AB

COMMONWEALTH OF MASSACHUSETTS



CONTRACT DOCUMENTS AND SPECIAL PROVISIONS

PROPOSAL NO.	609068-136649
P.V. =	$3,427,000.00
PLANS	YES

FOR

Federal Aid Project No. STP(BR-OFF)-003S(993)X
Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook

in the Town

SHEFFIELD

In accordance with the STANDARD SPECIFICATIONS
for HIGHWAYS and BRIDGES dated 2026

This Proposal to be opened and read: **TUESDAY, NOVEMBER 10, 2026 at 2:00 P.M.**

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DOCUMENT 00104

NOTICE TO CONTRACTORS

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

TUESDAY, NOVEMBER 10, 2026 at 2:00 P.M. **
SHEFFIELD
Federal Aid Project No. STP(BR-OFF)-003S(993)X
Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook
****Date Subject to Change**

PROJECT VALUE = $3,427,000.00

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.

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 $712.50 per ton, Portland cement $452.13 per ton, diesel fuel $5.413 per gallon, and gasoline $3.665 per gallon, and Steel Base Price Index 384.0. 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: Phillip Eng, Interim MassDOT Secretary
Jonathan L. Gulliver, Undersecretary and Highway Administrator
SATURDAY, SEPTEMBER 5, 2026

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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.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner of capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b).

M.G.L. c. 30, § 39O: Suspension, Delay, or Interruption or Failure to Act by Awarding Authority; Adjustment in Contract Price; Submission of Claims.

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

<<<<<<<<<<>>>>>>>>>>

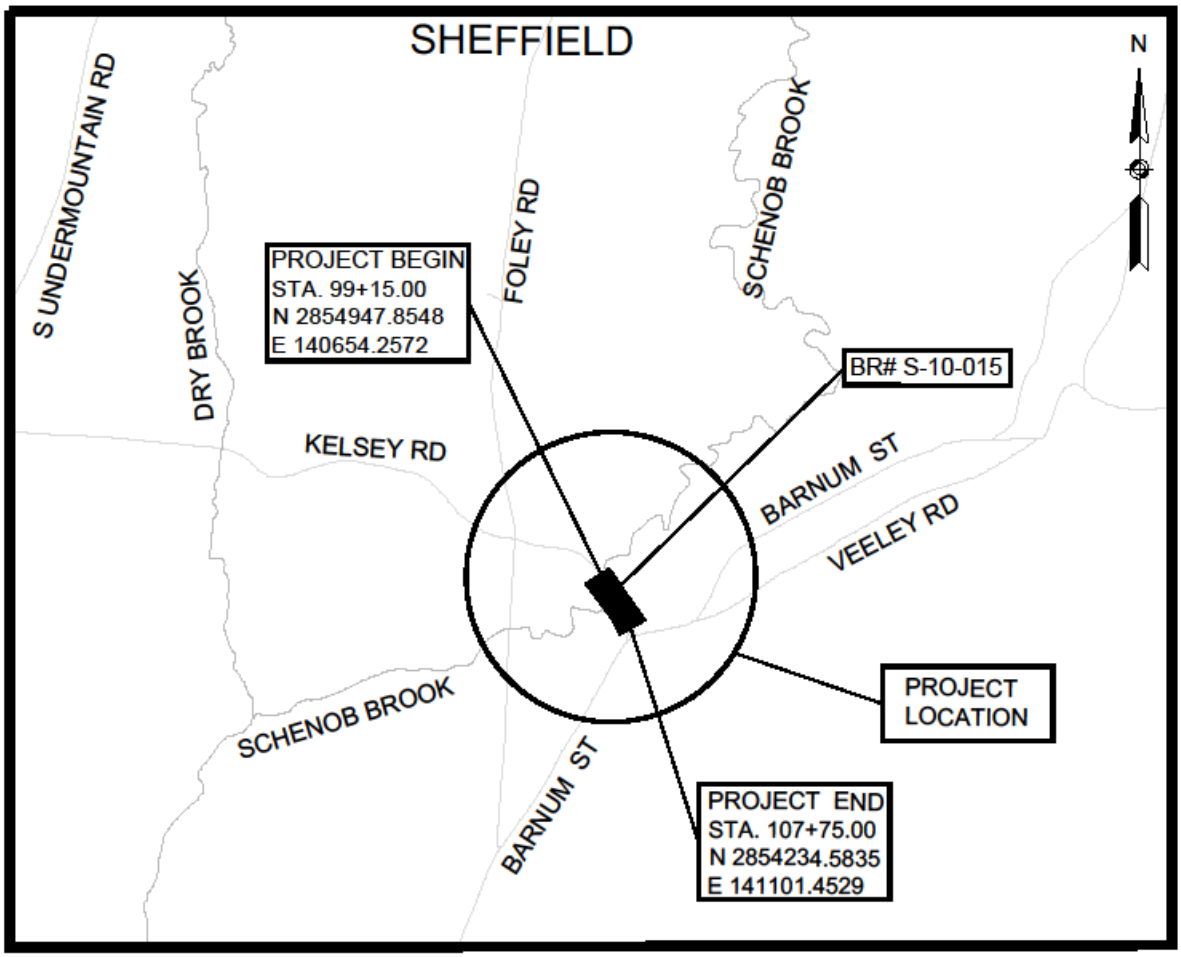
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DOCUMENT 00331

LOCUS MAP

SHEFFIELD
Federal Aid Project No. STP(BR-OFF)-003S(993)X
Bridge Replacement, S-10-015, Kelsey Road over Schenob 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): _____

_____

_____

CONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number:_____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

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

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR
(*Write Yes or No in space provided*)

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

I recommend a deduction for project completed late:_____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 9:_____

WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

Revised: 04/28/17

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DOCUMENT 00440

Final Report ☐

Interim Report ☐

SUBCONTRACTOR PROJECT EVALUATION FORM

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

Date: _____

City/Town: _____ Subcontractor: _____

Project: _____ Address: _____

F.A. No.: _____ Contract Number: _____

Prime Contractor _____ Current Contract Completion Date: _____

Date Work Started: _____ Date Work Completed*: _____

Subcontractor's Superintendent: _____

Type of Work Performed by Subcontractor: _____

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

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

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

_____ _____

District Construction Engineer's Signature/Date Resident Engineer's Signature/Date

_____ _____

Contractor Signature Acknowledging Report/Date Subcontractor Signature Acknowledging Report/Date

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

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

_____

_____

Contractor's Comments: _____

_____

SUBCONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number:_____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

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

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR
(*Write Yes or No in space provided*)

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

I recommend a deduction for project completed late:_____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 8: _____

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WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

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Revised: 04/28/17

*** END OF DOCUMENT ***

DOCUMENT 00710
GENERAL CONTRACT PROVISIONS
Revised: 03-31-26

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2026, the SUPPLEMENTAL SPECIFICATIONS , the 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS; the 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING and the CONSTRUCTION STANDARD DETAILS are available online at https://www.mass.gov/massdot-highway-division-manuals-and-publications

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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

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

1. Deliver to the Department, prior to the start of any work under this contract, copies of MSDS for all MSL substances to be used, stored, processed or manufactured at the worksite by the Contractor.

2. Train employees of the Department, who may be exposed to MSL substances as a result of the Contractor's work under this contract, with regard to those specific substances in accordance with requirements of the Right-To-Know Act.

3. Observe all safety precautions recommended on the MSDS for any MSL substance to be used, stored, processed, or manufactured at the worksite by the Contractor.

4. Inform the Department in writing regarding specific protective equipment recommended in the MSDS for MSL substances to which employees of the Department may be exposed as a result of the Contractor's work under this contract.

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

ALTERNATIVE DISPUTE RESOLUTION
Forum, Choice of Law and Mediations:

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

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DOCUMENT 00715

SUPPLEMENTAL SPECIFICATIONS

SEPTEMBER 30, 2026

The 2026 *Standard Specifications for Highways and Bridges* are amended by the following modifications, additions and deletions. These Supplemental Specifications prevail over those published in the Standard Specifications.

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

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

DIVISION I

GENERAL REQUIREMENTS AND COVENANTS

SECTION 5.00: CONTROL OF WORK

Subsection 5.03: Conformity with Plans and Specifications
Change the MGL reference in the first sentence to Chapter 30, Section 39I (from Section 39L).

SECTION 7.00: LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Subsection 7.16: Claims of Contractor for Compensation
Replace the fifth paragraph of 7.16.A: Contractor Claims Submission to the Department (Step 1), Itemized Statement of Claim, with the following:

Such notice by the Contractor and the keeping of costs by the Engineer shall not in any way be construed as providing the validity of the claim. The provisions of this subsection shall not apply to Extra Work ordered by the Engineer in writing.

Replace the third paragraph of 7.16..C Appeal to the Administrative Law Judge (Step 3) with the following:

At any time after the determination by the Claims Committee, the Contractor, at its sole discretion may pursue the matter in the Superior Court Department of the Commonwealth of Massachusetts in the County of Suffolk. The exclusive jurisdiction and venue for any legal action or proceeding, at Law or in equity, arising out of or relating to the Contract Documents or the Project, shall be the Superior Court Department of the Commonwealth of Massachusetts in the County of Suffolk. The Contractor waives all objections it might have to the jurisdiction or venue of such court and hereby consents to such jurisdiction, regardless of the Contractor's residence or domicile, for any such action or proceeding. This subsection does not relieve the Contractor's obligation to submit the dispute to Superior Court within the applicable statutes of limitations or repose and the Department does not hereby waive its rights to assert defenses based upon such statutes.

DIVISION II

CONSTRUCTION DETAILS

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

SUBSECTION 119: CONTROL OF RODENTS

Subsection 119.60:A: Initial Treatment
Replace the first sentence with the following;

This phase shall start immediately after Notice to Proceed and shall be applied in all buildings to be razed and to all other buildings and areas within the limits of construction where, in the Engineer's judgment, rodents have gathered or may gather during the construction period.

SECTION 200: DRAINAGE

SUBSECTION 227: DRAINAGE SYSTEM SEDIMENT

Subsection 227.30, Method of Measurement
Change the subsection number to 227.80

Subsection 227.31, Basis of Payment
Change the subsection number to 227.81

Subsection 227.31, Payment Items
Change the subsection number to 227.82

SECTION 400: SUB-BASE, BASE COURSE, SHOULDERS, PAVEMENT AND BERMS

SUBSECTION 430: CEMENT CONCRETE BASE COURSE

Subsection 430.40: General
Change Applied Crack Sealer to Hot Applied Crack Sealer.

SUBSECTION 476: CEMENT CONCRETE PAVEMENT

Subsection 476.20: Materials
Delete Preformed Bituminous Joint Filler for Concrete - M3.05.5 and add the following in M number sequence:

Preformed Expansion Joint Filler	M9.14.0

SUBSECTION 477: MILLED RUMBLE STRIPS

Subsection 477: Milled Rumble Strips
Replace this subsection with the following:

DESCRIPTION

477.20: General

The work consists of constructing rumble strips on roadways by milling grooves into finished surfaces. Milled Rumble Strips are categorized as Type A, Type B, Type C, or Type D. Type A are rectangular milled grooves at regular intervals in the paved surface, Type B rumble strips are rectangular grooves at regular intervals with designed gaps between intervals to accommodate bicyclists, and Type C and Type D rumble strips form continuous grooves in the paved surface in the form of a vertical sinusoidal wave pattern.

CONSTRUCTION METHODS

477.61: Equipment

The equipment shall self-align with the slope of the roadway surface and/or any irregularities in the roadway surface.

The Contractor shall demonstrate to the Engineer the ability to achieve the desired groove without tearing or snagging the roadway surface prior to beginning the work.

477.62: Installation of Rumble Strips

Rumble strips shall be installed in accordance with the locations, dimensions, and Type shown on the plans.

Type A and Type B rumble strips shall be installed after the longitudinal pavement markings they supplement (typically edge lines or channelizing lines) are in place. Installation of any diagonal or chevron pavement markings that cross the Type A or Type B rumble strips shall only occur after the rumble strips are in place.

Type C rumble strips shall be installed after the location of the longitudinal pavement markings they supplement (typically center lines) has been laid out, but before the pavement markings are installed. The pavement markings shall only be installed after the Type C rumble strips are in place.

Type D rumble strips shall be installed after the longitudinal pavement markings they supplement (typically center lines) are in place.

477.63: Control of the Work Area

At the end of each working day, all equipment shall be moved to a location where it does not present a hazard to traffic. The pavement shall be cleaned by sweeping and the work area shall be reopened to traffic.

Pavement millings shall become the property of the Contractor and shall be removed and disposed of off-site.

COMPENSATION

477.80: Method of Measurement

Milled Rumble Strip (Type A), Milled Rumble Strip (Type C), and Milled Rumble Strip (Type D) will be measured per foot of installed rumble strip. Milled Rumble Strip (Type B) will be measured per foot of installed rumble strip excluding the designed gaps. Breaks at castings, bridge decks, intersections, or other breaks will not be measured for payment for all types.

477.81: Basis of Payment

Payment for Milled Rumble Strip (Type A), Milled Rumble Strip (Type B), Milled Rumble Strip (Type C), and Milled Rumble Strip (Type D) will be made at the contract unit price per foot of rumble strips, complete in place. Such payment will be full compensation for furnishing all equipment and labor for satisfactorily performing the work including cleanup and disposal of excess materials.

477.82: Payment Items

Item number	Description	Unit
477.	Milled Rumble Strip (Type A)	Foot
477.1	Milled Rumble Strip (Type B)	Foot
477.2	Milled Rumble Strip (Type C)	Foot
477.3	Milled Rumble Strip (Type D)	Foot

SUBSECTION 482: SAWCUTTING

Subsection 482.80: Method of Measurement
Replace this subsection with the following:

Sawcutting, when included in the Contract as its own bid item, will be measured for payment by the foot along the cut line, regardless of depth.

SECTION 600: HIGHWAY GUARD, FENCES AND WALLS

SUBSECTION 628: IMPACT ATTENUATORS

Subsection 628.82: Payment Items
Replace this subsection with the following:

Item number	Description	Unit
628.302	Permanent Impact Attenuator, Non-Redirective, TL-2	Each
628.303	Permanent Impact Attenuator, Non-Redirective, TL-3	Each
628.304	Temporary Impact Attenuator, Non-Redirective, TL-2	Each
628.305	Temporary Impact Attenuator, Non-Redirective, TL-3	Each
628.312	Permanent Impact Attenuator, Redirective, TL-2	Each
628.313	Permanent Impact Attenuator, Redirective, TL-3	Each
628.314	Temporary Impact Attenuator, Redirective, TL-2	Each
628.315	Temporary Impact Attenuator, Redirective, TL-3	Each
628.322	Permanent Impact Attenuator, Low-Maintenance, TL-2	Each
628.323	Permanent Impact Attenuator, Low-Maintenance, TL-3	Each

SECTION 800: TRAFFIC CONTROL DEVICES

SUBSECTION 801: Conduit, Manholes, Handholes, Pull Boxes and Foundations

Subsection 801.61.C: Pre-Cast Concrete Units
Replace this subsection with the following;

The construction methods for pre-cast concrete units shall conform to the relevant provisions of M4.09.0 Precast, Prestressed, and Prefabricated Concrete Products

SUBSECTION 813: WIRING, GROUNDING AND SERVICE CONNECTIONS

Subsection 813.20: General
Replace this subsection with the following:

This work shall consist of furnishing and installing wire and cable of the type and size indicated for traffic signals and other traffic control devices, ITS systems, highway lighting and related electrical systems, equipment grounding systems, new ground electrodes or connections to existing ground electrodes, power pedestals, and all materials and equipment necessary to deliver power to such systems.

Service points shown on the plans are approximate only. The Contractor shall determine exact locations for both overhead and underground service access points. The Contractor shall determine riser elevations or connections/routing to manhole facilities from the serving utility, and arrange to complete the service connections.

All work under this Subsection shall comply with the MEC and the National Electrical Safety Code.

Subsection 813.41: Grounding and Bonding Conductors
Replace this subsection with the following:

Grounding and bonding conductors shall conform to M8.16.10: Type 10 Grounding and Bonding Conductors (Solid or Stranded, Insulated or Bare).

Subsection 813.42: Ground Rods
Replace this subsection with the following:

Ground rods shall consist of driven rod(s) conforming to M8.17.0: Ground Rod or other devices approved for the purpose.

Subsection 813.44: Power Pedestal
Add this subsection in numerical order:

A Power Pedestal shall consist of a side-of-post mounted lockable load center enclosure, a load center with circuit breakers, an exterior-mounted electrical meter, signal post and base, equipment bonding, ground rod(s) conforming to 813.42: Ground Rods, and a cement concrete foundation. The enclosure, lock, circuit breakers, signal post and base, and foundation shall all be included in the Shop Drawing submission.

The enclosure shall be rated to meet or exceed NEMA 3R and be suitable for post-mounting and shall be sized appropriately to house the load center. The enclosure shall be capable of being secured with an integrated locking mechanism or by a Contractor-supplied padlock; regardless of locking mechanism, it shall be operated with a #2 key.

The circuit breakers shall be designed for single-phase, 3-wire, 120/240 VAC. Circuit breakers shall provide a means to manually operate a circuit and/or automatically open a circuit that is in overload or short circuit conditions. All circuit breakers shall be UL listed and have CSA certification.

The enclosure shall be furnished with a meter socket installed. The meter socket shall be approved by the servicing electrical utility.

The signal post and base shall conform to M10.05.1: Signal Posts and Bases and the Plans. The Contractor shall supply a square aluminum base with a natural or anodized finish and a Schedule 80 aluminum post with a brushed or spun finish, unless otherwise indicated in the Plans.

The Contractor shall supply mounting equipment recommended by the enclosure manufacturer to side-mount the cabinet to the post.

Bonding for the Power Pedestal shall utilize a #8 AWG or larger ASTM-B3 wire.

The cement concrete foundation shall conform to the Plans and M4.02.0: Concrete Produced by Stationary and Truck Mixers, M4.03.0: Concrete Produced by Volumetric Mixers, M4.06.1: Conventional Concrete, M4.09.0: Precast, Prestressed, and Prefabricated Concrete Products, M4.11.0: Evaporation Reducing Materials, and M4.12.0: Curing Materials, as applicable.

Subsection 813.64: Power Pedestal
Add this subsection in numerical order:

No work shall commence until Shop Drawings have been approved.

The Power Pedestal Cabinet shall be mounted side-of-post to the Signal Post, per the manufacturer's recommendations. The Power Pedestal Cabinet should be installed directly below the meter socket, per the Plans. If dissimilar metals are present, they shall be electrically insulated to prevent galvanic corrosion.

The Contractor shall supply the appropriate type (single pole or double pole) and number of circuit breakers included within the Power Pedestal Cabinet to provide the recommended AC power to each device receiving power from the Cabinet. The circuit breakers shall be clearly labeled as to which device they are powering (e.g. RRFB-1, RRFB-2, Warning Beacon, Speed Feedback Sign, etc.).

The Power Pedestal shall be grounded and bonded per 813.61: Equipment Grounding and Bonding and 813.62: Grounding Electrodes.

Subsection 813.80.E: Power Pedestal
Add this subsection in numerical order:

Power Pedestals will be measured by the number of Power Pedestals furnished and installed.

Subsection 813.81.E: Power Pedestal
Add this subsection in numerical order:

Power Pedestals will be paid for at the contract unit price per each installed in place. This includes all labor and materials required for a working system.

All costs associated with grounding and bonding of Power Pedestals shall be considered incidental to the item.

All costs associated with providing service connections to Power Pedestals shall be paid for under their respective pay items.

Subsection 813.82: Payment Items
Change the unit of measure for items 813.80 and 813.81 to Each and add the following pay item:

813.90	Power Pedestal	Each

Subsection 815.82: Payment Items
Delete payment items 818.90 to 818.94, 819.39, 819.832, 819.52, 819.53, 819.60 to 819.64, 819.70, 819.71, 819.72, 819.800, 819.801, 819.802, 819.803,:819.810, 819.811, 819.820, 819.821, 819.850, 819.851, 819.852.

SUBSECTION 815: TRAFFIC SIGNALS

Subsection 815.20: General
Replace the first sentence of the 11th paragraph with the following;

Within 30 days after Notice to Proceed, the Contractor shall submit to the Engineer for approval, a list of equipment they propose to install.

SUBSECTION 819: TRAFFIC SIGNAL DETECTION

Subsection 819: Traffic Signal Detection
Add this subsection:

DESCRIPTION

819.20: General

The work under this Subsection consists of furnishing and installing detection devices for vehicles, bicycles, pedestrians, and other road users.

MATERIALS

819.40: General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Material	Section
Vehicle Detection Systems	M10.08.0
Passive Stop Line Detectors	M10.08.1
Passive Advanced Detectors	M10.08.2

Pedestrian Detectors	M10.09.0
Pedestrian Pushbutton Assembly	M10.09.1
APS Pushbutton Assembly	M10.09.2

The Contractor shall furnish Vehicle Detection Systems (VDS) and Pedestrian Detectors that are listed on the QTCE.

Any software, firmware, cables, or adapters required to program, adjust, fine-tune, or monitor VDS or Pedestrian Detectors shall be provided by the Contractor. VDS and Pedestrian Detectors shall have the latest versions of software and/or firmware installed prior to inspection. Manufacturer updates to software and/or firmware shall be included at no cost for the life of the products.

819.40.A: Vehicle Detection Systems

A VDS shall consist of one or more Internet Protocol (IP) -based detector/sensor assemblies and a cabinet interface device that is installed in a Traffic Signal Controller Cabinet or similar device.

Stop Line VDS shall be capable of providing motor vehicle and bicycle detection at all locations shown on the Plans. The Contractor may furnish a VDS that utilizes a single detector/sensor or multiple, as long as all stop line motor vehicle and bicycle detection zones are encompassed and the traffic signal or other device utilizing the detection can operate per the Plans. All Passive Stop Line Detectors required to provide stop line detection at an intersection shall be included in the cost of a single Stop Line Vehicle Detection System.

If the Contractor furnishes a Stop Line VDS that does not utilize an integrated video monitoring system, a separate video monitoring system per 819.41: Video Monitoring System shall be furnished and installed at no additional cost.

Advanced VDS shall be capable of providing motor vehicle detection on a single approach, at the location shown on the Plans. The Contractor Shall furnish Passive Advanced Detectors that utilize, and are compatible with, the same interface device installed in the Traffic Signal Controller Cabinet, or similar device, as the Stop Line VDS.

All VDSs shall be furnished with manufacturer-supplied mounting hardware.

If multiple VDSs over multiple locations are supplied under a single contract, all components furnished by the Contractor shall be of the same make and model.

819.40.B: Pedestrian Detectors

Pedestrian Pushbutton Assembly and Accessible Pedestrian Signal (APS) Pushbutton Assembly shall both include a pushbutton, sign, housing, manufacturer-specified mounting hardware, and wiring. The Contractor shall review the Contract Documents to determine if one or more in-cabinet control units are required to meet the pedestrian detector type and operational requirements. In-cabinet control units shall be considered incidental to the cost of the item.

The Contractor shall provide a pushbutton housing that conforms to the shape of the pole it is mounted to or shall furnish and install a manufacturer-supplied saddle to provide a flush, secure fit, at no additional cost.

An APS Pushbutton Assembly shall include a pedestrian pushbutton sign that conforms to the Plans. If the sign is not integral to the housing, separate mounting equipment shall be furnished and installed by the Contractor. All costs associated with the sign and mounting equipment shall be considered incidental to the cost of the item.

819.41: Video Monitoring System

When required by 819.40.A: Vehicle Detection Systems, the Contractor shall furnish and install a Video Monitoring System. The Video Monitoring System shall consist of one or more IP-based 4K, 1080p, H.264 dome-type CCTV cameras; mounting hardware, including but not limited to: brackets, bands, straps, posts, plates, and pole mount adapters; power distribution and conditioning equipment including surge suppression; and all

necessary cabling and wiring.

All equipment provided for the Video Monitoring System shall be commercial, off-the-shelf products. Custom equipment designed specifically for the Contract will not be accepted. All cabling and wiring shall be recommended by the manufacturer and rated for outdoor use. Any special wiring or connectors required by the manufacturer shall be identified in the Shop Drawings.

The Video Monitoring System shall conform to National Electrical Manufactures Association (NEMA) standards, Underwriters' Laboratory (UL), and Military Standards (MIL), as applicable. All components of the Video Monitoring System shall be new and still under production by the manufacturer. Obsolete, no longer produced, and/or no longer supported components will not be accepted.

The Video Monitoring System shall be capable of operating in temperatures ranging from -29°F to +165°F.

The camera shall meet or exceed the requirements found in Table 819.41-1:

Table 819.41-1: Minimum Camera Requirements

Feature	Requirement
Zoom Ratio	The minimum zoom ratio shall be 30x Optical and 12x Digital
Camera Type	The camera shall be an IP-type CCTV camera.
Auto Focus	The camera shall include auto focus with a selection for manual override of auto focus.
Lens Aperture Ratio	Typical: F/1.6 to F/4.7 (wide to telephoto)
On-Screen Direction	The CCTV camera shall display on-screen azimuth indications.
Privacy Zones	The CCTV camera shall be programmable to blank out up to 8, four-sided areas to electronically block portions of the camera's field of view from being displayed. These privacy zones shall move and adjust sizing synchronously with camera movements and degree of lens zooming.
On-Screen Labels, Text and Titles	The CCTV camera shall display a minimum of 20 programmable characters for on-screen camera ID, preset position, sector, and alarm titles.
On-Screen Labels, Text and Title Positioning	The position of the on-screen text shall be adjustable to appear at selectable positions on the CCTV camera screen image.
Number of Pixels	The camera shall provide a minimum of 1280H x 720V effective pixels. The camera shall be capable of being configured to operate at all standard lower resolutions down to 320H x 180V effective pixels.
Image Sensor Size	The camera shall include an image sensor of 1/1.8 in., nominal.
Lens Focal Length	The camera shall include a zoom lens of 4.3 mm to 129 mm, minimum focal length.
Color and Black & White Image Selection	The camera shall have Color and Black & White video image display modes incorporating both automatic and manual override image mode selection. The camera shall transition automatically to a Black & White mode (when in automatic mode) when the luminance level reaches a user predefined threshold. At all times the camera shall provide a full motion video output at 30 frames per second.
Image Stabilization	The CCTV camera shall incorporate electronic image stabilization to reduce the effects of vibration and wind gusts on the displayed video image.

Feature	Requirement
Automatic Iris	The camera shall include both automatic iris control and an override for manual iris adjustments.
Wide Dynamic Range	The CCTV camera's wide dynamic range shall be 120 dB.
CCTV Camera Optical Sensitivity	The camera's sensitivity shall be sufficient to provide a clear, usable color video image display with a scene illumination of ≤ 0.1 lux at an aperture of F1.6, nominal.
Power Input	The power input for the CCTV camera and dome shall be PoE+.
Alarms	No alarm contacts shall be wired.

The Contractor shall mount the camera at a location that optimizes line-of-sight for all approaches. The view of each approach shall have a clear line of sight, free from obstructions from trees, overhead wires, buildings, and/or other obstructions. If the Contractor is unable to provide a clear line of sight for all approaches to the satisfaction of the Engineer, a second camera, including mounting hardware, cabling, and wiring, shall be furnished and installed on a different traffic signal structure at no additional cost.

The Contractor shall be responsible for the following items prior to installation:

- Ensure that all components are assembled and factory-tested prior to delivery to the project site.
- Fully configure the camera settings, including but not limited to: camera resolution, camera address, default settings, and pre-set and home positions, per the direction of the Engineer.
- Coordinate with the Engineer to set the camera address number to provide unique identification that is compatible with the CCTV camera addressing schema utilized by the Department.

The Contractor shall deliver the camera(s) fully assembled to the project site.

The Contractor shall provide up to 3 hard copy sets of operating manuals, service manuals, and maintenance instructions for all components of the system. At the request of the Engineer, the number of copies may be reduced if the manuals are provided in .pdf file format.

819.42: Material Warranties

All components of Vehicle Detection Systems, including Video Monitoring Systems, and Pedestrian Detectors shall include a minimum two-year manufacturer's replacement warranty that will commence upon acceptance by the Engineer. The warranty shall cover any manufacturing defects of the products.

Construction Methods

819.60: General

The Contractor shall use discretion in installing the detectors/sensors at locations that optimize the performance of the VDS and to eliminate false calls. The Contractor shall notify the Engineer if the size or location of the detection zones differs from what is shown in the Plans. At the direction of the Engineer, the Contractor will be required to readjust the location of the detection zones and/or modify the detection channels if false calls are observed or the traffic signal system is not operating per the Plans due to the performance of the VDS; this work shall be considered incidental to the cost of the item.

The Contractor shall use manufacturer-specified mounting hardware for all detectors/sensors. If mounted to mast arms or strain poles, any addition weight or wind loading from the detector/sensor shall be accounted for in the structural calculations.

The Contractor shall install the cabinet interface device in the traffic signal controller cabinet. The cabinet interface device shall be connected to the Field Monitoring Unit (FMU) or an ethernet switch in the traffic signal controller cabinet. All communication between devices shall be IP-based. Use of external communications that

are not routed through the FMU is prohibited.

The Contractor shall furnish and install low voltage power cabling surge protection equipment required for all data and power lines associated with VDS, Video Monitoring Systems, and/or Pedestrian Detection Systems entering the traffic signal controller cabinet.

The Contractor shall install the manufacturer-specified cable between the detectors/sensors to the cabinet interface device in the traffic signal controller cabinet via traffic signal structures, conduit, and/or pullboxes. This shall include all connectors, sealing tape, and incidental work to complete the connection(s). All equipment installation and wiring shall be installed in a neat and orderly manner and per the manufacturer's specifications.

The VDS shall be powered through one of the power outlets available on the FMU. The VDS shall be capable of being powered down and remotely restarted through remote control of the power outlet on the FMU.

Under the supervision of the Engineer, the Contractor shall install the VDS software that allows visual confirmation of the detection zones on Department computers.

The Contractor shall install Pedestrian Detectors at the location(s) and mounting height shown on the Plans.

The Contractor shall mount and orient the APS Pushbutton Assembly in a manner so that the vibrotactile arrow is aligned parallel to the crosswalk.

Prior to acceptance, the Contractor shall furnish all passwords for Vehicle Detection Systems and Pedestrian Detectors to the Engineer. The use of default passwords is prohibited.

819.61: Programming APS Pushbuttons

Each APS Pushbutton shall have an audible walk indication during the associated walk interval. The duration of the audible walk indication shall match the duration of the walk interval unless the pedestrian signal is programmed to rest in walk. If programmed to rest in walk, the audible walk indication shall be limited to 7 seconds in length but may be recalled by a subsequent button press during the walk interval.

The APS Pushbutton locator tone and audible walk indication shall be programmed to broadcast at volume 5 dBA louder than ambient sound, except when audible beaconing is provided in response to an extended pushbutton press. The broadcast volume shall be programmed to not exceed 100 dBA at 3 ft. from the emitter, regardless of ambient noise conditions.

The locator tone shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals.

The locator tone shall be active during all signal intervals, except for the following conditions:

- When the audible walk indication is being broadcast.
- If the signal is programmed to rest in walk, the locator tone shall resume 7 seconds after the start of the walk interval.
- The locator tone shall be disabled if the traffic control signal or pedestrian hybrid beacon is operating in an emergency or fault flashing mode.

The locator tone shall be active during the flashing yellow and alternating flashing red intervals of a pedestrian hybrid beacon phasing sequence.

Upon button press, the locator tone at that pushbutton shall be interrupted and a speech message of "Wait" shall be broadcast.

The normal status of the pilot light shall be dark. The pilot light shall illuminate upon button press and stay illuminated until the start of the walk interval, when it shall return to dark. If the associated pedestrian phase is set to pedestrian recall, the pilot light shall stay illuminated for all intervals except for the walk interval.

The audible walk indication shall an audible tone unless a speech message is called for in the Plans. The audible

tone shall repeat at 8 to 10 ticks per second, in multiple frequencies, with the dominant component at 880 Hz.

If a speech message is used, the following shall apply:

- For exclusive pedestrian phases, during the walk interval the speech message shall be: "walk sign is on for all crossings." This message shall be broadcast a single instance.
- *For concurrent pedestrian phases, during the walk interval the speech message shall be: "[STREET NAME]. Walk sign is on for [STREET NAME]." This message shall be broadcast a single instance.
- If the signal is programmed to rest in walk, the concurrent pedestrian speech message shall be repeated upon each subsequent button press.

*Note: See Plans for Street Name information.

The vibrotactile arrow shall vibrate during the walk interval.

The Contractor shall include a fault relay that will default to placing a constant pedestrian call from any pushbutton assembly that fails to communicate back to the in-cabinet control unit.

The Contractor shall connect the in-cabinet control unit to the Field Monitoring Unit (FMU) via an open ethernet port.

819.62: VDS Testing and Evaluation

After the VDS is installed, but prior to acceptance, the Contractor shall conduct an evaluation of the system in the presence of the Engineer. The purpose of the evaluation is to certify the system is operating per the requirements of M10.08.0: Vehicle Detection Systems, M10.08.1: Passive Stop Line Detectors, and M10.08.2: Passive Advanced Detectors, as applicable. The Contractor shall submit their testing and evaluation plan as a part of the Shop Drawing submittal.

The testing and evaluation shall take place for a minimum of 30 minutes under moderate live traffic conditions. Testing shall not be conducted during inclement weather.

If the Engineer determines that the system does not meet the operational requirements, the Contractor will be required to adjust the location, orientation, and/or number of detector/sensors. The Contractor may also adjust the location of the detection zones at this time. Upon completion of this work, the system shall be reevaluated in the presence of the Engineer. This process shall be repeated until the operational requirements are met.

All costs associated with testing and evaluation of the VDS, including the repositioning or addition of new materials, shall be considered incidental to the item.

Compensation

819.80: Method of Measurement

Stop Line Vehicle Detection Systems will be measured by each system furnished and installed.

Advanced Vehicle Detection Systems will be measured by each system furnished and installed.

Pedestrian Pushbuttons and APS Pushbuttons will be measured by each pushbutton furnished and installed.

819.81: Basis of Payment

Stop Line Vehicle Detection Systems will be paid for each system installed at an intersection. For the purposes of this work, an intersection shall be defined as all roadway, path, and/or trail approaches controlled by a single traffic signal controller. Where a Video Monitoring System is required per 819.40: General, it shall be included in the cost of Item 819.840.

Advanced Vehicle Detection System will be paid for each system installed on an intersection approach.

Pedestrian Pushbutton and APS Pushbutton will be paid for each pushbutton assembly installed. The pedestrian sign mounted directly above the pushbutton shall be considered incidental to the item.

The unit cost of each vehicle detection system or pushbutton item shall include all wiring, cabling, mounting hardware, software, firmware, video monitoring system (if required), testing, calibrating, Department Acceptance, training, and all other labor and materials required for the system(s) to operate per the Plans.

819.82: Payment Items

Item number	Description	Unit
819.840	Stop Line Vehicle Detection System	Each
819.845	Advanced Vehicle Detection System	Each
819.850	Pedestrian Pushbutton	Each
819.855	APS Pushbutton	Each

SUBSECTION 820: HIGHWAY LIGHTING

Subsection 820.20: General
Replace the first sentence of the 8th paragraph with the following;

Within 30 days after Notice to Proceed, the Contractor shall submit to the Engineer for approval, a list of equipment they propose to install.

SUBSECTION 850: TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS

Subsection 850.25: Arrow Board
Subsection 850.45: Arrow Board
Subsection 850.65: Arrow Board
Delete these subsections.

Subsection 850.80: Method of Measurement
Delete the 7th paragraph beginning with "Arrow Board will be measured …"

Subsection 850.81: Basis of Payment
Delete the 7th paragraph beginning with "Arrow Board will be paid for …"

Subsection 850.82: Payment Items
Revise description and unit of item 852. to Safety Signing for Traffic Management / Square Foot.
Delete item number 856.

SUBSECTION 856: CONNECTED WORK ZONE NOTIFICATION SYSTEM AND ASSOCIATED DEVICES

Subsection 856: Connected Work Zone Notification System and Associated Devices
Add this new subsection.

DESCRIPTION

856.20: General

The Connected Work Zone Notification System (CWZNS) is a system of field devices that transmit real-time location-based data about work zones. CWZNS field device data is provided in a Work Zone Data Exchange (WZDx) Device Feed in accordance with the United States Department of Transportation (USDOT) WZDx Specification. The Device Feed is consumed by the MassDOT Work Zone Manager (WZM) application.

The Contractor shall be responsible for furnishing, installing, repositioning, operating, maintaining, and

removing these CWZNS devices.

MATERIALS

856.40: General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Material	Section
Connected Work Zone Notification System Devices	M10.18.0
Location Marker	M10.18.1
Connected Arrow Board	M10.18.2

End Location Markers shall conform to M10.18.1: Location Marker and include power and communication status lights and an on/off switch.

856.41: Arrow Board

Arrow Boards shall consist of a matrix of yellow elements that may be illuminated in flashing or sequential patterns, on a non-reflective, black background. The light output from the Arrow Board shall meet the minimum legibility distance, per the MUTCD. The elements shall be capable of at least 50% dimming from full brilliance to avoid nighttime glare. Arrow Boards that are continuously operational in both daylight and nighttime conditions shall automatically adjust the light output based upon ambient light conditions.

The mounting height of the Arrow Board, when in operation, shall be per the Plans.

The minimum dimensions and number of elements for Arrow Boards shall be per Table 856.41-1.

Table 856.41-1: Arrow Board Dimensions and Elements

Item Numbers	MUTCD Type	Minimum Dimensions (width by height)	Minimum Number of Elements
856.060, 856.160	B	60 in. by 30 in.	13
856.096, 856.196	C	96 in. by 48 in.	15

Arrow Boards shall be capable of the following operating modes, per the MUTCD:

- Four Corners Flashing Caution
- Alternating Diamond Caution
- Flashing Arrow (left or right)
- Sequential Chevron (left or right)
- Flashing Double Arrow

Arrow Boards that are categorized as “Connected Arrow Boards” (Items 856.160 and 856.196) shall meet the requirements of M10.18.2: Connected Arrow Board in addition to the requirements of an Arrow Board described in this Subsection.

856.42: Shop Drawings

Within 30 days of the Notice to Proceed, the Contractor shall submit to the Engineer for review and approval cut sheets for each model of CWZNS device to be used. The cut sheets shall document device specifications, including details of how the CWZNS device will communicate. Work that requires the use of CWZNS devices shall not commence until the submission has been approved.

CONSTRUCTION METHODS

856.60: General

At least 15 days prior to deploying CWZNS devices, the Contractor shall visit the site to verify cellular coverage.

If the devices the Contractor plans to deploy do not have coverage, the Contractor shall swap out the cellular modem, SIM card, or both to a carrier that provides coverage. If no adequate cellular coverage exists from 4G LTE or 5G providers, the Contractor shall immediately notify the Engineer.

The Contractor shall install CWZNS devices at the locations shown on the Plans.

Per the WZDx Specification Device Feed, an End Location Marker shall have a single Marked Location with the "type" property as "work-zone-end".

The Contractor shall install and power on the End Location Marker coinciding with the deployment of the temporary traffic control setup that calls for its use. The Contractor shall power down and remove the Location Marker at the conclusion of the removal of the temporary traffic control setup. If the location of the work moves during a work shift, the Contractor shall power down the Location Marker, relocate it, and then power it back on.

The operating mode for the Arrow Board or Connected Arrow Board shall be per the Plans. When activated, the minimum element on-time shall be 50% for the flashing mode, with equal intervals of 25% for each sequential phase. The flashing rate shall be not less than 25 or more than 40 flashes per minute.

If a Connected Arrow Board is being used to transmit its location without utilizing other arrow board functions, such as operating a Flashing Arrow, the arrow board shall remain dark and removed from the roadway or protected from approaching traffic while the data is being transmitted.

The Contractor shall be responsible for remediating any CWZNS device that is not operating as specified, at no additional cost to the Department.

CWZNS devices that are lost, stolen, vandalized, damaged, destroyed, or deemed unacceptable while their use is required on the project shall be replaced by the Contractor at no additional cost to the Department.

COMPENSATION

856.80: Method of Measurement

Arrow Boards and Connected Arrow Boards will be measured by the Day. Each period of up to 24 hours during which an Arrow Board or Connected Arrow Board is in use will be measured as one day, regardless of the number of times that the unit is positioned, repositioned, removed, or returned to service.

End Location Markers will be measured by the Day. Each period of up to 24 hours during which a End Location Marker is in use will be measured as one day, regardless of the number of times that the unit is positioned, repositioned, removed, or returned to service.

856.81: Basis of Payment

Arrow Boards and Connected Arrow Boards will be paid for at the contract unit price per day, which shall include full compensation for labor and materials, positioning, repositioning, and removing or returning to service.

End Location Markers will be paid for at the contract unit price per day which shall include full compensation for labor and materials, positioning, repositioning, and removing or returning to service.

If an End Location Marker is attached to another traffic control device that is not otherwise called for in the Plans or Specifications, that ancillary device shall be considered incidental to the cost of the End Location Marker.

Licenses, fees, communication costs, power costs, and access to real-time and recorded data associated with the Device Feed for CWZNS devices shall be considered incidental to the cost of the item.

The Department will not pay for CWZNS devices that fail to operate as specified.

856.82: Payment Items

Item number	Description	Unit
856.060	Arrow Board (Type B)	Day
856.096	Arrow Board (Type C)	Day
856.160	Connected Arrow Board (Type B)	Day
856.196	Connected Arrow Board (Type C)	Day
856.201	End Location Marker	Day

SECTION 900: STRUCTURES

SUBSECTION 901: CEMENT CONCRETE

Subsection 901.20: Materials
Delete Asphaltic Materials – M3, Preformed Bituminous Fiber Joint Filler – M3.05.3 and add the following in M number sequence:

Preformed Expansion Joint Filler	M9.14.0

SUBSECTION 983: REVETMENT

Subsection 983.40: General
Delete Preformed Bituminous Fiber Joint Filler – M3.05.3 and add the following in M number sequence:

Preformed Expansion Joint Filler	M9.14.0

SUBSECTION 996: NOISE BARRIER

Subsection 996.60: General
Replace the fourth paragraph with the following:

The Contractor shall submit an erection procedure in accordance with 960.67.A: Erection.

DIVISION III

MATERIALS SPECIFICATIONS

SECTION M3: ASPHALTIC MATERIALS

Subsection M3.05.5: Preformed Bituminous Joint Filler for Concrete
Delete this subsection.

SECTION M9: MISCELLANEOUS MATERIALS

Subsection M9.07.0: Plastic Waterstops
Replace this subsection with the following:

M9.07.0.A: Scope

This specification pertains to Polyvinyl chloride (PVC) Waterstops.

M9.07.0.B General Requirements

Waterstops shall be fabricated from a plastic compound, the basic resin of which shall be polyvinyl chloride.

The compound shall contain any additional resins, plasticizers, inhibitors or other materials such that when compounded it shall meet the performance requirements hereinafter specified. No reclaimed polyvinyl chloride shall be used.

Waterstops shall be extruded in such a manner that any cross section shall be dense, homogenous and free from porosity or other imperfections. The cross section of waterstops shall be as shown on the Plans.

The waterstops shall be spliced only at jointing made necessary by construction design. Where joints are required, they shall be made in accordance with the manufacturer's instructions, without appreciable loss in strength, elasticity or permeability of the material.

The waterstop material shall not engage in electrolytic action with steel, shall be resistant to mineral oils, and shall not discolor concrete.

The approved waterstop when properly installed, as in a concrete construction or expansion joint, shall be capable of maintaining a head of 75 ft of water without leakage.

M9.07.0.C: Material Requirements

The waterstops shall meet the following requirements:

Description	Requirement
Tensile Strength, Type IV, ASTM D638	Minimum 2,000 psi
Ultimate Elongation, Type IV, ASTM D638	Minimum 350%
Tear Resistance, ASTM D624	Minimum 300 lb/in
Low Temperature Brittleness, ASTM D746	No Failure at -35°F
Resistance to Alkalis, after 7 days	
Weight Change CRD-C572	-0.10% to 0.25%
Hardness Change, CRD-C572/ASTM D2240	Maximum ±5 points
Hardness Durometer (Shore A) ASTM D2240	75 to 85 points
Water Absorption (48 hr) ASTM D570	Maximum 0.15% (by mass)
Specific Gravity, ASTM D792	Maximum 1.40

M9.07.0.D: Qualification Samples

A manufacturer requesting approval of a waterstop shall furnish to Research and Materials two (2) 6"x6" plaques per lot prepared in accordance with ASTM D3182 or a 3-ft length of each lot of waterstop they intend to supply. A Certificate of Analysis (COA) shall be furnished with the samples showing test results by an Independent Testing Laboratory and subsequently qualified Quality Control (QC) test results. The QC testing laboratory shall be qualified in accordance with AASHTO R 38. The submitted COA shall state that the material furnished conforms without exception to all the requirements specified herein; and it shall also include all qualitative and quantitative test results.

Subsection M9.14.0: Preformed Expansion Joint Filler
Replace this subsection with the following:

Preformed expansion joint filler for concrete applications and structural construction shall meet the requirements specified herein. The Contractor shall provide certified test data which documents compliance with the required physical properties. The certified test data shall be submitted to the Engineer for approval.

Table M9.14.0-1: Types of Preformed Expansion Joint Filler

Specification	Type and Description
AASHTO M 153	Type I – Sponge Rubber Type II – Cork Type III – Self-Expanding Cork Type IV – Polyurethane-Bonded Recycled Rubber
AASHTO M 213	Type I – Asphalt-Saturated Cellulosic Fiber Type II – Asphalt Binder-Cork with Asphalt-Saturated or Glass Fiber Felt Type III – Polyurethane-Bonded Recycled Rubber
ASTM D1752	Type IV – Recycled PVC
ASTM D7174	Type I – Closed-Cell Polyethylene or Blended Polyethylene Foam
ASTM D8139	Type I – Closed-Cell Polypropylene Foam

Subsection M9.14.2: Closed Cell Foam Joint Filler
Delete this subsection:

SECTION M10: TRAFFIC CONTROL DEVICES

Subsection M10.03.1: Field Monitoring Unit
Add this new subsection:

M10.03.1: Field Monitoring Unit

All Field Monitoring Units (FMU) shall be compatible with the MassDOT Critical Operations Multi-jurisdictional Modular System (MCOMMS), cloud-based management system.

FMUs shall be capable of operating independently from the brand of traffic signal controller, vehicle and pedestrian detection systems, battery backup system (BBS), and any other Ethernet-based, web accessible device present in the traffic signal controller cabinet.

M10.03.1.A: Hardware

The FMU shall communicate via an Ethernet port with an RJ45 connector and have an integrated Ethernet switch with a minimum of four ports.

The FMU shall be powered via standard 120 VAC input power. The FMU shall include an integrated battery and battery charging/monitoring circuit that will allow the FMU to fully function even if all other electrical service to the cabinet has been interrupted. The battery shall continue to supply the FMU with power for a minimum of 5 hours on a single charge.

The FMU shall have an integrated GPS that will allow for automated telemetry without additional configuration. The GPS shall be capable of providing a time sync pulse to the internal clock of a connected traffic signal controller. The FMU shall utilize the integrated GPS to geolocate itself on a map via the FMU management software.

M10.03.1.B: Software

The configuration of the FMU shall be accomplished by accessing FMU management software via an internet browser. It shall be possible to configure the FMU without any special software.

The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL to the host of the FMU management software.

The FMU shall utilize HTTPS protocols and XML data structure for communications with the FMU management software. The data shall be scalable for future expansion; proprietary protocols shall not be used.

M10.03.1.C: Wireless Connectivity

The FMU shall be supplied with an internal 4G LTE cellular modem.

The modem shall support future upgrades to 5G service, when available, and shall be compatible with SIM cards from multiple cellular carriers.

M10.03.1.D: Remote Access

Remote access to any traffic signal cabinet component that has a web interface via the FMU shall not require the end user to create a separate Virtual Private Network (VPN) connection.

Subsection M10.08.0: Vehicle Detection Systems
Subsection M10.08.1: Passive Stop Line Detectors
Subsection M10.08.2: Passive Advanced Detectors
Add theses new subsections:

M10.08.0: Vehicle Detection Systems

Vehicle Detection Systems (VDS) shall be capable of detecting the presence of all motor vehicle types and bicycles in designated areas and sending corresponding detector outputs to a traffic signal controller.

All in-cabinet components of VDS shall be compatible with the following standards:

- ATCC 5301 v02
- ATC 5201 v06
- NEMA TS2 environmental standards

Through an ethernet-based connection to the detection module and/or cabinet interface device in the field or through the internal network of the traffic signal controller cabinet, the VDS shall support remote management of motor vehicle and bicycle detection configurations and access to data including:

- The number, location, and size of detection zones.
- Configuration of the detector channel and assigned phase for each zone.
- Configuration of detection zones for signal performance measurement data collection.
- The ability to add and remove users.
- Signal performance data:
  - Monitoring and recording the status of the phase and detector channels from the traffic signal controller through the SIU bus at a frequency of no less than 10 times per second.
  - Estimation of the speed of vehicles at defined, user-configurable points, such as entering or exiting a detection zone.
  - Retrieval of the signal performance data through an HTTP-based Application Programming Interface (API), or equivalent process, in .xml, .json, or .csv format.
  - The data shall be available in a per vehicle format, be viewable in real time, and store at least 168 hours of data locally on the device.

VDS shall be capable of supporting user-based restrictions to limit functionality, including:

- The ability to make changes to the VDS settings.
- The ability to view imagery or digital video streams.
- The ability to view and download signal performance data.

VDS shall be capable of automatically determining if the system's ability to accurately detect vehicles and shall default to a constant call state if this system error is detected.

VDS shall be capable of classifying vehicles based upon length and/or number of axles.

VDS shall be capable of performing all detection, classification, and data collection functions in the absence of an internet connection.

VDS shall be capable of providing remote access to the latest images or digital video stream of all IP video units through either an HTTP request or through a Real Time Streaming Protocol compatible with RFC2326 standards. VDS that do not utilize video shall be able to display the current state of the vehicle detection zones and approximate vehicle locations in a digital twin model of the intersection.

M10.08.1: Passive Stop Line Detectors

Passive Stop Line Detectors shall demonstrate a reliability of 99% or greater for vehicle detection functions.

Passive Stop Line Detectors shall be able to track and classify turning movements for all motor vehicle types and bicycles and shall demonstrate an accuracy of 95% or greater for turning movement counts.

M10.08.2: Passive Advanced Detectors

Passive Advanced Detectors shall be capable of detecting all motor vehicle types at a minimum distance of 600 ft upstream of the stop line.

Subsection M10.09.0: Pedestrian Detectors
Subsection M10.09.1: Pedestrian Pushbutton Assembly
Subsection M10.09.2: APS Pushbutton Assembly
Add theses new subsections:

M10.09.0: Pedestrian Detectors

Pedestrian Detectors shall be capable of detecting the presence of pedestrians and placing a corresponding call for a phase in a traffic signal controller or similar device.

Pedestrian Detectors may be pushbuttons or passive detection devices.

Components of Pedestrian Detectors shall meet NEMA TS2 compliance for temperature and humidity, mechanical shock and vibration, transient voltage protection, transient suppression, and electrical reliability.

If Pedestrian Detectors include an in-cabinet control unit, it shall meet the following requirements:

- Operate on a cabinet-supplied 120 VAC power source.
- Include labelled LED indicators for each channel operation.
- Include a 10/100BaseT, RJ45 ethernet connector port.
- Capable of communication with the Pedestrian Detectors to allow for remote programming and firmware updates via the ethernet connection.
- Capable of supporting a minimum of 4 pedestrian detectors per NEMA pedestrian phase and up to 16 pushbuttons.
- Will automatically reset upon loss of internal communication.

M10.09.1: Pedestrian Pushbutton Assembly

A Pedestrian Pushbutton Assembly shall consist of a pushbutton, a sign, and a housing to mount those devices to a post.

The pushbutton shall be a minimum of 2 in. in diameter and the force to activate it shall be no greater than 5 lbs. The pushbutton must be weather-tight and tamper-resistant.

The pushbutton shall meet one of the following criteria:

- A normally open, mechanical phenolic enclosed, positive-acting, spring-loaded, audible (i.e., click) snap-action switch with single pole, single throw contacts; or

- A piezo-driven solid state switch rated for a minimum of 50 V, a minimum of 20 million cycles, and capable of providing an audible indication of actuation.

The pushbutton shall have an operating voltage range of 12 to 36 VDC.

The housing shall be yellow.

Housings that include an integral sign mount for the pedestrian pushbutton sign shall be capable of mounting a 9 in. by 12 in. or 9 in. by 15 in. sign (width by height).

M10.09.2: APS Pushbutton Assembly

An APS Pushbutton Assembly shall meet all of the requirements of M10.09.1: Pedestrian Pushbutton Assembly, and the following.

The pushbutton shall have a vibrotactile arrow. The arrow shall have high visual contrast (light on dark or dark on light).

APS Pushbutton Assembly shall be capable of the following:

- Emitting a locator tone.
- Providing two types of audible walk indications: an audible tone in multiple frequencies and a speech message. The type of audible walk indication will be programmed by Contractor per the Plans.
- Emitting sound via one or more speakers that automatically adjust to ambient noise and shall also be capable of being capped at a preprogrammed level.
- Providing three functions as a result of an extended pushbutton press: increased crossing time, audible beaconing, and speech pushbutton information. The function of the extended pushbutton press will be programmed by the Contractor per the Plans.

APS Pushbutton Assembly shall include a latching red LED pilot light.

Subsection M10.18.0: Connected Work Zone Notification System Devices
Subsection M10.18.1: Location Marker
Add these new subsections.

M10.18.0: Connected Work Zone Notification System Devices

Connected Work Zone Notification System (CWZNS) devices shall include the following:

- An internal 4G LTE or 5G cellular modem. The modem shall be compatible with SIM cards from multiple cellular carriers, or the device shall be capable of using a cellular modem from more than one cellular carrier.
- An integrated GPS that will allow for automated telemetry without additional configuration.
- A self-contained power source that can be recharged without manual intervention. The power source shall enable uninterrupted operation of the CWZNS field device.
- Mounting and supporting hardware and wiring necessary to complete a working system.

CWZNS devices shall be capable of operating in temperatures ranging from -40°F to +122°F with no degradation in operation due to rain, fog, snow, ice, darkness, dust, or road debris.

CWZNS devices shall be physically and digitally secured to prevent unauthorized access.

When powered on, real-time data from CWZNS devices shall be provided in a USDOT Work Zone Data Exchange (WZDx) Specification Device Feed version 4.2. The Device Feed shall then be able to be consumed by the MassDOT Work Zone Manager (WZM) application. The Device Feed shall meet the following requirements:

- Each manufacturer of CWZNS field devices and Smart Work Zone (SWZ) field devices shall provide a single statewide Device Feed (a single URL) that consists of that manufacturer's field devices that are used by or under the direction of the Department.
- The Device Feed shall be made available via an HTTP GET request. The response shall be the WZDx Device Feed JSON object without a wrapper or paging.

- The Device Feed shall be public or use "Basic" HTTP Authentication.
- The Device Feed shall be provided over HTTPS.
- The Device Feed shall reflect changes in CWZNS field device status (e.g., display changed or device moved) no later than 60 seconds after they occur.
- For each CWZNS field device, the "update date" property shall be no older than 60 minutes, except when it has stopped communicating or is otherwise in error.
- The "id" property of each CWZNS field device feature in the Device Feed shall stay the same for the duration of the Contract and shall be a Universally Unique Identifier (UUID) to guarantee uniqueness between feeds and over time.

M10.18.1: Location Marker

Location Markers shall meet the requirements of M10.18.0: Connected Work Zone Notification System Devices.

Location Markers may be standalone devices or an attachment to a channelizing device. Either type shall be certified to comply with the relevant minimum TL-3 testing requirements of the *Manual on Assessing Safety Hardware*.

M10.18.2: Connected Arrow Board

Connected Arrow Boards shall meet the requirements of M10.18.0: Connected Work Zone Notification System Devices.

A Connected Arrow Board shall be capable of transmitting its location, verifying the time and location of an event.

Connected Arrow Boards shall be capable of transmitting their display status.

Arrow Boards may be connected to meet these specifications either through a retrofit kit or an appurtenance that is integral to the Arrow Board.

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END OF SUPPLEMENTAL SPECIFICATIONS

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

I. General
II. Nondiscrimination
III. Davis-Bacon and Related Act Provisions
IV. Contract Work Hours and Safety Standards Act Provisions
V. Subletting or Assigning the Contract
VI. Safety: Accident Prevention
VII. False Statements Concerning Highway Projects
VIII. Implementation of Clean Air Act and Federal Water Pollution Control Act
IX. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
X. Certification Regarding Use of Contract Funds for Lobbying
XI. 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. Historically, contracting agencies using Federal-aid highway funds were required to ensure Form FHWA-1273 was physically incorporated into all contracts and subcontracts. Effective June 10, 2026, this requirement was eliminated [91 FR 25492]. Future use of Form FHWA-1273 is now optional on the part of the contracting agency using Federal-aid highway funds. FHWA continues to make Form FHWA-1273 available as a convenience to contracting agencies. Contracting agencies must continue to ensure compliance with the provisions cited in Form FHWA-1273 in accordance with the provisions regardless of the use of Form FHWA-1273. Accordingly, the contracting agency retains the authority to determine whether the contractor must use Form FHWA-1273 to physically incorporate required contract provisions in each subcontract and in lower tier contracts. Where permitted by the contracting agency, the contractor may choose other ways to include required contract provisions in each subcontract, besides incorporating Form FHWA-1273. Contract provisions in Form FHWA-1273 are not required to be physically included in subcontracts for design services on Federal-aid design-build contracts, or in purchase orders, rental agreements and other agreements for supplies or services.

The applicable provisions 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 or 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.

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.

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

The contractor and all subcontractors must comply with the following policies: 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, including any amendments thereto.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with 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, including any amendments thereto.

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.

1.Assurances Required:

a. The requirements of 49 CFR Part 26, including any amendments thereto, 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, including any amendments thereto, 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, including any amendments thereto, are incorporated by reference. 49 CFR Part 21.

III. 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 IV, 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 reprocurement 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 29 CFR part 30, including any amendments thereto.

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 III. 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 in any subcontracts the clauses set forth in paragraphs (1) through (11) of this section, 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.

IV. 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.

* $33 as of January 15, 2025 (See 90 FR 1859) 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 III 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 reprocurement 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.

V. 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 this section 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 this section 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).

VI. 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).

VII. 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."

VIII. 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.

IX. 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.

* * * * *

X. 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.

XI. 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 (40 U.S.C. sections 14501(d) and 14701 and the Appalachian Regional Commission Code as authorized under 40 U.S.C. section 14302)
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 40 U.S.C. 14501 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

September 10, 2026

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	$0.59
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)	$0.83
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	$0.83
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	$0.85
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	$0.89
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	$0.84
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	$0.89
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	$0.84
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	$0.92
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	$0.85
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	$0.92
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	$0.85
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	$0.97
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	$1.04
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	$1.59
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	$0.92
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	$0.85
18	ASTM A276 Type 316 Stainless Steel	$4.78
19	ASTM A240 Type 316 Stainless Steel	$4.78
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	$1.64
21	ASTM A53 Grade B Structural Steel Pipe	$1.04
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	$1.04
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	$0.83
24	ASTM 252, Grade 2 Permanent Steel Casing	$0.83
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	$0.87
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	$1.57
27	ASTM A572 / A572M, Grade 50 Sheetpiling	$1.57
28	ASTM A36/36M, Grade 50	$0.89
29	ASTM A570, Grade 50	$0.87
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	$0.89
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	$1.04
32	AREA 140 LB Rail and Track Accessories	$0.54

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 l51 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 preceeding 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.

*** END OF DOCUMENT ***

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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: 136649 **Project No.** 609068 **Federal Aid No.:** STP(BR-OFF)-

Location: SHEFFIELD

Project Description: Bridge Replacement, S-10-015, Kelsey Road over Schenob 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.
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: _____
_____
_____
Telephone Number:_____
Federal I.D. Number:_____
Estimated Start Date:_____
Estimated Completion Date:_____
Estimated Dollar Amount:_____

_____
(Print Name and Title)

_____
(Authorized Signature)

_____
(Date)

Rev'd 09/02/22

*** END OF DOCUMENT ***

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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THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS
Prevailing Wage Rates

MAURA HEALEY
Governor
KIM DRISCOLL
Lt. Governor

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:	Massachusetts Highway	**City/Town:**	SHEFFIELD
Wage Request No:	20260909182940	**Job Location:**	Kelsey Road over Schenob Brook
Description of Work:	SHEFFIELD - Federal Aid Project No. STP(BR-OFF)-003S(993)X Bridge Replacement, S-10-015, SHEFFIELD - Federal Aid Project No. STP(BR-OFF)-003S(993)X Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook		
Contract Number:	136649		

§§ 26-27D Construction Project

This Prevailing Wage Schedule establishes the minimum wage rates that employees on this public works construction project must be paid. The project's Wage Request Number is listed above and on all pages of this Schedule. This schedule applies **only** to this specific project.

Awarding Authority Responsibilities

- You must include this Prevailing Wage Schedule (PWS) or an appropriate reference to it in all advertisements and calls for bids.
- The PWS must be incorporated in its entirety into all contracts for this project (G.L. c. 149, § 27).
- The wage rates on this PWS will remain in effect for the duration of the project. **Exception:** You must request an updated schedule for any multi-year construction project no later than 2 weeks before the project's yearly anniversary date.
  - For CM AT RISK projects, the anniversary date is the earlier of the signing date of: (a) the GMP Amendment; or (b) the first amendment to permit procurement of construction services.
  - For all other construction projects, the anniversary date is the date the contract was signed by the Awarding Authority and the General Contractor.
- You must also request an updated PWS if you have not opened bids or selected a contractor within 90 days of the date of issuance on this PWS.
  - For CM AT RISK projects, the earlier of (a) the signing date of the GMP Amendment; or (b) the bid for the first construction scope of work must be within 90 days of the date of issuance on this Schedule.
- You must provide any updated PWS to all contractors working on the project, including general and sub-contractors.
- You must keep the contractors' weekly certified payroll records and Statements of Compliance on file for **3 years.**
- Awarding authorities have other prevailing wage responsibilities not listed above. Learn more at: **[Prevailing wage: for awarding authorities | Mass.gov]** and G.L. c. 149, §§ 26-27D.

Contractor Responsibilities

- You must pay all employees who perform construction work on this project at least the wage rate listed on this PWS. **Warning!** If you do not follow this requirement, you can face civil fines, criminal charges, or private lawsuits.
- You must post this PWS at the worksite where it can be easily seen. (G.L. c. 149, § 27)
- You must file weekly payroll reports and a Statement of Compliance with the awarding authority (**not** DLS). You can file payroll reports by mail or email and must keep them on file for 3 years. Each weekly payroll report must include each employees' name, address, occupational classification(s), hours worked, and wages paid. Find a sample report at: mass.gov/dols/pw.
- You cannot pay any employees at the apprentice rates listed on this PWS unless they are registered with the Massachusetts Division of Apprentice Standards (DAS). Qualifying apprentices must be paid at the applicable step rate and must carry their apprentice ID card during all work hours on the project. Apprentices **not** registered with DAS must be paid at the listed journeyworker's rate, even if they are registered with a different federal/state public agency or private entity. For every week in which apprentice rates are paid, a copy of each apprentice's apprentice ID card issued by DAS shall be attached to the certified payroll records.
- If you don't know what classification or rate applies to the work being performed, you must ask DLS; paying the wrong rate subjects you to enforcement.
- Please contact DLS if you have any questions about the Prevailing Wage Schedule: (617) 626-6953 or **DLS.Feedback@mass.gov**

Employees who are **not** paid the wage listed on the Prevailing Wage Schedule (PWS) may file a complaint with the Attorney General's Fair Labor

Division: **www.mass.gov/ago/fld**; **(617) 727-3465.**

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$41.95	$16.17	$21.78	$0.00	$0.00	$79.90
	12/1/2026	$41.95	$16.17	$23.52	$0.00	$0.00	$81.64
	1/1/2027	$41.95	$16.77	$23.52	$0.00	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.02	$16.17	$21.78	$0.00	$0.00	$79.97
	12/1/2026	$42.02	$16.17	$23.52	$0.00	$0.00	$81.71
	1/1/2027	$42.02	$16.77	$23.52	$0.00	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.14	$16.17	$21.78	$0.00	$0.00	$80.09
	12/1/2026	$42.14	$16.17	$23.52	$0.00	$0.00	$81.83
	1/1/2027	$42.14	$16.77	$23.52	$0.00	$0.00	$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3) For apprentice rates see "Apprentice- PILE DRIVER"	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 4 (BUILDING & SITE) For apprentice rates see "Apprentice- LABORER"	6/1/2026	$36.97	$10.90	$9.75	$6.60	$0.00	$64.22
	12/1/2026	$39.39	$10.90	$9.75	$6.60	$0.00	$66.64
	6/1/2027	$40.79	$10.90	$9.75	$6.60	$0.00	$68.04
	12/1/2027	$42.19	$10.90	$9.75	$6.60	$0.00	$69.44
	6/1/2028	$43.69	$10.90	$9.75	$6.60	$0.00	$70.94
	12/1/2028	$45.19	$10.90	$9.75	$6.60	$0.00	$72.44
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	6/1/2026	$37.75	$10.90	$9.75	$6.60	$0.00	$65.00
	12/1/2026	$39.04	$10.90	$9.75	$6.60	$0.00	$66.29
ASBESTOS WORKER (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)	12/1/2025	$40.32	$14.50	$4.30	$6.25	$0.00	$65.37
ASPHALT RAKER LABORERS LABORERS - ZONE 4 (BUILDING & SITE) For apprentice rates see "Apprentice- LABORER"	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
ASPHALT RAKER (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
BARCO-TYPE JUMPING TAMPER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.97	$10.90	$9.75	$6.60	$0.00	$64.22
	12/1/2026	$39.39	$10.90	$9.75	$6.60	$0.00	$66.64
	6/1/2027	$40.79	$10.90	$9.75	$6.60	$0.00	$68.04
	12/1/2027	$42.19	$10.90	$9.75	$6.60	$0.00	$69.44
	6/1/2028	$43.69	$10.90	$9.75	$6.60	$0.00	$70.94
	12/1/2028	$45.19	$10.90	$9.75	$6.60	$0.00	$72.44
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$37.75	$10.90	$9.75	$6.60	$0.00	$65.00
	12/1/2026	$39.04	$10.90	$9.75	$6.60	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
BOILER MAKER BOILERMAKERS LOCAL 29 BOILERMAKERS LOCAL 29	1/1/2024	$48.12	$7.07	$14.60	$6.00	$0.00	$75.79

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
2	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
3	70.00	$33.68	$7.07	$10.03	$4.20	$0.00	$54.98
4	75.00	$36.09	$7.07	$10.74	$4.50	$0.00	$58.40
5	80.00	$38.50	$7.07	$11.45	$4.80	$0.00	$61.82
6	85.00	$40.90	$7.07	$12.18	$5.10	$0.00	$65.25
7	90.00	$43.31	$7.07	$12.88	$5.40	$0.00	$68.66
8	95.00	$45.71	$7.07	$13.62	$5.70	$0.00	$72.10

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:4							
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	8/1/2026	$58.56	$12.84	$15.57	$5.89	$0.00	$92.86
	2/1/2027	$59.96	$12.84	$15.57	$5.89	$0.00	$94.26

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.28	$12.84	$15.57	$5.89	$0.00	$63.58
2	60.00	$35.14	$12.84	$15.57	$5.89	$0.00	$69.44
3	70.00	$40.99	$12.84	$15.57	$5.89	$0.00	$75.29
4	80.00	$46.85	$12.84	$15.57	$5.89	$0.00	$81.15
5	90.00	$52.70	$12.84	$15.57	$5.89	$0.00	$87.00

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.98	$12.84	$15.57	$5.89	$0.00	$64.28
2	60.00	$35.98	$12.84	$15.57	$5.89	$0.00	$70.28
3	70.00	$41.97	$12.84	$15.57	$5.89	$0.00	$76.27
4	80.00	$47.97	$12.84	$15.57	$5.89	$0.00	$82.27
5	90.00	$53.96	$12.84	$15.57	$0.00	$0.00	$82.37

Apprentice to Journeyworker Ratio: 1:5							
CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$50.40	$10.90	$9.75	$9.80	$0.00	$80.85
	12/1/2026	$51.90	$10.90	$9.75	$9.80	$0.00	$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
	12/1/2026	$50.75	$10.90	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$49.58	$10.90	$9.75	$9.80	$0.00	$80.03
	12/1/2026	$51.08	$10.90	$9.75	$9.80	$0.00	$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19

For apprentice rates see "Apprentice- LABORER"

CARPENTER CARPENTERS CARPENTERS LOCAL 336 - BERKSHIRE COUNTY	9/1/2026	$44.76	$9.19	$11.25	$6.90	$0.00	$72.10
	3/1/2027	$45.66	$9.19	$11.25	$6.90	$0.00	$73.00

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.14	$9.19	$0.00	$1.40	$0.00	$30.73
2	45.00	$20.14	$9.19	$0.00	$1.40	$0.00	$30.73
3	55.00	$24.62	$9.19	$0.00	$2.76	$0.00	$36.57
4	55.00	$24.62	$9.19	$0.00	$2.76	$0.00	$36.57
5	70.00	$31.33	$9.19	$11.21	$4.14	$0.00	$55.87
6	70.00	$31.33	$9.19	$11.21	$4.14	$0.00	$55.87
7	80.00	$35.81	$9.19	$11.23	$5.52	$0.00	$61.75
8	80.00	$35.81	$9.19	$11.23	$5.52	$0.00	$61.75

Apprentice: CARPENTER

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.55	$9.19	$0.00	$1.40	$0.00	$31.14
2	45.00	$20.55	$9.19	$0.00	$1.40	$0.00	$31.14
3	55.00	$25.11	$9.19	$0.00	$2.76	$0.00	$37.06
4	55.00	$25.11	$9.19	$0.00	$2.76	$0.00	$37.06
5	70.00	$31.96	$9.19	$11.21	$4.14	$0.00	$56.50
6	70.00	$31.96	$9.19	$11.21	$4.14	$0.00	$56.50
7	80.00	$36.53	$9.19	$11.23	$5.52	$0.00	$62.47
8	80.00	$36.53	$9.19	$11.23	$5.52	$0.00	$62.47

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME CARPENTERS CARPENTERS-ZONE 3 (Wood Frame)	10/1/2025	$27.37	$7.38	$4.47	$1.00	$0.00	$40.22
	10/1/2026	$28.47	$7.38	$4.47	$1.00	$0.00	$41.32

All Aspects of New Wood Frame Work

Construction

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

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$16.42	$7.38	$0.00	$0.00	$0.00	$23.80
2	60.00	$16.42	$7.38	$0.00	$0.00	$0.00	$23.80
3	65.00	$17.79	$7.38	$0.00	$1.00	$0.00	$26.17
4	70.00	$19.16	$7.38	$0.00	$1.00	$0.00	$27.54
5	75.00	$20.53	$7.38	$3.80	$1.00	$0.00	$32.71
6	80.00	$21.90	$7.38	$3.80	$1.00	$0.00	$34.08
7	85.00	$23.26	$7.38	$3.80	$1.00	$0.00	$35.44
8	90.00	$24.63	$7.38	$3.80	$1.00	$0.00	$36.81

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
2	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
3	65.00	$18.51	$7.38	$0.00	$1.00	$0.00	$26.89
4	70.00	$19.93	$7.38	$0.00	$1.00	$0.00	$28.31
5	75.00	$21.35	$7.38	$3.80	$1.00	$0.00	$33.53
6	80.00	$22.78	$7.38	$3.80	$1.00	$0.00	$34.96
7	85.00	$24.20	$7.38	$3.80	$1.00	$0.00	$36.38
8	90.00	$25.62	$7.38	$3.80	$1.00	$0.00	$37.80

Apprentice to Journeyworker Ratio: 1:5

CEMENT MASONRY/PLASTERING	7/1/2026	$49.32	$13.20	$16.30	$2.93	$1.69	$83.44
PLASTERERS AND CEMENT MASONS LOCAL 534	1/1/2027	$50.51	$13.20	$16.30	$2.93	$1.69	$84.63
Plasterers and Cement Masons - Zone 2	7/1/2027	$51.70	$13.20	$16.30	$2.93	$1.69	$85.82
	1/1/2028	$52.89	$13.20	$16.30	$2.93	$1.69	$87.01

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.66	$13.20	$16.30	$0.00	$0.00	$54.16
2	60.00	$29.59	$13.20	$16.30	$2.93	$1.69	$63.71
3	65.00	$32.06	$13.20	$16.30	$2.93	$1.69	$66.18
4	70.00	$34.52	$13.20	$16.30	$2.93	$1.69	$68.64
5	75.00	$36.99	$13.20	$16.30	$2.93	$1.69	$71.11
6	80.00	$39.46	$13.20	$16.30	$2.93	$1.69	$73.58
7	90.00	$44.39	$13.20	$16.30	$2.93	$0.00	$76.82

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: CEMENT MASONRY/PLASTERING							
Effective Date: 1/1/2027							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$25.26	$16.30	$16.30	$0.00	$0.00	$57.86
2 / 60.00		$30.31	$16.30	$16.30	$2.93	$1.69	$67.53
3 / 65.00		$32.83	$16.30	$16.30	$2.93	$1.69	$70.05
4 / 70.00		$35.36	$16.30	$16.30	$2.93	$1.69	$72.58
5 / 75.00		$37.88	$16.30	$16.30	$2.93	$1.69	$75.10
6 / 80.00		$40.41	$16.30	$16.30	$2.93	$1.69	$77.63
7 / 90.00		$45.46	$16.30	$16.30	$2.93	$0.00	$80.99
Apprentice to Journeyworker Ratio: 1:5							
CHAIN SAW OPERATOR	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
LABORERS	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
DELEADER (BRIDGE)	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 3							
Apprentice: DELEADER (BRIDGE)							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2 / 55.00		$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3 / 60.00		$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4 / 65.00		$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5 / 70.00		$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6 / 75.00		$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7 / 80.00		$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8 / 90.00		$53.60	$10.35	$12.00	$11.34	$0.00	$87.29
Apprentice to Journeyworker Ratio: 1:1							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DEMO: ADZEMAN	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60
LABORERS	12/7/2026	$50.80	$10.90	$9.75	$9.65	$0.00	$81.10
LABORERS - ZONE 4 (BUILDING & SITE)	6/7/2027	$52.40	$10.90	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.00	$10.90	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.68	$10.90	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.35	$10.90	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	6/1/2026	$50.30	$10.90	$9.75	$9.65	$0.00	$80.60
LABORERS	12/7/2026	$51.80	$10.90	$9.75	$9.65	$0.00	$82.10
LABORERS - ZONE 4 (BUILDING & SITE)	6/7/2027	$53.40	$10.90	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.00	$10.90	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.68	$10.90	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.35	$10.90	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS	6/1/2026	$50.05	$10.90	$9.75	$9.65	$0.00	$80.35
LABORERS	12/7/2026	$51.55	$10.90	$9.75	$9.65	$0.00	$81.85
LABORERS - ZONE 4 (BUILDING & SITE)	6/7/2027	$53.15	$10.90	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$54.75	$10.90	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.43	$10.90	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.10	$10.90	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: CONCRETE CUTTER/SAWYER	6/1/2026	$50.30	$10.90	$9.75	$9.65	$0.00	$80.60
LABORERS	12/7/2026	$51.80	$10.90	$9.75	$9.65	$0.00	$82.10
LABORERS - ZONE 4 (BUILDING & SITE)	6/7/2027	$53.40	$10.90	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.00	$10.90	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.68	$10.90	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.35	$10.90	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR	6/1/2026	$50.05	$10.90	$9.75	$9.65	$0.00	$80.35
LABORERS	12/7/2026	$51.55	$10.90	$9.75	$9.65	$0.00	$81.85
LABORERS - ZONE 4 (BUILDING & SITE)	6/7/2027	$53.15	$10.90	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$54.75	$10.90	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.43	$10.90	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.10	$10.90	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60
LABORERS	12/7/2026	$50.80	$10.90	$9.75	$9.65	$0.00	$81.10
LABORERS - ZONE 4 (BUILDING & SITE)	6/7/2027	$52.40	$10.90	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.00	$10.90	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.68	$10.90	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.35	$10.90	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIVER	8/1/2024	$78.11	$10.08	$11.62	$12.67	$0.00	$112.48
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 3)							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate							
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate							
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN (Including Core Drilling) ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	6/28/2026 1/3/2027	$54.41 $55.56	$14.00 $14.25	$8.43 $8.47	$7.03 $7.09	$0.00 $0.00	$83.87 $85.37

Apprentice: ELECTRICIAN (Including Core Drilling)

Effective Date: 6/28/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.76	$7.80	$0.63	$0.00	$0.00	$30.19
2	45.00	$24.48	$7.80	$0.70	$0.00	$0.00	$32.98
3	50.00	$27.21	$14.00	$7.53	$0.00	$0.00	$48.74
4	55.00	$29.93	$14.00	$7.61	$0.00	$0.00	$51.54
5	65.00	$35.37	$14.00	$9.84	$0.00	$0.00	$59.21
6	70.00	$38.09	$14.00	$11.30	$0.00	$0.00	$63.39

Apprentice: ELECTRICIAN (Including Core Drilling)

Effective Date: 1/3/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$22.22	$7.95	$0.63	$0.00	$0.00	$30.80
2	45.00	$25.00	$7.95	$0.70	$0.00	$0.00	$33.65
3	50.00	$27.78	$14.25	$7.53	$0.00	$0.00	$49.56
4	55.00	$30.56	$14.25	$7.61	$0.00	$0.00	$52.42
5	65.00	$36.11	$14.25	$9.84	$0.00	$0.00	$60.20
6	70.00	$38.89	$14.25	$11.30	$0.00	$0.00	$64.44

Apprentice to Journeyworker Ratio: 2:3

ELEVATOR CONSTRUCTOR	1/1/2026	$69.23	$16.38	$11.06	$10.70	$0.00	$107.37

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTORS LOCAL 41 ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2027	$72.23	$16.48	$11.16	$11.00	$0.00	$110.87

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.62	$16.38	$0.00	$0.00	$0.00	$51.00
2	55.00	$38.08	$16.38	$11.06	$10.70	$0.00	$76.22
3	65.00	$45.00	$16.38	$11.06	$10.70	$0.00	$83.14
4	70.00	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
5	80.00	$55.38	$16.38	$11.06	$10.70	$0.00	$93.52

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$36.12	$16.48	$0.00	$0.00	$0.00	$52.60
2	55.00	$39.73	$16.48	$11.16	$11.00	$0.00	$78.37
3	65.00	$46.95	$16.48	$11.16	$11.00	$0.00	$85.59
4	70.00	$50.56	$16.48	$11.16	$11.00	$0.00	$89.20
5	80.00	$57.78	$16.48	$11.16	$11.00	$0.00	$96.42

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER	1/1/2026	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
ELEVATOR CONSTRUCTORS LOCAL 41 ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2027	$50.56	$16.48	$11.16	$11.00	$0.00	$89.20
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & BEAM RAIL ERECTOR	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2026	$38.64	$10.90	$9.75	$6.60	$0.00	$65.89
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$44.69	$10.90	$9.75	$6.60	$0.00	$71.94
For apprentice rates see "Apprentice- LABORER"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/1999	$18.84	$4.80	$4.10	$0.00	$0.00	$27.74
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/1999	$21.33	$4.80	$4.10	$0.00	$0.00	$30.23

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/1999	$22.33	$4.80	$4.10	$0.00	$0.00	$31.23
FIRE ALARM INSTALLER ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$29.21	$10.90	$9.75	$6.60	$0.00	$56.46
	12/1/2026	$29.21	$10.90	$9.75	$6.60	$0.00	$56.46
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FLOORCOVERER FLOORCOVERERS LOCAL 2168 FLOORCOVERERS LOCAL 2168 ZONE III	9/1/2026	$45.29	$8.56	$11.25	$6.90	$0.00	$72.00
	3/1/2027	$46.19	$8.56	$11.25	$6.90	$0.00	$72.90

Apprentice: FLOORCOVERER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.38	$8.56	$0.00	$1.38	$0.00	$30.32
2	45.00	$20.38	$8.56	$0.00	$1.38	$0.00	$30.32
3	55.00	$24.91	$8.56	$0.00	$2.76	$0.00	$36.23
4	55.00	$24.91	$8.56	$0.00	$2.76	$0.00	$36.23
5	70.00	$31.70	$8.56	$11.25	$4.14	$0.00	$55.65
6	70.00	$31.70	$8.56	$11.25	$4.14	$0.00	$55.65
7	80.00	$36.23	$8.56	$11.25	$5.52	$0.00	$61.56
8	80.00	$36.23	$8.56	$11.25	$5.52	$0.00	$61.56

Apprentice: FLOORCOVERER

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.79	$8.56	$0.00	$1.38	$0.00	$30.73
2	45.00	$20.79	$8.56	$0.00	$1.38	$0.00	$30.73
3	55.00	$25.40	$8.56	$0.00	$2.76	$0.00	$36.72
4	55.00	$25.40	$8.56	$0.00	$2.76	$0.00	$36.72
5	70.00	$32.33	$8.56	$11.25	$4.14	$0.00	$56.28
6	70.00	$32.33	$8.56	$11.25	$4.14	$0.00	$56.28
7	80.00	$36.95	$8.56	$11.25	$5.52	$0.00	$62.28
8	80.00	$36.95	$8.56	$11.25	$5.52	$0.00	$62.28

Construction

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

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 1333 GLAZIERS LOCAL 1333	6/1/2026	$44.73	$11.20	$8.40	$6.05	$0.00	$70.38
	6/1/2027	$46.73	$11.60	$8.55	$6.60	$0.00	$73.48
	6/1/2028	$48.73	$12.00	$8.70	$7.20	$0.00	$76.63

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.37	$11.20	$8.40	$6.05	$0.00	$48.02
2	56.25	$25.16	$11.20	$8.40	$6.05	$0.00	$50.81
3	62.50	$27.96	$11.20	$8.40	$6.05	$0.00	$53.61
4	68.75	$30.75	$11.20	$8.40	$6.05	$0.00	$56.40
5	75.00	$33.55	$11.20	$8.40	$6.05	$0.00	$59.20
6	81.25	$36.34	$11.20	$8.40	$6.05	$0.00	$61.99
7	87.50	$39.14	$11.20	$8.40	$6.05	$0.00	$64.79
8	93.75	$41.93	$11.20	$8.40	$6.05	$0.00	$67.58

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.37	$11.60	$8.55	$6.60	$0.00	$50.12
2	56.25	$26.29	$11.60	$8.55	$6.60	$0.00	$53.04
3	62.50	$29.21	$11.60	$8.55	$6.60	$0.00	$55.96
4	68.75	$32.13	$11.60	$8.55	$6.60	$0.00	$58.88
5	75.00	$35.05	$11.60	$8.55	$6.60	$0.00	$61.80
6	81.25	$37.97	$11.60	$8.55	$6.60	$0.00	$64.72
7	87.50	$40.89	$11.60	$8.55	$6.60	$0.00	$67.64
8	93.75	$43.81	$11.60	$8.55	$6.60	$0.00	$70.56

Apprentice to Journeyworker Ratio: 3:1

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37

For apprentice rates see "Apprentice- ELECTRICIAN"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR)	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
SHEETMETAL WORKERS LOCAL 63	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
SHEETMETAL WORKERS LOCAL 63	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	3/17/2026	$52.26	$13.85	$10.85	$7.10	$0.00	$84.06
PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.26	$13.85	$10.85	$7.10	$0.00	$86.06
PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2027	$56.26	$13.85	$10.85	$7.10	$0.00	$88.06
	9/17/2027	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	3/17/2028	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	9/17/2028	$62.26	$13.85	$10.85	$7.10	$0.00	$94.06
	3/17/2029	$64.26	$13.85	$10.85	$7.10	$0.00	$96.06
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC	3/17/2026	$52.26	$13.85	$10.85	$7.10	$0.00	$84.06
PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.26	$13.85	$10.85	$7.10	$0.00	$86.06
PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2027	$56.26	$13.85	$10.85	$7.10	$0.00	$88.06
	9/17/2027	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	3/17/2028	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	9/17/2028	$62.26	$13.85	$10.85	$7.10	$0.00	$94.06
	3/17/2029	$64.26	$13.85	$10.85	$7.10	$0.00	$96.06
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY)	6/1/2026	$37.75	$10.90	$9.75	$6.60	$0.00	$65.00
LABORERS	12/1/2026	$39.04	$10.90	$9.75	$6.60	$0.00	$66.29
LABORERS - ZONE 4 (HEAVY & HIGHWAY)							
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
INSULATOR (PIPES & TANKS)	9/1/2026	$47.22	$16.15	$11.46	$11.49	$0.00	$86.32
HEAT & FROST INSULATORS LOCAL 6							
HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)							

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.61	$16.15	$11.21	$5.75	$0.00	$56.72
2	60.00	$28.33	$16.15	$11.26	$6.89	$0.00	$62.63
3	70.00	$33.05	$16.15	$11.31	$8.04	$0.00	$68.55
4	80.00	$37.78	$16.15	$11.36	$9.19	$0.00	$74.48

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER	3/16/2026	$42.46	$9.25	$12.75	$11.25	$0.00	$75.71
IRONWORKERS LOCAL 7							
IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)							

Construction

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

Apprentice: IRONWORKER/WELDER

Effective Date: 3/16/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	70.00	$29.72	$9.25	$12.75	$1.25	$0.00	$52.97
2	80.00	$33.97	$9.25	$12.75	$1.25	$0.00	$57.22
3	90.00	$38.21	$9.25	$12.75	$1.25	$0.00	$61.46
4	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Apprentice to Journeyworker Ratio: 1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.22	$10.90	$9.75	$6.60	$0.00	$63.47
	12/1/2026	$38.64	$10.90	$9.75	$6.60	$0.00	$65.89
	6/1/2027	$40.04	$10.90	$9.75	$6.60	$0.00	$67.29
	12/1/2027	$41.44	$10.90	$9.75	$6.60	$0.00	$68.69
	6/1/2028	$42.94	$10.90	$9.75	$6.60	$0.00	$70.19
	12/1/2028	$44.44	$10.90	$9.75	$6.60	$0.00	$71.69

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$21.73	$10.90	$9.75	$6.60	$0.00	$48.98
2	70.00	$25.35	$10.90	$9.75	$6.60	$0.00	$52.60
3	80.00	$28.98	$10.90	$9.75	$6.60	$0.00	$56.23
4	90.00	$32.60	$10.90	$9.75	$6.60	$0.00	$59.85

Construction

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

Apprentice: LABORER

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$23.18	$10.90	$9.75	$6.60	$0.00	$50.43
2	70.00	$27.05	$10.90	$9.75	$6.60	$0.00	$54.30
3	80.00	$30.91	$10.90	$9.75	$6.60	$0.00	$58.16
4	90.00	$34.78	$10.90	$9.75	$6.60	$0.00	$62.03

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$37.00	$10.90	$9.75	$6.60	$0.00	$64.25
	12/1/2026	$38.29	$10.90	$9.75	$6.60	$0.00	$65.54

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.20	$10.90	$9.75	$6.60	$0.00	$49.45
2	70.00	$25.90	$10.90	$9.75	$6.60	$0.00	$53.15
3	80.00	$29.60	$10.90	$9.75	$6.60	$0.00	$56.85
4	90.00	$33.30	$10.90	$9.75	$6.60	$0.00	$60.55

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.97	$10.90	$9.75	$6.60	$0.00	$50.22
2	70.00	$26.80	$10.90	$9.75	$6.60	$0.00	$54.05
3	80.00	$30.63	$10.90	$9.75	$6.60	$0.00	$57.88
4	90.00	$34.46	$10.90	$9.75	$6.60	$0.00	$61.71

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.22	$10.90	$9.75	$6.60	$0.00	$63.47
	12/1/2026	$38.64	$10.90	$9.75	$6.60	$0.00	$65.89
	6/1/2027	$40.04	$10.90	$9.75	$6.60	$0.00	$67.29
	12/1/2027	$41.44	$10.90	$9.75	$6.60	$0.00	$68.69
	6/1/2028	$42.94	$10.90	$9.75	$6.60	$0.00	$70.19
	12/1/2028	$44.44	$10.90	$9.75	$6.60	$0.00	$71.69

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.22	$10.90	$9.75	$6.60	$0.00	$63.47
	12/1/2026	$38.64	$10.90	$9.75	$6.60	$0.00	$65.89
	6/1/2027	$40.04	$10.90	$9.75	$6.60	$0.00	$67.29
	12/1/2027	$41.44	$10.90	$9.75	$6.60	$0.00	$68.69

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2028	$42.94	$10.90	$9.75	$6.60	$0.00	$70.19
	12/1/2028	$44.44	$10.90	$9.75	$6.60	$0.00	$71.69
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$35.67	$10.90	$9.75	$5.41	$0.00	$61.73
	12/1/2026	$36.96	$10.90	$9.75	$5.41	$0.00	$63.02
	6/1/2027	$38.26	$10.90	$9.75	$5.41	$0.00	$64.32
	12/1/2027	$39.56	$10.90	$9.75	$5.41	$0.00	$65.62
	6/5/2028	$40.91	$10.90	$9.75	$5.41	$0.00	$66.97
	12/4/2028	$42.26	$10.90	$9.75	$5.41	$0.00	$68.32
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$38.22	$10.90	$9.75	$6.60	$0.00	$65.47
	12/1/2026	$40.64	$10.90	$9.75	$6.60	$0.00	$67.89
	6/1/2027	$42.04	$10.90	$9.75	$6.60	$0.00	$69.29
	12/1/2027	$43.44	$10.90	$9.75	$6.60	$0.00	$70.69
	6/1/2028	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
	12/1/2028	$46.44	$10.90	$9.75	$6.60	$0.00	$73.69
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50
	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.22	$10.90	$9.75	$6.60	$0.00	$63.47
	12/1/2026	$38.64	$10.90	$9.75	$6.60	$0.00	$65.89
	6/1/2027	$40.04	$10.90	$9.75	$6.60	$0.00	$67.29
	12/1/2027	$41.44	$10.90	$9.75	$6.60	$0.00	$68.69
	6/1/2028	$42.94	$10.90	$9.75	$6.60	$0.00	$70.19
	12/1/2028	$44.44	$10.90	$9.75	$6.60	$0.00	$71.69
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.22	$10.90	$9.75	$6.60	$0.00	$63.47
	12/1/2026	$38.64	$10.90	$9.75	$6.60	$0.00	$65.89
	6/1/2027	$40.04	$10.90	$9.75	$6.60	$0.00	$67.29
	12/1/2027	$41.44	$10.90	$9.75	$6.60	$0.00	$68.69
	6/1/2028	$42.94	$10.90	$9.75	$6.60	$0.00	$70.19
	12/1/2028	$44.44	$10.90	$9.75	$6.60	$0.00	$71.69
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 LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
MARBLE & TILE FINISHERS	8/1/2026	$47.05	$12.84	$15.10	$5.68	$0.00	$80.67
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2027	$48.17	$12.84	$15.10	$5.68	$0.00	$81.79

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.53	$12.84	$15.10	$5.41	$0.00	$56.88
2	60.00	$28.23	$12.84	$15.10	$5.41	$0.00	$61.58
3	70.00	$32.94	$12.84	$15.10	$5.41	$0.00	$66.29
4	80.00	$37.64	$12.84	$15.10	$5.41	$0.00	$70.99
5	90.00	$42.35	$12.84	$15.10	$5.41	$0.00	$75.70

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.09	$12.84	$15.10	$5.68	$0.00	$57.71
2	60.00	$28.90	$12.84	$15.10	$5.68	$0.00	$62.52
3	70.00	$33.72	$12.84	$15.10	$5.68	$0.00	$67.34
4	80.00	$38.54	$12.84	$15.10	$5.68	$0.00	$72.16
5	90.00	$43.35	$12.84	$15.10	$5.68	$0.00	$76.97

Apprentice to Journeyworker Ratio: 1:5

MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 3	1/5/2026	$45.20	$10.58	$11.47	$9.75	$0.00	$77.00

Apprentice: MILLWRIGHT (Zone 3)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$24.86	$10.58	$0.00	$5.36	$0.00	$40.80
2	65.00	$29.38	$10.58	$0.00	$6.34	$0.00	$46.30

Construction

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

Apprentice: MILLWRIGHT (Zone 3)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
3	75.00	$33.90	$10.58	$11.47	$7.31	$0.00	$63.26
4	85.00	$38.42	$10.58	$11.47	$8.29	$0.00	$68.76

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

MORTAR MIXER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19

For apprentice rates see "Apprentice- LABORER"

Operating Engineers 98 - Classification 1 OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/2026	$47.55	$14.80	$12.50	$3.50	$0.00	$78.35
	12/1/2026	$49.51	$14.80	$12.50	$3.50	$0.00	$80.31
	6/1/2027	$51.16	$14.80	$12.50	$3.50	$0.00	$81.96
	12/1/2027	$52.80	$14.80	$12.50	$3.50	$0.00	$83.60

Bulldozer; Shovels; Backhoe; Combination Backhoe Loader 3/4 yd & Over; Grader; Trenching Machine; Front End Loader over 5.5 yds; Automatic Grader-Excavator, Micro Pile & Other Pile Driving Machine; Geothermal Drill; John Henry Rock Drill; Horizontal Drilling Machine; Concrete Pump with Boom.

Apprentice: Operating Engineers 98 - Classification 1

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$28.53	$14.80	$12.50	$3.50	$0.00	$59.33
2	70.00	$33.29	$14.80	$12.50	$3.50	$0.00	$64.09
3	80.00	$38.04	$14.80	$12.50	$3.50	$0.00	$68.84
4	90.00	$42.80	$14.80	$12.50	$3.50	$0.00	$73.60

Construction

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

Apprentice: Operating Engineers 98 - Classification 1

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$29.71	$14.80	$12.50	$3.50	$0.00	$60.51
2	70.00	$34.66	$14.80	$12.50	$3.50	$0.00	$65.46
3	80.00	$39.61	$14.80	$12.50	$3.50	$0.00	$70.41
4	90.00	$44.56	$14.80	$12.50	$3.50	$0.00	$75.36

Apprentice to Journeyworker Ratio: 1:6

Operating Engineers 98 - Classification 10	6/1/2026	$51.05	$14.80	$12.50	$3.50	$0.00	$81.85
OPERATING ENGINEERS LOCAL 98	12/1/2026	$53.01	$14.80	$12.50	$3.50	$0.00	$83.81
OPERATING ENGINEERS LOCAL 98	6/1/2027	$54.66	$14.80	$12.50	$3.50	$0.00	$85.46
	12/1/2027	$56.30	$14.80	$12.50	$3.50	$0.00	$87.10

Crawler & Truck Crane; Dragline; Derrick; Clamshell; Tower Crane; Self-Propelled Hydraulic Crane; Boom Truck.

Operating Engineers 98 - Classification 2	6/1/2026	$47.24	$14.80	$12.50	$3.50	$0.00	$78.04
OPERATING ENGINEERS LOCAL 98	12/1/2026	$49.20	$14.80	$12.50	$3.50	$0.00	$80.00
OPERATING ENGINEERS LOCAL 98	6/1/2027	$50.85	$14.80	$12.50	$3.50	$0.00	$81.65
	12/1/2027	$52.49	$14.80	$12.50	$3.50	$0.00	$83.29

Front End Loader 4 - 5.5 yds; Scraper over 21 yds; Sonic & Vibratory Hammers; Mechanic; Forklift over 3 ton; Asphalt Paver; Transfer Machine; Road Planer / Milling Machine.

Operating Engineers 98 - Classification 3	6/1/2026	$47.02	$14.80	$12.50	$3.50	$0.00	$77.82
OPERATING ENGINEERS LOCAL 98	12/1/2026	$48.98	$14.80	$12.50	$3.50	$0.00	$79.78
OPERATING ENGINEERS LOCAL 98	6/1/2027	$50.63	$14.80	$12.50	$3.50	$0.00	$81.43
	12/1/2027	$52.27	$14.80	$12.50	$3.50	$0.00	$83.07

Scraper up to 21 yds; Front End Loader up to 4 yds; Pumpcrete Machine; Concrete Batch Plant on Site; Grout Pumps; Well Point Operator; Hydro-Vac Truck; Grease Truck.

Operating Engineers 98 - Classification 3A	6/1/2026	$46.41	$14.80	$12.50	$3.50	$0.00	$77.21
OPERATING ENGINEERS LOCAL 98	12/1/2026	$48.37	$14.80	$12.50	$3.50	$0.00	$79.17
OPERATING ENGINEERS LOCAL 98	6/1/2027	$50.02	$14.80	$12.50	$3.50	$0.00	$80.82
	12/1/2027	$51.66	$14.80	$12.50	$3.50	$0.00	$82.46

Asphalt Roller; Self-Powered Rollers & Compactors; Tractors; York Rakes.

Operating Engineers 98 - Classification 4	6/1/2026	$43.79	$14.80	$12.50	$3.50	$0.00	$74.59
OPERATING ENGINEERS LOCAL 98	12/1/2026	$45.75	$14.80	$12.50	$3.50	$0.00	$76.55
OPERATING ENGINEERS LOCAL 98	6/1/2027	$47.40	$14.80	$12.50	$3.50	$0.00	$78.20
	12/1/2027	$49.04	$14.80	$12.50	$3.50	$0.00	$79.84

Hoists; Conveyors; Power Pavement Breaker; Power Broom; Generators over 30 KW.

Operating Engineers 98 - Classification 5	6/1/2026	$42.67	$14.80	$12.50	$3.50	$0.00	$73.47
OPERATING ENGINEERS LOCAL 98	12/1/2026	$44.63	$14.80	$12.50	$3.50	$0.00	$75.43
OPERATING ENGINEERS LOCAL 98	6/1/2027	$46.28	$14.80	$12.50	$3.50	$0.00	$77.08
	12/1/2027	$47.92	$14.80	$12.50	$3.50	$0.00	$78.72

Compressor (315 to 900 cu ft.); Pumps (4 - 6 in. discharge).

PAINTER (BRIDGES/TANKS)	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51
PAINTERS LOCAL 35							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PAINTERS LOCAL 35 - ZONE 3							

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	1/1/2026	$42.03	$10.35	$12.00	$8.35	$0.00	$72.73

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 3

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$21.02	$10.35	$0.00	$0.00	$0.00	$31.37
2	55.00	$23.12	$10.35	$0.00	$4.59	$0.00	$38.06
3	60.00	$25.22	$10.35	$0.00	$5.01	$0.00	$40.58
4	65.00	$27.32	$10.35	$0.00	$5.43	$0.00	$43.10
5	70.00	$29.42	$10.35	$12.00	$5.85	$0.00	$57.62
6	75.00	$31.52	$10.35	$12.00	$6.26	$0.00	$60.13
7	80.00	$33.62	$10.35	$12.00	$6.68	$0.00	$62.65
8	90.00	$37.83	$10.35	$12.00	$7.52	$0.00	$67.70

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	1/1/2026	$39.35	$10.35	$12.00	$8.35	$0.00	$70.05

PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 3

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$19.68	$10.35	$0.00	$0.00	$0.00	$30.03
2	55.00	$21.64	$10.35	$0.00	$4.59	$0.00	$36.58

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
3	60.00	$23.61	$10.35	$0.00	$5.01	$0.00	$38.97
4	65.00	$25.58	$10.35	$0.00	$5.43	$0.00	$41.36
5	70.00	$27.55	$10.35	$12.00	$5.85	$0.00	$55.75
6	75.00	$29.51	$10.35	$12.00	$6.26	$0.00	$58.12
7	80.00	$31.48	$10.35	$12.00	$6.68	$0.00	$60.51
8	90.00	$35.42	$10.35	$12.00	$7.52	$0.00	$65.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	1/1/2026	$40.63	$10.35	$12.00	$8.35	$0.00	$71.33

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 3

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$20.32	$10.35	$0.00	$0.00	$0.00	$30.67
2	55.00	$22.35	$10.35	$0.00	$4.59	$0.00	$37.29
3	60.00	$24.38	$10.35	$0.00	$5.01	$0.00	$39.74
4	65.00	$26.41	$10.35	$0.00	$5.43	$0.00	$42.19
5	70.00	$28.44	$10.35	$12.00	$5.85	$0.00	$56.64
6	75.00	$30.47	$10.35	$12.00	$6.26	$0.00	$59.08
7	80.00	$32.50	$10.35	$12.00	$6.68	$0.00	$61.53
8	90.00	$36.57	$10.35	$12.00	$7.52	$0.00	$66.44

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, REPAINT)	1/1/2026	$37.95	$10.35	$12.00	$8.35	$0.00	$68.65

PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 3

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$18.98	$10.35	$0.00	$0.00	$0.00	$29.33
2	55.00	$20.87	$10.35	$0.00	$4.59	$0.00	$35.81
3	60.00	$22.77	$10.35	$0.00	$5.01	$0.00	$38.13
4	65.00	$24.67	$10.35	$0.00	$5.43	$0.00	$40.45
5	70.00	$26.57	$10.35	$12.00	$5.85	$0.00	$54.77
6	75.00	$28.46	$10.35	$12.00	$6.26	$0.00	$57.07

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
7 / 80.00		$30.36	$10.35	$12.00	$6.68	$0.00	$59.39
8 / 90.00		$34.16	$10.35	$12.00	$7.52	$0.00	$64.03
Apprentice to Journeyworker Ratio: 1:1							
PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$37.00	$10.90	$9.75	$6.60	$0.00	$64.25
	12/1/2026	$38.29	$10.90	$9.75	$6.60	$0.00	$65.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$41.78	$16.17	$21.78	$0.00	$0.00	$79.73
	12/1/2026	$41.78	$16.17	$23.52	$0.00	$0.00	$81.47
	1/1/2027	$41.78	$16.77	$23.52	$0.00	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
Apprentice: PILE DRIVER							
Effective Date: 8/1/2024							
Step / Percent		**Apprentice Base Wage**					
1 / 45.00		$22.14	$10.08	$0.00	$2.53	$0.00	$34.75
2 / 55.00		$27.05	$10.08	$0.00	$5.07	$0.00	$42.20
3 / 70.00		$34.43	$10.08	$11.62	$7.60	$0.00	$63.73
4 / 80.00		$39.35	$10.08	$11.62	$10.14	$0.00	$71.19
Apprentice to Journeyworker Ratio: 1:5							
PIPELAYER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
PIPELAYER (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
PLUMBER & PIPEFITTER	3/17/2026	$52.76	$13.85	$10.85	$7.10	$0.00	$84.56
PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.26	$13.85	$10.85	$7.10	$0.00	$86.06
	3/17/2027	$56.26	$13.85	$10.85	$7.10	$0.00	$88.06
	9/17/2027	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	3/17/2028	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	9/17/2028	$64.26	$13.85	$10.85	$7.10	$0.00	$96.06
	3/17/2029	$64.26	$13.85	$10.85	$7.10	$0.00	$96.06

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 3/17/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.74	$13.50	$10.85	$0.00	$0.00	$48.09
2	50.00	$26.38	$13.50	$10.85	$0.00	$0.00	$50.73
3	55.00	$29.02	$13.50	$10.85	$0.00	$0.00	$53.37
4	60.00	$31.66	$13.50	$10.85	$0.00	$0.00	$56.01
5	65.00	$34.29	$13.50	$10.85	$0.00	$0.00	$58.64
6	70.00	$36.93	$13.50	$10.85	$0.00	$0.00	$61.28
7	75.00	$39.57	$13.50	$10.85	$0.00	$0.00	$63.92
8	80.00	$42.21	$13.50	$10.85	$0.00	$0.00	$66.56
9	85.00	$44.85	$13.50	$10.85	$7.10	$0.00	$76.30
10	85.00	$44.85	$13.50	$10.85	$7.10	$0.00	$76.30

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 9/17/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.42	$13.85	$10.85	$0.00	$0.00	$49.12
2	50.00	$27.13	$13.85	$10.85	$0.00	$0.00	$51.83
3	55.00	$29.84	$13.85	$10.85	$0.00	$0.00	$54.54
4	60.00	$32.56	$13.85	$10.85	$0.00	$0.00	$57.26
5	65.00	$35.27	$13.85	$10.85	$0.00	$0.00	$59.97
6	70.00	$37.98	$13.85	$10.85	$0.00	$0.00	$62.68
7	75.00	$40.70	$13.85	$10.85	$0.00	$0.00	$65.40
8	80.00	$43.41	$13.85	$10.85	$0.00	$0.00	$68.11
9	85.00	$46.12	$13.85	$10.85	$7.10	$0.00	$77.92
10	85.00	$46.12	$13.85	$10.85	$7.10	$0.00	$77.92

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
**1:1,2:5,3:9,4:12							
Apprentice to Journeyworker Ratio: 1:1							
PNEUMATIC CONTROLS (TEMP.)	3/17/2026	$52.76	$13.85	$10.85	$7.10	$0.00	$84.56
PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.26	$13.85	$10.85	$7.10	$0.00	$86.06
PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2027	$56.26	$13.85	$10.85	$7.10	$0.00	$88.06
	9/17/2027	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	3/17/2028	$62.26	$13.85	$10.85	$7.10	$0.00	$94.06
	9/17/2028	$62.26	$13.85	$10.85	$7.10	$0.00	$94.06
	3/17/2029	$64.26	$13.85	$10.85	$7.10	$0.00	$96.06
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50
LABORERS	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
LABORERS - ZONE 4 (HEAVY & HIGHWAY)							
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
POWDERMAN & BLASTER	6/1/2026	$37.22	$10.90	$9.75	$6.60	$0.00	$64.47
LABORERS	12/1/2026	$39.64	$10.90	$9.75	$6.60	$0.00	$66.89
LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2027	$41.04	$10.90	$9.75	$6.60	$0.00	$68.29
	12/1/2027	$42.44	$10.90	$9.75	$6.60	$0.00	$69.69
	6/1/2028	$43.94	$10.90	$9.75	$6.60	$0.00	$71.19
	12/1/2028	$45.44	$10.90	$9.75	$6.60	$0.00	$72.69
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	6/1/2026	$38.00	$10.90	$9.75	$6.60	$0.00	$65.25
LABORERS	12/1/2026	$39.29	$10.90	$9.75	$6.60	$0.00	$66.54
LABORERS - ZONE 4 (HEAVY & HIGHWAY)							
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
READY-MIX CONCRETE DRIVER	5/1/2024	$26.14	$11.82	$7.25	$0.00	$0.00	$45.21
TEAMSTERS 404 - Construction Service (Northampton)							
TEAMSTERS 404 - Construction Service (Northampton)							
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2026	$36.47	$10.90	$9.75	$6.60	$0.00	$63.72
LABORERS	12/1/2026	$38.89	$10.90	$9.75	$6.60	$0.00	$66.14
LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2027	$40.29	$10.90	$9.75	$6.60	$0.00	$67.54
	12/1/2027	$41.69	$10.90	$9.75	$6.60	$0.00	$68.94
	6/1/2028	$43.19	$10.90	$9.75	$6.60	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$44.94	$10.90	$9.75	$6.60	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ROOFER (Coal tar pitch) ROOFERS LOCAL 248 ROOFERS LOCAL 248 For apprentice rates see "Apprentice- ROOFER"	7/16/2026	$44.73	$10.85	$8.95	$10.00	$0.00	$74.53
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) ROOFERS LOCAL 248 ROOFERS LOCAL 248	7/16/2026	$44.23	$10.85	$8.95	$10.00	$0.00	$74.03
ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 248 ROOFERS LOCAL 248 For apprentice rates see "Apprentice- ROOFER"	7/16/2026	$44.73	$10.85	$8.95	$10.00	$0.00	$74.53
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28

Apprentice: SHEETMETAL WORKER

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$5.96	$4.95	$0.00	$0.85	$31.33
2	50.00	$21.74	$6.62	$5.51	$0.00	$0.94	$34.81
3	55.00	$23.91	$7.28	$9.91	$0.00	$1.15	$42.25
4	60.00	$26.09	$7.94	$9.91	$0.00	$1.23	$45.17
5	65.00	$28.26	$8.60	$9.91	$0.00	$1.31	$48.08
6	70.00	$30.44	$9.27	$9.91	$0.00	$1.39	$51.01
7	75.00	$32.61	$9.93	$9.91	$0.00	$1.47	$53.92
8	80.00	$34.78	$10.59	$9.91	$9.92	$1.78	$66.98
9	85.00	$36.96	$11.25	$9.91	$9.92	$1.86	$69.90
10	90.00	$39.13	$11.92	$9.91	$9.92	$1.94	$72.82

Apprentice: SHEETMETAL WORKER

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$6.09	$4.95	$0.00	$0.85	$31.46
2	50.00	$21.74	$6.77	$5.51	$0.00	$0.94	$34.96
3	55.00	$23.91	$7.45	$9.91	$0.00	$1.15	$42.42
4	60.00	$26.09	$8.36	$9.91	$0.00	$1.23	$45.59
5	65.00	$28.26	$8.86	$9.91	$0.00	$1.31	$48.34
6	70.00	$30.44	$9.48	$9.91	$0.00	$1.39	$51.22
7	75.00	$32.61	$10.15	$9.91	$0.00	$1.47	$54.14
8	80.00	$34.78	$10.83	$9.91	$11.12	$1.78	$68.42
9	85.00	$36.96	$11.51	$9.91	$11.12	$1.86	$71.36
10	90.00	$39.13	$12.18	$9.91	$11.12	$1.94	$74.28

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:3							
SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.53	$16.17	$21.78	$0.00	$0.00	$80.48
	12/1/2026	$42.53	$16.17	$23.52	$0.00	$0.00	$82.22
	1/1/2027	$42.53	$16.77	$23.52	$0.00	$0.00	$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 669 SPRINKLER FITTERS LOCAL 669	7/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	10/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	1/1/2027	$56.54	$14.55	$7.50	$9.41	$0.00	$88.00
	4/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	7/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	10/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	1/1/2028	$59.83	$15.50	$7.55	$9.41	$0.00	$92.29

Apprentice: SPRINKLER FITTER

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	43.00	$28.36	$9.64	$0.00	$0.00	$0.00	$38.00
2	48.00	$31.66	$9.64	$0.00	$0.00	$0.00	$41.30
3	52.00	$34.29	$13.60	$7.45	$1.15	$0.00	$56.49
4	56.00	$36.93	$13.60	$7.45	$1.15	$0.00	$59.13
5	59.00	$38.91	$13.60	$7.45	$1.40	$0.00	$61.36
6	64.00	$42.21	$13.60	$7.45	$1.40	$0.00	$64.66
7	68.00	$44.85	$13.60	$7.45	$1.40	$0.00	$67.30
8	72.00	$47.48	$13.60	$7.45	$1.40	$0.00	$69.93
9	76.00	$50.12	$13.60	$7.45	$1.40	$0.00	$72.57
10	80.00	$52.76	$13.60	$7.45	$1.40	$0.00	$75.21

Apprentice: SPRINKLER FITTER

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	43.00	$28.36	$0.00	$0.00	$0.00	$0.00	$28.36
2	48.00	$31.66	$0.00	$0.00	$0.00	$0.00	$31.66
3	52.00	$34.29	$0.00	$0.00	$1.15	$0.00	$35.44
4	56.00	$36.93	$0.00	$0.00	$1.15	$0.00	$38.08
5	59.00	$38.91	$0.00	$0.00	$1.40	$0.00	$40.31
6	64.00	$42.21	$0.00	$0.00	$1.40	$0.00	$43.61
7	68.00	$44.85	$0.00	$0.00	$1.40	$0.00	$46.25
8	72.00	$47.48	$0.00	$0.00	$1.40	$0.00	$48.88
9	76.00	$50.12	$0.00	$0.00	$1.40	$0.00	$51.52
10	80.00	$52.76	$0.00	$0.00	$1.40	$0.00	$54.16

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:1							
TELECOMMUNICATION TECHNICIAN	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
TELECOMMUNICATION TECHNICIAN	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
ELECTRICIANS LOCAL 7							
ELECTRICIANS LOCAL 7							

For apprentice rates and ratios see "Apprentice- ELECTRICIAN"

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 6/28/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.76	$7.80	$0.63	$0.00	$0.00	$30.19
2	45.00	$24.48	$7.80	$0.70	$0.00	$0.00	$32.98
3	50.00	$27.21	$14.00	$7.53	$0.00	$0.00	$48.74
4	55.00	$29.93	$14.00	$7.61	$0.00	$0.00	$51.54
5	65.00	$35.37	$14.00	$9.84	$0.00	$0.00	$59.21
6	70.00	$38.09	$14.00	$11.30	$0.00	$0.00	$63.39

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 1/3/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$22.22	$7.95	$0.63	$0.00	$0.00	$30.80
2	45.00	$25.00	$7.95	$0.70	$0.00	$0.00	$33.65
3	50.00	$27.78	$14.25	$7.53	$0.00	$0.00	$49.56
4	55.00	$30.56	$14.25	$7.61	$0.00	$0.00	$52.42
5	65.00	$36.11	$14.25	$9.84	$0.00	$0.00	$60.20
6	70.00	$38.89	$14.25	$11.30	$0.00	$0.00	$64.44

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:1							
TERRAZZO FINISHERS	8/1/2026	$69.09	$12.84	$15.57	$8.02	$0.00	$105.52
BRICKLAYERS LOCAL 3	2/1/2027	$70.49	$12.84	$15.57	$8.02	$0.00	$106.92
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE							

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.55	$12.84	$15.57	$8.02	$0.00	$70.98
2	60.00	$41.45	$12.84	$15.57	$8.02	$0.00	$77.88
3	70.00	$48.36	$12.84	$15.57	$8.02	$0.00	$84.79
4	80.00	$55.27	$12.84	$15.57	$8.02	$0.00	$91.70
5	90.00	$62.18	$12.84	$15.57	$8.02	$0.00	$98.61

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: TERRAZZO FINISHERS							
Effective Date: 2/1/2027							

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.25	$12.84	$15.57	$8.02	$0.00	$71.68
2	60.00	$42.29	$12.84	$15.57	$8.02	$0.00	$78.72
3	70.00	$49.34	$12.84	$15.57	$8.02	$0.00	$85.77
4	80.00	$56.39	$12.84	$15.57	$8.02	$0.00	$92.82
5	90.00	$63.44	$12.84	$15.57	$8.02	$0.00	$99.87

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TERRAZZO MECHANIC	8/1/2026	$70.17	$12.84	$15.57	$7.99	$0.00	$106.57
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2027	$71.57	$12.84	$15.57	$7.99	$0.00	$107.97
Apprentice: TERRAZZO MECHANIC							
Effective Date: 8/1/2026							

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.09	$12.84	$15.57	$7.99	$0.00	$71.49
2	60.00	$42.10	$12.84	$15.57	$7.99	$0.00	$78.50
3	70.00	$49.12	$12.84	$15.57	$7.99	$0.00	$85.52
4	80.00	$56.14	$12.84	$15.57	$7.99	$0.00	$92.54
5	90.00	$63.15	$12.84	$15.57	$7.99	$0.00	$99.55

Apprentice: TERRAZZO MECHANIC

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.79	$12.84	$15.57	$7.99	$0.00	$72.19
2	60.00	$42.94	$12.84	$15.57	$7.99	$0.00	$79.34
3	70.00	$50.10	$12.84	$15.57	$7.99	$0.00	$86.50
4	80.00	$57.26	$12.84	$15.57	$7.99	$0.00	$93.66
5	90.00	$64.41	$12.84	$15.57	$7.99	$0.00	$100.81

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TEST BORING DRILLER	6/1/2026	$53.25	$10.90	$9.75	$9.80	$0.00	$83.70
LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2026	$54.75	$10.90	$9.75	$9.80	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER	6/1/2026	$49.37	$10.90	$9.75	$9.80	$0.00	$79.82
LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2026	$50.87	$10.90	$9.75	$9.80	$0.00	$81.32
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TEST BORING LABORER	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2026	$50.75	$10.90	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
TRAILERS FOR EARTH MOVING EQUIPMENT	6/1/2026	$42.82	$16.17	$21.78	$0.00	$0.00	$80.77
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.82	$16.17	$23.52	$0.00	$0.00	$82.51
	1/1/2027	$42.82	$16.77	$23.52	$0.00	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR	6/1/2026	$61.48	$10.90	$9.75	$10.25	$0.00	$92.38
LABORERS LABORERS (COMPRESSED AIR)	12/1/2026	$62.98	$10.90	$9.75	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	6/1/2026	$63.48	$10.90	$9.75	$10.25	$0.00	$94.38
LABORERS LABORERS (COMPRESSED AIR)	12/1/2026	$64.98	$10.90	$9.75	$10.25	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	6/1/2026	$53.55	$10.90	$9.75	$10.25	$0.00	$84.45
LABORERS LABORERS (FREE AIR TUNNEL)	12/1/2026	$55.05	$10.90	$9.75	$10.25	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	6/1/2026	$55.55	$10.90	$9.75	$10.25	$0.00	$86.45
LABORERS LABORERS (FREE AIR TUNNEL)	12/1/2026	$57.05	$10.90	$9.75	$10.25	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	6/1/2026	$37.25	$10.90	$9.75	$6.60	$0.00	$64.50
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$38.54	$10.90	$9.75	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WATER METER INSTALLER	3/17/2026	$52.76	$13.85	$10.85	$7.10	$0.00	$84.56
PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.26	$13.85	$10.85	$7.10	$0.00	$86.06
	3/17/2027	$56.26	$13.85	$10.85	$7.10	$0.00	$88.06
	9/17/2027	$60.26	$13.85	$10.85	$7.10	$0.00	$92.06
	3/17/2028	$62.26	$13.85	$10.85	$7.10	$0.00	$94.06
	9/17/2028	$62.26	$13.85	$10.85	$7.10	$0.00	$94.06
	3/17/2029	$64.26	$13.85	$10.85	$7.10	$0.00	$96.06

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

Marine Drilling

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BLASTER MARINE DRILLING MARINE DRILLING	1/1/2018	$41.82	$7.63	$2.35	$1.25	$0.00	$53.05
BOAT CAPTAIN MARINE DRILLING MARINE DRILLING	1/1/2018	$33.87	$7.63	$2.35	$0.95	$0.00	$44.80
BOAT CAPTAIN / Over 1,000 hp MARINE DRILLING MARINE DRILLING	1/1/2018	$38.06	$7.63	$2.35	$1.25	$0.00	$49.29
CORE DRILLER MARINE DRILLING MARINE DRILLING	1/1/2018	$31.43	$7.63	$2.25	$0.65	$0.00	$41.96
CORE DRILLER HELPER MARINE DRILLING MARINE DRILLING	1/1/2018	$28.47	$7.63	$2.35	$0.65	$0.00	$39.10
DRILLER MARINE DRILLING MARINE DRILLING	1/1/2018	$39.70	$7.63	$2.35	$1.25	$0.00	$50.93
ENGINEER MARINE DRILLING MARINE DRILLING	1/1/2018	$39.69	$7.63	$2.25	$1.25	$0.00	$50.82
HELPER MARINE DRILLING MARINE DRILLING	1/1/2018	$34.24	$7.63	$2.35	$0.65	$0.00	$44.87
MACHINIST MARINE DRILLING MARINE DRILLING	1/1/2018	$38.88	$7.63	$2.35	$0.95	$0.00	$49.81
OILER - MARINE DRILLING MARINE DRILLING MARINE DRILLING	1/1/2018	$34.24	$7.63	$2.35	$0.65	$0.00	$44.87
TUG DECKHAND MARINE DRILLING MARINE DRILLING	1/1/2018	$27.61	$7.63	$2.35	$0.65	$0.00	$38.24
WELDER MARINE DRILLING MARINE DRILLING	1/1/2018	$38.88	$7.63	$2.35	$0.95	$0.00	$49.81

Op Eng Marine (Dredging Work)

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BOAT OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$29.26	$7.63	$2.35	$0.95	$0.00	$40.19
CERTIFIED WELDER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$31.09	$7.63	$2.35	$1.25	$0.00	$42.32
CHIEF WELDER/ CHIEF MATE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
DERRICK / SPIDER / SPILLBARGE OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
DRAG BARGE OPERATOR / WELDER / MATE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$30.24	$7.63	$2.35	$0.95	$0.00	$41.17
ENGINEER / ELECTRICIAN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
LICENSED BOAT OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
LICENSED TUG OPERATOR OVER 1000HP OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$38.18	$7.63	$2.35	$1.25	$0.00	$49.41
MAINTENANCE ENGINEER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.03	$7.63	$2.35	$1.25	$0.00	$44.26
OILER - MARINE DIVISION OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$24.30	$7.63	$2.35	$0.65	$0.00	$34.93
OPERATOR / LEVERMAN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$38.18	$7.63	$2.35	$1.25	$0.00	$49.41
RODMAN / SCOWMAN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$24.30	$7.63	$2.35	$0.65	$0.00	$34.93
SHOREMAN / DECKHAND OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$24.30	$7.63	$2.35	$0.65	$0.00	$34.93

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$44.67	$8.00	$12.55	$0.00	$0.00	$65.22
GROUNDMAN OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$30.58	$8.00	$5.48	$0.00	$0.00	$44.06
GROUNDMAN / TRUCK DRIVER OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$39.97	$8.00	$10.96	$0.00	$0.00	$58.93
HEAVY EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$47.01	$8.00	$13.22	$0.00	$0.00	$68.23
JOURNEYMAN LINEMAN OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	9/1/2019	$51.71	$8.00	$15.55	$0.00	$0.00	$75.26

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 9/1/2019

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$31.03	$8.00	$3.43	$0.00	$0.00	$42.46
2	65.00	$33.61	$8.00	$3.51	$0.00	$0.00	$45.12
3	70.00	$36.20	$8.00	$3.59	$0.00	$0.00	$47.79
4	75.00	$38.78	$8.00	$5.16	$0.00	$0.00	$51.94
5	80.00	$41.37	$8.00	$5.24	$0.00	$0.00	$54.61
6	85.00	$43.95	$8.00	$5.32	$0.00	$0.00	$57.27
7	90.00	$46.54	$8.00	$7.40	$0.00	$0.00	$61.94

Apprentice to Journeyworker Ratio: 1:2

TELEDATA CABLE SPLICER OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	2/4/2019	$30.73	$4.70	$0.92	$2.25	$0.00	$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TRACTOR-TRAILER DRIVER OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	9/1/2019	$44.67	$8.00	$12.55	$0.00	$0.00	$65.22

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42							

Additional Apprentice Information

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

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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 that 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: MA20260016 05/18/2026

State: Massachusetts

Construction Types: Highway

Counties: Massachusetts Counties of
Berkshire

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026

ENGI0004-019 06/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR GROUP 2 MILLING MACHINE; PAVER (ASPHALT, AGGREGATE, AND CONCRETE) 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	$ 57.83	33.70
POWER EQUIPMENT OPERATOR GROUP 2 BULLDOZER; GRADER/BLADE 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	$ 57.83	33.70
POWER EQUIPMENT OPERATOR GROUP 1 BROOM/SWEEPER; CRANE; GRADALL; POST DRIVER (GUARDRAIL/FENCES) 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.....$ 57.18
33.70
POWER EQUIPMENT OPERATOR GROUP 1
BACKHOE/EXCAVATOR/TRACKHOE; BOBCAT/SKID STEER/SKID
LOADER; LOADER 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......$ 57.18
33.70

ENGI0098-010 12/01/2024

Rates
Fringes
POWER EQUIPMENT OPERATOR GROUP 4 ROLLER 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.....$ 39.12
31.04

IRON0007-027 09/16/2025

Rates
Fringes
IRONWORKER: ORNAMENTAL AND STRUCTURAL.....$ 41.89
33.90

LABO0473-007 12/01/2024

Rates
Fringes
TRAFFIC CONTROL (FLAGGER).....$ 27.01
26.65
LABORER (COMMON OR GENERAL).....$ 31.54
26.65

LABO0596-005 06/01/2025

	Rates	Fringes
LABORER (FORM WORK ONLY)	$ 35.00	26.91

PAIN0035-023 07/01/2024

	Rates	Fringes
PAINTER: STEEL	$ 56.76	36.00

SUMA2014-006 01/11/2017

	Rates	Fringes
TRUCK DRIVER: FLATBED TRUCK	$ 48.53	0.00
TRUCK DRIVER: DUMP TRUCK	$ 38.94	12.00
TRUCK DRIVER: CONCRETE TRUCK	$ 33.69	15.79
TRAFFIC CONTROL: LABORER-CONES/ BARRICADES/BARRELS - SETTER/MOVER/SWEEPER	$ 43.73	15.06
PAINTER: SPRAY (LINESTRIPING)	$ 38.30	17.43
OPERATOR: PILEDRIVER	$ 43.87	18.04
OPERATOR: MECHANIC	$ 48.14	17.02
OPERATOR: FORKLIFT	$ 51.63	0.00
LABORER: LANDSCAPE	$ 36.62	16.00
LABORER: CONCRETE SAW (HAND HELD/WALK BEHIND)	$ 44.43	14.18
LABORER: ASPHALT, INCLUDES RAKER, SHOVELER, SPREADER AND DISTRIBUTOR	$ 33.10	18.09
IRONWORKER, REINFORCING	$ 46.21	21.27
ELECTRICIAN	$ 47.13	13.41

CEMENT MASON/CONCRETE FINISHER.....$ 52.13
20.89
CARPENTER.....$ 44.11
21.41

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.

Note: Executive Order 13658 generally applies to contracts subject

to the Davis-Bacon Act that were awarded on or between January 1,
2015 and January 29, 2022, and that have not been renewed or
extended on or after January 30, 2022. Executive Order 13658 does
not apply to contracts subject only to the Davis-Bacon Related Acts
regardless of when they were awarded. If a contract is subject to
Executive Order 13658, the contractor must pay all covered workers
at least $13.65 per hour (or the applicable wage rate listed on this
wage determination, if it is higher) for all hours spent performing on
the contract from May 11, 2026, through December 31, 2026. The
applicable Executive Order minimum wage rate will be adjusted annually.
Additional information on contractor requirements and worker
protections under Executive Order 13658 is available at
www.dol.gov/whd/govcontracts.

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

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

rate, a weighted union average rate, a state adopted rate, or a
supplemental classification rate.

Union Rate Identifiers

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

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

Union Average Rate Identifiers

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

updated to reflect the most current union average rate.

