0.200		71.2	30-150			

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QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328265 - SW-846 3546										
Matrix Spike (B328265-MS1)	Source: 23A0923-02			Prepared: 01/11/23 Analyzed: 01/16/23						
Alachlor	0.086	0.14	mg/Kg dry	0.145	ND	59.3	30-150			R-06
Alachlor [2C]	0.075	0.14	mg/Kg dry	0.145	ND	51.5	30-150			R-06
Aldrin	0.10	0.036	mg/Kg dry	0.145	ND	68.9	30-150			R-06
Aldrin [2C]	0.077	0.036	mg/Kg dry	0.145	ND	53.3	30-150			R-06
alpha-BHC	0.099	0.036	mg/Kg dry	0.145	ND	68.1	30-150			R-06
alpha-BHC [2C]	0.071	0.036	mg/Kg dry	0.145	ND	49.2	30-150			R-06
beta-BHC	0.094	0.036	mg/Kg dry	0.145	ND	64.8	30-150			R-06
beta-BHC [2C]	0.072	0.036	mg/Kg dry	0.145	ND	49.9	30-150			R-06
delta-BHC	0.077	0.036	mg/Kg dry	0.145	ND	53.1	30-150			R-06
delta-BHC [2C]	0.061	0.036	mg/Kg dry	0.145	ND	42.1	30-150			R-06
gamma-BHC (Lindane)	0.098	0.014	mg/Kg dry	0.145	ND	67.7	30-150			R-06
gamma-BHC (Lindane) [2C]	0.073	0.014	mg/Kg dry	0.145	ND	50.7	30-150			R-06
4,4'-DDD	0.10	0.029	mg/Kg dry	0.145	ND	72.4	30-150			R-06
4,4'-DDD [2C]	0.098	0.029	mg/Kg dry	0.145	ND	67.7	30-150			R-06
4,4'-DDE	0.094	0.029	mg/Kg dry	0.145	ND	64.8	30-150			R-06
4,4'-DDE [2C]	0.081	0.029	mg/Kg dry	0.145	ND	56.0	30-150			R-06
4,4'-DDT	0.089	0.029	mg/Kg dry	0.145	ND	61.7	30-150			R-06
4,4'-DDT [2C]	0.071	0.029	mg/Kg dry	0.145	ND	49.2	30-150			R-06
Dieldrin	0.10	0.029	mg/Kg dry	0.145	ND	71.8	30-150			R-06
Dieldrin [2C]	0.084	0.029	mg/Kg dry	0.145	ND	58.1	30-150			R-06
Endosulfan I	0.091	0.036	mg/Kg dry	0.145	ND	62.7	30-150			R-06
Endosulfan I [2C]	0.076	0.036	mg/Kg dry	0.145	ND	52.6	30-150			R-06
Endosulfan II	0.089	0.058	mg/Kg dry	0.145	ND	61.3	30-150			R-06
Endosulfan II [2C]	0.081	0.058	mg/Kg dry	0.145	ND	56.1	30-150			R-06
Endosulfan Sulfate	0.089	0.058	mg/Kg dry	0.145	ND	61.5	30-150			R-06
Endosulfan Sulfate [2C]	0.086	0.058	mg/Kg dry	0.145	ND	59.2	30-150			R-06
Endrin	0.11	0.058	mg/Kg dry	0.145	ND	75.4	30-150			R-06
Endrin [2C]	0.096	0.058	mg/Kg dry	0.145	ND	66.3	30-150			R-06
Endrin Aldehyde	0.080	0.058	mg/Kg dry	0.145	ND	55.4	30-150			R-06
Endrin Aldehyde [2C]	0.074	0.058	mg/Kg dry	0.145	ND	51.3	30-150			R-06
Endrin Ketone	0.094	0.058	mg/Kg dry	0.145	ND	65.2	30-150			R-06
Endrin Ketone [2C]	0.089	0.058	mg/Kg dry	0.145	ND	61.2	30-150			R-06
Heptachlor	0.10	0.036	mg/Kg dry	0.145	ND	70.6	30-150			R-06
Heptachlor [2C]	0.075	0.036	mg/Kg dry	0.145	ND	51.9	30-150			R-06
Heptachlor Epoxide	0.10	0.036	mg/Kg dry	0.145	ND	68.9	30-150			R-06
Heptachlor Epoxide [2C]	0.080	0.036	mg/Kg dry	0.145	ND	55.3	30-150			R-06
Hexachlorobenzene	0.10	0.043	mg/Kg dry	0.145	ND	71.0	30-150			R-06
Hexachlorobenzene [2C]	0.073	0.043	mg/Kg dry	0.145	ND	50.1	30-150			R-06
Methoxychlor	0.093	0.36	mg/Kg dry	0.145	ND	64.5	30-150			R-06
Methoxychlor [2C]	0.10	0.36	mg/Kg dry	0.145	ND	69.8	30-150			R-06
Surrogate: Decachlorobiphenyl	0.146		mg/Kg dry	0.290		50.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.168		mg/Kg dry	0.290		58.0	30-150			
Surrogate: Tetrachloro-m-xylene	0.206		mg/Kg dry	0.290		71.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.146		mg/Kg dry	0.290		50.4	30-150			

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QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328265 - SW-846 3546										
Matrix Spike Dup (B328265-MSD1)										
		Source: 23A0923-02		Prepared: 01/11/23 Analyzed: 01/16/23						
Alachlor	0.12	0.14	mg/Kg dry	0.145	ND	82.2	30-150	32.3	* 30	R-06
Alachlor [2C]	0.11	0.14	mg/Kg dry	0.145	ND	75.2	30-150	37.4	* 30	R-06
Aldrin	0.14	0.036	mg/Kg dry	0.145	ND	94.3	30-150	31.2	* 30	R-06
Aldrin [2C]	0.11	0.036	mg/Kg dry	0.145	ND	77.0	30-150	36.4	* 30	R-06
alpha-BHC	0.13	0.036	mg/Kg dry	0.145	ND	92.5	30-150	30.4	* 30	R-06
alpha-BHC [2C]	0.11	0.036	mg/Kg dry	0.145	ND	72.8	30-150	38.6	* 30	R-06
beta-BHC	0.12	0.036	mg/Kg dry	0.145	ND	84.8	30-150	26.7	30	
beta-BHC [2C]	0.10	0.036	mg/Kg dry	0.145	ND	69.7	30-150	33.2	* 30	R-06
delta-BHC	0.12	0.036	mg/Kg dry	0.145	ND	81.5	30-150	42.3	* 30	R-06
delta-BHC [2C]	0.10	0.036	mg/Kg dry	0.145	ND	68.9	30-150	48.3	* 30	R-06
gamma-BHC (Lindane)	0.13	0.014	mg/Kg dry	0.145	ND	92.6	30-150	31.1	* 30	R-06
gamma-BHC (Lindane) [2C]	0.11	0.014	mg/Kg dry	0.145	ND	74.7	30-150	38.4	* 30	R-06
4,4'-DDD	0.14	0.029	mg/Kg dry	0.145	ND	95.0	30-150	27.0	30	
4,4'-DDD [2C]	0.14	0.029	mg/Kg dry	0.145	ND	93.8	30-150	32.4	* 30	R-06
4,4'-DDE	0.13	0.029	mg/Kg dry	0.145	ND	92.8	30-150	35.5	* 30	R-06
4,4'-DDE [2C]	0.12	0.029	mg/Kg dry	0.145	ND	84.0	30-150	40.0	* 30	R-06
4,4'-DDT	0.14	0.029	mg/Kg dry	0.145	ND	99.1	30-150	46.6	* 30	R-06
4,4'-DDT [2C]	0.12	0.029	mg/Kg dry	0.145	ND	79.5	30-150	47.1	* 30	R-06
Dieldrin	0.13	0.029	mg/Kg dry	0.145	ND	88.4	30-150	20.7	30	
Dieldrin [2C]	0.12	0.029	mg/Kg dry	0.145	ND	82.0	30-150	34.2	* 30	R-06
Endosulfan I	0.13	0.036	mg/Kg dry	0.145	ND	89.1	30-150	34.8	* 30	R-06
Endosulfan I [2C]	0.11	0.036	mg/Kg dry	0.145	ND	77.3	30-150	38.1	* 30	R-06
Endosulfan II	0.12	0.058	mg/Kg dry	0.145	ND	86.3	30-150	33.9	* 30	R-06
Endosulfan II [2C]	0.12	0.058	mg/Kg dry	0.145	ND	80.9	30-150	36.2	* 30	R-06
Endosulfan Sulfate	0.13	0.058	mg/Kg dry	0.145	ND	87.2	30-150	34.5	* 30	R-06
Endosulfan Sulfate [2C]	0.12	0.058	mg/Kg dry	0.145	ND	84.9	30-150	35.6	* 30	R-06
Endrin	0.14	0.058	mg/Kg dry	0.145	ND	94.5	30-150	22.5	30	
Endrin [2C]	0.13	0.058	mg/Kg dry	0.145	ND	86.5	30-150	26.5	30	
Endrin Aldehyde	0.12	0.058	mg/Kg dry	0.145	ND	84.5	30-150	41.5	* 30	R-06
Endrin Aldehyde [2C]	0.11	0.058	mg/Kg dry	0.145	ND	78.1	30-150	41.4	* 30	R-06
Endrin Ketone	0.13	0.058	mg/Kg dry	0.145	ND	89.7	30-150	31.6	* 30	R-06
Endrin Ketone [2C]	0.12	0.058	mg/Kg dry	0.145	ND	85.0	30-150	32.6	* 30	R-06
Heptachlor	0.14	0.036	mg/Kg dry	0.145	ND	99.5	30-150	33.9	* 30	R-06
Heptachlor [2C]	0.11	0.036	mg/Kg dry	0.145	ND	77.6	30-150	39.7	* 30	R-06
Heptachlor Epoxide	0.13	0.036	mg/Kg dry	0.145	ND	91.8	30-150	28.6	30	
Heptachlor Epoxide [2C]	0.11	0.036	mg/Kg dry	0.145	ND	77.8	30-150	33.8	* 30	R-06
Hexachlorobenzene	0.14	0.043	mg/Kg dry	0.145	ND	95.3	30-150	29.3	30	
Hexachlorobenzene [2C]	0.10	0.043	mg/Kg dry	0.145	ND	71.4	30-150	35.1	* 30	R-06
Methoxychlor	0.14	0.36	mg/Kg dry	0.145	ND	95.2	30-150	38.5	* 30	R-06
Methoxychlor [2C]	0.14	0.36	mg/Kg dry	0.145	ND	97.3	30-150	32.9	* 30	R-06
Surrogate: Decachlorobiphenyl	0.222		mg/Kg dry	0.290		76.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.248		mg/Kg dry	0.290		85.7	30-150			
Surrogate: Tetrachloro-m-xylene	0.271		mg/Kg dry	0.290		93.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.205		mg/Kg dry	0.290		70.8	30-150			

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QUALITY CONTROL
Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328266 - SW-846 3546										
Blank (B328266-BLK1)										
Prepared: 01/11/23 Analyzed: 01/14/23										
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.187		mg/Kg wet	0.200		93.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.181		mg/Kg wet	0.200		90.4	30-150			
Surrogate: Tetrachloro-m-xylene	0.184		mg/Kg wet	0.200		91.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.190		mg/Kg wet	0.200		94.8	30-150			
LCS (B328266-BS1)										
Prepared: 01/11/23 Analyzed: 01/14/23										
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		90.3	40-140			
Aroclor-1016 [2C]	0.18	0.020	mg/Kg wet	0.200		87.9	40-140			
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		85.7	40-140			
Aroclor-1260 [2C]	0.16	0.020	mg/Kg wet	0.200		79.7	40-140			
Surrogate: Decachlorobiphenyl	0.189		mg/Kg wet	0.200		94.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.183		mg/Kg wet	0.200		91.5	30-150			
Surrogate: Tetrachloro-m-xylene	0.190		mg/Kg wet	0.200		95.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.196		mg/Kg wet	0.200		97.8	30-150			
LCS Dup (B328266-BSD1)										
Prepared: 01/11/23 Analyzed: 01/14/23										
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		89.8	40-140	0.537	30	
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.200		87.4	40-140	0.622	30	
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		85.0	40-140	0.879	30	
Aroclor-1260 [2C]	0.16	0.020	mg/Kg wet	0.200		79.5	40-140	0.316	30	
Surrogate: Decachlorobiphenyl	0.183		mg/Kg wet	0.200		91.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.178		mg/Kg wet	0.200		89.2	30-150			
Surrogate: Tetrachloro-m-xylene	0.184		mg/Kg wet	0.200		92.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.190		mg/Kg wet	0.200		94.9	30-150			

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QUALITY CONTROL
Petroleum Hydrocarbons Analyses - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328703 - SW-846 3546										
Blank (B328703-BLK1)										
Prepared: 01/14/23 Analyzed: 01/17/23										
TPH (C9-C36)	ND	8.3	mg/Kg wet							
Surrogate: 2-Fluorobiphenyl	1.12		mg/Kg wet	3.33		33.8	* 40-140			S-26
LCS (B328703-BS1)										
Prepared: 01/14/23 Analyzed: 01/17/23										
TPH (C9-C36)	27.3	8.3	mg/Kg wet	33.3		82.0	40-140			
Surrogate: 2-Fluorobiphenyl	2.35		mg/Kg wet	3.33		70.4	40-140			
LCS Dup (B328703-BSD1)										
Prepared: 01/14/23 Analyzed: 01/17/23										
TPH (C9-C36)	27.2	8.3	mg/Kg wet	33.3		81.5	40-140	0.704	30	
Surrogate: 2-Fluorobiphenyl	2.44		mg/Kg wet	3.33		73.3	40-140			

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QUALITY CONTROL
Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328385 - SW-846 3546										
Blank (B328385-BLK1)										
Prepared: 01/11/23 Analyzed: 01/17/23										
C9-C18 Aliphatics	ND	10	mg/Kg wet							
C19-C36 Aliphatics	ND	10	mg/Kg wet							
Unadjusted C11-C22 Aromatics	ND	10	mg/Kg wet							
C11-C22 Aromatics	ND	10	mg/Kg wet							
Acenaphthene	ND	0.10	mg/Kg wet							
Acenaphthylene	ND	0.10	mg/Kg wet							
Anthracene	ND	0.10	mg/Kg wet							
Benzo(a)anthracene	ND	0.10	mg/Kg wet							
Benzo(a)pyrene	ND	0.10	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.10	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.10	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.10	mg/Kg wet							
Chrysene	ND	0.10	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.10	mg/Kg wet							
Fluoranthene	ND	0.10	mg/Kg wet							
Fluorene	ND	0.10	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.10	mg/Kg wet							
2-Methylnaphthalene	ND	0.10	mg/Kg wet							
Naphthalene	ND	0.10	mg/Kg wet							
Phenanthrene	ND	0.10	mg/Kg wet							
Pyrene	ND	0.10	mg/Kg wet							
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet							
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet							
Surrogate: Chlorooctadecane (COD)	4.15		mg/Kg wet	5.00		83.0	40-140			
Surrogate: o-Terphenyl (OTP)	4.20		mg/Kg wet	5.00		84.0	40-140			
Surrogate: 2-Bromonaphthalene	4.14		mg/Kg wet	5.00		82.8	40-140			
Surrogate: 2-Fluorobiphenyl	4.02		mg/Kg wet	5.00		80.5	40-140			
LCS (B328385-BS1)										
Prepared: 01/11/23 Analyzed: 01/17/23										
C9-C18 Aliphatics	23.8	10	mg/Kg wet	30.0		79.3	40-140			
C19-C36 Aliphatics	37.5	10	mg/Kg wet	40.0		93.9	40-140			
Unadjusted C11-C22 Aromatics	81.8	10	mg/Kg wet	85.0		96.2	40-140			
Acenaphthene	4.13	0.10	mg/Kg wet	5.00		82.5	40-140			
Acenaphthylene	3.84	0.10	mg/Kg wet	5.00		76.9	40-140			
Anthracene	4.44	0.10	mg/Kg wet	5.00		88.7	40-140			
Benzo(a)anthracene	5.05	0.10	mg/Kg wet	5.00		101	40-140			
Benzo(a)pyrene	5.12	0.10	mg/Kg wet	5.00		102	40-140			
Benzo(b)fluoranthene	5.07	0.10	mg/Kg wet	5.00		101	40-140			
Benzo(g,h,i)perylene	4.92	0.10	mg/Kg wet	5.00		98.4	40-140			
Benzo(k)fluoranthene	4.38	0.10	mg/Kg wet	5.00		87.6	40-140			
Chrysene	4.86	0.10	mg/Kg wet	5.00		97.1	40-140			
Dibenz(a,h)anthracene	4.95	0.10	mg/Kg wet	5.00		99.1	40-140			
Fluoranthene	4.69	0.10	mg/Kg wet	5.00		93.9	40-140			
Fluorene	4.34	0.10	mg/Kg wet	5.00		86.8	40-140			
Indeno(1,2,3-cd)pyrene	5.12	0.10	mg/Kg wet	5.00		102	40-140			
2-Methylnaphthalene	3.90	0.10	mg/Kg wet	5.00		78.0	40-140			
Naphthalene	3.52	0.10	mg/Kg wet	5.00		70.4	40-140			
Phenanthrene	4.63	0.10	mg/Kg wet	5.00		92.5	40-140			
Pyrene	4.81	0.10	mg/Kg wet	5.00		96.2	40-140			
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
Surrogate: Chlorooctadecane (COD)	4.22		mg/Kg wet	5.00		84.4	40-140			

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QUALITY CONTROL
Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328385 - SW-846 3546										
LCS (B328385-BS1)					Prepared: 01/11/23 Analyzed: 01/17/23					
Surrogate: o-Terphenyl (OTP)	4.36		mg/Kg wet	5.00		87.2	40-140			
Surrogate: 2-Bromonaphthalene	4.52		mg/Kg wet	5.00		90.4	40-140			
Surrogate: 2-Fluorobiphenyl	4.59		mg/Kg wet	5.00		91.8	40-140			
LCS Dup (B328385-BSD1)					Prepared: 01/11/23 Analyzed: 01/17/23					
C9-C18 Aliphatics	26.5	10	mg/Kg wet	30.0		88.3	40-140	10.7	25	
C19-C36 Aliphatics	39.5	10	mg/Kg wet	40.0		98.8	40-140	5.14	25	
Unadjusted C11-C22 Aromatics	82.8	10	mg/Kg wet	85.0		97.4	40-140	1.15	25	
Acenaphthene	4.32	0.10	mg/Kg wet	5.00		86.5	40-140	4.68	25	
Acenaphthylene	4.04	0.10	mg/Kg wet	5.00		80.8	40-140	4.98	25	
Anthracene	4.47	0.10	mg/Kg wet	5.00		89.5	40-140	0.855	25	
Benzo(a)anthracene	5.01	0.10	mg/Kg wet	5.00		100	40-140	0.785	25	
Benzo(a)pyrene	5.05	0.10	mg/Kg wet	5.00		101	40-140	1.24	25	
Benzo(b)fluoranthene	5.02	0.10	mg/Kg wet	5.00		100	40-140	0.989	25	
Benzo(g,h,i)perylene	4.84	0.10	mg/Kg wet	5.00		96.7	40-140	1.75	25	
Benzo(k)fluoranthene	4.33	0.10	mg/Kg wet	5.00		86.5	40-140	1.24	25	
Chrysene	4.81	0.10	mg/Kg wet	5.00		96.2	40-140	0.910	25	
Dibenz(a,h)anthracene	4.88	0.10	mg/Kg wet	5.00		97.6	40-140	1.45	25	
Fluoranthene	4.68	0.10	mg/Kg wet	5.00		93.7	40-140	0.215	25	
Fluorene	4.49	0.10	mg/Kg wet	5.00		89.7	40-140	3.28	25	
Indeno(1,2,3-cd)pyrene	5.05	0.10	mg/Kg wet	5.00		101	40-140	1.40	25	
2-Methylnaphthalene	4.14	0.10	mg/Kg wet	5.00		82.8	40-140	6.03	25	
Naphthalene	3.77	0.10	mg/Kg wet	5.00		75.5	40-140	7.04	25	
Phenanthrene	4.67	0.10	mg/Kg wet	5.00		93.3	40-140	0.848	25	
Pyrene	4.79	0.10	mg/Kg wet	5.00		95.7	40-140	0.434	25	
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
Surrogate: Chlorooctadecane (COD)	4.38		mg/Kg wet	5.00		87.5	40-140			
Surrogate: o-Terphenyl (OTP)	4.28		mg/Kg wet	5.00		85.6	40-140			
Surrogate: 2-Bromonaphthalene	4.23		mg/Kg wet	5.00		84.6	40-140			
Surrogate: 2-Fluorobiphenyl	4.28		mg/Kg wet	5.00		85.7	40-140			

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QUALITY CONTROL
Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328271 - SW-846 7470A/7471A										
Blank (B328271-BLK1) Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	ND	0.025	mg/Kg wet							
LCS (B328271-BS1) Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	17.3	3.7	mg/Kg wet	25.6		67.7	67.2-132.8			
LCS Dup (B328271-BSD1) Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	22.1	3.7	mg/Kg wet	25.6		86.4	67.2-132.8	24.3	*	20 R-05
Batch B328274 - SW-846 7470A/7471A										
Blank (B328274-BLK1) Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	ND	0.025	mg/Kg wet							
LCS (B328274-BS1) Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	20.9	3.8	mg/Kg wet	25.6		81.5	67.2-132.8			
LCS Dup (B328274-BSD1) Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	17.1	3.8	mg/Kg wet	25.6		66.7	* 67.2-132.8	20.0	20	L-07
Duplicate (B328274-DUP1) Source: 23A0923-01 Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	ND	0.034	mg/Kg dry		ND			NC	20	
Matrix Spike (B328274-MS1) Source: 23A0923-01 Prepared: 01/11/23 Analyzed: 01/13/23										
Mercury	0.467	0.036	mg/Kg dry	0.481	ND	97.1	80-120			
Batch B328339 - SW-846 3050B										
Blank (B328339-BLK1) Prepared: 01/11/23 Analyzed: 01/13/23										
Antimony	ND	1.6	mg/Kg wet							
Arsenic	ND	3.2	mg/Kg wet							
Barium	ND	1.6	mg/Kg wet							
Beryllium	ND	0.16	mg/Kg wet							
Cadmium	ND	0.32	mg/Kg wet							
Chromium	ND	0.64	mg/Kg wet							
Copper	ND	0.64	mg/Kg wet							
Lead	ND	0.48	mg/Kg wet							
Nickel	ND	0.64	mg/Kg wet							
Selenium	ND	3.2	mg/Kg wet							
Thallium	ND	1.6	mg/Kg wet							
Vanadium	ND	0.64	mg/Kg wet							

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QUALITY CONTROL
Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328339 - SW-846 3050B										
Blank (B328339-BLK2)										
Prepared: 01/11/23 Analyzed: 01/17/23										
Silver	ND	0.32	mg/Kg wet							
Zinc	ND	0.64	mg/Kg wet							
LCS (B328339-BS1)										
Prepared: 01/11/23 Analyzed: 01/13/23										
Antimony	69.3	4.9	mg/Kg wet	111		62.5	0-205.4			
Arsenic	90.7	9.7	mg/Kg wet	112		81.0	* 82-118.8			L-07
Barium	138	4.9	mg/Kg wet	154		89.4	81.8-118.2			
Beryllium	104	0.49	mg/Kg wet	121		86.1	82.2-118.2			
Cadmium	167	0.97	mg/Kg wet	196		85.2	82.1-118.4			
Chromium	87.7	1.9	mg/Kg wet	103		85.1	80.8-118.4			
Copper	66.4	1.9	mg/Kg wet	70.4		94.3	83.4-116.6			
Lead	66.0	1.5	mg/Kg wet	73.2		90.2	82.8-117.3			
Nickel	214	1.9	mg/Kg wet	249		85.9	81.9-118.1			
Selenium	178	9.7	mg/Kg wet	215		82.8	78.1-121.9			
Thallium	64.7	4.9	mg/Kg wet	67.7		95.5	80.1-120.1			
Vanadium	155	1.9	mg/Kg wet	177		87.7	78-122			
Zinc	322	1.9	mg/Kg wet	360		89.6	79.7-120.3			
LCS (B328339-BS2)										
Prepared: 01/11/23 Analyzed: 01/17/23										
Silver	81.8	0.97	mg/Kg wet	78.5		104	78.9-121.1			
LCS Dup (B328339-BSD1)										
Prepared: 01/11/23 Analyzed: 01/13/23										
Antimony	69.5	4.9	mg/Kg wet	111		62.6	0-205.4	0.269	30	
Arsenic	96.4	9.7	mg/Kg wet	112		86.1	82-118.8	6.08	30	
Barium	138	4.9	mg/Kg wet	154		89.8	81.8-118.2	0.363	20	
Beryllium	109	0.49	mg/Kg wet	121		89.8	82.2-118.2	4.24	30	
Cadmium	173	0.97	mg/Kg wet	196		88.1	82.1-118.4	3.25	20	
Chromium	92.3	1.9	mg/Kg wet	103		89.6	80.8-118.4	5.08	30	
Copper	68.6	1.9	mg/Kg wet	70.4		97.4	83.4-116.6	3.28	30	
Lead	67.1	1.5	mg/Kg wet	73.2		91.7	82.8-117.3	1.65	30	
Nickel	223	1.9	mg/Kg wet	249		89.5	81.9-118.1	4.09	30	
Selenium	181	9.7	mg/Kg wet	215		84.2	78.1-121.9	1.65	30	
Thallium	65.3	4.9	mg/Kg wet	67.7		96.4	80.1-120.1	0.946	30	
Vanadium	160	1.9	mg/Kg wet	177		90.6	78-122	3.25	30	
Zinc	333	1.9	mg/Kg wet	360		92.6	79.7-120.3	3.38	30	
LCS Dup (B328339-BSD2)										
Prepared: 01/11/23 Analyzed: 01/17/23										
Silver	83.3	0.97	mg/Kg wet	78.5		106	78.9-121.1	1.78	30	
Duplicate (B328339-DUP1)										
Source: 23A0923-01 Prepared: 01/11/23 Analyzed: 01/13/23										
Antimony	ND	2.3	mg/Kg dry		ND			NC	35	
Arsenic	ND	4.6	mg/Kg dry		ND			NC	35	
Beryllium	0.582	0.23	mg/Kg dry		0.585			0.526	35	
Cadmium	ND	0.46	mg/Kg dry		ND			NC	35	
Chromium	11.0	0.92	mg/Kg dry		8.13			30.2	35	
Copper	13.5	0.92	mg/Kg dry		11.9			12.6	35	
Lead	9.99	0.69	mg/Kg dry		10.1			1.36	35	
Nickel	11.5	0.92	mg/Kg dry		10.3			10.9	35	
Selenium	ND	4.6	mg/Kg dry		ND			NC	35	
Thallium	ND	2.3	mg/Kg dry		ND			NC	35	
Vanadium	13.6	0.92	mg/Kg dry		12.4			8.88	35	
Zinc	47.4	0.92	mg/Kg dry		44.1			7.33	35	

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QUALITY CONTROL
Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328339 - SW-846 3050B										
Duplicate (B328339-DUP3)		Source: 23A0923-01			Prepared: 01/11/23 Analyzed: 01/18/23					
Silver	ND	0.46	mg/Kg dry		ND			NC	35	
Matrix Spike (B328339-MS1)		Source: 23A0923-01			Prepared: 01/11/23 Analyzed: 01/13/23					
Antimony	8.26	2.4	mg/Kg dry	23.6	ND	35.1	* 75-125			MS-07
Arsenic	21.7	4.7	mg/Kg dry	23.6	ND	92.0	75-125			
Beryllium	22.1	0.24	mg/Kg dry	23.6	0.585	91.1	75-125			
Cadmium	21.0	0.47	mg/Kg dry	23.6	ND	89.3	75-125			
Chromium	29.9	0.94	mg/Kg dry	23.6	8.13	92.3	75-125			
Copper	58.9	0.94	mg/Kg dry	47.1	11.9	99.8	75-125			
Lead	30.0	0.71	mg/Kg dry	23.6	10.1	84.3	75-125			
Nickel	30.8	0.94	mg/Kg dry	23.6	10.3	86.7	75-125			
Selenium	16.6	4.7	mg/Kg dry	23.6	ND	70.3	* 75-125			MS-07
Thallium	21.4	2.4	mg/Kg dry	23.6	ND	90.8	75-125			
Vanadium	37.4	0.94	mg/Kg dry	23.6	12.4	106	75-125			
Zinc	82.0	0.94	mg/Kg dry	47.1	44.1	80.6	75-125			
Matrix Spike (B328339-MS3)		Source: 23A0923-01			Prepared: 01/11/23 Analyzed: 01/18/23					
Silver	23.6	0.47	mg/Kg dry	23.6	ND	100	75-125			
Reference (B328339-SRM1) MRL CHECK					Prepared: 01/11/23 Analyzed: 01/13/23					
Lead	0.490	0.50	mg/Kg wet	0.499		98.2	80-120			
Batch B329105 - SW-846 3050B										
Blank (B329105-BLK1)					Prepared: 01/18/23 Analyzed: 01/19/23					
Barium	ND	1.6	mg/Kg wet							
LCS (B329105-BS1)					Prepared: 01/18/23 Analyzed: 01/19/23					
Barium	158	5.0	mg/Kg wet	154		102	81.8-118.2			
LCS Dup (B329105-BSD1)					Prepared: 01/18/23 Analyzed: 01/19/23					
Barium	158	4.8	mg/Kg wet	154		103	81.8-118.2	0.0770	20	
Duplicate (B329105-DUP1)		Source: 23A0923-01RE1			Prepared: 01/18/23 Analyzed: 01/19/23					
Barium	51.5	2.3	mg/Kg dry		111			73.5	* 35	R-02
Matrix Spike (B329105-MS1)		Source: 23A0923-01RE1			Prepared: 01/18/23 Analyzed: 01/19/23					
Barium	87.2	2.3	mg/Kg dry	22.8	111	-106	* 75-125			MS-19

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B328559 - SW 846 9060A										
Blank (B328559-BLK1)										
Prepared & Analyzed: 01/13/23										
Total Organic Carbon	ND	100	mg/Kg wet							
LCS (B328559-BS1)										
Prepared & Analyzed: 01/13/23										
Total Organic Carbon	849	100	mg/Kg wet	749		113	* 73.7-110			L-07
LCS Dup (B328559-BSD1)										
Prepared & Analyzed: 01/13/23										
Total Organic Carbon	765	100	mg/Kg wet	749		102	73.7-110	10.4	18.6	
Duplicate (B328559-DUP1)										
Source: 23A0923-02										
Prepared & Analyzed: 01/13/23										
Total Organic Carbon	23700	140	mg/Kg dry		28200			17.3	57.4	
Matrix Spike (B328559-MS1)										
Source: 23A0923-02										
Prepared & Analyzed: 01/13/23										
Total Organic Carbon	35400	140	mg/Kg dry	1090	28200	658	* 85-115			MS-11
Batch B328841 - SM21-23 2510B Modified										
Blank (B328841-BLK1)										
Prepared & Analyzed: 01/17/23										
Specific conductance	ND	2.0	µmhos/cm							
LCS (B328841-BS1)										
Prepared & Analyzed: 01/17/23										
Specific conductance	150		µmhos/cm	137		106	90-122			

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BREAKDOWN REPORT

Lab Sample ID: S081991-PEM1 **Analyzed:** 01/16/2023

Column Number:	1
Analyte	% Breakdown
4,4'-DDT [1]	0.57
Endrin [1]	1.34

Column Number:	2
Analyte	% Breakdown
4,4'-DDT [2]	0.68
Endrin [2]	1.07

BREAKDOWN REPORT

Lab Sample ID: S081991-PEM2 **Analyzed:** 01/16/2023

Column Number:	1
Analyte	% Breakdown
4,4'-DDT [1]	0.68
Endrin [1]	0.81

Column Number:	2
Analyte	% Breakdown
4,4'-DDT [2]	0.66
Endrin [2]	0.56

BREAKDOWN REPORT

Lab Sample ID: S081991-PEM3 **Analyzed:** 01/17/2023

Column Number:	1
Analyte	% Breakdown
4,4'-DDT [1]	1.05
Endrin [1]	1.47



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BREAKDOWN REPORT

Lab Sample ID: S081991-PEM3 Analyzed: 01/17/2023

Column Number:	2
Analyte	% Breakdown
4,4'-DDT [2]	1.13
Endrin [2]	1.28

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**IDENTIFICATION SUMMARY
 FOR SINGLE COMPONENT ANALYTES**

LCS

SW-846 8081B

Lab Sample ID: B328265-BS1 Date(s) Analyzed: 01/16/2023 01/16/2023
 Instrument ID (1): ECD6A Instrument ID (2): ECD6B
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.760	6.730	6.790	0.11	
	2	6.849	6.818	6.878	0.10	18.2
4,4'-DDE	1	6.345	6.315	6.375	0.12	
	2	6.438	6.407	6.467	0.090	28.6
4,4'-DDT	1	6.962	6.932	6.992	0.11	
	2	7.077	7.046	7.106	0.091	18.9
Alachlor	1	5.827	5.797	5.857	0.098	
	2	5.679	5.648	5.708	0.074	27.9
Aldrin	1	5.724	5.694	5.754	0.12	
	2	5.721	5.691	5.751	0.081	38.8
alpha-BHC	1	5.099	5.069	5.129	0.12	
	2	5.097	5.066	5.126	0.078	42.4
alpha-Chlordane	1	6.280	6.250	6.310	0.11	
	2	6.306	6.275	6.335	0.082	29.2
beta-BHC	1	5.324	5.294	5.354	0.11	
	2	5.339	5.309	5.369	0.072	41.8
delta-BHC	1	5.424	5.394	5.454	0.11	
	2	5.503	5.473	5.533	0.075	37.8
Dieldrin	1	6.533	6.503	6.563	0.11	
	2	6.526	6.495	6.555	0.088	22.2
Endosulfan I	1	6.368	6.338	6.398	0.11	
	2	6.338	6.307	6.367	0.083	28.0
Endosulfan II	1	6.852	6.822	6.882	0.11	
	2	6.893	6.862	6.922	0.087	23.4
Endosulfan Sulfate	1	7.487	7.457	7.517	0.11	
	2	7.356	7.325	7.385	0.095	14.6
Endrin	1	6.692	6.662	6.722	0.11	
	2	6.736	6.705	6.765	0.090	28.6
Endrin Aldehyde	1	7.160	7.130	7.190	0.099	
	2	7.144	7.114	7.174	0.099	0.0
Endrin Ketone	1	7.694	7.664	7.724	0.11	



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**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES**

LCS

SW-846 8081B

Lab Sample ID: B328265-BS1 Date(s) Analyzed: 01/16/2023 01/16/2023

Instrument ID (1): ECD6A Instrument ID (2): ECD6B

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	7.754	7.723	7.783	0.097	12.6
gamma-BHC (Lindane)	1	5.273	5.242	5.302	0.12	
	2	5.287	5.257	5.317	0.080	40.0
gamma-Chlordane	1	6.192	6.161	6.221	0.11	
	2	6.208	6.177	6.237	0.084	26.8
Heptachlor	1	5.545	5.514	5.574	0.12	
	2	5.532	5.502	5.562	0.081	38.8
Heptachlor Epoxide	1	6.109	6.080	6.140	0.11	
	2	6.083	6.052	6.112	0.082	29.2
Hexachlorobenzene	1	5.005	4.975	5.035	0.12	
	2	5.020	4.990	5.050	0.075	46.2
Methoxychlor	1	7.341	7.311	7.371	0.11	
	2	7.623	7.592	7.652	0.11	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

SW-846 8081B

 Lab Sample ID: B328265-BSD1 Date(s) Analyzed: 01/16/2023 01/16/2023

 Instrument ID (1): ECD6A Instrument ID (2): ECD6B

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.760	6.730	6.790	0.11	
	2	6.849	6.818	6.878	0.10	9.5
4,4'-DDE	1	6.345	6.315	6.375	0.11	
	2	6.438	6.407	6.467	0.090	20.0
4,4'-DDT	1	6.962	6.932	6.992	0.11	
	2	7.077	7.046	7.106	0.092	17.8
Alachlor	1	5.826	5.797	5.857	0.092	
	2	5.678	5.648	5.708	0.070	27.2
Aldrin	1	5.724	5.694	5.754	0.11	
	2	5.721	5.691	5.751	0.079	32.8
alpha-BHC	1	5.099	5.069	5.129	0.12	
	2	5.096	5.066	5.126	0.074	47.4
alpha-Chlordane	1	6.280	6.250	6.310	0.10	
	2	6.306	6.275	6.335	0.081	21.0
beta-BHC	1	5.324	5.294	5.354	0.10	
	2	5.339	5.309	5.369	0.069	36.7
delta-BHC	1	5.424	5.394	5.454	0.096	
	2	5.503	5.473	5.533	0.066	37.0
Dieldrin	1	6.532	6.503	6.563	0.10	
	2	6.526	6.495	6.555	0.087	13.9
Endosulfan I	1	6.368	6.338	6.398	0.097	
	2	6.338	6.307	6.367	0.079	20.5
Endosulfan II	1	6.852	6.822	6.882	0.099	
	2	6.893	6.862	6.922	0.084	16.4
Endosulfan Sulfate	1	7.487	7.457	7.517	0.099	
	2	7.355	7.325	7.385	0.091	8.4
Endrin	1	6.691	6.662	6.722	0.11	
	2	6.736	6.705	6.765	0.090	20.0
Endrin Aldehyde	1	7.161	7.130	7.190	0.11	
	2	7.145	7.114	7.174	0.090	20.0
Endrin Ketone	1	7.694	7.664	7.724	0.098	



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**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES**

LCS Dup

SW-846 8081B

Lab Sample ID: B328265-BSD1 Date(s) Analyzed: 01/16/2023 01/16/2023

Instrument ID (1): ECD6A Instrument ID (2): ECD6B

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	7.753	7.723	7.783	0.094	4.2
gamma-BHC (Lindane)	1	5.273	5.242	5.302	0.12	
	2	5.287	5.257	5.317	0.075	46.2
gamma-Chlordane	1	6.191	6.161	6.221	0.11	
	2	6.208	6.177	6.237	0.083	28.0
Heptachlor	1	5.544	5.514	5.574	0.12	
	2	5.532	5.502	5.562	0.078	42.4
Heptachlor Epoxide	1	6.110	6.080	6.140	0.11	
	2	6.082	6.052	6.112	0.080	31.6
Hexachlorobenzene	1	5.005	4.975	5.035	0.12	
	2	5.020	4.990	5.050	0.073	48.7
Methoxychlor	1	7.341	7.311	7.371	0.10	
	2	7.623	7.592	7.652	0.11	9.5

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

Matrix Spike

SW-846 8081B

Lab Sample ID: B328265-MS1 Date(s) Analyzed: 01/16/2023 01/16/2023
 Instrument ID (1): ECD6A Instrument ID (2): ECD6B
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.758	6.730	6.790	0.10	
	2	6.847	6.818	6.878	0.098	11.5
4,4'-DDE	1	6.342	6.315	6.375	0.094	
	2	6.436	6.407	6.467	0.081	14.9
4,4'-DDT	1	6.959	6.932	6.992	0.089	
	2	7.076	7.046	7.106	0.071	22.5
Alachlor	1	5.824	5.797	5.857	0.086	
	2	5.678	5.648	5.708	0.075	13.7
Aldrin	1	5.721	5.694	5.754	0.10	
	2	5.720	5.691	5.751	0.077	26.0
alpha-BHC	1	5.097	5.069	5.129	0.099	
	2	5.095	5.066	5.126	0.071	32.9
beta-BHC	1	5.322	5.294	5.354	0.094	
	2	5.339	5.309	5.369	0.072	26.5
delta-BHC	1	5.421	5.394	5.454	0.077	
	2	5.502	5.473	5.533	0.061	23.2
Dieldrin	1	6.530	6.503	6.563	0.10	
	2	6.524	6.495	6.555	0.084	17.4
Endosulfan I	1	6.366	6.338	6.398	0.091	
	2	6.337	6.307	6.367	0.076	18.0
Endosulfan II	1	6.850	6.822	6.882	0.089	
	2	6.892	6.862	6.922	0.081	9.4
Endosulfan Sulfate	1	7.484	7.457	7.517	0.089	
	2	7.354	7.325	7.385	0.086	3.4
Endrin	1	6.689	6.662	6.722	0.11	
	2	6.734	6.705	6.765	0.096	13.6
Endrin Aldehyde	1	7.156	7.130	7.190	0.080	
	2	7.144	7.115	7.175	0.074	7.8
Endrin Ketone	1	7.691	7.664	7.724	0.094	
	2	7.752	7.723	7.783	0.089	6.5
gamma-BHC (Lindane)	1	5.271	5.242	5.302	0.098	

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

Matrix Spike Dup

SW-846 8081B

 Lab Sample ID: B328265-MSD1 Date(s) Analyzed: 01/16/2023 01/16/2023

 Instrument ID (1): ECD6A Instrument ID (2): ECD6B

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.758	6.730	6.790	0.14	
	2	6.848	6.818	6.878	0.14	0.0
4,4'-DDE	1	6.343	6.315	6.375	0.13	
	2	6.437	6.407	6.467	0.12	8.0
4,4'-DDT	1	6.959	6.932	6.992	0.14	
	2	7.076	7.046	7.106	0.12	15.4
Alachlor	1	5.825	5.797	5.857	0.12	
	2	5.678	5.648	5.708	0.11	8.7
Aldrin	1	5.721	5.694	5.754	0.14	
	2	5.720	5.691	5.751	0.11	24.0
alpha-BHC	1	5.097	5.069	5.129	0.13	
	2	5.096	5.066	5.126	0.11	16.7
beta-BHC	1	5.322	5.294	5.354	0.12	
	2	5.339	5.309	5.369	0.10	18.2
delta-BHC	1	5.422	5.394	5.454	0.12	
	2	5.503	5.473	5.533	0.10	18.2
Dieldrin	1	6.530	6.503	6.563	0.13	
	2	6.525	6.495	6.555	0.12	8.0
Endosulfan I	1	6.365	6.338	6.398	0.13	
	2	6.337	6.307	6.367	0.11	16.7
Endosulfan II	1	6.850	6.822	6.882	0.12	
	2	6.892	6.862	6.922	0.12	8.0
Endosulfan Sulfate	1	7.484	7.457	7.517	0.13	
	2	7.354	7.325	7.385	0.12	8.0
Endrin	1	6.689	6.662	6.722	0.14	
	2	6.735	6.705	6.765	0.13	7.4
Endrin Aldehyde	1	7.156	7.130	7.190	0.12	
	2	7.144	7.115	7.175	0.11	8.7
Endrin Ketone	1	7.691	7.664	7.724	0.13	
	2	7.752	7.723	7.783	0.12	8.0
gamma-BHC (Lindane)	1	5.271	5.242	5.302	0.13	

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8081B

Matrix Spike Dup

 Lab Sample ID: B328265-MSD1 Date(s) Analyzed: 01/16/2023 01/16/2023

 Instrument ID (1): ECD6A Instrument ID (2): ECD6B

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	5.286	5.257	5.317	0.11	16.7
Heptachlor	1	5.542	5.514	5.574	0.14	
	2	5.532	5.502	5.562	0.11	24.0
Heptachlor Epoxide	1	6.107	6.080	6.140	0.13	
	2	6.082	6.052	6.112	0.11	16.7
Hexachlorobenzene	1	5.003	4.975	5.035	0.14	
	2	5.020	4.990	5.050	0.10	33.3
Methoxychlor	1	7.338	7.311	7.371	0.14	
	2	7.622	7.592	7.652	0.14	0.0



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**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES**

LCS

SW-846 8082A

Lab Sample ID: B328266-BS1 Date(s) Analyzed: 01/14/2023 01/14/2023

Instrument ID (1): ECD10 Instrument ID (2): ECD10

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.18	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.16	6.1



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**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES**

LCS Dup

SW-846 8082A

Lab Sample ID: B328266-BSD1 Date(s) Analyzed: 01/14/2023 01/14/2023

Instrument ID (1): ECD10 Instrument ID (2): ECD10

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.17	5.7
Aroclor-1260	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.16	6.1

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
DL-03	Elevated reporting limit due to matrix interference.
L-04	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
L-14	Compound classified by MA CAM as difficult with acceptable recoveries of 40-160%. Recovery does not meet 70-130% criteria but does meet difficult compound criteria.
MS-07	Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.
MS-07A	Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.
MS-11	Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
O-32	A dilution was performed as part of the standard analytical procedure.
R-02	Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
R-06	Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.
S-07	One associated surrogate standard recovery is outside of control limits but the other(s) is/are within limits. All recoveries are > 10%.
S-26	Surrogate outside of control limits.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-35	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

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CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
MADEP EPH rev 2.1 in Soil	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
MADEP EPH rev 2.1 in Water	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
SW-846 6010D in Soil	
Antimony	CT,NH,NY,ME,VA,NC
Arsenic	CT,NH,NY,ME,VA,NC

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 6010D in Soil</i>	
Barium	CT,NH,NY,ME,VA,NC
Beryllium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
Thallium	CT,NH,NY,ME,VA,NC
Vanadium	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
<i>SW-846 6010D in Water</i>	
Antimony	CT,NH,NY,ME,VA,NC
Arsenic	CT,NH,NY,ME,VA,RI,NC
Barium	CT,NH,NY,ME,VA,NC
Beryllium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
Thallium	CT,NH,NY,VA,NC
Vanadium	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
<i>SW-846 7471B in Soil</i>	
Mercury	CT,NH,NY,NC,ME,VA
<i>SW-846 8081B in Soil</i>	
Alachlor	NC
Alachlor [2C]	NC
Aldrin	CT,NH,NY,ME,NC,VA
Aldrin [2C]	CT,NH,NY,ME,NC,VA
alpha-BHC	CT,NH,NY,ME,NC,VA
alpha-BHC [2C]	CT,NH,NY,ME,NC,VA
beta-BHC	CT,NH,NY,ME,NC,VA
beta-BHC [2C]	CT,NH,NY,ME,NC,VA
delta-BHC	CT,NH,NY,ME,NC,VA
delta-BHC [2C]	CT,NH,NY,ME,NC,VA
gamma-BHC (Lindane)	CT,NH,NY,ME,NC,VA
gamma-BHC (Lindane) [2C]	CT,NH,NY,ME,NC,VA
Chlordane	CT,NH,NY,ME,NC,VA
Chlordane [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDD	CT,NH,NY,ME,NC,VA
4,4'-DDD [2C]	CT,NH,NY,ME,NC,VA

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8081B in Soil	
4,4'-DDE	CT,NH,NY,ME,NC,VA
4,4'-DDE [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDT	CT,NH,NY,ME,NC,VA
4,4'-DDT [2C]	CT,NH,NY,ME,NC,VA
Dieldrin	CT,NH,NY,ME,NC,VA
Dieldrin [2C]	CT,NH,NY,ME,NC,VA
Endosulfan I	CT,NH,NY,ME,NC,VA
Endosulfan I [2C]	CT,NH,NY,ME,NC,VA
Endosulfan II	CT,NH,NY,ME,NC,VA
Endosulfan II [2C]	CT,NH,NY,ME,NC,VA
Endosulfan Sulfate	CT,NH,NY,ME,NC,VA
Endosulfan Sulfate [2C]	CT,NH,NY,ME,NC,VA
Endrin	CT,NH,NY,ME,NC,VA
Endrin [2C]	CT,NH,NY,ME,NC,VA
Endrin Aldehyde	CT,NH,NY,ME,NC,VA
Endrin Aldehyde [2C]	CT,NH,NY,ME,NC,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC
Heptachlor	CT,NH,NY,ME,NC,VA
Heptachlor [2C]	CT,NH,NY,ME,NC,VA
Heptachlor Epoxide	CT,NH,NY,ME,NC,VA
Heptachlor Epoxide [2C]	CT,NH,NY,ME,NC,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NH,NY,ME,NC,VA
Methoxychlor [2C]	CT,NH,NY,ME,NC,VA
Toxaphene	CT,NH,NY,ME,NC,VA
Toxaphene [2C]	CT,NH,NY,ME,NC,VA
SW-846 8081B in Water	
Alachlor	NC
Alachlor [2C]	NC
Aldrin	CT,NH,NY,ME,NC,VA
Aldrin [2C]	CT,NH,NY,ME,NC,VA
alpha-BHC	CT,NH,NY,ME,NC,VA
alpha-BHC [2C]	CT,NH,NY,ME,NC,VA
beta-BHC	CT,NH,NY,ME,NC,VA
beta-BHC [2C]	CT,NH,NY,ME,NC,VA
delta-BHC	CT,NH,NY,ME,NC,VA
delta-BHC [2C]	CT,NH,NY,ME,NC,VA
gamma-BHC (Lindane)	CT,NH,NY,ME,NC,VA
gamma-BHC (Lindane) [2C]	CT,NH,NY,ME,NC,VA
Chlordane	CT,NH,NY,ME,NC,VA
Chlordane [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDD	CT,NH,NY,ME,NC,VA
4,4'-DDD [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDE	CT,NH,NY,ME,NC,VA

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8081B in Water</i>	
4,4'-DDE [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDT	CT,NH,NY,ME,NC,VA
4,4'-DDT [2C]	CT,NH,NY,ME,NC,VA
Dieldrin	CT,NH,NY,ME,NC,VA
Dieldrin [2C]	CT,NH,NY,ME,NC,VA
Endosulfan I	CT,NH,NY,ME,NC,VA
Endosulfan I [2C]	CT,NH,NY,ME,NC,VA
Endosulfan II	CT,NH,NY,ME,NC,VA
Endosulfan II [2C]	CT,NH,NY,ME,NC,VA
Endosulfan Sulfate	CT,NH,NY,ME,NC,VA
Endosulfan Sulfate [2C]	CT,NH,NY,ME,NC,VA
Endrin	CT,NH,NY,ME,NC,VA
Endrin [2C]	CT,NH,NY,ME,NC,VA
Endrin Aldehyde	CT,NH,NY,ME,NC,VA
Endrin Aldehyde [2C]	CT,NH,NY,ME,NC,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC
Heptachlor	CT,NH,NY,ME,NC,VA
Heptachlor [2C]	CT,NH,NY,ME,NC,VA
Heptachlor Epoxide	CT,NH,NY,ME,NC,VA
Heptachlor Epoxide [2C]	CT,NH,NY,ME,NC,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NH,NY,ME,NC,VA
Methoxychlor [2C]	CT,NH,NY,ME,NC,VA
Toxaphene	CT,NH,NY,ME,NC,VA
Toxaphene [2C]	CT,NH,NY,ME,NC,VA
<i>SW-846 8082A in Soil</i>	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA
SW-846 8260D in Soil	
Acetone	CT,NH,NY,ME
Benzene	CT,NH,NY,ME
Bromobenzene	NH,NY,ME
Bromochloromethane	NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME
2-Butanone (MEK)	CT,NH,NY,ME
n-Butylbenzene	CT,NH,NY,ME
sec-Butylbenzene	CT,NH,NY,ME
tert-Butylbenzene	CT,NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
2-Chlorotoluene	CT,NH,NY,ME
4-Chlorotoluene	CT,NH,NY,ME
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY
Dibromomethane	NH,NY,ME
1,2-Dichlorobenzene	CT,NH,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
Dichlorodifluoromethane (Freon 12)	NY,ME

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260D in Soil</i>	
1,1-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	CT,NH,NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME
1,3-Dichloropropane	NH,NY,ME
2,2-Dichloropropane	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
1,4-Dioxane	NY
Ethylbenzene	CT,NH,NY,ME
Hexachlorobutadiene	NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	CT,NH,NY,ME
p-Isopropyltoluene (p-Cymene)	NH,NY
Methyl tert-Butyl Ether (MTBE)	NH,NY
Methylene Chloride	CT,NH,NY,ME
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
Naphthalene	NH,NY,ME
n-Propylbenzene	NH,NY
Styrene	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME
1,2,3-Trichlorobenzene	NY
1,2,4-Trichlorobenzene	NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME
1,1,2-Trichloroethane	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,4-Trimethylbenzene	CT,NH,NY,ME
1,3,5-Trimethylbenzene	CT,NH,NY,ME
Vinyl Chloride	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME
<i>SW-846 8270E in Soil</i>	
Acenaphthene	CT,NY,NH
Acenaphthene	CT,NY,NH,ME,NC,VA
Acenaphthylene	CT,NY,NH,ME,NC,VA
Acenaphthylene	CT,NY,NH
Acetophenone	NY,NH
Aniline	NY,NH

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8270E in Soil</i>	
Anthracene	CT,NY,NH,ME,NC,VA
Anthracene	CT,NY,NH
Benzo(a)anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)anthracene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH,ME,NC,VA
Benzo(b)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(b)fluoranthene	CT,NY,NH
Benzo(g,h,i)perylene	CT,NY,NH
Benzo(g,h,i)perylene	CT,NY,NH,ME,NC,VA
Benzo(k)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(k)fluoranthene	CT,NY,NH
Bis(2-chloroethoxy)methane	CT,NY,NH
Bis(2-chloroethyl)ether	CT,NY,NH
Bis(2-chloroisopropyl)ether	CT,NY,NH
Bis(2-Ethylhexyl)phthalate	CT,NY,NH
4-Bromophenylphenylether	CT,NY,NH
Butylbenzylphthalate	CT,NY,NH
4-Chloroaniline	CT,NY,NH
2-Chloronaphthalene	CT,NY,NH
2-Chlorophenol	CT,NY,NH
Chrysene	CT,NY,NH,ME,NC,VA
Chrysene	CT,NY,NH
Dibenz(a,h)anthracene	CT,NY,NH,ME,NC,VA
Dibenz(a,h)anthracene	CT,NY,NH
Dibenzofuran	CT,NY,NH
Di-n-butylphthalate	CT,NY,NH
1,2-Dichlorobenzene	NY,NH
1,3-Dichlorobenzene	NY,NH
1,4-Dichlorobenzene	NY,NH
3,3-Dichlorobenzidine	CT,NY,NH
2,4-Dichlorophenol	CT,NY,NH
Diethylphthalate	CT,NY,NH
2,4-Dimethylphenol	CT,NY,NH
Dimethylphthalate	CT,NY,NH
2,4-Dinitrophenol	CT,NY,NH
2,4-Dinitrotoluene	CT,NY,NH
2,6-Dinitrotoluene	CT,NY,NH
Di-n-octylphthalate	CT,NY,NH
1,2-Diphenylhydrazine/Azobenzene	NY,NH
Fluoranthene	CT,NY,NH,ME,NC,VA
Fluoranthene	CT,NY,NH
Fluorene	NY,NH
Fluorene	CT,NY,NH,ME,NC,VA
Hexachlorobenzene	CT,NY,NH
Hexachlorobutadiene	CT,NY,NH
Hexachloroethane	CT,NY,NH

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Soil	
Indeno(1,2,3-cd)pyrene	CT,NY,NH
Indeno(1,2,3-cd)pyrene	CT,NY,NH,ME,NC,VA
Isophorone	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH,ME,NC,VA
2-Methylphenol	CT,NY,NH
3/4-Methylphenol	CT,NY,NH
Naphthalene	CT,NY,NH,ME,NC,VA
Naphthalene	CT,NY,NH
Nitrobenzene	CT,NY,NH
2-Nitrophenol	CT,NY,NH
4-Nitrophenol	CT,NY,NH
Pentachlorophenol	CT,NY,NH
Phenanthrene	CT,NY,NH,ME,NC,VA
Phenanthrene	CT,NY,NH
Phenol	CT,NY,NH
Pyrene	CT,NY,NH,ME,NC,VA
Pyrene	CT,NY,NH
1,2,4-Trichlorobenzene	CT,NY,NH
2,4,5-Trichlorophenol	CT,NY,NH
2,4,6-Trichlorophenol	CT,NY,NH
SW-846 8270E in Water	
Acenaphthene	CT,NY,NH
Acenaphthene	CT,NY,NH,ME,NC,VA
Acenaphthylene	CT,NY,NH
Acenaphthylene	CT,NY,NH,ME,NC,VA
Acetophenone	NY
Aniline	CT,NY
Anthracene	CT,NY,NH
Anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)anthracene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH,ME,NC,VA
Benzo(a)pyrene	CT,NY,NH
Benzo(b)fluoranthene	CT,NY,NH
Benzo(b)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(g,h,i)perylene	CT,NY,NH,ME,NC,VA
Benzo(g,h,i)perylene	CT,NY,NH
Benzo(k)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(k)fluoranthene	CT,NY,NH
Bis(2-chloroethoxy)methane	CT,NY,NH
Bis(2-chloroethyl)ether	CT,NY,NH
Bis(2-chloroisopropyl)ether	CT,NY,NH
Bis(2-Ethylhexyl)phthalate	CT,NY,NH
4-Bromophenylphenylether	CT,NY,NH
Butylbenzylphthalate	CT,NY,NH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8270E in Water</i>	
4-Chloroaniline	CT,NY,NH
2-Chloronaphthalene	CT,NY,NH
2-Chlorophenol	CT,NY,NH
Chrysene	CT,NY,NH
Chrysene	CT,NY,NH,ME,NC,VA
Dibenz(a,h)anthracene	CT,NY,NH
Dibenz(a,h)anthracene	CT,NY,NH,ME,NC,VA
Dibenzofuran	CT,NY,NH
Di-n-butylphthalate	CT,NY,NH
1,2-Dichlorobenzene	CT,NY,NH
1,3-Dichlorobenzene	CT,NY,NH
1,4-Dichlorobenzene	CT,NY,NH
3,3-Dichlorobenzidine	CT,NY,NH
2,4-Dichlorophenol	CT,NY,NH
Diethylphthalate	CT,NY,NH
2,4-Dimethylphenol	CT,NY,NH
Dimethylphthalate	CT,NY,NH
2,4-Dinitrophenol	CT,NY,NH
2,4-Dinitrotoluene	CT,NY,NH
2,6-Dinitrotoluene	CT,NY,NH
Di-n-octylphthalate	CT,NY,NH
1,2-Diphenylhydrazine/Azobenzene	NY
Fluoranthene	CT,NY,NH
Fluoranthene	CT,NY,NH,ME,NC,VA
Fluorene	NY,NH
Fluorene	CT,NY,NH,ME,NC,VA
Hexachlorobenzene	CT,NY,NH
Hexachlorobutadiene	CT,NY,NH
Hexachloroethane	CT,NY,NH
Indeno(1,2,3-cd)pyrene	CT,NY,NH,ME,NC,VA
Indeno(1,2,3-cd)pyrene	CT,NY,NH
Isophorone	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH,ME,NC,VA
2-Methylnaphthalene	CT,NY,NH
2-Methylphenol	CT,NY,NH
3/4-Methylphenol	CT,NY,NH
Naphthalene	CT,NY,NH
Naphthalene	CT,NY,NH,ME,NC,VA
Nitrobenzene	CT,NY,NH
2-Nitrophenol	CT,NY,NH
4-Nitrophenol	CT,NY,NH
Pentachlorophenol	CT,NY,NH
Phenanthrene	CT,NY,NH
Phenanthrene	CT,NY,NH,ME,NC,VA
Phenol	CT,NY,NH
Pyrene	CT,NY,NH
Pyrene	CT,NY,NH,ME,NC,VA



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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8270E in Water</i>	
1,2,4-Trichlorobenzene	CT,NY,NH
2,4,5-Trichlorophenol	CT,NY,NH
2,4,6-Trichlorophenol	CT,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO 17025:2017	100033	03/1/2024
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
RI	Rhode Island Department of Health	LAO00373	12/30/2023
NC	North Carolina Div. of Water Quality	652	12/31/2023
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2023
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023

23A0923

Doc # 381 Rev 5_07/13/2021

http://www.pacelabs.com

39 Spruce Street
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

Page 1 of 1

Requested by: Weston Sampson
 Address: 712 Brook St Rocky Hill CT
 Phone: 960-513-1473
 Project Name: SANDMILL ROCHES
 Project Location: Cheshire, MA
 Project Number: Dason Kurkjian
 Pace Quote Name/Number: WILL SIBATNAK
 Invoice Recipient: WILL SIBATNAK
 Sampled by: WILL SIBATNAK

7-Day PFAS 10-Day (std) 10-Day Field Filtered 0 Lab to Filter
 Rush Approval Required 0 Orthophosphate Samples 0
 1-Day 3-Day 4-Day 0 Field Filtered 0 Lab to Filter
 2-Day 4-Day 0 Field Filtered 0 Lab to Filter

Format: PDF EXCEL SOXHLET
 Other: NON SOXHLET

CLP Like Data Pkg Required: SOXHLET

Email To: SIBATNAK@USEINC.COM

Beginning Date/Time	Ending Date/Time	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
1/10/23	1/10/23	Comp	U	3	8			
1/10/23	1/10/23	Comp	U	3	8			

ANALYSIS REQUESTED

mg
 VOCs (860)
 PCB Congeners
 EPA PHS
 TAC
 CBM 14 Metals + Copper
 Grain Size
 Pesticides + Herbicides

Preservation Code: Courier Use Only
 Total Number Of: VIALS, GLASS, PLASTIC, BACTERIA, ENCORE

Glassware in the fridge? Y/N
 Glassware in freezer? Y/N
 Prepackaged Cooler? Y/N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Matrix Codes:
 GW = Ground Water
 WW = Waste Water
 DW = Drinking Water
 A = Air
 S = Soil
 SL = Sludge
 SOL = Solid
 O = Other (please define)
SEDIMENT
 ? Preservation Codes:
 I = Iced
 H = HCL
 M = Methanol
 N = Nitric Acid
 S = Sulfuric Acid
 B = Sodium Bisulfate
 X = Sodium Hydroxide
 T = Sodium Thiosulfate
 O = Other (please define)

Client Comments: AN Email results to Kurtjand@useinc.com + SibatnaK@useinc.com

MASS DEP COMPARISON STANDARDS/SAVE EXTRA VOLUME FOR TCEP ANALYSIS

MA MCP Required
 MA MCP Certification Form Required
 CT RCP Required
 RCP Certification Form Required
 MA State DW Required

Project Entity: Government Federal City
 Municipality: 21 J Brownfield
 MWRA School MBTA WRTA
 Other: Chromatogram AIHA-LAP, LLC

Signature: [Signature] Date/Time: 1/10/23
 Signature: [Signature] Date/Time: 1/10/23 15E
 Signature: [Signature] Date/Time: 1/10/23 15E
 Signature: [Signature] Date/Time: 1/10/23 15E

Disclaimers: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

39 Spruce St.
 East Longmeadow, MA. 01028
 P: 413-525-2332
 F: 413-525-6405
 www.pacelabs.com



Doc# 277 Rev 6 July 2022

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client W & S

Received By [Signature] Date 1/10/23 Time 1515

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Were samples within Temperature? Direct From Sample _____ Ambient _____ Melted Ice _____
 Within 2-6°C T By Gun # 2 Actual Temp - 2.5

Was Custody Seal In tact? NA By Blank # _____ Actual Temp - _____
 Was COC Relinquished? T Were Samples Tampered with? NA
 Are there broken/leaking/loose caps on any samples? F Does Chain Agree With Samples? T

Is COC in ink/ Legible? T Were samples received within holding time? T
 Did COC include all pertinent Information? Client? T Analysis? T Sampler Name? T
 Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T
 Are there Lab to Filters? T Who was notified? _____

Are there Rushes? F Who was notified? _____
 Are there Short Holds? T Who was notified? _____

Samples are received within holding time? T Is there enough Volume? T
 Is there Headspace where applicable? T MS/MSD? F

Proper Media/Containers Used? T splitting samples require? F
 Were trip blanks received? F On COC? F

Do All Samples Have the proper pH? NA Acid _____ Base _____

Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-	2	250 mL Amb.		250 mL Plastic		4oz Amb/Clear	16
Bisulfate-	4	Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

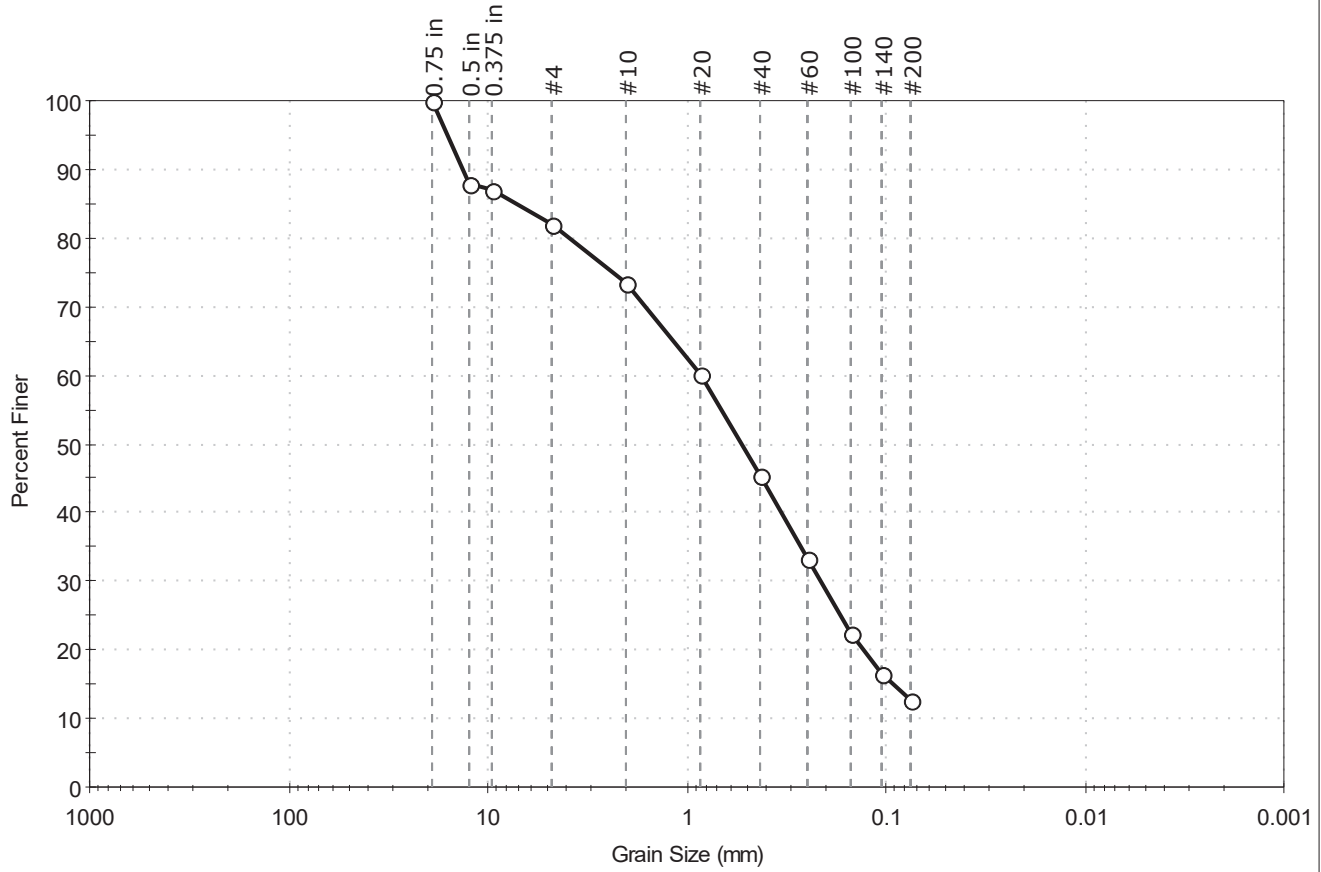
Comments:

[Empty box for comments]



Client: Pace New England	Project: 23A0923	Location:	Project No: GTX-316625
Boring ID: ---	Sample Type: jar	Tested By: ckg	Checked By: jsc
Sample ID: 23A0923-01	Test Date: 01/20/23	Test Id: 702110	
Depth: ---	Test Comment: ---	Visual Description: Moist, dark brown silty sand with gravel and organics	Sample Comment: ---

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	17.8	69.6	12.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	88		
0.375 in	9.50	87		
#4	4.75	82		
#10	2.00	74		
#20	0.85	60		
#40	0.42	45		
#60	0.25	33		
#100	0.15	22		
#140	0.11	16		
#200	0.075	13		

<u>Coefficients</u>	
D ₈₅ = 7.0985 mm	D ₃₀ = 0.2137 mm
D ₆₀ = 0.8441 mm	D ₁₅ = 0.0933 mm
D ₅₀ = 0.5285 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

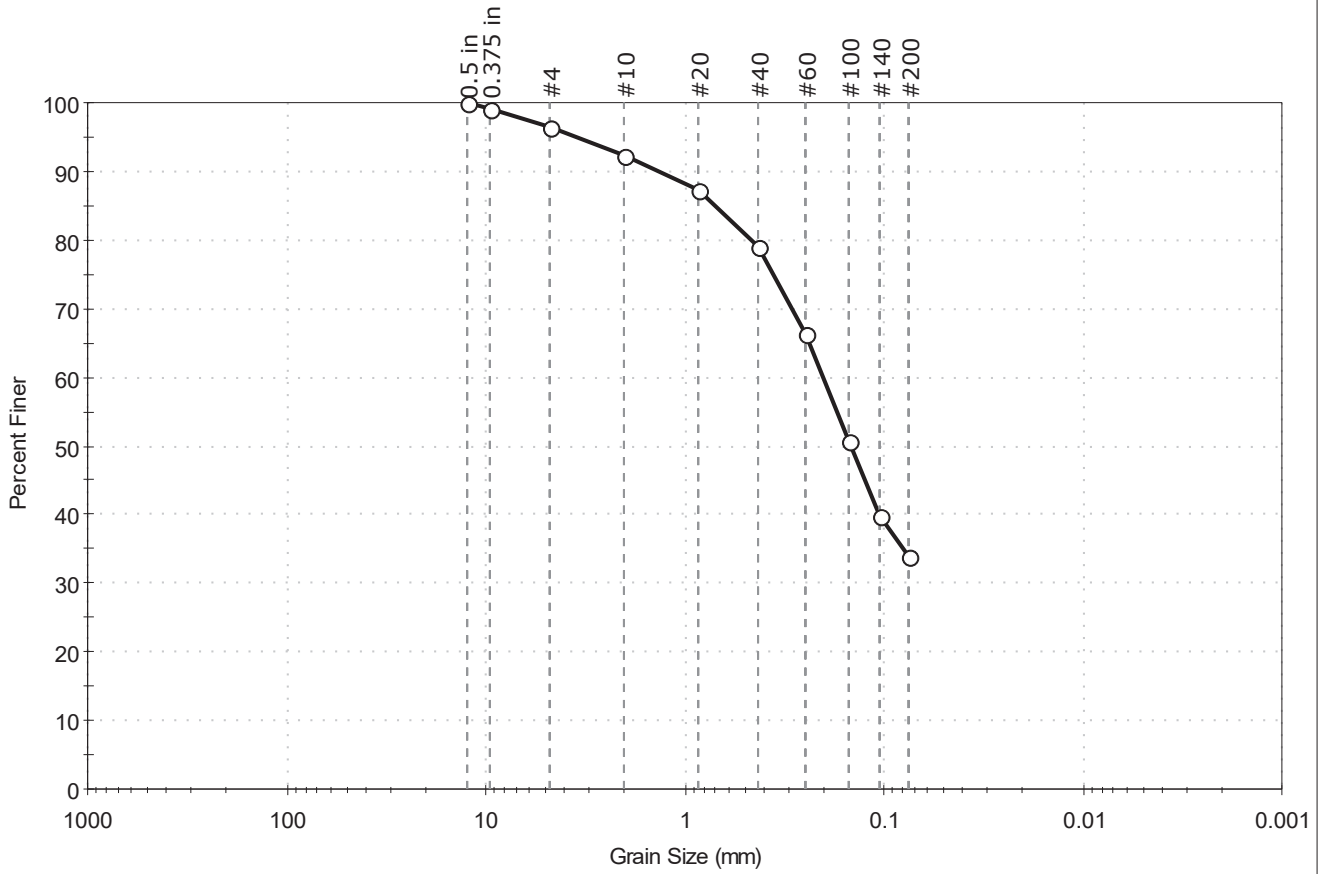
<u>Classification</u>	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client: Pace New England	Proposal No. 608857-125514	Table of Contents
Project: 23A0923		
Location:		Project No: GTX-316625
Boring ID: ---	Sample Type: jar	Tested By: ckg
Sample ID: 23A0923-02	Test Date: 01/20/23	Checked By: jsc
Depth: ---	Test Id: 702111	
Test Comment: ---		
Visual Description: Moist, dark brown silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	3.4	62.7	33.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	97		
#10	2.00	92		
#20	0.85	87		
#40	0.42	79		
#60	0.25	66		
#100	0.15	51		
#140	0.11	40		
#200	0.075	34		

Coefficients	
D ₈₅ = 0.7085 mm	D ₃₀ = N/A
D ₆₀ = 0.2030 mm	D ₁₅ = N/A
D ₅₀ = 0.1467 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Wednesday, January 18, 2023

Attn: Rebecca Faust
Con-Test
39 Spruce Street
East Longmeadow, MA 01028

Project ID: 23A0923
SDG ID: GCN20762
Sample ID#s: CN20762 - CN20763

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

A handwritten signature in black ink that reads "Phyllis Shiller". The signature is written in a cursive style.

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

January 18, 2023

SDG I.D.: GCN20762

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

January 18, 2023

SDG I.D.: GCN20762

Project ID: 23A0923

Client Id	Lab Id	Matrix
23A0923-01	CN20762	SOIL
23A0923-02	CN20763	SOIL



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 18, 2023

FOR: Attn: Rebecca Faust
 Con-Test
 39 Spruce Street
 East Longmeadow, MA 01028

Sample Information

Matrix: SOIL
 Location Code: CON-TEST
 Rush Request: Standard
 P.O.#:

Custody Information

Collected by:
 Received by: SW
 Analyzed by: see "By" below

Date Time
 01/10/23
 01/11/23 10:00

Laboratory Data

SDG ID: GCN20762
 Phoenix ID: CN20762

Project ID: 23A0923
 Client ID: 23A0923-01

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	64		%		01/11/23	AL	SW846-%Solid
Soil Extraction for Herbicide	Completed				01/15/23	J/D	SW3546

Chlorinated Herbicides

2,4,5-T	ND	0.039	mg/kg	2	01/18/23	JRB	SW8151A
2,4,5-TP (Silvex)	ND	0.039	mg/kg	2	01/18/23	JRB	SW8151A
2,4-D	ND	0.077	mg/kg	2	01/18/23	JRB	SW8151A
2,4-DB	ND	0.039	mg/kg	2	01/18/23	JRB	SW8151A
Dalapon	ND	0.039	mg/kg	2	01/18/23	JRB	SW8151A
Dicamba	ND	0.039	mg/kg	2	01/18/23	JRB	SW8151A
Dichloroprop	ND	0.058	mg/kg	2	01/18/23	JRB	SW8151A
Dinoseb	ND	0.039	mg/kg	2	01/18/23	JRB	SW8151A
MCPA	ND	3.1	mg/kg	2	01/18/23	JRB	SW8151A
MCPP	ND	3.1	mg/kg	2	01/18/23	JRB	SW8151A

QA/QC Surrogates

% DCAA	75		%	2	01/18/23	JRB	30 - 150 %
% DCAA (Confirmation)	84		%	2	01/18/23	JRB	30 - 150 %

Project ID: 23A0923
 Client ID: 23A0923-01

Phoenix I.D.: CN20762

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
 QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.
 If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
 The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

January 18, 2023

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 18, 2023

FOR: Attn: Rebecca Faust
 Con-Test
 39 Spruce Street
 East Longmeadow, MA 01028

Sample Information

Matrix: SOIL
 Location Code: CON-TEST
 Rush Request: Standard
 P.O.#:

Custody Information

Collected by:
 Received by: SW
 Analyzed by: see "By" below

Date

01/10/23
 01/11/23

Time

10:00

Laboratory Data

SDG ID: GCN20762
 Phoenix ID: CN20763

Project ID: 23A0923
 Client ID: 23A0923-02

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	75		%		01/11/23	AL	SW846-%Solid
Soil Extraction for Herbicide	Completed				01/15/23	J/D	SW3546

Chlorinated Herbicides

2,4,5-T	ND	0.033	mg/kg	2	01/18/23	JRB	SW8151A
2,4,5-TP (Silvex)	ND	0.033	mg/kg	2	01/18/23	JRB	SW8151A
2,4-D	ND	0.066	mg/kg	2	01/18/23	JRB	SW8151A
2,4-DB	ND	0.033	mg/kg	2	01/18/23	JRB	SW8151A
Dalapon	ND	0.033	mg/kg	2	01/18/23	JRB	SW8151A
Dicamba	ND	0.033	mg/kg	2	01/18/23	JRB	SW8151A
Dichloroprop	ND	0.049	mg/kg	2	01/18/23	JRB	SW8151A
Dinoseb	ND	0.033	mg/kg	2	01/18/23	JRB	SW8151A
MCPA	ND	3.3	mg/kg	2	01/18/23	JRB	SW8151A
MCPP	ND	3.3	mg/kg	2	01/18/23	JRB	SW8151A

QA/QC Surrogates

% DCAA	94		%	2	01/18/23	JRB	30 - 150 %
% DCAA (Confirmation)	97		%	2	01/18/23	JRB	30 - 150 %

Project ID: 23A0923
 Client ID: 23A0923-02

Phoenix I.D.: CN20763

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
 QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.
 If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
 The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

January 18, 2023

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

January 18, 2023

QA/QC Data

SDG I.D.: GCN20762

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 660037 (ug/Kg), QC Sample No: CN20291 10X (CN20762, CN20763)										
Chlorinated Herbicides - Soil										
2,4,5-T	ND	130	73	68	7.1	84	70	18.2	40 - 140	30
2,4,5-TP (Silvex)	ND	130	78	70	10.8	84	69	19.6	40 - 140	30
2,4-D	ND	250	76	70	8.2	83	71	15.6	40 - 140	30
2,4-DB	ND	2500	67	64	4.6	82	67	20.1	40 - 140	30
Dalapon	ND	130	66	66	0.0	69	61	12.3	40 - 140	30
Dicamba	ND	130	86	80	7.2	79	68	15.0	40 - 140	30
Dichloroprop	ND	130	81	77	5.1	94	79	17.3	40 - 140	30
Dinoseb	ND	130	76	73	4.0	81	69	16.0	10 - 110	20
MCPA	ND	38000	69	68	1.5	86	73	16.4	40 - 140	30
MCPP	ND	38000	75	66	12.8	99	88	11.8	40 - 140	30
% DCAA (Surrogate Rec)	94	%	101	93	8.2	103	94	9.1	30 - 150	30
% DCAA (Surrogate Rec) (Confirm)	134	%	152	136	11.1	161	132	19.8	30 - 150	30

Comment:


MCP 8151 additional criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.

m = This parameter is outside laboratory MS/MSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria
- Intf - Interference


 Phyllis/Shiller, Laboratory Director
 January 18, 2023

Wednesday, January 18, 2023

Criteria: MA: CAM, S1

State: MA

SampleNo Acode

Phoenix Analyte

Criteria

Result

RL

Criteria

RL
Criteria

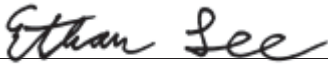
Analysis
Units

*** No Data to Display ***

Sample Criteria Exceedances Report

GCN20762 - CON-TEST

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedances. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedance information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form					
Laboratory Name: Phoenix Environmental Laboratories, Inc. Project #:					
Project Location: 23A0923			RTN:		
This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)] CN20762, CN20763					
Matrices: <input type="checkbox"/> Groundwater/Surface Water <input checked="" type="checkbox"/> Soil/Sediment <input type="checkbox"/> Drinking Water <input type="checkbox"/> Air <input type="checkbox"/> Other:					
CAM Protocol (check all that apply below)					
8260 VOC CAM II A <input type="checkbox"/>	7470/7471 Hg CAM III B <input type="checkbox"/>	MassDEP VPH CAM IV A <input type="checkbox"/>	8081 Pesticides CAM V B <input type="checkbox"/>	7196 Hex Cr CAM VI B <input type="checkbox"/>	MassDEP APH CAM IX A <input type="checkbox"/>
8270 SVOC CAM II B <input type="checkbox"/>	7010 Metals CAM III C <input type="checkbox"/>	MassDEP EPH CAM IV B <input type="checkbox"/>	8151 Herbicides CAM V C <input checked="" type="checkbox"/>	8330 Explosives CAM VIII A <input type="checkbox"/>	TO-15 VOC CAM IX B <input type="checkbox"/>
6010 Metals CAM III A <input type="checkbox"/>	6020 Metals CAM III D <input type="checkbox"/>	8082 PCB CAM V A <input type="checkbox"/>	9012 Total Cyanide/PAC CAM V1 A <input type="checkbox"/>	6860 Perchlorate CAM VIII B <input type="checkbox"/>	
Affirmative responses to questions A through F are required for "Presumptive Certainty" status					
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Responses to questions G, H and I below is required for "Presumptive Certainty" status					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350					
H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Section: Herbicide Narration .			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>All negative responses must be addressed in an attached laboratory narrative.</i>					
I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.					
Authorized Signature: _____			Date: Wednesday, January 18, 2023		
			Printed Name: Ethan Lee		
			Position: Project Manager		



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

January 18, 2023

SDG I.D.: GCN20762

Herbicide Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 660037 (Samples: CN20762, CN20763): -----

One or more surrogates is outside of criteria. (% DCAA (Surrogate Rec) (Confirmation))

Instrument:

AU-ECD12 01/17/23-1 Jeff Bucko, Chemist 01/17/23

CN20762 (2X), CN20763 (2X)

The initial calibration (HRBD29AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (HRBD29BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds:

Samples: CN20762, CN20763

Preceding CC 117B039 - None.

Succeeding CC 117B047 - 2,4-DB (12) 23%H (15%)

QC (Batch Specific):

Batch 660037 (CN20291)

CN20762, CN20763

All LCS recoveries were within 40 - 140 with the following exceptions: % DCAA (Surrogate Rec) (Confirmation)(152%)

All LCSD recoveries were within 40 - 140 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

MCP 8151 additional criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

2.3^{over}
1P

SUBCONTRACT CHAIN OF CUSTODY

Pace New England

23A0923

SENDING LABORATORY:

Pace New England
39 Spruce Street
East Longmeadow, MA 01028
Phone: 413.525.2332
Fax: 413.525.6405
Project Manager: Rebecca Faust

RECEIVING LABORATORY:

Phoenix Laboratory
587 Middle Turnpike East
Manchester, CT 06040
Phone : (860) 645-1102
Fax: (860) 645-0823

Analysis	Due	Expires	Comments
Sample ID: 23A0923-01 S-8151 <i>Containers Supplied:</i> 8 oz amber glass jar (H)	Soil 01/20/23 15:30	Sampled: 01/10/23 00:00 01/24/23 00:00	MA MCP, RCS-1
Sample ID: 23A0923-02 S-8151 <i>Containers Supplied:</i> 8 oz amber glass jar (H)	Soil 01/20/23 15:30	Sampled: 01/10/23 00:00 01/24/23 00:00	MA MCP, RCS-1

Released By: Dan Bellante Date: 1-11-23 @ 0838
 Received By: [Signature] Date: 1-11-23 10:00

Released By: _____ Date: _____
 Received By: _____ Date: _____

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Pace New England	Project #: 23A0923
Project Location: Sandmill Rd, Cheshire, MA	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
 23A0923-01 thru 23A0923-02

Matrices: Soil

CAM Protocol (check all that below)

8260 VOC CAM II A (X)	7470/7471 Hg CAM IIIB (X)	MassDEP VPH (GC/PID/FID) CAM IV A ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()
8270 SVOC CAM II B (X)	7010 Metals CAM III C ()	MassDEP VPH (GC/MS) CAM IV C ()	8081 Pesticides CAM V B (X)	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
6010 Metals CAM III A (X)	6020 Metals CAM III D ()	MassDEP EPH CAM IV B (X)	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()

Affirmative response to Questions A through F is required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No ¹
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
----------	---	--

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

H	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ¹
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹

¹All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: <u>Meghan E. Kelley</u>	Position: <u>Reporting Specialist</u>
Printed Name: <u>Meghan E. Kelley</u>	Date: <u>01/23/23</u>

APPENDX G
WETLAND DELINEATION REPORT



westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

Wetland Delineation Report

September 2022

Sandmill Road Bridge
Cheshire, MA

Wetland Delineation Conducted By:
Mel Higgins, PWS on 9/8/2022



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FIGURES

Figure 1.....	Wetlands Field Map
Figure 2.....	USGS Topographic Map
Figure 3.....	Environmental Resources Map

APPENDICES

Appendix A	ACOE Wetland Determination Data Forms
Appendix B	Site Photographs

Wetland Delineation Report

1.0 SITE DESCRIPTION

On September 8th, 2022, the presence of wetland resources was investigated near the Sandmill Road bridge (near 1031 Sandmill Road in Cheshire, MA). This investigation area is located along a rural residential road forested areas along both banks of the stream (Dry Brook) which passes under Sandmill Road flowing in a westerly direction. Please see Figure 1 (Wetlands Field Map) and Figure 2 (USGS Topographic Map) of this report for the investigation area.

Wetland resource areas, including bordering vegetated wetlands, perennial stream bank and isolated stream bank, were identified and flagged in the field using pink flagging by a Weston & Sampson employee who is trained in the wetland delineation process using the Massachusetts Department of Environmental Protection (MassDEP) and the US Army Corps of Engineers methodology. Further descriptions of these wetland resource areas are presented in the following sections.

.....

2.0 DELINEATION OF WETLAND RESOURCES

2.1 Site Observations

The Weston & Sampson wetland scientist, trained in the ACOE Wetland Delineation Manual and Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act guidance document, observed the following protected wetland resources at the site:

- Bordering Vegetated Wetlands (BVW)
- Bank – Perennial Stream
- Bank – Intermittent Stream

Field data were recorded on US Army Corps of Engineers (ACOE) Wetland Determination Data Forms. See Appendix A for completed data forms and Appendix B for site photographs.

2.2 Wetland Delineation Methodology

A wetland delineation assessment was conducted in accordance with the Massachusetts Wetland Protection Act Regulations (310 CMR 10.55(2)(c)), Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Protection Act (March 1995), and ACOE Wetland Manual (Technical Report Y-87-1).

The bordering vegetated wetlands (BVW) delineation methodology included the characterization of vegetation, soil and hydrologic conditions in both wetland and upland areas to identify the transitional area, which was used as the wetland limit. Pink flags with distinct flag numbers were left in the field to show wetland resource area limits.

Vegetation, hydrology and soils were assessed in both wetland and upland areas to accurately place the wetland limits at each site. The percentage of vegetative species was estimated by creating sample plots. Sample plot radius for trees, saplings, shrubs, groundcover and woody vine strata was 30', 15', 15', 5' and 30', respectively. After creating the sample plot areas, the percent basal area coverage of each species within the monitoring plot was recorded. Using these field observations, the percent dominance of each species within its stratum was calculated. The 50/20 Rule was then used to

Wetland Delineation Report

determine dominance. Dominant species were considered the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceeds 50% of the total dominance measure (basal area) for the stratum, plus any additional species comprising 20% or more of the total dominance measure for the stratum. Once the dominant species were determined, they were treated equally to determine the presence of hydrophytic vegetation. If the number of dominant species with a Wetland Indicator Status of FAC (excluding FAC-), FACW or OBL is greater than, or equal to, the number of remaining dominant species, the area was considered a jurisdictional wetland resource area based on vegetation.

A soil sample from each wetland sample plot were also taken. Each soil sample goes to a depth of at least 12-24 inches. The soil was characterized to determine if the soil sample was considered a hydric (wetland) soil. Soil samples, including mottles, were characterized based on color using Munsell Soil-Color charts as a color reference.

The general area was then assessed for hydrologic conditions, including, but not limited to, site inundation, depth to free water, depth of soil saturation, water marks, drift lines, sediment deposits, water stained leaves.

2.3 Bordering Vegetated Wetlands (BVW)

A single BVW series was delineated at the site. This BVW is located on the southern bank of Dry Brook, west of the bridge. The limit of the BVW resource areas were determined by locating the transitional area between wetland and upland vegetation, soils and hydrologic conditions. Wetland flags left in the field included:

- BVW-A1 through BVW-A3 (BVW "A" Series)

Dominant vegetation within the wetland resource area included black willow (*Salix nigra*), silky dogwood (*Cornus amomum*), and goldenrod (*Solidago spp.*), species that generally thrive in wet conditions. Soils within the BVW's were composed of fine sandy loam. Other indicators of wetland hydrology included saturation and water stained leaves.

.....

Wetland Delineation Report

Dominant upland vegetation in the area included staghorn sumac (*Rhus typhina*), multiflora rose (*Rosa multiflora*) and sticky willy (*Gallium aparine*). Soils within the upland were considered sandy loam with with no evidence of mottling or hydrology within the top 12 inches.

BVWs are subject to a 100-foot buffer under the Massachusetts Wetland Protection Act per 310 CMR 10.02(2)(b).

2.4 Bank

Water bodies, including perennial streams, intermittent streams, ponds and lakes, have banks which are protected by the Massachusetts Wetland Protection Act. Bank is a wetland resource area defined by 310 CMR 10.54(2)(a) as “the portion of land surface which normally abuts and confines a water body. It occurs between a waterbody and a vegetated bordering wetland and adjacent floodplain, or, in absence of these, it occurs between a waterbody and an upland.” Vegetated banks provide valuable functions such as flood control, stormwater prevention, fisheries protection, and water quality protection. The limit of this resource area is identified by Top of Bank (TOB) which is located at the first observable break in slope or the Mean Annual Flood Level (MAFL), whichever is lower. TOB is easily identified in the field so that indicator was utilized for this wetland delineation.

Perennial Stream Banks

A single perennial stream known as the Dry Brook was identified within the investigation area. The boundary of the perennial stream was identified in the field utilizing Top of Bank (TOB), identified by flag line TOB-A. Dry Brook is shown as perennial on the current United States Geographical Survey (USGS) map and has a watershed size greater than one square mile in size according to USGS Stream Stats which classifies the stream as perennial per 310 CMR 10.58 (2)(a)(1)(b-c). The boundary of the perennial stream was identified in the field by the first observable break in slope (TOB). Wetland flags left in the field included:

- TOB-A1 through TOB-A12 (Perennial Stream Bank “A” Series): southern bank
- TOB-B1 through TOB-B9 (Perennial Stream Bank “B” Series): northern bank

Wetland Delineation Report

Perennial streams are subject to a 200-foot Riverfront Area under the Massachusetts Wetland Protection Act per 301 CMR 10.58(2)(a)(2)(c).

Intermittent Stream Banks

The single intermittent stream was delineated on site which intersects the northern bank of Dry Brook, east of the bridge. The unnamed stream is not present on USGS Stream Stats and is assumed to convey stormwater from Sandmill Road to the channel to Dry Brook. The boundary of the intermittent stream was identified in the field by the first observable break in slope (TOB). Wetland flags left in the field included:

- ISB-A1 through ISB-A5 (Intermittent Stream Bank "A" Series)(western bank)
- ISB-B1 through ISB-B5 (Intermittent Stream Bank "B" Series)(western bank)

Intermittent stream banks are subject to a 100-foot buffer under the Massachusetts Wetland Protection Act per 301 CMR 10.02(2)(b).

2.5 Other Protected Areas

Weston & Sampson created environmental resources maps (see Figure 3) of the site to determine the presence of other protected areas. The data source of these map layers was the Massachusetts Geographic Information System (MassGIS). These areas included:

- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- NHESP Certified and Potential Vernal Pools
- Areas of Critical Environmental Concern (ACEC)
- Outstanding Resource Waters (ORW)
- Coldwater Fisheries
- Shellfish Suitability Area
- 100-Year Flood Zone

.....

Wetland Delineation Report

Wetland resources identified in the field were also added to these maps. Based on the MassGIS information, additional protected environmental resources in the area include 100-year flood zone and endangered species habitat (NHESP habitat).

3.0 SUMMARY

On September 8th, 2021, the presence of wetland resources was investigated near the Sandmill Road bridge (near 1031 Sandmill Road in Cheshire, MA.. A single bordering vegetated wetlands, single perennial stream, and single intermittent stream, was identified and flagged at the site.

Additional environmental mapping was conducted using MassGIS data mapping. This additional mapping indicates that there is endangered species habitat and 100-year flood zone in this general area.

This Wetlands Delineation Report has been reviewed and approved by a Professional Wetland Scientist PWS.

.....

4.0 REFERENCES

Jackson, Scott. 1995. "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act." Massachusetts Department of Environmental Protection.

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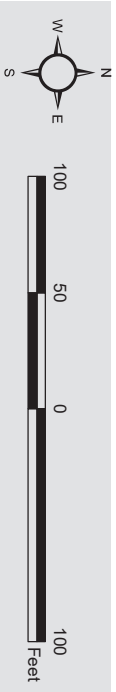
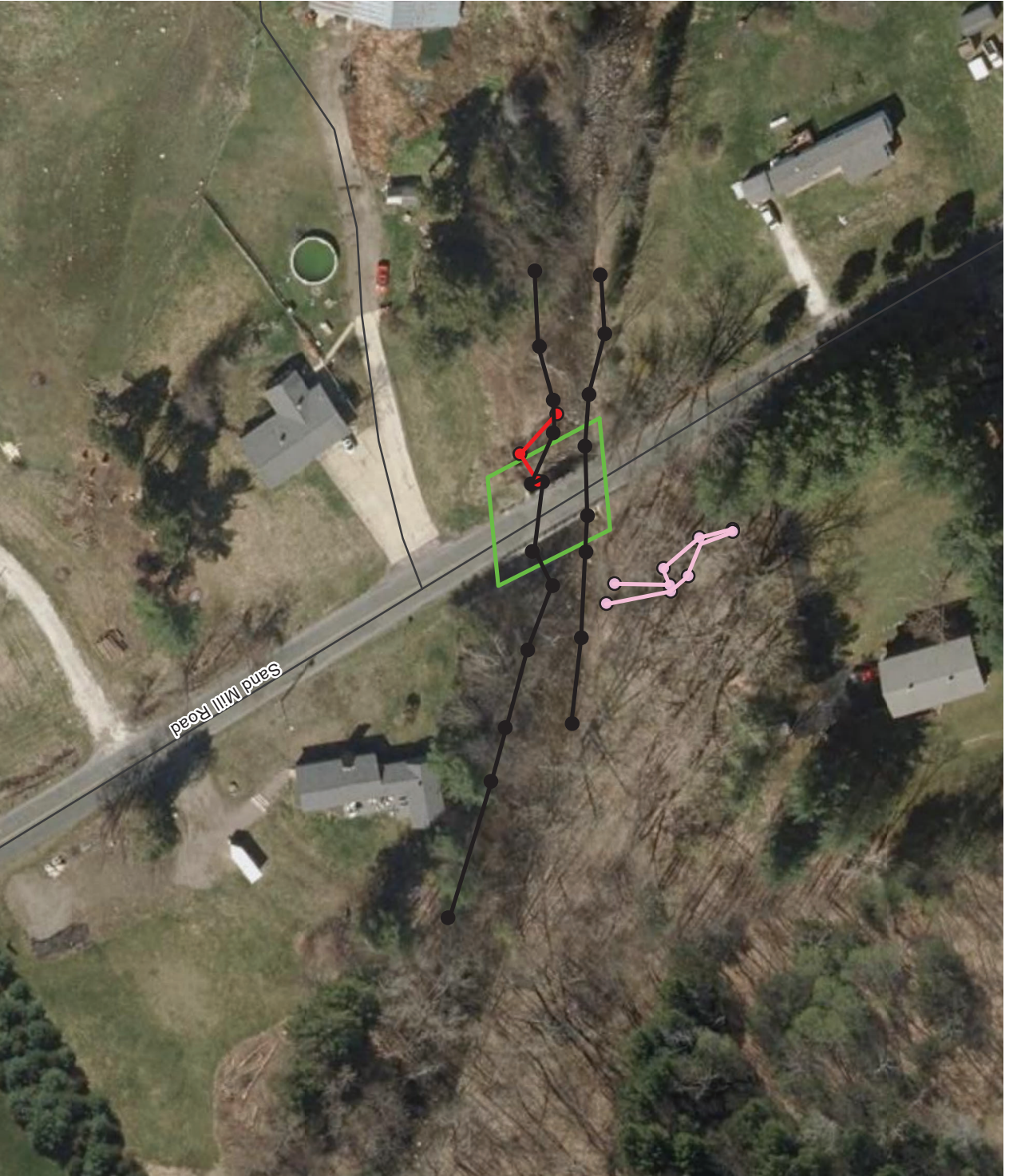
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.

Wetland Delineation Report

FIGURES



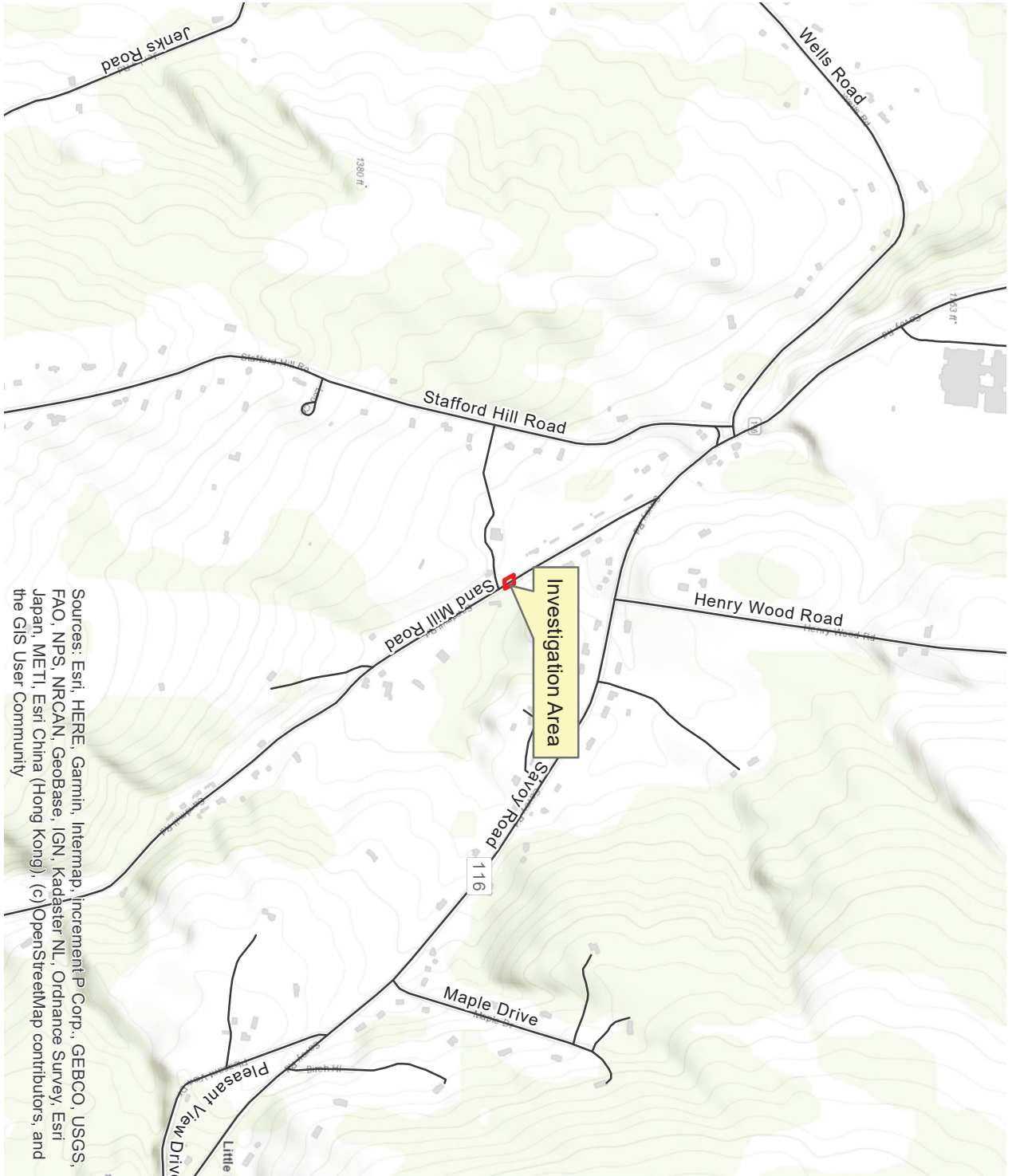
Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

- Legend**
- resource
 - BWW
 - Intermittent Stream Bank
 - Perennial Stream Bank
 - Work Area

FIGURE 1

Sandmill Road Bridge
Cheshire, MA
Wetlands Field Map





Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

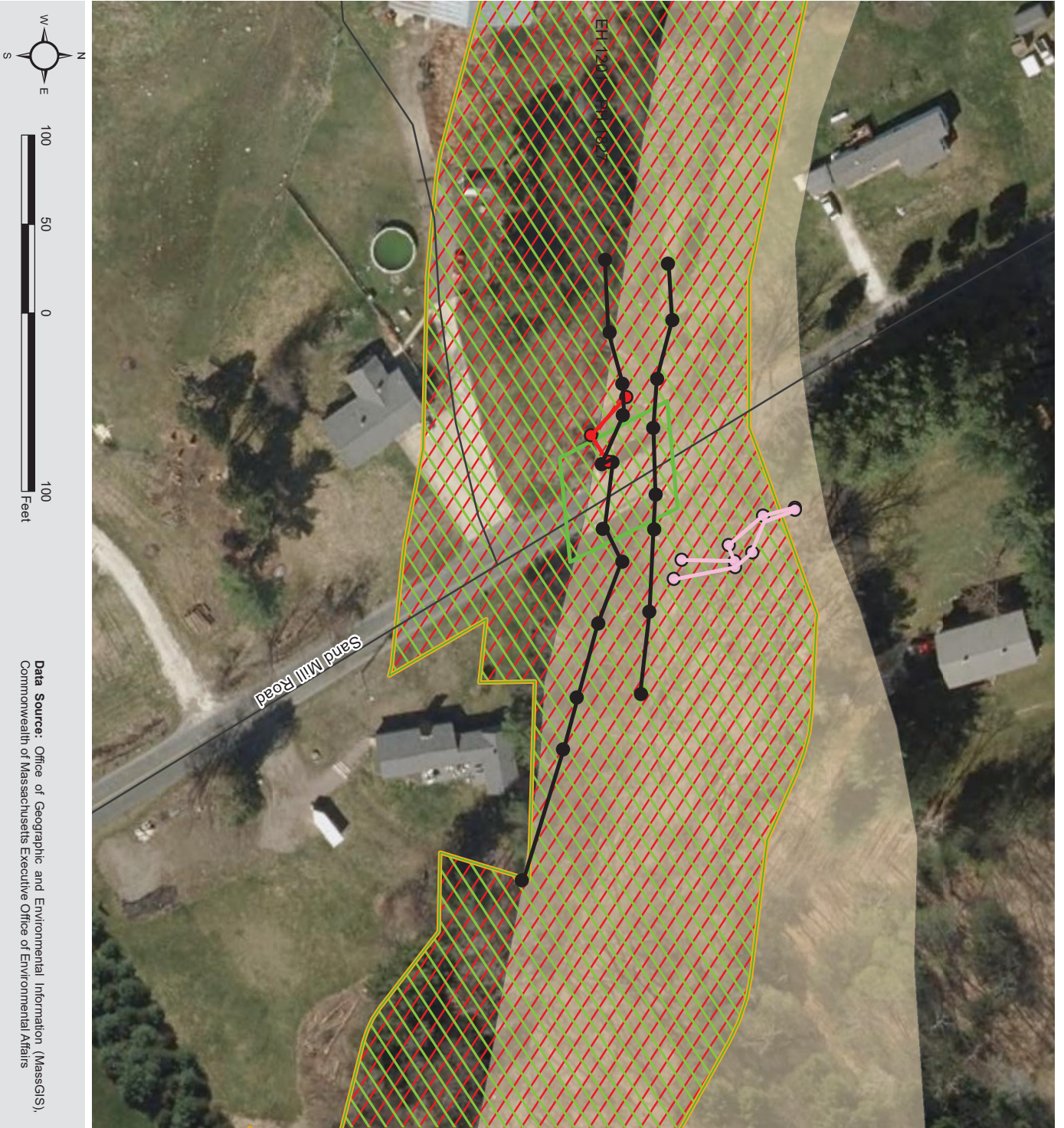
Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend
 Work Area

FIGURE 2

Sandmill Road Bridge
 Cheshire, MA
 Locus Map





Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

- Legend**
- resource
 - BWW
 - Intermittent Stream Bank
 - Perennial Stream Bank
 - Work Area
 - ACECs
 - ACECs
 - NHESP Habitats
 - NHESP Estimated Habitats of Rare Wildlife
 - NHESP Priority Habitats of Rare Species
 - NHESP Certified Vernal Pools
 - NHESP Potential Vernal Pools
 - 100-Year Flood Zone
 - 100-Year Flood Zone
 - Outstanding Resource Waters
 - Public Water Supply Contributor
 - ORW for ACEC
 - ORW for both Water Supply and Other

FIGURE 3

Sandmill Road Bridge
Cheshire, MA
Environmental Receptors



APPENDIX A

ACOE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sandmill Rd Bridge City/County: Cheshire Sampling Date: 9/8/22
 Applicant/Owner: Town of Cheshire State: MA Sampling Point: BVW-A2 UPL
 Investigator(s): Mel Higgins, PWS Section, Township, Range: _____
 Landform (hillside, terrace, etc.): none Local relief (concave, convex, none): none Slope (%): 3
 Subregion (LRR or MLRA): LRR R Lat: 42deg 35' 9.196"N Long: 73deg 6' 36.397"W Datum: _____
 Soil Map Unit Name: Kendaia silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>x</u> Hydric Soil Present? Yes _____ No <u>x</u> Wetland Hydrology Present? Yes _____ No <u>x</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>x</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>x</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
---	---

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: BVW-A2 UPL

<u>Tree Stratum</u> (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	0	_____	_____		
2. _____	0	_____	_____		
3. _____	0	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
				=Total Cover	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft radius</u>)					
1. <u>Rhus typhina</u>	30	Yes	UPL		
2. <u>Frangula alnus</u>	10	Yes	FAC		
3. <u>Rosa multiflora</u>	10	Yes	FACU		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
				50 =Total Cover	
<u>Herb Stratum</u> (Plot size: <u>5 ft radius</u>)					
1. <u>Galium aparine</u>	60	Yes	FAC		
2. <u>Glechoma hederacea</u>	20	Yes	FAC		
3. _____	0	_____	_____		
4. _____	0	_____	_____		
5. _____	0	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
				80 =Total Cover	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
				=Total Cover	

Dominance Test worksheet:	
Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
Total Number of Dominant Species Across All Strata:	<u>5</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>40.0%</u> (A/B)
Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>10</u>	x 4 = <u>40</u>
UPL species <u>30</u>	x 5 = <u>150</u>
Column Totals: <u>70</u> (A)	<u>280</u> (B)
Prevalence Index = B/A = <u>4.00</u>	
Hydrophytic Vegetation Indicators:	
<u>1</u> - Rapid Test for Hydrophytic Vegetation	
<u>2</u> - Dominance Test is >50%	
<u>3</u> - Prevalence Index is ≤3.0 ¹	
<u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
<u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Vegetation Strata:	
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
Woody vines – All woody vines greater than 3.28 ft in height.	
Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: BVW-A2 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	2.5Y 2.5/1	100					Sandy	sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No x

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sandmill Rd Bridge City/County: Cheshire Sampling Date: 9/8/22
 Applicant/Owner: Town of Cheshire State: MA Sampling Point: BVW-A2 WET
 Investigator(s): Mel Higgins, PWS Section, Township, Range: _____
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): LRR R Lat: 42deg 35' 9.196"N Long: 73deg 6' 36.397"W Datum: _____
 Soil Map Unit Name: Kendaia silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____	Is the Sampled Area within a Wetland? Yes <u>x</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>x</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>x</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
---	---

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>x</u> No _____ Depth (inches): <u>6</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: BVW-A2 WET

<u>Tree Stratum</u> (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	0	_____	_____		
2. _____	0	_____	_____		
3. _____	0	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
				=Total Cover	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft radius</u>)					
1. <u>Salix nigra</u>	10	Yes	OBL		
2. <u>Cornus amomum</u>	10	Yes	FACW		
3. _____	0	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
				20 =Total Cover	
<u>Herb Stratum</u> (Plot size: <u>5 ft radius</u>)					
1. <u>Solidago</u>	50	Yes	FAC		
2. <u>Equisetum</u>	20	Yes	FAC		
3. <u>Phalaris arundinacea</u>	10	No	FACW		
4. _____	0	_____	_____		
5. _____	0	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
				80 =Total Cover	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
				=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>10</u>	x 1 = <u>10</u>
FACW species <u>20</u>	x 2 = <u>40</u>
FAC species <u>20</u>	x 3 = <u>60</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>50</u> (A)	<u>110</u> (B)
Prevalence Index = B/A = <u>2.20</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

APPENDIX B

Site Photographs



Photo 1: Dry Brook looking east. Southern bank on right.