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

Survey Rate Identifiers

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

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

State Adopted Rate Identifiers

The "SA" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be

directed to the WHD Branch of Construction Wage Determinations.
Requests can be submitted via email to BCWD-Office@dol.gov or
by mail to:

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

2) If an initial decision has been issued, then any interested
party (those affected by the action) that disagrees with the
decision can request review and reconsideration from the Wage
and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7).
Requests for review and reconsideration can be submitted via
email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

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END OF GENERAL DECISION

"

"General Decision Number: MA20260010 05/18/2026

State: Massachusetts

Construction Types: Heavy

Counties: Massachusetts Counties of
Berkshire, Franklin, Hampden and
Hampshire

Heavy and Marine Construction Projects

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026

BOIL0029-001 01/01/2025

	Rates	Fringes
BOILERMAKER	$ 50.62	28.82

BRMA0001-005 08/01/2023

	Rates	Fringes
BRICKLAYERS; CEMENT MASONS; PLASTERERS; STONE MASONS; MARBLE, TILE & TERRAZZO WORKERS (SPRINGFIELD CHAPTER)	$ 50.81	32.27

BRMA0001-007 08/01/2023

	Rates	Fringes

BRICKLAYER: BRICKLAYERS; CEMENT MASONS; PLASTERERS;
STONE MASONS; MARBLE, TILE & TERRAZZO WORKERS
(SPRINGFIELD/PITTSFIELD CHAPTER BERKSHIRE COUNTY)..$ 50.81
32.27

CARP0056-004 08/01/2024

Rates
Fringes
DIVER TENDER.....$ 61.70
35.47
DIVER.....$ 78.11
35.47

CARP0056-009 08/01/2024

Rates
Fringes
PILEDRIVERMAN.....$ 51.97
35.47

CARP0336-005 09/01/2025

Rates
Fringes
CARPENTER (FRANKLIN COUNTY (ERVING, ORANGE, NORTH
ORANGE, AND WARWICK)).....$ 43.33
27.82

CARP0336-010 09/01/2025

Rates
Fringes
CARPENTER (BERKSHIRE).....$ 43.33
27.82

CARP0336-012 09/01/2025

Rates
Fringes
CARPENTER (HAMPDEN; HAMPSHIRE; AND FRANKLIN

(REMAINDER OF COUNTY))..............................$ 43.33
27.82

CARP1121-004 04/21/2025

Rates
Fringes
MILLWRIGHT..$ 43.42
33.00

ELEC0007-002 06/29/2025

Rates
Fringes
ELECTRICIAN (HAMPDEN (EXCEPT CHESTER & HOLYOKE);
HAMPSHIRE (BELCHERTOWN, WARE))......................$ 52.16
29.56

ELEC0007-003 06/29/2025

Rates
Fringes
ELECTRICIAN (BERKSHIRE; FRANKLIN; HAMPDEN (CHESTER,
HOLYOKE); HAMPSHIRE (EXCEPT BELCHERTOWN, WARE)).....$ 52.16
29.56

ENGI0098-007 12/01/2024

Rates
Fringes
POWER EQUIPMENT OPERATORS: GROUP 15 BOOM LENGTHS
OVER 350 FEET INCLUDING JIB HAZARDOUS WASTE
PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT
OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY,
WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE
DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY,
THANKSGIVING DAY AND CHRISTMAS DAY..................$ 52.38
31.04
POWER EQUIPMENT OPERATORS: GROUP 14 BOOM LENGTHS
OVER 300 FEET INCLUDING JIB HAZARDOUS WASTE
PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT
OPERATORS: 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.....$ 50.88 31.04

POWER EQUIPMENT OPERATORS: GROUP 13 BOOM LENGTHS OVER 250 FEET INCLUDING JIB HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 49.88 31.04

POWER EQUIPMENT OPERATORS: GROUP 12 BOOM LENGTHS OVER 200 FEET INCLUDING JIB HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 48.88 31.04

POWER EQUIPMENT OPERATORS: GROUP 11 BOOM LENGTHS OVER 150 FEET INCLUDING JIB HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 47.38 31.04

POWER EQUIPMENT OPERATORS: GROUP 10 MASTER MECHANIC HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 46.38 31.04

POWER EQUIPMENT OPERATORS: GROUP 9 OILER HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 44.37 31.04

POWER EQUIPMENT OPERATORS: GROUP 8 TRUCK CRANE CREWS HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: 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....$ 44.06
31.04
POWER EQUIPMENT OPERATORS: 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. HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 54.38
31.04
POWER EQUIPMENT OPERATORS: GROUP 6 COMPRESSOR (ONE OR TWO) 315 CU FT TO 900 CU FT; PUMPS 4 INCHES TO 16 INCHES (TOTAL DISCHARGE). HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 36.06
31.04
POWER EQUIPMENT OPERATORS: 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. HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 38.00
31.04
POWER EQUIPMENT OPERATORS: 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. HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: 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.....$ 39.12 31.04

POWER EQUIPMENT OPERATORS: 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. HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 42.35 31.04

POWER EQUIPMENT OPERATORS: 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. HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 42.57 31.04

POWER EQUIPMENT OPERATORS: 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. HAZARDOUS WASTE PREMIUM $2.00 FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, COLUMBUS DAY, VETERANS DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....$ 42.88
31.04

IRON0007-014 09/16/2025

	Rates	Fringes
IRONWORKER (BERKSHIRE (BECKET, EAST OTIS, HINSDALE, MONTEREY, NEW MARLBORO, NORTH OTIS, OTIS, PERU, SANDISFIELD, SAVOY, SHEFFIELD, WASHINGTON, WINDSOR); FRANKLIN; HAMPDEN; HAMPSHIRE).....	$ 41.89	33.90

IRON0012-003 07/01/2025

	Rates	Fringes
IRONWORKER (BERKSHIRE (LEE)).....	$ 40.75	31.91

IRON0012-004 07/01/2025

	Rates	Fringes
IRONWORKERS: STRUCTURAL, ORNAMENTAL, REINFORCING, FENCE ERECTOR, MACHINERY MOVER, RIGGER, RODMAN, STONE DERRICKMAN (BERKSHIRE (REMAINDER OF COUNTY))..	$ 40.75	31.91
IRONWORKERS: SHEETER (BERKSHIRE (REMAINDER OF		

COUNTY))..... $ 41.00
31.91

LABO0022-002 12/01/2024

Rates
Fringes
LABORERS: GROUP 6 ASBESTOS ABATEMENT, TOXIC AND
HAZARDOUS WASTE LABORERS (FRANKLIN (ORANGE,
WARWICK))..... $ 40.95
29.70
LABORERS: GROUP 5 PRECAST FLOOR AND ROOF, PLANK
ERECTOR (FRANKLIN (ORANGE, WARWICK))..... $ 39.70
29.70
LABORERS: GROUP 4 BLASTER; POWDERMAN (FRANKLIN
(ORANGE, WARWICK))..... $ 39.95
29.70
LABORERS: GROUP 3 AIR TRACK OPERATOR; BLOCK PAVER;
RAMMER; CURB SETTER, HYDRAULIC AND SIMILAR
SELF-POWERED DRILLS (FRANKLIN (ORANGE, WARWICK))....$ 39.70
29.70
LABORERS: GROUP 2 ASPHALT RAKER; FENCE AND GUARD
RAIL ERECTOR; LASER BEAM OPERATOR; MASON TENMDER;
PIPELAYER; PNEUMATIC DRILL OPERATOR; PNEUMATIC TOOL
OPERATOR; WAGON DRILL OPERATORM JACKHAMMER
OPERATOR, PAVEMENT BREAKER, CARBIDE CORE DRILLING
MACHINE, CHAIN SAW OPERATOR, BARCO TYPE JUMPING
TAMPERS, CONCRETE PUMP, MOTORIZED MORTAR MINER,
RIDE-ON MOTORIZED BUGGY (FRANKLIN (ORANGE,
WARWICK))..... $ 39.20
29.70
LABORERS: GROUP 1 LABORERS; CARPENTER TENDERS;
CEMENT FINISHER TENDERS, PLASTERER TENDERS
(FRANKLIN (ORANGE, WARWICK))..... $ 38.95
29.70

LABO0473-005 12/01/2024

Rates
Fringes
LABORERS: GROUP 6 ASBESTOS ABATEMENT, TOXIC AND
HAZARDOUS WASTE LABORERS (FRANKLIN (EXCEPT ORANGE
AND WARRICK); HAMPDEN AND HAMPSHIRE COUNTIES (WITH
THE EXCEPTION OF CHESTERFIELD, CUMMINGTON, GOSHEN,

MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON)).....$ 35.00
29.70
LABORERS: GROUP 5 FLAGGERS (FRANKLIN (EXCEPT
ORANGE AND WARRICK); HAMPDEN AND HAMPSHIRE COUNTIES
(WITH THE EXCEPTION OF CHESTERFIELD, CUMMINGTON,
GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON))..$ 27.01
29.70
LABORERS: GROUP 4 BLASTERS, POWDERMEN (FRANKLIN
(EXCEPT ORANGE AND WARRICK); HAMPDEN AND HAMPSHIRE
COUNTIES (WITH THE EXCEPTION OF CHESTERFIELD,
CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND
WORTHINGTON))....$ 35.00
29.70
LABORERS: GROUP 3 AIR TRACK OPERATOR, BLOCK PAVERS,
RAMMERS, CURB SETTERS (FRANKLIN (EXCEPT ORANGE AND
WARRICK); HAMPDEN AND HAMPSHIRE COUNTIES (WITH THE
EXCEPTION OF CHESTERFIELD, CUMMINGTON, GOSHEN,
MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON)).....$ 35.00
29.70
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 (FRANKLIN (EXCEPT
ORANGE AND WARRICK); HAMPDEN AND HAMPSHIRE COUNTIES
(WITH THE EXCEPTION OF CHESTERFIELD, CUMMINGTON,
GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON))..$ 35.00
29.70
LABORERS: GROUP 1 CARPENTER TENDERS, CEMENT
FINISHER TENDERS, LABORERS, WRECKING LABORERS
(FRANKLIN (EXCEPT ORANGE AND WARRICK); HAMPDEN AND
HAMPSHIRE COUNTIES (WITH THE EXCEPTION OF
CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD,
PLAINFIELD, AND WORTHINGTON))....$ 35.00
29.70

LABO0473-006 12/01/2024

Rates
Fringes
LABORERS: GROUP 6 ASBESTOS ABATEMENT, TOXIC AND
HAZARDOUS WASTE LABORERS (BERKSHIRE; HAMPSHIRE
COUNTIES (THE TOWNS OF CHESTERFIELD, CUMMINGTON,
GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON
ONLY))....$ 33.99
26.65

LABORERS: GROUP 5 FLAGGERS (BERKSHIRE; HAMPSHIRE COUNTIES (THE TOWNS OF CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON ONLY))..... $ 27.01 26.65
LABORERS: GROUP 4 BLASTERS, POWDERMEN (BERKSHIRE; HAMPSHIRE COUNTIES (THE TOWNS OF CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON ONLY))..... $ 33.99 26.65
LABORERS: GROUP 3 AIR TRACK OPERATOR, BLOCK PAVERS, RAMMERS, CURB SETTERS (BERKSHIRE; HAMPSHIRE COUNTIES (THE TOWNS OF CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON ONLY))..... $ 33.99 26.65
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 (BERKSHIRE; HAMPSHIRE COUNTIES (THE TOWNS OF CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON ONLY))..... $ 33.99 26.65
LABORERS: GROUP 1 CARPENTER TENDERS, CEMENT FINISHER TENDERS, LABORERS, WRECKING LABORERS (BERKSHIRE; HAMPSHIRE COUNTIES (THE TOWNS OF CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON ONLY))..... $ 33.99 26.65

LABO1421-002 12/02/2024

Rates Fringes

LABORERS: GROUP 6 ASBESTOS, LEAD PAINT, TOXIC AND HAZARDOUS WASTE..... $ 46.25 29.70
LABORERS: GROUP 5 YARDMAN, BURNERS, SAWYERS..... $ 45.35 29.70
LABORERS: GROUP 4 YARDMAN (SALVAGE YARD ONLY)..... $ 42.25 29.70
LABORERS: GROUP 3 SMALL BACKHOES, LOADERS ON TRACKS, BOBCAT TYPE LOADERS, HYDRAULIC ""BROCK"" TYPE

HAMMER OPERATORS, CONCRETE CUTTING SAWS.....$ 47.25
29.70
LABORERS: GROUP 2 BURNERS, JACKHAMMERS.....$ 47.00
29.70
LABORERS: GROUP 1 ADZEMAN, WRECKING LABORER.....$ 46.25
29.70

PAIN0035-010 07/01/2024

Rates
Fringes
PAINTER: SPRAY, SANDBLAST (NEW CONSTRUCTION).....$ 39.48
31.85
PAINTER: BRUSH, TAPER (NEW CONSTRUCTION).....$ 38.78
31.85
PAINTER REPAINT: SPRAY, SANDBLAST.....$ 36.80
31.85
PAINTER REPAINT: BRUSH, TAPER.....$ 35.40
31.85
PAINTER REPAINT: BRIDGE.....$ 56.76
31.85

PLUM0004-003 09/01/2025

Rates
Fringes
PLUMBER AND STEAMFITTER (FRANKLIN (ORANGE)).....$ 55.00
31.57

PLUM0104-004 09/17/2025

Rates
Fringes
PLUMBERS AND PIPEFITTERS (BERKSHIRE (BECKET, OTIS,
SANDISFIELD); FRANKLIN (EXCEPT MONROE, ROWE, AND
THE WESTERN PART OF CHARLEMONT); HAMPDEN;
HAMPSHIRE).....$ 52.26
31.05

PLUM0104-009 09/17/2025

Rates
Fringes
PLUMBER AND STEAMFITTER (BERKSHIRE (EXCEPT OTIS, BECKET, SANDISFIELD); FRANKLIN (MONROE, ROWE AND THE WESTERN PART OF CHARLEMONT)).....$ 52.26
31.05

TEAM0379-001 06/01/2025

Rates
Fringes
TRUCK DRIVERS: GROUP 7 TRAILERS FOR EARTH MOVING EQUIPMENT (DOUBLE HOOKUP) POWER TRUCKS $.25 DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM
FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY
B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 41.82
37.35
TRUCK DRIVERS: GROUP 6 SPECIALIZED EARTH MOVING EQUIPMENT OVER 35 TONS POWER TRUCKS $.25 DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM
FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY
B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 41.53
37.35
TRUCK DRIVERS: GROUP 5 SPECIALIZED EARTH MOVING EQUIPMENT UNDER 35 TONS OTHER THAN CONVENTIONAL TYPE TRUCKS; LOW BED; VACHUAL; MECHANICS, PAVING RESTORATION EQUIPMENT POWER TRUCKS $.25

DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 41.24
37.35
TRUCK DRIVERS: GROUP 4 FOUR AND FIVE AXLE EQUIPMENT POWER TRUCKS $.25 DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 41.14
37.35
TRUCK DRIVERS: GROUP 3 THREE AXLE EQUIPMENT AND TIREMAN POWER TRUCKS $.25 DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 41.02
37.35
TRUCK DRIVERS: GROUP 2 TWO AXLE EQUIPMENT; & FORKLIFT OPERATOR POWER TRUCKS $.25 DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40

DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 40.95
37.35
TRUCK DRIVERS: GROUP 1 STATION WAGONS; PANEL TRUCKS; AND PICKUP TRUCKS POWER TRUCKS $.25 DIFFERENTIAL BY AXLE TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM FOOTNOTES: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. PAID VACATION: EMPLOYEES WITH 4 MONTHS TO 1 YEAR OF SERVICE RECEIVE 1/2 DAY'S PAY PER MONTH; 1 WEEK VACATION FOR 1 - 5 YEARS OF SERVICE; 2 WEEKS VACATION FOR 5 - 10 YEARS OF SERVICE; AND 3 WEEKS VACATION FOR MORE THAN 10 YEARS OF SERVICE.....$ 40.78
37.35

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.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

Survey Rate Identifiers

The "SU" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that

classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

a) a survey underlying a wage determination
b) an existing published wage determination

c) an initial WHD letter setting forth a position on
a wage determination matter
d) an initial conformance (additional classification
and rate) determination

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

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

3) If the decision of the Administrator is not favorable,
an
interested party may appeal directly to the Administrative
Review Board (formerly the Wage Appeals Board).  Write to:
            Administrative Review Board
            U.S. Department of Labor
            200 Constitution Avenue, N.W.
            Washington, DC 20210.
================================================================
=====
          END OF GENERAL DECISION
"
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"General Decision Number: MA20260006 05/18/2026

State: Massachusetts

Construction Types: Heavy

Counties: Massachusetts Counties of
Barnstable, Berkshire, Bristol, Dukes,
Essex, Franklin, Hampden, Hampshire,
Middlesex, Nantucket, Norfolk, Plymouth,
Suffolk and Worcester

Massachusetts All Dredging, except self-propelled hopper dredges, on the Atlantic Coast & tributary waters emptying into the Atlantic Ocean

Modification Number	Publication Date
1	01/30/2026
2	05/18/2026

ENGI0025-001 10/01/2025

Rates Fringes

DREDGING: CLASS D: OILER, DECKHAND, SHOREMAN, RODMAN, SCOWMAN, COOK, MESSMAN, PORTER/JANITOR.
INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS

(LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER (ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 30.86
14.15
DREDGING: CLASS C2: BOAT OPERATOR. INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER (ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 37.15
14.57
DREDGING: CLASS C1: MATE, DRAG BARGE OPERATOR, ASSISTANT FILL PLACER, WELDER, STEWARD.
INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER

(ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 38.38
14.66
DREDGING: CLASS B2: CERTIFIED WELDER. INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER (ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 39.46
14.73
DREDGING: CLASS B1: DERRICK OPERATOR (180 SWING), SPIDER/SPILL BARGE OPERATOR, ENGINEER, ELECTRICIAN, CHIEF WELDER, CHIEF MATE, FILL PLACER, OPERATOR II, MAINTENANCE ENGINEER, LICENSED BOAT OPERATOR, LICENSED CREW BOAT OPERATOR. INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL

CLASSIFICATIONS (LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER (ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 41.93 14.90

DREDGING: CLASS A2: CRANE OPERATOR (360 SWING) INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER (ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 43.20 14.99

DREDGING: CLASS A1: DECK CAPTAIN; MECHANICAL DREDGE OPERATOR, LEVERMAN, LICENSED TUG OPERATOR OVER 1000 HP. INCENTIVE PAY: (ADD TO HOURLY RATE) OPERATOR (NCCCO LICENSE/CERTIFICATION) $1.80 LICENSED TUG OPERATOR OVER 1000 HP (ASSIGNED AS MASTER) (USCG LICENSED MASTER OF TOWING VESSELS (MOTV) $1.80; LICENSED BOAT OPERATOR (ASSIGNED AS LEAD BOAT CAPTAIN) USCG LICENSED BOAT OPERATOR $1.30; ENGINEER (QMED AND TANKERMAN ENDORSEMENT OR LICENSED ENGINEER (USCG) $1.80 OILER (QMED AND TANKERMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS (TANKERMAN ENDORSEMENT ONLY) USCG $1.55; DECKHAND OR MATE (AB WITH LIFEBOATMAN ENDORSEMENT (USCG) $1.80; ALL CLASSIFICATIONS

(LIFEBOATMAN ENDORSEMENT ONLY (USCG) $1.55; WELDER (ABS CERTIFICATION) $1.55 FOOTNOTES APPLICABLE TO ABOVE CRAFTS: A. PAID HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING, JR.'S BIRTHDAY, MEMORIAL DAY, GOOD FRIDAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY AND CHRISTMAS DAY B. VACATION: EIGHT PERCENT (8%) OF THE STRAIGHT TIME RATE, MULTIPLIED BY THE TOTAL HOURS WORKED.....$ 48.48 15.34

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.

Note: Executive Order 13658 generally applies to contracts subject
to the Davis-Bacon Act that were awarded on or between January 1,
2015 and January 29, 2022, and that have not been renewed or
extended on or after January 30, 2022. Executive Order 13658 does
not apply to contracts subject only to the Davis-Bacon Related Acts
regardless of when they were awarded. If a contract is subject to
Executive Order 13658, the contractor must pay all covered workers
at least $13.65 per hour (or the applicable wage rate listed on this
wage determination, if it is higher) for all hours spent performing on
the contract from May 11, 2026, through December 31, 2026. The
applicable Executive Order minimum wage rate will be adjusted annually.
Additional information on contractor requirements and worker
protections under Executive Order 13658 is available at
www.dol.gov/whd/govcontracts.

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

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

order under rate identifiers indicating whether the particular
rate is a union rate (current union negotiated rate), a survey
rate, a weighted union average rate, a state adopted rate, or a
supplemental classification rate.

Union Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

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

Survey Rate Identifiers

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

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be
directed to the WHD Branch of Construction Wage Determinations.
Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested
party (those affected by the action) that disagrees with the
decision can request review and reconsideration from the Wage
and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7).
Requests for review and reconsideration can be submitted via
email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

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END OF GENERAL DECISION

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DOCUMENT A00801

SPECIAL PROVISIONS

SHEFFIELD
Federal Aid Project Number STP(BR-OFF)-003S(993)X
Bridge Replacement, S-10-015, Kelsey Road over Schenob 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

The work to be done under this Contract consists of furnishing all labor, materials and equipment required for the replacement of the Kelsey Road over Schenob Brook Bridge (No. S-10-015) in the Town of Sheffield, MA. The bridge will be replaced with a prestressed concrete box beam superstructure on full-height concrete cantilever abutments with pile foundations. The proposed bridge will carry a 13-foot-wide travel lane with 4" wide curb offsets on both sides set between CT-MTL2 barriers. Sidewalks will not be provided. The roadway will be crowned along the centerline of the bridge with 2% cross-slopes

The proposed approach roadways generally follow the current roadway alignment; they will be reconstructed to match the bridge section and transition to meet the existing roadway width and cross-section at the project limits. The bridge and approach slabs will be paved with an asphalt riding surface, while the remainder of Kelsey Road will retain its existing gravel riding surface. The proposed vertical alignment has been increased by approximately 1 foot across the bridge so that the roadway surface will be above the 10-year flood elevation. Additional roadway work will include guardrail installation; curbing; side slope grading; installation of new elliptical RCP culvert pipes; dry hydrant relocation; overhead utility relocations; temporary sedimentation and erosion control measures; development of a wetland replication area; and seeding.

Traffic management and safety controls during construction are also included. Kelsey Road will be closed to traffic during construction at the project limits and traffic will be detoured along an approved detour route as shown in the contract documents.

Work under this contract will extend beyond the existing layout lines requiring temporary and permanent construction easements.

All work under this Contract shall be done in conformance with the *2026 Standard Specifications for Highways and Bridges,* the *Supplemental Specifications* contained in this book, the *Construction Standard Details* in effect as of August 2026, the *1990 Standard Drawings for Signs and Supports*, the 2015 *Overhead Signal Structure and Foundation Standard Drawings*, the *11th Edition of the Manual on Uniform Traffic Control Devices (MUTCD)* and the *January 2026 Massachusetts Amendments to the MUTCD*, the *1968 Standard Drawings for Traffic Signals and Highway Lighting*, the latest edition of The *American Standard for Nursery Stock*, the Plans and these Special Provisions.

CONTRACTOR QUESTIONS AND ADDENDUM ACKNOWLEDGEMENTS

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

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

BIDDERS LIST

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

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

BUILD AMERICA BUY AMERICA PREFERENCE

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

(1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Foreign steel and iron can be used if the cost of the materials does not exceed 0.1% of the total Contract cost or $2,500, whichever is greater. The action of applying a coating to a covered material (i.e., steel and iron) is deemed a manufacturing process subject to Buy America. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to requirements of Build America, Buy America. Steel used for temporary support of excavation, including H piles, soldier piles, and sheeting when the steel is required to be left in place is subject to requirements of Build America, Buy America. Temporary steel, shall remain in place when it falls within the influence zone of the soil supporting any structure or railroad tracks.

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States and

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.

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

EQUIVALENT SINGLE AXLE LOADS (ESALS)

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

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 not to impact the marathon. All other districts work restrictions will be as per DHD.

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

Memorial Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Bunker Hill Day (Suffolk County State Holiday)
No work restrictions due to traffic concerns.

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

HOLIDAY WORK RESTRICTIONS (Continued)

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

Labor Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Columbus Day (Federal Holiday)
No work on major arterials from 5:00 AM on the Friday before, until the normal start of business on the following day

Veterans' Day (Federal Holiday)
No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)
No work on major arterials from 5:00 AM two days before until the normal start of business on the following Monday.

Christmas Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

SOIL STOCKPILING DIRECTIVE P-22-001

Any stockpiling of soil must be performed in compliance with Policy Directive P-22-001, Off-Site Stockpiling of Soil from MassDOT Construction Projects. This directive limits the allowable locations for off-site stockpiling of soil generated during MassDOT projects and includes various requirements that must be satisfied by the contractor prior to off-site stockpiling. The Contractor is responsible for identifying a suitable stockpile location.

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.

TRUCK SAFETY DEVICES

(Supplementing Subsection 7.04: Motor Vehicles)

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

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

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

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

ENVIRONMENTAL PERMITTING

The proposed work occurs in jurisdictional wetland resources subject to Section 401 and Section 404 of the Clean Water Act; therefore, a Water Quality Certification from the Massachusetts Department of Environmental Protection and 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 obtained allowing such work. The Contractor must notify the District 1 Highway Director and Resident Engineer in writing at least 60 days prior to the desired commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 1 Environmental Engineer.

The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN

This heading specifies the requirements of the Natural Heritage and Endangered Species Program (NHESP) of the Division of Fisheries and Wildlife (DFW) for projects that occur within high-priority state and federally-protected turtle populations. The requirements consist of installation of a Turtle Exclusion Barrier (Item 670.1), regular sweeps to ensure that turtles are excluded from the work zone, and routine inspections to ensure that the Turtle Exclusion Barrier is functioning as intended. The requirements outlined herein are for the following project: Kelsey Road Bridge Replacement over Schenob Brook in Sheffield, Massachusetts.

The work shall be coordinated with the MassDOT Wildlife Unit Contact (also referred to as the Monitor) and the Engineer. The Monitor shall obtain a Scientific Collection Permit from NHESP prior to the pre-construction Turtle Protection field meeting described below.

The MassDOT Wildlife Unit Contact Information is:

David Paulson, Wildlife and Endangered Species Unit Supervisor
David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

Failure to implement the Turtle Protection Plan as specified herein will result in a cease work order and/or violation from NHESP.

CONTRACTOR RESPONSIBILITY AND SCHEDULE OF WORK

Pre-construction Turtle Protection Meeting

The Contractor shall schedule and attend a Turtle Protection Meeting in the field with the Engineer and the Monitor, prior to any site disturbance to review the State-listed Turtle Protection Plan. The Contractor shall schedule this meeting at least 60 days in advance of the proposed meeting date.

During the meeting, the Monitor will provide the Contractor and Engineer with the appropriate state-listed turtle identification and handling pamphlets. The Contractor shall provide the Monitor with the construction schedule.

Immediately following the meeting, the Contractor shall inform, in writing, all construction, landscaping, and other sub-contractors associated with the Project of the likely presence of state-listed turtles on the Property and what measures must be implemented to minimize direct harm to the turtles.

Initial Turtle Sweep

Prior to site clearing, grubbing, earth disturbance, or any other site preparations, the Contractor shall coordinate with the Engineer to have the Monitor sweep the site for turtles, ensuring that vegetation within 200-feet of the stream is surveyed.

Additionally, the Contractor shall coordinate with the Monitor to conduct a sweep of the site prior to any work in water. The Monitor will inspect all areas of land under water where cofferdams are to be installed paying close attention to overhanging banks and to water that contains coarse woody debris.

If in-water work is to occur in separate phases, the Monitor will provide a sweep of the site before each phase, depending on the scope and scheduling of phased work.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN (Continuned)

Work will stop immediately if turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. No one without Section 6 federal clearance shall handle federally-listed turtles. Work will not resume until the turtle has left the site on its own accord. In addition, MassDOT will contact USFWS and MassWildlife NHESP within 24 hours if a bog turtle is observed and will send location details and photographs, if possible. If a turtle appears dead, injured, or immobile, all work will stop and the Monitor, USFWS, and MassWildlife NHESP shall be contacted immediately.

Installation of Turtle Exclusion Barrier

Following the initial sweep of the work site, a barrier to prevent turtles from accessing the site shall be installed in accordance with Item 670.1 Turtle Exclusion Barrier (Barrier). This Barrier will also serve as the Limit of Work.

MassDOT Responsibility

Turtle Sweeps

A representative from the MassDOT Wildlife Unit will serve as the Turtle Monitor. Prior to the pre-construction meeting, the Monitor will obtain a Scientific Collection Permit from NHESP to handle state-listed turtles. Prior to site clearing, grubbing, earth disturbance, or site preparations, the Monitor will sweep the site for turtles, ensuring that all vegetation within 200-feet of the stream is surveyed.

Within 48 hours of installing the turtle barrier, the Monitor will inspect the Barrier to ensure it is installed properly. The Monitor may request photos from the Contractor to aid in their review.

Additionally, the Monitor will provide a sweep of the site prior to any work in water. The Monitor shall inspect all areas of land under water where cofferdams are to be installed, paying close attention to overhanging banks and in water coarse woody debris. If in-water work is to occur in separate phases, the monitor will provide a sweep of the site before each phase, depending on the scope and scheduling of phased work. In the event of finding an injured turtle, the turtle shall be transported to a suitable veterinarian. In the event of finding a turtle with a radio transmitter, NHESP and the contact on the transmitter will be alerted immediately. In the case a federally-listed turtle is observed on site, no one without a federal Section 6 clearance shall handle the federally-listed turtle.

No turtles or other wildlife shall be removed without the approval of a qualified wildlife biologist or the Division except as necessary to receive veterinary treatment in case of harm during construction.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN (Continued)

Work will stop immediately if turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. No one without Section 6 federal clearance shall handle federally-listed turtles. Work will not resume until the turtle has left the site on its own accord. In addition, MassDOT will contact USFWS and MassWildlife NHESP within 24 hours if a state or federally-listed turtle is observed and will send location details and photographs, if possible.

NHESP Reporting

At the end of the calendar year, the Monitor will provide NHESP with a summary of activities at the construction site. This report will include the number and duration of visits as well as submitting rare species observation forms for all state-listed species encountered. Any rare species encountered will be described in the NHESP Rare Animal/Plan Observation Report with the required supporting materials within 10 days of the observation. No state-listed species may be removed from the project site unless under the direct supervision of the Monitor or the NHESP.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed endangered, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. MassDOT, on behalf of FHWA, submitted a Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key Consultation through Information for Planning and Consultation (IPaC) and generated a May Affect, Not Likely to Adversely Affect (NLAA) determination (see **Document A00844**). Subsequently, the project has completed Section 7 consultation under the ESA.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

General AMMs

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including all applicable AMMs. NLEB and TCB information (https://www.fws.gov/midwest/endangered/mammals/nleb/ and https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus) shall be made available to all personnel.
- On July 9, 2024, MassDOT Highway Division Environmental Services conducted a northern long-eared bat summer presence/absence survey, in accordance with the 2024 survey guidelines. The survey did confirm the presence of NLEB and/or TCB. If work is proposed by the Contractor past July 9, 2029, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.\

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION (Continued)

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31**

Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*
- Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
- No tree cutting, trimming, or removal of trees and/or woody vegetation >3-inch in diameter shall be conducted between **April 15 to October 31**
- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and/or TCB, including the **TOY** restriction. If this restriction needs to be waived at any location(s) the Resident Engineer shall send a locus map of the proposed work to MassDOT Highway Division's Environmental Services Section for review and a determination if the restriction can be waived.

Bridge AMMs

- Following the March 9th, 2026, guidance from the U.S. Fish and Wildlife Service (the Service) regarding roadway transportation structures in New England, an inspection of the bridge for the presence of, or evidence of use by, bats was not conducted. The MassDOT Wildlife Unit conducted a desktop review that determined the bridge/culvert is not (1) a covered bridge, (2) a bridge with wood/timber as a component of construction, (3) a bridge with stone/masonry construction, (4) a "cave-like" culvert, typically greater than 200 feet long, and/or (5) located on Nantucket County. The bridge/culvert did not meet any of these exceptions, and therefore no survey was required.

STATE-LISTED PLANT PROTECTION PLAN

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) has reviewed MassDOT Project 609068 – Kelsey Road bridge replacement over Schenob 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 impacts to state-listed Rare Plants.

The MassDOT Wildlife Unit Contact Information is:

David Paulson, Wildlife and Endangered Species Unit Supervisor
David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

Rare Plants occur outside of the Limit of Work on the southwest side of Kelsey Road, between stations 99 and 100 and the western terminus of work. No work or alteration to the soil, surface, or vegetation shall occur outside of the limits of work shown on the site plan, unless otherwise approved in writing by the Engineer, the MassDOT Wildlife Unit Supervisor, and NHESP.

STATE-LISTED PLANT PROTECTION PLAN (Continued)

The Contractor shall schedule and attend a Rare Plant Protection Meeting with the Engineer and a representative from the MassDOT Wildlife Unit, before any site disturbance. During this meeting, the Contractor shall provide the MassDOT Wildlife Unit with a construction schedule, and the MassDOT Wildlife Unit will discuss the protection of rare plants. The Contractor shall schedule this meeting at least 60 days in advance of the proposed meeting date.

The MassDOT Wildlife Unit will visually demarcate the rare plants using surveyor's tape, orange construction fencing, or another measure. The avoidance of the rare plants will be inspected periodically by the Engineer and/or representative(s) from the MassDOT Wildlife Unit. Should damage to the rare plants occur, additional rare plant protection and permitting may be required by Contractor as directed by the MassDOT Wildlife Unit and may result in a cease work order and/or violation from NHESP. Encroachments outside the limit of work in proximity to the rare plants shall be immediately reported to the Engineer and MassDOT Wildlife Unit.

NHESP Reporting

Prior to the completion of work, the MassDOT Wildlife Unit will submit written confirmation to NHESP documenting that the rare plants have been avoided and protected through containment of construction activities within the limit of work. The contractor shall provide photos or written documentation upon request to the MassDOT Wildlife Unit. No separate payment will be made for meetings and reporting requirements associated with the State-Listed Plant Protection Plan. Cost shall be incidental to the contract pay items.

WILDLIFE PASSAGE BENCH

The Wildlife Bench is a dirt or gravel bench incorporated into bridge or culvert projects typically over scour protection. Its primary function is to allow wildlife to pass beneath crossing structures uninterrupted as they travel along river corridors to avoid the need for animals to cross roads to reduce animal mortality and to increase public safety.

Pre-Construction Coordination
At least 30 days prior to the commencement of construction, the Contractor shall coordinate with David Paulson (MassDOT Wildlife Unit Supervisor, (508) 389-6366 / david.j.paulson@state.ma.us) to set up an initial (virtual or in person) meeting with MassDOT's Wildlife Unit, Contractor, and Resident Engineer. At this meeting, the Wildlife Unit will provide an overview of the Wildlife Bench. The Contractor should be prepared to discuss the anticipated means, methods, and schedule.

Design
The Wildlife Bench shall be constructed according to the bridge design plans. Field conditions may warrant changes to the design, and such changes must be approved by the Wildlife Unit and Resident Engineer.

Wildlife Passage Benches typically exist on both sides of a stream channel above or below the Ordinary High-Water Level to provide a dry path through the structure for wildlife when flooding is not taking place. The elevation of the Passage Bench may vary based on stream morphology, flood depths and velocities, bridge design, and site topography. The distance between the Wildlife Passage Bench and bridge beam should be maximized to the greatest extent possible. The minimum vertical clearance between the bench surface and the bottom of the bridge beam is 2 feet.

WILDLIFE PASSAGE BENCH (Continued)

The Wildlife Bench shall be level, or nearly so, and a minimum of 3 feet wide. Larger widths should be used for larger bridges and the width of the Wildlife Bench should be maximized to the greatest extent possible.

The ends of the wildlife passage bench shall be tied to traversable natural ground or bank lines outside of the bridge to ensure wildlife can readily pass in and out of the structure. The approaches to the wildlife passage bench should be passable by wildlife as shown on the plans. No abrupt changes in topography or terrain should be present between the wildlife bench and the connection to the ground outside the project limit. Steep side slopes should be avoided approaching wildlife benches.

Material
A Streambed/Bank Restoration Item (983.521) is proposed in the project. The Wildlife Bench uses the same material gradation proposed within the Streambed/Bank Restoration Item. However, if the streambed consists of boulder and cobble material, the Wildlife Passage Bench material shall be adjusted to include a surface layer of finer material (e.g., sand/gravel) to fill the voids and provide a walkable surface for wildlife.

Construction
The initial placement of the wildlife bench material shall fill the voids in the underlying riprap, if present. The purpose of filling the voids is to provide a level, stable, and smooth surface for wildlife to walk on.

The ends of the wildlife bench shall be graded and tied to natural ground or bank lines outside of the bridge to ensure wildlife passage. This may require the Wildlife Passage bench to traverse across slope stabilization located around each abutment. No abrupt changes in topography should be present between the natural bank / ground and the wildlife bench.

The wildlife bench will be included as part of Item 983.521 – Streambed/Bank Restoration.

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

GAS:
Emergency: 1-800-233-5325
New Service: 1- 877-696-4743
Customer Support: 1-800-732-3400

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

NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)

Following are the names of owners and representatives of the principal utilities affected, but the Department does not guarantee completeness of the list:

Town of Sheffield

DPW

Mr. David Ruot
Sheffield Highway Department
35 Pike Road
Sheffield, MA 01257
Telephone: 413-229-7030
Email: Highway@sheffieldma.gov

Telephone

Mr. Paul Styspeck
Verizon
385 Myles Standish Blvd.
Taunton, MA 02780
Telephone No: 774-409-3160
Email: paul.m.styspeckverizon.com

Electric

Mr. Manuel Munoz
National Grid Electric
548 Haydenville Road
Leeds, MA 01053
Telephone No: 401-895-9726
Email: manuel.munoz@nationalgrid.com

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.

COMPLIANCE WITH THE NATIONAL DEFENSE AUTHORIZATION ACT (Continued)

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

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

SUBSECTION 8.14 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

SUBSECTION 8.14 (Continued)

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.

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 Contactor 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.

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.

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.

CONTAMINATED SOIL

Soil to be removed from the project area shall not be assumed to be uncontaminated and must be evaluated prior to off-site management for potential contamination with hazardous materials. No soil may be disposed of off-site without proper assessment by the contractor and approval from the Resident Engineer (RE), District Environmental Engineer (DEE), or the project designee.

NONCONFORMING COMPRESSIVE STRENGTH OF CEMENT CONCRETE

Concrete with compressive strength test results failing to attain the limits specified in Table 901.64-3 of 901.64.B: Acceptance Testing shall be evaluated for structural adequacy and serviceability at the Contractors' expense. The Department will review all production records, the concrete test records, petrographic analysis report, field notes, and the placement records for the concrete in question. If the Engineer determines the material is found to be adequate to remain in place, payment shall be adjusted in accordance with the following formula:

$$P = \frac{2(fc - f'c)(UP)(Q)}{f'c}$$

Where:

P = pay adjustment for substandard concrete
$f'c$ = specified minimum compressive strength at 28 days
fc = substandard concrete cylinder compressive strength at 56 days
Q = quantity of concrete represented by the acceptance cylinders tested
UP = unit contract price or the lump sum breakdown price per cubic yard for the class of concrete involved complete in place

GENERAL REQUIREMENTS FOR DEMOLITION AND WORK INVOLVING PAINTED STEEL

(02/06/2020)

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

Work Involving Painted Steel

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

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

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

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

Environmental

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

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

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

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

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

Cleaning/Removal

Cutting Or Burning Of Steel

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

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

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

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

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

Mechanical Disassembly Of Steel

All surfaces to be mechanically disassembled by shear cutting or removing bolts or rivets shall not require deleading. When shear cutting or removing bolts or rivets, the Contractor shall not use any method that will cause dust and/or particles to be emitted and/or dispersed into the environment to an extent that would expose the workers above the Action Levels of 30µg/m3.

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.

ITEM 102.3 HERBICIDE TREATMENT OF INVASIVE PLANTS HOUR

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be written and submitted per Item 102.33 Invasive Plant Management Strategy and shall be measured and paid for under that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

Date and time stamped photos indicating start and stop time of work must be submitted if requested.

This item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor’s responsibility and at the Contractor’s expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this item shall be as determined in the field per the site walk and as specified in the IPMS.

ITEM 102.3 (Continued)

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): "non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems."

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: Peter.R.Spellmeyer@dot.state.ma.us.

QUALIFICATIONS

The applicators shall submit and meet the qualifications outlined below. A list of contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
   a. Narrative describing company, its expertise and experience with invasive plant control.
   b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
   c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
   a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
   b. At least one or more applicator must have a ROW certification, if required for work.
   c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all contractor crew leaders working on the project.
   d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
   a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.

ITEM 102.3 (Continued)

b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
c. Photo documentation of these projects.
d. GPS coordinates of project locations, if available.

4. Crew leader must have expertise with invasive plant control and provide the following:
   a. Have held Core license for at least five (5) years.
   b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

SUBMITTALS

No work shall begin without approval of the submittals.

Submittals include the following items:

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer and the MassDOT Landscape Architect a completed and signed MassDOT Herbicide Use Report.

Photo Documentation

Digital photos with date and time of herbicide application work, showing start time and completion time, are required and must be submitted for measurement of payment upon request.

MATERIALS

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on herbicide proposed and shall be per the manufacturer's label for specific application.

ITEM 102.3 (Continued)

METHODS

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33 Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. Vegetation damaged shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

ITEM 102.3 (Continued)

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this item.

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

MEASURE OF SUCCESS

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the Hour of verified crew time spent on the project doing herbicide application as and where specified herein and in the IPMS. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

ITEM 102.3 (Continued)

BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon verified time spent on the project doing herbicide application as and where specified in the IPMS and upon receipt and approval of submittals. Payment will not include travel time to and from the Contractor's place of business and nor time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR

This item consists of providing an Invasive Plant Management Strategy (IPMS) for the control of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. Unless otherwise approved, the IPMS shall be submitted in the form of the MassDOT Invasive Plant Management Strategy Report Form.

The IPMS shall be submitted for review and approval by the MassDOT Landscape Design Section or their representative, and the IPMS shall be implemented on-site.

The Invasive Plant Management Strategy Report Form is available online at https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individual attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

QUALIFICATIONS

Individual shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

SUBMITTALS

Task Summary & Reports

For measurement of payment, the contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, submittal of an approved IPMS, and if requested to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

ITEM 102.33 (Continued)

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the site inspection walk when an Interim or Final Report has been requested.

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, the contractor shall submit the IPMS for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Prime Contractor and the Engineer and shall include the following as appropriate and applicable to the project and to the IPMS Report Form questions and Guidance:

I. Project Information
- a. Company writing the IPMS and performing the herbicide application.
- b. Date of site walk
- c. Attendees at site walk
- d. Expected end date of contract and expected last treatment (month/season)

II. Brief Description of Conditions
- a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

III. Coordination with Roadway Contractor regarding other work
- a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
- b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
- c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
- d. Mowing: If coordination is required with state mowers, note need in IPMS.

IV. Soil Management
- a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off-site and if so, where?).
- b. Show stockpile locations on plan and include treatment schedule.
- c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

V. Invasive Plant Treatment & Management
- a. Proposed chemical and methods of treatment for each species or area.
- b. Time of treatment based on target plant species.

ITEM 102.33 (Continued)

c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.
e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.
f. Expected follow-up treatment for duration of contract.

VI. Monitoring Schedule if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this item, in which case, the contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos of site conditions, typical species, and extent of infestation must be provided with the IPMS and with any follow-up monitoring or reporting. Photos of follow-up monitoring and reporting must be date and time stamped for acceptance.

METHODS

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

ITEM 102.33 (Continued)

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted. Interim Reports must include time and date stamped photos showing treated locations and species.

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved. Final reports submittal must include time and date stamped photos.

METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the Hour. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal and acceptance of submittals and photos described above.

BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work. Payment shall not include travel time to and from the Contractor's place of business.

ITEM 102.511 TREE PROTECTION – ARMORING AND PRUNING EACH

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

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

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

REFERENCES

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

MATERIALS

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

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

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

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

METHODS OF WORK

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

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

ITEM 102.511 (Continued)

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

DAMAGES OR LOSS

If trees designated for protection under this item are damaged, including root damage from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist. Arborist shall be an International Society of Arboriculture (ISA) Certified Arborist or a Massachusetts Certified Arborist. The Arborist shall have at least 10 years of experience in tree care, including tree protection during construction, and shall demonstrate a familiarity with the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1Pruning, Part 5 Construction Management Standards, and Part 9 Tree Risk Assessment. The Arborist shall be approved by MassDOT.

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

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

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

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

40% of the value shall be paid upon installation of trunk armoring and completion of pruning work, if required.

60% of the value shall be paid at the end of construction operations that would potentially damage the tree and after protection materials have been removed and properly disposed of by the Contractor. In the event of repairable damages, payment shall be made after the completion of remediation measures.

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

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

ITEM 102.522 TREE AND PLANT PROTECTION FENCE - CHAIN LINK FOOT

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

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

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

Chain link fencing for tree and plant protection shall remain in place for the duration of the construction activities, unless otherwise required by the Engineer.

MATERIALS

Chain link fence for tree and plant protection shall be six (6) foot tall metal chain link, set in metal frame panels on movable core drilled concrete blocks of sufficient size to hold the fence erect. Panels shall be such that they create a barrier to encompass the entire TPPZ or root zone area, to the extent possible.

Unless otherwise indicated, the following types of chain link fence are acceptable:

- New materials or previously used salvaged chain link fencing in good condition, subject to inspection and approval by the Engineer.
- Posts: Galvanized steel pipe of diameter to provide rigidity.
- Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

REFERENCES

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

ESTABLISHMENT OF THE TPPZ

Fencing shall be used for construction areas, staging areas, and stockpile areas as shown on the plans, or as required by the Engineer, to establish the TPPZ.

ITEM 102.522 (Continued)

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

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

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. Accessing or traversing the TPPZ shall not be permitted.

METHOD OF WORK

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

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

After construction activities are completed, or when required by the Engineer, fencing panels, posts, and anchoring 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. In the event that handwork is not feasible, work shall be conducted with the smallest mechanized equipment necessary to do the work, with permission of the Engineer.

ITEM 102.522 (Continued)

TREE AND PLANT DAMAGES OR LOSS

If the TPPZ is encroached by construction activity without approval, at the discretion of the Engineer the Contractor may be required to provide a more durable barrier (e.g., Jersey Barriers) to secure the area. Costs of furnishing and installing additional or more durable barrier(s) shall be borne by the Contractor.

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

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, secure the services of an Arborist. Arborist shall be an International Society of Arboriculture (ISA) Certified Arborist or a Massachusetts Certified Arborist. The Arborist shall have at least 10 years of experience in tree care, including tree protection during construction, and shall demonstrate a familiarity with the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1Pruning, Part 5 Construction Management Standards, and Part 9 Tree Risk Assessment. 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 shall be repaired as soon as possible, within the appropriate season for such work, and according to industry standards.

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

Tree removal from improper or inadequate protection of the TPPZ shall result in the Engineer assessing the Contractor monetary damages in the amount based upon industry standards per diameter inch at breast height (DBH) per tree.

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.522 Tree and Plant Protection Fence–Chain Link will be measured and paid for payment by the FOOT, complete in place.

This will include all labor, materials, equipment, maintenance, resetting, final removal/disposal of the protective fence(s), damage repair, and all incidental costs required to complete the work.

ITEM 102.522 (Continued)

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

- Forty (40) percent of the value payment will be made upon installation of TPPZ fencing.

- Sixty (60) percent of the value payment will be made when TPPZ fencing 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, Arborist services, tree or plant removal, shrub replacement and establishment, but all costs in connection therewith shall be included in the Contract unit price bid.

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

ITEM 114.1 DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. S-10-015 (088) LUMP SUM

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

The work under this Item shall include the removal and disposal of the entire superstructure, as specified in Subsection 112.61.

The work shall also include the removal and disposal of the timber railings. The timber components of the existing structure are suspected to be treated with creosote, pentachlorophenol and/or CCA. Refer to the Special Provision for Item 184.1 Disposal of Treated Wood Products for sampling, testing and disposal requirements for this treated timber. All costs for permits, dump fees, taxes, special handling of hazardous materials, and all other required incidental work, shall be included in the bid price of this item.

The Contractor shall develop a demolition plan indicating his/her proposed demolition procedures and methods to be used including equipment, tools, devices, crane capacity and location, and schedule of operations. These plans shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted to the Engineer and MassDOT's Environmental Office for approval prior to the start of construction. The Contractor's design shall consider the use of equipment and operation methods for shoring, formworks, and fall protection. All work shall be conducted in conformance with all environmental regulations and requirements.

The Contractor is reminded that all utility coordination and emergency service contact shall be made in advance of any bridge demolition work so as not to create any delays in the project schedule. Claims for delays in the demolition of the existing bridge structure due to the Contractor's failure to notify and coordinate with the affected agencies will not be considered.

BASIS OF PAYMENT

Item 114.1 will be paid for at the Contract Lump Sum price, which price shall include removal and disposal of the entire superstructure, removal and disposal of the timber railings, removal and disposal of the existing structural steel, deck, posts, railings, and any untreated wood elements, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

Disposal of treated wood components will be paid under Item 184.1.

Payment for the installation of cofferdams and other measures for control of water will be paid under Item 991.1.

Payment for temporary protection of Schenob Brook from falling debris will be paid under Item 994.01.

ITEM 120. EARTH EXCAVATION CUBIC YARD

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

The work shall also include the removal and satisfactory disposal of rubbish and debris; bituminous concrete pavements; stone walls and other existing items that will not be reused. Unless otherwise specified, excavated bituminous concrete pavement, stone, barrier, drainage pipe, and other items that will not be reused shall become the property of the Contractor.

Edges of excavations made in existing pavements shall be squared by sawcutting with power-driven tools to provide a neat, clean edge for joining new pavement, as shown on the Plans. Ragged, uneven edges will not be accepted. Pavement areas that have been broken or undermined shall be edged neatly with a minimum disturbance to remaining pavement. Payment for sawcutting work shall be paid separately as noted elsewhere in the contract documents.

This item shall include excavation of material suitable for embankment, subgrade and subbase material. Excavated material meeting the requirements of Subsection 150.40 of the Standard Specifications for its specific use, as determined by the Engineer, shall be reused under this Contract for the formation of embankments, roadbeds, foundations or backfill in accordance with the relevant provisions of Subsections 150 and 170.

If the Contractor, for his/her own convenience, desires to stockpile excavated material suitable for the formation of embankments or other uses requiring material meeting M1.01.0, he/she may do so in accordance with Subsection 150, within the project limits.

The Contractor shall not be paid for stockpiling excavated material within or outside the project limits. Materials excavated and stockpiled for reuse under this Contract will not be paid for as borrow in addition to its original payment as excavation. The Contractor shall not be paid for replacement borrow material if he/she desires to waste suitable excavated material for his/her own convenience. The Contractor may waste excavated material only after obtaining written approval of the Engineer in accordance with Subsection 150.20.

METHOD OF MEASUREMENT

Item 120. will be measured for payment according to the provisions of Subsection 120.80 of the Standard Specifications.

BASIS OF PAYMENT

Item 120. will be paid for according to the provisions of Subsection 120.81 of the Standard Specifications.

ITEM 127.1 REINFORCED CONCRETE EXCAVATION CUBIC YARD

The work under this Item shall conform to the provisions of Subsection 120 of the Standard Specifications, and the following:

The work shall include the removal and disposal of the existing concrete abutments, wingwalls, and footings to the elevations and limits indicated on the Contract Plans.

The work shall also include any test pits performed to locate existing footings.

All costs for permits, dump fees, taxes, special handling of hazardous materials, etc., related to work under this item shall be included in the bid price of this item.

The Contractor shall develop a demolition plan for the existing reinforced concrete abutments indicating his/her proposed demolition procedures and methods to be used including equipment, tools, devices, and schedule of operations. Debris shall not be allowed to enter the waterway during substructure removal. Any temporary supports of excavation or shielding in addition to cofferdams shall be shown. These plans shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted to the Engineer and MassDOT's Environmental Office for approval prior to the start of construction. The Contractor's design shall consider the use of equipment and operation methods for shoring, formworks, and fall protection. All work shall be conducted in conformance with all environmental regulations and requirements.

The Contractor is reminded that all utility coordination and emergency service contact shall be made in advance of any bridge demolition work so as not to create any delays in the project schedule. Claims for delays in the demolition of the existing bridge structure due to the Contractor's failure to notify and coordinate with the affected agencies will not be considered.

METHOD OF MEASUREMENT

Item 127.1 will be measured for payment by the Cubic Yard of Reinforced Concrete Excavation within specified limits as indicated on the Plans.

BASIS OF PAYMENT

Item 127.1 will be paid for at the Contract unit price per Cubic Yard, which price shall include excavation, removal and disposal of the existing concrete abutments, wingwalls, and footings, submittals, temporary supports of excavation, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

Payment for installation of cofferdams and other measures for control of water will be paid under Item 991.1 Control of Water – Structure No. S-10-015 (088). Payment for temporary protection of Schenob Brook from falling debris will be paid under Item 994.01 Temporary Protective Shielding Bridge No. S-10-015 (088).

ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM

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

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

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

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

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

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

ITEM 180.01 (Continued)

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

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

ITEM 180.02 PERSONAL PROTECTION LEVEL C UPGRADE HOUR

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

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

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

ITEM 180.03 LICENSED SITE PROFESSIONAL SERVICES HOUR

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

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

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

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

ITEM 180.03 (Continued)

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

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

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

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

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

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

ITEM 180.03 (Continued)

LABORATORY TESTING IN SUPPORT OF LSP SERVICES

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

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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

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

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

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

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

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

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

SUBMITTALS

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

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

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

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

ITEMS 181.11 through 181.14 (Continued)

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

II. Stockpiling, Transport, and Disposal.

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

Excavation and Stockpiling Protocol:
Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

Disposal and Recycling Facilities:

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.

2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

Transportation:
The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

III. Material Tracking and Analytical Documentation for Reuse/Disposal.

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

ITEMS 181.11 through 181.14 (Continued)

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

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

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

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

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

ITEMS 181.11 through 181.14 (Continued)

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

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

ITEM 184.1 DISPOSAL OF TREATED WOOD PRODUCTS TON

The work under this Item consists of the transportation and disposal of all treated existing wood product as directed by the Engineer.

The timber components of the existing structure are suspected to be treated with creosote, pentachlorophenol and/or CCA. This item shall include all costs for sampling, laboratory testing, loading, transportation and disposal of the treated wood. The Contractor is required to submit disposal manifests to the Engineer prior to the completion of the project. All aspects of this Item are to be completed in accordance with state and federal regulations.

METHOD OF MEASUREMENT

Item 184.1 will be measured for payment by the TON of Treated Wood Products transported and accepted at a licensed facility.

BASIS OF PAYMENT

Item 184.1 will be paid at the contract unit price per TON, which price shall include all labor, materials, equipment, tools, testing, loading, transportation, approvals, permits and all incidentals required to complete the work.

ITEM 242. REINFORCED CONCRETE PIPE HEADWALL EACH

The work under this Item shall conform to the relevant provisions of Subsections 901 and 903 of the Standard Specifications, and the following:

The work under this Item shall consist of constructing a reinforced concrete pipe headwall at the locations shown on the plans. The work includes excavation, forming, reinforcing steel, concrete placement, pipe installation, backfilling, and all incidental costs required to complete the work in accordance with the plans and the MassDOT Standard Specifications for Highways and Bridges (2026 Edition).

MATERIALS

4,000 psi, 1.5-inch, 565 Cement Concrete shall meet the requirements of Subsection 901.

Epoxy Coated Reinforcing Bars shall meet the requirements of M8.01.7.

Special Borrow shall meet the requirements of M1.02.0.

Granular Backfill shall meet the requirements of M1.03.0.

Non-Shrink Grout shall meet the requirements of M4.04.5

CONSTRUCTION METHODS

Excavate to the lines and grades shown on the plans. Remove unsuitable material and replace with compacted special borrow as directed by the Engineer.

Install formwork and reinforcement in accordance with the contract drawings and Subsection 903 of the Standard Specifications.

Place concrete in a single continuous operation unless otherwise approved. Consolidate using mechanical vibration. Cure in accordance with requirements of Subsection 901.

Install the RCP pipe through the headwall opening. Seal the annular space with non-shrink grout.

Backfill shall not begin until the concrete has attained sufficient strength. Place backfill in 8-inch lifts and compact to 95% maximum dry density.

METHOD OF MEASUREMENT

Item 242. will be measured for payment by the EACH headwall constructed, complete in place.

BASIS OF PAYMENT

Item 242. will be paid for at the Contract unit price per EACH, which price shall include all labor, materials, equipment, excavation, special borrow and granular backfill, forming, reinforcing, concrete, pipe connection, and all incidental costs required to complete the work.

ITEM 244.34 34 INCH BY 53 INCH ELIPTICAL RCP CLASS V FOOT

The work under this Item shall conform to the relevant provisions of Subsections 140, 150, and 230 of the Standard Specifications, and the following:

The work under this Item shall consist of furnishing and installing 34" x 53" Elliptical Reinforced Concrete Pipe (RCP), Class V at the locations shown on the plans. The work will be supplemented by the construction of cast-in-place headwalls paid under Item 242 – Reinforced Concrete Pipe Headwall.

MATERIALS

Elliptical Class V RCP shall conform to Subsection 230 of the Standard Specifications and the following:

- ASTM C507 – Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
- ACI 318 – Building Code Requirements for Structural Concrete (reinforcement provisions)

RCP shall be Class V, designed for high-load applications. RCP shall meet or exceed the D-load requirements specified in ASTM C507 for Class V elliptical pipe, and the following:

- Concrete compressive strength: minimum 5,000 psi at 28 days.
- Reinforcement: steel meeting ASTM A615 or A706, properly placed and securely fastened.
- Cement: ASTM C150 Type I or II.
- Aggregates: ASTM C33.
- Admixtures: permitted only with Engineer approval.

Pipe joints shall be rubber gasketed, meeting ASTM C443. Joints shall provide a watertight seal under the design head. Gaskets shall be compatible with the pipe and joint geometry.

All pipe, joints, fittings, and accessories shall be new, free of defects, and manufactured in accordance with the latest applicable standards. All materials shall be subject to inspection and approval by the Engineer prior to installation.

CONSTRUCTION METHODS

Submittals:

The Contractor shall submit the following:

- Manufacturer's certification of compliance with ASTM C507 and Class V requirements
- Shop drawings showing reinforcement, dimensions, and joint details
- Material certifications for concrete, steel, and gaskets
- Installation recommendations from the manufacturer

ITEM 244.34 (Continued)

General

Pipe shall be handled using methods that prevent cracking, chipping, or spalling. Pipe shall be stored on level blocking to prevent distortion. Pipe shall not be rolled or dropped. Any damaged pipe shall be rejected and removed from the site immediately at no additional cost to the Commonwealth.

Excavation and backfill shall conform to the applicable portions of Subsection 140: Excavation for Structures and Subsection 150: Embankment. Excavation for the proposed RCP shall include the removal and disposal of the existing corrugated metal pipe and its end sections.

Pipe shall be laid true to line and grade. Elliptical orientation shall be maintained throughout installation. Joints shall be cleaned, lubricated, and assembled per manufacturer recommendations. Gaskets shall be properly seated to ensure watertightness.

Backfilling shall conform to the requirements of Subsection 230.63.F. No heavy equipment shall operate directly over the pipe until a minimum of 12 inches of compacted cover is provided as approved by the Engineer.

METHOD OF MEASUREMENT

Item 244.34 will be measured for payment by the Foot of 34 Inch by 53 Inch elliptical reinforced concrete pipe Class V installed, complete in place.

BASIS OF PAYMENT

Item 244.34 will be paid for at the Contract unit price per Foot, which price shall include furnishing, installation, joints and gaskets, excavation, removal and disposal of the existing corrugated metal pipe, bedding, backfilling, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

ITEM 376.22 DRY HYDRANT – REMOVED AND RESET EACH

The work under this Item shall conform to the relevant provisions of Subsections 120, 150, and 301 of the Standard Specifications, and the following:

The work under this Item shall consist of furnishing all labor, equipment, materials, and incidentals required to remove an existing dry hydrant and reset the dry hydrant at a new location. The existing dry hydrant shall be removed and reinstalled by the Contractor at the new location as shown on the plans. The work shall also include any required interim installations during construction and coordination with the local Fire Department to ensure compliance with local standards, NFPA 1142 requirements, and operational needs.

COORDINATION REQUIREMENTS

A minimum of 2 weeks prior to the removal of the existing dry hydrant, the Contractor shall contact the local Fire Department (Chief David Ullrich, 413-229-7033) to coordinate testing and verification that the system is operational. The coordinated testing of the system is intended to verify for all concerned parties that the existing dry hydrant components to be reset are operational prior to removal and storage.

Prior to the final installation, the Contractor shall coordinate with the local Fire Department and obtain approval of the proposed hydrant location, ensuring compliance with local requirements, minimum clearances, fire apparatus access, and long-term maintenance considerations.

The dry hydrant may be removed and stored by the Contractor for a period of no more than seven (7) calendar days.

Throughout construction, the Contractor shall ensure that the Fire Department has continuous (24 hours/day, 7 days/week) access to the dry hydrant (other than the storage period noted above). The Contractor shall provide the Fire Department with full access to the project site for purposes of accessing the hydrant. The Contractor shall coordinate with the local Fire Department for concurrence on the accessibility of the hydrant in advance of any construction operations that may impede access, including the implementation of the roadway closure and detour. The roadway closure/detour shall not be implemented unless the Fire Department deems that the existing or interim hydrant location is accessible.

MATERIALS

Dry hydrant connection shall be constructed of a minimum of six (6) inch Schedule 40 welded steel piping. 90-degree long sweeps or 45-degree elbows shall be used. Dry hydrant piping shall be capable of withstanding the forces applied by six (6) inch suction hose and adaptors flowing 1,000 gallons per minute, without damage to the piping or other system appurtenances.

All steel piping shall be primed and painted to prevent deterioration. Above-grade steel piping shall be painted bright red. All welds shall be cleaned and painted.

ITEM 376.22 (Continued)

Concrete for the thrust block shall meet the Material requirements for Cement Concrete and Related Materials under Subsection 301.40 of the Standard Specifications.

CONSTRUCTION METHODS

Following the testing of the existing dry hydrant as noted under Coordination Requirements, the Contractor shall remove the existing dry hydrant, inclusive of all connections, piping, fittings, and screen assembly. The existing hydrant components to be reset under this contact shall be stored by the Contractor in a secure location to be protected from elements and construction activities. Existing dry hydrant components to be reset include:

- Dry hydrant head and cap
- Intake strainer

The remainder of the existing hydrant components shall be disposed of by the Contractor.

The dry hydrant shall be reset at the new location as shown on the plans and/or as approved by the local Fire Department.

The dry hydrant head shall be installed at a height of 18 to 36 inches above finished roadway grade and located 5 to 8 feet from the edge of roadway. Standpipe for the hydrant head shall be set vertical. Contractor shall furnish and install fittings as necessary to connect the hydrant head and intake strainer to the new piping.

Excavation for pipe trench shall conform to the requirements of Subsection 120 of the Standard Specifications.

Pipe and fitting shall be handled with care to ensure that the pipe and fittings are in sound, undamaged condition. Particular care shall be taken to prevent damage to pipe coating and lining.

Examine all pipe and fittings before laying and no pipe or fittings shall be installed which are found to be defective. If any defective pipe is discovered after it has been laid, the Contractor shall remove the defective pipe and replace it with sound pipe at no additional cost.

Install couplings and fittings in accordance with manufacturer's instructions.

Backfill pipe trenches in accordance with requirements of Subsection 150.64.C of the Standard Specifications.

Construct concrete thrust block in accordance with the requirements of Subsection 301.60.I.

ITEM 376.22 (Continued)

Upon completion of construction, the Contractor shall request a final operational test by the local Fire Department. The Contractor shall provide any necessary support during drafting and flow testing. Final acceptance requires written confirmation from the local Fire Department stating that the hydrant location, clearances, and access meet local requirements and that the Dry Hydrant system successfully supported drafting operations consistent with local standards and NFPA flow performance criteria.

Interim Dry Hydrant Installation:

In the event that the dry hydrant cannot be installed at its permanent location within the timeframe noted under Coordination Requirements, the Contractor shall reset the dry hydrant at an interim location where it will be accessible and operational until such time as it can be reset at the permanent location. Prior to removal of the dry hydrant, the Contractor shall stake-out the interim location and contact the local Fire Department to approve the interim location. The interim location shall be located between Sta. 103+50 and 106+00. The interim location shall meet all of the above requirements for Materials and Construction Methods.

METHOD OF MEASUREMENT

Item 376.22 will be measured for payment by the Each Dry Hydrant removed and reset, complete in place.

Interim relocations needed to accommodate construction staging will not be considered a relocation and will be considered incidental to the item.

BASIS OF PAYMENT

Item 376.22 will be paid for at the Contract unit price per EACH, which price shall include the removal of existing system components, storage and disposal of system components as specified in this special provision, and the installation of the system at the final location, inclusive of the thrust block and all labor, materials, equipment, tools and all incidental costs required to complete the work. Price shall also include all work associated with the coordination with the local Fire Department and testing/verification of the existing and final systems.

Price shall also include all costs for labor, materials, equipment tools and incidentals required for the installation and removal of the dry hydrant at any interim location(s).

ITEM 402.13 PAVEMENT MILLING MULCH FOR SHOULDERS FOOT

The work under this Item shall conform to the relevant provisions of Subsection 769 of the Standard Specifications, and the following:

The work consists of earthworks to install pavement millings mulch for shoulders at the edge of pavement. The existing shoulder shall be prepared for pavement milling mulch as necessary and directed by the Engineer. The work shall consist of excavation and leveling shoulder area to be mulched. The excavation and leveling of shoulder shall be pushed back down slope on embankment and/or excavated and disposed of on site level and compacted as directed by the Engineer. Milling mulch shall be graded and compacted to a width of 3 feet and a depth of 4 inches level with the edge of the pavement, top of edging or curb or as directed by the Engineer.

MATERIALS

Pavement milling mulch shall be smaller than the Standard 1½ inch sieve.

The on-site recycling of pavement millings sourced from the project is encouraged. All pavement milling mulch for shoulders will be accepted based on visual inspection by the Engineer. Mulch material greater than 1 ½ inch shall be removed off site by the Contractors.

METHOD OF MEASUREMENT

Item 402.13 will be measured per FOOT in the longitudinal direction parallel to the edge of road, complete in place.

BASIS OF PAYMENT

Item 402.13 will be paid per FOOT of material installed which price includes materials, excavation, grading and leveling and disposing on site, compacting and all incidental costs required to complete the work.

Pavement milling mulch under guardrail shall be paid for under Item 769. Pavement Milling Mulch under Guardrail.

ITEM 482.31 SAWING AND SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES FOOT

The work 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 Crack Sealer meeting the requirements of M3.05.2 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 under this Items shall conform to the relevant provisions of Subsection 644 of the Standard Specifications, and the following:

The work under this Item shall include furnishing, installing, and removing temporary chain-link fence to completely close off the construction work area.

The Contractor will be responsible for providing the Engineer with an acceptable method for the installation of the fence that will provide for the safety and security for which it is intended.

All posts including end, corner, and intermediate brace posts, and all gates and gate posts shall be included in the unit cost. The fencing height shall be 6 feet minimum. Material need not be new, but shall not be deteriorated, nor in any way jeopardize the security purposes intended. All fencing shall meet the approval of the Engineer.

Posts shall be set plumb and all fencing neatly aligned in a manner approved by the Engineer. The Contractor shall be responsible for maintenance of the temporary fence, and shall be responsible and cognizant that it remains secure and that the area is sealed off at all times to the general public. It may be necessary to move sections of temporary fence at times during construction.

Fence fabric shall be placed on the fence of the post away from the work area. A top tension wire rather than a pipe top rail shall be used. The top edge of the fabric shall be finished with a "knuckled" salvage.

METHOD OF MEASUREMENT

Item 657. will be measured for payment by the Foot of Temporary Fence installed and finally removed.

BASIS OF PAYMENT

Item 657. will be paid for at the Contract unit price per Foot, which price shall include furnishing, installation, final removal, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

ITEM 669. FENCE REMOVED AND STACKED FOOT

The work under this Item shall conform to the relevant provisions of Subsection 665 of the Standard Specifications, and the following:

The work under this item shall include the dismantling, removal, transporting and stacking of existing fencing where shown on the plans.

Removal of fence shall be done in accordance with the requirements of Subsection 665.60 of the Standard Specifications.

Removed fence shall become the property of the Contractor and shall be disposed of away from the site.

METHOD OF MEASUREMENT

Item 669. will be measured for payment according to the provisions of Subsection 665.80 of the Standard Specifications.

BASIS OF PAYMENT

Item 669. will be paid for according to the provisions of Subsection 665.81 of the Standard Specifications.

ITEM 670.1 TURTLE EXCLUSION BARRIER FOOT

The work under this Item shall conform to the relevant provisions of Subsection 670 of the Standard Specifications and the following:

The work under this Item consists of furnishing, installation, maintenance, removing and resetting, and final removal of a physical barrier to exclude turtles from accessing the construction work zone as shown on the plans or as required by the Engineer. This Turtle Exclusion Barrier will also serve as the Limit of Work beyond which no disturbance or construction activities may occur.

The work and scheduling shall be coordinated with the Turtle Protection Plan.

SCHEDULE OF INSTALLATION

The Barrier shall be installed after the Pre-construction Turtle Protection Meeting and the initial turtle sweep which shall occur prior to any site disturbance (see Turtle Protection Plan). The turtle sweep, which shall be conducted by an approved MassDOT Monitor, is described under the Turtle Protection Plan.

CONSTRUCTION METHODS

The Barrier shall be installed where shown on the Turtle Barrier Location Plan. Final placement will be required to adjust to field conditions as approved by the Engineer and the Monitor.

Signage noting the Limit of Work shall be installed in the four quadrants of the work zone as shown on the Turtle Barrier Location Plan or as required by the Monitor. Signs shall conform to the Limit of Work sign shown in the Details.

The fencing used for the Turtle Exclusion Barrier may be combined with sediment barriers (i.e., compost filter tubes or coir logs). However, the placement of the Turtle Exclusion Barrier shall be as needed to prevent turtles from accessing the site. Placement of sediment barriers shall be as required for the purposes of sediment control and shall be located as shown on the erosion and sedimentation control plans or as required for site conditions. The locations may be the same provided the intended functions of both types of barriers are met, and the sediment barriers are placed on the interior (construction side) of the Barrier. Compost filter tubes and coir logs installed solely for the purpose of sediment control need not include sediment fence unless directed by the Engineer.

Installation

Within 48 hours of installation, the MassDOT Monitor will inspect the Barrier to ensure it is installed properly. If requested, the Contractor shall provide photos of the installed barrier.

Installation of the fencing used to create the barrier shall be such that it results in minimal ground disturbance (i.e., hand-dug, mechanical trencher, or auger).

ITEM 670.1 (Continued)

The above-ground height of the fencing after installation must be at least 2.5 feet and the fence must be trenched a minimum of 4 inches into the ground. The trench should be backfilled with soil and compacted. If it is not possible to trench in the fence, the bottom of must be affixed to the surface using methods approved by the Monitor.

The barrier must connect, without gaps, to any proposed water control structures such as cofferdams or sandbags to prevent turtles from entering the work zone.

To the extent feasible when the road is closed to traffic during construction, the barrier perimeter shall be limited to a single entrance at each end of the project to allow vehicles to access the construction area. These entrances must be closed each night during the turtle active season (March 15 – October 31) with either a gate and/or sedimentation fencing. If using sedimentation fence, the fence must be affixed to the ground with sandbags, wood posts or other approved methods. If using a gate, the Contractor shall securely block the gap between the ground and the bottom of the gate so that turtles cannot enter the work area through this gap. The method used to block the gap shall be approved by the Monitor.

Immediately following Barrier installation, the Contractor shall notify the Monitor so that the Monitor can confirm proper installation of it within 48 hours. The Monitor may request photos from the Contractor to aid in their review.

Turtle Sweep and Inspection Schedule

The Contractor shall provide a two-week notice prior to requesting all required sweeps and inspections. Any changes to the construction schedule that will affect timing of the turtle sweep must be communicated to the Monitor immediately. At a minimum, the following sweeps and inspections will be required:

- Initial sweep prior to vegetation clearing and before the Barrier has been installed
- Within 48 hours after the Barrier has been installed to approve the installation
- Prior to any initial in-water staging or construction (i.e., cofferdam installation)
- Prior to any secondary phase of in-water work, and thereafter, if needed.
- If new staging, access, or areas of work are required for construction that are not shown on the Turtle Exclusion Barrier Plan, the areas must be swept and Barrier installed.

The Contractor is responsible for ensuring that the Monitor is contacted and that these areas meet the requirements of Turtle Protection Plan. It is the Contractors responsibility to notify and coordinate with the Monitor in a timely manner to avoid construction delays. Work described above cannot occur until after each turtle sweep is complete.

ITEM 670.1 (Continued)

Weekly Barrier Inspection

Once per week, the Engineer will inspect the Barrier and direct the Contractor to make any necessary repairs or alterations. The Barrier must be kept taut between stakes and any gaps along the bottom must be immediately repaired. Repairs to the barrier must be made within 24 hours of notice. Failure to maintain an effective Barrier will result in a cease work order and/or violation from NHESP.

Daily Turtle Sweep Requirements

When the road remains open to traffic during construction, the Engineer will provide a sweep of the site prior to each workday and relocate any turtles to suitable habitat outside of the Barrier as identified during the pre-construction meeting. In the event a state-listed turtle is discovered on site, the Contractor and/or Engineer must contact the Monitor.

No turtles or other wildlife shall be removed without the approval of a qualified wildlife biologist or the Division except as necessary to receive veterinary treatment in case of harm during construction.

METHOD OF MEASUREMENT

Item 670.1 will be measured for payment by the Foot of turtle exclusion barrier installed, complete in place. Measurements will be taken along the top of the Barrier. Overlaps shall be measured as a single layer.

BASIS OF PAYMENT

Item 670.1 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, installation, inspection, maintenance, removing and resetting, signs, signs installation, and all incidental costs required to complete the work.

Payments will be made according to the following schedule:

- Payment of forty (40) % of this pay Item will be paid upon accepted installation of turtle exclusion barrier.
- The remaining sixty (60) % of this pay Item will be paid when turtle exclusion barrier have been maintained as specified, for the intended duration, removed and disposed of off-site at the completion of the turtle exclusion period.

ITEM 679.3 FLOATING TURBIDITY BARRIER FOOT

The work under this Item includes the furnishing, installing, maintaining and removal of temporary floating turbidity barrier (FTB) as specified herein and shown on the drawings. Regular inspection of the barrier and removal and disposal of accumulated sediment is also included in this item.

Warranty
Provide copies of the manufacturer's warranty for the floating turbidity barrier.

Submittals
Prior to start of work, the Contractor shall submit to the Engineer, copies of manufacturer's data for all materials to be used in the floating turbidity barrier and recommended procedures for installation, maintenance and removal.

MATERIALS

The floating turbidity barrier shall be designed to prevent particulate materials from leaving the immediate area of construction in the water. The FTB shall be a continuous barrier within the limits indicated and shall be designed to operate in both standing water and low water flow conditions. The barrier shall extend from the water surface to the bottom of the waterbody in the indicated locations. Height of barrier shall be calculated based on a water surface elevation of ordinary high water.

The FTB and floatation materials shall be high visibility in color. Barrier material, flotation devices and bottom weighting system shall all be from the same manufacturer and shall be of a type appropriate for the application.

Sufficient flotation and bottom weighting shall be provided to maintain the proper function of the FTB. The FTB shall also be able to be anchored in place as needed to prevent excessive movement or system failure due to water flow during storm conditions.

CONSTRUCTION METHODS

General
The floating turbidity barrier shall be installed according to the manufacturer's listed procedures and recommendations or as directed. Turbidity Barrier shall be installed as indicated on the Drawings and prior to the start of excavation and filling area. The FTB shall be installed prior to other work in water occurring. Care shall be taken not to disturb or displace surface material or other particulate matter prior to, or during, the installation of the FTB.

ITEM 679.3 (Continued)

Maintenance
The FTB shall be inspected daily to verify proper operation during active construction in or near the water and also following any rain event where over ½" of rainfall occurs. Any displacement of the FTB shall be corrected and any damage to the FTB shall be repaired prior to work in the water resuming.

Removal
Erosion and Turbidity control devices shall be maintained until all disturbed earth has been paved or vegetated, or interim work is completed at which time they shall be removed upon approval of the Engineer. Care shall be taken not to allow any accumulated sediments to become suspended in the water column during the removal process. Accumulated sediments shall be removed and disposed and any sediment that becomes suspended in the water column shall be allowed to settle prior to removal of the FTB.

METHOD OF MEASUREMENT

Item 679.3 will be measured for payment by the Foot of floating turbidity barrier installed, maintained, and finally removed, measured along the top of the floatation system, regardless of the depth of the barrier.

BASIS OF PAYMENT

Item 679.3 will be paid for at the Contract unit price per Foot, which price shall include furnishing, installation, maintenance, final removal of barrier and accumulated sediments, submittals, inspection, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

Following installation of the floating turbidity barrier, 75% of the contract value will be paid. The balance will be paid following removal of all accumulated sediments and removal of the FTB.

ITEM 698.1 GEOTEXTILE FABRIC FOR STABILIZATION SQUARE YARD
ITEM 698.3 GEOTEXTILE FABRIC FOR SEPARATION SQUARE YARD

The work under these Items shall consist of furnishing and installing geotextile fabric to the limits shown on the Plans and as required by the Engineer.

MATERIALS

The geotextile fabric used shall be selected from the MassDOT Qualified Construction Materials List at https://www.mass.gov/service-details/qualified-construction-materials-list.

The geotextile fabric shall conform to the requirements of Subsection M9.50.0 of the Standard Specifications and AASHTO M 288 for the intended use.

CONSTRUCTION

Construction and installation of all geotextile fabric shall be in accordance with AASHTO M 288 including Appendix A, and the following;

Atmospheric exposure of the geotextile fabric to the elements following lay down shall be a maximum of 14 days. If laid under water, the covering crushed stone or riprap shall be placed on the same day as the geotextile fabric.

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 intimate 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 the geotextile.

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 in 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.

ITEMS 698.1 and 698.3 (Continued)

When stone or riprap is placed over Geotextile Fabric for Separation, the stone placement shall begin at the toe of slope and proceed up the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the geotextile. Crushed stone shall not be dropped from a height exceeding 3 feet.

Field monitoring shall be performed to verify that the crushed stone or riprap placement does not damage the geotextile. Any geotextile damaged during backfill placement shall be replaced as required by the Engineer, at the Contractor's expense.

The Contractor shall take care not to allow more than two weeks of exposure to direct sunlight. Fabric rolls shall not be dropped more than two (2) feet.

METHOD OF MEASUREMENT

Items 698.1 and 698.3 will be measured for payment by the Square Yard of respective geotextile fabric installed, complete in place.

Overlapped matting will not be measured for payment.

BASIS OF PAYMENT

Items 698.1 and 698.3 will be paid for at the respective Contract unit prices per Square Yard, which prices shall include furnishing, installation, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

ITEM 740. ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work under this Item shall conform to the relevant provisions of Subsection 740 of the Standard Specifications and the following:

Two computer systems and printer system meeting minimum requirements set forth below including installation, maintenance, power, paper, disks, and other supplies shall be provided at the Resident Engineer's Office:

All equipment shall be UL approved and Energy Star compliant.

The Computer System shall meet the following minimum criteria or better:

Processor:	Intel, 3.5 GHz
System Memory (RAM):	12 GB
Hard Drive:	500 GB
Optical Drive:	DVD-RW/DVD+RW/CD-RW/CD+RW
Graphics Card:	8 GB
Network Adapter:	10/100 Mbit/s
USB Ports:	6 USB 3.0 ports
Keyboard:	Generic
Mouse:	Optical mouse with scroll, MS-Mouse compliant
Video/Audio	the computer system shall be capable of allow video calling and recording:
Video camera	shall be High Definition 1080p widescreen capable video calling and recording with built in microphone. The microphone system shall capture natural audio while filtering out background noise.
Audio	shall be stereo multimedia speaker system delivering premium sound.
OS:	Latest Windows Professional with all security updates
Web Browser:	Latest Internet Explorer with all security updates
Applications:	Latest MS Office Professional with all security updates Latest Adobe Acrobat Professional with all security updates Latest Autodesk AutoCAD LT Antivirus software with all current security updates maintained through the life of the contract.
Monitors:	Two 27" LED with Full HD resolution. Max. resolution 1920 x 1080
Flash drives:	2 (two) - 128GB USB 3.0
Internet access:	High Speed (min. 24 mbps) internet access with wireless router.

ITEM 740. (Continued)

The Multifunction Printer System shall meet the following minimum criteria or better:

Color laser printer, fax, scanner, email and copier all in one with the following minimum capabilities:

- Estimated volume 8,000 pages per month
- LCD touch panel display
- 50 page reversing automatic document feeder (RADF)
- 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 (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.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Compensation for this work will be made at the contract unit price per month which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

ITEM 751.7 COMPOST BLANKET CUBIC YARD

The work under this Item shall conform to the relevant provisions of Subsection 751 and M1.06.0 Compost of the Standard Specifications, and the following:

Work shall consist of furnishing and pneumatically applying compost as a thin mulch blanket (1/2-1 inch depth) over prepared soil to provide temporary soil stabilization and organic matter for plant growth.

SUBMITTALS AND MATERIALS

No materials shall be delivered until the required submittals have been approved by the Engineer. Delivered materials shall match the approved samples. Approval of test results does not constitute final acceptance.

Contractor shall submit to the Engineer samples and certified test results no sooner than 60 days prior to application of compost. Vender certification that material delivered meets the test results shall be submitted if requested.

Compost shall meet the requirements for M1.06.0: Compost, Type 2, as referenced in the MassDOT– Highway Division Standard Specifications for Highways and Bridges, Division III: Materials Specifications, latest edition.

The Engineer shall approve the Contractor's equipment for application.

CONSTRUCTION METHODS

Application of compost material shall not begin until the Engineer has approved the site and soil conditions. Soil preparation shall be as specified under the applicable item for soil placement or for seeding. The Contractor shall notify the Engineer when areas are ready for inspection and application of compost.

Compost blanket shall be pneumatically applied (blown on) to a minimum depth of one half to one inch. Where shown on the plans or when directed by the Engineer depth may be increased to provide berms for sediment control or to otherwise prevent slope erosion.

When compost blanket is proposed with seeding, seed shall be broadcast and shall occur in conjunction with compost blanket, as specified under the relevant item for seeding.

When compost blanket is proposed for areas with planting, compost (and seed if applicable) shall be applied after planting. If compost and seed occur prior to planting, areas shall be regraded and compost and seed reapplied to the satisfaction of the Engineer and at the Contractor’s expense.

ITEM 751.7 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 751.7 will be measured and paid for at the Contract unit price per Cubic Yard which price shall include all labor, materials, equipment, and all incidental costs required to complete the work of pneumatically applying compost.

Surface preparation of substrate receiving compost blanket shall be compensated under the applicable item for placement of loam, sand, ordinary borrow, wetland soil, topsoil rehandled and spread, tilled existing soil, or other specified substrate.

Seeding, if utilized, will be compensated for under the appropriate seeding items.

ITEM 755.35 INLAND WETLAND REPLICATION AREA LUMP SUM

The work under this Item shall conform to the relevant provisions of Subsections 120, 770 and 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.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: ***105+00 (RT)*** Area = ***8,348*** 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.

ITEM 755.35 (Continued)

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.

SUBMITTALS - MATERIAL

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.

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).

ITEM 755.35 (Continued)

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 GROUNDCOVER, 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 and 767.122.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to compost blankets, coir logs, 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.

ITEM 755.35 (Continued)

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 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

Seed in the Mitigation Area shall conform to the Item 765.554 – Wetland Seasonally Flooded Mix. The side slopes of the wetland replication area shall be revegetated with native seeding in accordance with the requirements of Item 765.635.

ITEM 755.35 (Continued)

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.

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 Earth 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.

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.

ITEM 755.35 (Continued)

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.

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.

ITEM 755.35 (Continued)

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.

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 GROUNDCOVER of the Division I Standard Specifications and as amended below.

ITEM 755.35 (Continued)

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.

ITEM 755.35 (Continued)

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

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.

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.

ITEM 755.35 (Continued)

- 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.

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.

ITEM 755.35 (Continued)

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.

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, 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
Sediment Barrier – Coir Log will be paid under Item 767.122
Wetland Specialist will be paid under Item 755.75
Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

ITEM 755.45 WETLAND RESTORATION SQUARE YARD

The work under this item shall conform to the relevant provisions of Subsections 120, 751, 765, 767, and 771 of the Standard Specifications, and the following:

The work under this item shall include all labor and furnishing of materials to complete the work specified herein to protect and restore existing inland wetland areas that will be temporarily impacted as shown on the drawings and as required by the Engineer.

Inland Wetland Replication work shall be as specified and compensated under that item. Tidal wetland mitigation shall be as specified under the appropriate item for tidal wetlands.

Restoration Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers General Permit.

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 Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Completion Certification: If required, Contractor shall submit completion certification to the Engineer for distribution to appropriate regulatory agencies as specified below.

ASSOCIATED ITEMS AND MATERIALS

Timber Mat shall be as specified under that item.

Compost shall be in accordance with Subsection 751 and M1.06.0 Organic Soil Additives of the Standard Specifications. Compost shall not contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants. Off-site sources shall be identified and available for inspection 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.

Compost Blanket shall be as specified under that item.

ITEM 755.45 (Continued)

Required submittals include:

- Certificate of Materials from the supplier shall be submitted and approved 30 days prior to ordering seed. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

- Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

- Bill of lading or a notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Seed Mix shall be Mix 765.554 Wetland Seed – Seasonally Flooded, as follows:

	Botanical Name	Common Name	% PLS By Weight
Grass			
	Elymus riparius	Riverbank Wild Rye	20.00%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	12.00%
	Carex lupulina	Hop Sedge	10.00%
	Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	10.00%
	Carex vulpinoidea	Fox Sedge	10.00%
	Carex scoparia	Broom sedge	8.00%
	Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	8.00%
	Panicum virgatum	Switch Grass	8.00%
	Juncus effusus	Soft Rush	2.00%
	Juncus tenuis	Path Rush	1.00%
			89.00%
Herb/Forb			
	Verbena hastata	Blue Vervain	4.00%
	Desmodium canadense	Showy Tick Trefoil	2.00%
	Eupatorium maculatum	Joe-pye Weed	1.00%
	Asclepias incarnata	Swamp Milkweed	1.00%
	Aster novae-angliae	New England Aster	1.00%
	Eupatorium perfoliatum	Boneset	0.70%
	Helenium autumnale	Common Sneezeweed	0.50%
	Aster puniceus	Aster - Swamp	0.50%
	Mimulus ringens	Monkey Flower	0.20%
	Vernonia noveboracensis	New York Ironweed	0.10%
			11.00%
			100.00%

ITEM 755.45 (Continued)

Apply this mix at 20 lbs PLS/acre.

Fertilizers shall not be used.

Straw mulch or hydromulch shall be per Section M6 of the Standard Specifications.

CONSTRUCTION METHODS & SEQUENCE

Site Protection Prior to Impacts

Prior to any land work, as part of the initial site-walk, the Wetland Specialist shall photo-document the site and provide a summary report of existing conditions as outlined under Item 755.75 Wetland Specialist.

Where and as required vegetation shall be cut flush and area surveyed to establish pre-construction elevations.

Following the cutting and surveying, temporary separation fabric or timber matting shall be placed as required to protect soil and vegetation from compaction, contamination, and/or other damages. Fabric and timber mats shall be placed as specified under the respective items and the Engineer shall approval placement.

Restoration Upon Completion of Roadway Construction Work

Sediment Barriers

If required for sediment control during Restoration work (i.e, tilling is required to restore soil), sediment barriers shall be installed along the downslope perimeter of the Restoration Area beginning and ending in the surrounding upland so that no disturbed soil can enter adjacent wetlands or waters. Sediment barriers shall be in place and approved by the Engineer prior to any soil disturbance. No work shall take place outside the barriers.

Removal of Fill and Grading

Fill and temporary separation fabric or mats shall be removed and disposed of as specified under the respective items.

If required, grades shall be restored to pre-construction elevations as shown in the baseline survey or as required by the Engineer and Wetland Specialist to restore hydrologic functions. Final elevations shall be approved by the Engineer prior to soil preparation and seeding. Grading shall be incidental to this item.

Following approval of grading to elevations required, soil shall be prepared and seeded as follows.

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Soil Scarification
Compacted soil shall be scarified with equipment approved by the Engineer. Upon approval of soil scarification, the area shall be seeded with Compost Blanket as specified below. Seeding shall immediately follow soil preparation.

Seeding with Compost Blanket
Application of compost blanket and seed shall be done as one application and shall not begin until the Engineer has approved the site and soil conditions. The Contractor shall notify the Engineer when raked areas are ready for inspection and application of compost blanket and seed.

Compost shall be pneumatically applied (blown on) to a depth of one half to one inch at the same time that seed is broadcast such that seed is covered by a light application of compost.

When planting occurs on projects with compost blankets and seed application, planting shall occur prior to application of compost and seed. Otherwise, compost and seed shall be re-applied to the satisfaction of the Engineer and at not cost to the contract.

Seed tags shall be submitted at time of seeding.

SEED ESTABLISHMENT

Seeding that fails to establish according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland restoration work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist (if applicable to project) demonstrating that the wetland restoration work was done according to plans (or how modified) and meets required permit conditions (if applicable). The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Restoration Area and the surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

ITEM 755.45 (Continued)

- The target elevations have been restored per the survey or adjusted per the Engineer. Areas that are too high or too low should be identified along with suggested corrective measures.
- Soil compaction has been mitigated.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- Hydrology meets performance standards and has been adequately restored.
- Specified seed mix has been seeded and seeded species in the wetland and adjacent upland show signs of good germination and healthy growth.
- There are no invasive plants visible in the restored wetland area.
- Any linear temporary erosion controls have been removed.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Restoration work is not approved, MassDOT will issue a rejection letter requiring corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Wetland Specialist and regulatory representative (if required) shall assess the Restoration Area. Final Acceptance will initiate the start of the Monitoring Period (if required).

The following conditions shall be inspected and approved for acceptance and payment:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 100 percent of the restoration area, excluding areas of open water, large boulders or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- There are no visible invasive plants.

If the restoration work is not approved, MassDOT will issue a rejection letter requiring corrective action. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation. Work not approved shall be addressed by the Contractor at no extra cost.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.45 will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, compost and amendments, seed, mulch, equipment, submittals, maintenance, grading, and incidental costs necessary to complete the work as required.

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Payment shall be as follows:

- 50% upon completion of soil preparation and seeding
- 25% upon Conditional Acceptance
- 25% upon Final Acceptance or approval of the Engineer

Excavation of temporary fill will be paid under Item 120.
Sediment Control Barrier will be paid under Item 767.121
Sediment Barrier – Coir Logs will be paid under Item 767.122
Compost Blanket will be paid under Item 751.7

ITEM 755.75 WETLAND SPECIALIST HOUR

The work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications hereafter referred to as the "Wetland Specialist."

"Wetland Mitigation" shall be used herein for applicable wetland work. For this project, applicable wetland work is for:

Item 755.35 Inland Wetland Replication Area (creation of a new wetland)
Item 755.45 Wetland Restoration

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.

ITEM 755.75 (Continued)

- 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 restoration 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.
- ***Data logger output from Monitoring Wells*** shall be submitted with reports, if reactivation of design wells are determined to be necessary.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance for the Water Quality Certification 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.

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.

ITEM 755.75 (Continued)

- 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 Restoration Measures for Restoration Areas
  - Review and approve methods of soil protection and restoration 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.

Conditional Acceptance

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Restoration areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation items.

ITEM 755.75 (Continued)

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

METHOD OF MEASUREMENT

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and restoration oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time or time spent off-site on reports. 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

The 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 permit conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.
- Color photo documentation with photos for each sampling event at each observation plot

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 or as required by permits:

- MassDEP: 2 Reports - (end of 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:

- Year 1 = 1 Report
- Year 2 = 1 Report

ITEM 756.1 CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN **LUMP SUM**

The work under this Item shall consist of the preparation and implementation of a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) as required by a regulatory agency. This Item is applicable to projects that are not subject to the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

The work under this item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the CP/PP.

The CP/PP, at a minimum, shall include the following:

- Project & Site Description
- Project Site Contact Information
    - This shall include the phone number for the Contractor Site Superintendent, Project Manager and CP/PP Inspector(s).
- Qualifications of the CP/PP Inspector and documentation of qualifications
    - At a minimum, relevant personnel responsible for erosion and sedimentation control inspections shall have completed the EPA's construction inspection training course and obtained a certificate confirming completion of the training module, or have completed a third-party stormwater course which covers the minimum topics listed in Part 6.3.b of the CGP.
- Reference to and information to address permit Special Conditions relevant to the CP/PP contents
    - These include but are not limited to Water Quality Certification and Army Corps of Engineers Section 404 Permit.
- Construction Sequencing/Phasing
- Erosion Prevention, Sediment Control, and Best Management Practices (BMP s) to be implemented
- Maintenance measures and intended timeline to address maintenance and corrective actions for implemented Erosion Prevention Measures, Sediment Control Devices, and BMPs
- Anticipated inspection schedule and sample inspection report form
- Use the EPA's Site Inspection Report Template found on the EPA's website.

ITEM 756.1 (Continued)

- Site Plans
    - This shall depict, at minimum, the project limits, locations of construction phase erosion prevention measures, construction phase sedimentation control measures, limits of disturbance, staging and laydown areas, proposed dewatering locations and proposed stockpile locations. Depict existing jurisdictional wetland resource areas, drainage conveyances and stormwater treatment features.

The Contractor shall prepare the CP/PP, and update/revise as needed upon changes in site conditions, relevant project personnel, construction phase controls, schedule changes, revised work, regulations, and construction methodologies. The Contractor shall submit the CP/PP to the Engineer for approval at least thirty (30) days prior to prior to commencement of any project related activity that disturbs land, including clearing and grubbing. Submission of the CP/PP to a regulatory agency for review and approval may also be required by a Special Condition associated with a permit issued under the Wetlands Protection Act, or Section 401of the Clean Water Act and their implementing Regulations. It is the responsibility of the Contractor to ensure the CP/PP is submitted to reviewers in a timely manner to support the construction schedule.

It is the responsibility of the Contractor to comply with the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Army Corps of Engineers Section 404 Permit and other environmental permits applicable to the project, and to include in the CP/PP the methods and means necessary to comply with applicable conditions of said permits.

Inspection frequency shall be:

- Weekly: At least once every 7 calendar days;
- Post-Rain Event: Within 24 hours of the end of a storm event that produces 0.25 inches or greater of rain;
- Daily (During Active Rain): While not always a formal reporting requirement, it is best practice to monitor controls curing extended rain events to prevent catastrophic failure.

The inspections shall be performed by an individual that meets the qualifications specified in the permits and proof of the inspector's qualifications shall be included as an Appendix in the CP/PP. CP/PP inspection reports shall be completed and distributed to the Resident Engineer within 24-hours of each inspection. Special conditions associated with permits may also require submittal of reports to regulators at a certain frequency. Reports shall be maintained throughout the duration of the project. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector.

ITEM 756.1 (Continued)

The Contractor is responsible for preparation of the CP/PP, inspections, and associated reports. The Standard Specifications require adequate erosion and sedimentation control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications, good engineering practices, and MassDOT standard specifications and special provisions. Contractor must maintain all control measures and other protective measures in effective operating conditions in accordance with the additional Special Provisions herein. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department.

BASIS OF PAYMENT

Item 756.1 will be paid for at the Contract Lump Sum price, which price shall include preparation and implementation of CP/PP and Flood Contingency Plans, required revisions, submittals, inspections, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

Work under this item shall include acceptable completion of the CP/PP, Flood Contingency Plan, site inspections, and revisions/amendments required during construction. In addition, any erosion prevention or sediment control measures beyond those specified in bid items that are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and execution of the work shall be considered incidental to this item.

Payment of thirty (30) % of the contract price shall be made upon acceptance of the CP/PP and Flood Contingency Plan. Payment of forty (40) % of the contract price shall be made in equal installments over the expected duration of stormwater pollution prevention measures. Payment of the final thirty (30) % of the contract price shall be paid when final stabilization has been achieved (minimum of 75% total cover of disturbed vegetated areas with perennial ground cover).

ITEM 765.554 WETLAND SEED - SEASONALLY FLOODED MIX POUND

The work under this Item shall consist of furnishing the seed mixes specified below in the required quantity and in accordance with the relevant provisions of Subsection 765 of the Standard Specifications.

SUBMITTALS

1) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Design Builder shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.

2) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Design Builder shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.

3) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.

4) Seed Tags. The Design Builder shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

   Number of tags submitted must correspond to number of bags delivered.

   Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

   A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

ITEM 765.554 (Continued)

5) Verification of Seed Delivery. Prior to payment, Design Builder shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section

6) Seed Sample. If requested or if seed is from a previously opened bag, the Design Builder may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

SEEDING SEASON

The appropriate seeding seasons are:
Spring: April 1 - May 15
Fall: October 1 - December 1 for dormant seeding

PERMANENT SEED MIXES

Calculating Pure Live Seed (PLS)

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

Seed Mix shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

ITEM 765.554 (Continued)

Mix 765.554 Wetland – Seasonally Flooded Mix

Botanical Name	Common Name	% PLS By Weight
Grass		
Elymus riparius	Riverbank Wild Rye	20.00%
Andropogon gerardii NY Eco	Big Bluestem NY Eco	12.00%
Carex lupulina	Hop Sedge	10.00%
Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	10.00%
Carex vulpinoidea	Fox Sedge	10.00%
Carex scoparia	Broom sedge	8.00%
Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	8.00%
Panicum virgatum	Switch Grass	8.00%
Juncus effusus	Soft Rush	2.00%
Juncus tenuis	Path Rush	1.00%
		89.00%
Herb/Forb		
Verbena hastata	Blue Vervain	4.00%
Desmodium canadense	Showy Tick Trefoil	2.00%
Eupatorium maculatum	Joe-pye Weed	1.00%
Asclepias incarnata	Swamp Milkweed	1.00%
Aster novae-angliae	New England Aster	1.00%
Eupatorium perfoliatum	Boneset	0.70%
Helenium autumnale	Common Sneezeweed	0.50%
Aster puniceus	Aster – Swamp	0.50%
Mimulus ringens	Monkey Flower	0.20%
Vernonia noveboracensis	New York Ironweed	0.10%
		11.00%
		100.00%

Seeding Rate: Apply this mix at 20 lbs/acre PLS. No cover crop shall be applied.

Any species substitutions shall be with a species having similar characteristics and function. Substitutions must be approved by MassDOT Landscape Design Section per the documentation submittal process.

50% Increase Adjustment for Field Conditions

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season
  OR
- Seeding after Compost Blanket has been applied (unless already increased for out of season).

ITEM 765.554 (Continued)

NATIVE SEED WORKSHEET

Project Description: _____ Project No: _____

Contractor: _____ Contract No: _____

Seed Mix Number & Description: _____

Contractor: Complete Prior To Ordering

Pounds of Seed Required Per Contract:

_____lbs./acre for _____Acre(s) OR _____ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

_____**lbs. Total Seed Required**

Calculated Quantity for **P**ure **L**ive **S**eed (PLS[1]):

_____ **Total Pounds PLS**

Engineer: Verification at Time of Application

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).
*[2]Quantity delivered should match pounds **Total Pounds PLS** and **Verification of Seed Delivery**. Pounds should be shown on each Seed Tag.*

_____ **Total Pounds PLS**

Engineer: Verification at Time of Application

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).
*[2]Quantity delivered should match pounds **Total Pounds PLS** and **Verification of Seed Delivery**. Pounds should be shown on each Seed Tag.*

ITEM 765.554 (Continued)

SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS

Date_____

We hereby certify that (*Seed Supplier*):_____

Furnished to (*Contractor*): _____

For use on: (*Project Description*) _____

Project #: _____ Contract #: _____

Pounds of Pure Live Seed: _____

Of Mix (*Description*): _____

Lot Number _____

The material was delivered on (*Date*)_____.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): _____ Title: _____

Supplier: _____

Signature and Seal: _____

ITEM 765.554 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Wetland Seasonally Flooded Mix will be measured for payment by the pound of Pure Live Seed delivered and complete in place.

Wetland Seasonally Flooded Mix will be paid at the contract unit price per pound of Pure Live Seed delivered upon approval of all Seed Submittal Documentation. Overseeding required to correct poor germination or establishment shall be incidental to the item.

Application and care of native seed mix will be paid for separately under Item 765.635 Native Seeding and Establishment.

ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT SQUARE YARD

The work under this Item shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications, and the following:

The work under this item shall consist of seeding, mowing, and other care to establish a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term "grass" shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

QUALIFICATIONS

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

SEEDING SEASON

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

MATERIAL AND SUBMITTALS

Seed Mixes and Submittals shall be per the item(s) for permanent and annual (cover crop) seed mixes.

Compost Blanket, if used, shall meet the material and submittal requirements for that item.

Hydromulch shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

Fertilizer
No fertilizers shall be applied.

ITEM 765.635 (Continued)

Water
Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

CONSTRUCTION METHODS

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

Surface Preparation

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer’s instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

Seeding over Various Substrates

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Compost Blanket: Compost Blanket shall be applied as specified under that item. Seed should be hand broadcast at the same time as compost application to ensure a thin cover of compost over seed.

ITEM 765.635 (Continued)

When seeding is done after application of Compost Blanket the rate shall be increased by 50%. If the Compost Blanket is applied after December 1, seed shall be broadcast or hydroseeding over the compost in the Spring and the rate increased by 50% specified under Seed Application.

Seed Application

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

Broadcast Seeding

Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

Hydroseeding and Hydromulching

Hydroseed and mulching shall be per the manufacturer's directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

ITEM 765.635 (Continued)

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

CARE DURING GERMINATION AND ESTABLISHMENT

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

MOWING FOR WEED CONTROL

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7th and August 1st, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

ITEM 765.635 (Continued)

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

OVER-SEEDING

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

DETERMINING SATISFACTORY GRASS ESTABLISHMENT

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
    - At least 3 types of permanent seeded grass species shall be visible.
- At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

ITEM 765.635 (Continued)

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance. Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the contractor's expense.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Native Seeding and Establishment will be measured for payment by the square yard, complete in place.

Native Seeding and Establishment will be paid at the Contract unit price by the square yard upon Conditional, Interim, and Final Acceptances as described below. This price shall include all submittals, seeding, hydromulch, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Native seed shall be compensated under the respective items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project. If used, Compost Blanket shall be compensated under the respective item.

ITEM 765.635 (Continued)

Mowing for weed control will be incidental to this item.

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

ITEM 767.121 SEDIMENT CONTROL BARRIER FOOT

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. 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 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 damage by construction activities shall be repaired or replaced as directed by the Engineer at the Contractors expense.

ITEM 767.122 SEDIMENT BARRIER - COIR LOG FOOT

The work under this Item shall conform to the relevant provisions of Subsections 101, 120, 170, and 751 of the Standard Specifications and the following:

Sediment Barrier - Coir Log shall be used in wet locations where the barrier will not require removal; when barrier is placed immediately adjacent to existing wetlands; as a check dam in swales; in locations as shown on the Drawings; and/or in locations required by the Engineer.

Permits, Codes and Regulations: The Contractor shall comply with all rules, regulations, laws and ordinances of the City/Town and State, and all other authorities having jurisdiction over the Project site. All labor, materials, equipment, and services necessary to make the work comply with such requirements shall be provided by the Contractor without additional cost to the Department.

MATERIALS

Coir Log: Coir Log shall be biodegradable coir fiber cylindrical bundles. Inner core shall be 100 percent unsorted, well-cleaned, coir fiber uniformly distributed along the length of the log. The stuffed density of the coir fiber shall be a minimum of 9 pounds per cubic foot.

Outer netting shall be constructed from a minimum 3-ply high strength coir bristle twine. The netting shall have 2-inch by 2-inch rhombic openings with hand-knotted junctions. The average breaking strength of the coir twine shall be a minimum of 80 pounds. Production tolerance for all the above parameters shall not exceed plus or minus 10 percent.

Coir log diameter shall be sized as shown on the drawings. Typical lengths are supplied in 10 foot or 20-foot increments. Coir logs or coir netting may not be cut to decrease length and shall maintain the physical properties as supplied by the Manufacturer.

Notched Wood Stakes: Stakes shall be oak or southern pine with dimensions as shown on the Drawings. Stakes shall be free from knots and other defects which would cause splitting and shall have a downward-angled notch as shown in the drawing.

Coconut Fiber Cord: Coconut fiber cord shall be two-ply braided cord with a breaking strength of 80 pounds, minimum 0.25-inch diameter.

Delivery, Storage and Handling: Protect materials from deterioration during delivery and while stored at site.

CONSTRUCTION METHODS

General: Prior to initial placement of the coir log sediment barrier, the Contractor and the Engineer shall review locations specified on the plans and adjust placement, if required, to ensure that the coir log positioning and configuration will provide maximum sediment capture. Coir log sediment barrier(s) shall be in place prior to excavation work and no work shall take place outside the coir log barrier(s).

ITEM 767.122 (Continued)

Installation: Coir logs shall be staked and secured as shown on the Drawings, as specified herein, and/or as recommended by the Manufacturer. The Contractor shall remove all underlying vegetation or debris to ensure that each coir log is securely in contact with soil, such that there is no flow beneath the log.

When used as a check dam barrier in a swale, the coir log shall be centered in the low point of the swale, perpendicular to the flow, with ends extending upslope. The log check dam barrier shall extend such that the log top elevation at the center of the swale is lower than the lowest elevation at the end log, to ensure that sediment-laden runoff will flow either through or over the coir log but not around it. The coir log check dam barrier shall have length such that no seams occur in the swale.

Notched wood stakes shall be driven parallel on both sides of the coir log at a typical spacing of 5 feet on center, unless site conditions warrant a closer spacing distance to ensure logs are firmly secured to the underlying soil. Stakes shall not extend more than 1 foot beyond the top of the log. Coir twine shall lash the logs to notched stakes in a cross-lashing fashion between stakes, throughout the length of the log barrier.

When utilizing multiple logs for sediment control, each coir log shall be laced together end-to-end (creating a seam) with coir twine to create a continuous length. End-to-end lacing may be completed before or after placement, to facilitate handling.

Maintenance: Maintenance of the coir log sediment barrier shall be per the Stormwater Pollution Prevention Plan (SWPPP).

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. The Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract. Under no condition shall sediment be allowed to accumulate more than 4 inches above the original ground line.

If a breach or other failure of the barrier occurs, the barrier shall be immediately restored. Repair shall include replacement of entire defective segments or for short breaches, revetment with additional coir logs, set directly adjacent to the downslope side of the breech. Revetment coir logs must overlap breech by a minimum of 2 feet on each side. The Engineer must approve breech repair means and methods as well as outcome.

If the coir log sediment barrier is damaged by equipment or undergoes a significant washout or other major failure, the Contractor shall replace the component in its entirety, at the discretion and approval of the Engineer. Any delay in maintaining the barrier shall be cause to immediately suspend the work as provided for in Subsection 8.09: Delay and Suspension of Work.

ITEM 767.122 (Continued)

Disposition/Removal: For naturalized areas, coir logs and wooden stakes may be left in place to decompose on-site. For areas where, in the determination of the Engineer, aesthetics are a concern, logs, errant coir fiber material, and stakes may require removal.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.122 Sediment Barrier - Coir Log will be measured for payment by the FOOT, complete in place and will be paid for at the Contract unit price per FOOT, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for coir log(s) follow-up maintenance and repairs, or disposal (if required), but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 767.9 JUTE MESH SQUARE YARD

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following.

The work under this item shall consist of furnishing and installing jute mesh fabric to prevent soil erosion. Jute mesh shall be placed over all areas of exposed soil in locations shown on the plans or as required by the Engineer.

MATERIALS

Jute netting or similar material shall be new, unused, undyed, and unbleached 100% biodegradable yarn (no polypropylene) and of uniform plain weave. The materials should weigh approximately 1.0 (+/- 5%) pounds per linear yard (assuming a 4-foot width).

Shall meet the following minimum requirements:

Open Area:	70-75%
Mesh Size:	approximately 1/2 inch with an open area of 60-65%.
Roll Weight:	approximately 1.0 (+/- 5%) pounds per linear yard
Warp Ends:	78 per linear yard
Weft Ends:	41 per linear yard
Recommended flow:	6 fps (1.8 m/s)
Functional Longevity:	6-9 months

Anchoring devices shall be 11-gauge steel staples 6-inch minimum length. In loose soils the length of the staples shall be 9-inches.

For areas that will be routinely mowed anchoring devices shall consist of minimum 8” wooden stakes. Longer stakes shall be used where loose soils or other conditions obligate, as required by the Engineer.

CONSTRUCTION METHODS

Area shall be seeded prior to installation of jute netting.

Installation shall be such as to ensure continuous contact with soil without folds or wrinkles. Jute netting shall be laid such that upslope fabric is placed over lower slope fabric by a minimum of 3 feet. Adjoining rolls shall be overlapped a minimum 6 inches. The netting shall extend beyond at least 1 foot beyond the edge of the seeded area.

The Contractor shall bury the ends of the jute netting 6-8 inches in anchor trenches at top and bottom of slopes.

ITEM 767.9 (Continued)

Jute netting shall be anchored in place with vertically driven metal staples. The staples shall be driven in until their tops are flush with the soil. Staples shall be placed at 12-inch intervals along the top of a slope and in staggered courses along the face of the slope to achieve a minimum of 3 staples per square yard, or at manufacturer's recommendations for the given site conditions.

Contractor shall reseed all trenched and otherwise disturbed areas with specified seed mix. The Contractor shall maintain the jute netting and make satisfactory repairs of any areas damaged until acceptance of seed establishment.

METHOD OF MEASUREMENT

Jute Mesh will be measured by the number of Square Yards complete in place, including anchoring, as measured across the surface of grade and does not include buried or overlapped portions. The quantity measured for payment shall not exceed that shown on the plans or as directed by the Engineer.

Mesh that becomes loose or that is not otherwise functioning to stabilize soil shall be repaired and new or additional jute matting installed as required at the Contractor's expense. Soil erosion shall be repaired, and area shall be raked and reseeded with the original specified mix as required by the Engineer at the Contractors expense.

BASIS OF PAYMENT

Item 767.9 will be paid for at the contract unit price per Square Yard, which price shall include all labor, materials, equipment, trenching, placing, and stapling of jute fabric, reseeding of trenched and disturbed areas, and all incidental costs required to complete the work.

ITEM 767.91 TIMBER MATTING SQUARE YARD

The work under this Item shall conform to the plans and the relevant provisions of Subsection 767 of the Standard Specifications, and the following:

Timber Mats shall be used to support construction equipment when operating in wetlands. This item consists of furnishing, placing, maintaining, and removing Timber Matting as specified herein, as shown on the plans, and as required to protect existing soils during construction. Mats shall be within the area shown on the plans as necessary for construction access and staging. Existing soils shall be protected to the extent feasible.

At a minimum, material and methods shall follow Army Corp of Engineers Best Management Practices:

https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/MA/ConstructionMatBMPs.pdf

Relevant permit conditions and approvals shall also be followed.

MATERIALS & SUBMITTALS

Material and methods shall be submitted to the Engineer for approval. Submittal shall include a plan to show the proposed extent of matting, methods of preventing soil or other material from entering the wetland through gaps in the timber, procedure for inspections, method of removal and cleaning, and location of cleaning.

The timber construction mats shall be composed of heavy timbers joined together to form stable platforms installed over the surface of wetlands. Mats shall have all timber and rods intact.

Depending on site specific field conditions at the time of construction, multiple layers of Timber Mats and stringers may be necessary to support heavy equipment and to protect the underlying wetland.

As necessary, sediment control devices such as compost filter tubes shall be placed along edge of the Timber Mats to protect wetlands from sedimentation caused by construction vehicle traffic.

Mats shall be certified clean by the vendor prior to installation. The vendor shall submit proof of compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc.), soil, or other deleterious materials prior to being brought to the project site.

METHOD OF WORK

Prior to placement of mats, existing wetland limits and topography shall be assessed. Vegetation shall be cut flush. Care shall be taken to avoid removal of plant roots and to avoid soil disturbance.

ITEM 767.91 (Continued)

Mats shall be spread evenly and smoothly to ensure direct contact with the soil at all points and placed parallel to the drainage flow direction. To the extent possible, mats shall be placed along the travel area so that individual boards are perpendicular to the direction of traffic. There shall be no gaps between the mats. Mats shall be placed on either side of wetland area to rest on firm ground.

For situations where the Contractor determines that stones or boulders shall be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads, the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull-dozer is not allowed). When there is a significant number of boulders that shall be removed, the Contractor shall consult with the Engineer prior to undertaking the work.

The stockpiling of stone, drill spoils, and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Under this scenario, composite mats and/or other approved methods and materials shall be placed on top of the timber mats to prevent spoils from migrating through the gaps between timbers or spilling over the sides of the matting. The stockpiled spoil shall be removed from the work zone and properly disposed of in uplands approved by the Engineer or hauled off site for proper disposal. Material that falls into or otherwise enters the wetlands shall be removed by hand following removal of the mats.

Sediment controls and stone or wood chip ramps may be installed to promote a smooth transition to and minimize sediment tracking onto the timber mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions.

Mats shall be placed per the manufacturer's instruction. If requested by the Engineer, method of installation and final placement of mats shall be approved by the Wetland Specialist.

MAINTENANCE

Mats shall be monitored to assure that they are functioning correctly and shall be inspected for any defects or structural problems. Mats covered with soils or construction debris shall be cleaned and the materials removed and disposed of in an upland location. The material should not be scraped and shoveled into the resource area. Mats that become imbedded must be reset or layered to prevent mud from covering them or water passing over them. Worn timber or plywood used as a wearing surface shall be replaced as required and to the satisfaction of the Engineer.

REMOVAL OF MATS

Clean mats after use to remove any invasive plant species seed stock. Cleaning methods may include but are not limited to, shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, sweeping, or exposing the mats to high temperatures. The location and method of cleaning shall be approved by the Engineer.

ITEM 767.91 (Continued)

Upon completion of construction, mats shall be removed. Matting should be removed by "backing" out of the site, removing mats one at a time.

If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions consistent with the surrounding area, by light hand raking or by back-blading with machinery. Deeper ruts shall be graded using available, loose soil from the work area.

Care shall be taken to inspect wetland crossings as each mat is removed to ensure any undesirable materials are properly removed and disposed of off- site.

If determined necessary by the Engineer, to enhance the functions of an altered wetland, a wetland seed mix shall be sown throughout the disturbed areas. In most instances, natural re-vegetation is an appropriate means to re-establish the wetland plant community in lieu of seeding.

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of swamp mats. Once construction mats are removed, wetlands shall be inspected for build-up of sand that may have fallen through swamp mats, therefore care shall be taken to inspect wetland crossings carefully as each mat is removed to ensure sand is properly removed and disposed of off-site.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Timber matting will be measured for payment by the square yard, complete in place, maintained and removed. Overlapped matting will not be measured for payment.

Timber matting will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, sediment barriers specific to matting, geotextile, stone, wood chips, cutting of existing vegetation, and incidental costs required to complete the work of installation, maintenance, removal, and restoration of soil and vegetation, if required.

ITEM 776.520	**MAPLE – RED 5-6 FEET**	**EACH**
ITEM 777.260	**OAK - SWAMP WHITE 5-6 FEET**	**EACH**
ITEM 778.163	**BIRCH – RIVER HERITAGE 5-6 FOOT CLUMP**	**EACH**
ITEM 783.045	**SERVICEBERRY - SHADBLOW 3-4 FEET**	**EACH**
ITEM 783.464	**TUPELO 1 INCH CALIPER**	**EACH**
ITEM 788.013	**ALDER SHRUB – SPECKLED 18-24 INCH**	**EACH**
ITEM 789.632	**BLUEBERRY – HIGHBUSH 18-24 INCH**	**EACH**
ITEM 790.717	**DOGWOOD - SILKY 18-24 INCH / #1**	**EACH**
ITEM 790.721	**DOGWOOD – GRAY 18-24 INCH**	**EACH**
ITEM 791.031	**ELDERBERRY 18-24 INCH**	**EACH**
ITEM 795.009	**VIBURNUM - ARROWWOOD 18-24 INCHES / #2**	**EACH**
ITEM 795.021	**VIBURNUM - NANNYBERRY 18-24 INCHES**	**EACH**
ITEM 795.051	**RED CHOKEBERRY 18-24 INCH**	**EACH**
ITEM 795.061	**MALEBERRY 18-24 INCH**	**EACH**

The work under these Items shall conform to the relevant provisions of Subsection 771 of the Standard Specifications.

ITEM 874.4 TRAFFIC SIGN REMOVED AND STACKED EACH

The work under this Item shall include the dismantling, removal, transporting and stacking of all existing warning, regulatory and route marker signs and their supports.

Also included is the excavation of the existing foundations to a depth of at least 6 inches below the ground level, backfilling with compacted gravel and the restoration or replacement in kind of the holes resulting from the excavation. The sign panels and supports shall be stacked on boards at a location selected by the Engineer. The existing signs shall not be removed until the bridge work has been completed.

Removed signs shall become the property of the Contractor and he shall dispose of them away from the site.

METHOD OF MEASUREMENT

Item 874.4 will be measured for payment by the Each traffic sign removed and stacked.

BASIS OF PAYMENT

Item 874.4 will be paid for at the Contract unit price per Each, which price shall include removal, stacking and disposal of traffic signs and supports, excavation of the existing foundation, backfilling, surface restoration, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

ITEM 983.521 STREAMBED/BANK RESORATION MATERIAL SQUARE YARD

The work under this Item shall consist of restoring the streambed where disturbance takes place in the project area within the limits of work. Work will primarily include furnishing and installing streambed material at the Bridge No. S-10-015 crossing structure. The streambed restoration beneath the proposed bridge structure and immediately adjacent to Schenob Brook 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 an Environmental Specialist or a Fluvial Geomorphologist (Geomorphologist) to provide review of the final design and on-site assistance during streambed restoration construction to ensure the restoration is constructed 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 the MassDOT Wildlife Unit to set up an initial (virtual or in person) meeting with MassDOT's Environmental Specialist, Geomorphologist, Contractor, and Resident Engineer. The MassDOT Wildlife Unit Contact Information is:

David Paulson, Wildlife and Endangered Species Unit Supervisor
David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

At this meeting, the Environmental Specialist or 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 additional onsite meeting to discuss the streambed restoration with the Environmental Specialist or Geomorphologist and respective parties from MassDOT. The Environmental Specialist or Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Environmental Specialist or 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.

MATERIAL

The streambed/bank construction material is to be placed along the limits of the proposed Schenob Brook channel in the area beneath the proposed bridge span.

ITEM 983.521 (Continued)

The streambed material shall be comprised of two primary components.

1. Stone 4 inches and under shall meet the following gradation:

Sieve Opening	% Passing (by Mass)
4”	95
2”	55 – 65
¾”	30 – 45
#4	0 - 5

2. Stone 6 inches to 2.5 feet in diameter:

Stone Size	% Passing (by Mass)
2.0’	80
1.5’	25
0.5’	0

The streambed/bank stone for all two components shall be native cobbles and boulders similar in shape and size of the streambed/bank stone adjacent to the work area. Partially angular rock is preferred over round, and shall be able to lock together to prevent movement during high flows. Crushed Stone will not be acceptable for any of the components. The elevations and conditions of the existing streambed shall be maintained to the maximum extent practicable.

CONSTRUCTION METHODS

Streambed
Components One and Two shall be pre-blended outside the project area at a volume ratio of 30% and 70% respectively. The pre-blending shall be done in a way that will prevent the mass from being contaminated by work-place soils The final streambed shape and appearance between the bridge abutments shall be finalized in the field as directed by the Environmental Specialist or Geomorphologist.

The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

The pre-blended mass shall be placed in a manner to fill/choke any voids in the underlying material. 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.

Completion
Once all material has been placed in the stream channel and approved by the Environmental Specialist or 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.

ITEM 983.521 (Continued)

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 organisms following construction. Terrestrial wildlife must be able to walk along the riverbank.

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 Environmental Specialist or Geomorphologist.

METHOD OF MEASUREMENT

Item 983.521 will be measured for payment by the Square Yard of streambed/bank restored, complete in place.

BASIS OF PAYMENT

Item 983.521 will be paid for at the Contract unit price per Square Yard, which price shall include furnishing and installing streambed material, restoration of the streambed/bank, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

The Environmental Specialist or Geomorphologist will be provided by MassDOT at no cost to the Contractor.

ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2) LUMP SUM

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

The work under this Item shall include all cofferdams, pumping, sandbagging, barriers, earth and other measures, necessary for sufficient water control to accomplish the removal and replacement of Bridge No. S-10-015, including wingwalls, foundations, and streambed/bank restoration in the dry. Work under this Item shall consist of dewatering within the bridge work limits as shown on the plans to facilitate the reconstruction of the bridge, wingwalls, and streambed/bank restoration. Water within the work area shall be discharged as specified in the contract documents, environmental permits obtained for this project, and as directed by the Engineer. No direct discharge will be allowed into Schenob Brook or adjacent wetland resource areas during the dewatering operations. Dewatering shall be conducted to ensure that all structural concrete is placed and cured in the dry. For demolition purposes, dewatering shall be conducted for portions of the existing bridge as determined by the Engineer. It is the responsibility of the Contractor to determine the need and extent of dewatering required; identify sedimentation and dewatering techniques and controls to be utilized; and submit method and materials he/she proposes to use for approval by the Engineer.

The handling of flood flows and the protection of existing structures, and any or all of the finished construction during high water, are included in the scope of work under this item.

Plans and calculations for all the sheeting, sandbagging, dikes, and other water control measures, including pumping, shall be developed by the Contractor. These plans and calculations shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted for approval prior to the start of construction. The Contractor shall use such equipment and shall perform the operations in such a manner that disturbances of the soil in the foundation areas will be prevented. The Contractor shall keep the excavated areas dry by such means that the water will be prevented from entering from the adjacent soils and adversely affecting the stability of the foundation material or supporting soils.

The Contractor shall investigate and verify existing river flow/elevation conditions, and evaluate the need for protection during construction and the type of temporary measures required. Before commencing construction, the Contractor shall furnish the Engineer with the plan and methods he/she proposes to use for work within or adjacent to the river including details for cofferdams and pumping as needed to accomplish the work within these areas. The Contractor may use sandbags, barriers, or other types of protective facilities as approved by the Engineer. The furnishings of such plans and methods shall not relieve the Contractor of his responsibility for the safety of the work and for the successful completion of the project.

The height of any cofferdams and/or barriers shall be sufficient to provide reasonable protection from flooding as described on the Contract Plans. All such temporary structures or facilities shall be safely designed, extended to sufficient depth and be of such dimensions and water-tightness to assure construction of the permanent work in the dry. Water control structures shall not interfere with the proper performance of the work. Their construction shall be such as to permit excavation for the permanent work and any conflicts shall be corrected at the sole expense of the Contractor.

ITEM 991.1 (Continued)

Any pumping from within the areas of construction shall be done in such a manner as to prevent the possibility of movement of water through any fresh concrete. No pumping will be permitted during placing of concrete or for a period of 24 hours thereafter, unless it is done from a suitable sump properly located with sufficient pumping capacity to protect against damage from sudden rising of water.

All dewatering and related earthwork shall be conducted in such a manner as to prevent siltation or contamination of the waterway and wetland resource areas. The pumping discharge shall not be allowed to enter directly into Schenob Brook or wetland resource areas. The water from the work areas shall be pumped either to a temporary settling tank, filter bags, or other approved containment structure conforming to the Department's *"Erosion & Sediment Control Field Guide"*. The filtration system shall be constructed to allow for the pumped water to pass through the structure with sediments settling out before outletting to the surrounding area. A temporary containment corral shall be built around the filtration system. The criteria that are implemented for the control of water must meet the following requirements:

1. Approximately 70% sedimentation trapping efficiency shall be achieved with an enclosure adequately sized to prevent overtopping from dewatering and to provide the required filtering.
2. The outlet from the containment structure shall not cause erosion of the surrounding area.
3. Demonstrate that size and type of structure are adequate for the proposed rate of pumping discharge.

The control of water containment structure shall be maintained as follows in accordance with the Department's *"Erosion & Sediment Control Field Guide"*.

Placement of the dewatering containment structure will be as approved by the Engineer based on specific site conditions and staging operations of the Contractor.

Unless otherwise provided or directed by the Engineer, all such temporary protective work shall be removed and disposed of in an approved manner when no longer required.

The Contractor shall be responsible for the scheduling of work under this item to not interfere with any sequence of operations developed for this project. Delays as a result of work required under this item shall not constitute a claim for an extension of contract time.

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.

ITEM 991.1 (Continued)

BASIS OF PAYMENT

Item 991.1 will be paid for at the Contract Lump Sum price, which price shall include furnishing and installing all required measures for water control work, designs, submittals, dewatering, piping, pumping, maintenance, final removal of all required materials and equipment, sedimentation filtration and containment systems including haybales, sedimentation fence and filter bags, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING LUMP SUM
BRIDGE NO. S-10-015 (088)

The work under this Item shall include designing, furnishing, installing, relocating, maintaining, and disposing of a temporary protective shielding system under the bridge. The purpose of the installed system is to prevent any construction debris from entering the waterway below the bridge.

Prior to the start of demolition, the Contractor shall submit drawings and calculations for the temporary shielding to the Engineer for review and approval. The temporary shielding system shall be designed to safely withstand all loads that it will be subjected to in accordance with AASHTO Standard Specifications for Highway Bridges and conform to all Federal, State, and local laws and regulations. The design shall indicate the maximum size of deck area to be excavated at one time. The shielding shall be designed to withstand impact loads from the maximum size of concrete decking should it fall during removal. The shielding shall extend the full length of the bridge span, 3 feet beyond the deck limits, and sufficient distance above and beyond the girders as required to protect debris from entering the waterway below. 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 waterway. The temporary shielding system drawings and calculations shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.

No portion of the bridge deck, curbing, or other portion of the superstructure or existing structure shall be removed until the Protective Shielding is completely in place and the Contractor has approval from the Engineer to proceed.

The Contractor shall periodically inspect the shielding system, repair any deficiencies, and remove/dispose of any accumulated debris. The Contractor shall exercise due care not to permit any items of the existing bridge structure to fall into the waterway. Any debris that falls into the waterway below must be immediately removed and properly disposed of at the Contractor's expense.

The shielding shall be maintained and remain in place until the superstructure is completely removed. Shielding shall be removed only upon approval of the Engineer. After completion, the shielding shall be removed and disposed of to the satisfaction of the Engineer.

BASIS OF PAYMENT

Item 994.01 will be paid for at the Contract Lump Sum price, which price shall include designing, furnishing, installing, relocating, maintaining, inspecting, and subsequent disposal of the temporary protective shielding system, removal and disposal of accumulated debris, all labor, materials, tools, equipment, engineering services, submittals, and all incidental costs required to complete the work.

ITEM 995.01 BRIDGE STRUCTURE, BRIDGE NO. S-10-015 (8M2) LUMP SUM

The work under this Item shall conform to the relevant provisions of Subsection 995 of the Standard Specifications and the specific requirements stipulated below for the component parts of this Item. For those component parts where no specific requirement is stipulated, the Standard Specifications shall apply except for payment.

The work under this Item shall include all materials, equipment and labor needed to construct the following:

Sub-Item	Description
904.3	5000 psi, ¾ inch, 685 HP Cement Concrete
904.31	Precast Highway Guardrail Transitions
905.2	5000 psi, 3/8 inch, 710 HP Cement Concrete
910.	Steel Reinforcement for Structures
910.1	Steel Reinforcement for Structures – Epoxy Coated
922.	Laminated Elastomeric Bearing Pad Without Anchor Bolts
930.410	Prestressed Concrete Box Beams (B48-24)
965.	Membrane Waterproofing for Bridge Decks
970.	Damp-Proofing

The work does not include any items listed separately in the proposal. Payment for materials shown on the Plans as being part of this bridge structure or which may be incidental to its construction and are not specifically included for payment under another Item shall be considered incidental to the work performed under this Item and shall be included in the unit price of the component of which they are a part.

PRESTRESSED CONCRETE BOX BEAMS (B48-24)

A. General.

The work under this Heading consists of fabricating, transporting and installing Prestressed Concrete Box Beams (B48-24), and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The Precast, Prestressed, and Prefabricated Concrete Elements shall meet the requirements of Section M4: Cement Concrete and Related Materials.

MATERIALS

A. Materials.

Materials shall conform to M4.09.1 and the following:

Non-Shrink Grout Products	M4.04.5
Prestressing Strands	AASHTO M 203
Welded Steel Wire Fabric	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Strand Chuck	M8.15.0
Lifting Devices	PCI MNL-116

ITEM 995.01 (Continued)

1. 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.

2. 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.

3. 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. 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 M4.09.4 *Department Acceptance*), 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.

B. Reinforcement.

The reinforcing bars shall be installed in accordance with Subsection 901.35 of the Standard 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.

C. 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.

D. Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with Subsection 901.35. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

ITEM 995.01 (Continued)

E. 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. 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.

Where applicable, the material used for forming voids in concrete 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.

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 sublot.
(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.

ITEM 995.01 (Continued)

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:

1. Erection Procedure

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Design, Fabrication and Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (eighth 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 in PDF format on 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.

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.

ITEM 995.01 (Continued)

(d) 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.

Adjacent Prestressed Concrete 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 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.

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 (M4.04.5) 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.

ITEM 995.01 (Continued)

Mortar (M4.04.5) 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.

5. Backwalls and Curtain Walls.

The backwalls and the curtain walls at the abutment bridge seats 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 concrete shall be placed directly against it. The safety curb may be cast after the curtain walls have been cast.

PRECAST HIGHWAY GUARDRAIL TRANSITIONS

A. General.

The work under this Heading consists of fabricating, transporting and installing Precast Highway Guardrail Transitions and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The Precast Concrete Bridge Elements shall meet the requirements of Section M4: Cement Concrete and Related Materials.

MATERIALS

A. Materials.

Materials shall conform to M4.09.1 and the following:

Non-Shrink Grout Products	M4.04.5
Controlled Low-Strength Material – Structural Non-Excavatable	M4.08.0
Welded Steel Wire Fabric	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. 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.

2. 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.

3. 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).

CONSTRUCTION METHODS – PLANT FABRICATION

A. 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 M4.09.4 *Department Acceptance*), 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.

B. Reinforcement.

The reinforcing bars shall be installed in accordance with Subsection 901.35, 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.

C. Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with Subsection 901.35. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

ITEM 995.01 (Continued)

D. 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. 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.

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 sublot.
(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:

1. Erection Procedure

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Design, Fabrication and Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (eighth 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.

ITEM 995.01 (Continued)

(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 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 Low-Strength Material – Structural Non-Excavatable to the limits as shown on the plans.

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.

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 Pours and Grouted Keyways.

Immediately prior to erecting the Precast Concrete Bridge Elements, the grouted keyways 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 grout and precast concrete using a high-pressure water blast. Any 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 closure pours and grouted keyways 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.

ITEM 995.01 (Continued)

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.

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.

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.

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 Mortar (M4.04.5).

After the formwork has been removed, all threaded inserts that have been cast into the precast concrete bridge element 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 10 (10) days after the Notice to Proceed, the Contractor shall submit a schedule of unit prices 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. S-10-015 (8M2). 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 the 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 applies only to Bridge Structure No. S-10-015 (8M2). 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)

PRELIMINARY ESTIMATE OF QUANTITIES

Item	Description	Unit	QTY	Price	Total
904.3	5000 psi, ¾ inch, 685 HP Cement Concrete	CY	150		
904.31	Precast Highway Guardrail Transitions	EA	4		
905.2	5000 psi, 3/8 inch, 710 HP Cement Concrete	CY	20		
910.	Steel Reinforcement for Structures	LB	15,000		
910.1	Steel Reinforcement for Structures – Epoxy Coated	LB	11,000		
922.	Laminated Elastomeric Bearing Pad Without Anchor Bolts	EA	16		
930.410	Prestressed Concrete Box Beams (B48-24)	FT	286		
965.	Membrane Waterproofing for Bridge Decks	SF	1,100		
970.	Damp-Proofing	SF	950		

Total Lump Sum for Item 995.01 =

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DETAIL SHEETS

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PROJECT FILE NO. 609068

- PRELIMINARY ESTIMATE OF QUANTITIES - DETAIL SHEET -

TOWN-CITY: SHEFFIELD **ROAD:** KELSEY ROAD
DATE: July 24th, 2026

Earth Excavation	3349 Cubic Yds	Class A Rock Excavation	170 Cubic Yds
Class B Trench Excavation	8 Cubic Yds	Class B Rock Excavation	7 Cubic Yds
Gravel Borrow	380 Cubic Yds	Embankment + 15%	581 Cubic Yds

Proposed Full Depth HMA Pavement **Area = 45 SY**

Surface Course: 3" Hot Mix Asphalt:
1 ½" Superpave Bridge Surface Course – 9.5 Polymer (SSC-B-9.5-P), over
1 ½" Superpave Bridge Protective Course – 9.5 Polymer (SPC-B-9.5-P), over

Base Course: 4" Superpave Base Course – 37.5 (SBC-37.5), over

Sub-base: 4" Dense Graded Crushed Stone, over
6" Min. Gravel Borrow, Type b, over
Approach Slab (Type1)

Tack Coat: Asphalt Emulsion for Tack Coat shall be sprayed in accordance with Subsection 450.

Proposed Bridge Wearing Surface **Area = 120 SY**

Surface Course: 3" Hot Mix Asphalt:
1 ½" Superpave Bridge Surface Course – 9.5 Polymer (SSC-B-9.5-P), over
1 ½" Superpave Bridge Protective Course – 9.5 Polymer (SPC-B-9.5-P), over
Membrane Waterproofing

Proposed Gravel for Surfacing **Area = 900 SY**

Surface: 4" Gravel Borrow, Type b (Top), over
8" Gravel Borrow, Type b (Compacted), over
Geotextile Fabric (Stabilization), over
Special Borrow, as required

ITEM 101. CLEARING AND GRUBBING

Sta. 100+83 LT to Sta. 103+13 LT
Sta. 103+42 LT to Sta. 107+28 LT

Sta. 100+60 RT to Sta. 103+14 RT
Sta. 103+40 RT to Sta. 107+27 RT

ITEM 102. SELECTIVE CLEARING AND THINNING

Sta. 103+22 LT to Sta. 104+50 LT
Sta. 105+97 LT to Sta. 106+83 LT

Sta. 99+92 RT to Sta. 105+93 RT

ITEM 102.1 TREE TRIMMING

Sta. 100+50 LT to Sta. 102+97 LT
Sta. 103+47 LT to Sta. 104+56 LT
Sta. 104+72 LT to Sta. 104+90 LT
Sta. 106+14 LT to Sta. 106+88 LT

Sta. 99+92 RT to Sta. 102+20 RT
Sta. 103+44 RT to Sta. 104+37 RT
Sta. 104+82 RT to Sta. 105+51 RT
Sta. 105+78 RT to Sta. 106+06 RT

ITEM 102.511 TREE PROTECTION - ARMORING AND PRUNING

Sta. 105+80 LT
Sta. 107+13 LT

ITEM 102.522 TREE PROTECTION - ARMORING AND PRUNING

For root zone protection on existing trees throughout the project

Sta. 99+16 RT to Sta. 100+05 RT
Sta. 105+61 LT to Sta. 107+27 LT
Sta. 105+79 RT to Sta. 106+60 RT

ITEM 121. CLASS A ROCK EXCAVATION

For excavation of materials,
Sta.101+48 to Sta. 102+67
Sta.103+67 to Sta. 106+32

ITEM 123. MUCK EXCAVATION

For excavation of materials at bridge, Sta.102+67 to Sta. 103+67

ITEM 127.1 REINFORCED CONCRETE EXCAVATION

For demolition of existing wing walls and footing at bridge,
Sta.102+67 to Sta. 103+67

ITEM 140.1 BRIDGE EXCAVATION WITHIN COFFERDAM

For excavation of constructing bridge substructure elements that must be built inside a cofferdam, Sta.102+67 to Sta. 103+67

ITEM 142. CLASS B TRENCH EXCAVATION

For excavation of proposed elliptical pipe, Sta 101+66 to Sta. 101+75

ITEM 144. CLASS B ROCK EXCAVATION

For excavation of materials a bridge, Sta.102+67 to Sta. 103+67

ITEM 150.1 SPECIAL BORROW

As necessary for use below subbase Gravel Borrow, Type b:
Sta. 103+95 to Sta. 106+50

ITEM 151. GRAVEL BORROW

For roadway subbase and proposed gravel driveway, as shown on the Construction Plans:

Sta. 101+48 to Sta. 102+70
Sta. 103+95 to Sta. 107+30

ITEM 151.1 GRAVEL BORROW FOR BRIDGE FOUNDATION

For roadway subbase:
Sta. 101+48 to Sta. 102+70
Sta. 103+95 to Sta. 106+50

ITEM 151.2 GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

For backfilling bridge structure, Sta. 103+95 to Sta. 104+50

ITEM 156. CRUSHED STONE

For 12" Drainage Pipe, Sta. 105+60 to Sta. 105+80
For Elliptical Drainage Pipe, Sta 101+66 to Sta. 101+75
For Full Depth Pavement Section, Sta. 103+95 to Sta. 104+50
For crushed stone under riprap embankment
For crushed stone under modified rockfill near bridge corners

ITEM 160.3 CONTROLLED-LOW STRENGTH MATERIAL-STRUCTURAL NON EXCAVATABLE

For setting precast highway guardrail transitions.