Photo 2: Culvert where intermittent stream originates from.

APPENDIX H
SECTION 7 DOCUMENTATION



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

August 21, 2023

Project code: 2023-0013416

Project Name: 608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK

Subject: Concurrence verification letter for the '608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated August 21, 2023 to verify that the **608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may

identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK

DESCRIPTION

608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK

This project proposes full replacement of this existing SD bridge.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

[1] See [Northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?
No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

SUBMITTED DOCUMENTS

- [608857_Cheshire_MassDOT_AcousticSurvey_BridgeInspection.pdf https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOOASFJHBEM/projectDocuments/118983921](https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOOASFJHBEM/projectDocuments/118983921)

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB^[1]?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum^[1]?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

23. Does the project include slash pile burning?

No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

25. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

26. Has a bridge assessment^[1] been conducted **within** the last 24 months^[2] to determine if the bridge is being used by bats?

[1] See [User Guide Appendix D](#) for bridge/structure assessment guidance

[2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

Yes

SUBMITTED DOCUMENTS

- [608857_Cheshire_MassDOT_AcousticSurvey_BridgeInspection.pdf https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOASFJHBEM/projectDocuments/118983921](https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOASFJHBEM/projectDocuments/118983921)

27. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)^[1]?

[1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

No

28. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

No

29. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

30. Will the project involve the use of *any* **temporary** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees), or bridge/structure removal, replacement or maintenance activities?

Yes

31. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be used?

Yes

32. Will the project install new or replace existing **permanent** lighting?

No

33. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

Yes

34. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

35. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

36. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage, rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

37. Will the project raise the road profile **above the tree canopy**?

No

38. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

39. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

40. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

41. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

42. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

N/A

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

1

4. Please describe the proposed bridge work:

The purpose of the project is to reconstruct the bridge over Dry Brook with a new wider bridge, abutments, retaining walls, and a roadway typical section consisting of (2) 10'-0" wide travel lanes, (2) 2'-4 1/2" wide shoulders. The proposed roadway cross section will transition to meet the existing approach roadway widths.

5. Please state the timing of all proposed bridge work:

Summer 2024 – Fall 2024

6. Please enter the date of the bridge assessment:

7/11/2022

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation

Name: Trevor Burns

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email: trevor.b.burns@dot.state.ma.us

Phone: 8574885122

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

APPENDIX I
SECTION 106 DOCUMENTATION



CULTURAL RESOURCES PROJECT RECORD

City/Town:	Cheshire	Project #	608857	Date Cleared	1/4/2022
Project Name	C-10-002 Replacement	Date Filed	1/4/2022	Finding Under Review	<input type="checkbox"/>
		FHWA to MHC			
Project Type:	Bridge Replacement	Early Coord. Letter Sent:	<input checked="" type="checkbox"/>	Reviewer:	JPS
Review:	Section 106 (PA)	Comment Received:		Consultant	
Finding:	Appendix 1	<input type="checkbox"/> MHC <input type="checkbox"/> LHC			
Comment	Sand Mill Road crosses Dry Brook at four locations in Cheshire. Bridge C-10-002 is the northernmost crossing.				

Determination based on: Scope of Work Plan Inventory Site Visit Archaeological Survey
Attach appropriate documentation for checked items

Projects Requiring No Massachusetts SHPO Review

Programmatic Agreement, Appendix 1 (check all that apply) :

- | | |
|--|---|
| <input type="checkbox"/> 1) Interstate bridge or roadway projects | <input type="checkbox"/> 16) Bridge (less than 20' span) |
| <input type="checkbox"/> 2) Resurfacing, repair existing roadways | * <input type="checkbox"/> 17) Highway safety improvement |
| * <input type="checkbox"/> 3) Reconstruction on existing roadway | <input type="checkbox"/> 18) Drainage system element |
| * <input type="checkbox"/> 4) Roadway geometrics, intersections | * <input type="checkbox"/> 19) Traffic signal, safety improvement |
| * <input type="checkbox"/> 5) Curbs and sidewalks | * <input type="checkbox"/> 20) Intelligent Transportation System project |
| <input type="checkbox"/> 6) Pavement markings, rumble strips, etc | <input type="checkbox"/> 21) Rest area, maintenance facility |
| <input type="checkbox"/> 7) Curbs, sidewalks (MAAB, ADA) | * <input type="checkbox"/> 22) Bicycle, pedestrian lane, path or facility |
| * <input type="checkbox"/> 8) Removal of trees | <input type="checkbox"/> 23) Lighting system |
| <input type="checkbox"/> 9) Landscaping | <input type="checkbox"/> 24) Sign |
| <input type="checkbox"/> 10) Utilities | <input type="checkbox"/> 25) Hazardous waste |
| <input type="checkbox"/> 11) Railroad crossing | <input type="checkbox"/> 26) Highway fencing |
| <input type="checkbox"/> 12) Stream stabilization and restoration | <input type="checkbox"/> 27) Emergency repair |
| <input type="checkbox"/> 13) Wetland mitigation area | <input type="checkbox"/> 28) Erosion control |
| * <input type="checkbox"/> 14) Bridge (NR "Not Eligible" or "Conditionally Not Eligible") | <input type="checkbox"/> 29) Noise barrier |
| * <input checked="" type="checkbox"/> 15) Bridge (concrete slab post 1900, steel stringer) | * National Register eligibility evaluation required |

-OR-

No Historic Properties Affected

Programmatic Agreement Stipulation V.B. (check one):

- No NR listed or -eligible properties within Area of Potential Effect
 No effect on National Register listed or -eligible properties

Reviewer's Initials: JPS JMA



CULTURAL RESOURCES PROJECT RECORD

Summary of MassDOT Highway Division Finding (Appendix 1 and Section V.B. Projects only)

MassDOT proposes to expend federal funds to replace Bridge C-10-002, which carries Sand Mill Road over Dry Brook. Constructed in 1939, the bridge consists of a single-span steel stringer superstructure supported on reinforced concrete abutments. The bridge carries one 10' wide travel lane in either direction with 7-inch-wide shoulders and no sidewalks. Steel beam highway guardrails have been installed along both sides of the bridge deck. The existing superstructure and abutments will be demolished. The proposed new bridge will consist of a single-span pre-cast concrete deck beam superstructure supported on new reinforced concrete abutments. The new bridge will be constructed on the same alignment as the existing bridge. The new superstructure will be approximately 5' wider to accommodate 2.5' wide shoulders.

Traffic will be managed during construction with a detour on existing roads. A temporary bridge is not proposed.

The roadway approaches along Sand Mill Road will be reconstructed or resurfaced for approximately 200' at either end of the bridge. Minor roadway widening within the existing highway layout is proposed to accommodate the wider superstructure. New steel beam guardrails will be installed along the approaches at the four corners of the new bridge to replace existing. Riprap will be placed on both stream banks under the new bridge.

A review of the National Register of Historic Places revealed no listed properties in the vicinity of the project area. A review of the Inventory of Historic Assets of the Commonwealth revealed one inventoried property in the vicinity of the project area. The S. L. Lincoln House, aka Stony Brook Farm, 920 Sand Mill Road at the northerly approach to the bridge. Constructed in 1858, the S. L. Lincoln House is a one-and-one-half story dwelling with a full "Cape" form. The dwelling has been altered and does not exhibit the distinguishing features necessary for individual listing in the NRHP nor is it part of any historic district. The S. L. Lincoln House will not be disturbed by the proposed project.

A review of the MHC archaeological maps revealed no recorded pre-contact sites in the vicinity of the project area. It is the opinion of the MassDOT Archaeologist that low sensitivity may be ascribed to the project's direct area of potential effects based on the location of the work within the existing highway layout and previous disturbance caused by bridge and roadway construction.

Reviewer's Initials: _____

Shrimpton, Jeffrey P. (DOT)

From: Shrimpton, Jeffrey P. (DOT)
Sent: Monday, January 10, 2022 7:05 AM
To: thpo
Cc: Harwood, Jameson (DOT)
Subject: Cheshire, Bridge C-10-002 Replacement (608857)
Attachments: PNF Cheshire 608857.pdf; Locus Map 608857.pdf; 001_608857 - 25%25 HWY plan set - flat.pdf

Dear Mr. Allison,

MassDOT is submitting the enclosed information regarding the above-noted project to the Tribal Historic Preservation Officer to meet the Section 106 consultation requirements of the U. S. Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Acting Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us.

Jeffrey Shrimpton
Cultural Resources Supervisor
Environmental Services, Highway Division
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116
Cell Phone: (978) 325-2094
Jeffrey.shrimpton@dot.state.ma.us

Shrimpton, Jeffrey P. (DOT)

From: Shrimpton, Jeffrey P. (DOT)
Sent: Monday, January 10, 2022 7:05 AM
To: tashtesook@aol.com
Cc: Harwood, Jameson (DOT)
Subject: Cheshire, Bridge C-10-002 Replacement (608857)
Attachments: PNF Cheshire 608857.pdf; Locus Map 608857.pdf; 001_608857 - 25%25 HWY plan set - flat.pdf

Dear Mr. Brown,

MassDOT is submitting the enclosed information regarding the above-noted project to the Tribal Historic Preservation Officer to meet the Section 106 consultation requirements of the U. S. Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavalley, P.E., Acting Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us.

Jeffrey Shrimpton
Cultural Resources Supervisor
Environmental Services, Highway Division
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116
Cell Phone: (978) 325-2094
Jeffrey.shrimpton@dot.state.ma.us

Shrimpton, Jeffrey P. (DOT)

From: Shrimpton, Jeffrey P. (DOT)
Sent: Monday, January 10, 2022 7:05 AM
To: Robinson, David S (EEA)
Cc: Harwood, Jameson (DOT)
Subject: Cheshire, Bridge C-10-002 Replacement (608857)
Attachments: PNF Cheshire 608857.pdf; Locus Map 608857.pdf; 001_608857 - 25%25 HWY plan set - flat.pdf

Dear Mr. Robinson,

MassDOT is submitting the enclosed project information regarding the above-noted project to the Board of Underwater Archaeological Resources to meet the Section 106 consultation requirements of the U. S. Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Acting Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us.

Jeffrey Shrimpton
Cultural Resources Supervisor
Environmental Services, Highway Division
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116
Cell Phone: (978) 325-2094
Jeffrey.shrimpton@dot.state.ma.us

Shrimpton, Jeffrey P. (DOT)

From: Shrimpton, Jeffrey P. (DOT)
Sent: Monday, January 10, 2022 7:05 AM
To: David Weeden (David.Weeden@mwtribe-nsn.gov)
Cc: Harwood, Jameson (DOT)
Subject: Cheshire, Bridge C-10-002 Replacement (608857)
Attachments: PNF Cheshire 608857.pdf; Locus Map 608857.pdf; 001_608857 - 25%25 HWY plan set - flat.pdf

Dear Mr. Weeden,

MassDOT is submitting the enclosed information regarding the above-noted project to the Tribal Historic Preservation Officer to meet the Section 106 consultation requirements of the U. S. Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Acting Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us.

Jeffrey Shrimpton
Cultural Resources Supervisor
Environmental Services, Highway Division
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116
Cell Phone: (978) 325-2094
Jeffrey.shrimpton@dot.state.ma.us

Shrimpton, Jeffrey P. (DOT)

From: Shrimpton, Jeffrey P. (DOT)
Sent: Monday, January 10, 2022 7:05 AM
To: Bettina Washington
Cc: Harwood, Jameson (DOT)
Subject: Cheshire, Bridge C-10-002 Replacement (608857)
Attachments: PNF Cheshire 608857.pdf; Locus Map 608857.pdf; 001_608857 - 25%25 HWY plan set - flat.pdf

Dear Ms. Washington,

MassDOT is submitting the enclosed information regarding the above-noted project to the Tribal Historic Preservation Officer to meet the Section 106 consultation requirements of the U. S. Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Acting Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us.

Jeffrey Shrimpton
Cultural Resources Supervisor
Environmental Services, Highway Division
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116
Cell Phone: (978) 325-2094
Jeffrey.shrimpton@dot.state.ma.us

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A

MASSACHUSETTS HISTORICAL COMMISSION

220 MORRISSEY BOULEVARD

BOSTON, MASS. 02125

617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Bridge Replacement C-10-002 (608857)

Location /Address: Sand Mill Road over Dry Brook

City/Town: Cheshire

Project Proponent

Name: Massachusetts Department of Transportation

Address: 10 Park Plaza, Room 4260

City/Town/Zip/Telephone: Boston, MA 02116 / cell phone: 978-325-2094

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name

FHWA

Army Corps of Engineers

Type of License or funding (specify)

Federal Aid Transportation Program

General Permit, Section 404 of the Clean Water Act

Project Description (narrative):

MassDOT proposes to expend federal funds to replace Bridge C-10-002, which carries Sand Mill Road over Dry Brook. Constructed in 1939, the bridge consists of a single-span steel stringer superstructure supported on reinforced concrete abutments. The bridge carries one 10' wide travel lane in either direction with 7-inch-wide shoulders and no sidewalks. Steel beam highway guardrails have been installed along both sides of the bridge deck. The existing superstructure and abutments will be demolished. The proposed new bridge will consist of a single-span pre-cast concrete deck beam superstructure supported on new reinforced concrete abutments. The new bridge will be constructed on the same alignment as the existing bridge. The new superstructure will be approximately 5' wider to accommodate 2.5' wide shoulders.

Traffic will be managed during construction with a detour on existing roads. A temporary bridge is not proposed.

The roadway approaches along Sand Mill Road will be reconstructed or resurfaced for approximately 200' at either end of the bridge. Minor roadway widening within the existing highway layout is proposed to accommodate the wider superstructure. New steel beam guardrails will be installed along the approaches at the four corners of the new bridge to replace existing. Riprap will be placed on both stream banks under the new bridge.

Does the project include demolition? Yes, see project description.

Does the project include rehabilitation of any existing buildings? No.

Does the project include new construction? Yes, see project description.

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APPENDIX A (continued)

Are any historic or archaeological properties known to exist within the project's area of potential impact?

A review of the MHC archaeological maps revealed no recorded pre-contact sites in the vicinity of the project area. It is the opinion of the MassDOT Archaeologist that low sensitivity may be ascribed to the project's direct area of potential effects based on the location of the work within the existing highway layout and previous disturbance caused by bridge and roadway construction.

What is the total acreage of the project area?

Woodland	_____	acres	Productive Resources:		
Wetland	_____	acres	Agriculture	_____	acres
Floodplain	_____	acres	Forestry	_____	acres
Open Space	_____	acres	Mining/Extraction	_____	acres
Developed	_____	acres	Total Project Acreage	_____	Acres

What is the acreage of the proposed new construction?

_____ N/A _____ acres

What is the present land use of the project area?

Rural road.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of person submitting this form: Jeffrey Shrimpton January 10,
Date: 2022

Name: Jeffrey Shrimpton, Cultural Resources Supervisor
Address: Massachusetts Department of Transportation, 10 Park Plaza, Room 4260
City/Town/Zip: Boston, MA 02116
Telephone: cell phone 978-325-2094

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

7/1/93

950 CMR - 276

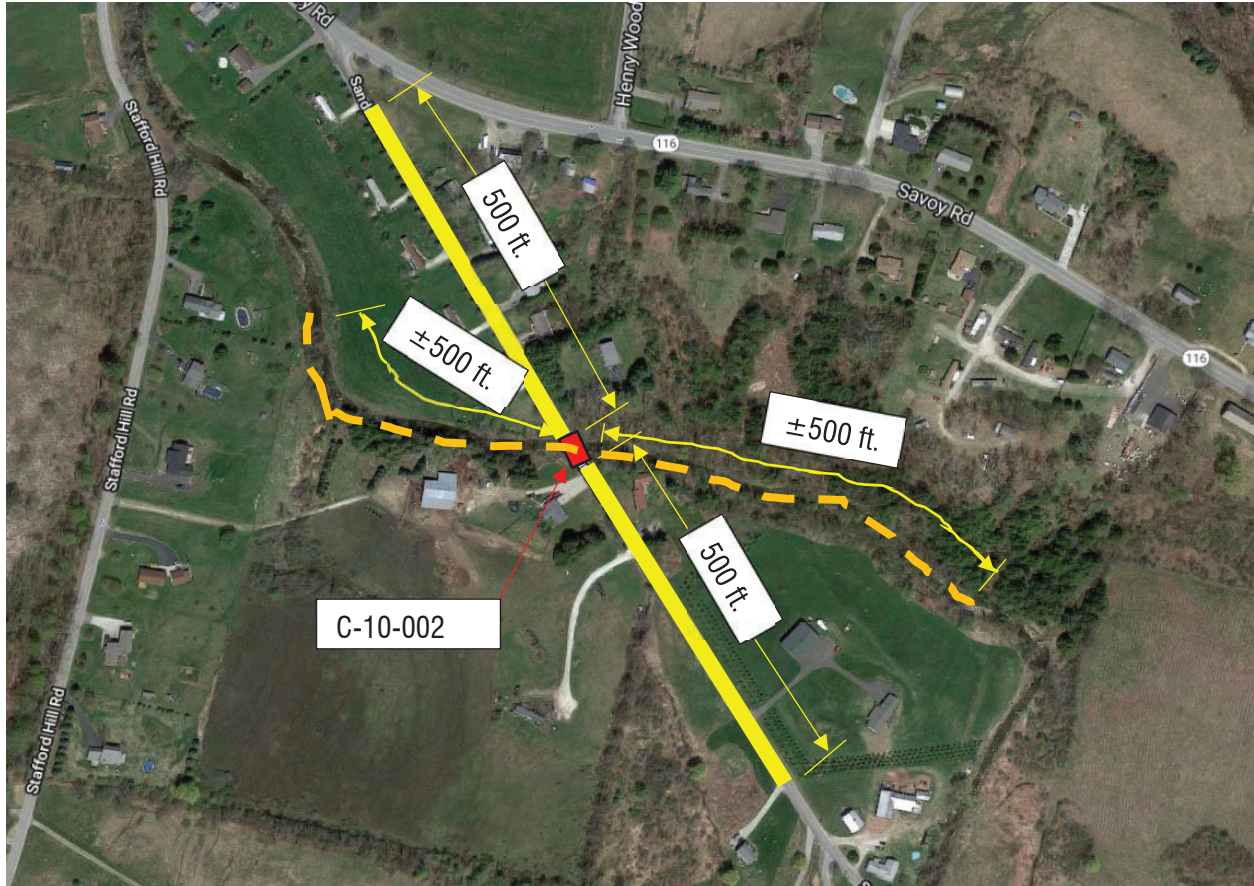
||

Bridge No. C-10-002

Cheshire, MA

Approximate Survey Limits Request

Hydraulic survey limits to be determined by MassDOT Hydraulics Section with 500 ft. as a minimum upstream and downstream of the bridge.



From: [thpo](#)
To: [Harwood, Jameson \(DOT\)](#)
Subject: Cheshire, Bridge C-10-002 Replacement (608857)
Date: Thursday, January 20, 2022 10:27:25 AM
Attachments: [SMC Inadvertent Discovery Policy.pdf](#)

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Jamie,

Good afternoon. Thank you for requesting comments from the Stockbridge-Munsee Community Tribal Historic Preservation Office. We have reviewed the documents associated with the proposed bridge replacement in Cheshire, Berkshire County, MA. We have the following comments.

- The SMC THPO has no concerns with the proposed undertaking. We make a determination of ***No Historic Properties Affected***. We ask to be notified should the project scope be revised and or anything unexpected be encountered during the work phase. Please find attached our Inadvertent Discovery Policy.

Please let me know should you have any questions.

Best,

Nathan

Stockbridge-Munsee Mohican Tribal Historic Preservation
Extension Office
86 Spring Street
Williamstown, MA 01267
(413) 884-6029
thpo@mohican-nsn.gov
www.mohican-nsn.gov
<https://www.mohican.com/services/cultural-services/cultural-affairs/faq/>

APPENDIX J
PROJECT SPECIFICATIONS

DRAFT : *ONCE FINALIZED WILL ADD UPDATED COPY*

ITEM 156.2**CRUSHED STONE FOR SLOPE TREATMENT****TON**

The work under this item shall conform to the relevant provisions of Section 150 and 983 of the Standard Specifications and the following:

The Contractor shall provide and place crushed stone for slope treatments. The material for this item shall meet the requirements of Section M2.01.4.

Crushed stone for slope treatment shall be placed to the depth and at the locations shown on the plans and as required by the Engineer.

METHOD OF MEASUREMENT

Item 156.2 will be measured per TON of crushed stone furnished and placed.

BASIS OF PAYMENT

Item 156.2 will be paid for at the contract unit price per TON; which price shall include all labor, materials, equipment, and incidentals necessary to complete the work.

ITEM 755.35

INLAND WETLAND REPLICATION AREA

LUMP SUM

DESCRIPTION

General

The work under this item shall conform to the relevant provisions of Sections 120, 770, 771 of the Standard Specifications and the following:

Work under this item shall include furnishing material and the construction and maintenance of inland wetland replication areas as shown on the drawings and as required by the Engineer. Inland Wetland Replication Area shall hereafter be referred to as Replication Area. All work shall be in coordination with an approved Wetland Specialist as specified under that item.

Wetland Restoration work shall be as specified and compensated under that item. Construction of tidal wetlands shall be as specified under the appropriate item for tidal wetland mitigation.

The Replication Area shall be constructed prior to wetland impacts unless otherwise approved by the Engineer, specified herein, or specified in permit conditions and approvals. Construction schedule shall be appropriate to planting and seeding season (see below). Changes to this schedule will require written approval from the Engineer.

Scope of Work

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: **12+02.47± to 12+17.83±** Area = **87** sf.

Replication Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers Permit.

ITEM 755.35 (Continued)

The Contractor is responsible for protection and preservation of natural areas adjacent to the Replication Area both within and outside the project limits and for the duration of the Contract; including but not limited to damage to soils or vegetation due to erosion, sedimentation, compaction, trampling, vehicles, storage of materials, or other negligence shall be repaired to the satisfaction of the Engineer and at the Contractor's expense.

The Wetland Specialist overseeing the Wetland Replication construction work shall not be from the same company as that which is performing planting, seeding, or participating in any aspect of the Wetland Replication construction.

SUBMITTALS**Documents****Request for Conditional Acceptance:**

As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full):

As specified below, shall be submitted to the Engineer for distribution to appropriate regulatory agencies.

Request for Final Acceptance:

As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Monitoring Reports:

Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.75 and 755.76.

Materials**Soil and Amendments**

No soil, compost, or other soil amendment imported to the work site shall contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants.

ITEM 755.35 (Continued)

At least sixty (60) days prior to installation and prior to ordering, the Contractor shall submit for approval sources of soil, compost, and amendments. Submittal shall include the supplier and location of the source. Off-site sources shall be identified and available for inspection by the Wetland Specialist prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

Samples of tested and approved wetland soil and soil amendments for soil texture, organic carbon content or other routine soil analysis parameters (e.g., pH, Cation Exchange Capacity, Percent Base Saturation) and Soil Organic Matter Analysis will be required if requested by the Engineer. The grab samples shall be collected by the Contractor or Wetland Specialist from multiple representative locations in the wetland topsoil mix following the “Umass Soil and Plant Tissue Testing Laboratory Sampling and Collection Protocols” (or equivalent certification paperwork provided by the soil supplier). The lab analysis shall be provided to the Engineer along with written certification from the Contractor or Wetland Specialist that the wetland topsoil was collected per the referenced protocol and meets the desired specification. The analysis and written certification of same shall be provided to the Engineer prior to placing the wetland topsoil in the Replication Area.

Seed Mix

Certificate of Materials from the supplier shall be submitted 30 days prior to seeding and must be approved prior to ordering materials. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

Bill of lading or notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Plant Certification

Plant Certification shall be per the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUND COVER, of the Standard Specifications. The nursery source shall certify the provenance or origin of all plants.

Other Material

Submittals shall be per the respective item.

ITEM 755.35 (Continued)**MATERIALS****Sediment Control Barrier and Erosion Prevention Measures**

Sediment control barriers shall be per Item 767.121.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to jute mesh, seeding, and/or combinations thereof as approved by the Engineer.

Sediment controls and erosion prevention devices and measures shall be compensated under the respective items.

Wetland Soil

Soil appropriate for the Replication Area may be either hydric soil excavated from the impacted wetland, a manufactured mix of compost and on-site borrow, or a combination thereof, as approved by the Engineer.

Hydric soil from the impacted wetland area may be spread on the surface of the constructed Replication Area as an inoculant or can be placed in a bulk fashion in a roughly 1:1 ratio of area and depth. Soil shall be handled such that the original soil structure is preserved and shall not be compacted, screened, or otherwise processed.

Hydric soil from the impacted wetland that is infested with invasive plant species identified on the Massachusetts Invasive Plant Advisory Group (MIPAG) shall not be used in the Replication Area unless approved by the Wetland Specialist and Engineer. To the extent possible, infested soil shall be disposed of within the project limits in an upland area outside of regulated areas and as approved by the Invasive Plant Management Strategy item (if in the contract) or by the Engineer.

A manufactured mix suitable for wetlands shall consist of on-site borrow from the proposed Replication Area (if approved by the Wetland Specialist and Engineer) thoroughly mixed with compost to achieve a target organic carbon content of 10-12% (up to 21% percent organic matter) by dry weight. The organic material used for mixing shall be well or partially decomposed. Clean leaf compost is the preferred soil amendment to achieve these standards though other materials may be used if approved by the Wetland Specialist and Engineer. Note that "clean" refers both to a negligible amount (<1%) of physical contaminants such as plastic and to the lack of chemical contaminants that might pose a hazard to plants or animals. Off-site borrow may be used for mixing if approved in advance by the Engineer.

No soil or soil amendment shall be brought on site without approval of the material source by the Wetland Specialist and the Engineer. Soils used in the replacement area shall be free of rocks greater than 4 inches in diameter.

ITEM 755.35 (Continued)**Plants**

Plant material shall conform to the applicable requirements of Section 771, PLANTING TREES, SHRUBS AND GROUND COVER, of the latest edition of the Standard Specifications and as amended below.

Plants shall be native species, not cultivars. To the extent possible, plants shall originate from the applicable EPA Level III Ecoregion.

Plant species and sizes to be included in the Replication Area shall be as specified on the plans.

Requests for substitutions shall be submitted in writing to the Engineer for review by the Wetland Specialist, MassDOT Landscape Architect, and, if required, the relevant regulatory agency at least thirty (30) days prior to planting. All proposed substitutes shall be in conformance with the requirements herein and suitable for the site conditions.

Transplanting and plant material collected from the wild is prohibited unless approved in writing by the Engineer. Plants shall be selected from certified nurseries that have been inspected by state and/or federal agencies.

Seed Mix

Seeding shall conform to the Standard Specifications Section M6, ROADSIDE DEVELOPMENT MATERIALS.

(Mix and Rate of Application to be provided by MassDOT Landscape Architect)

Fertilizers shall not be used.

Water

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

ITEM 755.35 (Continued)Mulch/Compost Blanket for Seeding

(Input needed from MassDOT Landscape Architect for this section)

Hydromulch shall be per the manufacturer's recommendations and shall be wood fiber or straw mulch only. Mulch shall be incidental to seeding.

Compost Blanket may be used in lieu of mulch for seeding. Compost Blanket shall meet the material and submittal requirements of that Item and shall be applied as specified below. Compost Blanket shall be compensated under that item.

CONSTRUCTION METHODS & SEQUENCE**Site Protection Measures**Minimizing Damage

The Contractor shall plan and execute operations in a manner minimizing the amount of excavated and exposed fill or other foreign materials that could be washed or otherwise carried into Replication Area and nearby resource areas.

Construction of and access to the Replication Area shall minimize damage to existing vegetation and soils as specified herein. Damage to soils or vegetation shall be repaired to the satisfaction of the Engineer and at the Contractor's expense. If required for soil remediation, tilling and the addition of compost shall be at the Contractor's expense.

Wetland topsoil shall be deposited and graded in the Replication Area in a manner that minimizes travel and subsequent compaction of the subgrade (including any specified pit and mound topography) to the extent practicable, including use of track mounted excavators as appropriate. Should soils be compacted, they shall be loosened by a method such as disking, spring-tooth harrowing and/or rototilling. The Contractor shall use boards, timber or composite mats, or other approved materials as necessary, to protect existing and/or new wetlands from compaction due to heavy foot traffic or if equipment is required to travel over wetland soil. All labor and materials required for protection and preservation of site shall be incidental to this item.

ITEM 755.35 (Continued)Stockpiling of Soil

Stockpiling of soil, including hydric soil for replication, shall be at least 100 feet from the edge of the bordering and isolated vegetated wetlands and inland banks, unless approved otherwise by the Engineer. Stockpiled soils shall be securely stabilized and contained. Any areas of exposed soil or stockpiles within and adjacent to the Replication Area that will remain inactive for more than 7 calendar days shall be sown with a mix of rapid germinating annual grasses (e.g., annual rye) covered with a layer of straw mulch applied at a rate of 90 pounds per 1,000 square feet. As necessary, the mulch shall be anchored with a tacking coat (non-tar) applied by a hydro seeder or other method recommended by the Wetland Specialist in consultation with the Engineer. In the event that there is excess borrow, it shall be disposed of under Excavation, Item 120.

Sediment Barriers*Placement:*

Sediment barriers shall be installed along the downslope perimeter of the Replication Area beginning and ending in the surrounding upland so that no excavated material or disturbed soil can enter adjacent wetlands or waters. Where construction work is immediately upgradient of the wetland, barriers shall be located so as to protect the Replication Area until slopes are stabilized. Sediment barriers shall be in place and approved by the Engineer prior to excavation work. No work shall take place outside the barriers.

Maintenance:

The Contractor shall ensure that all sediment barriers function as intended and at all times per the specifications of those respective items.

Existing Trees to Remain

Tree protection shall be per the relevant specifications and as shown on the plans or as required by the Engineer. To protect root systems of existing trees to remain, the limits of the Replication Area may be adjusted, but, the total area of replication required by the permits shall not be reduced. Access route may be adjusted as required.

Trees to be retained as snags (upright dead or dying trees left for wildlife habitat) within or adjacent to the Replication Area shall be as shown on the plans or as directed by the Wetland Specialist or Landscape Architect during the initial site walk. Trees to remain as snags shall be clearly marked prior to clearing. Trees that pose a potential fall hazard (i.e., are near a roadway) should have limbs and trunk cut such that the tree does not pose a fall hazard.

Coarse woody debris in the form of cut trees, stumps, logs, and brush shall be incorporated as shown on the plans or as directed by the Wetland Specialist or Landscape Architect. On site material shall be selected and marked by the Wetland Specialist, retained on the project site, and placed as specified below under Placement of Coarse Woody Debris.

ITEM 755.35 (Continued)

All trees, stumps, or brush not specified to remain shall be removed and shall not be stockpiled in the wetland resource areas while awaiting disposal.

Work shall be coordinated with Clearing or Tree Removal Item and compensated under that Item.

Pre-Wetland Construction Site Walk**Delineating the Replication Area and Access Route:**

The Contractor shall stake out the Replication Area boundaries and the intended access route and set grade stakes for approval by the Wetland Specialist and Engineer. Following staking and demarcation of areas, the Engineer and Wetland Specialist shall approve or modify as necessary the limits of work, the access route, final location and configuration of replication, grade stake elevations, proposed location of sediment barriers, and review proposed construction methods.

As part of the delineation and approval process, the Wetland Specialist shall mark trees to be converted to snags, select course woody debris to be retained for re-use, and select rocks or other elements to be used for habitat features.

Invasive Plants:

As part of the initial site walk, the wetland to be impacted and the proposed replication site shall be inspected for the presence of invasive plants. If invasive plants are found they shall be addressed as described herein under Invasive Plants.

Soil Work

Final grades in the Replication Area shall meet the target elevations as shown on the Plans or as adjusted by the Wetland Specialist to achieve the desired hydrology and micro-habitat. If adjustments are required, a Request for Information (RFI) shall be submitted to the Engineer for approval. Adjustments shall be documented and included in the As-Built plans (if required) and/or other applicable required documents.

Excavation & Grading

When required by permits, the Wetland Specialist shall notify MADEP and the ACOE (as applicable) at least 72 hours prior to excavation.

Soil in the proposed wetland areas that must be removed for grades to conform to the proposed elevations shall be stripped and disposed of, or, if suitable for reuse, be stockpiled in an approved location. Stockpiled soils shall be kept wet and not allowed to dry out. Procedures for maintaining appropriate moisture levels shall be documented by the Wetland Specialist and provided to the Engineer and the Contractor.

ITEM 755.35 (Continued)

Replication area shall be excavated as shown on the drawings. Where replication area is adjacent to existing reference wetland, finish grade of replication shall generally match existing grades and micro-topography, notwithstanding any deviations that are necessary to achieve the desired hydrology and habitat in the Replication Area.

Prior to placement of backfill, scarify subgrade to a depth of 4 to 6 inches.

Placement of Wetland Soil

Following excavation, scarification, and grading of sub-grade, and after the sub-grade elevations are approved by the Wetland Specialist, suitable soil previously removed or an evenly mixed organic/mineral soil created on-site shall be spread to the design depth and thickness over the proposed wetland areas as shown on the plans and as directed by the Wetland Specialist.

Vehicles used to transport soil from offsite shall be washed or cleaned with air pressure to prevent exotic or invasive seeds or root fragments from contaminating the Replication Area.

Final Grading

The finished grade of the Replication Area shall be at an elevation that will provide an unrestricted hydrologic connection between the Replication Area and adjacent resource areas. The hydrologic connection should be in keeping with restoring the intended function of the replacement wetland relative to the impacted reference wetland. The Contractor shall verify that this elevation is not at a level that could negatively alter the hydrology of an adjacent wetland. Microtopography in the form of hummocks, pits and mounds shall be as shown on the plans or as adjusted by the Wetland Specialist. Final elevations and grading of wetland soil shall be approved by the Wetland Specialist and the Engineer.

To avoid compaction once soil has been placed, no heavy equipment shall travel across placed soil and no work shall occur in wet or moist soil. Soil that is compacted due to construction activities shall be replaced with soil as specified herein and at the Contractor's expense.

ITEM 755.35 (Continued)**Restoring Vegetation**Placement of Coarse Woody Material

If specified within this Contract or if directed by the Wetland Specialist or Landscape Architect during the initial site walk, woody debris shall be placed in the Replication Area and/or adjacent upland buffer. Material shall be placed as shown on the plans or as directed following placement of wetland soil and prior to application of compost and/or seed. Woody material shall cover a minimum of 5-20 percent of the Replication Area, depending on whether it is a meadow or woodland wetland and how much wood is available from construction clearing. Where trees are cut for construction purposes, logs of a minimum length of 8 feet must comprise a minimum of 50% of the woody material left on site. Brush shall be included along with logs and stumps as directed. Woody material shall be placed in a deliberate and naturalistic manner.

Planting

Following placement of wetland soil and approval of final grade and conditions, Replication Area shall be planted. Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUND COVER of the Division I Standard Specifications and as amended below.

Planting Season shall be May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Prior to planting, the Wetland Specialist shall approve the condition of the plant material and the method of installation and shall oversee the planting work. Replication Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer or Wetland Specialist and shall be replaced at the Contractor's expense.

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up. If previously approved species are not available at the time of planting, the Wetland Specialist may propose substitutions relative to species, size, and quantities for review and approval by the MassDOT Landscape Architect. Upon approval by MassDOT, substitutions shall be approved by the regulating authority, if and as necessary. Provisions shall be made for a growth warranty of at least two (2) calendar years from the date of Conditional Acceptance as described below or as

required by permits.

Seeding

Following placement of wetland soil and planting (if included), the Replication Area shall be seeded using one of the following methods:

- Broadcast by hand or with a hand-held spreader followed by application of straw mulch. If necessary, seed shall be lightly raked to insure good seed-to-soil contact.
- Hydro-seeded with hydro mulch per the Standard Specifications and per the manufacturer's directions.
- Hand broadcast seed with Compost Blanket pneumatically applied at the same time to ensure light cover of soil topdressing over seed.

If spring conditions are drier than usual, supplemental watering may be required. If sowing during the summer months, supplemental watering will likely be required until germination.

If required, seeding limits for different seed mixes shall be determined by the Wetland Specialist.

PLANT ESTABLISHMENT AND INVASIVE MANAGEMENT

Plants shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

Seeding that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

Invasive Plants: Corrective measures shall be taken to remove or treat invasive plant species in the Replication Areas. Invasive plants shall include those listed as invasive by Massachusetts Invasive Plant Advisory Group (MIPAG) and the US Army Corp of Engineer's New England District's Compensatory Mitigation Guidance

[MassDOT Landscape Architect to confirm Option highlighted below.]

Option 1: If chemical treatment of invasive plants is necessary, the strategy for treatment shall be as determined under Item 102.3 Invasive Plant Management Strategy. That strategy shall be coordinated with the Wetland Specialist and all applicable permits and permitting agencies. Chemical application under 102.33 Invasive Plant Management On-site shall be compensated under that item and shall be for the duration of the contract only.

Option 2: The strategy for chemical and/or manual removal shall be as directed by the Wetland Specialist, shall continue for the duration of the monitoring period, and shall be incidental to this item.

ITEM 755.35 (Continued)**Conditional Acceptance of Work**

Conditional Acceptance shall indicate approval of the wetland construction work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist demonstrating that the wetland replication construction work was done according to plans (or how modified) and meets required permit conditions. The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Replication Area and surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The final finished target elevations have been met and maintained relative to the approved plans and reference wetland. Areas that are too high or too low should be identified along with suggested corrective measures.
- Hydrology meets performance standards.
- Specified seed mix has been seeded. If inspected 30 or more days after seeding, seeded species in the wetland and adjacent upland shall show signs of good germination and healthy growth.
- Planted woody and herbaceous species meet specifications and are establishing well.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- There are no invasive plants visible in the replication area.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Replication work is not approved, MassDOT will issue a rejection letter requiring corrective actions. The Wetland Specialist shall recommend corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

Request for Certificate of Compliance

If required, a request for a Certificate of Compliance (Partial or Full) pursuant to the Massachusetts Wetlands Protection Act regulations shall be prepared and submitted to MassDOT within 30 days following Conditional Acceptance.

ITEM 755.35 (Continued)

The Request for Certificate of Compliance shall include the following:

- A brief narrative of the work on company letterhead signed by the Wetland Specialist. Narrative shall be prepared as a MS Word document and shall include substantive explanation that demonstrates compliance with EACH relevant permit condition. Narrative shall note variations from the originally permitted design.
- As-built Drawings signed by the Contractor's PE registered in the Commonwealth of Massachusetts. As-built drawings shall show hydrologic conditions, status of plantings and seeding, and shall include a narrative and minimum of 4 photographs documenting site conditions. Plans should note variations from the originally permitted design.

When required, drawings shall meet the Army Corp of Engineer's New England District's Compensatory Replication Guidance, including: scale in the range of 1"=20' to 1" = 100', contours at 1' intervals, spot elevations for intermediate elevations, and polygons outlining each Replication Area, and, as applicable, plant community types. The As-built Drawings shall be provided to the Engineer electronically in Portable Document Format (PDF). If requested by the Engineer, the Drawings shall be provided in printed paper format (11" x 17" sheets, unless otherwise directed). Drawings must be scalable.

- Other documents as required.

Final Acceptance of Work

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Contractor, Wetland Specialist and regulatory representative (if required) shall assess the Replication Area. Final Acceptance will initiate the start of the Wetland Monitoring Period.

The following conditions shall be inspected and approved for acceptance and payment.

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover at least 95 percent of the Replication Area, excluding areas of open water areas or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

If the mitigation work does not meet the above condition and is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions. Work not approved will be addressed by the Contractor at no extra cost.

ITEM 755.35 (Continued)

Wetland Specialist shall be compensated under Item 755.75.

Monitoring Reports for Regulatory Compliance

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 95 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation.

COMPENSATION**Method of Measurement and Basis of Payment**

Item 755.35 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, submittals, maintenance, all required soil, site preparation, grading, wetland seeding, planting, mulching, watering, monitoring wells, registered surveyor, as-built plans, Request for Certificate of Compliance, and all incidental costs necessary to complete the work as required.

Payment shall be as follows:

- 60% upon Conditional Acceptance.
- 20% after receipt and acceptance of Certificate of Compliance by the Engineer and once all permit construction requirements have been met and approved.
- 20% upon Final Acceptance.

Excavation will be paid under Item 120.

Sediment Control Barrier will be paid under Item 767.121

Wetland Specialist will be paid under Item 755.75

Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

Jute Mesh will be paid under Item 767.9

ITEM 755.75**WETLAND SPECIALIST****HOUR****DESCRIPTION**

Work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Replication Ecologist, or other professional with similar qualifications hereafter referred to as the “Wetland Specialist.”

“Wetland Mitigation” shall be used herein for applicable wetland work. For this project, applicable wetland work is for replication after temporary impacts.

The Wetland Specialist shall demonstrate knowledge and expertise to coordinate and oversee all work associated with the Wetland Mitigation as defined herein, as shown on the Plans, as required by permits, and as specified under the relevant Wetland Mitigation items.

Regulatory monitoring reports following Final Acceptance of the Wetland Mitigation shall be per Item 755.76, Wetland Monitoring Reports.

For all onsite work, the Wetland Specialist shall sign in and sign out with the Engineer.

The Wetland Specialist shall not be from the same company as the company responsible for planting, seeding, and/or maintaining the wetland.

QUALIFICATIONS

The Wetland Specialist shall have a minimum of five (5) years of experience with construction and monitoring of wetland mitigation areas similar in size, type, and complexity to the Contract mitigation. When required by permits, at least ten (10) years of experience may be required. The Wetland Specialist shall be thoroughly versed in the Commonwealth of Massachusetts Wetlands Protection Act (MGL C.131, s.40), U.S. Army Corps of Engineers New England District Compensatory Mitigation Guidance, and all other relevant regulations of the Massachusetts Department of Environmental Protection and the U.S. Army Corps of Engineers New England District.

SUBMITTALS - QUALIFICATION

Within sixty (60) days following the Notice to Proceed, the Contractor shall provide proof of qualifications for the Wetland Specialist to the Engineer for approval. Submittals shall include, but not be limited to, the following:

- Resume of the individual on-site implementing the Wetland Specialist work. If the Wetland Specialist changes over the course of the project, the new individual shall submit resume and qualifications for approval 30 days prior to doing any work on-site.

ITEM 755.75 (Continued)

- Resume of any personnel working on-site in place of the Wetland Specialist. Individual shall be approved prior to work on-site.
- Narrative describing the company, its expertise, technical qualifications and experience with wetland construction.
- At least three (3) references from prior work of a similar nature completed in the last five (5) years and by the individuals who will perform the work. Provide contact information for each reference including address, phone number and email.
- A summary of each reference project including nature of the work, project size, dates, and period of construction and monitoring, methodologies used, and summary of success (or not) in terms of meeting performance objectives. Summary shall include a minimum of one before and one after photo for each project.

SUBMITTALS – DOCUMENTATION AND REPORTS**Wetland Construction Oversight**

Wetland Specialist shall provide documentation of pre-existing conditions and wetland construction as specified below and as part of fulfilling the Scope of Work described below. Documentation shall include photos that are clear and legible. Photos are incidental to this item.

- ***Site Walk Prior to Disturbance and Construction of Wetlands:*** Provide brief assessment with photos, including documentation of the existing wetlands to be impacted (both permanent and temporary), proposed wetland replication area, and reference/model wetland areas (typically an adjacent undisturbed wetland or the existing wetland to be impacted). Photos of existing wetlands that will be temporarily impacted shall include a view from at least 3 angles.
- ***Excavation and Grading:*** Documentation shall include minimum of two photos of the excavated wetland and two photos after final grading prior to planting and seeding. For replication areas, photos shall show soil preparation (i.e, tilling and grading), if applicable.
- ***Approval of Subgrades:*** The Wetland Specialist shall inspect the sub-grade of the Replication Area to ensure that proper hydrology is likely to be established and shall provide the Engineer with written confirmation and photographs upon completion of subgrade excavation work. Written confirmation shall include recommended field adjustments, based on field observations, to achieve the desired hydrology and designed wetland system.

ITEM 755.75 (Continued)

- ***Planting and Seeding:*** Provide assessment and photos of vegetation upon completion of planting and seeding work.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance and for the Water Quality Certifications, and other regulatory permits as required.

Requests for Acceptance of Work & Regulatory Compliance

The Wetland Specialist shall submit the following documents if and as specified herein and under Item the relevant Wetland Mitigation items:

- Request for Conditional Acceptance.
- Request for Certificate of Compliance (Partial or Full) when applicable.
- Request for Final Acceptance.

SCOPE OF WORK

In the event of discrepancies with the applicable permits, the Wetland Specialist shall submit a Request for Information (RFI) to the Engineer.

General

The Wetland Specialist shall be responsible for the following:

- Review and have a comprehensive knowledge of the environmental permits relevant to the specific mitigation work being done so as to ensure compliance throughout the duration of the contract.
- Identify and inform the Contractor and Engineer of unique site conditions which may require adjustments to the schedule, design, or construction methods. For example, wildlife nesting, illegal dumping, or rare species.
- Identify and inform the Contractor and Engineer of any sediment or erosion control problems observed within mitigation areas.
- Advise so as to avoid impacts to adjacent areas and regulated wetland resources.
- Participate in necessary meetings as required by permits and when requested by the Engineer.

ITEM 755.75 (Continued)**Inspections & Construction Oversight**

The Wetland Specialist shall be responsible for, but not limited to, the following:

- Pre-Construction Site Walk
 - Following surveying, flagging, and staking of all relevant boundaries and elevations by the Contractor, the Wetland Specialist shall walk the site with the Engineer and the Contractor to review existing and proposed conditions, recommend changes if necessary, and approve the following: location and boundaries of the Mitigation Area, target elevations and grades, location of tree protection associated with the Mitigation Area, and final layout and limits of clearing for access route.
 - Select and mark snags, logs, and woody material to be retained for placement in the Wetland Mitigation, as appropriate.
 - Note invasive plants in and adjacent to Wetland Mitigation.
 - Provide summary report if and as specified under Wetland Mitigation items.
- Excavation, Soil Placement, Grading for Replication Areas
 - Approve excavated depth and grading for appropriate wetland hydrology, subsoil preparation, and finished grade of placed wetland soil.
 - Adjust grades as required and approve microtopography. If grades need to be adjusted, submit an RFI to the Engineer.
 - If requested by the Engineer, the Wetland Specialist shall inspect stockpiled wetland soil for moisture content and signs of undesirable weeds.
- Soil Protection and Replication Measures for Replication Areas.
 - Review and approve methods of soil protection and replication if required.
 - Confirm decompaction will adequately restore appropriate wetland hydrology. If decompaction measures need to be adjusted, submit an RFI to the Engineer.
- Re-vegetation of Mitigation Area
 - Placement of woody material to be re-used.
 - Verify seed used complies with specifications and site conditions, determine limits for wetland seeding based on elevations, approve seeding and mulching methods, and collect seed tags to submit with Request for Conditional Acceptance.
 - Review planting methods (if applicable) prior to installation and oversee layout of wetland plants.

ITEM 755.75 (Continued)**Conditional Acceptance**

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Replication areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation items.

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

ITEM 755.75 (Continued)**COMPENSATION****Method of Measurement**

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and replication oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time or time spent off-site on reports. Decimal Pay Limits will be 0.25 hours.

Basis of Payment

Item 755.75 Wetland Specialist shall be paid at the Contractor bid price for each hour, or fraction thereof, spent on-site to perform the work as described above. Reports and photo documentation are required for payment.

Post wetland construction reports shall be per Item 755.76, Wetland Monitoring Reports.

ITEM 755.76**WETLAND MONITORING REPORTS****LUMP SUM****DESCRIPTION**

Work under this item shall be for the submittal of Wetland Monitoring Reports following the completion of wetland construction and shall include all inspections, photos, and other work required to complete those reports as specified herein.

“Wetland Mitigation” shall be used herein for applicable wetland work, whether Wetland Replication (creation of a new wetland) and/or Wetland Restoration (restoration after temporary impacts).

The Contractor shall retain the services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications, hereafter referred to as the “Wetland Specialist,” to complete the Wetland Monitoring reports. Wetland Specialist shall meet requirements specified under Item 755.75 Wetland Specialist.

All on-site Wetland Specialist services required to complete the construction and revegetation of the wetland replication, including preparation and submission of monitoring reports during construction, shall be per Item 755.75 Wetland Specialist.

SCOPE OF WORK**Post-Construction Wetland Monitoring Reports**

Final Acceptance of the wetland construction work as specified under Item 755.35 shall initiate the beginning of the Monitoring Period.

Inspections and reports shall be performed to ensure compliance with mitigation requirements defined under the relevant Wetland Mitigation items and with all applicable environmental permits. Monitoring reports shall cover the following:

- Identification of all plant species present
- Percent cover for each plant species and overall percent surface area cover by indigenous wetland plant species for replication area and upland
- Description of the viability, health, and vigor of installed plants as well as volunteer plant species within the replication areas
- Description of remedial measures taken to ensure criteria are met
- Depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface and data loggers, as appropriate.
- A conclusion regarding the success of the wetland mitigation area relative to the performance standards at 310 CMR 10.55(4)(b) (unless varied), the design plans, and performance criteria established by MADEP in the variance conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.

ITEM 755.76 (Continued)

Reports shall be submitted to the Engineer as a digital copy in Portable Document Format (PDF) unless otherwise requested. Hard copies shall be provided as requested by the Engineer. All reports shall be marked with the applicable permit numbers and identifying information as required in the permits. Reports shall include photo documentation of the wetland/s being monitored and shall include a minimum of 3 views from different orientations. Views shall be labeled.

Spring Reports, when required, shall be submitted to the Engineer by July 1 for dispersal to the appropriate permitting agencies.

End of Year Reports (which may serve as the Fall Report) shall be based on inspections that occur prior to October 15th. Reports shall be submitted to the Engineer no later than November 1 of each year.

Monitoring Reports shall be as follows for **XX** years: ***[Select/amend as required for permits. If monitoring is required beyond 2 years after expected close of construction contract, please coordinate with MassDOT Environmental].***

MassDOT to provide input.

- ***ACOE: # Reports (note if spring and/or 1 end of year).***

COMPENSATION

Method of Measurement and Basis of Payment

Item 755.76 Wetland Monitoring Reports and associated inspections shall be at the Contract unit price per Lump Sum and shall include all labor, materials, equipment, and all incidental costs required to complete the work. Lump Sum will be paid in equal installments of the Lump Sum divided by the number of reports submitted. Payment shall be upon submittal and acceptance of each report, based on the following schedule: ***MassDOT to provide input.***

[Complete/modify as applicable. # reports is for report submitted, not # of inspections.]

- Year 1 = ***xx Reports***
- Year 2 = ***xx Reports***

ITEM 767.121**SEDIMENT CONTROL BARRIER****FOOT****DESCRIPTION**

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. Photo-biodegradable fabric shall not be used.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, sedimentation fence shall be used in addition to compost filter tubes and straw bales and shall be compensated under that item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

MATERIALS AND CONSTRUCTION

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

ITEM 767.121 (Continued)

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer's instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

Compost Filter Tube

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

Straw Bales

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

ITEM 767.121 (Continued)

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

Sedimentation Fence

Materials and Installation shall be per Section 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

Maintenance

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

Dismantling & Removing

ITEM 767.121 (Continued)

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Sedimentation fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

COMPENSATION**Method of Measurement and Basis of Payment**

Item 767.121 will be measured and paid for at the contract unit price per foot of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Additional barrier, such as double or triple stacking of compost filter tubes, will be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damaged by construction activities shall be repaired or replaced as directed by the Engineer at the Contractor's expense.

ITEM 767.9

JUTE MESH

SQUARE YARD

DESCRIPTION

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following.

The work under this item shall consist of furnishing and installing jute mesh fabric to prevent soil erosion. Jute mesh shall be placed over all areas of exposed soil in locations shown on the plans or as required by the Engineer.

MATERIALS

Jute netting or similar material shall be new, unused, undyed, and unbleached 100% biodegradable yarn (no polypropylene) and of uniform plain weave. The materials should weigh approximately 1.0 (+/- 5%) pounds per linear yard (assuming a 4-foot width).

Shall meet the following minimum requirements:

Open Area:	70-75%
Mesh Size:	approximately 1/2 inch with an open area of 60-65%.
Roll Weight:	approximately 1.0 (+/- 5%) pounds per linear yard
Warp Ends:	78 per linear yard
Weft Ends:	41 per linear yard
Recommended flow:	6 fps (1.8 m/s)
Functional Longevity:	6-9 months

Anchoring devices shall be 11-gauge steel staples 6-inch minimum length. In loose soils the length of the staples shall be 9-inches.

For areas that will be routinely mowed anchoring devices shall consist of minimum 8” wooden stakes. Longer stakes shall be used where loose soils or other conditions obligate, as required by the Engineer.

CONSTRUCTION METHODS

Area shall be seeded prior to installation of jute netting.

Installation shall be such as to ensure continuous contact with soil without folds or wrinkles. Jute netting shall be laid such that upslope fabric is placed over lower slope fabric by a minimum of 3 feet. Adjoining rolls shall be overlapped a minimum 6 inches. The netting shall extend beyond at least 1 foot beyond the edge of the seeded area.

The Contractor shall bury the ends of the jute netting 6-8 inches in anchor trenches at top and bottom of slopes.

ITEM 767.9 (Continued)

Jute netting shall be anchored in place with vertically driven metal staples. The staples shall be driven in until their tops are flush with the soil. Staples shall be placed at 12-inch intervals along the top of a slope and in staggered courses along the face of the slope to achieve a minimum of 3 staples per square yard, or at manufacturer's recommendations for the given site conditions.

Contractor shall reseed all trenched and otherwise disturbed areas with specified seed mix. The Contractor shall maintain the jute netting and make satisfactory repairs of any areas damaged until acceptance of seed establishment.

COMPENSATION**Method of Measurement**

Item 767.9 will be measured by the number of Square Yards complete in place, including anchoring, as measured across the surface of grade and does not include buried or overlapped portions. The quantity measured for payment shall not exceed that shown on the plans or as directed by the Engineer.

Mesh that becomes loose or that is not otherwise functioning to stabilize soil shall be repaired and new or additional jute matting installed as required at the Contractor's expense. Soil erosion shall be repaired, and area shall be raked and reseeded with the original specified mix as required by the Engineer at the Contractors expense.

Basis of Payment

Item 767.9 will be paid for at the contract unit price per Square Yard, which price shall include all labor, materials, equipment, trenching, placing, and stapling of jute fabric, reseeded of trenched and disturbed areas, and all incidental costs required to complete the work.

ITEM 983.522**STREAMBED RESTORATION****LUMP SUM****DESCRIPTION**

This work shall consist of removing, stockpiling, and replacing stream bed material in the proposed bridge replacement and the upstream and downstream approaches in the limits of work. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, roughness, shape, profile, and appearance. The ultimate product will, to the extent possible, replicate the function and appearance of the natural stream channel, as illustrated by photo-documentation herein (Figure A and B).

The Contractor shall coordinate with his/her sub-contractors to ensure all required equipment is available on-site to complete the work in this manner. The streambed restoration is required to comply with environmental permits issued for the project. MassDOT Environmental Services will provide a Fluvial Geomorphologist (Geomorphologist) to provide a pre-construction meeting, on-site oversight during construction, and assistance during streambed restoration construction to ensure the restoration is constructed as shown on the Plans, as required by these Special Provisions and in accordance with permit requirements.

At least 30 days prior to the commencement of construction, the Contractor shall coordinate with David Paulson (MassDOT Wildlife Unit Supervisor, tel: (508) 389-6366; email: david.j.paulson@state.ma.us) to set up an initial (virtual or in person) meeting with MassDOT's Geomorphologist, Contractor, and Resident Engineer. At this meeting, the Geomorphologist will provide an overview of the restoration work. The Contractor should be prepared to discuss the anticipated means, methods, and schedule.

Process Approval:

In lieu of a mockup, the Contractor shall schedule an onsite meeting to discuss the streambed restoration with the Geomorphologist and respective parties from MassDOT. The Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Geomorphologist adequate access to observe, direct, and inspect the channel restoration work throughout the duration of the removal, stockpile, and reinstallation of the existing streambed material. If material is being brought to the site for streambed restoration, the Contractor shall provide the Geomorphologist with photographs to see the material.

MATERIAL

The top 1.5 feet of streambed material excavated from the existing streambed shall be removed and stockpiled to facilitate reinstallation and replication of the natural streambed. The excavated streambed material below the top 2 feet shall be stockpiled and reused to fill the voids in the proposed riprap placed below the top streambed restoration layer.

ITEM 983.522 (Continued)

In the event that the excavated material is not suitable or there is not enough available suitable material, additional streambed restoration material shall be locally sourced that matches the composition of the existing native streambed. The following gradation sampled from a similar streambed surface shall be used as a guide.

Stream Bed Material Gradation

Particle	Percent (%) Composition
Boulder	75
Cobble	20
Gravel	5
Sand	0

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

Related Items

Crushed Stone. Shall conform to the requirements of Item 156.2 Crushed Stone for Slope Treatment and shall be paid for under that item.

Riprap Stone shall conform to the requirements of Item 983. and shall be paid for under that item.

METHOD OF CONSTRUCTION

Channel

The streambed material shall be reinstalled over riprap, as depicted on the plans, to an average thickness of 1 foot, with variations in thickness as necessary to replicate existing channel conditions. The initial placement of streambed material shall fill the voids in the underlying riprap. Fill voids by shaking stone with the teeth of an excavator bucket, hand tamping with metal tamping rods, and by spraying water to settle fines between large stones. Plate compactors shall not be used. The purpose of filling the voids is to prevent subsurface flow where surface water disappears into large voids between the stone fill below the channel bed surface during low flow conditions. The final streambed shape and appearance shall be finalized in the field as directed by the Geomorphologist.

Reinstallation of the stockpiled streambed material shall be placed on top of the riprap to restore streambed habitat and fish passage. The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

ITEM 983.522 (Continued)**Completion**

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the cofferdams in such a way as to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

The final streambed shall maintain the general configuration of the existing streambed bedform and there shall be minimal subsurface flow upon final inspection by the Resident Engineer and Geomorphologist. The project must be passable by fish and other aquatic organism following construction.

The streambed restoration to be measured for payment will be the complete and accepted work for restoration of the streambed within the limits shown on the Plans as approved by the Resident Engineer and Geomorphologist.

COMPENSATION**Method of Measurement**

Item 983.522 will be measured by lump sum unit of accepted streambed restoration.

Basis of Payment

Item 983.522 shall be paid for on a lump sum basis, which shall include full compensation for excavating, stockpiling, transporting, and placing the material specified and for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

ITEM 991.1**CONTROL OF WATER
STRUCTURE NO. C-10-002****LUMP SUM****DESCRIPTION**

Work under this item shall conform to the relevant provisions of Section 140 of the Standard Specifications and these Special Provisions for all dewatering activities necessary for the project, including, but not limited, excavation, construction of proposed pile caps, abutments, and wingwalls, riprap installation, and proposed drainage outfall structures to ensure work will be performed in the dry.

The Contractor's attention is directed to the section of these Special Provisions that addresses the Contractor's requirements for Sedimentation and Erosion Controls for this project.

The Contractor shall take all steps to fulfill the requirements the Massachusetts DEP Erosion and Sedimentation Controls guidelines and all environmental permits associated with this project.

The Contractor shall review the boring logs and site conditions to assess the bearing soils and determine the Contractor's methods for the control of water.

The Contractor should take precautions to reduce subgrade disturbance by diverting storm water run-off away from construction areas and maintaining effective dewatering.

As part of the work under this Item, it is the responsibility of the Contractor to determine the need and extent of stream diversions, sedimentation basins and dewatering techniques and sedimentation controls needed to control water and sediment at the site. Prior to the actual process of executing the excavation operations, the Contractor shall submit the methods and materials proposed to be used for the Engineer's approval.

The Contractor shall be responsible for design of the water control structure for placement in the stream as shown on the Contract Plans. The water control structure shall include an impermeable barrier to ensure sediments from construction operations do not migrate into the stream.

SUBMITTALS

Plans and calculations for the water control structure shall be developed by the Contractor for this item, prepared by a Professional Engineer registered in the Commonwealth of Massachusetts and submitted for the review of the Engineer prior to the start of construction.

This submittal shall include, but not limited to, excavation support, dewatering and construction sequence designs to sufficiently address the channel flow caused by the control of water.

ITEM 991.1 Continued)**CONSTRUCTION METHODS**

Plans and Calculations for water retaining and dewatering measures shall be developed by the Contractor for this Item, prepared and stamped by a Professional Engineer Registered in the Commonwealth of Massachusetts and submitted for the review of the Engineer prior to the start of construction.

Stream diversions shall be conducted in such a manner as to minimize siltation and prevent contamination of the waterway.

Maximum screen sizes on the inlet side of all pumps shall not exceed 0.5 inch.

Recommended devices to control water at the site include, but are not limited to:

- Installation of precast concrete median barriers or blocks covered with sedimentation fabric and sandbags to reduce water infiltration.
- Sandbag dams installed at the top of the excavation to provide temporary control of water.
- Portable cofferdam system comprised of steel frames covered by an impervious fabric membrane.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Engineer has the right to order the Contractor to stop all excavation operations when in his judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

The Contractor shall provide the means of removing all sediment from water pumped from the excavation areas; this shall include the use of sedimentation basins, check dams, sedimentation fences or tanks as directed in the Special Provisions under Sedimentation and Erosion Controls.

COMPENSATION**Method of Measurement and basis of Payment**

Measurement and payment for control of water, all necessary equipment, design, materials, labor and installation, shall be included in the Lump Sum contract price for Item 991.1 Control of Water Structure No. C-10-002.



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

October 11, 2023

Massachusetts Department of Transportation Highway Division
Ten Park Plaza, Suite 4160
Boston, MA 02116
ATTN: Courtney Walker

RE: 401 WATER QUALITY CERTIFICATION
Administrative Completeness and Technical Deficiency Review
401 WQC Transmittal No: X289593 & X289762

AT: Sand Mill Road over Dry Brook (Bridge No. C-10-002)
Cheshire, MA

Dear Ms. Walker:

MassDEP has completed its Administrative Review of the application for the above-referenced application and has determined it to be administratively complete.

MassDEP has completed its Technical Review of the application for the above-referenced application and is requesting that you submit the following additional information:

1. The stormwater standards section of the application notes two different reported values for an increase to impervious area. The description for Standard 2 states that there will be 1,054 square feet (sf) of increase while the description for Standard 3 states there will be an 1,150 sf increase. Please clarify which value is correct.
2. Please provide the hydraulic report referenced on page 9 of the application.
3. In the discussion of Standard 6 of the MA Stormwater Standards, it is stated that the project does not occur in a Zone II, IWPA or any other critical area. Standard 6 does include cold-water fisheries as defined in 314 CMR 9.02 and 310 CMR 10.04 as a Critical Area. The evaluation requested in 4. below should incorporate and address this status.
4. While the project is considered redevelopment and requires meeting stormwater to Maximum Extent Practicable, 314 CMR 9.06(6)(a)(7) also requires that, "A redevelopment project shall...

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.

TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

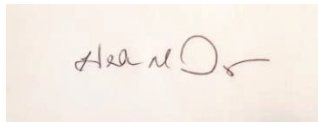
improve existing conditions.” An evaluation of measures that improve existing conditions should include deep sump catch basins and/or LID measures such as vegetated swales or buffers. Please provide this evaluation and reasons why the measures evaluated are feasible or not feasible.

5. Is there any additional information on the concrete structure to be removed in the southwest bridge quadrant? Is this structure adjacent to the proposed wetland replication area?

Upon receipt of all requested supplemental information, MassDEP has 30 calendar days in which to issue or deny a certification.

Should you have any questions relative to this letter, please email myself at Heidi.davis@mass.gov or tyler.lewis@mass.gov.

Sincerely,

A rectangular area containing a handwritten signature in blue ink. The signature appears to read "Heidi M. Davis" with a stylized flourish at the end.

Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP - WERO - Michael McHugh
USACE - Dan Vasconcelos
MassDOT – Melissa Lenker
MassDOT – Kylie Abouzeid
Cheshire Conservation Commission – concom@cheshire-ma.gov



55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

November 20, 2023

Massachusetts Department of Environmental Protection
Attn: Heidi M. Davis, Highway Unit Supervisor
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Response to MassDEP Comments
Cheshire: Sand Mill Road over Dry Brook
401 WQC Transmittal No. X289593 & X289762

Dear Ms. Davis:

On behalf of the Massachusetts Department of Transportation (MassDOT), Weston & Sampson Engineers, Inc. is hereby responding to comments generated by DEP on October 11, 2023.

Comment 1: The stormwater standards section of the application notes two different reported values for an increase to impervious area. The description for Standard 2 states that there will be 1,054 square feet (sf) of increase while the description for Standard 3 states there will be an 1,150 sf increase. Please clarify which value is correct.

Response 1: The correct value is 1,054 square feet of increase to impervious area.

Comment 2: Please provide the hydraulic report referenced on page 9 of the application.

Response 2: Please see the Hydraulic Report attached to this response to comments package.

Comment 3: In the discussion of Standard 6 of the MA Stormwater Standards, it is stated that the project does not occur in a Zone II, IWPA or any other critical area. Standard 6 does include cold-water fisheries as defined in 314 CMR 9.02 and 310 CMR 10.04 as a Critical Area. The evaluation requested in 4. below should incorporate and address this status.

Response 3: Dry Brook is a Cold-Water Fishery, please see the evaluation associated with Comment 4 for additional information on how this status will be addressed.

Comment 4: While the project is considered redevelopment and requires meeting stormwater to Maximum Extent Practicable, 314 CMR 9.06(6)(a)(7) also requires that, "A redevelopment project shall...improve existing conditions." An evaluation of measures that improve existing conditions should include deep sump catch basins and/or LID measures such as vegetated swales or buffers. Please provide this evaluation and reasons why the measures evaluated are feasible or not feasible.

Response 4: The reference to "A redevelopment project shall improve existing conditions" has been previously discussed and resolved to maintain the country drainage that exists today for the following reasons:

1. There are no existing, formal curbs or gutter lines along the project length of 450 linear feet that would warrant proposed catch basins nor would there be a significant volume of stormwater runoff measurable enough to be treated with curbing installed.
2. The length of roadway improvements is relatively short with a bridge and curbing in the middle and driveways on three of the four corners of the project resulting in

limited space for construction of new drainage swales or increased vegetated buffers. These are not feasible due to these site constraints.

3. Limits of impact, tree clearing and larger areas of clearing and grubbing would be increased with the addition of drainage swales or vegetated buffers behind proposed guardrail and have little benefit in overall treatment to the project area.
4. Existing shoulders and slopes off the EOP within the project limits are not formally and intentionally vegetated but rather overgrown and sparsely vegetated.

The project proposes the vegetation of the slope areas adjacent to the roads within the project limits where possible as opposed to traditional "end of system solutions" or structures. Vegetated slopes are an efficient, economical and "Low impact Development" (LID) method to treatment which results in an improvement to existing conditions. Vegetation will include loam and seed along the EOP and a wetland replication area containing wetland seed mix and native plantings.

We acknowledge Dry Brook is a Coldwater Fishery and are trying to minimize impacts because one of the Coldwater Fish (Longnose Sucker) is a state listed species, so a time of year (TOY) restriction is being implemented. To avoid impacts to state-listed fish, no in water work shall occur during the period of April 1 to July 31.

In summary, the increase in impervious surface (0.02 acres) as part of this project is considered to have a negligible impact to the Coldwater Fishery, Dry Brook. For this reason, the LID measure of restoring vegetated slopes is preferred to a structural solution which would require increased clearing and earthwork.

Comment 5: Is there any additional information on the concrete structure to be removed in the southwest bridge quadrant? Is this structure adjacent to the proposed wetland replication area?

Response 5: The concrete structure at the southwest corner of the bridge, on the downstream end of the bridge opening, is an existing splash pad and intended to be removed. It will be replaced with rip rap and a new pipe which penetrates the new wingwall. This concrete structure to be removed is within easement areas obtained by the Town and adjacent to the proposed wetland replication area.

If you have any questions, please contact me at (978) 532-1900.

Very truly yours,

WESTON & SAMPSON



Alexandra Gaspar
Environmental Scientist

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DOCUMENT A00831

ARMY CORPS OF ENGINEERS
General Permit (GP)

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January 5, 2024

Regulatory Division
File Number: NAE-2023-01078

Courtney Walker
MassDOT – Highway Division
10 Park Plaza, Room 7360
Boston, Massachusetts 02116
Sent by email: courtney.l.walker@dot.state.ma.us

Dear Ms. Walker:

The U.S. Army Corps of Engineers (USACE) has reviewed your application to permanently discharge fill material within 821 square feet below the Ordinary High Water (OHW) mark of Dry Brook, and within 80 square feet of palustrine wetlands, associated with the replacement of the bridge conveying Sand Mill Road over Dry Brook in Cheshire, Massachusetts. The existing bridge and abutments will be removed and replaced with a new bridge and abutments in approximately the same location. Rip-rap scour protection overtopped with natural streambed material will be placed in front of the new abutments. The project also includes temporary impacts within 607 square feet below OHW, and within 75 square feet of wetlands, associated with temporary construction access and dewatering behind cofferdams. The work is shown on the enclosed plans titled “CHESHIRE SAND MILL ROAD OVER DRY BROOK,” on four sheets, and dated “SEPTEMBER 21, 2023.”

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 23 of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). The GPs are available at <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit>.

Please review the GPs carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GPs are fully aware of and comply with its terms and conditions. A copy of the GPs and this verification letter shall be available at the work site as required by General Condition 17. You must perform this work in compliance with the following special conditions:

1. You must complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated start date. You must also complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

2. A conditioned Water Quality Certification (WQC) has been issued by the Massachusetts Department of Environmental Protection for your project and is attached. You must comply with the conditions specified in the WQC.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special condition(s) provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey>.

Please contact Dan Vasconcelos, of my staff, at (978) 318-8653 or daniel.b.vasconcelos@usace.army.mil if you have any questions.

Sincerely,



Grace Moses
Chief, Technical Support Branch
Regulatory Division

Enclosures

cc:

Ed Reiner, U.S. EPA, Region 1, Boston, MA; reiner.ed@epa.gov

Rachel Croy, U.S. EPA, Region 1, Boston, MA; croy.rachel@epa.gov

David Simmons, USFWS, New England Field Office, Concord, NH;

david_simmons@fws.gov

Heidi Davis, MassDEP, Boston, MA; heidi.davis@mass.gov

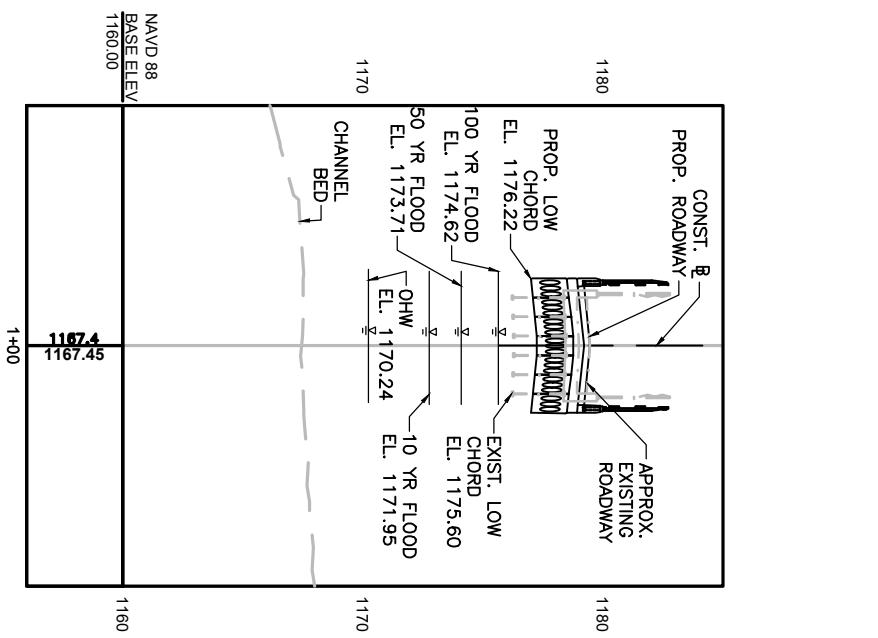
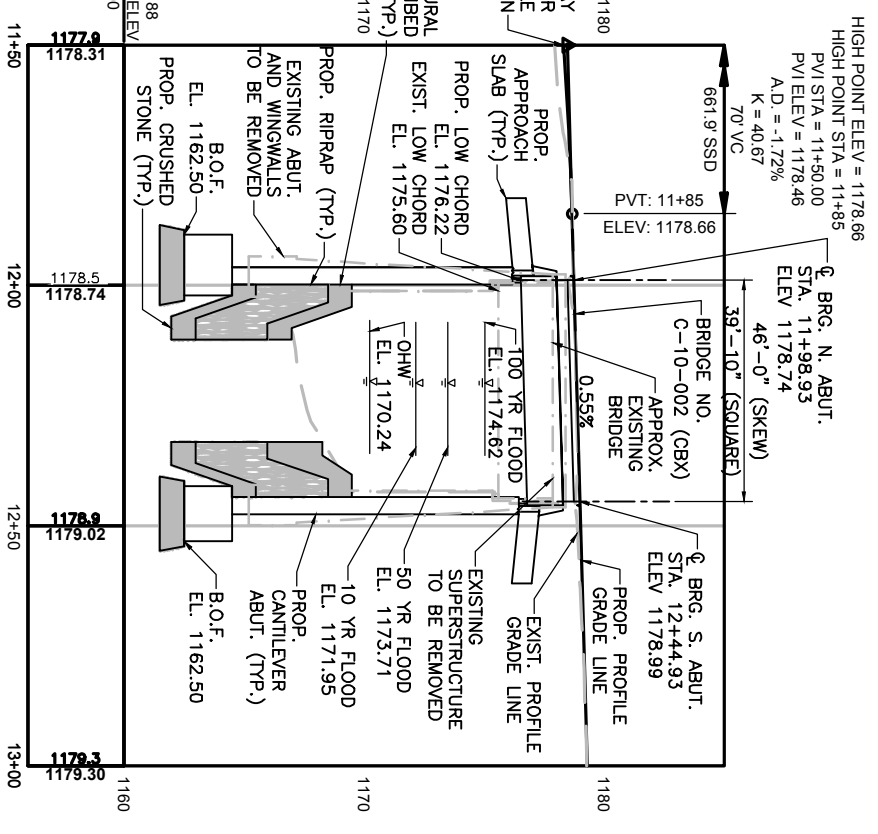
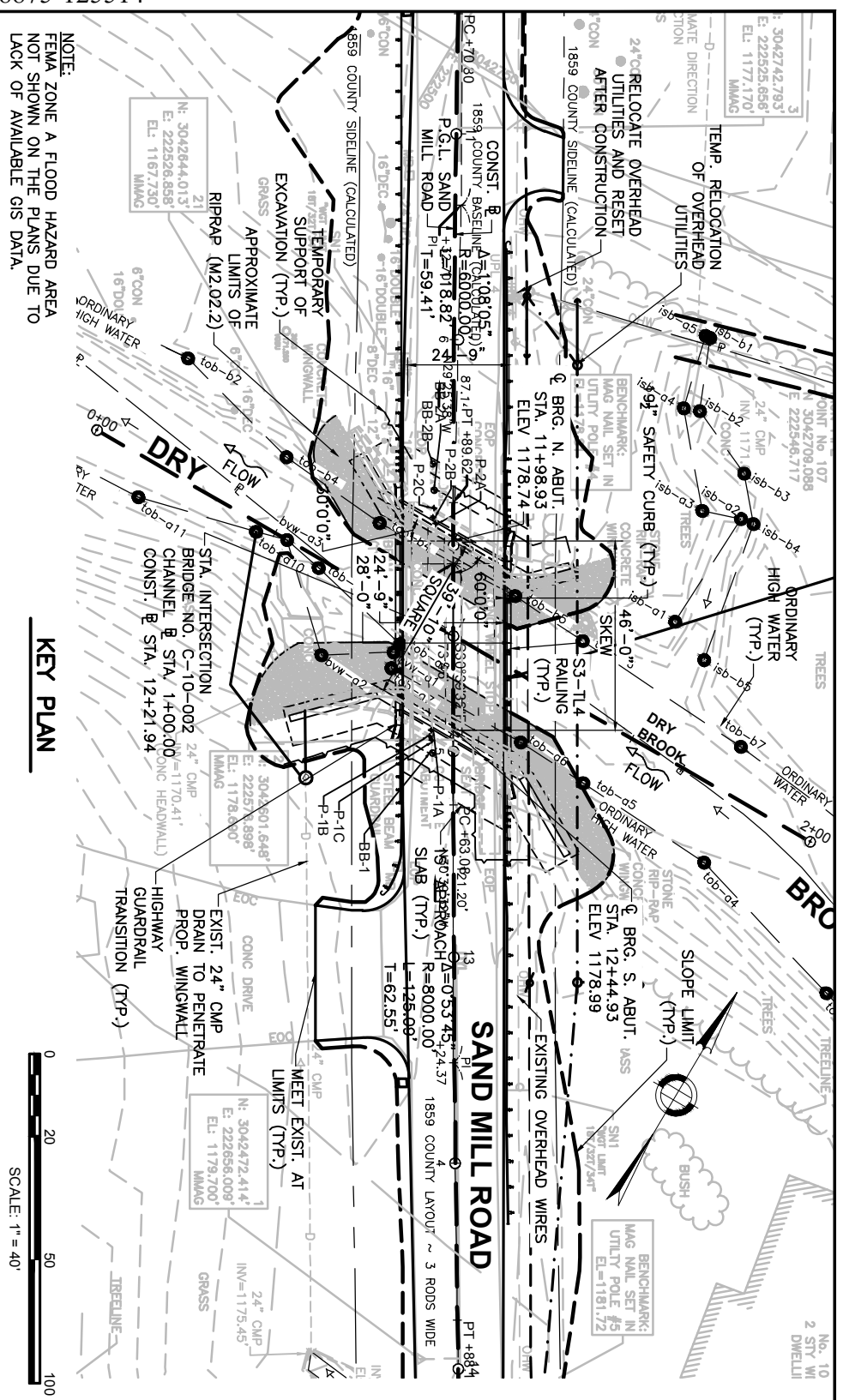
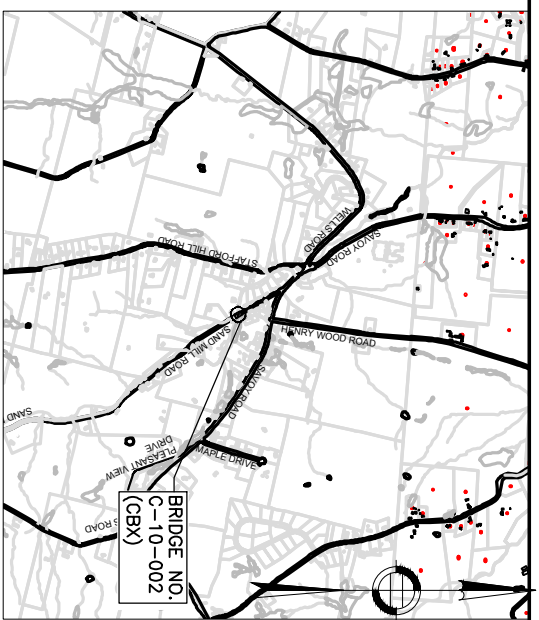
Tyler Lewis, MassDEP, Boston, Massachusetts; Tyler.Lewis@mass.gov

MassDEP-WRP, Boston, MA; dep.waterways@mass.gov

David Robinson, MA Board of Underwater Archaeological Resources (BUAR);

david.s.robinson@mass.gov

Conservation Commission, Cheshire, Massachusetts; concom@cheshire-ma.gov



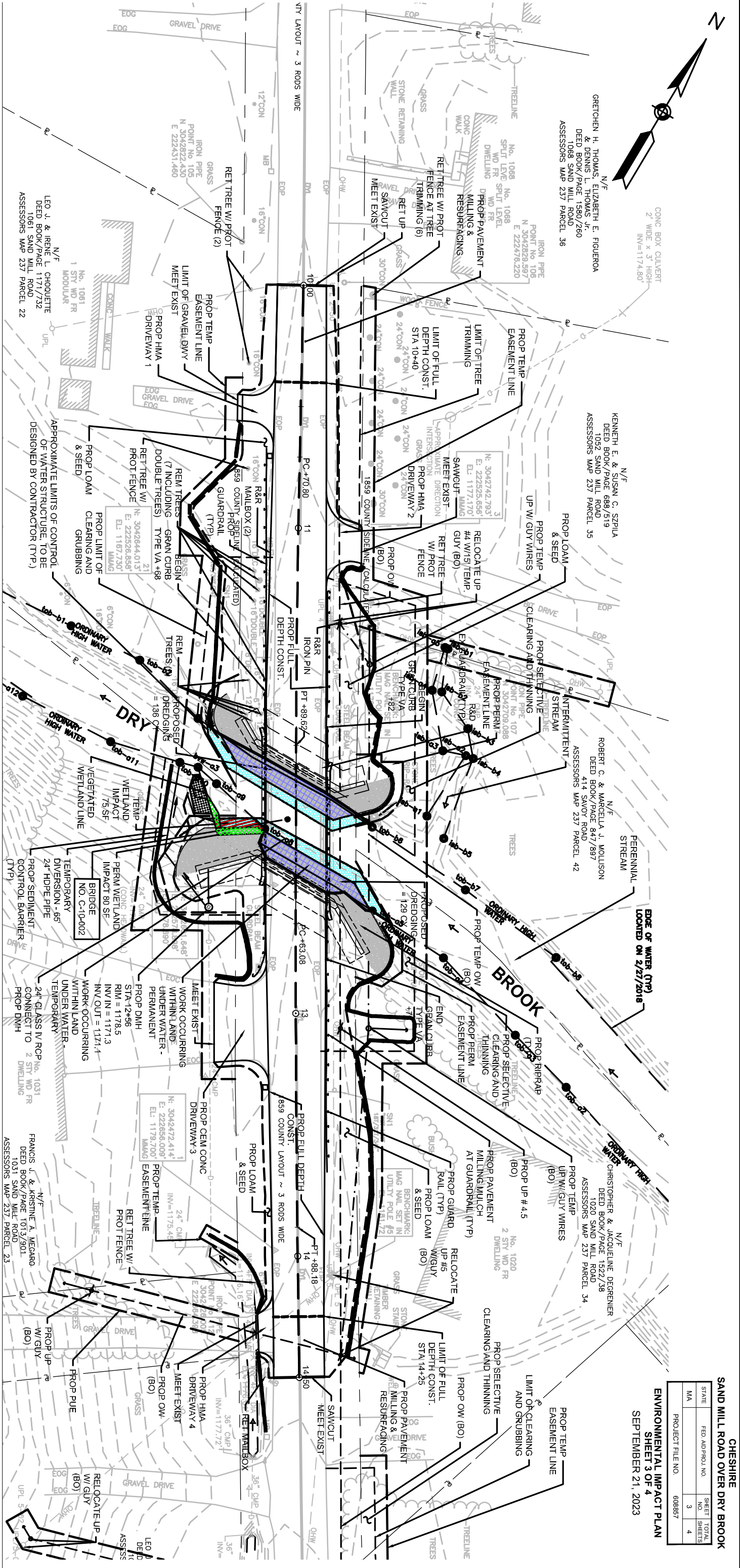
ITEM	ESTIMATED QUANTITIES (NOT GUARANTEED)	QUANTITY
DEMOLITION OF BRIDGE NO. C-10-002	1 LS
BRIDGE EXCAVATION	1393 CY
CLASS B ROCK EXCAVATION	70 CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	720 CY
CRUSHED STONE	325 TON
CRUSHED STONE FOR BRIDGE FOUNDATIONS	77 TON
24 INCH REINFORCED CONCRETE PIPE	15 FT
SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B-9.5)	98 TON
SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B-9.5)	15 TON
SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	60 FT
GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL	700 SY
TEMPORARY SUPPORT OF EXCAVATION	190 SY
CONTROL OF WATER STRUCTURE C-10-002	1 LS
TEMPORARY PROTECTIVE SHIELDING	960 SF
BRIDGE STRUCTURE, BRIDGE NO. C-10-002	1 LS

CHESHIRE SAND MILL ROAD OVER DRY BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	4

PROJECT FILE NO. 608875
ENVIRONMENTAL IMPACT PLAN
SHEET 1 OF 4
SEPTEMBER 21, 2023

FOR PERMIT REVIEW ONLY
09/21/2023



ENVIRONMENTAL IMPACTS

TOTAL STREAM IMPACT AREA (TEMPORARY AND PERMANENT) _____ 1,428 SF

WORK OCCURRING IN LAND UNDER WATERS OF U.S. - PERMANENT _____ 821 SF

WORK OCCURRING IN LAND UNDER WATERS OF U.S. - TEMPORARY _____ 607 SF

BORDERING VEGETATED WETLAND IMPACT - PERMANENT _____ 80 SF

BORDERING VEGETATED WETLAND IMPACT - TEMPORARY _____ 75 SF

WORK OCCURRING ALONG BANK _____ 156 FT

WORK OCCURRING ALONG BANK - TEMPORARY _____ 29 FT

WORK OCCURRING ALONG BANK - PERMANENT _____ 127 FT

VOLUME OF DREDGING _____ 266 CY

LEGEND:

	BORDERING VEGETATED WETLAND IMPACT - PERMANENT
	BORDERING VEGETATED WETLAND IMPACT - TEMPORARY
	PERMANENT WORK OCCURRING IN LAND UNDER WATERS OF U.S.
	TEMPORARY WORK OCCURRING IN LAND UNDER WATERS OF U.S.
	WORK OCCURRING ALONG BANK



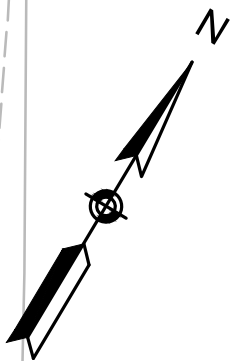
FOR PERMIT REVIEW ONLY
09/21/2023

CHESHIRE
SAND MILL ROAD OVER DRY BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		3	4

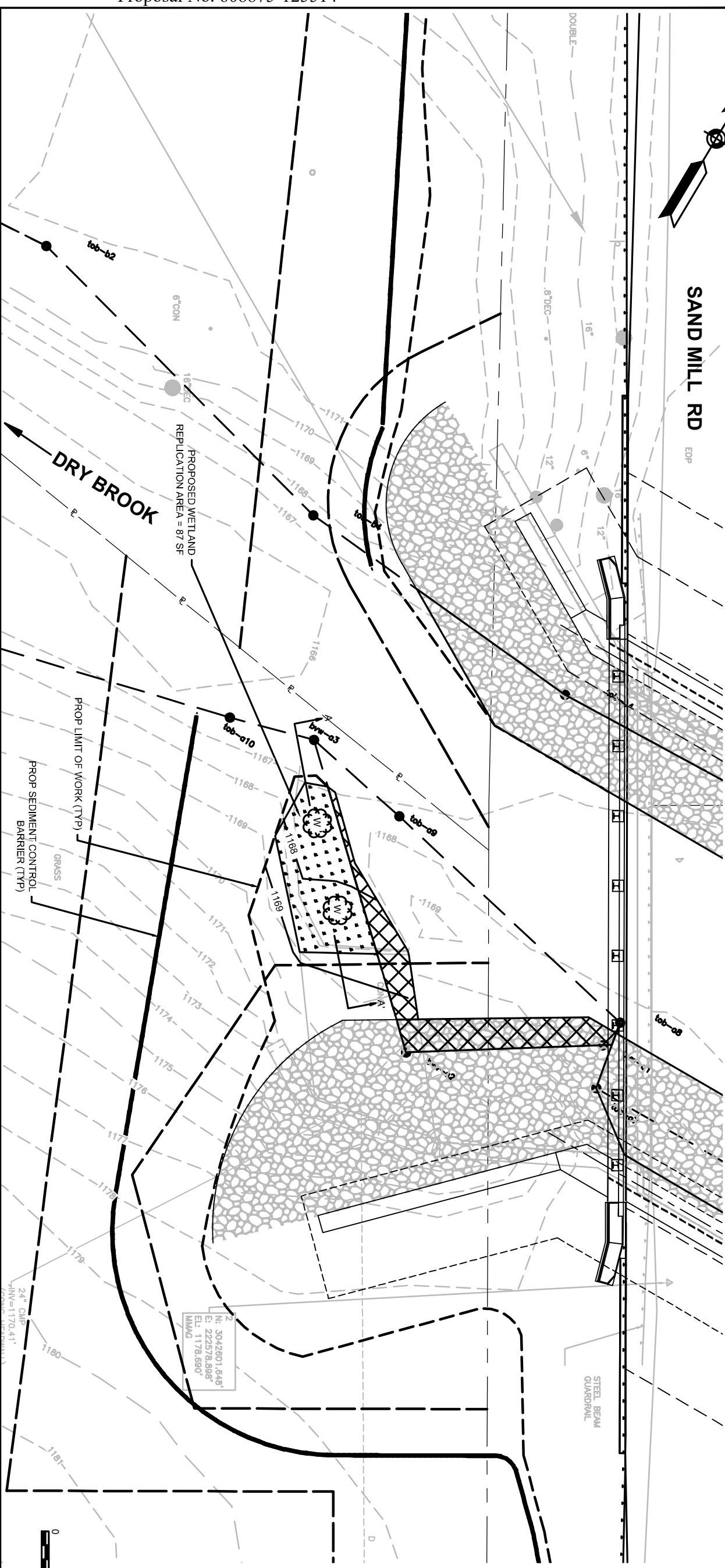
PROJECT FILE NO. 608875

ENVIRONMENTAL IMPACT PLAN
 SHEET 3 OF 4
 SEPTEMBER 21, 2023



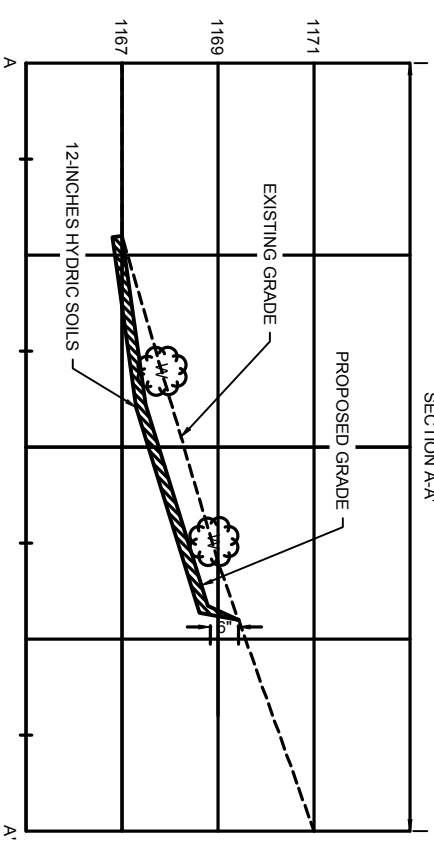
SAND MILL RD

EOP



- LEGEND:**
- WETLAND SEED MIX
 - WILLOW PLANTINGS - 2 EA AT APPROX. 8' SPACING
 - BORDERING VEGETATED WETLAND IMPACT - PERMANENT = 80 SF

ELEVATION



WETLAND REPLICATION PROFILE
NOT TO SCALE

N: 3042801.648'
E: 222578.898'
E.L.: 1178.890'
MWD



FOR PERMIT REVIEW ONLY
09/21/2023

CHESHIRE
SAND MILL ROAD OVER DRY BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	4

PROJECT FILE NO. 608857

WETLAND REPLICATION PLAN
SHEET 4 OF 4
SEPTEMBER 21, 2023



**US Army Corps
of Engineers**®
New England District

WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

EMAIL TO: daniel.b.vasconcelos@usace.army.mil and cenae-r-ma@usace.army.mil; or

MAIL TO: Daniel Vasconcelos
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

A U.S. Army Corps of Engineers authorization, file # 2023-01078, was issued to MassDOT – Highway Division. The permit authorized the permanent discharge of fill material within 821 square feet below the Ordinary High Water (OHW) mark of Dry Brook, and within 80 square feet of Palustrine wetlands, associated with the replacement of the bridge conveying Sand Mill Road over Dry Brook in Cheshire, Massachusetts. The existing bridge and abutments will be removed and replaced with a new bridge and abutments in approximately the same location. Rip-rap scour protection overtopped with natural streambed material will be placed in front of the new abutments. The project also includes temporary impacts within 607 square feet below OHW, and within 75 square feet of wetlands, associated with temporary construction access and dewatering behind cofferdams.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

Phone: () _____ () _____

Email: _____

Proposed Work Dates: Start _____ Finish _____

Permittee/Agent Signature: _____ Date: _____

Printed Name: _____ Title: _____

Date Permit Issued: _____ Date Permit Expires: _____

FOR USE BY THE ARMY CORPS OF ENGINEERS

PM: Vasconcelos Submittals Required: _____

Inspection Recommendation: _____



**US Army Corps
of Engineers**®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification
within one month of the completion of work.)

Permit Number: NAE-2023-01078

Project Manager: Vasconcelos

Name of Permittee: MassDOT – Highway Division

Permit Issuance Date: 1/5/2024

Please sign this certification and return it to our office upon completion of the activity.

```

*****
* E-MAIL TO: cenae-r-ma@usace.army.mil; or *
* * * * *
* MAIL TO: Massachusetts Section *
* Regulatory Division *
* U.S. Army Corps of Engineers, New England District *
* 696 Virginia Road *
* Concord, MA 01742-2751 *
*****

```

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

Printed Name

Date of Work Completion

() _____
Telephone Number

() _____
Telephone Number

General Permit No.: NAE-2022-02649

Final Effective Date: June 2, 2023

Applicant: General Public, Commonwealth of Massachusetts

Expiration Date: June 1, 2028

**Department of the Army
General Permits for the Commonwealth of Massachusetts**

The New England District of the U.S. Army Corps of Engineers (USACE) hereby issues twenty-five (25) regional general permits (GPs) for activities subject to USACE jurisdiction in waters of the U.S., including wetlands, navigable waters within the Commonwealth of Massachusetts and adjacent ocean waters to the seaward limit of the outer continental shelf. The Massachusetts GPs (hereafter referred to as the MA GP or GP) are issued in accordance with USACE regulations at 33 CFR 320 – 332 [see 33 CFR 325.5(c)(1)]. These GPs establish criteria and contain permit conditions to ensure that the authorized activities have no more than minimal individual and cumulative adverse impacts to the environment.

This document contains the following sections:

Pages

SECTION I	Statutory Authorities & Regulated Activities	2
SECTION II	Review Categories & Application Procedures	3-7
SECTION III	Massachusetts General Permits	8-34
SECTION IV	General Conditions	35-51
SECTION V	Mitigation Standards	52-54
SECTION VI	Federal & State Agency Contact Information & Websites	55-56
SECTION VII	Definitions & Acronyms	57-66
APPENDIX A	Guidance for Section 106 NHPA Compliance in Massachusetts	67-71
APPENDIX B	Pre-Construction Notification	72-77
APPENDIX C	Self-Verification Notification	78-81
APPENDIX D	Pre-Construction Notification Application Checklist	82-88

In issuing these GPs, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest; (c) damages to persons, property or to other permitted or unpermitted activities or structures caused by the activity authorized by any of the GPs; (d) design or construction deficiencies associated with the permitted work; or (e) damage claims associated with any future modification, suspension or revocation of these permits.

Tammy R. Turley 02 June 2023

 Tammy R. Turley Date
 Chief, Regulatory Division

SECTION I. STATUTORY AUTHORITIES & REGULATED ACTIVITIES

1. Work Requiring USACE Authorization

- a. Section 10: Work and structures that are located in, over, under or that affect navigable waters of the United States (U.S.) (see 33 CFR 329). The USACE regulates these activities under section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322).
- b. Section 404: The discharge of dredged or fill material into waters of the U.S (see 33 CFR 328). The USACE regulates these activities under Section 404 of the Clean Water Act (CWA). The term “discharge of dredged or fill material” also includes certain discharges resulting from excavation. Applicants should contact USACE to determine if a particular excavation discharge occurring within waters of the U.S., is a regulated activity. See 33 CFR 323.4 of the CWA for exempted activities.

For additional information on the limits of USACE jurisdiction, please see:

https://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/Jurisdictional_Limits_Brochure.pdf

2. Authority to Issue General Permits

- a. In accordance with 33 CFR 322.2(f), 325.2(e)(2), and 325.5(c), USACE may issue regional general permits authorizing activities under Section 10 of the RHA.
- b. In accordance with Section 404(e) of the CWA, 33 USC 1344(e), and 33 CFR 323.2(h), 325.2(e)(2), and 325.5(c), after notice and opportunity for public hearing, USACE may issue regional general permits for any category of activities involving discharges of dredged or fill material if the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will only have minimal cumulative adverse effect on the environment.

3. Related Laws

33 CFR 320.3 includes a list of related laws including, but not limited to, Section 408 of the Rivers and Harbors Act of 1899, Section 401 of the Clean Water Act, Section 402 of the Clean Water Act, Section 307(c) of the Coastal Zone Management Act of 1972, Section 106 of the National Historic Preservation Act of 1966, Section 7 of the Endangered Species Act, the Fish and Wildlife Coordination Act of 1956, the Magnuson-Stevens Fishery Conservation and Management Act, the Fish and Wildlife Coordination Act, Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, Section 7(a) of the Wild and Scenic Rivers Act, the Golden Eagle Protection Act, and the Migratory Bird Treaty Act.

SECTION II. REVIEW CATEGORIES & APPLICATION PROCEDURES

To qualify under these GPs, the design, construction, and maintenance associated with each proposed activity must meet the terms and eligibility criteria listed in Section III, all applicable general conditions (GCs) in Section IV, and any specific mitigation requirements in Section V. Applicants should first review the GPs to see if a project is eligible for authorization under one or more of the GPs within this document. Any activity not specifically listed may still be eligible for authorization under these GPs; applicants are advised to contact USACE for specific eligibility determination.

Please note that these GPs allow for Self-Verification (SV) contingent upon meeting all criteria and with full adherence to all GCs. Projects that do not qualify for SV, may meet criteria for Pre-Construction Notification (PCN). Tables are provided under each activity, which outline criteria for SV and PCN. Activities that do not meet criteria for SV or PCN may require review as an Individual Permit (IP). Activities may require a PCN or IP as noted in Sections III and/or IV of this GP. Notwithstanding compliance with the terms of these GPs, USACE retains discretionary authority to require either PCN review or IP review on a case-by-case basis for any project based on concerns for the environment or for any of the other public interest factors found in 33 CFR 320.4(a). These GPs also do not replace or change those activities identified as exempt from USACE regulation (33 CFR 323.4).

1. Pre-Application Assistance

Prospective applicants may request a pre-application meeting to address any questions they may have. USACE may also request a pre-application meeting or additional information to facilitate review of the request. Pre-application meetings and/or site visits help streamline the authorization process by alerting the prospective applicant to potentially time-consuming factors that may arise during the evaluation of their project (e.g., avoidance, minimization and compensatory mitigation requirements, historic properties, endangered species, essential fish habitat, impacts to federal projects, and/or dredging of contaminated sediments).

To schedule a pre-application meeting, present questions, or if you need further assistance, please contact USACE at:

Email: cenae-r-ma@usace.army.mil (strongly preferred)

Phone: (978) 318-8338

Mail: U.S. Army Corps of Engineers
New England District
Regulatory Division, Massachusetts Section
696 Virginia Road
Concord, MA 01742

2. Submitting a Request

Please follow the procedures outlined in Sections II.2-5 when requesting an SV or applying for PCN authorization for activities covered by these GPs. The GPs are provided in Section III below. For SV-eligible projects, the Self-Verification Notification (SVN) must be submitted within 30 days of commencing work. Otherwise, a Pre-Construction Notification (PCN) must be submitted for work that is not SV-eligible. Please include appropriate drawings and attachments and submit your request using the mailbox identified in Section II.4 or II.5 below. USACE will promptly confirm receipt of your request and notify you in the event additional information is required. Guidance on

how to submit electronic correspondence is located on the NAE Regulatory website here:
<https://www.nae.usace.army.mil/Missions/Regulatory/Submitting-Electronic-Correspondence>.

3. Local, State & Federal Approvals

Applicants are responsible for applying for and obtaining any required local, state, and federal permits or approvals. These must be obtained prior to the commencement of work in waters. Such authorizations may include a Water Quality Certification, a Coastal Zone Management Act consistency determination, and other approvals as noted below. Authorization under these GPs does not obviate the need for the permittee to obtain other Federal, State, or local permits, approvals, or authorizations required by law.

I. Water Quality Certification under Section 401 of the Federal Clean Water Act (33 USC 1341).

Applicants are responsible for determining the appropriate 401 Water quality Certification (WQC) requirements and submitting this information to the USACE at the time of their PCN application or when completing their SVN. Applicants that are unsure of whether their activity has been certified should contact MassDEP, or EPA Region 1 when the activity is located on tribal lands, for a determination. The 401 WQC requirement must be satisfied by acquiring one of the following WQCs from MassDEP (see GC 8):

General 401 WQC: The MassDEP issued a WQC on April 21, 2023 conditionally certifies all activities in GPs 1 – 24 eligible for SV and PCN so long as the activity is described in 314 CMR 9.03, and is not an activity described in 314 CMR 9.04, and so long as the activity meets all other requirements, terms and conditions of this WQC. The MassDEP WQC also conditionally certifies activities described in GP 25 so long as the activity meets all other conditions of the WQC. Emergency projects described in GP 25 must obtain an emergency certification or otherwise be authorized pursuant to 310 CMR 10.06, qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) issued by the MassDEP, or meet the requirements of 9.12(2) or (3) in order to be certified under the WQC

Applicants should refer to the following link to determine if their activity is eligible:
<https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. If eligible, you must comply with all applicable WQC conditions. Activities listed in 314 CMR 9.03 that are not exempt from the Wetland Protection Act must have a valid Final Order of Conditions (OOC) or Final Restoration Order of Conditions pursuant to 310 CMR 10.00 to be eligible under the General 401 WQC.

Individual 401 WQC: In the event the proposed activity is not covered by the general WQC, applicants shall contact MassDEP and apply for an individual 401 WQC if their activity does not qualify for a General 401 WQC as outlined above. MassDEP may issue, waive, or deny the individual 401 WQC on a case-by-case basis. All activities listed in 314 CMR 9.04 must obtain an individual 401 WQC from MassDEP to be eligible under these GPs. When an Individual 401 WQC is required for *PCN activities*, the applicant shall submit their Individual 401 WQC application concurrently to MassDEP and the USACE to comply with 40 CFR 121.

Activities Proposed on Tribal Lands: When an activity is proposed on Tribal lands, the applicant shall refer to the general 401 WQCs granted by the Environmental Protection Agency (EPA), Region 1 on May 15, 2023. These 401 WQCs are located on the USACE Regulatory website:
<https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

II. Coastal Zone Management Act Federal Consistency Concurrence pursuant to Section 307 of the CZMA of 1972, as amended.

Federal consistency concurrence is required for all activities located within the coastal zone, unless determined otherwise by the Massachusetts Office of Coastal Zone Management (MA CZM) (see GC 9). As applicable, this requirement must be satisfied by acquiring one of the following from the MA CZM:

General CZM Federal Consistency Concurrence (General Concurrence): MA CZM has granted General Concurrence for all SV and PCN activities for GPs 1-25 and this can be found at: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. The applicant must obtain all applicable permits and approvals prior to the commencement of work in USACE jurisdiction (i.e., construction begins on site). For SVs, General Concurrence is automatically granted and no further action is required from the applicant. For PCNs, the USACE will coordinate with MA CZM to acquire General Concurrence as part of the PCN application review. During review of the PCN application, USACE may request additional information from the applicant to support CZM's evaluation of the activity.