ITEM 170. FINE GRADING AND COMPACTING – SUBGRADE AREA

For areas beneath full depth HMA pavement subbase:
Sta. 102+67 to Sta. 102+82
Sta. 103+52 to Sta. 103+67
For area with gravel for resurfacing:
Sta. 101+48 to Sta. 102+67
Sta. 103+67 to Sta. 107+30

ITEM 184.1 DISPOSAL OF TREATED WOOD PRODUCTS

For removal and excavation of materials at bridge, Sta.102+67 to Sta. 103+67

ITEM 242. REINFORCED CONCRETE PIPE HEADWALL

For headwalls at upstream and downstream ends up elliptical pipe
Sta. 101+70 ±
Sta. 101+66±

ITEM 244.12 12 INCH REINFORCED CONCRETE PIPE CLASS V

Sta. 105+60 ± to Sta. 105+80

ITEM 244.3453 34 INCH BY 53 INCH ELLIPTICAL PIPE RCP CLASS V

Sta 101+66 to Sta. 101+75

ITEM 258. DRY HYDRANT - REMOVED AND RESET

For dry hydrant at Sta. 103+55

ITEM 376.22 STONE FOR PIPE ENDS

At end of flared end section at Sta. 107+50

ITEM 402.13 PAVEMENT MILLING MULCH FOR SHOULDERS

For roadway shoulders:
Sta. 104+73 LT to Sta. 107+30 LT
Sta. 104+60 RT to Sta. 107+30 RT

ITEM 440. CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL

For areas of roadway reconstruction, to include full depth HMA pavement, gravel roadway surface and gravel driveways. Applied at a rate of 1.5 lbs/sy:

Sta. 101+48 to Sta. 102+82
Sta. 103+95 to Sta. 106+50

ITEM 443. WATER FOR ROADWAY DUST CONTROL

For areas of roadway reconstruction, include full depth HMA pavement, gravel roadway surface and gravel driveways. Applied at a rate of 1.0 gallon/sy:

Sta. 101+48 to Sta. 102+82
Sta. 103+95 to Sta. 106+50

ITEM 450.42 SUPERPAVE BASE COURSE – 37.5 (SBC-37.5)

HMA Base Course in areas of full depth HMA pavement:
Sta. 102+67 to Sta. 102+82
Sta. 103+52 to Sta. 103+67

ITEM 450.601 SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B - 9.5 - P)

HMA Surface Course within full depth HMA pavement:
Sta. 102+67 to Sta. 102+82
Sta. 103+52 to Sta. 103+67

ITEM 450.701 SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B - 9.5 - P)

HMA Surface Course within full depth HMA pavement:
Sta. 102+67 to Sta. 102+82
Sta. 103+52 to Sta. 103+67

ITEM 452. ASPHALT EMULSION FOR TACK COAT

For smooth surfaces between proposed full depth pavement layers in accordance with Section 450.
Sta. 102+67 to Sta. 102+82
Sta. 103+52 to Sta. 103+67

ITEM 453 HMA JOINT ADHESIVE

Apply to all transverse joints and all longitudinal joints in surface course:
Sta. 102+65 to Sta. 102+81
Sta. 103+54 to Sta.103+69

ITEM 482.31 SAWING AND SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES

Apply to all transverse joints and all longitudinal joints in surface course:
Sta. 102+65 to Sta. 102+81
Sta. 103+54 to Sta.103+69

ITEM 505. GRANITE CURB TYPE VA5 – STRAIGHT

Install at each of the transitions to bridge rail

ITEM 620.12 GUARDRAIL, TL-2 (SINGLE FACED)

Sta. 101+23 LT to Sta. 102+35 LT
Sta. 102+35 LT to Sta. 102+69 LT
Sta. 103+95 LT to Sta. 104+29 LT

Sta. 101+02 RT to Sta. 102+39 RT
Sta. 104+00 RT to Sta. 104+25 RT

TEM 627.82 GUARDRAIL TANGENT END TREATMENT, TL-2

Sta. 100+98 LT to Sta. 102+35 LT
Sta. 100+76 RT to Sta. 101+02 RT
Sta. 104+29 LT to Sta. 104+53 LT
Sta. 104+25 RT to Sta. 104+50 RT

ITEM 628.24 TRANSITION TO BRIDGE RAIL

Sta. 102+35 LT to Sta. 102+69 LT
Sta. 103+62 LT to Sta. 103+95 LT
Sta. 102+39 RT to Sta. 102+73 RT
Sta. 103+66 RT to Sta. 104+00 RT

ITEM 669. FENCE REMOVED AND STACKED

Sta. 103+45 to Sta. 104+54

ITEM 751. LOAM FOR ROADSIDES

Sta. 100+87 LT to Sta. 101+48 LT
Sta. 103+95 LT to Sta. 104+55 LT
Sta. 104+73 LT to Sta. 107+30 LT
Sta. 100+63 RT to Sta. 101+48 RT
Sta. 103+95 RT to Sta. 107+30 RT

ITEM 751.7 COMPOST BLANKET

Sta. 100+87 LT to Sta. 101+48 LT
Sta. 103+95 LT to Sta. 104+55 LT
Sta. 104+73 LT to Sta. 107+30 LT
Sta. 100+63 RT to Sta. 101+48 RT
Sta. 103+95 RT to Sta. 104+65 RT

ITEM 767.122 SEDIMENT CONTROL BARRIER-COIR LOGS

For installation of coir logs and sedimentation fence at limits of clearing and grubbing, as shown on Construction Plans:

Sta. 100+81 LT to Sta. 103+13 LT
Sta. 103+42 LT to Sta. 103+99 LT

Sta. 100+60 RT to Sta. 102+55 RT
Sta. 103+40 RT to Sta. 104+30 RT

For installation of compost filter tubes and sedimentation fence at limits of wetland replication area, as shown on Construction Plans:

Sta. 104+30 RT to Sta. 105+71 RT

ITEM 767.91 TIMBER MATTING

For use to support equipment during construction when working in wetlands between Sta. 100+60 and Sta. 102+80

ITEM 769. PAVEMENT MILLING MULCH UNDER GUARDRAIL

Sta. 100+98 LT to Sta. 101+23 LT
Sta. 101+23 LT to Sta. 102+35 LT
Sta. 102+35 LT to Sta. 102+69 LT
Sta. 103+62 LT to Sta. 103+95 LT
Sta. 103+95 LT to Sta. 104+29 LT
Sta. 104+29 LT to Sta. 104+53 LT

Sta. 100+76 RT to Sta. 101+02 RT
Sta. 101+02 RT to Sta. 102+39 RT
Sta. 102+39 RT to Sta. 102+73 RT
Sta. 103+66 RT to Sta. 104+00 RT
Sta. 104+00 RT to Sta. 104+25 RT
Sta. 104+25 RT to Sta. 104+50 RT

ITEM 832. WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A)

For OM3-L and OML-R signage at the ends of the bridge

Sta. 100+58 LT
Sta. 103+71 LT
Sta. 102+62 RT
Sta. 103+77 RT

ITEM 833.7 DELINEATION FOR GUARDRAIL TERMINI

Sta. 100+98 LT to Sta. 102+35 LT
Sta. 100+76 RT to Sta. 101+02 RT
Sta. 104+29 LT to Sta. 104+53 LT
Sta. 104+25 RT to Sta. 104+50 RT

ITEM 847.1 SIGN SUP (NOT GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL

For sign supports for Item 832

Sta. 100+58 LT
Sta. 103+71 LT
Sta. 102+62 RT
Sta. 103+77 RT
Sta. 106+97 LT

ITEM 853.2 TEMPORARY BARRIER (TL-2)

For use in closing Kelsey Road at each side of closed bridge

ITEM 874.4 TRAFFIC SIGN REMOVED AND STACKED

Sta. 102+06 RT (Weight Limit/Narrow Bridge)
Sta. 104+86 LT (Weight Limit/Narrow Bridge)
Sta. 107+47 LT (Weight Limit)
Intersection of Foley Road (Weight Limit)

ITEM 983.1 RIPRAP

Sta. 101+48 to Sta. 102+70
Sta. 103+67 to Sta. 103+95

ITEM 983.521 STREAMBED/BANK RESTORATION MATERIAL

Sta. 102+84 ± to Sta. 103+20 ±
Sta. 103+43 ± to Sta. 103+50 ±

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PROJECT UTILITY COORDINATION FORM

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Project Utilities Coordination (PUC) Form

CONTACTS AND GENERAL UTILITY INFORMATION

Printed: 6/2/2026

City/Town:	Project File #:	PUC Completed by:	Utility Pole Set:	
Sheffield	609068	Justin Daigle, EIT	National Grid	
Route/Street:	**Resident Engineer:**	**Mass DOT PM:**	**Scheduled Ad Date:**	**Total Poles Relocated:**
Kelsey Road over Schenob Brook	*TBD*	Joshua Bartus	8/15/2026	7

Consultant:	Contact:	Cell #	Office #	Email
Gannett Fleming Engineers and Architects, P.C.	Thomas Daley	(617) 276-5125	(781) 410-3930	tdaley@gfnet.com

Utility Company	Contact	Office #	Cell #	Email	Scope, Budget, Duration Submitted		Reimbursement			Potential for District Initiated Early Relocation *		Utilities On Bridge/Structure		Utilities Underground (UG) /Aerial (OH)	
					Yes	No	Agreement	Non-Reimb'le	Notes	YES	NO	YES	NO	UG	OH
National Grid	Steve Hayward	(413) 923-8956		steven.hayward@nationalgrid.com	X		X				X		X		X
Pike (Verizon)	Kyle Sawin		(413) 362-9346	Ksawin@Pike.com	X		X				X		X		X
National Grid	Manny Munoz		(401) 895-9726	Manuel.Munoz@nationalgrid.com											
Verizon	Paul Styspeck	(413) 787-1845	(413) 575-7058	paul.m.styspeck@verizon.com											

Utility Relocation Notes for MassDOT Contractor

Unless otherwise noted by Contract, the MassDOT Contractor is to provide the District Construction Office with 7 Calendar Days advance notification in order to validate the current progress and provide the required 90 Days advance notice-to-proceed for the first Utility - and each subsequent Utility. These advance notifications are to be identified in the Contractor's Schedules (Pre-Con preparation, Baseline, Subnets, and Updated/Monthly Schedules) as specified in Subsection 8.02 (for DBB Contracts) and/or Section 9 (of DB Contracts). Note: The durations included below do not include these lead-times. See Additional 'Important Basis notes for Contractor' - on last PUC Form page.

Additional notes:

Suggested Sequence of Relocation (Based on Consultant proposed construction staging)

The sequence as detailed on the following pages is based on the consultants proposed staging plan. This information was compiled through meetings that included all of the utilities listed below along with the designer and the Town of Sheffield. The information provided is the best available information prior to project advertisement.

Proposal No. 609068-136649

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

6/2/2026
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massDOT Massachusetts Department of Transportation Highway Division

	RESPONSIBLE PARTY		DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)	Concurrent / Exclusive Utility Work Contractor note: In planning and executing the work, the Access Restraints listed in the Special Provisions, takes precedence over the checklist in these 4 columns.				Access Restraint & Limitations of Operations Notes Should an AR be considered for the Contractor ?	
					Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site	Contractor Concurrent		
	C = Contractor	U = Utility Co.			Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility is	Contractor and Utility are working on-site - but NOT in the same vicinity	Potential Access Restraint (Yes/No)	Reason/Note (optional)
Phase 1	C		Enabling' work by the Contractor - **90 Calendar Day Lead Time - Supply Chain Delays** - 7 working days should be provided for review, acceptance, and issuance of utility NTP's - after receipt of acceptable Fragnet or baseline schedule - 10 working days shall be provided for MassDOT to stake pole locations. (The Contractor should be made aware that poles will not be restaked, and all efforts should be made to maintain or offset pole locations, and any missing stakes required for poles or anchors must be set by the Contractor.) - Contractor to setup and hold a site utility meeting to confirm pole locations at least 30 days before the start of utility work. -National Grid will need 10 days after final staking of the poles to clear their DIG-SAFE.							
			UTILITY OPERATIONS - Pole Set / Temporary Overhead Relocation							
Task: 1			***Utility Co. - National Grid***							
	U		Poles / Anchors	8	X		X		Yes	
	U		Framing / Overhead Conductor	5	X		X		Yes	
			Sub-Total	**13**						
Task: 2			***Utility Co. - Verizon***							
	U		Verizon Construction - Place new guywires and associated equipment	2	X		X		Yes	
	U		Verizon Line - Place new 10M strand where necessary	2	X		X		Yes	
	U		Verizon Splice - Trim out CU cable and modulize cable ends	3	X		X		Yes	
	U		Verizon Line - Transfer all cables and associated equipment to new poles	5	X		X		Yes	
	U		Verizon Line - Remove old CU drop and CU terminal	2	X		X		Yes	
	U		Verizon Construction - Remove old poles, guying and anchors	3	X		X		Yes	
			Sub-Total	**17**						
Phase 2	C		Enabling' work by the Contractor - *30 Calendar Day Lead Time - Supply Chain Delays* - 5 working days shall be provided for MassDOT to stake final stub pole location. - Contractor to complete bridge erection - National Grid will need 10 days after final staking of the poles to clear their DIG-SAFE. - Final Stub Pole should be set prior to installation of guardrail to prevent cutting off access for utility to remove Temporary Push Brace							
Task: 1			***Utility Co. - National Grid***							
	U		Poles / Anchors	2	X		X		Yes	
	U		Framing / Overhead Conductor	2	X		X		Yes	
			Sub-Total	**4**						
Task: 2			***Utility Co. - Verizon***							
	U		Verizon Construction - Remove Temp Push Brace (Added separately from Force Account per email with Paul Styspeck on 1/28/26)	1	X		X		Yes	
			Sub-Total	**1**						

IMPORTANT BASIS NOTES - FOR CONTRACTOR

1	Unless otherwise specified in the MassDOT Construction Contract, or unless specifically noted within this PUC Form, these durations (herein) are based upon the Contractor providing *unimpeded access* to the Utility company to perform Utility relocations (see Note 5 - Access).
2	"Concurrent Utilities" operations noted herein, are to signify those Utility Company operations that can be worked concurrently (e.g. Utility A and Utility B work on-site together) - MassDOT and the Contractor are to prepare NTPs to Utilities accordingly.
3	"Potential Access Restraints" noted within this PUC Form are for planning purposes. See MassDOT Contract for Contractual Access Restraints (refer to Subsections 8.02, 8.03, and/or 8.06 for Design Bid Build Contracts and Volume II Section 9 for Design Build Contracts).
4	Utility non-work periods - For planning purposes, the durations above contain some non work days (contingency) for New England conditions (precipitation, high temperatures, low temperatures, snow, ice). Gas line work 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 noted).
5	Access - Unless otherwise noted in the Contract, and in addition to the 'enabling' notes above, the Contractor must provide safe and unimpeded access (for trucks, lifts, cranes, etc.) to the Utilities, to allow for the proposed relocation(s) - including but not limited to snow removal, clearing and grubbing, guard rail removal, barrier removal, tree removal, and grading. Any costs associated with these tasks are deemed to be incidental to the project.
6	For all MassDOT construction contracts issued after January 2014, the new Utility Coordination/documentation specification is required. This is Section 8.14 in Design-Bid-Build Contracts (see Design-Build index reference for applicable section #).
7	Prior to starting any and all enabling work for Utilities, the Contractor is to plan in advance with submittals and approved durations.
8	* Potential District Initiated Early Utility Relocation - if noted herein, the District reserves the right to initiate early utility relocation in advance of the Contract NTP. In submitting a bid price and in the development/basis of the 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.

Proposal No. 609068-136649

DOCUMENT A00810

MassDOT Herbicide Use Report

Proposal No. 609068-136649

MassDOT Herbicide Use Report

Date Submitted:

Use multiple sheets for multiple application techniques or sites as needed.

Contractor Performing Work:

Project or Contract No:

Town/s:

Associated Route:

Project Description:

MDAR ALERT*:

Treatment Description:

Area Treated (as applicable)

Acres: **Sq Yds:** **Miles:**

Weeds Targeted:

Gallons Formula Used:

Application Method:

Date/Time Began:

Date/Time End:

Product Used:

Name: _____	Name: _____	Name: _____
EPA Reg. No: _____	EPA Reg. No: _____	EPA Reg. No: _____
% Active Ingredient	% Active Ingredient	% Active Ingredient
Dry: _____	Dry: _____	Dry: _____
Liquid: _____	Liquid: _____	Liquid: _____
Formulation (dilution rate): _____	Formulation (dilution rate): _____	Formulation (dilution rate): _____

Additional products used (surfactants, etc.) or other information:

Applicators: **License Numbers:**

* Please note:
EDRR Species (MAM, Hogweed, Pepperweed, Kudzu, etc.)
Tree of Heaven 1) stands of >20 trees; 2) >5 trees near nursery, landscape company, or highway rest area where trucks stop

Upon completion, please submit form to MassDOT District Engineer and Landscape Design Section in Boston office.

07/18/2018

DOCUMENT A00811

WATERING LOG
for
MassDOT Plantings

Watering Log for MassDOT Plantings

Project Description:

Contract No:

Project No:

Plant Locations/s: (Attach planting plan/s as necessary)

Notes:

	Separate logs shall be kept to track areas or plants with different watering schedules. Trees shall receive a minimum of 10 gallons with each watering and shrubs a minimum of 5 gallons. Provide note that if watering is not performed as scheduled due to rain. Record date of rainfall and amount.												
Date Watered													
Landscape Contractor Initial													
Prime Contractor Initial													
Date Watered													
Landscape Contractor Initial													
Prime Contractor Initial													

Each week, following watering, Log shall be submitted to the MassDOT Engineer.

6/15/2018

DOCUMENT 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: SHEFFIELD Project File Number: 609068

Contract Number: 136649

Project Description: Bridge Replacement, S-10-015, Kelsey Road over Schenob 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
Permit Application

And

MASSACHUSETTS
Department of Environmental Protection

Water Quality Certificate Application

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BRP WW 10: Major Fill Project
Water Quality Certification Permit Form

for

609068 Sheffield – Kelsey Road Bridge Replacement
Sheffield, Massachusetts

April 2026

Prepared For:
Massachusetts Department of Transportation Highway Division
10 Park Plaza
Boston, Massachusetts 02216

Prepared By:
Comprehensive Environmental Inc.
41 Main Street
Bolton, Massachusetts 01740

Gannett Fleming Inc.
175 Federal Street Suite 800,
Boston, MA 02110

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Phillip Eng, Interim MassDOT Secretary
Jonathan L. Gulliver, Undersecretary and Highway Administrator

MassDOT
Massachusetts Department of Transportation
Highway Division

April 3, 2026

Heidi Davis
Massachusetts Department of Environmental Protection
Highway Unit Supervisor
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Water Quality Certification
Kelsey Road over Schenob Brook
Bridge Replacement (Bridge No. S-10-015)
Sheffield, MA
MassDOT Project 609068
Transmittal #XXXXXX BRP WW10 for Major Fill

Dear Ms. Davis,

The Massachusetts Department of Transportation, Highway Division (MassDOT) is submitting this 401 Water Quality Certification (WQC) application for the replacement of a bridge over Schenob Brook on Kesley Road in the Town of Sheffield, MA. MassDOT is the main project proponent/applicant for the WQC, acting through its agent Comprehensive Environmental Inc. (CEI). This project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement design is substantially the functional equivalent of, and in similar alignment to, the existing bridge.

MassDOT is replacing bridge No. S-10-015 on Kelsey Road over Schenob Brook with a new substructure and superstructure of larger capacity due to structural concerns. The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. The bridge and approach slabs will have an asphalt riding surface; beyond the approach slabs the roadway approaches will remain gravel. The bridge replacement project requires a 401 WQC and authorization under Section 404 Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering as it will permanently and temporarily disturb approximately 38 square feet (sf) and 292 sf of Land Under Water associated with Schenob Brook. The project will permanently and temporarily impact 7,635 sf and 14,163 sf of Bordering Vegetated Wetlands. Additionally, the project will permanently and temporarily impact 182 linear feet (lf) and 75 lf of Bank.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

A pre-filing meeting for this project was held on December 18, 2025 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 subject project, please contact me at (857) 262-0757 or by email at courtney.l.walker@dot.state.ma.us.

Sincerely,

Courtney Walker

Courtney Walker
Wetlands & Water Resources Coordinator
MassDOT Highway Division, Environmental Services

Cc: Josh Bartus, MassDOT
Ryan Hale, MassDEP
Kevin Newton, US Army Corps of Engineers
Jaime Iannelli, MassDEP
Tyler Lewis, MassDEP
Dan Vasconcelos, US Army Corps of Engineers
Don Ward, Sheffield Conservation Commission
Lily Collins, MassDOT Wetlands

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Attachment I – Additional Documents

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Contact:
Energy and Environmental Affairs, MASSDEP
Energy and Environmental Affairs, MDAR
Energy and Environmental Affairs, DCR

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Instructions

* indicates a required field.

Permittee

"Permittee" is the individual, or individual authorized by a company/organization submitting the application and the authorization will be issued in their name.
If you are the Permittee you may click on "Add New" button and select the checkbox on the top "Use Login Information" and click "Continue".

If you are a consultant, engineer, attorney, or other representative who is preparing the application on behalf of the Permittee you are an "Application Contact". Do not enter your name or contact information in the fields for the Permittee.

• If the Permittee has an EEA ePLACE account and they will be contributing to the Application process, click "Look Up" button, search and select the appropriate Permittee.
• If the Permittee does not have an EEA ePLACE account and will not be contributing to the Application process, click "Add New" button and enter the Permittee information on their behalf.
• If there are multiple Permittees, please enter information for one primary Permittee here and add any additional Permittees in the "Application Contact" section.

An application will not be processed without valid contact information for the Permittee that includes their mailing address and phone number or email address.

Permittee:

MassDOT Highway Division
10 Park Plaza
Boston, MA, 02116
Telephone #: 857-368-8807 Email: Courtney.l.walker@dot.state.ma.us

Edit or View Remove

Application Contacts

An "Application Contact" is an individual or organization who is a party to the application (in addition to the Permittee), or who is contributing to the application. For example, a Property Owner, Additional Permittee etc.,

To add the contact, click "Add New" button and enter their Contact information.

Add New

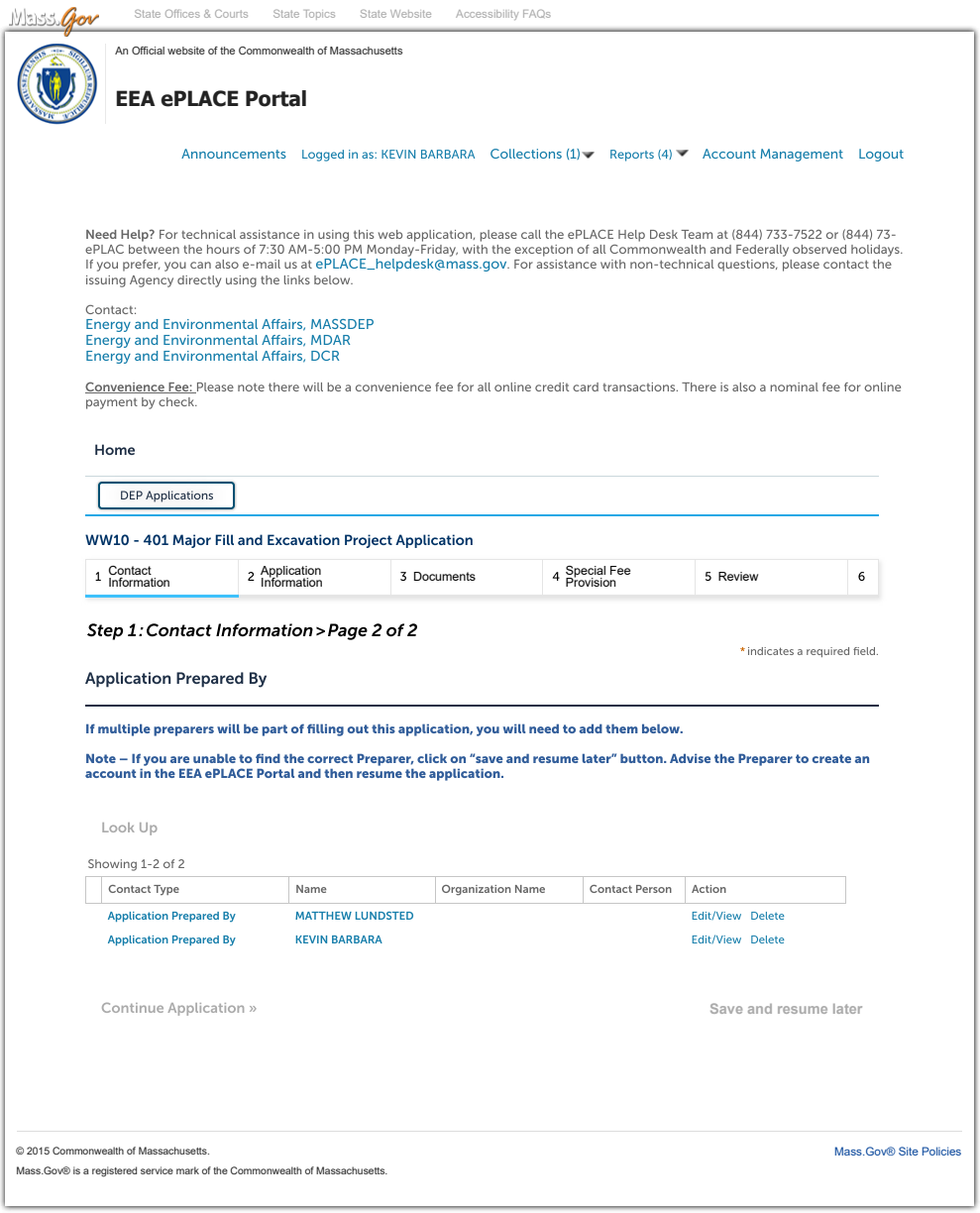
Showing 1-1 of 1

Contact Type	Name	Organization Name	Contact Person	Action
Permittee Company		Massachusetts Department of Transportation	Courtney Walker	Edit/View Delete

Continue Application »

Save and resume later

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Announcements Logged in as: KEVIN BARBARA Collections (1) Reports (4) Account Management Logout

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Contact:
Energy and Environmental Affairs, MASSDEP
Energy and Environmental Affairs, MDAR
Energy and Environmental Affairs, DCR

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* indicates a required field.

Application Prepared By

If multiple preparers will be part of filling out this application, you will need to add them below.

Note – If you are unable to find the correct Preparer, click on "save and resume later" button. Advise the Preparer to create an account in the EEA ePLACE Portal and then resume the application.

Look Up

Showing 1-2 of 2

Contact Type	Name	Organization Name	Contact Person	Action
Application Prepared By	MATTHEW LUNDSTED			Edit/View Delete
Application Prepared By	KEVIN BARBARA			Edit/View Delete

Continue Application » Save and resume later

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Instructions

* indicates a required field.

Primary Project Location

If the project site does not have a traditional physical address, please enter Street Number as "0" Street Name as "N/A" and enter the latitude and longitude coordinates.

To find the latitude and longitude information, type in your address on Search Google Maps - Right click on your location pin and select "What's here?"

The information will be displayed at the bottom of your page. The format should be in decimal degrees (i.e. Latitude XX.XXXXXX Longitude XX.XXXXXX) Please do not include the "-" sign with the longitude.

*

Name of the Waterbody:
Schenob Brook

*Street #: 0
*Street Name: Kelsey Road
Street Name 2:

*City: Sheffiled
*State: MA
*Zip: 01257-

Latitude*: 42.065663
Longitude*: 73.39769

Clear

Other Primary Location Info

*Parcel ID: 00000

*Municipality : SHEFFIELD

Project Information

Project Name: Kelsey Road Bridge Replacement over Schenob Brook

*Proposed Activity:
This project involves the replacement of the existing bridge, No. S-10-015, in the same location with a new substructure and superstructure of larger capacity. The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U- wingwalls.

*Will the project occur in multiple municipalities?:
○ Yes ◉ No

Additional Project Sites

Additional Project Sites

Showing 0-0 of 0

	Municipality	Property Description	
No records found.			

Add a Row | Edit Selected Delete Selected

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Project Type

Commercial / Industrial:
☐
Utility:
☐
Real Estate Subdivision:
☐
Institutional:
☐
Other:
☑
* Please provide additional information for the selection of your project type:

Transportation - Bridge and roadway replacement completed for MassDOT

Proposed Areal Extent Info

Proposed Areal Extent of "Discharges of Dredged or Fill Material", including "redeposit of dredged or excavated material" to "Waters of the United States within the Commonwealth".

Report the areal extent, as expressed in square feet, of all proposed "discharges of dredged or fill material", including "redeposit of dredged or excavated material", both temporary and permanent, to each category of "Waters of the United States within the Commonwealth" below:

* Bordering Vegetated Wetland (sqft):
21798
* Isolated Vegetated Wetland (sqft):
0
* Non-tidal Land Under Water (sqft):
330
* Salt Marsh (sqft):
0
* Land Under the Ocean (sqft):
0
* Intertidal Zone (sqft):
0
Total cumulative loss (sqft):
22128

Continue Application »

Save and resume later

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Instructions

For additional details regarding the compliance, please visit mass.gov.

* indicates a required field.

Compliance With 314 CMR 9.00

*Does the proposed project meet the definition of a Single and Complete Project at 314 CMR 9.02?:
(●) Yes ( ) No

*Does the proposed project include "multi-phased activities"?:
(●) Yes ( ) No

*Does the proposed project meet the definition of an Ecological Restoration Project?:
( ) Yes (●) No

*Have you completed the Public Notice as per 314 CMR 9.05(3)? If yes, please attach a completed 'Proof of Public Notice' document in the document section.:
( ) Yes (●) No

Does the required Alternatives Analysis screen all practicable alternatives to the proposed discharge that would have less adverse impact on the aquatic ecosystem?:
(●) Yes ( ) No

*Does this proposed project meet the definition of Water-Dependent at 314 CMR 9.02?:
(●) Yes ( ) No

*Is the proposed project restricted to access to one dwelling unit?:
( ) Yes (●) No

*Will the cumulative discharges of dredged or fill material to Waters of the United States within the Commonwealth exceed 1 acre in areal extent?:
( ) Yes (●) No

*Report the areal extent, as expressed in square feet, of all proposed restoration or replication of Bordering Vegetated Wetlands and/or Isolated Vegetated Wetlands:
9,125

*Will any proposed discharges of dredged or fill material or any proposed restoration or replication occur within Rare Species Habitat as defined at 314 CMR 9.02?:
(●) Yes ( ) No

*If yes, does the Permittee presently hold a "no adverse effect determination" and/or a "no take determination", or a Conservation and Management Permit from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife? Also, please attach a document 'NHESP Determination Letter or Conservation Management Permit' in the document section.:
(●) Yes ( ) No

NHESP File Number (if available):
24-18666

Date of NHESP Determination Letter:
12/31/2025

*Will the proposed project include or consist of the construction of a new non-tidal crossing of any Land Under Water? :
( ) Yes (●) No

*Will the proposed project include or consist of the construction of a new tidal crossing of any Land Under Water?:
( ) Yes (●) No

*Will the proposed project include or consist of the repair, replacement, and/or expansion of an existing non-tidal crossing of any Land Under Water? :
(●) Yes ( ) No

If yes, will such repair, replacement, and/or expansion of an existing crossing comply with the Massachusetts River and Stream Crossing Standards (March 8, 2012) to the maximum extent practicable (see Practicable at 314 CMR 9.02)?: *
(●) Yes ( ) No

*Will the proposed project include or consist of the repair, replacement, and/or expansion of an existing tidal crossing of any Land Under Water?:
( ) Yes (●) No

* Does the proposed project include any amount of discharges of dredged or fill material to any Outstanding Resource Water?:
( ) Yes (●) No

*Will any proposed "discharge of dredged or fill materials" occur within any certified Vernal Pool (as defined at 314 CMR 9.02)? :
( ) Yes (●) No

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* indicates a required field.

Additional Information

*Is your project subject to Massachusetts Environmental Policy Act (MEPA)?:
○ Yes ◉ No

*Is your project subject to Massachusetts Wetlands Protection Act?:
○ Yes ◉ No

*Is your project subject to Massachusetts Public Waterfront Act?:
○ Yes ◉ No

*Is your project subject to Massachusetts Historical Commission?:
◉ Yes ○ No

MHC File Number (if available):

Date of MHC Determination Letter (if available):
12/09/2024

*Is your project subject to Massachusetts Bureau of Underwater Archeological Resources?:
◉ Yes ○ No

BUAR File Number (if available):

Date of BUAR Determination Letter (if available):
12/09/2024

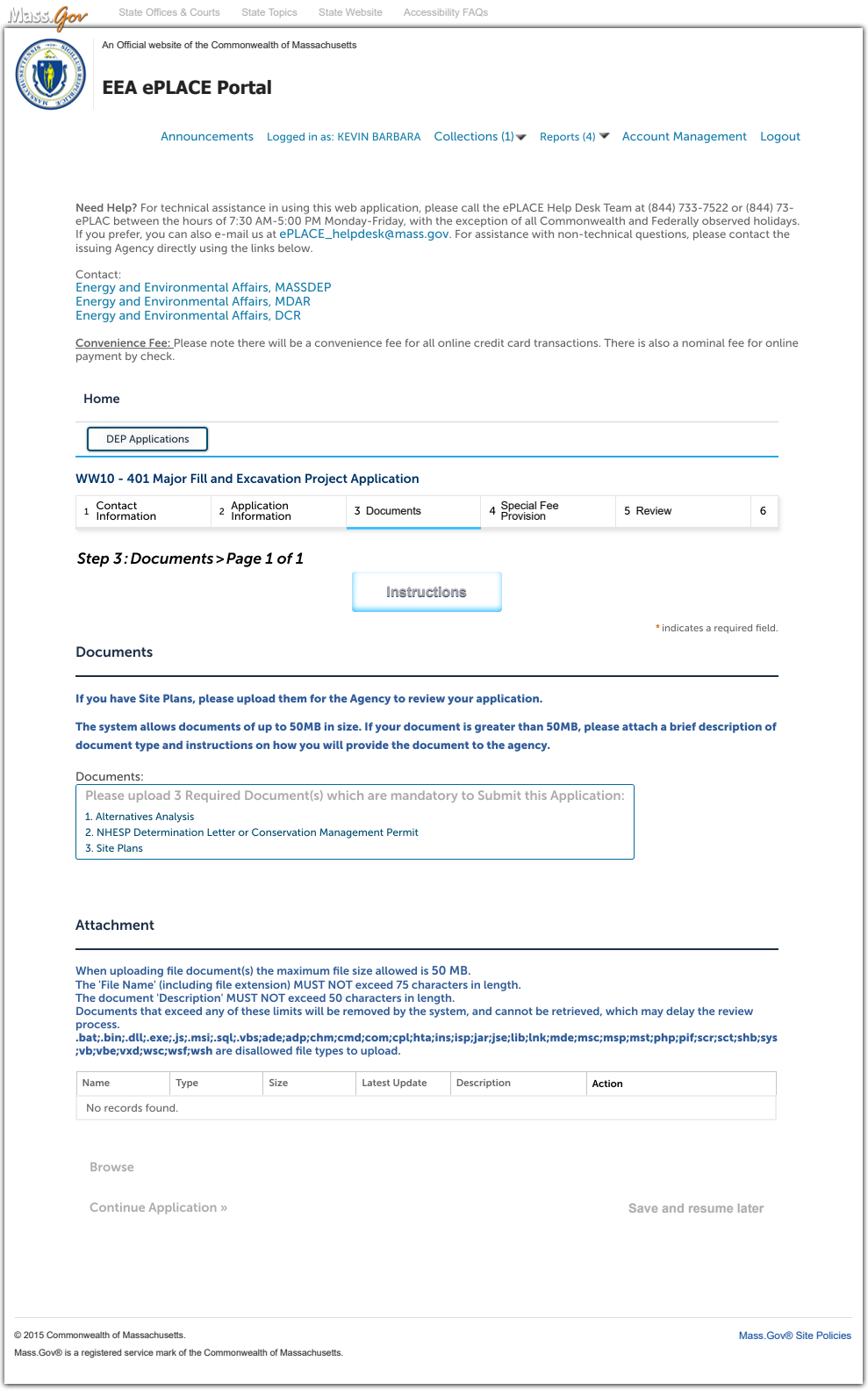
*Is your project subject to U.S. Army Corps of Engineers – Section 404 of Federal Clean Water Act?:
◉ Yes ○ No

USACE File Number (if available):

Date of USACE PCN Authorization (if available):
MM/DD/YYYY

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Documents

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Documents:

Please upload 3 Required Document(s) which are mandatory to Submit this Application:
1. Alternatives Analysis
2. NHESP Determination Letter or Conservation Management Permit
3. Site Plans

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PUBLIC NOTICE

Massachusetts Department of Environmental Protection
Division of Wetlands and Waterways
MassDEP Boston Office
100 Cambridge Street Suite 900
Boston, MA 02114

Pursuant to 33 U.S.C. 1341 and M.G.L. c. 21 §§ 26 - 53, notice is given of a 401 Water Quality Certification application for the replacement of Bridge #S-10-015, Kelsey Road over Schenob Brook in Sheffield, Massachusetts by the Massachusetts Department of Transportation – Highway Division, Ten Park Plaza, Room 7360, Boston, MA 02116. The purpose of the project is to provide roadway improvements to enhance vehicular safety and increase bridge capacity. The project proposes replacing the existing substructure and superstructure with four prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. Additional information may be obtained from the Massachusetts Department of Transportation – Highway Division at the above address, attention Courtney Walker, or by emailing Courtney.L.Walker@dot.state.ma.us. Written comments should be sent to Heidi Davis, MassDEP Wetlands Program, 100 Cambridge Street, Suite 900, Boston, MA 02114 or heidi.davis@mass.gov within twenty-one days of this notice.

Any group of ten persons, any aggrieved person, or any governmental body or private organization with a mandate to protect the environment who submits written comments may appeal the Department's Certification. Failure to submit written comments before the end of the public comment period may result in the waiver of any right to an adjudicatory hearing.

Project Narrative

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

1. Introduction

The Massachusetts Department of Transportation (MassDOT) Highway Division is planning the replacement of the existing Kelsey Road bridge (Bridge No. S-10-015) superstructure and substructure over Schenob Brook, due to structural deficiencies. The resource areas surrounding the existing structure consist of Bank, Land Under Water (LUW), and Bordering Vegetated Wetlands (BVW). Both permanent and temporary impacts are expected throughout construction. Mitigation measures are proposed to minimize these impacts including: constructing a wetland replication area, creating LUW from cutting roadway to install the larger span/opening bridge, implementing an invasive species management plan, and riprap lined side slopes to minimize the extents of lateral slope limits. As part of the permitting process for this project, a Water Quality Certification (WQC) is being filed with the Massachusetts Department of Environmental Protection (MassDEP). Additionally, a Pre-Construction Notification (PCN) is being filed concurrently with the Army Corps of Engineers. MassDOT is the main project proponent/applicant for the WQC, acting through its agent Comprehensive Environmental Inc. (CEI). The project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement is substantially the functional equivalent of, and in similar alignment to, the existing bridge. Therefore, the project is exempt from permitting through the Wetlands Protection Act (WPA), Chapter 91, and Massachusetts Environmental Policy Act (MEPA) permitting are exempt. Required permits for this project include the MassDEP Water Quality Certification (BRP WW 10) and U.S. Army Corps (USACE) Pre-Construction Notification under the Massachusetts Section 404 Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering.

2. Existing Conditions

The project is located in Massachusetts Department of Transportation (MassDOT) District 1, in the Town of Sheffield, Massachusetts in the southern part of Berkshire County.

Kelsey Road is an unpaved rural local road running primarily east/west between South Undermountain Road (MA Route 41) to the west and Barnum Street to the east. There are existing overhead, pole-mounted utility lines (electric and communications) running along the length of Kelsey Road. There are no underground utilities. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent floodplain wetlands along the outside shoulders.

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

Schenob Brook flows from south to north beneath the bridge. The main channel of Schenob Brook is restricted by the bridge at Kelsey Road where it flows full from abutment face to abutment face. The clear opening is approximately 20' wide by 5'-6" high at its deepest point. The observed water depth is approximately 20"; there is approximately 3'-9" of vertical clearance between the observed water surface and low chord of the bridge. The brook turns 90° to the northwest, just north of the bridge and runs roughly parallel to Kelsey Road for approximately 150' before turning again sharply to the northeast. The bankful width of the Schenob Brook is 42'. A Stream Visual Assessment Protocol (SVAP) form was completed during an initial in-field stream evaluation in early September of 2025 and is included in **Attachment I**. Information within this form is strictly for illustrating stream features.

Two additional floodplain culverts pass under Kelsey Road, west of the bridge at distances of approximately 40' (66" diameter corrugated metal pipe) and 150' (48" x 72" elliptical corrugated metal pipe) northwest of the west abutment. The culverts allow flow from two floodplain wetlands to pass beneath the west. These two culverts don't connect to the main stem of the channel and lack clear bank definition on all sides.

The existing bridge was constructed in 1915 and is owned and maintained by MassDOT. The single-span structure is approximately 23 feet long and carries a gravel surfaced roadway approximately 13 feet wide. 9½" wide concrete curbs are located on each side of the bridge along with bridge railings consisting of a single timber rail bolted to steel I-shaped posts. There are no sidewalks along the bridge or roadway approaches. The out-to-out bridge width is 14'-8".

The bridge superstructure consists of five rolled steel beams with a cast-in-place concrete jack arch deck encasing the beams. The jack arches are formed by stay-in-place, half- round, corrugated steel pipes supported by the beam bottom flanges. The concrete deck is topped by approximately 6" of gravel riding surface. The substructure consists of cast-in- place concrete abutments with monolithic, flared wingwalls.

Overall, the bridge structure is in poor to satisfactory condition and the bridge is posted for reduced weight limits based on section loss to the south exterior beam.

The resource areas surrounding the existing structure consists of Bank, LUW and BVW. A wetland delineation was conducted throughout the project area on August 18, 2025, by Comprehensive Environmental Inc's wetland scientists.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsey Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The

delineated wetland resource areas along this crossing include areas with BVW and Bank, as seen in **Attachment G**. The area surrounding the site is predominantly forest to the north and agriculture to the south. Topography of the site is moderately sloped towards these resource areas. The area was delineated using the A, B, C, D and RB series of flags. Flags RB-01 through RB-10 and RB-100 through RB-111 represent Bank. Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 represent BVW.

A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. A moderately dense canopy exists dominated by American elm (*Ulmus americana*), hemlock (*Tsuga canadensis)* and black willow (*Salix nigra)*. Shrubs in the understory include winterberry holly (*Ilex verticillate),* highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Swida amomum*), green ash (*Fraxinus pennsylvanica*), and saplings from the canopy. The herbaceous stratum of the BVW includes jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Joe-Pye weed (*Eutrochium fistulosum*), purple loosestrife (*Lythrum salicaria*), reed canary 2 grass (*Phalaris arundinacea*), narrow leaved cattails (*Typha angustifolia*), dotted smartweed (*Persicaria punctata)*, cardinal flower (*Lobelia cardinalis*) and sedges (*Carex* spp.)

The upland/wetland boundary to the BVW was delineated in the field using flags:

- A-WF-01 through A-WF-08 are along the northwest boundary of the floodplain.
- B-WF-01 through B-WF-08 are along the northeast boundary of the floodplain.
- C-WF-01 through C-WF-06 are along the southwest boundary of the floodplain.
- D-WF-01 through D-WF-05 are along the southeast boundary of the floodplain.

Bank was delineated in the field through observation of vegetation change, bank cutting, water-stained leaves, shelving, and wrack lines. The banks of Schenob Brook were approximately three feet high with a channel 20 to 30 feet wide. Water was slowly flowing northeast at the time of inspection with depths of over six feet in portions of the thalweg.

- Flags RB-01 through RB-10 delineate the mean annual high-water mark along the southern bank of the brook.
- Flags RB-100 through RB-111 delineate the mean annual high-water mark along the northern bank of the brook.

According to USDA soil surveys (Attachment A), the site is underlaid with soils consisting of moderately sloped, Farmington-Rock outcrop complex (108C) and Amenia silt loam

(500C) in the upland areas and nearly level, frequently flooded Saco silt loam (5A) in the BVW and brook. A detailed Wetland Delineation Report is included in **Attachment G**.

The bridge is not located within any Outstanding Resource Waters (ORW), certified vernal pools, within 0.25 miles of a National Wild Scenic River, or near any federal lands. It is however located within the following resource areas: Area of Critical Environmental Concerns (ACEC) – Schenob Brook Drainage Basin, a Zone II- Mountain Water Systems Inc, and Natural Heritage & Endangered Species (NHESP) Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674. Schenob Brook is a Coldwater Fishery. Maps of these resources are located in **Attachment C**.

There are Section 7 Endangered Species found within project limits: the Northern Long-eared Bat (*Myotis septentrionalis)*, the Tricolored Bat (*Perimyotis subflavus)*, the Bog Turtle (*Glyptemys muhlenbergii)*, and the Monarch Butterfly, *Danaus Plexippus.* A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. In coordination with MassDOT, the Natural Heritage and Endangered Species Program (NHESP) received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed species. See **Attachment D** for all species determination letters. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS. A Turtle Protection Plan is found in **Attachment G.**

The United States Federal Emergency Management Agency (FEMA) Flood Map Service Center's online map viewer indicates that the existing bridge is within Zone A/Areas of 100-Year flood; base flood elevations and flood hazard factors not determined. Therefore, the No-Rise evaluation is not required for this project. See **Attachment C**.

The project area was reviewed for invasive species in mid-Summer of 2025. Asian Bittersweet, Multiflora Rose, Japanese Bittersweet, and Autumn Olive were observed throughout the project site.

3. Proposed Conditions

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

This project involves the replacement of the existing bridge, No. S-10-015, in the same location with a new substructure and superstructure of larger capacity. This increase in capacity will yield a net gain in LUW. A Preliminary Hydraulic Analysis was conducted to determine requirements for the proposed bridge hydraulic opening. The low chord of the existing bridge is at an elevation of 674.68'. The low chord of the proposed bridge will be at an elevation of 674.21; the 10-year and 100-year flood elevations are 677.83 and 678.73, respectively. The existing bridge is therefore subject to overtopping during flood events. Alternative bridge designs assumed that the existing low chord elevation would be maintained – increasing this elevation so that it would be above the flood elevations would require a four foot increase in the roadway profile which would push the limits of side slope grading an additional six or more feet beyond the proposed limits along the approach roadways adjacent to wetlands. It was estimated that this would result in an additional 4,700 square feet or more of permanent wetland impacts, which was deemed unacceptable. Based on these controlling criteria, the proposed structure will have a span length of 66.98'. With a bankful width of 42', this span length exceeds the minimum requirements for meeting the 1.2 bankful width standards in accordance with Massachusetts Stream Crossing Standards (SCS). Wildlife shelving on both sides of the bank within the crossing are proposed, tying back to the existing Banks on all corners post construction.

The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. The bridge railings will be concrete CT-TL2 barriers. The total out-to-out structure width will be 16.56' as measured along the length of the stream. With a cross-sectional area of 335.2 square feet, the openness ratio is approximately 20.24 feet, exceeding the minimum 0.82 foot requirement of the Massachusetts SCS.

The proposed roadway cross section will include a single 13' wide travel lane with a crown at the center and 2% cross slopes. Guardrails are proposed for both sides of the roadway along each bridge approach. The bridge and approach slabs will have an asphalt riding surface; beyond the approach slabs the roadway approaches will remain gravel. There will be no sidewalks along the approaches or across the bridge. Roadway side slopes will be constructed with a 1.5:1 slope to minimize impacts to the adjacent resource areas. These side slopes will be lined with modified rockfill over riprap to protect the embankment and bridge wingwalls from overtopping flood events.

A minimum 12-inch thick layer of streambed/bank restoration material will be placed along the widened streambed area within the new abutment limits (at and around the abutments only) to allow for natural substrate; existing channel will remain untouched. With the increased bridge span length and hydraulic opening, the closer of the two culverts (66" corrugated metal pipe) beneath Kelsey Road to the west of the bridge will be removed. This

existing floodplain culvert falls within the proposed bridge's opening. The second flood plain culvert (48" x 72" elliptical corrugated metal pipe) will be replaced in its current location with twin elliptical (34" x 53") reinforced concrete pipes, closely matching the existing culvert's cross-sectional area. This flood plain culvert doesn't connect to the main channel and therefore is not required to meet MA SCS.

During the demolition and construction of the bridge, Kelsey Road will be closed to traffic and a detour plan will be implemented. The detour length for both directions of traffic will be approximately 0.9 miles. With the full closure of Kelsey Road, construction equipment will be able to access the project site from either side of Schenob Brook along Kelsey Road and the Contractor will be able to use the approach roadway on each side of the project area for staging equipment and stockpiling materials. At the beginning of the project, sedimentation controls measures will be installed at the limits of grading and/or clearing.

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas. Alternate water handling means and methods may be submitted by the contractor for approval.

Due to the replacement of the existing bridge's substructure and superstructure, as well as the approach roadway reconstruction and replacement of the western flood plain culvert, Bank, LUW, and BVW will be impacted during the construction of the proposed bridge (See Section 5).

The existing gravel roadway surface on the bridge and the approach roadways is considered to be impervious and, as such, the pre-construction impervious area total is approximately 10,053 SF within the project limits. The post-construction impervious area, consisting of the gravel and paved roadway/bridge surfaces, totals 10,201 SF. This resulted in a net increase of 148 SF.

Approximately 9 cubic yards (streambed removed within limits of LUW) of dredge will be needed to construct the bridge replacement. This includes dredging activities for the demolition and removal of the existing bridge structure abutments and subsurface foundations as well as installing the proposed cofferdam systems around these foundations to allow the work to be performed in the dry while maintaining a streambed opening throughout construction. If legacy streambed material is encountered beneath the roadway embankment and is determined to be suitable, it will be utilized as natural stream substrate and augmented to the additional manufactured streambed material, meeting the required specifications as necessary (for quantity). A limited amount of excavated soil from the project site will be reused for fill where needed and where the material meets required soil classification for the intended use. All other excavated soil from the project site, included the dredged soil from these excavations, will be removed from the project site and disposed of by the Contractor.

4. Bridge Replacement Construction Sequence

Note: While the Department does not dictate Contractor's Means and Methods for construction, the Contractor will be required to perform construction near and in portions of the Schenob Brook (LUW) in the dry.

1. Construction staging and layout.
2. Placement of erosion and sedimentation controls and turtle protection barriers throughout the work area.
3. Clearing and grubbing.
4. Utility relocations.
5. Detour Kelsey Road to Foley Road and Barnum Street.
6. Provide a debris shield under the existing bridge prior to demolition to control demolition debris from entering Schenob Brook.
7. Remove existing bridge superstructure (deck, railing and steel beams).
8. Remove existing dry hydrant.
9. Drive temporary steel sheet piling for cofferdams. Provide dewatering equipment (sump pump and temporary dewatering sediment containment structure), as necessary to maintain any work in the dry.
10. Remove, segregate and stockpile top 12" of existing riverbed material from between steel sheeting and existing abutments taking care not to intermingle material from each abutment.

11. Remove the existing abutments. Once the riverbed material has been salvaged the existing abutments will be removed by hydraulic hoe-ram or similar demolition equipment. At no time will equipment or debris be allowed outside temporary cofferdam or upland areas. Abutments may be cut off 24" below proposed streambed.
12. Drive piles for proposed bridge foundations.
13. Prepare subgrade for placement of new abutments and wingwalls.
14. Construct abutments and wingwalls.
15. Place streambed/bank restoration material in areas between existing and proposed bridge abutments.
16. Backfill behind abutments and wingwalls.
17. Construct bridge approach slabs.
18. Remove dewatering equipment and temporary steel sheeting. Steel sheeting may be cut off 24" below mudline.
19. Set bridge beams. Beams will be delivered on the east roadway approach via Barnum Street. Using a crane located along the east roadway approach, beams will be placed.
20. Form and pour concrete bridge deck and bridge barrier/rail.
21. Pave and waterproof bridge.
22. Install new dry hydrant.
23. Remove and replace western culvert.
24. Construct remainder of roadway approaches.
25. Install approach roadway guardrail and signing.
26. Final grading, seeding and landscape plantings, including development of wetland replication area
27. Restore wetlands/streambed within limits of temporary impacts.
28. Stabilize all roadway slopes prior to the removal of erosion and sedimentation controls.
29. Remove all temporary traffic control devices and open roadway to traffic.
30. Cleanup area and return to pre-construction condition.

5. Wetland Resource Areas Impacts

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

During the site visit in August 2025, wetland boundaries were reverified from a 2020 delineation and have been identified on the plans based on the flagging done during the initial survey. Wetland delineation includes the boundaries of Bank (MAHW) and BVW. BVW were delineated on both the east and west sides of Schenob Brook within approximately 75' of Bridge No. S-10-015. On the west approach, these wetlands flank both sides of the roadway from the bridge to the further of the two culverts to the west. More information is illustrated in **Attachment F**.

A total of 7,635 square feet of permanent BVW impacts are anticipated. These permanent impacts are due to the following: regrading of the approach roadway side slopes, bridge reconstruction, replacement of the western flood plain culvert and clearing & grubbing.

A total of 14,163 square feet of temporary BVW impacts are anticipated. These impacts are due to selective clearing and thinning within 15' of the proposed utility lines and within the swing radius of the crane used to install the bridge beams. Selective clearing and thinning will not include the removal of stumps or any other grubbing activities within BVW.

A total of 292 square feet of temporary LUW impacts are anticipated. These temporary impacts are due to the installation of the temporary steel sheet pile cofferdams. 38 square feet of permanent LUW impacts expected. These are due to the addition of stone sloping along the wingwalls and the potential for cofferdam sheeting to be left-in-place (cut-off a minimum of 24" below the mudline).

LUW under the existing bridge equates to 325 square feet and LUW under the proposed bridge equates to 1,143 square feet. Including the 38 square feet of permanent LUW impacts, there will be an increase of 780 square feet of LUW gained due to widening the bridge span and cutting existing roadway fill. Streambed/bank restoration material will be provided in these gained LUW areas.

182 linear feet of permanent impacts to Bank are anticipated due to the following; regrading approach roadways, bridge reconstruction, the addition of riprap, streambed/bank restoration material between the abutments, and clearing & grubbing. 75 linear feet of temporary Bank impacts are expected due to selective clearing & trimming.

Table 1 below provides a summary of the overall wetland impacts for the proposed alternative:

Table 1 – Wetland Impact Summary		
Resource Area	**Permanent Impacts**	**Temporary Impacts**

Bordering Vegetated Wetlands (BVW)	7,635 sf	14,163 sf
Land Under Water (LUW)	38 sf	292 sf
Bank	182 lf	75 lf

The project will also involve impacts to the regulatory FEMA flood Zone A. The hydraulic capacity of the structure is being increased due to the widening of the bridge. Based on hydraulic modeling, the widening of the bridge will result in a decrease of the 100-year water surface elevation by approximately 0.20-foot at the bridge crossing when compared to existing conditions (existing WSE = 678.75', Proposed WSE = 678.52').

6. Wetland Mitigation

Proposed mitigation for the Wetland Resource Area impacts described in Section 5 are as follows:

BVW: To provide mitigation for 7,635 SF of permanent impact to BVW (palustrine shrub-dominated wetland along the floodplain of Schenob Brook), construction of a 9,117 SF wetland replication is proposed. The replication area will provide mitigation at a ratio of approximately 1.2:1 to account for potential failure.

The wetland replication is proposed to be located south of the bridge, south of ~STA 104+40 +/- RT, in the adjacent field area southeast of wetland flags WF#C-1 through WF#C-5.

Areas proximate to the BVW impact area to the immediate north and south of the bridge crossing were evaluated for wetland replication feasibility, including the goal of minimizing tree clearing required to construct the replication area. The town indicated that the abutters of the northeast quadrant were in the process of submitting a building application. To avoid adversely impacting their potential use of property, this quadrant was not chosen. The southeast quadrant was investigated but due to crane laydown and potential soil compaction caused by construction activity, this quadrant was not chosen. No off-site locations were determined to be available or feasible for a replication area proximate to the impact area. The proposed location was selected as the best available option for wetland replication because (1) it is immediately adjacent to the BVW bordering Schenob Brook and (2) it is an open field requiring minimal disturbance of exiting vegetation.

The proposed replication will be constructed with the following features, as specified on the Plans:

- The proposed replication final base elevation is 675 feet, with microtopography up to plus or minus six inches from the base elevation. This design elevation is approximately 12 inches below the adjacent wetland boundary elevation.
- The area will be subgraded to allow for 12 inches of backfill with wetland topsoil.
- The replication area will be planted with thirty-six specimens of three wetland shrub species: silky dogwood (*Cornus amomum*), gray dogwood (*Cornus racemosa*), and speckled alder (*Alnus incana*). These species will be planted in twelve clusters with three plantings per cluster. The entire area will also be seeded with a wetland seed mix.

LUW: Impacted existing LUW will be restored and an additional 780 SF of LUW will be constructed, with natural substrate placed over any necessary scour protection. The additional LUW area is due to the widening of the bridge opening from approximately 20 feet to 65 feet. LUW will be restored and new areas will be developed with the construction of a 12" layer of Streambed/Bank Restoration material (Item 983.521) between the two proposed bridge abutments.

Bank: A Streambed/Bank Restoration specification (Item 983.521) is provided in Attachment A. Roadway embankments approaching the bridge will be restored using riprap with a 12" layer of Streambed/Bank Restoration material (Item 983.521) on top. Riprap is necessary to protect and stabilize the slopes of the roadway embankment due to flooding events that may overtop the roadway. If any invasive species are to be impacted during construction, they shall be handled and disposed of in accordance with the following specifications: Herbicide Treatment of Invasive Plants (Item 102.3) and Invasive Plant Management Strategy (Item 102.33). Fill materials brought onsite or transported within the site would be free of invasive species or treated in accordance with the above noted specifications to prevent the spread of such species.

7. Sedimentation Control

Measures will be taken to minimize sedimentation/siltation into the resource areas, Schenob Brook, and the surrounding community during construction activities. Implementation of accepted and usual methods of sedimentation erosion control will be used at the site during all phases of construction. The perimeter erosion controls will also serve to demarcate the limits of work.

The sediment control barrier installations will be checked daily for any degradation or failures in the barrier. These will either be repaired or restored with new sediment control barriers. The Contractor will be required to maintain adequate stocks of sediment control barriers onsite to affect immediate repairs. These barriers may include compost filter tubes and silt fencing.

These erosion control devices/ methods will remain in place/use until all disturbed surfaces have stabilized. Additional control measures will be employed as necessary. All silt collected behind the erosion controls shall be removed before such measures are removed.

8. Dewatering

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream flow will be maintained throughout construction; however, the opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas.

The dewatered area inside the temporary sheeting and sandbag cofferdam are classified as temporary impacts as summarized above.

9. Storm Water Management

There are no existing stormwater Best Management Practices (BMPs) along Kelsey Road. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders.

<u>Stormwater Management Standards:</u>

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Standard 1. No New Untreated Discharges
Currently, there are no existing outfalls to treat stormwater runoff, and no new stormwater outfalls are proposed for the Project. The existing and proposed gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders. Minimal newly exposed impervious area is proposed as part of this project. Existing roadway widths will be matched and road widening is not proposed. This standard will be met.

Standard 2. Peak Rate Attenuation
The Project has been designed to comply with Standard 2 to the maximum extent practicable. There are minimal newly exposed impervious areas proposed as part of this project. As such, post-development peak rate attenuation is anticipated to remain the same as pre-development rates. Existing roadway pavement widths will be matched and road widening is not proposed. However, there is an existing drainage swale located along the south shoulder of Kelsey Road on the east side of Schenob Brook. The project will introduce stone check dams along the length of this swale to reduce the velocity of flow and attenuate the peak discharge.

Standard 3. Recharge
The Project has been designed to comply with Standard 3 to the maximum extent practicable. The purpose of this standard is to replenish groundwater baseflows by ensuring that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions. Loss of annual recharge to groundwater is eliminated with the bridge replacement design. The proposed roadway and bridge cross-sections closely match those of the existing pavement widths; road widening is not proposed. As such, there is only a minimal amount of newly exposed impervious areas and, therefore, annual recharge from the post-development site approximates the annual recharge from the pre-development conditions.

Standard 4. Water Quality
The Project has been designed to comply with Standard 4 to the maximum extent practicable.

The addition of Deep Sump Catch Basins as a SCM to achieve some measure of removal of post-construction TSS was evaluated. Based on the roadway profile, the location of these catch basins would need to be located immediately west of the replacement bridge structure, at approximate Sta. 102+00. However, as shown on the cross-section included in Appendix A of the Stormwater Management Memorandum, the elevation of a discharge pipe from deep sump catch basins at this location would fall below the Ordinary High Water Elevation. As a result, this alternative was dismissed from further consideration.

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As previously noted, Kelsey Road is a gravel roadway, providing a level of permeable pavement as a Low Impact Development (LID) practice. Additionally, the side slopes of Kelsey Road (where stormwater runoff is directed via country drainage) will be lined with stone materials (combination of riprap and streambed/bank restoration material) that will provide a level of disconnection between the roadway surface and the wetlands.

Because of the site constraints (ROW and resource areas) and the minimal grade difference between the roadway surface and the surrounding wetlands, the use of Infiltration BMPs, Filtration BMPs and Detention and Flow Control BMPs were deemed infeasible. Based on soil borings collected along Kelsey Road, groundwater is estimated at a depth of 2 to 8 feet below the roadway surface.

One measure that is proposed to be installed is the addition of check dams along the existing drainage swale running along the south shoulder of Kelsey Road on the east side of Schenob Brook. The introduction of these check dams will help to reduce the velocity of flow and attenuate the peak discharge.

A Long-Term Pollution Prevention Plan (LTPPP) has been developed for the project in compliance with Standard 4. The Standard 9 section of this document includes this LTPPP.

Standard 5. Land Uses with Higher Potential Pollutant Loads
Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area**.**

Standard 6. Critical Areas
The Project has been designed to comply with Standard 6. The project is located within an Area of Critical Environmental Concern (ACEC), designated as the Schenob Brook Drainage Basin. Additionally, Schenob Brook is classified as a coldwater fishery. **Attachment C** of this Water Quality Certification shows the Critical Areas in the vicinity of the project site. As noted under Standard 1, there are no existing or proposed outfalls to treat stormwater runoff entering these critical areas. Kelsey Road relies upon country drainage, with the runoff draining off the edge of the road and flowing to these resource areas along the outside shoulders. The side slopes off the edge of Kelsey Road will be lined with a combination of riprap and streambed/bank restoration material that will provide a level of disconnection between the roadway surface and the wetlands as a Low Impact Development practice.

Standards 7. Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable
The Project is considered a redevelopment and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable.

Standard 8. Construction Period Pollution Prevention and Erosion and Sedimentation Control
The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans (**Attachment F**) and include the use of coir logs along the limits of land disturbance. The project is expected to be completed within one construction season. In the event work extends longer than one season, these E&S controls will be replaced prior to the beginning of the second season.

The project consists of less than 1 acre of disturbance; therefore, a Construction Pollution Prevention Plan is required (CPPP). See **Attachment H**.

Standard 9. Operations & Maintenance Plan
The roadway included in this project is not owned by MassDOT. The O&M Plan will be implemented by the municipality. The Town of Sheffield will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be addressed to Sheffield Highway Department located at Pike Road East, Sheffield, MA; phone (413) 229-7030.

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, maintenance of landscaped areas, snow and ice management, street sweeping, prohibition of illicit discharges, and spill prevention and response. See **Attachment H**.

Standard 10. Prohibition of Illicit Discharges
The project's stormwater management system, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's Illicit Discharge Detention and Elimination (IDDE) Program.

10. Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools

An online review of the NHESP using the MassGIS MassMapper revealed that the project site is located within Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674, an ACEC designated as the Schenob Brook Drainage Basin, and the

Schenob Brook is designated as a Coldwater Fishery. However, the current project limits aren't within certified/potential vernal pools, an ORW, or an Essential Fish Habitat. See **Attachment C**. In coordination with MassDOT, NHESP received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed reptile. A Turtle Protection Plan is found in **Attachment G**.

According to an Information for Planning and Consultation (IPaC) inquiry for the area on August 22nd 2025, the following species were listed as follows; the Northern Long-eared Bat, *Myotis septentrionalis* is endangered, the Tricolored Bat, *Perimyotis subflavus* is proposed endangered, the Bog Turtle, *Glyptemys muhlenbergii* is threatened, and the Monarch Butterfly, *Danaus Plexippus* as proposed threatened. A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS.

11. Massachusetts Stream Crossing Performance Standards

1. *Type of Crossing- Spans and/or Open Bottom Preferred*
   The bridge replacement will be an open bottom structure. This qualifies as "optimum" for the Type of Crossing under the Massachusetts Stream Crossing Standards (SCS)
2. *Embedment*
   a. *All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%;*
      This project is a bridge replacement project with an open clear span, and therefore, this standard does not apply.
   b. *If pipe culverts cannot be embedded this deep, then they should not be used;*
      N/A- no pipe is proposed.
   c. *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 bridge abutments will be embedded approximately 3.36 feet below the streambed and aren't under riprap or crushed stone. The hydraulic study detailing scour protection design is attached to this application. Scour protection design was based on the standards set forth in the MassDOT LRFD Bridge Manual.
3. *Crossing Span- Span is a minimum of 1.2 times the bankfull width of the stream.*

A minimum span of 50.4' is necessary to meet 1.2 bankfull (42'). The proposed crossing span is 66.98'. 66.98/42 = 1.59, which exceeds the minimum 1.2 ratio. The roadway will be overtopped during the design and base flood events, see the attached hydraulic study.

4. *Openness Ratio*
    a. *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;* The proposed openness ratio is 335.2 SF/ 16.56 LF = 20.24 feet, which exceeds the minimum 0.82 feet.
    b. *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);*
    The proposed crossing meets the optimum standards of exceeding 6' in height (6.1' proposed) and 1.64 feet openness ratio (20.24 feet proposed).
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 dis-placement during floods and maintain an appropriate bottom during normal flows.* The proposed natural substrate will be salvaged from excavations below the existing bridge (historical streambed) and be re-used for the disturbed and proposed substrate sections through the bridge channel. Within the widened section of the bridge opening, a 12-inch layer of streambed/bank restoration material will be placed to replicate the natural substrate.
6. *Water Depth and Velocity- Water depths and velocities are comparable to those found in the natural channel at a variety of flows.*
Hydraulic modeling of the proposed crossing indicates that velocities and water surface elevations better match the downstream natural channel. This is the result of "opening up" the crossing cross-section.

12. Alternatives Analysis

Alternatives for the project include the "No-Build Alternative". The project involves the replacement of a structurally deficient bridge that has been posted for reduced vehicular traffic loads. The No-Build Alternative does not meet the purpose and need requirements of the project and would result in continued deterioration of the structure. Therefore, this alternative was not selected as the preferred alternative.

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Based on the need to replace the bridge structure, various bridge superstructure and substructure alternatives were considered. The proposed bridge type was determined to include four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls.

The existing roadway alignment and cross-section will be maintained, consisting of a 13' wide, unpaved travel lane on the roadway approaches (the bridge structure will have an asphalt riding surface). Beyond the edge of the roadway, 2-foot wide usable shoulder areas are proposed to provide safety and operational improvements such as lateral support of the pavement, reduced sedimentation that may result from country drainage, and support emergency stopping and errant vehicles. There are no sidewalks proposed along the bridge or approach roadways. Further widening of the roadway and bridge section was not considered due to the impacts this would have on the right-of-way and adjacent resource areas.

In terms of bridge construction, full road closure was considered but decided against as it would interfere with emergency vehicle access and response time. Nearby properties adjacent to the site would be negatively impacted if through traffic was closed off. The use of retaining walls to aid in lessening the amount of grading were considered as well. It was decided against as the excavation to install the foundations for these walls would extend to similar or further distances then the current "toe of slope", ultimately causing more impacts.

Several alternatives were evaluated using the proposed bridge type and roadway alignment/cross-section summarized above. These alternatives focused on opportunities that would minimize impacts to the adjacent wetland resource areas and existing right-of-way. These alternatives are summarized as follows:

Alternative #1 – Bridge Replacement with Spread Footing

This alternative considered the use of shallow spread footings for the new bridge abutments. Based on the Preliminary Hydraulic Analysis, it was determined that the potential scour depth would require full width countermeasure protection (i.e. riprap) from abutment to abutment with the top of footing located below the countermeasure apron. Because of the pressure scour issues and the impacts to Land Under Water that would be associated with the added countermeasures across the width of Schenob Brook, this alternative was not deemed to be desirable.

Alternative #2 – Bridge Replacement with Deep Foundations (Preferred Alternative)

The Preliminary Hydraulic Analysis indicates that the proposed bridge design will result in contraction scour depth of approximately 3.36 feet from the bottom of the streambed. Under this alternative, the streambed between the existing abutments would be retained and would not be disturbed. The widened section of Schenob Brook (created by the increased bridge span length) would be graded with Streambed/Bank Restoration material (Item 983.521) in an effort to replicate the existing streambed conditions. The recommendation under this alternative was to provide a proposed substructure consisting of full height bridge abutments on deep pile foundations extending below the scour depth. With the pile supported foundation designed for foundation supports located below the scour depth, the Hydraulic Analysis suggests that Riprap Scour Protection within the channel is not warranted. Eliminating the riprap scour protection within the channel would reduce the permanent LUW impacts by 1,442 square feet, relative to Alternative #1. Based on this reduction to the LUW impacts and the improved scour countermeasures for the bridge structure, Alternative #2 was deemed to be the preferred alternative.

Alternative #3 – Bridge Replacement with Brook Realignment

Realigning a section of Schenob Brook north of Kelsey Road to provide a more natural flow alignment and reduce potential for erosion and bank scour beyond the limits of the bridge was investigated. It was agreed that this was not required hydraulically as the brook will realign naturally (to allow for free sediment transport). This work is not directly linked to the purpose and need of this project and could be eliminated. Eliminating this work would reduce the overall wetland impacts by 5,567 square feet for Vegetated Wetlands and 4,153 square feet for LUW.

13. Conclusion

The project proposes to replace the existing structurally deficient bridge along Kelsey Road in Town of Sheffield, MA. As part of project activities, there are impacts to jurisdictional wetland resource areas. Permanent and temporary impacts to BVW total 7,635 square feet and 14,163 square feet. Permanent and temporary impacts to LUW total 38 square feet and 292 square feet. Permanent and temporary impacts to Bank total 182 linear feet and 75 linear feet. A portion of the permanent impacts include the dredging required for the reconstruction of the new bridge. Approximately 9 cubic yards of dredging is proposed.

Although there are impacts within resource areas, the applicant respectfully requests that MassDEP and the United States Army Corps of Engineers find these measures adequately protective of the interests identified under Section 401 and 404 of the Clean Water Act Regulations and issue a 401 WQC and 404 PCN under the NWPs approving the work shown on the accompanying plan set.

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14. Environmental Related Specifications to be Included into the Contract

- Herbicide Treatment of Invasive Plants
- Invasive Plant Management Strategy
- Turtle Exclusion Barrier
- Floating Turbidity Barrier
- Geotextile Fabric For Stabilization & Separation
- Compost Blanket
- 755.35 Inland Wetland Replication Area
- 755.45 Wetland Restoration
- Wetland Specialist
- Wetland Monitoring Reports
- 756.1 Construction Pollution Prevention Plan
- Wetland Seasonally Flooded Mix
- Native Seeding and Establishment
- Sediment Barrier – Coir Log
- Timber Matting
- 983.521 Streambed & Bank Restoration
- Control of Water – Structure No. S-10-015
- Temporary Protective Shielding

Attachment A
Environmental Related Specifications

ENVIRONMENTAL PERMITTING

The proposed work occurs in jurisdictional wetland resources subject to Section 401 and Section 404 of the Clean Water Act; therefore, a Water Quality Certification from the Massachusetts Department of Environmental Protection and 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 obtained allowing such work. The Contractor must notify the District 1 Highway Director and Resident Engineer in writing at least 60 days prior to the desired commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 1 Environmental Engineer.

The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN

This heading specifies the requirements of the Natural Heritage and Endangered Species Program (NHESP) of the Division of Fisheries and Wildlife (DFW) for projects that occur within high-priority state and federally-protected turtle populations. The requirements consist of installation of a Turtle Exclusion Barrier (Item 670.1), regular sweeps to ensure that turtles are excluded from the work zone, and routine inspections to ensure that the Turtle Exclusion Barrier is functioning as intended. The requirements outlined herein are for the following project: Kelsey Road Bridge Replacement over Schenob Brook in Sheffield, Massachusetts.

The work shall be coordinated with the MassDOT Wildlife Unit Contact (also referred to as the Monitor) and the Engineer. The Monitor shall obtain a Scientific Collection Permit from NHESP prior to the pre-construction Turtle Protection field meeting described below.

The MassDOT Wildlife Unit Contact Information is:

> David Paulson, Wildlife and Endangered Species Unit Supervisor
> David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

Failure to implement the Turtle Protection Plan as specified herein will result in a cease work order and/or violation from NHESP.

CONTRACTOR RESPONSIBILITY AND SCHEDULE OF WORK

Pre-construction Turtle Protection Meeting

The Contractor shall schedule and attend a Turtle Protection Meeting in the field with the Engineer and the Monitor, prior to any site disturbance to review the State-listed Turtle Protection Plan. The Contractor shall schedule this meeting at least 60 days in advance of the proposed meeting date.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN (Continued)

During the meeting, the Monitor will provide the Contractor and Engineer with the appropriate state-listed turtle identification and handling pamphlets. The Contractor shall provide the Monitor with the construction schedule.

Immediately following the meeting, the Contractor shall inform, in writing, all construction, landscaping, and other sub-contractors associated with the Project of the likely presence of state-listed turtles on the Property and what measures must be implemented to minimize direct harm to the turtles.

Initial Turtle Sweep

Prior to site clearing, grubbing, earth disturbance, or any other site preparations, the Contractor shall coordinate with the Engineer to have the Monitor sweep the site for turtles, ensuring that vegetation within 200-feet of the stream is surveyed.

Additionally, the Contractor shall coordinate with the Monitor to conduct a sweep of the site prior to any work in water. The Monitor will inspect all areas of land under water where cofferdams are to be installed paying close attention to overhanging banks and to water that contains coarse woody debris.

If in-water work is to occur in separate phases, the Monitor will provide a sweep of the site before each phase, depending on the scope and scheduling of phased work.

Work will stop immediately if turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. Work will not resume until the turtle has left the site on its own accord. In addition, MassDOT will contact USFWS and MassWildlife NHESP within 24 hours if a bog turtle is observed and will send location details and photographs, if possible. If a turtle appears dead, injured, or immobile, all work will stop and the Monitor, USFWS, and MassWildlife NHESP shall be contacted immediately.

Installation of Turtle Exclusion Barrier

Following the initial sweep of the work site, a barrier to prevent turtles from accessing the site shall be installed in accordance with Item 670.1 Turtle Exclusion Barrier (Barrier). This Barrier will also serve as the Limit of Work.

MassDOT Responsibility

Turtle Sweeps

A representative from the MassDOT Wildlife Unit will serve as the Turtle Monitor. Prior to the pre-construction meeting, the Monitor will obtain a Scientific Collection Permit from NHESP to handle state-listed turtles. Prior to site clearing, grubbing, earth disturbance, or site preparations, the Monitor will sweep the site for turtles, ensuring that all vegetation within 200-feet of the stream is surveyed.

Within 48 hours of installing the turtle barrier, the Monitor will inspect the Barrier to ensure it is installed properly. The Monitor may request photos from the Contractor to aid in their review.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN (Continued)

Additionally, the Monitor will provide a sweep of the site prior to any work in water. The Monitor shall inspect all areas of land under water where cofferdams are to be installed, paying close attention to overhanging banks and in water coarse woody debris. If in-water work is to occur in separate phases, the monitor will provide a sweep of the site before each phase, depending on the scope and scheduling of phased work. In the event of finding an injured turtle, the turtle shall be transported to a suitable veterinarian. In the event of finding a turtle with a radio transmitter, NHESP and the contact on the transmitter will be alerted immediately.

No turtles or other wildlife shall be removed without the approval of a qualified wildlife biologist or the Division except as necessary to receive veterinary treatment in case of harm during construction.

Work will stop immediately if turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. Work will not resume until the turtle has left the site on its own accord. In addition, MassDOT will contact USFWS and MassWildlife NHESP within 24 hours if a bog turtle is observed and will send location details and photographs, if possible.

NHESP Reporting

At the end of the calendar year, the Monitor will provide NHESP with a summary of activities at the construction site. This report will include the number and duration of visits as well as submitting rare species observation forms for all state-listed species encountered. Any rare species encountered will be described in the NHESP Rare Animal/Plan Observation Report with the required supporting materials within 10 days of the observation. No state-listed species may be removed from the project site unless under the direct supervision of the Monitor or the NHESP.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed endangered, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. MassDOT, on behalf of FHWA, submitted a Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key Consultation through Information for Planning and Consultation (IPaC) and generated a May Affect, Not Likely to Adversely Affect (NLAA) determination (see **Document USFWS NLAA**). Subsequently, the project has completed Section 7 consultation under the ESA.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION (Continued)

General AMMs

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including all applicable AMMs. NLEB and TCB information (https://www.fws.gov/midwest/endangered/mammals/nleb/ and https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus) shall be made available to all personnel.
- On July 9, 2024, MassDOT Highway Division Environmental Services conducted a northern long-eared bat summer presence/absence survey, in accordance with the 2024 survey guidelines. The survey did confirm the presence of NLEB and/or TCB. If work is proposed by the Contractor past July 9, 2029, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31**

Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*
- Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
- No tree cutting, trimming, or removal of trees and/or woody vegetation >3-inch in diameter shall be conducted between **April 15 to October 31**
- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and/or TCB, including the **TOY** restriction. If this restriction needs to be waived at any location(s) the Resident Engineer shall send a locus map of the proposed work to MassDOT Highway Division's Environmental Services Section for review and a determination if the restriction can be waived.

Bridge AMMs

- On July 16, 2024, MassDOT Highway Division Environmental Services, conducted a northern long-eared bat bridge/structure bat assessment, in accordance with the USFWS guidelines. The assessment did not find presence of, or evidence of use by bats, and as stated within the guidelines, the assessment is valid for two years. If bridge work is not complete before July 16, 2026, assessment of the bridge for the presence of, or evidence of use by, bats shall be completed by the MassDOT Wildlife Unit prior to continuing bridge work. The Contractor shall notify the MassDOT Wildlife Unit no later than fourteen (14) days prior to July 16, 2026 to provide adequate time for inspection. If bats are found to be present, or, if there is evidence of bat usage, work at the bridge shall not commence until after the MassDOT Wildlife Unit has completed coordination with the US Fish and Wildlife Service to determine the appropriate follow up or mitigation actions.

STATE-LISTED PLANT PROTECTION PLAN

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) has reviewed MassDOT Project 609068 – Kelsey Road bridge replacement over Schenob 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 impacts to state-listed Rare Plants.

The MassDOT Wildlife Unit Contact Information is:

> David Paulson, Wildlife and Endangered Species Unit Supervisor
> David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

Rare Plants occur outside of the Limit of Work on the southwest side of Kelsey Road, between stations 99 and 100 and the western terminus of work. No work or alteration to the soil, surface, or vegetation shall occur outside of the limits of work shown on the site plan, unless otherwise approved in writing by the Engineer, the MassDOT Wildlife Unit Supervisor, and NHESP.

The Contractor shall schedule and attend a Rare Plant Protection Meeting with the Engineer and a representative from the MassDOT Wildlife Unit, before any site disturbance. During this meeting, the Contractor shall provide the MassDOT Wildlife Unit with a construction schedule, and the MassDOT Wildlife Unit will discuss the protection of rare plants. The Contractor shall schedule this meeting at least 60 days in advance of the proposed meeting date.

The MassDOT Wildlife Unit will visually demarcate the rare plants using surveyor's tape, orange construction fencing, or another measure. The avoidance of the rare plants will be inspected periodically by the Engineer and/or representative(s) from the MassDOT Wildlife Unit. Should damage to the rare plants occur, additional rare plant protection and permitting may be required by Contractor as directed by the MassDOT Wildlife Unit and may result in a cease work order and/or violation from NHESP. Encroachments outside the limit of work in proximity to the rare plants shall be immediately reported to the Engineer and MassDOT Wildlife Unit.

NHESP Reporting

Prior to the completion of work, the MassDOT Wildlife Unit will submit written confirmation to NHESP documenting that the rare plants have been avoided and protected through containment of construction activities within the limit of work. The contractor shall provide photos or written documentation upon request to the MassDOT Wildlife Unit.

ITEM 102.3 HERBICIDE TREATMENT OF INVASIVE PLANTS HOUR

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be written and submitted per Item 102.33 Invasive Plant Management Strategy and shall be measured and paid for under that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

Date and time stamped photos indicating start and stop time of work must be submitted if requested.

This item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor’s responsibility and at the Contractor’s expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this item shall be as determined in the field per the site walk and as specified in the IPMS.

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): “non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems.”

ITEM 102.3 (Continued)

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: XXXXX.XXXX@dot.state.ma.us.

QUALIFICATIONS

The applicators shall submit and meet the qualifications outlined below. A list of contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
   a. Narrative describing company, its expertise and experience with invasive plant control.
   b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
   c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
   a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
   b. At least one or more applicator must have a ROW certification, if required for work.
   c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all contractor crew leaders working on the project.
   d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
   a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.
   b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
   c. Photo documentation of these projects.
   d. GPS coordinates of project locations, if available.

4. Crew leader must have expertise with invasive plant control and provide the following:
   a. Have held Core license for at least five (5) years.

ITEM 102.3 (Continued)

b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

SUBMITTALS

No work shall begin without approval of the submittals.

Submittals include the following items:

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer and the MassDOT Landscape Architect a completed and signed MassDOT Herbicide Use Report.

Photo Documentation

Digital photos with date and time of herbicide application work, showing start time and completion time, are required and must be submitted for measurement of payment upon request.

MATERIALS

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on herbicide proposed and shall be per the manufacturer's label for specific application.

METHODS

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33 Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

ITEM 102.3 (Continued)

Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. Vegetation damaged shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

ITEM 102.3 (Continued)

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this item.

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

MEASURE OF SUCCESS

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the Hour of verified crew time spent on the project doing herbicide application as and where specified herein and in the IPMS. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon verified time spent on the project doing herbicide application as and where specified in the IPMS and upon receipt and approval of submittals. Payment will not include travel time to and from the Contractor's place of business and nor time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR

This item consists of providing an Invasive Plant Management Strategy (IPMS) for the control of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. Unless otherwise approved, the IPMS shall be submitted in the form of the MassDOT Invasive Plant Management Strategy Report Form.

The IPMS shall be submitted for review and approval by the MassDOT Landscape Design Section or their representative, and the IPMS shall be implemented on-site.

The Invasive Plant Management Strategy Report Form is available online at https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individual attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

QUALIFICATIONS

Individual shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

SUBMITTALS

Task Summary & Reports

For measurement of payment, the contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, submittal of an approved IPMS, and if requested to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the site inspection walk when an Interim or Final Report has been requested.

ITEM 102.33 (Continued)

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, the contractor shall submit the IPMS for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Prime Contractor and the Engineer and shall include the following as appropriate and applicable to the project and to the IPMS Report Form questions and Guidance:

I. Project Information

a. Company writing the IPMS and performing the herbicide application.
b. Date of site walk
c. Attendees at site walk
d. Expected end date of contract and expected last treatment (month/season)

II. Brief Description of Conditions

a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

III. Coordination with Roadway Contractor regarding other work

a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
d. Mowing: If coordination is required with state mowers, note need in IPMS.

IV. Soil Management

a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off-site and if so, where?).
b. Show stockpile locations on plan and include treatment schedule.
c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

V. Invasive Plant Treatment & Management

a. Proposed chemical and methods of treatment for each species or area.
b. Time of treatment based on target plant species.
c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.

ITEM 102.33 (Continued)

e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.
f. Expected follow-up treatment for duration of contract.

VI. Monitoring Schedule if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this item, in which case, the contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos of site conditions, typical species, and extent of infestation must be provided with the IPMS and with any follow-up monitoring or reporting. Photos of follow-up monitoring and reporting must be date and time stamped for acceptance.

METHODS

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted. Interim Reports must include time and date stamped photos showing treated locations and species.

ITEM 102.33 (Continued)

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved. Final reports submittal must include time and date stamped photos.

METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the Hour. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal and acceptance of submittals and photos described above.

BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work. Payment shall not include travel time to and from the Contractor's place of business.

ITEM 670.1 TURTLE EXCLUSION BARRIER FOOT

The work under this Item shall conform to the relevant provisions of Subsection 670 of the Standard Specifications and the following:

The work under this Item consists of furnishing, installation, maintenance, removing and resetting, and final removal of a physical barrier to exclude turtles from accessing the construction work zone as shown on the plans or as required by the Engineer. This Turtle Exclusion Barrier will also serve as the Limit of Work beyond which no disturbance or construction activities may occur.

The work and scheduling shall be coordinated with the Turtle Protection Plan.

SCHEDULE OF INSTALLATION

The Barrier shall be installed after the Pre-construction Turtle Protection Meeting and the initial turtle sweep which shall occur prior to any site disturbance (see Turtle Protection Plan). The turtle sweep, which shall be conducted by an approved MassDOT Monitor, is described under the Turtle Protection Plan.

CONSTRUCTION METHODS

The Barrier shall be installed where shown on the Turtle Barrier Location Plan. Final placement will be required to adjust to field conditions as approved by the Engineer and the Monitor.

Signage noting the Limit of Work shall be installed in the four quadrants of the work zone as shown on the Turtle Barrier Location Plan or as required by the Monitor. Signs shall conform to the Limit of Work sign shown in the Details.

The fencing used for the Turtle Exclusion Barrier may be combined with sediment barriers (i.e., compost filter tubes or coir logs). However, the placement of the Turtle Exclusion Barrier shall be as needed to prevent turtles from accessing the site. Placement of sediment barriers shall be as required for the purposes of sediment control and shall be located as shown on the erosion and sedimentation control plans or as required for site conditions. The locations may be the same provided the intended functions of both types of barriers are met, and the sediment barriers are placed on the interior (construction side) of the Barrier. Compost filter tubes and coir logs installed solely for the purpose of sediment control need not include sediment fence unless directed by the Engineer.

Installation

Within 48 hours of installation, the MassDOT Monitor will inspect the Barrier to ensure it is installed properly. If requested, the Contractor shall provide photos of the installed barrier.

Installation of the fencing used to create the barrier shall be such that it results in minimal ground disturbance (i.e., hand-dug, mechanical trencher, or auger).

ITEM 670.1 (Continued)

The above-ground height of the fencing after installation must be at least 2.5 feet and the fence must be trenched a minimum of 4 inches into the ground. The trench should be backfilled with soil and compacted. If it is not possible to trench in the fence, the bottom of must be affixed to the surface using methods approved by the Monitor.

The barrier must connect, without gaps, to any proposed water control structures such as cofferdams or sandbags to prevent turtles from entering the work zone.

To the extent feasible when the road is closed to traffic during construction, the barrier perimeter shall be limited to a single entrance at each end of the project to allow vehicles to access the construction area. These entrances must be closed each night during the turtle active season (March 15 – October 31) with either a gate and/or sedimentation fencing. If using sedimentation fence, the fence must be affixed to the ground with sandbags, wood posts or other approved methods. If using a gate, the Contractor shall securely block the gap between the ground and the bottom of the gate so that turtles cannot enter the work area through this gap. The method used to block the gap shall be approved by the Monitor.

Immediately following Barrier installation, the Contractor shall notify the Monitor so that the Monitor can confirm proper installation of it within 48 hours. The Monitor may request photos from the Contractor to aid in their review.

Turtle Sweep and Inspection Schedule

The Contractor shall provide a two-week notice prior to requesting all required sweeps and inspections. Any changes to the construction schedule that will affect timing of the turtle sweep must be communicated to the Monitor immediately. At a minimum, the following sweeps and inspections will be required:

- Initial sweep prior to vegetation clearing and before the Barrier has been installed
- Within 48 hours after the Barrier has been installed to approve the installation
- Prior to any initial in-water staging or construction (i.e., cofferdam installation)
- Prior to any secondary phase of in-water work, and thereafter, if needed.
- If new staging, access, or areas of work are required for construction that are not shown on the Turtle Exclusion Barrier Plan, the areas must be swept and Barrier installed.

The Contractor is responsible for ensuring that the Monitor is contacted and that these areas meet the requirements of Turtle Protection Plan. It is the Contractors responsibility to notify and coordinate with the Monitor in a timely manner to avoid construction delays. Work described above cannot occur until after each turtle sweep is complete.

ITEM 670.1 (Continued)

Weekly Barrier Inspection

Once per week, the Engineer will inspect the Barrier and direct the Contractor to make any necessary repairs or alterations. The Barrier must be kept taut between stakes and any gaps along the bottom must be immediately repaired. Repairs to the barrier must be made within 24 hours of notice. Failure to maintain an effective Barrier will result in a cease work order and/or violation from NHESP.

Daily Turtle Sweep Requirements

When the road remains open to traffic during construction, the Engineer will provide a sweep of the site prior to each workday and relocate any turtles to suitable habitat outside of the Barrier as identified during the pre-construction meeting. In the event a state-listed turtle is discovered on site, the Contractor and/or Engineer must contact the Monitor.

No turtles or other wildlife shall be removed without the approval of a qualified wildlife biologist or the Division except as necessary to receive veterinary treatment in case of harm during construction.

METHOD OF MEASUREMENT

Item 670.1 will be measured for payment by the Foot of turtle exclusion barrier installed, complete in place. Measurements will be taken along the top of the Barrier. Overlaps shall be measured as a single layer.

BASIS OF PAYMENT

Item 670.1 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, installation, inspection, maintenance, removing and resetting, signs, signs installation, and all incidental costs required to complete the work.

Payments will be made according to the following schedule:

- Payment of forty (40) % of this pay Item will be paid upon accepted installation of turtle exclusion barrier.
- The remaining sixty (60) % of this pay Item will be paid when turtle exclusion barrier have been maintained as specified, for the intended duration, removed and disposed of off-site at the completion of the turtle exclusion period.

ITEM 679.3 FLOATING TURBIDITY BARRIER FOOT

DESCRIPTION

Work under this item includes the furnishing, installing, maintaining and removal of temporary floating turbidity barrier (FTB) as specified herein and shown on the drawings. Regular inspection of the barrier and removal and disposal of accumulated sediment is also included in this item.

Warranty
Provide copies of the manufacturer's warranty for the floating turbidity barrier.

Submittals
Prior to start of work, the Contractor shall submit to the Engineer, copies of manufacturer's data for all materials to be used in the floating turbidity barrier and recommended procedures for installation, maintenance and removal.

MATERIALS

The floating turbidity barrier shall be designed to prevent particulate materials from leaving the immediate area of construction in the water. The FTB shall be a continuous barrier within the limits indicated and shall be designed to operate in both standing water and low water flow conditions. The barrier shall extend from the water surface to the bottom of the waterbody in the indicated locations. Height of barrier shall be calculated based on a water surface elevation of ordinary high water.

The FTB and floatation materials shall be high visibility in color. Barrier material, flotation devices and bottom weighting system shall all be from the same manufacturer and shall be of a type appropriate for the application.

Sufficient flotation and bottom weighting shall be provided to maintain the proper function of the FTB. The FTB shall also be able to be anchored in place as needed to prevent excessive movement or system failure due to water flow during storm conditions.

CONSTRUCTION METHODS

General
The floating turbidity barrier shall be installed according to the manufacturer's listed procedures and recommendations or as directed. Turbidity Barrier shall be installed as indicated on the Drawings and prior to the start of excavation and filling area. The FTB shall be installed prior to other work in water occurring. Care shall be taken not to disturb or displace surface material or other particulate matter prior to, or during, the installation of the FTB.

ITEM 679.3 (Continued)

Maintenance

The FTB shall be inspected daily to verify proper operation during active construction in or near the water and also following any rain event where over ½" of rainfall occurs. Any displacement of the FTB shall be corrected and any damage to the FTB shall be repaired prior to work in the water resuming.

Removal

Erosion and Turbidity control devices shall be maintained until all disturbed earth has been paved or vegetated, or interim work is completed at which time they shall be removed upon approval of the Engineer. Care shall be taken not to allow any accumulated sediments to become suspended in the water column during the removal process. Accumulated sediments shall be removed and disposed and any sediment that becomes suspended in the water column shall be allowed to settle prior to removal of the FTB.

METHOD OF MEASUREMENT

Item 679.3, will be measured by the Foot installed, along the top of the flotation system, regardless of depth of barrier.

BASIS OF PAYMENT

Item 679.3 will be paid at the Contract unit bid price per Foot which price shall be full compensation for all labor, materials, and incidentals necessary to complete the work specified above.

Following installation of the floating turbidity barrier, 75% of the contract value will be paid. The balance will be paid following removal of all accumulated sediments and removal of the FTB.

ITEM 698.1 GEOTEXTILE FABRIC FOR STABILIZATION SQUARE YARD
ITEM 698.3 GEOTEXTILE FABRIC FOR SEPARATION SQUARE YARD

The work performed under these items shall consist of furnishing and installing geotextile fabric to the limits shown on the Plans and as required by the Engineer.

MATERIALS

The geotextile fabric used shall be selected from the MassDOT Qualified Construction Materials List at https://www.mass.gov/service-details/qualified-construction-materials-list.

The geotextile fabric shall conform to the requirements of Subsection M9.50.0 of the Standard Specifications and AASHTO M 288 for the intended use.

CONSTRUCTION

Construction and installation of all geotextile fabric shall be in accordance with AASHTO M 288 including Appendix A, and the following;

Atmospheric exposure of the geotextile fabric to the elements following lay down shall be a maximum of 14 days. If laid under water, the covering crushed stone or riprap shall be placed on the same day as the geotextile fabric.

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 intimate 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 the geotextile.

Adjacent geotextile sheets shall be joined by either sewing of 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 in 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 698.1 to 698.3 (Continued)

When stone or riprap is placed over Geotextile Fabric for Separation, the stone placement shall begin at the toe of slope and proceed up the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the geotextile. Crushed stone shall not be dropped from a height exceeding 3 feet.

Field monitoring shall be performed to verify that the crushed stone or riprap placement does not damage the geotextile. Any geotextile damaged during backfill placement shall be replaced as required by the Engineer, at the Contractor's expense.

The Contractor shall take care not to allow more than two weeks of exposure to direct sunlight. Fabric rolls shall not be dropped more than two (2) feet.

METHOD OF MEASUREMENT

The quantity for this Item shall be measured by the SQUARE YARD of actual geotextile fabric installed and accepted by the Engineer.

BASIS OF PAYMENT

This Item shall be paid for at the contact bid price per SQUARE YARD, which price shall include full compensation for all labor, materials, tools, equipment, removals, disposal, health and safety, and incidentals necessary to complete the work as described herein and/or as directed by the Engineer.

ITEM 751.7 COMPOST BLANKET CUBIC YARD

The work under this Item shall conform to the relevant provisions of Subsection 751 and M1.06.0 Compost of the Standard Specifications and the following:

Work shall consist of furnishing and pneumatically applying compost as a thin mulch blanket (1/2-1 inch depth) over prepared soil to provide temporary soil stabilization and organic matter for plant growth.

SUBMITTALS AND MATERIALS

No materials shall be delivered until the required submittals have been approved by the Engineer. Delivered materials shall match the approved samples. Approval of test results does not constitute final acceptance.

Contractor shall submit to the Engineer samples and certified test results no sooner than 60 days prior to application of compost. Vender certification that material delivered meets the test results shall be submitted if requested.

Compost shall meet the requirements for M1.06.0: Compost, Type 2, as referenced in the MassDOT– Highway Division Standard Specifications for Highways and Bridges, Division III: Materials Specifications, latest edition.

The Engineer shall approve the Contractor's equipment for application.

CONSTRUCTION METHODS

Application of compost material shall not begin until the Engineer has approved the site and soil conditions. Soil preparation shall be as specified under the applicable item for soil placement or for seeding. The Contractor shall notify the Engineer when areas are ready for inspection and application of compost.

Compost blanket shall be pneumatically applied (blown on) to a minimum depth of one half to one inch. Where shown on the plans or when directed by the Engineer depth may be increased to provide berms for sediment control or to otherwise prevent slope erosion.

When compost blanket is proposed with seeding, seed shall be broadcast and shall occur in conjunction with compost blanket, as specified under the relevant item for seeding.

When compost blanket is proposed for areas with planting, compost (and seed if applicable) shall be applied after planting. If compost and seed occur prior to planting, areas shall be regraded and compost and seed reapplied to the satisfaction of the Engineer and at the Contractor’s expense.

ITEM 751.7 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 751.7 will be measured and paid for at the Contract unit price per Cubic Yard which price shall include all labor, materials, equipment, and all incidental costs required to complete the work of pneumatically applying compost.

Surface preparation of substrate receiving compost blanket shall be compensated under the applicable item for placement of loam, sand, ordinary borrow, wetland soil, topsoil rehandled and spread, tilled existing soil, or other specified substrate.

Seeding, if utilized, will be compensated for under the appropriate seeding items.

ITEM 755.35 INLAND WETLAND REPLICATION AREA LUMP SUM

REV. 2022.01.01 (REV. DATE TO BE REMOVED BY MASSDOT CONTRACTS)

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.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: ***105+00 (RT)*** Area = ***9,027*** 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.

ITEM 755.35 (Continued)

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.

SUBMITTALS - MATERIAL

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.

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).

ITEM 755.35 (Continued)

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 GROUNDCOVER, 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 767.122.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to compost blankets, coir logs, 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.

ITEM 755.35 (Continued)

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 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

Seed in the Mitigation Area shall conform to the Item 765.555 – Wetland Part Shade Mix. The side slopes of the wetland replication area shall be revegetated with native seeding in accordance with the requirements if Item 765.635 – Native Seeding and Establishment.

ITEM 755.35 (Continued)

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 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 120.1.

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.

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.

ITEM 755.35 (Continued)

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.

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.

ITEM 755.35 (Continued)

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.

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 GROUNDCOVER of the Division I Standard Specifications and as amended below.

ITEM 755.35 (Continued)

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.

ITEM 755.35 (Continued)

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

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.

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.

ITEM 755.35 (Continued)

- 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.

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.

ITEM 755.35 (Continued)

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.

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, 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 Barrier – Coir Log will be paid under Item 767.122
Wetland Specialist will be paid under Item 755.75
Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

ITEM 755.45 WETLAND RESTORATION SQUARE YARD

DESCRIPTION

The work under this item shall conform to the relevant provisions of Subsections 120, 751, 765, 767, and 771 of the Standard Specifications and the following:

The work under this item shall include all labor and furnishing of materials to complete the work specified herein to protect and restore existing inland wetland areas that will be temporarily impacted as shown on the drawings and as required by the Engineer.

Inland Wetland Replication work shall be as specified and compensated under that item. Tidal wetland mitigation shall be as specified under the appropriate item for tidal wetlands.

Restoration Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers General Permit.

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 Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Completion Certification: If required, Contractor will submit completion certification to the Engineer for distribution to appropriate regulatory agencies as specified below.

ASSOCIATED ITEMS AND MATERIALS

Timber Mat shall be as specified under that item.

Compost shall be in accordance with Subsection 751 and M1.06.0 Organic Soil Additives of the Standard Specifications. Compost shall not contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants. Off-site sources shall be identified and available for inspection 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.

Compost Blanket shall be as specified under that item.

Seed Mix shall be specified under that item.

Required submittals include:

ITEM 755.45 (Continued)

- Certificate of Materials from the supplier shall be submitted and approved 30 days prior to ordering seed. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

- Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

- Bill of lading or a notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Seed mix shall be Mix 765.554 Wetland Seed – Seasonally Flooded, as follows:

	Botanical Name	Common Name	% PLS By Weight
Grass			
	Elymus riparius	Riverbank Wild Rye	20.00%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	12.00%
	Carex lupulina	Hop Sedge	10.00%
	Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	10.00%
	Carex vulpinoidea	Fox Sedge	10.00%
	Carex scoparia	Broom sedge	8.00%
	Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	8.00%
	Panicum virgatum	Switch Grass	8.00%
	Juncus effusus	Soft Rush	2.00%
	Juncus tenuis	Path Rush	1.00%
			89.00%
Herb/Forb			
	Verbena hastata	Blue Vervain	4.00%
	Desmodium canadense	Showy Tick Trefoil	2.00%
	Eupatorium maculatum	Joe-pye Weed	1.00%
	Asclepias incarnata	Swamp Milkweed	1.00%
	Aster novae-angliae	New England Aster	1.00%
	Eupatorium perfoliatum	Boneset	0.70%
	Helenium autumnale	Common Sneezeweed	0.50%
	Aster puniceus	Aster - Swamp	0.50%
	Mimulus ringens	Monkey Flower	0.20%
	Vernonia noveboracensis	New York Ironweed	0.10%
			11.00%
			100.00%

ITEM 755.45 (Continued)

Apply this mix at 20 lbs PLS/acre.

Fertilizers shall not be used.

Straw mulch or hydromulch shall be per Section M6 of the Standard Specifications.

CONSTRUCTION METHODS & SEQUENCE

Site Protection Prior to Impacts

Prior to any land work, as part of the initial site-walk, the Wetland Specialist shall photo-document the site and provide a summary report of existing conditions as outlined under Item 755.75 Wetland Specialist.

Where and as required vegetation shall be cut flush and area surveyed to establish pre-construction elevations.

Following the cutting and surveying, temporary separation fabric or timber matting shall be placed as required to protect soil and vegetation from compaction, contamination, and/or other damages. Fabric and timber mats shall be placed as specified under the respective items and the Engineer shall approval placement.

Restoration Upon Completion of Roadway Construction Work

Sediment Barriers

If required for sediment control during Restoration work (i.e, tilling is required to restore soil), sediment barriers shall be installed along the downslope perimeter of the Restoration Area beginning and ending in the surrounding upland so that no disturbed soil can enter adjacent wetlands or waters. Sediment barriers shall be in place and approved by the Engineer prior to any soil disturbance. No work shall take place outside the barriers.

Removal of Fill and Grading

Fill and temporary separation fabric or mats shall be removed and disposed of as specified under the respective items.

If required, grades shall be restored to pre-construction elevations as shown in the baseline survey or as required by the Engineer and Wetland Specialist to restore hydrologic functions. Final elevations shall be approved by the Engineer prior to soil preparation and seeding. Grading shall be incidental to this item.

ITEM 755.45 (Continued)

Following approval of grading to elevations required, soil shall be prepared and seeded as follows.

Soil Scarification
Compacted soil shall be scarified with equipment approved by the Engineer. Upon approval of soil scarification, the area shall be seeded with Compost Blanket as specified below. Seeding shall immediately follow soil preparation.

Seeding with Compost Blanket
Application of compost blanket and seed shall be done as one application and shall not begin until the Engineer has approved the site and soil conditions. The Contractor shall notify the Engineer when raked areas are ready for inspection and application of compost blanket and seed.

Compost shall be pneumatically applied (blown on) to a depth of one half to one inch at the same time that seed is broadcast such that seed is covered by a light application of compost.

When planting occurs on projects with compost blankets and seed application, planting shall occur prior to application of compost and seed. Otherwise, compost and seed shall be re-applied to the satisfaction of the Engineer and at not cost to the contract.

Seed tags shall be submitted at time of seeding.

SEED ESTABLISHMENT

Seeding that fails to establish according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland restoration work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist (if applicable to project) demonstrating that the wetland restoration work was done according to plans (or how modified) and meets required permit conditions (if applicable). The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Restoration Area and the surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

ITEM 755.45 (Continued)

- The target elevations have been restored per the survey or adjusted per the Engineer. Areas that are too high or too low should be identified along with suggested corrective measures.
- Soil compaction has been mitigated.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- Hydrology meets performance standards and has been adequately restored.
- Specified seed mix has been seeded and seeded species in the wetland and adjacent upland show signs of good germination and healthy growth.
- There are no invasive plants visible in the restored wetland area.
- Any linear temporary erosion controls have been removed.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Restoration work is not approved, MassDOT will issue a rejection letter requiring corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Wetland Specialist and regulatory representative (if required) shall assess the Restoration Area. Final Acceptance will initiate the start of the Monitoring Period (if required).

The following conditions shall be inspected and approved for acceptance and payment:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 100 percent of the restoration area, excluding areas of open water, large boulders or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- There are no visible invasive plants.

If the restoration work is not approved, MassDOT will issue a rejection letter requiring corrective action. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation. Work not approved shall be addressed by the Contractor at no extra cost.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.45 will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, compost and amendments, seed, mulch, equipment, submittals, maintenance, grading, and incidental costs necessary to complete the work as required.

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Payment shall be as follows:

- 50% upon completion of soil preparation and seeding
- 25% upon Conditional Acceptance
- 25% upon Final Acceptance or approval of the Engineer

Excavation of temporary fill will be paid under Item 120
Sediment Barrier – Coir Logs will be paid under Item 767.122
Compost Blanket will be paid under Item 751.7

ITEM 755.75 WETLAND SPECIALIST HOUR

Work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications hereafter referred to as the "Wetland Specialist."

"Wetland Mitigation" shall be used herein for applicable wetland work. For this project, applicable wetland work is for:

Item 755.35 Inland Wetland Replication Area (creation of a new wetland)
Item 755.45 Wetland Restoration

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.

ITEM 755.75 (Continued)

- 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 restoration 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.
- ***Data logger output from Monitoring Wells*** shall be submitted with reports, if reactivation of design wells are determined to be necessary.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance for the Water Quality Certification 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.

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.

ITEM 755.75 (Continued)

- 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 Restoration Measures for Restoration Areas
  - Review and approve methods of soil protection and restoration 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.

Conditional Acceptance

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Restoration areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation items.

ITEM 755.75 (Continued)

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

METHOD OF MEASUREMENT

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and restoration oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time or time spent off-site on reports. 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 permit conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.
- Color photo documentation with photos for each sampling event at each observation plot

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 or as required by permits:

- MassDEP: 2 Reports - (end of year)

BASIS OF PAYMENT AND METHOD OF MEASUREMENT

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:

- Year 1 = 1 Report
- Year 2 = 1 Report

ITEM 756.1 CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN **LUMP SUM**

The work under this item shall consist of the preparation and implementation of a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) as required by a regulatory agency. This Item is applicable to projects that are not subject to the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

The work under this item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the CP/PP.

The CP/PP, at a minimum, shall include the following:

- Project & Site Description
- Project Site Contact Information
    - This shall include the phone number for the Contractor Site Superintendent, Project Manager and CP/PP Inspector(s).
- Qualifications of the CP/PP Inspector and documentation of qualifications
    - At a minimum, relevant personnel responsible for erosion and sedimentation control inspections shall have completed the EPA's construction inspection training course and obtained a certificate confirming completion of the training module, or have completed a third-party stormwater course which covers the minimum topics listed in Part 6.3.b of the CGP.
- Reference to and information to address permit Special Conditions relevant to the CP/PP contents
    - These include but are not limited to Water Quality Certification and Army Corps of Engineers Section 404 Permit.
- Construction Sequencing/Phasing
- Erosion Prevention, Sediment Control, and Best Management Practices (BMP s) to be implemented
- Maintenance measures and intended timeline to address maintenance and corrective actions for implemented Erosion Prevention Measures, Sediment Control Devices, and BMPs
- Anticipated inspection schedule and sample inspection report form
- Use the EPA's Site Inspection Report Template found on the EPA's website.
- Site Plans
    - This shall depict, at minimum, the project limits, locations of construction phase erosion prevention measures, construction phase sedimentation control measures, limits of disturbance, staging and laydown areas, proposed dewatering locations and proposed stockpile locations. Depict existing jurisdictional wetland resource areas, drainage conveyances and stormwater treatment features.

ITEM 756.1 (Continued)

The Contractor shall prepare the CP/PP, and update/revise as needed upon changes in site conditions, relevant project personnel, construction phase controls, schedule changes, revised work, regulations, and construction methodologies. The Contractor shall submit the CP/PP to the Engineer for approval at least thirty (30) days prior to prior to commencement of any project related activity that disturbs land, including clearing and grubbing. Submission of the CP/PP to a regulatory agency for review and approval may also be required by a Special Condition associated with a permit issued under the Wetlands Protection Act, or Section 401of the Clean Water Act and their implementing Regulations. It is the responsibility of the Contractor to ensure the CP/PP is submitted to reviewers in a timely manner to support the construction schedule.

It is the responsibility of the Contractor to comply with the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Army Corps of Engineers Section 404 Permit and other environmental permits applicable to the project, and to include in the CP/PP the methods and means necessary to comply with applicable conditions of said permits.

Inspection frequency shall be:

- Weekly: At least once every 7 calendar days;
- Post-Rain Event: Within 24 hours of the end of a storm event that produces 0.25 inches or greater of rain;
- Daily (During Active Rain): While not always a formal reporting requirement, it is best practice to monitor controls curing extended rain events to prevent catastrophic failure.

The inspections shall be performed by an individual that meets the qualifications specified in the permits and proof of the inspector's qualifications shall be included as an Appendix in the CP/PP. CP/PP inspection reports shall be completed and distributed to the Resident Engineer within 24-hours of each inspection. Special conditions associated with permits may also require submittal of reports to regulators at a certain frequency. Reports shall be maintained throughout the duration of the project. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector.

The Contractor is responsible for preparation of the CP/PP, inspections, and associated reports. The Standard Specifications require adequate erosion and sedimentation control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications, good engineering practices, and MassDOT standard specifications and special provisions. Contractor must maintain all control measures and other protective measures in effective operating conditions in accordance with the additional Special Provisions herein. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department.

ITEM 756.1 (Continued)

BASIS OF PAYMENT AND METHOD OF MEASUREMENT

Item 756.1 will be measured at the contract unit price, lump sum, which shall include all work detailed above, including CP/PP and Flood Contingency Plan preparation, required revisions, revisions/addenda during construction, inspections and reports.

Work under this item shall include acceptable completion of the CP/PP, Flood Contingency Plan, site inspections, and revisions/amendments required during construction. In addition, any erosion prevention or sediment control measures beyond those specified in bid items that are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and execution of the work shall be considered incidental to this item.

Payment of thirty (30) % of the contract price shall be made upon acceptance of the CP/PP and Flood Contingency Plan. Payment of forty (40) % of the contract price shall be made in equal installments over the expected duration of stormwater pollution prevention measures. Payment of the final thirty (30) % of the contract price shall be paid when final stabilization has been achieved (minimum of 75% total cover of disturbed vegetated areas with perennial ground cover).

ITEM 765.554 WETLAND – SEASONALLY FLOODED MIX SQUARE YARD

Work under these items shall consist of furnishing the seed mixes specified below in the required quantity and in accordance with the relevant provisions of Section 765 of the Standard Specifications.

SUBMITTALS

1) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Design Builder shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.

2) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Design Builder shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.

3) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.

4) Seed Tags. The Design Builder shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

   Number of tags submitted must correspond to number of bags delivered.

   Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

   A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

ITEM 765.554 (Continued)

5) Verification of Seed Delivery. Prior to payment, Design Builder shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section

6) Seed Sample. If requested or if seed is from a previously opened bag, the Design Builder may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

SEEDING SEASON

The appropriate seeding seasons are:

Spring: April 1 - May 15
Fall: October 1 - December 1 for dormant seeding

PERMANENT SEED MIXES

Calculating Pure Live Seed (PLS)

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

Seed Mix shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

ITEM 765.554 (Continued)

Mix 765.554 Wetland – Seasonally Flooded Mix

Botanical Name	Common Name	% PLS By Weight
Grass		
Elymus riparius	Riverbank Wild Rye	20.00%
Andropogon gerardii NY Eco	Big Bluestem NY Eco	12.00%
Carex lupulina	Hop Sedge	10.00%
Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	10.00%
Carex vulpinoidea	Fox Sedge	10.00%
Carex scoparia	Broom sedge	8.00%
Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	8.00%
Panicum virgatum	Switch Grass	8.00%
Juncus effusus	Soft Rush	2.00%
Juncus tenuis	Path Rush	1.00%
		89.00%
Herb/Forb		
Verbena hastata	Blue Vervain	4.00%
Desmodium canadense	Showy Tick Trefoil	2.00%
Eupatorium maculatum	Joe-pye Weed	1.00%
Asclepias incarnata	Swamp Milkweed	1.00%
Aster novae-angliae	New England Aster	1.00%
Eupatorium perfoliatum	Boneset	0.70%
Helenium autumnale	Common Sneezeweed	0.50%
Aster puniceus	Aster – Swamp	0.50%
Mimulus ringens	Monkey Flower	0.20%
Vernonia noveboracensis	New York Ironweed	0.10%
		11.00%
		100.00%

Seeding Rate: Species ecotype shall be as native to New England region as possible.
Apply this mix at 20 lbs PLS/acre.

ITEM 765.554 (Continued)

NATIVE SEED WORKSHEET

Project Description: _____ Project No: _____

Contractor: _____ Contract No: _____

Seed Mix Number & Description: _____

Contractor: Complete Prior To Ordering

Pounds of Seed Required Per Contract:

_____lbs./acre for _____Acre(s) OR _____ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

_____**lbs. Total Seed Required**

Calculated Quantity for **P**ure **L**ive **S**eed (PLS[1]):

_____ **Total Pounds PLS**

Engineer: Verification at Time of Application

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).
*[2]Quantity delivered should match pounds **Total Pounds PLS** and **Verification of Seed Delivery**. Pounds should be shown on each Seed Tag.*

ITEM 765.554 (Continued)

SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS

Date_____

We hereby certify that (*Seed Supplier*):_____

Furnished to (*Contractor*): _____

For use on: (*Project Description*) _____

Project #: _____ Contract #: _____

Pounds of Pure Live Seed: _____

Of Mix (*Description*): _____

Lot Number _____

The material was delivered on (*Date*)_____.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): _____ Title: _____

Supplier: _____

Signature and Seal: _____

ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT SQUARE YARD

Work shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications and the following:

The work under this item shall consist of seeding, mowing, and other care to establish a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term "grass" shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

QUALIFICATIONS

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

SEEDING SEASON

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

Seeding season for cover crops shall be grain oats January 1 – July 31 and grain rye August 1 – December 1.

MATERIAL AND SUBMITTALS

Seed Mixes and Submittals shall be per the item(s) for permanent and annual (cover crop) seed mixes.

Compost Blanket, if used, shall meet the material and submittal requirements for that item.

Hydromulch shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

Fertilizer
No fertilizers shall be applied.

ITEM 765.635 (Continued)

Water
Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

SEEDING

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

Surface Preparation

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer’s instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

Seeding over Various Substrates

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Compost Blanket: Compost Blanket shall be applied as specified under that item. Seed should be hand broadcast at the same time as compost application to ensure a thin cover of compost over seed.

ITEM 765.635 (Continued)

When seeding is done after application of Compost Blanket the rate shall be increased by 50%. If the Compost Blanket is applied after December 1, seed shall be broadcast or hydroseeding over the compost in the Spring and the rate increased by 50% specified under Seed Application.

Compost Mulch over Modified Rock: Compost Mulch and seed shall be applied as specified under that item. No hydromulch is required.

Cover Crop

Cover crop shall be used when seeding out of season, when specified with the permanent native seed mix under that item, and as required to prevent erosion until the permanent seed establishes. A cover crop should not be used with a steep slope mix or other permanent mix which already contains either cereal rye or oats in the composition of the mix. A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

Seed Application

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

Broadcast Seeding

Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

Hydroseeding and Hydromulching

Hydroseed and mulching shall be per the manufacturer’s directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

ITEM 765.635 (Continued)

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

CARE DURING GERMINATION AND ESTABLISHMENT

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

MOWING FOR WEED CONTROL

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7th and August 1st, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

ITEM 765.635 (Continued)

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

OVER-SEEDING

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

DETERMINING SATISFACTORY GRASS ESTABLISHMENT

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
  - At least 3 types of permanent seeded grass species shall be visible.
- At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

ITEM 765.635 (Continued)

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance. Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the contractor's expense.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Native Seeding and Establishment will be measured for payment by the square yard, complete in place.

Native Seeding and Establishment will be paid at the Contract unit price by the square yard upon Conditional, Interim, and Final Acceptances as described above. This price shall include all submittals, seeding, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Native seed and cover crop mixes shall be compensated under the respective items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project. If used, Compost Blanket shall be compensated under the respective item.

Mowing for weed control will be incidental to this item.

ITEM 765.635 (Continued)

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

ITEM 767.122 SEDIMENT BARRIER - COIR LOG FOOT

The work under this item shall conform to the relevant provisions of Subsections 101, 120, 170, and 751 of the Standard Specifications and the following:

Sediment Barrier - Coir Log shall be used in wet locations where the barrier will not require removal; when barrier is placed immediately adjacent to existing wetlands; as a check dam in swales; in locations as shown on the Drawings; and/or in locations required by the Engineer.

Permits, Codes and Regulations: The Contractor shall comply with all rules, regulations, laws and ordinances of the City/Town and State, and all other authorities having jurisdiction over the Project site. All labor, materials, equipment, and services necessary to make the work comply with such requirements shall be provided by the Contractor without additional cost to the Department.

MATERIALS

Coir Log: Coir Log shall be biodegradable coir fiber cylindrical bundles. Inner core shall be 100 percent unsorted, well-cleaned, coir fiber uniformly distributed along the length of the log. The stuffed density of the coir fiber shall be a minimum of 9 pounds per cubic foot.

Outer netting shall be constructed from a minimum 3-ply high strength coir bristle twine. The netting shall have 2-inch by 2-inch rhombic openings with hand-knotted junctions. The average breaking strength of the coir twine shall be a minimum of 80 pounds. Production tolerance for all the above parameters shall not exceed plus or minus 10 percent.

Coir log diameter shall be sized as shown on the drawings. Typical lengths are supplied in 10 foot or 20-foot increments. Coir logs or coir netting may not be cut to decrease length and shall maintain the physical properties as supplied by the Manufacturer.

Notched Wood Stakes: Stakes shall be oak or southern pine with dimensions as shown on the Drawings. Stakes shall be free from knots and other defects which would cause splitting and shall have a downward-angled notch as shown in the drawing.

Coconut Fiber Cord: Coconut fiber cord shall be two-ply braided cord with a breaking strength of 80 pounds, minimum 0.25-inch diameter.

Delivery, Storage and Handling: Protect materials from deterioration during delivery and while stored at site.

CONSTRUCTION METHODS

General: Prior to initial placement of the coir log sediment barrier, the Contractor and the Engineer shall review locations specified on the plans and adjust placement, if required, to ensure that the coir log positioning and configuration will provide maximum sediment capture. Coir log sediment barrier(s) shall be in place prior to excavation work and no work shall take place outside the coir log barrier(s).

ITEM 767.122 (Continued)

Installation: Coir logs shall be staked and secured as shown on the Drawings, as specified herein, and/or as recommended by the Manufacturer. The Contractor shall remove all underlying vegetation or debris to ensure that each coir log is securely in contact with soil, such that there is no flow beneath the log.

When used as a check dam barrier in a swale, the coir log shall be centered in the low point of the swale, perpendicular to the flow, with ends extending upslope. The log check dam barrier shall extend such that the log top elevation at the center of the swale is lower than the lowest elevation at the end log, to ensure that sediment-laden runoff will flow either through or over the coir log but not around it. The coir log check dam barrier shall have length such that no seams occur in the swale.

Notched wood stakes shall be driven parallel on both sides of the coir log at a typical spacing of 5 feet on center, unless site conditions warrant a closer spacing distance to ensure logs are firmly secured to the underlying soil. Stakes shall not extend more than 1 foot beyond the top of the log. Coir twine shall lash the logs to notched stakes in a cross-lashing fashion between stakes, throughout the length of the log barrier.

When utilizing multiple logs for sediment control, each coir log shall be laced together end-to-end (creating a seam) with coir twine to create a continuous length. End-to-end lacing may be completed before or after placement, to facilitate handling.

Maintenance: Maintenance of the coir log sediment barrier shall be per the Stormwater Pollution Prevention Plan (SWPPP).

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. The Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract. Under no condition shall sediment be allowed to accumulate more than 4 inches above the original ground line.

If a breach or other failure of the barrier occurs, the barrier shall be immediately restored. Repair shall include replacement of entire defective segments or for short breaches, revetment with additional coir logs, set directly adjacent to the downslope side of the breech. Revetment coir logs must overlap breech by a minimum of 2 feet on each side. The Engineer must approve breech repair means and methods as well as outcome.

If the coir log sediment barrier is damaged by equipment or undergoes a significant washout or other major failure, the Contractor shall replace the component in its entirety, at the discretion and approval of the Engineer. Any delay in maintaining the barrier shall be cause to immediately suspend the work as provided for in Subsection 8.09: Delay and Suspension of Work.

ITEM 767.122 (Continued)

Disposition/Removal: For naturalized areas, coir logs and wooden stakes may be left in place to decompose on-site. For areas where, in the determination of the Engineer, aesthetics are a concern, logs, errant coir fiber material, and stakes may require removal.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.122 Sediment Barrier - Coir Log will be measured for payment by the FOOT, complete in place and will be paid for at the Contract unit price per FOOT, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for coir log(s) follow-up maintenance and repairs, or disposal (if required), but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 767.91 **TIMBER MATTING** **SQUARE YARD**

Work under this item shall conform to the plans and the relevant provisions of Section 767 and the following:

Timber Mats shall be used to support construction equipment when operating in wetlands. This item consists of furnishing, placing, maintaining, and removing Timber Matting as specified herein, as shown on the plans, and as required to protect existing soils during construction. Mats shall be within the area shown on the plans as necessary for construction access and staging. Existing soils shall be protected to the extent feasible.

At a minimum, material and methods shall follow Army Corp of Engineers Best Management Practices:
https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/MA/ConstructionMatBMPs.pdf

Relevant permit conditions and approvals shall also be followed.

MATERIALS & SUBMITTALS

Material and methods shall be submitted to the Engineer for approval. Submittal shall include a plan to show the proposed extent of matting, methods of preventing soil or other material from entering the wetland through gaps in the timber, procedure for inspections, method of removal and cleaning, and location of cleaning.

The timber construction mats shall be composed of heavy timbers joined together to form stable platforms installed over the surface of wetlands. Mats shall have all timber and rods intact.

Depending on site specific field conditions at the time of construction, multiple layers of Timber Mats and stringers may be necessary to support heavy equipment and to protect the underlying wetland.

As necessary, sediment control devices such as compost filter tubes shall be placed along edge of the Timber Mats to protect wetlands from sedimentation caused by construction vehicle traffic.

Mats shall be certified clean by the vendor prior to installation. The vendor shall submit proof of compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc.), soil, or other deleterious materials prior to being brought to the project site.

METHOD OF WORK

Prior to placement of mats, existing wetland limits and topography shall be assessed. Vegetation shall be cut flush. Care shall be taken to avoid removal of plant roots and to avoid soil disturbance.

ITEM 767.91 (Continued)

Mats shall be spread evenly and smoothly to ensure direct contact with the soil at all points and placed parallel to the drainage flow direction. To the extent possible, mats shall be placed along the travel area so that individual boards are perpendicular to the direction of traffic. There shall be no gaps between the mats. Mats shall be placed on either side of wetland area to rest on firm ground.

For situations where the Contractor determines that stones or boulders shall be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads, the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull-dozer is not allowed). When there is a significant number of boulders that shall be removed, the Contractor shall consult with the Engineer prior to undertaking the work.

The stockpiling of stone, drill spoils, and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Under this scenario, composite mats and/or other approved methods and materials shall be placed on top of the timber mats to prevent spoils from migrating through the gaps between timbers or spilling over the sides of the matting. The stockpiled spoil shall be removed from the work zone and properly disposed of in uplands approved by the Engineer or hauled off site for proper disposal. Material that falls into or otherwise enters the wetlands shall be removed by hand following removal of the mats.

Sediment controls and stone or wood chip ramps may be installed to promote a smooth transition to and minimize sediment tracking onto the timber mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions.

Mats shall be placed per the manufacturer's instruction. If requested by the Engineer, method of installation and final placement of mats shall be approved by the Wetland Specialist.

MAINTENANCE

Mats shall be monitored to assure that they are functioning correctly and shall be inspected for any defects or structural problems. Mats covered with soils or construction debris shall be cleaned and the materials removed and disposed of in an upland location. The material should not be scraped and shoveled into the resource area. Mats that become imbedded must be reset or layered to prevent mud from covering them or water passing over them. Worn timber or plywood used as a wearing surface shall be replaced as required and to the satisfaction of the Engineer.

REMOVAL OF MATS

Clean mats after use to remove any invasive plant species seed stock. Cleaning methods may include but are not limited to, shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, sweeping, or exposing the mats to high temperatures. The location and method of cleaning shall be approved by the Engineer.

ITEM 767.122 (Continued)

Upon completion of construction, mats shall be removed. Matting should be removed by "backing" out of the site, removing mats one at a time.

If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions consistent with the surrounding area, by light hand raking or by back-blading with machinery. Deeper ruts shall be graded using available, loose soil from the work area.

Care shall be taken to inspect wetland crossings as each mat is removed to ensure any undesirable materials are properly removed and disposed of off- site.

If determined necessary by the Engineer, to enhance the functions of an altered wetland, a wetland seed mix shall be sown throughout the disturbed areas. In most instances, natural re-vegetation is an appropriate means to re-establish the wetland plant community in lieu of seeding.

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of swamp mats. Once construction mats are removed, wetlands shall be inspected for build-up of sand that may have fallen through swamp mats, therefore care shall be taken to inspect wetland crossings carefully as each mat is removed to ensure sand is properly removed and disposed of off-site.

COMPENSATION

Timber matting will be measured for payment by the square yard, complete in place, maintained and removed. Overlapped matting will not be measured for payment.

Timber matting will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, sediment barriers specific to matting, geotextile, stone, wood chips, cutting of existing vegetation, and incidental costs required to complete the work of installation, maintenance, removal, and restoration of soil and vegetation, if required.

ITEM 983.521 STREAMBED/BANK RESTORATION SQUARE YARD

This work shall consist of restoring the streambed where disturbance takes place in the project area within the limits of work. Work will primarily include furnishing and installing streambed material at the Bridge No. S-10-015 crossing structure and above proposed roadway embankment armoring (i.e. riprap). The streambed restoration beneath the proposed bridge structure and immediately adjacent to Schenob Brook 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 an Environmental Specialist or a Fluvial Geomorphologist (Geomorphologist) to provide review of the final design and on-site assistance during streambed restoration construction to ensure the restoration is constructed 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 the MassDOT Wildlife Unit to set up an initial (virtual or in person) meeting with MassDOT's Environmental Specialist, Geomorphologist, Contractor, and Resident Engineer. The MassDOT Wildlife Unit Contact Information is:

David Paulson, Wildlife and Endangered Species Unit Supervisor
David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

At this meeting, the Environmental Specialist or 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 additional onsite meeting to discuss the streambed restoration with the Environmental Specialist or Geomorphologist and respective parties from MassDOT. The Environmental Specialist or Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Environmental Specialist or 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.

MATERIAL

The streambed/bank construction material is to be placed along the limits of the proposed Schenob Brook channel in the area beneath the proposed bridge span and along the side slopes adjacent to the proposed bridge wingwalls as shown on the plans.

ITEM 983.521 (Continued)

Additionally, streambed/bank restoration material shall be installed on top of the proposed Riprap along the approach roadway side slope embankments as shown on the plans.

The streambed material shall be comprised of two primary components.

1. Stone 4 inches and under shall meet the following gradation:

Sieve Opening	% Passing (by Mass)
4”	95
2”	55 – 65
¾”	30 – 45
#4	0 - 5

2. Stone 6 inches to 2.5 feet in diameter:

Stone Size	% Passing (by Mass)
2.0’	80
1.5’	25
0.5’	0

The streambed/bank stone for all two components shall be native cobbles and boulders similar in shape and size of the streambed/bank stone adjacent to the work area. Partially angular rock is preferred over round, and shall be able to lock together to prevent movement during high flows. Crushed Stone will not be acceptable for any of the components. The elevations and conditions of the existing streambed shall be maintained to the maximum extent practicable.

CONSTRUCTION METHODS

Streambed

Components One and Two shall be pre-blended outside the project area at a volume ratio of 30% and 70% respectively. The pre-blending shall be done in a way that will prevent the mass from being contaminated by work-place soils. The final streambed shape and appearance between the bridge abutments shall be finalized in the field as directed by the Environmental Specialist or Geomorphologist.

The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

Roadway Side Slope Embankment

Where installed over riprap, the pre-blended mass shall be placed in a manner to fill / choke 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.

ITEM 983.521 (Continued)

Completion

Once all material has been placed in the stream channel and approved by the Environmental Specialist or 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 organisms following construction. Terrestrial wildlife must be able to walk along the riverbank.

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 Environmental Specialist or Geomorphologist.

METHOD OF MEASUREMENT

Streambed/Bank Restoration will be measured for payment per square yard of Natural Substrate material complete and in place.

BASIS OF PAYMENT

The work to be done under this item shall be paid for at the Contract Unit Price per Square Yard which Contract unit price bid shall be considered full compensation for all labor, tools, equipment, and materials necessary to rebuild the streambed.

The Environmental Specialist or Geomorphologist will be provided by MassDOT at no cost to the Contractor.

ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2) LUMP SUM

The work to be performed under this Item shall be in accordance with Section 140.60.C, 140.60.E, and as specified herein. Work under this Item shall include all cofferdams, pumping, sandbagging, barriers, earth and other measures, necessary for sufficient water control to accomplish the removal and replacement of Bridge No. S-10-015, including wingwalls, foundations, and streambed/bank restoration in the dry. Work under this Item shall consist of dewatering within the bridge work limits as shown on the plans to facilitate the reconstruction of the bridge, wingwalls, and streambed/bank restoration. Water within the work area shall be discharged as specified in the contract documents, environmental permits obtained for this project, and as directed by the Engineer. No direct discharge will be allowed into Schenob Brook or adjacent wetland resource areas during the dewatering operations. Dewatering shall be conducted to ensure that all structural concrete is placed and cured in the dry. For demolition purposes, dewatering shall be conducted for portions of the existing bridge as determined by the Engineer. It is the responsibility of the Contractor to determine the need and extent of dewatering required; identify sedimentation and dewatering techniques and controls to be utilized; and submit method and materials he/she proposes to use for approval by the Engineer.

The handling of flood flows and the protection of existing structures, and any or all of the finished construction during high water, are included in the scope of work under this item.

Plans and calculations for all the sheeting, sandbagging, dikes, and other water control measures, including pumping, shall be developed by the Contractor. These plans and calculations shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted for approval prior to the start of construction. The Contractor shall use such equipment and shall perform the operations in such a manner that disturbances of the soil in the foundation areas will be prevented. The Contractor shall keep the excavated areas dry by such means that the water will be prevented from entering from the adjacent soils and adversely affecting the stability of the foundation material or supporting soils.

The Contractor shall investigate and verify existing river flow/elevation conditions, and evaluate the need for protection during construction and the type of temporary measures required. Before commencing construction, the Contractor shall furnish the Engineer with the plan and methods he/she proposes to use for work within or adjacent to the river including details for cofferdams and pumping as needed to accomplish the work within these areas. The Contractor may use sandbags, barriers, or other types of protective facilities as approved by the Engineer. The furnishings of such plans and methods shall not relieve the Contractor of his responsibility for the safety of the work and for the successful completion of the project.

The height of any cofferdams and/or barriers shall be sufficient to provide reasonable protection from flooding as described on the Contract Plans. All such temporary structures or facilities shall be safely designed, extended to sufficient depth and be of such dimensions and water-tightness to assure construction of the permanent work in the dry. Water control structures shall not interfere with the proper performance of the work. Their construction shall be such as to permit excavation for the permanent work and any conflicts shall be corrected at the sole expense of the Contractor.

ITEM 991.1 (Continued)

Any pumping from within the areas of construction shall be done in such a manner as to prevent the possibility of movement of water through any fresh concrete. No pumping will be permitted during placing of concrete or for a period of 24 hours thereafter, unless it is done from a suitable sump properly located with sufficient pumping capacity to protect against damage from sudden rising of water.

All dewatering and related earthwork shall be conducted in such a manner as to prevent siltation or contamination of the waterway and wetland resource areas. The pumping discharge shall not be allowed to enter directly into Schenob Brook or wetland resource areas. The water from the work areas shall be pumped either to a temporary settling tank, filter bags, or other approved containment structure conforming to the Department's *"Erosion & Sediment Control Field Guide"*. The filtration system shall be constructed to allow for the pumped water to pass through the structure with sediments settling out before outletting to the surrounding area. A temporary containment corral shall be built around the filtration system. The criteria that are implemented for the control of water must meet the following requirements:

1. Approximately 70% sedimentation trapping efficiency shall be achieved with an enclosure adequately sized to prevent overtopping from dewatering and to provide the required filtering.
2. The outlet from the containment structure shall not cause erosion of the surrounding area.
3. Demonstrate that size and type of structure are adequate for the proposed rate of pumping discharge.

The control of water containment structure shall be maintained as follows in accordance with the Department's *"Erosion & Sediment Control Field Guide"*.

Placement of the dewatering containment structure will be as approved by the Engineer based on specific site conditions and staging operations of the Contractor.

Unless otherwise provided or directed by the Engineer, all such temporary protective work shall be removed and disposed of in an approved manner when no longer required.

The Contractor shall be responsible for the scheduling of work under this item to not interfere with any sequence of operations developed for this project. Delays as a result of work required under this item shall not constitute a claim for an extension of contract time.

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.

ITEM 991.1 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for work under this Item shall be paid at the lump sum contract bid price, complete.

All water control work, including design for the dewatering operations and systems used to maintain a water free excavation, all labor, tools, equipment, and materials required for installation, piping, pumping, maintenance, subsequent removal of all related materials and equipment all as outlined above, and restoration of site shall be included in the lump sum contract price bid under this Item.

Haybales, sedimentation fence, filter bags or other materials provided specifically for the sedimentation filtration and containment system shall be included in the lump sum bid price for this Item.

ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING LUMP SUM
BRIDGE NO. S-10-015 (088)

The work to be performed under this Item shall include designing, furnishing, installing, relocating, maintaining, and disposing of a temporary protective shielding system under the bridge. The purpose of the installed system is to prevent any construction debris from entering the waterway below the bridge.

Prior to the start of demolition, the Contractor shall submit drawings and calculations for the temporary shielding to the Engineer for review and approval. The temporary shielding system shall be designed to safely withstand all loads that it will be subjected to in accordance with AASHTO Standard Specifications for Highway Bridges and conform to all Federal, State, and local laws and regulations. The design shall indicate the maximum size of deck area to be excavated at one time. The shielding shall be designed to withstand impact loads from the maximum size of concrete decking should it fall during removal. The shielding shall extend the full length of the bridge span, 3 feet beyond the deck limits, and sufficient distance above and beyond the girders as required to protect debris from entering the waterway below. 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 waterway. The temporary shielding system drawings and calculations shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.

No portion of the bridge deck, curbing, or other portion of the superstructure or existing structure shall be removed until the Protective Shielding is completely in place and the Contractor has approval from the Engineer to proceed.

The Contractor shall periodically inspect the shielding system, repair any deficiencies, and remove/dispose of any accumulated debris. The Contractor shall exercise due care not to permit any items of the existing bridge structure to fall into the waterway. Any debris that falls into the waterway below must be immediately removed and properly disposed of at the Contractor's expense.

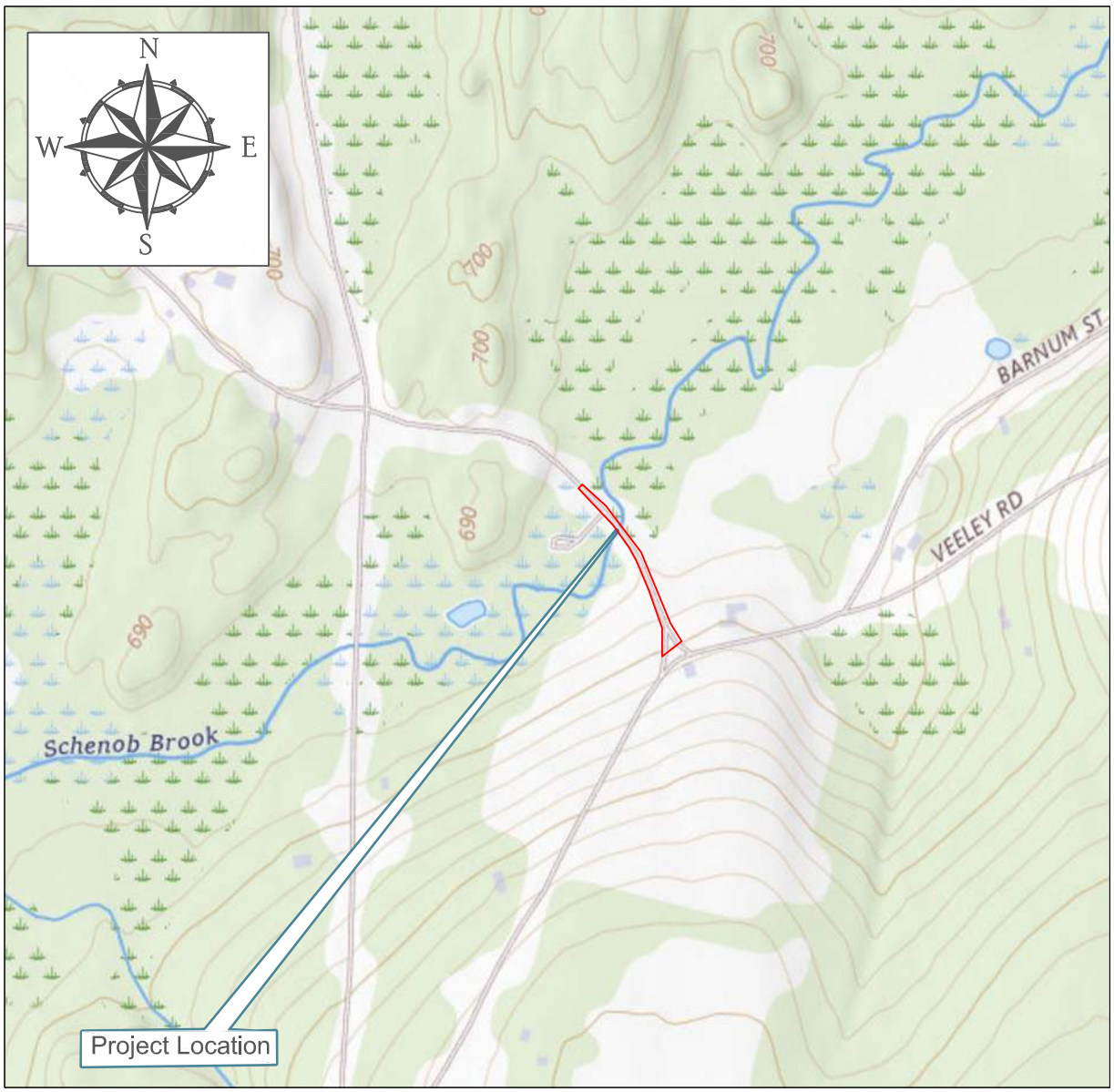
The shielding shall be maintained and remain in place until the superstructure is completely removed. Shielding shall be removed only upon approval of the Engineer. After completion, the shielding shall be removed and disposed of to the satisfaction of the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for work under this Item shall be paid at the contract lump sum bid price, complete.