Individual CZM Federal Consistency Concurrence (Individual Concurrence): In certain cases, MA CZM may elevate any GP activity 1-25 to require Individual Concurrence. The applicant must contact MA CZM and follow the procedures to obtain Individual Concurrence as determined appropriate by MA CZM.

The MA CZM program includes five regional offices that serve 78 coastal municipalities. The following map provides more information about these offices: <https://www.mass.gov/service-details/czm-regions-coastal-communities-and-coastal-zone-boundary>

III. Other Approvals: Approvals typically required in Massachusetts include, but are not limited to, a Chapter 91 Permit/License, Massachusetts Environmental Protection Act (MEPA) review, Wetlands Protection Act Order of Conditions, and/or Aquaculture Certification. *Applicants should also be aware that USACE may not be able to render a permit decision in the event the proposed activity is denied by another local, state and/or federal agency.*

4. Procedures for Self-Verification (SV) Eligible Projects

If the activity is eligible for an SV, the Self-Verification Notification (SVN) must be completed prior to the start of project construction and submitted to USACE within 30 days of commencing work. The purpose of the SVN is to provide applicants with a tool to assist them when determining if the activity as proposed is SV-eligible. The following GPs do not require submission of the SVN: GP 1 (SV #1), GP 3 (SV #2-3), GP 4 (SV #2), GP 11, GP 12 (note #2), GP 14 (see note), GP 15 (see note), and GP 24 (SV #3). **For the activities not listed above, the SVN must be completed prior to the start of work and be kept on site at all times during project construction.** The applicant shall not begin work for SV-eligible activities until they have completely verified the bulleted items below.

Digital submittals by email are **strongly encouraged** to facilitate the most efficient processing of the SVN submittal. Please communicate with USACE staff if you are unable to provide a digital copy. Addresses are cenae-r-ma-sv@usace.army.mil (email) or Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751 (mail).

Eligible SV Activities:

- Are subject to USACE jurisdiction (see GC 2); and
- Qualify for one or more of the GPs within this document (Section III); and
- Meet the GCs within this document (Section IV); and

- When required, are supported by a complete SVN (Appendix C); and
- Receive all other required local, State, and/or Federal approvals.

5. Procedures for Pre-Construction Notification (PCN) Eligible Projects

For activities that require a PCN, an application to and written authorization from USACE is required. *No work requiring a PCN may proceed until the applicant receives written authorization from USACE verifying that the activity is authorized.* The verification letter may include special conditions that the applicant must comply with. When possible, it is *highly* recommended that PCN application materials are submitted at least 90 days before the target start date to allow for USACE evaluation and any necessary agency consultations. PCN applications shall demonstrate in writing how the proposed activity complies with all GCs, as applicable to their activity.

Digital submittals by email are **strongly encouraged** to facilitate the most efficient processing of the PCN application. Please communicate with USACE staff if you are unable to provide a digital copy. Addresses are cenae-r-ma@usace.army.mil or Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751 (mail).

Eligible PCN Activities:

- Are subject to USACE jurisdiction (see GC 2); and
- Qualify for one or more of the GPs within this document (Section III); and
- Meet the GCs within this document (Section IV); and
- Comply with the Mitigation Standards within this document (Section V); and
- Are supported by a complete PCN document (Appendix B); and
- When required, are supported by the submittal of project information to the appropriate parties identified in Appendix A; and
- Receive all other required local, State, and/or Federal approvals.

6. Interagency Review Procedures

The USACE reserves the opportunity to coordinate PCN activities with Federal and State agencies to ensure that the proposed activity results in no more than a minimal impact to the aquatic environment. In some cases, USACE may require project modifications involving avoidance, minimization, and/or compensatory mitigation for unavoidable impacts to ensure the net effects of a project are minimal. The USACE determines, after review and coordination with the agencies and/or the applicant, if PCN applications:

- Meet the terms and conditions of the GP as proposed;
- Require additional information;
- Require avoidance, minimization, compensatory mitigation, construction sequencing, project modification, or other special conditions to avoid or minimize adverse impacts to the aquatic environment;
- Require individual permit review regardless of whether the terms and GCs of these GPs are met, based on concerns for the aquatic environment or any other factor of the public interest (see Section 9 below).

For activities requiring a PCN, the applicant must wait for written authorization from USACE before commencing activities in waters of the U.S. Beginning work for PCN required activities without a USACE written authorization is a violation of these GPs, and the terms and conditions of this document. The applicant may be subjected to an enforcement action by USACE and/or the Environmental Protection Agency (EPA).

7. Construction of Solid Fill Structures and Fills Along the Coastline or Baseline from Which the Territorial Sea is Measured.

Projects involving the construction of solid fill structures or discharge of fill that may extend beyond the coastline or the baseline from which the territorial sea is measured (i.e., mean low water) will require a PCN. The USACE will submit a description of the proposed work and a copy of the plans to the Solicitor, Department of the Interior, Washington, DC 20240, and request comments concerning the effects of the proposed work on the outer continental rights of the United States. These comments will be included in the administrative record of the application. After completion of permit review, the record will be forwarded to the Chief of Engineers. The decision on the application will be made by the Secretary of the Army after coordination with the Attorney General.

8. Emergency Activities

Per 33 CFR 325.2(e)(4), an emergency is limited to a situation that would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. Emergency work shall be limited to that which is necessary to stabilize and secure the situation. Additional work needed for final repairs shall not be completed until approval is obtained through the appropriate, non-emergency process. Emergency work is subject to the same terms and conditions of these GPs as non-emergency work, and similarly, must qualify for authorization under these GPs; otherwise, an IP is required. *See GP 25 Emergency Situations for additional information.*

9. Individual Permit

Projects that do not meet the terms and conditions of this GP may require review as an IP (33 CFR 325.5 (b)). Proposed work in this category will require a separate Federal application for an individual permit from USACE (33 CFR 325.1). In addition, USACE retains discretionary authority on a case-by-case basis to elevate GP-eligible activities to an IP based on concerns for the environment or any other factor of the public interest (33 CFR 320.4 (a)). Applicants are required to submit the appropriate application materials directly to USACE as early as possible to expedite the permit review process. General information and application forms can be obtained at our website or by contacting our office at cenae-r-ma@usace.army.mil or (978) 318-8338. Individual 401 WQC and/or CZMA Federal consistency concurrence from the appropriate MA agencies are required before USACE can issue an individual permit. Applying for an IP does not relieve the applicant from their obligation to obtain all required Federal, State and/or local approvals.

10. Compliance

Applicants shall ensure compliance with all applicable GPs in Section III, GCs in Section IV, and any special conditions included in USACE verification letters. Noncompliance with these GPs, GCs, and special conditions may subject the applicant to criminal, civil, or administrative penalties, and/or an ordered restoration, and/or the permit may be modified, suspended or revoked by USACE. The USACE will consider any activity requiring USACE authorization to be noncompliant if that activity does not comply with all GP terms and conditions at all times, including while the project is under construction and when work is completed.

SECTION III. MASSACHUSETTS GENERAL PERMITS

Applicants are encouraged to review Sections I & II prior to submitting an application to confirm that the activity as proposed complies with all terms and conditions of the 2023 MA GPs.

Applicants are also encouraged to review the definitions in Section VII, Definitions & Acronyms, of this document. Several terms are frequently used throughout the GPs, and it is important for the reader to understand these terms. If seeking verification for an activity previously verified under the 2018 MA GPs, please contact the USACE to discuss permitting needs in advance of submitting an application.

General Permits

1. Aids to Navigation and Temporary Recreational Structures
2. Maintenance
3. Moorings
4. Structures in Navigable Waters of the U.S.
5. Boat Ramps and Marine Railways
6. Utility Lines, Oil or Natural Gas Pipelines, Outfall Or Intake Structures, and Appurtenant Features
7. Dredging, Disposal of Dredged Material, Beach Nourishment, Rock Removal and Rock Relocation
8. U.S. Coast Guard Approved Bridges
9. Bank and Shoreline Stabilization
10. Aquatic Habitat Restoration, Enhancement, and Establishment Activities
11. Fish and Wildlife Harvesting and Attraction Devices and Activities
12. Response Operations, Oil and Hazardous Substances
13. Cleanup of Hazardous and Toxic Waste
14. Scientific Measurement Devices
15. Survey Activities
16. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects
17. Residential, Commercial and Institutional Developments, and Recreational Facilities
18. Aquaculture
19. Mining Activities
20. Living Shorelines
21. Agricultural Activities
22. Reshaping Existing Drainage Ditches, Construction of New Ditches, and Mosquito Management
23. Linear Transportation Projects and Wetland/Stream Crossings
24. Temporary Construction, Access, and Dewatering
25. Emergency Situations

GP 1. AIDS TO NAVIGATION AND TEMPORARY RECREATIONAL STRUCTURES (Authority: §10)

(a) The placement of aids to navigation and regulatory markers that are approved by and installed in accordance with the requirements of the U.S. Coast Guard (USCG). See 33 CFR, Part 66; and (b) Temporary buoys, markers, and similar structures placed for recreational use during specific events such as water skiing competitions and boat races or seasonal use. See GC 16.

Self-Verification Eligible

1. Aids to navigation and regulatory markers approved by and installed in accordance with the requirements of the USCG.
2. Temporary buoys, markers and similar structures that are: (a) placed for recreational use during specific events and removed within 30 days after event; or (b) placed during winter events on ice and removed before spring thaw. These structures must be authorized by the local harbormaster, not located within an FNP or its buffer zone, and not located in saltmarsh or tidal vegetated shallows.

Pre-Construction Notification Required

1. Impacts in saltmarsh or tidal vegetated shallows.
2. Activities that are not SV eligible.

Note: An SVN submittal to USACE is not required for work authorized under SV #1 above.

GP 2. MAINTENANCE (Authorities: §10 and §404)

Repair, rehabilitation, or replacement of any previously authorized¹, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 (activities occurring before certain dates), provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction technique requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above. Maintenance dredging and beach nourishment are not eligible under GP 2 (see GP 7). Stream crossing modifications (including sliplining), replacements or extensions are not eligible under GP 2 (see GPs 6, 17, 23). See GP 25 Emergency Situations for expedited review of emergency activities.

Not authorized under GP 2 (IP required): (a) Permanent impacts in >1 acre in non-tidal waters and/or wetlands; or (b) Permanent impacts >1/2 acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; or (c) Temporary impacts >1 acre in tidal waters; >5000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >1000 SF in vegetated shallows; (d) New stream channelization or stream relocation projects (e.g., those in response to storm or flood events).

Self-Verification Eligible

Maintenance activities that meet all of the following terms:

1. In non-tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF² and not located in vegetated shallows or riffle and pool complexes.
2. In tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF, ≤1,000 SF in mudflats and/or natural rocky habitat, and not located in saltmarsh and tidal vegetated shallows.
3. Minor deviations in the repair, rehabilitation, or replacement of previously authorized, currently serviceable structures or fills.
4. Bulkhead replacement in tidal and non-tidal waters via installation of new bulkhead within 18 inches of the existing bulkhead and associated backfill.
5. Drawdown of an impoundment for dam/levee repair provided it does not exceed 18 months and one growing season (April through September).

Pre-Construction Notification Required

1. Discharges associated with removal of accumulated sediments and debris in the vicinity of existing structures, including intake and outfall structures and associated canals.
2. The removal of sediment outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) that is ≥200 linear feet. This activity is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions existing when the structure was built.
3. Dam and flood control or levee repair, rehabilitation, or replacement involves:
 - a. A change in the flood elevation or permanent water surface elevation of the impoundment; or
 - b. Drawdown of impoundment for construction exceeding one growing season (see SV eligible #5);
 - c. Any modification that changes the character, scope, or size of the original fill design; or
 - d. Does not meet SV eligible 1-7.
4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.

¹ Some maintenance activities may not be subject to regulation under Section 404 of the CWA in accordance with 33 CFR 323.4(a)(2). Per 33 CFR 330.3, Vested dates are: a) Work performed and structures installed before December 18, 1968 (Section 10); and b) Fill placed before July 25, 1975 (Section 404).

² This excludes dam projects that may require a temporary drawdown with impacts >5,000 SF in non-tidal waters. Instead, the drawdown shall comply with SV #5 to be eligible under Self-Verification.

<p>6. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill.</p> <p>7. Work to previously approved tide gates not affecting upstream tidal resource areas.</p>	<p>5. Activities located in the Connecticut River or Merrimack River, unless they are completed in the dry or when the tide is waterward of the work area.</p> <p>6. Activities on USACE properties & USACE-controlled easements.</p> <p>7. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.</p>
<p>Notes:</p> <p>1. This authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the CWA §404(f) exemption for maintenance. See 33 CFR 323.4(a)(2). Prior USACE permits may have included authorization to maintain the activity, in which case authorization under this GP is not necessary.</p> <p>2. See GC 22 for information on temporary construction mats.</p>	

GP 3. MOORINGS (Authority: §10)

New moorings and mooring fields; the relocation of previously authorized moorings; expansions, boundary reconfigurations or modifications of previously authorized mooring fields; and maintenance and replacement of moorings.

Not authorized under GP 3 (IP required): (a) Moorings or mooring fields converted to or associated with a new boating facility¹; or (b) Moorings in a USACE Federal Navigation Anchorage or USACE Federal Navigation Channel, except municipal-operated mooring fields.

Self-Verification Eligible

1. New or relocated moorings that meet all the following terms:
 - a. Authorized by a local harbormaster/municipality under MGL Chapter 91 §10A; and
 - b. No interference with navigation; and
 - c. Single boat, single-point and non-commercial; and
 - d. Not associated with a boating facility, and
 - e. Neither placed within nor impact tidal vegetated shallows (e.g., eelgrass); and
 - f. Not located within a USACE Federal navigation project (FNP) or the FNP buffer zone.
2. Existing, authorized moorings are converted from traditional moorings to low impact mooring technology (see note below) and/or helical anchors.
3. Maintenance and replacement of moorings authorized by the USACE.

Pre-Construction Notification Required

1. New mooring fields; or expansions, boundary reconfigurations or modifications of existing, authorized mooring fields.
2. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Anchorage. The buffer zone is equal to 3 times the authorized depth of that channel (see GC 15).
3. New individual moorings located in saltmarsh, mudflats, natural rocky habitat, and tidal vegetated shallows. Locating moorings these areas should be avoided to the maximum extent practicable. If these areas cannot be avoided, plans should show conservation mooring or low-impact mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides, where practicable. USACE may require a survey in areas previously mapped as containing eelgrass or within 100 ft. of existing eelgrass beds to document presence or absence of eelgrass and to determine the appropriate type and amount of compensatory mitigation for impacts to eelgrass.
4. Replacement moorings located in tidal vegetated shallows.
5. Moorings that are not SV eligible and do not require an IP.

Notes:

1. Low impact mooring systems, including conservation moorings, are encouraged to minimize impacts of chain scouring from conventional moorings during the tidal cycle.
2. An SVN submittal to USACE is not required for work authorized under SV #2-3 above.

¹ Boating facilities are marinas, yacht clubs, boat clubs, boat yards, dockominiums, town facilities, land/homeowner’s associations, etc. that provide for a fee, rent or sell mooring or docking space. Not classified as boating facilities are municipal moorings or municipal mooring fields that charge an equitable user fee based only on the actual costs incurred.

GP 4. STRUCTURES IN NAVIGABLE WATERS OF THE U.S. (Authority: §10 & §404)

New, expansions, reconfigurations or modifications of structures for navigational access in waters of the U.S. including but not limited to temporary/seasonal or permanent pile and pole-supported piers, floats, stairs, shore out hauls, and boat and float lifts.

Not authorized under GP 4 (IP required): (a) Structures associated with a new boating facility; (b) Structures in a USACE Federal anchorage or channel; or (c) Artificial reefs.

Self-Verification Eligible

1. Private, non-commercial piers, floats and lifts that meet all the following terms:
 - a. Piers and floats in: (i) Tidal waters total ≤600 SF combined; and (ii) Non-tidal navigable waters of the U.S. total ≤600 SF combined; and
 - b. Piers are ≤4 feet wide and ≥6 feet above the marsh substrate (the height is measured from the marsh substrate to the bottom of the lowest longitudinal support); and
 - c. Floats and lifts in tidal waters and non-tidal navigable waters of the U.S. are ≥24 inches above the substrate during all tidal cycles. Float stops are preferred when site conditions warrant them (i.e., low tide exposes substrate), and skids can only be used in areas where piles are not feasible and on sandy or hard bottom substrates; and
 - d. Piers, floats and lifts: (i) Are ≥25 feet from previously mapped or existing vegetated shallows, or riparian property line extensions; (ii) Extend ≤25% of the waterway width in non-tidal navigable waters of the U.S. or MHW in tidal navigable waters of the U.S.
 - e. Installation of ≤12-inch diameter timber piles. Installation of ≥12-inch diameter piles of any material type when installed in the dry.
2. Fenders and similar structures.

Pre-Construction Notification Required

1. Shore out hauls.
2. Expansions, modifications, or new reconfiguration zones at any authorized boating facility.
3. New, expansions, reconfigurations, reconfiguration zones, or modifications of structures that provide public, community or government recreational uses such as boating, fishing, swimming, access, etc.
4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.
5. Located within the buffer zone of the horizontal limits of an FNP (GC 15).
6. Miscellaneous structures.
7. Impacts in tidal vegetated shallows.
8. Structures that are not SV eligible and do not require an IP.

Notes:

1. See GC 19 regarding pile driving and pile removal in navigable waters and
2. See GC 20 regarding time of year restrictions in tidal waters.
3. Boating facilities are facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc. Pile supported structures with no discharges of dredged or fill material are not regulated by USACE in non-navigable waters.
4. A SVN submittal to USACE is not required for SV #2 above.

GP 5. BOAT RAMPS AND MARINE RAILWAYS (Authorities: §10 and §404)

Activities required for the construction of boat ramps and marine railways, including excavation and fill.

Not authorized under GP 5 (IP required): (a) Permanent impacts that are >1 acre in non-tidal waters of the U.S., >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows¹; or (c) dredging in navigable waters of the U.S. (see GP 7).

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.
2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, and (c), not located in saltmarsh and tidal vegetated shallows.

Pre-Construction Notification Required

1. Boat ramps are located within 25 feet of property line extensions unless the properties are owned by the same owner. The USACE may require a letter of no objection from the abutter(s).
2. Activities that are not eligible for SV and do not require an IP.

GP 6. UTILITY LINES, OIL OR NATURAL GAS PIPELINES, OUTFALL OR INTAKE STRUCTURES, AND APPURTENANT FEATURES (Authorities: §10 & §404)

Activities required for: (a) The construction, maintenance, repair or removal of utility lines, oil or natural gas pipelines¹, outfall or intake structures², and appurtenant features including the associated excavation, backfill, or bedding for these structures. (b) The construction, maintenance, or expansion of substations and other appurtenant facilities associated with a utility line, oil or natural gas pipeline, and outfall or intake structure in non-tidal waters of the U.S.; and (c) The construction and maintenance of foundations for overhead utility line towers, poles, and anchors in tidal and non-tidal waters of the U.S., provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible. This GP authorizes the construction of access roads to facilitate construction of the above activities provided the activity, in combination with all other activities included in one single and complete project, does not exceed the thresholds identified below (IP required). Access roads used solely for construction of the utility line must be removed upon completion of the work. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above.³

Not authorized under GP 6 (IP required): (a) Permanent impacts for any single and complete project that are >1 acre in non-tidal waters of the U.S.; >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Stormwater treatment or detention systems, or subsurface sewage disposal systems in waters of the U.S.; or (d) New tide gates that do not meet SV criteria below.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.
2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, and (c), not located in saltmarsh and tidal vegetated shallows.
3. Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments.
4. New tide gates on outfall structures for pipes conveying stormwater and/or industrial NPDES-permitted discharges from waters that are not waters of the U.S.

Pre-Construction Notification Required

1. New outfall and/or intake structures.
2. Unconfined work or silt producing activities in streams with diadromous fish.
3. Submarine cables, conduits, or pipelines that occur in, over or under navigable waters of the U.S.
4. Stream channelization, relocation, impoundment, or loss of streambed occurs.
5. The activity is placed within and runs parallel to or along a streambed within waters of the U.S.
6. There is a permanent change in preconstruction contours in waters of the U.S.
7. Installation of utility lines or gas/oil pipelines using trench excavation where material is temporarily sidecast into waters of the U.S. for >3 months. Applicants must demonstrate how the material would not be dispersed by currents or other forces.
8. Activities that are not SV eligible and do not require an IP.

¹ See the definitions of a “utility line” and “oil or natural gas pipeline” in Section VII.

² Outfall structures must be in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).

³ Temporary impacts shall comply with all GCs, including GC 32 Utility Line Installation and Removal.

GP 7. DREDGING (Authority: §10), DISPOSAL OF DREDGED MATERIAL (Authorities: §10, §404), BEACH NOURISHMENT (Authorities: §10 & §404), ROCK REMOVAL (Authority: §10) AND ROCK RELOCATION (Authorities: §10 & §404)

New, improvement and maintenance dredging (see notes below) including: (a) Disposal of dredged material at a confined aquatic disposal cell, beach nourishment location, near shore site, or ocean disposal site selected under Section 404 of the Clean Water Act pursuant to the 404(b)(1) Guidelines, provided the dredged material meets the requirements for such disposal; (b) Beach nourishment not associated with dredging; and (c) Rock removal and relocation for navigation.

Not authorized under GP 7 (IP required): (a) Dredging where ocean disposal is required for the disposal of dredged material (Section 103); New dredging >½ acre; ≥10,000 CY; >1000 SF permanent impacts to intertidal areas, saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF permanent impacts to tidal vegetated shallows; (b) Maintenance or improvement dredging and/or disposal with >1 acre of impacts to intertidal areas, saltmarsh, mudflats, riffle and pool complexes, or non-tidal vegetated shallows; (c) New dredging where the primary purpose is sand mining for beach nourishment; (d) Beach scraping; (e) Boulder removal and relocation for navigation >½ acre; or (f) Blasting.

Self-Verification Eligible

1. Maintenance dredging of previously dredged areas, with upland disposal, that meet all of the following terms:
 - a. Dredged area ≤1/2 acre; and
 - b. Activities comply with GC 20, TOY Restrictions. The time-of-year restriction(s) stated in Appendix B of the MA Division of Marine Fisheries (DMF) Technical Report TR-47¹ can apply instead if the general TOY restriction if a TOY is provided for a specific waterbody and is less restrictive. This is to protect endangered species, EFH, and other species; and
 - c. The dredge footprint is located >25' from salt marsh or >100' from vegetated shallows; and
 - d. Combined permanent and temporary impacts that are (i) ≤1,000 SF in mudflats or natural rocky habitat, or (ii) ≤5,000 SF within intertidal habitat and areas containing shellfish (an area contains shellfish unless: it is verified that minimal shellfish are present per the local shellfish constable or a shellfish survey; or it is not mapped as a MassGIS shellfish suitability area).
 - e. No return water from upland disposal areas.
2. Boulder relocation with ≤1,000 SF of impacts, relocated to a similar depth and substrate.

Pre-Construction Notification Required

1. Maintenance dredging where the primary purpose is sand mining for beach nourishment.
2. New dredging and associated disposal ≤1/2 acre or <10,000 cubic yards.
3. Improvement dredging.
4. Beach nourishment in waters of the U.S. not associated with dredging.
5. Activities that are located in saltmarsh and tidal vegetated shallows.
6. Dredging in a Federal Navigation Project or within the buffer zone (see GC 15).
7. Activities that are not eligible for SV and do not require an IP.

Notes:

1. See Section VII for definitions of improvement and maintenance dredging.
2. For PCN activities, the USACE may waive or adjust the time of year requirement on a case-by-case basis after consultation with resource agencies.
3. Disposal site of any dredged material must be identified prior to obtaining USACE authorization.
4. Contact the USACE if a ten-year authorization to maintain an area is desired.

¹ The MA DMF Technical Report TR-47: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>

GP 8. U.S. COAST GUARD APPROVED BRIDGES (Authorities: §404)

Discharges of dredged or fill material incidental to the construction and modification of bridges across navigable waters of the U.S., including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided that the USCG authorizes the construction of the bridge structure under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws. A USCG Authorization Act Exemption or a Surface Transportation and Uniform Relocation Assistance Act (STURRA) (144h) exemption do not constitute USCG authorization.

Not authorized under GP 8 (IP Required): Causeways and approach fills (see GP 23).

Self-Verification Eligible

1. Discharges of dredged or fill material that are incidental to the construction of bridges across navigable waters and meet all of the following:
 - a. Combined permanent and temporary impacts that are ≤5,000 SF.
 - b. Combined permanent and temporary impacts that are ≤1,000 SF in mudflats and natural rocky habitat.
 - c. Not located in saltmarsh and tidal vegetated shallows.

Pre-Construction Notification Required

1. Activities on USACE properties & USACE controlled easements.
2. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.
3. Activities that are not eligible for SV and do not require an IP.

Notes:

1. GP 8 is not applicable to bridges over inland waters or wetlands that are not tidally influenced or regulated as navigable under Section 10.
2. See eligibility criteria for GPs 2 & 23 for projects that are not subject to USCG regulations.

GP 9. BANK AND SHORELINE STABILIZATION (Authorities: §10 & §404)

Bank stabilization activities necessary for erosion protection along the banks of lakes, ponds, streams, estuarine and ocean waters, and any other open waters. Includes bulkheads, seawalls, riprap, revetments, living seawalls, or slope protection & similar structures, specifically for the purpose of shoreline protection. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above.

Activities must meet the following criteria: (a) No material is placed in excess of the minimum needed for erosion protection; (b) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the U.S.; (c) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas); (d) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization; (e) The activity is not a stream channelization activity; and (f) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This GP authorizes those maintenance and repair activities if they require authorization. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. See GP 20 for living shoreline stabilization structures or fills.

Not authorized under GP 9 (IP required): (a) New bank stabilization >500 feet in total length (>1,000 linear feet in total length when necessary to protect transportation infrastructure) or permanent loss of saltmarsh >1,000 SF, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a new bulkhead that is >1,000 feet in length along the bank); (b) Stream channelization or relocation activities; or (c) Breakwaters, groins or jetties.

Self-Verification Eligible

1. Activities in tidal and non-tidal waters that are:
 - a. <200 feet in length.
 - b. <400 feet in length when necessary to protect transportation infrastructure.
 - c. ≤1 cubic yard of fill per linear foot average along the bank waterward of the plane of OHW or HTL.
 - d. Not located in non-tidal wetlands, saltmarsh, vegetated shallows.

Pre-Construction Notification Required

1. Activities in tidal and non-tidal waters that are:
 - a. ≥200 feet to ≤500 feet in total length. Activities >500 feet in total length must have a written waiver from USACE.
 - b. ≥400 feet to ≤1,000 feet in total length when necessary to protect transportation infrastructure. Activities >1,000 feet in total length must have a written waiver from USACE.
 - c. >1 cubic yard of fill per linear foot average along the bank waterward of the plane of OHW or HTL.
 - d. Located in non-tidal wetlands, saltmarsh, vegetated shallows.
2. Activities with permanent loss of tidal or non-tidal waters that is (a) ≥5,000 SF or (b) ≥1,000 SF in mudflats and natural rocky habitat.
3. Activities that are (a) located in the Connecticut River or Merrimack River and/or (b) require installation of steel piles/steel sheet piles that cannot be done in the dry where NOAA ESA-listed species are mapped as present.
4. Activities on USACE properties & USACE-controlled easements.
5. Activities that require grouted riprap and/or poured/unformed concrete.
6. Activities that are not eligible for SV and do not require an IP.

Note: The applicant shall comply with GC 24. This includes utilization of bioengineering techniques in lieu of hard armoring to the maximum extent practicable as site conditions allow.

**GP 10. AQUATIC HABITAT RESTORATION, ENHANCEMENT, AND ESTABLISHMENT ACTIVITIES
(Authorities: §10 and §404)**

Activities for the restoration, enhancement and establishment of non-tidal and tidal wetlands and riparian areas, including invasive, non-native or nuisance species control; the restoration and enhancement of non-tidal streams and other non-tidal open waters; the relocation of non-tidal waters, including non-tidal streams & associated wetlands for reestablishment of a natural stream morphology and reconnection of the floodplain; the restoration and enhancement of shellfish, finfish and wildlife; and the rehabilitation or enhancement of tidal streams, tidal wetlands and tidal open waters; provided those activities result in net increases in aquatic resource functions and services. See GP 9 for bank and shoreline stabilization. See GP 20 for living shorelines.

Not authorized under GP 10 (IP required): Stream channelization activities and artificial reefs.

Self-Verification Eligible

1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are ≤5,000 SF.
2. Eelgrass (vegetated shallows) planting and transplanting ≤100 SF in tidal waters.

Pre-Construction Notification Required

1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are >5,000 SF.
2. Eelgrass (vegetated shallows) planting and transplanting >100 SF in tidal waters.
3. Permanent water impoundments, dam removal, fish ladders, or tide gates.
4. Stream relocation, impoundment, or loss of streambed occurs.
5. Runneling projects with the purpose of restoring saltmarsh by removing excess water that ponds on the saltmarsh surface.
6. The conversion of: (a) a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa, wetland to pond, etc.) or uplands, (b) one wetland type to another (e.g., forested wetland to an emergent wetland).
7. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving permanent or temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species.
8. Activities on USACE properties & USACE-controlled easements.
9. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type.
2. See RGL 18-01 for guidance on removal of obsolete dams and other structures from rivers and streams. <https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/guidance-letters/>
3. An ecological reference site may be used for a design basis of the restoration activity. The reference site should possess characteristics of an intact aquatic habitat or riparian area that exists in the region. The reference site shall represent the target habitat type of the proposed activity. A reference site may be required at the discretion of USACE.

GP 11. FISH AND WILDLIFE HARVESTING AND ATTRACTION DEVICES AND ACTIVITIES
(Authorities: §10 and §404)

Fish and wildlife harvesting and attraction devices and activities in waters of the U.S. such as pound nets, crab traps, crab and shellfish dredging, eel pots, lobster traps, duck blinds, clam and oyster digging, fish aggregating devices, and small fish attraction devices such as open-water fish concentrators (sea kites, etc.).

Not authorized under GP 11 (IP required): Artificial reefs; or new, or expansions of, impoundments and semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster with an impounded area >1/2 acre.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤1/2 acre, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.
2. Fish and wildlife harvesting and attraction devices and activities that do not require a PCN or IP.

Pre-Construction Notification Required

1. Pound nets, impoundments or semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster with an impounded area ≤1/2 acre, fish aggregating devices, or small fish attraction devices.
2. Devices and activities that are located in tidal vegetated shallows, mud flats, or saltmarsh.
3. Devices and activities that do not require an IP.

Note: An SVN submittal to USACE is not required for work authorized under GP 11.

GP 12. RESPONSE OPERATIONS, OIL AND HAZARDOUS SUBSTANCES (Authorities: §10 & §404)

(a) Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) including containment, cleanup, and mitigation efforts, provided that the activities are done under either: (i) The Spill Prevention, Control and Countermeasure Plan required by 40 CFR 112.3; (ii) The direction or oversight of the Federal on-scene coordinator designated by 40 CFR 300; or (iii) Any approved existing State, regional or local contingency plan provided that the Regional Response Team concurs with the proposed response efforts or does not object to the response effort; (b) Activities required for the cleanup of oil releases in waters of the U.S. from electrical equipment that are governed by EPA's polychlorinated biphenyl (PCB) spill response regulations at 40 CFR 761; (c) Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention; and (d) The use of structures and fills for spill response training exercises. Wetlands, vegetated shallows, mudflats, and riffle and pool complexes should be restored in place at the same elevation.

Self-Verification Eligible

1. Activities are conducted in accordance with (a) or (b) above that are not planned or scheduled, but an emergency response (see Note 1).
2. Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention.
3. Temporary impacts for spill response training exercises ≤5000 SF in non-tidal waters and ≤1000 SF in tidal waters with no impacts to wetlands, saltmarsh, mudflats, or vegetated shallows.
4. Temporary structures in tidal waters with no impacts to wetlands, saltmarsh, mudflats, vegetated shallows, or riffle and pool complexes and in place ≤30 days.

Pre-Construction Notification Required

1. Activities (a) or (b) above are planned or scheduled, not an emergency response; or
2. Activities that are not eligible for SV and do not require an IP.

Notes:

1. For emergency response activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, Merrimack River from the Essex Dam to the mouth, and remaining tidal waters that are not rivers, the permittee must contact the USACE at (978) 318-8338 before or as soon as possible after the work authorized under GP 12(a) - (c) commences for the USACE to address effects under the Endangered Species Act.
2. An SVN submittal to USACE is not required for booms used for spill prevention, or properly contained and cleaned de minimus oil or hazardous substance discharges into navigable waters of the U.S.

GP 13. CLEANUP OF HAZARDOUS AND TOXIC WASTE (Authorities: §10 and §404)

Specific activities required to affect the containment, stabilization, or removal of hazardous or toxic waste materials, including court ordered remedial action plans or related settlements, which are performed, ordered or sponsored by a government agency with established legal or regulatory authority.

Not authorized under GP 13: (a) Establishment of new disposal sites; or (b) Expansion of existing sites used for the disposal of hazardous or toxic waste.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) $\leq 5,000$ SF, and (b) not located in vegetated shallows and riffle and pool complexes.

Pre-Construction Notification Required

1. In non-tidal waters, the combined permanent and temporary impacts are (a) $> 5,000$ SF, and (b) located in vegetated shallows and riffle and pool complexes.
2. Permanent and temporary impacts in tidal waters or navigable waters of the U.S.
3. Stream channelization, relocation, impoundment, or loss of streambed occurs.
4. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Wetlands, vegetated shallows, mudflats, and riffle and pool complexes should be restored in place at the same elevation to the maximum extent practicable.
2. Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA, are not required to obtain permits under Section 404 of the CWA or Section 10 of the Rivers and Harbors Act.

GP 14. SCIENTIFIC MEASUREMENT DEVICES (Authorities: §10 and §404)

Scientific measurement devices for measuring and recording scientific data, such as staff gauges, tide and current gauges, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, and similar structures. Also eligible are small weirs and flumes constructed primarily to record water elevation, flow and/or velocity. Upon completion of the use of the device to measure and record scientific data, the measuring device and any other structures or fills associated with that device (e.g., foundations, anchors, buoys, lines, etc.) must be removed to the maximum extent practicable and the site restored to preconstruction elevations.

Not authorized under GP 14 (IP required): (a) Permanent impacts that are >5,000 SF in tidal and non-tidal waters of the U.S.; >1000 SF in tidal saltmarsh, mud flats, riffle and pool complexes; or >100 SF in tidal vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows.
2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, (c) not located in saltmarsh and tidal vegetated shallows.
3. Temporary, non-biological sampling devices in waters that do not restrict or concentrate movement of aquatic organisms and will not adversely affect the course, condition, or capacity of a waterway for navigation.
4. Scientific measurement devices, and small weirs and flumes constructed primarily to record water quantity and velocity provided the discharge of fill is limited to 25 cubic yards. These cannot obstruct or restrict the waterway course, condition, capacity, and location.
5. Temporary measuring devices and associated structures (e.g., anchors, buoys, etc.) in tidal and non-tidal waters that do not require a PCN or IP.

Pre-Construction Notification Required

1. Biological sampling devices, weirs or flumes, or the activity restricts or concentrates movement of aquatic organisms.
2. Permanent towers located in navigable waters that record and measure scientific data.
3. Devices that are not eligible for SV and do not require an IP.

Note: An SVN submittal to USACE is not required for temporary measuring devices with a footprint of <10 SF, with a profile of <3 feet high measured from the substrate and located in water deeper than -10 feet MLW.

GP 15. SURVEY ACTIVITIES (Authorities: §10 and §404)

Survey activities such as soil borings, core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching, soil surveys, sampling, sample plots or transects for wetland delineations, and historic resources surveys.

Not authorized under GP 15 (IP required): (a) Permanent impacts that are >1 acre in tidal and non-tidal waters; >1000 SF in tidal saltmarsh, mud flats, or riffle and pool complexes; or >100 SF in tidal vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows.
2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, (c) not located in saltmarsh and tidal vegetated shallows.

Pre-Construction Notification Required

1. Exploratory trenching (see Note 2) occurs in waterways (e.g., streams, tidal waters).
2. Activities associated with the recovery of historic resources, and the drilling and discharge of excavated material from test wells for oil and gas exploration.
3. Seismic exploratory operations occur in tidal waters, the Connecticut River from the Turners Falls Dam to the MA/CT border, or the Merrimack River from the Essex Dam to the mouth. This is to protect endangered species.
4. Activities that are not eligible for SV and do not require an IP.

Notes:

1. An SVN submittal is not required for wetland delineations, and core sampling conducted for preliminary evaluation of dredge project analysis.
2. For the purposes of GP 15, the term “exploratory trenching” means mechanical land or underwater clearing of the upper soil profile to expose bedrock or substrate for the purpose of mapping or sampling the exposed material.
3. The discharge of drilling mud and cuttings may require a permit under §402 of the CWA.

GP 16. LAND AND WATER-BASED RENEWABLE ENERGY GENERATION FACILITIES (Authorities: §10 and §404), AND HYDROPOWER PROJECTS (Authority: §10 and §404)

Structures and work in tidal waters and discharges of dredged or fill material into tidal and non-tidal waters for the construction, expansion, modification or removal of: (a) Land-based renewable energy production facilities (e.g., solar, wind, biomass, geothermal) and their attendant features; (b) Water-based wind or hydrokinetic renewable energy generation projects and their attendant features; and (c) Discharges of dredged or fill material associated with hydropower projects. Attendant features may include, but are not limited to, land-based collection and distribution facilities, control facilities, and parking lots. For each single and complete project in (b) above, no more than 10 generation units (e.g., wind turbines or hydrokinetic devices) are authorized in navigable waters of the U.S. Upon completion of the pilot project (see note 2), the generation units, transmission lines, and other structures or fills associated with the pilot project must be removed to the maximum extent practicable.

Not authorized under GP 16 (IP required): (a) Permanent impacts that are >1 acre in non-tidal waters, >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

Self-Verification Eligible

In non-tidal waters, the combined permanent and temporary impacts for land-based activities are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows.

Pre-Construction Notification Required

1. In non-tidal waters, the combined permanent and temporary impacts for land-based activities are (a) >5000 SF, or (b) located in vegetated shallows or riffle and pool complexes.
2. Permanent and temporary impacts in tidal waters.
3. Water-based wind or hydrokinetic renewable energy generation projects, and hydropower projects.
4. For all activities eligible for authorization under GP 16:
 - a. The activity occurs in tidal waters or in, over or under navigable waters.
 - b. Stream channelization, relocation, impoundment, or loss of streambed occurs.
5. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Utility lines constructed to transfer the energy from the land-based renewable generation or collection facility to a distribution system, regional grid, or other facility may be authorized by GP 6.
2. For the purposes of this GP, the term “pilot project” means an experimental project where the renewable energy generation units will be monitored to collect information on their performance and environmental effects at the project site.

GP 17. RESIDENTIAL, COMMERCIAL AND INSTITUTIONAL DEVELOPMENTS AND RECREATIONAL FACILITIES (AUTHORITIES: §404)

Discharges of dredged or fill material into non-tidal waters for the construction or expansion of: (a) Residences and residential subdivisions; (b) Residential, commercial and institutional building foundations and building pads; and (c) Recreational facilities such as playgrounds, playing fields, bikeways, trails, etc. This GP also authorizes attendant features that include, but are not limited to, roads, parking lots, garages, yards, and utility lines, and stormwater management facilities. This GP authorizes attendant features if they are necessary for the use of the project purpose.

Not authorized under GP 17 (IP required): (a) Permanent impacts that result in loss of non-tidal waters >1/2 acre; >1000 SF in riffle and pool complexes or vegetated shallows; or (b) Subsurface sewerage disposal systems in non-tidal waters.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are (a) <5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.

2. Stream channelization or relocation resulting in loss of streambed that is <200 LF.

Pre-Construction Notification Required

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≥5,000 SF, or (b) located in riffle and pool complexes or non-tidal vegetated shallows.

2. Stream and wetland crossings that require a PCN per GCs 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings.

3. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind.

4. Activities on USACE properties & USACE-controlled easements.

5. Activities that are not SV eligible and do not require an IP.

Notes:

1. Stream and wetland crossings (permanent and temporary), including those built with construction mats; and modifications (including sliplining), replacements or extensions to existing crossings.
2. See GC 22 for information on temporary construction mats.
3. Subdivisions: For residential subdivisions, the aggregate total loss of waters of United States authorized by this GP cannot exceed 1/2-acre. This includes any loss of waters of the United States associated with development of individual subdivision lots.

GP 18. AQUACULTURE (Authorities: §10 and §404)

(a) The installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the U.S.; (b) Discharges of dredged or fill material into tidal and non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities; and (c) Shellfish seeding or brushing the flats projects. Any fill material imported to the project from offsite (this is limited to mineral growth medium used in culture trays) shall be clean and of comparable grain size to the native substrate. Activities authorized under this GP must have (a) their MA DMF Aquaculture Certificate letter for licensed shellfish aquaculture sites, (b) documentation that the applicant has coordinated with the U.S. Coast Guard regarding USCG Private Aids to Navigation standards, (c) their MEPA Certificate (if required), and (d) documentation that the applicant has contacted their local authorities (ex. harbormaster, select board, shellfish constable) for authorization of their facility.

Not authorized under GP 18 (IP required): (a) New, or expansions of, impoundments and semi-impoundments of tidal and non-tidal waters for the culture or holding of motile species such as lobster with an impounded area >½ acre; (b) Cultivation of a nonindigenous species (see Note 1) unless that species has been previously cultivated in the waterbody; (c) Cultivation of an aquatic nuisance species (see Note 1); (d) Attendant features such as docks, piers, boat ramps (see GP 4); (e) stockpiles, staging areas, or the deposition of shell material back into tidal and non-tidal waters as waste.

Self-Verification Eligible

1. In tidal waters, a new lease site area is (a) ≤2-acre, (b) not located in salt marsh, natural rocky habitat, or tidal vegetated shallows.
2. In tidal waters, expansions of existing lease sites not to exceed 2 acres for the entire site (e.g. 1 acre lease site increasing to a 2 acre lease site may qualify as SV). A PCN is required for expansions in salt marsh, natural rocky habitat, and tidal vegetated shallows.
3. Cages, racks that are elevated ≥2 feet above the ocean floor with legs within a lease site with ≤4 buoys marking the corners.
4. Floating cage strings with a single connecting line, ≤2 anchors and ≤2 end marker buoys per string within a lease site with ≤4 buoys marking the corners.
5. No activities located within 25 feet of tidal vegetated shallows.
6. Culture only indigenous species.
7. Not located in FNP or within a distance of three times the authorized depth of an FNP (see GC 15).
8. Not located in or impinge upon the value of any National Lands or Federal Properties.
9. Floating upweller docks that total ≤600 SF in area.

Pre-Construction Notification Required

1. Discharges of fill material associated with aquaculture >5,000 SF.
2. Research, educational, commercial-viability or experimental aquaculture gear activities >1,000 SF.
3. Kelp or finfish aquaculture.
4. Land-based hatchery intakes >3 inches in diameter.
5. Activities in water depths >10 feet mean low lower water (MLLW).
6. Activities with in-water lines, ropes or chains that are not SV eligible (see #3-4).
7. Activities occur in the Connecticut River from the Turners Falls Dam to the MA/CT border or the Merrimack River from the Essex Dam to the mouth. This is to protect endangered species.
8. New, or expansions of, impoundments and semi-impoundments for the culture or holding of motile species such as lobster with an impounded area ≤1/2 acre.
9. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.

Note: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines: (a) nonindigenous species as “any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organism transferred from one country into another”; and (b) aquatic nuisance species as “a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.”

GP 19. MINING ACTIVITIES (Authorities: §10 and §404)

Discharges of dredged or fill material into non-tidal waters for mining activities, except for coal mining and metallic mineral mining activities.

Not authorized under GP 19 (IP required): (a) Permanent impacts >1 acre in non-tidal waters; or (b) Activities in tidal waters.

Self-Verification Eligible

In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes, non-tidal vegetated shallows, and streams.

Pre-Construction Notification Required

1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, or (b) located in riffle and pool complexes, non-tidal vegetated shallows, and streams.
2. The activity occurs in non-tidal navigable waters of the U.S.
3. Stream channelization, relocation, impoundment, loss of streambed, or discharge of tailings into streams occurs.
4. Work on USACE properties & USACE-controlled easements.
5. Activities that are not eligible for SV and do not require an IP.

GP 20. LIVING SHORELINES¹ (Authorities: §10 and §404)

Construction and maintenance of living shorelines to stabilize banks and shores in tidal waters. In non-tidal waters that are not subject to the ebb and flow of the tide, nature-based bank stabilization techniques such as bioengineering and vegetative stabilization may be authorized by GP 9. This GP authorizes those maintenance and repair activities in-kind that are necessary to address changing environmental conditions.

The following terms must be met for both SVs and PCNs as applicable: (a) Coir logs, coir mats, stone, native oyster shell, native wood debris, and other structural materials must be adequately anchored, of sufficient weight, or installed in a manner that prevents relocation in most wave action or water flow conditions, except for extremely severe storms; (b) For living shorelines consisting of tidal fringe wetlands, native plants appropriate for current site conditions, including salinity and elevation, must be used if the site is planted by the permittee; (c) Discharges of dredged or fill material into waters of the U.S., and oyster or mussel reef structures in navigable waters, must be the minimum necessary for the establishment and maintenance of the living shoreline; (d) If sills or other structural materials per PCN #4 must be constructed to protect fringe wetlands for the living shoreline, those structures must be the minimum size necessary to protect those fringe wetlands; (e) The activity must be designed, constructed, and maintained so that it has no more than minimal adverse effects on water and sediment movement between the waterbody and the shore and the movement of aquatic organisms between the waterbody and the shore; and (f) The living shoreline must be properly maintained and monitored, which may require periodic repair of sills, bioengineered components, or replacing sand fills after severe storms or erosion events. Vegetation may be replanted to maintain the living shoreline.

Not authorized under GP 20 (IP required): (a) The activity is ≥1000 feet in length along the bank (≥2000 LF both banks) unless waived by the District Engineer; or (b) The activity is >30 feet channel ward of mean low water in tidal waters; or (c) Upland reclamation activities; or (d) Stream channelization or relocation activities; or (e) Breakwaters, groins, jetties, or artificial reefs; or (f) Permanent impacts >1,000 SF in existing saltmarsh; >100 SF in existing tidal vegetated shallows.

Self-Verification Eligible

1. Tidal and non-tidal living shorelines ≤100 LF for each bank (≤200 LF for both banks).
2. Combined permanent and temporary impacts ≤5,000 SF in tidal waters, excluding existing salt marsh, tidal vegetated shallows, natural rocky habitat, and mudflats.

Pre-Construction Notification Required

1. Tidal and non-tidal living shorelines >100 LF to <1000 LF (>200 LF to <2000 LF for both banks).
2. Permanent and temporary impacts in existing salt marsh, tidal vegetated shallows, or mudflats.
3. Work on USACE properties & USACE-controlled easements.
4. Use of stone sills, native oyster shell, native wood debris, or other structural materials.

Notes:

1. PCNs require monitoring for a minimum of 5 years in accordance with an approved restoration plan, unless otherwise determined by the USACE. The first year of monitoring will be the first year that the site has been through a full growing period after completion of construction and planting.
2. Applicants are encouraged to obtain a MEPA certificate prior to submitting a USACE permit application.

¹ A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes. Living shorelines must have a substantial biological component, either tidal or lacustrine fringe wetlands or oyster or mussel reef structures.

GP 21. AGRICULTURAL ACTIVITIES (Authority: §404)

Discharges of dredged or fill material in non-tidal waters for agricultural activities, including the construction of building pads for farm buildings. Authorized activities include: (a) installation, placement, or construction of drainage tiles, ditches, or levees; mechanized land clearing; land leveling; the relocation of existing serviceable drainage ditches; and similar activities; (b) construction of farm ponds, excluding perennial streams, provided the farm pond is used solely for agricultural purposes; and (c) discharges of dredged or fill material to relocate existing serviceable drainage ditches constructed in non-tidal streams.

Not authorized under GP 21 (IP required): (a) Permanent impacts that are >1 acre in non-tidal waters; or >1000 SF in riffle and pool complexes, or non-tidal vegetated shallows; (b) Work in tidal waters; or (c) Construction of farm ponds in perennial streams.

Self-Verification Eligible

In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.

Pre-Construction Notification Required

1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, or (b) located in riffle and pool complexes and non-tidal vegetated shallows.
2. Activities occur in non-tidal navigable waters of the U.S.
3. Stream channelization, relocation, impoundment, loss of streambed, or farm ponds in non-perennial streams occurs.
4. Activities that are not eligible for SV and do not require an IP.

Note: Some discharges for agricultural activities may qualify for an exemption under Section 404(f) of the CWA (see 33 CFR 323.4). This GP authorizes the construction of farm ponds that do not qualify for the CWA §404(f)(1)(C) exemption because of the recapture provision at §404(f)(2).

GP 22. RESHAPING EXISTING DRAINAGE DITCHES, CONSTRUCTION OF NEW DITCHES, AND MOSQUITO MANAGEMENT (Authorities: §10 and §404)

Discharges to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in tidal and non-tidal waters, for the purpose of improving water quality by regrading the drainage ditch with gentler slopes, which can reduce erosion, increase growth of vegetation, and increase uptake of nutrients and other substances by vegetation. Also authorized are mosquito reduction activities.

Not authorized under GP 22 (IP required): Stream channelization, relocation, impoundments, or loss of streambed.

Self-Verification Eligible

≤500 linear feet of drainage ditch will be reshaped provided excavated material is deposited in an upland area.

Pre-Construction Notification Required

1. >500 linear feet of drainage ditch will be reshaped, excavated material is deposited in a water of the U.S., or the reshaping of the ditch increases the drainage capacity beyond the original as-built capacity or expands the area drained by the ditch as originally constructed (i.e., the capacity of the ditch is not the same as originally constructed or drains additional wetlands or other waters of the U.S.).
2. Permanent and temporary impacts in tidal vegetated shallows.
3. New ditches or relocation of drainage ditches constructed in waters of the U.S. (i.e., the location of the centerline of the reshaped drainage ditch is not approximately the same as the location of the centerline of the original drainage ditch).
4. Activities that are not eligible for SV and do not require an IP.

Note: Some ditch activities are exempt under Section 404(f) of the CWA (see 33 CFR 323.4).

GP 23. LINEAR TRANSPORTATION PROJECTS AND WETLAND/STREAM CROSSINGS (Authorities: §10 & §404)

Activities¹ required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats (see Note 1), necessary to construct the linear transportation project.

Not authorized under GP 23 (IP required): (a) Permanent impacts for any single and complete project that are >1 acre in non-tidal waters; >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars (see GP 17); or (d) New tide gates.

Self-Verification Eligible

1. In non-tidal waters, the combined permanent and temporary impacts are a) ≤5,000 SF; b) not located in riffle and pool complexes and non-tidal vegetated shallows; and c) meet the Massachusetts River and Stream Crossing Standards
2. Existing crossings (e.g., culverts, elliptical or arch pipes, etc.) are not modified by (a) decreasing the diameter of the crossing or (b) changing the friction coefficient, such as through slip lining (retrofitting an existing culvert by inserting a smaller diameter pipe), culvert relining or invert lining.
3. Stream channelization or relocation resulting in loss of streambed that is <200 LF.

Pre-Construction Notification Required

1. In non-tidal waters, the combined permanent and temporary impacts are a) >5,000 SF; b) located in vegetated shallows or riffle and pool complexes; or c) do not meet the Massachusetts River and Stream Crossing Standards (see note 4).
2. The activity occurs in tidal waters, salt marsh, or in, over or under navigable waters of the U.S.
3. Stream and wetland crossings that require a PCN per GC 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings.
4. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind.
5. Work on USACE properties & USACE-controlled easements.
6. Activities that are not eligible for SV and do not require an IP.

Notes:

1. See GC 22 for information on temporary construction mats.
2. Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the U.S. may be authorized under GP 8.
3. Loss of streambed does not require a PCN when bridge piers or similar supports are used.
4. In their PCN application submission to the USACE, applicants must explain why they are unable to meet the Massachusetts River and Stream Crossing Standards.
5. For tidal crossings, modeling is encouraged as a method to verify the proposed crossing would not be undersized and resilient to the effects of sea level rise.

¹ Stream crossings must conform with the MA Stream Crossing Guidelines when practicable and comply with all applicable GCs of this document (Section IV).