All work, including design, labor, materials, equipment and incidental costs necessary for the installation, maintenance, and removal of the temporary protective shielding system as shown in the approved working drawings shall be included in the lump sum bid price for this Item.

Attachment B
Locus Map - USGS



GENERAL NOTES

1. Locus map based on USGS 7.5x7.5 Grid US Topo Map of Sheffield, MA from the USGS map webstore: http://www.store.usgs.gov
2. Locus map is not to scale

Figure 1

USGS Locus Map

S-10-015 - BRIDGE REPLACEMENT PROJECT

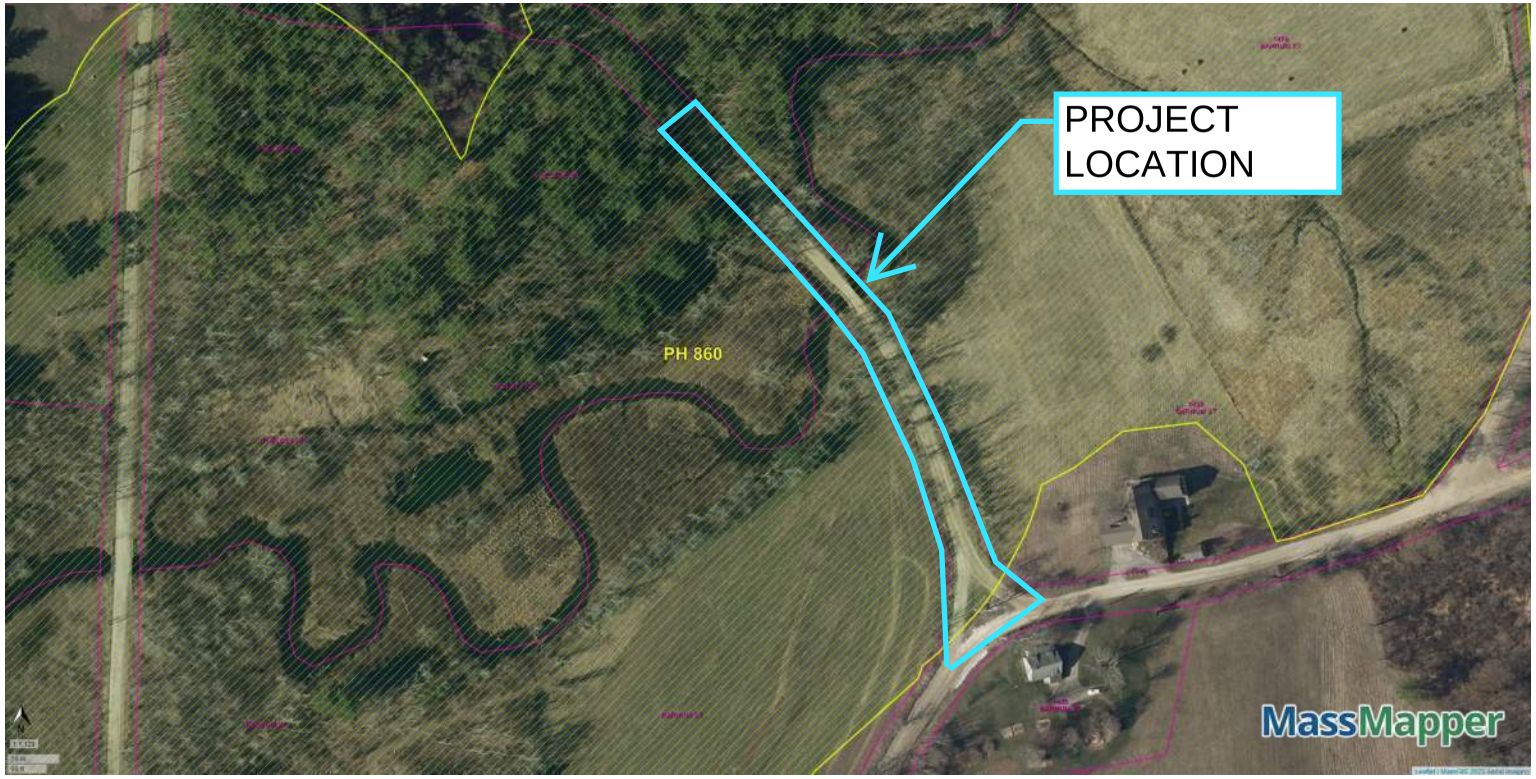
SHEFFIELD, MA

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

Attachment C
Environmental Constraints

609068 Environmental Constraints 1 of 5



NHESP Estimated Habitats of Rare Wildlife

NHESP Priority Habitats of Rare Species

Property Tax Parcels

Proposal No. 609068-136649

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609068 Environmental Constraints 2 of 5



DCR Pools
- Swimming Pool
- Swimming Pool, Diving Pool and Spray Deck
- Spray Deck
- Swimming Pool and Spray Deck
- Wading Pool
- Swimming and Wading Pool
- Wading Pool and Spray Deck

Public Water Supplies
- Communtiy Groundwater Well
- Non-Communtiy Groundwater Well
- Surface Water Intake
- Emergency Surface Water Intake
- Community Labels
- Non-Community Labels

IWPAs

Zone C

Zone B

Zone A

Zone Is

Zone IIs

NHESP Certified Vernal Pools

DFW Coldwater Fisheries Resources

Shellfish Growing Areas
- APPROVED
- CONDITIONALLY APPROVED
- RESTRICTED
- CONDITIONALLY RESTRICTED
- PROHIBITED

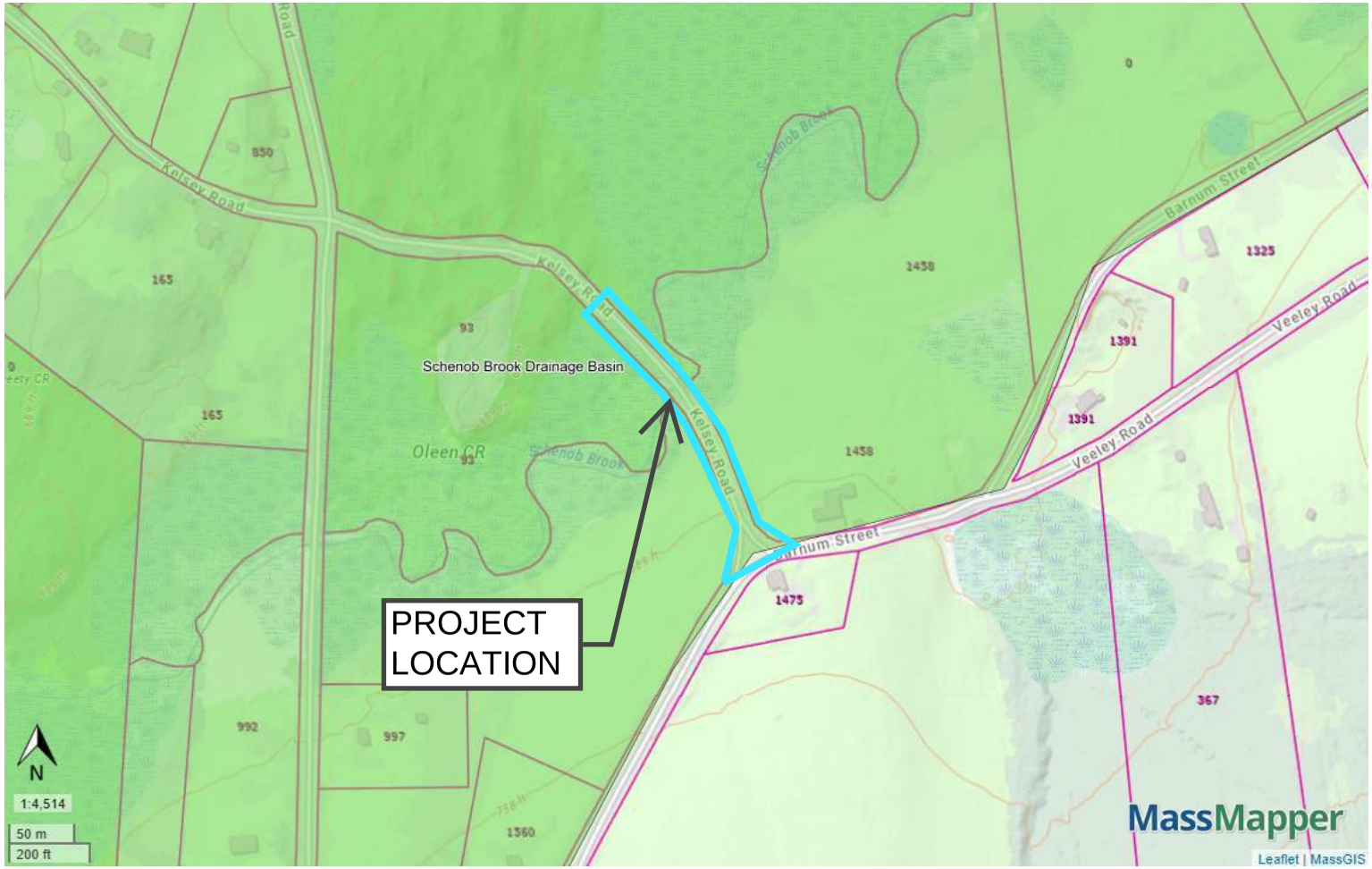
Property Tax Parcels

Proposal No. 609068-136649

A00830 - 118

Printed Oct 29, 2025

609068 Environmental Constraints 3 of 5



Areas of Critical Environmental Concern
ACECs Transparent Green

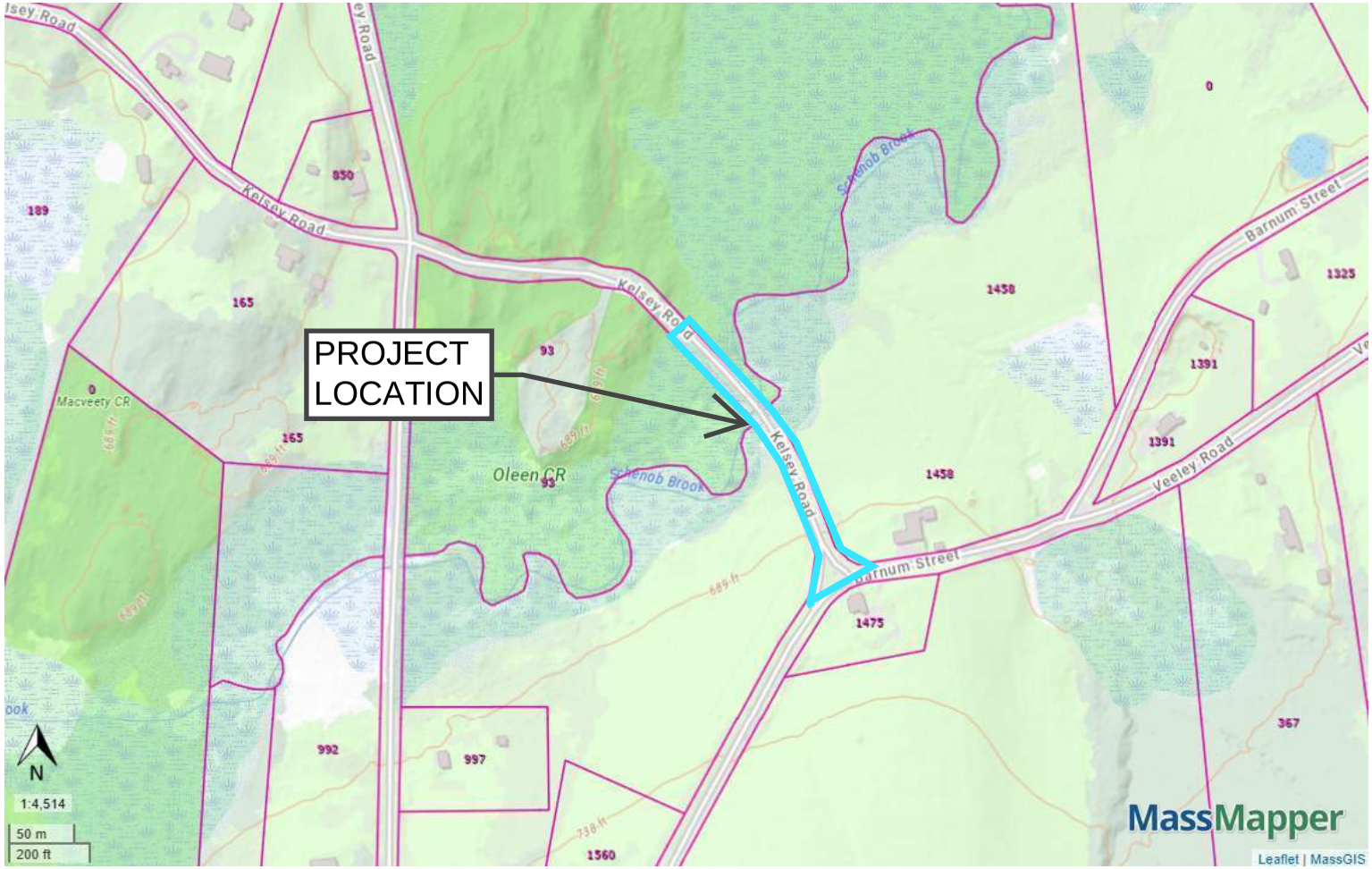
Property Tax Parcels

Proposal No. 609068-136649

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609068 Environmental Constraints 4 of 5



Outstanding Resource Waters

- ACEC
- Cape Cod National Seashore
- Protected Shoreline
- Public Water Supply Watershed
- Retired Public Water Supply
- Scenic/Protected River
- Wildlife Refuge

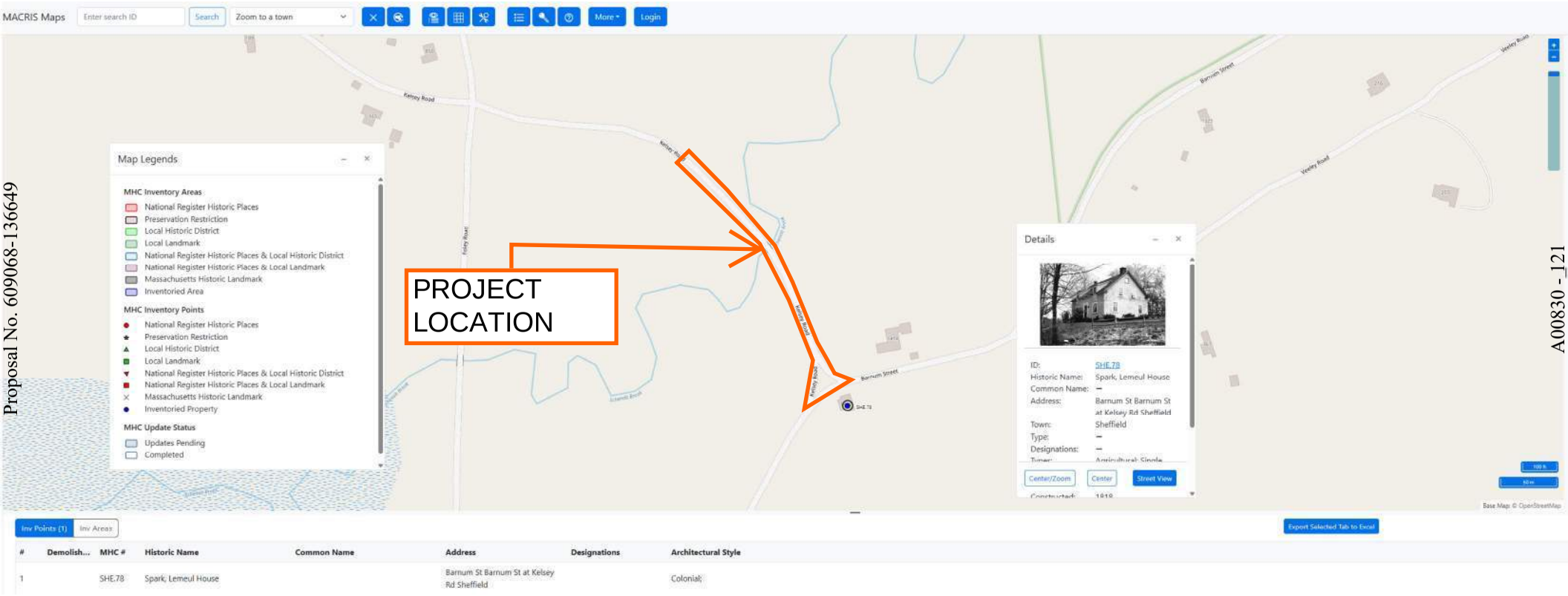
Property Tax Parcels

Proposal No. 609068-136649

A00830 - 120

Printed Oct 29, 2025

609068 Environmental Constraints 5 of 5



Inv Points (1) | Inv Areas | Export Selected Tab to Excel

#	Demolish...	MHC #	Historic Name	Common Name	Address	Designations	Architectural Style
1		SHE.78	Spark, Lemeul House		Barnum St Barnum St at Kelsey Rd Sheffield		Colonial;

Proposal No. 609068-136649

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

Greater Atlantic Regional Office
Atlantic Highly Migratory Species Management Division

Query Results

Degrees, Minutes, Seconds: Latitude = 42º 3' 56" N, Longitude = 74º 36' 8" W
Decimal Degrees: Latitude = 42.066, Longitude = -73.398

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

***** W A R N I N G *****

Please note under "Life Stage(s) Found at Location" the category "ALL" indicates that all life stages of that species share the same map and are designated at the queried location.

EFH

No additional Essential Fish Habitats (EFH) were identified at the report location.

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

Atlantic Salmon

No Atlantic Salmon were identified at the report location.

HAPCs

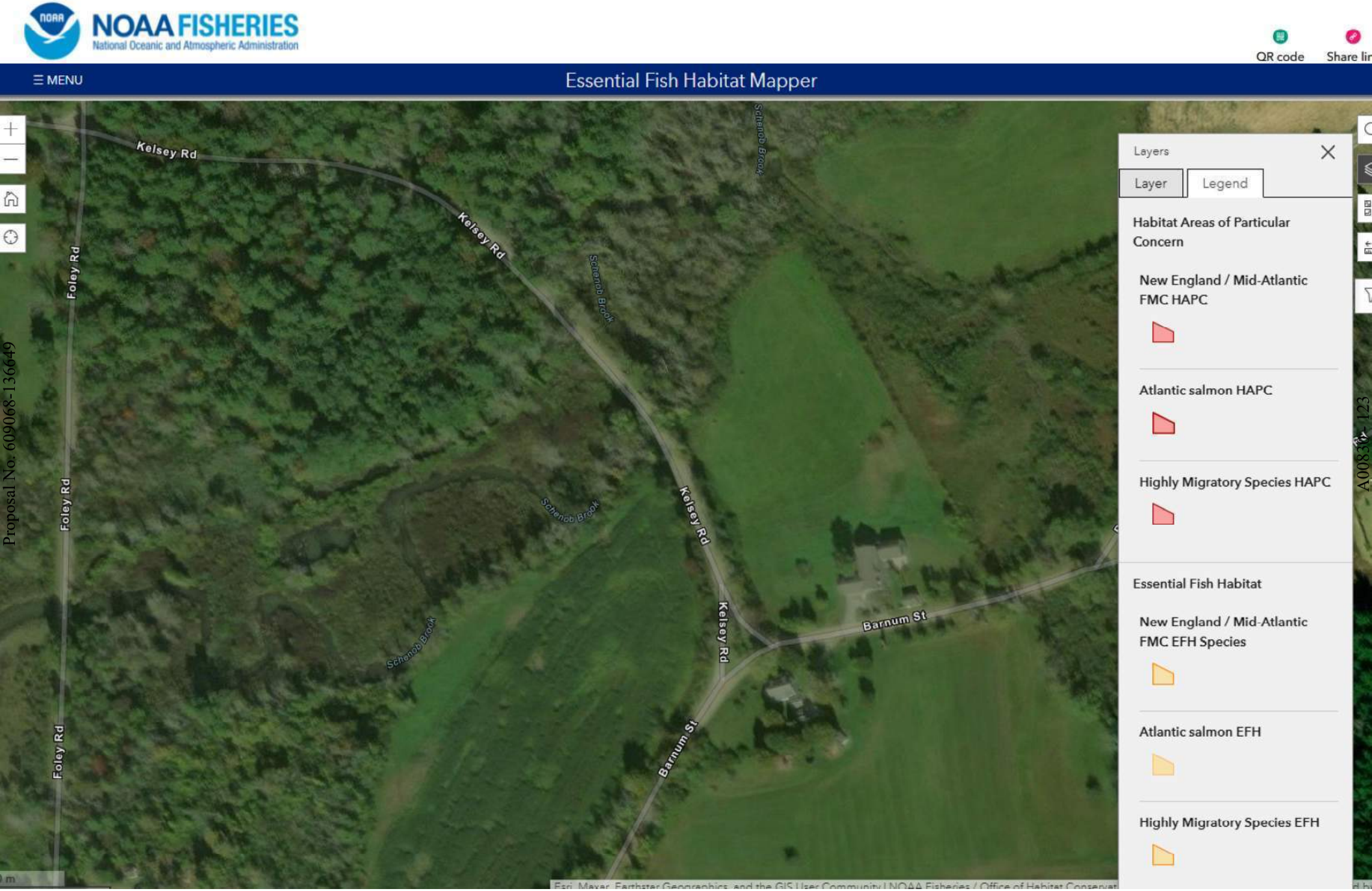
No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.
****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**

All EFH species have been mapped for the Greater Atlantic region,
Atlantic Highly Migratory Species EFH,
Bigeye Sand Tiger Shark,
Bigeye Sixgill Shark,
Caribbean Sharpnose Shark,
Galapagos Shark,
Narrowtooth Shark,
Sevengill Shark,
Sixgill Shark,
Smooth Hammerhead Shark,
Smalltail Shark

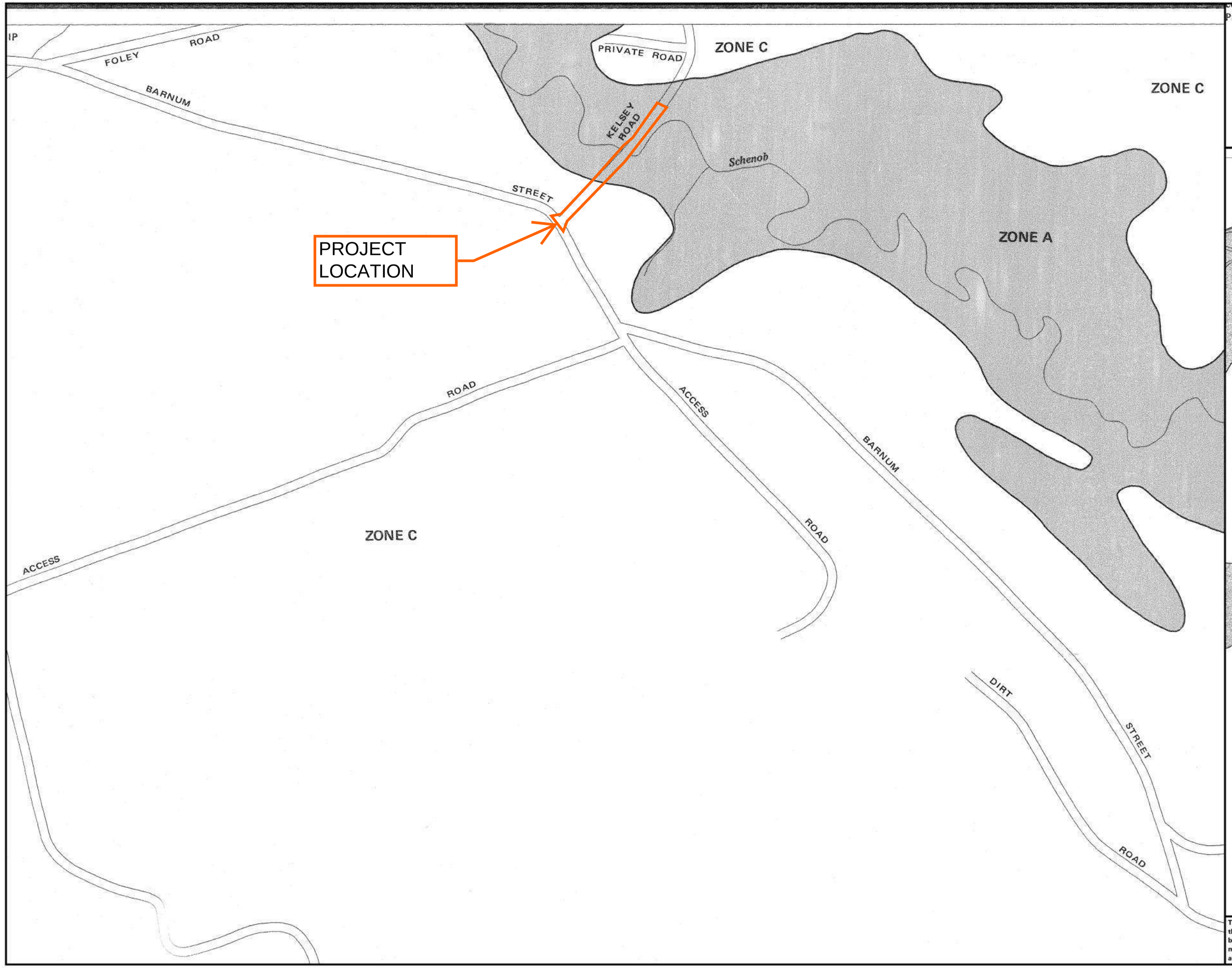


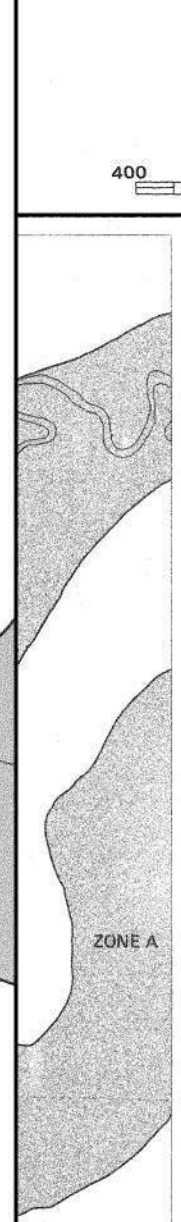
Proposal No. 609068-136649

A00830 - 123

Proposal No. 609068-136649

Contact your insurance agent, or call the National Flood Insurance Program at (800) 638-6620.





APPROXIMATE SCALE

400 0 400 FEET

KEY TO MAP

500-Year Flood Boundary	ZONE B
100-Year Flood Boundary	ZONE A1
Zone Designations*	ZONE A5
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7x
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

Attachment D
Correspondences

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 3301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 09/04/2025 15:46:27 UTC
Project code: 2025-0109843
Project Name: 609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

Federal Nexus: yes
Federal Action Agency (if applicable): Federal Highway Administration

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK'

Dear Julia Hoogeboom:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on September 04, 2025, for '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK' (here forward, Project). This project has been assigned Project Code 2025-0109843 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your Project, the Project may need to apply***

the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office.

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	NLAA

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete for northern long-eared bat and/or tricolored bat and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat or tricolored bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat or tricolored bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat and/or tricolored bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat and Tricolored Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Bog Turtle *Glyptemys muhlenbergii* Threatened
- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2025-0109843 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

2. Description

The following description was provided for the project '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK':

> 609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK
> The recommended bridge replacement entails a superstructure with an increased hydraulic opening measuring approximately 70 feet in length and 16 feet in width. The superstructure comprises four adjacent prestressed concrete box beams supported by full-height concrete cantilever abutments with pile foundations and U-wing walls. Riprap will be installed along the entire channel of Schenob Brook beneath the bridge. The bridge and approach slabs will be paved with an asphalt riding surface, while the remainder of Kelsey Road will retain its existing gravel riding surface. The proposed roadway cross section will consist of a single lane, measuring 13 feet in width, featuring a crown at the center and 2% cross slopes. Guiderails will be installed on both sides of the roadway along each bridge approach
> Tricolored Bat: Proposed Threatened Species only. The project action will not jeopardize the continued existence of the proposed species.
> Monarch Butterfly: Proposed Threatened Species only. The project action will not jeopardize the continued existence of the proposed species.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.06555865,-73.39766969509034,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does the proposed action involve **wind or solar energy**?

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Note for projects in Pennsylvania: Projects requiring authorization under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act would be considered as having a federal nexus. Since the U.S. Army Corps of Engineers (Corps) has issued the Pennsylvania State Programmatic General Permit (PASPGP), which may be verified by the PA Department of Environmental Protection or certain Conservation Districts, the need to receive a Corps authorization to perform the work under the PASPGP serves as a federal nexus. As such, if proposing to use the PASPGP, you would answer 'yes' to this question.

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   Yes

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    Automatically answered

    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    No

13. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    Yes

14. Has the local Service Field Office confirmed that bridge surveys are not needed because project activities are not expected to impact bats, or because NLEBs and TCBs are not using bridges within the action area?

    No

15. Has a site-specific bridge assessment following USFWS guidelines been completed?

    Note: For information on conducting a bridge/structure assessment, please see Appendix K in the USFWS' Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines at:https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines Additional resources can be found at: https://www.fws.gov/media/bats-and-transportation-structures-references-and-additional-resources and a training video is located at: https://www.youtube.com/watch?v=iuFwkT7q8Ws.

    Yes

16. Was evidence of bat use found during the bridge assessment?

    No

    SUBMITTED DOCUMENTS

    - *609068_Sheffield-bat_acoustic_report.pdf https://ipac.ecosphere.fws.gov/project/BRLW5HTKVNB2DIGKVRVDAFS2I4/projectDocuments/163432405*

17. Did you coordinate with your local Ecological Services Field Office (ESFO) and receive approval of the bridge assessment results? If NO, please contact the appropriate local ESFO before completing this determination key.

    Yes

18. Will the action result in effects to a culvert or tunnel at any time of year?

    No

19. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

20. Does the action include the intentional exclusion of bats from a building or building-like structure? **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

21. Does the action involve removal, modification, or maintenance of a human-made building-like structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

22. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

23. Will the action include or cause any construction or other activity that is reasonably certain to increase average night-time traffic permanently or temporarily on one or more existing roads? **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

24. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

25. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

26. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

27. Will the action include drilling or blasting?

    No

28. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use at night)?

    No

29. Will the proposed action involve the use of herbicides or pesticides (e.g., fungicides, insecticides, or rodenticides)?

    No

30. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

31. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

32. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    No

33. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

34. Is the project related to the production of coal, including projects that support the mining of coal, as well as the production and/or distribution of energy produced from coal?

    No

35. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

36. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

37. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

38. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

39. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

40. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

41. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

42. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

43. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

44. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known NLEB hibernacula or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

45. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

46. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.Have you contacted the appropriate agency to determine if your action is within 150 feet of any documented northern long-eared bat roosts?

    Note: A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat roosts is available here. Location information for northern long-eared bat roosts is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

    Automatically answered
    No

47. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

48. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

49. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Fall Swarming season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

50. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Spring Staging** season for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

51. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Summer Occupancy season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

52. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

53. Is the action area located within 0.5-mile of radius of an entrance/opening to any known tricolored bat hibernacula or winter roost?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    Automatically answered
    No

54. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

55. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

56. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

57. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Developmental Projects.

    No

58. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

0.6

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation
Name: Julia Hoogeboom
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email julia.a.hoogeboom@dot.state.ma.us
Phone: 8574452880

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
https://www.fws.gov/office/new-england-ecological-services

March 13, 2026

David Paulson
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116

RE: 609068 Bridge Replacement, S-10-015, Kelsey Rd over Schenob Brook, Sheffield, MA
In reply refer to Project Code 2025-0109843

Dear David Paulson:

This responds to your request for our concurrence with the Massachusetts Department of Transportation's (MassDOT) determination that replacing the Kelsey Rd bridge over Schenob Brook (Project) may affect, but is not likely to adversely affect, the federally threatened bog turtle (*Glyptemys muhlenbergii*). The U.S. Fish and Wildlife Service (USFWS) received your complete consultation request on January 8, 2026. Your request and our response are made pursuant to section 7 of the Endangered Species Act of 1973, as amended (87 Stat. 884, as amended; 16 U.S.C 1531, et seq.) (ESA). We understand the MassDOT is acting as a non-Federal representative of the Federal Highway Administration (FHWA) for the purpose of consultation under section 7.

Kelsey Road Bridge (No. S-10-015) (bridge) conveys Kelsey Road over Schenob Brook in Sheffield, MA. A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. The existing bridge, constructed in 1915, is a single-span structure approximately 23 feet long by 13 feet wide. The bridge structure is in poor to satisfactory condition resulting in reduced weight limits.

The MassDOT is proposing to replace the bridge to address structural deficiencies. The proposed bridge will be in the same location, with increased capacity and wildlife passage shelving on both streambanks. The Project would result in temporary and permanent impacts to wetland resource areas.

Bog turtles are semi-aquatic and tend to occupy open canopy, unpolluted, herbaceous sedge meadows and fens bordered by wooded areas. The wider landscape around the project area

contains suitable habitat for bog turtles. However, upon review of the project area and coordination with the Massachusetts Division of Fisheries and Wildlife (MassWildlife) Natural Heritage and Endangered Species Program (NHESP), the project area contains marginal habitat, at best. Project activities have the potential to directly adversely affect bog turtles through crushing, drowning, etc.

To avoid adverse effects, the MassDOT will implement the following conservation measures:

- Prior to the start of construction, full turtle exclusion shall be implemented by installing an entrenched silt fence barrier around the work area. Silt fencing will be installed immediately following a species exclusionary survey by a qualified turtle monitor and prior to any construction activities. These controls are to be inspected daily for proper functioning and removed immediately once site work is complete.
- If the silt fence barrier becomes compromised, all work must stop until the breach is repaired and the action area is swept for turtles by the turtle monitor.
- Work will stop immediately if bog turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. Work will not resume until the turtle has left the site on its own accord. In addition, the MassDOT will contact USFWS and MassWildlife within 24 hours if a bog turtle is observed and will send location details and photographs, if possible.
- Field and construction personnel will be trained to recognize bog turtles. An education and encounter plan will be put in place that outlines appropriate actions if a turtle is observed, enters the work site, or is harmed.
- If a bog turtle appears dead, injured, or immobile, all work will stop and USFWS and MassWildlife shall be contacted immediately.

We concur with your determination that the proposed project may affect, but is not likely to adversely affect, the bog turtle. This conclusion is based on several factors. First, key habitat features for bog turtle do not occur within 300 feet of the project area. Coordination with NHESP confirmed that the nearest documented bog turtle occurrence is over 3,500 linear feet from the project area, suggesting that effects to active season habitat are discountable. Second, the use of exclusionary silt fencing will prevent turtles from entering the work area, thereby eliminating the risk of direct adverse effects. Third, as suitable bog turtle habitat is lacking in the project area, impacts to wetland habitat will be insignificant. Fourth, contractor education and monitoring protocols will ensure that all personnel are aware of the species, understand avoidance procedures, and respond appropriately to any turtle encounters.

Further consultation with us under section 7 of the ESA is not required at this time. If any of the criteria at 50 CFR 402.16(a)[1] are met, reinitiation of consultation is required, and the MassDOT should contact us immediately and suspend activities that may affect those species until the appropriate level of consultation is completed with our office. Thank you for your cooperation,

[1] https://www.ecfr.gov/current/title-50/chapter-IV/subchapter-A/part-402/subpart-B/section-402.16

and please contact Tessa Corsetti of this office at (413) 409-7693 or tessa_corsetti@fws.gov if you have questions or need further assistance.

Sincerely yours,

AUDREY MAYER

Digitally signed by AUDREY MAYER
Date: 2026.03.13 09:20:08 -04'00'

Audrey Mayer
Supervisor
New England Field Office

cc: david.j.paulson@dot.state.ma.us
julia.a.hoogeboom@dot.state.ma.us

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

December 31, 2025

Julia Hoogeboom
Massachusetts Department of Transportation - Highway Division, Environmental Services
10 park plaza
Boston, MA 02116

RE: Applicant: Julia Hoogeboom, MA Department of Transportation
Project Location: Kelsey Road over Schenob Brook, Sheffield, MA
Project Description: 609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
NHESP File No.: 24-18666
Heritage Hub Form ID: RC-97284

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 (MGL. c. 131A) and its implementing regulations (321 CMR 10.00) (MESA).

PROJECT DESCRIPTION (the "Project")
The project, as currently proposed, includes the replacement of the Kelsey Road bridge (Bridge No. S-10-015) over Schenob Brook in Sheffield as shown on the Project Plan.

STATE-LISTED SPECIES
The Project as currently proposed will occur within Priority Habitat of the following state-listed species:

Scientific Name	Common Name	Taxonomic Group	State Status
Data Sensitive	Data Sensitive	Data Sensitive Vertebrate	Endangered
Glyptemys insculpta	Wood Turtle	Reptile	Special Concern

"Data Sensitive Species" are highly susceptible to collection and are therefore of high concern to Natural Heritage. Information about these species (including presence/absence) cannot be released to anyone (especially including release to third parties or published) unless such release is agreed to in writing by the Natural Heritage Program (See Massachusetts Public Records law: M.G.L. chapter 66 section 17D).

State-listed species and their habitats are protected in accordance with the MESA.

MASSACHUSETTS ENDANGERED SPECIES ACT (MESA)

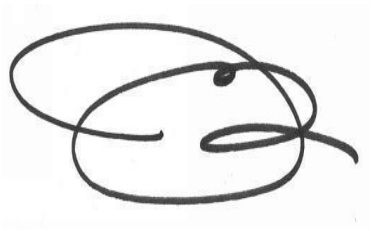
The MESA is administered by the Division and prohibits the Take of state-listed species, which includes actions that "in reference to animals, means to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, means to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct. 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 wildlife species" (321 CMR 10.02). The purpose of the Division's review under the MESA regulations is to determine whether a Take of state-listed species will result from the proposed project.

Based on the information provided and the information contained in our database, the Division finds that the Project **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.

If you have any questions regarding this letter please contact Tim McGuire Endangered Species Review Biologist, at timothy.mcguire2@mass.gov, (508) 389-6366.

Sincerely,



Jesse Leddick
Assistant Director

cc: david paulson, Massachusetts Department of Transportation

Attachment: List of Conditions

List of Conditions

Applicant: Julia Hoogeboom, MA Department of Transportation
Project Location: Kelsey Road over Schenob Brook, Sheffield, MA
Project Description: 609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
NHESP File No.: 24-18666
Heritage Hub Form ID: RC-97284
Approved Plan: Sheffield Kelsey Road Over Schenob Brook
Plan date: 12/19/25 Revised Date: N/A

To avoid a prohibited Take of state-listed species, the following condition(s) must be met:

1. **Turtle Protection Plan:** Prior to the start of work (including vegetation clearing or soil disturbance), the Applicant shall submit a Turtle Protection Plan to the Division for review and written approval. Said Plan shall detail procedures for protecting state-listed turtles during construction, and be prepared and implemented by a qualified, Division-approved wildlife biologist. The Division is available for consultation on Plan development and can provide contact information for qualified biologists. The Division-approved Plan shall be implemented as written; any proposed changes to the Plan must be submitted to the Division for review and written approval prior to implementation of said changes. By December 31st of any year in which work occurs, the qualified biologist shall submit: a) a summary report to the Division detailing project status and compliance with the Plan; and b) any observations of state-listed turtles at https://www.mass.gov/how-to/report-rare-species-vernal-pool-observations.

From: Hoogeboom, Julia A. (DOT)
To: Kautza, Adam (FWE)
Cc: Burns, Trevor B. (DOT); McGuire, Timothy (FWE)
Subject: RE: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield
Date: Monday, October 20, 2025 12:28:00 PM

Sounds good. We will make sure sediment control and water management BMPs are followed closely.

Thanks!
-Julia

Julia Hoogeboom (she/her)
Wildlife and Endangered Species Unit Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-772-1749

From: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Sent: Monday, October 20, 2025 12:14 PM
To: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>; McGuire, Timothy (FWE) <Timothy.McGuire2@mass.gov>
Subject: Re: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Yes that would be an issue for construction! I think we'd be willing to waive the TOY for coldwater species here. The potential long term benefits from an improved crossing could outweigh any short term issues with the construction. Just make sure that all sediment control and water management BMPs are followed to minimize any negative impact to spawning and egg development/rearing of coldwater species that may be in the vicinity. Thanks

Adam Kautza
Coldwater Fisheries Project Leader
Massachusetts Division of Fisheries and Wildlife (MassWildlife)
1 Rabbit Hill Road, Westborough, MA 01581
(857) 275-6961

From: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Sent: Monday, October 20, 2025 11:24:17 AM
To: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>; McGuire, Timothy (FWE) <Timothy.McGuire2@mass.gov>
Subject: RE: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Thanks for the info, Adam. The existing bridge and immediately adjacent culvert are being replaced with one much larger bridge to meet MA stream crossing standards. I've attached plans and a narrative for your review.

The location is also mapped for NHESP Bridle Shiner so it's likely we'd receive a TOY restriction for the breeding season from May through August. I've just sent the project information to Tim McGuire for his review. As you can imagine receiving a TOY restriction from May through August, and October through May, would greatly impact construction timeline at this location.

If needed, we could discuss this with Tim McGuire. I've cc'ed him here.

Thanks,
Julia

Julia Hoogeboom (she/her)
Wildlife and Endangered Species Unit Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-772-1749

From: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Sent: Monday, October 20, 2025 10:13 AM
To: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>
Subject: Re: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Hi Julia,

As you're aware Schenob Brook is a CFR. Unfortunately we don't have any recent data from the brook, and no data whatsoever from that far upstream. Our only surveys are from further downstream at Salisbury Road. That being said I would err on the cautious side and request a TOY restriction for this project. Is it a large project? Something that can be completed within the June-Sep timeframe? What is the crossing that is being replaced - another bridge or a culvert? Thanks

Adam Kautza PhD | Coldwater Fisheries Project Leader

Massachusetts Division of Fisheries and Wildlife

1 Rabbit Hill Road

Westborough, MA 01581

(857) 275-6961

adam.kautza@mass.gov

From: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Sent: Friday, October 17, 2025 11:17 AM
To: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>
Subject: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Good morning Adam,

MassDOT is proposing to replace the bridge on Kelsey Road over Schenob Brook in Sheffield (73.3977270°W 42.0656001°N). The proposed bridge will meet the Massachusetts Stream Crossing Standards, contains streambed restoration and a wildlife bench along one abutment. While the proposed project results in 8,230 sf of impacts to BVW and 633 sf of impacts to Land Under Water, 780 sf of land under water is gained by increasing the hydraulic opening beneath the bridge. All scour protection will be topped with natural streambed material or compost and seed.

The site is within NHESP Priority Habitat so the project has been sent to NHESP for review.

Does DFW have any TOY restrictions or BMP recommendations for this location?

Please let me know if you have any questions.

Thanks,
Julia

Julia Hoogeboom (she/her)
Wildlife and Endangered Species Unit Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-772-1749

Drawn Action Area & Overlapping S7 Consultation Areas

Area of Interest (AOI) Information

Area : 2,224.74 acres

Aug 22 2025 9:14:54 Eastern Daylight Time



Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	0	0	N/A
Shortnose Sturgeon	0	0	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	0	0	N/A
Atlantic Large Whales	0	0	N/A
In or Near Critical Habitat	0	0	N/A

CULTURAL RESOURCES PROJECT RECORD

City/Town: Sheffield | Project # 609068 | Date Cleared 12/09/2024

Project Name: Bridge replacement, S-10-015, Kelsey Road over Schenob Brook | Date Filed 12/09/2024 | Finding Under Review ☐

FHWA to MHC

Project Type: Bridge Replacement | Early Coord. Letter Sent: ☑

Review: Section 106 (PA) | Comment Received: ☐ MHC ☐ LHC | Reviewer: KJ

Finding: Stip VB - No historic properties affected | Consultant

Comments: PNF sent to BUAR, Aquinnah THPO, Mashpee THPO, Stockbridge-Munsee THPO and Narragansett THPO on 12/09/2024.

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) :

☐ 1) Interstate bridge or roadway projects
☐ 2) Resurfacing, repair existing roadways
* ☐ 3) Reconstruction on existing roadway
* ☐ 4) Roadway geometrics, intersections
* ☐ 5) Curbs and sidewalks
☐ 6) Pavement markings, rumble strips, etc
☐ 7) Curbs, sidewalks (MAAB, ADA)
* ☐ 8) Removal of trees
☐ 9) Landscaping
☐ 10) Utilities
☐ 11) Railroad crossing
☐ 12) Stream stabilization and restoration
☐ 13) Wetland mitigation area
* ☐ 14) Bridge (NR "Not Eligible" or "Conditionally Not Eligible")
* ☐ 15) Bridge (concrete slab post 1900, steel stringer)
☐ 16) Bridge (less than 20' span)
* ☐ 17) Highway safety improvement
☐ 18) Drainage system element
* ☐ 19) Traffic signal, safety improvement
* ☐ 20) Intelligent Transportation System project
☐ 21) Rest area, maintenance facility
* ☐ 22) Bicycle, pedestrian lane, path or facility
☐ 23) Lighting system
☐ 24) Sign
☐ 25) Hazardous waste
☐ 26) Highway fencing
☐ 27) Emergency repair
☐ 28) Erosion control
☐ 29) Noise barrier

* 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: KJ JMH

CULTURAL RESOURCES PROJECT RECORD

Summary of MassDOT Highway Division Finding
(Appendix 1 and Section V.B. Projects only)

The Massachusetts Department of Transportation (MassDOT) proposes to replace Bridge S-10-015 which carries Kelsey Road over Schenob Brook in Sheffield. Bridge S-10-015 is a single-span steel stringer bridge with concrete jack arches constructed circa 1925. The superstructure is supported by reinforced concrete abutments with wingwalls. The crossing also includes a 48" by 72" oblong corrugated metal pipe overflow culvert, located about 120' to the west of Bridge S-10-015. The crossing presently carries a single 13' -wide travel lane, with a gravel surface carried across the bridge.

The proposed work will include full replacement of the bridge on existing alignment with a structure 18" wider than existing. The new structure will consist of precast concrete butted box beams supported by cantilever abutments on H-pile footings. The bridge will have reinforced concrete CT-TL2 railings, also known as Texas rail. The proposed bridge will carry a single 13' 8"-wide travel lane. The structure will be 40' longer than existing to provide improved horizontal clearance for the stream channel. In addition to the main bridge structure, the overflow culvert will also be replaced with a 48" by 76" elliptical reinforced concrete pipe.

Other proposed work includes full-depth pavement construction along the bridge approaches, within 30' of either end of the bridge; reconstruction of existing gravel roadway within the project limits; guardrail installation along the bridge approaches. Streambed and stream bank restoration is also proposed, with improvements to the stream channel immediately east and west of the bridge. Due to a sharp bend in the stream channel at either end of the crossing, the banks immediately adjacent to the bridge abutments will be armored with riprap covered with composted mulch material. The project area extends 280' to the north and 350' to the south of the bridge, encompassing a total length of 680'.

Review of the National Register of Historic Places revealed that there are no National Register-listed properties or historic districts located in proximity to the bridge. Review of the Inventory of Historic and Archaeological Assets of the Commonwealth revealed that no inventoried properties or areas are located within the project's direct Area of Potential Effects (APE).

Bridge S-10-015 was assessed by Kurt Jergensen, MassDOT's Historic Bridge Specialist, and determined to be ineligible for listing in the National Register. The bridge is a typical example of standard design, lacking distinctive architectural and engineering features that would confer eligibility. It is is a steel stringer structure, the most common type in MassDOT's bridge inventory. While it is further distinguished as a concrete jack arch structure, an uncommon subtype utilized during the late 19th and early 20th centuries, it is a late example built with corrugated steel stay-in-place forms on the underside of the jack arches. Stay-in-place forms were a standardized construction method used later in the period.

A review of the MHC's archaeological maps in MACRIS revealed that there are no recorded pre-contact or historic archaeological sites within the project's direct APE. The nearest recorded pre-Contact sites are located 2.3 miles to the east: 19-BK-169 (Ashley Field Site), a Paleoindian, Archaic and Woodland period site; and 19-BK-170 (Tract III Site), an Archaic and Woodland period site. It is the opinion of the MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's direct APE based on the impacts of past bridge and roadway construction, as well as limited disturbance outside of the existing bridge and roadway footprint. Soil borings revealed the roadway at the bridge is constructed on deep fill embankments, up to 10 feet in depth. Groundwater was encountered at 2.2 – 8.0 ft. below the existing paved roadway surface.

Reviewer's Initials: _____

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, Bridge S-10-015 (MassDOT #609068)
Location /Address:	Kelsey Road over Schenob Brook
City/Town:	Sheffield
Project Proponent	
Name:	Massachusetts Department of Transportation
Address:	10 Park Plaza
City/Town/Zip/Telephone:	Boston, MA 02116 / T: 207-590-4999

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	**Type of License or funding (specify)**
FHWA (lead agency)	Federal Aid funds
US Army Corps of Engineers	Section 404 permit

Project Description (narrative):

The Massachusetts Department of Transportation (MassDOT) proposes to replace Bridge S-10-015 which carries Kelsey Road over Schenob Brook in Sheffield. Bridge S-10-015 is a single-span steel stringer bridge with concrete jack arches constructed circa 1925. The superstructure is supported by reinforced concrete abutments with wingwalls. The crossing also includes a 48" by 72" oblong corrugated metal pipe overflow culvert, located about 120’ to the west of Bridge S-10-015. The crossing presently carries a single 13' -wide travel lane, with a gravel surface carried across the bridge.

The proposed work will include full replacement of the bridge on existing alignment with a structure 18" wider than existing. The new structure will consist of precast concrete butted box beams supported by cantilever abutments on H-pile footings. The bridge will have reinforced concrete CT-TL2 railings, also known as Texas rail. The proposed bridge will carry a single 13' 8"-wide travel lane. The structure will be 40' longer than existing to provide improved horizontal clearance for the stream channel. In addition to the main bridge structure, the overflow culvert will also be replaced with a 48" by 76" elliptical reinforced concrete pipe.

Other proposed work includes full-depth pavement construction along the bridge approaches, within 30' of either end of the bridge; reconstruction of existing gravel roadway within the project limits; guardrail installation along the bridge approaches. Streambed and stream bank restoration is also proposed, with improvements to the stream channel immediately east and west of the bridge. Due to a sharp bend in the stream channel at either end of the crossing, the banks immediately adjacent to the bridge abutments will be armored with riprap covered with composted mulch material. The project area extends 280' to the north and 350' to the south of the bridge, encompassing a total length of 680'.

APPENDIX A (continued)

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.
N/A

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation
N/A

Does the project include new construction? If so, describe (attach plans and elevations if necessary).
Bridge S-10-015 will be demolished and replaced on existing alignment with a slightly wider structure.

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.
Review of the National Register of Historic Places revealed that there are no National Register-listed properties or historic districts located in proximity to the bridge. Review of the Inventory of Historic and Archaeological Assets of the Commonwealth revealed that no inventoried properties or areas are located within the project's direct Area of Potential Effects (APE).

Bridge S-10-015 was assessed by Kurt Jergensen, MassDOT's Historic Bridge Specialist, and determined to be ineligible for listing in the National Register. The bridge is a typical example of standard design, lacking distinctive architectural and engineering features that would confer eligibility. It is is a steel stringer structure, the most common type in MassDOT's bridge inventory. While it is further distinguished as a concrete jack arch structure, an uncommon subtype utilized during the late 19th and early 20th centuries, it is a late example built with corrugated steel stay-in-place forms on the underside of the jack arches. Stay-in-place forms were a standardized construction method used later in the period.

A review of the MHC's archaeological maps in MACRIS revealed that there are no recorded pre-contact or historic archaeological sites within the project's direct APE. The nearest recorded pre-Contact sites are located 2.3 miles to the east: 19-BK-169 (Ashley Field Site), a Paleoindian, Archaic and Woodland period site; and 19-BK-170 (Tract III Site), an Archaic and Woodland period site. It is the opinion of the MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's direct APE based on the impacts of past bridge and roadway construction, as well as limited disturbance outside of the existing bridge and roadway footprint. Soil borings revealed the roadway at the bridge is constructed on deep fill embankments, up to 10 feet in depth. Groundwater was encountered at 2.2 – 8.0 ft. below the existing paved roadway surface.

What is the total acreage of the project area?

Woodland		acres	Productive Resources:		
Wetland		acres	Agriculture		acres
Floodplain	<1	acres	Forestry		acres
Open Space		acres	Mining/Extraction		acres
Developed	<1	acres	Total Project Acreage	<1	acres

What is the acreage of the proposed new construction? <1 acres

APPENDIX A (continued)

What is the present land use of the project area?
The Project area is situated amid a wooded wetland bordering the meandering path of Schenob Brook. Hayfields border the wetlands to the south and east, with dense forest to the north and west.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of person submitting this form:  **Date:** 12/9/2024

Name: Kurt Jergensen

Address: 10 Park Plaza

City/Town/Zip: Boston, MA 02116

Telephone: 207-590-4999

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

cc: Wampanoag Tribe of Gay Head (Aquinnah) THPO
Mashpee Wampanoag Tribe THPO
Stockbridge-Munsee THPO
Narragansett Indian Tribe THPO
BUAR

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:45 PM
To: Bettina Washington
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Ms. Washington,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Wampanoag Tribe of Gay Head (Aquinnah) to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Bettina Washington
Sent: Tuesday, December 10, 2024 12:45 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

Bettina Washington (thpo@wampanoagtribe-nsn.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:51 PM
To: Robinson, David S (EEA)
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Mr. Robinson,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Board of Underwater Archaeological Resources to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Robinson, David S (EEA)
Sent: Tuesday, December 10, 2024 12:51 PM
Subject: Delivered: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

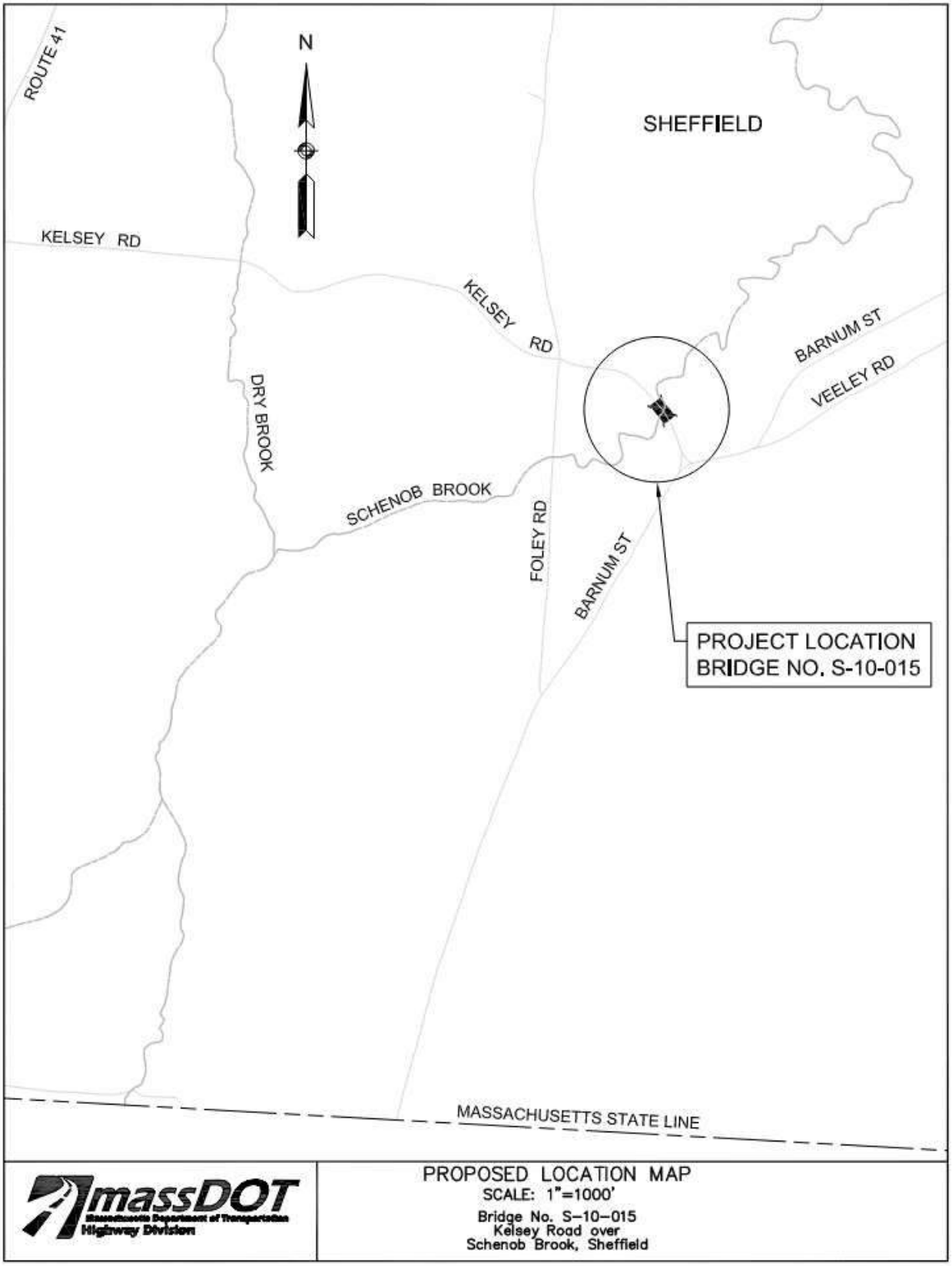
Your message has been delivered to the following recipients:

Robinson, David S (EEA) (David.S.Robinson@mass.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...


ROUTE 41
N
SHEFFIELD
KELSEY RD
KELSEY RD
DRY BROOK
BARNUM ST
VEELEY RD
SCHENOB BROOK
FOLEY RD
BARNUM ST
PROJECT LOCATION
BRIDGE NO. S-10-015
MASSACHUSETTS STATE LINE
massDOT
Massachusetts Department of Transportation
Highway Division
PROPOSED LOCATION MAP
SCALE: 1"=1000'
Bridge No. S-10-015
Kelsey Road over
Schenob Brook, Sheffield



KELSEY ROAD BRIDGE OVER SCHENOB BROOK
(LOOKING NORTHWEST)



KELSEY ROAD BRIDGE OVER SCHENOB BROOK
SOUTH BRIDGE FACE



KELSEY ROAD WEST APPROACH
(LOOKING SOUTHEAST)



KELSEY ROAD EAST APPROACH
(LOOKING SOUTHEAST)



SCHENOB BROOK
(LOOKING NORTH FROM BRIDGE)



SCHENOB BROOK
(LOOKING AT SOUTH SIDE OF BRIDGE)



BYPASS CULVERT – NORTH END



WEST CULVERT – NORTH END



WEST CULVERT – SOUTH END

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:46 PM
To: David Weeden
Cc: 106Review@mwtribe-nsn.gov; Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Mr. Weeden,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Mashpee Wampanoag Tribe to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: David Weeden; 106Review@mwtribe-nsn.gov
Sent: Tuesday, December 10, 2024 12:46 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

David Weeden (David.Weeden@mwtribe-nsn.gov)

106Review@mwtribe-nsn.gov (106Review@mwtribe-nsn.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:47 PM
To: Tashtesook@aol.com
Cc: markandrews0563@outlook.com; Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Mr. Brown,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Narragansett Indian Tribe to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Tashtesook@aol.com; markandrews0563@outlook.com
Sent: Tuesday, December 10, 2024 12:48 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

Tashtesook@aol.com (tashtesook@aol.com)

markandrews0563@outlook.com (markandrews0563@outlook.com)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:50 PM
To: thpo
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Dr. Bendremer,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Stockbridge-Munsee Band of Mohican Indians to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: thpo
Sent: Tuesday, December 10, 2024 12:50 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

thpo (thpo@mohican-nsn.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: thpo <thpo@mohican-nsn.gov>
Sent: Wednesday, December 11, 2024 2:12 PM
To: Jergensen, Kurt E. (DOT)
Cc: Harwood, Jameson (DOT)
Subject: RE: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

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.

Dear Kurt,

Thank you for the notice regarding the proposed Bridge replacement, Bridge S-10-015 (MassDOT #609068), Kelsey Road over Schenob Brook, Sheffield, Berkshire County, MA.

The Stockbridge-Munsee Tribal Historic Preservation Office has no issue with the project moving forward with the following standard stipulations:

- If previously undocumented archaeological resources are encountered, please contact me promptly and follow the Inadvertent Discovery Policy on the Stockbridge-Munsee Community website: https://www.mohican.com/mt-content/uploads/2022/09/smc-inadvertent-discovery-policy.pdf.
- Please give due attention to the incidental or routine movement of heavy machinery both inside and outside the stated area of potential effects (APE) that may cause unintended or inadvertent impacts to cultural resources.
- Should the proposed work be altered to expand beyond the current scope of work and/or APE, we ask to be notified.

Regards,
Jeff

Jeffrey C Bendremer Ph.D., RPA
Tribal Historic Preservation Officer
Stockbridge-Munsee Community
Tribal Historic Preservation Extension Office
86 Spring St.
Williamstown, MA 01267
413-884-6029 (o)
715-881-2254 (c)

www.mohican.com

From: Jergensen, Kurt E. (DOT) <Kurt.Jergensen@dot.state.ma.us>
Sent: Tuesday, December 10, 2024 12:50 PM
To: thpo <thpo@mohican-nsn.gov>
Cc: Harwood, Jameson (DOT) <Jameson.Harwood@dot.state.ma.us>
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

CAUTION: This email originated from outside the organization.
Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Dr. Bendremer,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Stockbridge-Munsee Band of Mohican Indians to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

From: Cryan, Melissa (EEA)
To: Kevin Barbara
Subject: RE: Section 6(f) properties - Sheffield MA, MassDOT Project 609068
Date: Friday, August 22, 2025 9:18:58 AM

Kevin,

There are no LWCF-funded sites in Sheffield. Thanks for checking.

Melissa

Melissa Cryan (she/her/hers)
Grant Programs Supervisor
Division of Conservation Services
(857) 274-7173
https://www.mass.gov/grant-programs-offered-by-the-division-of-conservation-services

From: Kevin Barbara <kbarbara@ceiengineers.com>
Sent: Friday, August 22, 2025 9:06 AM
To: Cryan, Melissa (EEA) <melissa.cryan@mass.gov>
Subject: Section 6(f) properties - Sheffield MA, MassDOT Project 609068

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.

Good morning,

CEI is conducting a 401 Water Quality Certficiation for MassDOTs 609068 Project in Sheffield, MA where replacement of the existing bridge S-10-015 carrying Kelsey Road over Schenob Brook will take place.

In doing so, we would like to see if there are any land or water properties protected by section 6(f) within the proposed project area that the LWCF oversees.

I have attached a Locus Map illustrating the proposed project area. (42.065644, -73.397721)

If any more info/documents are needed, please let me know and I'll be happy to send them your way.

Thanks,
Kevin

Attachment E
Photos

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 1- Kelsey Road



Photo 2- Kelsey Road

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 3- Upstream view of Schenob Brook



Photo 4- Downstream view of Schenob Brook

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 5- Bridge S-10-015 opening



Photo 6- Road shoulder of Kelsey Road

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 7- Existing wetland & roadside looking south from bridge (southwest quadrant)



Photo 8- Open grass field

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 9- Existing wetlands at edge of roadside embankment impacted by slope work – STA 102+30 Right



Photo 10- Typical land cover

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 11- Black willow leaning into upstream end of Schenob Brook



Photo 12- Wetland replication area and existing wetland boundary

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 13- Wetlands at edge of roadway embankment (typical)



Photo 14- Existing wetlands at edge of roadside embankment impacted by slope work – STA 102+30 Left

Attachment F
Project Plans

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	1	55
	PROJECT FILE NO.	609068	

TITLE SHEET & INDEX

PLAN AND PROFILE OF

KELSEY ROAD OVER SCHENOB BROOK

(BRIDGE NO. S-10-015)

IN THE TOWN OF

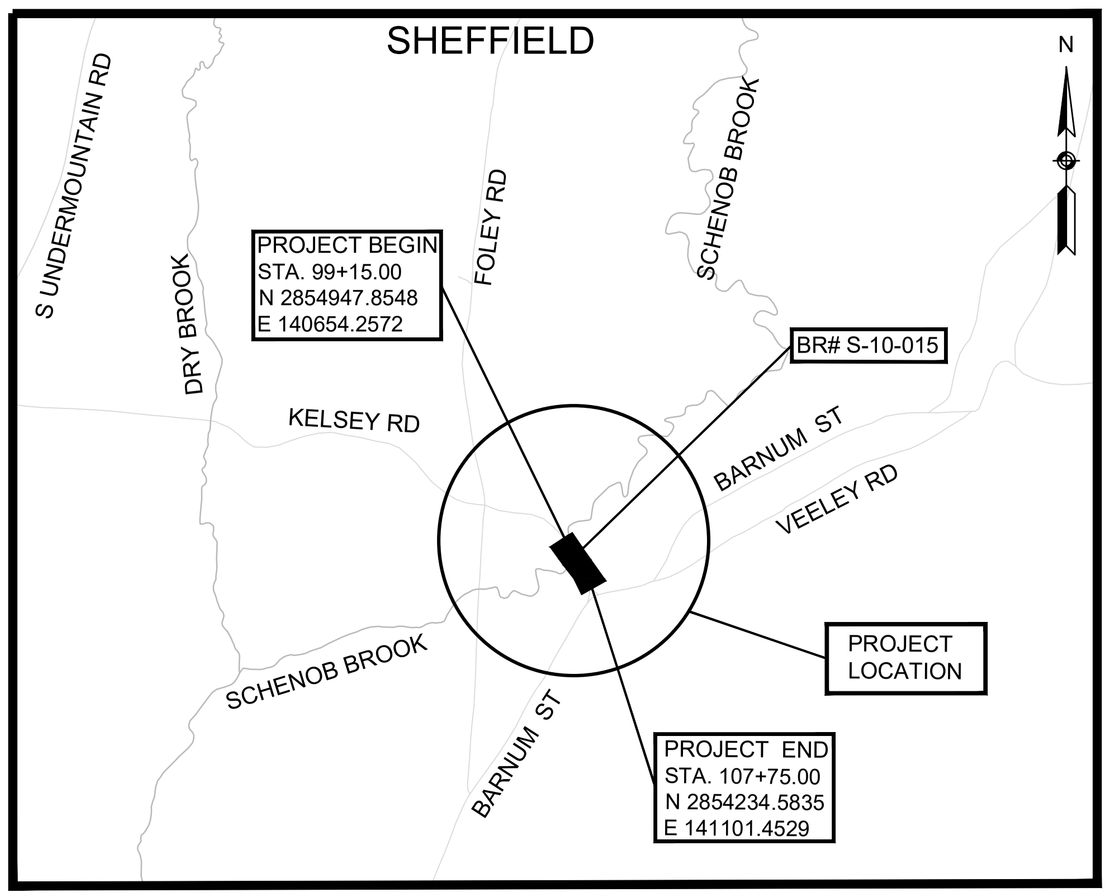
SHEFFIELD

BERKSHIRE COUNTY

THESE PLANS ARE SUPPLEMENTED BY THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS, AS IDENTIFIED IN THE CONTRACT SPECIAL PROVISIONS: THE MASSDOT CONSTRUCTION STANDARD DETAILS, THE MASSDOT STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, THE MASSDOT OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, THE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, AND THE ANSI AMERICAN STANDARD FOR NURSERY STOCK.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN
4	TYPICAL SECTIONS
5-6	CONSTRUCTION PLANS
7-8	ROADWAY PROFILES
9-10	CONSTRUCTION BASELINE TIE PLANS
11-12	GRADING PLANS
13-14	TRAFFIC SIGNING PLANS
15	DRAINAGE DETAILS
16	TEMPORARY TRAFFIC CONTROL PLANS
17-18	UTILITY PLANS
20-19	ENVIRONMENTAL IMPACTS PLANS
21-22	TURTLE EXCLUSION BARRIER PLANS
23	TURTLE EXCLUSION BARRIER DETAILS
24	WETLAND REPLICATION PLAN
25-26	LANDSCAPING PLANS
27-28	CONSTRUCTION DETAILS
29-48	BRIDGE PLANS
49-55	CROSS SECTIONS



0 1000 2000 3000 4000

SCALE: 1" = 1000'

LENGTH OF PROJECT = 860 FEET = 0.163 MILES

DESIGN DESIGNATION (KELSEY ROAD)

DESIGN SPEED	20 MPH
ADT (2026)	121
ADT (2046)	148
K	-
D	-
T (PEAK HOUR)	6%
T (AVERAGE DAY)	6%
DHV	-
DDHV	-
FUNCTIONAL CLASSIFICATION	RURAL LOCAL

DATE	DESCRIPTION	REV #

GFT
175 FEDERAL STREET, SUITE 800
BOSTON, MA 02110

massDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER ____ DATE ____

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR ____ DATE ____

APPROVED

HIGHWAY ADMINISTRATOR ____ DATE ____

Proposal No. 609068-136649
609068_HD (SHEFFIELD COVER SHEET).DWG Plotted on 14-Aug-2019 1:54 PM
A00830 - 185

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
OHW		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		EROSION AND SEDIMENT CONTROL BARRIER
		EROSION AND SEDIMENT CONTROL BARRIER-COIR LOGS
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		WETLAND

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
ONLY	ONLY	PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
	SL	STOP LINE
	CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

SURVEY NOTES:

1. BOUNDARY INFORMATION SHOWN HEREON WAS COMPILED FROM AN ACTUAL FIELD SURVEY CONDUCTED BY WSP SURVEYORS FROM SEPTEMBER 4, 2020 THROUGH OCTOBER 2, 2020. SURVEY FIELD NOTES CAN BE FOUND IN MASSDOT SURVEY NOTEBOOK 23412.
2. NORTH ORIENTATION AND BEARING BASE PER GRID NORTH.
3. HORIZONTAL COORDINATES RELATIVE TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MASSACHUSETTS MAINLAND ZONE. BASED ON THE NORTH AMERICAN DATUM OF 1983, NAD83 (2011) EPOCH 2010.00. GPS POINTS 2613 & 2614 WERE USED AS SURVEY CONTROL POINTS TO ESTABLISH A DATUM FOR THE PROJECT.
4. ELEVATIONS RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, (NAVD 1988).
5. HORIZONTAL COORDINATE AND ELEVATION UNITS ARE U.S. SURVEY FEET.
6. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY HIGHWAY BOUND OR PRIVATE PROPERTY PIN THAT MAY BE DAMAGED OR DESTROYED DURING CONSTRUCTION, TO ITS LOCATION JUST PRIOR TO CONSTRUCTION.

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	2	55
PROJECT FILE NO.	609068		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PWW	PAVED WATERWAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

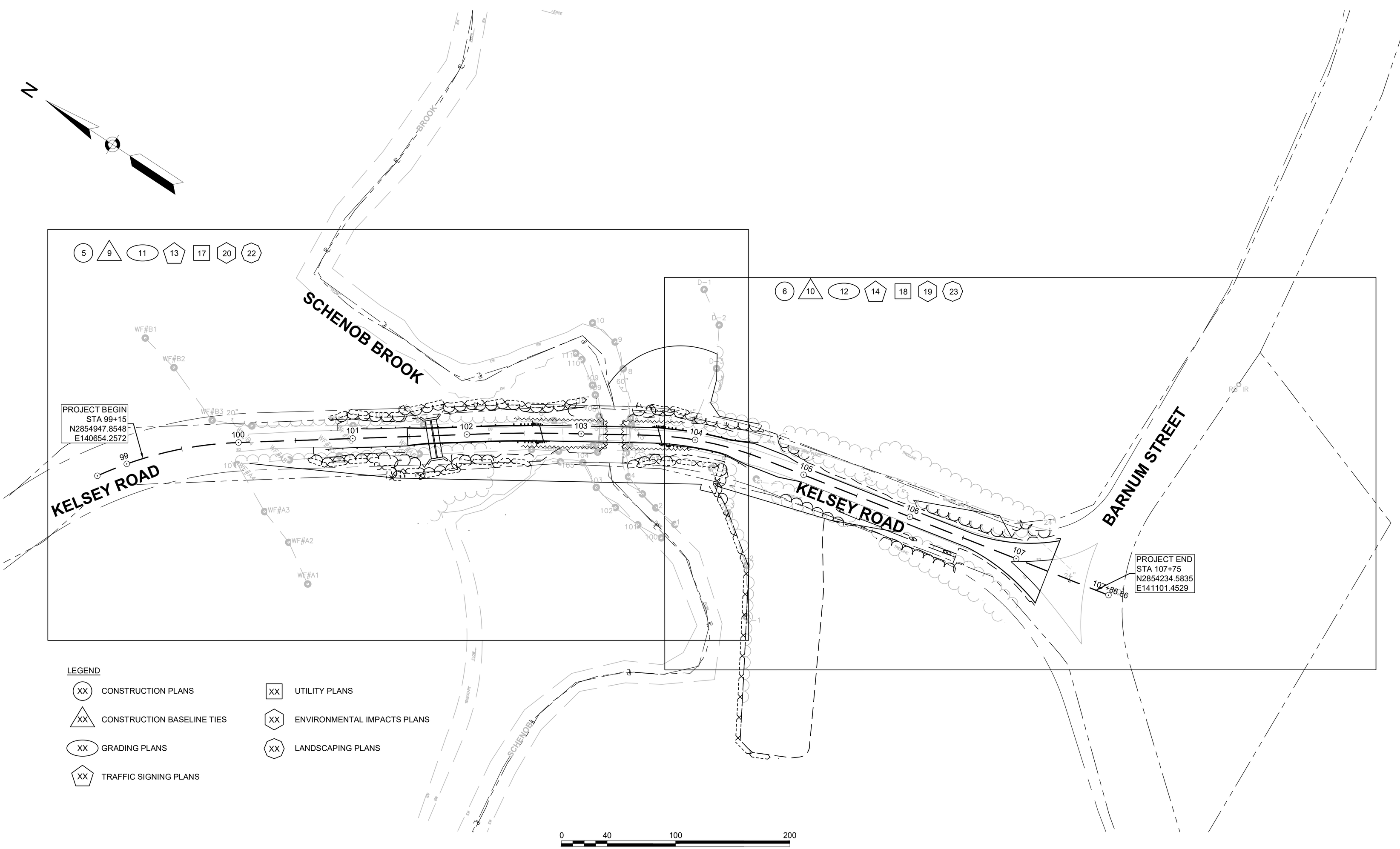
Proposal No. 609068-136649

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SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

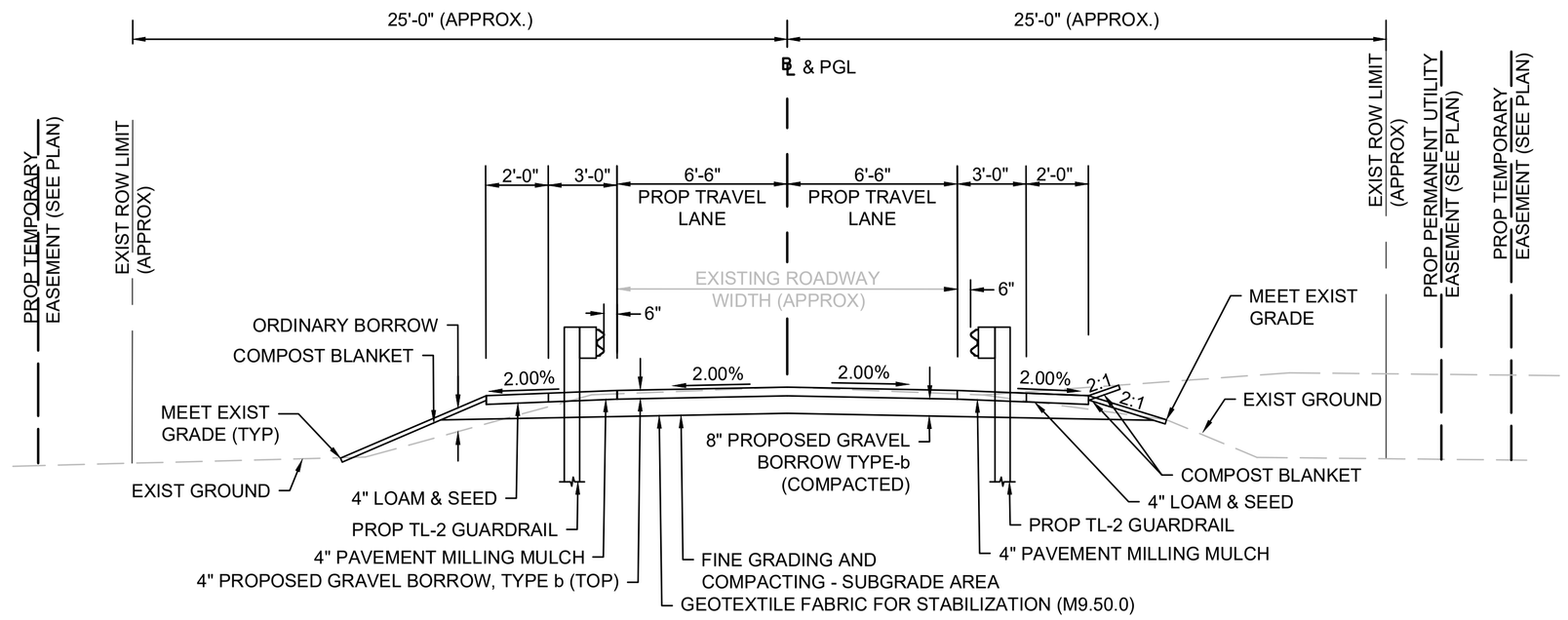
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	3	55
PROJECT FILE NO.	609068		

KEY PLAN



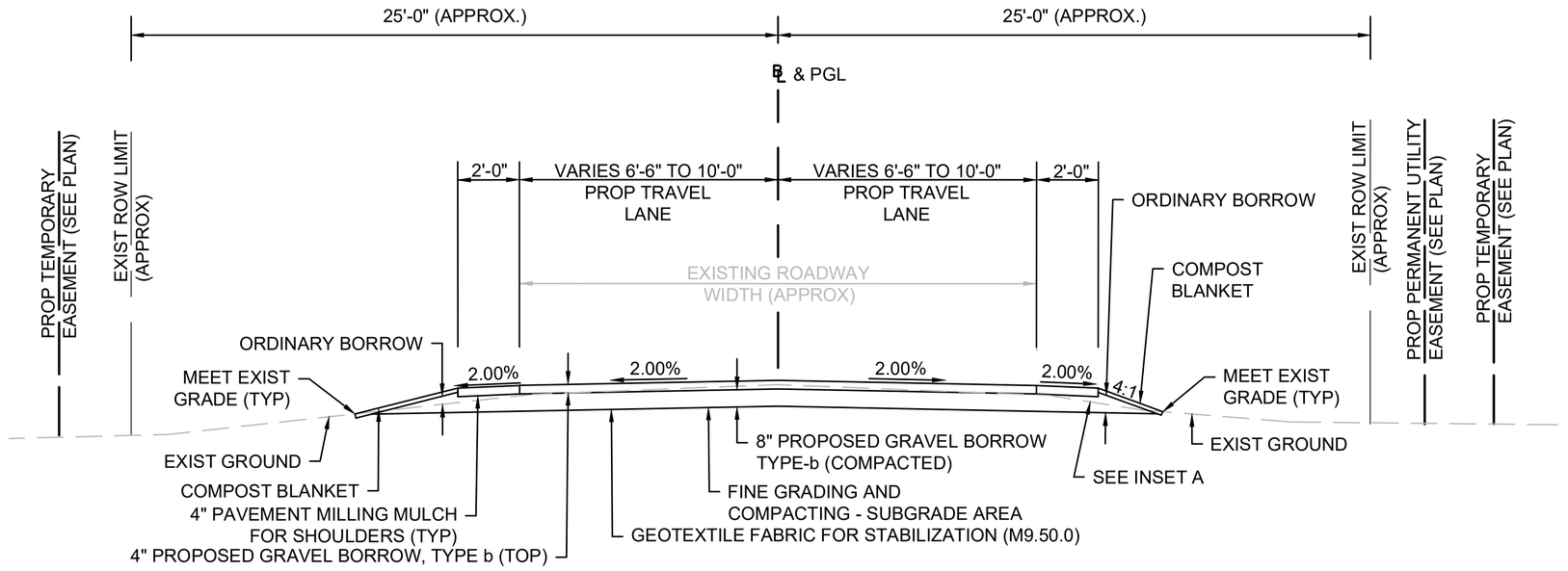
Proposal No. 609068-136649

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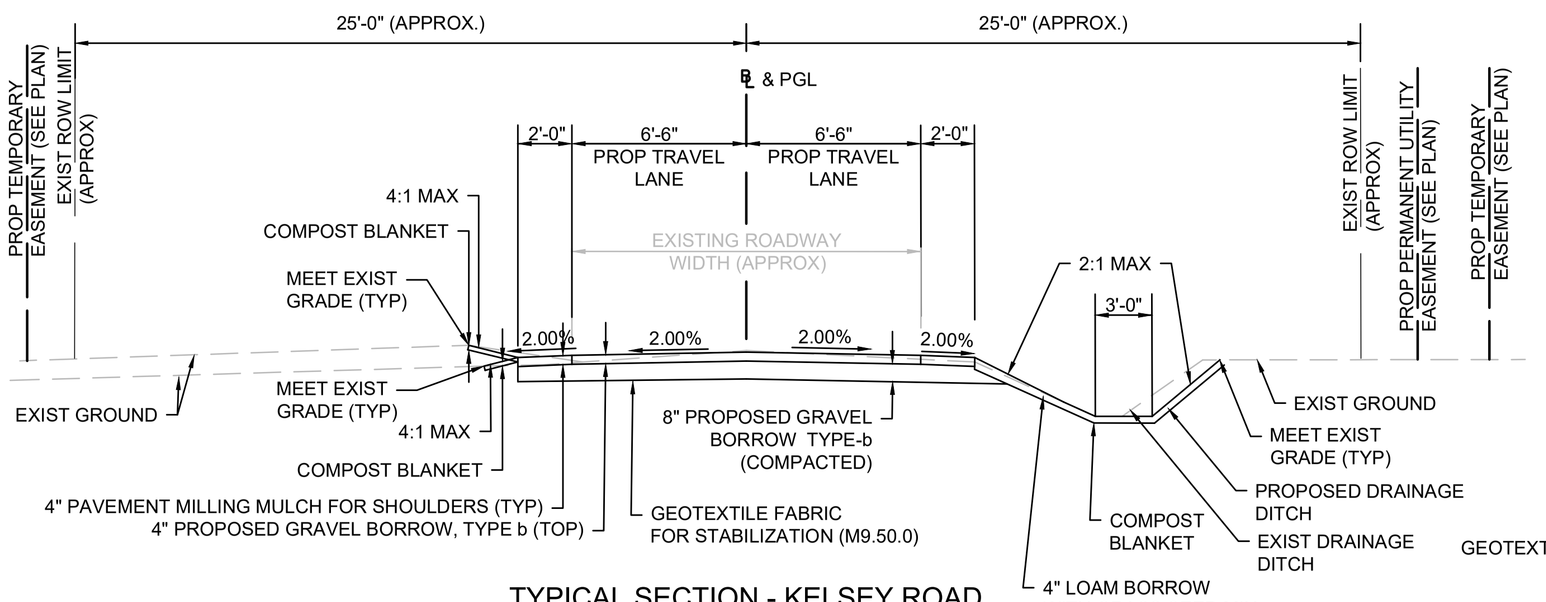
TYPICAL SECTION - KELSEY ROAD

STA. 103+95.00 TO STA. 104+53.97
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD PASSING SECTION AND WETLAND ADJACENT GRADING

STA. 104+53.97 TO STA. 105+37.00
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD WITH PROPOSED ROADSIDE DITCH

STA. 105+37.00 TO STA. 106+50.00
NOT TO SCALE

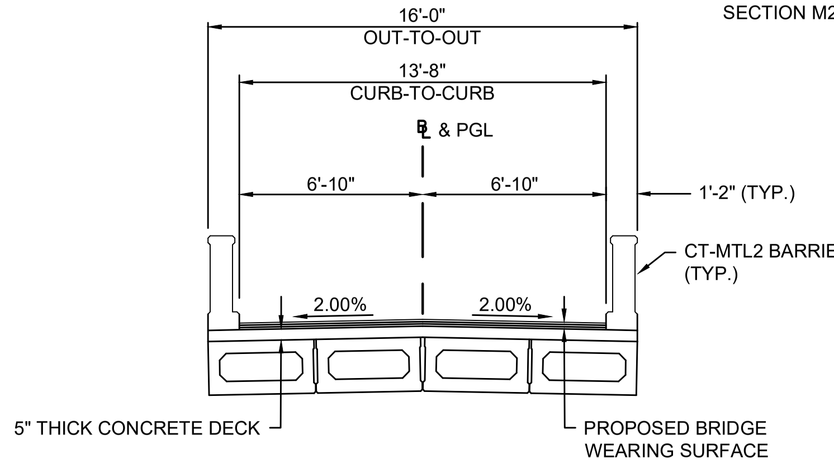
NOTES:

1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED IN ACCORDANCE WITH SECTION 450.
2. SEE LANDSCAPE PLANS FOR COMPOST BLANKET SEEDING DETAILS
3. SEE CONSTRUCTION STANDARD DETAILS (628.24.2, 628.24.3) FOR GUARDRAIL TRANSITIONS AT BRIDGE APPROACHES
4. GRAVEL BORROW TYPE-b SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 4 INCHES.
5. RIP RAP MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION M2.02.0

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	4	55
PROJECT FILE NO.	609068		

TYPICAL SECTIONS



TYPICAL SECTION - KELSEY ROAD BRIDGE

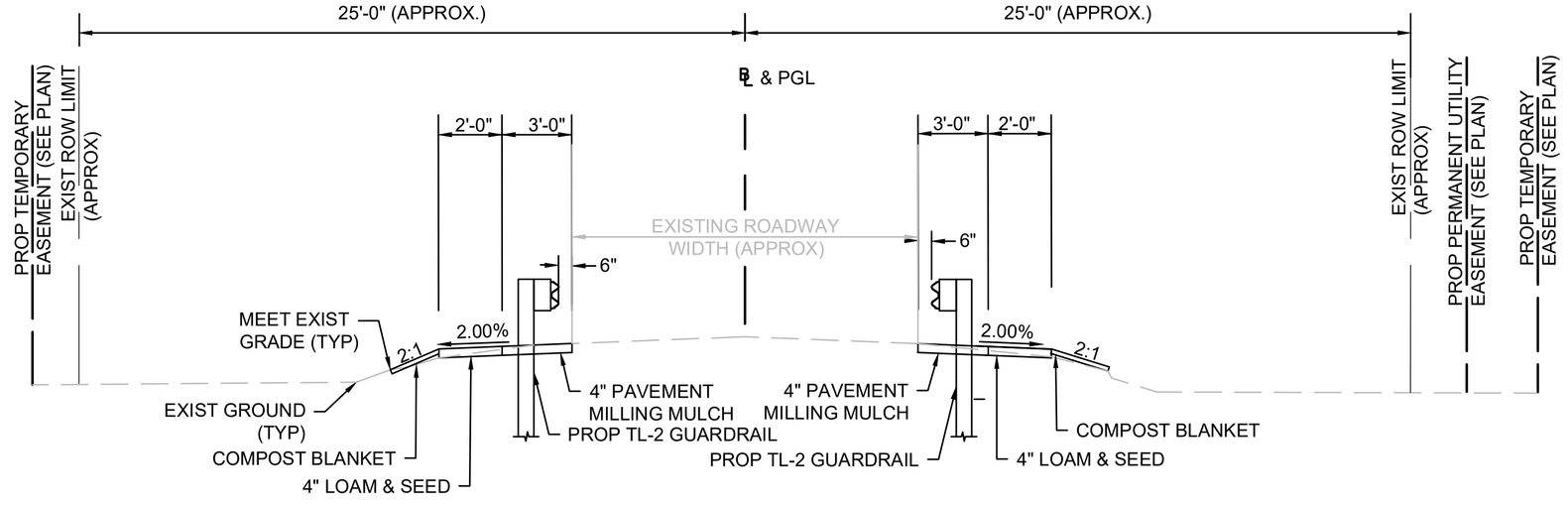
STA. 102+82.23 TO STA. 103+51.98
SCALE: ¼" = 1'-0"

PAVEMENT NOTES:

PROPOSED GRAVEL FOR SURFACING & GRAVEL DRIVEWAY
4" GRAVEL BORROW, TYPE b (TOP), OVER
8" GRAVEL BORROW, TYPE-b (COMPACTED), OVER
GEOTEXTILE FABRIC (STABILIZATION), OVER
SPECIAL BORROW AS REQUIRED BASED ON EXISTING SUBGRADE MATERIALS ONLY WHEN NEEDED

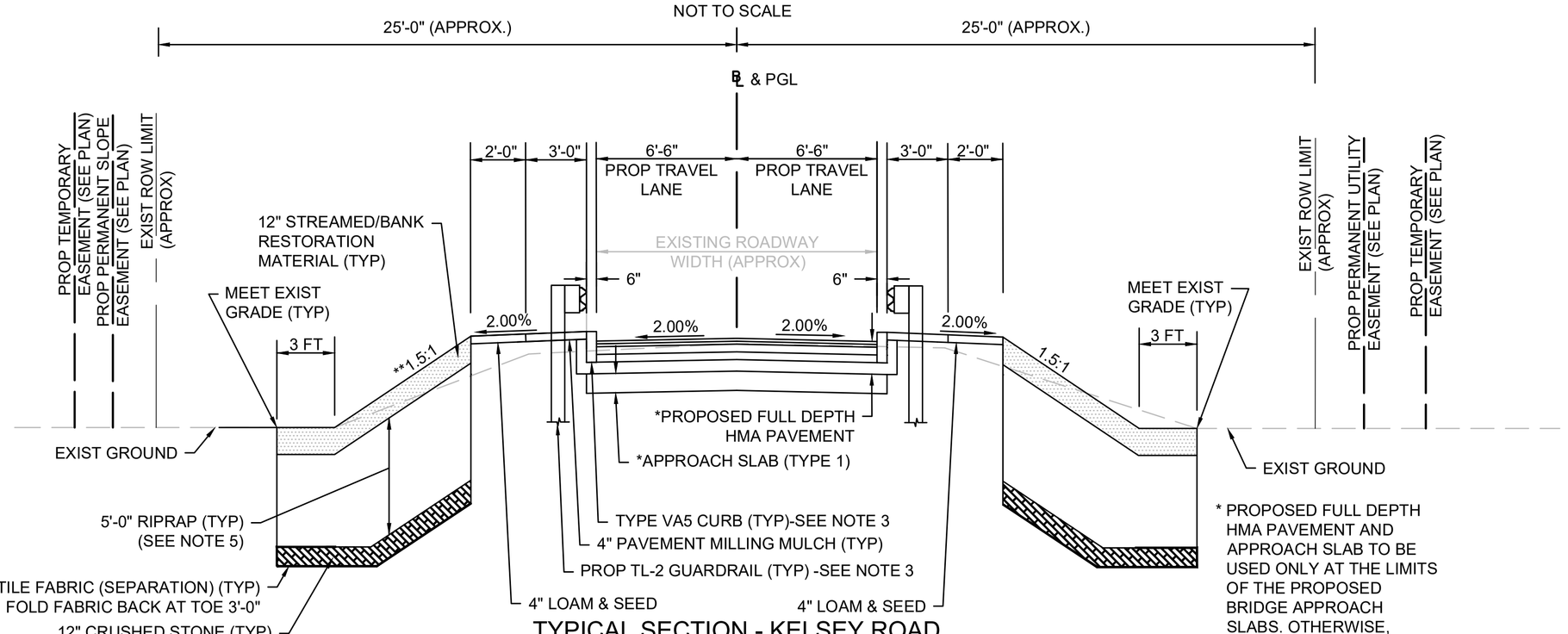
PROPOSED FULL DEPTH HMA PAVEMENT
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P)), OVER
4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5), OVER
4" DENSE GRADED CRUSHED STONE, OVER
6" MIN. GRAVEL BORROW TYPE B, OVER
PROPOSED APPROACH SLAB (TYPE 1)

PROPOSED BRIDGE WEARING SURFACE
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P), OVER
MEMBRANE WATERPROOFING



TYPICAL SECTION - KELSEY ROAD

STA. 101+00.00 TO STA. 101+48.00
NOT TO SCALE



**2:1 SLOPES USED FROM 25 FT RADIUS AWAY FROM THE ABUTMENTS AND BEYOND

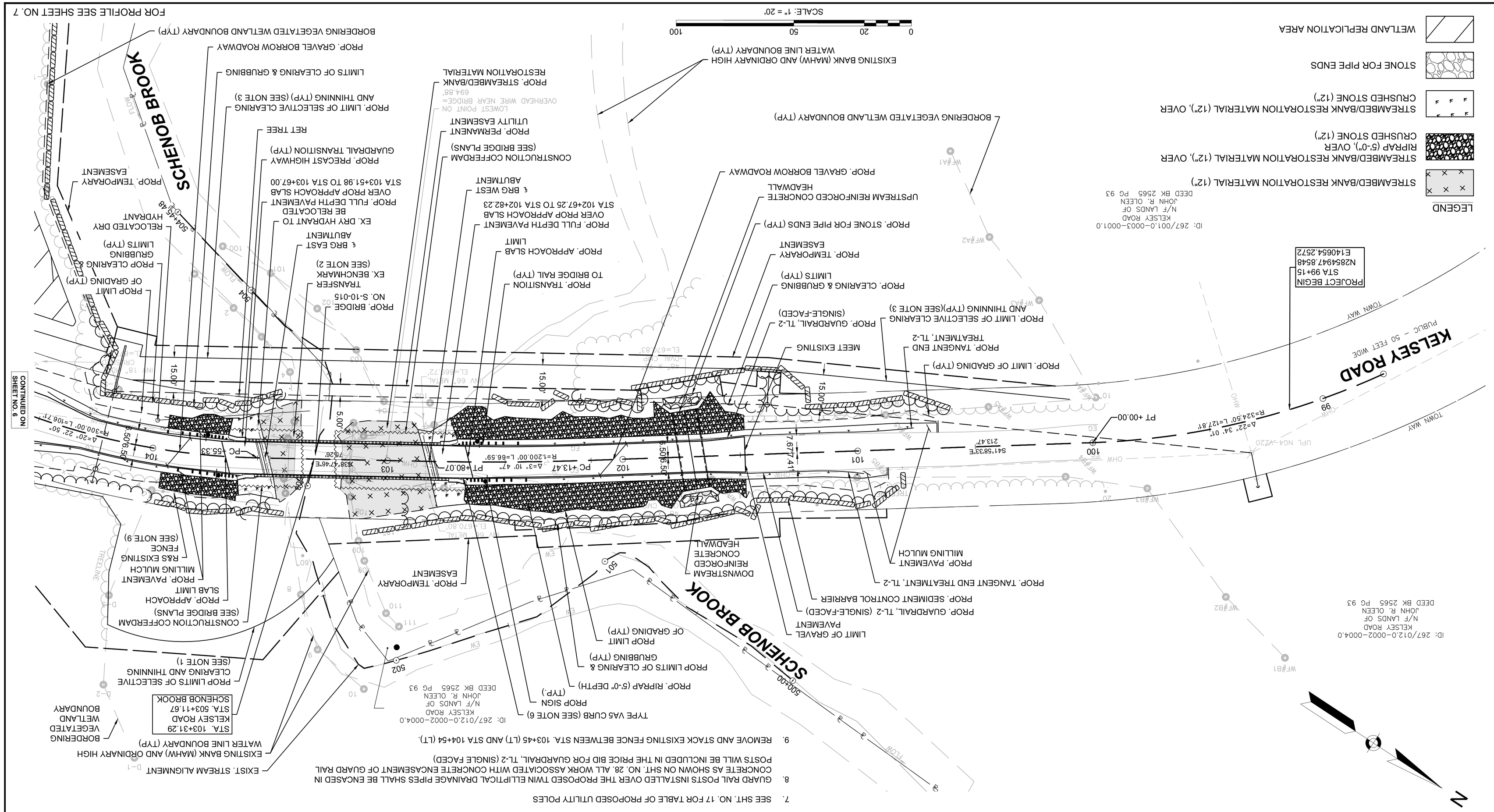
* PROPOSED FULL DEPTH HMA PAVEMENT AND APPROACH SLAB TO BE USED ONLY AT THE LIMITS OF THE PROPOSED BRIDGE APPROACH SLABS. OTHERWISE, GRAVEL BORROW TYPE-B IS TO BE USED. SEE PLANS FOR LIMITS.

TYPICAL SECTION - KELSEY ROAD BRIDGE APPROACH

STA. 101+48.00 TO STA. 102+81.48
STA. 103+52.73 TO STA. 103+95.00
NOT TO SCALE

Proposal No. 609068-136649

609068_HD (SHEFFIELD TYPICAL SECTIONS).DWG Plotted on 2-Apr-2026 1:55 PM



HIGHWAY GUARD DETAILS

TANGENT END TREATMENT, STA. 100+97.81 (LT) TO STA. 101+22.80 (LT)
IMPACT HEAD TO BE OFFSET 9.72 LT AT STA. 100+97.81
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+22.80 (LT) TO STA. 102+35.13 (LT)
TRANSITION TO BRIDGE RAIL, STA. 102+35.13 (LT) TO STA. 102+68.68 (LT)
TANGENT END TREATMENT, STA. 100+76.06 (RT) TO STA. 101+01.65 (RT)
IMPACT HEAD TO BE OFFSET 8.93 RT AT STA. 100+76.06
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+01.65 (RT) TO STA. 102+38.65 (RT)
TRANSITION TO BRIDGE RAIL, STA. 102+38.65 (RT) TO STA. 102+72.60 (RT)
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85 (RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00.00 12.00 RT

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+70.47 20.09 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+66.06 13.32 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+75.80 19.36 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+71.43 14.05 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

SEE SHEET 15 FOR DETAILS

NOTES:

1. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
2. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
3. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'.
4. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.
5. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
6. INSTALL GRANITE CURBING TYPE VA5 AT EACH OF THE TRANSITIONS TO BRIDGE RAIL. REFER TO MASSDOT CONSTRUCTION STANDARD DETAILS, DWG NO. 628.24.2
7. SEE SHT. NO. 17 FOR TABLE OF PROPOSED UTILITY POLES
8. GUARD RAIL POSTS INSTALLED OVER THE PROPOSED TWIN ELLIPTICAL DRAINAGE PIPES SHALL BE ENCASED IN CONCRETE AS SHOWN ON SHT. NO. 28. ALL WORK ASSOCIATED WITH CONCRETE ENCASEMENT OF GUARD RAIL POSTS WILL BE INCLUDED IN THE PRICE BID FOR GUARDRAIL, TL-2 (SINGLE FACED)
9. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
CONSTRUCTION PLANS
SHEET 1 OF 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	5	55

PROJECT FILE NO. 609068

609068_HD (SHEFFIELD CONST PLAN 01).DWG Plotted on 2-Apr-2026 2:09 PM

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Proposal No. 609068-136649

HIGHWAY GUARD DETAILS

TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
IMPACT HEAD TO BE OFFSET 11.99 LT AT 104+28.95 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85(RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)
IMPACT HEAD TO BE OFFSET 12.00 RT AT 104+24.78 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00 12.00 RT

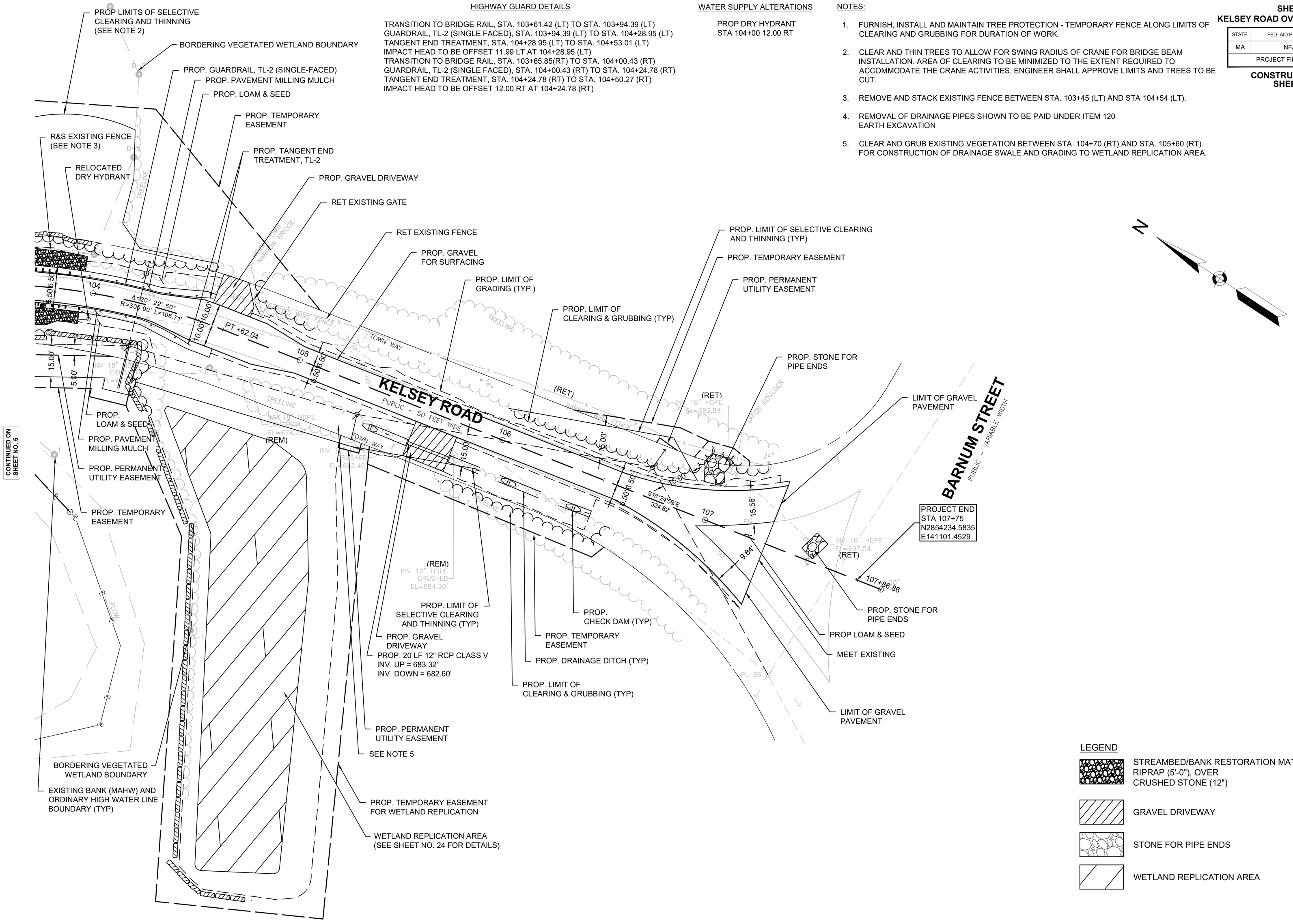
NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
4. REMOVAL OF DRAINAGE PIPES SHOWN TO BE PAID UNDER ITEM 120 EARTH EXCAVATION
5. CLEAR AND GRUB EXISTING VEGETATION BETWEEN STA. 104+70 (RT) AND STA. 105+60 (RT) FOR CONSTRUCTION OF DRAINAGE SWALE AND GRADING TO WETLAND REPLICATION AREA.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	6	55
PROJECT FILE NO.	609068		

CONSTRUCTION PLANS
SHEET 2 OF 2



FOR PROFILE SEE SHEET NO. 8

Proposal No. 609068-136649
609068_HD (SHEFFIELD CONST PLAN 02).DWG Plotted on 3-Apr-2026 11:51 AM
A00830 - 190

FOR CONSTRUCTION PLAN:
SEE SHT. NO. 5

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8

KELSEY ROAD PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 4'

Benchmark 8284
Rivet in Wingwall
Elevation = 676.68'
Sta. 103+39.89, 09.93' RT

99+00 100+00 101+00 103+00 104+00

NAVD 88
BASE ELEV
655.00

660 670 680 690 700 710

EXISTING ELEV.
PROPOSED ELEV.

676.3 676.0 675.9 676.1 676.11 676.0 676.07 675.9 676.50 676.6 677.50 677.6 678.51 678.6 679.52

BEGINNING OF PROJECT
STA. 99+15.00
N 2854947.8548
E 1406542572

PROP DRY WILDLIFE CROSSING (TYP.)

PROP 12" THICK STREAMBED/BANK RESTORATION MATERIAL (TYP)

PROP 34" X 53" ELLIPTICAL CLASS V RCP

EXIST 48" X 72" OVAL CMP TO BE REMOVED

PROP 34" X 53" ELLIPTICAL CLASS V RCP

PROP BOTTOM OF SUBGRADE

EXIST GRADE

13.15"

-0.10%

GRADE BREAK STA = 101+48.03
ELEV = 676.12

LIMIT OF GRAVEL PAVING
STA. 101+48.03
N 2854782.7350
E 1406817.6967

PROP ℄ BRG W. ABUT.

EXIST 66" METAL PIPE TO BE REMOVED

LOW CHORD EL 674.21

APPROACH SLAB (TYP)

PROP GRADE

EX ℄ BRG W. ABUT.

EX ℄ BRG E. ABUT.

ORDINARY HIGH WATER EL 671±

PROP ℄ BRG E. ABUT.

SCHENOB BROOK

KELSEY ROAD

2.02%

10 YEAR DESIGN FLOOD EL 676.61

100 YEAR BASE FLOOD EL 678.52

50 YEAR DESIGN FLOOD EL 677.88

BRIDGE NO. S-10-015

PVT: 102+58.03
ELEV: 676.65

PVC: 101+98.03
ELEV: 676.08

LOW POINT ELEV = 676.07
LOW POINT STA = 102+00.34
PVI STA = 102+28.03
PVI ELEV = 676.05
A.D. = 2.10%
K = 28.56
60' VC

739.6' HSD

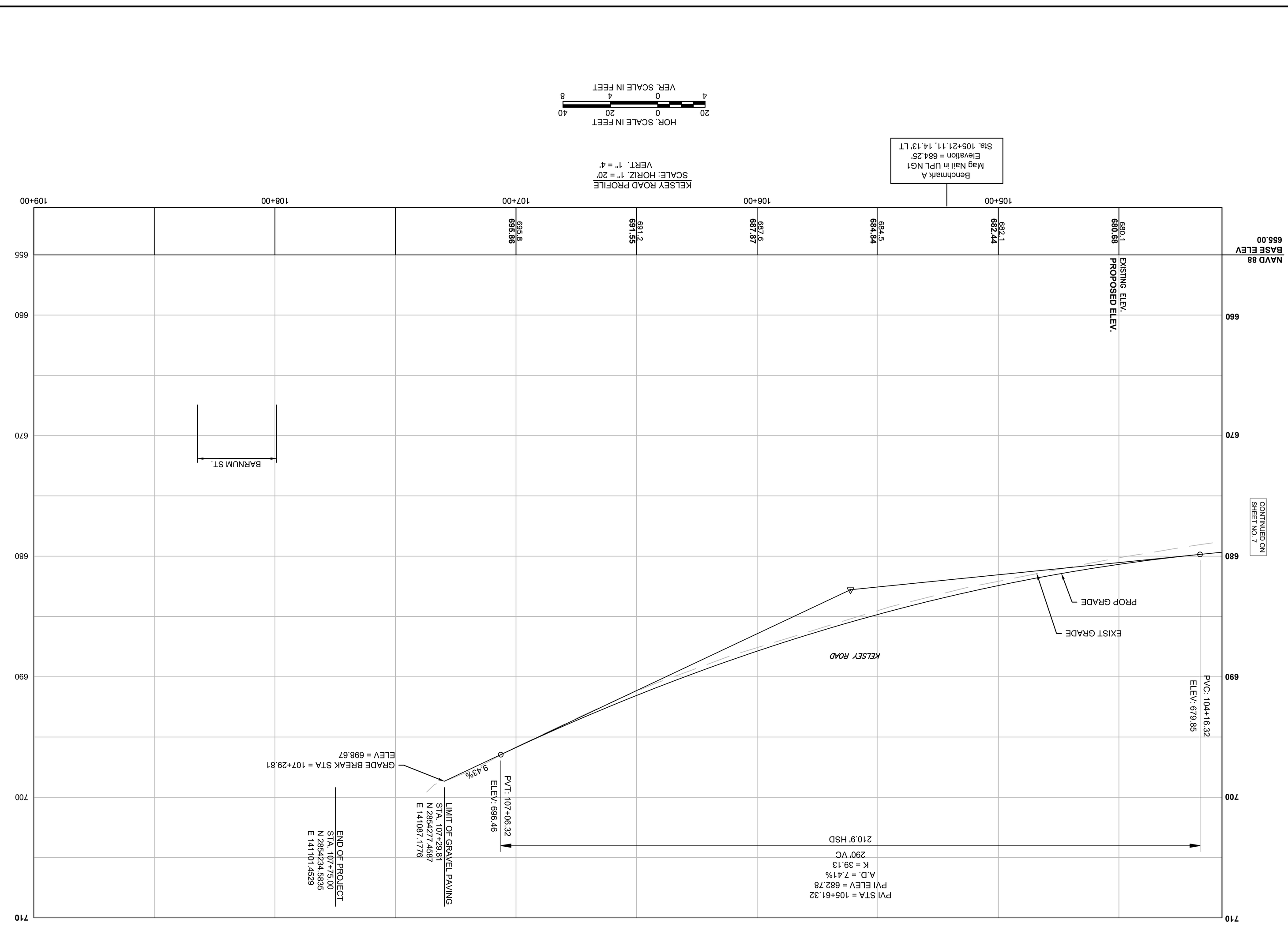
CONTINUED ON SHEET NO. 8

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	7	55
	PROJECT FILE NO. 609068		

ROADWAY PROFILES

FOR CONSTRUCTION PLAN:
SEE SHT. NO. 6



ROADWAY PROFILES

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	8	55
PROJECT FILE NO. 609068			

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

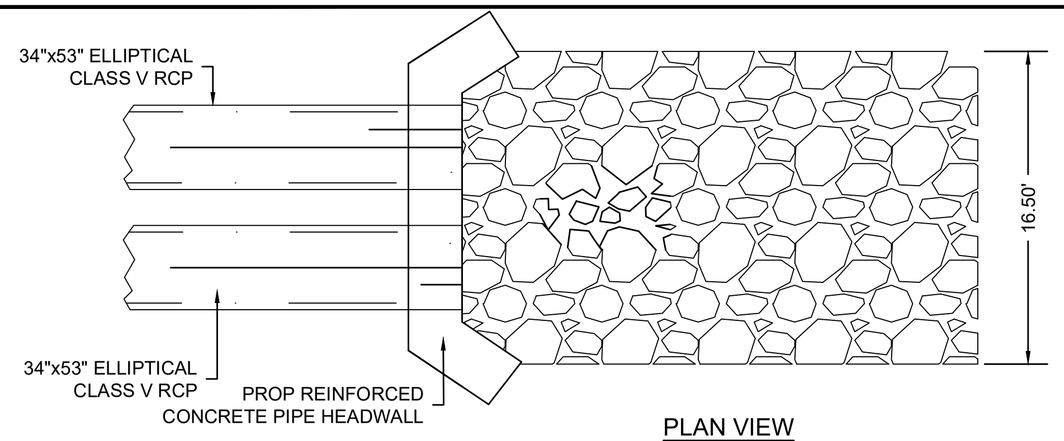
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A00830 - 192

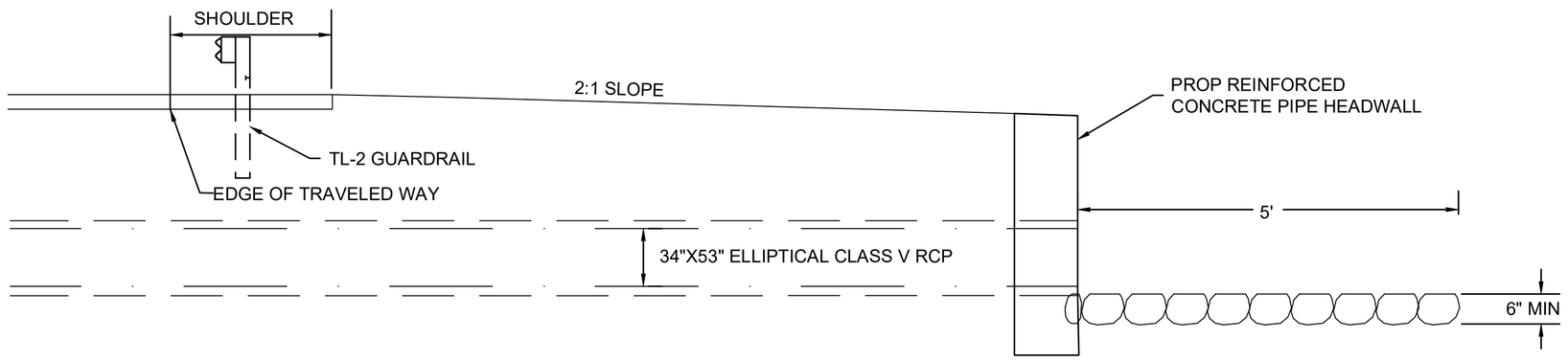
Proposal No. 609068-136449

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	15	55
PROJECT FILE NO.	609068		

DRAINAGE DETAILS



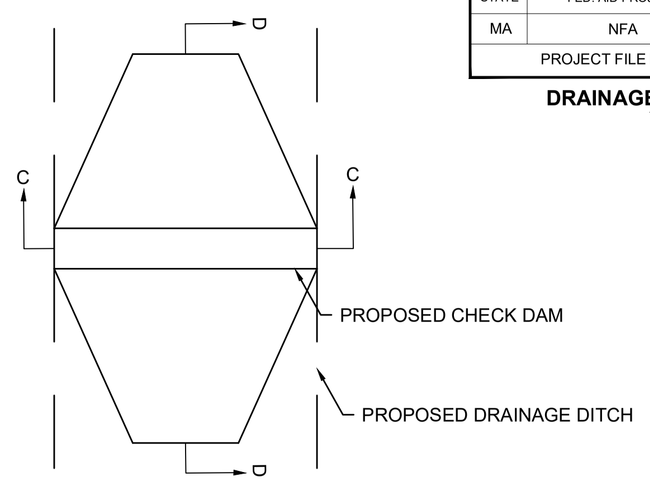
PLAN VIEW



PROFILE VIEW

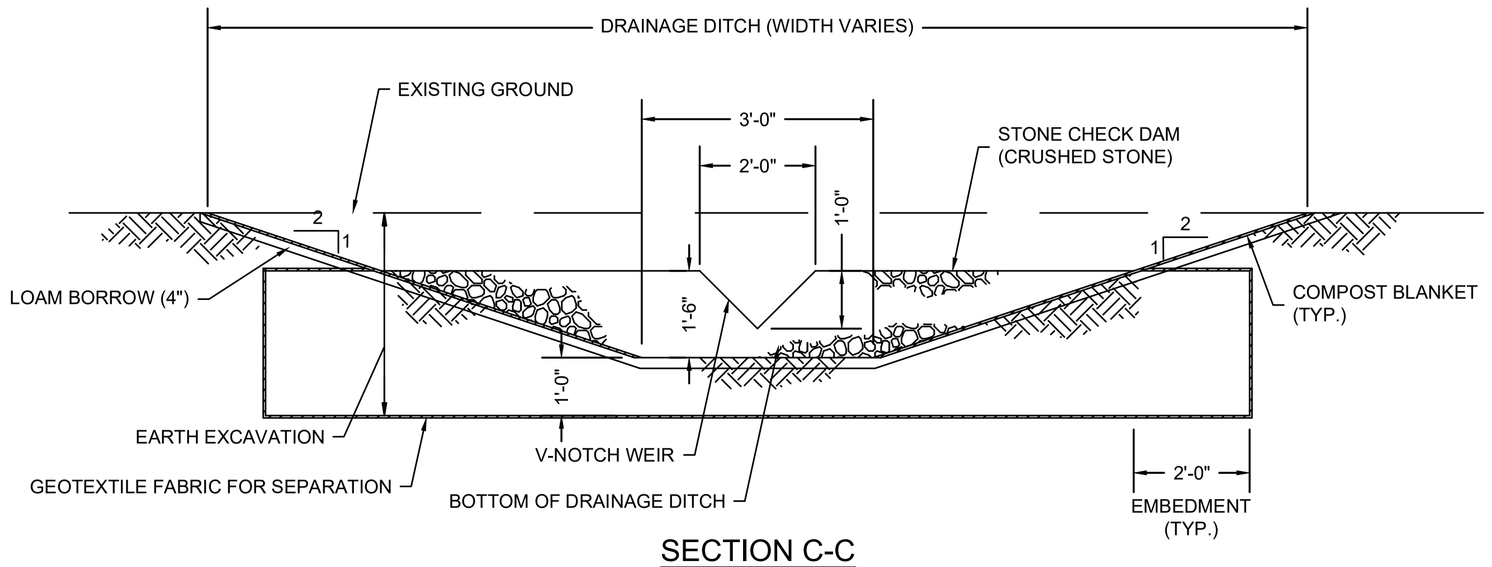
STONE FOR PIPE ENDS AT ELLIPTICAL CULVERT

NOT TO SCALE



STONE CHECK DAM PLAN VIEW

NOT TO SCALE

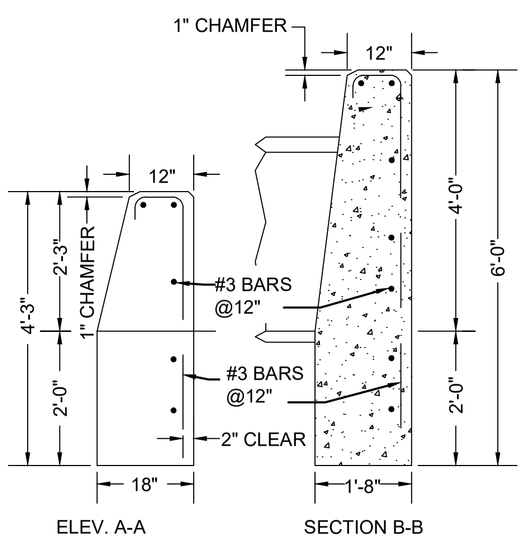


SECTION C-C

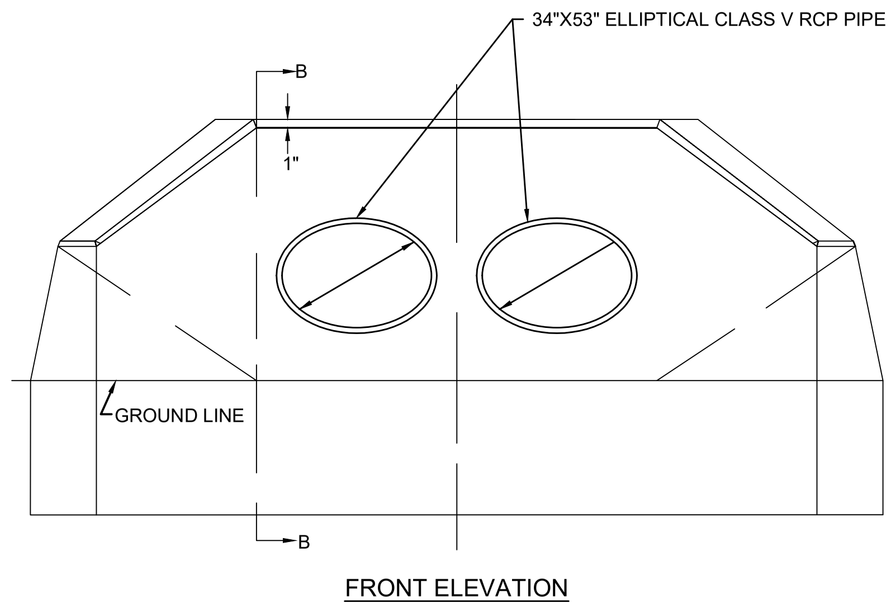
NOT TO SCALE

PLAN VIEW

** FOR 1V:1.5H SLOPE, F=3'-6"
FOR 1V:2H SLOPE, F=5'-0"



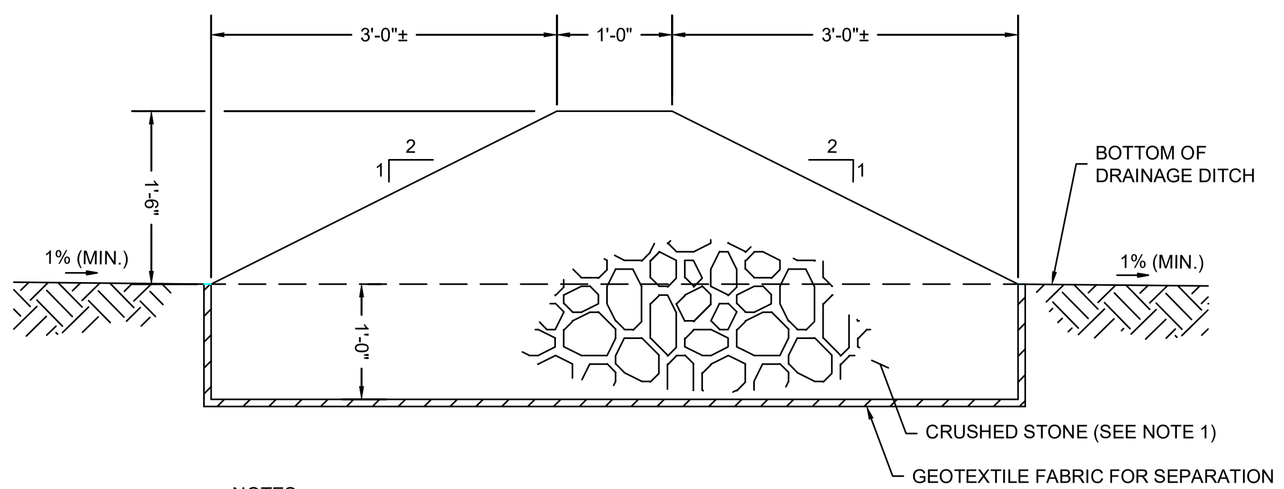
ELEV. A-A SECTION B-B



FRONT ELEVATION

REINFORCED CONCRETE PIPE HEADWALL

NOT TO SCALE
(ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM)



NOTES:
1. CRUSHED STONE SHALL MEET MATERIAL REQUIREMENTS OF SECTION M2.01.2

SECTION D-D

NOT TO SCALE

Proposal No. 609068-136649
608069_HD(DRAINAGE DETAILS).DWG Plotted on 18-Mar-2026 2:47 PM
A00830 - 193

WETLAND FLAG NOTES:

1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW)/ FEDERAL WETLANDS. FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+66 LT TO STA. 101+70 RT

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+72 LT TO STA. 101+76 RT

NOTES:

1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.

2. AREA TO BE CLEARED TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES.

3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.

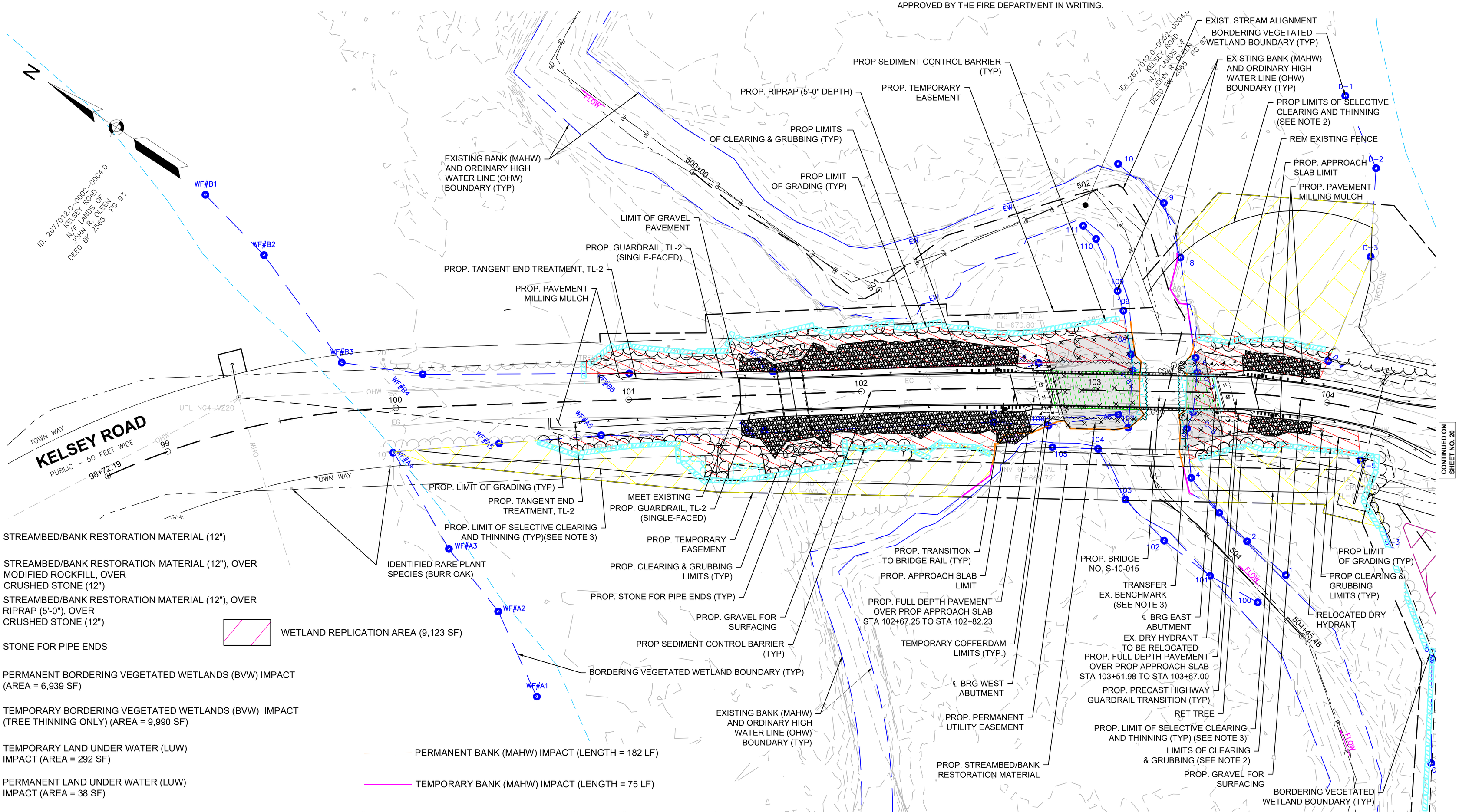
4. GRUBBING IS NOT TO BE DONE IN WETLANDS WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS.

5. THE DRY HYDRANT MUST BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED MUST BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	19	55
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2



LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12")
- STREAMBED/BANK RESTORATION MATERIAL (12"), OVER MODIFIED ROCKFILL, OVER CRUSHED STONE (12")
- STREAMBED/BANK RESTORATION MATERIAL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- STONE FOR PIPE ENDS
- PERMANENT BORDERING VEGETATED WETLANDS (BVW) IMPACT (AREA = 6,939 SF)
- TEMPORARY BORDERING VEGETATED WETLANDS (BVW) IMPACT (TREE THINNING ONLY) (AREA = 9,990 SF)
- TEMPORARY LAND UNDER WATER (LUW) IMPACT (AREA = 292 SF)
- PERMANENT LAND UNDER WATER (LUW) IMPACT (AREA = 38 SF)
- LAND UNDER WATER (LUW) GAINED FROM CUTTING (AREA = 780 SF)
- WETLAND REPLICATION AREA (9,123 SF)
- PERMANENT BANK (MAHW) IMPACT (LENGTH = 182 LF)
- TEMPORARY BANK (MAHW) IMPACT (LENGTH = 75 LF)

0 20 50 100
SCALE: 1" = 20'

Proposal No. 609068-136649
609068_HD\WETLAND REPLICATION PLANS.DWG Plotted on 2-Apr-2026 2:20 PM
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SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

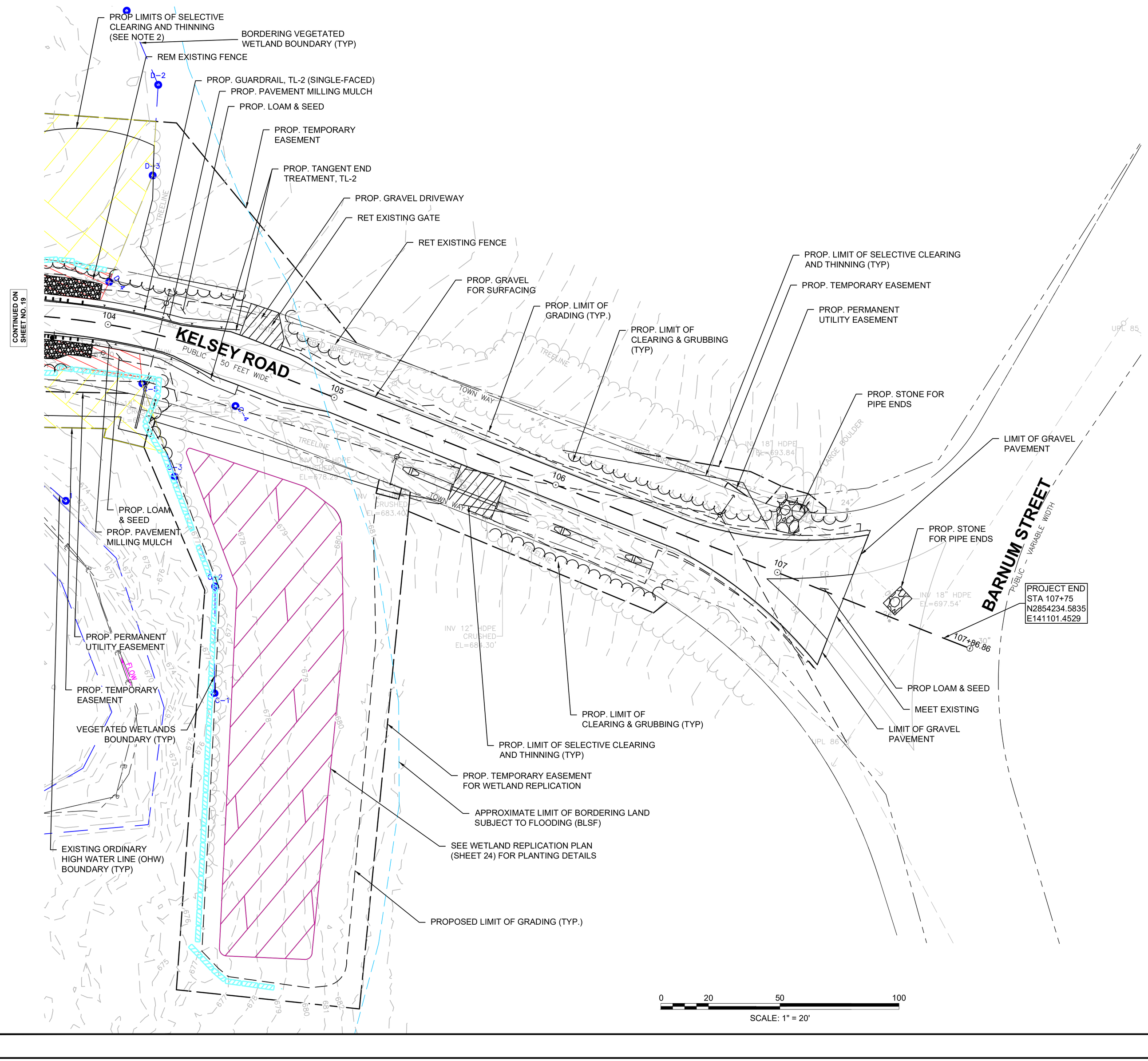
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	20	55
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.