GP 24. TEMPORARY CONSTRUCTION, ACCESS, AND DEWATERING (Authorities: §10 and §404)

Temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites that are not authorized under another GP activity.

Not authorized under GP 24 (IP required): (a) Permanent structures or impacts; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Use of cofferdams to dewater wetlands or other aquatic areas to change their use; (d) Temporary stream crossings (see GPs 6, 17, 23); (e) Structures or fill left in place after construction is completed.

Self-Verification Eligible

1. In non-tidal waters, temporary impacts are a) ≤5,000 SF; b) not located in riffle and pool complexes and non-tidal vegetated shallows.
2. In tidal waters, temporary impacts are a) ≤5,000 SF, b) ≤1,000 SF in mudflats and/or natural rocky habitat, and c) not located in saltmarsh and tidal vegetated shallows.
3. Structures in navigable waters of the U.S. provided impacts do not require a PCN and they are left in place ≤30 days.

Pre-Construction Notification Required

1. In non-tidal waters, temporary impacts are a) >5,000 SF; b) located in riffle and pool complexes or non-tidal vegetated shallows.
2. In tidal waters, temporary impacts are a) >5,000 SF; b) >1,000 SF in mudflats and/or natural rocky habitat, or (c) located in saltmarsh and tidal vegetated shallows.
3. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species; or
4. Activities not eligible for SV and do not require an IP.

Notes:

1. Turbidity or sediment resuspension is generally not considered to occur when properly using management techniques to work in dry conditions. See GC 25.
2. Total impact areas under SV Eligible 1-2 exclude use of temporary construction mats. See GC 22 for information on temporary construction mats.
3. An SVN submittal to USACE is not required for SV #3 above.

GP 25. EMERGENCY SITUATIONS (Authorities: §10 and §404)

Structures or work in or affecting navigable waters of the U.S. and the discharge of dredged or fill material into waters of the U.S., including wetlands, necessary for repair or protection measures associated with an emergency situation¹, MassDEP Emergency Declaration/Certification, or FEMA Declared Disaster. The activity shall be the minimum necessary to alleviate the immediate emergency unless that additional work would result in no more than minimal effects to aquatic environment and is necessary to reduce the potential for future failure or loss of the structure or site. Typical activities authorized under this GP include, but are not limited to, restoration of damaged areas; bank stabilization; temporary fills for staging, access, and dewatering; and, repair, replacement, or rehabilitation of existing structures and/or fills (i.e., roads, bridges, utility pipelines and flood control structures, including attendant features, and other existing structures located in waters of the U.S.).

For the restoration of areas damaged by storms floods, or other discrete events: (a) The restored area must not extend waterward of the ordinary high-water mark or high tide line that existed prior to the damage. (b) The slope of the restored area below the ordinary high-water mark or high tide line must not exceed the slope that existed prior to the damage. (c) The bottom elevation of the restored area must not exceed the bottom elevation that existed prior to the damage (i.e., the restored area must not result in a reduction in the depth of the waterbody that existed prior to the damage). (d) Except in cases of FEMA reimbursement, the activity must be initiated, under contract to commence, or funds shall be allocated for the activity within 30 days of authorization under GP 25.

Not authorized under GP 25 (IP required): (a) Permanent impacts for a single and complete project >1/2 acre in tidal waters, unless the district engineer waives this criterion by making a written determination concluding that the activity will result in no more than minimal adverse environmental effects; >1,000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >5,000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1,000 SF in vegetated shallows; (c) New structures or fills that did not previously exist before the storm event or other discrete event (see other GPs).

Self-Verification Eligible

1. Activities that qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) and/or receive an Emergency Certification pursuant to 310 CMR 10.06 and/or meet the requirements of 314 CMR 9.12(2) or (3); and
2. Activities eligible under a FEMA Declared Disaster that also comply with #1 above.

Pre-Construction Notification Required

1. Activities that are eligible under a FEMA Declared Disaster and do not qualify under SV #1.
2. Minor deviations in the structure or fill area, including those to existing structures or fills are authorized due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to alleviate the emergency.
3. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Review the GCs (Section IV) to confirm if a PCN is not required elsewhere in this document.
2. If the activity is not a MassDEP Emergency Declaration/Certification, does not meet the requirements of 314 CMR 9.12(2) or (3), or is not a FEMA Declared Disaster, applicants must explain in writing why their activity qualifies as an emergency (see footnote) to be eligible under GP 25.
3. SV eligible activities qualify under the general 401 WQC MassDEP issued for the 2023 MA GPs (GC 9).

¹ An emergency, as determined by this office and 33 CFR 325.2(e)(4), is one which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a Department of the Army permit is not undertaken within a time period less than the normal time to process the request under standard processing procedures.

SECTION IV. GENERAL CONDITIONS:

To qualify for GP authorization, the applicant must comply with the following general conditions, as applicable, in addition to authorization-specific conditions imposed by the division or district engineer.

1. Other Permits
2. Federal Jurisdictional Boundaries
3. Single and Complete Projects
4. Use of Multiple General Permits
5. Suitable Material
6. Tribal Rights & Burial Sites
7. Avoidance, Minimization, and Compensatory Mitigation
8. Water Quality & Stormwater Management
9. Coastal Zone Management
10. Federal Threatened and Endangered Species
11. Essential Fish Habitat
12. National Lands
13. Wild and Scenic Rivers
14. Historic Properties
15. USACE Property and Federal Projects (§408)
16. Navigation
17. Permit/Authorization Letter On-Site
18. Storage of Seasonal Structures
19. Pile Driving and Pile Removal in Navigable Waters
20. Time of Year Restrictions
21. Heavy Equipment in Wetlands
22. Temporary Fill & Construction Mats
23. Restoration of Wetland Areas
24. Bank Stabilization
25. Soil Erosion and Sediment Controls
26. Aquatic Life Movements and Management of Water Flows
27. Spawning, Breeding, and Migratory Areas
28. Vernal Pools
29. Invasive Species
30. Fills Within 100-Year Floodplains
31. Stream Work and Crossings & Wetland Crossings
32. Utility Line Installation and Removal
33. Water Supply Intakes
34. Coral Reefs
35. Blasting
36. Inspections
37. Maintenance
38. Property Rights
39. Transfer of GP Verifications
40. Modification, Suspension, and Revocation
41. Special Conditions
42. False or Incomplete Information
43. Abandonment
44. Enforcement Cases
45. Previously Authorized Activities
46. Duration of Authorization

1. Other Permits. Authorization under these GPs does not obviate the need for the permittee to obtain other Federal, State, or local permits, approvals, or authorizations required by law. Permittees are responsible for obtaining all required permits, approvals, or authorizations. Activities that are not regulated by the State, but subject to USACE jurisdiction, may still be eligible for these GPs.

2. Federal Jurisdictional Boundaries.

a. Applicability of these GPs shall be evaluated with reference to Federal jurisdictional boundaries. Activities shall be evaluated with reference to “waters of the U.S.” under the CWA (33 CFR 328) and “navigable waters of the U.S.” under §10 of the Rivers and Harbors Act of 1899 (33 CFR 329).

Permittees are responsible for ensuring that the boundaries used satisfy the Federal criteria defined at 33 CFR 328-329. These sections prescribe the policy, practice, and procedures to be used in determining the extent of the USACE jurisdiction. Note: Waters of the U.S. includes all waters pursuant to 33 CFR 328.3(a), and adjacent wetlands as the term is defined in 33 CFR 328.3(c).

b. Wetlands shall be delineated in accordance with the USACE Wetlands Delineation Manual and the most recent Northcentral/Northeast Regional Supplement. Wetland delineation and jurisdiction information is located at: www.nae.usace.army.mil/missions/regulatory/jurisdiction-and-wetlands and maps are located at www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

c. Vegetated shallows shall be delineated when present on the project site. Vegetated shallow survey guidance and maps are located at: www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

d. Natural rocky habitats shall be delineated when present on the project site. The definition of natural rocky habitats is in Section VII of the MA GP. Natural rocky habitat survey guidance and maps are located at: www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

3. Single and Complete Projects. The MA GP shall not be used for piecemeal work and shall be applied to single and complete projects. The term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers.

a. For non-linear projects, a single and complete project must have independent utility. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed, even if the other phases were not built, can be considered as separate single and complete projects with independent utility.

b. Unless USACE determines the activity has independent utility, all components of a single project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) shall be evaluated as one single and complete project.

c. For linear projects such as power lines or pipelines with multiple crossings, a “single and complete project” is all crossings of a single water of the U.S. (i.e., single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately. If any crossing requires a PCN review or an individual permit review, then the entire linear project shall be reviewed as one project under PCN or the individual permit procedures.

4. Use of Multiple General Permits. The use of more than one GP for a single and complete project is prohibited, except when the acreage loss of waters of the U.S. authorized by the GPs does not exceed the acreage limit of the GPs with the highest specified acreage limit. For example, if a road crossing over waters is constructed under GP 23, with an associated utility line

crossing authorized by GP 6, if the maximum acreage loss of waters of the U.S. for the total project is ≥ 1 acre it shall be evaluated as an IP.

5. Suitable Material & Discharge of Pollutants. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). All activities involving any discharge into waters of the U.S. authorized under these GPs shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 U.S.C. 1251), and applicable state and local laws. If applicable water quality standards, limitations, etc., are revised or modified during the term of this GP, the authorized work shall be modified to conform with these standards within six months from the effective date of such revision or modification, or within a longer period of time deemed reasonable by the District Engineer in consultation with the Regional Administrator of the EPA. Unless monitoring data indicates otherwise, applicants may presume that their activity complies with state water quality standards provided they are in compliance with the Section 401 WQC (Applicable only to the Section 404 activity).

6. Tribal Rights & Burial Sites

- a. For all SV and PCN applications, prospective permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
- c. Many tribal resources are not listed on the National Register of Historic Places (NRHP) and may require identification and evaluation in collaboration with the identifying tribe and by qualified professionals. The Tribal Historic Preservation Officer (THPO) and State Historic Preservation Officer (SHPO) may be able to assist with locating information on:
 - i. Previously identified tribal resources; and
 - ii. Areas with potential for the presence of tribal resources.
- d. Discovery of Previously Unknown Remains and Artifacts: If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the appropriate the Federal, Tribal, and state coordination required to determine if the items or remains are eligible for listing in the NRHP and warrant a recovery effort or can be avoided.
- e. Burial Sites: Burial sites, marked or unmarked, are subject to state law (Massachusetts Unmarked Burial Law). Native American burial sites on federal or tribal land are subject to the provisions of Native American Graves Protection and Repatriation Act (NAGPRA). Regulated activities may not result in disturbance or removal of human remains until disposition of the remains has been determined by the appropriate authority under these laws, and the work is authorized by the USACE. Regulated activities which result in an inadvertent discovery of human remains must stop immediately, and the USACE, as well as the appropriate state and tribal authority, must be notified. Regulated work at inadvertent discovery sites requires compliance with state law or NAGPRA, as appropriate, prior to re-starting work.

7. Avoidance, Minimization, and Compensatory Mitigation. To qualify under the MA GP, activities must comply with Section V Mitigation Standards and the following as applicable:

- a. Avoid and Minimize: Activities must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the U.S. to the maximum extent practicable at the project site. Avoidance and minimization are required to the extent necessary to ensure that the adverse effects to the aquatic environment (both area and function) are no more than minimal.

- b. Compensatory mitigation for unavoidable impacts to waters of the U.S., including direct, indirect, secondary, and temporal loss, will generally be required for permanent impacts that exceed the thresholds identified in Section V, and may be required for temporary impacts, to offset unavoidable impacts which remain after all appropriate and practicable avoidance and minimization has been achieved and to ensure that the adverse effects to the aquatic environment are no more than minimal. Proactive restoration projects or temporary impact work with no secondary effects may generally be excluded from this requirement.
- c. Mitigation proposals shall follow the guidelines found in the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule April 10, 2008; 33 CFR 332. Prospective permittees may purchase mitigation credits in-lieu of permittee-responsible mitigation as compensation for unavoidable impacts to waters of the U.S. in the Commonwealth of Massachusetts.

8. Water Quality & Stormwater Management. The 401 WQC requirement applies to all activities listed under GPs 1-25, unless determined otherwise by MassDEP. Permittees shall also satisfy stormwater management requirements in Massachusetts.

- a. General 401 WQC: MassDEP issued a WQC on April 21, 2023 which conditionally certifies all activities in GPs 1 – 24 eligible for SV and PCN so long as the activity is described in 314 CMR 9.03, and is not an activity described in 314 CMR 9.04, and so long as the activity meets all other requirements, terms and conditions of the WQC. The MassDEP WQC also conditionally certifies activities described in GP 25 so long as the activity meets all other conditions of the WQC. Emergency projects described in GP 25 must obtain an emergency certification or otherwise be authorized pursuant to 310 CMR 10.06, qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) issued by the MassDEP, or meet the requirements of 9.12(2) or (3) in order to be certified under the WQC. Prospective permittees may refer to the following link to determine if their activity is eligible: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. The General 401 WQC is located here, and it provides detailed information regarding what activities are certified and the conditions for certification. Activities listed in 314 CMR 9.03 that are not exempt from the Wetland Protection Act must have a valid Final Order of Conditions (OOC) or Final Restoration Order of Conditions pursuant to 310 CMR 10.00 to be eligible under the General 401 WQC.
- b. Individual 401 WQC: Prospective permittees shall contact MassDEP and apply for an individual 401 WQC if their activity does not qualify for a General 401 WQC as outlined above. MassDEP may issue, waive, or deny the individual 401 WQC on a case-by-case basis. All activities listed in 314 CMR 9.04 must obtain an individual 401 WQC from MassDEP to be eligible under these GPs. When an Individual 401 WQC is required for *PCN activities*, the prospective permittee shall submit their Individual 401 WQC application concurrently to MassDEP and USACE to comply with 40 CFR 121.
- c. The prospective permittee is responsible for determining the appropriate 401 WQC requirement and submitting this information to the USACE at the time of their PCN application or when completing their SVN. Prospective permittees that are unsure of whether their activity has been certified should contact MassDEP for a determination.
- d. As applicable, all activities shall be compliant with the Massachusetts Stormwater Handbook. The Stormwater Handbook can be accessed on the NAE Regulatory website here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.
- e. No work requiring authorization under Section 404 of the CWA may be performed unless (1) the prospective permittee qualifies for coverage under the April 21, 2023 General 401 WQC, (2) the prospective permittee receives an individual Section 401 WQC from the MassDEP, or (3) the MassDEP waives individual Section 401 WQC.

9. Coastal Zone Management. The permittee must obtain CZM consistency concurrence when an activity is located in the coastal zone in order to be eligible under the MA GP. This requirement

shall be satisfied by acquiring one of the following from the Massachusetts Office of Coastal Zone Management (MA CZM):

- a. General CZM Federal Consistency Concurrence (General Concurrence): MA CZM has granted General Concurrence for all SV and PCN activities for GPs 1-25. The prospective permittee must obtain all applicable permits and approvals before construction of the authorized activity begins (e.g., before work begins on site). For SVs, General Concurrence is automatically granted and no further action is required from the prospective permittee. For PCNs, the USACE will coordinate with MA CZM to acquire General Concurrence as part of the PCN application review.
- b. Individual CZM Federal Consistency Concurrence (Individual Concurrence): In certain cases, MA CZM may elevate any GP activity 1-25 and require Individual Concurrence. The prospective permittee must contact MA CZM and follow the procedures to obtain Individual Concurrence as determined appropriate by MA CZM.
- c. Permittees must obtain CZM consistency concurrence as outlined above before commencing work authorized under these GPs.

10. Federal Threatened and Endangered Species

- a. No activity is authorized under any GP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any GP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”
- b. Other Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If a PCN is required for the proposed activity, the Federal permittee must provide USACE with the appropriate documentation to demonstrate compliance with those requirements. The USACE will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.
- c. USFWS ESA-Listed Species: Non-federal applicants shall use the USFWS website, Information for Planning and Consultation (IPAC), to determine if their activity is located within the ESA-listed species range. The IPAC website can be accessed on the NAE Regulatory website: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. Applicants shall ensure they have an updated, valid species list before construction begins. This may require applicants to update their species list in IPAC before the start of construction. Note: Applicants should refer to the NAE Regulatory Website at the link above to determine if they have been designated as a non-federal representative. Applicants shall complete Section 7 consultation according to the guidance document located on the NAE Regulatory Website. After completing the Rangewide Determination Key and reaching the outcome “may affect, not likely to adversely affect”, you may be required to wait up to 15 days before that outcome is final and compliance under Section 7 of the ESA is fulfilled.
 - i. Self-Verification Criteria: The activity is SV-eligible if:
 - 1) The activity is not located within the ESA-listed species range;
 - 2) Another (lead) Federal agency has completed Section 7 consultation; or
 - 3) The activity is located within the ESA-listed species range and USACE has designated the applicant as a non-federal representative under 50 CFR 402.08 of the ESA for all

species within the project's action area. As the non-federal representative, the applicant shall complete consultation through IPAC and reach the outcome of "no effect" or "not likely to adversely affect".

ii. *Pre-Construction Notification Criteria*: The activity requires a PCN if:

- 1) The activity is located within the ESA-listed species range and USACE has NOT designated the applicant as a non-federal representative under 50 CFR 402.08 of the ESA for all species within the project's action area;
- 2) The activity is located in designated or proposed critical habitat; or
- 3) The activity is located within the ESA-listed species range and completion of the IPAC determination key has resulted in the outcome of "may affect" or "may affect, likely to adversely affect"; or
- 4) A PCN is required elsewhere in this document.

d. **NOAA-Listed Species**: Non-federal applicants shall refer to the Section 7 Mapper for federally listed species to determine if any species are mapped as present. When NOAA-listed species are present, the applicant shall generate a species report through the mapper and submit this document as part of their PCN or SVN submission. The NOAA Fisheries' Section 7 Mapper can be accessed here on the NAE Regulatory website here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

e. Authorization of an activity by an GP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

11. Essential Fish Habitat (EFH).

a. SV eligible activities have been determined to result in no more than minimal adverse effects, provided the permittee complies with all terms and conditions of the MA GP as applicable to the activity. NMFS has granted General Concurrence [50 CFR 600.920(g)] for all SV eligible activities. These activities do not require project specific EFH consultation.

b. For PCN required activities, the applicant is required to describe and identify potential adverse effects to EFH and should refer to NOAA Fisheries' EFH Mapper (<http://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper>) and Omnibus Essential Fish Habitat Amendment 2 Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts (https://www.habitat.noaa.gov/application/efhmapper/oa2_efh_hapc.pdf). If an activity is located within EFH, the PCN application must contain:

1. A description of the action located in EFH.
2. An analysis of the potential adverse effects of the action on EFH and the managed Species.
3. Conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable (refer to the mitigation thresholds located in Section V).

c. Federal agencies shall follow their own procedures for complying with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act. For activities requiring a PCN, the applicant is responsible for furnishing documentation that demonstrates consultation for EFH has been completed.

d. For PCN activities, no work may commence until EFH consultation as required by the Magnuson-Stevens Act has been completed.

12. National Lands. Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Historic Landmarks or any other area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service (USFS) require a PCN or Individual Permit. Federal land managers seeking authorization for activities located in the above listed National Lands may proceed under SV, unless a PCN is required elsewhere in this document.

13. Wild and Scenic Rivers. The following activities in designated river or study river segments in the National Wild and Scenic River (WSR) System require a PCN unless the Federal agency with direct management responsibility for such river, in Massachusetts this is generally the National Park Service, has determined in writing to the proponent that the proposed work will not adversely affect the WSR designation or study status:

- a. Activities that occur in WSR segments, in and 0.25 miles up or downstream of WSR segments, or in tributaries within 0.25 miles of WSR segments;
- b. Activities that occur in wetlands within 0.25 miles of WSR segments;
- c. Activities that have the potential to alter free-flowing characteristics in WSR segments.

No GP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

As of May 10, 2023, affected rivers in Massachusetts include: the Taunton River (40 miles), Sudbury River (16.6 miles), Assabet River (4.4 miles), Concord River (8 miles), Nashua River (27 miles), Squannacook River (16.3 miles), Nissitissit River (4.7 miles), and the Westfield River, including West Branch, Middle Branch, Gendale Brook, East Branch, Drowned Land Brook, Center Brook, Windsor Jambs Brook, Shaker Mill Brook, Depot Brook, Savery Brook, Watson Brook, Center Pond Brook (78.1 miles). The most up to date list of designated and study rivers and their descriptions may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

14. Historic Properties

- a. For all SV and PCN applications, permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No undertaking authorized by these GPs shall cause effects¹ (defined in 36 CFR Part 800 and 33 CFR Part 325, Appendix C, and its Interim Guidance) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places (NRHP)², including previously unknown historic properties within the permit area, unless the USACE or another Federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (Section 106). If another Federal agency is determined the lead federal agency for compliance with Section 106, applicant must obtain the appropriate documentation and provide this information to the USACE to demonstrate compliance with Section 106. The applicant shall not begin the activity until the USACE notifies them in writing that the documentation provided satisfies Section 106 requirements.

¹ Effect means the alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Properties.

² See the NAE Regulatory website, National Register of Historic Places link here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

- c. Many historic properties are not listed on the NRHP and may require identification and evaluation by qualified historic preservation and/or archaeological consultants. The State Historic Preservation Officer (SHPO), Massachusetts Board of Underwater Archaeological Resources (BUAR), local historical societies, certified local governments, general public, and NRHP may also be able to assist with locating information on:
- i. Previously identified historic properties; and
 - ii. Areas with potential for the presence of historic properties.
- d. **Discovery of Previously Unknown Remains and Artifacts:** If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the Federal, State and tribal coordination required to determine if the items or remains warrant a recovery effort and/or if the site is eligible for listing in the National Register of Historic Places.
- e. **Section 110k:** Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. § 306113) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely effected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the USACE is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties effected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or effects historic properties on tribal lands or effects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.
- f. **Underwater Archaeological Resources:** Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the BUAR has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. Underwater archaeological resources located within the waters of the Commonwealth of Massachusetts are property of the Commonwealth, which holds title to these resources and retains regulatory authority over their use. Under Massachusetts General Law, no person, organization or corporation may "remove, displace, damage, or destroy" any underwater archaeological resources located within the Commonwealth's submerged lands except through consultation with the BUAR and in conformity with the permits it issues. <https://www.mass.gov/orgs/board-of-underwater-archaeological-resources>.

15. USACE Property and Federal Projects. (33 USC §408)

- a. USACE projects and property can be found at: <https://www.nae.usace.army.mil/Missions/Civil-Works/>.
- b. In addition to any authorization under these GPs, prospective permittee shall contact the USACE Real Estate Division (<https://www.nae.usace.army.mil/Missions/Real-Estate-Division/>) at (978) 318-8585 for work occurring on or potentially affecting USACE properties and/or USACE-controlled easements. Work may not commence on USACE properties and/or USACE-controlled easements until they have received any required USACE real estate documents evidencing site-specific permission to work.
- c. Any proposed temporary or permanent occupation or alteration of a Federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States),

is not eligible for SV and requires a PCN. This includes all proposed structures and work in, over, or under a USACE federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance of three times the FNP's authorized depth. The activity also requires review and approval by the USACE pursuant to 33 USC 408 (Section 408 Permission). The prospective permittee may reach out to the POCs located here: <https://www.nae.usace.army.mil/Missions/Section-408/>.

d. Any structure or work constructed in a FNP or its buffer zone shall be subject to removal at the owner's expense prior to any future USACE dredging or the performance of periodic hydrographic surveys.

e. Where a Section 408 permission is required, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

16. Navigation

a. No activity may cause more than a minimal adverse effect on navigation.

b. Any safety lights and signals prescribed by the U.S. Coast Guard, must be installed, and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.

c. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

d. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

17. Permit/Authorization Letter On-Site. For PCNs, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of USACE jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including GCs and the authorization letter (including its drawings, plans, appendices, special conditions, and other attachments), and any permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of USACE jurisdiction. For SVs, the permittee shall ensure that a complete and signed copy of the SVN is present on site during construction and is made available for review at any time by USACE and other Federal, State, & Local regulatory agencies. A complete and signed copy of the SVN must be submitted to USACE Regulatory within 30 days of initiating construction of the authorized activity, unless stated otherwise in the applicable GP.

18. Storage of Seasonal Structures. Coastal structures such as pier sections, floats, etc., that

are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above MHW and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

19. Pile Driving and Pile Removal in Navigable Waters.

- a. Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to 3 feet below the substrate to prevent interference with navigation, and existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method¹ to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands or mudflats.
- b. A PCN is required for the installation or removal of structures with jetting techniques.
- c. A PCN is required for the installation of >12 inch-diameter piles of any material type or steel piles of any size in tidal waters, unless they are installed in the dry. If piles are not installed in the dry:
 - i. Impact pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one minute waiting periods, before initiating continuous impact driving.
 - ii. Vibratory pile driving shall be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period shall be repeated two more times, followed immediately by pile-driving at full rate and energy.
 - iii. In addition to using a soft start at the beginning of the workday for pile driving as described in 19c(i-ii), a soft start must also be used at any time following a cessation of pile driving for a period of 30 minutes or longer.
- d. Bubble curtains may be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

20. Time-of-Year (TOY) Restrictions. Activities that include in-water work must comply with the TOY Restrictions below to be SV eligible, otherwise a PCN is required. PCN submittals shall contain written justification for deviation from the TOY Restrictions. The term “in-water work” does not include conditions where the work site is “in-the-dry” (e.g., intertidal areas exposed at low tide). The term “in-the-dry” includes work contained within a cofferdam so long as the cofferdam is installed and subsequently removed outside the TOY Restriction. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47² can apply instead for activities in tidal waters if (1) TOYs are provided for a specific waterbody where the activity is proposed and (2) the TOYs are less restrictive than below. The activity must also not require a PCN elsewhere in this document to be SV eligible.

¹ Direct Pull: Each piling is wrapped with a choker cable or chain that is attached at the top to a crane. The crane then pulls the piling directly upward, removing the piling from the sediment. Vibratory Pull: The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The vibrating hammer loosens the piling while the crane pulls up. Clamshell Pull: This can remove intact, broken or damaged pilings. The clamshell bucket is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up. The size of the clamshell bucket is minimized to reduce turbidity during piling removal.

² The MA DMF Technical Report TR-47: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>

TOY Restriction (No work)**Non-tidal Waters**

Defer to TR-47

Tidal Waters

January 15 – November 15

Alternate work windows proposed under a PCN will generally be coordinated with the USFWS and NMFS. Resulting written verifications may include species-specific work allowed windows.

21. Heavy Equipment in Wetlands. Operating heavy equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and such equipment shall not be stored, maintained, or repaired in wetlands, to the maximum extent practicable. Where construction requires heavy equipment operation in wetlands, the equipment shall:

- i. Have low ground pressure (typically ≤ 3 psi);
- ii. Be placed on swamp/construction/timber mats (herein referred to as “construction mats” or “mats”) that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. See GC 22 for information on the placement of construction mats; or
- iii. Be operated on adequately dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath the equipment and upheaval of adjacent wetlands. Construction mats are to be placed in the wetland from the upland or from equipment positioned on mats if working within a wetland. Dragging construction mats into position is prohibited. Other support structures that are capable of safely supporting equipment may be used with written USACE authorization.

22. Temporary Fill, Work & Construction Mats.

a. Construction mats in non-tidal waters: Temporary construction mats shall be in place ≤ 1 year and for one growing season or less to be SV eligible. A PCN is required if construction mats are in place > 1 year or for more than one growing season. Construction mats can be placed in an area of any size in non-tidal waters. The activity may occur in segments to ensure the requirements for SV above are met, otherwise a PCN is required.

b. Construction mats in tidal waters: Temporary construction mats placed in an area $< 5,000$ SF in tidal waters are SV eligible, provided those mats are in place ≤ 6 months. Temporary construction mats placed in an area $\geq 5,000$ SF or in place > 6 months in tidal waters require a PCN.

c. Management of construction mats: At a minimum, construction mats shall be managed in accordance with the following construction mat best management practices (BMPs):

1. Mats shall be in good condition to ensure proper installation, use, and removal.
2. As feasible, mats shall be placed in a location that will minimize the amount of mats needed for the wetland crossing(s).
3. Inspect mats prior to their re-use and remove any plant debris. Mats are to be thoroughly cleaned before re-use to prevent the spread of invasive plant species.
4. Impacts to wetland areas shall be minimized during installation, use, and removal of the mats.
5. Adequate erosion & sediment controls shall be installed at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, the mats.
6. In most cases, mats should be placed along the travel area so that the individual boards are resting perpendicular to the direction of traffic. No gaps should exist between mats. Place mats far enough on either side of the resource area to rest on firm ground.

d. A PCN is required for temporary fills in place > 2 years. All temporary fills and disturbed soils shall be stabilized to prevent the material from eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill must be placed in a manner that will prevent it from being eroded by expected high flows.

- e. Activities that require unconfined temporary fill and are authorized for discharge into waters of the U.S. shall consist of material that minimizes effects to water quality.
- f. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.
- g. Construction debris and deteriorated materials shall not be located in waters of the U.S.
- h. Temporary fills, construction mats, and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized activity and the disturbed areas be restored to pre-construction contours and conditions.
- i. Construction equipment, such as temporary barges in tidal waters, shall provide clearance above the substrate to avoid grounding onto the substrate during all tides.

23. Restoration of Wetland Areas.

- a. Upon completion of construction, all disturbed wetland areas shall be stabilized with a wetland seed mix or plant plugs containing only plant species native to New England, and be appropriate for site conditions, including salinity and frequency of inundation, and shall not contain any species listed in the “Invasive and Other Unacceptable Plant Species” Appendix K of the New England District “Compensatory Mitigation Standard Operating Procedures” found at <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx>.
- b. The introduction or spread of invasive plant species in disturbed areas shall be prevented and controlled. Equipment shall be thoroughly cleaned before and after project construction to prevent the spread of invasive species. This includes, but is not limited to, tire treads and construction mats.
- c. In areas of authorized temporary disturbance, if trees are cut in USACE jurisdiction, they shall be cut at or above ground level and not uprooted in order to prevent disruption of any kind to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
- d. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

24. Bank Stabilization.

- a. Projects involving construction or reconstruction/maintenance of bank stabilization within USACE jurisdiction shall be designed to minimize environmental effects, effects to neighboring properties, scour, conversion of natural shoreline to hard armoring, etc. to the maximum extent practicable.
- b. Projects involving the construction of new bank stabilization within USACE jurisdiction shall use bioengineering techniques and natural materials in the project design to the maximum extent practicable. Use of hard structures shall be eliminated or minimized unless the prospective permittee can demonstrate that use of bioengineering techniques is not practicable due to site conditions.
- c. Where possible, bank stabilization projects shall optimize the natural function of the shoreline, including self-sustaining stability to attenuate flood flows, fishery, wildlife habitat and water quality protection, while protecting upland infrastructure from storm events that can cause erosion as well as impacts to public and private property.
- d. No material shall be placed in excess of the minimum needed for erosion protection.
- e. No material shall be placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas).

- f. Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization.
- g. The activity must be properly maintained, which may require repairing it after severe storms or erosion events.

25. Soil Erosion and Sediment Controls.

- a. Appropriate soil erosion and sediment controls¹ (hereinafter referred to as “controls”) must be installed prior to earth disturbance and maintained in effective operating condition during construction. Biodegradable wildlife friendly erosion controls should be used whenever practicable to minimize effects to water quality.
- b. Activities in streams (rivers, streams, brooks, etc.) and tidal waters that are capable of producing sedimentation or turbidity should be done during periods of low-flow or no-flow, when the stream or tide is waterward of the work area. Controls may also be used to obtain dry work conditions (e.g., coffer dam, turbidity curtain). The prospective permittee must demonstrate in the project plans where the controls are proposed and how these controls would avoid and/or minimize turbidity or sedimentation.
- c. A PCN is required for controls that encroach: i) >25% of the stream width measured from OHW in non-tidal diadromous streams from March 15 to June 30; or ii) >25% of the waterway width measured from MHW in tidal waters from Feb. 1 to June 30, or >50% of the waterway width measured from MHW in tidal waters from July 1 to Jan. 14. This is to protect upstream fish passage. Proponents must also maintain downstream fish passage throughout the project.
- d. No dewatering shall occur with direct discharge to waters or wetlands. Excess water in isolated work areas shall be pumped or directed to a sedimentation basin, tank or other dewatering structures in an upland area adequately separated from waters or wetlands. Suspended solids shall be removed prior to discharge back into waters or wetlands from these dewatering structures. All discharge points back into waters and wetlands shall use appropriate energy dissipaters and erosion and sedimentation control BMPs.
- e. Temporary controls shall be removed upon completion of work, but not until all exposed soil and other fills, as well as any work waterward of OHW or the HTL, are permanently stabilized at the earliest practicable date. Sediment and debris collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. Controls may be left in place if they are biodegradable and flows and aquatic life movements are not disrupted.

26. Aquatic Life Movements and Management of Water Flows.

- a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity’s primary purpose is to impound water. All permanent and temporary crossings of waterbodies and wetlands shall be:
 - i. Suitably spanned, bridged, culverted, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and
 - ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the crossing.

¹ Appropriate soil erosion, sediment and turbidity controls include cofferdams, bypass pumping around barriers immediately up and downstream of the work footprint (i.e., dam and pump), installation of sediment control barriers (i.e., silt fence, vegetated filter strips, geotextile silt fences, filter tubes, erosion control mixes, hay bales or other devices) downhill of all exposed areas, stream fords, retention of existing vegetated buffers, application of temporary mulching during construction, phased construction, and permanent seeding and stabilization, etc.

- b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when necessary to perform the authorized work.
- c. For work in tidal waters, in-stream controls (e.g., cofferdams) should be installed in such a way as to not obstruct fish passage.
- d. Riprap and other stream bed materials shall be installed in a manner that avoids organism entrapment in rock voids or water displaced to subterranean flow with crushed stone and riprap.
- e. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity shall not restrict or impede the passage of normal or high flows unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

27. Spawning, Breeding, and Migratory Areas.

- a. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized under these GPs.
- b. Activities in waters of the U.S. that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
- c. The applicant is responsible for obtaining any “take” permits required under the USFWS’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The applicant should contact the appropriate local office of the USFWS to determine if such “take” permits are required for a particular activity.
- d. Information on spawning habitat for species managed under the Magnuson-Stevens Fishery Conservation and Management Act (i.e., EFH for spawning adults) can be obtained from NAE Regulatory website, Essential Fish Habitat section, at: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.
- e. Information regarding diadromous fish habitat can be obtained from the following DMF website at: <https://www.mass.gov/info-details/massgis-data-diadromous-fish>.

28. Vernal Pools.

- a. A PCN is required if a discharge of dredged or fill material is proposed within a vernal pool depression that is also a water of the U.S.
- b. Vernal pools must be identified on the plans that show aquatic resource delineations.
- c. Adverse impacts to vernal pools shall be avoided & minimized to the maximum extent practicable.

29. Invasive Species.

- a. The introduction, spread or the increased risk of invasion of invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work shall be avoided. Construction mats shall be thoroughly cleaned before reuse to avoid spread of invasive species.
- b. Unless otherwise directed by USACE, all applications for PCN non-tidal projects proposing fill in USACE jurisdiction shall include an Invasive Species Control Plan. Additional information can be found at: <https://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species/>, <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/>.

30. Fills Within 100-Year Floodplains. The activity shall comply with applicable Federal Emergency Management Agency (FEMA) approved, Massachusetts Emergency Management

Agency (MEMA) approved and/or local floodplain management requirements. Applicants should contact FEMA and/or MEMA regarding floodplain management requirements.

31. Stream Work and Crossings & Wetland Crossings.

- a. When feasible, all temporary and permanent crossings of waterbodies and wetlands (hereinafter referred to as “crossings”) shall conform to the “Massachusetts River and Stream Crossing Standards” located at: <https://www.mass.gov/doc/massachusetts-river-and-stream-crossing-standards/download> or <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. Projects that do not conform to these guidelines shall be reviewed under PCN or IP procedures.
- b. Crossings shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, maintain water quality, and not obstruct the movement of aquatic life indigenous to the waterbody beyond the duration of construction.
- c. Crossings shall be installed in such a manner as to preserve hydraulic capacity and flow, sediment transport, and organism passage at its present level, between the wetlands on either side of the road. The applicant shall take necessary measures to correct any wetland damage resulting from deficiencies in hydraulic capacity, sediment transport and organism passage.
- d. Stream crossings shall utilize a natural mixed grain-size streambed material composition that matches upstream and downstream substrates to create a stable streambed. Substrate should function appropriately during normal and high flows without washing out. If natural streambed material is not utilized, a PCN is required.
- e. Activities involving open trench excavation in flowing waters require a PCN. Work should not occur in flowing waters (requires using management techniques such as temporary flume pipes, culverts, cofferdams, etc.). Normal flows should be maintained within the stream boundary’s confines when practicable. Projects utilizing these management techniques must meet all applicable terms and conditions of the GP, including the GCs in Section IV.

32. Utility Line Installation and Removal

- a. Subsurface utility lines must be installed at a sufficient depth to avoid damage from anchors, dredging, etc., and to prevent exposure from erosion and stream adjustment.
- b. When utility lines are installed via horizontal directional drilling, a frac-out contingency plan shall be present on site for the duration of construction. As necessary, the applicant shall immediately contain, control, recover, and remove drilling fluids released into the environment.
- c. Abandoned or inactive utility lines must be removed and faulty lines (e.g., leaking hazardous substances, petroleum products, etc.) must be removed or repaired. A written verification from the USACE is required if they are to remain in place, e.g., to protect sensitive areas or ensure safety.
- d. Utility lines shall not adversely alter existing hydrology, and trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). In wetland areas, structures such as ditch plugs, cut-off walls, clay blocks, bentonite, or other suitable material shall be used within utility trenches to ensure that the trench through which the utility line is installed does not drain waters of the U.S. including wetlands.
- e. Stockpiling of tree debris, to the extent where it has the effect of fill material, shall not occur in waters of the U.S. Tree debris shall be removed from waters of the U.S. and placed in uplands without causing additional disturbance to aquatic resources. Failure to meet this condition could change the bottom elevation of the wetland and be considered a discharge of fill material, and depending on the area of alteration, may require a PCN or IP.

33. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

34. Coral Reefs. Impacts to coral reefs are not authorized under these GPs. Coral reefs consist of the skeletal deposit, usually of calcareous or siliceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms present in growing portions of the reef.

35. Blasting. Blasting in waters of the U.S. associated with work such as dredging, trenching, pile installation, etc. is not authorized under these GPs.

36. Inspections. The permittee shall allow USACE to make periodic inspections at any time deemed necessary to ensure that the work is being or has been performed in accordance with the terms and conditions of this permit. To facilitate these inspections, for activities requiring a PCN, the permittee shall complete and return the Certificate of Compliance when it is provided with a PCN verification letter. For SV-eligible activities, the permittee shall complete and submit the SVN to USACE within 30 days of initiating project construction, at which point, USACE may opt to inspect the activity to verify compliance with the terms and conditions of the GP. Post-construction engineering drawings may be required by USACE for completed work. This includes post-dredging survey drawings for any dredging work.

37. Maintenance. The permittee shall maintain the activity authorized by these GPs in good condition and in conformance with the terms and conditions of this permit. Some maintenance activities may not be subject to federal regulation under Section 404 in accordance with 33 CFR 323.4(a)(2). This condition is not applicable to maintenance of dredging projects. Prospective permittees should contact USACE to inquire about maintenance of dredging projects, and its eligibility under these GPs. Maintenance dredging is subject to the review thresholds in GP #7 as well as any conditions included in a written USACE authorization. Maintenance dredging includes only those areas and depths previously authorized and dredged.

38. Property Rights. Per 33 CFR 320.4(g)(6), these GPs do not convey any property rights, either in real estate or material, or any exclusive privileges, nor do they authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations.

39. Transfer of GP Verifications. When the work authorized by these GPs is still in existence at the time the property is transferred, the terms and conditions of these GPs, including any special conditions, will continue to be binding on the entity or individual who received the GP authorizations, as well as the new owner(s) of the property. If the permittee sells the property associated with a GP authorization, the applicant may transfer the GP authorization to the new owner by submitting a letter to USACE to validate the transfer. A copy of the GP authorization letter must be attached to the letter, and the letter must include the following statement: "The terms and conditions of these general permits, including any special conditions, will continue to be binding on the new owner(s) of the property." This letter shall be signed by both the seller and new property owner(s).

40. Modification, Suspension, and Revocation. These GPs and any individual authorization issued thereof may be either modified, suspended, or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7; and any such action shall not be the basis for any claim for damages against the U.S.

41. Special Conditions. The USACE may impose other special conditions on a project authorized pursuant to these GPs that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization, including special conditions, constitutes a permit violation and may subject the applicant to criminal, civil, or administrative penalties or restoration.

42. False or Incomplete Information. If USACE makes a determination regarding the eligibility of a project under these GPs, and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the applicant, the authorization will not be valid, and the U.S. Government may institute appropriate legal proceedings.

43. Abandonment. If the permittee decides to abandon the activity authorized under these GPs, unless such abandonment is merely the transfer of property to a third party, he/she/they may be required to restore the area to the satisfaction of USACE.

44. Enforcement cases. These GPs do not apply to any existing or proposed activity in USACE jurisdiction associated with an on-going USACE or EPA enforcement action, until such time as the enforcement action is resolved or USACE or EPA determines that the activity may proceed independently without compromising the enforcement action.

45. Previously Authorized Activities.

- a. Completed projects that received prior authorization from USACE (SV or PCN), shall remain authorized in accordance with the original terms and conditions of those authorizations, including their terms, GCs, and any special conditions provided in a written verification.
- b. Activities authorized pursuant to 33 CFR 330.3 (activities occurring before certain dates) are not affected by these GPs.

46. Duration of Authorization.

These GPs expire on June 1, 2028. Activities authorized under these GPs will remain authorized until the GPs expire, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2(e)(2). Activities authorized under GPs 1-25 that have either commenced (i.e., are under construction) or are under contract to commence in reliance upon this authorization will have until June 1, 2029 to complete the work. If requested by USACE, the permittee shall furnish documentation that demonstrates the project was under construction or under contract to commence by June 1, 2028. If work is not completed before June 1, 2029, the permittee must contact USACE. The USACE may issue a new authorization provided the project meets the terms and conditions of the MA GPs in effect at the time. Activities completed under the SV or PCN authorizations of these GPs will continue to be authorized after their expiration date.

SECTION V: MITIGATION STANDARDS

1. Mitigation Types

For all activities, applicants must (a) demonstrate how the project has been designed to avoid or minimize impacts to aquatic resources; and (b) describe measures taken to avoid or minimize impacts to aquatic resources through construction techniques and/or site access. Please see <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/> for assistance with preparing mitigation in accordance with the 2008 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 CFR 332.3), hereafter referred to as “2008 Mitigation Rule.”

Avoidance - Avoidance of impacts (direct and indirect) to aquatic resources means that project activities would not result in the placement of fill material or installation of a structure that could impact the resource area. Avoidance can include, but is not limited to, designing the project to avoid impacts to all or a portion of the aquatic resource areas.

Minimization - Minimization of impacts (direct and indirect) to aquatic resources means that measures are taken to ensure the amount and duration of impacts are limited to the maximum extent practicable. There are many minimization measures that could be implemented, prior to, during, or after the proposed activity, to ensure impacts are minimized. Examples include, but are not limited to:

- Permanent preservation of avoided aquatic features and buffer zone, in perpetuity. In these cases, the preserved area would be under a conservation easement and managed by conservation oriented third-party manager.
- Utilization of best management practices (BMPs) to ensure impacts are limited, and do not result in adverse impacts to the integrity and long-term functions of preserved/avoided features.

Compensatory Mitigation - Compensatory mitigation is generally required for PCN activities in which the impacts to the aquatic resources have been avoided and minimized to the maximum extent practicable but would still result in unavoidable adverse effects to the environment that are considered more than minimal or are contrary to the public interest. *Whatever the case may be, compensatory mitigation is no substitute for avoidance and minimization.*

2. Thresholds for Compensatory Mitigation

The basic objective of compensatory mitigation in the USACE Regulatory Program is to offset environmental losses resulting from unavoidable impacts to waters of the U.S. authorized by Department of the Army permits. **The following compensatory mitigation thresholds apply to all PCN activities that result in loss¹ of the resource area types listed below. Activities² in waters of the U.S. associated with the restoration, enhancement, and establishment of tidal and non-tidal aquatic resources are not considered loss and are not subject to the thresholds below.** Thresholds for different resource areas may not be combined to exceed 5,000 SF of total loss of all waters. The USACE will continue to evaluate projects on a case-by-case basis, and may in some cases require compensatory mitigation below these thresholds (e.g. minor impacts that add to a cumulative loss).

¹ See definition of loss in Section VII.

² These activities must result in net increases in aquatic resource functions and services to be exempted from the thresholds above.

Compensatory Mitigation Thresholds in Massachusetts		
Resource Area	Non-Tidal Threshold	Tidal Threshold
Stream	200 LF	200 LF
Bank Stabilization	500 LF	500 LF
Open Water	Project Dependent	Project Dependent
Wetland	5,000 SF	500 SF
Vernal Pool	All	N/A
SAV	Project dependent	25 SF
Mudflat	N/A	1,000 SF
Intertidal	N/A	1,000 SF

These thresholds can be utilized to determine at what point compensatory mitigation is required but are not used to determine how much mitigation may be needed to offset impacts to resources. Per the 2008 Mitigation Rule (33 CFR 332.3(f)(1)) “the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratios must be used.”

3. Compensatory Mitigation Hierarchy

Compensatory mitigation should follow the hierarchy as outlined in 33 CFR 332.3(b)(2-6) or current regulation. This hierarchy in order of preference includes: (1) Mitigation Bank credits, (2) In-Lieu Fee program credits, (3) permittee-responsible mitigation under a watershed approach, (4) permittee-responsible mitigation through on-site and in-kind mitigation, and (5) permittee-responsible mitigation through off-site and/or out-of-kind mitigation. If the proposed mitigation deviates from this mitigation hierarchy, the applicant **must** justify in writing why the proposed mitigation is environmentally preferable to the preferred method of compensatory mitigation (See 2008 Mitigation Rule). **In order for your application to be considered complete, you must provide a statement that discusses how your project will compensate for the loss or impact to aquatic resources.** If you are proposing permittee responsible mitigation, the 12 components of a mitigation plan (33 CFR 332.4(c)(2-14) must be addressed for your application to be considered complete. Prospective applicants are encouraged to contact USACE with questions at any time. Addressing the 12 components of a mitigation plan is commensurate with the amount of compensatory mitigation required, and USACE can assist prospective applicants with the level of information needed to satisfy each component.

For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee.

4. In-Lieu Fee (ILF)

The purchase of credits from the Massachusetts In-Lieu Fee Program (MA ILFP) is the **preferred** method of compensatory mitigation in Massachusetts since, as of the issuance date of this GP, there are no mitigation banks available in Massachusetts. The applicant shall develop a mitigation plan that addresses the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

The MA ILFP is administered by the Massachusetts Department of Fish & Game (DFG) in accordance with the 2008 Mitigation Rule at 33 CFR 332. The Mitigation Rule governs in-lieu fee compensatory mitigation associated with USACE permits under §404 of the Clean Water Act and/or §9 or §10 of the Rivers and Harbors Act of 1899.

MA ILFP Website: <https://www.mass.gov/in-lieu-fee-program>

Acceptance of an ILF payment into the ILFP established by the 2014 MA ILFP Instrument (link below) is an acknowledgement by DFG that it assumes all legal responsibility for satisfying the mitigation requirements of the USACE (i.e., the implementation, performance, and long-term management and monitoring of the compensatory mitigation project(s) approved under this Instrument and subsequent Compensatory Mitigation Plans). This transfer of legal responsibility is established by: 1) the approval of this In-Lieu Fee Instrument; 2) receipt by the district engineer of a Notice of Credit Sale and Transfer of Legal Responsibility to DFG that is signed by the DFG and the permittee and dated; and 3) the transfer of fees from the permittee to DFG.

MA ILFP Fact Sheet: <https://www.mass.gov/files/documents/2017/01/sj/ilfp-fact-sheet-ma-ilfp-fees.pdf>

MA ILFP Instrument: <https://www.mass.gov/files/documents/2016/08/nd/ilfp-final-instrument-dfg.pdf>

5. Permittee-Responsible

The USACE may determine that the proposed permittee-responsible compensatory mitigation is appropriate on a case-by-case basis. As described in the Compensatory Mitigation Hierarchy section above, applicants must justify in writing why the proposed mitigation is environmentally preferable to the purchase of ILF credits. Applicants are encouraged to contact the USACE prior to submission of a permit application to seek further guidance regarding USACE mitigation requirements.

Applicants will demonstrate their proposed compensatory mitigation in writing by addressing the 12 components of a mitigation plan (33 CFR 332.4(c)(2-14). *Please note that all elements must be addressed, or the permit application will be deemed incomplete.* In certain circumstances, the district engineer may determine that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). Guidance on how to address these components can be found on the New England District Mitigation webpage: <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/>

Performance standards will be used to measure the successfulness of the mitigation project. A successful mitigation project is one that is self-sustaining. For a mitigation project that will restore, enhance, or create wetlands, proper performance standards must address hydrology, hydric soils, and hydrophytic vegetation. The mitigation proposal must include an explanation of quantitative methods used to measure the success of performance standards (i.e., percent cover may be measured using vegetation plots, hydrology may be measured using data loggers, soil cores may be taken and evaluated for hydric soil indicators).

Monitoring methods should include quantitative sampling methods following established, scientific protocols. Sampling documentation, as part of monitoring reports, should include maps and coordinates (also shapefiles, if available) showing locations of sampling points, transects, quadrats, etc. In addition, permanent photo stations should be established coincident with sampling locations.

SECTION VI: FEDERAL & STATE AGENCY CONTACT INFORMATION & ORGANIZATIONAL WEBSITES

Federal Agencies

U.S. Army Corps of Engineers
Regulatory Division
696 Virginia Road
Concord, Massachusetts 01742-2751
(978) 318-8338 (phone); (978) 318-8303 (fax)
www.nae.usace.army.mil/missions/regulatory

U.S. Army Corps of Engineers
Navigation Division – Section 408
696 Virginia Road
Concord, Massachusetts 01742-2751
See link below for contact information:
<https://www.nae.usace.army.mil/Missions/Section-408/>

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930
(978) 281-9300 (phone)
(Federal endangered species & EFH)

U.S. Fish & Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301
(603) 223-2541 (phone)
(Federal endangered species)

National Park Service
15 State Street
Boston, Massachusetts 02109
(617) 223-5191 (phone)
(Wild and Scenic Rivers)

Bureau of Ocean and Energy Management
1849 C Street, NW
Washington D.C. 20240
202-208-6474 (phone)
(Offshore Wind Facilities)

Chief, Risk Analysis Branch
FEMA Region 1
99 High Street, 6th Floor
U.S. Department of Homeland Security
Boston, Massachusetts 02110
(617) 956-7576 (phone)

Commander (dpb)
First Coast Guard District
Battery Building
One South Street
New York, New York 10004-1466
(212) 514-4331 (phone); (212) 514-4337 (fax)
(Bridge permits)

U.S. Environmental Protection Agency
5 Post Office Square
Suite 100 (OEP06-3)
Boston, Massachusetts 02109-3912
(617) 918-1692 (phone)

State Agencies in Massachusetts

<u>Massachusetts Department of Environmental Protection (MassDEP)</u>	
<u>DEP Division of Wetlands & Waterways</u>	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 292-5695
<u>Northeast Region</u>	150 Presidential Way, Suite 300 Woburn, Massachusetts 01801 (978) 694-3200
<u>Southeast Region</u>	20 Riverside Drive, Route 105 Lakeville, Massachusetts 02347 (508) 946-2800
<u>Central Region</u>	8 New Bond Street Worcester, Massachusetts 01606 (508) 792-7650
<u>Western Region</u>	436 Dwight Street Springfield, Massachusetts 01103 (413) 784-1100

<u>Massachusetts Office of Coastal Zone Management (CZM)</u>	
Emails may be sent to: czm@mass.gov	
<u>MA Office of Coastal Zone Management</u>	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 626-1200
<u>North Shore Region</u>	2 State Fish Pier Gloucester, Massachusetts 01930 (978) 281-3972
<u>South Shore Region</u>	175 Edward Foster Road Scituate, Massachusetts 02066
<u>Cape Cod and Islands Region</u>	3195 Main Street, P.O. Box 220 Barnstable, MA 02630
<u>South Coastal Region</u>	81-B County Road, Suite E Mattapoisett, MA 02739

<u>Massachusetts Historical Commission (MHC)</u>	
Office Location:	220 Morrissey Boulevard Boston, Massachusetts 02125 (617) 727-8470

<u>Massachusetts Board of Underwater Archaeological Resources (BUAR)</u>	
Emails may be sent to: david.s.robinson@mass.gov	
Office Location:	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 626-1014

SECTION VII: Definitions & Acronyms

Artificial or Living Reef: A structure which is constructed or placed in waters for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities.

Attendant Features: Occurring with or as a result of; accompanying.

Biodegradable: A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Photodegradable, UV degradable or Oxo-(bio)degradable plastics are not considered biodegradable under this GP.