2. AREA TO BE CLEARED TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES.



LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- PERMANENT BORDERING VEGETATED WETLANDS (BVW) IMPACT (AREA = 6,939 SF)
- TEMPORARY BORDERING VEGETATED WETLANDS (BVW) IMPACT (TREE THINNING ONLY) (AREA = 9,990 SF)
- WETLAND REPLICATION AREA (9,117 SF)

Proposal No. 609068-136649

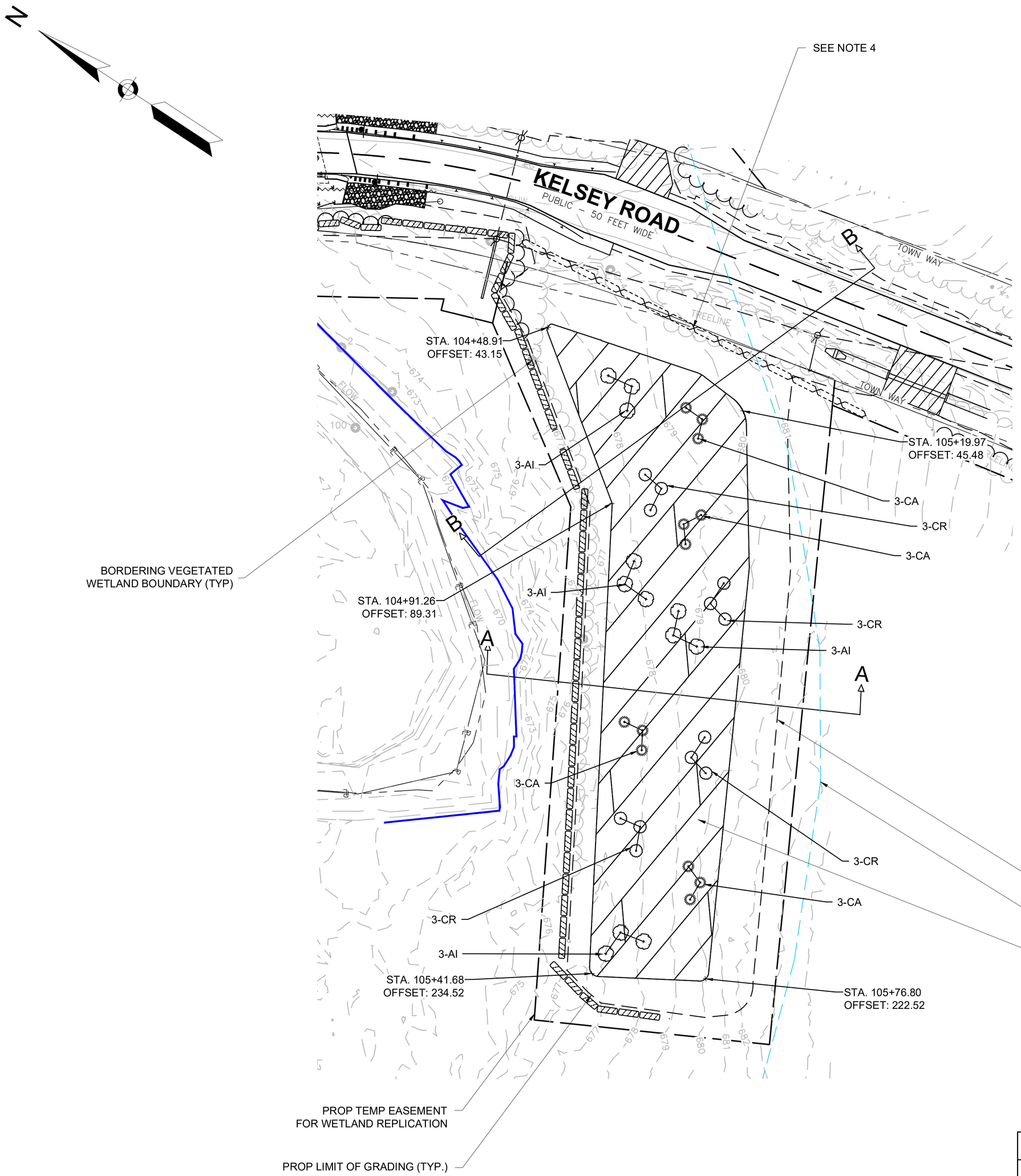
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SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	24	55
PROJECT FILE NO.	609068		

WETLAND REPLICATION PLAN
SHEET 1 OF 3



NOTE:

1. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS.EXCAVATE TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
2. WETLAND REPLICATION AREA SHALL BE SEEDED WITH WETLAND PART SHADE MIX MEETING THE REQUIREMENTS OF ITEM 765.555.
3. SEE WETLAND REPLICATION PLAN SHEET 2 OF 3 FOR SECTION A-A. SEE WETLAND REPLICATION PLAN SHEET 3 OF 3 FOR SECTION B-B.
4. CONTRACTOR SHALL INSTALL COMPOST FILTER TUBES ALONG BOTTOM OF ROADWAY SLOPE BETWEEN STA. 104+25 (RT) AND STA. 105+60 (RT) TO PREVENT SEDIMENT FROM ROADWAY WORK ENTERING WETLAND REPLICATION AREA. WORK TO BE PAID UNDER ITEM 767.121 - SEDIMENT CONTROL BARRIER

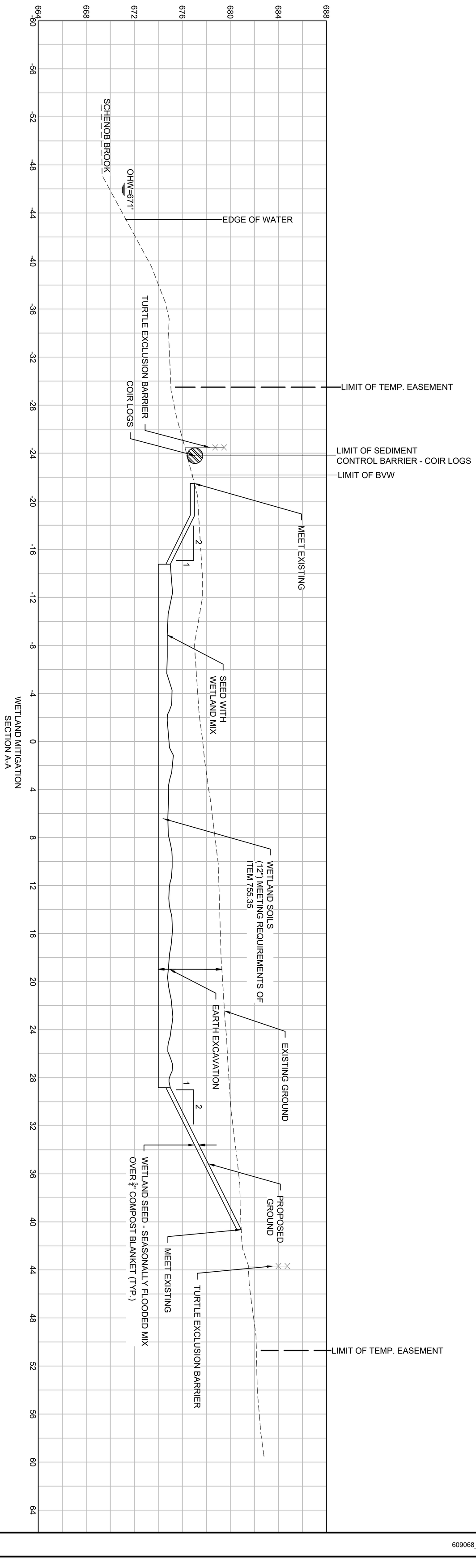
LEGEND

- OHW/ELEV 671±
- TEMPORARY EROSION & SEDIMENT CONTROL
- TEMPORARY EROSION & SEDIMENT CONTROL - COIR LOGS
- WETLAND REPLICATION AREA (9,123 SF)

0 20 50 100
SCALE: 1" = 20'

WETLAND REPLICATION PLANT LIST				
SYMBOL	QUANTITY (EACH)	BOTANICAL NAME	COMMON NAME	SIZE
CA	12	CORNUS AMOMUM	SILKY DOGWOOD	24" TO 36"
CR	12	CORNUS RACEMOSA	GRAY DOGWOOD	24" TO 36"
AI	12	ALNUS INCANA	SPECKLED ALDER	12" TO 18"

Proposal No. 609068-136649
609068_HD(WETLAND REPLICATION PLANS).DWG Plotted on 3-Apr-2026 11:55 AM
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WETLAND MITIGATION
SECTION A-A

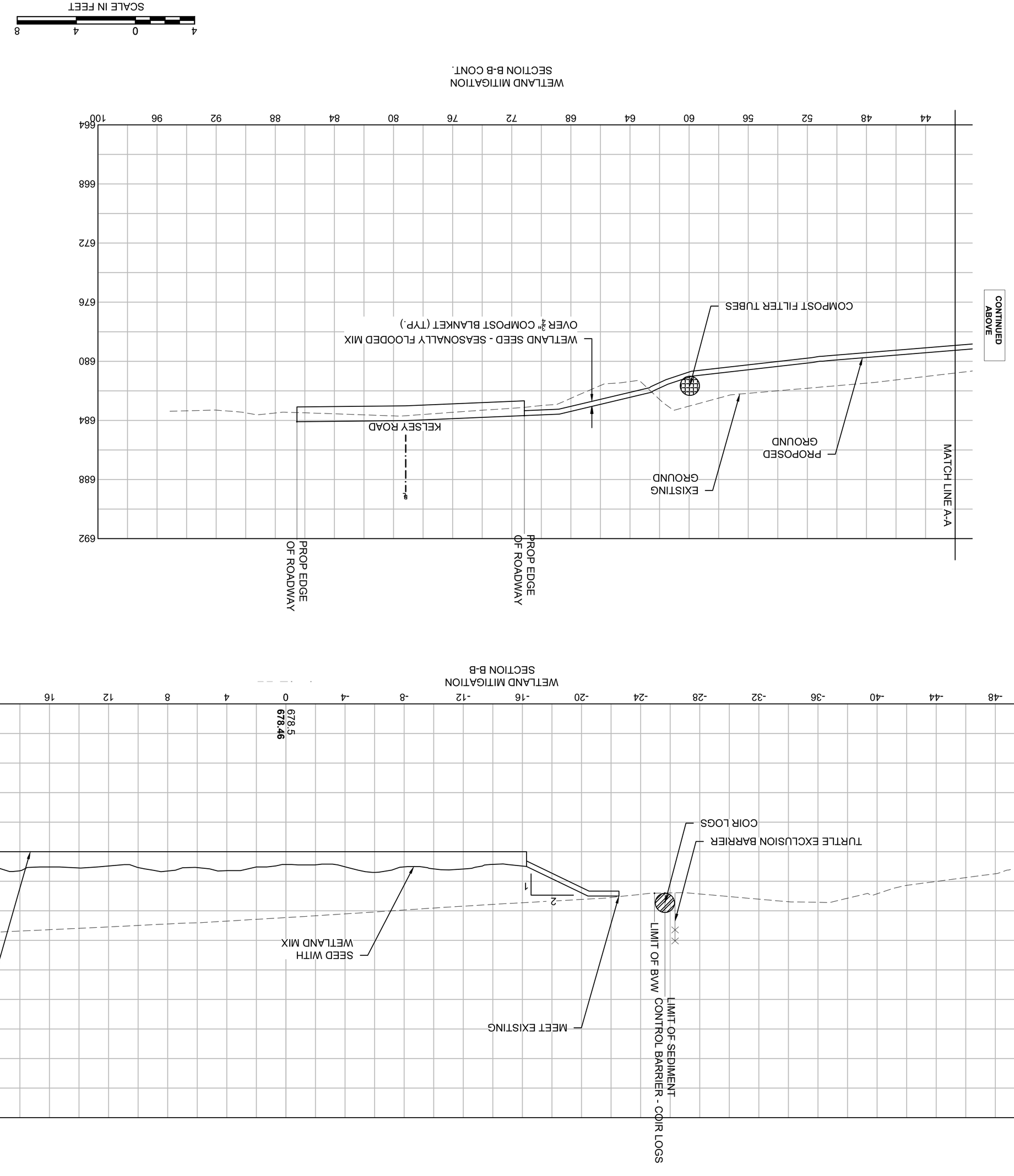
4 0 4 8
SCALE IN FEET

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	24	55
	PROJECT FILE NO. 609068		

WETLAND REPLICATION PLAN
SHEET 2 OF 3

609068_HD(WETLAND REPLICATION PLANS).DWG Plotted on 2-Apr-2026 2:28 PM



WETLAND REPLICATION PLAN
SHEET 3 OF 3

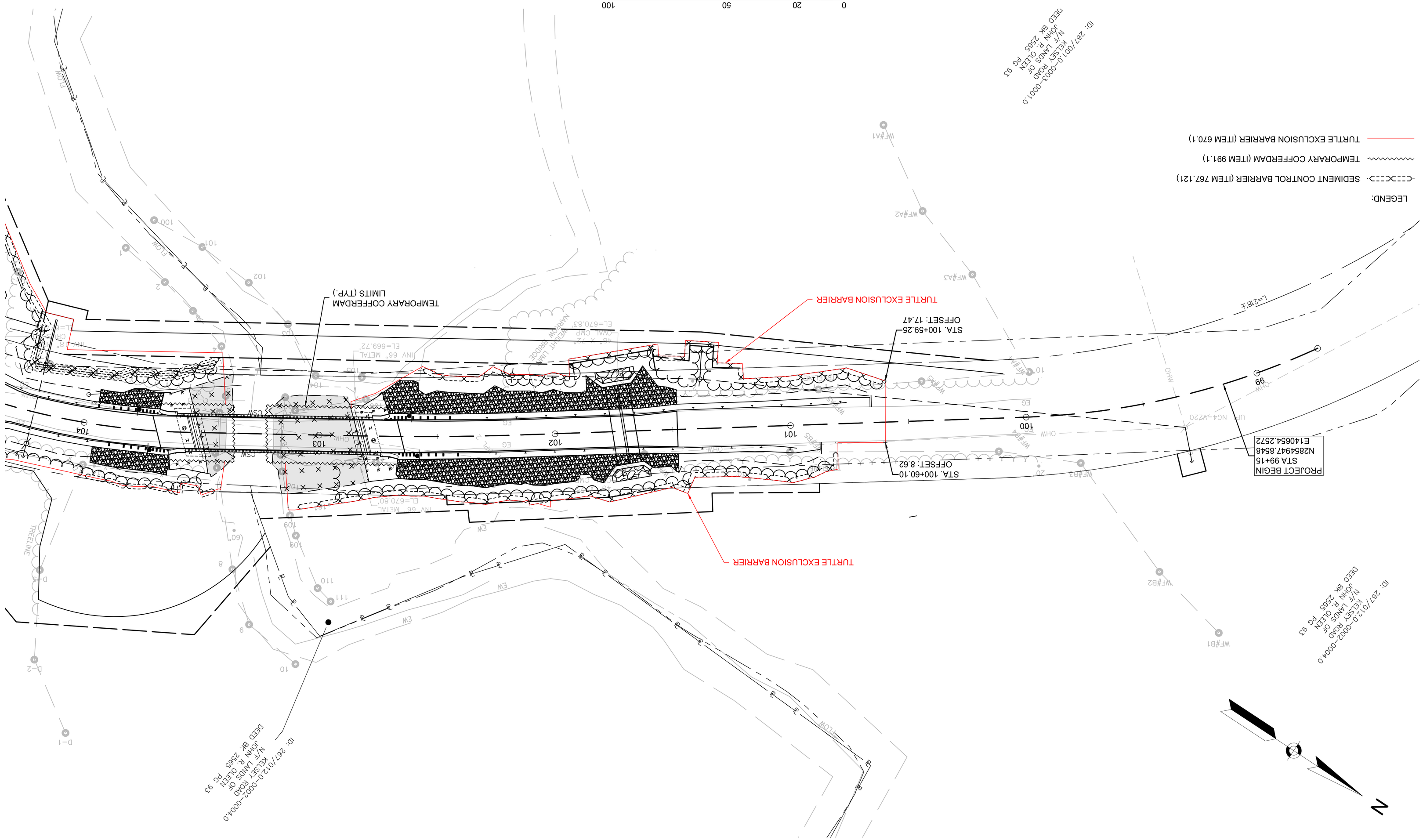
PROJECT FILE NO. 609068		
STATE: MA	FED. AID PROJ. NO.: NFA	SHEET NO.: 24 / TOTAL SHEETS: 55

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

609068_HDWETLAND REPLICATION PLANS.DWG Plotted on 2-Apr-2026 2:30 PM

A908830 - 198

Proposal No. 609068-136649



NOTES:

1. TURTLE EXCLUSION BARRIER SHALL BE PLACED AS SHOWN ON THE TURTLE EXCLUSION BARRIER PLAN. FINAL LOCATION SHALL BE DETERMINED BY FIELD CONDITIONS AND MUST BE APPROVED BY THE MASSDOT WILDLIFE MONITOR.
2. INSTALLATION AND MONITORING SHALL BE AS SHOWN AND AS DESCRIBED IN THE SPECIFICATIONS.
3. THE BARRIER MUST CONNECT, WITHOUT GAPS, TO ANY PROPOSED WATER CONTROL STRUCTURES SUCH AS COFFERDAMS OR SANDBAGS TO PREVENT TURTLES FROM ENTERING THE WORKZONE.
4. CONSTRUCTION VEHICLE ENTRANCES TO THE WORK AREA MUST BE CLOSED EACH NIGHT DURING THE TURTLE ACTIVE SEASON (MARCH 15 - OCTOBER 31) WITH EITHER A GATE AND/OR SEDIMENTATION FENCING. THE CONSTRUCTION VEHICLE ENTRANCES SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.
5. SIGNAGE NOTING THE LIMIT OF WORK SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.

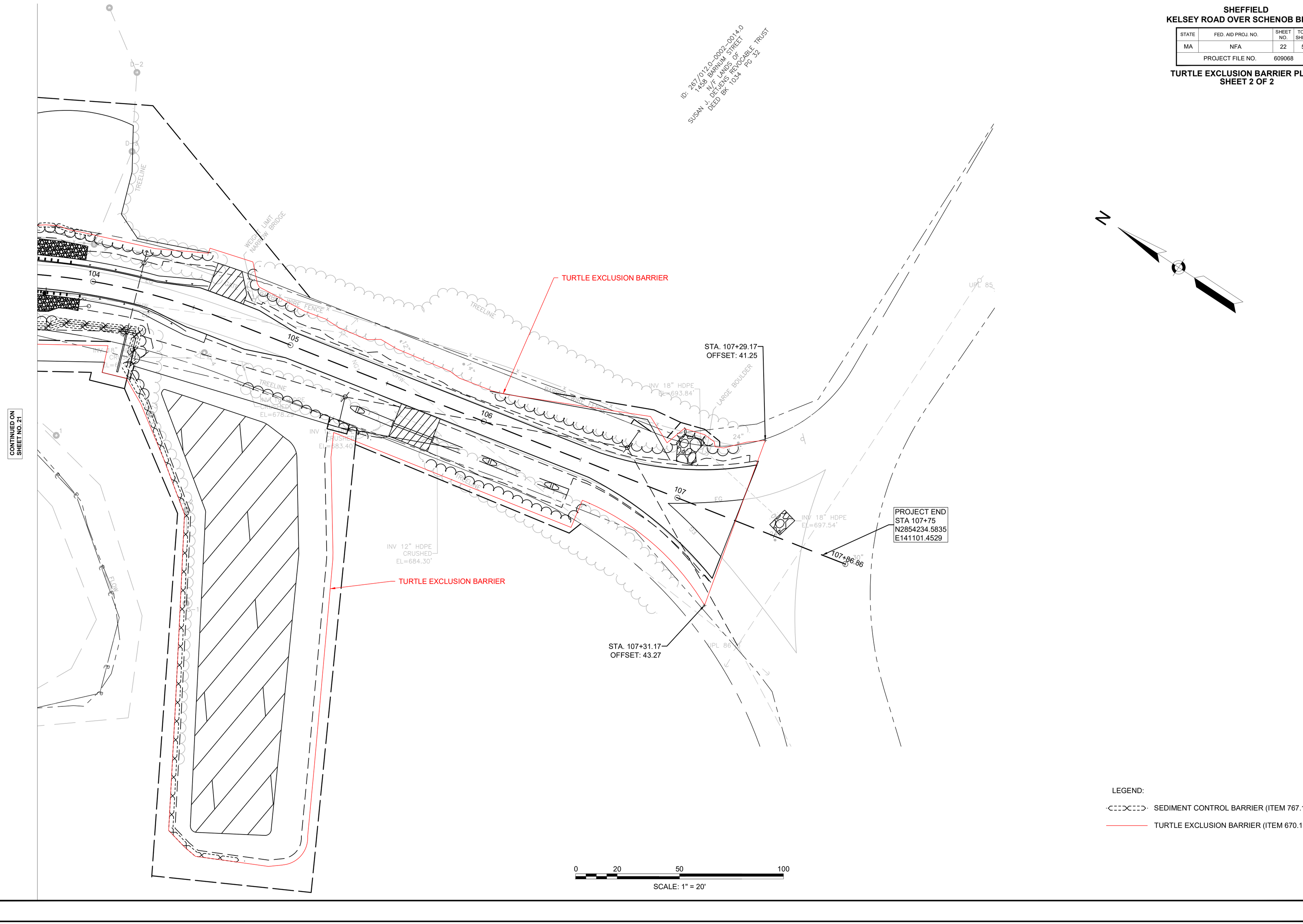
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
TURTLE EXCLUSION BARRIER PLANS
SHEET 1 OF 2

STATE	FED. AID PROJ. NO.		PROJECT FILE NO. 609068
MA	NFA	SHEET NO. 21	TOTAL SHEETS 55

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	22	55
PROJECT FILE NO.	609068		

TURTLE EXCLUSION BARRIER PLANS
SHEET 2 OF 2



LEGEND:

- SEDIMENT CONTROL BARRIER (ITEM 767.121)
- TURTLE EXCLUSION BARRIER (ITEM 670.1)

Proposal No. 609068-136649

609068_HD(TURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 18-Mar-2026 2:01 PM

A00830 - 200

ENVIRONMENTALLY SENSITIVE AREA SIGNAGE

SCALE: N.T.S.

NOTES:

1. SIGNAGE MUST CLEARLY IDENTIFY THE LIMIT OF WORK IN ALL 4 QUADRANTS OF THE WORK SITE.

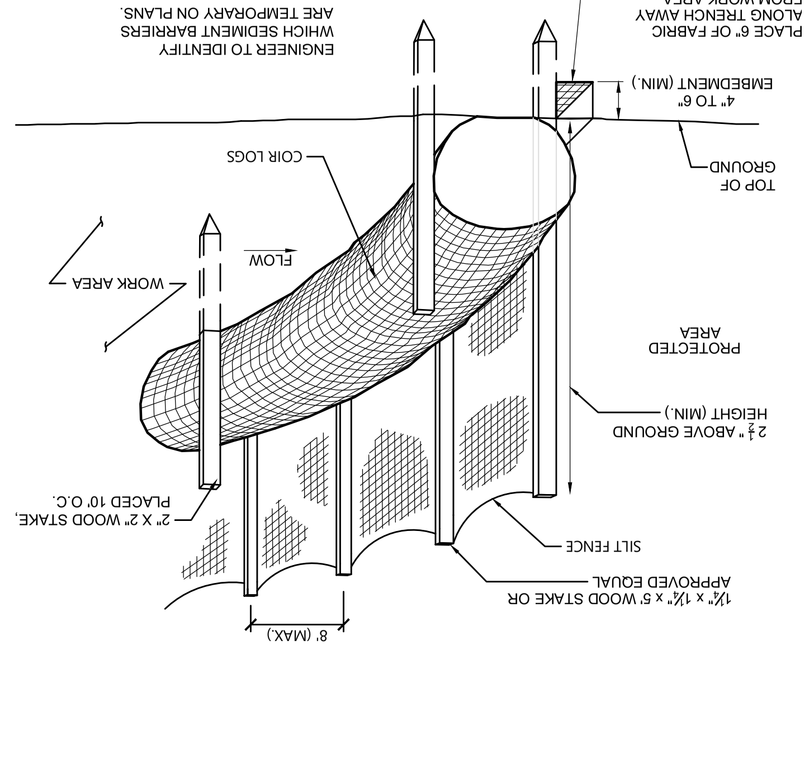


TURTLE EXCLUSION BARRIER WITH SEDIMENT CONTROL BARRIER

SCALE: NTS

NOTES:

1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

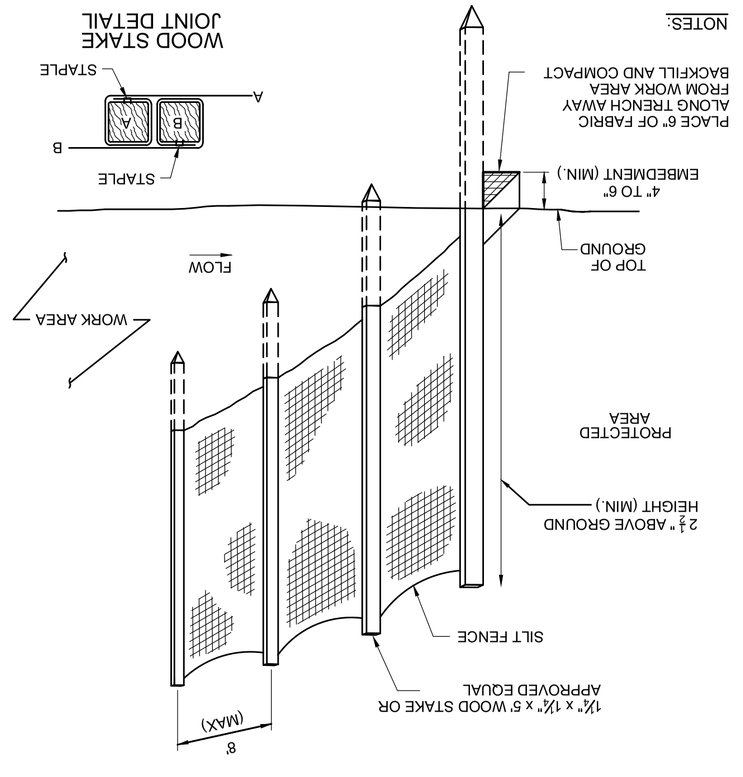


TURTLE EXCLUSION BARRIER

SCALE: N.T.S.

NOTES:

1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.



SHEFFIELD
KELSEY ROAD OVER SCHENOB BRROK

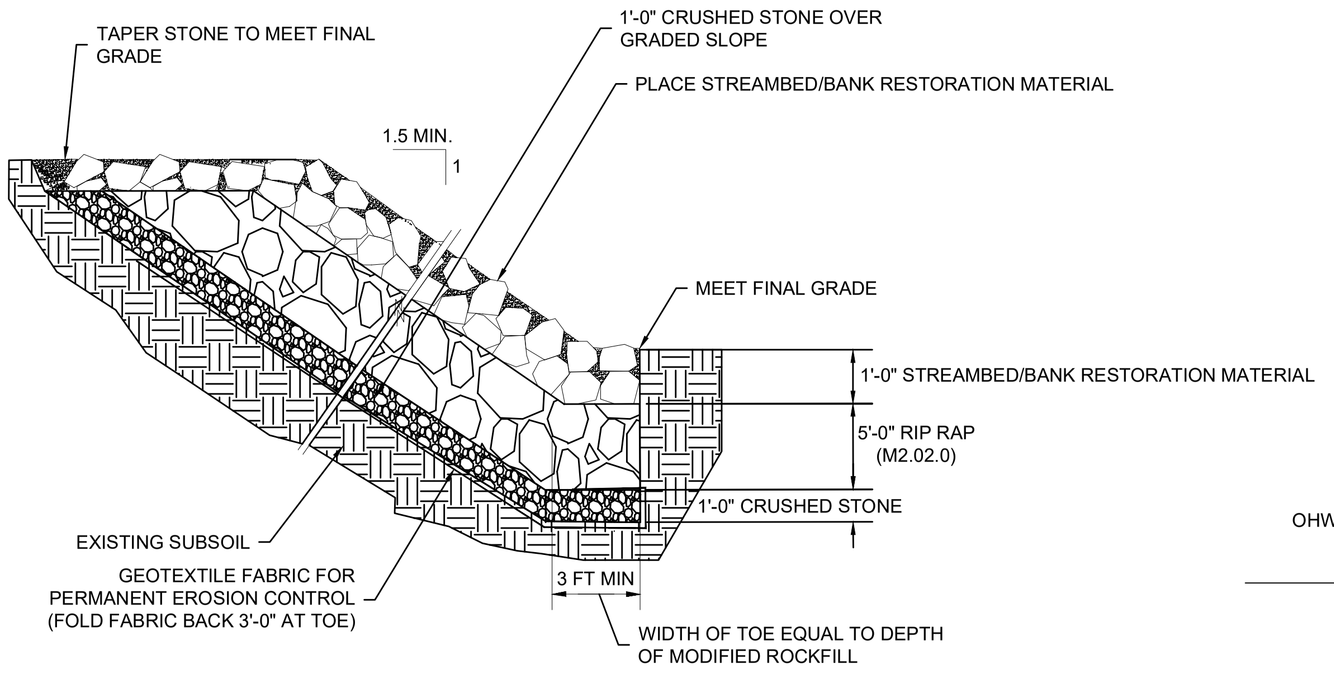
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	23	55
PROJECT FILE NO. 609068			

TURTLE EXCLUSION BARRIER DETAILS

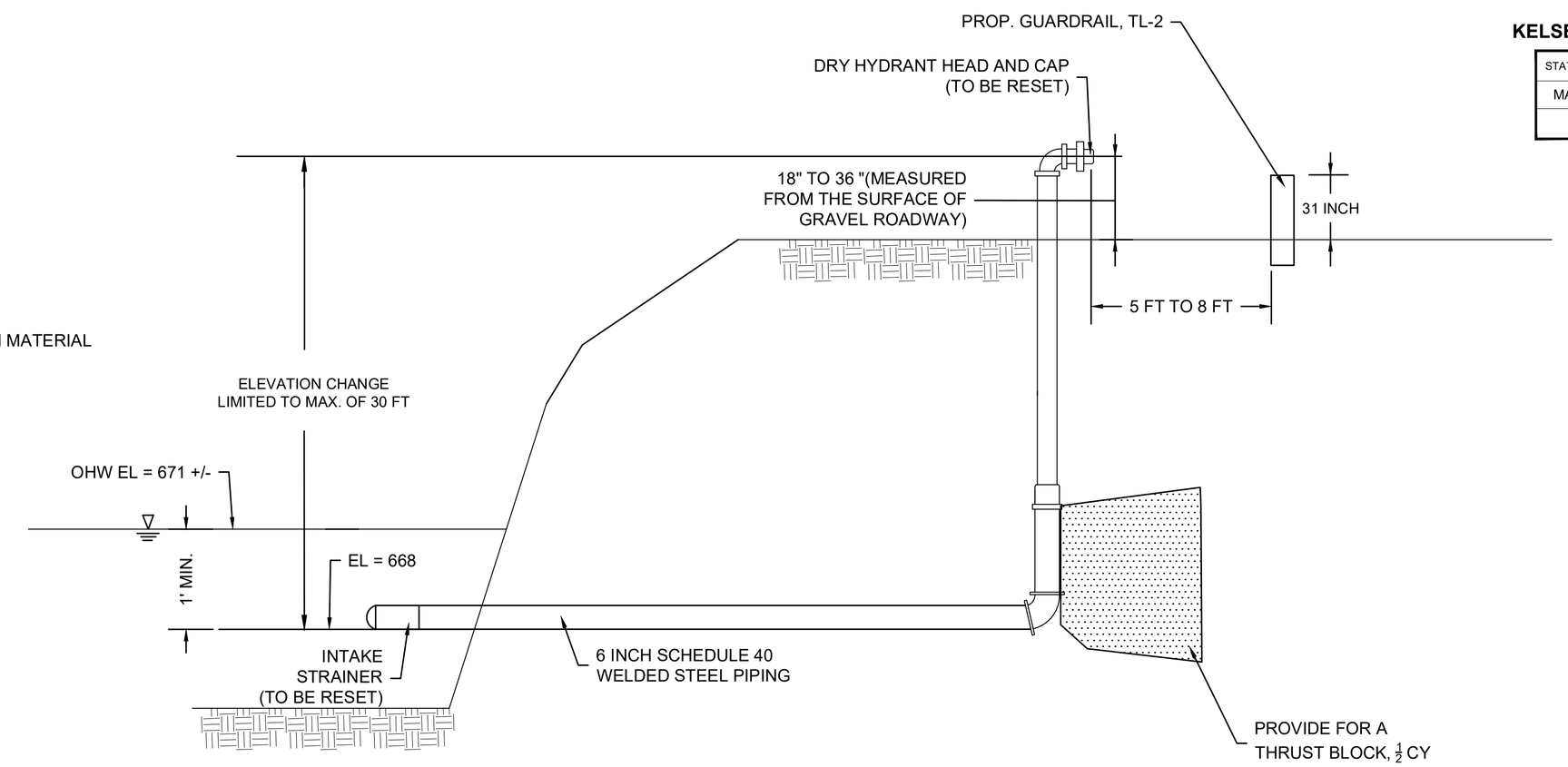
609068_HD(TURTLE BARRIER EXCLUSION PLAN DETAILS).DWG Plotted on 18-Mar-2026 2:01 PM

A00830 - 201

Proposal No. 609068-136649



RIPRAP SIDE SLOPE DETAIL
NTS



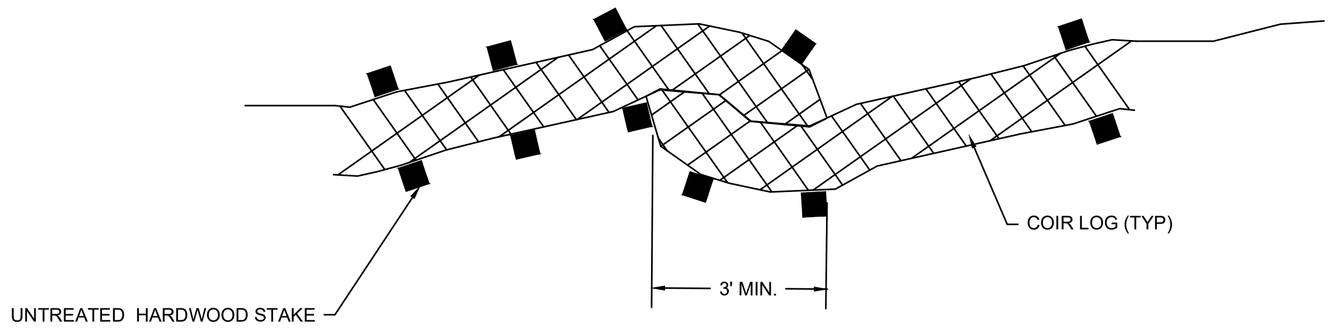
DRY HYDRANT DETAILS
NTS

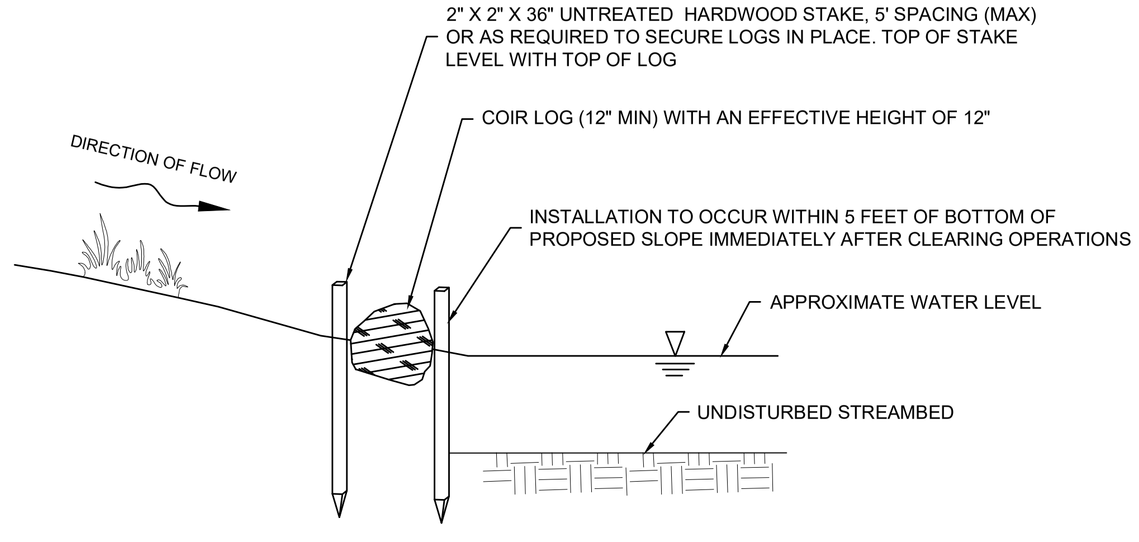
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	27	55
PROJECT FILE NO.	609068		

CONSTRUCTION DETAILS

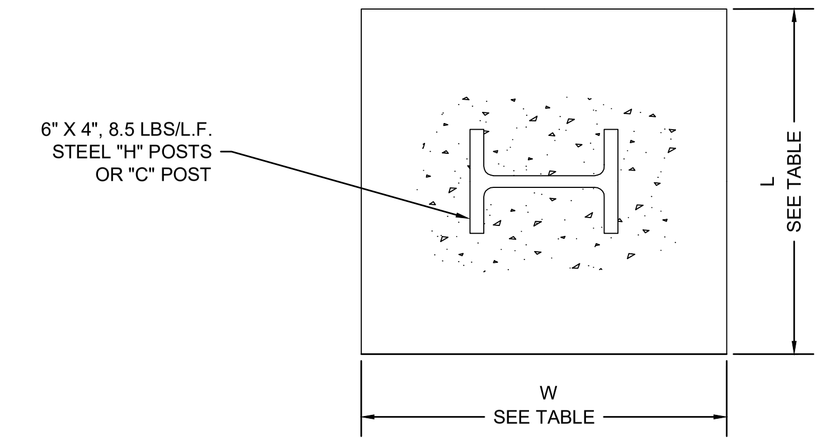
STREAM OR VEGETATED WETLANDS



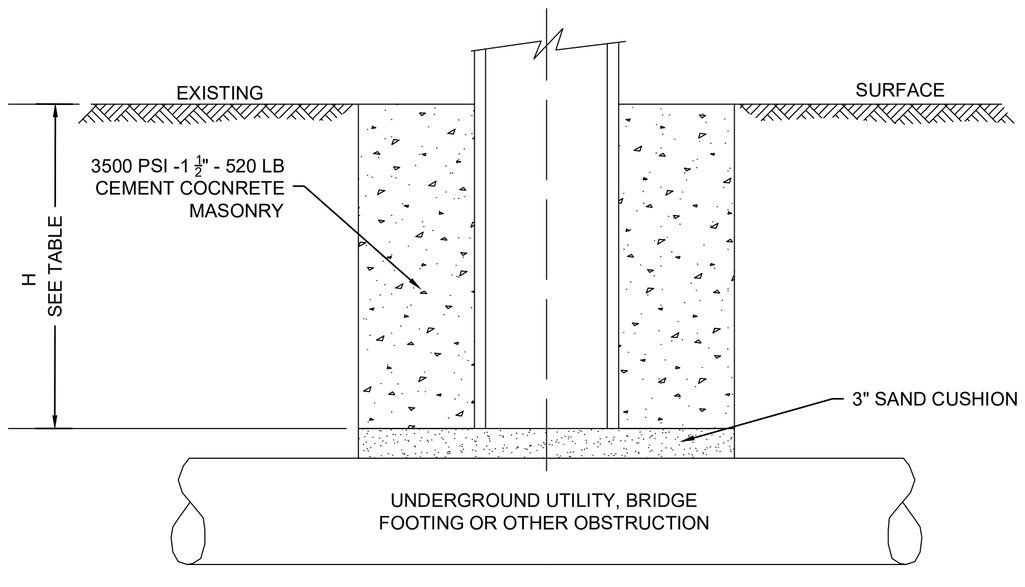


COIR LOG DETAILS
NTS

Proposal No. 609068-136649
609068_HD (CONSTRUCTION DETAILS.DWG Plotted on 3-Apr-2026 8:33 AM
A00830 - 202



PLAN



ELEVATION

HEIGHT OF EXISTING SURFACE ABOVE TOP OF SAND CUSHION	DIMENSION OF CONCRETE ENVELOPE		
	H HEIGHT OF SURFACE ABOVE SAND CUSHION	W	L
1'-0" - 1'-6"	VARIES 1'-0" - 1'-6"	2'-6"	2'-6"
1'-6" - 2'-6"	VARIES 1'-6" - 2'-6"	2'-0"	1'-6"
OVER 2'-6"	2'-6"	1'-6"	1'-6"

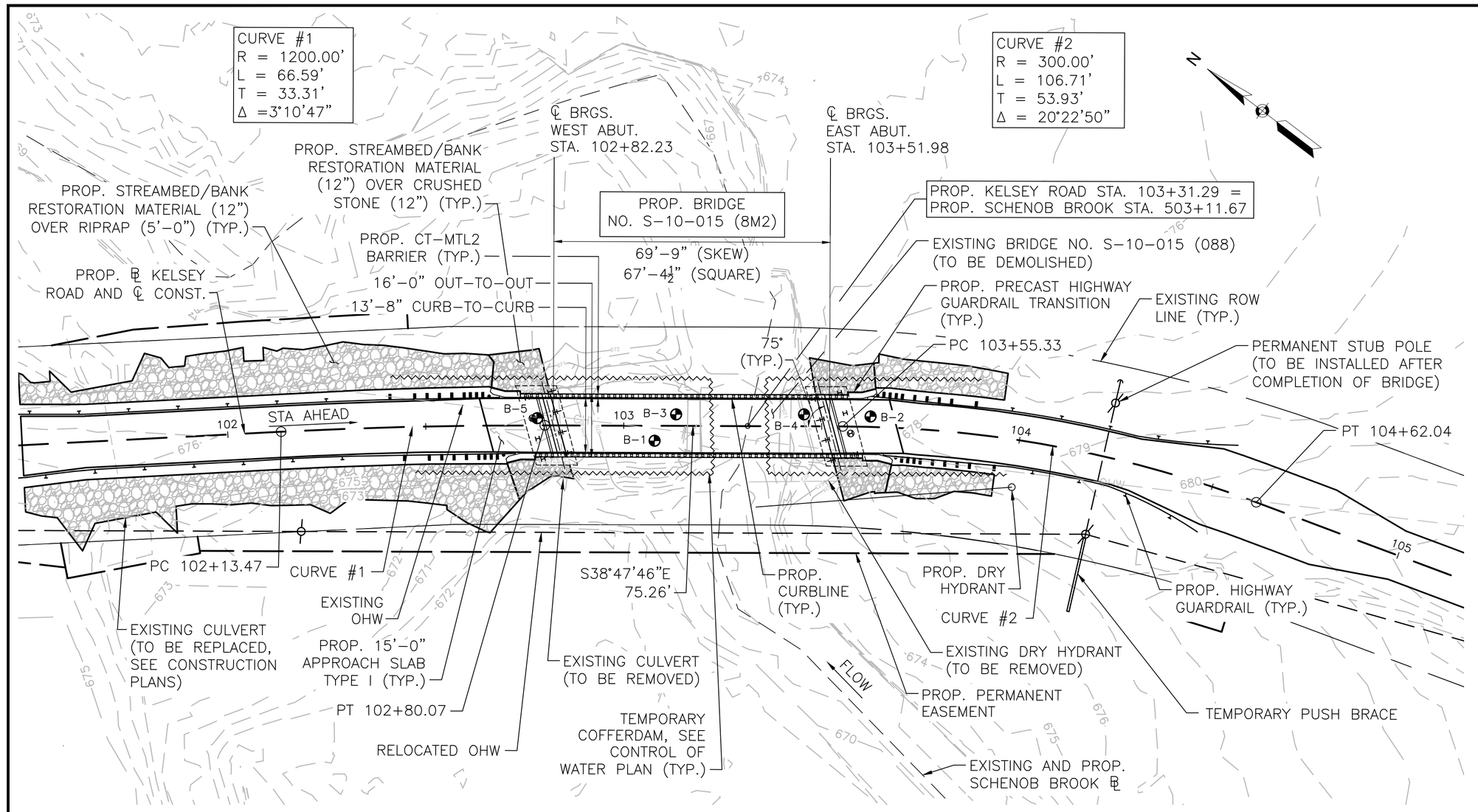
NOTES:

1. OFFSET BRACKETS ARE TO BE INSTALLED AND RAILS ARE TO BE MOUNTED AS SHOWN ON DRAWINGS 620.12.1
2. NOT TO BE USED ON MORE THAN 2 POSTS IN A ROW

MODIFIED HIGHWAY GUARD POST INSTALLATION

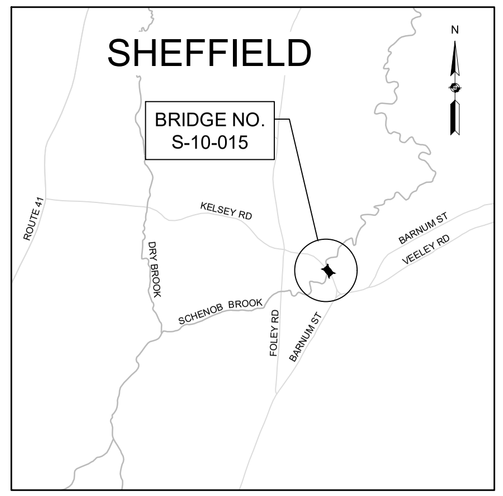
NTS

Proposal No. 609068-136649
609068_HD (CONSTRUCTION DETAILS.DWG Plotted on 3-Apr-2026 8:36 AM
A00830 - 203



KEY PLAN

SCALE: 1" = 20'



LOCUS

SCALE: 1" = 2000'

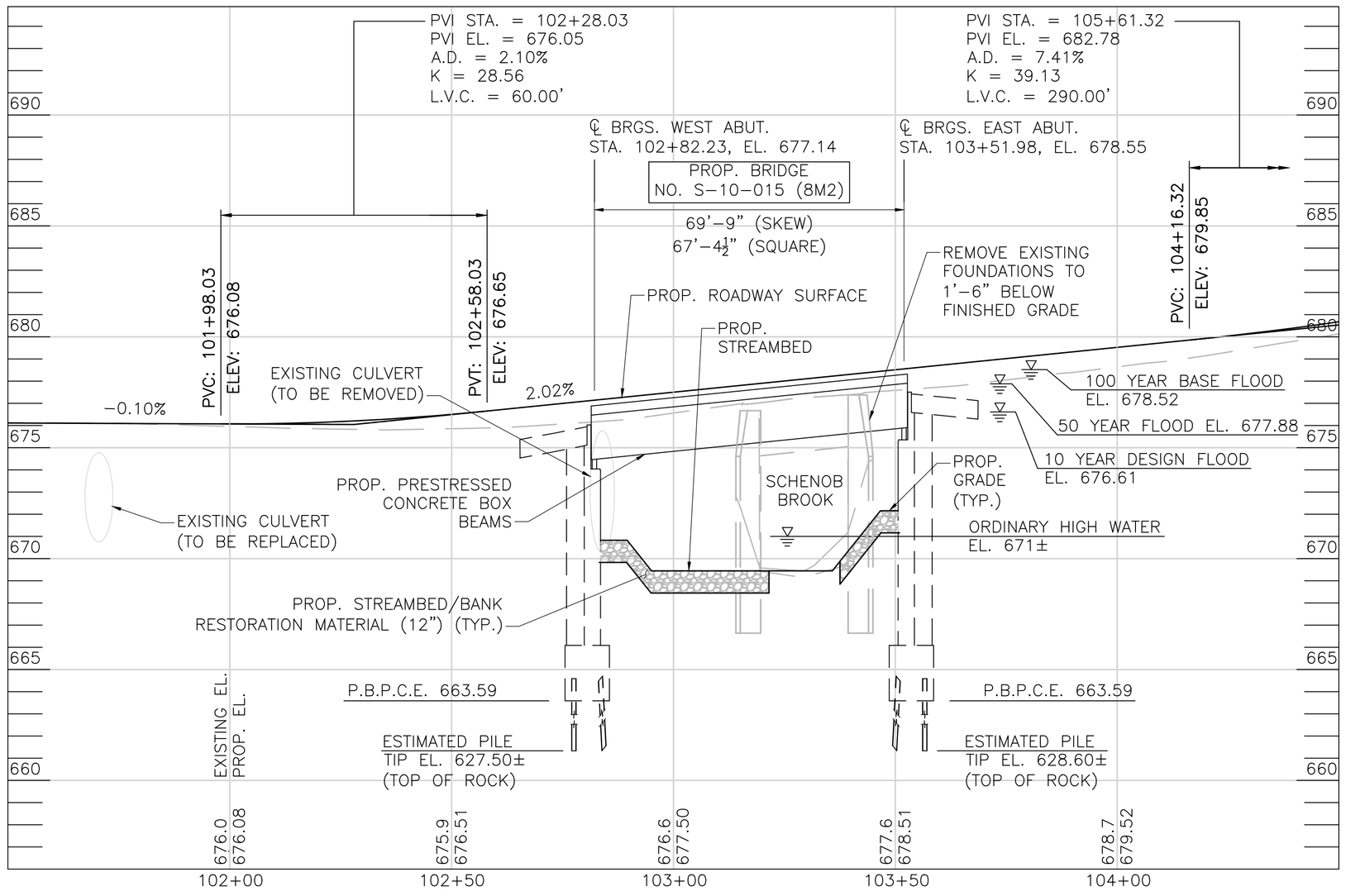
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	29	55
PROJECT FILE NO.	609068		

KEY PLAN, LOCUS, AND PROFILES

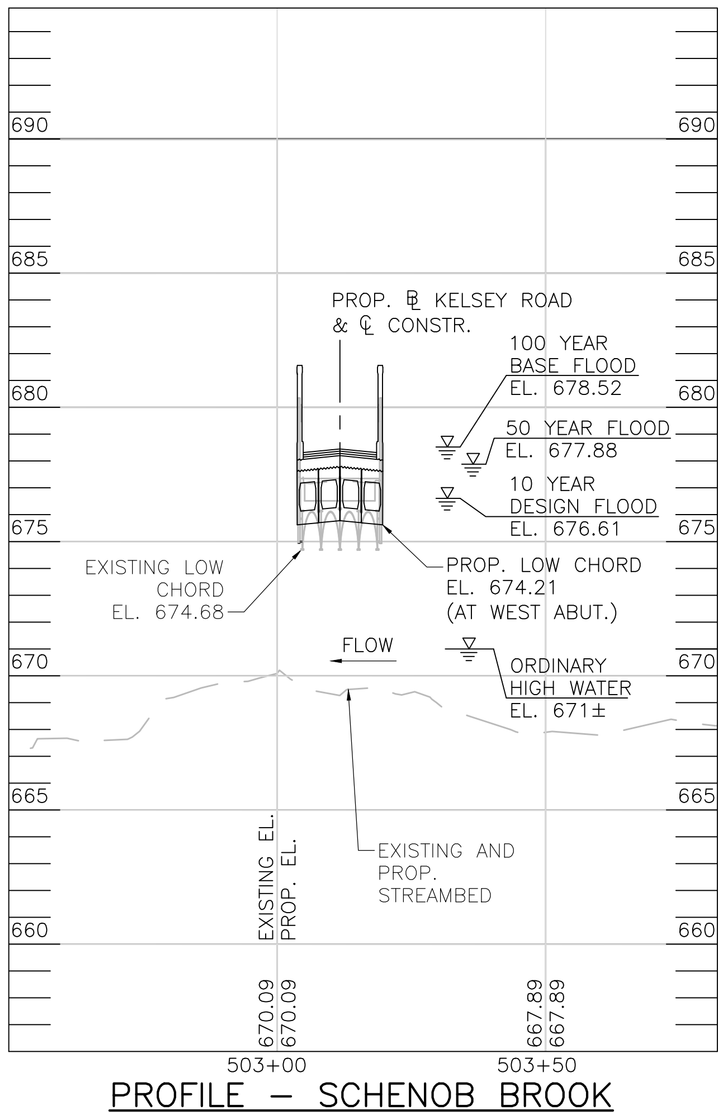
INDEX OF DRAWINGS

BRIDGE SHEET NO.	TITLE
1	KEY PLAN, LOCUS, AND PROFILES
2	GENERAL NOTES
3	BORINGS LOGS – 1
4	BORINGS LOGS – 2
5	BORINGS LOGS – 3
6	BORINGS LOGS – 4
7	GENERAL PLAN AND ELEVATION
8	BRIDGE DEMOLITION PLAN
9	CONTROL OF WATER PLAN
10	WEST ABUTMENT PLAN AND ELEVATION
11	EAST ABUTMENT PLAN AND ELEVATION
12	SUBSTRUCTURE DETAILS – 1
13	SUBSTRUCTURE DETAILS – 2
14	FRAMING PLAN
15	BEAM DETAILS – 1
16	BEAM DETAILS – 2
17	DECK SECTION AND APPROACH SLAB DETAILS
18	BRIDGE RAILING DETAILS
19	HIGHWAY GUARDRAIL TRANSITION DETAILS – 1
20	HIGHWAY GUARDRAIL TRANSITION DETAILS – 2



PROFILE – ℄ CONSTRUCTION – KELSEY ROAD

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'



PROFILE – SCHENOB BROOK

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'

	MONTH DD, YYYY — ISSUED FOR CONSTRUCTION

massDOT Massachusetts Department of Transportation Highway Division

PROPOSED BRIDGE
SHEFFIELD
KELSEY ROAD
OVER SCHENOB BROOK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

GANNETT FLEMING, INC.
175 FEDERAL STREET
SUITE 800
BOSTON, MA 02110
781-326-4605

STATE BRIDGE ENGINEER — CHIEF ENGINEER

SHEET 1 OF 20 SHEETS BRIDGE NO. S-10-015 (8M2)

Proposal No. 609068-136649
609068_BR1.DWG Plotted on 2-Mar-2026 8:30 AM
609068 Second Structural Submittal (S2) 2-Mar-2026
A00830 - 204

GENERAL NOTES:

DESIGN:

IN ACCORDANCE WITH THE 2020 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2022 FOR HL–93 LOADING.

MASSDOT BENCH MARK:

BENCHMARK #8284, BRASS RIVET SET IN THE TOP OF THE SOUTHEAST CONCRETE WINGWALL OF A BRIDGE OVER SCHENOB BROOK, EL. = 676.68.

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

DATE:

TO BE PLACED ON THE INSIDE FACE OF THE SOUTHWEST AND NORTHEAST HIGHWAY GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST HIGHWAY GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:

SURVEY NOTEBOOK NO. 23412. FIELD SURVEY WAS PERFORMED BY WSP USA, INC. AND WAS ELECTRONICALLY RECORDED. COPIES OF THE FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION–HIGHWAY DIVISION.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF–SIZE PRINTS (A3).

CONCRETE:

UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE, EXCEPT THAT THE CT–MTL2 BARRIERS SHALL BE 5000 $\frac{3}{4}$ IN. HP CONCRETE.

ALL CIP AND PRECAST CONCRETE POURS SHOWN ON THESE CONSTRUCTION DRAWINGS WHERE ALL VOLUMETRIC DIMENSIONS ARE 4 FEET OR GREATER SHALL BE CONSIDERED TO BE MASS CONCRETE PLACEMENTS AND SHALL REQUIRE A HEAT OF HYDRATION ANALYSIS AND THERMAL CONTROL PLAN, AS SPECIFIED IN THE MASSDOT STANDARD SPECIFICATIONS.

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. COATED BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	17"	21"
2. 12" OF CONCRETE BELOW BAR	18"	22"	27"
3. EPOXY COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	21"	26"	31"
4. COATED BARS, ALL OTHER CASES	17"	21"	25"
5. CONDITION 2. AND 3.	23"	29"	35"
6. CONDITION 2. AND 4.	21"	27"	32"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

FOUNDATIONS:

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

EXISTING CONDITIONS:

THE CONFIGURATION AND LAYOUT OF THE EXISTING BRIDGE STRUCTURE AND FOUNDATIONS ARE BASED ON INFORMATION CONTAINED IN THE 2016 BRIDGE RATING REPORT AND PROJECT SURVEY. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO CONSTRUCTION DETAILS AND WORK QUANTITIES. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH FIELD CONDITIONS.

THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED FIELD VERIFICATIONS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. THE EXISTING STRUCTURE IS SHOWN IN A SCREENED LINEWEIGHT.

TRAFFIC:

THE BRIDGE WILL BE CLOSED TO ALL VEHICULAR TRAFFIC DURING ALL PHASES OF DEMOLITION AND RECONSTRUCTION. TRAFFIC WILL BE CONTROLLED AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

UTILITIES:

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE, OR RELOCATE, AS NECESSARY, ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR THE BRIDGE WORK.

THE LOCATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL UTILITIES. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION REGARDING UTILITIES.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM	QTY.	UNIT
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. B–10–015 (088)	1	LS
MUCK EXCAVATION	400	CY
REINFORCED CONCRETE EXCAVATION	50	CY
BRIDGE EXCAVATION WITHIN COFFERDAM	420	CY
TEST PIT FOR EXPLORATION	50	CY
CLASS B ROCK EXCAVATION	7	CY
GRAVEL BORROW FOR BRIDGE FOUNDATION	65	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	75	CY
CRUSHED STONE	30	TON
CONTROLLED LOW–STRENGTH MATERIAL–STRUCTURAL NON–EXCAVATABLE	2	CY
DISPOSAL OF TREATED WOOD PRODUCTS	0.5	TON
SUPERPAVE BRIDGE SURFACE COURSE – 9.5 POLYMER (SSC–B–9.5–P)	11	TON
SUPERPAVE BRIDGE PROTECTIVE COURSE – 9.5 POLYMER (SPC–B–9.5–P)	11	TON
SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	30	FT
GEOTEXTILE FABRIC FOR SEPARATION	70	SY
STEEL PILE HP 12 X 84	620	FT
DYNAMIC LOAD TEST BY CONTRACTOR	2	EA
PILE SHOES	16	EA
STREAMBED/BANK RESTORATION	264	SY
CONTROL OF WATER – STRUCTURE NO. S–10–015 (8M2)	1	LS
TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S–10–015 (088)	1	LS
BRIDGE STRUCTURE, BRIDGE NO. S–10–015 (8M2)	1	LS

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	30	55
PROJECT FILE NO.	609068		

GENERAL NOTES

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2046	
AVERAGE DAILY TRAFFIC – PRESENT	121	
AVERAGE DAILY TRAFFIC – DESIGN YEAR	148	
DESIGN HOURLY VOLUME	N/A	
DIRECTIONAL DISTRIBUTION	50%	
TRUCK PERCENTAGE – AVERAGE DAY	6%	
TRUCK PERCENTAGE – PEAK HOUR	6%	
DESIGN SPEED	20 MPH	
DIRECTIONAL DESIGN HOURLY VOLUME	N/A	

SEISMIC DESIGN CRITERIA

DESIGN RETURN PERIOD:	1000 YR
DESIGN SPECTRA	
As	0.096
SDs	0.232
SD1	0.084
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

HYDRAULIC DESIGN FLOOD (HDF) DATA

DRAINAGE AREA (SQ. MILES)	19.00
HDF DISCHARGE (C.F.S.)	2,000
HDF FREQUENCY (YEARS)	10
HDF VELOCITY (F.P.S.)	4.02
HDF ELEVATION (FEET, NAVD, UPSTREAM)	676.61
BASE (100–YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	4,460
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	678.52
SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	25
SDF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.29
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	3.36
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	50
SCF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.88
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	4.27
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	N/A
FREQUENCY (IF KNOWN, YEARS)	N/A
MAXIMUM ELEVATION (FEET, NAVD)	N/A
DATE (MM/YYYY)	N/A
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	N/A

TEMPORARY WATER CONTROL DESIGN DATA

DESIGN FLOOD DISCHARGE (C.F.S.)	864
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	8.45
DESIGN FLOOD ELEVATION (FEET, NAVD)	676.13

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR2.DWG Plotted on 1-Mar-2026 8:39 AM
609068 Second Structural Submittal (S2) 2-Mar-2026
A00830 - 205

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT

AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

GENERAL PLAN

SCALE: $\frac{3}{16}$" = 1'-0"

LONGITUDINAL SECTION (LOOKING NORTH)

SCALE: $\frac{3}{16}$" = 1'-0"

LEGEND:

- I VERTICAL PILE
- (T) TEST PILE
- 4V:1H BATTERED PILE

WORKING POINT TABLE

W.P.	STATION	OFFSET
W.P.#1	102+73.97	6.85' LT
W.P.#2	102+77.76	6.83' RT
W.P.#3	102+79.55	10.02' LT
W.P.#4	102+84.92	10.02' RT
W.P.#5	103+49.29	10.02' LT
W.P.#6	103+54.67	10.02' RT
W.P.#7	103+56.41	6.83' LT
W.P.#8	103+61.02	6.79' RT

GENERAL PLAN AND ELEVATION

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	35	55
PROJECT FILE NO. 609068			

609068 Second Structural Submittal (S2) 2-Mar-2026

609068_BR7.DWG Plotted on 1-Mar-2026 6:52 PM

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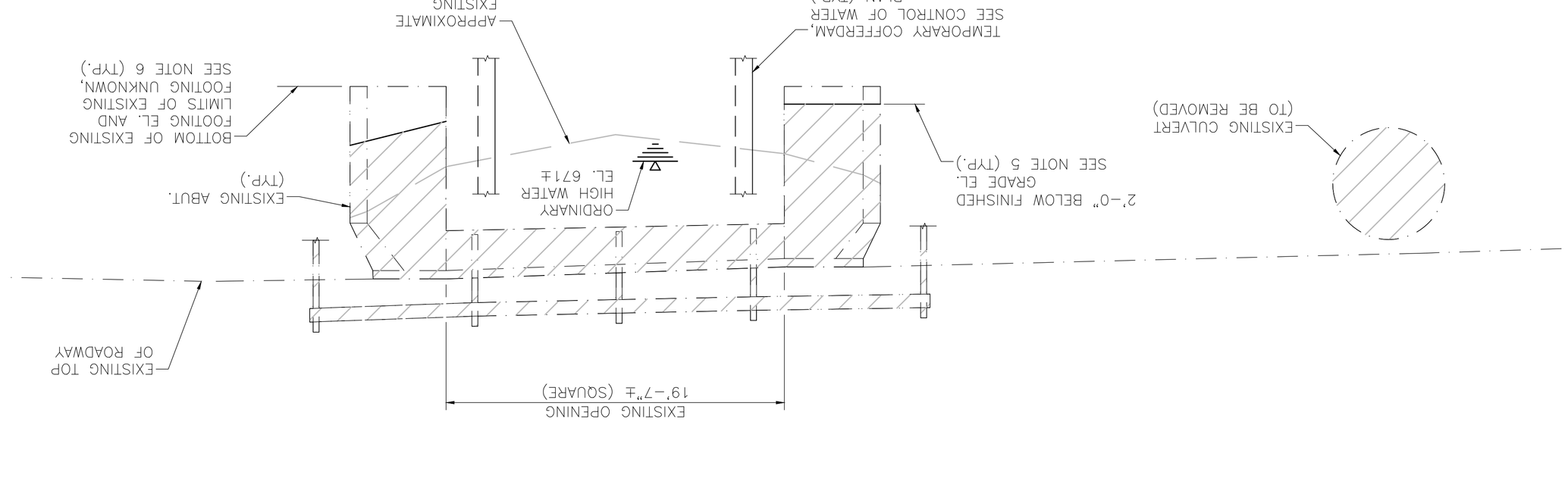
Proposal No. 609068-136649

DATE	DESCRIPTION
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

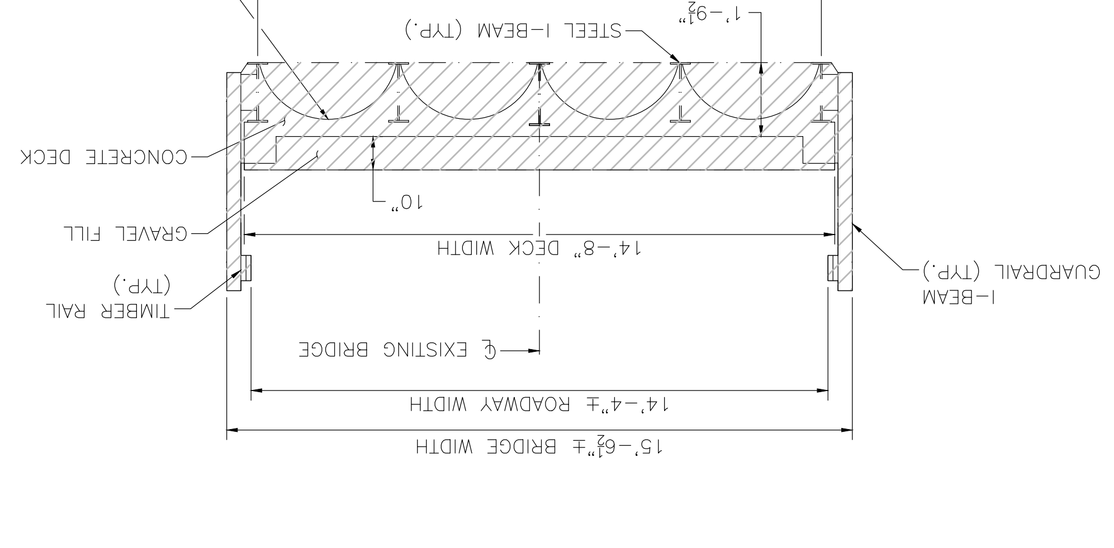
DEMOLITION ELEVATION

SCALE: $\frac{1}{4}$" = 1'-0"



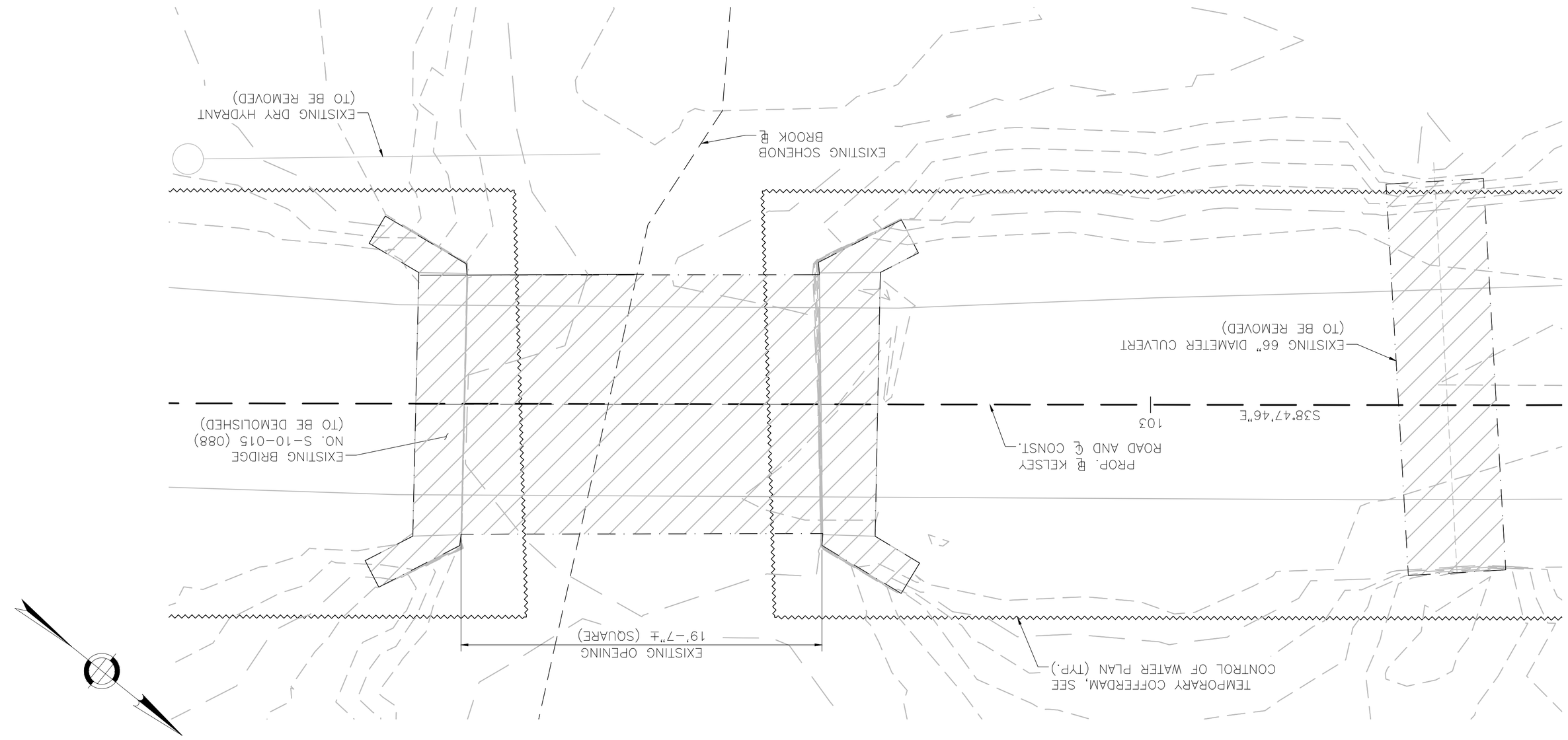
EXISTING BRIDGE TYPICAL CROSS SECTION

SCALE: $\frac{3}{8}$" = 1'-0"



DEMOLITION PLAN

SCALE: $\frac{1}{4}$" = 1'-0"



LEGEND:

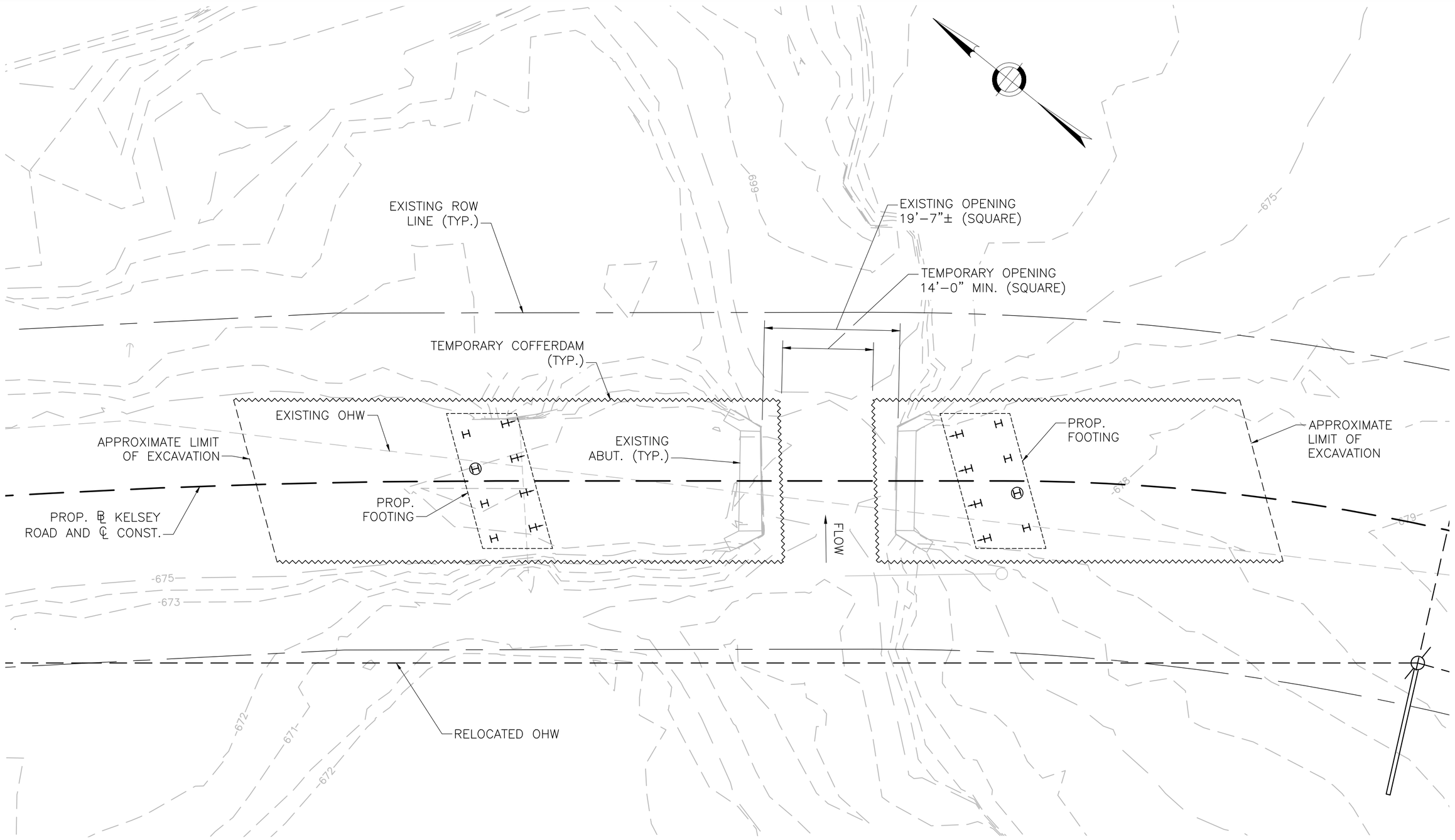
▨ TO BE REMOVED

DEMOLITION NOTES:

1. THE EXISTING BRIDGE SHALL BE DEMOLISHED TO THE LIMITS SHOWN ON THE PLANS. THE CONTRACTOR SHALL TAKE ALL MEASURES REQUIRED TO PROTECT THE SCHENOB BROOK AND ADJACENT WETLAND AREAS FROM ALL CONSTRUCTION OPERATIONS.
2. CONTRACTOR MUST CONTAIN ALL DEBRIS FROM FALLING INTO THE BROOK DURING CONSTRUCTION ACTIVITIES. TEMPORARY PROTECTIVE SHIELDING ASSOCIATED WITH DEMOLITION SHALL BE INCLUDED IN THE PAY ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088). SEE SPECIAL PROVISIONS.
3. THE INFORMATION PRESENTED HERE IS FOR BIDDING PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL INFORMATION PRIOR TO SUBMITTING BIDS.
4. EXACT LIMITS OF THE EXISTING SUBSTRUCTURE ARE UNKNOWN. TEST PITS ARE TO BE PERFORMED TO LOCATE EXISTING FOUNDATIONS PRIOR TO ANY DEMOLITION WORK. TEST PITS WILL BE PAID UNDER PAY ITEM 141.1 TEST PIT FOR EXPLORATION.
5. EXISTING SUBSTRUCTURES ARE TO BE REMOVED A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.
6. EXISTING WINGWALLS AND FOUNDATIONS IN CONFLICT WITH PROPOSED SUBSTRUCTURE SHALL BE REMOVED ENTIRELY WITHIN 1 FOOT FROM PROPOSED SUBSTRUCTURE.

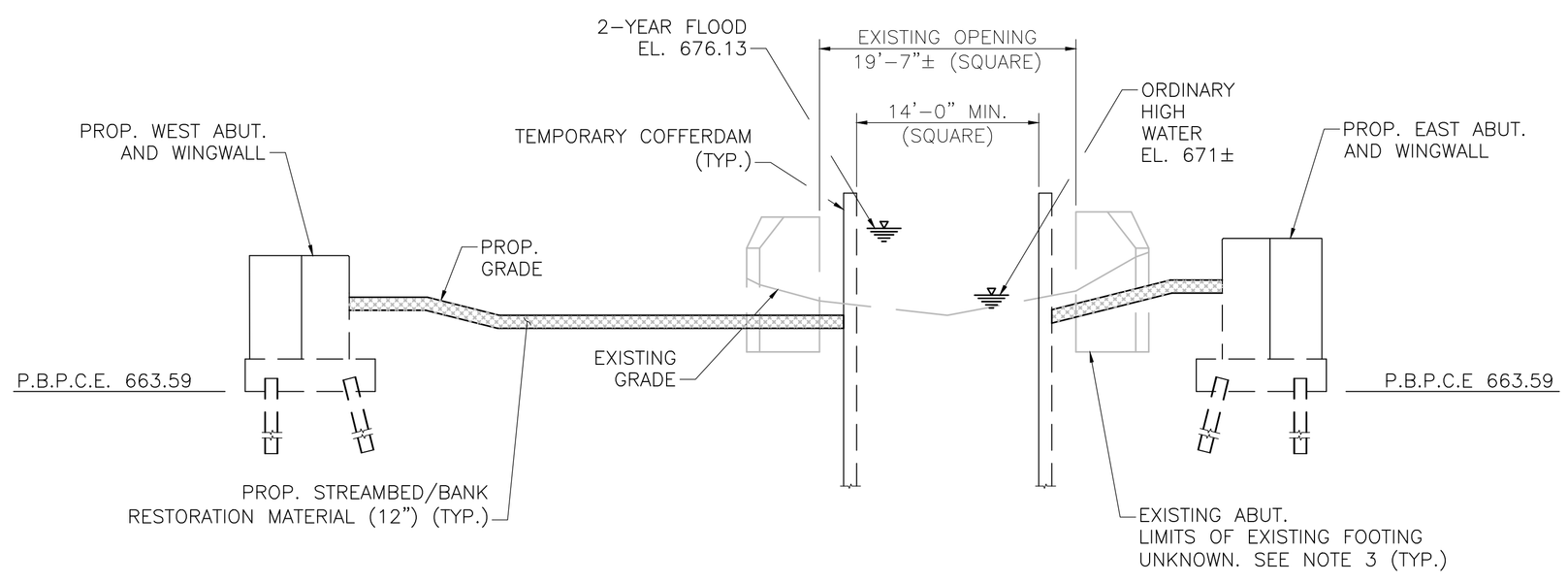
SHEFFIELD
KELSEY ROAD
BRIDGE DEMOLITION PLAN

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	36	55
PROJECT FILE NO. 609068			



WATER CONTROL PLAN

SCALE: 1" = 10'



WATER CONTROL ELEVATION

SCALE: 1/8" = 1'-0"

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	#######	37	55
PROJECT FILE NO.	609068		

CONTROL OF WATER PLAN

WATER CONTROL NOTES:

1. THE COST OF COFFERDAM AND ALL OTHER MEASURES NECESSARY FOR CONTROL OF WATER SHALL BE INCLUDED IN ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2). SEE SPECIAL PROVISIONS.
2. THE COFFERDAM SHALL BE DESIGNED BY CONTRACTOR TO CONSTRUCT THE BRIDGE FOUNDATIONS IN THE DRY. THE TEMPORARY WATER CONTROL DESIGN DATA SHOWN ON THESE PLANS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE AWARE THAT THE ROADWAY WILL BE OVERTOPPED DURING THE 2-YEAR FLOOD EVENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUSLY MONITORING THE FORECAST AND TAKING THE NECESSARY PRECAUTIONS TO ENSURE THAT THE EXCAVATIONS REMAIN DRY DURING CONSTRUCTION.
3. EXISTING FOOTING LIMITS ARE UNKNOWN. CONTRACTOR SHALL ESTABLISH EXISTING FOOTING LIMITS PRIOR TO DESIGNING COFFERDAMS.
4. INSTALLATION OF COFFERDAM SHALL BE COORDINATED WITH RELOCATION OF OVERHEAD WIRES.
5. STEEL SHEETING LEFT IN PLACE SHALL BE CUT OFF A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.
6. SEE BRIDGE DEMOLITION PLAN FOR EXISTING STRUCTURE DEMOLITION NOTES.

TEMPORARY WATER CONTROL DESIGN DATA:

FLOOD FREQUENCY:	2-YEAR
PEAK FLOW:	864 C.F.S.
WATER SURFACE ELEVATION:	676.13
VELOCITY	8.45 F.P.S.
FREE BOARD:	N/A
TOP ELEVATION OF COFFERDAM:	677.13

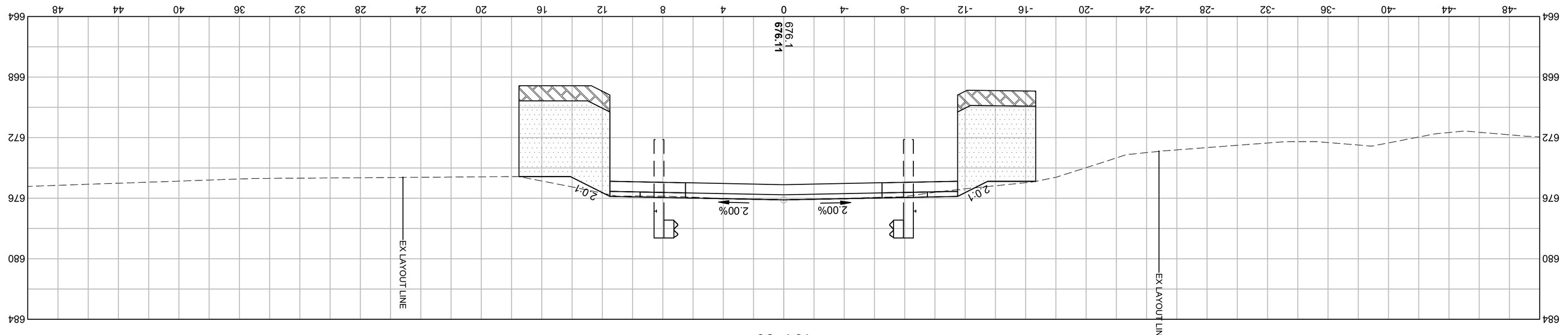
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR9.DWG Plotted on 1-Mar-2026 8:09 AM
609068 Second Structural Submittal (S2) 2-Mar-2026
A00830 - 208

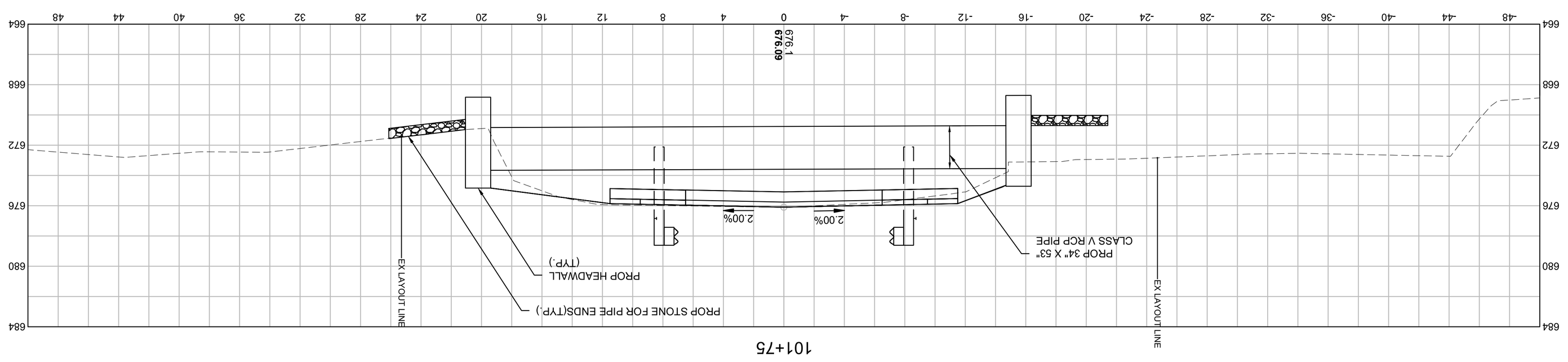
SCALE IN FEET

4 0 4 8



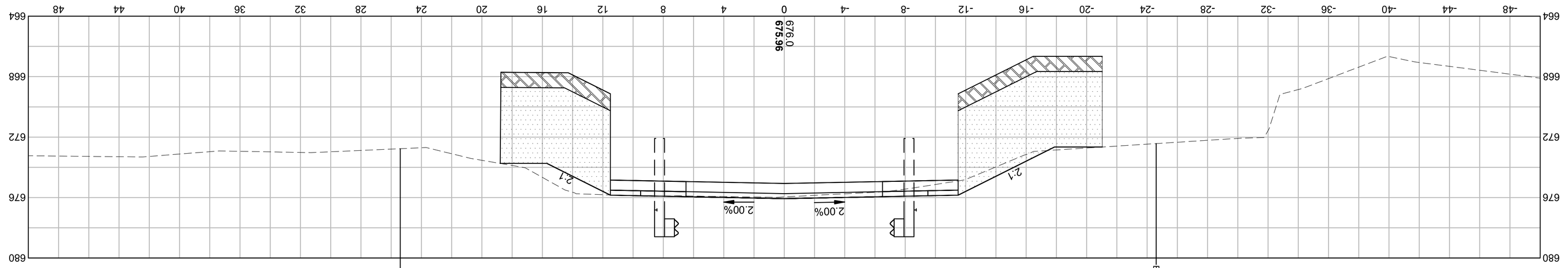
CUT: 91.92 SF
FILL: 1.86 SF

101+50



CUT: 38.95 SF
FILL: 9.11 SF

101+75



CUT: 127.06 SF
FILL: 8.22 SF

102+00

PROP. UPL 2
+17

CROSS SECTIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	49	55
	PROJECT FILE NO. 609068		

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

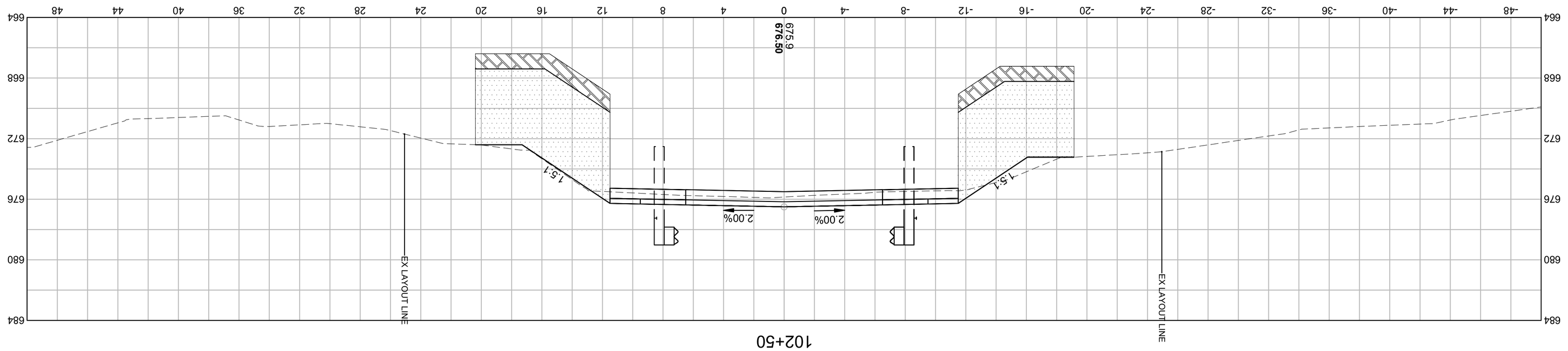
Proposal No. 609068-136649

609068_HD (SHEFFIELD CROSS SECTIONS)PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 8:40 AM

A00830 - 209

SCALE IN FEET

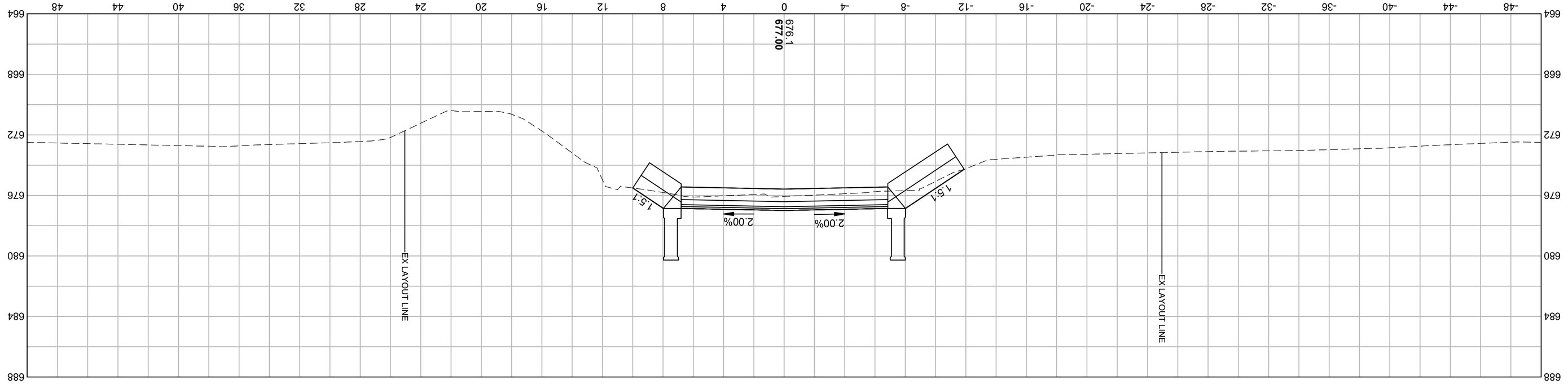
4 0 4 8



102+50

CUT: 118.42 SF

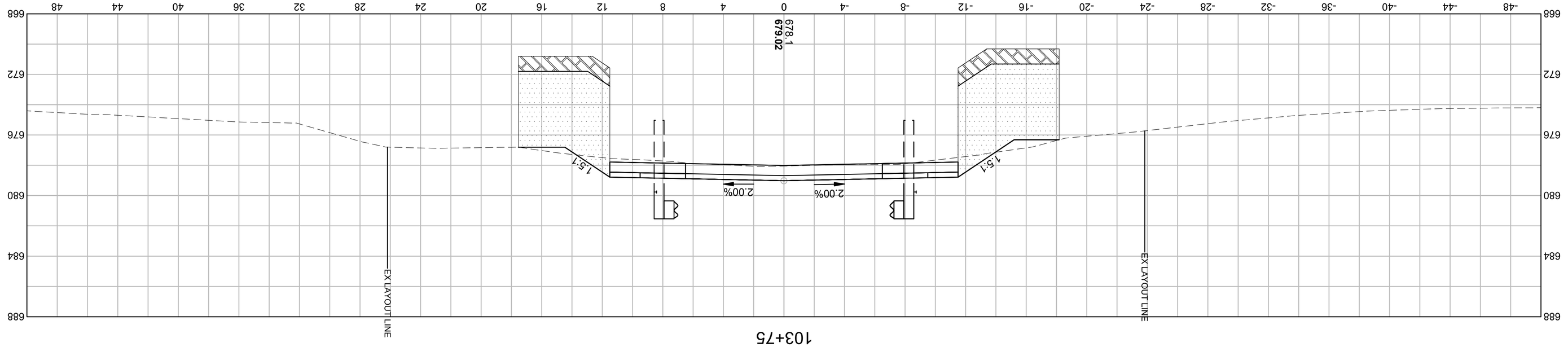
FILL: 17.68 SF



102+75

CUT: 17.18 SF

FILL: 3.51 SF



103+75

CUT: 82.24 SF

FILL: 26.69 SF

CROSS SECTIONS

PROJECT FILE NO. 609068			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	49	55

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

Proposal No. 609068-136649

A00830 - 210

609068_HD ISHEFFIELD CROSS SECTIONS/PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 8:40 AM

NOTES:

1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREABETWEEN STA. 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN DETAIL FOR ADDITIONAL INFORMATION

CROSS SECTIONS

PROJECT FILE NO. 609068			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	49	55

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

609068_HD (SHEFFIELD CROSS SECTIONS)PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 8:42 AM

A00830 - 211

Proposal No. 609068-136649

NOTES:

1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREABETWEEN STA. 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN DETAIL FOR ADDITIONAL INFORMATION

CROSS SECTIONS

PROJECT FILE NO. 609068			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	49	55

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

A90830 - 212
609068_HD SHEFFIELD CROSS SECTIONS/PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 8:46 AM
Proposal No. 609068-136649

Attachment G
Wetland Data Forms

Wetland Delineation Report

Bridge Replacement
Kelsey Road over Schenob Brook
Bridge No. S-10-015
MassDOT Project No. 609068
Sheffield, MA

August 2025

Prepared By:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

Prepared For:

Massachusetts Department of Transportation
Highway Division
10 Park Plaza
Boston, MA 02116

Gannett Fleming Inc.
175 Federal Street
Suite 800
Boston, MA 02110

1. Introduction

A wetland delineation was conducted along the Kelsey Road bridge crossing over Schenob Brook in the Town of Sheffield, MA on August 18, 2025, by Comprehensive Environmental Inc's wetland scientists. Wetland resource areas protectable under the *Massachusetts Wetlands Protection Act* (M.G.L. c. 131, s. 40) and the implementing *Regulations* (310 CMR 10.00) were identified and characterized. The delineation included the boundary of Bordering Vegetated Wetlands (BVW) and Bank along Schenob Brook. The delineation was marked in the field with sequentially numbered pink (BVW) and blue (Bank) flagging tape. The following narrative provides a general site description, wetland delineation methodology, and description of delineated wetland resource areas.

2. General Site Description

The bridge (MADOT bridge number: S-10-015) is located approximately 425-feet north of the Kelsy Road and Barnum Street intersection at the Schenob Brook crossing (42.065582132, -73.397664738). Schenob Brook begins at the outlet of Washinee Lake in Salisbury, CT approximately 2.5 miles southwest of the bridge crossing on Kelsey Road. After the crossing, Schenob Brook continues to flow northeast for approximately four miles until it's confluence with Hubbard Brook and then into the Housatonic River.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsy Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The delineated wetland resource areas along this crossing include areas with Bordering Vegetated Wetlands (BVW) and Bank (and associated Riverfront Area), as seen on project plan sheets in the NOI narrative. The area surrounding the site is predominantly forest to the north and agriculture to the south. Topography of the site is moderately sloped towards these resource areas. The area was delineated using the A, B, C, D and RB series of flags. Flags RB-01 through RB-10 and RB-100 through RB-111 represent Bank. Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 represent BVW.

3. Methodology

Wetland resource areas and mean annual high-water line were delineated in conformance with the *Massachusetts Handbook of Delineation of Bordering Vegetated Wetlands* (2022; the Handbook) through observation of vegetative communities, soil characteristics and indications of wetlands hydrology on August 18, 2025. Visual observations were used to determine wetlands hydrology, including typical indicators such as water marks, water-stained leaves, trees with shallow root systems, drift lines and drainage patterns. Small observational plots were used to document the characteristics of the BVW areas as described by Appendix B of the Handbook.

4. Description of Wetland Resource Areas

4.1 Bordering Vegetated Wetlands (BVW)

A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. A moderately dense canopy exists dominated by American elm (*Ulmus americana*), hemlock (*Tsuga canadensis)* and black willow (*Salix nigra)*. Shrubs in the understory include winterberry holly (*Ilex verticillate),* highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Swida amomum*), green ash (*Fraxinus pennsylvanica*), and saplings from the canopy. The herbaceous stratum of the BVW includes jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Joe-Pye weed (*Eutrochium fistulosum*), purple loosestrife (*Lythrum salicaria*), reed canary

grass (*Phalaris arundinacea*), narrow leaved cattails (*Typha angustifolia*), dotted smartweed (*Persicaria punctata)*, cardinal flower (*Lobelia cardinalis*) and sedges (*Carex* spp.)

The upland/wetland boundary to the BVW was delineated in the field using flags:

- A-WF-01 through A-WF-08 are along the northwest boundary of the floodplain.
- B-WF-01 through B-WF-08 are along the northeast boundary of the floodplain.
- C-WF-01 through C-WF-06 are along the southwest boundary of the floodplain.
- D-WF-01 through D-WF-05 are along the southeast boundary of the floodplain.

4.2 Bank

Bank was delineated in the field using signs of annual mean high-water mark. The banks of Schenob Brook were approximately three feet high with a channel 20 to 30 feet wide. Water was slowly flowing northeast at the time of inspection with depths was over six feet in portions of the thalweg.

- Flags RB-01 through RB-10 delineate the mean annual high-water mark along the southern bank of the brook.
- Flags RB-100 through RB-111 delineate the mean annual high-water mark along the northern bank of the brook.

4.3 Description of Adjacent Uplands

Habitat surrounding the site is a mixture of mowed roadway right-of-way, upland forest and mowed agricultural fields. In the portions of the upland with canopy, the canopy is mostly white pine (*Pinus strobus*). Japanese barberry (*Berberis thunbergii*), staghorn sumac (*Rhus hirta*), multiflora rose (*Rosa multiflora*) and saplings from the canopy comprise the understory. Dominant ground cover species include upland grasses (*Festuca* spp.), Canada goldenrod *(Solidago canadensis*), Queen Anne's lace (*Daucus carota*), and raspberry (*Rubus idaeus*). Vines include fox grape (*Vitis labrusca*), Asian bittersweet (*Celastrus orbiculatus*) and Virginia creeper (*Parthenocissus quinquefolia*).

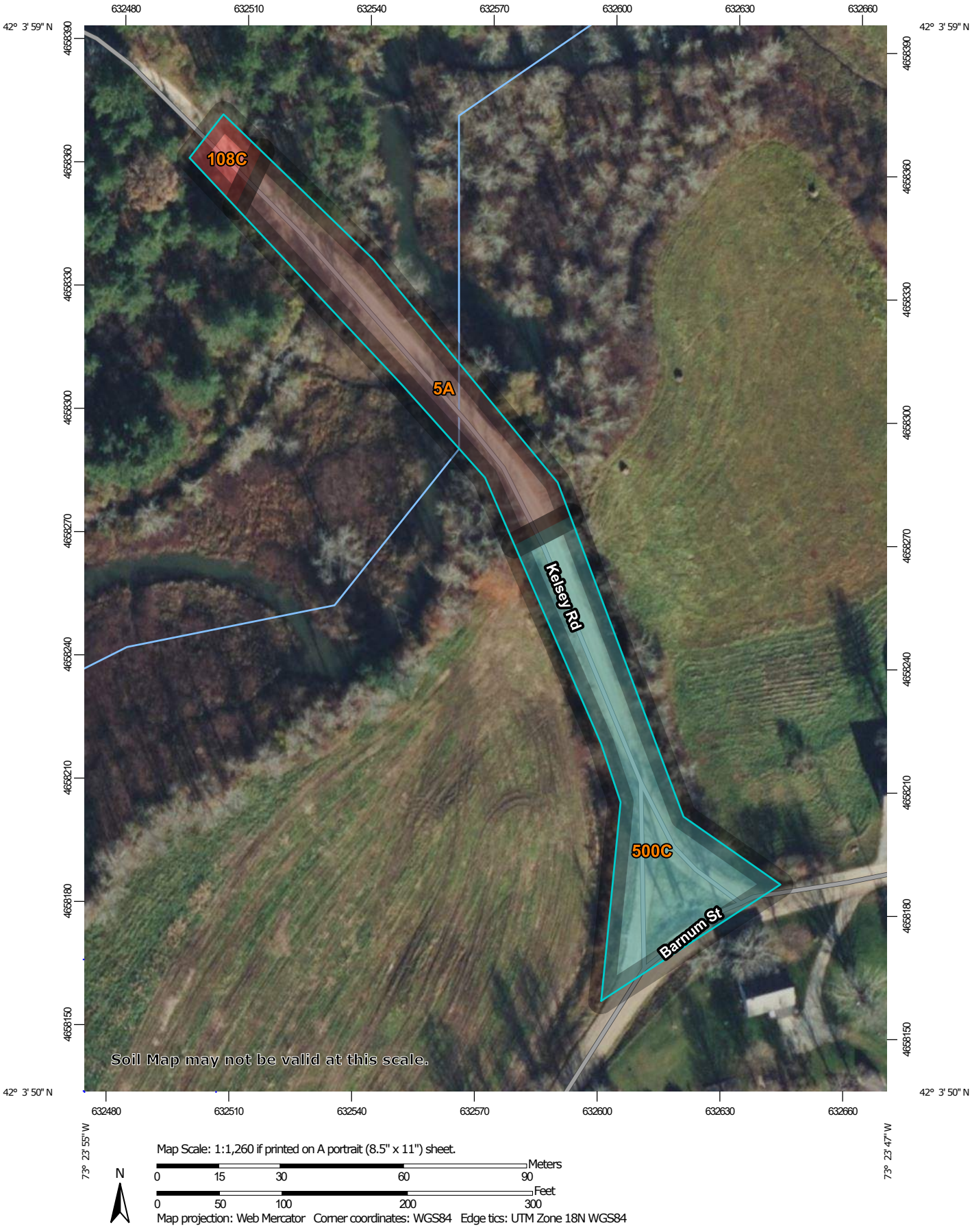
4.4 Soils

According to USDA soil surveys (Attachment A), the site is underlaid with soils consisting of moderately sloped, Farmington-Rock outcrop complex (108C) and Amenia silt loam (500C) in the upland areas and nearly level, frequently flooded Saco silt loam (5A) in the BVW and brook.

Attachment A

Site Soil Map

Hydrologic Soil Group—Berkshire County, Massachusetts
(609068 Kelsey Road Soils)



Proposal No. 609068-136649

A00830 - 219

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Berkshire County, Massachusetts
Survey Area Data: Version 20, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2021—Nov 8, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5A	Saco silt loam, frequently ponded, 0 to 2 percent slopes, frequently flooded	B/D	0.4	41.8%
108C	Farmington-Rock outcrop complex, 3 to 15 percent slopes	D	0.0	5.1%
500C	Amenia silt loam, 8 to 15 percent slopes	C	0.5	53.1%
Totals for Area of Interest			**1.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment B

MassDEP Bordering Vegetated Wetland (310 CMR 10.55)
Delineation Field Data Forms

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: WET-1

Investigator(s): I. Church Latitude / Longitude: 42.0655941172, -73.3978329943

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: SS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [✓]	No [ ]	**Is the Sampled Area within a Wetland?** **Yes [✓] No [ ]**
Hydric Soils criterion met?	Yes [✓]	No [ ]	
Wetlands hydrology present?	Yes [✓]	No [ ]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)
Water Table Present?	Yes [✓]	No [ ]	Depth (inches) 4.00
Saturation Present (including capillary fringe)?	Yes [✓]	No [ ]	Depth (inches) 0.00

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[✓] Free water in a soil test hole	[✓] Drainage patterns
[ ] Iron deposits	[✓] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point WET-1

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. black willow	Salix nigra	OBL	20.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

20.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. green ash	Fraxinus pennsylvanica	FACW	10.5	Yes	Yes
2. silky dogwood	Swida amomum	FACW	10.5	Yes	Yes
3. speckled alder	Alnus incana	FACW	3.0	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					

24.0 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. sedges	Carex spp.	OBL	38.0	Yes	Yes
2. sensitive fern	Onoclea sensibilis	FACW	20.5	Yes	Yes
3. marsh fern	Thelypteris palustris	FACW	20.5	Yes	Yes
4. reed canary grass	Phalaris arundinacea	FACW	10.5	No	Yes
5. purple loosestrife	Lythrum salicaria	OBL	10.5	No	No
6. Canada goldenrod	Solidago canadensis	FACU	3.0	No	No
7. Joe-Pye weed	Eutrochium fistulosum	FACW	3.0	No	Yes
8.					
9.					
10.					
11.					
12.					

106.0 = Total Cover

Sampling Point WET-1

VEGETATION – continued.

Woody Vine Stratum Plot size _____

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
			0.0 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☑ No ☐

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	6			Yes ☑ No ☐
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	69	X 1	= 69.00
	FACW species	79	X 2	= 157.00
	FAC species	0	X 3	= 0.00
	FACU species	3	X 4	= 12.00
	UPL species	0	X 5	= 0.00
	Column Totals	(A) 150.5		(B) 238
	Prevalence Index	B/A = 1.58		Is the Prevalence Index ≤ 3.0? Yes ☑ No ☐

Wetland vegetation criterion met? Yes ☑ No ☐

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point WET-1

SOIL

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]	Location[2]		
0-16	10YR 2/1	100.00					muck	
16-24+	10YR 3/1	100.00					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☑ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Due to time of year, species level identification of sedge species was not possible (lacking key identifying features such as seed head, fully developed leaved, etc). Young growth appeared to be consistent with Carex species.

Hydric Soils criterion met? **Yes** ☑ **No** ☐

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: WET-2

Investigator(s): I. Church Latitude / Longitude: 42.06563493716, -73.3978886501

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: SS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [✓] No [ ]	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soils criterion met?	Yes [✓] No [ ]	
Wetlands hydrology present?	Yes [✓] No [ ]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)
Water Table Present?	Yes [✓]	No [ ]	Depth (inches) 4.00
Saturation Present (including capillary fringe)?	Yes [✓]	No [ ]	Depth (inches) 0.00

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[✓] Free water in a soil test hole	[✓] Drainage patterns
[ ] Iron deposits	[✓] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point WET-2

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. black willow	Salix nigra	OBL	10.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. silky dogwood	Swida amomum	FACW	20.5	Yes	Yes
2. speckled alder	Alnus incana	FACW	3.0	No	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

23.5 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. sedges	Carex spp.	OBL	38.0	Yes	Yes
2. sensitive fern	Onoclea sensibilis	FACW	20.5	Yes	Yes
3. reed canary grass	Phalaris arundinacea	FACW	20.5	Yes	Yes
4. purple loosestrife	Lythrum salicaria	OBL	10.5	No	Yes
5. Joe-Pye weed	Eutrochium fistulosum	FACW	10.5	No	Yes
6.					
7.					
8.					
9.					
10.					
11.					
12.					

100.0 = Total Cover

Sampling Point WET-2

VEGETATION – continued.

Woody Vine Stratum	Plot size				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
		0.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☑ No ☐
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes ☑ No ☐
	5	5		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	59	X 1	= 59.00
	FACW species	75	X 2	= 150.00
	FAC species	0	X 3	= 0.00
	FACU species	0	X 4	= 0.00
	UPL species	0	X 5	= 0.00
	Column Totals	(A) 134		(B) 209
Prevalence Index		B/A = 1.56		Is the Prevalence Index ≤ 3.0? Yes ☑ No ☐
Wetland vegetation criterion met?		**Yes** ☑ **No** ☐		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point WET-2

SOIL

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]	Location[2]		
0-18	10YR 2/1	100.00					muck	
18-24+	10YR 3/1	100.00					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☑ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Due to time of year, species level identification of sedge species was not possible (lacking key identifying features such as seed head, fully developed leaved, etc). Young growth appeared to be consistent with Carex species.

Hydric Soils criterion met? **Yes** ☑ **No** ☐

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: UPL-1

Investigator(s): I. Church Latitude / Longitude: 42.0657275478, -73.3978927042

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: NC

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soils criterion met?	Yes [ ]	No [✓]	
Wetlands hydrology present?	Yes [ ]	No [✓]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)_____
Water Table Present?	Yes [ ]	No [✓]	Depth (inches)_____
Saturation Present (including capillary fringe)?	Yes [ ]	No [✓]	Depth (inches)_____

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point UPL-1

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. American elm	Ulmus americana	FACW	10.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. multiflora rose	Rosa multiflora	FACU	20.5	Yes	No
2. Japanese barberry	Berberis thunbergii	FACU	10.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

31.0 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. mowed upland grasses	Festuca spp.	UPL	38.0	Yes	No
2. Asian bittersweet	Celastrus orbiculatus	UPL	10.5	No	No
3. Canada goldenrod	Solidago canadensis	FACU	10.5	No	No
4. Queen Anne's lace	Daucus carota		3.0	No	No
5. Virginia creeper	Parthenocissus quinquefolia	FACU	3.0	No	No
6. sneezeweed	Helenium amarum	FACU	3.0	No	No
7.					
8.					
9.					
10.					
11.					
12.					

68.0 = Total Cover

Sampling Point UPL-1

VEGETATION – continued.

Woody Vine Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Asian bittersweet	Celastrus orbiculatus	UPL	3.0	Yes	No
2.					
3.					
4.					
		3.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☐ No ☑

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?
	5	1	Yes ☐ No ☑

Prevalence Index:	Total % Cover (all strata)	Multiply by:	Result
OBL species	0	X 1	= 0.00
FACW species	11	X 2	= 21.00
FAC species	0	X 3	= 0.00
FACU species	48	X 4	= 190.00
UPL species	52	X 5	= 257.50
Column Totals	(A) 109.5		(B) 468.5
Prevalence Index	B/A = 4.28		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☑

Wetland vegetation criterion met? Yes ☐ No ☑

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point UPL-1

SOIL

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]	Location[2]		
	10YR 7/2	100.00					sandy gravel	compacted roadway gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Site is within actively mowed roadway ROW. Species-level identification of upland grass species was not possible (lacking key identifying features such as panicles, seed heads, etc.), although dominant grass appeared to be consistent with fescue (Festuca spp.) species.

Hydric Soils criterion met? **Yes** ☐ **No** ☑

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: UPL-2

Investigator(s): I. Church Latitude / Longitude: 42.0657092438, -73.3978538238

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: NC

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ] , or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ] , or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soils criterion met?	Yes [ ]	No [✓]	
Wetlands hydrology present?	Yes [ ]	No [✓]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)_____
Water Table Present?	Yes [ ]	No [✓]	Depth (inches)_____
Saturation Present (including capillary fringe)?	Yes [ ]	No [✓]	Depth (inches)_____

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point UPL-2

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. American elm	Ulmus americana	FACW	10.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. multiflora rose	Rosa multiflora	FACU	10.5	Yes	No
2. Japanese barberry	Berberis thunbergii	FACU	10.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

21.0 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. mowed upland grasses	Festuca spp.	UPL	38.0	Yes	No
2. Asian bittersweet	Celastrus orbiculatus	UPL	20.5	Yes	No
3. Canada goldenrod	Solidago canadensis	FACU	10.5	No	No
4. Queen Anne's lace	Daucus carota		10.5	No	No
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

79.5 = Total Cover

Sampling Point UPL-2

VEGETATION – continued.

Woody Vine Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Asian bittersweet	Celastrus orbiculatus	UPL	3.0	Yes	No
2.					
3.					
4.					
		3.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☐ No ☑

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?
	6	1	Yes ☐ No ☑

Prevalence Index:	Total % Cover (all strata)	Multiply by:	Result
OBL species	0	X 1	= 0.00
FACW species	11	X 2	= 21.00
FAC species	0	X 3	= 0.00
FACU species	32	X 4	= 126.00
UPL species	62	X 5	= 307.50
Column Totals	(A) 103.5		(B) 454.5
Prevalence Index	B/A = 4.39		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☑

Wetland vegetation criterion met? Yes ☐ No ☑

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point UPL-2

SOIL

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]	Location[2]		
	10YR 7/2	100.00					sandy gravel	compacted roadway gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Site is within actively mowed roadway ROW. Species-level identification of upland grass species was not possible (lacking key identifying features such as panicles, seed heads, etc.), although dominant grass appeared to be consistent with fescue (Festuca spp.) species.

Hydric Soils criterion met? **Yes** ☐ **No** ☑

Attachment C

Photo Log



Figure 1 Downstream view of Schenob Brook from Kelsey Road.



Figure 2 Upstream view of Schenob Brook from Kelsey Road.



Figure 3 View of road shoulder and BVW from Kelsey Road.



Figure 4 View of bridge S-10-015 from upstream end of Schenob Brook.



Figure 5 Downgradient view of monitoring plot WET-1.



Figure 6 Cross gradient view of monitoring plot UPL-1.

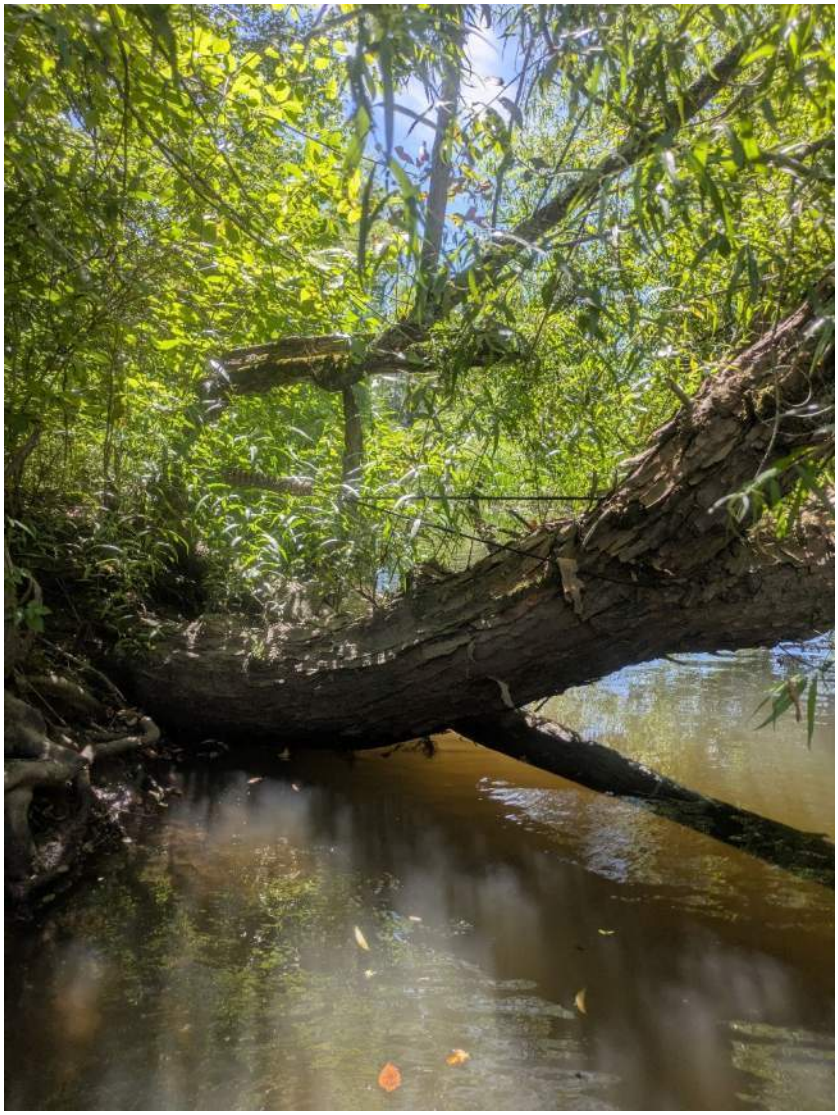


Figure 7 Black willow leaning into upstream end of Schenob Brook, supported by wire anchored into the bank.

Attachment H
Stormwater Report Memo

Template Version: January 2025

To: MassDOT

Date: *April 2, 2026*

Project #: *609068*

From: GFT Engineers & Architects, P.C.

Re: *Kelsey Road over Schenob Brook Bridge Replacement Sheffield, MA*

This Stormwater Management Memorandum has been prepared to show compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Water Quality Certification Regulations (314 CMR 9.00) to support the Project's Section 401 Water Quality Certificate Application. As the subject project is considered a redevelopment project, MassDOT is only required to meet the standards to the maximum extent practicable.

Project Description

The Applicant, MassDOT, is proposing Project 609068 to construct a bridge replacement (the Project) located in the Town of Sheffield, MA. As proposed, the Project consists of the replacement of the existing Kelsey Road over Schenob Brook bridge (Bridge No. S-10-015) to address structural deficiencies. The bridge structure is in poor to satisfactory condition and the bridge is posted for reduced weight limits based on section loss to the south exterior beam.

Kelsey Road is an unpaved rural local road running primarily east/west between South Undermountain Road (MA Route 41) to the west and Barnum Street to the east. Schenob Brook generally flows from south to north beneath the bridge. The proposed work limits include improvements to the approach roadways that extend approximately 200 feet to the northwest and 400 feet to the southeast for a total project length of 280 feet (0.13 mile).

Kelsey Road is a two-way roadway featuring a single 13-foot-wide lane without delineated shoulders. It is an unpaved road with a cross slope of approximately 2% along its existing approach. There are no sidewalks.

The recommended bridge replacement entails a superstructure measuring 69 feet and 9 inches in length and 16 feet in width (this span length exceeds the minimum requirements for meeting the 1.2 bankfull width standards in accordance with the MassDOT's *Design of Bridges and Culverts for Wildlife Passage at Freshwater Streams*). The superstructure comprises four adjacent prestressed concrete box beams (B48-24) supported by full-height concrete cantilever abutments with pile foundations and U-wing walls. To ensure safety, the bridge railings will be constructed using concrete CT-TL2 barriers.

A Hydraulic Analysis concluded that the existing bridge is subject to overtopping during flood events. To mitigate the effects of overtopping and pressure flow during design flood events, riprap will be installed along the roadway embankments on each side of the bridge and adjacent to the bridge wingwalls.

The bridge and approach slabs will be paved with an asphalt riding surface, while the remainder of Kelsey Road will retain its existing gravel riding surface. The proposed roadway cross section will consist of a single lane, measuring 13 feet in width, featuring a crown at the center and 2% cross slopes. Guardrails will be installed on both sides of the roadway along each bridge approach. The project does not include the construction of sidewalks either along the approaches or across the bridge.

Existing and Proposed Drainage Conditions

The project area shares boundaries with three distinct properties. Within the project limits, all three properties primarily consist of undeveloped land characterized by a combination of wooded areas and

wetlands that extend to approximately 100 feet east of the bridge. Further east (towards Barnum Street), the lands on both sides of Kelsey Road are agricultural farmlands.

Kelsey Road is an unpaved, gravel roadway that is considered to be impervious. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders. There is no other existing drainage infrastructure or Stormwater Control Measures (SCMs).

Schenob Brook flows from south to north beneath the bridge. The main channel of Schenob Brook is restricted by the bridge at Kelsey Road where it flows full from abutment face to abutment face. The clear opening is approximately 20′ wide by 5′-6″ high at its deepest point. The observed water depth is approximately 20″; there is approximately 3′-9″ of vertical clearance between the observed water surface and low chord of the bridge. The brook turns 90° to the west, just north of the bridge and runs roughly parallel to Kelsey Road for approximately 150′ before turning again sharply to the north. The bankfull width of the Schenob Brook is 42′.

The project is located within the Schenob Brook Drainage Basin, which is an Area of Critical Environmental Concerns (ACEC).

The resource areas surrounding the existing structure consists of Bank (MAHW), LUW and BVW. A wetland delineation was conducted throughout the project area on August 18, 2025.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsy Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The delineated wetland resource areas along this crossing include areas with BVW and Bank (MAHW). Topography of the site is moderately sloped towards these resource areas.

The Project will include construction of a new bridge over Schenob Brook as described in the Project Description section above. The existing roadway and bridge widths will closely match and road widening is not proposed. The existing gravel roadway surface on the bridge and the approach roadways is considered to be impervious and, as such, the pre-construction impervious area (10,053 sf) and post-construction impervious area (10,201 sf) are relatively equal (net increase of 148 sf).

Massachusetts Department of Environmental Protection (MassDEP) – Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards). Under the Stormwater Management Standards, the Project is considered a redevelopment project because it involves maintenance and improvement of an existing roadway.

The new bridge over Schenob Brook and approach roadways will closely match the cross-section of the existing:

	Existing	Proposed
Out-to-Out Bridge Width	15′-6½″	16′-0″
Curb-to-Curb Width	14′-4″	13′-8″

The existing bridge and roadway surface is gravel. The proposed bridge will include a paved, asphalt surface while the approach roadway will remain gravel. Because the existing gravel surface on the bridge and roadway is considered to be impervious, the net change in impervious area is minimal – 148 square feet increase from 10,053 square feet to 10,021 square feet for the overall project limits.

The Project has been designed to meet the Stormwater Management Standards to the maximum extent practicable and to improve upon existing conditions.

Standard 1: No New Untreated Discharges

No new stormwater conveyance (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project has been designed to comply with Standard 1.

Currently, there are no existing outfalls to treat stormwater runoff, and no new stormwater outfalls are proposed for the Project. The existing and proposed gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders. Minimal newly exposed impervious area is proposed as part of this project. Existing roadway widths will be matched and road widening is not proposed.

As a means of bettering the quality of the runoff drainage discharging off the edge of Kelsey Road, the roadway side slopes will be lined with a combination of riprap and streambed/bank restoration material that will provide a level of disconnection between the roadway surface and the wetlands as a Low Impact Development practice.

Standard 2: Peak Rate Attenuation

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.

The Project has been designed to comply with Standard 2 to the maximum extent practicable.

There are minimal newly exposed impervious areas proposed as part of this project. Existing roadway pavement widths will be matched and road widening is not proposed. As such, post-development peak rate attenuation will remain the same as pre-development rates.

There is an existing drainage swale located along the south shoulder of Kelsey Road on the east side of Schenob Brook. The project will introduce stone check dams along the length of this swale to reduce the velocity of flow and attenuate the peak discharge. While peak discharge rates have not been calculated for the pre- and post-development conditions, the introduction of these check dams will provide a minimal reduction to the pre-development discharge rates.

Standard 3: Stormwater Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater 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 types. 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.

The Project has been designed to comply with Standard 3 to the maximum extent practicable. The purpose of this standard is to replenish groundwater baseflows by ensuring that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions. Loss of annual recharge to groundwater is eliminated with the bridge replacement design. The proposed roadway and bridge cross-sections closely match those of the existing pavement widths; road widening is not proposed. As such, there is only a minimal amount of newly exposed impervious areas and, therefore, annual recharge from the post-development site approximates the annual recharge from the pre-development conditions.

Standard 4: Water Quality

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 Project has been designed to comply with Standard 4 to the maximum extent practicable.

The addition of Deep Sump Catch Basins as a SCM to achieve some measure of removal of post-construction TSS was evaluated. Based on the roadway profile, the location of these catch basins would need to be located immediately west of the replacement bridge structure, at approximate Sta. 102+00. However, as shown on the cross-section included in Appendix A, the elevation of a discharge pipe from deep sump catch basins at this location would fall below the Ordinary High Water Elevation. As a result, this alternative was dismissed from further consideration.

As previously noted, Kelsey Road is a gravel roadway, providing a level of permeable pavement as a Low Impact Development (LID) practice. Additionally, the side slopes of Kelsey Road (where stormwater runoff is directed via country drainage) will be lined with stone materials (combination of riprap and streambed/bank restoration material) that will provide a level of disconnection between the roadway surface and the wetlands.

Because of the site constraints (ROW and resource areas) and the minimal grade difference between the roadway surface and the surrounding wetlands, the use of Infiltration BMPs, Filtration BMPs and Detention and Flow Control BMPs were deemed infeasible. Based on soil borings collected along Kelsey Road, groundwater is estimated at a depth of 2 to 8 feet below the roadway surface.

One measure that is proposed to be installed is the addition of check dams along the existing drainage swale running along the south shoulder of Kelsey Road on the east side of Schenob Brook. The introduction of these check dams will help to reduce the velocity of flow and attenuate the peak discharge.

A Long-Term Pollution Prevention Plan (LTPPP) has been developed for the project in compliance with Standard 4. The Standard 9 section of this document includes this LTPPP.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), 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 LUHPPLs 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 LUHPPLs 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 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area**.**

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of 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 "stormwater 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 a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

The Project has been designed to comply with Standard 6. The project is located within an Area of Critical Environmental Concern (ACEC), designated as the Schenob Brook Drainage Basin. Additionally, Schenob Brook is classified as a coldwater fishery. Figure 3 shows the Critical Areas in the vicinity of the project site. As noted under Standard 1, there are no existing or proposed outfalls to treat stormwater runoff entering these critical areas. Kelsey Road relies upon country drainage, with the runoff draining off the edge of the road and flowing to these resource areas along the outside shoulders. The side slopes off the edge of Kelsey Road will be lined with a combination of riprap and streambed/bank restoration material that will provide a level of disconnection between the roadway surface and the wetlands as a Low Impact Development practice.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

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.

The Project is considered a redevelopment and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

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.

The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans and include silt fence along the limits of land disturbance. The project is expected to be completed within one construction season. In the event work extends longer than one season, these E&S controls will be replaced prior to the beginning of the second season.

The project consists of less than 1 acre of disturbance; therefore, coverage under the NPDES Construction General Permit (CGP) is not required.

Standard 9: Operation and Maintenance Plan

A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The roadway included in this project is not owned by MassDOT. The O&M Plan will be implemented by the municipality. The Town of Sheffield will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be address to Sheffield Highway Department located at Pike Road East, Sheffield, MA; phone (413) 229-7030.

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, snow and ice management, prohibition of illicit discharges, and spill prevention and response.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

The project's stormwater management system, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's Illicit Discharge Detention and Elimination (IDDE) Program.

Attachments: Appendix A – Stormwater Checklist
Appendix B – Deep-Sump Catch Basin Evaluation
Appendix C – Stormwater Management System Operation & Maintenance Plan and Long-Term Pollution Prevention Plan

175 Federal Street
Suite 800
Boston, MA 02110

Appendix A

Stormwater Checklist

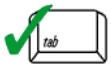
GFT

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

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Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

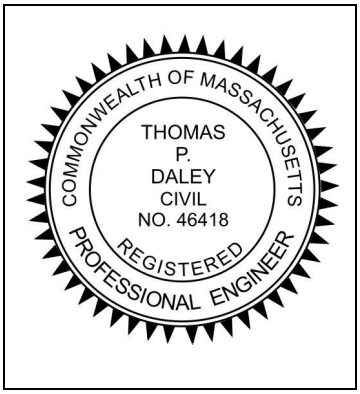
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



04/02/2026

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

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Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☒ Use of “country drainage” versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

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Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

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Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

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Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☒ Critical areas and BMPs are identified in the Stormwater Report.

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Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

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Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☒ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

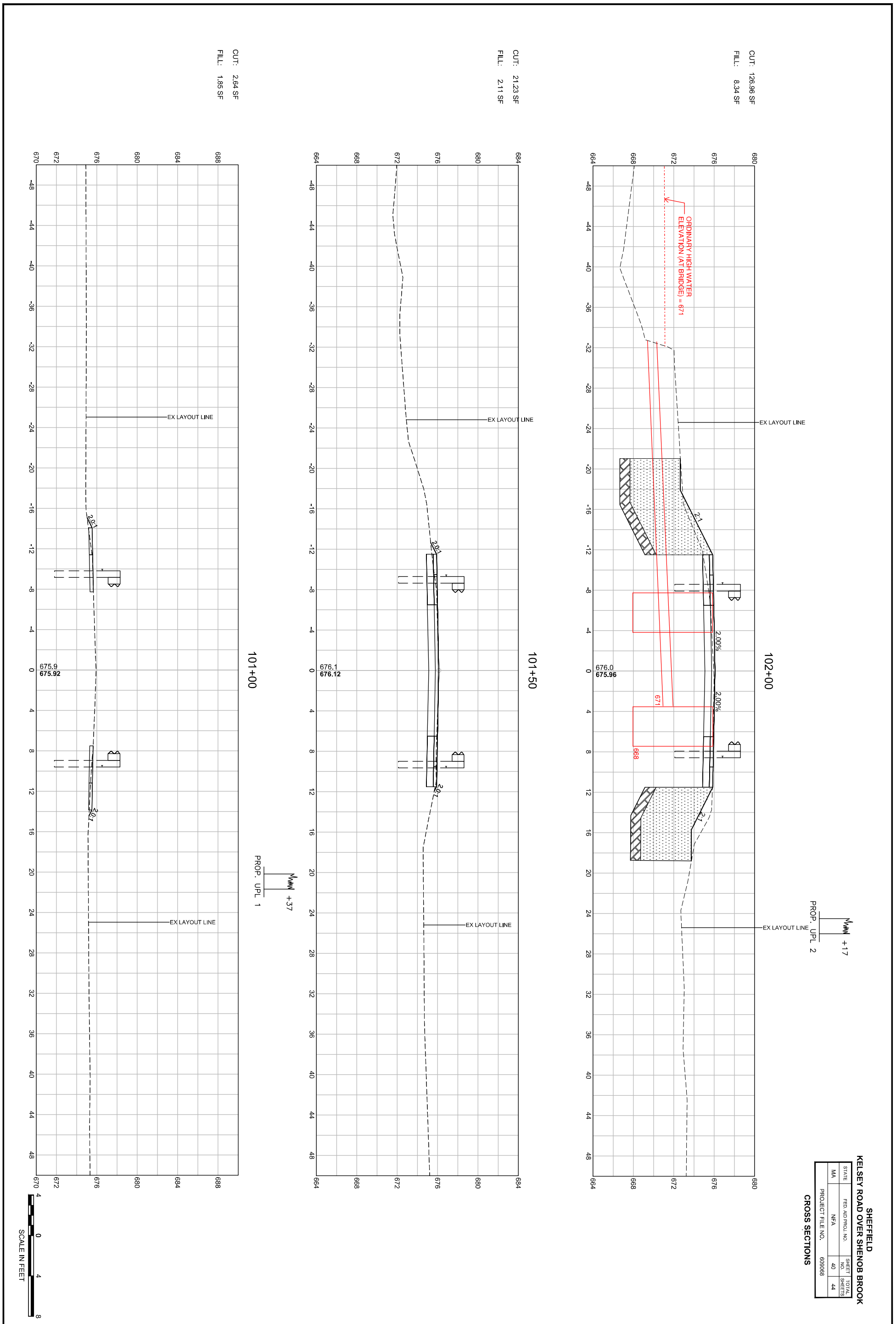
☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Appendix B

Deep Sump Catch Basin Evaluation

GFT


CUT: 126.96 SF
FILL: 8.34 SF
ORDINARY HIGH WATER
ELEVATION (AT BRIDGE) = 671
EX LAYOUT LINE
2:1
2.00%
2.00%
671
668
676.0
675.96
102+00
PROP. UPL 2
+17
CUT: 21.23 SF
FILL: 2.11 SF
EX LAYOUT LINE
2:0.1
676.1
676.12
101+50
PROP. UPL 1
+37
CUT: 2.64 SF
FILL: 1.85 SF
EX LAYOUT LINE
2:0.1
675.9
675.92
101+00
SCALE IN FEET
SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK
STATE: MA
FED. AID PROJ. NO.: NFA
SHEET NO.: 40
TOTAL SHEETS: 44
PROJECT FILE NO.: 609068
CROSS SECTIONS
609068_HD (SHEFFIELD CROSS SECTION 01).DWG
Plotted on 17-Sep-2025 12:44 PM

Appendix C

Stormwater Management System Operation & Maintenance Plan And Long-Term Pollution Prevention Plan

GFT

Kelsey Road over Schenob Brook Bridge Replacement

Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan

Sheffield, MA

PREPARED FOR

massDOT

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Boston, MA 02116

PREPARED BY

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75 Federal Street, Suite 800
Boston, MA 02110

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

04/02/2026

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Appendices

Appendix A – Structural Stormwater BMP Inspection Checklists

1

Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for the Kelsey Road over Schenob Brook Bridge Replacement project (MassDOT Project #609068) in the Town of Sheffield, MA. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

1.1 Responsible Party

The Town of Sheffield will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be address to the Sheffield Highway Department located at Pike Road East, Sheffield, MA 01257, phone (413) 229-7010.

1.2 Inspection and Maintenance Measures and Record-Keeping

The stormwater management system covered by this O&M Plan consists of the following measures:

- Roadside Drainage Swale with Check Dams

The Town of Sheffield will inspect structural stormwater BMPs annually at a minimum. Recommended inspection activities and frequency are summarized in Table 1.

Table 1: Maintenance Inspection Schedule for Roadside Drainage Swale

Activity	Time of Year	Frequency
Inspect drainage swale & check dams	Spring and fall	Bi-annually and during and after major storms
Examine discharge area for clogging or high outflow release velocities	Spring and fall	Bi-annually
Mow side slopes	Spring through fall	Bi-annually, or as needed to keep grass under 6”
Remove trash and debris	Spring	Annually
Remove sediment from swale	Year round	Annually

A Recommended inspection checklist is provided in ***Appendix A***.

Based on the results of the inspection, repairs will be made in accordance with the Town of Sheffield’s standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff. Maintenance may require contracting if existing contracts are unavailable to perform the work. More intensive remedial activities may require permitting and/or an engineering solution.

1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, pipe plugs, cofferdams deployed within stormwater structures, or other practices designed to prevent such discharges. Additional measures to manage erosion and sediment control measures during maintenance operations may include:

1. Vegetated and wooded buffers shall be protected, and left undisturbed to the extent possible.
2. Runoff shall not be diverted into a sensitive area unless this has been specifically approved.
3. Snow shall not be plowed into BMPs.
4. Easements shall be maintained, to enable maintenance equipment to access BMPs for regular cleaning.

1.4 O&M Budget

The Town of Sheffield performs maintenance for stormwater management systems as part of their annual operation and maintenance budget for roadways and bridges.

2

Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for the Kelsey Road over Schenob Brook Bridge Replacement project (MassDOT Project #609068) in the Town of Sheffield, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with:

- The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4),

This LTPPP satisfies the requirements related to pollution prevention under Massachusetts Stormwater Standards 4, 5, 6, and 10.

2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

- good housekeeping;
- storing materials and waste products inside or under cover;
- vehicle washing;
- routine inspections and maintenance of SCMs;
- spill prevention and response;
- maintenance of lawns, gardens, and other landscaped areas;
- storage and use of fertilizers, herbicides, and pesticides;
- pet waste management;
- operation and management of septic systems; and
- proper management of deicing chemicals and snow.

2.1.1 Litter Pick-up

The Town of Sheffield will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

2.1.2 Inspection and Maintenance of Stormwater Assets

The Town of Sheffield will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

2.1.3 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard Town of Sheffield practices. SCM basin bottoms and embankments designed to impound water should be mowed as required to prevent establishment of woody vegetation.

Except in rare circumstances, the Town of Sheffield does not use fertilizers, herbicides, and pesticides for the maintenance of facilities. Exceptions include using fertilizer to ensure the survival of new plantings and herbicides to control invasive plants. Local Conservation Commission review may also be required.

2.1.4 Snow and Ice Management

Snow and Ice Management will be conducted consistent with the practices outlined in the Town of Sheffield Snow Plowing Guidelines.

In accordance with the Town of Sheffield Snow Plowing Guidelines, the Town will use sand and salt when there are hazardous ice or slippery conditions. The Town is concerned about the effect of such chemicals on the environment and will limit its use for this reason.

2.1.5 Street Sweeping

Kelsey Road is a gravel roadway and, as such, street sweeping is not anticipated within the project area.

2.1.6 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- Firefighting activities*
- Foundation drains
- Water line flushing
- Footing drains
- Landscape irrigation
- Individual residential car washing
- Uncontaminated groundwater
- Flows from riparian habitats/wetlands
- Potable water sources
- Dechlorinated swimming pool water
- Street wash waters
- Wash water from residential buildings (no detergents)
- Condensation from air conditioning units
- Run-on from private driveways caused by precipitation

- Rising groundwater
- Diverted stream flows
- Lawn watering
- Water from crawl space pumps

*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the Kelsey Road over Schenob Brook Bridge Replacement project (MassDOT Project #609068).

2.1.7 Spill Prevention and Response

Response procedures will be implemented at all outfalls for any significant release of hazardous materials such as fuels, oils, or chemical materials that have the potential of discharging to Schenob Brook, a waterbody located within an Area of Critical Environmental Concerns (ACEC) – Schenob Brook Drainage Basin, a Zone II- Mountain Water Systems Inc, and a Coldwater Fishery. Spill containment measures may include booms, caps, covers, pneumatic plugs, absorbent materials, etc.

Reportable quantities will immediately be reported to the applicable Federal, State, and local agencies as required by law. Reportable quantities of chemical, fuels, or oils are established under the Clean Water Act and enforced through MassDEP. The MassDEP Emergency Response Program shall be immediately notified in accordance with required procedures for the report of a release (telephone (888) 304-1133).

The Town of Sheffield fire department, working closely with the Town police department, takes the lead on hazardous materials spills. Sheffield's fire department has informal mutual aid agreements with many surrounding communities. In the case of a spill, applicable containment and clean-up procedures will be performed immediately. These procedures are implemented in accordance with the Unified Response Manual at the local level by first responders, which includes Sheffield's local public safety departments (e.g., fire, police, public works, board of health). Spill material collected during the response will be promptly removed and disposed of in accordance with Federal, State, and local requirements.

APPENDIX A:

Structural Stormwater BMP Inspection Checklists

INSPECTION CHECKLIST – ROADSIDE DRAINAGE SWALE

Inspections should be conducted bi-annually, and during and after major storm events.

General Information

BMP Description	Roadside Drainage Swale		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Examine discharge area for clogging or high outflow release velocities	Bi-Annually	Yes ☐ No ☐	
Mow side slopes and embankment	Bi-Annually	Yes No	
Remove trash and debris	Bi-Annually	Yes No	

Attachment I
Additional Documents

Exhibit 1 — Stream Visual Assessment Protocol 2 Summary Sheet

609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

Stream Visual Assessment Protocol 2 Summary Sheet

Owner's name TOWN OF SHEFFIELD Evaluator's name MATTHEW LUNDSTED, P.E.

Stream name SCHENOB BROOK Tributary to: HUBBARD BROOK HUC: 12-011000050203

HOUSATONIC RIVER

1. Preliminary Assessment

A. Watershed Description

Western New England Marble Valleys/Berkshire Valley/Housatonic and Hoosic Valley

Ecoregion or MLRA MLRA 145 Watershed Drainage area (acres or (mi^2)) 19.0

Watershed management structures: (no.): dams 0 water controls 0 irrigation diversions ___

No. of miles of contiguous riparian cover/mile of entire stream in watershed (estimated) 0.95 (SEE BELOW)

Land use within watershed (%): cropland _____ hayland 15 grazing/pasture _____ forest 60

urban 4 industrial _____ other (specify) <2 % impervious roads

20 % surface waters and wetlands

Agronomic practices in uplands include: SMALL FARMS

Confined animal feeding operations (no.) _____ Conservation (acres) ~1500 industrial(acres) _____

Number of stream miles on property 0.5 Number of total stream miles ~9.1

Stream hydrology: _____intermittent; months of year wetted : _____

X perennial; months of year at baseflow: 12

B. Stream/Reach Description:

Stream Gage Location/Discharge: NONE /_____ft^3/s

Applicable Reference Stream: NONE Reference Stream Location: ____/_____

Information Sources:

Notes: 1) the watershed extends south into CT.

2. Field Assessment

A. Preliminary Field Data

Date of assessment 9/5/25 Weather conditions today 71°, 90% cloud cover
(ambient temp.\ % cloud cover)

Weather conditions over past 2 to 5 days: no rain/average daily temp. was 59°-62° over the previous 5 days
(No. of days precip/average daytime temp.)

Reach location (UTM or Lat./Long.) 42.06639N/-73.39737W Channel type/classification scheme C5 / ROSGEN

Riparian Cover Type(s): Tree 50 % Shrub 30 % Herbaceous 15 % Bare 5 %

Bank Profile: Stratified___ Homogeneous XX Cohesive Soil___ Noncohesive Soil ____

Gradient (√ one): Low (0-2%) XX Moderate (>2<4%)___ High (>4%) ___

Bankfull channel width 42 ft Reach length 450 ft Flood plain width 300 ft

Average riparian zone width 50 ft Method used (e.g., Range finder): Range finder

Average height of woody shrubs 7.5' Method used (e.g., Range finder): Tape measure

Flood plain wetlands, if present 3 acres/reach

Dominant substrate (%): boulder 0 cobble 0 gravel 5 sand 65 fine sediments 30
(> 250 mm) (60-250mm) (2-60 mm) (2-.06 mm) (< .06 mm)

Photo Point Locations and Descriptions:

Photo Pt. #	GPS Coordinates/Waypoints	Description
1	SEE ATTACHED	
2		
3		

SVAP Start Time/Water Temp: 10:30 a.m. / 66° SVAP End Time/Water Temp: 12:30 p.m. / 66°

Notes:

B. Element Scores

Element	Score	Element	Score
1. Channel Condition	8	14. Aquatic Invertebrate Community	NA
2. Hydrologic Alteration	9	15. Riffle Embeddedness	NA
3. Bank Condition	9	16. Salinity	NA
4. Riparian Area Quantity	10	**A. Sum of all elements scored**	115
5. Riparian Area Quality	8	**B. Number of elements scored**	13
6. Canopy Cover	9		
7. Water Appearance	10	**Overall score: A/B** 8.8	
8. Nutrient Enrichment	10	1 to 2.9 Severely Degraded 3 to 4.9 Poor 5 to 6.9 Fair 7 to 8.9 Good 9 to 10 Excellent	
9. Manure or Human Waste	10		
10. Pools	9		
11. Barriers to Movement	10		
12. Fish Habitat Complexity	6		
13. Aquatic Invertebrate Habitat	7		

Suspected causes of SVAP scores less than 5 (does not meet quality criteria for stream species)

N/A

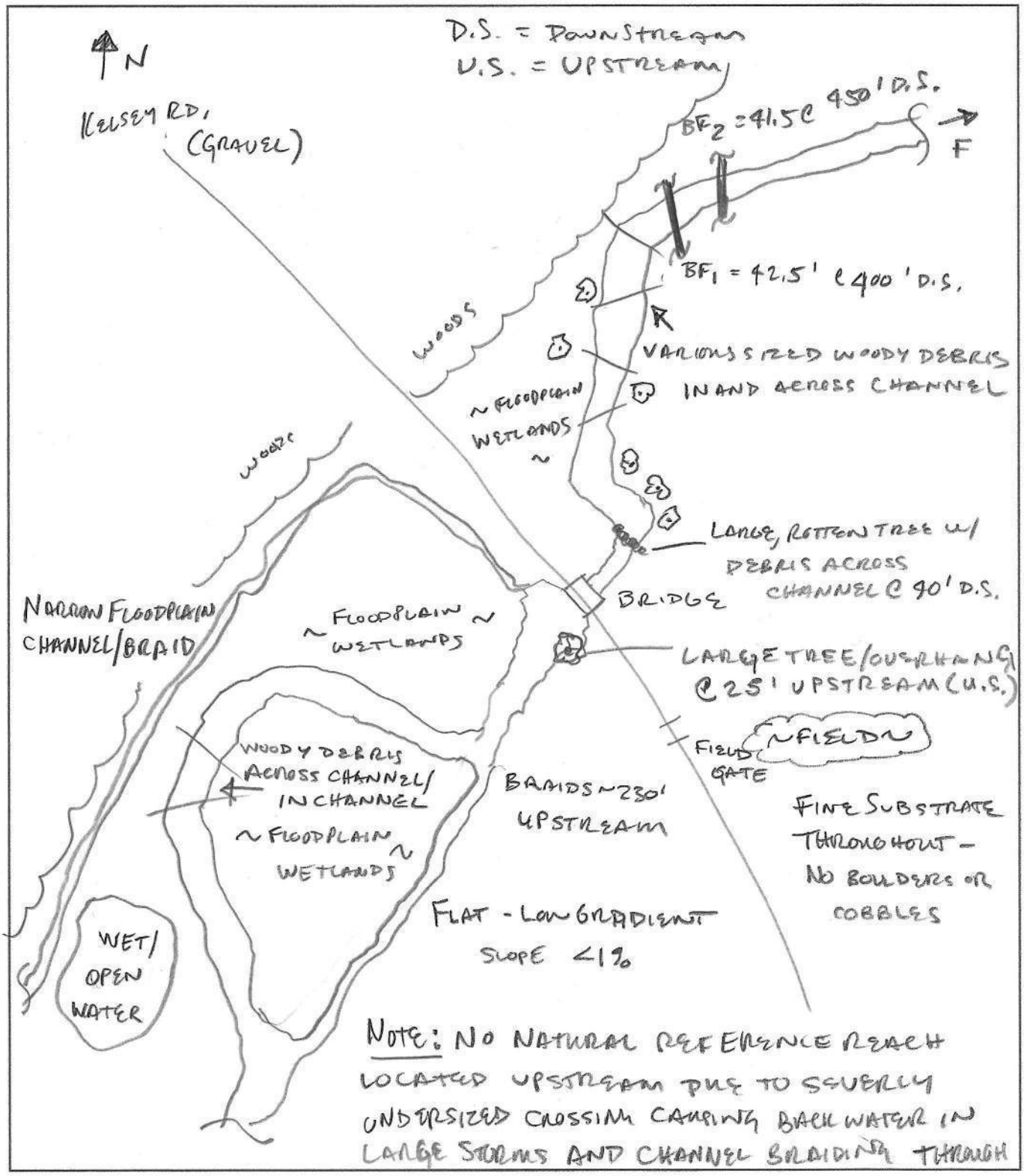
Recommendations for further assessment or actions:

N/A

Riparian wildlife habitat recommendations:

N/A

C. Site Diagram: indicate approximate scale, major features, resource concerns, etc.



1 to 2.9 Severely Degraded
3 to 4.9 Poor

Provide notes related to each element scored on back of site diagram, as needed.

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 1- Schenob Brook crossing looking South on Kelsey Road, Sheffield, MA, 42.065697, -73.397822



Photo 2- Schenob Brook crossing looking North on Kelsey Road, Sheffield, MA, 42.065530, -73.397650

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 3- Looking Upstream from Bridge at Schenob Brook, Sheffield, MA, 42.0656335, -73.3977680



Photo 4- Looking Downstream from Bridge at Schenob Brook, Sheffield, MA, 42.0656335, -73.3977680

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 5- Upstream Face of Kelsey Road Bridge, Sheffield, MA, 42.065563, -73.397786



Photo 6- Downstream Face of Kelsey Road Bridge looking South, Sheffield, MA, 42.065657, -73.397723

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 7- Typical View of Schenob Brook Downstream Reference Reach, Sheffield, MA, 42.066366, -73.397709



Photo 8- Typical Riparian Zone and Floodplain Wetland- River-Left Upstream, Schenob Brook, Sheffield, MA, 42.065410, -73.397860

Pre-Construction Notification Permit Form

for

609068 Sheffield – Kelsey Road Bridge Replacement
Sheffield, Massachusetts

April 2026

Prepared For:
Massachusetts Department of Transportation Highway Highway Division
10 Park Plaza
Boston, Massachusetts 02216

Prepared By:
Comprehensive Environmental Inc.
41 Main Street
Bolton, Massachusetts 01740

Gannett Fleming Inc.
175 Federal Street Suite 800,
Boston, MA 02110

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Phillip Eng, Interim MassDOT Secretary
Jonathan L. Gulliver, Undersecretary and Highway Administrator

massDOT
Massachusetts Department of Transportation
Highway Division

April 3, 2026

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
Kelsey Road over Schenob Brook
Bridge Replacement (Bridge No. S-10-015)
Sheffield, MA
MassDOT Project 609068

Dear Mr. Vasconcelos,

The Massachusetts Department of Transportation, Highway Division (MassDOT) is submitting this application for Pre-Construction Notification (PCN) Application for the replacement of a bridge over Schenob Brook on Kelsey Road in the Town of Sheffield, MA. MassDOT is the main project proponent/applicant for the PCN, acting through its agent Comprehensive Environmental Inc. (CEI).

MassDOT is replacing bridge No. S-10-015 on Kelsey Road over Schenob Brook with a new substructure and superstructure of larger capacity due to structural concerns. The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. The bridge and approach slabs will have an asphalt riding surface; beyond the approach slabs the roadway approaches will remain gravel. The bridge replacement project requires a 401 Water Quality Certification (WQC) and authorization under Section 404 of the Clean Water Act, Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering as it will permanently and temporarily disturb approximately 38 square feet (sf) and 292 sf of Waters of the US (WOTUS) associated with Schenob Brook. The project will permanently and temporarily impact 7,635 sf and 14,163 sf of Federal Wetlands. Additionally, the project will permanently and temporarily impact 182 linear feet (lf) and 75 lf of Bank.

The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. This project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The bridge

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

replacement design is substantially the equivalent of, and in similar alignment to, the existing bridge structure. 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,

Courtney Walker

Courtney Walker
Wetlands & Water Resources Coordinator
MassDOT Highway Division, Environmental Services

Cc: Ryan Hale, MassDEP
Heidi Davis, MassDEP
Tyler Lewis, MassDEP
Jamie Ianelli, MassDEP
Kevin Newton, ACOE
Don Ward, Sheffield Conservation Commission
Lily Collins, MassDOT Wetlands

PRE-CONSTRUCTION NOTIFICATION PERMIT FORM

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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 Disclosure 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.

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 (*agent is not required*)
First - Matthew Middle - Last - Lundsted
Company - Comprehensive Environmental Inc
E-mail Address - mlundsted@ceiengineers.com

6. APPLICANT'S ADDRESS:
Address- 10 Park Plaza, Room 7360
City - Boston State - MA Zip - 02216 Country - USA

9. AGENT'S ADDRESS:
Address- 41 Main Street
City - Bolton State - MA Zip - 0174 Country - USA

7. APPLICANT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile
857.262.0757

10. AGENT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile
800.725.255

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Matthew Lundsted 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.

Courtney Walker — SIGNATURE OF APPLICANT
4/6/2026 — DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)
Sheffield Bridge Replacement of Kelsey Road over Schenob Brook - S-10-015

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)
Schenob Brook

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
City: State: Zip:

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)
Latitude: 42.065630 °N Longitude: -73.397721 °W

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: Municipality:

Section: Township: Range:

17. DIRECTIONS TO THE SITE.

To access the northern limits of the site, Foley Road can be taken northbound or southbound before intersecting Kelsey Road, approximately 1,000 ft away from northern work limits. To access the southern limits of the site, Barnum Street can be taken eastbound or westbound before intersecting Kelsey Road approximately 450 ft away from southern work limits.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

The existing bridge substructure and superstructure will be replaced with a bridge structure that will have a span length of 69'-9". The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. Riprap will be placed underneath structure and will extend 25' past openings on both ends. In addition, the project includes realigning a section of Schenob Brook north of Kelsey Road.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

38/292 SF of Waters of the US (WOTUS) (Perm/Temp) impacts, 7,635 SF/14,163 SF of Vegetated Wetlands (Perm/Temp), 182 LF/75 LF of Ordinary High Water (OHW) (Perm/Temp) impacts are anticipated. A wetland replication area is proposed with ~9,117 SF of plantings, creating 780 SF of WOTUS from cutting roadway to install the larger span/opening bridge,implementing an invasive species management plan, and minimizing slope limits (1.5:1) by installing compost and seed over modified rockfill.

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

The purpose of this project is to replace the existing bridge crossing over the Schenob Brook along Kelsey Road, improving existing bridge structural concerns.

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
38/292			PERM/TEMP	The addition of riprap sloping, temporary cofferdams
7,635/14,163			PERM/TEMP	ement of the western flood plain culvert, addition of strear
	182/75		PERM/TEMP	addition of riprap, streambed/bank restoration between a
		9	PERM	ging to remove the existing structure & installing the prop

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*)

Approximately 780 square feet of new WOTUS (excavated existing roadway/embankment) will be gained from this new larger span culvert and stream realignment.

25. Is Any Portion of the General Permit Activity Already Complete? [ ] Yes [X] 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*)

IPaC listed the Northern Long-eared Bat, Myotis septentrionalis as endangered, the Tricolored Bat, Perimyotis subflavus as proposed endangered, the Bog Turtle, Glyptemys muhlenbergii as threatened, and the Monarch Butterfly, Danaus plexippus as proposed threatened. NHESP Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674

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 - There are no historical properties within the project limits.

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 - The project does not occur within a "study river" nor is it within 0.25 miles of a wild scenic 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 [X] 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, a BRP WW10 - 401 WQC for Major Fill is being filed with MassDEP concurrently with this notice.

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.

Courtney Walker	4/6/2026		
SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a

Department of the Army

General Permit (GP) Pre-Construction Notification (PCN)

Blocks 1 through 4. To be completed by the U.S. Army Corps of Engineers.

Block 5. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific General Permit(s) You Propose to Use. List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

Block 19. Description of the Proposed General Permit Activity. Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20: Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

Block 21. Purpose of General Permit Activity. Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity. For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including is 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.

Project Narrative

Replacement of Bridge No. S-10-015, Kelsey Road over Schenob Brook Sheffield, MA – Pre-Construction Notification

PRE-CONSTRUCTION NOTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

1. Introduction

The Massachusetts Department of Transportation (MassDOT) Highway Division is planning the replacement of the existing Kelsey Road bridge (Bridge No. S-10-015) superstructure and substructure over Schenob Brook, due to structural deficiencies. The resource areas surrounding the existing structure consists of Ordinary High Water (OHW), Waters of the US (WOTUS), and Vegetated Wetlands. Both permanent and temporary impacts are expected throughout construction. Mitigation measures are proposed to minimize these impacts including: constructing a wetland replication area, creating WOTUS from cutting roadway to install the larger span/opening bridge, implementing an invasive species management plan, and riprap lined side slopes to minimize the extents of lateral slope limits. As part of the permitting process for this project, a Pre-Construction Notification (PCN) is being filed with the Army Corps of Engineers. Additionally, a Water Quality Certification (WQC) is being filed concurrently with the Massachusetts Department of Environmental Protection (MassDEP). MassDOT is the main project proponent/applicant for the WQC, acting through its agent Comprehensive Environmental Inc (CEI). The project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement is substantially the functional equivalent of, and in similar alignment to, the existing bridge. Therefore, the project is exempt from permitting through the Wetlands Protection Act (WPA), Chapter 91, and Massachusetts Environmental Policy Act (MEPA) permitting are exempt. Required permits for this project include the MassDEP Water Quality Certification (BRP WW 10) and U.S. Army Corps (USACE) Pre-Construction Notification under the Massachusetts Section 404 Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering.

2. Existing Conditions

The project is located in Massachusetts Department of Transportation (MassDOT) District 1, in the Town of Sheffield, Massachusetts in the southern part of Berkshire County.

Kelsey Road is an unpaved rural local road running primarily east/west between South Undermountain Road (MA Route 41) to the west and Barnum Street to the east. There are existing overhead, pole-mounted utility lines (electric and communications) running along the length of Kelsey Road. There are no underground utilities. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent floodplain wetlands along the outside shoulders.

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Schenob Brook flows from south to north beneath the bridge. The main channel of Schenob Brook is restricted by the bridge at Kelsey Road where it flows full from abutment face to abutment face. The clear opening is approximately 20' wide by 5'-6" high at its deepest point. The observed water depth is approximately 20"; there is approximately 3'-9" of vertical clearance between the observed water surface and low chord of the bridge. The brook turns 90° to the northwest, just north of the bridge and runs roughly parallel to Kelsey Road for approximately 150' before turning again sharply to the northeast. The bankful width of the Schenob Brook is 42'. A Stream Visual Assessment Protocol (SVAP) form was completed during an initial in-field stream evaluation in early September of 2025 and is included in **Attachment I**. Information within this form is strictly for illustrating stream features.

Two additional floodplain culverts pass under Kelsey Road, west of the bridge at distances of approximately 40' (66" diameter corrugated metal pipe) and 150' (48" x 72" elliptical corrugated metal pipe) northwest of the west abutment. The culverts allow flow from two floodplain wetlands to pass beneath the west. These two culverts don't connect to the main stem of the channel and lack clear bank definition on all sides.

The existing bridge was constructed in 1915 and is owned and maintained by MassDOT. The single-span structure is approximately 23 feet long and carries a gravel surfaced roadway approximately 13 feet wide. 9½" wide concrete curbs are located on each side of the bridge along with bridge railings consisting of a single timber rail bolted to steel I-shaped posts. There are no sidewalks along the bridge or roadway approaches. The out-to-out bridge width is 14'-8".

The bridge superstructure consists of five rolled steel beams with a cast-in-place concrete jack arch deck encasing the beams. The jack arches are formed by stay-in-place, half- round, corrugated steel pipes supported by the beam bottom flanges. The concrete deck is topped by approximately 6" of gravel riding surface. The substructure consists of cast-in- place concrete abutments with monolithic, flared wingwalls.

Overall, the bridge structure is in poor to satisfactory condition and the bridge is posted for reduced weight limits based on section loss to the south exterior beam.

The resource areas surrounding the existing structure consists of OHW, WOTUS and Vegetated Wetlands. A wetland delineation was conducted throughout the project area on August 18, 2025, by Comprehensive Environmental Inc's wetland scientists.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsy Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The

delineated wetland resource areas along this crossing include areas with Vegetated Wetlands and OHW, as seen in Attachment F.

The area surrounding the site is predominantly forest to the north and agriculture to the south. Topography of the site is moderately sloped towards these resource areas. The area was delineated using the A, B, C, D and RB series of flags. Flags RB-01 through RB-10 and RB-100 through RB-111 represent OHW. Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 represent Vegetated Wetlands.

A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. A moderately dense canopy exists dominated by American elm (*Ulmus americana*), hemlock (*Tsuga canadensis)* and black willow (*Salix nigra)*. Shrubs in the understory include winterberry holly (*Ilex verticillate),* highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Swida amomum*), green ash (*Fraxinus pennsylvanica*), and saplings from the canopy. The herbaceous stratum of the BVW includes jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Joe-Pye weed (*Eutrochium fistulosum*), purple loosestrife (*Lythrum salicaria*), reed canary 2 grass (*Phalaris arundinacea*), narrow leaved cattails (*Typha angustifolia*), dotted smartweed (*Persicaria punctata)*, cardinal flower (*Lobelia cardinalis*) and sedges (*Carex* spp.)

The upland/wetland boundary to the Vegetated Wetlands was delineated in the field using flags:

- A-WF-01 through A-WF-08 are along the northwest boundary of the floodplain.
- B-WF-01 through B-WF-08 are along the northeast boundary of the floodplain.
- C-WF-01 through C-WF-06 are along the southwest boundary of the floodplain.
- D-WF-01 through D-WF-05 are along the southeast boundary of the floodplain.

OHW was delineated in the field through observation of vegetation change, bank cutting, water-stained leaves, shelving, and wrack lines. The banks of Schenob Brook were approximately three feet high with a channel 20 to 30 feet wide. Water was slowly flowing northeast at the time of inspection with depths of over six feet in portions of the thalweg.

- Flags RB-01 through RB-10 delineate the mean annual high-water mark along the southern bank of the brook.
- Flags RB-100 through RB-111 delineate the mean annual high-water mark along the northern bank of the brook.

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Sheffield, MA

According to USDA soil surveys (Attachment A), the site is underlaid with soils consisting of moderately sloped, Farmington-Rock outcrop complex (108C) and Amenia silt loam (500C) in the upland areas and nearly level, frequently flooded Saco silt loam (5A) in the Vegetated Wetlands and brook. A detailed Wetland Delineation Report is included in **Attachment G**.

The bridge is not located within any Outstanding Resource Waters (ORW), certified vernal pools, within 0.25 miles of a National Wild Scenic River, or near any federal lands. It is however located within the following resource areas: Area of Critical Environmental Concerns (ACEC) – Schenob Brook Drainage Basin, a Zone II- Mountain Water Systems Inc, and Natural Heritage & Endangered Species (NHESP) Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674. Schenob Brook is a Coldwater Fishery. Maps of these resources are located in **Attachment C**.

There are Section 7 Endangered Species found within project limits: the Northern Long-eared Bat (*Myotis septentrionalis)*, the Tricolored Bat (*Perimyotis subflavus)*, the Bog Turtle (*Glyptemys muhlenbergii)*, and the Monarch Butterfly, *Danaus Plexippus.* A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. In coordination with MassDOT, the Natural Heritage and Endangered Species Program (NHESP) received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed species. See **Attachment D** for all species determination letters. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS. A Turtle Protection Plan is found in **Attachment G.**

The United States Federal Emergency Management Agency (FEMA) Flood Map Service Center's online map viewer indicates that the existing bridge is within Zone A/Areas of 100-Year flood; base flood elevations and flood hazard factors not determined. Therefore, the No-Rise evaluation is not required for this project. See **Attachment C**.

The project area was reviewed for invasive species in mid-Summer of 2025. Asian Bittersweet, Multiflora Rose, Japanese Bittersweet, and Autumn Olive were observed throughout the project site.

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3. Proposed Conditions

This project involves the replacement of the existing bridge, No. S-10-015, in the same location with a new substructure and superstructure of larger capacity. This increase in capacity will yield a net gain in WOTUS. A Preliminary Hydraulic Analysis was conducted to determine requirements for the proposed bridge hydraulic opening. The low chord of the existing bridge is at an elevation of 674.68'. The low chord of the proposed bridge will be at an elevation of 674.21; the 10-year and 100-year flood elevations are 677.83 and 678.73, respectively. The existing bridge is therefore subject to overtopping during flood events. Alternative bridge designs assumed that the existing low chord elevation would be maintained – increasing this elevation so that it would be above the flood elevations would require a four foot increase in the roadway profile which would push the limits of side slope grading an additional six or more feet beyond the proposed limits along the approach roadways adjacent to wetlands. It was estimated that this would result in an additional 4,700 square feet or more of permanent wetland impacts, which was deemed unacceptable. Based on these controlling criteria, the proposed structure will have a span length of 69'-9". With a bankful width of 42', this span length exceeds the minimum requirements for meeting the 1.2 bankful width standards in accordance with Massachusetts Stream Crossing Standards (SCS). Wildlife shelving on both sides of the bank within the crossing are proposed, tying back to the existing Bank post construction.

The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. The bridge railings will be concrete CT-TL2 barriers. The total out-to-out structure width will be 16.56' as measured along the length of the stream. With a cross-sectional area of 335.2 square feet, the openness ratio is approximately 20.24, exceeding the minimum 0.25 requirement of the Massachusetts SCS.

The proposed roadway cross section will include a single 13' wide travel lane with a crown at the center and 2% cross slopes. Guardrails are proposed for both sides of the roadway along each bridge approach. The bridge and approach slabs will have an asphalt riding surface; beyond the approach slabs the roadway approaches will remain gravel. There will be no sidewalks along the approaches or across the bridge. Roadway sideslopes will be constructed with a 1.5:1 slope to minimize impacts to the adjacent resource areas. These side slopes will be lined with modified rockfill over riprap to protect the embankment and bridge wingwalls from overtopping flood events.

A 12-inch layer of streambed/bank restoration material will be placed along the widened streambed area within the new abutment limits (at and around the abutments only) to allow

for natural substrate; existing channel will remain untouched. With the increased bridge span length and hydraulic opening, the closer of the two culverts (66" corrugated metal pipe) beneath Kelsey Road to the west of the bridge will be removed. This existing floodplain culvert falls within the proposed bridge's opening. The second flood plain culvert (48" x 72" elliptical corrugated metal pipe) will be replaced in its current location with twin elliptical (34" x 53") reinforced concrete pipes, closely matching the existing culvert's cross-sectional area. This flood plain culvert doesn't connect to the main channel and therefore is not required to meet MA SCS.

During the demolition and construction of the bridge, Kelsey Road will be closed to traffic and a detour plan will be implemented. The detour length for both directions of traffic will be approximately 0.9 miles. With the full closure of Kelsey Road, construction equipment will be able to access the project site from either side of Schenob Brook along Kelsey Road and the Contractor will be able to use the approach roadway on each side of the project area for staging equipment and stockpiling materials. At the beginning of the project, sedimentation controls measures will be installed at the limits of grading and/or clearing.

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas. Alternate water handling means and methods may be submitted by the contractor for approval.

Due to the replacement of the existing bridge's substructure and superstructure, as well as the approach roadway reconstruction and replacement of the western flood plain culvert, OHW, WOTUS, and Vegetated Wetlands will be impacted during the construction of the proposed bridge (See Section 5).

The existing gravel roadway surface on the bridge and the approach roadways is considered to be impervious and, as such, the pre-construction impervious area total is approximately 10,053 SF within the project limits. The post-construction impervious area, consisting of the

gravel and paved roadway/bridge surfaces, totals 10,201 SF. This resulted in a net increase of 148 SF.

Approximately 9 cubic yards (streambed removed within limits of WOTUS) of dredge will be needed to construct the bridge replacement. This includes dredging activities for the demolition and removal of the existing bridge structure abutments and subsurface foundations as well as installing the proposed cofferdam systems around these foundations to allow the work to be performed in the dry while maintaining a streambed opening throughout construction. If legacy streambed material is encountered beneath the roadway embankment and is determined to be suitable, it will be utilized as natural stream substrate and augmented to the additional manufactured streambed material, meeting the required specifications as necessary (for quantity). A limited amount of excavated soil from the project site will be reused for fill where needed and where the material meets required soil classification for the intended use. All other excavated soil from the project site, included the dredged soil from these excavations, will be removed from the project site and disposed of by the Contractor.

4. Bridge Replacement Construction Sequence

Note: While the Department does not dictate Contractor's Means and Methods for construction, the Contractor will be required to perform construction near and in portions of the Schenob Brook (WOTUS) in the dry.

1. Construction staging and layout.
2. Placement of erosion and sedimentation controls and turtle protection barriers throughout the work area.
3. Clearing and grubbing.
4. Utility relocations.
5. Detour Kelsey Road to Foley Road and Barnum Street.
6. Provide a debris shield under the existing bridge prior to demolition to control demolition debris from entering Schenob Brook.
7. Remove existing bridge superstructure (deck, railing and steel beams).
8. Remove existing dry hydrant.
9. Drive temporary steel sheet piling for cofferdams. Provide dewatering equipment (sump pump and temporary dewatering sediment containment structure), as necessary to maintain any work in the dry.

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10. Remove, segregate and stockpile top 12" of existing riverbed material from between steel sheeting and existing abutments taking care not to intermingle material from each abutment.
11. Remove the existing abutments. Once the riverbed material has been salvaged the existing abutments will be removed by hydraulic hoe-ram or similar demolition equipment. At no time will equipment or debris be allowed outside temporary cofferdam or upland areas. Abutments may be cut off 24" below proposed streambed.
12. Drive piles for proposed bridge foundations.
13. Prepare subgrade for placement of new abutments and wingwalls.
14. Construct abutments and wingwalls.
15. Place streambed/bank restoration material in areas between existing and proposed bridge abutments.
16. Backfill behind abutments and wingwalls.
17. Construct bridge approach slabs.
18. Remove dewatering equipment and temporary steel sheeting. Steel sheeting may be cut off 24" below mudline.
19. Set bridge beams. Beams will be delivered on the east roadway approach via Barnum Street. Using a crane located along the east roadway approach, beams will be placed.
20. Form and pour concrete bridge deck and bridge barrier/rail.
21. Pave and waterproof bridge.
22. Install new dry hydrant.
23. Remove and replace western culvert.
24. Construct remainder of roadway approaches.
25. Install approach roadway guardrail and signing.
26. Final grading, seeding and landscape plantings, including development of wetland replication area
27. Restore wetlands/streambed within limits of temporary impacts.
28. Stabilize all roadway slopes prior to the removal of erosion and sedimentation controls.
29. Remove all temporary traffic control devices and open roadway to traffic.
30. Cleanup area and return to pre-construction condition.

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5. Wetland Resource Areas Impacts

During the site visit in August 2025, wetland boundaries were reverified from a 2020 delineation and have been identified on the plans based on the flagging done during the initial survey. Wetland delineation includes the boundaries of OHW and Vegetated Wetlands. Vegetated Wetlands were delineated on both the east and west sides of Schenob Brook within approximately 75' of Bridge No. S-10-015. On the west approach, these wetlands flank both sides of the roadway from the bridge to the further of the two culverts to the west. More information is illustrated in **Attachment F**.

A total of 7,635 square feet of permanent Vegetated Wetlands impacts are anticipated. These permanent impacts are due to the following: regrading of the approach roadway side slopes, bridge reconstruction, replacement of the western flood plain culvert and clearing & grubbing.

A total of 14,163 square feet of temporary Vegetated Wetlands impacts are anticipated. These impacts are due to selective clearing and thinning within 15' of the proposed utility lines and within the swing radius of the crane used to install the bridge beams. Selective clearing and thinning will not include the removal of stumps or any other grubbing activities within Vegetated Wetlands.

A total of 292 square feet of temporary WOTUS impacts are anticipated. These temporary impacts are due to the installation of the temporary steel sheet pile cofferdams. 38 square feet of permanent WOTUS impacts expected. These are due to the addition of stone sloping along the wingwalls and the potential for cofferdam sheeting to be left-in-place (cut-off a minimum of 24" below the mudline).

WOTUS under the existing bridge equates to 325 square feet and WOTUS under the proposed bridge equates to 1,143 square feet. Including the 38 square feet of permanent WOTUS impacts, there will be an increase of 780 square feet of WOTUS gained due to widening the bridge span and cutting existing roadway fill. Streambed/bank restoration material will be provided in these gained WOTUS areas.

182 linear feet of permanent impacts to Bank are anticipated due to the following; regrading approach roadways, bridge reconstruction, the addition of riprap, streambed/bank restoration material between the abutments, and clearing & grubbing. 75 square feet of temporary Bank impacts are expected due to selective clearing & trimming.

Table 1 below provides a summary of the overall wetland impacts for the proposed alternative:

Table 1 – Wetland Impact Summary		
Resource Area	**Permanent Impacts**	**Temporary Impacts**
Vegetated Wetlands	7,635 sf	14,163 sf
WOTUS	38 sf	292 sf
Bank	182 lf	75 lf

The project will also involve impacts to the regulatory FEMA flood Zone A. The hydraulic capacity of the structure is being increased due to the widening of the bridge. Based on hydraulic modeling, the widening of the bridge will result in a decrease of the 100-year water surface elevation by approximately 0.20-foot at the bridge crossing when compared to existing conditions (existing WSE = 678.75', Proposed WSE = 678.52').

6. Wetland Replication

Proposed mitigation for the Wetland Resource Area impacts described in Section 5 are as follows:

Vegetated Wetlands: To provide mitigation for 7,635 SF of permanent impact to Vegetated Wetlands (palustrine shrub-dominated wetland along the floodplain of Schenob Brook), construction of a 9,117 SF wetland replication is proposed. The replication area will provide mitigation at a ratio of approximately 1.2:1 to account for potential failure.

The wetland replication is proposed to be located south of the bridge, south of ~STA 104+40 +/- RT, in the adjacent field area southeast of wetland flags WF#C-1 through WF#C-5.

Areas proximate to the Vegetated Wetlands impact area to the immediate north and south of the bridge crossing were evaluated for wetland replication feasibility, including the goal of minimizing tree clearing required to construct the replication area. The town indicated that the abutters of the northeast quadrant were in the process of submitting a building application. To avoid adversely impacting their potential use of property, this quadrant was not chosen. The southeast quadrant was investigated but due to crane laydown and potential soil compaction caused by construction activity, this quadrant was not chosen. No off-site locations were determined to be available or feasible for a replication area proximate to the impact area. The proposed location was selected as the best available option for wetland replication because (1) it is immediately adjacent to the

Vegetated Wetlands bordering Schenob Brook and (2) it is an open field requiring minimal disturbance of exiting vegetation.

The proposed replication will be constructed with the following features, as specified on the Plans:

- The proposed replication final base elevation is 675 feet, with microtopography up to plus or minus six inches from the base elevation. This design elevation is approximately 12 inches below the adjacent wetland boundary elevation.
- The area will be subgraded to allow for 12 inches of backfill with wetland topsoil.
- The replication area will be planted with thirty-six specimens of three wetland shrub species: silky dogwood (*Cornus amomum*), gray dogwood (*Cornus racemosa*), and speckled alder (*Alnus incana*). These species will be planted in twelve clusters with three plantings per cluster. The entire area will also be seeded with a wetland seed mix.

WOTUS: Impacted existing WOTUS will be restored and an additional 780 SF of WOTUS will be constructed, with natural substrate placed over any necessary scour protection. The additional WOTUS area is due to the widening of the bridge opening from approximately 20 feet to 65 feet. WOTUS will be restored and new areas will be developed with the construction of a 12" layer of Streambed/Bank Restoration material (Item 983.521) between the two proposed bridge abutments.

Bank: A Streambed/Bank Restoration specification (Item 983.521) is provided in Attachment A. Roadway embankments approaching the bridge will be restored using riprap with a 12" layer of Streambed/Bank Restoration material (Item 983.521) on top. Riprap is necessary to protect and stabilize the slopes of the roadway embankment due to flooding events that may overtop the roadway. If any invasive species are to be impacted during construction, they shall be handled and disposed of in accordance with the following specifications: Herbicide Treatment of Invasive Plants (Item 102.3) and Invasive Plant Management Strategy (Item 102.33). Fill materials brought onsite or transported within the site would be free of invasive species or treated in accordance with the above noted specifications to prevent the spread of such species.

7. Sedimentation Control

Measures will be taken to minimize sedimentation/siltation into the resource areas, Schenob Brook, and the surrounding community during construction activities. Implementation of

accepted and usual methods of sedimentation erosion control will be used at the site during all phases of construction. The perimeter erosion controls will also serve to demarcate the limits of work.

The sediment control barrier installations will be checked daily for any degradation or failures in the barrier. These will either be repaired or restored with new sediment control barriers. The Contractor will be required to maintain adequate stocks of sediment control barriers onsite to affect immediate repairs. These barriers may include compost filter tubes and silt fencing.

These erosion control devices/ methods will remain in place/use until all disturbed surfaces have stabilized. Additional control measures will be employed as necessary. All silt collected behind the erosion controls shall be removed before such measures are removed.

8. Dewatering

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream flow will be maintained throughout construction; however, the opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas.

The dewatered area inside the temporary sheeting and sandbag cofferdam are classified as temporary impacts as summarized above.

9. Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools

An online review of the NHESP using the MassGIS MassMapper revealed that the project site is located within Priority Habitats of Rare Species PH 860 and Estimated Habitats of

Rare Wildlife EH 674, an ACEC designated as the Schenob Brook Drainage Basin, and the Schenob Brook is designated as a Coldwater Fishery. However, the current project limits aren't within certified/potential vernal pools, an ORW, or an Essential Fish Habitat. See **Attachment C**. In coordination with MassDOT, NHESP received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed reptile. A Turtle Protection Plan is found in **Attachment G**.

According to an Information for Planning and Consultation (IPaC) inquiry for the area on August 22nd 2025, the following species were listed as follows; the Northern Long-eared Bat, *Myotis septentrionalis* is endangered, the Tricolored Bat, *Perimyotis subflavus* is proposed endangered, the Bog Turtle, *Glyptemys muhlenbergii* is threatened, and the Monarch Butterfly, *Danaus Plexippus* as proposed threatened. A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS.

10. Massachusetts Stream Crossing Performance Standards

1. *Type of Crossing- Spans and/or Open Bottom Preferred*
   The bridge replacement will be an open bottom structure. This qualifies as "optimum" for the Type of Crossing under the Massachusetts Stream Crossing Standards (SCS)
2. *Embedment*
   a. *All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%;*
      This project is a bridge replacement project with an open clear span, and therefore, this standard does not apply.
   b. *If pipe culverts cannot be embedded this deep, then they should not be used;*
      N/A- no pipe is proposed.
   c. *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 bridge abutments will be embedded approximately 3.36 feet below the streambed and aren't under riprap or crushed stone. The hydraulic study detailing

scour protection design is attached to this application. Scour protection design was based on the standards set forth in the MassDOT LRFD Bridge Manual.

3. *Crossing Span- Span is a minimum of 1.2 times the bankfull width of the stream.*
   A minimum span of 50.4' is necessary to meet 1.2 bankfull (42'). The proposed crossing span is 66.98'. 66.98/42 = 1.59, which exceeds the minimum 1.2 ratio. The roadway will be overtopped during the design and base flood events, see the attached hydraulic study.
4. *Openness Ratio*
   a. *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;*
      The proposed openness ratio is 335.2 SF/ 16.56 LF = 20.24 feet, which exceeds the minimum 0.82 feet.
   b. *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);*
      The proposed crossing meets the optimum standards of exceeding 6' in height (6.1' proposed) and 1.64 feet openness ratio (20.24 feet proposed).
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 dis-placement during floods and maintain an appropriate bottom during normal flows.*
   The proposed natural substrate will be salvaged from excavations below the existing bridge (historical streambed) and be re-used for the disturbed and proposed substrate sections through the bridge channel. Within the widened section of the bridge opening, a 12-inch layer of streambed/bank restoration material will be placed to replicate the natural substrate.
6. *Water Depth and Velocity- Water depths and velocities are comparable to those found in the natural channel at a variety of flows.*
   Hydraulic modeling of the proposed crossing indicates that velocities and water surface elevations better match the downstream natural channel values. This is the result of "opening up" the crossing cross-section.

11. Alternatives Analysis

Alternatives for the project include the "No-Build Alternative". The project involves the replacement of a structurally deficient bridge that has been posted for reduced vehicular traffic loads. The No-Build Alternative does not meet the purpose and need requirements of

the project and would result in continued deterioration of the structure. Therefore, this alternative was not selected as the preferred alternative.

Based on the need to replace the bridge structure, various bridge superstructure and substructure alternatives were considered. The proposed bridge type was determined to include four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls.

The existing roadway alignment and cross-section will be maintained, consisting of a 13' wide, unpaved travel lane on the roadway approaches (the bridge structure will have an asphalt riding surface). Beyond the edge of the roadway, 2-foot wide usable shoulder areas are proposed to provide safety and operational improvements such as lateral support of the pavement, reduced sedimentation that may result from country drainage, and support emergency stopping and errant vehicles. There are no sidewalks proposed along the bridge or approach roadways. Further widening of the roadway and bridge section was not considered due to the impacts this would have on the right-of-way and adjacent resource areas.

In terms of bridge construction, full road closure was considered but decided against as it would interfere with emergency vehicle access and response time. Nearby properties adjacent to the site would be negatively impacted if through traffic was closed off. The use of retaining walls to aid in lessening the amount of grading were considered as well. It was decided against as the excavation to install the foundations for these walls would extend to similar or further distances then the current "toe of slope", ultimately causing more impacts.

Several alternatives were evaluated using the proposed bridge type and roadway alignment/cross-section summarized above. These alternatives focused on opportunities that would minimize impacts to the adjacent wetland resource areas and existing right-of-way. These alternatives are summarized as follows:

<u>Alternative #1 – Bridge Replacement with Spread Footing</u>

This alternative considered the use of shallow spread footings for the new bridge abutments. Based on the Preliminary Hydraulic Analysis, it was determined that the potential scour depth would require full width countermeasure protection (i.e. riprap) from abutment to abutment with the top of footing located below the countermeasure apron. Because of the pressure scour issues and the impacts to WOTUS that would be associated with the added countermeasures across the width of Schenob Brook, this alternative was not deemed to be desirable.

Alternative #2 – Bridge Replacement with Deep Foundations (Preferred Alternative)

The Preliminary Hydraulic Analysis indicates that the proposed bridge design will result in contraction scour depth of approximately 3.36 feet from the bottom of the streambed. Under this alternative, the streambed between the existing abutments would be retained and would not be disturbed. The widened section of Schenob Brook (created by the increased bridge span length) would be graded with Streambed/Bank Restoration material (Item 983.521) in an effort to replicate the existing streambed conditions. The recommendation under this alternative was to provide a proposed substructure consisting of full height bridge abutments on deep pile foundations extending below the scour depth. With the pile supported foundation designed for foundation supports located below the scour depth, the Hydraulic Analysis suggests that Riprap Scour Protection within the channel is not warranted. Eliminating the riprap scour protection within the channel would reduce the permanent WOTUS impacts by 1,442 square feet, relative to Alternative #1. Based on this reduction to the WOTUS impacts and the improved scour countermeasures for the bridge structure, Alternative #2 was deemed to be the preferred alternative.

Alternative #3 – Bridge Replacement with Brook Realignment

Realigning a section of Schenob Brook north of Kelsey Road to provide a more natural flow alignment and reduce potential for erosion and bank scour beyond the limits of the bridge was investigated. It was agreed that this was not required hydraulically as the brook will realign naturally (to allow for free sediment transport). This work is not directly linked to the purpose and need of this project and could be eliminated. Eliminating this work would reduce the overall wetland impacts by 5,567 square feet for Vegetated Wetlands and 4,153 square feet for WOTUS.

12. Conclusion

The project proposes to replace the existing structurally deficient bridge along Kelsey Road in Town of Sheffield, MA. As part of project activities, there are impacts to jurisdictional wetland resource areas. Permanent and temporary impacts to Vegetated Wetlands total 7,635 square feet and 14,163 square feet. Permanent and temporary impacts to WOTUS total 38 square feet and 292 square feet. Permanent and temporary impacts to Bank total 182 linear feet and 75 linear feet. A portion of the permanent impacts include the dredging required for the reconstruction of the new bridge. Approximately 9 cubic yards of dredging is proposed.

PRE-CONSTRUCTION NOTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

Although there are impacts within resource areas, the applicant respectfully requests that MassDEP and the United States Army Corps of Engineers find these measures adequately protective of the interests identified under Section 401 and 404 of the Clean Water Act Regulations and issue a 401 WQC and 404 PCN under the NWPs approving the work shown on the accompanying plan set.

13. Environmental Related Specifications to be Included into the Contract

- Herbicide Treatment of Invasive Plants
- Invasive Plant Management Strategy
- Turtle Exclusion Barrier
- Floating Turbidity Barrier
- Geotextile Fabric For Stabilization & Separation
- Compost Blanket
- 755.35 Inland Wetland Replication Area
- 755.45 Wetland Restoration
- Wetland Specialist
- Wetland Monitoring Reports
- 756.1 Construction Pollution Prevention Plan
- Wetland Seasonally Flooded Mix
- Native Seeding and Establishment
- Sediment Barrier – Coir Log
- Timber Matting
- 983.521 Streambed & Bank Restoration
- Control of Water – Structure No. S-10-015
- Temporary Protective Shielding

Attachment A
Environmental Related Specifications

ENVIRONMENTAL PERMITTING

The proposed work occurs in jurisdictional wetland resources subject to Section 401 and Section 404 of the Clean Water Act; therefore, a Water Quality Certification from the Massachusetts Department of Environmental Protection and 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 obtained allowing such work. The Contractor must notify the District 1 Highway Director and Resident Engineer in writing at least 60 days prior to the desired commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 1 Environmental Engineer.

The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN

This heading specifies the requirements of the Natural Heritage and Endangered Species Program (NHESP) of the Division of Fisheries and Wildlife (DFW) for projects that occur within high-priority state and federally-protected turtle populations. The requirements consist of installation of a Turtle Exclusion Barrier (Item 670.1), regular sweeps to ensure that turtles are excluded from the work zone, and routine inspections to ensure that the Turtle Exclusion Barrier is functioning as intended. The requirements outlined herein are for the following project: Kelsey Road Bridge Replacement over Schenob Brook in Sheffield, Massachusetts.

The work shall be coordinated with the MassDOT Wildlife Unit Contact (also referred to as the Monitor) and the Engineer. The Monitor shall obtain a Scientific Collection Permit from NHESP prior to the pre-construction Turtle Protection field meeting described below.

The MassDOT Wildlife Unit Contact Information is:

> David Paulson, Wildlife and Endangered Species Unit Supervisor
> David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

Failure to implement the Turtle Protection Plan as specified herein will result in a cease work order and/or violation from NHESP.

CONTRACTOR RESPONSIBILITY AND SCHEDULE OF WORK

Pre-construction Turtle Protection Meeting

The Contractor shall schedule and attend a Turtle Protection Meeting in the field with the Engineer and the Monitor, prior to any site disturbance to review the State-listed Turtle Protection Plan. The Contractor shall schedule this meeting at least 60 days in advance of the proposed meeting date.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN (Continued)

During the meeting, the Monitor will provide the Contractor and Engineer with the appropriate state-listed turtle identification and handling pamphlets. The Contractor shall provide the Monitor with the construction schedule.

Immediately following the meeting, the Contractor shall inform, in writing, all construction, landscaping, and other sub-contractors associated with the Project of the likely presence of state-listed turtles on the Property and what measures must be implemented to minimize direct harm to the turtles.

Initial Turtle Sweep

Prior to site clearing, grubbing, earth disturbance, or any other site preparations, the Contractor shall coordinate with the Engineer to have the Monitor sweep the site for turtles, ensuring that vegetation within 200-feet of the stream is surveyed.

Additionally, the Contractor shall coordinate with the Monitor to conduct a sweep of the site prior to any work in water. The Monitor will inspect all areas of land under water where cofferdams are to be installed paying close attention to overhanging banks and to water that contains coarse woody debris.

If in-water work is to occur in separate phases, the Monitor will provide a sweep of the site before each phase, depending on the scope and scheduling of phased work.

Work will stop immediately if turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. Work will not resume until the turtle has left the site on its own accord. In addition, MassDOT will contact USFWS and MassWildlife NHESP within 24 hours if a bog turtle is observed and will send location details and photographs, if possible. If a turtle appears dead, injured, or immobile, all work will stop and the Monitor, USFWS, and MassWildlife NHESP shall be contacted immediately.

Installation of Turtle Exclusion Barrier

Following the initial sweep of the work site, a barrier to prevent turtles from accessing the site shall be installed in accordance with Item 670.1 Turtle Exclusion Barrier (Barrier). This Barrier will also serve as the Limit of Work.

MassDOT Responsibility

Turtle Sweeps

A representative from the MassDOT Wildlife Unit will serve as the Turtle Monitor. Prior to the pre-construction meeting, the Monitor will obtain a Scientific Collection Permit from NHESP to handle state-listed turtles. Prior to site clearing, grubbing, earth disturbance, or site preparations, the Monitor will sweep the site for turtles, ensuring that all vegetation within 200-feet of the stream is surveyed.

Within 48 hours of installing the turtle barrier, the Monitor will inspect the Barrier to ensure it is installed properly. The Monitor may request photos from the Contractor to aid in their review.

STATE AND FEDERALLY-LISTED TURTLE PROTECTION PLAN (Continued)

Additionally, the Monitor will provide a sweep of the site prior to any work in water. The Monitor shall inspect all areas of land under water where cofferdams are to be installed, paying close attention to overhanging banks and in water coarse woody debris. If in-water work is to occur in separate phases, the monitor will provide a sweep of the site before each phase, depending on the scope and scheduling of phased work. In the event of finding an injured turtle, the turtle shall be transported to a suitable veterinarian. In the event of finding a turtle with a radio transmitter, NHESP and the contact on the transmitter will be alerted immediately.

No turtles or other wildlife shall be removed without the approval of a qualified wildlife biologist or the Division except as necessary to receive veterinary treatment in case of harm during construction.

Work will stop immediately if turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. Work will not resume until the turtle has left the site on its own accord. In addition, MassDOT will contact USFWS and MassWildlife NHESP within 24 hours if a bog turtle is observed and will send location details and photographs, if possible.

NHESP Reporting

At the end of the calendar year, the Monitor will provide NHESP with a summary of activities at the construction site. This report will include the number and duration of visits as well as submitting rare species observation forms for all state-listed species encountered. Any rare species encountered will be described in the NHESP Rare Animal/Plan Observation Report with the required supporting materials within 10 days of the observation. No state-listed species may be removed from the project site unless under the direct supervision of the Monitor or the NHESP.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed endangered, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. MassDOT, on behalf of FHWA, submitted a Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key Consultation through Information for Planning and Consultation (IPaC) and generated a May Affect, Not Likely to Adversely Affect (NLAA) determination (see **Document USFWS NLAA**). Subsequently, the project has completed Section 7 consultation under the ESA.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION (Continued)

General AMMs

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including all applicable AMMs. NLEB and TCB information (https://www.fws.gov/midwest/endangered/mammals/nleb/ and https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus) shall be made available to all personnel.
- On July 9, 2024, MassDOT Highway Division Environmental Services conducted a northern long-eared bat summer presence/absence survey, in accordance with the 2024 survey guidelines. The survey did confirm the presence of NLEB and/or TCB. If work is proposed by the Contractor past July 9, 2029, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31**

Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*
- Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
- No tree cutting, trimming, or removal of trees and/or woody vegetation >3-inch in diameter shall be conducted between **April 15 to October 31**
- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and/or TCB, including the **TOY** restriction. If this restriction needs to be waived at any location(s) the Resident Engineer shall send a locus map of the proposed work to MassDOT Highway Division's Environmental Services Section for review and a determination if the restriction can be waived.

Bridge AMMs

- On July 16, 2024, MassDOT Highway Division Environmental Services, conducted a northern long-eared bat bridge/structure bat assessment, in accordance with the USFWS guidelines. The assessment did not find presence of, or evidence of use by bats, and as stated within the guidelines, the assessment is valid for two years. If bridge work is not complete before July 16, 2026, assessment of the bridge for the presence of, or evidence of use by, bats shall be completed by the MassDOT Wildlife Unit prior to continuing bridge work. The Contractor shall notify the MassDOT Wildlife Unit no later than fourteen (14) days prior to July 16, 2026 to provide adequate time for inspection. If bats are found to be present, or, if there is evidence of bat usage, work at the bridge shall not commence until after the MassDOT Wildlife Unit has completed coordination with the US Fish and Wildlife Service to determine the appropriate follow up or mitigation actions.

STATE-LISTED PLANT PROTECTION PLAN

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) has reviewed MassDOT Project 609068 – Kelsey Road bridge replacement over Schenob 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 impacts to state-listed Rare Plants.

The MassDOT Wildlife Unit Contact Information is:

> David Paulson, Wildlife and Endangered Species Unit Supervisor
> David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

Rare Plants occur outside of the Limit of Work on the southwest side of Kelsey Road, between stations 99 and 100 and the western terminus of work. No work or alteration to the soil, surface, or vegetation shall occur outside of the limits of work shown on the site plan, unless otherwise approved in writing by the Engineer, the MassDOT Wildlife Unit Supervisor, and NHESP.

The Contractor shall schedule and attend a Rare Plant Protection Meeting with the Engineer and a representative from the MassDOT Wildlife Unit, before any site disturbance. During this meeting, the Contractor shall provide the MassDOT Wildlife Unit with a construction schedule, and the MassDOT Wildlife Unit will discuss the protection of rare plants. The Contractor shall schedule this meeting at least 60 days in advance of the proposed meeting date.

The MassDOT Wildlife Unit will visually demarcate the rare plants using surveyor's tape, orange construction fencing, or another measure. The avoidance of the rare plants will be inspected periodically by the Engineer and/or representative(s) from the MassDOT Wildlife Unit. Should damage to the rare plants occur, additional rare plant protection and permitting may be required by Contractor as directed by the MassDOT Wildlife Unit and may result in a cease work order and/or violation from NHESP. Encroachments outside the limit of work in proximity to the rare plants shall be immediately reported to the Engineer and MassDOT Wildlife Unit.

NHESP Reporting

Prior to the completion of work, the MassDOT Wildlife Unit will submit written confirmation to NHESP documenting that the rare plants have been avoided and protected through containment of construction activities within the limit of work. The contractor shall provide photos or written documentation upon request to the MassDOT Wildlife Unit.

ITEM 102.3 HERBICIDE TREATMENT OF INVASIVE PLANTS HOUR

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be written and submitted per Item 102.33 Invasive Plant Management Strategy and shall be measured and paid for under that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

Date and time stamped photos indicating start and stop time of work must be submitted if requested.

This item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor’s responsibility and at the Contractor’s expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this item shall be as determined in the field per the site walk and as specified in the IPMS.

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): “non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems.”

ITEM 102.3 (Continued)

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: XXXXX.XXXX@dot.state.ma.us.

QUALIFICATIONS

The applicators shall submit and meet the qualifications outlined below. A list of contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
   a. Narrative describing company, its expertise and experience with invasive plant control.
   b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
   c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
   a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
   b. At least one or more applicator must have a ROW certification, if required for work.
   c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all contractor crew leaders working on the project.
   d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
   a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.
   b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
   c. Photo documentation of these projects.
   d. GPS coordinates of project locations, if available.

4. Crew leader must have expertise with invasive plant control and provide the following:
   a. Have held Core license for at least five (5) years.

ITEM 102.3 (Continued)

b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

SUBMITTALS

No work shall begin without approval of the submittals.

Submittals include the following items:

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer and the MassDOT Landscape Architect a completed and signed MassDOT Herbicide Use Report.

Photo Documentation

Digital photos with date and time of herbicide application work, showing start time and completion time, are required and must be submitted for measurement of payment upon request.

MATERIALS

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on herbicide proposed and shall be per the manufacturer's label for specific application.

METHODS

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33 Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

ITEM 102.3 (Continued)

Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. Vegetation damaged shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

ITEM 102.3 (Continued)

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this item.

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

MEASURE OF SUCCESS

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the Hour of verified crew time spent on the project doing herbicide application as and where specified herein and in the IPMS. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon verified time spent on the project doing herbicide application as and where specified in the IPMS and upon receipt and approval of submittals. Payment will not include travel time to and from the Contractor's place of business and nor time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR

This item consists of providing an Invasive Plant Management Strategy (IPMS) for the control of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. Unless otherwise approved, the IPMS shall be submitted in the form of the MassDOT Invasive Plant Management Strategy Report Form.

The IPMS shall be submitted for review and approval by the MassDOT Landscape Design Section or their representative, and the IPMS shall be implemented on-site.

The Invasive Plant Management Strategy Report Form is available online at https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individual attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

QUALIFICATIONS

Individual shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

SUBMITTALS

Task Summary & Reports

For measurement of payment, the contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, submittal of an approved IPMS, and if requested to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the site inspection walk when an Interim or Final Report has been requested.

ITEM 102.33 (Continued)

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, the contractor shall submit the IPMS for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Prime Contractor and the Engineer and shall include the following as appropriate and applicable to the project and to the IPMS Report Form questions and Guidance:

I. Project Information

a. Company writing the IPMS and performing the herbicide application.
b. Date of site walk
c. Attendees at site walk
d. Expected end date of contract and expected last treatment (month/season)

II. Brief Description of Conditions

a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

III. Coordination with Roadway Contractor regarding other work

a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
d. Mowing: If coordination is required with state mowers, note need in IPMS.

IV. Soil Management

a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off-site and if so, where?).
b. Show stockpile locations on plan and include treatment schedule.
c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

V. Invasive Plant Treatment & Management

a. Proposed chemical and methods of treatment for each species or area.
b. Time of treatment based on target plant species.
c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.

ITEM 102.33 (Continued)

e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.
f. Expected follow-up treatment for duration of contract.

VI. Monitoring Schedule if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this item, in which case, the contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos of site conditions, typical species, and extent of infestation must be provided with the IPMS and with any follow-up monitoring or reporting. Photos of follow-up monitoring and reporting must be date and time stamped for acceptance.

METHODS

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted. Interim Reports must include time and date stamped photos showing treated locations and species.

ITEM 102.33 (Continued)

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved. Final reports submittal must include time and date stamped photos.

METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the Hour. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal and acceptance of submittals and photos described above.

BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work. Payment shall not include travel time to and from the Contractor's place of business.

ITEM 670.1 TURTLE EXCLUSION BARRIER FOOT

The work under this Item shall conform to the relevant provisions of Subsection 670 of the Standard Specifications and the following:

The work under this Item consists of furnishing, installation, maintenance, removing and resetting, and final removal of a physical barrier to exclude turtles from accessing the construction work zone as shown on the plans or as required by the Engineer. This Turtle Exclusion Barrier will also serve as the Limit of Work beyond which no disturbance or construction activities may occur.

The work and scheduling shall be coordinated with the Turtle Protection Plan.

SCHEDULE OF INSTALLATION

The Barrier shall be installed after the Pre-construction Turtle Protection Meeting and the initial turtle sweep which shall occur prior to any site disturbance (see Turtle Protection Plan). The turtle sweep, which shall be conducted by an approved MassDOT Monitor, is described under the Turtle Protection Plan.

CONSTRUCTION METHODS

The Barrier shall be installed where shown on the Turtle Barrier Location Plan. Final placement will be required to adjust to field conditions as approved by the Engineer and the Monitor.

Signage noting the Limit of Work shall be installed in the four quadrants of the work zone as shown on the Turtle Barrier Location Plan or as required by the Monitor. Signs shall conform to the Limit of Work sign shown in the Details.

The fencing used for the Turtle Exclusion Barrier may be combined with sediment barriers (i.e., compost filter tubes or coir logs). However, the placement of the Turtle Exclusion Barrier shall be as needed to prevent turtles from accessing the site. Placement of sediment barriers shall be as required for the purposes of sediment control and shall be located as shown on the erosion and sedimentation control plans or as required for site conditions. The locations may be the same provided the intended functions of both types of barriers are met, and the sediment barriers are placed on the interior (construction side) of the Barrier. Compost filter tubes and coir logs installed solely for the purpose of sediment control need not include sediment fence unless directed by the Engineer.

Installation

Within 48 hours of installation, the MassDOT Monitor will inspect the Barrier to ensure it is installed properly. If requested, the Contractor shall provide photos of the installed barrier.

Installation of the fencing used to create the barrier shall be such that it results in minimal ground disturbance (i.e., hand-dug, mechanical trencher, or auger).

ITEM 670.1 (Continued)

The above-ground height of the fencing after installation must be at least 2.5 feet and the fence must be trenched a minimum of 4 inches into the ground. The trench should be backfilled with soil and compacted. If it is not possible to trench in the fence, the bottom of must be affixed to the surface using methods approved by the Monitor.

The barrier must connect, without gaps, to any proposed water control structures such as cofferdams or sandbags to prevent turtles from entering the work zone.

To the extent feasible when the road is closed to traffic during construction, the barrier perimeter shall be limited to a single entrance at each end of the project to allow vehicles to access the construction area. These entrances must be closed each night during the turtle active season (March 15 – October 31) with either a gate and/or sedimentation fencing. If using sedimentation fence, the fence must be affixed to the ground with sandbags, wood posts or other approved methods. If using a gate, the Contractor shall securely block the gap between the ground and the bottom of the gate so that turtles cannot enter the work area through this gap. The method used to block the gap shall be approved by the Monitor.

Immediately following Barrier installation, the Contractor shall notify the Monitor so that the Monitor can confirm proper installation of it within 48 hours. The Monitor may request photos from the Contractor to aid in their review.

Turtle Sweep and Inspection Schedule

The Contractor shall provide a two-week notice prior to requesting all required sweeps and inspections. Any changes to the construction schedule that will affect timing of the turtle sweep must be communicated to the Monitor immediately. At a minimum, the following sweeps and inspections will be required:

- Initial sweep prior to vegetation clearing and before the Barrier has been installed
- Within 48 hours after the Barrier has been installed to approve the installation
- Prior to any initial in-water staging or construction (i.e., cofferdam installation)
- Prior to any secondary phase of in-water work, and thereafter, if needed.
- If new staging, access, or areas of work are required for construction that are not shown on the Turtle Exclusion Barrier Plan, the areas must be swept and Barrier installed.

The Contractor is responsible for ensuring that the Monitor is contacted and that these areas meet the requirements of Turtle Protection Plan. It is the Contractors responsibility to notify and coordinate with the Monitor in a timely manner to avoid construction delays. Work described above cannot occur until after each turtle sweep is complete.

ITEM 670.1 (Continued)

Weekly Barrier Inspection

Once per week, the Engineer will inspect the Barrier and direct the Contractor to make any necessary repairs or alterations. The Barrier must be kept taut between stakes and any gaps along the bottom must be immediately repaired. Repairs to the barrier must be made within 24 hours of notice. Failure to maintain an effective Barrier will result in a cease work order and/or violation from NHESP.

Daily Turtle Sweep Requirements

When the road remains open to traffic during construction, the Engineer will provide a sweep of the site prior to each workday and relocate any turtles to suitable habitat outside of the Barrier as identified during the pre-construction meeting. In the event a state-listed turtle is discovered on site, the Contractor and/or Engineer must contact the Monitor.

No turtles or other wildlife shall be removed without the approval of a qualified wildlife biologist or the Division except as necessary to receive veterinary treatment in case of harm during construction.

METHOD OF MEASUREMENT

Item 670.1 will be measured for payment by the Foot of turtle exclusion barrier installed, complete in place. Measurements will be taken along the top of the Barrier. Overlaps shall be measured as a single layer.

BASIS OF PAYMENT

Item 670.1 will be paid for at the Contract unit price per Foot, which price shall include all labor, materials, equipment, installation, inspection, maintenance, removing and resetting, signs, signs installation, and all incidental costs required to complete the work.

Payments will be made according to the following schedule:

- Payment of forty (40) % of this pay Item will be paid upon accepted installation of turtle exclusion barrier.
- The remaining sixty (60) % of this pay Item will be paid when turtle exclusion barrier have been maintained as specified, for the intended duration, removed and disposed of off-site at the completion of the turtle exclusion period.

ITEM 679.3 FLOATING TURBIDITY BARRIER FOOT

DESCRIPTION

Work under this item includes the furnishing, installing, maintaining and removal of temporary floating turbidity barrier (FTB) as specified herein and shown on the drawings. Regular inspection of the barrier and removal and disposal of accumulated sediment is also included in this item.

Warranty
Provide copies of the manufacturer's warranty for the floating turbidity barrier.

Submittals
Prior to start of work, the Contractor shall submit to the Engineer, copies of manufacturer's data for all materials to be used in the floating turbidity barrier and recommended procedures for installation, maintenance and removal.

MATERIALS

The floating turbidity barrier shall be designed to prevent particulate materials from leaving the immediate area of construction in the water. The FTB shall be a continuous barrier within the limits indicated and shall be designed to operate in both standing water and low water flow conditions. The barrier shall extend from the water surface to the bottom of the waterbody in the indicated locations. Height of barrier shall be calculated based on a water surface elevation of ordinary high water.

The FTB and floatation materials shall be high visibility in color. Barrier material, flotation devices and bottom weighting system shall all be from the same manufacturer and shall be of a type appropriate for the application.

Sufficient flotation and bottom weighting shall be provided to maintain the proper function of the FTB. The FTB shall also be able to be anchored in place as needed to prevent excessive movement or system failure due to water flow during storm conditions.

CONSTRUCTION METHODS

General
The floating turbidity barrier shall be installed according to the manufacturer's listed procedures and recommendations or as directed. Turbidity Barrier shall be installed as indicated on the Drawings and prior to the start of excavation and filling area. The FTB shall be installed prior to other work in water occurring. Care shall be taken not to disturb or displace surface material or other particulate matter prior to, or during, the installation of the FTB.

ITEM 679.3 (Continued)

Maintenance

The FTB shall be inspected daily to verify proper operation during active construction in or near the water and also following any rain event where over ½" of rainfall occurs. Any displacement of the FTB shall be corrected and any damage to the FTB shall be repaired prior to work in the water resuming.

Removal

Erosion and Turbidity control devices shall be maintained until all disturbed earth has been paved or vegetated, or interim work is completed at which time they shall be removed upon approval of the Engineer. Care shall be taken not to allow any accumulated sediments to become suspended in the water column during the removal process. Accumulated sediments shall be removed and disposed and any sediment that becomes suspended in the water column shall be allowed to settle prior to removal of the FTB.

METHOD OF MEASUREMENT

Item 679.3, will be measured by the Foot installed, along the top of the flotation system, regardless of depth of barrier.

BASIS OF PAYMENT

Item 679.3 will be paid at the Contract unit bid price per Foot which price shall be full compensation for all labor, materials, and incidentals necessary to complete the work specified above.

Following installation of the floating turbidity barrier, 75% of the contract value will be paid. The balance will be paid following removal of all accumulated sediments and removal of the FTB.

ITEM 698.1 GEOTEXTILE FABRIC FOR STABILIZATION SQUARE YARD
ITEM 698.3 GEOTEXTILE FABRIC FOR SEPARATION SQUARE YARD

The work performed under these items shall consist of furnishing and installing geotextile fabric to the limits shown on the Plans and as required by the Engineer.

MATERIALS

The geotextile fabric used shall be selected from the MassDOT Qualified Construction Materials List at https://www.mass.gov/service-details/qualified-construction-materials-list.

The geotextile fabric shall conform to the requirements of Subsection M9.50.0 of the Standard Specifications and AASHTO M 288 for the intended use.

CONSTRUCTION

Construction and installation of all geotextile fabric shall be in accordance with AASHTO M 288 including Appendix A, and the following;

Atmospheric exposure of the geotextile fabric to the elements following lay down shall be a maximum of 14 days. If laid under water, the covering crushed stone or riprap shall be placed on the same day as the geotextile fabric.

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 intimate 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 the geotextile.

Adjacent geotextile sheets shall be joined by either sewing of 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 in 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 698.1 to 698.3 (Continued)

When stone or riprap is placed over Geotextile Fabric for Separation, the stone placement shall begin at the toe of slope and proceed up the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the geotextile. Crushed stone shall not be dropped from a height exceeding 3 feet.

Field monitoring shall be performed to verify that the crushed stone or riprap placement does not damage the geotextile. Any geotextile damaged during backfill placement shall be replaced as required by the Engineer, at the Contractor's expense.

The Contractor shall take care not to allow more than two weeks of exposure to direct sunlight. Fabric rolls shall not be dropped more than two (2) feet.

METHOD OF MEASUREMENT

The quantity for this Item shall be measured by the SQUARE YARD of actual geotextile fabric installed and accepted by the Engineer.

BASIS OF PAYMENT

This Item shall be paid for at the contact bid price per SQUARE YARD, which price shall include full compensation for all labor, materials, tools, equipment, removals, disposal, health and safety, and incidentals necessary to complete the work as described herein and/or as directed by the Engineer.

ITEM 751.7 COMPOST BLANKET CUBIC YARD

The work under this Item shall conform to the relevant provisions of Subsection 751 and M1.06.0 Compost of the Standard Specifications and the following:

Work shall consist of furnishing and pneumatically applying compost as a thin mulch blanket (1/2-1 inch depth) over prepared soil to provide temporary soil stabilization and organic matter for plant growth.

SUBMITTALS AND MATERIALS

No materials shall be delivered until the required submittals have been approved by the Engineer. Delivered materials shall match the approved samples. Approval of test results does not constitute final acceptance.

Contractor shall submit to the Engineer samples and certified test results no sooner than 60 days prior to application of compost. Vender certification that material delivered meets the test results shall be submitted if requested.

Compost shall meet the requirements for M1.06.0: Compost, Type 2, as referenced in the MassDOT– Highway Division Standard Specifications for Highways and Bridges, Division III: Materials Specifications, latest edition.

The Engineer shall approve the Contractor's equipment for application.

CONSTRUCTION METHODS

Application of compost material shall not begin until the Engineer has approved the site and soil conditions. Soil preparation shall be as specified under the applicable item for soil placement or for seeding. The Contractor shall notify the Engineer when areas are ready for inspection and application of compost.

Compost blanket shall be pneumatically applied (blown on) to a minimum depth of one half to one inch. Where shown on the plans or when directed by the Engineer depth may be increased to provide berms for sediment control or to otherwise prevent slope erosion.

When compost blanket is proposed with seeding, seed shall be broadcast and shall occur in conjunction with compost blanket, as specified under the relevant item for seeding.

When compost blanket is proposed for areas with planting, compost (and seed if applicable) shall be applied after planting. If compost and seed occur prior to planting, areas shall be regraded and compost and seed reapplied to the satisfaction of the Engineer and at the Contractor’s expense.

ITEM 751.7 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 751.7 will be measured and paid for at the Contract unit price per Cubic Yard which price shall include all labor, materials, equipment, and all incidental costs required to complete the work of pneumatically applying compost.

Surface preparation of substrate receiving compost blanket shall be compensated under the applicable item for placement of loam, sand, ordinary borrow, wetland soil, topsoil rehandled and spread, tilled existing soil, or other specified substrate.

Seeding, if utilized, will be compensated for under the appropriate seeding items.

ITEM 755.35 INLAND WETLAND REPLICATION AREA LUMP SUM

REV. 2022.01.01 (REV. DATE TO BE REMOVED BY MASSDOT CONTRACTS)

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.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: ***105+00 (RT)*** Area = ***9,027*** 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.

ITEM 755.35 (Continued)

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.

SUBMITTALS - MATERIAL

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.

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).

ITEM 755.35 (Continued)

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 GROUNDCOVER, 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 767.122.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to compost blankets, coir logs, 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.

ITEM 755.35 (Continued)

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 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

Seed in the Mitigation Area shall conform to the Item 765.555 – Wetland Part Shade Mix. The side slopes of the wetland replication area shall be revegetated with native seeding in accordance with the requirements if Item 765.635 – Native Seeding and Establishment.

ITEM 755.35 (Continued)

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 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 120.1.

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.

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.

ITEM 755.35 (Continued)

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.

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.

ITEM 755.35 (Continued)

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.

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 GROUNDCOVER of the Division I Standard Specifications and as amended below.

ITEM 755.35 (Continued)

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.

ITEM 755.35 (Continued)

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

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.

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.

ITEM 755.35 (Continued)

- 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.

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.

ITEM 755.35 (Continued)

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.

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, 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 Barrier – Coir Log will be paid under Item 767.122
Wetland Specialist will be paid under Item 755.75
Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

ITEM 755.45 WETLAND RESTORATION SQUARE YARD

DESCRIPTION

The work under this item shall conform to the relevant provisions of Subsections 120, 751, 765, 767, and 771 of the Standard Specifications and the following:

The work under this item shall include all labor and furnishing of materials to complete the work specified herein to protect and restore existing inland wetland areas that will be temporarily impacted as shown on the drawings and as required by the Engineer.

Inland Wetland Replication work shall be as specified and compensated under that item. Tidal wetland mitigation shall be as specified under the appropriate item for tidal wetlands.

Restoration Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers General Permit.

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 Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Completion Certification: If required, Contractor will submit completion certification to the Engineer for distribution to appropriate regulatory agencies as specified below.

ASSOCIATED ITEMS AND MATERIALS

Timber Mat shall be as specified under that item.

Compost shall be in accordance with Subsection 751 and M1.06.0 Organic Soil Additives of the Standard Specifications. Compost shall not contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants. Off-site sources shall be identified and available for inspection 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.

Compost Blanket shall be as specified under that item.

Seed Mix shall be specified under that item.

Required submittals include:

ITEM 755.45 (Continued)

- Certificate of Materials from the supplier shall be submitted and approved 30 days prior to ordering seed. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

- Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

- Bill of lading or a notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Seed mix shall be Mix 765.554 Wetland Seed – Seasonally Flooded, as follows:

	Botanical Name	Common Name	% PLS By Weight
Grass			
	Elymus riparius	Riverbank Wild Rye	20.00%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	12.00%
	Carex lupulina	Hop Sedge	10.00%
	Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	10.00%
	Carex vulpinoidea	Fox Sedge	10.00%
	Carex scoparia	Broom sedge	8.00%
	Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	8.00%
	Panicum virgatum	Switch Grass	8.00%
	Juncus effusus	Soft Rush	2.00%
	Juncus tenuis	Path Rush	1.00%
			89.00%
Herb/Forb			
	Verbena hastata	Blue Vervain	4.00%
	Desmodium canadense	Showy Tick Trefoil	2.00%
	Eupatorium maculatum	Joe-pye Weed	1.00%
	Asclepias incarnata	Swamp Milkweed	1.00%
	Aster novae-angliae	New England Aster	1.00%
	Eupatorium perfoliatum	Boneset	0.70%
	Helenium autumnale	Common Sneezeweed	0.50%
	Aster puniceus	Aster - Swamp	0.50%
	Mimulus ringens	Monkey Flower	0.20%
	Vernonia noveboracensis	New York Ironweed	0.10%
			11.00%
			100.00%

ITEM 755.45 (Continued)

Apply this mix at 20 lbs PLS/acre.

Fertilizers shall not be used.

Straw mulch or hydromulch shall be per Section M6 of the Standard Specifications.

CONSTRUCTION METHODS & SEQUENCE

Site Protection Prior to Impacts

Prior to any land work, as part of the initial site-walk, the Wetland Specialist shall photo-document the site and provide a summary report of existing conditions as outlined under Item 755.75 Wetland Specialist.

Where and as required vegetation shall be cut flush and area surveyed to establish pre-construction elevations.

Following the cutting and surveying, temporary separation fabric or timber matting shall be placed as required to protect soil and vegetation from compaction, contamination, and/or other damages. Fabric and timber mats shall be placed as specified under the respective items and the Engineer shall approval placement.

Restoration Upon Completion of Roadway Construction Work

Sediment Barriers

If required for sediment control during Restoration work (i.e, tilling is required to restore soil), sediment barriers shall be installed along the downslope perimeter of the Restoration Area beginning and ending in the surrounding upland so that no disturbed soil can enter adjacent wetlands or waters. Sediment barriers shall be in place and approved by the Engineer prior to any soil disturbance. No work shall take place outside the barriers.

Removal of Fill and Grading

Fill and temporary separation fabric or mats shall be removed and disposed of as specified under the respective items.

If required, grades shall be restored to pre-construction elevations as shown in the baseline survey or as required by the Engineer and Wetland Specialist to restore hydrologic functions. Final elevations shall be approved by the Engineer prior to soil preparation and seeding. Grading shall be incidental to this item.

ITEM 755.45 (Continued)

Following approval of grading to elevations required, soil shall be prepared and seeded as follows.

Soil Scarification
Compacted soil shall be scarified with equipment approved by the Engineer. Upon approval of soil scarification, the area shall be seeded with Compost Blanket as specified below. Seeding shall immediately follow soil preparation.

Seeding with Compost Blanket
Application of compost blanket and seed shall be done as one application and shall not begin until the Engineer has approved the site and soil conditions. The Contractor shall notify the Engineer when raked areas are ready for inspection and application of compost blanket and seed.

Compost shall be pneumatically applied (blown on) to a depth of one half to one inch at the same time that seed is broadcast such that seed is covered by a light application of compost.

When planting occurs on projects with compost blankets and seed application, planting shall occur prior to application of compost and seed. Otherwise, compost and seed shall be re-applied to the satisfaction of the Engineer and at not cost to the contract.

Seed tags shall be submitted at time of seeding.

SEED ESTABLISHMENT

Seeding that fails to establish according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland restoration work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist (if applicable to project) demonstrating that the wetland restoration work was done according to plans (or how modified) and meets required permit conditions (if applicable). The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Restoration Area and the surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

ITEM 755.45 (Continued)

- The target elevations have been restored per the survey or adjusted per the Engineer. Areas that are too high or too low should be identified along with suggested corrective measures.
- Soil compaction has been mitigated.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- Hydrology meets performance standards and has been adequately restored.
- Specified seed mix has been seeded and seeded species in the wetland and adjacent upland show signs of good germination and healthy growth.
- There are no invasive plants visible in the restored wetland area.
- Any linear temporary erosion controls have been removed.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Restoration work is not approved, MassDOT will issue a rejection letter requiring corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Wetland Specialist and regulatory representative (if required) shall assess the Restoration Area. Final Acceptance will initiate the start of the Monitoring Period (if required).

The following conditions shall be inspected and approved for acceptance and payment:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 100 percent of the restoration area, excluding areas of open water, large boulders or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- There are no visible invasive plants.

If the restoration work is not approved, MassDOT will issue a rejection letter requiring corrective action. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation. Work not approved shall be addressed by the Contractor at no extra cost.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.45 will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, compost and amendments, seed, mulch, equipment, submittals, maintenance, grading, and incidental costs necessary to complete the work as required.

ITEM 755.45 (Continued)

Payment shall be as follows:

- 50% upon completion of soil preparation and seeding
- 25% upon Conditional Acceptance
- 25% upon Final Acceptance or approval of the Engineer

Excavation of temporary fill will be paid under Item 120
Sediment Barrier – Coir Logs will be paid under Item 767.122
Compost Blanket will be paid under Item 751.7

ITEM 755.75 WETLAND SPECIALIST HOUR

Work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications hereafter referred to as the "Wetland Specialist."

"Wetland Mitigation" shall be used herein for applicable wetland work. For this project, applicable wetland work is for:

Item 755.35 Inland Wetland Replication Area (creation of a new wetland)
Item 755.45 Wetland Restoration

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.

ITEM 755.75 (Continued)

- 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 restoration 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.
- ***Data logger output from Monitoring Wells*** shall be submitted with reports, if reactivation of design wells are determined to be necessary.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance for the Water Quality Certification 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.

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.

ITEM 755.75 (Continued)

- 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 Restoration Measures for Restoration Areas
  - Review and approve methods of soil protection and restoration 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.

Conditional Acceptance

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Restoration areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation items.

ITEM 755.75 (Continued)

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

METHOD OF MEASUREMENT

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and restoration oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time or time spent off-site on reports. 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 permit conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.
- Color photo documentation with photos for each sampling event at each observation plot

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 or as required by permits:

- MassDEP: 2 Reports - (end of year)

BASIS OF PAYMENT AND METHOD OF MEASUREMENT

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:

- Year 1 = 1 Report
- Year 2 = 1 Report

ITEM 756.1 CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN **LUMP SUM**

The work under this item shall consist of the preparation and implementation of a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) as required by a regulatory agency. This Item is applicable to projects that are not subject to the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

The work under this item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the CP/PP.

The CP/PP, at a minimum, shall include the following:

- Project & Site Description
- Project Site Contact Information
    - This shall include the phone number for the Contractor Site Superintendent, Project Manager and CP/PP Inspector(s).
- Qualifications of the CP/PP Inspector and documentation of qualifications
    - At a minimum, relevant personnel responsible for erosion and sedimentation control inspections shall have completed the EPA's construction inspection training course and obtained a certificate confirming completion of the training module, or have completed a third-party stormwater course which covers the minimum topics listed in Part 6.3.b of the CGP.
- Reference to and information to address permit Special Conditions relevant to the CP/PP contents
    - These include but are not limited to Water Quality Certification and Army Corps of Engineers Section 404 Permit.
- Construction Sequencing/Phasing
- Erosion Prevention, Sediment Control, and Best Management Practices (BMP s) to be implemented
- Maintenance measures and intended timeline to address maintenance and corrective actions for implemented Erosion Prevention Measures, Sediment Control Devices, and BMPs
- Anticipated inspection schedule and sample inspection report form
- Use the EPA's Site Inspection Report Template found on the EPA's website.
- Site Plans
    - This shall depict, at minimum, the project limits, locations of construction phase erosion prevention measures, construction phase sedimentation control measures, limits of disturbance, staging and laydown areas, proposed dewatering locations and proposed stockpile locations. Depict existing jurisdictional wetland resource areas, drainage conveyances and stormwater treatment features.

ITEM 756.1 (Continued)

The Contractor shall prepare the CP/PP, and update/revise as needed upon changes in site conditions, relevant project personnel, construction phase controls, schedule changes, revised work, regulations, and construction methodologies. The Contractor shall submit the CP/PP to the Engineer for approval at least thirty (30) days prior to prior to commencement of any project related activity that disturbs land, including clearing and grubbing. Submission of the CP/PP to a regulatory agency for review and approval may also be required by a Special Condition associated with a permit issued under the Wetlands Protection Act, or Section 401of the Clean Water Act and their implementing Regulations. It is the responsibility of the Contractor to ensure the CP/PP is submitted to reviewers in a timely manner to support the construction schedule.

It is the responsibility of the Contractor to comply with the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Army Corps of Engineers Section 404 Permit and other environmental permits applicable to the project, and to include in the CP/PP the methods and means necessary to comply with applicable conditions of said permits.

Inspection frequency shall be:

- Weekly: At least once every 7 calendar days;
- Post-Rain Event: Within 24 hours of the end of a storm event that produces 0.25 inches or greater of rain;
- Daily (During Active Rain): While not always a formal reporting requirement, it is best practice to monitor controls curing extended rain events to prevent catastrophic failure.

The inspections shall be performed by an individual that meets the qualifications specified in the permits and proof of the inspector's qualifications shall be included as an Appendix in the CP/PP. CP/PP inspection reports shall be completed and distributed to the Resident Engineer within 24-hours of each inspection. Special conditions associated with permits may also require submittal of reports to regulators at a certain frequency. Reports shall be maintained throughout the duration of the project. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector.

The Contractor is responsible for preparation of the CP/PP, inspections, and associated reports. The Standard Specifications require adequate erosion and sedimentation control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications, good engineering practices, and MassDOT standard specifications and special provisions. Contractor must maintain all control measures and other protective measures in effective operating conditions in accordance with the additional Special Provisions herein. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department.

ITEM 756.1 (Continued)

BASIS OF PAYMENT AND METHOD OF MEASUREMENT

Item 756.1 will be measured at the contract unit price, lump sum, which shall include all work detailed above, including CP/PP and Flood Contingency Plan preparation, required revisions, revisions/addenda during construction, inspections and reports.

Work under this item shall include acceptable completion of the CP/PP, Flood Contingency Plan, site inspections, and revisions/amendments required during construction. In addition, any erosion prevention or sediment control measures beyond those specified in bid items that are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and execution of the work shall be considered incidental to this item.

Payment of thirty (30) % of the contract price shall be made upon acceptance of the CP/PP and Flood Contingency Plan. Payment of forty (40) % of the contract price shall be made in equal installments over the expected duration of stormwater pollution prevention measures. Payment of the final thirty (30) % of the contract price shall be paid when final stabilization has been achieved (minimum of 75% total cover of disturbed vegetated areas with perennial ground cover).

ITEM 765.554 WETLAND – SEASONALLY FLOODED MIX SQUARE YARD

Work under these items shall consist of furnishing the seed mixes specified below in the required quantity and in accordance with the relevant provisions of Section 765 of the Standard Specifications.

SUBMITTALS

1) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Design Builder shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.

2) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Design Builder shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.

3) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.

4) Seed Tags. The Design Builder shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

   Number of tags submitted must correspond to number of bags delivered.

   Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

   A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

ITEM 765.554 (Continued)

5) Verification of Seed Delivery. Prior to payment, Design Builder shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section

6) Seed Sample. If requested or if seed is from a previously opened bag, the Design Builder may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

SEEDING SEASON

The appropriate seeding seasons are:

Spring: April 1 - May 15
Fall: October 1 - December 1 for dormant seeding

PERMANENT SEED MIXES

Calculating Pure Live Seed (PLS)

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

Seed Mix shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

ITEM 765.554 (Continued)

Mix 765.554 Wetland – Seasonally Flooded Mix

Botanical Name	Common Name	% PLS By Weight
Grass		
Elymus riparius	Riverbank Wild Rye	20.00%
Andropogon gerardii NY Eco	Big Bluestem NY Eco	12.00%
Carex lupulina	Hop Sedge	10.00%
Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	10.00%
Carex vulpinoidea	Fox Sedge	10.00%
Carex scoparia	Broom sedge	8.00%
Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	8.00%
Panicum virgatum	Switch Grass	8.00%
Juncus effusus	Soft Rush	2.00%
Juncus tenuis	Path Rush	1.00%
		89.00%
Herb/Forb		
Verbena hastata	Blue Vervain	4.00%
Desmodium canadense	Showy Tick Trefoil	2.00%
Eupatorium maculatum	Joe-pye Weed	1.00%
Asclepias incarnata	Swamp Milkweed	1.00%
Aster novae-angliae	New England Aster	1.00%
Eupatorium perfoliatum	Boneset	0.70%
Helenium autumnale	Common Sneezeweed	0.50%
Aster puniceus	Aster – Swamp	0.50%
Mimulus ringens	Monkey Flower	0.20%
Vernonia noveboracensis	New York Ironweed	0.10%
		11.00%
		100.00%

Seeding Rate: Species ecotype shall be as native to New England region as possible.
Apply this mix at 20 lbs PLS/acre.

ITEM 765.554 (Continued)

NATIVE SEED WORKSHEET

Project Description: _____ Project No: _____

Contractor: _____ Contract No: _____

Seed Mix Number & Description: _____

Contractor: Complete Prior To Ordering

Pounds of Seed Required Per Contract:

_____lbs./acre for _____Acre(s) OR _____ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

_____**lbs. Total Seed Required**

Calculated Quantity for **P**ure **L**ive **S**eed (PLS[1]):

_____ **Total Pounds PLS**

Engineer: Verification at Time of Application

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).
*[2]Quantity delivered should match pounds **Total Pounds PLS** and **Verification of Seed Delivery**. Pounds should be shown on each Seed Tag.*

ITEM 765.554 (Continued)

SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS

Date_____

We hereby certify that (*Seed Supplier*):_____

Furnished to (*Contractor*): _____

For use on: (*Project Description*) _____

Project #: _____ Contract #: _____

Pounds of Pure Live Seed: _____

Of Mix (*Description*): _____

Lot Number _____

The material was delivered on (*Date*)_____.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): _____ Title: _____

Supplier: _____

Signature and Seal: _____

ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT SQUARE YARD

Work shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications and the following:

The work under this item shall consist of seeding, mowing, and other care to establish a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term "grass" shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

QUALIFICATIONS

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

SEEDING SEASON

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

Seeding season for cover crops shall be grain oats January 1 – July 31 and grain rye August 1 – December 1.

MATERIAL AND SUBMITTALS

Seed Mixes and Submittals shall be per the item(s) for permanent and annual (cover crop) seed mixes.

Compost Blanket, if used, shall meet the material and submittal requirements for that item.

Hydromulch shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

Fertilizer
No fertilizers shall be applied.

ITEM 765.635 (Continued)

Water
Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

SEEDING

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

Surface Preparation

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer’s instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

Seeding over Various Substrates

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Compost Blanket: Compost Blanket shall be applied as specified under that item. Seed should be hand broadcast at the same time as compost application to ensure a thin cover of compost over seed.

ITEM 765.635 (Continued)

When seeding is done after application of Compost Blanket the rate shall be increased by 50%. If the Compost Blanket is applied after December 1, seed shall be broadcast or hydroseeding over the compost in the Spring and the rate increased by 50% specified under Seed Application.

Compost Mulch over Modified Rock: Compost Mulch and seed shall be applied as specified under that item. No hydromulch is required.

Cover Crop

Cover crop shall be used when seeding out of season, when specified with the permanent native seed mix under that item, and as required to prevent erosion until the permanent seed establishes. A cover crop should not be used with a steep slope mix or other permanent mix which already contains either cereal rye or oats in the composition of the mix. A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

Seed Application

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

Broadcast Seeding

Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

Hydroseeding and Hydromulching

Hydroseed and mulching shall be per the manufacturer’s directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

ITEM 765.635 (Continued)

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

CARE DURING GERMINATION AND ESTABLISHMENT

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

MOWING FOR WEED CONTROL

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7th and August 1st, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

ITEM 765.635 (Continued)

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

OVER-SEEDING

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

DETERMINING SATISFACTORY GRASS ESTABLISHMENT

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
  - At least 3 types of permanent seeded grass species shall be visible.
- At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

ITEM 765.635 (Continued)

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance. Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the contractor's expense.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Native Seeding and Establishment will be measured for payment by the square yard, complete in place.

Native Seeding and Establishment will be paid at the Contract unit price by the square yard upon Conditional, Interim, and Final Acceptances as described above. This price shall include all submittals, seeding, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Native seed and cover crop mixes shall be compensated under the respective items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project. If used, Compost Blanket shall be compensated under the respective item.

Mowing for weed control will be incidental to this item.

ITEM 765.635 (Continued)

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

ITEM 767.122 SEDIMENT BARRIER - COIR LOG FOOT

The work under this item shall conform to the relevant provisions of Subsections 101, 120, 170, and 751 of the Standard Specifications and the following:

Sediment Barrier - Coir Log shall be used in wet locations where the barrier will not require removal; when barrier is placed immediately adjacent to existing wetlands; as a check dam in swales; in locations as shown on the Drawings; and/or in locations required by the Engineer.

Permits, Codes and Regulations: The Contractor shall comply with all rules, regulations, laws and ordinances of the City/Town and State, and all other authorities having jurisdiction over the Project site. All labor, materials, equipment, and services necessary to make the work comply with such requirements shall be provided by the Contractor without additional cost to the Department.

MATERIALS

Coir Log: Coir Log shall be biodegradable coir fiber cylindrical bundles. Inner core shall be 100 percent unsorted, well-cleaned, coir fiber uniformly distributed along the length of the log. The stuffed density of the coir fiber shall be a minimum of 9 pounds per cubic foot.

Outer netting shall be constructed from a minimum 3-ply high strength coir bristle twine. The netting shall have 2-inch by 2-inch rhombic openings with hand-knotted junctions. The average breaking strength of the coir twine shall be a minimum of 80 pounds. Production tolerance for all the above parameters shall not exceed plus or minus 10 percent.

Coir log diameter shall be sized as shown on the drawings. Typical lengths are supplied in 10 foot or 20-foot increments. Coir logs or coir netting may not be cut to decrease length and shall maintain the physical properties as supplied by the Manufacturer.

Notched Wood Stakes: Stakes shall be oak or southern pine with dimensions as shown on the Drawings. Stakes shall be free from knots and other defects which would cause splitting and shall have a downward-angled notch as shown in the drawing.

Coconut Fiber Cord: Coconut fiber cord shall be two-ply braided cord with a breaking strength of 80 pounds, minimum 0.25-inch diameter.

Delivery, Storage and Handling: Protect materials from deterioration during delivery and while stored at site.

CONSTRUCTION METHODS

General: Prior to initial placement of the coir log sediment barrier, the Contractor and the Engineer shall review locations specified on the plans and adjust placement, if required, to ensure that the coir log positioning and configuration will provide maximum sediment capture. Coir log sediment barrier(s) shall be in place prior to excavation work and no work shall take place outside the coir log barrier(s).

ITEM 767.122 (Continued)

Installation: Coir logs shall be staked and secured as shown on the Drawings, as specified herein, and/or as recommended by the Manufacturer. The Contractor shall remove all underlying vegetation or debris to ensure that each coir log is securely in contact with soil, such that there is no flow beneath the log.

When used as a check dam barrier in a swale, the coir log shall be centered in the low point of the swale, perpendicular to the flow, with ends extending upslope. The log check dam barrier shall extend such that the log top elevation at the center of the swale is lower than the lowest elevation at the end log, to ensure that sediment-laden runoff will flow either through or over the coir log but not around it. The coir log check dam barrier shall have length such that no seams occur in the swale.

Notched wood stakes shall be driven parallel on both sides of the coir log at a typical spacing of 5 feet on center, unless site conditions warrant a closer spacing distance to ensure logs are firmly secured to the underlying soil. Stakes shall not extend more than 1 foot beyond the top of the log. Coir twine shall lash the logs to notched stakes in a cross-lashing fashion between stakes, throughout the length of the log barrier.

When utilizing multiple logs for sediment control, each coir log shall be laced together end-to-end (creating a seam) with coir twine to create a continuous length. End-to-end lacing may be completed before or after placement, to facilitate handling.

Maintenance: Maintenance of the coir log sediment barrier shall be per the Stormwater Pollution Prevention Plan (SWPPP).

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. The Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract. Under no condition shall sediment be allowed to accumulate more than 4 inches above the original ground line.

If a breach or other failure of the barrier occurs, the barrier shall be immediately restored. Repair shall include replacement of entire defective segments or for short breaches, revetment with additional coir logs, set directly adjacent to the downslope side of the breech. Revetment coir logs must overlap breech by a minimum of 2 feet on each side. The Engineer must approve breech repair means and methods as well as outcome.

If the coir log sediment barrier is damaged by equipment or undergoes a significant washout or other major failure, the Contractor shall replace the component in its entirety, at the discretion and approval of the Engineer. Any delay in maintaining the barrier shall be cause to immediately suspend the work as provided for in Subsection 8.09: Delay and Suspension of Work.

ITEM 767.122 (Continued)

Disposition/Removal: For naturalized areas, coir logs and wooden stakes may be left in place to decompose on-site. For areas where, in the determination of the Engineer, aesthetics are a concern, logs, errant coir fiber material, and stakes may require removal.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.122 Sediment Barrier - Coir Log will be measured for payment by the FOOT, complete in place and will be paid for at the Contract unit price per FOOT, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for coir log(s) follow-up maintenance and repairs, or disposal (if required), but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 767.91 TIMBER MATTING SQUARE YARD

Work under this item shall conform to the plans and the relevant provisions of Section 767 and the following:

Timber Mats shall be used to support construction equipment when operating in wetlands. This item consists of furnishing, placing, maintaining, and removing Timber Matting as specified herein, as shown on the plans, and as required to protect existing soils during construction. Mats shall be within the area shown on the plans as necessary for construction access and staging. Existing soils shall be protected to the extent feasible.

At a minimum, material and methods shall follow Army Corp of Engineers Best Management Practices:
https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/MA/ConstructionMatBMPs.pdf

Relevant permit conditions and approvals shall also be followed.

MATERIALS & SUBMITTALS

Material and methods shall be submitted to the Engineer for approval. Submittal shall include a plan to show the proposed extent of matting, methods of preventing soil or other material from entering the wetland through gaps in the timber, procedure for inspections, method of removal and cleaning, and location of cleaning.

The timber construction mats shall be composed of heavy timbers joined together to form stable platforms installed over the surface of wetlands. Mats shall have all timber and rods intact.

Depending on site specific field conditions at the time of construction, multiple layers of Timber Mats and stringers may be necessary to support heavy equipment and to protect the underlying wetland.

As necessary, sediment control devices such as compost filter tubes shall be placed along edge of the Timber Mats to protect wetlands from sedimentation caused by construction vehicle traffic.

Mats shall be certified clean by the vendor prior to installation. The vendor shall submit proof of compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc.), soil, or other deleterious materials prior to being brought to the project site.

METHOD OF WORK

Prior to placement of mats, existing wetland limits and topography shall be assessed. Vegetation shall be cut flush. Care shall be taken to avoid removal of plant roots and to avoid soil disturbance.

ITEM 767.91 (Continued)

Mats shall be spread evenly and smoothly to ensure direct contact with the soil at all points and placed parallel to the drainage flow direction. To the extent possible, mats shall be placed along the travel area so that individual boards are perpendicular to the direction of traffic. There shall be no gaps between the mats. Mats shall be placed on either side of wetland area to rest on firm ground.

For situations where the Contractor determines that stones or boulders shall be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads, the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull-dozer is not allowed). When there is a significant number of boulders that shall be removed, the Contractor shall consult with the Engineer prior to undertaking the work.

The stockpiling of stone, drill spoils, and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Under this scenario, composite mats and/or other approved methods and materials shall be placed on top of the timber mats to prevent spoils from migrating through the gaps between timbers or spilling over the sides of the matting. The stockpiled spoil shall be removed from the work zone and properly disposed of in uplands approved by the Engineer or hauled off site for proper disposal. Material that falls into or otherwise enters the wetlands shall be removed by hand following removal of the mats.

Sediment controls and stone or wood chip ramps may be installed to promote a smooth transition to and minimize sediment tracking onto the timber mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions.

Mats shall be placed per the manufacturer's instruction. If requested by the Engineer, method of installation and final placement of mats shall be approved by the Wetland Specialist.

MAINTENANCE

Mats shall be monitored to assure that they are functioning correctly and shall be inspected for any defects or structural problems. Mats covered with soils or construction debris shall be cleaned and the materials removed and disposed of in an upland location. The material should not be scraped and shoveled into the resource area. Mats that become imbedded must be reset or layered to prevent mud from covering them or water passing over them. Worn timber or plywood used as a wearing surface shall be replaced as required and to the satisfaction of the Engineer.

REMOVAL OF MATS

Clean mats after use to remove any invasive plant species seed stock. Cleaning methods may include but are not limited to, shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, sweeping, or exposing the mats to high temperatures. The location and method of cleaning shall be approved by the Engineer.

ITEM 767.122 (Continued)

Upon completion of construction, mats shall be removed. Matting should be removed by "backing" out of the site, removing mats one at a time.

If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions consistent with the surrounding area, by light hand raking or by back-blading with machinery. Deeper ruts shall be graded using available, loose soil from the work area.

Care shall be taken to inspect wetland crossings as each mat is removed to ensure any undesirable materials are properly removed and disposed of off- site.

If determined necessary by the Engineer, to enhance the functions of an altered wetland, a wetland seed mix shall be sown throughout the disturbed areas. In most instances, natural re-vegetation is an appropriate means to re-establish the wetland plant community in lieu of seeding.

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of swamp mats. Once construction mats are removed, wetlands shall be inspected for build-up of sand that may have fallen through swamp mats, therefore care shall be taken to inspect wetland crossings carefully as each mat is removed to ensure sand is properly removed and disposed of off-site.

COMPENSATION

Timber matting will be measured for payment by the square yard, complete in place, maintained and removed. Overlapped matting will not be measured for payment.

Timber matting will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, sediment barriers specific to matting, geotextile, stone, wood chips, cutting of existing vegetation, and incidental costs required to complete the work of installation, maintenance, removal, and restoration of soil and vegetation, if required.

ITEM 983.521 STREAMBED/BANK RESTORATION SQUARE YARD

This work shall consist of restoring the streambed where disturbance takes place in the project area within the limits of work. Work will primarily include furnishing and installing streambed material at the Bridge No. S-10-015 crossing structure and above proposed roadway embankment armoring (i.e. riprap). The streambed restoration beneath the proposed bridge structure and immediately adjacent to Schenob Brook 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 an Environmental Specialist or a Fluvial Geomorphologist (Geomorphologist) to provide review of the final design and on-site assistance during streambed restoration construction to ensure the restoration is constructed 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 the MassDOT Wildlife Unit to set up an initial (virtual or in person) meeting with MassDOT's Environmental Specialist, Geomorphologist, Contractor, and Resident Engineer. The MassDOT Wildlife Unit Contact Information is:

David Paulson, Wildlife and Endangered Species Unit Supervisor
David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

At this meeting, the Environmental Specialist or 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 additional onsite meeting to discuss the streambed restoration with the Environmental Specialist or Geomorphologist and respective parties from MassDOT. The Environmental Specialist or Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Environmental Specialist or 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.

MATERIAL

The streambed/bank construction material is to be placed along the limits of the proposed Schenob Brook channel in the area beneath the proposed bridge span and along the side slopes adjacent to the proposed bridge wingwalls as shown on the plans.

ITEM 983.521 (Continued)

Additionally, streambed/bank restoration material shall be installed on top of the proposed Riprap along the approach roadway side slope embankments as shown on the plans.

The streambed material shall be comprised of two primary components.

1. Stone 4 inches and under shall meet the following gradation:

Sieve Opening	% Passing (by Mass)
4”	95
2”	55 – 65
¾”	30 – 45
#4	0 - 5

2. Stone 6 inches to 2.5 feet in diameter:

Stone Size	% Passing (by Mass)
2.0’	80
1.5’	25
0.5’	0

The streambed/bank stone for all two components shall be native cobbles and boulders similar in shape and size of the streambed/bank stone adjacent to the work area. Partially angular rock is preferred over round, and shall be able to lock together to prevent movement during high flows. Crushed Stone will not be acceptable for any of the components. The elevations and conditions of the existing streambed shall be maintained to the maximum extent practicable.

CONSTRUCTION METHODS

Streambed

Components One and Two shall be pre-blended outside the project area at a volume ratio of 30% and 70% respectively. The pre-blending shall be done in a way that will prevent the mass from being contaminated by work-place soils. The final streambed shape and appearance between the bridge abutments shall be finalized in the field as directed by the Environmental Specialist or Geomorphologist.

The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

Roadway Side Slope Embankment

Where installed over riprap, the pre-blended mass shall be placed in a manner to fill / choke 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.

ITEM 983.521 (Continued)

Completion

Once all material has been placed in the stream channel and approved by the Environmental Specialist or 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 organisms following construction. Terrestrial wildlife must be able to walk along the riverbank.

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 Environmental Specialist or Geomorphologist.

METHOD OF MEASUREMENT

Streambed/Bank Restoration will be measured for payment per square yard of Natural Substrate material complete and in place.

BASIS OF PAYMENT

The work to be done under this item shall be paid for at the Contract Unit Price per Square Yard which Contract unit price bid shall be considered full compensation for all labor, tools, equipment, and materials necessary to rebuild the streambed.

The Environmental Specialist or Geomorphologist will be provided by MassDOT at no cost to the Contractor.

ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2) LUMP SUM

The work to be performed under this Item shall be in accordance with Section 140.60.C, 140.60.E, and as specified herein. Work under this Item shall include all cofferdams, pumping, sandbagging, barriers, earth and other measures, necessary for sufficient water control to accomplish the removal and replacement of Bridge No. S-10-015, including wingwalls, foundations, and streambed/bank restoration in the dry. Work under this Item shall consist of dewatering within the bridge work limits as shown on the plans to facilitate the reconstruction of the bridge, wingwalls, and streambed/bank restoration. Water within the work area shall be discharged as specified in the contract documents, environmental permits obtained for this project, and as directed by the Engineer. No direct discharge will be allowed into Schenob Brook or adjacent wetland resource areas during the dewatering operations. Dewatering shall be conducted to ensure that all structural concrete is placed and cured in the dry. For demolition purposes, dewatering shall be conducted for portions of the existing bridge as determined by the Engineer. It is the responsibility of the Contractor to determine the need and extent of dewatering required; identify sedimentation and dewatering techniques and controls to be utilized; and submit method and materials he/she proposes to use for approval by the Engineer.

The handling of flood flows and the protection of existing structures, and any or all of the finished construction during high water, are included in the scope of work under this item.

Plans and calculations for all the sheeting, sandbagging, dikes, and other water control measures, including pumping, shall be developed by the Contractor. These plans and calculations shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted for approval prior to the start of construction. The Contractor shall use such equipment and shall perform the operations in such a manner that disturbances of the soil in the foundation areas will be prevented. The Contractor shall keep the excavated areas dry by such means that the water will be prevented from entering from the adjacent soils and adversely affecting the stability of the foundation material or supporting soils.

The Contractor shall investigate and verify existing river flow/elevation conditions, and evaluate the need for protection during construction and the type of temporary measures required. Before commencing construction, the Contractor shall furnish the Engineer with the plan and methods he/she proposes to use for work within or adjacent to the river including details for cofferdams and pumping as needed to accomplish the work within these areas. The Contractor may use sandbags, barriers, or other types of protective facilities as approved by the Engineer. The furnishings of such plans and methods shall not relieve the Contractor of his responsibility for the safety of the work and for the successful completion of the project.

The height of any cofferdams and/or barriers shall be sufficient to provide reasonable protection from flooding as described on the Contract Plans. All such temporary structures or facilities shall be safely designed, extended to sufficient depth and be of such dimensions and water-tightness to assure construction of the permanent work in the dry. Water control structures shall not interfere with the proper performance of the work. Their construction shall be such as to permit excavation for the permanent work and any conflicts shall be corrected at the sole expense of the Contractor.

ITEM 991.1 (Continued)

Any pumping from within the areas of construction shall be done in such a manner as to prevent the possibility of movement of water through any fresh concrete. No pumping will be permitted during placing of concrete or for a period of 24 hours thereafter, unless it is done from a suitable sump properly located with sufficient pumping capacity to protect against damage from sudden rising of water.

All dewatering and related earthwork shall be conducted in such a manner as to prevent siltation or contamination of the waterway and wetland resource areas. The pumping discharge shall not be allowed to enter directly into Schenob Brook or wetland resource areas. The water from the work areas shall be pumped either to a temporary settling tank, filter bags, or other approved containment structure conforming to the Department's *"Erosion & Sediment Control Field Guide"*. The filtration system shall be constructed to allow for the pumped water to pass through the structure with sediments settling out before outletting to the surrounding area. A temporary containment corral shall be built around the filtration system. The criteria that are implemented for the control of water must meet the following requirements:

1. Approximately 70% sedimentation trapping efficiency shall be achieved with an enclosure adequately sized to prevent overtopping from dewatering and to provide the required filtering.
2. The outlet from the containment structure shall not cause erosion of the surrounding area.
3. Demonstrate that size and type of structure are adequate for the proposed rate of pumping discharge.

The control of water containment structure shall be maintained as follows in accordance with the Department's *"Erosion & Sediment Control Field Guide"*.

Placement of the dewatering containment structure will be as approved by the Engineer based on specific site conditions and staging operations of the Contractor.

Unless otherwise provided or directed by the Engineer, all such temporary protective work shall be removed and disposed of in an approved manner when no longer required.

The Contractor shall be responsible for the scheduling of work under this item to not interfere with any sequence of operations developed for this project. Delays as a result of work required under this item shall not constitute a claim for an extension of contract time.

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.

ITEM 991.1 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for work under this Item shall be paid at the lump sum contract bid price, complete.

All water control work, including design for the dewatering operations and systems used to maintain a water free excavation, all labor, tools, equipment, and materials required for installation, piping, pumping, maintenance, subsequent removal of all related materials and equipment all as outlined above, and restoration of site shall be included in the lump sum contract price bid under this Item.

Haybales, sedimentation fence, filter bags or other materials provided specifically for the sedimentation filtration and containment system shall be included in the lump sum bid price for this Item.

ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING LUMP SUM
BRIDGE NO. S-10-015 (088)

The work to be performed under this Item shall include designing, furnishing, installing, relocating, maintaining, and disposing of a temporary protective shielding system under the bridge. The purpose of the installed system is to prevent any construction debris from entering the waterway below the bridge.

Prior to the start of demolition, the Contractor shall submit drawings and calculations for the temporary shielding to the Engineer for review and approval. The temporary shielding system shall be designed to safely withstand all loads that it will be subjected to in accordance with AASHTO Standard Specifications for Highway Bridges and conform to all Federal, State, and local laws and regulations. The design shall indicate the maximum size of deck area to be excavated at one time. The shielding shall be designed to withstand impact loads from the maximum size of concrete decking should it fall during removal. The shielding shall extend the full length of the bridge span, 3 feet beyond the deck limits, and sufficient distance above and beyond the girders as required to protect debris from entering the waterway below. 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 waterway. The temporary shielding system drawings and calculations shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.

No portion of the bridge deck, curbing, or other portion of the superstructure or existing structure shall be removed until the Protective Shielding is completely in place and the Contractor has approval from the Engineer to proceed.

The Contractor shall periodically inspect the shielding system, repair any deficiencies, and remove/dispose of any accumulated debris. The Contractor shall exercise due care not to permit any items of the existing bridge structure to fall into the waterway. Any debris that falls into the waterway below must be immediately removed and properly disposed of at the Contractor's expense.

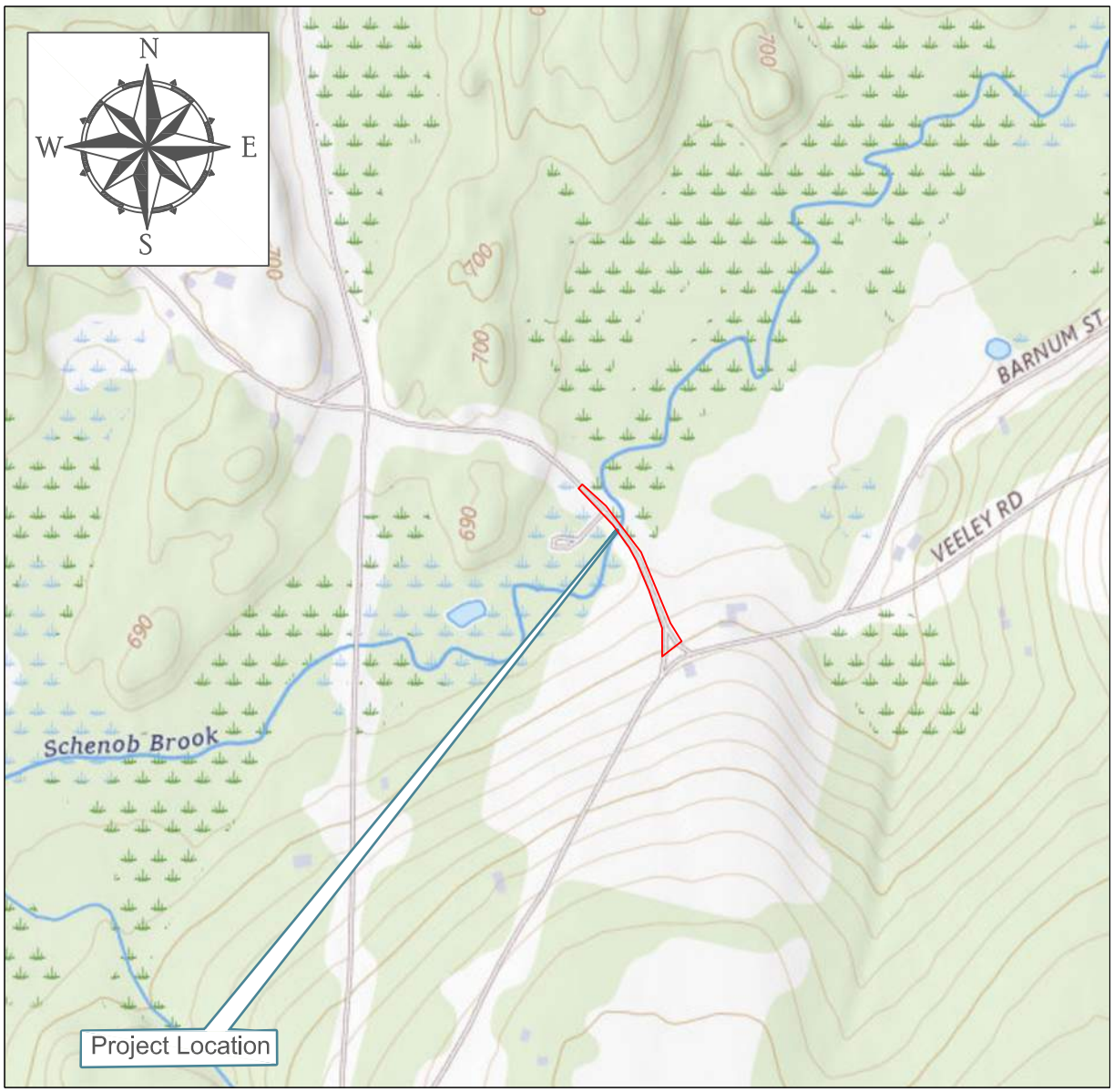
The shielding shall be maintained and remain in place until the superstructure is completely removed. Shielding shall be removed only upon approval of the Engineer. After completion, the shielding shall be removed and disposed of to the satisfaction of the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for work under this Item shall be paid at the contract lump sum bid price, complete.

All work, including design, labor, materials, equipment and incidental costs necessary for the installation, maintenance, and removal of the temporary protective shielding system as shown in the approved working drawings shall be included in the lump sum bid price for this Item.

Attachment B
Project Plans - USGS



GENERAL NOTES

1. Locus map based on USGS 7.5x7.5 Grid US Topo Map of Sheffield, MA from the USGS map webstore: http://www.store.usgs.gov
2. Locus map is not to scale

Figure 1

USGS Locus Map

S-10-015 - BRIDGE REPLACEMENT PROJECT

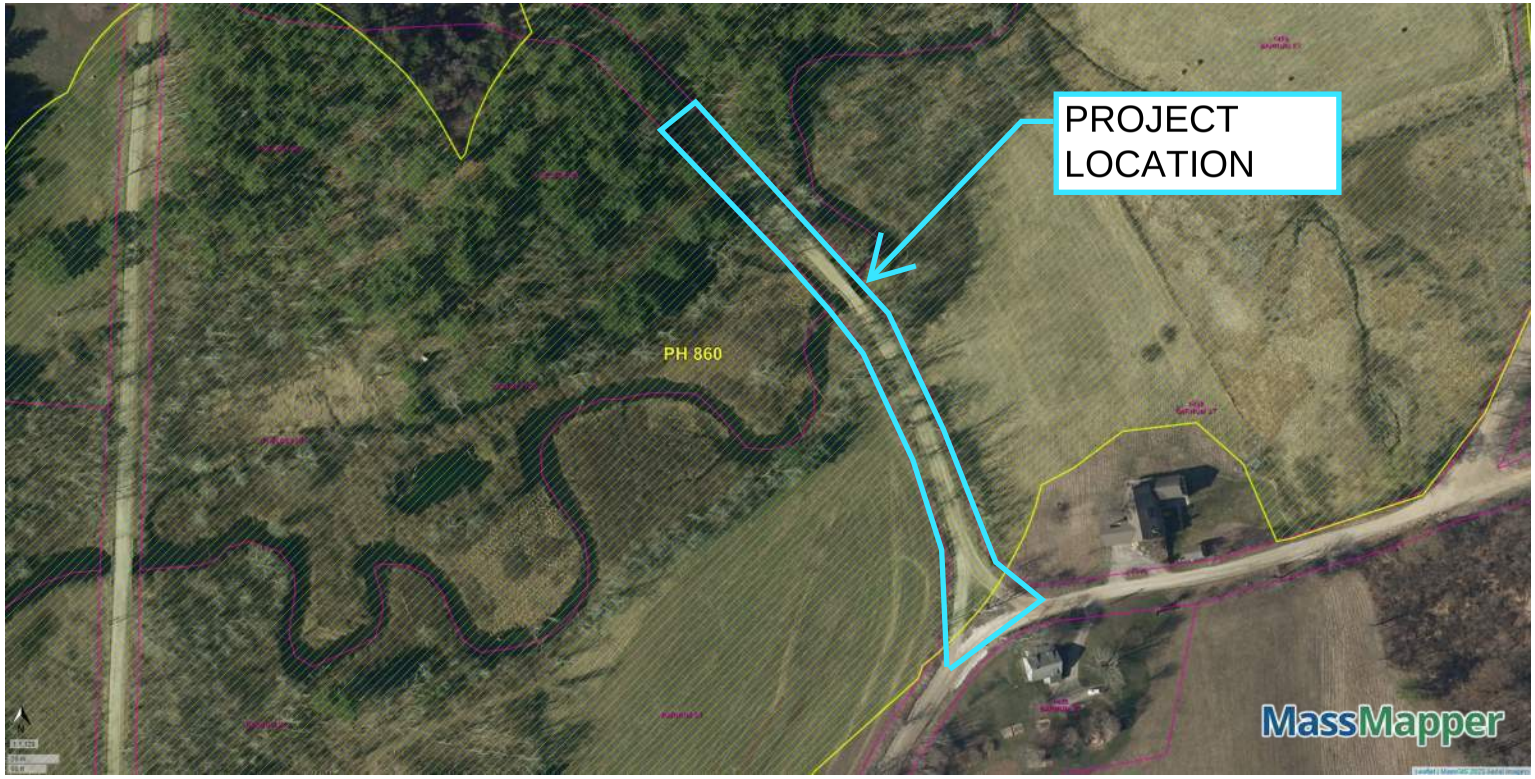
SHEFFIELD, MA

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

Attachment C
Environmental Constraints

609068 Environmental Constraints 1 of 5



NHESP Estimated Habitats of Rare Wildlife

NHESP Priority Habitats of Rare Species

Property Tax Parcels

Proposal No. 609068-136649

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609068 Environmental Constraints 2 of 5



DCR Pools
- Swimming Pool
- Swimming Pool, Diving Pool and Spray Deck
- Spray Deck
- Swimming Pool and Spray Deck
- Wading Pool
- Swimming and Wading Pool
- Wading Pool and Spray Deck

Public Water Supplies
- Communtiy Groundwater Well
- Non-Communtiy Groundwater Well
- Surface Water Intake
- Emergency Surface Water Intake
- Community Labels
- Non-Community Labels

IWPAs

Zone C

Zone B

Zone A

Zone Is

Zone IIs

NHESP Certified Vernal Pools

DFW Coldwater Fisheries Resources

Shellfish Growing Areas
- APPROVED
- CONDITIONALLY APPROVED
- RESTRICTED
- CONDITIONALLY RESTRICTED
- PROHIBITED

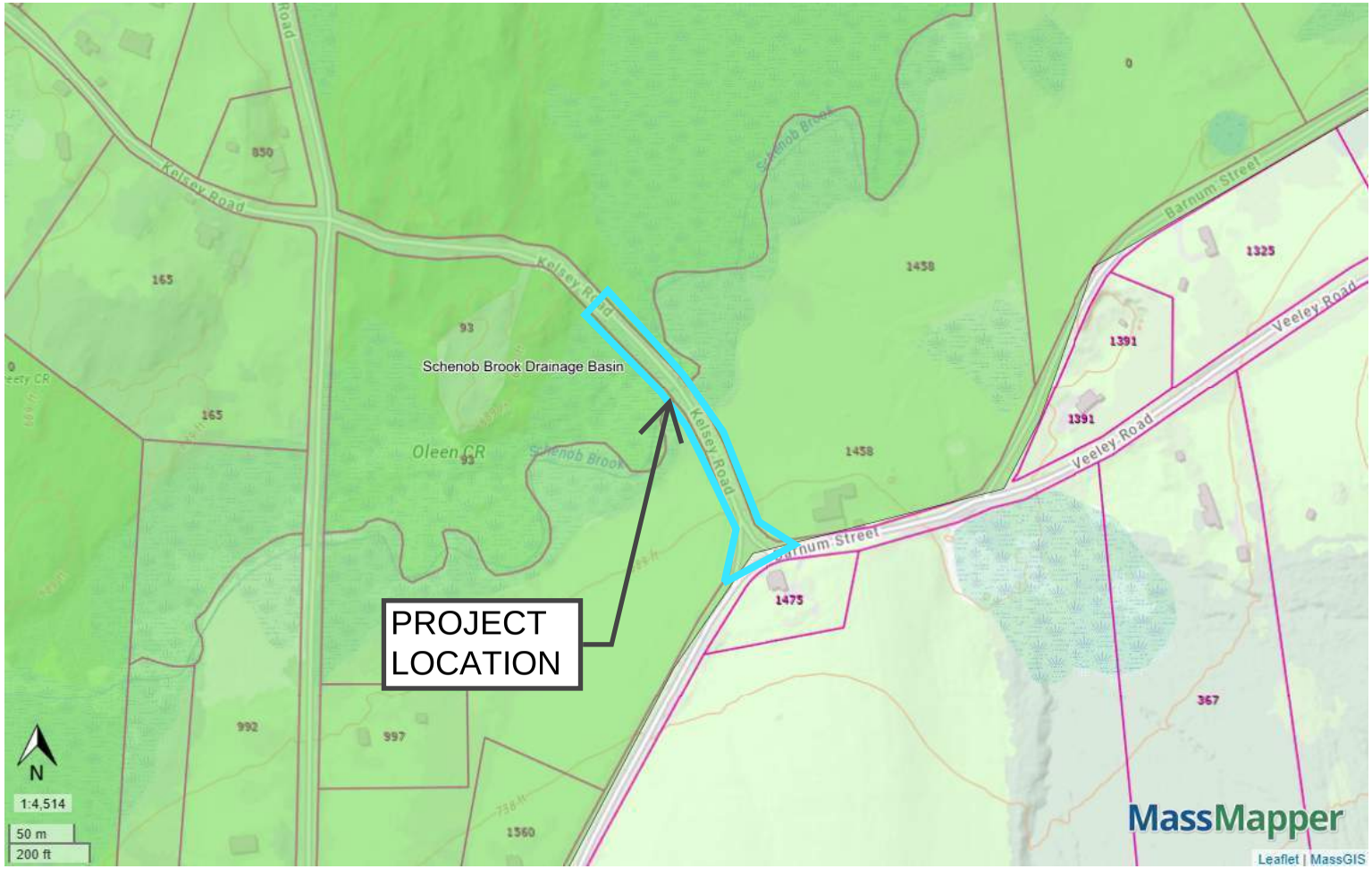
Property Tax Parcels

Proposal No. 609068-136649

A00830 - 394

Printed Oct 29, 2025

609068 Environmental Constraints 3 of 5



Areas of Critical Environmental Concern
ACECs Transparent Green

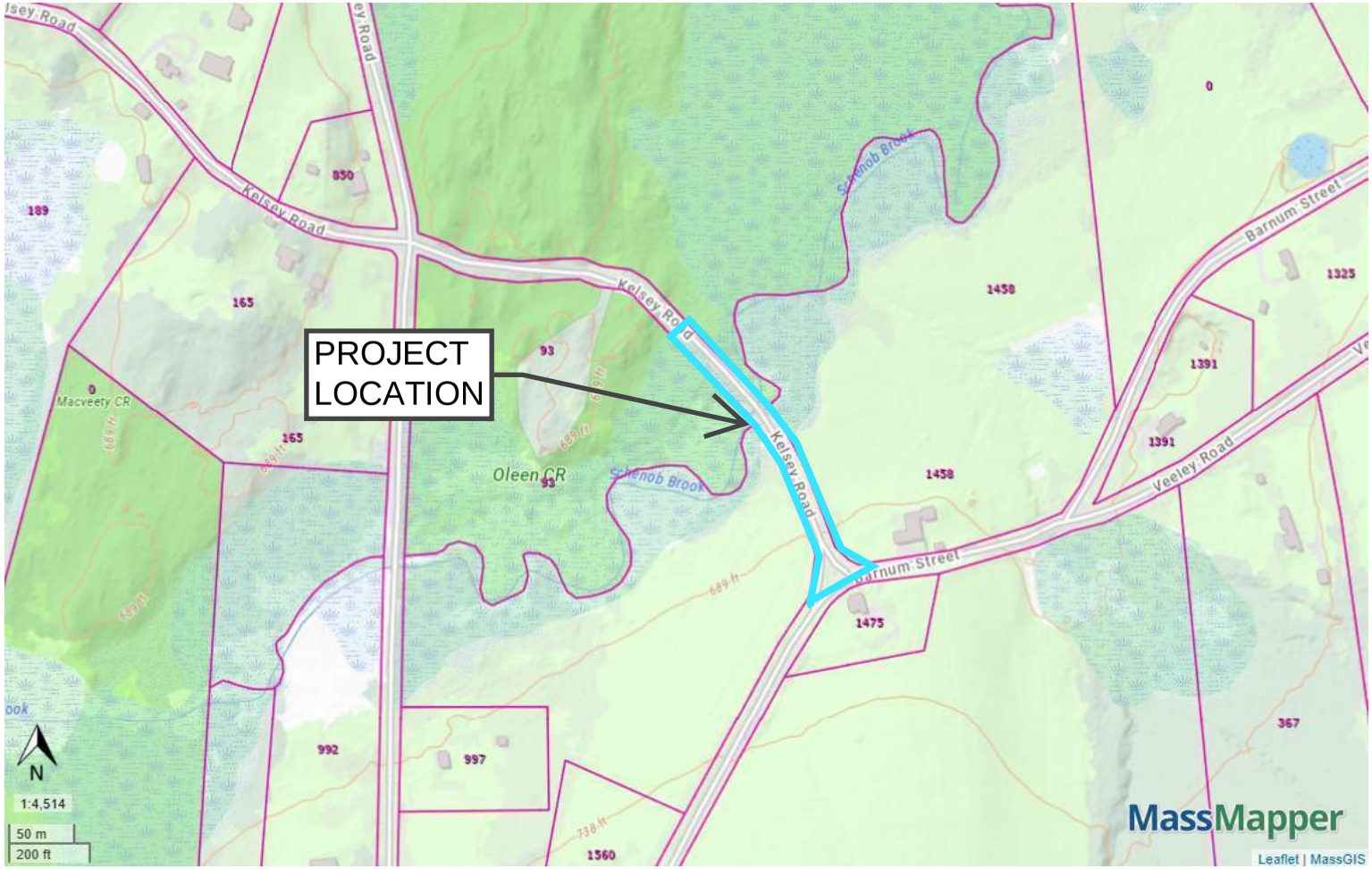
Property Tax Parcels

Proposal No. 609068-136649

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609068 Environmental Constraints 4 of 5



Outstanding Resource Waters

- ACEC
- Cape Cod National Seashore
- Protected Shoreline
- Public Water Supply Watershed
- Retired Public Water Supply
- Scenic/Protected River
- Wildlife Refuge

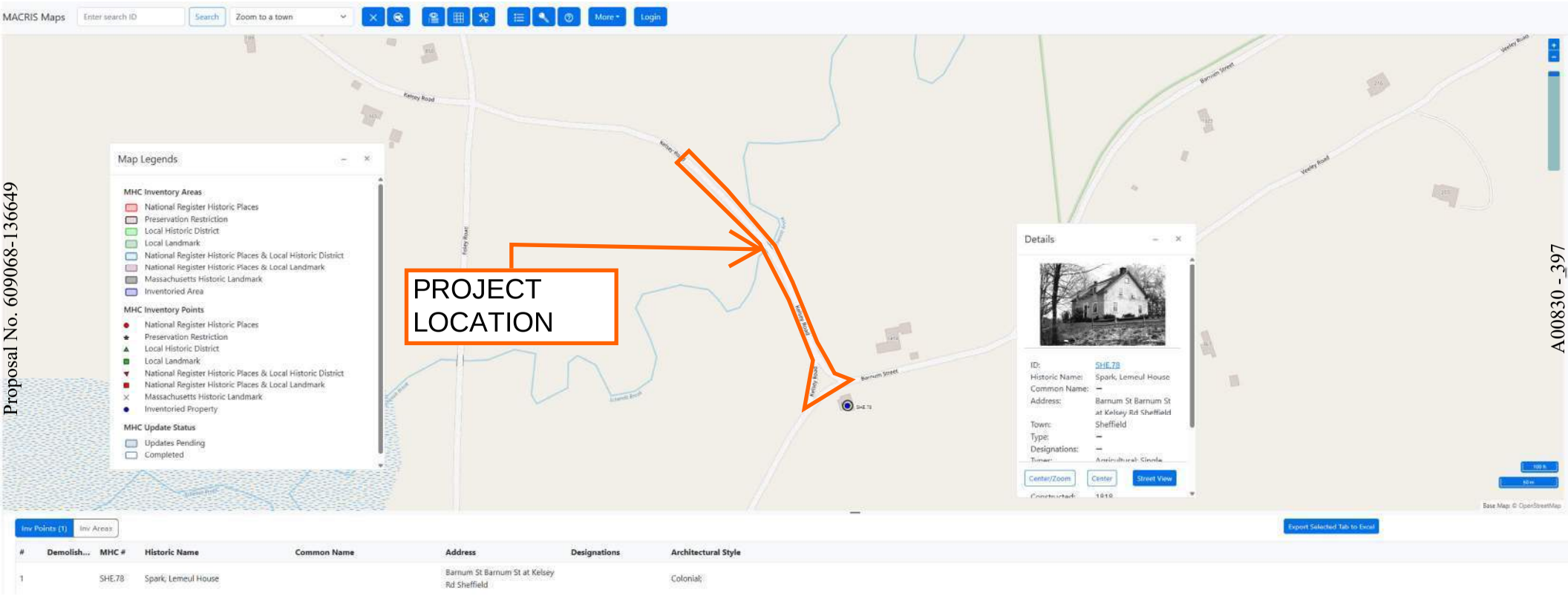
Property Tax Parcels

Proposal No. 609068-136649

A00830 - 396

Printed Oct 29, 2025

609068 Environmental Constraints 5 of 5



Inv Points (1) | Inv Areas | Export Selected Tab to Excel

#	Demolish...	MHC #	Historic Name	Common Name	Address	Designations	Architectural Style
1		SHE.78	Spark, Lemeul House		Barnum St Barnum St at Kelsey Rd Sheffield		Colonial;

Proposal No. 609068-136649

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EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

Greater Atlantic Regional Office
Atlantic Highly Migratory Species Management Division

Query Results

Degrees, Minutes, Seconds: Latitude = 42º 3' 56" N, Longitude = 74º 36' 8" W
Decimal Degrees: Latitude = 42.066, Longitude = -73.398

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

***** W A R N I N G *****

Please note under "Life Stage(s) Found at Location" the category "ALL" indicates that all life stages of that species share the same map and are designated at the queried location.

EFH

No additional Essential Fish Habitats (EFH) were identified at the report location.

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

Atlantic Salmon

No Atlantic Salmon were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
All EFH species have been mapped for the Greater Atlantic region, **Atlantic Highly Migratory Species EFH**, Bigeye Sand Tiger Shark, Bigeye Sixgill Shark, Caribbean Sharpnose Shark, Galapagos Shark, Narrowtooth Shark, Sevengill Shark, Sixgill Shark, Smooth Hammerhead Shark, Smalltail Shark

NOAA FISHERIES
National Oceanic and Atmospheric Administration

QR code Share lir

☰ MENU

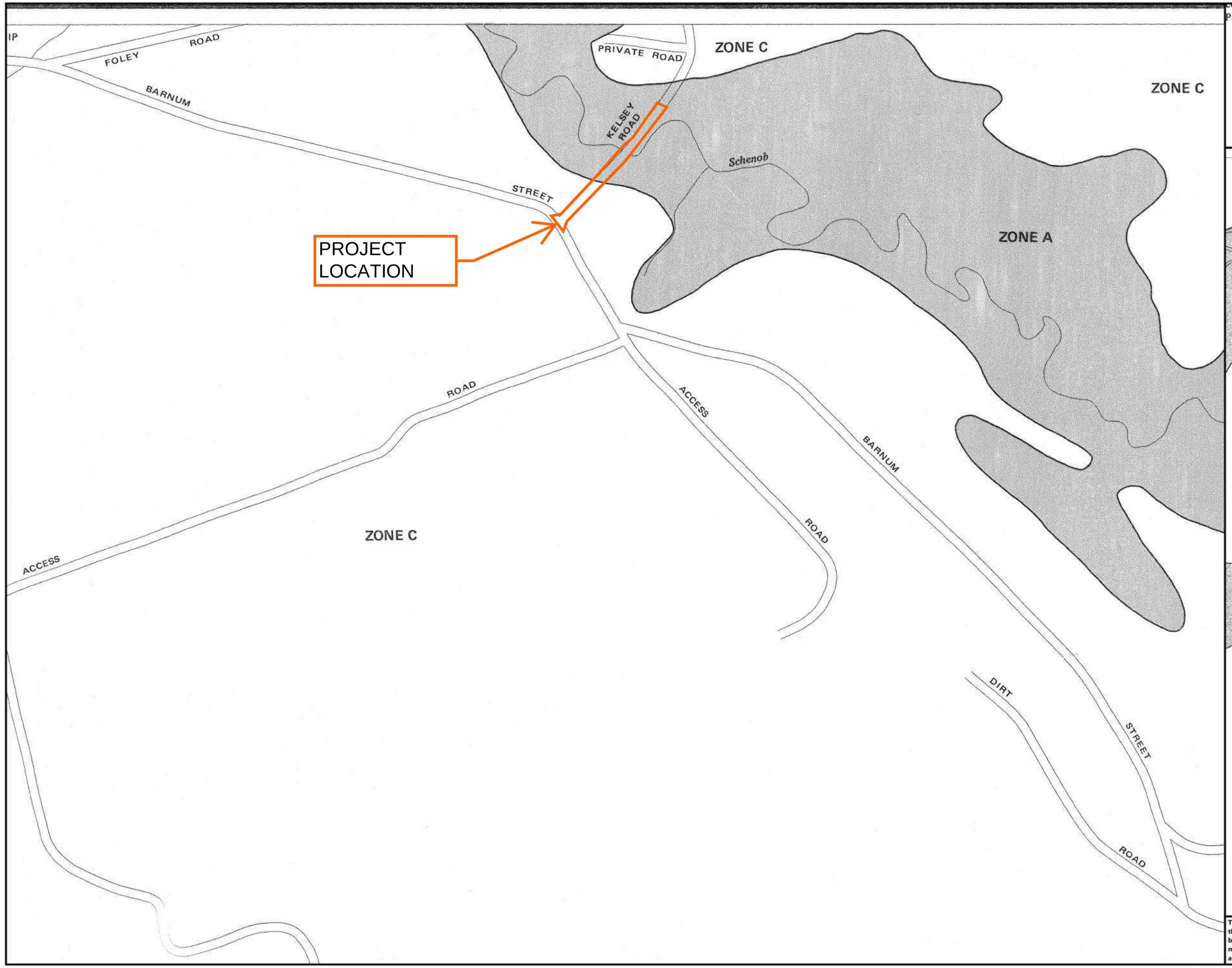
Essential Fish Habitat Mapper



Proposal No. 609068-136649

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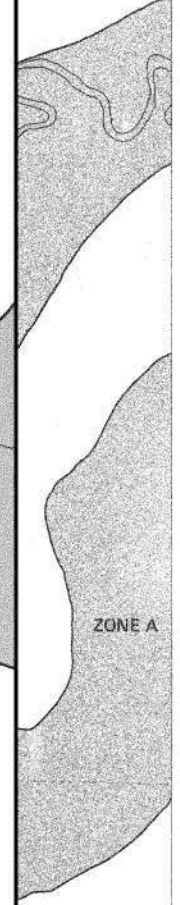
Proposal No. 609068-136649



Contact your insurance agent, or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE

400 0 400 FEET



KEY TO MAP

500-Year Flood Boundary	ZONE B
100-Year Flood Boundary	ZONE A1
Zone Designations*	ZONE A5
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7x
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

A00830 - 400

Attachment D
Correspondences

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 3301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 09/04/2025 15:46:27 UTC
Project code: 2025-0109843
Project Name: 609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

Federal Nexus: yes
Federal Action Agency (if applicable): Federal Highway Administration

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK'

Dear Julia Hoogeboom:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on September 04, 2025, for '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK' (here forward, Project). This project has been assigned Project Code 2025-0109843 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your Project, the Project may need to apply***

the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office.