Boating facilities: These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, dockminiums, municipal facilities, land/home owners, etc. Not classified as boating facilities are piers shared between two abutting properties or municipal mooring fields that charge an equitable user fee based on the actual costs incurred.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Must comply with the applicable provisions of 33 CFR 332. See also the New England District Compensatory Mitigation Guidance at <http://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx>.

Construction mats: Constructions, swamp and timber mats (herein referred to as “construction mats”) are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be construction mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like construction mats, they are considered as fill whether they are installed temporarily or permanently.

Cumulative Impacts: The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.1). Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. See 40 CFR 230.11(g).

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Dredging:

Improvement Dredging: For the purposes of these GPs, this is dredging deeper than previously authorized by the USACE and dredged under that authorization.

Maintenance Dredging: For the purposes of these GPs, this is dredging from an area previously authorized by the USACE and dredged under that authorization. The USACE may require proof of authorization and dredging. Maintenance dredging typically refers to the routine removal of accumulated sediment to maintain the design depths of serviceable navigation channels, harbors, marinas, boat launches and port facilities. Maintenance dredging is conducted for navigational purposes and does not include any expansion of the previously dredged area. The USACE may

review a maintenance dredging activity as new dredging if sufficient time has elapsed to allow for the colonization of SAS, shellfish, etc.

New Dredging: For the purposes of these GPs, this is a) first time the USACE authorizes dredging of a particular location or b) dredging has not occurred for an extended period of time, and this has allowed for aquatic resources (i.e., eelgrass, shellfish, etc.) to redevelop in the area.

Dredged material & discharge of dredged material: These are defined at 33 CFR 323.2(c) and (d). The term dredged material means material that is excavated or dredged from waters of the U.S.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: A stream with flowing water only during, and for a short duration, after precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Erosion Controls: Appropriate soil erosion, sediment and turbidity controls include cofferdams, bypass pumping around barriers immediately up and downstream of the work footprint (i.e., dam and pump), installation of sediment control barriers (i.e., silt fence, vegetated filter strips, geotextile silt fences, filter tubes, erosion control mixes, hay bales or other devices) downhill of all exposed areas, stream fords, retention of existing vegetated buffers, application of temporary mulching during construction, phased construction, and permanent seeding and stabilization, etc.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site.

Establishment results in a gain in aquatic resource area (33 CFR 332.2).

Expansions: Work that increases the footprint of fill, structures, depth of basin or drainage features, or floats, or slip capacity.

Essential Fish Habitat (EFH): The Federal Magnuson-Stevens Fishery Management and Conservation Act broadly defines EFH to include those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. See

www.greateratlantic.fisheries.noaa.gov/habitat for more information.

Fill material & discharge of fill material: Material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water of the U.S. Fill material does not include any pollutant discharged into the water primarily to dispose of waste. These are defined at 33 CFR 323.2 (e) & (f).

Federal navigation projects (FNPs): These areas are maintained by the USACE; authorized, constructed and maintained on the premise that they will be accessible and available to all on equal terms; and comprised of USACE Federal anchorages, Federal channels and Federal turning basins. The buffer zone is equal to three times the authorized depth of a FNP. The following are FNPs in MA and more information, including the limits, is provided at

www.nae.usace.army.mil/missions/navigation >> Navigation Projects:

Andrews River, Harwich, MA	Cross Rip Shoals, Nantucket	Gloucester Harbor and
Aunt Lydia's Cove	Sound	Annisquam River
Beverly Harbor	Cuttyhunk Harbor	Green Harbor
Boston Harbor	Dorchester Bay and Neponset	Hingham Harbor
Buttermilk Bay Channel	River	Hyannis Harbor
Canapitsit Channel	Duxbury Harbor	Ipswich River
Cape Cod Canal	Edgartown Harbor	Island End River (Chelsea, MA)
Chatham Harbor	Essex River	Kingston Harbor
Cohasset Harbor	Fall River Harbor	Lagoon Pond
	Falmouth Harbor	Little Harbor Woods Hole

Lynn Harbor	Plymouth Harbor	Taunton River
Malden River	Pollock Rip Shoals, Nantucket Sound	Vineyard Haven Harbor
Menemsha Creek	Provincetown Harbor	Wareham Harbor
Merrimack River	Red Brook Harbor	Wellfleet Harbor
Mystic River	Rockport Harbor	Westport River and Harbor
Nantucket Harbor of Refuge	Salem Harbor	Weymouth Back River
New Bedford and Fairhaven Harbor	Sandy Bay Harbor of Refuge	Weymouth Fore and Town Rivers
Newburyport Harbor	Saugus River	Winthrop Harbor
Oak Bluffs Harbor	Scituate Harbor	Woods Hole Channel
Pigeon Cove Harbor	Sesuit Harbor	

Flume: An open artificial water channel, in the form of a gravity chute, which leads water from a diversion dam or weir alongside a natural flow. A flume can be used to measure the rate of flow.

FNP buffer zone: The buffer zone of a USACE Federal Navigation Project (FNP) is equal to three times the authorized depth of the FNP.

Frac out: During horizontal directional drilling (HDD) operations, drilling fluid travels up the borehole into a pit. When the borehole becomes obstructed or the pressure becomes too great inside the borehole, the ground fractures and fluid escapes to the surface and may affect surface waters.

Ground disturbance: Any activity that compacts, relocates, overturns, removes, mixes, or otherwise disturbs the ground, including under water. Ground disturbance can be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, dredgers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, dredging, excavating, scraping, and plowing are typical examples of ground disturbance activities.

Height:width ratio: The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.

High Tide Line (HTL): The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides 58 that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds. (33 CFR 328). Refer to the highest predicted tide for the current year at the nearest NOAA tide gage. <https://tidesandcurrents.noaa.gov/map/index.html>

Historic Property: Any prehistoric or historic site (including archaeological sites), district, building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Impacts:

Direct Impacts: Effects that are caused by the activity and occur at the same time and place (40 CFR 1508.7).

Indirect impacts: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Secondary impacts: Effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.

Information about secondary effects on aquatic ecosystems shall be considered prior to the time final section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are: aquatic areas drained, flooded, fragmented; fluctuating water levels in an impoundment and downstream associated with the operation of a dam; septic tank leaching and surface runoff from residential or commercial developments on fill; and leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h).

Incidental Fallback: Incidental fallback is the redeposit of small volumes of dredged material that is incidental to excavation activity in waters of the U.S. when such material falls back to substantially the same place as the initial removal (33 CFR 323.2(d)(2)(iii)).

In the dry: Work that is done under dry conditions, e.g., work behind cofferdams or when the stream or tide is waterward of the work.

Independent utility: A test to determine what constitutes a single and complete non-linear project in the USACE Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Individual permit: A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Intertidal: The area in between mean low water and the high tide line.

Living reef: See the definition of “artificial or living reef.”

Living shoreline: A term used to describe a low-impact approach with a substantial biological component to shoreline protection and restoration along coastal shores, riparian zones, lacustrine fringe wetlands, or oyster or mussel reef structures. This approach integrates natural features to restore, enhance, maintain, or create habitat, functions, and processes while also functioning to mitigate flooding or shoreline erosion. Living shorelines may stabilize banks and shores with small fetch and gentle slopes that are subject to low-to mid-energy waves. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes.

Loss of waters of the United States: Waters of the U.S. that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the U.S. is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for a GP; it is not a net threshold that is calculated after considering compensatory mitigation that maybe used to offset losses of aquatic functions and services. Waters of the U.S. temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the U.S. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the U.S.

Maintenance: The repair, rehabilitation, or in-kind replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 – “Activities occurring before certain dates,” provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Maintenance includes minor deviations in the structure’s configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make repair, rehabilitation, or replacement are authorized. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Maintenance Exemption: In accordance with 33 CFR 323.4(a)(2), any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under Section 404 of the CWA: “Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design.”

Mean high water: Line on the shore reached by the plane of the average high water. Where precise determination of the actual location of the line becomes necessary, it must be established by survey with reference to the available tidal datum, preferably averaged over a period of 18.6 years. Less precise methods, such as observation of the “apparent shoreline” which is determined by reference to physical markings, lines of vegetation, or changes in type of vegetation, may be used only where an estimate is needed of the line reached by the mean high water.

Mechanized land clearing: Land clearing activities using mechanized equipment such as backhoes or bulldozers with shear blades, rakes or discs constitute point source discharges and are subject to section 404 jurisdiction when they take place in wetlands or waters of the U.S (Regulatory Guidance Letter 90-05).

Metallic mineral: Any ore or material to be excavated from the natural deposits on or in the earth for its metallic mineral content to be used for commercial or industrial purposes. “Metallic mineral” does not include thorium or uranium.

Minor deviations: Deviations in the structure’s configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environmental effects resulting from such repair, rehabilitation, or replacement are minimal.

Natural Rocky Habitats: Intertidal and subtidal substrates of pebble-gravel, cobble, boulder, or rock ledge and outcrops. Manufactured stone (e.g., cur or engineered riprap) is not considered a natural rocky habitat. Natural rocky habitats are either found as pavement (consolidated pebble-gravel, cobble, or boulder areas) or as a mixture with fines (i.e., clay and sand) and other substrates. Rocky habitats as EFH are defined as follows: (1) All pebble-gravel, cobble, or boulder pavements; (2) Pebble-gravel mixed with fines: mixed substrate of pebble-gravel and fines where pebble-gravel is an evident component of the substrate (either through visual observation or within sediment samples). Sediment samples with a content of 10% or more of pebble-gravel in the top layer (6-12 inches) should be delineated; (3) Scattered cobble, scattered boulder, scattered cobble/boulder: mixed substrate of cobble and/or boulder and other substrates. The aerial extent of cobbles and/or boulders should be delineated; and (4) All rock ledge outcrops: area should be delineated along the edge of the ledge/outcrop (as defined by NMFS Habitat and Ecosystems Services Branch, Gloucester, MA).

Navigable waters or Navigable waters of the U.S.: These waters are subject to section 10 of the Rivers and Harbors Act of 1899 and are defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR Part 329). Work or structures in navigable

waters require permits pursuant to §9 and §10 of the Rivers and Harbors Act of 1899. Also see the definition of “waters of the U.S.” below.

Note: Currently the following non-tidal waters have been determined to be navigable waters of the U.S. subject to permit jurisdiction in Massachusetts: Merrimack River, Connecticut River, and Charles River to the Watertown Dam.

Nearshore disposal: This is defined in the USACE Coastal Engineering Manual as “(1) In beach terminology an indefinite zone extending seaward from the shoreline well beyond the breaker zone. (2) The zone which extends from the swash zone to the position marking the start of the offshore zone, typically at water depths of the order of 20m.” A nearshore berm is an artificial berm built in shallow water using dredged material. Often, the berm is intended to renourish the adjacent and downdrift shore over time under the influence of waves and currents.

Non-regulated activity: Only structures or fills that were previously authorized and are in compliance with the terms and condition of the original authorization can be maintained as a non-regulated activity under 33 CFR 323.4(a)(2). Minor deviations from the previously authorized footprint do not qualify as a non-regulated activity and require new authorization from the USACE. The state’s maintenance provisions may differ from the USACE and a project may require reporting and written authorization from the state.

Non-tidal wetlands: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the HTL (*i.e.*, spring HTL). Also see the definition of “Waters of the U.S.” below.

Oil or natural gas pipeline: Any pipe or pipeline for the transportation of any form of oil or natural gas, including products derived from oil or natural gas, such as gasoline, jet fuel, diesel fuel, heating oil, petrochemical feedstocks, waxes, lubricating oils, and asphalt.

Ordinary High Water Mark (OHWM): A line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas. See 33 CFR 328.3(e).

Overall project: The overall project, for purposes of these GPs, includes all regulated activities that are reasonably related and necessary to accomplish the project purpose. Also see the definition of “single and complete linear project.”

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Permanent impacts: Permanent impacts means waters of the U.S. that are permanently affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent impacts include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody.

Preconstruction notification (PCN): A request submitted by the applicant to the USACE for confirmation that a particular activity is authorized by these GPs. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Preconstruction notification may be required by the terms and conditions of these GPs. A PCN may be voluntarily submitted in cases where PCN is not required and the applicant wants confirmation that the activity is authorized under these GPs.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions (33 CFR 332.2).

Real estate subdivision: Includes circumstances where a landowner or developer divides a tract of land into smaller parcels for the purpose of selling, conveying, transferring, leasing, or

developing said parcels. This would include the entire area of a residential, commercial or other real estate subdivision, including all parcels and parts thereof

Reconfiguration zone: A USACE authorized area in which permittees may rearrange pile-supported structures and floats without additional authorizations. A reconfiguration zone does not grant exclusive privileges to an area or an increase in structure or float area.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/ historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in again in aquatic resource area and functions (33 CFR 332.2).

Reference Site: Reference sites - Compensatory restoration, rehabilitation, and creation mitigation projects should seek to duplicate the features of reference aquatic resources or enhance connectivity with adjacent natural upland and aquatic resource landscape elements. Performance standards related to reference sites are encouraged. Mitigation project sites must be selected based on their ability to be, and continue to be, resistant to disturbance from the surrounding landscape, by locating them adjacent to refuges, buffers, green spaces, and other preserved natural elements of the landscape. In general, aquatic resource mitigation projects must be designed to be self-sustaining, natural systems within the landscape and climate in which they are located, with little or no ongoing maintenance and/or hydrologic manipulation.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area (33 CFR 332.2).

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation (33 CFR 332.2).

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Sedimentation: Sedimentation is defined as the process of deposition of a solid material from a state of suspension. Deposited sediments may accumulate and have temporal impacts to aquatic resource areas. See secondary effects definition above. For the purposes of this document, "greater than minimal sedimentation" is generally not considered to occur when using proper erosion controls (GC 25) or when sedimentation is considered "de minimis" 33 CFR 323.2(d)(5).

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/ developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for the purposes of these GPs. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete

non-linear project must have independent utility (see the definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in a GP authorization.

Special aquatic sites (SAS): These include inland and saltmarsh wetlands, mud flats, vegetated shallows, sanctuaries and refuges, coral reefs, and riffle and pool complexes. These are defined at 40 CFR 230.3 and listed in 40 CFR 230 Subpart E.

Streambed: The stream substrate between the OHW marks on each side. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the streambed, but outside of the OHW marks, are not considered part of the streambed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the U.S.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Temporal loss: The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site(s) (33 CFR 332.2).

Temporary impacts: Temporary impacts include, but are not limited to, jurisdictional waters that are temporarily filled, flooded, excavated, or drained because of the regulated activity. Impacts are considered temporary when they are removed immediately upon completion of the activity. Note: An impact is considered temporary when the aquatic resource is restored to pre-project conditions, but effects to archaeological and/or cultural resources may be permanent in duration.

Tidal wetlands: A wetland that is subject to the ebb and flow of the tide. See the definition of “Waters of the U.S.” below.

Tide gates: Structures such as duckbills, flap gates, manual and self-regulating tide gates, etc. that regulate or prevent upstream tidal flows.

Turbidity: A measure of the level of particles such as sediment, plankton, or organic by-products, in a body of water. As the turbidity of water increases, it becomes denser and less clear due to a higher concentration of these light-blocking particles. Suspended solids are more likely to carry toxic chemicals, and can also negatively affect aquatic organisms, water temperature, and dissolved oxygen levels.

Utility line: Any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. A utility line also includes any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term ‘utility line’ does not include activities that drain a water of the U.S., such as drainage tile or French drains, but it does apply to pipes conveying drainage from another area.

Vegetated shallows: Permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*) in marine systems (does not include salt marsh) as well as a number of freshwater species in rivers and lakes. These are a type of SAS defined at 40 CFR 230.43. Vegetated shallows are commonly referred to as submerged aquatic vegetation or SAV. Vegetated shallow survey guidance is located at www.nae.usace.army.mil/missions/regulatory/jurisdiction-and-wetlands. Maps of vegetated shallows in Massachusetts are located at www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

Vernal pools: For the purposes of these GPs, vernal pools are depressional wetland basins that typically dry up in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In

most years, vernal pools support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

Water diversions: Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

Waters of the United States (U.S.) These waterbodies are the waters where permits are required for the discharge of dredged or fill material pursuant to §404 of the CWA. These waters include but are not limited to navigable waters of the U.S. and tidal wetlands and include many non-tidal wetlands and other waterbodies. See definitions for navigable waters of the U.S., tidal wetlands, waterbody, and non-tidal wetlands. (33 CFR 328)

Waterbody: Examples of "waterbodies" include oceans, coastal waters, rivers, streams, ditches, lakes, ponds, and wetlands. If a wetland is adjacent to a waterbody determined to be a water of the U.S., that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

Weir: A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure and allows water to flow over the top. Weirs are commonly used to alter the flow regime of a river, prevent flooding, measure discharge and help render a river navigable.

Wetland: Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The Corps of Engineers Wetlands Delineation Manual in conjunction with the associated regional supplement should be used to determine if a wetland is present and delineate wetland boundaries.

Acronyms

BMPs	Best Management Practices
BUAR	Massachusetts Board of Underwater Archaeological Resources
CWA	Clean Water Act
CZM	Coastal Zone Management
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EFH	Essential Fish Habitat
FNP	Federal Navigation Project
GC	General Condition
GP	General Permit
HTL	High Tide Line
IP	Individual Permit
LID	Low impact development
MassDEP	Massachusetts Department of Environmental Protection
MA DMF	Massachusetts Division of Marine Fisheries
MHC	Massachusetts Historical Commission
MHW	Mean High Water
MLLW	Mean Lower Low Water
MLW	Mean Low Water
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
OHW	Ordinary High Water Mark
PCN	Preconstruction Notification
SAS	Special Aquatic Sites
SF	Square Feet
SV	Self-Verification
SHPO	State Historic Preservation Officer
THPO	Tribal Historic Preservation Officer
USFWS	U.S. Fish and Wildlife Service
USCG	U.S. Coast Guard
USFS	U.S. Forest Service
USGS	U.S. Geological Service
WQC	Water Quality Certification

Appendix A: Guidance for NHPA Section 106 Compliance in Massachusetts

1. Purpose & Applicability

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C § 306108), requires Federal agencies to take into account the effects of their undertakings on Historic Properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. Therefore, in order for an activity to be eligible for authorization under the 2023 Massachusetts General Permit, the USACE must consider the effect the activity may have on historic properties. Historic properties may include, but are not limited to, historic districts, archaeological districts, sites, buildings, structures, objects, sacred sites, traditional cultural places, and traditional cultural landscapes that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

This guidance applies to projects that require authorization under Section 404 of the Clean Water Act (33 U.S.C. § 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. §403) and will assist applicants when evaluating and documenting the presence of historic properties within or near their project site(s). The prospective applicant will evaluate their proposed project using the criteria below to determine if their project has the potential to affect historic properties and if so, whether or not historic properties are present or are likely to be present. All activities authorized under these GPs shall follow the terms outlined in General Condition 14: Historic Properties and General Condition 6: Tribal Rights & Burial Sites. Prospective applicants shall complete their due diligence according to the procedures below for their application to be deemed complete.

2. No Potential to Affect Historic Properties

Certain activities do not have the potential to cause effects on historic properties, assuming such historic properties were present, based on the nature of the activity and site-specific conditions. Therefore, these activities **do not** require historic property identification efforts or notification of the SHPO, THPOs, and/or BUAR under Section 106. The USACE has determined the following activities within the stated parameters have no potential to affect historic properties:

General Permit	Activity Parameters
1	Temporary buoys, markers and similar structures that are placed during winter events on ice and removed before spring thaw.
2	Repair or rehabilitation of structures that are less than 45 years in age. Any temporary structures or fills or work necessary to complete repairs or rehabilitation must not result in any ground disturbance.
3	Maintenance and replacement of moorings that are less than 45 years in age.
6	Maintenance, repair, replacement, or removal of utility lines, oil or natural gas pipelines, outfall or intake structures, and/or appurtenant features that are less than 45 years in age when all access, staging, and ground disturbance is strictly limited to previously disturbed areas (including any previous ground disturbance). Replacement must be in kind or smaller in size. Installation of tide gates on outfall structures that are less than 45 years in age.
7	Maintenance dredging of previously dredged areas where dredging does not extend beyond the original bottom elevations.

	Disposal of dredged material at an existing established and USACE-approved confined aquatic disposal cell. Beach nourishment in ongoing existing nourishment areas.
11	Fish and wildlife harvesting and attraction devices and activities.
13	Cleanup of hazardous and toxic waste materials, including contaminated sediments, that are less than 45 years in age.
16	Removal of land-based and water-based renewable energy generation facilities and hydropower projects that are less than 45 years in age.
18	Installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures for previously authorized by the USACE and ongoing aquaculture activities. Discharges of dredged or fill material into tidal or non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities for previously authorized and ongoing aquaculture activities.
20	Maintenance activities for existing living shorelines <u>excluding</u> maintenance activities that require new ground disturbance such as excavation or re-sloping of the bank/shoreline.
22	Reshaping or maintenance of existing drainage ditches less than 45 years in age <u>excluding</u> ditch enlargement.
23	Placement of temporary and removable linear transportation and wetland/stream crossings that have no ground disturbance prior to placement, during placement, and during removal (i.e., placed on the surface and subsequently removed within one year of placement).
24	Placement of temporary and removable crossings and cofferdams that have no ground disturbance prior to placement, during placement, and during removal (i.e., placed on the surface and subsequently removed within one year of placement).
25	Emergency repair of existing structures and/or fills less than 45 years in age.

3. Historic Property Identification

If the activity does not fit under the criteria above, the following historic property identification efforts must be completed to demonstrate compliance with Section 106 of the NHPA. This includes documenting previously identified and unidentified historic properties in the project area.

a. Previously Identified Historic Properties: The prospective applicant shall document if previously identified historic properties are present on or adjacent to the project site by notifying the Massachusetts Historical Commission (MHC) and the Massachusetts Board of Underwater Archaeological Resources (BUAR), as appropriate, of the proposed project. The MHC and BUAR will check their records for the presence of any previously identified historic properties. The following outlines how prospective applicants should notify the MHC and BUAR.

i. The prospective applicant will notify the SHPO and BUAR to identify any previously recorded cultural resources. Applicants shall mail a completed Project Notification Form¹⁸, project narrative, location (coordinates), plans, soil maps, and information on known cultural resources to the MHC. The MHC does not accept submissions via email. Applicants shall email or mail this information to the BUAR when the activity is located in lakes, ponds, rivers, and/or navigable waters in MA. Emailed file attachments should be <10MB. Any files >10MB shall be delivered via a file exchange system or the hard copy documents shall be mailed. Preferred contact information is listed below.

ii. **When sending this information, applicants must also document proof of receipt OR proof the information was delivered.** Proof of receipt constitutes a certified mail receipt, read email receipt, or other mail/email/online tracking services that document the information has reached the intended recipient(s). Proof the information was delivered constitutes a certificate of mailing, email delivery receipt, or other mail/email/online services that document the information was sent at a particular time. When using proof of delivery such (e.g., certificate of mailing), applicants should add 5 days to the 30-day notification period so the mail has time to reach its intended recipient. When using proof of receipt, the applicant may begin the 30-day notification period from the date received by the intended recipient.

iii. When mailing or emailing the application materials, applicants should include the following statement: "Please send responses to this notification directly to the USACE via email: cenae-r-ma@usace.army.mil or address regular mail responses to: Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, Massachusetts 01742-2751." Email responses to the USACE are strongly preferred. The SHPO and BUAR will contact the USACE and cc the applicant(s) within 30 days of receiving the notification if their records indicate that historic properties are located in the project vicinity, and if additional review and/or surveys are recommended to ensure NHPA compliance. If the SHPO and/or BUAR do not respond within 30 days of receiving the notification, it is presumed that no known historic properties are present.

b. Previously Unidentified Historic Properties: The prospective applicant shall evaluate the project site and determine the sensitivity for the presence of historic properties if the project site has not been previously surveyed for cultural resources within the last 10 years. If the sensitivity is determined to be moderate to high, an intensive archaeological and/or architectural survey is required to investigate the potential presence of historic properties. The individual conducting this survey must meet the Secretary of the Interior's Standards for Professional Qualifications (48 FR 44738-44739) in the discipline relevant to a particular resource type. For example, archeologists should not document and evaluate buildings or structures and architectural historians should not document and evaluate archaeological sites. The identification and qualifications for those participating in any survey and evaluation of resources should be included with the survey results. The criteria listed below are indicators of low sensitivity for the presence of historic properties for consideration when determining if an archaeological or architectural survey is needed.

Low sensitivity indicators:

- Previous archaeological and/or architectural survey within the last 10 years with negative results.
- In a location created in modern times (i.e., built on fill placed within the last 45 years or within an area excavated within the last 45 years).
- USACE has reviewed the project description and determined that a survey is not warranted based on the proposed activity and its location.

State survey guidance and standards are provided in the September 1995 Historic Properties Survey Manual Guidelines for the Identification of Historical and Archaeological Resources in Massachusetts available. State survey guidance and standards for underwater surveys are provided

¹⁸ <https://www.sec.state.ma.us/mhc/mhcform/formidx.htm>

in the Board of Underwater Archaeological Resources' 2022 Policy Guidance on Archaeological Investigations and Related Survey Standards for the Discovery of Underwater Archaeological Resources. This guidance is available on the NAE Regulatory website: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

Please note, a negative result from MHC and/or BUAR does not necessarily mean no historic properties are present. Often proposed project sites have not been previously subject to a survey, so historic properties which may be present have not been previously recorded.

4. Tribal Coordination

Prospective applicants shall mail the Project Notification Form, project narrative, location (coordinates), plans with locus map, soil maps, and information on cultural resources to the Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and/or Stockbridge-Munsee Community Band of Mohican Indians with interests in the project location. Preferred tribal contact information, including their respective areas of interest, can be found below. Applicants shall follow the same procedures as identified in Section 3(a)i-iii above when notifying Tribes of the proposed activity. Applicants shall provide the USACE with any responses received from the tribe(s) with their PCN application. If a tribe does not respond within 30 days of receiving the notification, the applicant shall provide USACE with all documentation of tribal outreach with their SV or PCN submission (e.g., emails, letters, phone call log, etc.). If the tribe indicates the presence of a previously unrecorded cultural resource, including a traditional cultural property (TCP) or traditional cultural landscape (TCL), a PCN is required.

5. Effect Determination

The project may have the potential to affect historic properties and/or tribal resources if 1) notification recipients respond within 30 calendar days of notification with concerns, 2) historic properties eligible for listing, or potentially eligible for listing in the NRHP, are present or 3) tribal resources are known to be present. The USACE may need to further review the project to confirm potential effects to historic properties and/or tribal resources. A PCN is required for any activity that may affect a historic property.

The USACE may determine the project will have 'no effect' on historic properties (i.e., no historic properties affected) when procedures outlined in Section 3 above are followed and no cultural resources are identified. Similarly, if historic properties are identified and will be completely avoided, the USACE may determine 'no effect.'

6. Contact Information:

Massachusetts Historical Commission

The Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

No email. Applicants or their representatives must send project information via certified mail and submit the certified mail receipt to the USACE or send via regular mail and submit proof of delivery.

Area of concern: All of Massachusetts.

Massachusetts Board of Underwater Archaeological Resources (BUAR)

100 Cambridge Street, Suite 900
Boston, Massachusetts 02114
Email: david.s.robinson@mass.gov

Applicants or their representatives must send project information via email (***strongly preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All waterbodies in Massachusetts.

Wampanoag Tribe of Gay Head (Aquinnah)

Bettina Washington
Tribal Historic Preservation Officer (THPO)
20 Black Brook Road
Aquinnah, Massachusetts 02535
Email: thpo@wampanoagtribe-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All of Massachusetts.

Mashpee Wampanoag Tribe

ATTN: David Weeden
Tribal Historic Preservation Officer (THPO)
483 Great Neck Road South
Mashpee, Massachusetts 02649
Email: 106review@mwtribe-nsn.gov
Cc: David.weeden@mwtribe-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All of Massachusetts.

Narragansett Indian Tribe

ATTN: John Brown
Tribal Historic Preservation Officer (THPO)
Narragansett Indian Longhouse
4425 South County Trail
Charlestown, Rhode Island 02813
Email: tashtesook@aol.com

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: Massachusetts east of the Connecticut River.

Stockbridge-Munsee Community Band of Mohican Indians

ATTN: Jeff Bendremer
Tribal Historic Preservation Manager
Stockbridge-Munsee Community
Tribal Historic Preservation Extension office
86 Spring Street
Williamstown, Massachusetts 01267
Email: thpo@mohican-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: West of the Connecticut River and Northfield, Montague, Miller's Falls, Turner's Falls, Sunderland, Amherst, Hadley, South Hadley, Chicopee, Springfield and Longmeadow.

APPENDIX B PRE-CONSTRUCTION NOTIFICATION

**U.S. Army Corps of Engineers (USACE), New England District (NAE)
PRE-CONSTRUCTION NOTIFICATION (PCN)**

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

Principal Purpose The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

Routine Uses This information may be shared with other federal, state, and local government agencies during the application review process. Submission of requested information is voluntary. However, if information is not provided the PCN application cannot be fully evaluated nor can USACE render a permit decision.

Disclosure

Instructions The applicant must complete ALL required sections of this document before their submission to USACE. The PCN submission to USACE shall include one set of drawings which show the location and character of the proposed activity, statements that address each required field below, and documentation that supports each field (e.g., emails, letters, description/narrative, phone calls, surveys, reports, etc.). Electronic submissions to the following address are strongly preferred: cenae-r-ma@usace.army.mil. The email subject line shall contain the following: General Permit #, PCN, City/Town, and date submitted. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY USACE)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - E-mail Address -		8. AUTHORIZED AGENT'S NAME AND TITLE (<i>agent is not required</i>) First - Middle - Last - Company - E-mail Address -	
6. APPLICANT'S ADDRESS: Address- City - State - Zip - Country -		9. AGENT'S ADDRESS: Address- City - State - Zip - Country -	
7. APPLICANT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile		10. AGENT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile	

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act on my behalf as my agent in the processing of this general permit PCN application and to furnish, upon request, supplemental information in support of this general permit PCN application.

SIGNATURE OF APPLICANT

DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)

Latitude: °N Longitude: °W

City: State: Zip:

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID:

Municipality:

Section:

Township:

Range:

17. DIRECTIONS TO THE SITE.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration	Purpose

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

25. Is Any Portion of the General Permit Activity Already Complete? Yes No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (see instructions)

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (see instructions)

28. For a proposed GP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project? Yes No
 If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
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The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a
Department of the Army
General Permit (GP) Pre-Construction Notification (PCN)**

Blocks 1 through 4. To be completed by the U.S. Army Corps of Engineers.

Block 5. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific General Permit(s) You Propose to Use. List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

Block 19. Description of the Proposed General Permit Activity. Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20: Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

Block 21. Purpose of General Permit Activity. Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity. For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including its banks, that are directly affected by the structures or fills. The duration of impact should be identified as temporary (xx days) or permanent. The impact purpose should briefly describe what structure or fill is responsible for the impact.

Block 23. Identify Any Other General Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity. List any other GP(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by these GPs that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

Block 24. Compensatory Mitigation Statement for Losses Greater Than the New England District Compensatory Mitigation Thresholds. New England District requires compensatory mitigation at a minimum one for one replacement ratio or greater for all aquatic resource losses that require a PCN and exceed the New England District Compensatory Mitigation Thresholds, unless USACE determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed GP activity are no more than minimal without compensatory mitigation, and provides an activity specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than the New England District Compensatory Mitigation Thresholds or provide an explanation of why USACE should not require wetland compensatory mitigation for the proposed GP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

Block 25. Is Any Portion of the General Permit Activity Already Complete? Describe any work that has already been completed for the GP activity.

Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the General Permit Activity. If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed GP activity, or if the proposed GP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

Block 27. List Any Historic Properties that Have the Potential to be Affected by the General Permit Activity. If you are not a federal agency, and if any historic properties have the potential to be affected by the proposed GP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed GP activity. Provide all relevant documentation about these historic properties in the PCN submittal. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the General Permit Activity Would Occur in such a River. If the proposed GP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a "study river" under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit <http://www.rivers.gov/>

Block 29. General Permit Activities that also Require Permission from the USACE Under 33 U.S.C. 408. If the proposed GP activity also requires permission from the USACE under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a USACE federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the USACE district having jurisdiction over that project.

Block 30. 401 Water Quality Certification. As described above, specify if the activity requires a 401 WQC from the certifying authority.

Block 31. Other Information Required For General Permit Pre Construction Notifications. The terms of some of the General Permits include additional information requirements for preconstruction notifications:

- * Maintenance – information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
- * Temporary Construction, Access, and Dewatering – a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
- * Repair of Uplands Damaged by Discrete Events – documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
- * Commercial Shellfish Aquaculture Activities – (1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this GP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required). Dredging – (1) a proposed sampling and analysis plan shall be provided to USACE for approval prior to its execution. Pre-application meetings are encouraged.
- * Beach Nourishment – sediment grain size should be determined for the length of the beach where nourishment is proposed. The frequency and locations of sediment sampling shall be sufficient to identify the sediment composition of the beach profile. This data shall be consolidated to generate a sediment gradation curve for each sampled transect. Each sampled transect should also be identified on the project plans (drawings).

If more space is needed, attach an extra sheet of paper marked Box 31.

Block 32. Signature of Applicant or Agent. The PCN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the GP activity (including compliance with special conditions, mitigation, etc.).

DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the USACE. The permittee may ask the USACE to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the USACE does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 60-day PCN review period will not start until a delineation has been completed.

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one copy of all drawings on 8½ x 11 inch plain white paper (electronic submissions preferred). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

ADDITIONAL INFORMATION AND REQUIREMENTS

For proposed GP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived. Some States, Tribes, or EPA have issued water quality certification for one or more GPs. Please check the New England District website to see if water quality certification has already been issued for the GP(s) you wish to use. For proposed GP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur. Some States have issued Coastal Zone Management Act consistency concurrences for one or more GPs. Please check the New England District website to see if Coastal Zone Management Act consistency concurrence has already been issued for the GP(s) you wish to use.

APPENDIX C SELF-VERIFICATION NOTIFICATION

**U.S. Army Corps of Engineers (USACE)
SELF-VERIFICATION NOTIFICATION (SVN)**

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

Principal Purpose This information will be used in evaluating activities under Self-Verification procedures within Massachusetts.

Routine Uses Routine uses will include: (1) Documenting compliance with the terms and conditions of the General Permit (GP) for activities that may require authorization pursuant to one or more of USACE's Regulatory authorities. (2) Records may be referred to other Federal, State, and local agencies for evaluation and enforcement purposes.

Disclosure Failure to fully comply and abide by the GP terms and conditions prior to commencing work and after completion project may result in formal enforcement action, up to and including monetary penalties and/or legal action, pursuant to 33 CFR Part 326.

Instructions The permittee must complete ALL required sections of this document before commencing USACE-regulated activities. A copy of this completed SVN must be kept on site during construction and be made available for review by USACE and other Federal, State, & Local regulatory authorities at any time. Within 30 days of initiating project construction, the permittee shall submit the completed SVN to USACE. The SVN shall be submitted to USACE as **ONE signed document** that includes project plans and documentation that supports each field (e.g., emails, letters, description, phone calls, surveys). Electronic submissions to the following address are strongly preferred: cenae-r-ma-sv@usace.army.mil. The email subject line shall contain the following: GP #, SVN, City/Town, and date submitted.

(ITEMS 1 THRU 3 TO BE FILLED BY USACE)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED
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APPLICANT AND AGENT INFORMATION

<p>4. APPLICANT'S NAME</p> <p>First - Middle - Last -</p> <p>Company -</p> <p>E-mail Address -</p>	<p>7. AGENT'S ADDRESS:</p> <p>First - Middle - Last -</p> <p>Company -</p> <p>E-mail Address -</p>
<p>5. APPLICANT'S ADDRESS:</p> <p>Address-</p> <p>City - State - Zip - Country -</p>	<p>8. AGENT'S ADDRESS:</p> <p>Address-</p> <p>City - State - Zip - Country -</p>
<p>6. APPLICANT'S PHONE NOs. w/AREA CODE</p> <p>a. Residence b. Business c. Fax</p>	<p>9. AGENTS PHONE NOs. w/AREA CODE</p> <p>a. Residence b. Business c. Fax</p>

NAME, LOCATION, AND DESCRIPTION OF PROJECT SITE

10. PROJECT NAME OR TITLE
11. FILE NUMBER(S) OF PREVIOUS USACE ACTIONS ON THE SITE (if applicable)
12. NAME OF WATERBODY
13. PROJECT COORDINATES (in decimal degrees)
Latitude: °N Longitude: °W
14. PROJECT STREET ADDRESS (if applicable)
Address
City - State - Zip -

ACTIVITY TYPE, PROJECT IMPACTS, AVOIDANCE & MINIMIZATION

15. GENERAL PERMIT ACTIVITIES (CHECK ALL THAT APPLY)

1 <input type="checkbox"/>	6 <input type="checkbox"/>	11 <input type="checkbox"/>	16 <input type="checkbox"/>	21 <input type="checkbox"/>
2 <input type="checkbox"/>	7 <input type="checkbox"/>	12 <input type="checkbox"/>	17 <input type="checkbox"/>	22 <input type="checkbox"/>
3 <input type="checkbox"/>	8 <input type="checkbox"/>	13 <input type="checkbox"/>	18 <input type="checkbox"/>	23 <input type="checkbox"/>
4 <input type="checkbox"/>	9 <input type="checkbox"/>	14 <input type="checkbox"/>	19 <input type="checkbox"/>	24 <input type="checkbox"/>
5 <input type="checkbox"/>	10 <input type="checkbox"/>	15 <input type="checkbox"/>	20 <input type="checkbox"/>	25 <input type="checkbox"/>

16. SUMMARY OF PROJECT IMPACTS (*see instructions*)

Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration

23. STATEMENT OF AUTHORIZATION *(see instructions)*

I certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

24. SIGNATURES *(see instructions)*

I hereby certify that the information in this Self-Verification Notification is complete and accurate. As the applicant or their duly authorized agent, I certify the activity was completed in accordance with the terms and conditions of the GP. This includes all applicable terms, general conditions, and activity-specific GP criteria. I agree to allow the duly authorized representatives of the Corps of Engineers Regulatory Program and other regulatory or advisory agencies to enter upon the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enter the property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as "no trespassing" this consent specifically supersedes and waives that prohibition and grants permission to enter the property despite such posting.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a
Department of the Army
General Permit (GP) Self-Verification**

Blocks 1 through 3. To be completed by the Corps of Engineers.

Block 4. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the self-verification, please attach a sheet of paper with the necessary information marked Block 4.

Block 5. Address of Applicant. Please provide the full address of the party or parties responsible for the self-verification. If more space is needed, attach an extra sheet of paper marked Block 5.

Block 6. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 7 through 9. To be completed, if you choose to have an agent.

Block 7. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 8 and 9. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 10. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 11. File Number(s) of Previous USACE Actions on the Site Please provide any known USACE file number. If the activity does not have a known USACE file number, you may state N/A.

Block 12. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 13. Proposed Activity Coordinates. Please enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 13.

Block 14. Proposed Activity Street Address. If the proposed activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. General Permit Activity Type. Please select all GP activity types that apply to the proposed activity. A list of GP activity types can be found in Section III of the GP.

Block 16. Summary of Project Impacts. Please provide ALL proposed impacts, both temporary and permanent in duration, that are located in Waters of the United States. The area of impact shall be provided in square feet (SF). When applicable, impacts that result in conversion of stream bank or shoreline must also be identified in linear feet (LF). Dredging or the discharge of dredged or fill material shall also include the volume, cubic yards (CY), of material removed from or placed into Waters of the U.S. If more entries are required, please attach a table matching the desired format in Block 16.

Block 17. Project Plans. Please verify that items a-g are included in the project plans. Three types of illustrations are necessary to properly depict the proposed work. These illustrations or drawings are identified as a Vicinity Map, a Plan View (Aerial view) and a Cross Section Map. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings (longitudinal profile) should also be included. Plans must accurately depict the existing conditions and all aspects of the proposed activity located in waters of the U.S. Please submit one copy of all drawings formatted to print on 8½ x 11 inch or 11 x 17 inch plain white paper. Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be certified engineering sheets; they should be clear, accurate, contain all necessary information, and depict all proposed work. Each submission must also include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by USACE.

Block 18. Avoidance & Minimization. Please verify that items a-d have been implemented for the proposed activity.

Block 19. Due Diligence. Please complete all the fields and submit documentation to USACE to demonstrate compliance with the above requirements. This Documentation may include emails, letters, meeting notes, phone call log, project narrative, project plans, a species list from the NOAA Section 7 Mapper, a completed copy of the IPAC determination keys, etc. Documentation should be limited to what is necessary to demonstrate how the proposed activity meets each requirement. Refer to the MA GP, Appendix A, for specific guidance on the identification of previously identified historic properties and previously unidentified historic properties. Endangered Species: *The applicant must be designated as the non-federal representative for the purposes of Section 7 consultation to select the Rangewide D-Key options. Otherwise, the applicant shall select the following option when IPAC indicates the NLEB is present: "The activity IS located within the NLEB Species Range (PCN Required)."

Block 20. Aquaculture Activities. Please verify that items a-d have been obtained or completed prior to commencing work in waters of the U.S.

Block 21. Additional Information/Attachments. Please verify that items a-d have been completed prior to commencing work in waters of the U.S.

Block 22. Lead Federal Agency. Please identify if there is another lead federal agency involved with the proposed activity. Enter the lead federal agency name (e.g., the Federal Emergency Management Agency, FEMA) and the agency's designated person of contact for the activity.

Block 23. Statement of Authorization. The applicant shall sign this section for all activities. If an agent is to be employed, the agent shall sign this section.

Block 24. Signatures. The SVN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the SVN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the SVN possesses the requisite property rights to undertake the GP activity.



**US Army Corps
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New England District

APPENDIX D: PCN APPLICATION CHECKLIST

The following information shall be submitted for all PCNs for USACE to properly evaluate your application. Some applications may require more information and this checklist is offered as a tool to assist applicants with submitting a complete application.

SECTION 1: GENERAL APPLICATION INFORMATION

1. Complete the Pre-Construction Notification document (Appendix B).
2. Specify which local/state/federal authorizations are required for the project and if any have been obtained or applied for at the time of USACE application submittal.
3. Identify all funding sources the project will receive or has received to date. Provide any relevant information in the application submission.
4. Is this part of a larger project that is being implemented in phases? If so, describe the project schedule and how each phase will be implemented.
5. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time application submittal.
6. Provide any historic information available that you may have of project area, e.g., existing USACE permit numbers, the names under which the permits were obtained if the permit numbers are unknown, construction dates and proof of prior existence (aerials, photos, town hall records, affidavits, state or local permits, etc.) to verify that the project predates regulation and is “vested”.¹⁹
7. The anticipated start and end dates for construction.

SECTION 2: WETLAND DELINEATION

8. Data used to support aquatic resource boundary determinations (delineation forms, delineation map(s) that show the locations of each aquatic resource in the project area, aerial and ground photographs, LIDAR imagery, national wetland inventory maps, soil maps, national hydrography dataset maps, floodplain maps, historical imagery, etc.).
9. Photographs of the wetland(s) and/or waterway(s) where impacts are proposed. Photos at low tide are preferred for work in tidal waters.
10. Indicate the relationship of the project area to waters of the U.S., i.e., adjacent wetlands, tidal influence or hydraulic connectivity through culverts, or other conveyances, etc.
11. At minimum the delineation map/figure should include the following:
 - a. Contour lines showing topography.
 - b. North arrow.
 - c. Bar and text scale.
 - d. Legend.
 - e. Drawn project boundary.
 - f. High tide line, mean high water, mean low water, ordinary high water mark, and/or wetland boundaries.
 - g. Captions with a unique name for each aquatic resource and the area or length of the aquatic resource within the project area.

¹⁹ Vested is exempt (someone or something) from a new law or regulation.

- h. Appropriate landmarks and features (e.g., culverts, special aquatic sites, etc.).
- i. Points showing the paired upland and wetland delineation locations for tidal and non-tidal wetlands only.

SECTION 3: AVOIDANCE & MINIMIZATION

- 12. Describe specific measures taken to avoid impacts to aquatic resources or describe why aquatic resources could not be avoided while achieving the project purpose and need.
- 13. For impacts to aquatic resources that could not be avoided, describe specific considerations/ measures taken to minimize the area of proposed impacts to aquatic resources in designing the project.
- 14. Describe specific measures taken to avoid and minimize the proposed direct, indirect, and secondary impacts to aquatic resources and their functions through construction techniques and timing.
- 15. If applicable, provide a restoration plan that describes how all temporary fills and structures will be removed and the area restored to pre-impact conditions (see GC 22).
- 16. If applicable, provide an Invasive Species Control Plan (see GC 29). For sample control plans, see www.nae.usace.army.mil/missions/regulatory/invasive-species.
- 17. If applicable, describe how the proposed wetland/waterbody crossing is compliant with GC 31, Stream Work and Crossings, and Wetland Crossings.

SECTION 4A: PROJECT IMPACTS

- 18. Describe the overall project and the activities located in Waters of the U.S. (WOTUS) that you are seeking authorization for.
- 19. Identify the following for project impacts in WOTUS:
 - a. Direct, indirect, secondary impacts²⁰ within WOTUS.
 - b. The size of each impact (square feet or acres, or linear feet).
 - c. For discharges of fill material (§404), specify the volume of fill material to be discharged (cubic yards).
 - d. The impact duration from each activity, permanent or temporary (X days).

SECTION 4B: PROJECT PLANS

- 20. Submit project plans that depict all impacts in WOTUS. On the project plans, applicants shall provide:

General Information

- a. Plan view and typical cross-section view sheets that show the existing and proposed conditions. These illustrations should each be identified with a figure number, date of the map, the project title, the name of the applicant and the type of illustration (vicinity map, plan view, or cross section).
- b. Drawings, sketches, or plans that are legible, reproducible (color is encouraged, but features must be distinguishable in black and white), drawn to scale, and no larger than 11"x17" and 10 MB when submitted in digital format. Numeric and graphic/bar scales must agree, and plan details must be measurable using a standard engineer's scale on printed plans. Reduced plans are not acceptable.
- c. The north arrow and remove miscellaneous non-wetland or water project related features such as conduits, utility poles, guardrails, etc.

²⁰ See definitions section for the definitions of direct, indirect, secondary impacts.

- d. Clearly draw the overall limits of work, staging areas, disposal sites, access routes, and any permittee responsible mitigation sites. These areas may include both aquatic resources and upland areas.
- e. Names or numbers of all roads in the site's vicinity and ownership and numbers of abutting parcels.
- f. Datum in plan and elevation views. The horizontal datum shall be in the NAD 83 Massachusetts State Plane Coordinate System (INSERT) in U.S. survey feet. The vertical data in coastal projects shall be referenced to either MLLW or the North American Vertical Datum of 1988 (NAVD 88). Both the distance and depth units shall be U.S. survey feet and specified on the project plans.

Aquatic Resources & Project Impacts

- g. Delineation of all aquatic resource types on site including salt marsh; other special aquatic sites (vegetated shallows, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges); other waters, such as lakes, ponds, vernal pools, natural rocky habitat (tidal only), and perennial, intermittent, and ephemeral streams.
- h. Identify the substrate type (cobble/gravel, organic detritus, sand/shell, silt, mud) and the approximate percentage of each substrate type on site. Grain sizes shall be based on Wentworth grain size classification scale for granules, pebbles, cobbles, and boulders. Sediment samples with a content of 10% or more of pebble-gravel-cobble and/or boulder in the top layer (6-12 inches) should be delineated and material with epifauna/macroalgae should be differentiated from bare pebble-gravel-cobble and boulder.
- i. The direction of ebb and flood in tidal waters and direction of flow in non-tidal waters.
- j. In tidal waters, the project boundary distance from special aquatic sites identified in 20g above if within 25 feet from that resource.
- k. USACE jurisdictional boundaries including ordinary high-water mark (OHWM), high tide line (HTL), mean high water (MHW). Other boundaries include mean low water (MLW), mean lower low water (MLLW), as applicable.
 - Non-tidal: OHWM and/or wetland boundaries.
 - Tidal (structures/work only): MHW, MLW.
 - Tidal (Fill and Structures/work): HTL, MHW, MLW.
 - Tidal (Dredging/Beach Nourishment): HTL, MHW, MLW, MLLW.
- l. Identification of each aquatic resource with a unique name (ex. Wetland 1, Wetland 2, Tributary 1, Beaver Brook, Atlantic Ocean) and the size of each aquatic resource within the project area (square feet or acres).
- m. Impacts to each aquatic resource with captions denoting the size of each impact (square feet, acres, or linear feet) and the duration of the impact (ex. Permanent, Temporary (X days)).

SECTION 4C: PROJECT PLANS - SPECIFIC PROJECT INFORMATION

- 21. For projects involving Navigation, Structures, Dredging, and/or Beach Nourishment, the applicant shall also address the following:

Navigation

- a. Identify the locations of adjacent Federal navigation project (FNP) and/or state/local navigation projects on the project plans.
- b. Specify the distance between the FNP and proposed project boundary, the authorized depths of the FNP, and state plane coordinates of seaward end(s) of project structures near an FNP.

Structures

- a. Identification of the piling type (steel, timber, concrete) and diameter to be removed and/or installed.
- b. Specify the minimal height of the structures' frame over saltmarsh. To meet the SV threshold, piers must be ≤ 4 feet in width and this minimal height must achieve a 1.5:1 ratio (i.e., a 4-foot-wide pier is 6 feet above a saltmarsh).
- c. For floats, the methods of securing them (piles, bottom anchors) and for keeping them off substrate (skids, stops) at low water. To meet the SV threshold, a minimum depth of 18-inches of water should be maintained below a floating dock/structure at lower tide levels.

Dredging

- a. The area (SF, acre) and volume (CY) of material to be dredged waterward of MHW for each dredge location.
- b. Dredge boundaries.
- c. Bathymetry for existing, proposed, and historical (include dates and USACE permits) dredge depths.
- d. The likely final angle of repose of the side cuts based on the physical characterization of the material to be dredged and based upon the high/ medium/low, wave or current energy of the location.
- e. Label area whether the dredging is new, maintenance, improvement, or a combination.
- f. Location of the disposal site (include location sheet). NOTE: For projects proposing open water, nearshore disposal, or beach nourishment, contact USACE as early as possible for sampling and testing protocols. Sediment testing, including physical (e.g., grain-size analysis), chemical and biological testing may be required. Sampling/testing of sediments without such contact should not occur and if done, will be at the applicant's risk.
- g. The methods and areas used to retain or prevent dredged material from running back into the wetland or waterway. Provide the capacity of the storage area and points of runback, including the overflow route, into the aquatic system.
- h. For open-water disposal, explain why inland or beneficial reuse sites are not practicable.
- i. Show the finished top elevation of the disposal site.

Beach Nourishment

- a. For beach nourishment, identify the disposal footprint, existing and proposed nourishment profiles (multiple profiles are appropriate if the site is more than 150 feet long or non-contiguous), total fill area (SF) and volume (CY), fill area and volume waterward of the HTL, and delineation of dunes, banks, existing beach vegetation, and contours.
- b. For beach nourishment identify the substrate type (fine sand, sand, cobble, boulder) and/or grain-size of existing material.

SECTION 5: STRUCTURES

- 22. For projects with the removal of existing pilings identify the number, type (steel, timber, concrete) and diameter of pilings to be removed and the methodology for removal (cut off at mud line, pulling, vibratory, etc.).
- 23. For projects with the installation of new pilings identify the number, type (steel, timber, concrete) and diameter of pilings to be installed and the methodology for installation (vibratory hammer, impact hammer etc.).
- 24. Identify any existing structures and moorings in waters adjacent to the proposed activity, their dimensions, and the distance to the limits and coordinates of any proposed mooring field or reconfiguration zone. For reconfiguration zone and mooring fields, provide the coordinates for all

corners based on the Massachusetts State Plane Coordinate System. Specify the maximum number of slips and/or moorings within proposed reconfiguration zones or anchorage areas.

25. The dimensions of the structure or work and extent of encroachment waterward of MHW and from affixed point on the shoreline or upland.
26. Shoreline of adjacent properties and property boundary offset for structures. In narrow waterbodies, the distance to opposite shoreline, waterway width, and structures across from proposed work.
27. For new commercial boating facilities, anchorage areas or reconfiguration zones, provide a description of the type of vessels that would use the facility, and any plans for sewage pump-out facilities, fueling facilities and contingency plans for oil spills.
28. See Sections 4A-C above.

SECTION 6: AQUACULTURE

29. Identify the coordinates for lease area corners and gear configuration area on the project plans.
30. Identify the proposed aquaculture gear type (buoys, floats, racks, trays, nets, lines, tubes, cages, containers, and other structures). Provide the impacts for each aquaculture gear type (see Section 4A 19a-d).
31. For a GP 18 to be valid, applicants must have (a) their MA DMF Aquaculture Certification letter for licensed shellfish aquaculture sites, (b) documentation that the applicant has coordinated with the U.S. Coast Guard regarding USCG Private Aids to Navigation standards, (c) their MEPA Certificate (if required), and (d) documentation that the applicant has contacted their local authorities (ex. harbormaster, select board, shellfish constable) for authorization of their facility.
32. Provide information on site the operation, maintenance, and access. Will the site be accessed via boat, kayak, etc.? Will cages be removed in the winter? How often will gear be checked on? Is there an operations plan for the proposed aquaculture area?
33. See Sections 4A-C above.