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	NLAA

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete for northern long-eared bat and/or tricolored bat and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat or tricolored bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat or tricolored bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat and/or tricolored bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat and Tricolored Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Bog Turtle *Glyptemys muhlenbergii* Threatened
- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2025-0109843 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

2. Description

The following description was provided for the project '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK':

> 609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK
> The recommended bridge replacement entails a superstructure with an increased hydraulic opening measuring approximately 70 feet in length and 16 feet in width. The superstructure comprises four adjacent prestressed concrete box beams supported by full-height concrete cantilever abutments with pile foundations and U-wing walls. Riprap will be installed along the entire channel of Schenob Brook beneath the bridge. The bridge and approach slabs will be paved with an asphalt riding surface, while the remainder of Kelsey Road will retain its existing gravel riding surface. The proposed roadway cross section will consist of a single lane, measuring 13 feet in width, featuring a crown at the center and 2% cross slopes. Guiderails will be installed on both sides of the roadway along each bridge approach
> Tricolored Bat: Proposed Threatened Species only. The project action will not jeopardize the continued existence of the proposed species.
> Monarch Butterfly: Proposed Threatened Species only. The project action will not jeopardize the continued existence of the proposed species.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.06555865,-73.39766969509034,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does the proposed action involve **wind or solar energy**?

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Note for projects in Pennsylvania: Projects requiring authorization under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act would be considered as having a federal nexus. Since the U.S. Army Corps of Engineers (Corps) has issued the Pennsylvania State Programmatic General Permit (PASPGP), which may be verified by the PA Department of Environmental Protection or certain Conservation Districts, the need to receive a Corps authorization to perform the work under the PASPGP serves as a federal nexus. As such, if proposing to use the PASPGP, you would answer 'yes' to this question.

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   Yes

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    Automatically answered

    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    No

13. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    Yes

14. Has the local Service Field Office confirmed that bridge surveys are not needed because project activities are not expected to impact bats, or because NLEBs and TCBs are not using bridges within the action area?

    No

15. Has a site-specific bridge assessment following USFWS guidelines been completed?

    Note: For information on conducting a bridge/structure assessment, please see Appendix K in the USFWS' Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines at:https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines Additional resources can be found at: https://www.fws.gov/media/bats-and-transportation-structures-references-and-additional-resources and a training video is located at: https://www.youtube.com/watch?v=iuFwkT7q8Ws.

    Yes

16. Was evidence of bat use found during the bridge assessment?

    No

    SUBMITTED DOCUMENTS

    - *609068_Sheffield-bat_acoustic_report.pdf https://ipac.ecosphere.fws.gov/project/BRLW5HTKVNB2DIGKVRVDAFS2I4/projectDocuments/163432405*

17. Did you coordinate with your local Ecological Services Field Office (ESFO) and receive approval of the bridge assessment results? If NO, please contact the appropriate local ESFO before completing this determination key.

    Yes

18. Will the action result in effects to a culvert or tunnel at any time of year?

    No

19. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

20. Does the action include the intentional exclusion of bats from a building or building-like structure? **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

21. Does the action involve removal, modification, or maintenance of a human-made building-like structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

22. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

23. Will the action include or cause any construction or other activity that is reasonably certain to increase average night-time traffic permanently or temporarily on one or more existing roads? **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

24. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

25. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

26. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

27. Will the action include drilling or blasting?

    No

28. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use at night)?

    No

29. Will the proposed action involve the use of herbicides or pesticides (e.g., fungicides, insecticides, or rodenticides)?

    No

30. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

31. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

32. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    No

33. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

34. Is the project related to the production of coal, including projects that support the mining of coal, as well as the production and/or distribution of energy produced from coal?

    No

35. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

36. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

37. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

38. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

39. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

40. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

41. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

42. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

43. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

44. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known NLEB hibernacula or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

45. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

46. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.Have you contacted the appropriate agency to determine if your action is within 150 feet of any documented northern long-eared bat roosts?

    Note: A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat roosts is available here. Location information for northern long-eared bat roosts is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

    Automatically answered
    No

47. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

48. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

49. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Fall Swarming season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

50. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Spring Staging** season for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

51. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Summer Occupancy season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

52. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

53. Is the action area located within 0.5-mile of radius of an entrance/opening to any known tricolored bat hibernacula or winter roost?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    Automatically answered
    No

54. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

55. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

56. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

57. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Developmental Projects.

    No

58. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

0.6

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation
Name: Julia Hoogeboom
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email julia.a.hoogeboom@dot.state.ma.us
Phone: 8574452880

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
https://www.fws.gov/office/new-england-ecological-services

March 13, 2026

David Paulson
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA 02116

RE: 609068 Bridge Replacement, S-10-015, Kelsey Rd over Schenob Brook, Sheffield, MA
In reply refer to Project Code 2025-0109843

Dear David Paulson:

This responds to your request for our concurrence with the Massachusetts Department of Transportation's (MassDOT) determination that replacing the Kelsey Rd bridge over Schenob Brook (Project) may affect, but is not likely to adversely affect, the federally threatened bog turtle (*Glyptemys muhlenbergii*). The U.S. Fish and Wildlife Service (USFWS) received your complete consultation request on January 8, 2026. Your request and our response are made pursuant to section 7 of the Endangered Species Act of 1973, as amended (87 Stat. 884, as amended; 16 U.S.C 1531, et seq.) (ESA). We understand the MassDOT is acting as a non-Federal representative of the Federal Highway Administration (FHWA) for the purpose of consultation under section 7.

Kelsey Road Bridge (No. S-10-015) (bridge) conveys Kelsey Road over Schenob Brook in Sheffield, MA. A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. The existing bridge, constructed in 1915, is a single-span structure approximately 23 feet long by 13 feet wide. The bridge structure is in poor to satisfactory condition resulting in reduced weight limits.

The MassDOT is proposing to replace the bridge to address structural deficiencies. The proposed bridge will be in the same location, with increased capacity and wildlife passage shelving on both streambanks. The Project would result in temporary and permanent impacts to wetland resource areas.

Bog turtles are semi-aquatic and tend to occupy open canopy, unpolluted, herbaceous sedge meadows and fens bordered by wooded areas. The wider landscape around the project area

contains suitable habitat for bog turtles. However, upon review of the project area and coordination with the Massachusetts Division of Fisheries and Wildlife (MassWildlife) Natural Heritage and Endangered Species Program (NHESP), the project area contains marginal habitat, at best. Project activities have the potential to directly adversely affect bog turtles through crushing, drowning, etc.

To avoid adverse effects, the MassDOT will implement the following conservation measures:

- Prior to the start of construction, full turtle exclusion shall be implemented by installing an entrenched silt fence barrier around the work area. Silt fencing will be installed immediately following a species exclusionary survey by a qualified turtle monitor and prior to any construction activities. These controls are to be inspected daily for proper functioning and removed immediately once site work is complete.
- If the silt fence barrier becomes compromised, all work must stop until the breach is repaired and the action area is swept for turtles by the turtle monitor.
- Work will stop immediately if bog turtles are observed within the project area at any time during construction. Site workers will not touch the turtle. Work will not resume until the turtle has left the site on its own accord. In addition, the MassDOT will contact USFWS and MassWildlife within 24 hours if a bog turtle is observed and will send location details and photographs, if possible.
- Field and construction personnel will be trained to recognize bog turtles. An education and encounter plan will be put in place that outlines appropriate actions if a turtle is observed, enters the work site, or is harmed.
- If a bog turtle appears dead, injured, or immobile, all work will stop and USFWS and MassWildlife shall be contacted immediately.

We concur with your determination that the proposed project may affect, but is not likely to adversely affect, the bog turtle. This conclusion is based on several factors. First, key habitat features for bog turtle do not occur within 300 feet of the project area. Coordination with NHESP confirmed that the nearest documented bog turtle occurrence is over 3,500 linear feet from the project area, suggesting that effects to active season habitat are discountable. Second, the use of exclusionary silt fencing will prevent turtles from entering the work area, thereby eliminating the risk of direct adverse effects. Third, as suitable bog turtle habitat is lacking in the project area, impacts to wetland habitat will be insignificant. Fourth, contractor education and monitoring protocols will ensure that all personnel are aware of the species, understand avoidance procedures, and respond appropriately to any turtle encounters.

Further consultation with us under section 7 of the ESA is not required at this time. If any of the criteria at 50 CFR 402.16(a)[1] are met, reinitiation of consultation is required, and the MassDOT should contact us immediately and suspend activities that may affect those species until the appropriate level of consultation is completed with our office. Thank you for your cooperation,

[1] https://www.ecfr.gov/current/title-50/chapter-IV/subchapter-A/part-402/subpart-B/section-402.16

and please contact Tessa Corsetti of this office at (413) 409-7693 or tessa_corsetti@fws.gov if you have questions or need further assistance.

Sincerely yours,

AUDREY MAYER

Digitally signed by AUDREY MAYER
Date: 2026.03.13 09:20:08 -04'00'

Audrey Mayer
Supervisor
New England Field Office

cc: david.j.paulson@dot.state.ma.us
julia.a.hoogeboom@dot.state.ma.us

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

December 31, 2025

Julia Hoogeboom
Massachusetts Department of Transportation - Highway Division, Environmental Services
10 park plaza
Boston, MA 02116

RE: Applicant: Julia Hoogeboom, MA Department of Transportation
Project Location: Kelsey Road over Schenob Brook, Sheffield, MA
Project Description: 609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
NHESP File No.: 24-18666
Heritage Hub Form ID: RC-97284

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 (MGL. c. 131A) and its implementing regulations (321 CMR 10.00) (MESA).

PROJECT DESCRIPTION (the "Project")
The project, as currently proposed, includes the replacement of the Kelsey Road bridge (Bridge No. S-10-015) over Schenob Brook in Sheffield as shown on the Project Plan.

STATE-LISTED SPECIES
The Project as currently proposed will occur within Priority Habitat of the following state-listed species:

Scientific Name	Common Name	Taxonomic Group	State Status
Data Sensitive	Data Sensitive	Data Sensitive Vertebrate	Endangered
Glyptemys insculpta	Wood Turtle	Reptile	Special Concern

"Data Sensitive Species" are highly susceptible to collection and are therefore of high concern to Natural Heritage. Information about these species (including presence/absence) cannot be released to anyone (especially including release to third parties or published) unless such release is agreed to in writing by the Natural Heritage Program (See Massachusetts Public Records law: M.G.L. chapter 66 section 17D).

State-listed species and their habitats are protected in accordance with the MESA.

MASSACHUSETTS ENDANGERED SPECIES ACT (MESA)

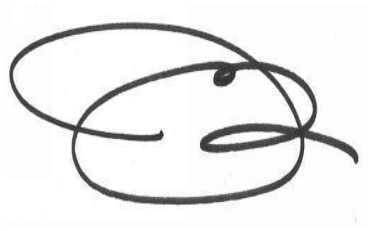
The MESA is administered by the Division and prohibits the Take of state-listed species, which includes actions that "in reference to animals, means to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, means to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct. 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 wildlife species" (321 CMR 10.02). The purpose of the Division's review under the MESA regulations is to determine whether a Take of state-listed species will result from the proposed project.

Based on the information provided and the information contained in our database, the Division finds that the Project **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.

If you have any questions regarding this letter please contact Tim McGuire Endangered Species Review Biologist, at timothy.mcguire2@mass.gov, (508) 389-6366.

Sincerely,



Jesse Leddick
Assistant Director

cc: david paulson, Massachusetts Department of Transportation

Attachment: List of Conditions

List of Conditions

Applicant: Julia Hoogeboom, MA Department of Transportation
Project Location: Kelsey Road over Schenob Brook, Sheffield, MA
Project Description: 609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
NHESP File No.: 24-18666
Heritage Hub Form ID: RC-97284
Approved Plan: Sheffield Kelsey Road Over Schenob Brook
Plan date: 12/19/25 Revised Date: N/A

To avoid a prohibited Take of state-listed species, the following condition(s) must be met:

1. **Turtle Protection Plan:** Prior to the start of work (including vegetation clearing or soil disturbance), the Applicant shall submit a Turtle Protection Plan to the Division for review and written approval. Said Plan shall detail procedures for protecting state-listed turtles during construction, and be prepared and implemented by a qualified, Division-approved wildlife biologist. The Division is available for consultation on Plan development and can provide contact information for qualified biologists. The Division-approved Plan shall be implemented as written; any proposed changes to the Plan must be submitted to the Division for review and written approval prior to implementation of said changes. By December 31st of any year in which work occurs, the qualified biologist shall submit: a) a summary report to the Division detailing project status and compliance with the Plan; and b) any observations of state-listed turtles at https://www.mass.gov/how-to/report-rare-species-vernal-pool-observations.

From: Hoogeboom, Julia A. (DOT)
To: Kautza, Adam (FWE)
Cc: Burns, Trevor B. (DOT); McGuire, Timothy (FWE)
Subject: RE: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield
Date: Monday, October 20, 2025 12:28:00 PM

Sounds good. We will make sure sediment control and water management BMPs are followed closely.

Thanks!
-Julia

Julia Hoogeboom (she/her)
Wildlife and Endangered Species Unit Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-772-1749

From: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Sent: Monday, October 20, 2025 12:14 PM
To: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>; McGuire, Timothy (FWE) <Timothy.McGuire2@mass.gov>
Subject: Re: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Yes that would be an issue for construction! I think we'd be willing to waive the TOY for coldwater species here. The potential long term benefits from an improved crossing could outweigh any short term issues with the construction. Just make sure that all sediment control and water management BMPs are followed to minimize any negative impact to spawning and egg development/rearing of coldwater species that may be in the vicinity. Thanks

Adam Kautza
Coldwater Fisheries Project Leader
Massachusetts Division of Fisheries and Wildlife (MassWildlife)
1 Rabbit Hill Road, Westborough, MA 01581
(857) 275-6961

From: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Sent: Monday, October 20, 2025 11:24:17 AM
To: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>; McGuire, Timothy (FWE) <Timothy.McGuire2@mass.gov>
Subject: RE: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Thanks for the info, Adam. The existing bridge and immediately adjacent culvert are being replaced with one much larger bridge to meet MA stream crossing standards. I've attached plans and a narrative for your review.

The location is also mapped for NHESP Bridle Shiner so it's likely we'd receive a TOY restriction for the breeding season from May through August. I've just sent the project information to Tim McGuire for his review. As you can imagine receiving a TOY restriction from May through August, and October through May, would greatly impact construction timeline at this location.

If needed, we could discuss this with Tim McGuire. I've cc'ed him here.

Thanks,
Julia

Julia Hoogeboom (she/her)
Wildlife and Endangered Species Unit Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-772-1749

From: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Sent: Monday, October 20, 2025 10:13 AM
To: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>
Subject: Re: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Hi Julia,

As you're aware Schenob Brook is a CFR. Unfortunately we don't have any recent data from the brook, and no data whatsoever from that far upstream. Our only surveys are from further downstream at Salisbury Road. That being said I would err on the cautious side and request a TOY restriction for this project. Is it a large project? Something that can be completed within the June-Sep timeframe? What is the crossing that is being replaced - another bridge or a culvert? Thanks

Adam Kautza PhD | Coldwater Fisheries Project Leader

Massachusetts Division of Fisheries and Wildlife

1 Rabbit Hill Road

Westborough, MA 01581

(857) 275-6961

adam.kautza@mass.gov

From: Hoogeboom, Julia A. (DOT) <Julia.A.Hoogeboom@dot.state.ma.us>
Sent: Friday, October 17, 2025 11:17 AM
To: Kautza, Adam (FWE) <adam.kautza@mass.gov>
Cc: Burns, Trevor B. (DOT) <Trevor.B.Burns@dot.state.ma.us>
Subject: Bridge Replacement: Kelsey Road over Schenob Brook in Sheffield

Good morning Adam,

MassDOT is proposing to replace the bridge on Kelsey Road over Schenob Brook in Sheffield (73.3977270°W 42.0656001°N). The proposed bridge will meet the Massachusetts Stream Crossing Standards, contains streambed restoration and a wildlife bench along one abutment. While the proposed project results in 8,230 sf of impacts to BVW and 633 sf of impacts to Land Under Water, 780 sf of land under water is gained by increasing the hydraulic opening beneath the bridge. All scour protection will be topped with natural streambed material or compost and seed.

The site is within NHESP Priority Habitat so the project has been sent to NHESP for review.

Does DFW have any TOY restrictions or BMP recommendations for this location?

Please let me know if you have any questions.

Thanks,
Julia

Julia Hoogeboom (she/her)
Wildlife and Endangered Species Unit Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-772-1749

Drawn Action Area & Overlapping S7 Consultation Areas

Area of Interest (AOI) Information

Area : 2,224.74 acres

Aug 22 2025 9:14:54 Eastern Daylight Time



Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	0	0	N/A
Shortnose Sturgeon	0	0	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	0	0	N/A
Atlantic Large Whales	0	0	N/A
In or Near Critical Habitat	0	0	N/A

CULTURAL RESOURCES PROJECT RECORD

City/Town: Sheffield | Project # 609068 | Date Cleared 12/09/2024

Project Name: Bridge replacement, S-10-015, Kelsey Road over Schenob Brook | Date Filed 12/09/2024 | Finding Under Review ☐

FHWA to MHC

Project Type: Bridge Replacement | Early Coord. Letter Sent: ☑

Review: Section 106 (PA) | Comment Received: ☐ MHC ☐ LHC | Reviewer: KJ

Finding: Stip VB - No historic properties affected | Consultant

Comments: PNF sent to BUAR, Aquinnah THPO, Mashpee THPO, Stockbridge-Munsee THPO and Narragansett THPO on 12/09/2024.

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) :

☐ 1) Interstate bridge or roadway projects
☐ 2) Resurfacing, repair existing roadways
* ☐ 3) Reconstruction on existing roadway
* ☐ 4) Roadway geometrics, intersections
* ☐ 5) Curbs and sidewalks
☐ 6) Pavement markings, rumble strips, etc
☐ 7) Curbs, sidewalks (MAAB, ADA)
* ☐ 8) Removal of trees
☐ 9) Landscaping
☐ 10) Utilities
☐ 11) Railroad crossing
☐ 12) Stream stabilization and restoration
☐ 13) Wetland mitigation area
* ☐ 14) Bridge (NR "Not Eligible" or "Conditionally Not Eligible")
* ☐ 15) Bridge (concrete slab post 1900, steel stringer)
☐ 16) Bridge (less than 20' span)
* ☐ 17) Highway safety improvement
☐ 18) Drainage system element
* ☐ 19) Traffic signal, safety improvement
* ☐ 20) Intelligent Transportation System project
☐ 21) Rest area, maintenance facility
* ☐ 22) Bicycle, pedestrian lane, path or facility
☐ 23) Lighting system
☐ 24) Sign
☐ 25) Hazardous waste
☐ 26) Highway fencing
☐ 27) Emergency repair
☐ 28) Erosion control
☐ 29) Noise barrier

* 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: KJ JMH

CULTURAL RESOURCES PROJECT RECORD

Summary of MassDOT Highway Division Finding
(Appendix 1 and Section V.B. Projects only)

The Massachusetts Department of Transportation (MassDOT) proposes to replace Bridge S-10-015 which carries Kelsey Road over Schenob Brook in Sheffield. Bridge S-10-015 is a single-span steel stringer bridge with concrete jack arches constructed circa 1925. The superstructure is supported by reinforced concrete abutments with wingwalls. The crossing also includes a 48" by 72" oblong corrugated metal pipe overflow culvert, located about 120' to the west of Bridge S-10-015. The crossing presently carries a single 13' -wide travel lane, with a gravel surface carried across the bridge.

The proposed work will include full replacement of the bridge on existing alignment with a structure 18" wider than existing. The new structure will consist of precast concrete butted box beams supported by cantilever abutments on H-pile footings. The bridge will have reinforced concrete CT-TL2 railings, also known as Texas rail. The proposed bridge will carry a single 13' 8"-wide travel lane. The structure will be 40' longer than existing to provide improved horizontal clearance for the stream channel. In addition to the main bridge structure, the overflow culvert will also be replaced with a 48" by 76" elliptical reinforced concrete pipe.

Other proposed work includes full-depth pavement construction along the bridge approaches, within 30' of either end of the bridge; reconstruction of existing gravel roadway within the project limits; guardrail installation along the bridge approaches. Streambed and stream bank restoration is also proposed, with improvements to the stream channel immediately east and west of the bridge. Due to a sharp bend in the stream channel at either end of the crossing, the banks immediately adjacent to the bridge abutments will be armored with riprap covered with composted mulch material. The project area extends 280' to the north and 350' to the south of the bridge, encompassing a total length of 680'.

Review of the National Register of Historic Places revealed that there are no National Register-listed properties or historic districts located in proximity to the bridge. Review of the Inventory of Historic and Archaeological Assets of the Commonwealth revealed that no inventoried properties or areas are located within the project's direct Area of Potential Effects (APE).

Bridge S-10-015 was assessed by Kurt Jergensen, MassDOT's Historic Bridge Specialist, and determined to be ineligible for listing in the National Register. The bridge is a typical example of standard design, lacking distinctive architectural and engineering features that would confer eligibility. It is is a steel stringer structure, the most common type in MassDOT's bridge inventory. While it is further distinguished as a concrete jack arch structure, an uncommon subtype utilized during the late 19th and early 20th centuries, it is a late example built with corrugated steel stay-in-place forms on the underside of the jack arches. Stay-in-place forms were a standardized construction method used later in the period.

A review of the MHC's archaeological maps in MACRIS revealed that there are no recorded pre-contact or historic archaeological sites within the project's direct APE. The nearest recorded pre-Contact sites are located 2.3 miles to the east: 19-BK-169 (Ashley Field Site), a Paleoindian, Archaic and Woodland period site; and 19-BK-170 (Tract III Site), an Archaic and Woodland period site. It is the opinion of the MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's direct APE based on the impacts of past bridge and roadway construction, as well as limited disturbance outside of the existing bridge and roadway footprint. Soil borings revealed the roadway at the bridge is constructed on deep fill embankments, up to 10 feet in depth. Groundwater was encountered at 2.2 – 8.0 ft. below the existing paved roadway surface.

Reviewer's Initials: _____

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, Bridge S-10-015 (MassDOT #609068)
Location /Address:	Kelsey Road over Schenob Brook
City/Town:	Sheffield
Project Proponent	
Name:	Massachusetts Department of Transportation
Address:	10 Park Plaza
City/Town/Zip/Telephone:	Boston, MA 02116 / T: 207-590-4999

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	**Type of License or funding (specify)**
FHWA (lead agency)	Federal Aid funds
US Army Corps of Engineers	Section 404 permit

Project Description (narrative):

The Massachusetts Department of Transportation (MassDOT) proposes to replace Bridge S-10-015 which carries Kelsey Road over Schenob Brook in Sheffield. Bridge S-10-015 is a single-span steel stringer bridge with concrete jack arches constructed circa 1925. The superstructure is supported by reinforced concrete abutments with wingwalls. The crossing also includes a 48" by 72" oblong corrugated metal pipe overflow culvert, located about 120’ to the west of Bridge S-10-015. The crossing presently carries a single 13' -wide travel lane, with a gravel surface carried across the bridge.

The proposed work will include full replacement of the bridge on existing alignment with a structure 18" wider than existing. The new structure will consist of precast concrete butted box beams supported by cantilever abutments on H-pile footings. The bridge will have reinforced concrete CT-TL2 railings, also known as Texas rail. The proposed bridge will carry a single 13' 8"-wide travel lane. The structure will be 40' longer than existing to provide improved horizontal clearance for the stream channel. In addition to the main bridge structure, the overflow culvert will also be replaced with a 48" by 76" elliptical reinforced concrete pipe.

Other proposed work includes full-depth pavement construction along the bridge approaches, within 30' of either end of the bridge; reconstruction of existing gravel roadway within the project limits; guardrail installation along the bridge approaches. Streambed and stream bank restoration is also proposed, with improvements to the stream channel immediately east and west of the bridge. Due to a sharp bend in the stream channel at either end of the crossing, the banks immediately adjacent to the bridge abutments will be armored with riprap covered with composted mulch material. The project area extends 280' to the north and 350' to the south of the bridge, encompassing a total length of 680'.

APPENDIX A (continued)

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.
N/A

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation
N/A

Does the project include new construction? If so, describe (attach plans and elevations if necessary).
Bridge S-10-015 will be demolished and replaced on existing alignment with a slightly wider structure.

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.
Review of the National Register of Historic Places revealed that there are no National Register-listed properties or historic districts located in proximity to the bridge. Review of the Inventory of Historic and Archaeological Assets of the Commonwealth revealed that no inventoried properties or areas are located within the project's direct Area of Potential Effects (APE).

Bridge S-10-015 was assessed by Kurt Jergensen, MassDOT's Historic Bridge Specialist, and determined to be ineligible for listing in the National Register. The bridge is a typical example of standard design, lacking distinctive architectural and engineering features that would confer eligibility. It is is a steel stringer structure, the most common type in MassDOT's bridge inventory. While it is further distinguished as a concrete jack arch structure, an uncommon subtype utilized during the late 19th and early 20th centuries, it is a late example built with corrugated steel stay-in-place forms on the underside of the jack arches. Stay-in-place forms were a standardized construction method used later in the period.

A review of the MHC's archaeological maps in MACRIS revealed that there are no recorded pre-contact or historic archaeological sites within the project's direct APE. The nearest recorded pre-Contact sites are located 2.3 miles to the east: 19-BK-169 (Ashley Field Site), a Paleoindian, Archaic and Woodland period site; and 19-BK-170 (Tract III Site), an Archaic and Woodland period site. It is the opinion of the MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's direct APE based on the impacts of past bridge and roadway construction, as well as limited disturbance outside of the existing bridge and roadway footprint. Soil borings revealed the roadway at the bridge is constructed on deep fill embankments, up to 10 feet in depth. Groundwater was encountered at 2.2 – 8.0 ft. below the existing paved roadway surface.

What is the total acreage of the project area?

Woodland		acres	Productive Resources:		
Wetland		acres	Agriculture		acres
Floodplain	<1	acres	Forestry		acres
Open Space		acres	Mining/Extraction		acres
Developed	<1	acres	Total Project Acreage	<1	acres

What is the acreage of the proposed new construction? <1 acres

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

What is the present land use of the project area?
The Project area is situated amid a wooded wetland bordering the meandering path of Schenob Brook. Hayfields border the wetlands to the south and east, with dense forest to the north and west.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of person submitting this form:  **Date:** 12/9/2024

Name: Kurt Jergensen

Address: 10 Park Plaza

City/Town/Zip: Boston, MA 02116

Telephone: 207-590-4999

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

cc: Wampanoag Tribe of Gay Head (Aquinnah) THPO
Mashpee Wampanoag Tribe THPO
Stockbridge-Munsee THPO
Narragansett Indian Tribe THPO
BUAR

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:45 PM
To: Bettina Washington
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Ms. Washington,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Wampanoag Tribe of Gay Head (Aquinnah) to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Bettina Washington
Sent: Tuesday, December 10, 2024 12:45 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

Bettina Washington (thpo@wampanoagtribe-nsn.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:51 PM
To: Robinson, David S (EEA)
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Mr. Robinson,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Board of Underwater Archaeological Resources to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Robinson, David S (EEA)
Sent: Tuesday, December 10, 2024 12:51 PM
Subject: Delivered: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

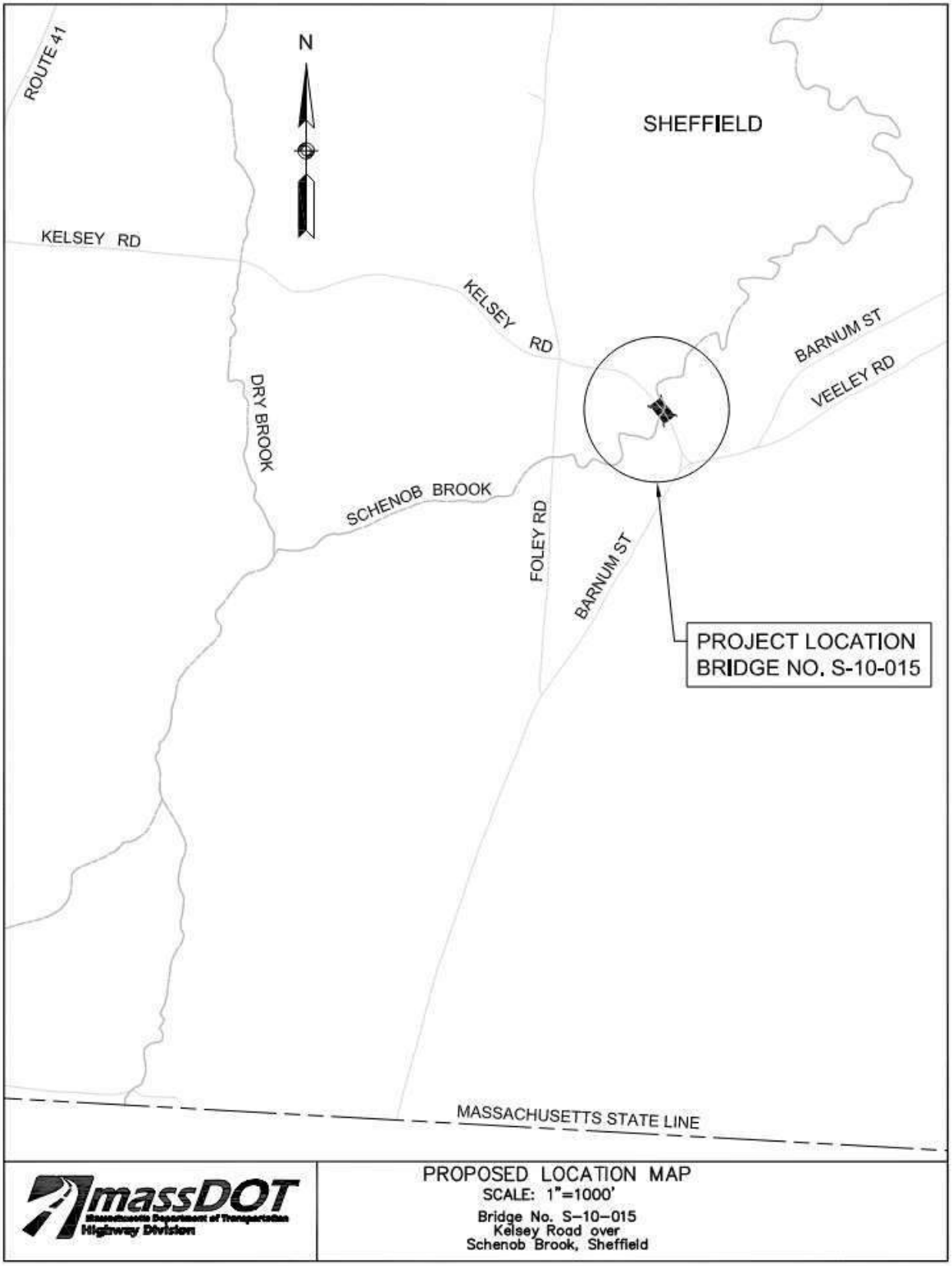
Your message has been delivered to the following recipients:

Robinson, David S (EEA) (David.S.Robinson@mass.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...


ROUTE 41
N
SHEFFIELD
KELSEY RD
KELSEY RD
DRY BROOK
BARNUM ST
VEELEY RD
SCHENOB BROOK
FOLEY RD
BARNUM ST
PROJECT LOCATION
BRIDGE NO. S-10-015
MASSACHUSETTS STATE LINE
massDOT
Massachusetts Department of Transportation
Highway Division
PROPOSED LOCATION MAP
SCALE: 1"=1000'
Bridge No. S-10-015
Kelsey Road over
Schenob Brook, Sheffield



KELSEY ROAD BRIDGE OVER SCHENOB BROOK
(LOOKING NORTHWEST)



KELSEY ROAD BRIDGE OVER SCHENOB BROOK
SOUTH BRIDGE FACE



KELSEY ROAD WEST APPROACH
(LOOKING SOUTHEAST)



KELSEY ROAD EAST APPROACH
(LOOKING SOUTHEAST)



SCHENOB BROOK
(LOOKING NORTH FROM BRIDGE)



SCHENOB BROOK
(LOOKING AT SOUTH SIDE OF BRIDGE)



BYPASS CULVERT – NORTH END



WEST CULVERT – NORTH END



WEST CULVERT – SOUTH END

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:46 PM
To: David Weeden
Cc: 106Review@mwtribe-nsn.gov; Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Mr. Weeden,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Mashpee Wampanoag Tribe to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: David Weeden; 106Review@mwtribe-nsn.gov
Sent: Tuesday, December 10, 2024 12:46 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

David Weeden (David.Weeden@mwtribe-nsn.gov)

106Review@mwtribe-nsn.gov (106Review@mwtribe-nsn.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:47 PM
To: Tashtesook@aol.com
Cc: markandrews0563@outlook.com; Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Mr. Brown,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Narragansett Indian Tribe to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Tashtesook@aol.com; markandrews0563@outlook.com
Sent: Tuesday, December 10, 2024 12:48 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

Tashtesook@aol.com (tashtesook@aol.com)

markandrews0563@outlook.com (markandrews0563@outlook.com)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Tuesday, December 10, 2024 12:50 PM
To: thpo
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)
Attachments: Bridge S-10-015 PNF (MassDOT 609068).pdf; Locus map & site photos.pdf; 001_609068_25%HighwayPlans.pdf; 001_609068_SketchPlans.pdf

Dear Dr. Bendremer,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Stockbridge-Munsee Band of Mohican Indians to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: thpo
Sent: Tuesday, December 10, 2024 12:50 PM
Subject: Relayed: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

thpo (thpo@mohican-nsn.gov)

Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)



Sheffield, Br.
S-10-015 replac...

Jergensen, Kurt E. (DOT)

From: thpo <thpo@mohican-nsn.gov>
Sent: Wednesday, December 11, 2024 2:12 PM
To: Jergensen, Kurt E. (DOT)
Cc: Harwood, Jameson (DOT)
Subject: RE: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

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.

Dear Kurt,

Thank you for the notice regarding the proposed Bridge replacement, Bridge S-10-015 (MassDOT #609068), Kelsey Road over Schenob Brook, Sheffield, Berkshire County, MA.

The Stockbridge-Munsee Tribal Historic Preservation Office has no issue with the project moving forward with the following standard stipulations:

- If previously undocumented archaeological resources are encountered, please contact me promptly and follow the Inadvertent Discovery Policy on the Stockbridge-Munsee Community website: https://www.mohican.com/mt-content/uploads/2022/09/smc-inadvertent-discovery-policy.pdf.
- Please give due attention to the incidental or routine movement of heavy machinery both inside and outside the stated area of potential effects (APE) that may cause unintended or inadvertent impacts to cultural resources.
- Should the proposed work be altered to expand beyond the current scope of work and/or APE, we ask to be notified.

Regards,
Jeff

Jeffrey C Bendremer Ph.D., RPA
Tribal Historic Preservation Officer
Stockbridge-Munsee Community
Tribal Historic Preservation Extension Office
86 Spring St.
Williamstown, MA 01267
413-884-6029 (o)
715-881-2254 (c)

www.mohican.com

From: Jergensen, Kurt E. (DOT) <Kurt.Jergensen@dot.state.ma.us>
Sent: Tuesday, December 10, 2024 12:50 PM
To: thpo <thpo@mohican-nsn.gov>
Cc: Harwood, Jameson (DOT) <Jameson.Harwood@dot.state.ma.us>
Subject: Sheffield, Br. S-10-015 replacement (MassDOT #609068)

CAUTION: This email originated from outside the organization.
Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Dr. Bendremer,

MassDOT is submitting the enclosed information regarding the proposed bridge replacement project to the Stockbridge-Munsee Band of Mohican Indians to meet the Section 106 consultation requirements of the US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Section
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

From: Cryan, Melissa (EEA)
To: Kevin Barbara
Subject: RE: Section 6(f) properties - Sheffield MA, MassDOT Project 609068
Date: Friday, August 22, 2025 9:18:58 AM

Kevin,

There are no LWCF-funded sites in Sheffield. Thanks for checking.

Melissa

Melissa Cryan (she/her/hers)
Grant Programs Supervisor
Division of Conservation Services
(857) 274-7173
https://www.mass.gov/grant-programs-offered-by-the-division-of-conservation-services

---

From: Kevin Barbara <kbarbara@ceiengineers.com>
Sent: Friday, August 22, 2025 9:06 AM
To: Cryan, Melissa (EEA) <melissa.cryan@mass.gov>
Subject: Section 6(f) properties - Sheffield MA, MassDOT Project 609068

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.

Good morning,

CEI is conducting a 401 Water Quality Certficiation for MassDOTs 609068 Project in Sheffield, MA where replacement of the existing bridge S-10-015 carrying Kelsey Road over Schenob Brook will take place.

In doing so, we would like to see if there are any land or water properties protected by section 6(f) within the proposed project area that the LWCF oversees.

I have attached a Locus Map illustrating the proposed project area. (42.065644, -73.397721)

If any more info/documents are needed, please let me know and I'll be happy to send them your way.

Thanks,
Kevin

Attachment E
Photos

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 1- Kelsey Road



Photo 2- Kelsey Road

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 3- Upstream view of Schenob Brook



Photo 4- Downstream view of Schenob Brook

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 5- Bridge S-10-015 opening



Photo 6- Road shoulder of Kelsey Road

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 7- Existing wetland & roadside looking south from bridge (southwest quadrant)



Photo 8- Open grass field

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 9- Existing wetlands at edge of roadside embankment impacted by slope work – STA 102+30 Right



Photo 10- Typical land cover

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 11- Black willow leaning into upstream end of Schenob Brook



Photo 12- Wetland replication area and existing wetland boundary

Photographic Documentation
609068 - SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK



Photo 13- Wetlands at edge of roadway embankment (typical)



Photo 14- Existing wetlands at edge of roadside embankment impacted by slope work – STA 102+30 Left

Attachment F
Project Plans

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	1	55
PROJECT FILE NO.	609068		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

KELSEY ROAD OVER SCHENOB BROOK

(BRIDGE NO. S-10-015)

IN THE TOWN OF

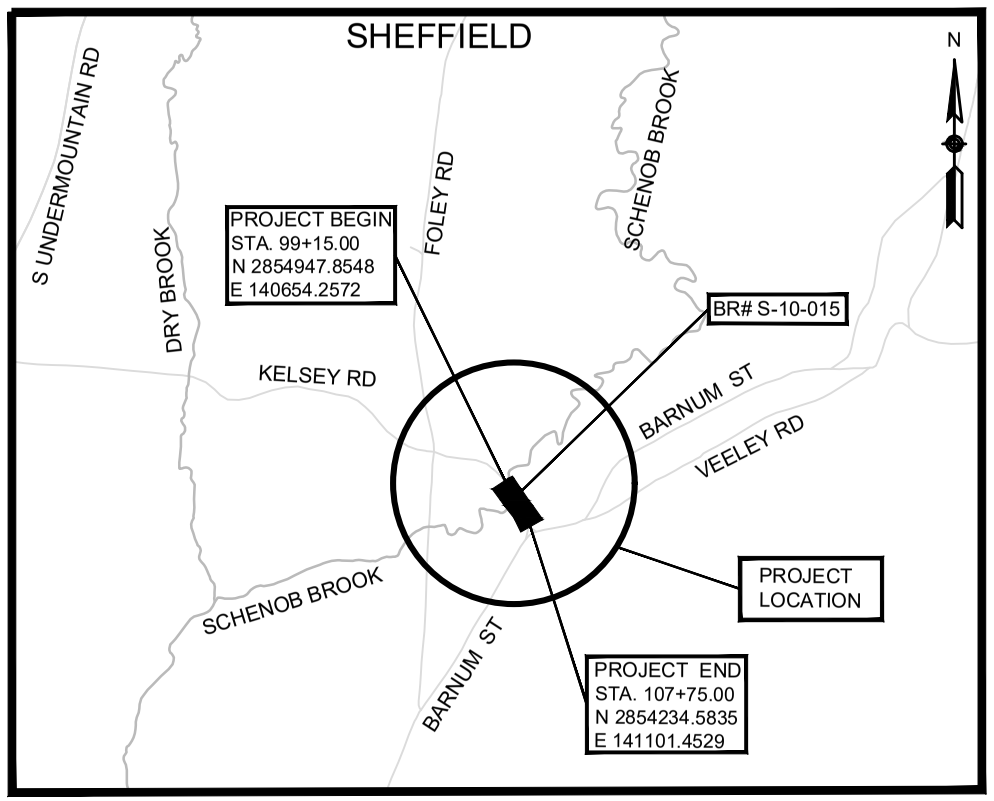
SHEFFIELD

BERKSHIRE COUNTY

THESE PLANS ARE SUPPLEMENTED BY THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS, AS IDENTIFIED IN THE CONTRACT SPECIAL PROVISIONS: THE MASSDOT CONSTRUCTION STANDARD DETAILS, THE MASSDOT STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, THE MASSDOT OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, THE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, AND THE ANSI AMERICAN STANDARD FOR NURSERY STOCK.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN
4	TYPICAL SECTIONS
5-6	CONSTRUCTION PLANS
7-8	ROADWAY PROFILES
9-10	CONSTRUCTION BASELINE TIE PLANS
11-12	GRADING PLANS
13-14	TRAFFIC SIGNING PLANS
15	DRAINAGE DETAILS
16	TEMPORARY TRAFFIC CONTROL PLANS
17-18	UTILITY PLANS
20-19	ENVIRONMENTAL IMPACTS PLANS
21-22	TURTLE EXCLUSION BARRIER PLANS
23	TURTLE EXCLUSION BARRIER DETAILS
24	WETLAND REPLICATION PLAN
25-26	LANDSCAPING PLANS
27-28	CONSTRUCTION DETAILS
29-48	BRIDGE PLANS
49-55	CROSS SECTIONS



SCALE: 1" = 2000'
LENGTH OF PROJECT = 860 FEET = 0.163 MILES

DESIGN DESIGNATION (KELSEY ROAD)

DESIGN SPEED	20 MPH
ADT (2026)	121
ADT (2046)	148
K	-
D	-
T (PEAK HOUR)	6%
T (AVERAGE DAY)	6%
DHV	-
DDHV	-
FUNCTIONAL CLASSIFICATION	RURAL LOCAL

DATE	DESCRIPTION	REV #

GFT
175 FEDERAL STREET, SUITE 800
BOSTON, MA 02110

massDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER — DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

APPROVED

HIGHWAY ADMINISTRATOR — DATE

Proposal No. 609068-136649
609068_HD (SHEFFIELD COVER SHEET).DWG Plotted on 14-Aug-2019 1:54 PM
A00830 - 461

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
OHW		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
		EROSION AND SEDIMENT CONTROL BARRIER
		EROSION AND SEDIMENT CONTROL BARRIER-COIR LOGS
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		WETLAND

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
ONLY	ONLY	PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
	SL	STOP LINE
	CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

SURVEY NOTES:

1. BOUNDARY INFORMATION SHOWN HEREON WAS COMPILED FROM AN ACTUAL FIELD SURVEY CONDUCTED BY WSP SURVEYORS FROM SEPTEMBER 4, 2020 THROUGH OCTOBER 2, 2020. SURVEY FIELD NOTES CAN BE FOUND IN MASSDOT SURVEY NOTEBOOK 23412.
2. NORTH ORIENTATION AND BEARING BASE PER GRID NORTH.
3. HORIZONTAL COORDINATES RELATIVE TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MASSACHUSETTS MAINLAND ZONE. BASED ON THE NORTH AMERICAN DATUM OF 1983, NAD83 (2011) EPOCH 2010.00. GPS POINTS 2613 & 2614 WERE USED AS SURVEY CONTROL POINTS TO ESTABLISH A DATUM FOR THE PROJECT.
4. ELEVATIONS RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, (NAVD 1988).
5. HORIZONTAL COORDINATE AND ELEVATION UNITS ARE U.S. SURVEY FEET.
6. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY HIGHWAY BOUND OR PRIVATE PROPERTY PIN THAT MAY BE DAMAGED OR DESTROYED DURING CONSTRUCTION, TO ITS LOCATION JUST PRIOR TO CONSTRUCTION.

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT

ABBREVIATIONS (cont.)

GENERAL

PWW	PAVED WATERWAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	2	55
PROJECT FILE NO.	609068		

LEGEND & ABBREVIATIONS

Plotted on 3-Apr-2026 9:23 AM

609068_HD (SHEFFIELD LEGEND).DWG

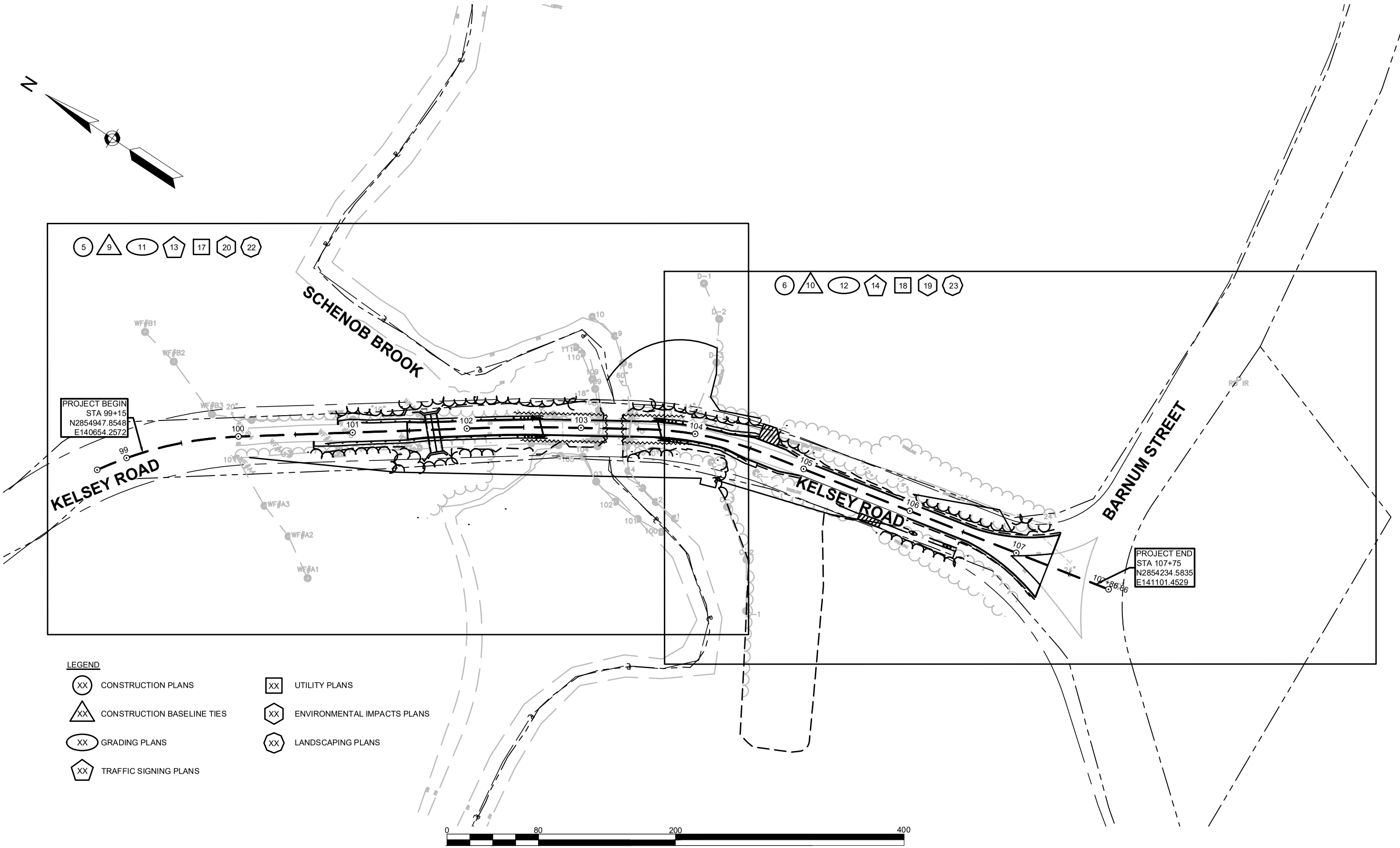
Proposal No. 609068-136649

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SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	3	55
PROJECT FILE NO.	609068		

KEY PLAN



LEGEND

- XX — CONSTRUCTION PLANS
- XX — CONSTRUCTION BASELINE TIES
- XX — GRADING PLANS
- XX — TRAFFIC SIGNING PLANS
- XX — UTILITY PLANS
- XX — ENVIRONMENTAL IMPACTS PLANS
- XX — LANDSCAPING PLANS

Proposal No. 609068-136649

609068_HDI(KEY PLAN).DWG Plotted on 3-Apr-2026 9:27 AM

A00830 - 463

Proposal No. 609068-136649

A00830 - 464

609068_HD (SHEFFIELD TYPICAL SECTIONS).DWG Plotted on 2-Apr-2026 1:55 PM

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	4	55
PROJECT FILE NO.	609068		

TYPICAL SECTIONS

NOTES:

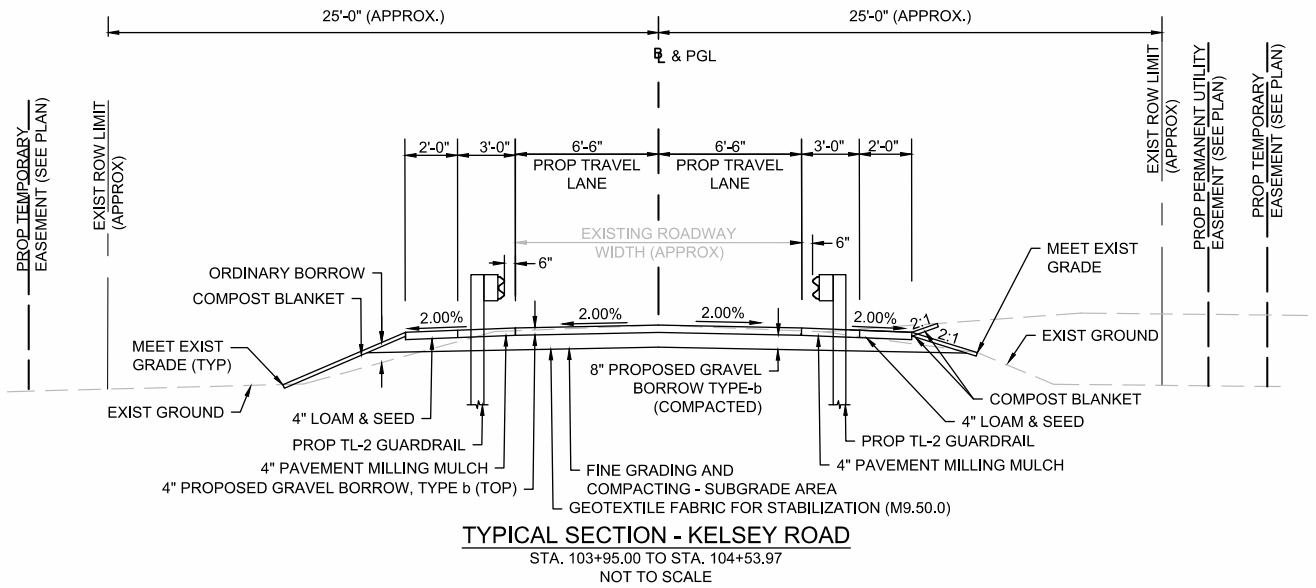
1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED IN ACCORDANCE WITH SECTION 450.
2. SEE LANDSCAPE PLANS FOR COMPOST BLANKET SEEDING DETAILS
3. SEE CONSTRUCTION STANDARD DETAILS (628.24.2, 628.24.3) FOR GUARDRAIL TRANSITIONS AT BRIDGE APPROACHES
4. GRAVEL BORROW TYPE-b SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 4 INCHES.
5. RIP RAP MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION M2.02.0

PAVEMENT NOTES:

PROPOSED GRAVEL FOR SURFACING & GRAVEL DRIVEWAY
4" GRAVEL BORROW, TYPE b (TOP), OVER
8" GRAVEL BORROW, TYPE-b (COMPACTED), OVER
GEOTEXTILE FABRIC (STABILIZATION), OVER
SPECIAL BORROW AS REQUIRED BASED ON
EXISTING SUBGRADE MATERIALS ONLY WHEN
NEEDED

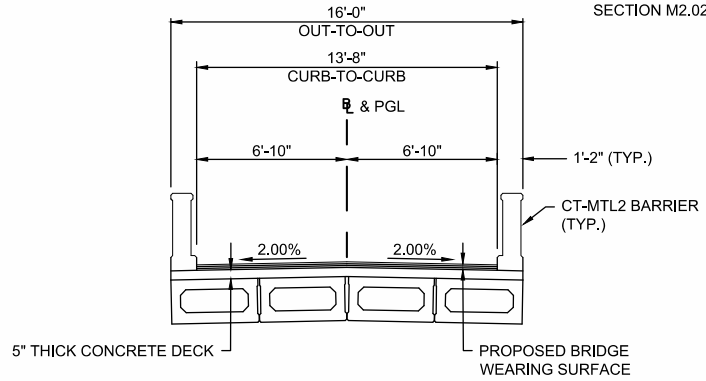
PROPOSED FULL DEPTH HMA PAVEMENT
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P)), OVER
4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5), OVER
4" DENSE GRADED CRUSHED STONE, OVER
6" MIN. GRAVEL BORROW TYPE B, OVER
PROPOSED APPROACH SLAB (TYPE 1)

PROPOSED BRIDGE WEARING SURFACE
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P), OVER
MEMBRANE WATERPROOFING



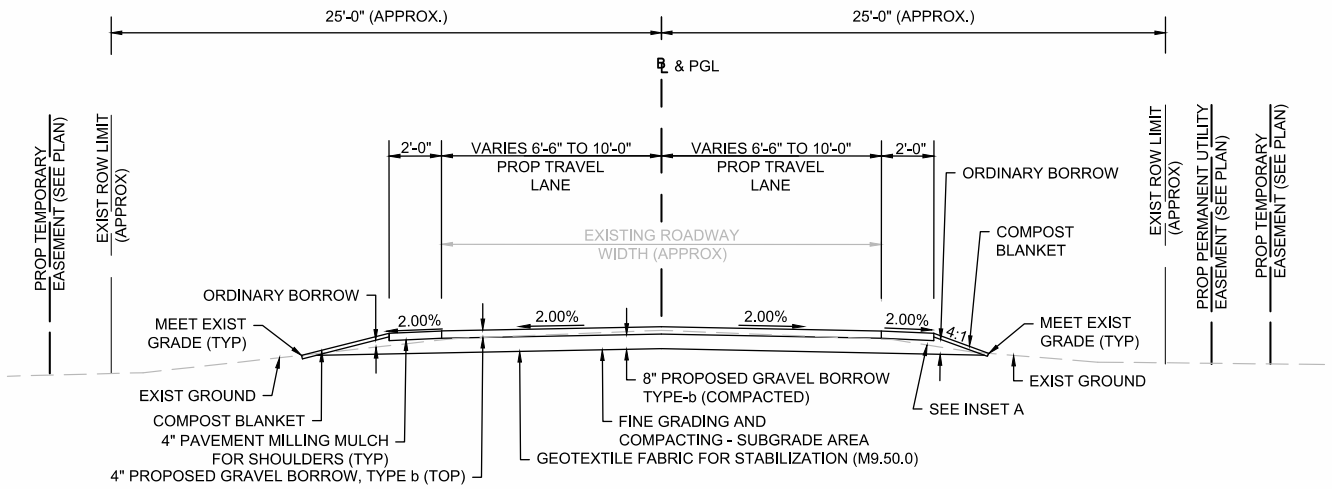
TYPICAL SECTION - KELSEY ROAD

STA. 103+95.00 TO STA. 104+53.97
NOT TO SCALE



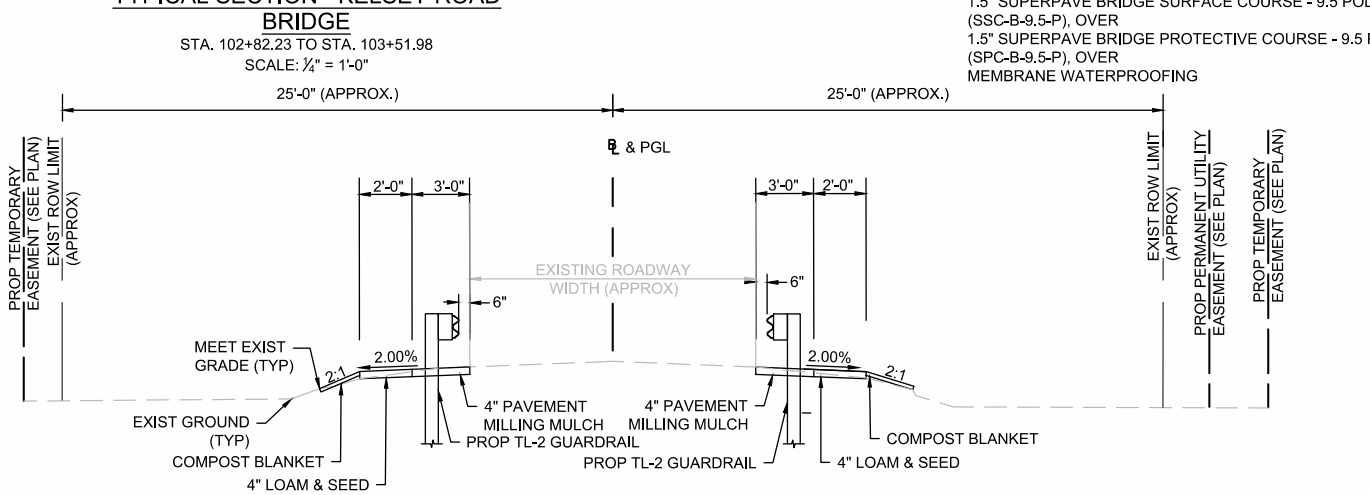
TYPICAL SECTION - KELSEY ROAD BRIDGE

STA. 102+82.23 TO STA. 103+51.98
SCALE: ¼" = 1'-0"



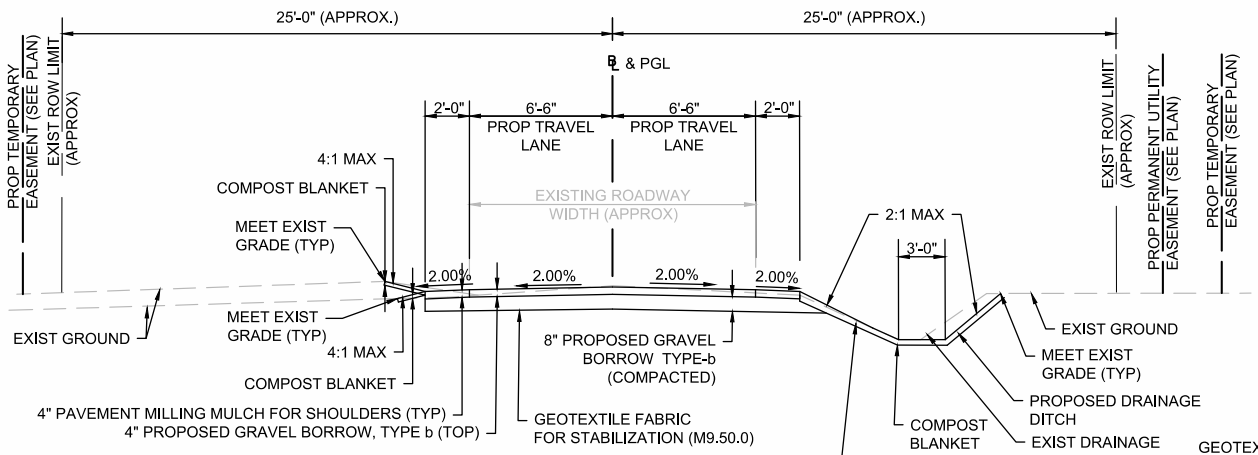
TYPICAL SECTION - KELSEY ROAD PASSING SECTION AND WETLAND ADJACENT GRADING

STA. 104+53.97 TO STA. 105+37.00
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD

STA. 101+00.00 TO STA. 101+48.00
NOT TO SCALE

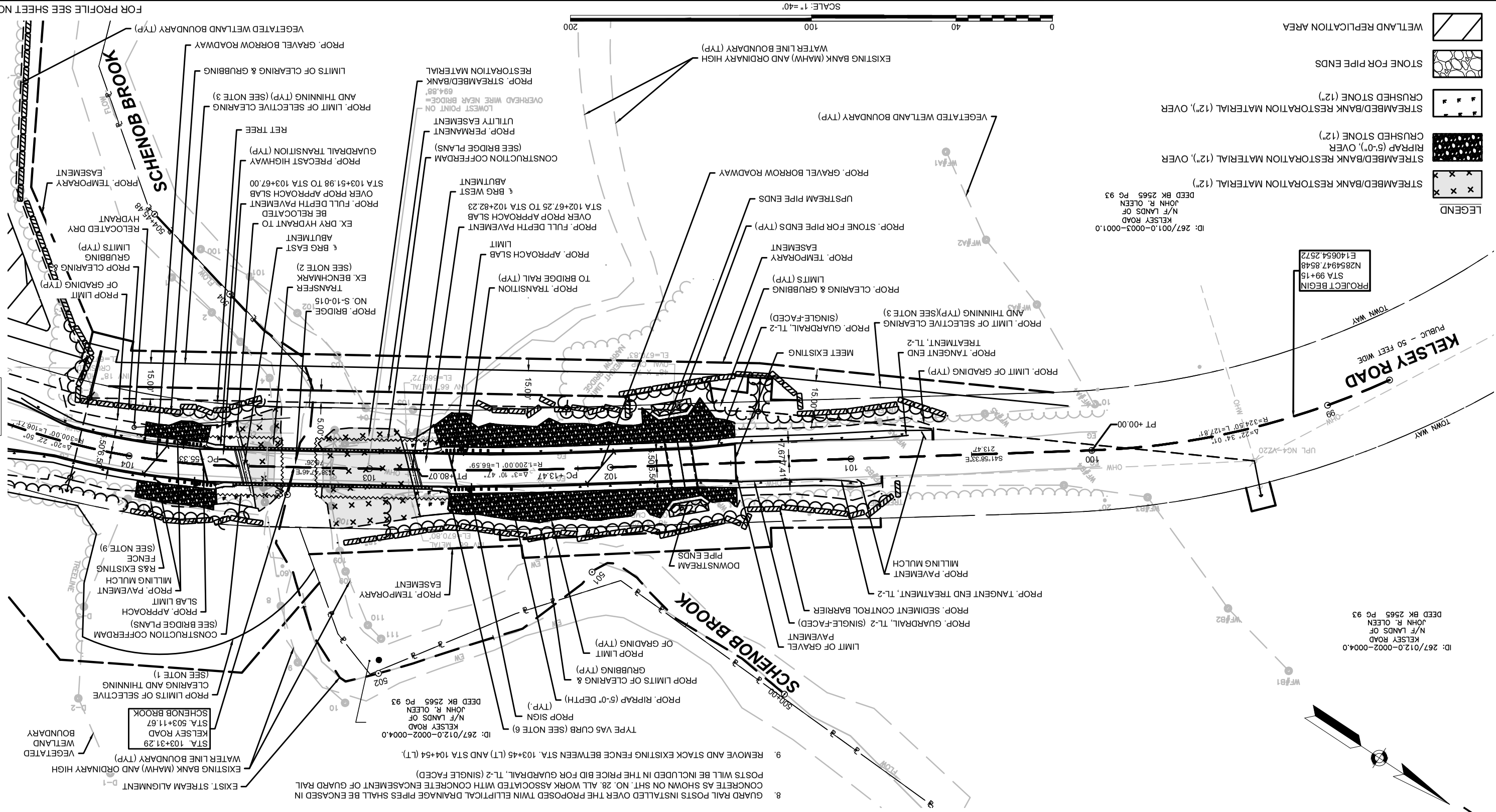


TYPICAL SECTION - KELSEY ROAD BRIDGE APPROACH

STA. 101+48.00 TO STA. 102+81.48
STA. 103+52.73 TO STA. 103+95.00
NOT TO SCALE

TYPICAL SECTION - KELSEY ROAD WITH PROPOSED ROADSIDE DITCH

STA. 105+37.00 TO STA. 106+50.00
NOT TO SCALE



HIGHWAY GUARD DETAILS

TANGENT END TREATMENT, STA. 100+97.81 (LT) TO STA. 101+22.80 (LT)
IMPACT END TO BE OFFSET 9.72 LT AT STA. 100+97.81
TRANSITION TO BRIDGE RAIL, STA. 102+35.13 (LT) TO STA. 102+68.68 (LT)
TANGENT END TREATMENT, STA. 100+76.06 (RT) TO STA. 101+01.65 (RT)
IMPACT HEAD TO BE OFFSET 8.93 RT AT STA. 100+76.06
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+01.65 (RT) TO STA. 102+38.65 (RT)
TRANSITION TO BRIDGE RAIL, STA. 102+38.65 (RT) TO STA. 102+72.60 (RT)
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85 (RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00.00 12.00 RT

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+70.47 20.09 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+66.06 13.32 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+75.80 19.36 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+71.43 14.05 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

SEE SHEET 15 FOR DETAILS

NOTES:

1. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
2. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
3. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
4. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.
5. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
6. INSTALL GRANITE CURBING TYPE VA5 AT EACH OF THE TRANSITIONS TO BRIDGE RAIL. REFER TO MASSDOT CONSTRUCTION STANDARD DETAILS, DWG NO. 628.24.2
7. SEE SHT. NO. 17 FOR TABLE OF PROPOSED UTILITY POLES
8. GUARD RAIL POSTS INSTALLED OVER THE PROPOSED TWIN ELLIPTICAL DRAINAGE PIPES SHALL BE ENCASED IN CONCRETE AS SHOWN ON SHT. NO. 28. ALL WORK ASSOCIATED WITH CONCRETE ENCASEMENT OF GUARD RAIL POSTS WILL BE INCLUDED IN THE PRICE BID FOR GUARDRAIL, TL-2 (SINGLE FACED)
9. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	5	55
PROJECT FILE NO. 609068			

CONSTRUCTION PLANS
SHEET 1 OF 2

609068_HD (SHEFFIELD CONST PLAN 01_ACOE VERSION).DWG Plotted on 3-Apr-2026 9:31 AM
Proposal No. 609068-136649

Proposal No. 609068-136649

609068_HD (SHEFFIELD CONST PLAN 02_ACOE VERSION).DWG Plotted on 3-Apr-2026 9:35 AM

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SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	6	55
PROJECT FILE NO.	609068		

CONSTRUCTION PLANS
SHEET 2 OF 2

HIGHWAY GUARD DETAILS

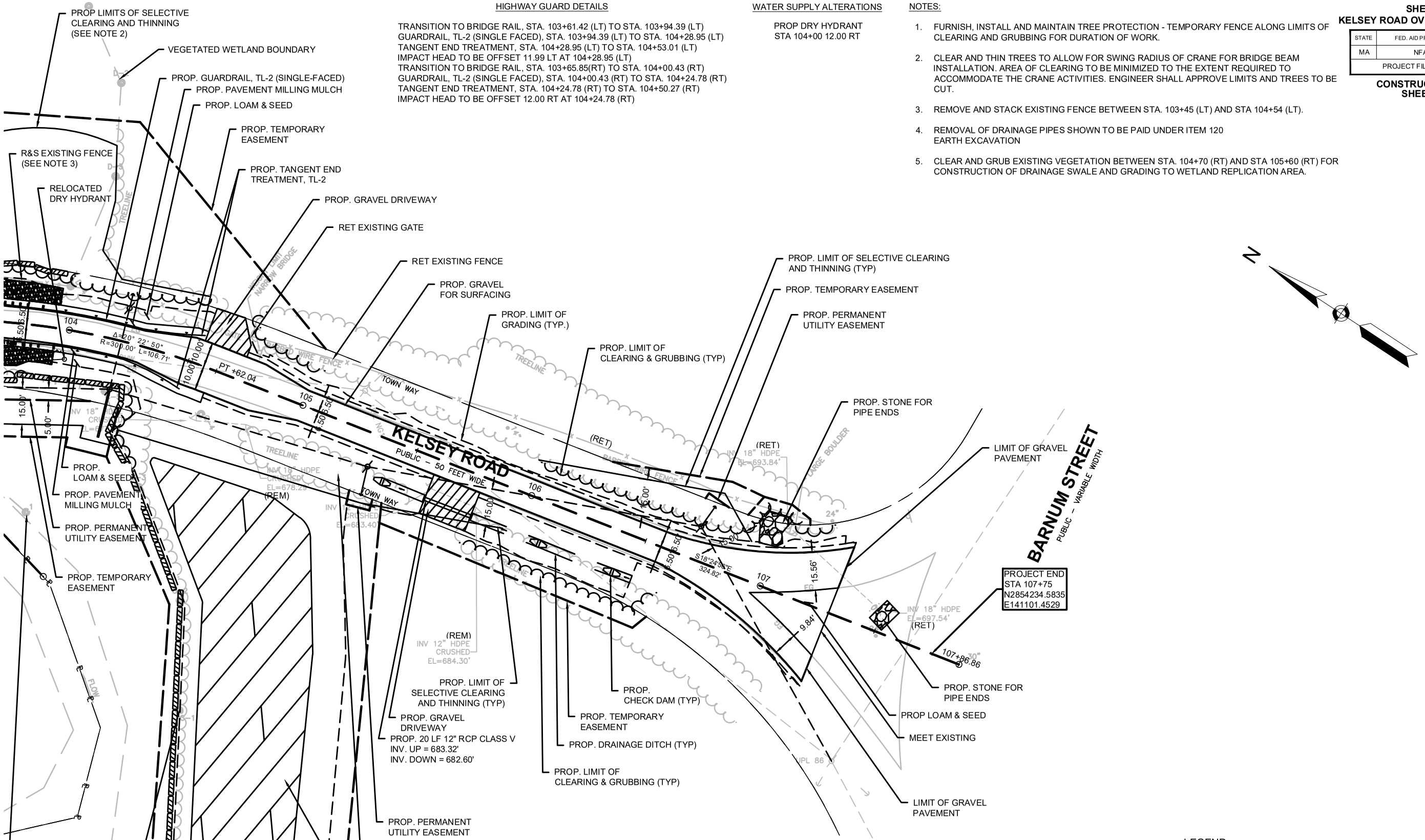
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
IMPACT HEAD TO BE OFFSET 11.99 LT AT 104+28.95 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85(RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)
IMPACT HEAD TO BE OFFSET 12.00 RT AT 104+24.78 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00 12.00 RT

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
4. REMOVAL OF DRAINAGE PIPES SHOWN TO BE PAID UNDER ITEM 120 EARTH EXCAVATION
5. CLEAR AND GRUB EXISTING VEGETATION BETWEEN STA. 104+70 (RT) AND STA 105+60 (RT) FOR CONSTRUCTION OF DRAINAGE SWALE AND GRADING TO WETLAND REPLICATION AREA.



LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- GRAVEL DRIVEWAY
- STONE FOR PIPE ENDS
- WETLAND REPLICATION AREA

FOR PROFILE SEE SHEET NO. 8

FOR CONSTRUCTION PLAN:
SEE SHT. NO. 5

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8

KELSEY ROAD PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 4'

Benchmark 8284
Rivet in Wingwall
Elevation = 676.68'
Sta. 103+39.89, 09.93' RT

NAVD 88
BASE ELEV
655.00

99+00 100+00 101+00 103+00 104+00

678.0 676.3 675.9 676.1 676.11 676.07 675.9 676.50 676.6 677.50 676.6 677.51 678.6 679.52

EXISTING ELEV.
PROPOSED ELEV.

660 670 680 690 700 710

PROP 12" THICK STREAMBED/BANK RESTORATION MATERIAL (TYP)

PROP DRY WILDLIFE CROSSING (TYP.)

PROP 34" X 53" ELLIPTICAL CLASS V RCP
EXIST 48" X 72" OVAL CMP
TO BE REMOVED

PROP 34" X 53" ELLIPTICAL CLASS V RCP

PROP BOTTOM OF SUBGRADE

EXIST GRADE

13.15"

-0.10%

GRADE BREAK STA = 101+48.03
ELEV = 676.12

LIMIT OF GRAVEL PAVING
STA. 101+48.03
N 2854782.7350
E 1408817.6967

PROP ℄ BRG
W. ABUT.

EXIST 66" METAL PIPE
TO BE REMOVED

LOW CHORD
EL 674.21

PROP ℄ BRG
E. ABUT.

EX ℄ BRG
W. ABUT.

APPROACH SLAB (TYP)

PROP GRADE

EX ℄ BRG
E. ABUT.

ORDINARY HIGH WATER
EL 671±

SCHENOB BROOK

KELSEY ROAD

2.02%

10 YEAR
DESIGN FLOOD
EL 676.61

100 YEAR
BASE FLOOD
EL 678.52

50 YEAR
DESIGN FLOOD
EL 677.88

BRIDGE NO. S-10-015

PVT: 102+58.03
ELEV: 676.65

PVC: 101+98.03
ELEV: 676.08

739.6' HSD

LOW POINT ELEV = 676.07
LOW POINT STA = 102+00.34
PVI STA = 102+28.03
PVI ELEV = 676.05
A.D. = 2.10%
K = 28.56
60' VC

BEGINNING OF PROJECT
STA. 99+15.00
N 2854947.8548
E 1406542572

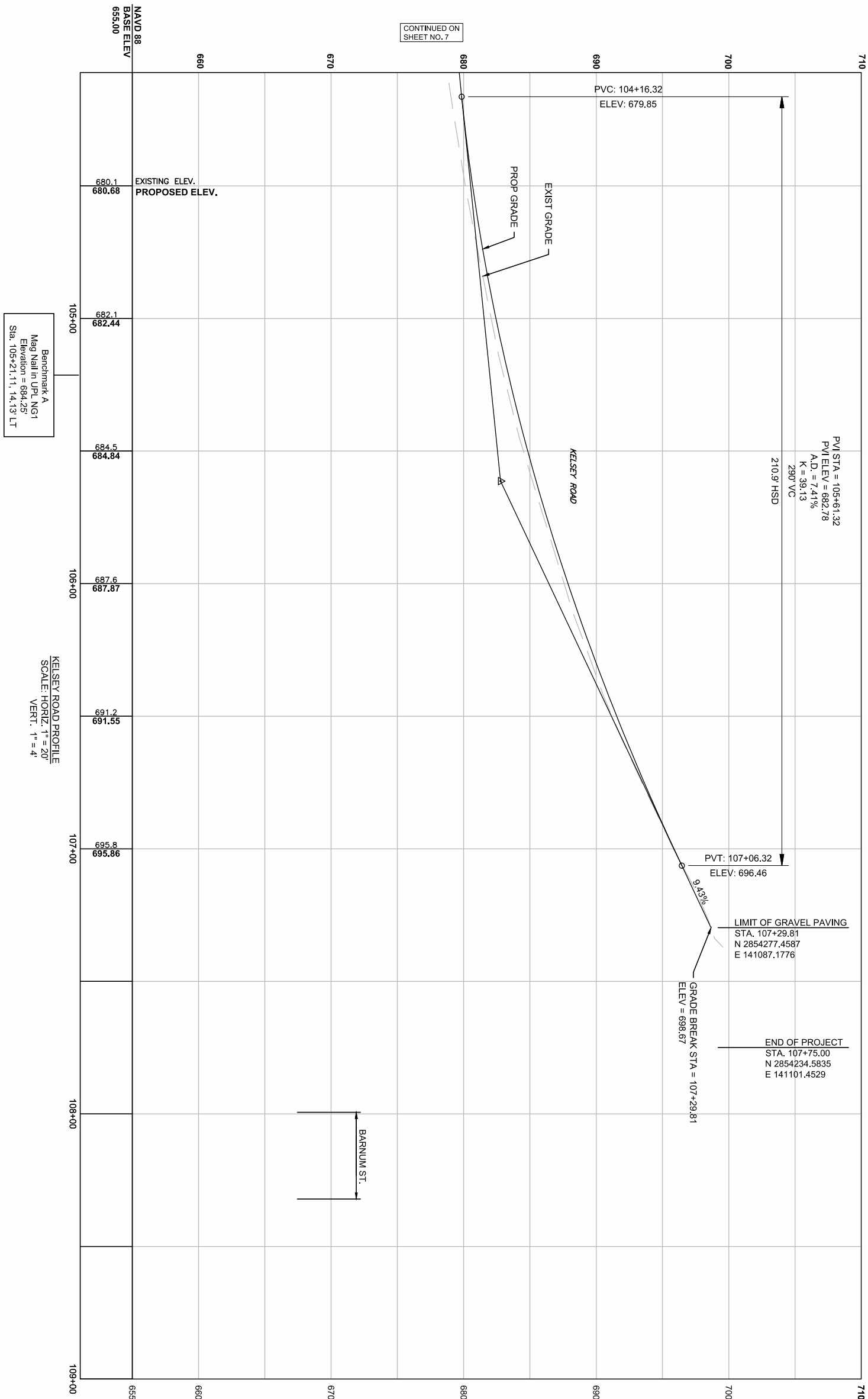
CONTINUED ON SHEET NO. 8

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	7	55

PROJECT FILE NO. 609068

ROADWAY PROFILES



FOR CONSTRUCTION PLAN:
SEE SHT. NO. 6

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
ROADWAY PROFILES

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	8	55
PROJECT FILE NO.	609068		

609068_HD (SHEFFIELD PROFILE 02).DWG Plotted on 18-Mar-2026 2:20 PM

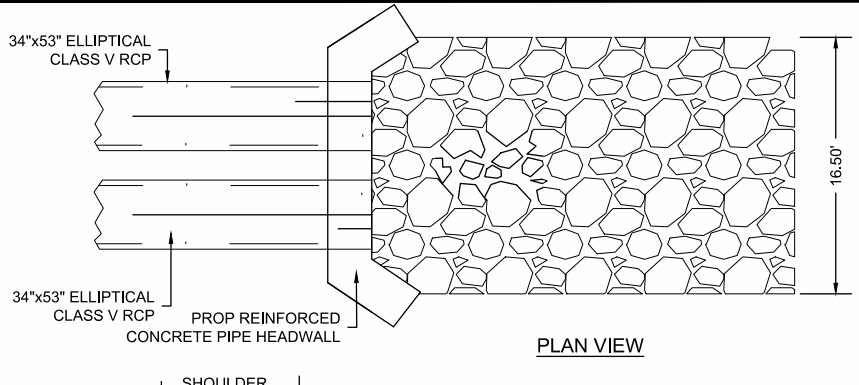
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	15	55
PROJECT FILE NO.	609068		

DRAINAGE DETAILS

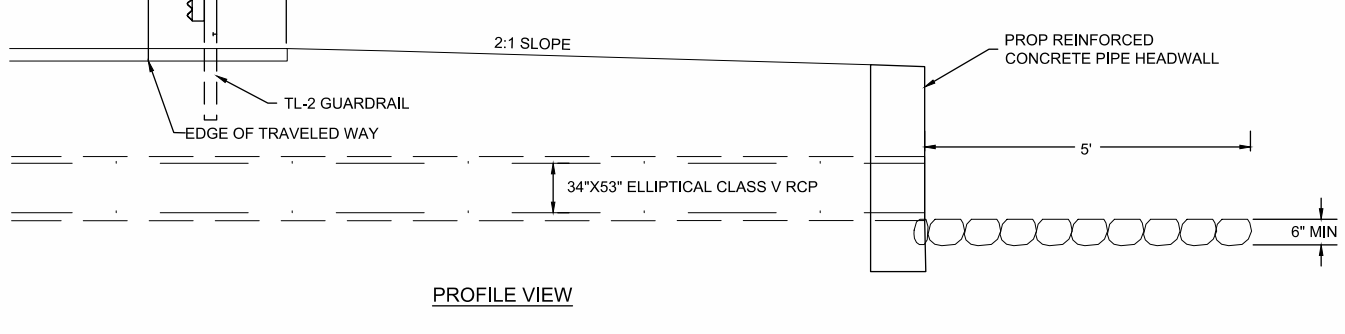
608069_HD\DRAINAGE DETAILS.DWG Plotted on 18-Mar-2026 2:47 PM

Proposal No. 609068-136649

A00830 - 469



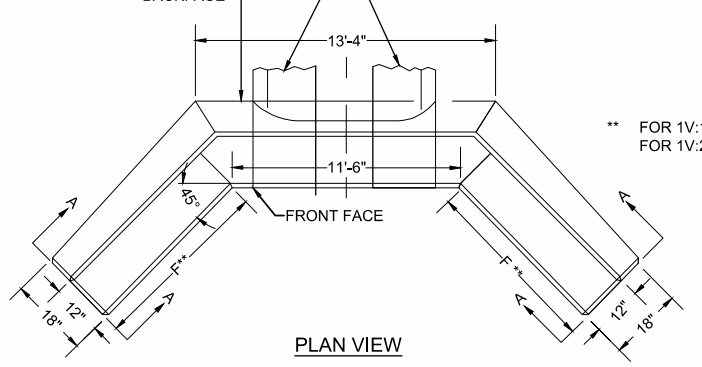
PLAN VIEW



PROFILE VIEW

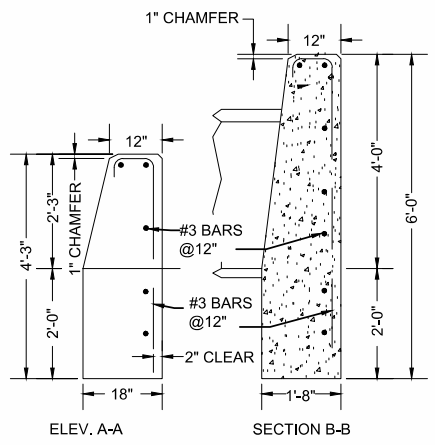
STONE FOR PIPE ENDS AT ELLIPTICAL CULVERT

NOT TO SCALE

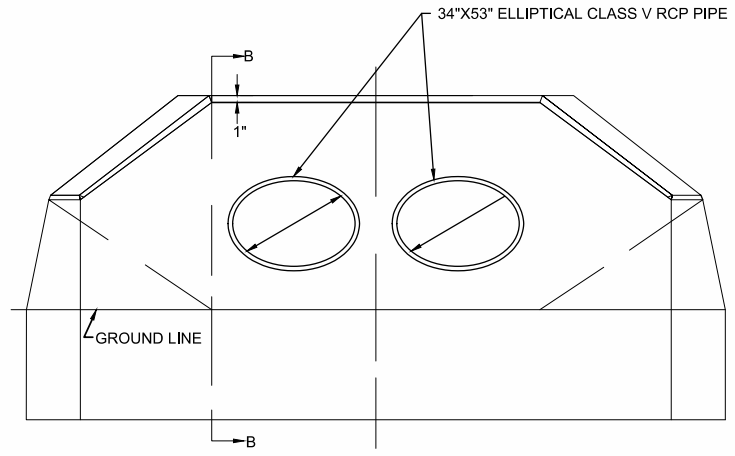


** FOR 1V:1.5H SLOPE, F=3'-6"
FOR 1V:2H SLOPE, F=5'-0"

PLAN VIEW



ELEV. A-A SECTION B-B

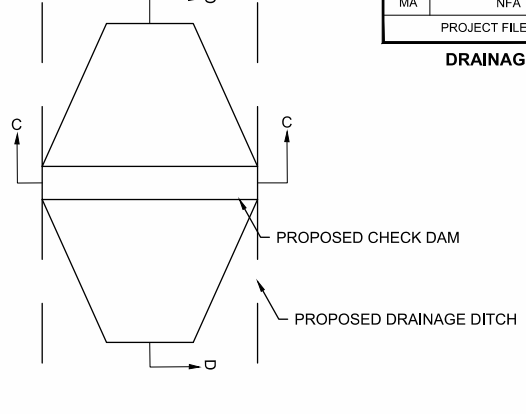


FRONT ELEVATION

REINFORCED CONCRETE PIPE HEADWALL

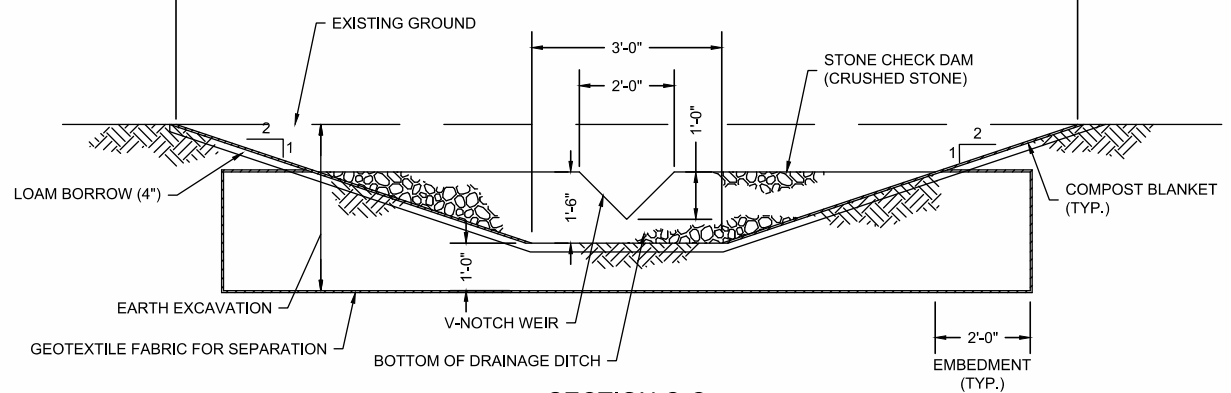
NOT TO SCALE

(ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM)



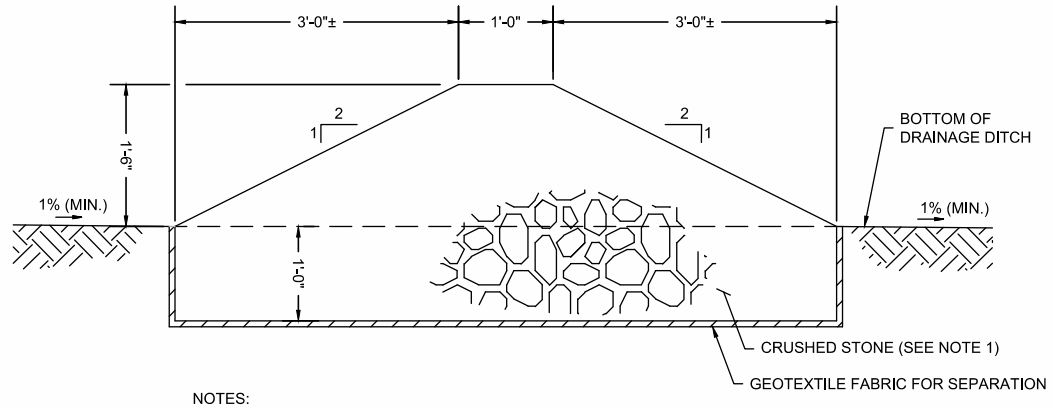
STONE CHECK DAM PLAN VIEW

NOT TO SCALE



SECTION C-C

NOT TO SCALE



NOTES:
1. CRUSHED STONE SHALL MEET MATERIAL REQUIREMENTS OF SECTION M2.01.2

SECTION D-D

NOT TO SCALE

WETLAND FLAG NOTES:

1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW)/ FEDERAL WETLANDS. FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+66 LT TO STA. 101+70 RT

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+72 LT TO STA. 101+76 RT

NOTES:

1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.

2. AREA TO BE CLEARED TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES.

3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.

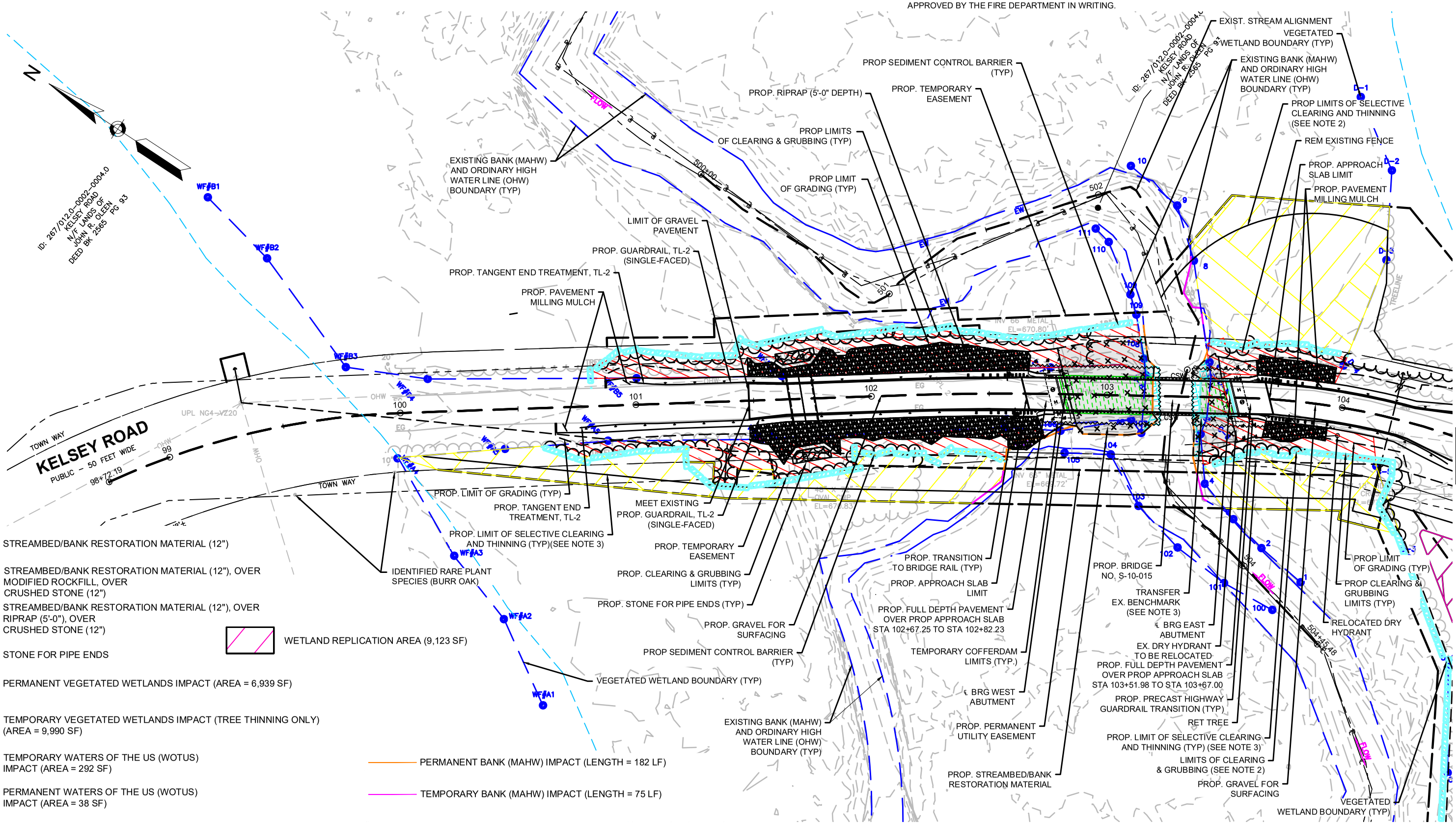
4. GRUBBING IS NOT TO BE DONE IN WETLANDS WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS.

5. THE DRY HYDRANT MUST BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED MUST BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	19	55
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2



Proposal No. 609068-136649
609068_HD/WETLAND REPLICATION PLANS_ACOE VERSION).DWG Plotted on: 3-Apr-2026 10:34 AM
A00830 - 470

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

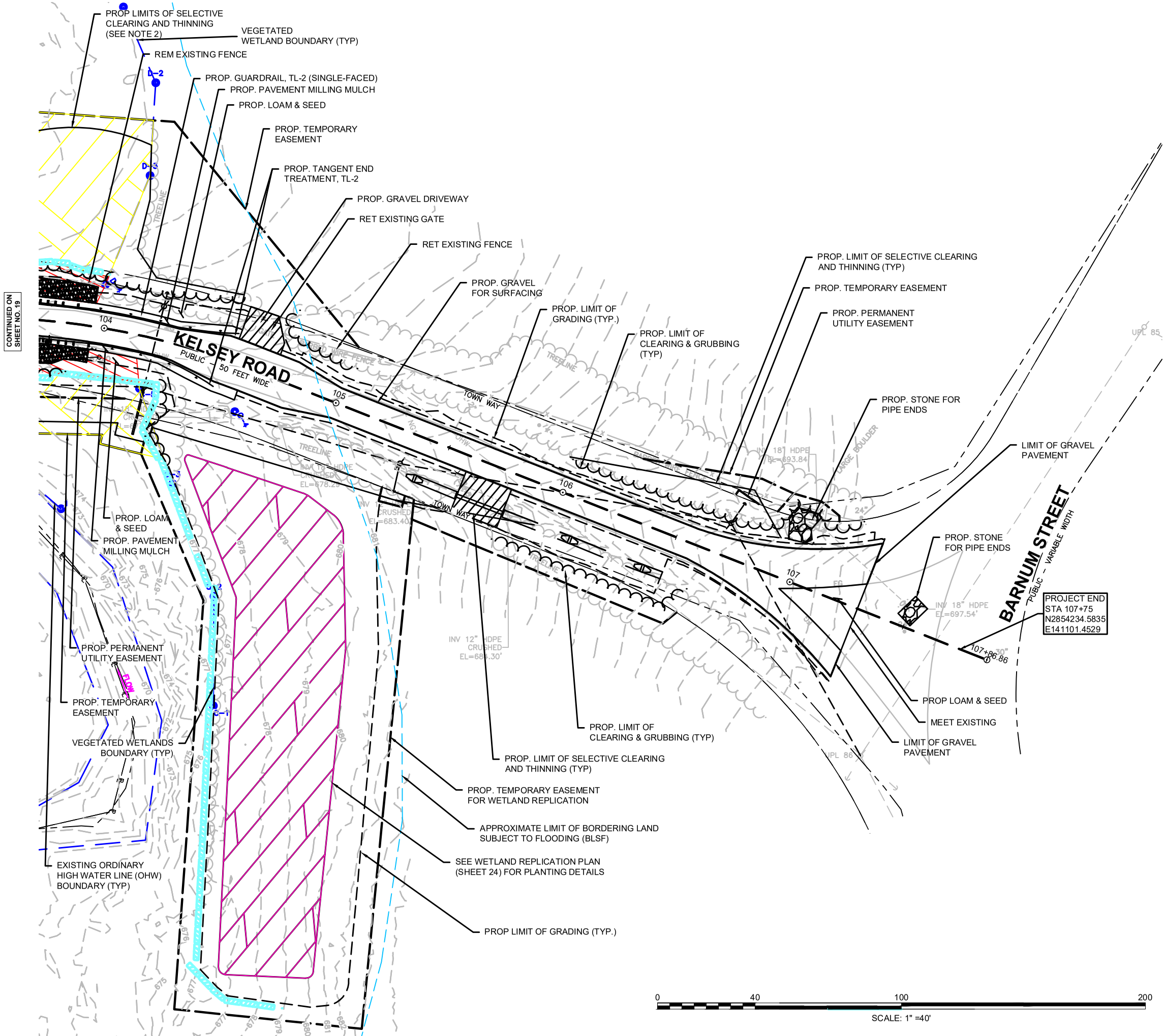
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	20	55
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.

2. AREA TO BE CLEARED TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES.



LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- PERMANENT VEGETATED WETLANDS IMPACT (AREA = 6,939 SF)
- TEMPORARY VEGETATED WETLANDS IMPACT (TREE THINNING ONLY) (AREA = 9,990 SF)
- WETLAND REPLICATION AREA (9,117 SF)

Proposal No. 609068-136649

A00830 - 471

609068_HDWETLAND REPLICATION PLANS_ACOE VERSION).DWG Plotted on 3-Apr-2026 9:46 AM

LEGEND

- OHW/ELEV 671±
- TEMPORARY EROSION & SEDIMENT CONTROL
- TEMPORARY EROSION & SEDIMENT CONTROL - COIR LOGS
- WETLAND REPLICATION AREA (9,123 SF)

SCALE: 1" =40'

0 40 100 200

WETLAND REPLICATION PLANT LIST				
SYMBOL	QUANTITY (EACH)	BOTANICAL NAME	COMMON NAME	SIZE
CA	12	CORNUS AMOMUM	SILKY DOGWOOD	24" TO 36"
CR	12	CORNUS RACEMOSA	GRAY DOGWOOD	24" TO 36"
AI	12	ALNUS INCANA	SPECKLED ALDER	12" TO 18"

PROP LIMIT OF GRADING

PROP TEMP EASEMENT FOR WETLAND REPLICATION

STA. 105+76.80 OFFSET: 222.52

STA. 105+41.68 OFFSET: 234.52

3-AI

3-CR

3-CA

3-CA

3-CR

3-AI

3-CR

3-AI

3-CA

3-CR

3-CA

3-AI

STA. 104+91.26 OFFSET: 89.31

STA. 104+48.91 OFFSET: 43.15

STA. 105+19.97 OFFSET: 45.48

VEGETATED WETLAND BOUNDARY (TYP)

SEE NOTE 4

KELSEY ROAD

PUBLIC - 50 FEET WIDE

TOWN WAY

TOWN WAY

PROPOSED LIMIT OF GRADING (TYP.)

APPROXIMATE LIMIT OF BORDERING LAND SUBJECT TO FLOODING (BLSF)

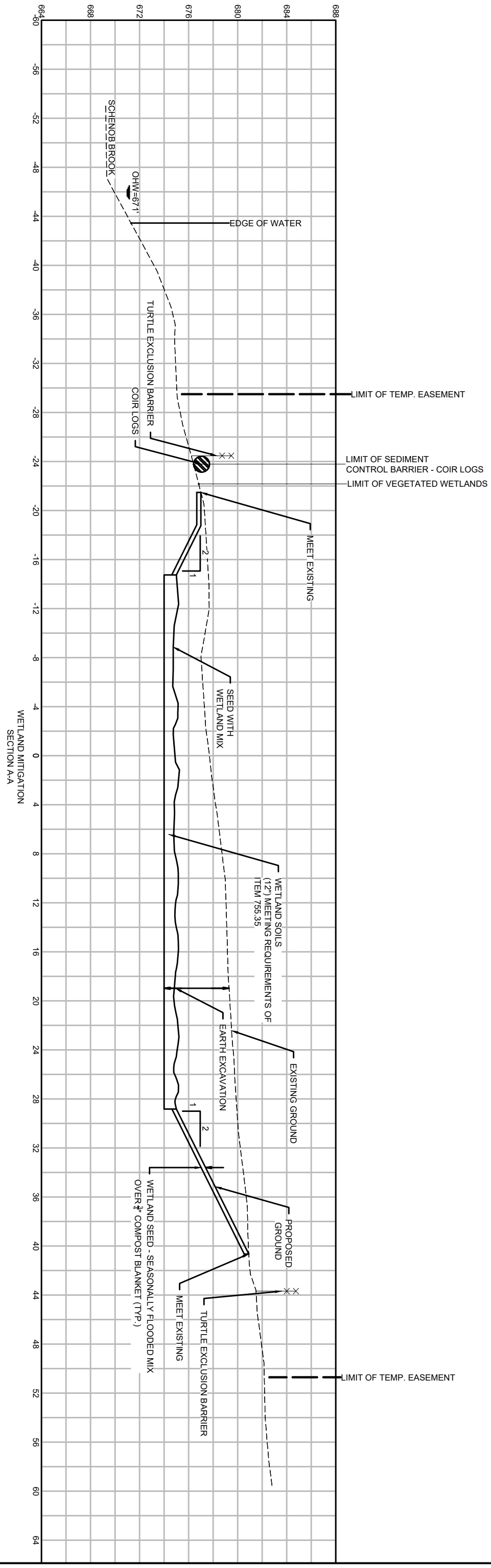
DEPTH OF EXCAVATION IS PRESUMED TO INTERCEPT GROUNDWATER. THE TYPE OF WETLAND LOST IS WATER BORDERING FLOODPLAIN. OHW IS 671 ±. 10-YR STORM ELEV IS ~676.6'. PROPOSED REPLICATION "FLOOR" IS 675.

NOTE:

1. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS. EXCAVATE TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
2. WETLAND REPLICATION AREA SHALL BE SEEDED WITH WETLAND PART SHADE MIX MEETING THE REQUIREMENTS OF ITEM 765.555.
3. SEE WETLAND REPLICATION PLAN SHEET 2 OF 3 FOR SECTION A-A. SEE WETLAND REPLICATION PLAN SHEET 3 OF 3 FOR SECTION B-B.
4. CONTRACTOR SHALL INSTALL COMPOST FILTER TUBES ALONG BOTTOM OF ROADWAY SLOPE BETWEEN STA. 104+25 (RT) AND STA. 105+60 (RT) TO PREVENT SEDIMENT FROM ROADWAY WORK ENTERING WETLAND REPLICATION AREA. WORK TO BE PAID UNDER ITEM 767.121 - SEDIMENT CONTROL BARRIER

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
WETLAND REPLICATION PLAN
SHEET 1 OF 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	24	55
PROJECT FILE NO. 609068			



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	24	55
	PROJECT FILE NO. 609068		

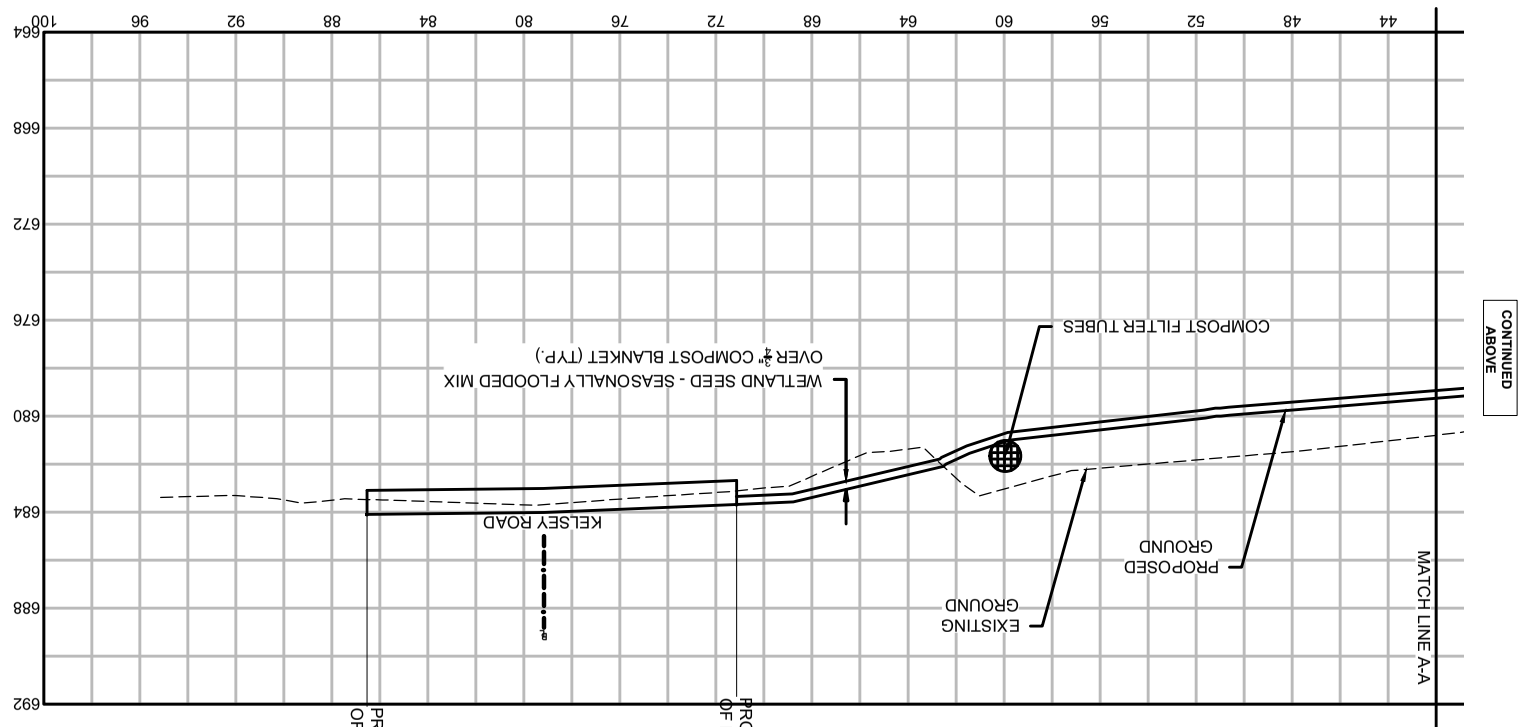
WETLAND REPLICATION PLAN
SHEET 2 OF 3

609068_HD(WETLAND REPLICATION PLANS_ACOE VERSION).DWG Plotted on 3-Apr-2026 10:37 AM

SCALE IN FEET

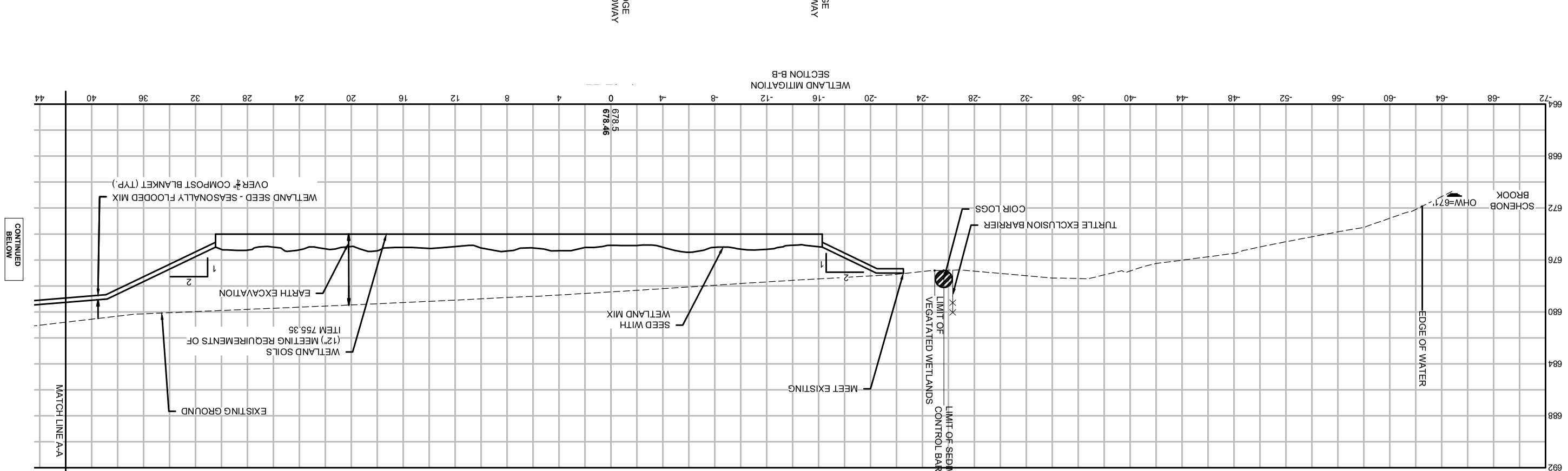
16 8 0 8

WETLAND MITIGATION
SECTION B-B CONT.



SECTION B-B

WETLAND MITIGATION



WETLAND REPLICATION PLAN
SHEET 3 OF 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	24	55
PROJECT FILE NO. 609068			

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

609068_HDWETLAND REPLICATION PLANS_ACOE VERSION1.DWG Plotted on 3-Apr-2026 9:51 AM

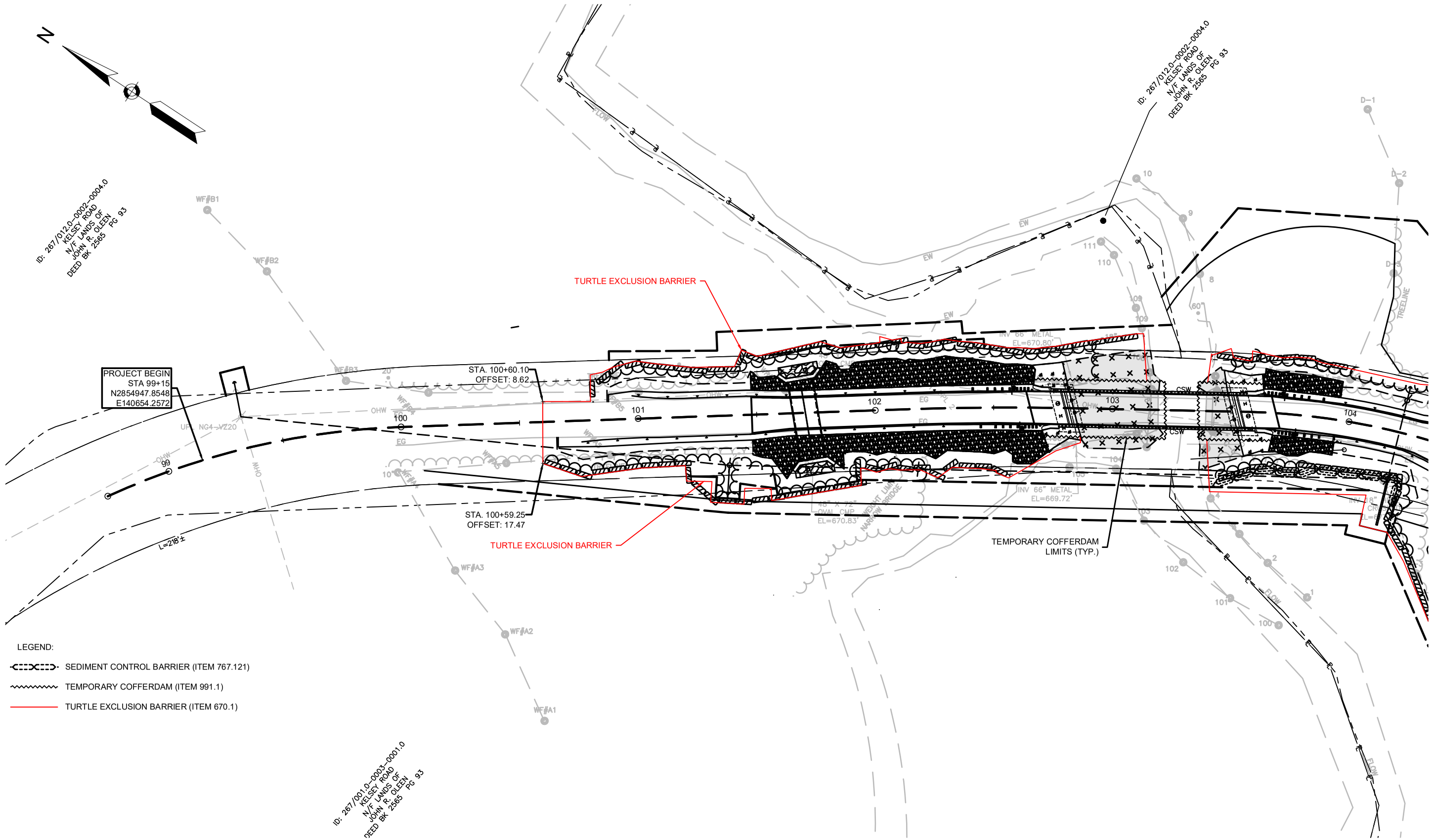
NOTES:

1. TURTLE EXCLUSION BARRIER SHALL BE PLACED AS SHOWN ON THE TURTLE EXCLUSION BARRIER PLAN. FINAL LOCATION SHALL BE DETERMINED BY FIELD CONDITIONS AND MUST BE APPROVED BY THE MASSDOT WILDLIFE MONITOR.
2. INSTALLATION AND MONITORING SHALL BE AS SHOWN AND AS DESCRIBED IN THE SPECIFICATIONS.
3. THE BARRIER MUST CONNECT, WITHOUT GAPS, TO ANY PROPOSED WATER CONTROL STRUCTURES SUCH AS COFFERDAMS OR SANDBAGS TO PREVENT TURTLES FROM ENTERING THE WORKZONE.
4. CONSTRUCTION VEHICLE ENTRANCES TO THE WORK AREA MUST BE CLOSED EACH NIGHT DURING THE TURTLE ACTIVE SEASON (MARCH 15 - OCTOBER 31) WITH EITHER A GATE AND/OR SEDIMENTATION FENCING. THE CONSTRUCTION VEHICLE ENTRANCES SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.
5. SIGNAGE NOTING THE LIMIT OF WORK SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	21	55
PROJECT FILE NO.	609068		

TURTLE EXCLUSION BARRIER PLANS
SHEET 1 OF 2



Proposal No. 609068-136649
609068_HD\TURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 3-Apr-2026 10:24 AM
A00830 - 475

CONTINUED ON SHEET NO. 21

TURTLE EXCLUSION BARRIER

TURTLE EXCLUSION BARRIER

STA. 107+31.17
OFFSET: 43.27

STA. 107+29.17
OFFSET: 41.25

PROJECT END
STA 107+75
N2854234.5835
E141101.4529

ID: 267/012.0-0002-0014.0
1458 BARNUM STREET
N/F LANDS OF
SUSAN J. DEVENS REVOCABLE TRUST
DEED BK 1034 PG 32

SCALE: 1" =40'

LEGEND:

SEDIMENT CONTROL BARRIER (ITEM 767.121)

TURTLE EXCLUSION BARRIER (ITEM 670.1)

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
TURTLE EXCLUSION BARRIER PLANS
SHEET 2 OF 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	22	55
	PROJECT FILE NO. 609068		

609068_HD(TURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 3-Apr-2026 10:25 AM

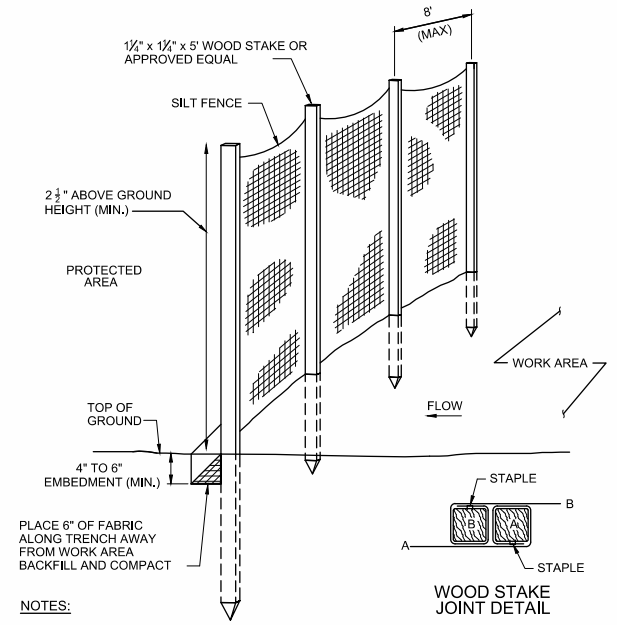
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	23	55
PROJECT FILE NO.	609068		

TURTLE EXCLUSION BARRIER DETAILS

609068_HD(TURTLE BARRIER EXCLUSION PLAN DETAILS).DWG Plotted on 18-Mar-2026 2:01 PM

Proposal No. 609068-136649

A00830 - 477



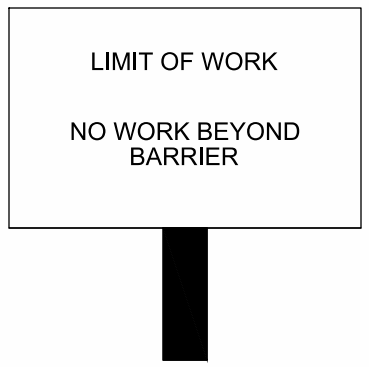
WOOD STAKE JOINT DETAIL

NOTES:

1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

TURTLE EXCLUSION BARRIER

SCALE: N.T.S.

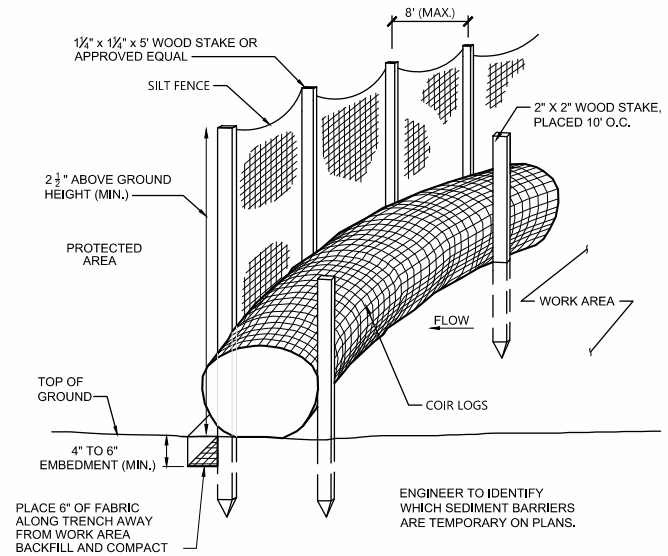


NOTES:

1. SIGNAGE MUST CLEARLY IDENTIFY THE LIMIT OF WORK IN ALL 4 QUADRANTS OF THE WORK SITE.

ENVIRONMENTALLY SENSITIVE AREA SIGNAGE

SCALE: N.T.S.

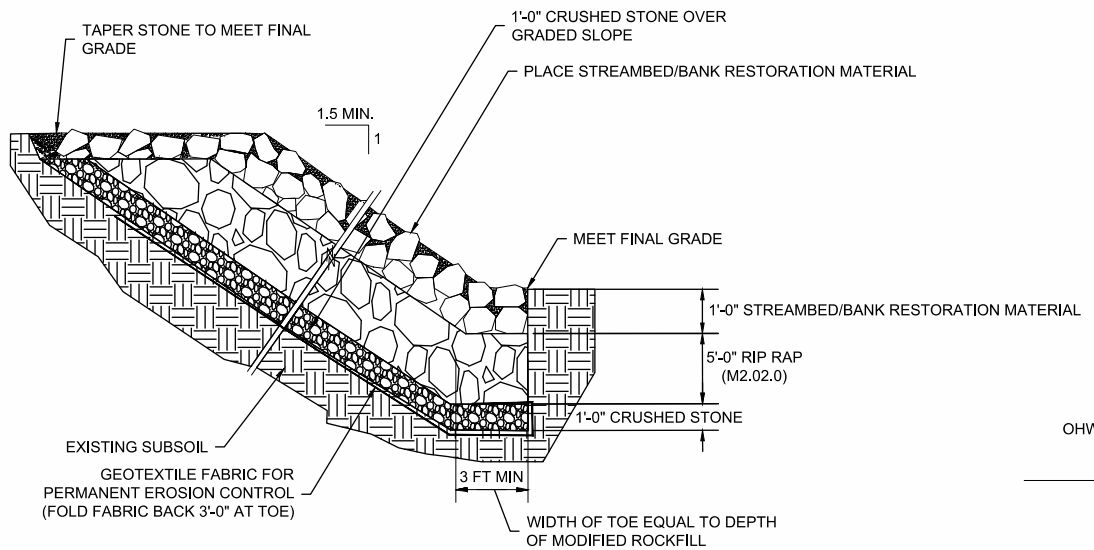


NOTES:

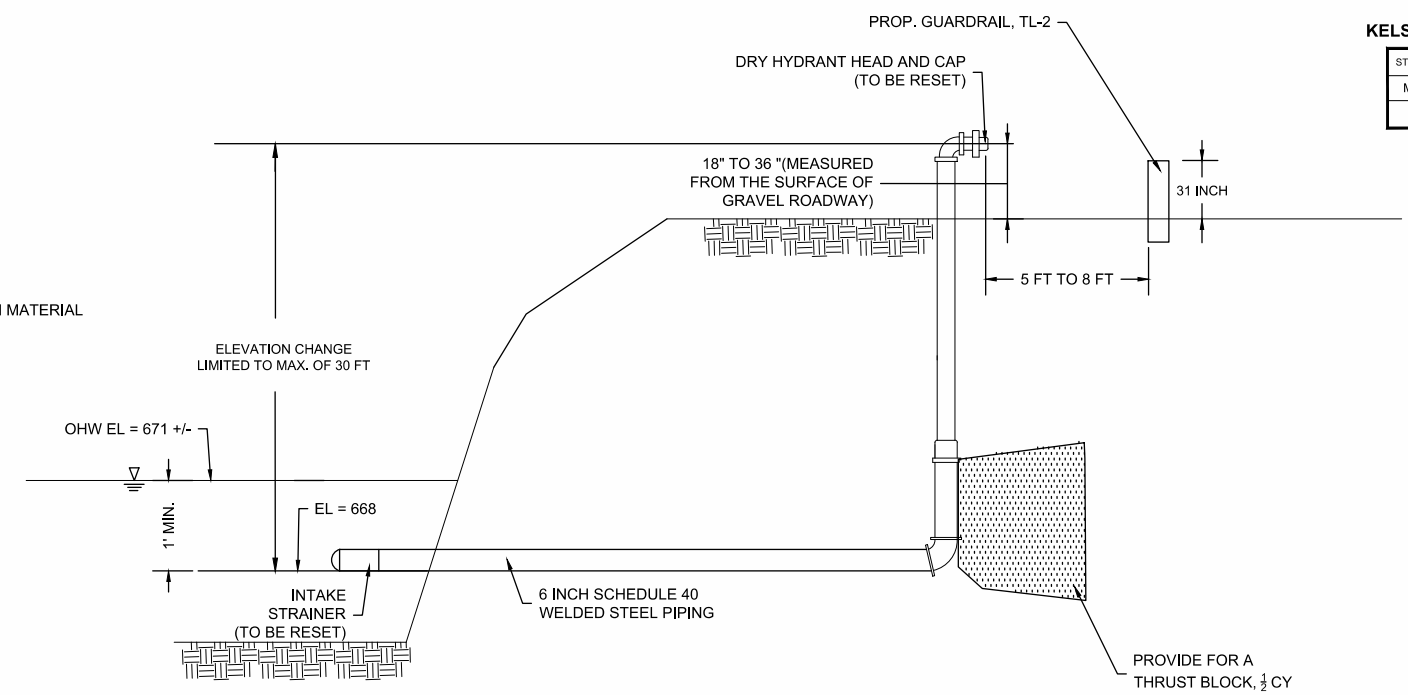
1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

TURTLE EXCLUSION BARRIER WITH SEDIMENT CONTROL BARRIER

SCALE: NTS



RIPRAP SIDE SLOPE DETAIL
NTS

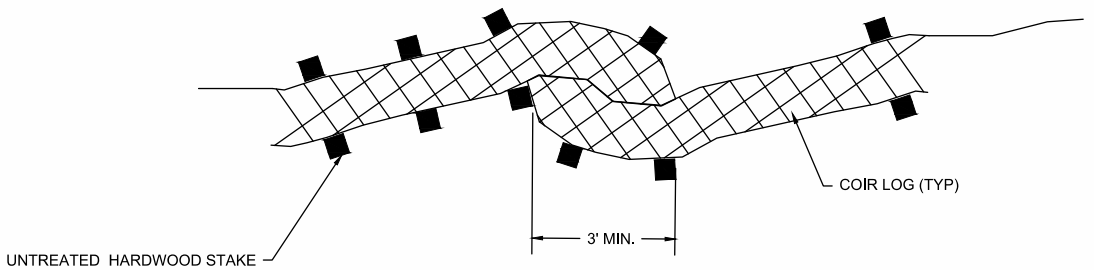


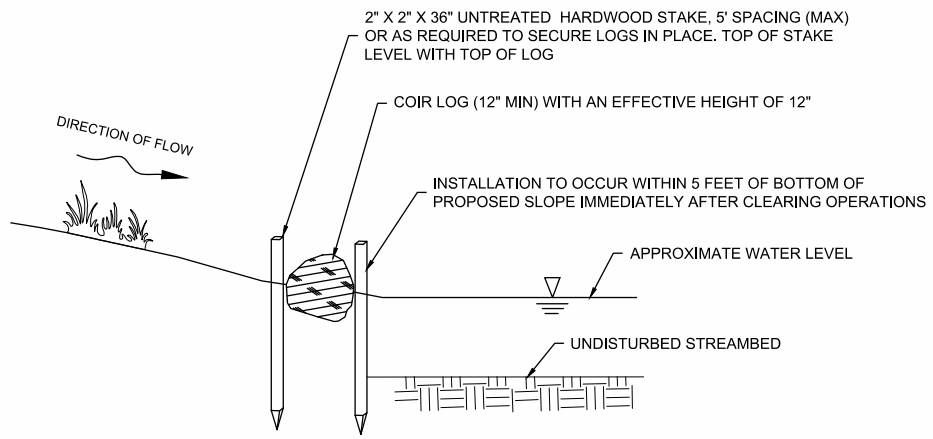
DRY HYDRANT DETAILS
NTS

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	27	55
PROJECT FILE NO.	609068		

CONSTRUCTION DETAILS





COIR LOG DETAILS
NTS

609068_HD (CONSTRUCTION DETAILS.DWG Plotted on 3-Apr-2026 8:33 AM

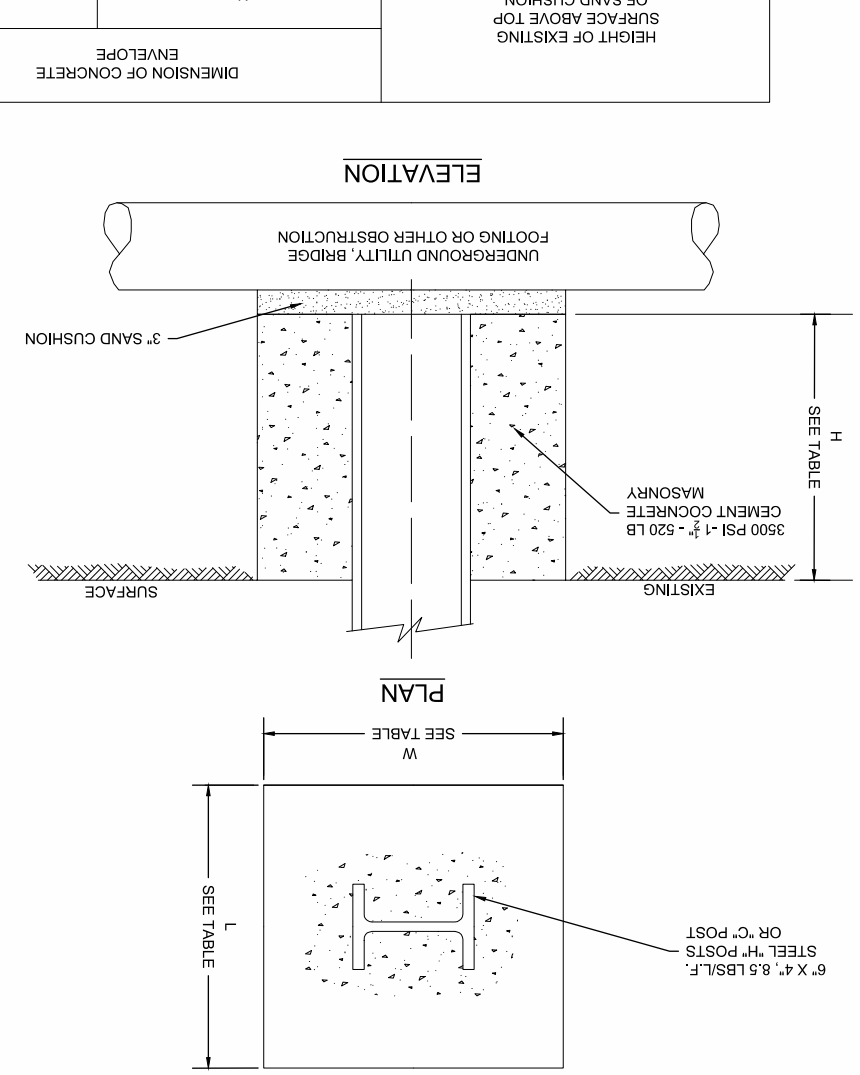
Proposal No. 609068-136649

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MODIFIED HIGHWAY GUARD
POST INSTALLATION
NTS

NOTES:
1. OFFSET BRACKETS ARE TO BE INSTALLED AND RAILS ARE TO BE MOUNTED AS SHOWN ON DRAWINGS 620.12.1
2. NOT TO BE USED ON MORE THAN 2 POSTS IN A ROW

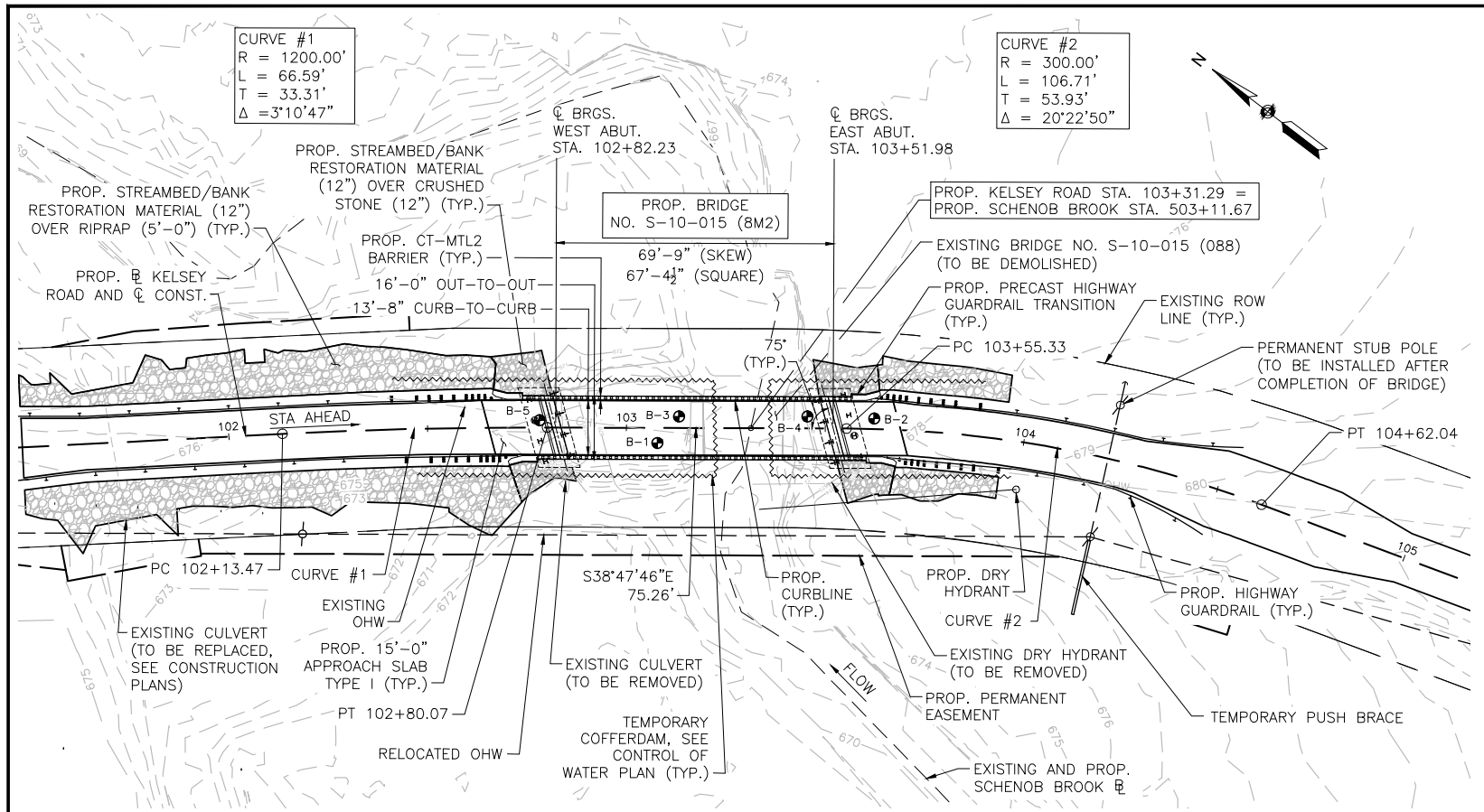
HEIGHT OF EXISTING SURFACE ABOVE TOP OF SAND CUSHION	DIMENSION OF CONCRETE ENVELOPE		
	H HEIGHT OF SURFACE ABOVE SAND CUSHION	W	L
1'-0" - 1'-6"	VARIES 1'-0" - 1'-6"	2'-6"	2'-6"
1'-6" - 2'-6"	VARIES 1'-6" - 2'-6"	2'-0"	1'-6"
OVER 2'-6"	2'-6"	1'-6"	1'-6"



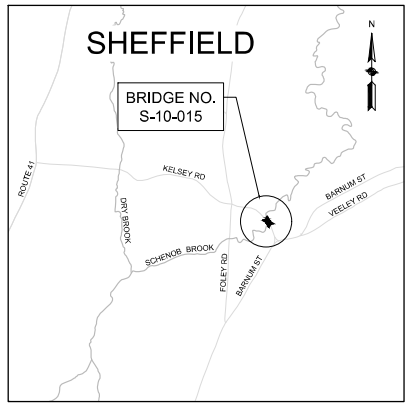
CONSTRUCTION DETAILS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	28	55
PROJECT FILE NO.	609068		

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK



KEY PLAN
SCALE: 1" = 20'



LOCUS
SCALE: 1" = 2000'

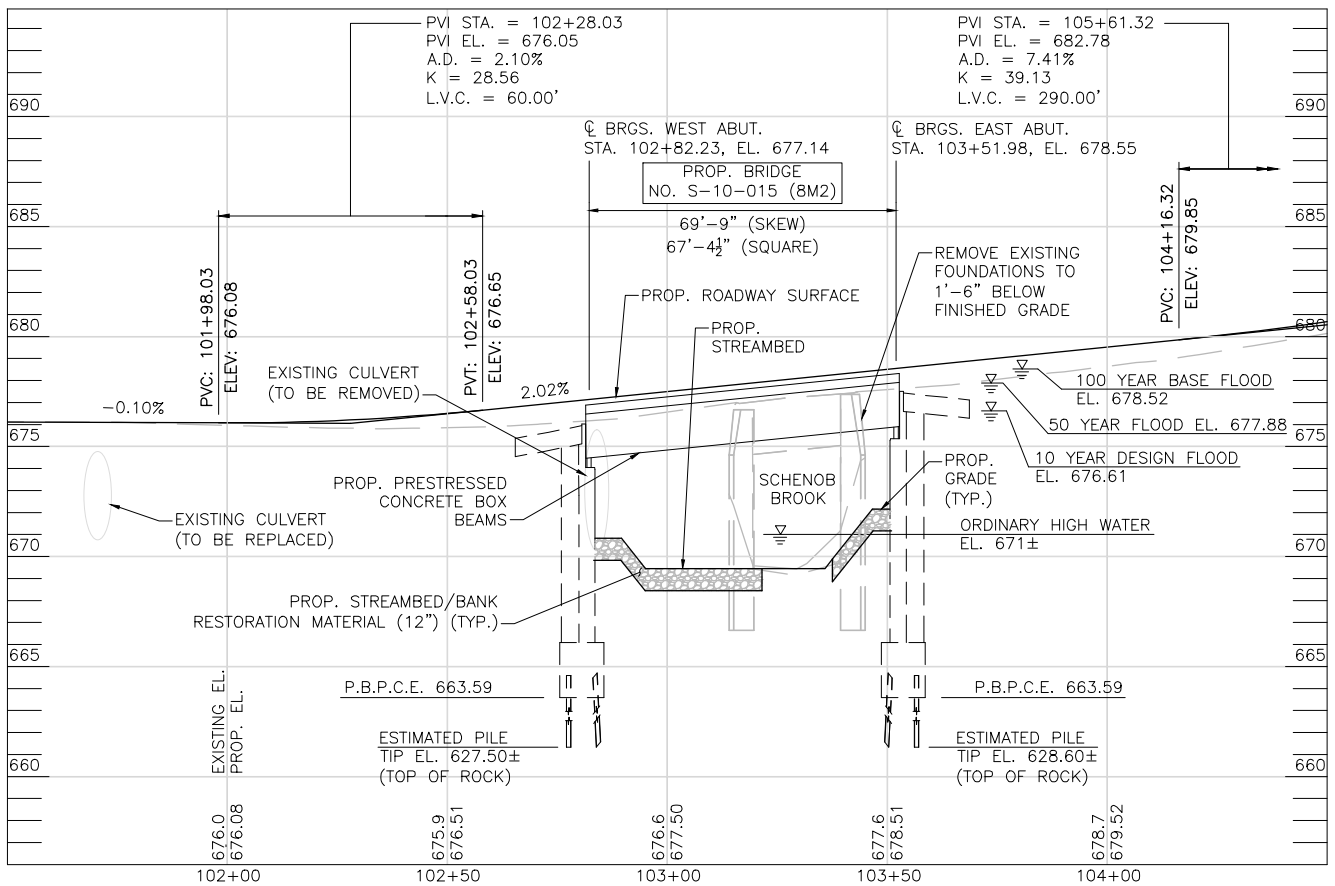
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	29	55
PROJECT FILE NO.	609068		

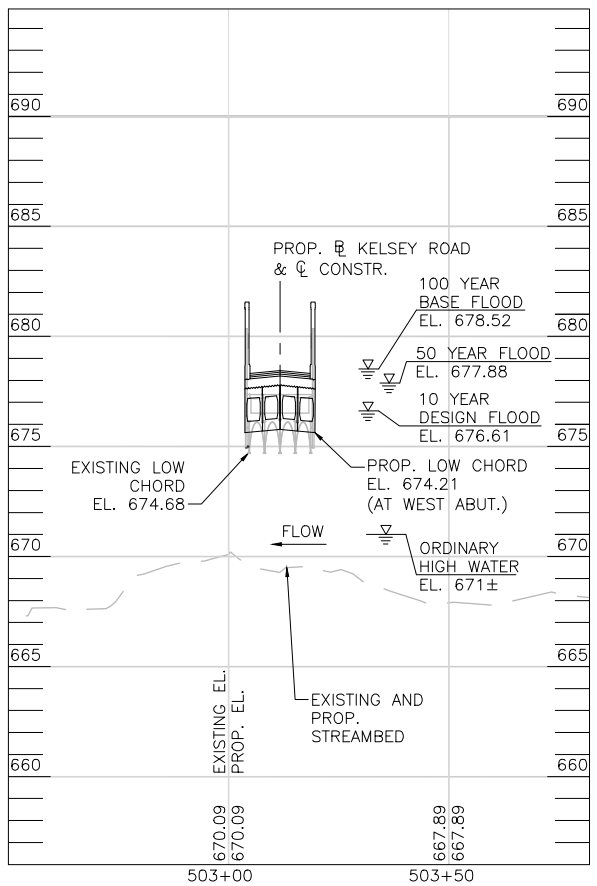
KEY PLAN, LOCUS, AND PROFILES

INDEX OF DRAWINGS

BRIDGE SHEET NO.	TITLE
1	KEY PLAN, LOCUS, AND PROFILES
2	GENERAL NOTES
3	BORINGS LOGS – 1
4	BORINGS LOGS – 2
5	BORINGS LOGS – 3
6	BORINGS LOGS – 4
7	GENERAL PLAN AND ELEVATION
8	BRIDGE DEMOLITION PLAN
9	CONTROL OF WATER PLAN
10	WEST ABUTMENT PLAN AND ELEVATION
11	EAST ABUTMENT PLAN AND ELEVATION
12	SUBSTRUCTURE DETAILS – 1
13	SUBSTRUCTURE DETAILS – 2
14	FRAMING PLAN
15	BEAM DETAILS – 1
16	BEAM DETAILS – 2
17	DECK SECTION AND APPROACH SLAB DETAILS
18	BRIDGE RAILING DETAILS
19	HIGHWAY GUARDRAIL TRANSITION DETAILS – 1
20	HIGHWAY GUARDRAIL TRANSITION DETAILS – 2



PROFILE – ℄ CONSTRUCTION – KELSEY ROAD
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'



PROFILE – SCHENOB BROOK
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'

	MONTH DD, YYYY: ISSUED FOR CONSTRUCTION

GANNETT FLEMING, INC.
175 FEDERAL STREET
SUITE 800
BOSTON, MA 02110
781-326-4605

massDOT Highway Division

PROPOSED BRIDGE
SHEFFIELD
KELSEY ROAD
OVER SCHENOB BROOK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

STATE BRIDGE ENGINEER _____ CHIEF ENGINEER _____

SHEET 1 OF 20 SHEETS BRIDGE NO. S-10-015 (8M2)

Proposal No. 609068-136649
609068_BR1.DWG Plotted on 2-Mar-2026 9:30 AM
609068 Second Structural Submittal (S2) 2-Mar-2026
A00830 - 480

Proposal No. 609068-136649

GENERAL NOTES:

DESIGN:

IN ACCORDANCE WITH THE 2020 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2022 FOR HL-93 LOADING.