SECTION 7: DREDGING

34. Sampling plan requests for new, improvement or maintenance dredging must submit completed [Dredged Material Evaluation checklist found at Dredged Material Evaluation Checklist, Sampling and Analysis Plan Requirements from Applicant \(army.mil\)](#) and identify the method of handling/transporting the dredged material.
35. Identify grain-size of material to be dredged (e.g., silty sand) and provide any existing sediment grain size and bulk sediment chemistry data from the proposed project or nearby projects. Include information on any recent spills of oil and/or other hazardous materials and/or nearby outfalls. Document the information source, e.g., EPA database, the harbormaster or fire chief. If there are none, state "none".
36. See Section 4A, 4B and 4C, Dredging 21(a-i) above.

SECTION 8: WETLAND/WATERBODY CROSSINGS

37. For the stream crossing, identify the crossing methodology on the project plan (e.g., dam and pump, dry, wet, etc.). Submit a waterway crossing sequencing plan with the application.
38. If the project includes a permanent crossing of a tidal waterway, your project design should be modified to match the velocity, depth, cross-sectional area, and substrate of the existing waterbody adjacent to the crossing and provide documentation (hydraulic analysis including low lying property analysis) that the size of the crossing will not restrict tidal flow over the full natural tide range and will not adversely affect abutting infrastructure.

39. If the work includes a permanent crossing of a non-tidal stream, your project design should be modified to match the culvert gradient of the existing stream channel profile, provide clearance for ≥ 1.2 times bank full width and conveyance should be embedded $\geq 1-2$ feet for box culverts and pipe arches or $\geq 1-2$ feet and at least 25 percent for rounded pipes/culverts in accordance with the Massachusetts Stream Crossing Standards. Provide the basis for any variation to this requirement.
40. If the work includes a permanent crossing of a non-tidal stream, the structure should be designed to include a natural bottom substrate within the conveyance that matches the characteristics of the substrate in the natural stream channel and the character of the banks (mobility, slope, stability, confinement, grain and rock size). The conveyance should be designed with a minimum openness ratio ≥ 0.82 -feet (0.25-meters). For how to calculate openness ratio and stream simulation ecological approach for road and stream crossings, see <https://www.nae.usace.army.mil/Missions/Regulatory/Stream-and-River-Continuity/>.

SECTION 9: COMPENSATORY MITIGATION

41. Does the project require Compensatory Mitigation²¹ for impacts to Waters of the U.S.? (See Section V in the 2023 Massachusetts General Permit)
42. If the project requires mitigation, does the selected compensatory mitigation option (i.e., In-Lieu Fee, permittee-responsible mitigation) deviate from the order of the options presented in §332.3(b)(2)-(6)? If so, please explain why. <https://www.ecfr.gov/current/title-33/chapter-II/part-332/section-332.3>
43. For any compensatory mitigation that involves preservation, the applicant must use a site protection instrument to preserve the parcel in perpetuity. (Conservation Easement, Deed Restriction, etc.) <https://www.mass.gov/service-details/conservation-restriction-review-program>.

SECTION 10: HISTORIC PROPERTIES & NOTIFICATIONS TO SHPO, THPOs, BUAR

44. Notify the SHPO, Massachusetts Historical Commission, of the Project via Certified Mail and include proof of delivery or receipt in the application package (See Appendix A).
45. As applicable, notify the THPOs, Narragansett Indian Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and Mashpee Wampanoag Tribe, of the Project via email OR mail and include proof of delivery or receipt in the application package (See Appendix A).
46. As applicable, notify the BUAR via email (*strongly preferred*) OR mail and include proof of delivery or receipt in the application package (See Appendix A).
47. Include responses to this notification in the permit application.
48. As applicable, information on historic properties (Tribal and Archaeological) within the project area should be provided in the permit application.

SECTION 11: ENDANGERED SPECIES & ESSENTIAL FISH HABITAT

49. Provide a USFWS Information for Planning and Consultation (IPaC) Official Species List from <https://ecos.fws.gov/ipac> and the email of the individual who generated the list (see GC 10 of the 2023 Massachusetts General Permit for more information).
50. Provide a species list from the NMFS Section 7 Endangered Species Act mapper at <https://noaa.maps.arcgis.com/apps/webappviewer/index.html>.
51. Provide a species list from the NMFS Essential Fish Habitat Mapper at https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3.

²¹ Your mitigation proposal must be consistent with the December 29, 2020 Compensatory Mitigation Standard Operating Procedures at <https://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/Compensatory-Mitigation-SOP-2020.pdf> and 2008 Mitigation Rule.

52. If the project will generate turbidity, describe the extent of turbidity and if erosion controls will be used to contain turbidity. If turbidity controls are not operationally feasible, explain the basis for your conclusion and identify any other measures that you will implement to minimize resuspension of sediment.
53. Identify the substrate type and any aquatic resources that will be affected by the proposed action. (SAV, salt marsh, sand, silt/clay, rocky/hard bottom)
54. For projects which will include the installation of pilings/sheet-piles, identify the substrate at the project site (sand, cobble, silt/mud/clay), the installation method (vibratory hammer, impact hammer, combination) and indicate whether the following “soft start” procedures at beginning of the workday and after a 30-minute period of rest will be deployed:
 - a. Vibratory Pile Installation: pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
 - b. Impact Pile Installation: pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving.
55. If the project involves dredging, describe any dredge history, number of dredge events to be covered by the permit, erosion/sediment controls, dredge type, intake structures (mesh screen size), dredged material disposal site.
56. For project activities associated with structures, identify the number, type (drill barge, work boat, tugboat, etc.), and size of any temporary vessels that will be used. Specify measures that will be implemented to ensure vessels are not berthed in shallow water or will “ground out” at low tide.
57. For aquaculture projects identify whether any component of the gear is seasonal (will be removed annually) or will be in place year-round. If gear will be present year-round and will be variably managed (e.g., floating in summer, bottom in winter) identify month/date for such configurations.
58. For aquaculture projects identify whether the project will involve use of an existing vessel or new vessel. Identify the length for all work vessels and identify the distance round trip from vessel berthing location and aquaculture area.
59. For project activities associated with docking structures (either commercial, industrial, or recreational) identify the number, type (motorized/non-motorized, jet-ski, sailboat, kayak, canoe, other that will be berthed there and the sizes of each.
60. Information required for Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act:
 - a. Results of an eelgrass survey completed per the INSERT.
 - b. Essential Fish Habitat Assessment to determine project-related impacts to essential fish habitat, using guidance developed by the National Marine Fisheries Service.
61. A document containing the following information (requirements of 50 CFR §600.920(e)(3)):
 - a. Description of proposed action.
 - b. Analysis of potential adverse effects on essential fish habitat.
 - c. Conclusions regarding the effects of the action on essential fish habitat.
 - d. If applicable, proposed mitigation.
 - e. Analysis of alternatives to the proposed action.
 - f. Other:

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DOCUMENT A00841

MASSACHUSETTS
Department of Environmental Protection
Water Quality Certificate

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Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

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Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

December 20, 2023

Massachusetts Department of Transportation
Highway Division
Ten Park Plaza, Suite 4160
Boston, MA 02116
ATTN: Courtney Walker

RE: 401 WATER QUALITY CERTIFICATION
BRP WW 11 (X289593) MINOR FILL AND EXCAVATION PROJECTS
BRP WW 08 (X289762) MINOR DREDGE PROJECTS

USACE Application Number: NAE-2023-00854

AT: Sand Mill Road over Dry Brook
Cheshire, Massachusetts
Hoosic River Watershed

Dear Ms. Walker:

The Department of Environmental Protection (“MassDEP”) has reviewed your application for a Water Quality Certification (WQC), as referenced above. In accordance with the provisions of MGL Ch. 21, §§26-53 and Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), it has been determined there is reasonable assurance the proposed project will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The proposed project includes the replacement of Sand Mill Bridge (C-10-002) which carries Sand Mill Road over Dry Brook in Cheshire. The project includes dredging to remove the existing abutments and alterations to Bordering Vegetated Wetland (BVW) and Land Under Water (LUW) as a result of the installation of the new bridge and abutments. The bridge has undergone multiple repairs and needs complete replacement due to its poor condition.

The existing bridge conveys traffic over Dry Brook. This two-lane bridge is a steel girder single span structure that is approximately 23 feet wide and has a span of 43 feet, 10.5 inches. It was built in 1939 and rehabilitated in 2016. The approaches on either side of the bridge are approximately the same width as the bridge. Sand Mill Road is located in a residential neighborhood and has no shoulders or

401 WQC – Cheshire –Bridge replacement (C-10-002) on Sand Mill Road
Application Number – X289593/X289762

sidewalks. Stormwater is conveyed on the project via sheet flow off the roadway to the vegetated shoulders (country drainage).

The Project will take place within Federal Emergency Management Agency (FEMA) Zone A. Dry Brook is designated as a Coldwater Fishery and a Natural Heritage and Endangered Species Program (NHESP) Priority Habitat for the Longnose Sucker. A vegetated wetland is located adjacent to the southern bank, on the west side of Sand Mill Road.

The project proposes to replace the existing bridge superstructure with a new single span structure in the same alignment. The new bridge and adjacent approaches will consist of two 10-foot travel lanes and two 2 foot, 4.5-inch shoulders, totaling a new full width of 24 feet, 9 inches. The existing abutments will be removed and replaced in the same location, resulting in the same span as existing conditions (43 feet, 10.5 inches). The total length of roadway to be paved/repaved is 450 linear feet.

Construction of the substructure will require excavation of 265 cubic yards of riverbed material in the areas of the new abutments and limited dewatering of these excavated areas. Streambed material within the work area will be temporarily removed, stored on site, and returned to the streambed once the abutment construction has been completed. Cofferdams will be in place for abutment construction, but stream flow will be maintained throughout the project.

The proposed replacement of the bridge and its abutments will result in permanent and temporary impacts to BVW as well as LUW. The impacts to BVW will consist of 80 square feet (sf) of permanent and 75 sf of temporary impacts. The impacts to LUW will consist of 821 square feet (sf) of permanent and 607 sf of temporary impacts. An 87 sf BVW replication area is proposed to offset the permanent impacts on the project and temporary impacts will be restored in place. The replication area will be located just west of the southwest quadrant of the bridge.

Approximately 265 cubic yards (CY) of dredging will be required to remove the existing abutments and install the new abutments. Cofferdams will be required around the abutments for dewatering, demolition, and construction, but stream flow will be maintained throughout construction. Streambed material removed from this area will be retained on site until the completion of the abutments. The material will then be returned to restore this area.

As the project is considered redevelopment in accordance with the stormwater provisions of 314 CMR 9.06(6)(a)7., stormwater standards will be met to the maximum extent practicable (MEP). The project will increase impervious area on site by 1,054 sf. The roadway currently utilizes country drainage for stormwater runoff. Various Stormwater Control Measures including water quality swales were considered but would require clearing and grubbing of existing vegetation, including trees. The project proposes the revegetation of the slope areas adjacent to the roads within the project limits. The peak discharge rate will slightly increase for all storm events, with a maximum increase of 0.16 cfs for the 100-year storm.

The replacement bridge will span Dry Brook and will provide an openness ratio of 9.8 feet, exceeding the openness ratio requirement. The span will be approximately 43.9 inches, or 1.7 feet less than 1.2 times the bankfull width of 45.6 feet. Following construction, the streambed will be restored with natural bottom substrate. The proposed span meets the Stream Crossing Standards to the maximum extent practicable.

401 WQC – Cheshire –Bridge replacement (C-10-002) on Sand Mill Road
Application Number – X289593/X289762

Based on a review of information provided by the applicant, MassDEP finds that this project complies with the standards described under 314 CMR 9.06. Public notice was provided in the Berkshire Eagle on September 22, 2023. No comments were received.

Therefore, based on information currently in the record, MassDEP grants a 401 Water Quality Certification for this project subject to the following conditions to maintain water quality, to minimize impact on waters and wetlands, and to ensure compliance with appropriate state law. MassDEP further certifies in accordance with 314 CMR 9.00 that there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law. Finally, MassDEP has determined that upon satisfying the conditions and mitigation requirements of this approval, the project provides a level of water quality necessary to protect existing uses and accordingly finds that the project to be implemented satisfies the Surface Water Quality Standards at 314 CMR 4.00.

Pursuant to 314 CMR 9.09(1)(d); 314 CMR 9.06(6)(a); 310 CMR 9.06(2); 314 CMR 9.07; 314 CMR 9.07(1); 314 CMR 9.09(7)(5)(c); 314 CMR 9.11; and 314 CMR 9.09(1)(e), the following Special Conditions are necessary to ensure that construction practices and stormwater controls are implemented in such a manner as to prevent degradation to wetlands and waters; ensure that practicable steps have been taken which will avoid and minimize impacts to wetlands and waters; minimize turbidity and sediment caused by construction activities; ensure that water quality is not degraded, and that biology of the waters are not negatively impacted by potential discharges; and/or maintain a record of the dredged material for reference and to ensure accountability in its transportation.

Those special conditions that require direct submittals to MassDEP for either review or review and approval are denoted by the following notation (Submittal) at the end of the condition. In addition, those conditions with the (Submittal) designation shall be included in the Special Provisions and reviewed at the District Pre-Construction Conference.

1. All work shall be performed in accordance with the following documents and plans:
 - a. Joint ACOE/401 WQC Application for MassDOT Cheshire Bridge (including all attachments and appendices), prepared by Weston and Sampson on behalf of MassDOT, dated September 14, 2023, Transmittal Number X289593/X289762;
 - b. Response to MassDEP Comments for Cheshire: Sand Mill Road over Dry Brook, 401 WQC Transmittal No. X289593 & X289762, submitted by Weston and Sampson on behalf of MassDOT, dated November 20, 2023.
 - c. Revised MassDOT Special Environmental Specifications, as provided by MassDOT on December 14, 2023.

Pre-construction

2. As specified in the permit application and Item 983.522 of the Streambed Restoration project specifications, a qualified **Fluvial Geomorphologist (FGM)** with a minimum of five years of relevant professional experience in stream replacement and restoration projects shall be employed to oversee all LUW replacement and restoration activities. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for review and approval with a copy to the Cheshire Conservation Commission prior to the Pre-Construction Meeting. **(Submittal)**

401 WQC – Cheshire –Bridge replacement (C-10-002) on Sand Mill Road
Application Number – X289593/X289762

3. Prior to the Pre-Construction Meeting, the applicant shall provide MassDEP with the name and contact information of the Resident Engineer (RE) responsible for ensuring that all work complies with the conditions of this WQC. **(Submittal)**
4. A minimum of 21 days prior to the start of work, MassDOT shall contact MassDEP to schedule an onsite or virtual Pre-Construction Meeting to review the approved plans and terms and conditions of this WQC. The RE, the construction contractor, a representative from the MassDOT Environmental Section and/or the District Environmental Engineer shall attend the Pre-Construction Meeting.
5. MassDEP shall be copied on applicable submittals to the U.S. Army Corps of Engineers (Corps). These include but are not limited to: Self-Verification Notification Form (SVNF); Pre-Construction Notification (PCN); Work-Start Notification Form; Mitigation Work-Start Notification Form; and/or Compliance Certification Form. The Work-Start Notification Form shall be submitted at least 14 days before the anticipated start of work and the Compliance Certification Form shall be submitted within 30 days following the completion of the authorized work. **(Submittal)**
6. A CP/PP shall be developed and implemented as required by 314 CMR 9.06(6)(a)8. A minimum of 14 days prior to the start of work, MassDOT shall submit the CP/PP for review and approval. Any subsequent changes to the Final CP/PP (defined herein as including the construction period SWPPP) must be approved by MassDEP. **(Submittal)**
7. Training regarding erosion and sedimentation controls are required. The RE, CP/PP Inspector, and any other relevant personnel responsible for erosion and sedimentation controls shall complete the EPA Construction General Permit Inspector Training, or other comparable training. Said training must include a complete and comprehensive review of the Final CP/PP and Stormwater Standard 8 requirements. Verification of proof of completion training of the shall be submitted to MassDEP prior to the start of work.
8. The CP/PP shall identify, but shall not be limited to, staging and laydown areas in relation to BVWs and LUW, proposed dewatering locations, proposed stockpile locations and their proximity to catch basins or other drainage conveyances that discharge to wetland resource areas, and the location of construction-period erosion and sedimentation controls.
9. A minimum of 21 days prior to the start of work, MassDOT shall submit a Water Management Plan for review and approval. The Plan shall include proposed methods to manage construction-period water including but not limited to dewatering methods and locations, specifications for any water bypass systems, and dredge and debris material dewatering prior to shipment off site, as applicable. The plan shall meet requirements of the CP/PP and be specific to the Project. Dewatering and water bypasses shall be conducted under the supervision of the RE and comply with the applicable conditions identified herein. **(Submittal)**
10. Prior to the start of work, approved erosion and sedimentation control measures shall be installed per the approved CP/PP and as applicable, the manufacturer specifications. Erosion and

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sedimentation control measures may consist of, but are not limited to, silt fence, staked straw bales, silt/turbidity curtains, compost filter tubes, etc.

11. Prior to the Pre-Construction Meeting, the boundaries of BVWs and LUW shall be re-flagged where they are within 50 feet of the limits of work. In the event BVWs and LUW boundaries overlap, the outermost boundary (i.e., closest to the proposed work) shall be flagged. All boundary markers, once in place, shall remain in place throughout construction until all disturbed surfaces have been permanently stabilized. Boundary markers shall be fully evaluated annually and refreshed where needed. Implementation of and compliance with this requirement shall be documented by the RE. All construction personnel shall be made aware of these markers.
12. A Flood Contingency Plan shall be submitted to MassDEP 14 days prior to the start of construction for review and approval. This plan will address areas that fall within the 1% annual chance of flooding zone within project limits. The Plan shall address the potential need for temporary relocation of construction and auxiliary equipment during flood events to designated upland locations above the Base Flood Elevation. The Plan shall be approved by MassDEP prior to any work within the 1% annual chance of flooding zone, including mobilization or storage of equipment and materials. **(Submittal)**

Construction Period

13. No more than **80 sf** of permanent and **75 sf** of temporary impacts to BVWs shall occur. No more than **821 sf** of permanent and **607 sf** of temporary impacts to LUW shall occur. No more than **265 cy** of dredging in LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.
14. CP/PP inspections shall occur at least once every seven calendar days and within 24 hours of a storm event that produces 0.5 inches or more of rain within a 24-hour period, or at a more stringent frequency if the CP/PP requires. Inspections are required only during the normal working hours of the site.
15. Pursuant to Section 9.1.2.l of the EPA CGP, copies of the Copies of CP/PP Inspection Reports and Corrective Action Logs shall be submitted to MassDEP within 14 days upon request.
16. Inspection and maintenance of erosion and sediment controls in active work areas shall be the responsibility of both the Contractor and RE. The RE shall be ultimately responsible for inspection and maintenance of site controls. The RE, and/or contractor shall immediately notify MassDEP and the Cheshire Conservation Commission if any unauthorized discharges to BVW or LUW occur.
17. In order to protect the priority habitat of Longnose Sucker, no in-water, silt-producing work shall occur during the Time of Year (TOY) restriction between the dates of April 1 to July 31. Work may proceed behind dewatered cofferdams at any time, provided they are installed and removed outside of the TOY restriction.
18. Disturbed areas shall be stabilized immediately after activities have permanently ceased or will be temporarily inactive for 14 or more calendar days. The installation of stabilization measures shall be implemented as soon as practicable, but no later than 14 calendar days after stabilization has been initiated.

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19. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Cheshire Conservation Commission within 24 hours prior to the commencement of dewatering. Dewatering methods and location(s) shall be approved by the RE prior to use, and shall be documented in the CP/PP. There shall be no discharge of untreated dewatered stormwater or groundwater to BVWs or LUW. Any discharges shall be visibly free of sediment.
20. Additional erosion and sedimentation control materials shall be stored on-site at all times for emergency and routine replacement. Materials shall be kept covered, dry, and accessible at all times. The RE shall be responsible for anticipating the need for and installation of additional erosion and sedimentation controls and shall have the authority to require additional erosion control measures to protect wetland resource areas beyond what is shown on the plans if field conditions, or professional judgment dictate that additional protection is necessary.
21. The RE shall monitor the National Weather Service forecast for updates, and upon issuance of a flood watch for the 1% annual chance of flooding zone, shall implement the flood contingency plan referenced in Condition 12.
22. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW. The CP/PP shall specify measures to implement this. Filter fabric stretched under storm drain inlet grates are not acceptable for this purpose.
23. The contractor shall have designated washout areas for concrete equipment that will be comprised of impermeable material and sized to contain project concrete wastes and wash water. Concrete wash out areas shall be located no less than 50 feet from BVWs, LUW, and catch basins or other drainage conveyances that discharge directly or indirectly to BVWs or LUW.
24. Refueling, washing, and cleaning of vehicles and other construction equipment shall not take place within 50 feet of BVWs or LUW and any wash water shall be contained such that it does not drain toward BVWs or LUW. MassDEP shall explicitly approve in writing any deviation to this condition for oversized stationary vehicles.
25. The contractor shall have spill containment kits on site. In the event of a release of fuels and/or oils, the local fire department and MassDEP shall be notified.
26. Sheet piles shall be fully removed from wetland resource areas upon stabilization of the area as required. No portion of sheet piles shall remain unless approved by MassDEP in writing prior to installation. A request to leave sheet piles shall include, but not be limited to, demonstration that full removal of the sheet piles is not feasible or practicable, and an alternatives analysis demonstrating alternative methods to isolate the work area(s) are not feasible or practicable. At no time shall sheet piles be allowed to remain in LUW of a waterway that provides aquatic organism passage.

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Dredging

27. Measures shall be in place to prevent turbid waters, due to dredging, demolition, or debris removal activities, from extending past the limits of work into Dry Brook. These measures can be items such as turbidity curtains and/or sheet piles.
28. MassDEP shall be notified one week prior to the start of dredging so that staff may inspect the work for compliance throughout the project.
29. If visual turbidity escapes the controls in place, as described in Condition 27, work shall stop immediately and MassDEP shall be notified within 24 hours. Work shall not resume until the issue is corrected and MassDEP to the satisfaction of MassDEP.
30. All turbidity controls shall be inspected daily by the RE. If any damage is observed the controls in place will be replaced or repaired immediately.
31. All material dredged or excavated within LUW and transported off site shall be tracked when transported using a Bill of Lading (BOL). A fully executed copy of the BOL shall be provided to MassDEP within 30 days of final shipment to the reused location or facility.
32. The contractor shall provide the dredge material disposal location prior to disposal, and it shall be reviewed and approved by MassDEP. If a licensed facility is located out of state, documentation shall be provided to the MassDEP that the dredged material disposal/reuse has been approved and will be accepted by the receiving State.
33. Best management practices shall be implemented during transportation of dredge materials to the receiving facility. At a minimum, when transported upon public roadways, all dredged materials shall have no free liquid as determined by a paint filter test or other suitable method.

Stream Mitigation and Wetland Replication

34. The FGM shall oversee all LUW replication and restoration. Placement of streambed materials shall take place in no- or low-flow conditions. The Water Management Plan required in Condition 9 shall include measures to create no-flow conditions for this work such as a pump bypass system or other dewatering method, if needed. Placement of streambed materials during greater than low-flow conditions shall require a placement plan, with a narrative describing turbidity control measures, submitted to MassDEP for review and approval.
35. Water shall be slowly introduced back into the restored and dewatered LUW work areas as to not cause erosion and sedimentation. This work shall be overseen by the FGM.
36. An 87-square foot replication shall be constructed in accordance with Item 755.35 of the project specifications and shall be done in coordination with a Wetland Specialist.

Post-Construction

37. All temporary erosion controls shall be removed at the conclusion of work once the surrounding area has achieved final stabilization.

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General Conditions

38. Any proposed alterations, minor plan changes, or amendment requests, as well as any required submittals shall be sent by email for review and approval to heidi.davis@mass.gov and tyler.lewis@mass.gov. **(Submittal)**
39. This WQC remains in effect for the same duration as the Section 404 permit that requires it.
40. No Special Condition set forth herein shall be construed or operate to prohibit MassDEP from taking enforcement against the MassDOT or its contractors for any failure to comply with the terms and requirements of this WQC.
41. No activity authorized by this WQC may begin prior to expiration of the 21-day appeal period, or until a final decision is issued by MassDEP in the event of an appeal.

Failure to comply with this Certification is grounds for enforcement, including civil and criminal penalties, under MGL Ch. 21 §42, MGL Ch. 21A §16, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This Certification does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations.

NOTICE OF APPEAL RIGHTS

A) Appeal Rights and Time Limits

Certain persons shall have a right to request an adjudicatory hearing concerning certifications by MassDEP when an application is required: (a) the applicant or property owner; (b) any person aggrieved by the decision who has submitted written comments during the public comment period; any ten (10) persons of the Commonwealth pursuant to M.G.L. c.30A where a group member has submitted written comments during the public comment period; or (d) any governmental body or private organization with a mandate to protect the environment which has submitted written comments during the public comment period. Any person aggrieved, any ten (10) persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c.30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within twenty-one (21) days from the date of issuance of this Certificate, and addressed to:

Case Administrator
Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02108

A copy of the request shall at the same time be sent by certified mail or hand delivery to the Department of Environmental Protection at:

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Department of Environmental Protection
Commissioner’s Office
100 Cambridge Street, Suite 900
Boston, MA 02108

B) Contents of Hearing Request

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP’s Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a.) the 401 Certification Transmittal Number;
- b.) the complete name of the applicant and address of the project;
- c.) the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
- d.) if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of “aggrieved person” found at 314 CMR 9.02;
- e.) a clear and concise statement that an adjudicatory hearing is being requested;
- f.) a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the MassDEP’s Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and
- g.) a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Environmental Management (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

C) Filing Fee and Address

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

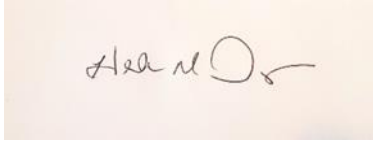
Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

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Should you have any questions relative to this permit, please me at Heidi.davis@state.ma.us or tyler.lewis@state.ma.us.

Very truly yours,

A rectangular image showing a handwritten signature in black ink on a light-colored background. The signature appears to be "Heidi M. Davis" written in a cursive style.

Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP - WERO - Michael McHugh
USACE - Dan Vasconcelos
MassDOT – Melissa Lenker
MassDOT – Kylie Abouzeid
Cheshire Conservation Commission – concom@cheshire-ma.gov

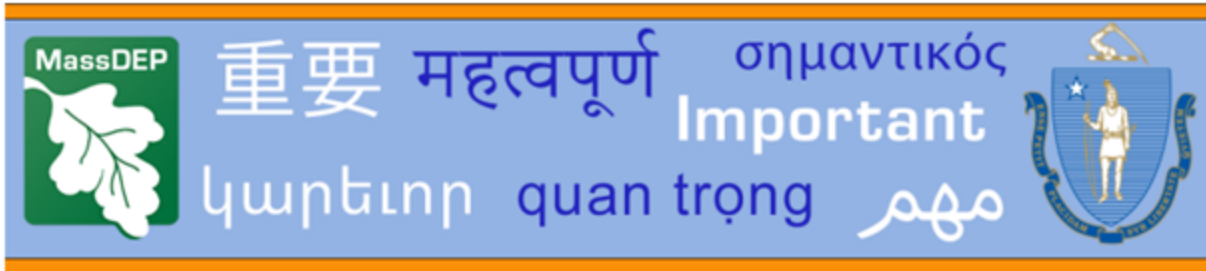
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ATTACHMENT A

THIS CHECKLIST MUST BE COMPLETED AND SIGNED PRIOR TO THE START OF WORK; NOTE THAT SOME CONDITIONS REQUIRE THAT INFORMATION BE SUBMITTED A SPECIFIC NUMBER OF DAYS PRIOR TO THE START OF WORK OR THE PRE-CONSTRUCTION MEETING.

Condition	Required Submittal	Due Date	Date Submitted	Final Approval Date
PRECONSTRUCTION (PC) SUBMITTAL REQUIREMENTS				
2	Name and contact information of the FGM	Prior to Pre-Con Meeting		
3	Name and contact information of the RE	Prior to Pre-Con Meeting		
5	Corps Work-Start Notification Form	2 weeks prior to work start		
6	CP/PP	2 weeks prior to work start		
9	Water Management Plan	3 weeks prior to work start		
12	Flood Contingency Plan	2 weeks prior to work start		

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Communication for Non-English-Speaking Parties

English

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido de inmediato. Si necesita este documento traducido, comuníquese con la Directora de Diversidad de MassDEP al número de teléfono que aparece más abajo.

Português Portuguese

Este é um documento importante e deve ser traduzido imediatamente. Se precisar de uma tradução deste documento, entre em contato com o Diretor de Diversidade da MassDEP nos números de telefone listados abaixo.

繁體中文 Chinese Traditional

本文件非常重要·應立即翻譯·如果您需要翻譯這份文件·請用下面列出的電話號碼聯絡 MassDEP 多元化負責人·

简体中文 Chinese Simplified

本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与 MassDEP 的多元化主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradwi l imedyatman. Si ou bezwen dokiman sa a tradwi, tanpri kontakte Direktè Divèsite MassDEP la nan nimewo telefòn endike anba.

Việt Vietnamese

Tài liệu này rất quan trọng và cần được dịch ngay lập tức. Nếu quý vị cần dịch tài liệu này, xin liên lạc với Giám đốc Đa dạng của MassDEP theo các số điện thoại ghi dưới đây.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះគឺសំខាន់ហើយត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការឱ្យគេបកប្រែឯកសារនេះ សូមទាក់ទងមកនាយកដ្ឋានពិពិធកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Kel dokumentu li é inportanti y debe ser traduzidu imediatamenti. Se bu meste di kel dokumentu traduzidu, pur favor kontakta Diretor di Diversidádi di MassDEP na numeru abaxu indikadu.

Contact **Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606**
Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 7.22.2022) 310 CMR 1.03(5)(a)

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Русский Russian

Это важный документ, и он должен быть безотлагательно переведен. Если вам нужен перевод данного документа, пожалуйста, свяжитесь с директором по вопросам многообразия (Diversity Director) компании MassDEP по указанному ниже телефону.

العربية Arabic

هذه الوثيقة مهمة ويجب ترجمتها على الفور. إذا كنت بحاجة إلى هذه الوثيقة مترجمة، يرجى الاتصال بمدير التنوع PMassDE على أرقام الهواتف المدرجة أدناه.

한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP의 다양성 담당 이사에 문의하시기 바랍니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է և պետք է անմիջապես թարգմանվի: Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանել, դիմեք MassDEP-ի բազմազանության տնօրենին ստորև նշված հեռախոսահամարով:

فارسی Farsi Persian

این سند مهم است و باید فوراً ترجمه شود. اگر به ترجمه این سند نیاز دارید، لطفاً با مدیر بخش تنوع نژادی MassDEP به شماره تلفن ذکر شده در زیر تماس بگیرید.

Français French

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, veuillez communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Sofern Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an den Diversity Director MassDEP unter der unten aufgeführten Telefonnummer.

Ελληνική Greek

Το παρόν έγγραφο είναι σημαντικό και θα πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του παρόντος εγγράφου, παρακαλούμε επικοινωνήστε με τον Διευθυντή Διαφορετικότητας του MassDEP στους αριθμούς τηλεφώνου που αναγράφονται παρακάτω.

Italiano Italian

Comunicazione per parti che non parlano inglese. Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, potete contattare il Direttore di Diversità di MassDEP al numero di telefono elencato di seguito.

Język Polski Polish

Dokument ten jest ważny i powinien zostać natychmiast przetłumaczony. Jeśli potrzebujesz przetłumaczonej wersji dokumentu, prosimy o kontakt z dyrektorem ds. różnorodności MassDEP pod jednym z numerów telefonu wymienionych poniżej.

हिन्दी Hindi

यह दस्तावेज़ महत्वपूर्ण है और इसका तुरंत अनुवाद किया जाना चाहिए. यदि आपको इस दस्तावेज़ का अनुवाद करने की आवश्यकता है, तो कृपया नीचे सूचीबद्ध टेलीफोन नंबरों पर मासडेपस डाइवर्सिटी के निदेशक से संपर्क करें.

Contact Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606
Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108

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(Version revised 7.22.2022) 310 CMR 1.03(5)(a)

ITEM 983.522

STREAMBED RESTORATION

LUMP SUM

DESCRIPTION

This work shall consist of removing, stockpiling, and replacing stream bed material in the proposed bridge replacement and the upstream and downstream approaches in the limits of work. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, roughness, shape, profile, and appearance. The ultimate product will, to the extent possible, replicate the function and appearance of the natural stream channel, as illustrated by photo-documentation herein (Figure A and B).

The Contractor shall coordinate with his/her sub-contractors to ensure all required equipment is available on-site to complete the work in this manner. The streambed restoration is required to comply with environmental permits issued for the project. MassDOT Environmental Services will provide a Fluvial Geomorphologist (Geomorphologist) to provide a pre-construction meeting, on-site oversight during construction, and assistance during streambed restoration construction to ensure the restoration is constructed as shown on the Plans, as required by these Special Provisions and in accordance with permit requirements.

At least 30 days prior to the commencement of construction, the Contractor shall coordinate with David Paulson (MassDOT Wildlife Unit Supervisor, tel: (508) 389-6366; email: david.j.paulson@state.ma.us) to set up an initial (virtual or in person) meeting with MassDOT's Geomorphologist, Contractor, and Resident Engineer. At this meeting, the Geomorphologist will provide an overview of the restoration work. The Contractor should be prepared to discuss the anticipated means, methods, and schedule.

Process Approval:

In lieu of a mockup, the Contractor shall schedule an onsite meeting to discuss the streambed restoration with the Geomorphologist and respective parties from MassDOT. The Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Geomorphologist adequate access to observe, direct, and inspect the channel restoration work throughout the duration of the removal, stockpile, and reinstallation of the existing streambed material. If material is being brought to the site for streambed restoration, the Contractor shall provide the Geomorphologist with photographs to see the material.

MATERIAL

The top 1.5 feet of streambed material excavated from the existing streambed shall be removed and stockpiled to facilitate reinstallation and replication of the natural streambed. The excavated streambed material below the top 2 feet shall be stockpiled and reused to fill the voids in the proposed riprap placed below the top streambed restoration layer.

ITEM 983.522 (Continued)

In the event that the excavated material is not suitable or there is not enough available suitable material, additional streambed restoration material shall be locally sourced that matches the composition of the existing native streambed. The following gradation sampled from a similar streambed surface shall be used as a guide.

Stream Bed Material Gradation

Particle	Percent (%) Composition
Boulder	75
Cobble	20
Gravel	5
Sand	0

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

Related Items

Crushed Stone. Shall conform to the requirements of Item 156.2 Crushed Stone for Slope Treatment and shall be paid for under that item.

Riprap Stone shall conform to the requirements of Item 983. and shall be paid for under that item.

METHOD OF CONSTRUCTION

Channel

The streambed material shall be reinstalled over riprap, as depicted on the plans, to an average thickness of 1 foot, with variations in thickness as necessary to replicate existing channel conditions. The initial placement of streambed material shall fill the voids in the underlying riprap. Fill voids by shaking stone with the teeth of an excavator bucket, hand tamping with metal tamping rods, and by spraying water to settle fines between large stones. Plate compactors shall not be used. The purpose of filling the voids is to prevent subsurface flow where surface water disappears into large voids between the stone fill below the channel bed surface during low flow conditions. The final streambed shape and appearance shall be finalized in the field as directed by the Geomorphologist.

Reinstallation of the stockpiled streambed material shall be placed on top of the riprap to restore streambed habitat and fish passage. The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

ITEM 983.522 (Continued)**Completion**

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the cofferdams in such a way as to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

The final streambed shall maintain the general configuration of the existing streambed bedform and there shall be minimal subsurface flow upon final inspection by the Resident Engineer and Geomorphologist. The project must be passable by fish and other aquatic organism following construction.

The streambed restoration to be measured for payment will be the complete and accepted work for restoration of the streambed within the limits shown on the Plans as approved by the Resident Engineer and Geomorphologist.

COMPENSATION**Method of Measurement**

Item 983.522 will be measured by lump sum unit of accepted streambed restoration.

Basis of Payment

Item 983.522 shall be paid for on a lump sum basis, which shall include full compensation for excavating, stockpiling, transporting, and placing the material specified and for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

DOCUMENT A00842

**Massachusetts Division of Fish & Wildlife
MESA Determination with Conditions
&
Natural Heritage Endangered Species Program Conditions**

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DIVISION OF FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

MASSWILDLIFE

August 23, 2023

David Paulson
MassDOT Highway Division
10 Park Plaza, Room 4260
Boston, Massachusetts 02116

RE: Applicant: David Paulson
 Project Location: Sand Mill Road over Dry Brook
 Project Description: Bridge N C-10-002 replacement
 NHESP File No.: **23-8535**

Dear Applicant:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the "Division") received the MESA Project Review Checklist and supporting documentation for review pursuant to the Massachusetts Endangered Species Act (MESA) (MGL c.131A) and its implementing regulations (321 CMR 10.00).

The MESA is administered by the Division, and prohibits the Take of state-listed species. The Take of state-listed species is defined as "in reference to animals...harm...kill...disrupt the nesting, breeding, feeding or migratory activity...and in reference to plants...collect, pick, kill, transplant, cut or process...Disruption of nesting, breeding, feeding, or migratory activity may result from, but is not limited to, the modification, degradation, or destruction of Habitat" of state-listed species (321 CMR 10.02).

The Division has determined that this Project, as currently proposed, will occur **within** the actual habitat of the following species:

<u>Scientific Name</u>	<u>Common Name</u>	<u>Taxonomic Group</u>	<u>State Status</u>
<i>Catostomus catostomus</i>	Longnose Sucker	Fish	Special Concern

This species and their habitats are protected in accordance with the MESA.

Based on the information provided and the information contained in our database, the Division finds that a portion of this project, as currently proposed, **must be conditioned** to avoid a prohibited Take of state-listed species (321 CMR 10.18(2)(a)). **To avoid a prohibited Take of state-listed species, the conditions attached to this letter must be met.**

Provided the attached conditions are fully implemented and there are no changes to the project plans, this project will not result in a Take of state-listed species. We note that all work is subject to the anti-segmentation provisions (321 CMR 10.16) of the MESA. This determination is a final decision of the Division of Fisheries and Wildlife pursuant to 321 CMR 10.18. Any changes to the proposed project or any additional work beyond that shown on the site plans may require an additional filing with the Division pursuant to the MESA. This project may be subject to further review if no physical work is commenced within five years from the date of issuance of this determination, or if there is a change to the project.

Please note that this determination addresses only the matter of state-listed species and their habitats. If you have any questions regarding this letter please contact Melany Cheeseman, Endangered Species Review Assistant, at Melany.Cheeseman@mass.gov, (508) 389-6357.

Sincerely,



Everose Schlüter, Ph.D.
Assistant Director

cc:

Attachment: List of Conditions

List of Conditions

Applicant: David Paulson
Project Location: Sand Mill Road over Dry Brook
Project Description: Bridge N C-10-002 replacement
NHESP File No.: 23-8535
Heritage Hub Form ID: RC-65017
Approved Plan: Proposed Bridge

To avoid a prohibited Take of state-listed species, the following condition(s) must be met:

1. **Fisheries Protection:** In order to avoid impacts to state-listed fishes, no in water work shall occur during the period of April 1 - July 31.

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Natural Heritage and Endangered Species Program Conditions

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) has reviewed MassDOT Project 608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK at the project's 75% design milestone and has determined that the project as proposed will occur within the actual habitat of Massachusetts state-listed species. Based on the information provided to NHESP, the project must be conditioned to avoid a prohibited Take of state listed species. The conditions are as follows:

1. **Fisheries Protection:** To avoid impacts to state-listed fishes, no in water work shall occur during the period of **April 1 to July 31**. This includes the installation of cofferdams.

The Contractor shall refer to the appropriate Special Provisions to ensure these conditions are implemented. If the limit-of-work or project scope changes, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by NHESP. The Contractor shall contact the MassDOT Environmental Services Unit (David Paulson, Wildlife and Endangered Species Supervisor, David.j.paulson@dot.state.ma.us, 857-262-3378) no later than 60 days prior to the desired start of in water work to ensure all NHESP permit conditions are implemented.

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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:

August 21, 2023

Project code: 2023-0013416

Project Name: 608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK

Subject: Concurrence verification letter for the '608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated August 21, 2023 to verify that the **608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may

identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK

DESCRIPTION

608857 - CHESHIRE- BRIDGE REPLACEMENT, C-10-002, SAND MILL ROAD OVER DRY BROOK

This project proposes full replacement of this existing SD bridge.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

[1] See [Northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?
No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

SUBMITTED DOCUMENTS

- [608857_Cheshire_MassDOT_AcousticSurvey_BridgeInspection.pdf https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOOASFJHBEM/projectDocuments/118983921](https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOOASFJHBEM/projectDocuments/118983921)

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB^[1]?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum^[1]?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry triangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

23. Does the project include slash pile burning?

No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

25. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

26. Has a bridge assessment^[1] been conducted **within** the last 24 months^[2] to determine if the bridge is being used by bats?

[1] See [User Guide Appendix D](#) for bridge/structure assessment guidance

[2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

Yes

SUBMITTED DOCUMENTS

- [608857_Cheshire_MassDOT_AcousticSurvey_BridgeInspection.pdf https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOASFJHBEM/projectDocuments/118983921](https://ipac.ecosphere.fws.gov/project/3FPTVOULLBEXNPSSOASFJHBEM/projectDocuments/118983921)

27. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)^[1]?

[1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

No

28. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

No

29. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

30. Will the project involve the use of *any* **temporary** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees), or bridge/structure removal, replacement or maintenance activities?

Yes

31. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be used?

Yes

32. Will the project install new or replace existing **permanent** lighting?

No

33. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

Yes

34. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

35. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

36. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage, rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

37. Will the project raise the road profile **above the tree canopy**?

No

38. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

39. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

40. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

41. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

42. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

N/A

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

1

4. Please describe the proposed bridge work:

The purpose of the project is to reconstruct the bridge over Dry Brook with a new wider bridge, abutments, retaining walls, and a roadway typical section consisting of (2) 10'-0" wide travel lanes, (2) 2'-4 1/2" wide shoulders. The proposed roadway cross section will transition to meet the existing approach roadway widths.

5. Please state the timing of all proposed bridge work:

Summer 2024 – Fall 2024

6. Please enter the date of the bridge assessment:

7/11/2022

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation

Name: Trevor Burns

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email: trevor.b.burns@dot.state.ma.us

Phone: 8574885122

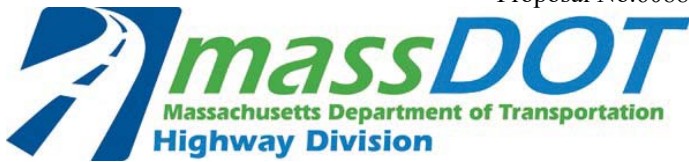
LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

DOCUMENT A00875

**POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002**

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Number: P-22-001
 Date: 9/23/22

POLICY DIRECTIVE

Jonathan Gulliver (signature on original)

 HIGHWAY ADMINISTRATOR

Off-Site Stockpiling of Soil from MassDOT Construction Projects

Purpose

The purpose of this Policy Directive is to formally establish a policy and procedures for managing and stockpiling soil generated and transported from MassDOT construction projects. This Policy Directive does not supersede any Federal, State, or Local regulations.

Date of Effect

This Policy Directive is effective immediately for all projects, including active construction projects.

For active construction projects and for other projects advertised prior to October 15, 2022, changes to the contract documents needed to implement the requirements of this Policy Directive will be considered on a case-by-case basis and shall be approved by the District Highway Director, as necessary.

For projects advertised on or after October 15, 2022, MassDOT will include the requirements and implementation procedures of this Policy Directive in the construction contract documents.

Policy Requirements

This policy is intended to prevent the off-site relocation of excavated soil generated from MassDOT projects to areas near residential receptors and to control potential fugitive dusts and/or contaminants. To that end, excavated soil may not be moved from the project site without knowledge of the content of the material. Knowledge may include visual field observations for presence of staining, odor, and/or debris, screening with a photoionization detector (PID), laboratory analysis, and/or site history. Pavement millings and other non-soil materials are not subject to the requirements of this Policy Directive.

Moving soil from a MassDOT project site to a temporary off-site storage location must be approved in writing by the District Highway Director.

The Contractor must select a storage location that is at least 500 feet away from residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially

zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

Implementation Procedures

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

1. Off-Site Stockpile Storage Locations

- a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
- b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
- c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
- d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
- e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
 - i. A description of material to be stored off-site, including available analytical data;
 - ii. A figure of the location with distances to residences and residential receptors; and
 - iii. Anticipated duration of temporary storage.
- f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
 - i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

- g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
- h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

2. Off-Site Stockpile Management

- a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
- b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
 - i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
- c. The Contractor shall label stockpiles with signs, including:
 - i. Location of origin (including any Release Tracking Numbers)
 - ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
 - iii. Date of initial accumulation
 - iv. Applicable telephone numbers for the Contractor and MassDOT.
- d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
- e. The Contractor shall remedy noncompliance with this policy within 48 hours.
- f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
- g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
- h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

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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

CESHIRE

For: **Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of CESHIRE in Berkshire 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:

Bridge C-10-002

Sand Mill Road

Beginning – Station 10+00.00 +/-

Ending –Station 14+50.00 +/-

The contract prices shall include the furnishing of all materials (except as otherwise herein specified), the performing of all the labor requisite or proper, the providing of all necessary machinery, tools, apparatus and other means of construction, the doing of all the abovementioned work in the manner set forth, described and shown in the specifications and on the drawings for the work, and in the form of contract, and the completion thereof within **1,257 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 # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
100.	1	SCHEDULE OF OPERATIONS - FIXED PRICE \$26,500 AT Twenty Six Thousand Five Hundred Dollars LUMP SUM	\$26,500.00	\$26,500.00
102.	0.35	SELECTIVE CLEARING AND THINNING AT _____ PER ACRE		
102.1	300	TREE TRIMMING AT _____ PER FOOT		
102.521	200	TREE AND PLANT PROTECTION FENCE AT _____ PER FOOT		
114.1	1	DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. C-10-002 (03G) AT _____ LUMP SUM		
120.	550	EARTH EXCAVATION AT _____ PER CUBIC YARD		
121.	30	CLASS A ROCK EXCAVATION AT _____ PER CUBIC YARD		
123.	70	MUCK EXCAVATION AT _____ PER CUBIC YARD		
127.1	250	REINFORCED CONCRETE EXCAVATION AT _____ PER CUBIC YARD		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
140.	1,370	BRIDGE EXCAVATION AT _____ PER CUBIC YARD		
141.1	30	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		
142.	10	CLASS B TRENCH EXCAVATION AT _____ PER CUBIC YARD		
143.1	230	CHANNEL EXCAVATION FOR STREAMBED RESTORATION AT _____ PER CUBIC YARD		
144.	70	CLASS B ROCK EXCAVATION AT _____ PER CUBIC YARD		
150.	10	ORDINARY BORROW AT _____ PER CUBIC YARD		
150.1	50	SPECIAL BORROW AT _____ PER CUBIC YARD		
151.	290	GRAVEL BORROW AT _____ PER CUBIC YARD		
151.2	725	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
156.	35	CRUSHED STONE AT _____ PER TON		
156.1	105	CRUSHED STONE FOR BRIDGE FOUNDATIONS AT _____ PER TON		
156.2	120	CRUSHED STONE FOR SLOPE TREATMENT AT _____ PER TON		
170.	1,020	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		
180.02	8	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		
180.03	10	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	3,550	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		
181.12	50	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
181.13	50	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		
181.14	50	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		
203.	1	SPECIAL MANHOLE AT _____ EACH		
243.24	20	24 INCH REINFORCED CONCRETE PIPE CLASS IV AT _____ PER FOOT		
252.24	70	24 INCH CORRUGATED PLASTIC PIPE AT _____ PER FOOT		
402.	100	DENSE GRADED CRUSHED STONE FOR SUB-BASE AT _____ PER CUBIC YARD		
415.2	150	PAVEMENT FINE MILLING AT _____ PER SQUARE YARD		
440.	1,350	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL AT _____ PER POUND		
443.	1	WATER FOR ROADWAY DUST CONTROL AT _____ PER 1000 GALLONS		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
450.31	130	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC -12.5) AT _____ PER TON		
450.42	200	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) AT _____ PER TON		
450.60	100	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B - 9.5) AT _____ PER TON		
450.70	17	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B - 9.5) AT _____ PER TON		
451.	5	HMA FOR PATCHING AT _____ PER TON		
452.	160	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		
453.	700	HMA JOINT SEALANT AT _____ PER FOOT		
472.	17	TEMPORARY ASPHALT PATCHING AT _____ PER TON		
482.31	60	SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES AT _____ PER FOOT		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
482.4	40	SAWCUTTING PORTLAND CEMENT CONCRETE AT _____ PER FOOT		
504.	50	GRANITE CURB TYPE VA4 - STRAIGHT AT _____ PER FOOT		
509.	25	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT AT _____ PER FOOT		
620.12	175	GUARDRAIL, TL-2 (SINGLE FACED) AT _____ PER FOOT		
627.1	2	TRAILING ANCHORAGE AT _____ EACH		
627.82	2	GUARDRAIL TANGENT END TREATMENT, TL-2 AT _____ EACH		
628.24	4	TRANSITION TO BRIDGE RAIL AT _____ EACH		
630.2	155	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ PER FOOT		
657.	240	TEMPORARY FENCE AT _____ PER FOOT		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
698.1	100	GEOTEXTILE FABRIC FOR STABILIZATION AT _____ PER SQUARE YARD		
698.4	870	GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL AT _____ PER SQUARE YARD		
701.1	100	CEMENT CONCRETE SIDEWALK AT DRIVEWAYS AT _____ PER SQUARE YARD		
702.	15	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ PER TON		
711.01	1	IRON PIN REMOVED AND RESET AT _____ EACH		
715.	3	RURAL MAIL BOX REMOVED AND RESET AT _____ EACH		
740.	28	ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.	120	LOAM BORROW AT _____ PER CUBIC YARD		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
755.35	1	INLAND WETLAND REPLICATION AREA AT _____ LUMP SUM		
755.75	8	WETLAND SPECIALIST AT _____ PER HOUR		
755.76	1	WETLANDS MONITORING REPORTS AT _____ LUMP SUM		
765.	900	SEEDING AT _____ PER SQUARE YARD		
767.121	740	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
769.	420	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		
833.7	4	DELINEATION FOR GUARD RAIL TERMINI AT _____ EACH		
852.	200	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
853.1	4	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
853.2	40	TEMPORARY BARRIER (TL-2) AT _____ PER FOOT		
853.21	40	TEMPORARY BARRIER REMOVED AND RESET AT _____ PER FOOT		
856.12	715	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
859.1	715	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS AT _____ PER DAY		
860.104	820	4 INCH REFLECTORIZED WHITE LINE (PAINTED) AT _____ PER FOOT		
861.104	900	4 INCH REFLECTORIZED YELLOW LINE (PAINTED) AT _____ PER FOOT		
874.4	2	TRAFFIC SIGN REMOVED AND STACKED AT _____ EACH		
953.1	1	TEMPORARY SUPPORT OF EXCAVATION AT _____ LUMP SUM		
983.	445	DUMPED RIPRAP AT _____ PER TON		

Project # 608857		Contract # 125514		
Location : CHESHIRE				
Description : Bridge Replacement, C-10-002, Sand Mill Road over Dry Brook				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
983.522	1	STREAMBED RESTORATION AT _____ LUMP SUM		
991.1	1	CONTROL OF WATER - STRUCTURE NO. C-10-002 (CBX) AT _____ LUMP SUM		
994.1	1,130	TEMPORARY PROTECTIVE SHIELDING AT _____ PER SQUARE FOOT		
995.01	1	BRIDGE STRUCTURE, BRIDGE NO. C-10-002 (CBX) AT _____ LUMP SUM		
Total Qty:		21,287.35		

DOCUMENT B00853

SCHEDULE OF PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES (DBES)

PRIME BIDDER: _____

DATE OF BID OPENING: _____ PROJECT NO.: 608857

FEDERAL AID PROJECT NO. STP(BR-OFF)-003S(725)X

PROJECT LOCATION: CHESHIRE

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: 608857

FEDERAL AID PROJECT NUMBER: STP(BR-OFF)-003S(725)X

PROJECT LOCATION: CHESHIRE

PRIME BIDDER: _____

DBE COMPANY NAME: _____

Item number if applicable	NAICS Code	Description of Activity with notations such as Services, or Brokerage, Installation Only, Material Only, or Complete	Quantity	Unit Price	Amount
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: 125514 Project No. 608857 Federal Aid No.: STP(BR-OFF)-003S(725)X

Location: CHESHIRE Bid Opening Date:

Project Description: Bridge Replacement, C-10-002, Sand Mill Road over Dry 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 ***