MASSDOT BENCH MARK:

BENCHMARK #8284, BRASS RIVET SET IN THE TOP OF THE SOUTHEAST CONCRETE WINGWALL OF A BRIDGE OVER SCHENOB BROOK, EL. = 676.68.

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

DATE:

TO BE PLACED ON THE INSIDE FACE OF THE SOUTHWEST AND NORTHEAST HIGHWAY GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST HIGHWAY GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:

SURVEY NOTEBOOK NO. 23412. FIELD SURVEY WAS PERFORMED BY WSP USA, INC. AND WAS ELECTRONICALLY RECORDED. COPIES OF THE FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF-SIZE PRINTS (A3).

CONCRETE:

UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE, EXCEPT THAT THE CT-MTL2 BARRIERS SHALL BE 5000 $\frac{3}{4}$ IN. HP CONCRETE.

ALL CIP AND PRECAST CONCRETE POURS SHOWN ON THESE CONSTRUCTION DRAWINGS WHERE ALL VOLUMETRIC DIMENSIONS ARE 4 FEET OR GREATER SHALL BE CONSIDERED TO BE MASS CONCRETE PLACEMENTS AND SHALL REQUIRE A HEAT OF HYDRATION ANALYSIS AND THERMAL CONTROL PLAN, AS SPECIFIED IN THE MASSDOT STANDARD SPECIFICATIONS.

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. COATED BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	17"	21"
2. 12" OF CONCRETE BELOW BAR	18"	22"	27"
3. EPOXY COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	21"	26"	31"
4. COATED BARS, ALL OTHER CASES	17"	21"	25"
5. CONDITION 2. AND 3.	23"	29"	35"
6. CONDITION 2. AND 4.	21"	27"	32"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

FOUNDATIONS:

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

EXISTING CONDITIONS:

THE CONFIGURATION AND LAYOUT OF THE EXISTING BRIDGE STRUCTURE AND FOUNDATIONS ARE BASED ON INFORMATION CONTAINED IN THE 2016 BRIDGE RATING REPORT AND PROJECT SURVEY. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO CONSTRUCTION DETAILS AND WORK QUANTITIES. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH FIELD CONDITIONS.

THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED FIELD VERIFICATIONS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. THE EXISTING STRUCTURE IS SHOWN IN A SCREENED LINEWEIGHT.

TRAFFIC:

THE BRIDGE WILL BE CLOSED TO ALL VEHICULAR TRAFFIC DURING ALL PHASES OF DEMOLITION AND RECONSTRUCTION. TRAFFIC WILL BE CONTROLLED AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

UTILITIES:

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE, OR RELOCATE, AS NECESSARY, ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR THE BRIDGE WORK.

THE LOCATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL UTILITIES. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION REGARDING UTILITIES.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM	QTY.	UNIT
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. B-10-015 (088)	1	LS
MUCK EXCAVATION	400	CY
REINFORCED CONCRETE EXCAVATION	50	CY
BRIDGE EXCAVATION WITHIN COFFERDAM	420	CY
TEST PIT FOR EXPLORATION	50	CY
CLASS B ROCK EXCAVATION	7	CY
GRAVEL BORROW FOR BRIDGE FOUNDATION	65	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	75	CY
CRUSHED STONE	30	TON
CONTROLLED LOW-STRENGTH MATERIAL-STRUCTURAL NON-EXCAVATABLE	2	CY
DISPOSAL OF TREATED WOOD PRODUCTS	0.5	TON
SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P)	11	TON
SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P)	11	TON
SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	30	FT
GEOTEXTILE FABRIC FOR SEPARATION	70	SY
STEEL PILE HP 12 X 84	620	FT
DYNAMIC LOAD TEST BY CONTRACTOR	2	EA
PILE SHOES	16	EA
STREAMBED/BANK RESTORATION	264	SY
CONTROL OF WATER - STRUCTURE NO. S-10-015 (8M2)	1	LS
TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088)	1	LS
BRIDGE STRUCTURE, BRIDGE NO. S-10-015 (8M2)	1	LS

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	30	55
PROJECT FILE NO.	609068		

GENERAL NOTES

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2046	
AVERAGE DAILY TRAFFIC - PRESENT	121	
AVERAGE DAILY TRAFFIC - DESIGN YEAR	148	
DESIGN HOURLY VOLUME	N/A	
DIRECTIONAL DISTRIBUTION	50%	
TRUCK PERCENTAGE - AVERAGE DAY	6%	
TRUCK PERCENTAGE - PEAK HOUR	6%	
DESIGN SPEED	20 MPH	
DIRECTIONAL DESIGN HOURLY VOLUME	N/A	

SEISMIC DESIGN CRITERIA

DESIGN RETURN PERIOD:	1000 YR
DESIGN SPECTRA	
As	0.096
SDs	0.232
SD1	0.084
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

HYDRAULIC DESIGN FLOOD (HDF) DATA

DRAINAGE AREA (SQ. MILES)	19.00
HDF DISCHARGE (C.F.S.)	2,000
HDF FREQUENCY (YEARS)	10
HDF VELOCITY (F.P.S.)	4.02
HDF ELEVATION (FEET, NAVD, UPSTREAM)	676.61
BASE (100-YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	4,460
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	678.52
SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	25
SDF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.29
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	3.36
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	50
SCF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.88
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	4.27
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	N/A
FREQUENCY (IF KNOWN, YEARS)	N/A
MAXIMUM ELEVATION (FEET, NAVD)	N/A
DATE (MM/YYYY)	N/A
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	N/A

TEMPORARY WATER CONTROL DESIGN DATA

DESIGN FLOOD DISCHARGE (C.F.S.)	864
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	8.45
DESIGN FLOOD ELEVATION (FEET, NAVD)	676.13

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Plotted on 1-Mar-2026 8:39 AM
609068_BR2.DWG
609068 Second Structural Submittal (S2) 2-Mar-2026
A00830 - 481

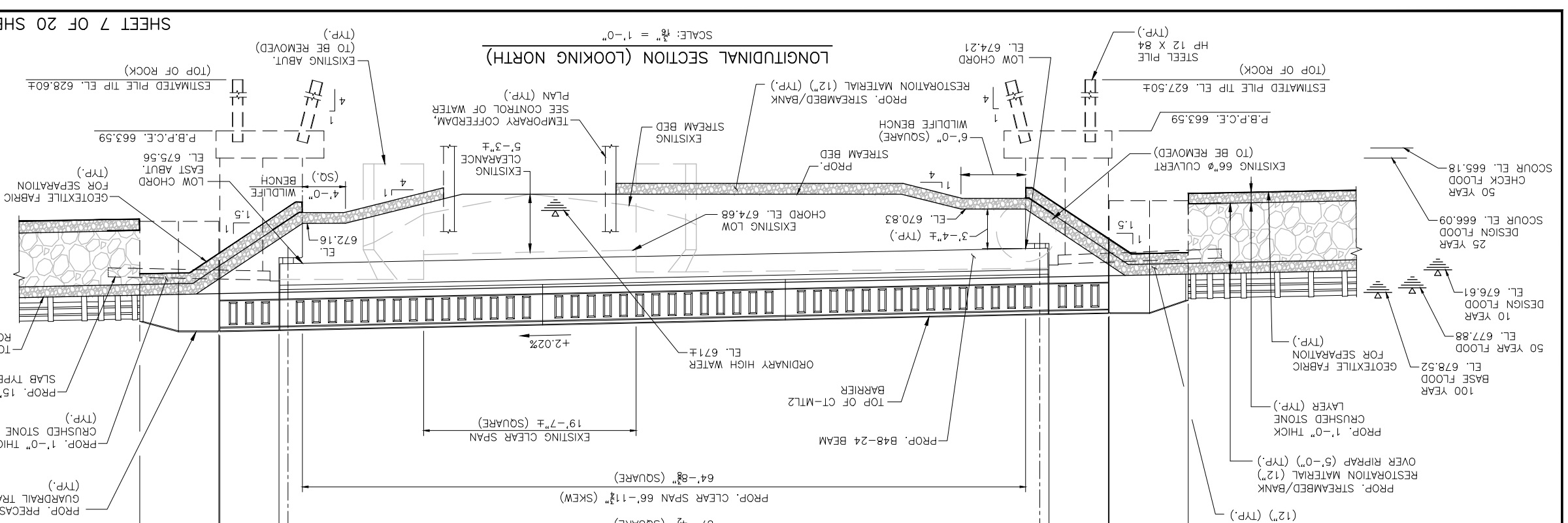
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DATE	DESCRIPTION

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USE ONLY PRINTS OF LATEST DATE

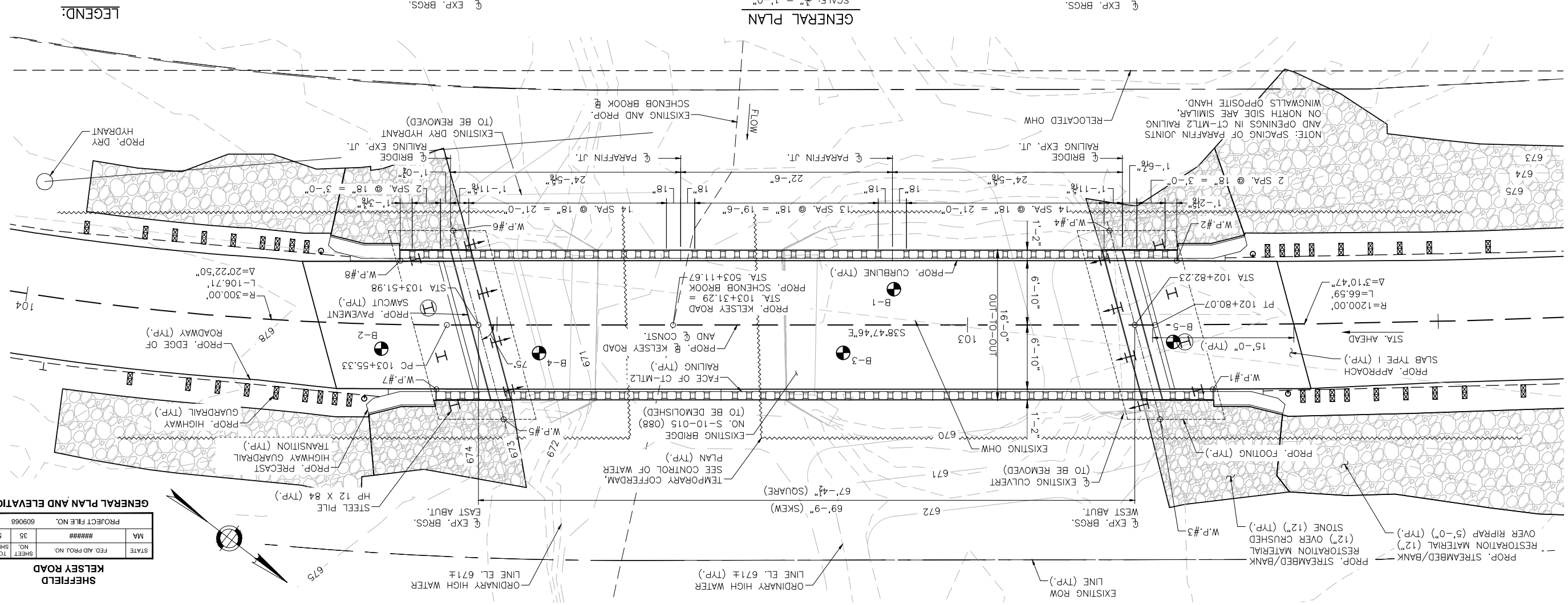
LONGITUDINAL SECTION (LOOKING NORTH)

SCALE: 1/8" = 1'-0"



GENERAL PLAN

SCALE: 1/8" = 1'-0"



GENERAL PLAN AND ELEVATION		
STATE	FED. AID PROJ. NO.	SHEET NO. 35 / TOTAL SHEETS 55
MA	######	
PROJECT FILE NO. 609068		

SHEFFIELD
KELSEY ROAD

609068_BR7.DWG Plotted on 1-Mar-2026 6:52 PM

609068 Second Structural Submittal (S2) 2-Mar-2026

A00830 - 482

Proposal No. 609068-136649

DATE	DESCRIPTION
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

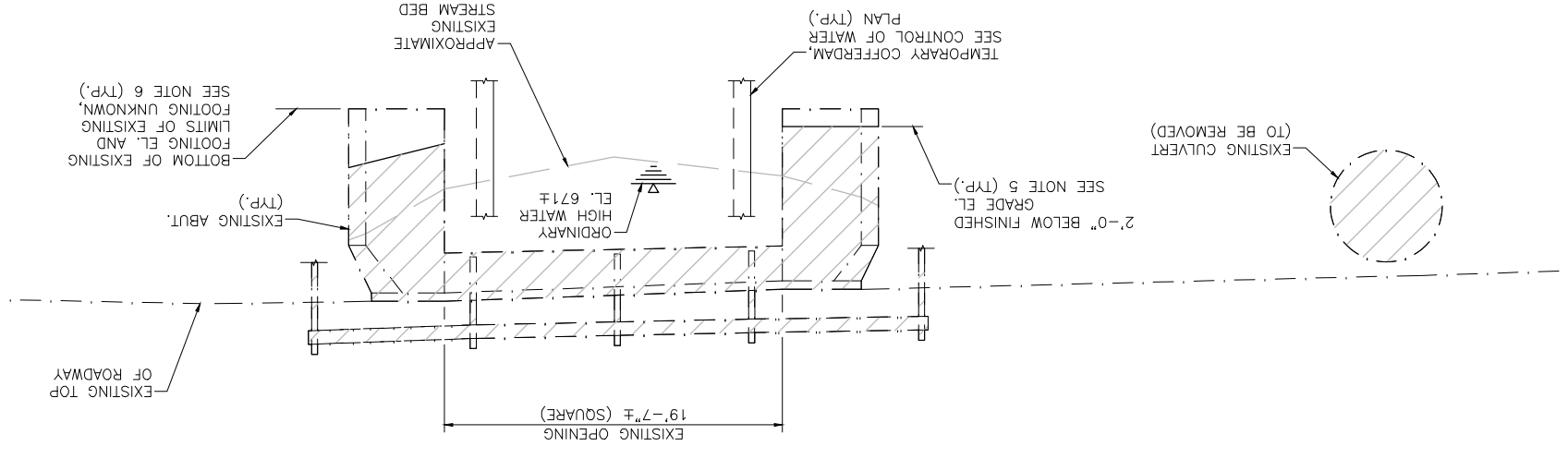
609068 Second Structural Submittal (S2) 2-Mar-2026

A00830 - 483

Proposal No. 609068-136649

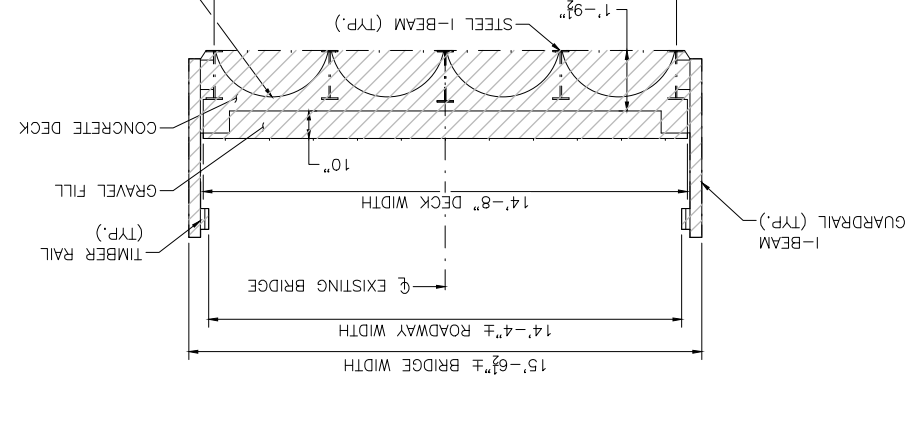
DEMOLITION ELEVATION

SCALE: $\frac{1}{4}$" = 1'-0"



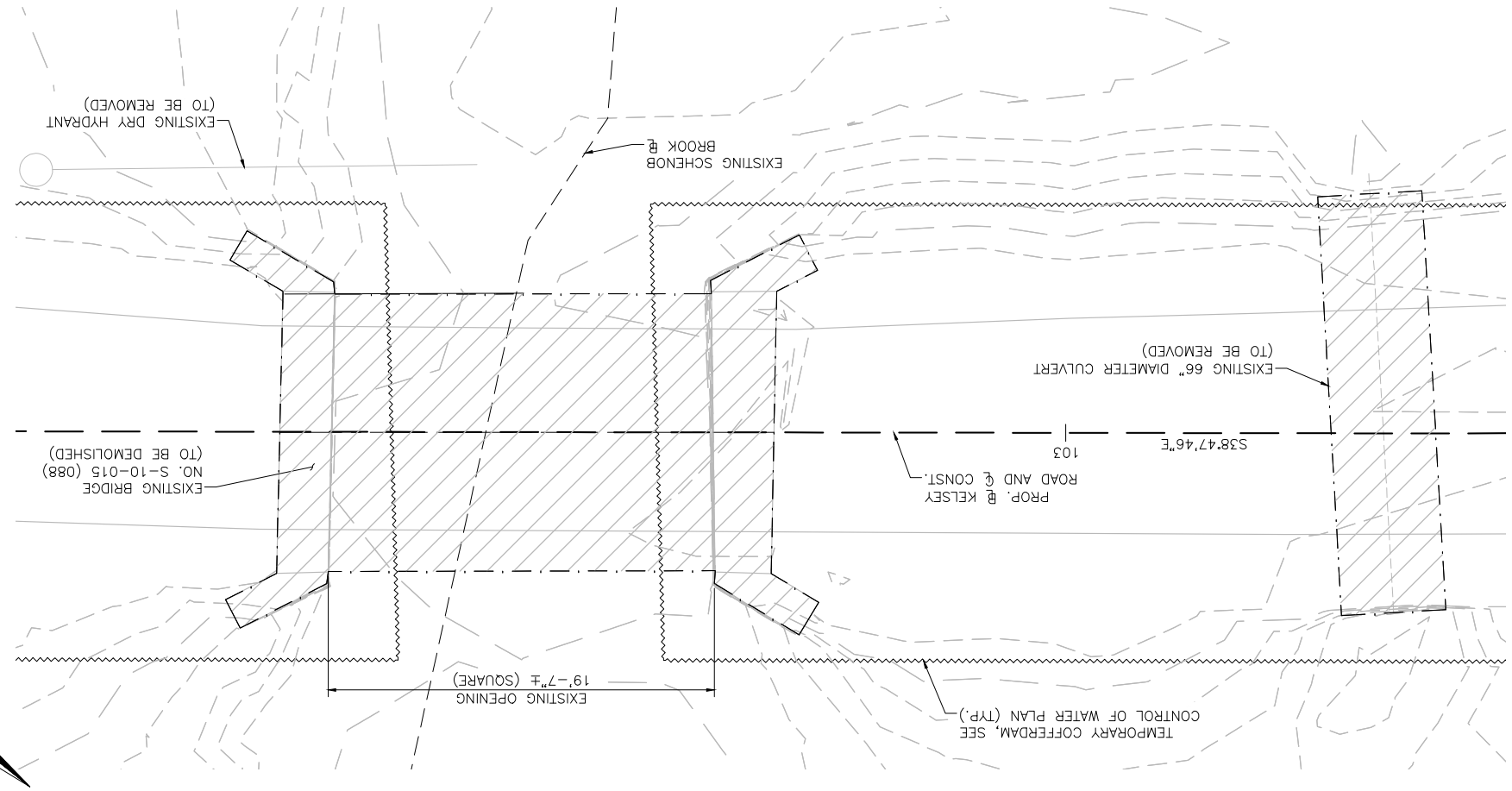
EXISTING BRIDGE TYPICAL CROSS SECTION

SCALE: $\frac{3}{8}$" = 1'-0"



DEMOLITION PLAN

SCALE: $\frac{1}{4}$" = 1'-0"



LEGEND:

TO BE REMOVED

DEMOLITION NOTES:

1. THE EXISTING BRIDGE SHALL BE DEMOLISHED TO THE LIMITS SHOWN ON THE PLANS. THE CONTRACTOR SHALL TAKE ALL MEASURES REQUIRED TO PROTECT THE SCHENOB BROOK AND ADJACENT WETLAND AREAS FROM ALL CONSTRUCTION OPERATIONS.
2. CONTRACTOR MUST CONTAIN ALL DEBRIS FROM FALLING INTO THE BROOK DURING CONSTRUCTION ACTIVITIES. TEMPORARY PROTECTIVE SHIELDING ASSOCIATED WITH DEMOLITION SHALL BE INCLUDED IN THE PAY ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088). SEE SPECIAL PROVISIONS.
3. THE INFORMATION PRESENTED HERE IS FOR BIDDING PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL INFORMATION PRIOR TO SUBMITTING BIDS.
4. EXACT LIMITS OF THE EXISTING SUBSTRUCTURE ARE UNKNOWN. TEST PITS ARE TO BE PERFORMED TO LOCATE EXISTING FOUNDATIONS PRIOR TO ANY DEMOLITION WORK. TEST PITS WILL BE PAID UNDER PAY ITEM 141.1 TEST PIT FOR EXPLORATION.
5. EXISTING SUBSTRUCTURES ARE TO BE REMOVED A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.
6. EXISTING WINGWALLS AND FOUNDATIONS IN CONFLICT WITH PROPOSED SUBSTRUCTURE SHALL BE REMOVED ENTIRELY WITHIN 1 FOOT FROM PROPOSED SUBSTRUCTURE.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	36	55
PROJECT FILE NO. 609068			

BRIDGE DEMOLITION PLAN

609068_BRIL.DWG Plotted on 1-Mar-2026 8:27 AM

Proposal No. 609068-136649

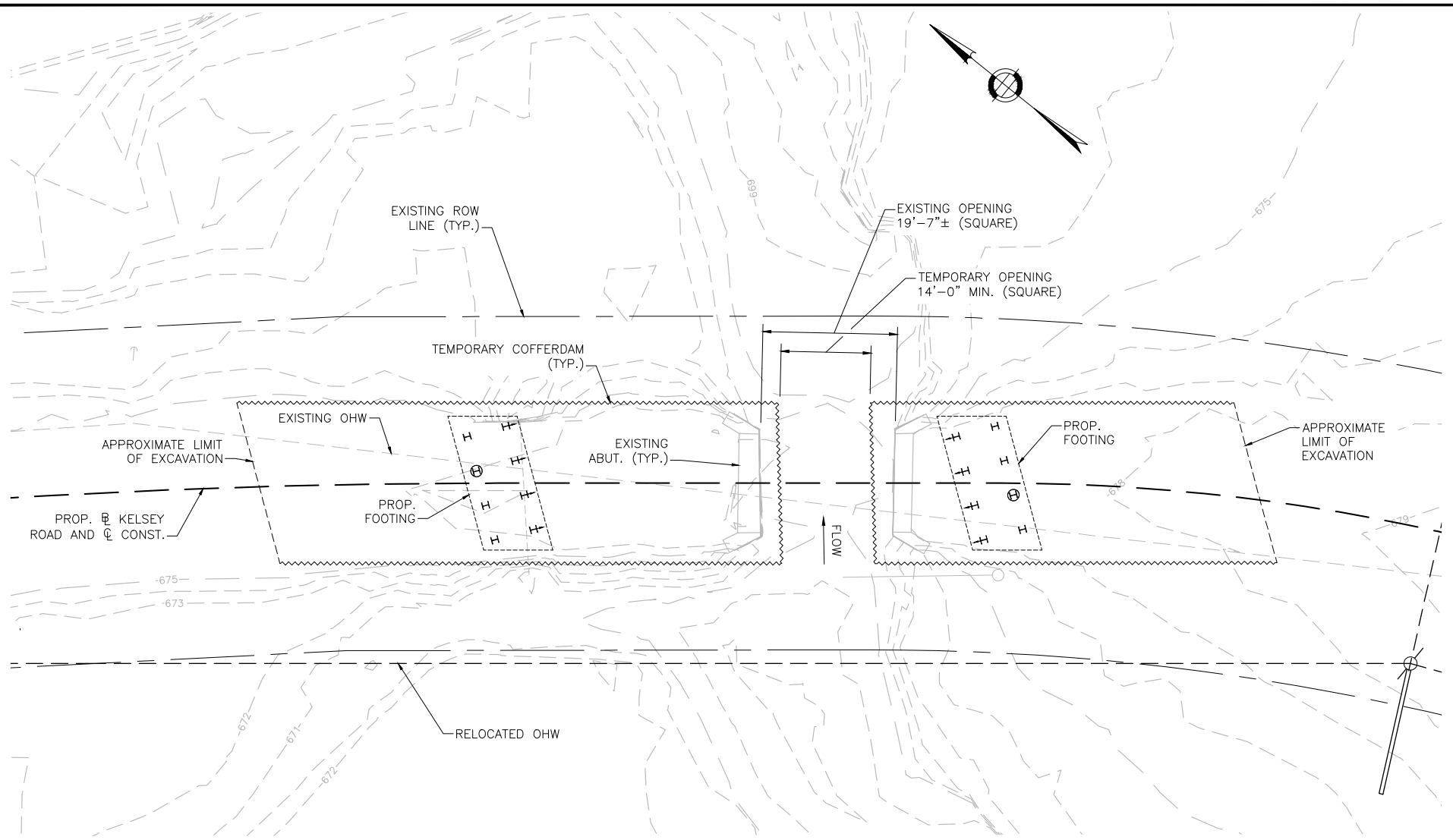
A00830 - 484

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SHEFFIELD
KELSEY ROAD

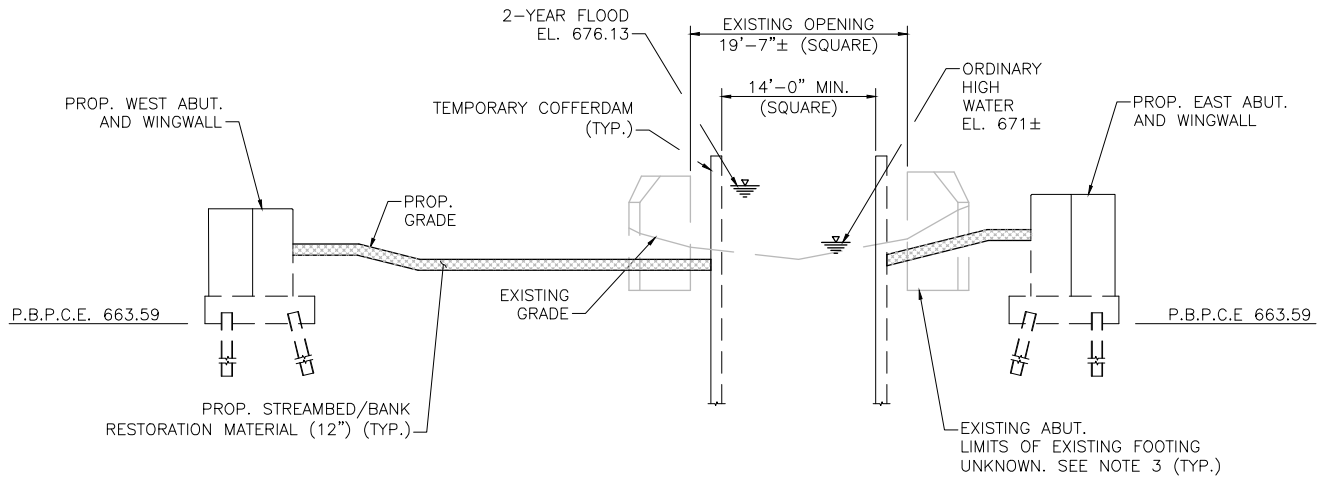
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	######	37	55
PROJECT FILE NO.	609068		

CONTROL OF WATER PLAN



WATER CONTROL PLAN

SCALE: 1" = 10'



WATER CONTROL ELEVATION

SCALE: $\frac{1}{8}$" = 1'-0"

WATER CONTROL NOTES:

1. THE COST OF COFFERDAM AND ALL OTHER MEASURES NECESSARY FOR CONTROL OF WATER SHALL BE INCLUDED IN ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2). SEE SPECIAL PROVISIONS.

2. THE COFFERDAM SHALL BE DESIGNED BY CONTRACTOR TO CONSTRUCT THE BRIDGE FOUNDATIONS IN THE DRY. THE TEMPORARY WATER CONTROL DESIGN DATA SHOWN ON THESE PLANS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE AWARE THAT THE ROADWAY WILL BE OVERTOPPED DURING THE 2-YEAR FLOOD EVENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUSLY MONITORING THE FORECAST AND TAKING THE NECESSARY PRECAUTIONS TO ENSURE THAT THE EXCAVATIONS REMAIN DRY DURING CONSTRUCTION.

3. EXISTING FOOTING LIMITS ARE UNKNOWN. CONTRACTOR SHALL ESTABLISH EXISTING FOOTING LIMITS PRIOR TO DESIGNING COFFERDAMS.

4. INSTALLATION OF COFFERDAM SHALL BE COORDINATED WITH RELOCATION OF OVERHEAD WIRES.

5. STEEL SHEETING LEFT IN PLACE SHALL BE CUT OFF A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.

6. SEE BRIDGE DEMOLITION PLAN FOR EXISTING STRUCTURE DEMOLITION NOTES.

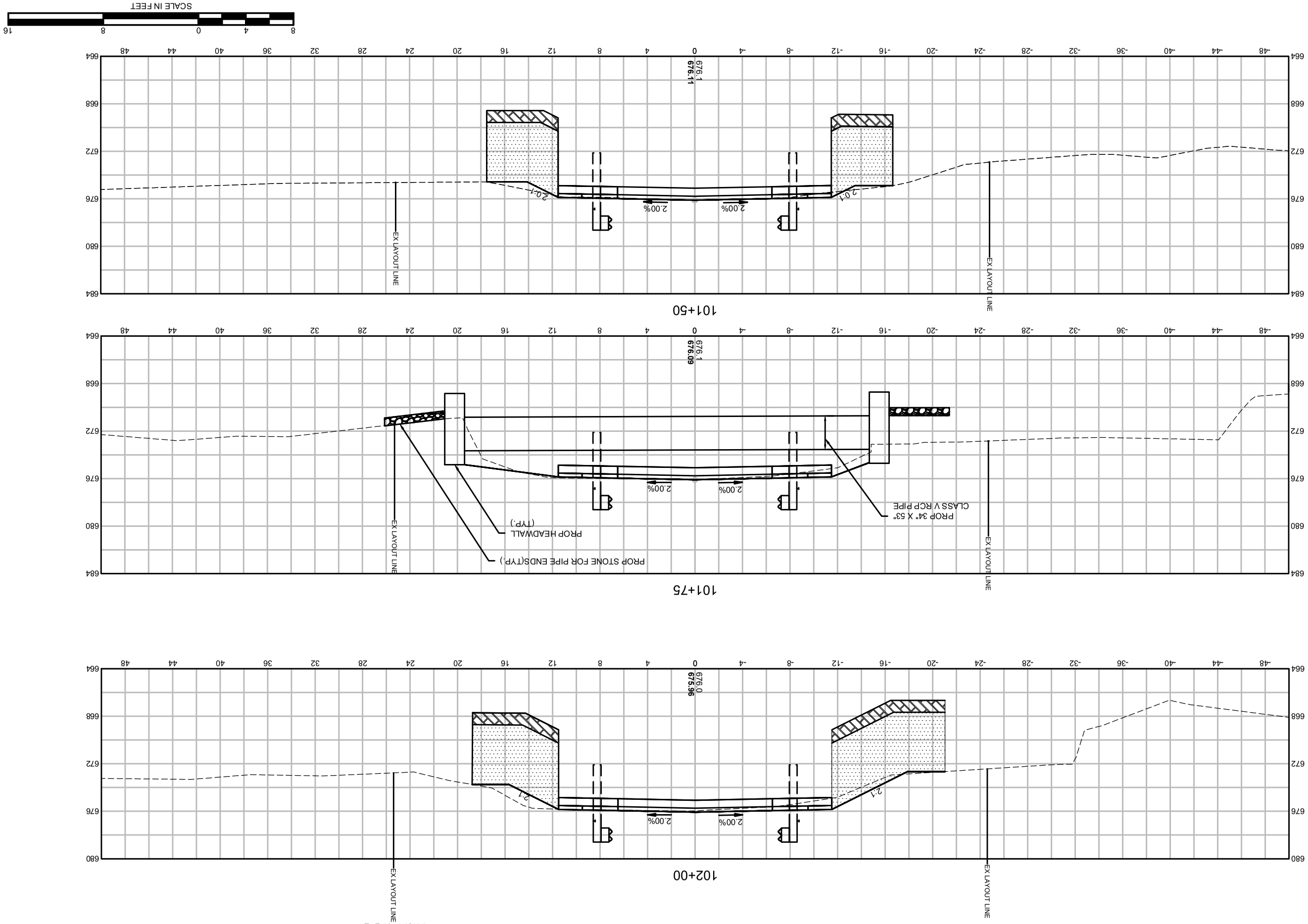
TEMPORARY WATER CONTROL DESIGN DATA:

FLOOD FREQUENCY:	2-YEAR
PEAK FLOW:	864 C.F.S.
WATER SURFACE ELEVATION:	676.13
VELOCITY	8.45 F.P.S.
FREE BOARD:	N/A
TOP ELEVATION OF COFFERDAM:	677.13

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

609068 Second Structural Submittal (S2) 2-Mar-2026



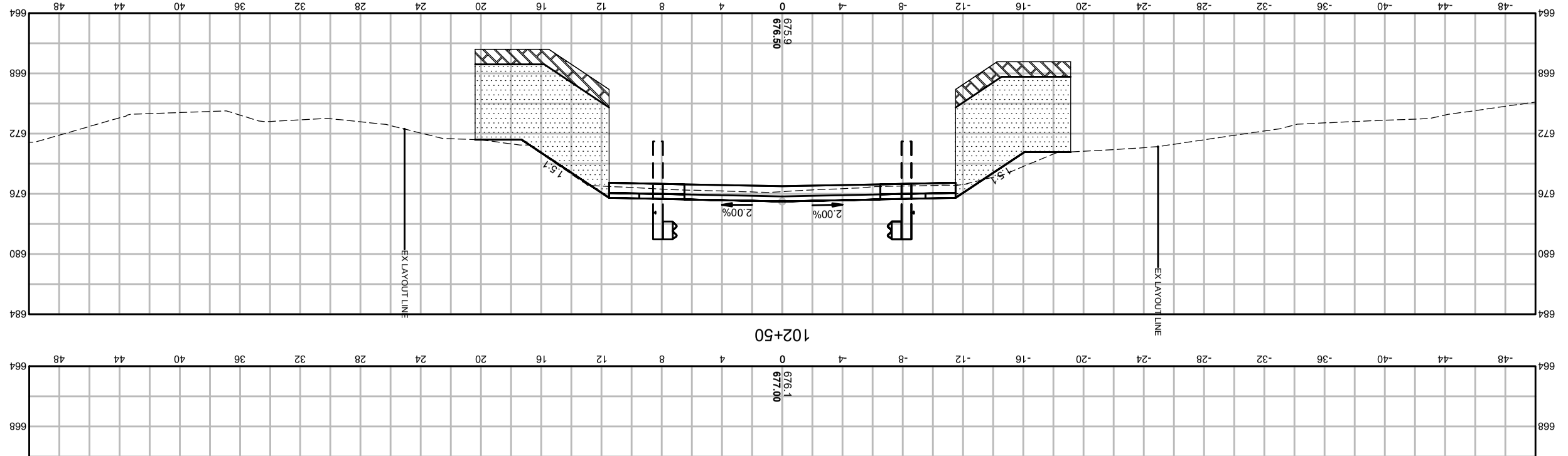
CROSS SECTIONS

PROJECT FILE NO. 609068		
STATE	FED. AID PROJ. NO.	SHEET NO. / TOTAL SHEETS
MA	NFA	49 / 55

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

A00830 - 485
609068_HD (SHEFFIELD CROSS SECTIONS)PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 9:57 AM
Proposal No. 609068-136649

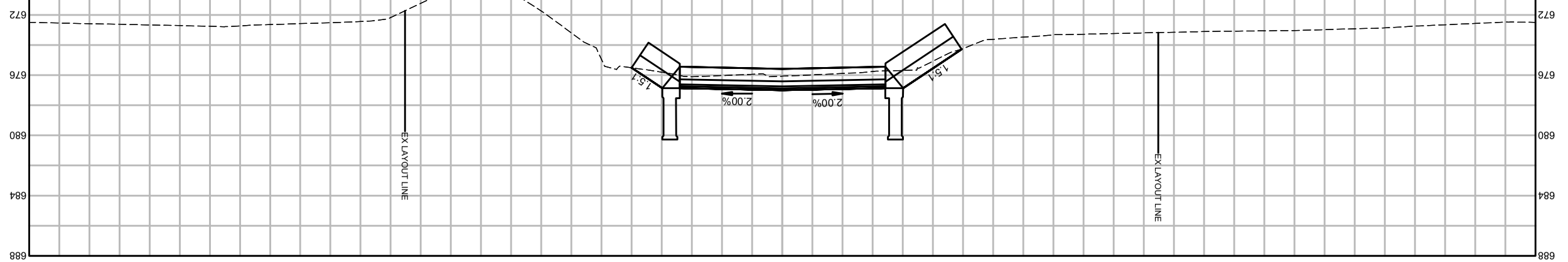




102+50

CUT: 118.42 SF

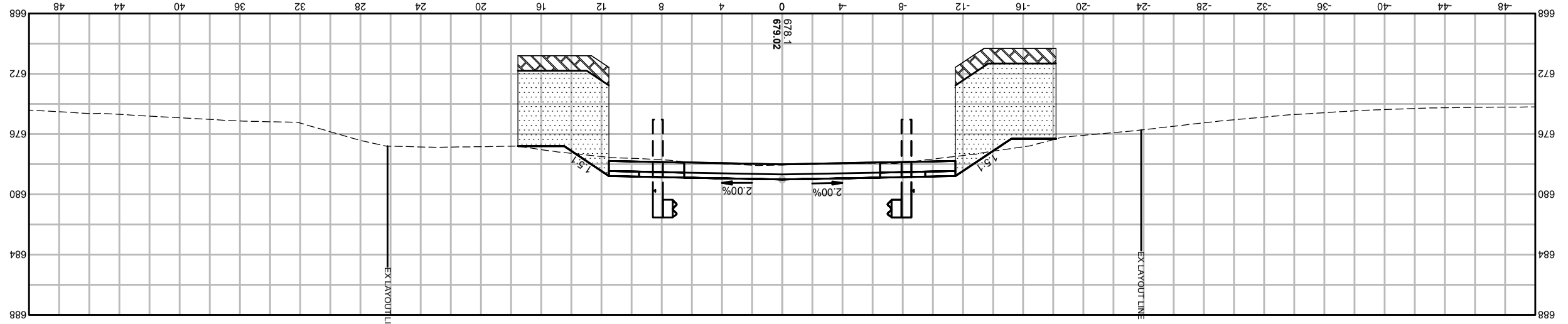
FILL: 17.68 SF



102+75

CUT: 17.18 SF

FILL: 3.51 SF



103+75

CUT: 82.24 SF

FILL: 26.69 SF

CROSS SECTIONS

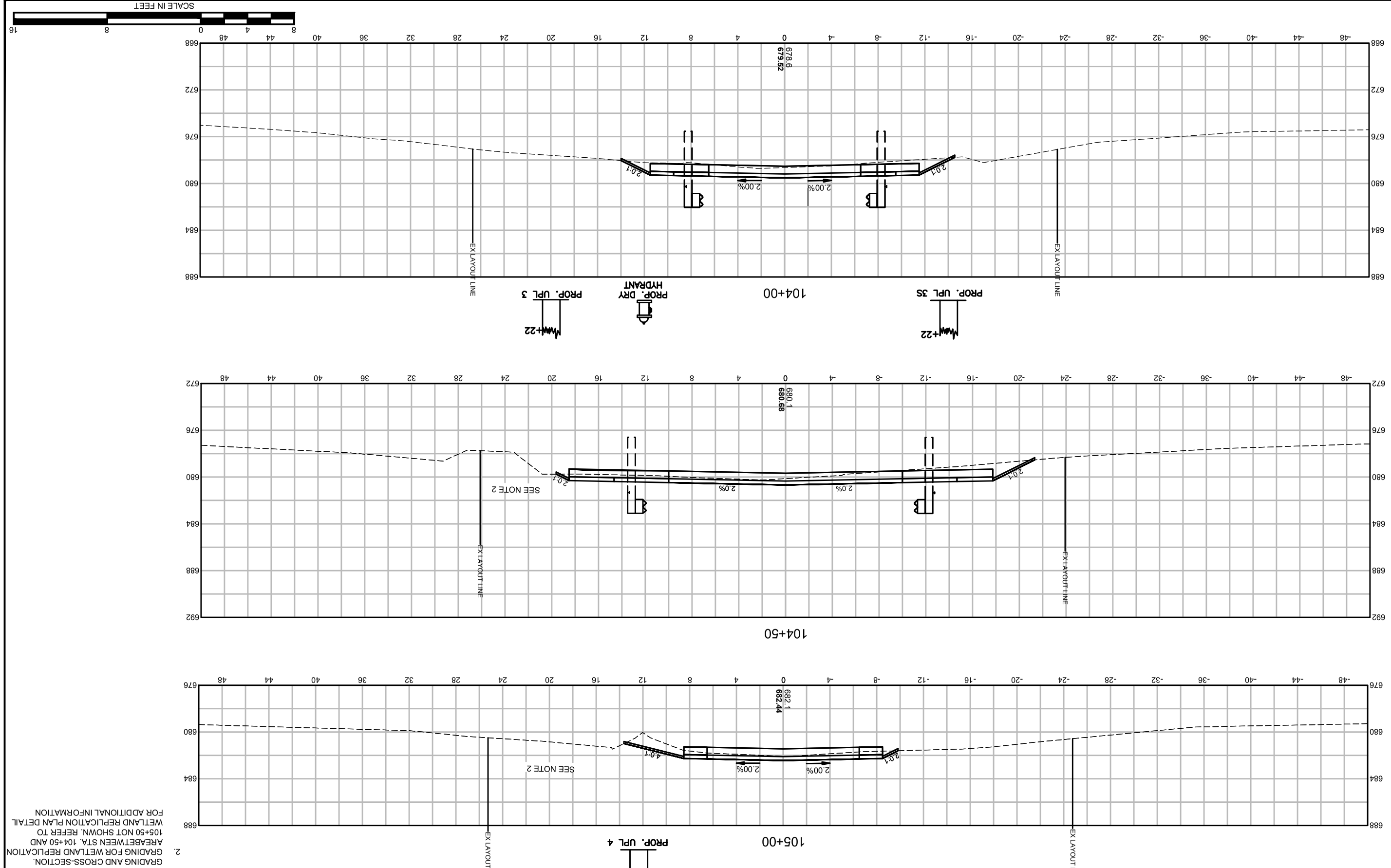
PROJECT FILE NO. 609068		
STATE	FED. AID PROJ. NO.	SHEET NO. / TOTAL SHEETS
MA	NFA	49 / 55

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

Proposal No. 609068-136649

A00830 - 486

609068_HD (SHEFFIELD CROSS SECTIONS)PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 9:57 AM



NOTES:

1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREABETWEEN STA. 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN DETAIL FOR ADDITIONAL INFORMATION

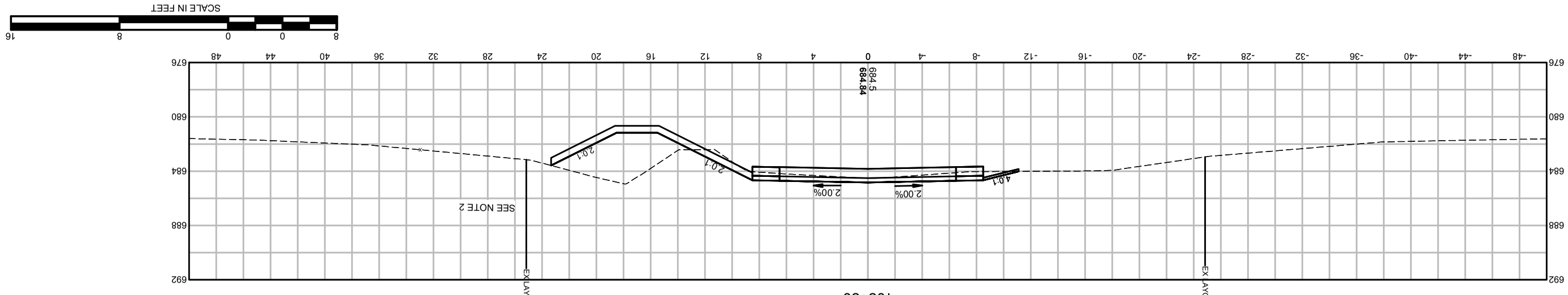
CROSS SECTIONS

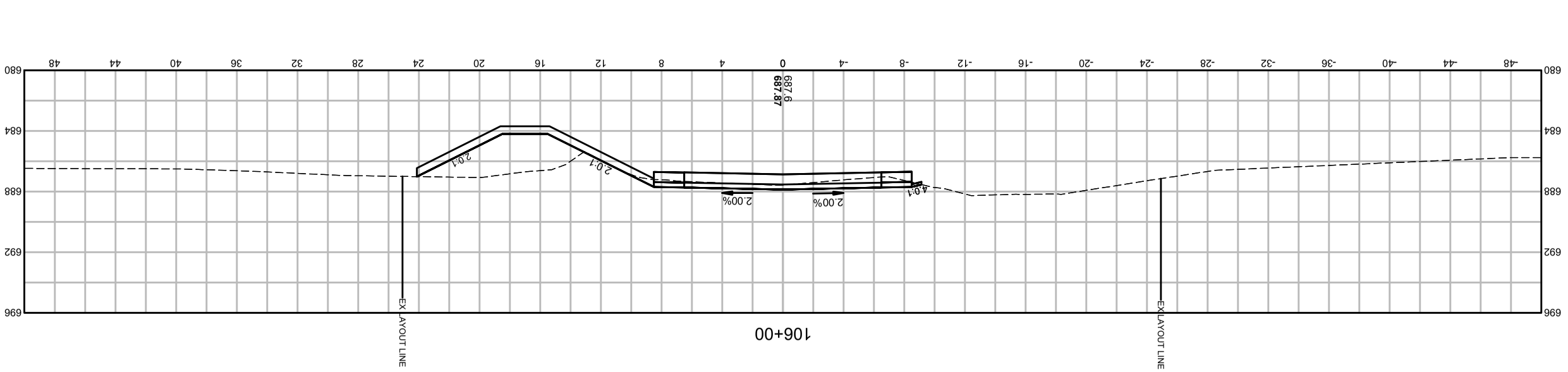
PROJECT FILE NO. 609068			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	49	55

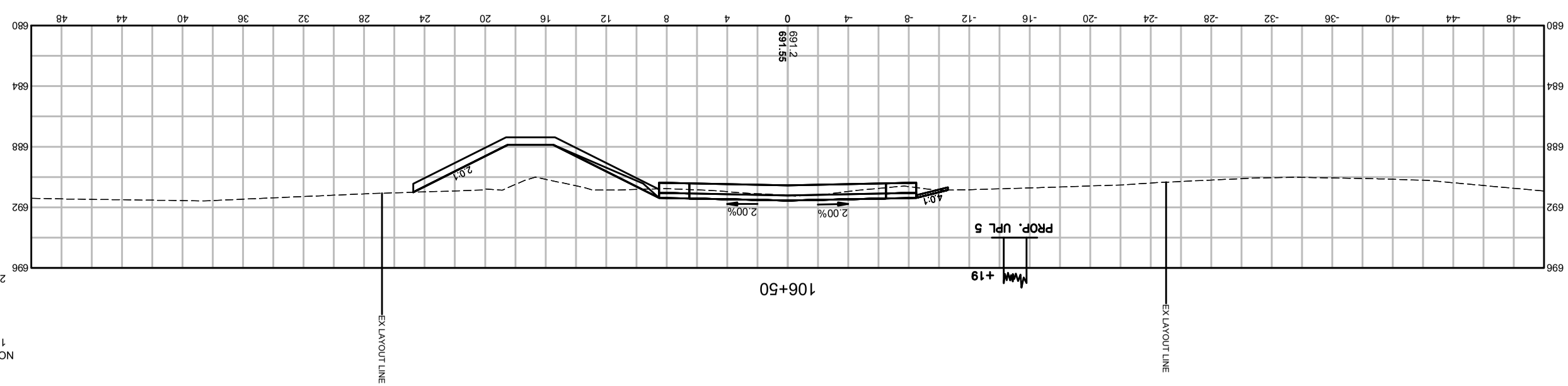
SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

609068_HD (SHEFFIELD CROSS SECTIONS)PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 9:57 AM

Proposal No. 609068-136649







NOTES:
1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREA BETWEEN STA. 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN DETAIL FOR ADDITIONAL INFORMATION

CROSS SECTIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	49	55
	PROJECT FILE NO. 609068		

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

A00830 - 488

609068_HD (SHEFFIELD CROSS SECTIONS)PERMIT DRAWINGS.DWG Plotted on 3-Apr-2026 9:57 AM

Proposal No. 609068-136649

Attachment G
Wetland Data Forms

Wetland Delineation Report

Bridge Replacement
Kelsey Road over Schenob Brook
Bridge No. S-10-015
MassDOT Project No. 609068
Sheffield, MA

August 2025

Prepared By:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

Prepared For:

Massachusetts Department of Transportation
Highway Division
10 Park Plaza
Boston, MA 02116

Gannett Fleming Inc.
175 Federal Street
Suite 800
Boston, MA 02110

1. Introduction

A wetland delineation was conducted along the Kelsey Road bridge crossing over Schenob Brook in the Town of Sheffield, MA on August 18, 2025, by Comprehensive Environmental Inc's wetland scientists. Wetland resource areas protectable under the *Massachusetts Wetlands Protection Act* (M.G.L. c. 131, s. 40) and the implementing *Regulations* (310 CMR 10.00) were identified and characterized. The delineation included the boundary of Bordering Vegetated Wetlands (BVW) and Bank along Schenob Brook. The delineation was marked in the field with sequentially numbered pink (BVW) and blue (Bank) flagging tape. The following narrative provides a general site description, wetland delineation methodology, and description of delineated wetland resource areas.

2. General Site Description

The bridge (MADOT bridge number: S-10-015) is located approximately 425-feet north of the Kelsy Road and Barnum Street intersection at the Schenob Brook crossing (42.065582132, -73.397664738). Schenob Brook begins at the outlet of Washinee Lake in Salisbury, CT approximately 2.5 miles southwest of the bridge crossing on Kelsey Road. After the crossing, Schenob Brook continues to flow northeast for approximately four miles until it's confluence with Hubbard Brook and then into the Housatonic River.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsy Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The delineated wetland resource areas along this crossing include areas with Bordering Vegetated Wetlands (BVW) and Bank (and associated Riverfront Area), as seen on project plan sheets in the NOI narrative. The area surrounding the site is predominantly forest to the north and agriculture to the south. Topography of the site is moderately sloped towards these resource areas. The area was delineated using the A, B, C, D and RB series of flags. Flags RB-01 through RB-10 and RB-100 through RB-111 represent Bank. Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 represent BVW.

3. Methodology

Wetland resource areas and mean annual high-water line were delineated in conformance with the *Massachusetts Handbook of Delineation of Bordering Vegetated Wetlands* (2022; the Handbook) through observation of vegetative communities, soil characteristics and indications of wetlands hydrology on August 18, 2025. Visual observations were used to determine wetlands hydrology, including typical indicators such as water marks, water-stained leaves, trees with shallow root systems, drift lines and drainage patterns. Small observational plots were used to document the characteristics of the BVW areas as described by Appendix B of the Handbook.

4. Description of Wetland Resource Areas

4.1 Bordering Vegetated Wetlands (BVW)

A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. A moderately dense canopy exists dominated by American elm (*Ulmus americana*), hemlock (*Tsuga canadensis)* and black willow (*Salix nigra)*. Shrubs in the understory include winterberry holly (*Ilex verticillate),* highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Swida amomum*), green ash (*Fraxinus pennsylvanica*), and saplings from the canopy. The herbaceous stratum of the BVW includes jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Joe-Pye weed (*Eutrochium fistulosum*), purple loosestrife (*Lythrum salicaria*), reed canary

grass (*Phalaris arundinacea*), narrow leaved cattails (*Typha angustifolia*), dotted smartweed (*Persicaria punctata)*, cardinal flower (*Lobelia cardinalis*) and sedges (*Carex* spp.)

The upland/wetland boundary to the BVW was delineated in the field using flags:

- A-WF-01 through A-WF-08 are along the northwest boundary of the floodplain.
- B-WF-01 through B-WF-08 are along the northeast boundary of the floodplain.
- C-WF-01 through C-WF-06 are along the southwest boundary of the floodplain.
- D-WF-01 through D-WF-05 are along the southeast boundary of the floodplain.

4.2 Bank

Bank was delineated in the field using signs of annual mean high-water mark. The banks of Schenob Brook were approximately three feet high with a channel 20 to 30 feet wide. Water was slowly flowing northeast at the time of inspection with depths was over six feet in portions of the thalweg.

- Flags RB-01 through RB-10 delineate the mean annual high-water mark along the southern bank of the brook.
- Flags RB-100 through RB-111 delineate the mean annual high-water mark along the northern bank of the brook.

4.3 Description of Adjacent Uplands

Habitat surrounding the site is a mixture of mowed roadway right-of-way, upland forest and mowed agricultural fields. In the portions of the upland with canopy, the canopy is mostly white pine (*Pinus strobus*). Japanese barberry (*Berberis thunbergii*), staghorn sumac (*Rhus hirta*), multiflora rose (*Rosa multiflora*) and saplings from the canopy comprise the understory. Dominant ground cover species include upland grasses (*Festuca* spp.), Canada goldenrod *(Solidago canadensis*), Queen Anne's lace (*Daucus carota*), and raspberry (*Rubus idaeus*). Vines include fox grape (*Vitis labrusca*), Asian bittersweet (*Celastrus orbiculatus*) and Virginia creeper (*Parthenocissus quinquefolia*).

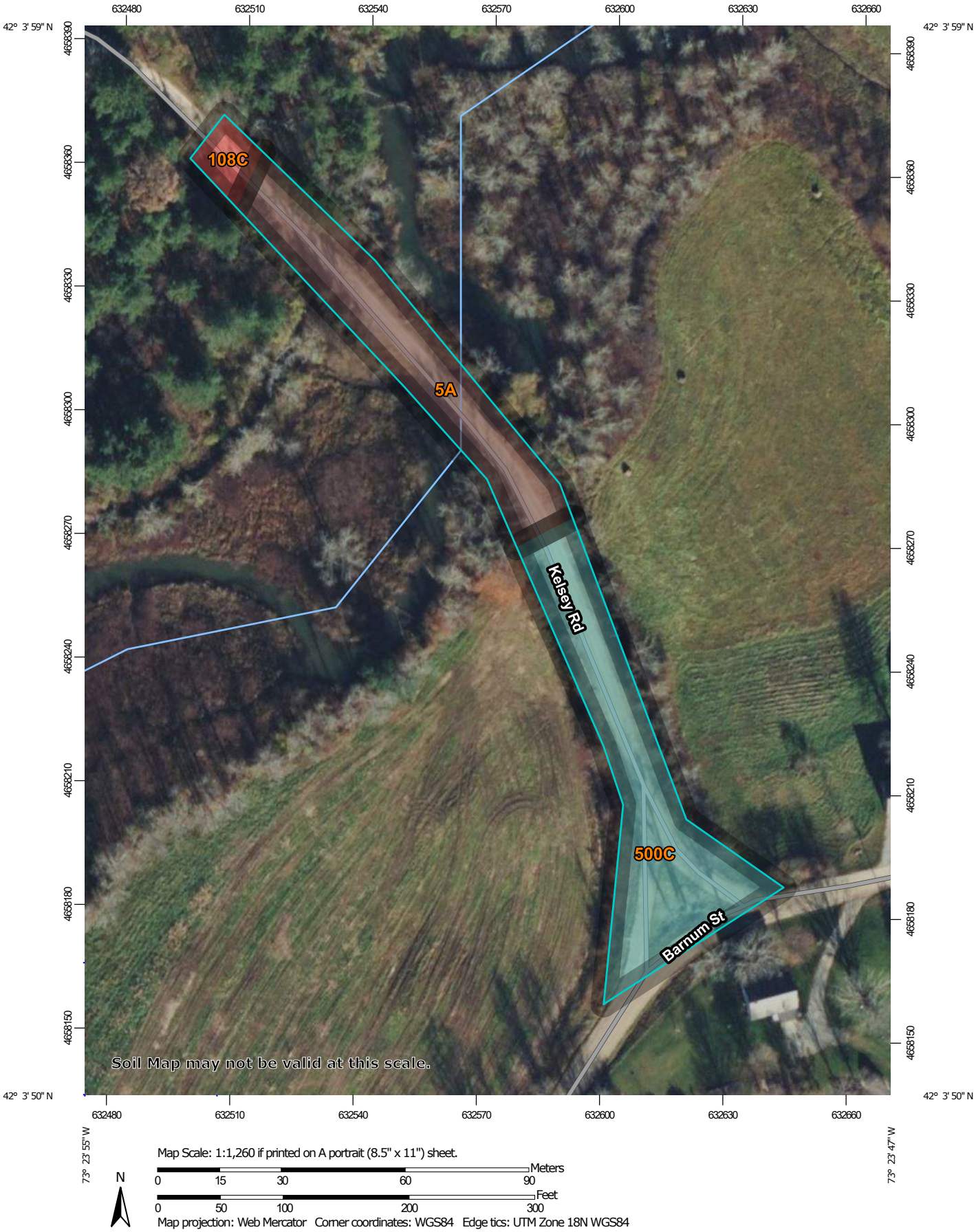
4.4 Soils

According to USDA soil surveys (Attachment A), the site is underlaid with soils consisting of moderately sloped, Farmington-Rock outcrop complex (108C) and Amenia silt loam (500C) in the upland areas and nearly level, frequently flooded Saco silt loam (5A) in the BVW and brook.

Attachment A

Site Soil Map

Hydrologic Soil Group—Berkshire County, Massachusetts
(609068 Kelsey Road Soils)



Proposal No. 609068-136649

A00830 - 495

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Berkshire County, Massachusetts
Survey Area Data: Version 20, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2021—Nov 8, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5A	Saco silt loam, frequently ponded, 0 to 2 percent slopes, frequently flooded	B/D	0.4	41.8%
108C	Farmington-Rock outcrop complex, 3 to 15 percent slopes	D	0.0	5.1%
500C	Amenia silt loam, 8 to 15 percent slopes	C	0.5	53.1%
Totals for Area of Interest			**1.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment B

MassDEP Bordering Vegetated Wetland (310 CMR 10.55)
Delineation Field Data Forms

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: WET-1

Investigator(s): I. Church Latitude / Longitude: 42.0655941172, -73.3978329943

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: SS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [✓] No [ ]	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soils criterion met?	Yes [✓] No [ ]	
Wetlands hydrology present?	Yes [✓] No [ ]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:

Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)
Water Table Present?	Yes [✓]	No [ ]	Depth (inches) 4.00
Saturation Present (including capillary fringe)?	Yes [✓]	No [ ]	Depth (inches) 0.00

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[✓] Free water in a soil test hole	[✓] Drainage patterns
[ ] Iron deposits	[✓] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point WET-1

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. black willow	Salix nigra	OBL	20.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

20.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. green ash	Fraxinus pennsylvanica	FACW	10.5	Yes	Yes
2. silky dogwood	Swida amomum	FACW	10.5	Yes	Yes
3. speckled alder	Alnus incana	FACW	3.0	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					

24.0 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. sedges	Carex spp.	OBL	38.0	Yes	Yes
2. sensitive fern	Onoclea sensibilis	FACW	20.5	Yes	Yes
3. marsh fern	Thelypteris palustris	FACW	20.5	Yes	Yes
4. reed canary grass	Phalaris arundinacea	FACW	10.5	No	Yes
5. purple loosestrife	Lythrum salicaria	OBL	10.5	No	No
6. Canada goldenrod	Solidago canadensis	FACU	3.0	No	No
7. Joe-Pye weed	Eutrochium fistulosum	FACW	3.0	No	Yes
8.					
9.					
10.					
11.					
12.					

106.0 = Total Cover

Sampling Point WET-1

VEGETATION – continued.

Woody Vine Stratum Plot size _____

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
			0.0 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☑ No ☐

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	6			Yes ☑ No ☐
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	69	X 1	= 69.00
	FACW species	79	X 2	= 157.00
	FAC species	0	X 3	= 0.00
	FACU species	3	X 4	= 12.00
	UPL species	0	X 5	= 0.00
	Column Totals	(A) 150.5		(B) 238
	Prevalence Index	B/A = 1.58		Is the Prevalence Index ≤ 3.0? Yes ☑ No ☐

Wetland vegetation criterion met? Yes ☑ No ☐

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point WET-1

SOIL

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]	Location[2]		
0-16	10YR 2/1	100.00					muck	
16-24+	10YR 3/1	100.00					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☑ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Due to time of year, species level identification of sedge species was not possible (lacking key identifying features such as seed head, fully developed leaved, etc). Young growth appeared to be consistent with Carex species.

Hydric Soils criterion met? **Yes** ☑ **No** ☐

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: WET-2

Investigator(s): I. Church Latitude / Longitude: 42.06563493716, -73.3978886501

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: SS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [✓]	No [ ]	**Is the Sampled Area within a Wetland?** **Yes [✓] No [ ]**
Hydric Soils criterion met?	Yes [✓]	No [ ]	
Wetlands hydrology present?	Yes [✓]	No [ ]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)
Water Table Present?	Yes [✓]	No [ ]	Depth (inches) 4.00
Saturation Present (including capillary fringe)?	Yes [✓]	No [ ]	Depth (inches) 0.00

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[✓] Free water in a soil test hole	[✓] Drainage patterns
[ ] Iron deposits	[✓] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point WET-2

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. black willow	Salix nigra	OBL	10.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. silky dogwood	Swida amomum	FACW	20.5	Yes	Yes
2. speckled alder	Alnus incana	FACW	3.0	No	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

23.5 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. sedges	Carex spp.	OBL	38.0	Yes	Yes
2. sensitive fern	Onoclea sensibilis	FACW	20.5	Yes	Yes
3. reed canary grass	Phalaris arundinacea	FACW	20.5	Yes	Yes
4. purple loosestrife	Lythrum salicaria	OBL	10.5	No	Yes
5. Joe-Pye weed	Eutrochium fistulosum	FACW	10.5	No	Yes
6.					
7.					
8.					
9.					
10.					
11.					
12.					

100.0 = Total Cover

Sampling Point WET-2

VEGETATION – continued.

Woody Vine Stratum Plot size _____

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
			0.0 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☑ No ☐

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?
	5	5	Yes ☑ No ☐

Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	59	X 1	= 59.00
	FACW species	75	X 2	= 150.00
	FAC species	0	X 3	= 0.00
	FACU species	0	X 4	= 0.00
	UPL species	0	X 5	= 0.00
	Column Totals	(A) 134		(B) 209
	Prevalence Index	B/A = 1.56		Is the Prevalence Index ≤ 3.0? Yes ☑ No ☐

Wetland vegetation criterion met? Yes ☑ No ☐

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point WET-2

SOIL

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]	Location[2]		
0-18	10YR 2/1	100.00					muck	
18-24+	10YR 3/1	100.00					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☑ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Due to time of year, species level identification of sedge species was not possible (lacking key identifying features such as seed head, fully developed leaved, etc). Young growth appeared to be consistent with Carex species.

Hydric Soils criterion met? **Yes** ☑ **No** ☐

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: UPL-1

Investigator(s): I. Church Latitude / Longitude: 42.0657275478, -73.3978927042

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: NC

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soils criterion met?	Yes [ ]	No [✓]	
Wetlands hydrology present?	Yes [ ]	No [✓]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)_____
Water Table Present?	Yes [ ]	No [✓]	Depth (inches)_____
Saturation Present (including capillary fringe)?	Yes [ ]	No [✓]	Depth (inches)_____

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point UPL-1

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. American elm	Ulmus americana	FACW	10.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. multiflora rose	Rosa multiflora	FACU	20.5	Yes	No
2. Japanese barberry	Berberis thunbergii	FACU	10.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

31.0 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. mowed upland grasses	Festuca spp.	UPL	38.0	Yes	No
2. Asian bittersweet	Celastrus orbiculatus	UPL	10.5	No	No
3. Canada goldenrod	Solidago canadensis	FACU	10.5	No	No
4. Queen Anne's lace	Daucus carota		3.0	No	No
5. Virginia creeper	Parthenocissus quinquefolia	FACU	3.0	No	No
6. sneezeweed	Helenium amarum	FACU	3.0	No	No
7.					
8.					
9.					
10.					
11.					
12.					

68.0 = Total Cover

Sampling Point UPL-1

VEGETATION – continued.

Woody Vine Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Asian bittersweet	Celastrus orbiculatus	UPL	3.0	Yes	No
2.					
3.					
4.					
		3.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☐ No ☑

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?
	5	1	Yes ☐ No ☑

Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	0	X 1	= 0.00
	FACW species	11	X 2	= 21.00
	FAC species	0	X 3	= 0.00
	FACU species	48	X 4	= 190.00
	UPL species	52	X 5	= 257.50
	Column Totals	(A) 109.5		(B) 468.5
	Prevalence Index	B/A = 4.28		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☑

Wetland vegetation criterion met? Yes ☐ No ☑

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point UPL-1

SOIL

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]	Location[2]		
	10YR 7/2	100.00					sandy gravel	compacted roadway gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Site is within actively mowed roadway ROW. Species-level identification of upland grass species was not possible (lacking key identifying features such as panicles, seed heads, etc.), although dominant grass appeared to be consistent with fescue (Festuca spp.) species.

Hydric Soils criterion met? **Yes** ☐ **No** ☑

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Kelsey Road over Schenob Brook City/Town: Sheffield Sampling Date: 8/18/2025

Applicant/Owner: MassDOT Sampling Point or Zone: UPL-2

Investigator(s): I. Church Latitude / Longitude: 42.0657092438, -73.3978538238

Soil Map Unit Name: 5A- Saco silt loam, frequently ponded, 0-2% slopes NWI or DEP Classification: NC

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soils criterion met?	Yes [ ]	No [✓]	
Wetlands hydrology present?	Yes [ ]	No [✓]	

Remarks, Photo Details, Flagging, etc.:

Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 are representative of BVW boundary. Flags RB-01 through RB-10 and RB-100 through RB-111 are representative of river bank.

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)_____
Water Table Present?	Yes [ ]	No [✓]	Depth (inches)_____
Saturation Present (including capillary fringe)?	Yes [ ]	No [✓]	Depth (inches)_____

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point UPL-2

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. American elm	Ulmus americana	FACW	10.5	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Shrub/Sapling Stratum Plot size 15'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. multiflora rose	Rosa multiflora	FACU	10.5	Yes	No
2. Japanese barberry	Berberis thunbergii	FACU	10.5	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

21.0 = Total Cover

Herb Stratum Plot size 5'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. mowed upland grasses	Festuca spp.	UPL	38.0	Yes	No
2. Asian bittersweet	Celastrus orbiculatus	UPL	20.5	Yes	No
3. Canada goldenrod	Solidago canadensis	FACU	10.5	No	No
4. Queen Anne's lace	Daucus carota		10.5	No	No
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

79.5 = Total Cover

Sampling Point UPL-2

VEGETATION – continued.

Woody Vine Stratum Plot size 30'

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Asian bittersweet	Celastrus orbiculatus	UPL	3.0	Yes	No
2.					
3.					
4.					
		3.0 = Total Cover			

Rapid Test: Do all dominant species have an indicator status of OBL or FACW? Yes ☐ No ☑

Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species?
	6	1	Yes ☐ No ☑

Prevalence Index:	Total % Cover (all strata)	Multiply by:	Result
OBL species	0	X 1	= 0.00
FACW species	11	X 2	= 21.00
FAC species	0	X 3	= 0.00
FACU species	32	X 4	= 126.00
UPL species	62	X 5	= 307.50
Column Totals	(A) 103.5		(B) 454.5
Prevalence Index	B/A = 4.39		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☑

Wetland vegetation criterion met? Yes ☐ No ☑

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point UPL-2

SOIL

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]	Location[2]		
	10YR 7/2	100.00					sandy gravel	compacted roadway gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: Site is within actively mowed roadway ROW. Species-level identification of upland grass species was not possible (lacking key identifying features such as panicles, seed heads, etc.), although dominant grass appeared to be consistent with fescue (Festuca spp.) species.

Hydric Soils criterion met? **Yes** ☐ **No** ☑

Attachment C

Photo Log



Figure 1 Downstream view of Schenob Brook from Kelsey Road.



Figure 2 Upstream view of Schenob Brook from Kelsey Road.



Figure 3 View of road shoulder and BVW from Kelsey Road.



Figure 4 View of bridge S-10-015 from upstream end of Schenob Brook.



Figure 5 Downgradient view of monitoring plot WET-1.



Figure 6 Cross gradient view of monitoring plot UPL-1.

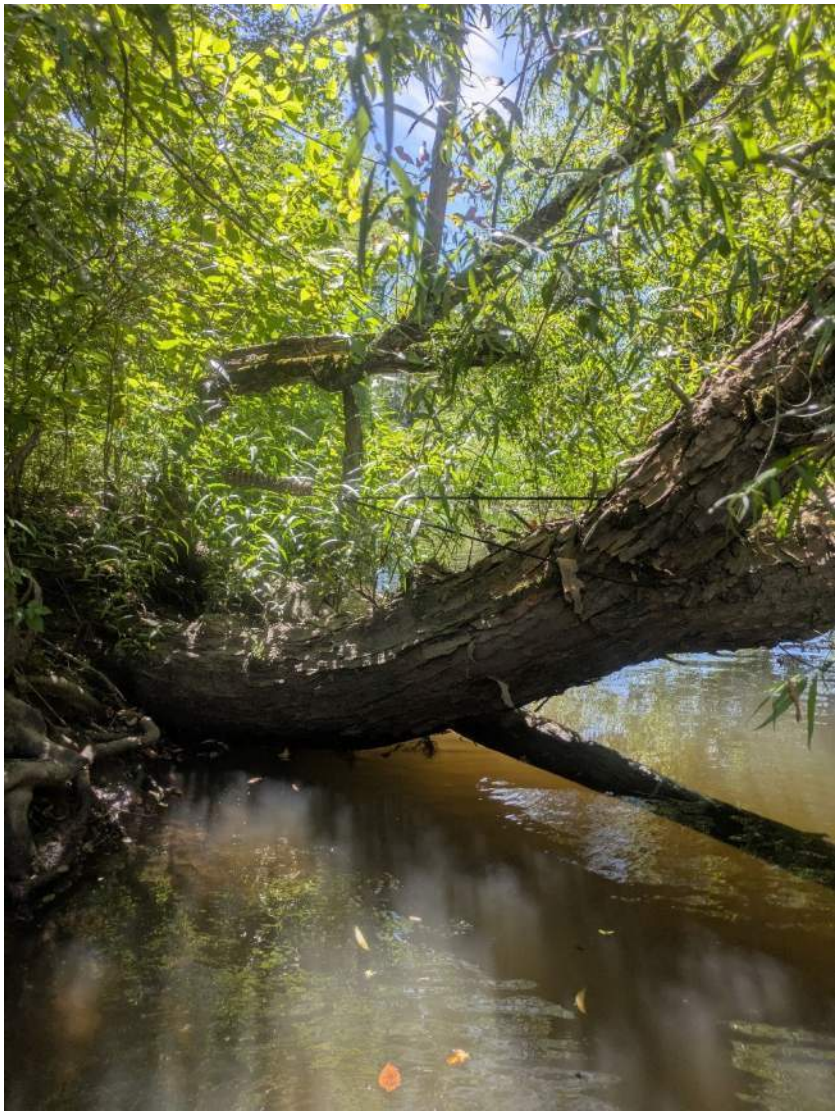


Figure 7 Black willow leaning into upstream end of Schenob Brook, supported by wire anchored into the bank.

Attachment H
Additional Documents

Exhibit 1 — Stream Visual Assessment Protocol 2 Summary Sheet

609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

Stream Visual Assessment Protocol 2 Summary Sheet

Owner's name TOWN OF SHEFFIELD Evaluator's name MATTHEW LUNDSTED, P.E.

Stream name SCHENOB BROOK Tributary to: HUBBARD BROOK HUC: 12-011000050203

HOUSATONIC RIVER

1. Preliminary Assessment

A. Watershed Description

Western New England Marble Valleys/Berkshire Valley/Housatonic and Hoosic Valley

Ecoregion or MLRA MLRA 145 Watershed Drainage area (acres or (mi^2)) 19.0

Watershed management structures: (no.): dams 0 water controls 0 irrigation diversions ___

No. of miles of contiguous riparian cover/mile of entire stream in watershed (estimated) 0.95 (SEE BELOW)

Land use within watershed (%): cropland _____ hayland 15 grazing/pasture _____ forest 60

urban 4 industrial _____ other (specify) <2 % impervious roads

20 % surface waters and wetlands

Agronomic practices in uplands include: SMALL FARMS

Confined animal feeding operations (no.) _____ Conservation (acres) ~1500 industrial(acres) _____

Number of stream miles on property 0.5 Number of total stream miles ~9.1

Stream hydrology: _____intermittent; months of year wetted : _____

X perennial; months of year at baseflow: 12

B. Stream/Reach Description:

Stream Gage Location/Discharge: NONE /_____ft^3/s

Applicable Reference Stream: NONE Reference Stream Location: ____/_____

Information Sources:

Notes: 1) the watershed extends south into CT.

2. Field Assessment

A. Preliminary Field Data

Date of assessment 9/5/25 Weather conditions today 71°, 90% cloud cover
(ambient temp.\ % cloud cover)

Weather conditions over past 2 to 5 days: no rain/average daily temp. was 59°-62° over the previous 5 days
(No. of days precip/average daytime temp.)

Reach location (UTM or Lat./Long.) 42.06639N/-73.39737W Channel type/classification scheme C5 / ROSGEN

Riparian Cover Type(s): Tree 50 % Shrub 30 % Herbaceous 15 % Bare 5 %

Bank Profile: Stratified___ Homogeneous XX Cohesive Soil___ Noncohesive Soil ____

Gradient (√ one): Low (0-2%) XX Moderate (>2<4%)___ High (>4%) ___

Bankfull channel width 42 ft Reach length 450 ft Flood plain width 300 ft

Average riparian zone width 50 ft Method used (e.g., Range finder): Range finder

Average height of woody shrubs 7.5' Method used (e.g., Range finder): Tape measure

Flood plain wetlands, if present 3 acres/reach

Dominant substrate (%): boulder 0 cobble 0 gravel 5 sand 65 fine sediments 30
(> 250 mm) (60-250mm) (2-60 mm) (2-.06 mm) (< .06 mm)

Photo Point Locations and Descriptions:

Photo Pt. #	GPS Coordinates/Waypoints	Description
1	SEE ATTACHED	
2		
3		

SVAP Start Time/Water Temp: 10:30 a.m. / 66° SVAP End Time/Water Temp: 12:30 p.m. / 66°

Notes:

B. Element Scores

Element	Score	Element	Score
1. Channel Condition	8	14. Aquatic Invertebrate Community	NA
2. Hydrologic Alteration	9	15. Riffle Embeddedness	NA
3. Bank Condition	9	16. Salinity	NA
4. Riparian Area Quantity	10	**A. Sum of all elements scored**	115
5. Riparian Area Quality	8	**B. Number of elements scored**	13
6. Canopy Cover	9		
7. Water Appearance	10	**Overall score: A/B** 8.8	
8. Nutrient Enrichment	10	1 to 2.9 Severely Degraded 3 to 4.9 Poor 5 to 6.9 Fair 7 to 8.9 Good 9 to 10 Excellent	
9. Manure or Human Waste	10		
10. Pools	9		
11. Barriers to Movement	10		
12. Fish Habitat Complexity	6		
13. Aquatic Invertebrate Habitat	7		

Suspected causes of SVAP scores less than 5 (does not meet quality criteria for stream species)

N/A

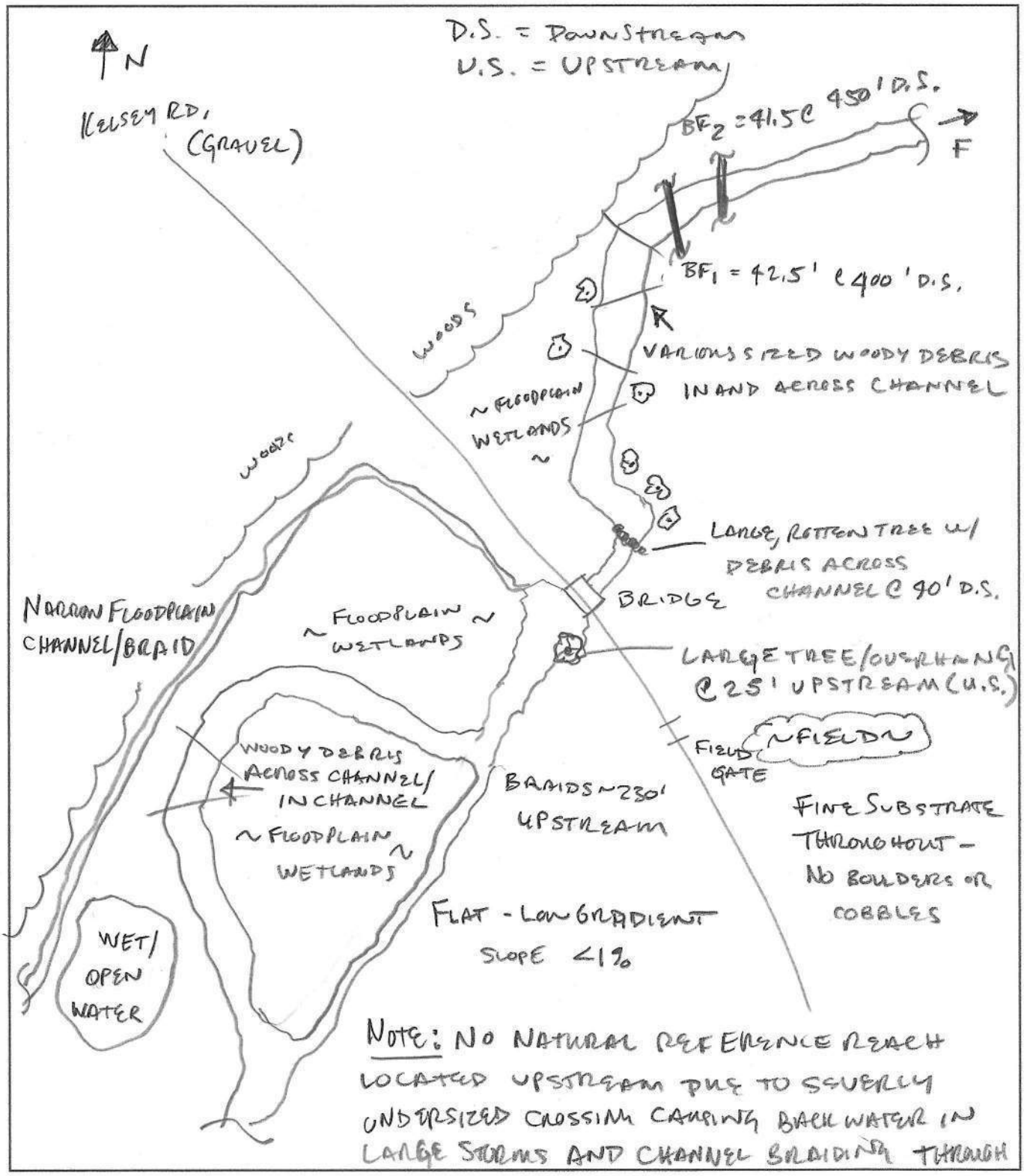
Recommendations for further assessment or actions:

N/A

Riparian wildlife habitat recommendations:

N/A

C. Site Diagram: indicate approximate scale, major features, resource concerns, etc.



1 to 2.9 Severely Degraded
3 to 4.9 Poor

Provide notes related to each element scored on back of site diagram, as needed.

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 1- Schenob Brook crossing looking South on Kelsey Road, Sheffield, MA, 42.065697, -73.397822



Photo 2- Schenob Brook crossing looking North on Kelsey Road, Sheffield, MA, 42.065530, -73.397650

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 3- Looking Upstream from Bridge at Schenob Brook, Sheffield, MA, 42.0656335, -73.3977680



Photo 4- Looking Downstream from Bridge at Schenob Brook, Sheffield, MA, 42.0656335, -73.3977680

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 5- Upstream Face of Kelsey Road Bridge, Sheffield, MA, 42.065563, -73.397786



Photo 6- Downstream Face of Kelsey Road Bridge looking South, Sheffield, MA, 42.065657, -73.397723

609068 SHEFFIELD- BRIDGE REPLACEMENT, S-10-015
KELSEY ROAD OVER SCHENOB BROOK

SVAP PHOTO EXHIBIT



Photo 7- Typical View of Schenob Brook Downstream Reference Reach, Sheffield, MA, 42.066366, -73.397709



Photo 8- Typical Riparian Zone and Floodplain Wetland- River-Left Upstream, Schenob Brook, Sheffield, MA, 42.065410, -73.397860

GFT

Ingenuity That Shapes Lives™

April 15, 2026

U.S. Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742
Attn: Mr. Daniel B. Vasconcelos, PWS
Senior Project Manager/Environmental Scientist

Re: 401/404 Pre-Construction Notification Application
Kelsey Road over Schenob Brook
Bridge Replacement (Bridge No. S-10-015)
Sheffield, MA
MassDOT Project #609068

Dear Mr. Vasconcelos:

We are in receipt of the April 9, 2026 comments you provided to the Massachusetts Department of Transportation Highway Division (MassDOT) on the Pre-Construction Notification (PCN) Application that was submitted for the replacement of the Kelsey Road bridge over Schenob Brook in the Town of Sheffield, MA. On behalf of MassDOT, we have reviewed your comments on offer the following responses:

1. On the environmental impact plans, the dark pattern for the streambed material over rip-rap obscures the wetland/OHW limits as well as the impact hatching for wetland and waterway impacts. It is possible these other layers are below the darker layer. Can you bring the other layers up so they are more visible over the darker pattern, or change the darker pattern so the other layers can be seen more easily?

   Response: We have updated the Environmental Impact Plans to place the hatching pattern for the proposed riprap behind other information. Additionally, we have set the transparency for this hatching to 50% so that the other information may be more easily read. Attached please find an updated copy of these Environmental Impact Plans (Attachment 1).

2. The wetland impacts on the plans do not appear to match the impacts described in the narrative and on the PCN form. The plans show 6,939 sf of permanent and 9,990 sf of temporary wetland impacts. The PCN form and narrative indicate there will be 7,635 sf of permanent and 14,163 sf of temporary wetland impact. Please clarify which are the correct impact numbers.

   Response: The impact areas on the Environmental Impact Plans are correct with the exception of the "Waters of the US (WOTUS) Gained From Cutting". This has been revised to 807 sf on Attachment 1. Additionally, we have revised the PCN Form and the PCN Narrative (Attachment 2) so that the areas agree with the information shown on the plans

3. How do you anticipate the vegetation clearing will be conducted? Hand clearing of vegetation is generally not considered a Section 404 discharge of fill material, provided it only involves cutting vegetation above the ground without disturbing the root system or soil. Reaching in from the road with a machine to cut and remove vegetation would also likely not be considered a 404 impact. Mechanized land clearing in which the ground is disturbed by uprooting trees or pushing or dragging cut vegetation would likely be considered a Section 404 discharge. Depending on the anticipated methods the temporary wetland impacts may need to be removed from the plans, if they do not result in Section 404 discharges of fill.

GFT

Ingenuity That Shapes Lives™

Response: The proposed vegetation clearing in areas identified as "Temporary Vegetated Wetlands Impact (Tree Thinning Only)" are required for the relocation of overhead utility lines (along the southwest side of Kelsey Road) and for crane to be able to swing around and place the bridge beams (along the northeast side of Kelsey Road). This work will be limited to cutting above ground vegetation and will not require the removal of any root system or soil disturbance. The expectation is that the Contractor will clear these areas with machine cutting equipment positioned on Kelsey Road or on adjacent property outside the limits of these resource areas.

Based on your comments, we have removed these temporary impact areas from the Environmental Impact Plans and PCN documents included as Attachment 1 and Attachment 2.

The following is a summary of the updated wetland impacts based on the revisions described in response to Comments 2 and 3:

Resource Area	Permanent Impacts	Temporary Impacts
Vegetated Wetlands	6,939 sf	0 sf
WOTUS	38 sf	292 sf
Bank	182 lf	75 lf

4. Mitigation will be required if the permanent loss of wetlands exceeds our 0.1-acre mitigation threshold, which appears to be the case for this project. We expect mitigation would be addressed through a payment to the MA In-lieu fee (ILF) program.

   Response: MassDOT acknowledges this requirement and it is anticipated that mitigation will occur through the Massachusetts in-lieu fee (ILF) program.

We trust that this information adequately addresses your comments. If you have any additional questions or comments, please contact Ms. Courtney Walker either by phone at (857) 262-0757 or by email at Courtney.l.walker@dot.state.ma.us.

Sincerely,
GFT Infrastructure, Inc.

Thomas P. Daley, P.E.
Project Manager

E: tdaley@gftinc.com
C: 617.276.5125 **| O**: 781.410.3930

gftinc.com

Attachments

cc: Ms. Courtney Walker, MassDOT Highway Division, Environmental Services
Ms. Lily Collins, MassDOT Highway Division, Environmental Services

Attachment 1

Environmental Impact Plans, Revised

GFT

WETLAND FLAG NOTES:

1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW)/ FEDERAL WETLANDS. FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+66 LT TO STA. 101+70 RT

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+72 LT TO STA. 101+76 RT

NOTES:

1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.

2. AREA TO BE CLEARED TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES.

3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.

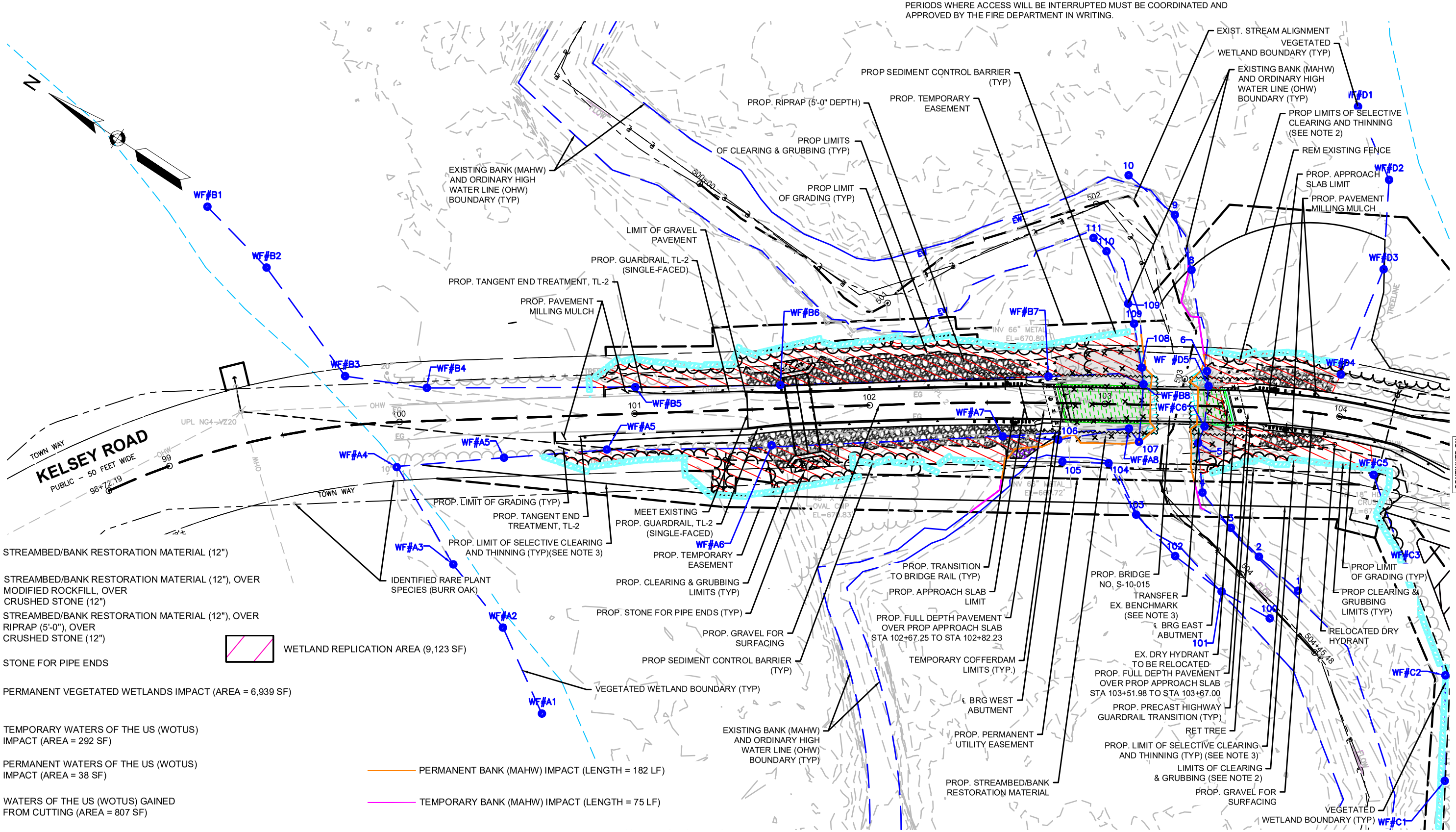
4. GRUBBING IS NOT TO BE DONE IN WETLANDS WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS.

5. THE DRY HYDRANT MUST BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED MUST BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	21	60
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2



Proposal No. 609068-136649
609068_HD/WETLAND REPLICATION PLANS_ACOE VERSION).DWG Plotted on: 15-Apr-2026 10:24 AM
A00830 - 532

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

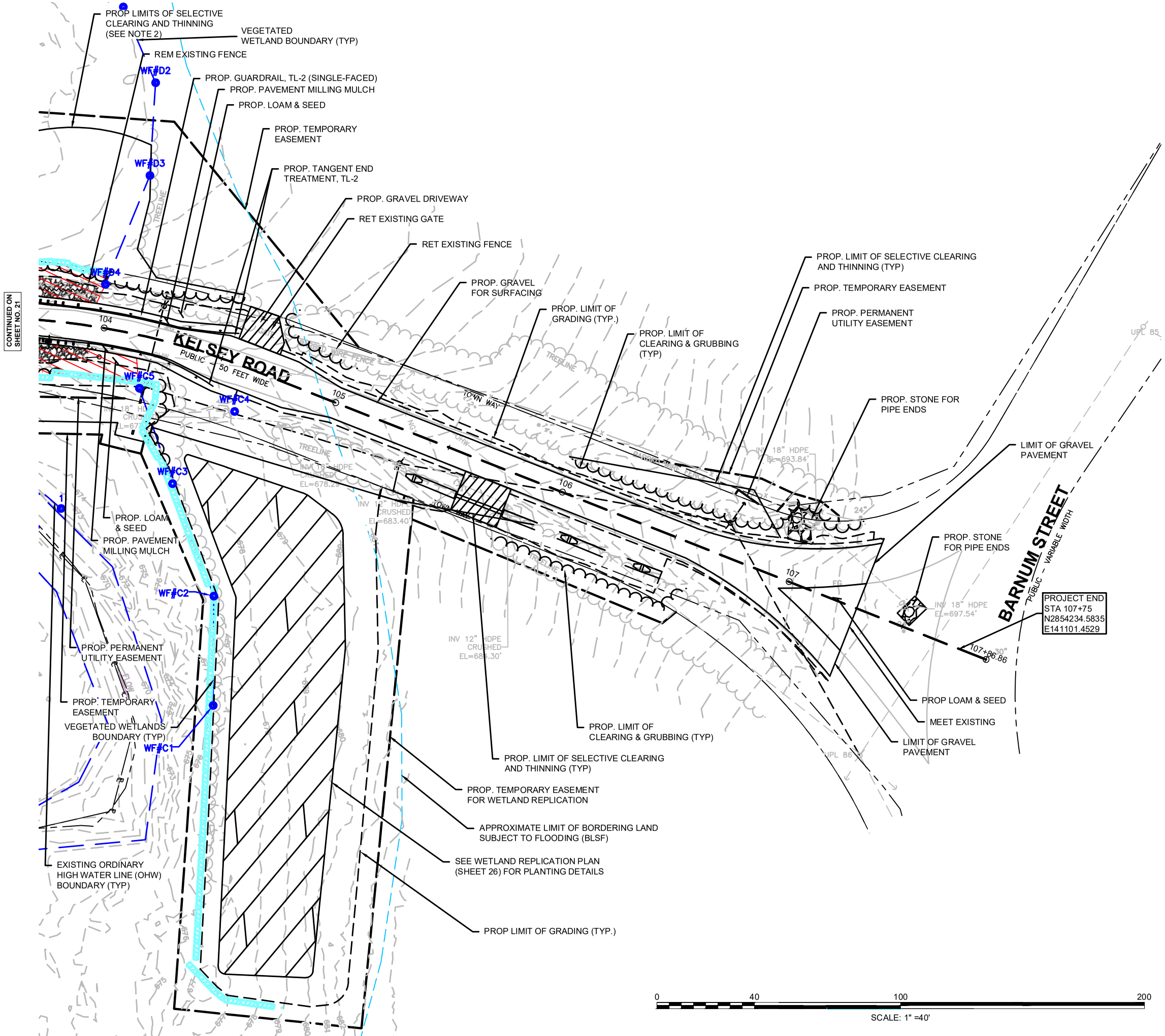
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	22	60
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.

2. AREA TO BE CLEARED TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES.



LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- PERMANENT VEGETATED WETLANDS IMPACT (AREA = 6,939 SF)
- WETLAND REPLICATION AREA (9,117 SF)

0 40 100 200

SCALE: 1" =40'

Proposal No. 609068-136649

A00830 - 533

Plotted on 15-Apr-2026 10:19 AM
609068_HD\WETLAND REPLICATION PLANS_ACOE VERSION).DWG

Attachment 2

PCN Form and the PCN Narrative, Revised

GFT

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

Disclosure 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.

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 (*agent is not required*)
First - Matthew Middle - Last - Lundsted
Company - Comprehensive Environmental Inc
E-mail Address - mlundsted@ceiengineers.com

6. APPLICANT'S ADDRESS:
Address- 10 Park Plaza, Room 7360
City - Boston State - MA Zip - 02216 Country - USA

9. AGENT'S ADDRESS:
Address- 41 Main Street
City - Bolton State - MA Zip - 0174 Country - USA

7. APPLICANT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile
857.262.0757

10. AGENT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile
800.725.255

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Matthew Lundsted 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.

Courtney Walker — SIGNATURE OF APPLICANT
4/16/2026 — DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)
Sheffield Bridge Replacement of Kelsey Road over Schenob Brook - S-10-015

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)
Schenob Brook

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
City: State: Zip:

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)
Latitude: 42.065630 °N Longitude: -73.397721 °W

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: Municipality:

Section: Township: Range:

17. DIRECTIONS TO THE SITE.

To access the northern limits of the site, Foley Road can be taken northbound or southbound before intersecting Kelsey Road, approximately 1,000 ft away from northern work limits. To access the southern limits of the site, Barnum Street can be taken eastbound or westbound before intersecting Kelsey Road approximately 450 ft away from southern work limits.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

The existing bridge substructure and superstructure will be replaced with a bridge structure that will have a span length of 69'-9". The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. Riprap will be placed underneath structure and will extend 25' past openings on both ends. In addition, the project includes realigning a section of Schenob Brook north of Kelsey Road.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

38/292 SF of Waters of the US (WOTUS) (Perm/Temp) impacts, 7,635 SF/14,163 SF of Vegetated Wetlands (Perm/Temp), 182 LF/75 LF of Ordinary High Water (OHW) (Perm/Temp) impacts are anticipated. A wetland replication area is proposed with ~9,117 SF of plantings, creating 780 SF of WOTUS from cutting roadway to install the larger span/opening bridge,implementing an invasive species management plan, and minimizing slope limits (1.5:1) by installing compost and seed over modified rockfill.

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

The purpose of this project is to replace the existing bridge crossing over the Schenob Brook along Kelsey Road, improving existing bridge structural concerns.

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
38/292			PERM/TEMP	The addition of riprap sloping, temporary cofferdams
7,635/14,163			PERM/TEMP	Regrading approach roadway side slopes, bridge recons
	182/75		PERM/TEMP	Regrading approach roadways, bridge reconstruction, a
		9	PERM	dredging to remove the existing structure & installing the

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*)

Approximately 780 square feet of new WOTUS (excavated existing roadway/embankment) will be gained from this new larger span culvert and stream realignment.

25. Is Any Portion of the General Permit Activity Already Complete? [ ] Yes [X] 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*)

IPaC listed the Northern Long-eared Bat, Myotis septentrionalis as endangered, the Tricolored Bat, Perimyotis subflavus as proposed endangered, the Bog Turtle, Glyptemys muhlenbergii as threatened, and the Monarch Butterfly, Danaus plexippus as proposed threatened. NHESP Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674

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 - There are no historical properties within the project limits.

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 - The project does not occur within a "study river" nor is it within 0.25 miles of a wild scenic 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 [X] 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, a BRP WW10 - 401 WQC for Major Fill is being filed with MassDEP concurrently with this notice.

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.

Courtney Walker	4/16/2026		
SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a

Department of the Army

General Permit (GP) Pre-Construction Notification (PCN)

Blocks 1 through 4. To be completed by the U.S. Army Corps of Engineers.

Block 5. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific General Permit(s) You Propose to Use. List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

Block 19. Description of the Proposed General Permit Activity. Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20: Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

Block 21. Purpose of General Permit Activity. Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity. For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including is 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.

PRE-CONSTRUCTION NOTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

1. Introduction

The Massachusetts Department of Transportation (MassDOT) Highway Division is planning the replacement of the existing Kelsey Road bridge (Bridge No. S-10-015) superstructure and substructure over Schenob Brook, due to structural deficiencies. The resource areas surrounding the existing structure consists of Ordinary High Water (OHW), Waters of the US (WOTUS), and Vegetated Wetlands. Both permanent and temporary impacts are expected throughout construction. Mitigation measures are proposed to minimize these impacts including: constructing a wetland replication area, creating WOTUS from cutting roadway to install the larger span/opening bridge, implementing an invasive species management plan, and riprap lined side slopes to minimize the extents of lateral slope limits. As part of the permitting process for this project, a Pre-Construction Notification (PCN) is being filed with the Army Corps of Engineers. Additionally, a Water Quality Certification (WQC) is being filed concurrently with the Massachusetts Department of Environmental Protection (MassDEP). MassDOT is the main project proponent/applicant for the WQC, acting through its agent Comprehensive Environmental Inc (CEI). The project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement is substantially the functional equivalent of, and in similar alignment to, the existing bridge. Therefore, the project is exempt from permitting through the Wetlands Protection Act (WPA), Chapter 91, and Massachusetts Environmental Policy Act (MEPA) permitting are exempt. Required permits for this project include the MassDEP Water Quality Certification (BRP WW 10) and U.S. Army Corps (USACE) Pre-Construction Notification under the Massachusetts Section 404 Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering.

2. Existing Conditions

The project is located in Massachusetts Department of Transportation (MassDOT) District 1, in the Town of Sheffield, Massachusetts in the southern part of Berkshire County.

Kelsey Road is an unpaved rural local road running primarily east/west between South Undermountain Road (MA Route 41) to the west and Barnum Street to the east. There are existing overhead, pole-mounted utility lines (electric and communications) running along the length of Kelsey Road. There are no underground utilities. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent floodplain wetlands along the outside shoulders.

PRE-CONSTRUCTION NOTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

Schenob Brook flows from south to north beneath the bridge. The main channel of Schenob Brook is restricted by the bridge at Kelsey Road where it flows full from abutment face to abutment face. The clear opening is approximately 20' wide by 5'-6" high at its deepest point. The observed water depth is approximately 20"; there is approximately 3'-9" of vertical clearance between the observed water surface and low chord of the bridge. The brook turns 90° to the northwest, just north of the bridge and runs roughly parallel to Kelsey Road for approximately 150' before turning again sharply to the northeast. The bankful width of the Schenob Brook is 42'. A Stream Visual Assessment Protocol (SVAP) form was completed during an initial in-field stream evaluation in early September of 2025 and is included in **Attachment I**. Information within this form is strictly for illustrating stream features.

Two additional floodplain culverts pass under Kelsey Road, west of the bridge at distances of approximately 40' (66" diameter corrugated metal pipe) and 150' (48" x 72" elliptical corrugated metal pipe) northwest of the west abutment. The culverts allow flow from two floodplain wetlands to pass beneath the west. These two culverts don't connect to the main stem of the channel and lack clear bank definition on all sides.

The existing bridge was constructed in 1915 and is owned and maintained by MassDOT. The single-span structure is approximately 23 feet long and carries a gravel surfaced roadway approximately 13 feet wide. 9½" wide concrete curbs are located on each side of the bridge along with bridge railings consisting of a single timber rail bolted to steel I-shaped posts. There are no sidewalks along the bridge or roadway approaches. The out-to-out bridge width is 14'-8".

The bridge superstructure consists of five rolled steel beams with a cast-in-place concrete jack arch deck encasing the beams. The jack arches are formed by stay-in-place, half- round, corrugated steel pipes supported by the beam bottom flanges. The concrete deck is topped by approximately 6" of gravel riding surface. The substructure consists of cast-in- place concrete abutments with monolithic, flared wingwalls.

Overall, the bridge structure is in poor to satisfactory condition and the bridge is posted for reduced weight limits based on section loss to the south exterior beam.

The resource areas surrounding the existing structure consists of OHW, WOTUS and Vegetated Wetlands. A wetland delineation was conducted throughout the project area on August 18, 2025, by Comprehensive Environmental Inc's wetland scientists.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsy Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The

delineated wetland resource areas along this crossing include areas with Vegetated Wetlands and OHW, as seen in Attachment F.

The area surrounding the site is predominantly forest to the north and agriculture to the south. Topography of the site is moderately sloped towards these resource areas. The area was delineated using the A, B, C, D and RB series of flags. Flags RB-01 through RB-10 and RB-100 through RB-111 represent OHW. Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 represent Vegetated Wetlands.

A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. A moderately dense canopy exists dominated by American elm (*Ulmus americana*), hemlock (*Tsuga canadensis)* and black willow (*Salix nigra)*. Shrubs in the understory include winterberry holly (*Ilex verticillate),* highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Swida amomum*), green ash (*Fraxinus pennsylvanica*), and saplings from the canopy. The herbaceous stratum of the BVW includes jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Joe-Pye weed (*Eutrochium fistulosum*), purple loosestrife (*Lythrum salicaria*), reed canary 2 grass (*Phalaris arundinacea*), narrow leaved cattails (*Typha angustifolia*), dotted smartweed (*Persicaria punctata)*, cardinal flower (*Lobelia cardinalis*) and sedges (*Carex* spp.)

The upland/wetland boundary to the Vegetated Wetlands was delineated in the field using flags:

- A-WF-01 through A-WF-08 are along the northwest boundary of the floodplain.
- B-WF-01 through B-WF-08 are along the northeast boundary of the floodplain.
- C-WF-01 through C-WF-06 are along the southwest boundary of the floodplain.
- D-WF-01 through D-WF-05 are along the southeast boundary of the floodplain.

OHW was delineated in the field through observation of vegetation change, bank cutting, water-stained leaves, shelving, and wrack lines. The banks of Schenob Brook were approximately three feet high with a channel 20 to 30 feet wide. Water was slowly flowing northeast at the time of inspection with depths of over six feet in portions of the thalweg.

- Flags RB-01 through RB-10 delineate the mean annual high-water mark along the southern bank of the brook.
- Flags RB-100 through RB-111 delineate the mean annual high-water mark along the northern bank of the brook.

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According to USDA soil surveys (Attachment A), the site is underlaid with soils consisting of moderately sloped, Farmington-Rock outcrop complex (108C) and Amenia silt loam (500C) in the upland areas and nearly level, frequently flooded Saco silt loam (5A) in the Vegetated Wetlands and brook. A detailed Wetland Delineation Report is included in **Attachment G**.

The bridge is not located within any Outstanding Resource Waters (ORW), certified vernal pools, within 0.25 miles of a National Wild Scenic River, or near any federal lands. It is however located within the following resource areas: Area of Critical Environmental Concerns (ACEC) – Schenob Brook Drainage Basin, a Zone II- Mountain Water Systems Inc, and Natural Heritage & Endangered Species (NHESP) Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674. Schenob Brook is a Coldwater Fishery. Maps of these resources are located in **Attachment C**.

There are Section 7 Endangered Species found within project limits: the Northern Long-eared Bat (*Myotis septentrionalis)*, the Tricolored Bat (*Perimyotis subflavus)*, the Bog Turtle (*Glyptemys muhlenbergii)*, and the Monarch Butterfly, *Danaus Plexippus.* A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. In coordination with MassDOT, the Natural Heritage and Endangered Species Program (NHESP) received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed species. See **Attachment D** for all species determination letters. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS. A Turtle Protection Plan is found in **Attachment G.**

The United States Federal Emergency Management Agency (FEMA) Flood Map Service Center's online map viewer indicates that the existing bridge is within Zone A/Areas of 100-Year flood; base flood elevations and flood hazard factors not determined. Therefore, the No-Rise evaluation is not required for this project. See **Attachment C**.

The project area was reviewed for invasive species in mid-Summer of 2025. Asian Bittersweet, Multiflora Rose, Japanese Bittersweet, and Autumn Olive were observed throughout the project site.

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3. Proposed Conditions

This project involves the replacement of the existing bridge, No. S-10-015, in the same location with a new substructure and superstructure of larger capacity. This increase in capacity will yield a net gain in WOTUS. A Preliminary Hydraulic Analysis was conducted to determine requirements for the proposed bridge hydraulic opening. The low chord of the existing bridge is at an elevation of 674.68'. The low chord of the proposed bridge will be at an elevation of 674.21; the 10-year and 100-year flood elevations are 677.83 and 678.73, respectively. The existing bridge is therefore subject to overtopping during flood events. Alternative bridge designs assumed that the existing low chord elevation would be maintained – increasing this elevation so that it would be above the flood elevations would require a four foot increase in the roadway profile which would push the limits of side slope grading an additional six or more feet beyond the proposed limits along the approach roadways adjacent to wetlands. It was estimated that this would result in an additional 4,700 square feet or more of permanent wetland impacts, which was deemed unacceptable. Based on these controlling criteria, the proposed structure will have a span length of 69'-9". With a bankful width of 42', this span length exceeds the minimum requirements for meeting the 1.2 bankful width standards in accordance with Massachusetts Stream Crossing Standards (SCS). Wildlife shelving on both sides of the bank within the crossing are proposed, tying back to the existing Bank post construction.

The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. The bridge railings will be concrete CT-TL2 barriers. The total out-to-out structure width will be 16.56' as measured along the length of the stream. With a cross-sectional area of 335.2 square feet, the openness ratio is approximately 20.24, exceeding the minimum 0.25 requirement of the Massachusetts SCS.

The proposed roadway cross section will include a single 13' wide travel lane with a crown at the center and 2% cross slopes. Guardrails are proposed for both sides of the roadway along each bridge approach. The bridge and approach slabs will have an asphalt riding surface; beyond the approach slabs the roadway approaches will remain gravel. There will be no sidewalks along the approaches or across the bridge. Roadway sideslopes will be constructed with a 1.5:1 slope to minimize impacts to the adjacent resource areas. These side slopes will be lined with modified rockfill over riprap to protect the embankment and bridge wingwalls from overtopping flood events.

A 12-inch layer of streambed/bank restoration material will be placed along the widened streambed area within the new abutment limits (at and around the abutments only) to allow

for natural substrate; existing channel will remain untouched. With the increased bridge span length and hydraulic opening, the closer of the two culverts (66" corrugated metal pipe) beneath Kelsey Road to the west of the bridge will be removed. This existing floodplain culvert falls within the proposed bridge's opening. The second flood plain culvert (48" x 72" elliptical corrugated metal pipe) will be replaced in its current location with twin elliptical (34" x 53") reinforced concrete pipes, closely matching the existing culvert's cross-sectional area. This flood plain culvert doesn't connect to the main channel and therefore is not required to meet MA SCS.

During the demolition and construction of the bridge, Kelsey Road will be closed to traffic and a detour plan will be implemented. The detour length for both directions of traffic will be approximately 0.9 miles. With the full closure of Kelsey Road, construction equipment will be able to access the project site from either side of Schenob Brook along Kelsey Road and the Contractor will be able to use the approach roadway on each side of the project area for staging equipment and stockpiling materials. At the beginning of the project, sedimentation controls measures will be installed at the limits of grading and/or clearing.

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas. Alternate water handling means and methods may be submitted by the contractor for approval.

Due to the replacement of the existing bridge's substructure and superstructure, as well as the approach roadway reconstruction and replacement of the western flood plain culvert, OHW, WOTUS, and Vegetated Wetlands will be impacted during the construction of the proposed bridge (See Section 5).

The existing gravel roadway surface on the bridge and the approach roadways is considered to be impervious and, as such, the pre-construction impervious area total is approximately 10,053 SF within the project limits. The post-construction impervious area, consisting of the

gravel and paved roadway/bridge surfaces, totals 10,201 SF. This resulted in a net increase of 148 SF.

Approximately 9 cubic yards (streambed removed within limits of WOTUS) of dredge will be needed to construct the bridge replacement. This includes dredging activities for the demolition and removal of the existing bridge structure abutments and subsurface foundations as well as installing the proposed cofferdam systems around these foundations to allow the work to be performed in the dry while maintaining a streambed opening throughout construction. If legacy streambed material is encountered beneath the roadway embankment and is determined to be suitable, it will be utilized as natural stream substrate and augmented to the additional manufactured streambed material, meeting the required specifications as necessary (for quantity). A limited amount of excavated soil from the project site will be reused for fill where needed and where the material meets required soil classification for the intended use. All other excavated soil from the project site, included the dredged soil from these excavations, will be removed from the project site and disposed of by the Contractor.

4. Bridge Replacement Construction Sequence

Note: While the Department does not dictate Contractor's Means and Methods for construction, the Contractor will be required to perform construction near and in portions of the Schenob Brook (WOTUS) in the dry.

1. Construction staging and layout.
2. Placement of erosion and sedimentation controls and turtle protection barriers throughout the work area.
3. Clearing and grubbing.
4. Utility relocations.
5. Detour Kelsey Road to Foley Road and Barnum Street.
6. Provide a debris shield under the existing bridge prior to demolition to control demolition debris from entering Schenob Brook.
7. Remove existing bridge superstructure (deck, railing and steel beams).
8. Remove existing dry hydrant.
9. Drive temporary steel sheet piling for cofferdams. Provide dewatering equipment (sump pump and temporary dewatering sediment containment structure), as necessary to maintain any work in the dry.

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10. Remove, segregate and stockpile top 12" of existing riverbed material from between steel sheeting and existing abutments taking care not to intermingle material from each abutment.
11. Remove the existing abutments. Once the riverbed material has been salvaged the existing abutments will be removed by hydraulic hoe-ram or similar demolition equipment. At no time will equipment or debris be allowed outside temporary cofferdam or upland areas. Abutments may be cut off 24" below proposed streambed.
12. Drive piles for proposed bridge foundations.
13. Prepare subgrade for placement of new abutments and wingwalls.
14. Construct abutments and wingwalls.
15. Place streambed/bank restoration material in areas between existing and proposed bridge abutments.
16. Backfill behind abutments and wingwalls.
17. Construct bridge approach slabs.
18. Remove dewatering equipment and temporary steel sheeting. Steel sheeting may be cut off 24" below mudline.
19. Set bridge beams. Beams will be delivered on the east roadway approach via Barnum Street. Using a crane located along the east roadway approach, beams will be placed.
20. Form and pour concrete bridge deck and bridge barrier/rail.
21. Pave and waterproof bridge.
22. Install new dry hydrant.
23. Remove and replace western culvert.
24. Construct remainder of roadway approaches.
25. Install approach roadway guardrail and signing.
26. Final grading, seeding and landscape plantings, including development of wetland replication area
27. Restore wetlands/streambed within limits of temporary impacts.
28. Stabilize all roadway slopes prior to the removal of erosion and sedimentation controls.
29. Remove all temporary traffic control devices and open roadway to traffic.
30. Cleanup area and return to pre-construction condition.

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5. Wetland Resource Areas Impacts

During the site visit in August 2025, wetland boundaries were reverified from a 2020 delineation and have been identified on the plans based on the flagging done during the initial survey. Wetland delineation includes the boundaries of OHW and Vegetated Wetlands. Vegetated Wetlands were delineated on both the east and west sides of Schenob Brook within approximately 75' of Bridge No. S-10-015. On the west approach, these wetlands flank both sides of the roadway from the bridge to the further of the two culverts to the west. More information is illustrated in **Attachment F**.

A total of 6,939 square feet of permanent Vegetated Wetlands impacts are anticipated. These permanent impacts are due to the following: regrading of the approach roadway side slopes, bridge reconstruction, replacement of the western flood plain culvert and clearing & grubbing.

A total of 292 square feet of temporary WOTUS impacts are anticipated. These temporary impacts are due to the installation of the temporary steel sheet pile cofferdams. 38 square feet of permanent WOTUS impacts expected. These are due to the addition of stone sloping along the wingwalls and the potential for cofferdam sheeting to be left-in-place (cut-off a minimum of 24" below the mudline).

WOTUS under the existing bridge equates to 325 square feet and WOTUS under the proposed bridge equates to 1,143 square feet. Including the 38 square feet of permanent WOTUS impacts, there will be an increase of 807 square feet of WOTUS gained due to widening the bridge span and cutting existing roadway fill. Streambed/bank restoration material will be provided in these gained WOTUS areas.

182 linear feet of permanent impacts to Bank are anticipated due to the following; regrading approach roadways, bridge reconstruction, the addition of riprap, streambed/bank restoration material between the abutments, and clearing & grubbing. 75 square feet of temporary Bank impacts are expected due to selective clearing & trimming.

Table 1 below provides a summary of the overall wetland impacts for the proposed alternative:

Table 1 – Wetland Impact Summary

Resource Area	Permanent Impacts	Temporary Impacts
Vegetated Wetlands	6,939 sf	0 sf

WOTUS	38 sf	292 sf
Bank	182 lf	75 lf

The project will also involve impacts to the regulatory FEMA flood Zone A. The hydraulic capacity of the structure is being increased due to the widening of the bridge. Based on hydraulic modeling, the widening of the bridge will result in a decrease of the 100-year water surface elevation by approximately 0.20-foot at the bridge crossing when compared to existing conditions (existing WSE = 678.75', Proposed WSE = 678.52').

6. Wetland Replication

Proposed mitigation for the Wetland Resource Area impacts described in Section 5 are as follows:

Vegetated Wetlands: To provide mitigation for 6,939 SF of permanent impact to Vegetated Wetlands (palustrine shrub-dominated wetland along the floodplain of Schenob Brook), construction of a 9,123 SF wetland replication is proposed. The replication area will provide mitigation at a ratio of approximately 1.3:1 to account for potential failure.

The wetland replication is proposed to be located south of the bridge, south of ~STA 104+40 +/- RT, in the adjacent field area southeast of wetland flags WF#C-1 through WF#C-5.

Areas proximate to the Vegetated Wetlands impact area to the immediate north and south of the bridge crossing were evaluated for wetland replication feasibility, including the goal of minimizing tree clearing required to construct the replication area. The town indicated that the abutters of the northeast quadrant were in the process of submitting a building application. To avoid adversely impacting their potential use of property, this quadrant was not chosen. The southeast quadrant was investigated but due to crane laydown and potential soil compaction caused by construction activity, this quadrant was not chosen. No off-site locations were determined to be available or feasible for a replication area proximate to the impact area. The proposed location was selected as the best available option for wetland replication because (1) it is immediately adjacent to the Vegetated Wetlands bordering Schenob Brook and (2) it is an open field requiring minimal disturbance of exiting vegetation.

The proposed replication will be constructed with the following features, as specified on the Plans:

- The proposed replication final base elevation is 675 feet, with microtopography up to plus or minus six inches from the base elevation. This design elevation is approximately 12 inches below the adjacent wetland boundary elevation.
- The area will be subgraded to allow for 12 inches of backfill with wetland topsoil.
- The replication area will be planted with thirty-six specimens of three wetland shrub species: silky dogwood (*Cornus amomum*), gray dogwood (*Cornus racemosa*), and speckled alder (*Alnus incana*). These species will be planted in twelve clusters with three plantings per cluster. The entire area will also be seeded with a wetland seed mix.

WOTUS: Impacted existing WOTUS will be restored and an additional 807 SF of WOTUS will be constructed, with natural substrate placed over any necessary scour protection. The additional WOTUS area is due to the widening of the bridge opening from approximately 20 feet to 65 feet. WOTUS will be restored and new areas will be developed with the construction of a 12" layer of Streambed/Bank Restoration material (Item 983.521) between the two proposed bridge abutments.

Bank: A Streambed/Bank Restoration specification (Item 983.521) is provided in Attachment A. Roadway embankments approaching the bridge will be restored using riprap with a 12" layer of Streambed/Bank Restoration material (Item 983.521) on top. Riprap is necessary to protect and stabilize the slopes of the roadway embankment due to flooding events that may overtop the roadway. If any invasive species are to be impacted during construction, they shall be handled and disposed of in accordance with the following specifications: Herbicide Treatment of Invasive Plants (Item 102.3) and Invasive Plant Management Strategy (Item 102.33). Fill materials brought onsite or transported within the site would be free of invasive species or treated in accordance with the above noted specifications to prevent the spread of such species.

7. Sedimentation Control

Measures will be taken to minimize sedimentation/siltation into the resource areas, Schenob Brook, and the surrounding community during construction activities. Implementation of accepted and usual methods of sedimentation erosion control will be used at the site during all phases of construction. The perimeter erosion controls will also serve to demarcate the limits of work.

The sediment control barrier installations will be checked daily for any degradation or failures in the barrier. These will either be repaired or restored with new sediment control

barriers. The Contractor will be required to maintain adequate stocks of sediment control barriers onsite to affect immediate repairs. These barriers may include compost filter tubes and silt fencing.

These erosion control devices/ methods will remain in place/use until all disturbed surfaces have stabilized. Additional control measures will be employed as necessary. All silt collected behind the erosion controls shall be removed before such measures are removed.

8. Dewatering

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream flow will be maintained throughout construction; however, the opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas.

The dewatered area inside the temporary sheeting and sandbag cofferdam are classified as temporary impacts as summarized above.

9. Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools

An online review of the NHESP using the MassGIS MassMapper revealed that the project site is located within Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674, an ACEC designated as the Schenob Brook Drainage Basin, and the Schenob Brook is designated as a Coldwater Fishery. However, the current project limits aren't within certified/potential vernal pools, an ORW, or an Essential Fish Habitat. See **Attachment C**. In coordination with MassDOT, NHESP received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was

determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed reptile. A Turtle Protection Plan is found in **Attachment G**.

According to an Information for Planning and Consultation (IPaC) inquiry for the area on August 22nd 2025, the following species were listed as follows; the Northern Long-eared Bat, *Myotis septentrionalis* is endangered, the Tricolored Bat, *Perimyotis subflavus* is proposed endangered, the Bog Turtle, *Glyptemys muhlenbergii* is threatened, and the Monarch Butterfly, *Danaus Plexippus* as proposed threatened. A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS.

10. Massachusetts Stream Crossing Performance Standards

1. *Type of Crossing- Spans and/or Open Bottom Preferred*
   The bridge replacement will be an open bottom structure. This qualifies as "optimum" for the Type of Crossing under the Massachusetts Stream Crossing Standards (SCS)
2. *Embedment*
   a. *All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%;*
      This project is a bridge replacement project with an open clear span, and therefore, this standard does not apply.
   b. *If pipe culverts cannot be embedded this deep, then they should not be used;*
      N/A- no pipe is proposed.
   c. *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 bridge abutments will be embedded approximately 3.36 feet below the streambed and aren't under riprap or crushed stone. The hydraulic study detailing scour protection design is attached to this application. Scour protection design was based on the standards set forth in the MassDOT LRFD Bridge Manual.
3. *Crossing Span- Span is a minimum of 1.2 times the bankfull width of the stream.*
   A minimum span of 50.4' is necessary to meet 1.2 bankfull (42'). The proposed crossing span is 66.98'. 66.98/42 = 1.59, which exceeds the minimum 1.2 ratio. The

roadway will be overtopped during the design and base flood events, see the attached hydraulic study.

4. *Openness Ratio*
   a. *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;* The proposed openness ratio is 335.2 SF/ 16.56 LF = 20.24 feet, which exceeds the minimum 0.82 feet.
   b. *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);*
      The proposed crossing meets the optimum standards of exceeding 6' in height (6.1' proposed) and 1.64 feet openness ratio (20.24 feet proposed).
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 dis-placement during floods and maintain an appropriate bottom during normal flows.* The proposed natural substrate will be salvaged from excavations below the existing bridge (historical streambed) and be re-used for the disturbed and proposed substrate sections through the bridge channel. Within the widened section of the bridge opening, a 12-inch layer of streambed/bank restoration material will be placed to replicate the natural substrate.
6. *Water Depth and Velocity- Water depths and velocities are comparable to those found in the natural channel at a variety of flows.*
   Hydraulic modeling of the proposed crossing indicates that velocities and water surface elevations better match the downstream natural channel values. This is the result of "opening up" the crossing cross-section.

11. Alternatives Analysis

Alternatives for the project include the "No-Build Alternative". The project involves the replacement of a structurally deficient bridge that has been posted for reduced vehicular traffic loads. The No-Build Alternative does not meet the purpose and need requirements of the project and would result in continued deterioration of the structure. Therefore, this alternative was not selected as the preferred alternative.

Based on the need to replace the bridge structure, various bridge superstructure and substructure alternatives were considered. The proposed bridge type was determined to

include four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls.

The existing roadway alignment and cross-section will be maintained, consisting of a 13' wide, unpaved travel lane on the roadway approaches (the bridge structure will have an asphalt riding surface). Beyond the edge of the roadway, 2-foot wide usable shoulder areas are proposed to provide safety and operational improvements such as lateral support of the pavement, reduced sedimentation that may result from country drainage, and support emergency stopping and errant vehicles. There are no sidewalks proposed along the bridge or approach roadways. Further widening of the roadway and bridge section was not considered due to the impacts this would have on the right-of-way and adjacent resource areas.

In terms of bridge construction, full road closure was considered but decided against as it would interfere with emergency vehicle access and response time. Nearby properties adjacent to the site would be negatively impacted if through traffic was closed off. The use of retaining walls to aid in lessening the amount of grading were considered as well. It was decided against as the excavation to install the foundations for these walls would extend to similar or further distances then the current "toe of slope", ultimately causing more impacts.

Several alternatives were evaluated using the proposed bridge type and roadway alignment/cross-section summarized above. These alternatives focused on opportunities that would minimize impacts to the adjacent wetland resource areas and existing right-of-way. These alternatives are summarized as follows:

Alternative #1 – Bridge Replacement with Spread Footing

This alternative considered the use of shallow spread footings for the new bridge abutments. Based on the Preliminary Hydraulic Analysis, it was determined that the potential scour depth would require full width countermeasure protection (i.e. riprap) from abutment to abutment with the top of footing located below the countermeasure apron. Because of the pressure scour issues and the impacts to WOTUS that would be associated with the added countermeasures across the width of Schenob Brook, this alternative was not deemed to be desirable.

Alternative #2 – Bridge Replacement with Deep Foundations (Preferred Alternative)

The Preliminary Hydraulic Analysis indicates that the proposed bridge design will result in contraction scour depth of approximately 3.36 feet from the bottom of the streambed.

Under this alternative, the streambed between the existing abutments would be retained and would not be disturbed. The widened section of Schenob Brook (created by the increased bridge span length) would be graded with Streambed/Bank Restoration material (Item 983.521) in an effort to replicate the existing streambed conditions. The recommendation under this alternative was to provide a proposed substructure consisting of full height bridge abutments on deep pile foundations extending below the scour depth. With the pile supported foundation designed for foundation supports located below the scour depth, the Hydraulic Analysis suggests that Riprap Scour Protection within the channel is not warranted. Eliminating the riprap scour protection within the channel would reduce the permanent WOTUS impacts by 1,442 square feet, relative to Alternative #1. Based on this reduction to the WOTUS impacts and the improved scour countermeasures for the bridge structure, Alternative #2 was deemed to be the preferred alternative.

Alternative #3 – Bridge Replacement with Brook Realignment

Realigning a section of Schenob Brook north of Kelsey Road to provide a more natural flow alignment and reduce potential for erosion and bank scour beyond the limits of the bridge was investigated. It was agreed that this was not required hydraulically as the brook will realign naturally (to allow for free sediment transport). This work is not directly linked to the purpose and need of this project and could be eliminated. Eliminating this work would reduce the overall wetland impacts by 5,567 square feet for Vegetated Wetlands and 4,153 square feet for WOTUS.

12. Conclusion

The project proposes to replace the existing structurally deficient bridge along Kelsey Road in Town of Sheffield, MA. As part of project activities, there are impacts to jurisdictional wetland resource areas. Permanent impacts to Vegetated Wetlands total 6,939 square feet. Permanent and temporary impacts to WOTUS total 38 square feet and 292 square feet. Permanent and temporary impacts to Bank total 182 linear feet and 75 linear feet. A portion of the permanent impacts include the dredging required for the reconstruction of the new bridge. Approximately 9 cubic yards of dredging is proposed.

Although there are impacts within resource areas, the applicant respectfully requests that MassDEP and the United States Army Corps of Engineers find these measures adequately protective of the interests identified under Section 401 and 404 of the Clean Water Act Regulations and issue a 401 WQC and 404 PCN under the NWPs approving the work shown on the accompanying plan set.

PRE-CONSTRUCTION NOTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

13. Environmental Related Specifications to be Included into the Contract

- Herbicide Treatment of Invasive Plants
- Invasive Plant Management Strategy
- Turtle Exclusion Barrier
- Floating Turbidity Barrier
- Geotextile Fabric For Stabilization & Separation
- Compost Blanket
- 755.35 Inland Wetland Replication Area
- 755.45 Wetland Restoration
- Wetland Specialist
- Wetland Monitoring Reports
- 756.1 Construction Pollution Prevention Plan
- Wetland Seasonally Flooded Mix
- Native Seeding and Establishment
- Sediment Barrier – Coir Log
- Timber Matting
- 983.521 Streambed & Bank Restoration
- Control of Water – Structure No. S-10-015
- Temporary Protective Shielding

From:	Thomas Daley
To:	Vasconcelos, Daniel B CIV USARMY CENAE (USA); Davis, Heidi (DEP)
Cc:	McHugh, Michael (DEP); townhall@sheffieldma.gov; Collins, Lily R. (DOT); Matt Lundsted; Bartus, Joshua D. (DOT); Walker, Courtney L. (DOT); Walker, Jaime (DEP)
Subject:	RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield - 2 of 2
Date:	Wednesday, July 29, 2026 11:11:21 AM
Attachments:	image001.png image002.png image003.png Attachment-1_11x17_FullPlanSet_2 of 2.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.

Dan,
Attached is pdf 2 of 2.

Tom

Thomas P. Daley | Vice President / Principal Project Manager
C: 617-276-5125 | **D:** 781-410-3930
GFT: Ingenuity That Shapes Lives™

From: Thomas Daley
Sent: Wednesday, July 29, 2026 11:05 AM
To: 'Vasconcelos, Daniel B CIV USARMY CENAE (USA)' <Daniel.B.Vasconcelos@usace.army.mil>; 'Davis, Heidi (DEP)' <heidi.davis@mass.gov>
Cc: 'McHugh, Michael (DEP)' <michael.mchugh@mass.gov>; 'townhall@sheffieldma.gov' <townhall@sheffieldma.gov>; 'Collins, Lily R. (DOT)' <lily.r.collins@dot.state.ma.us>; 'Matt Lundsted' <mlundsted@ceiengineers.com>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>; Courtney Walker <courtney.l.walker@dot.state.ma.us>; 'jaime.walker@mass.gov' <jaime.walker@mass.gov>
Subject: RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield - 1 of 2

Dan,
I tried sending this earlier, but the file was too large. So, I separated it into two pdf's that I'll send as separate email. Here is pdf 1 of 2.

Tom

Thomas P. Daley | Vice President / Principal Project Manager
C: 617-276-5125 | **D:** 781-410-3930
GFT: Ingenuity That Shapes Lives™

From: Thomas Daley
Sent: Wednesday, July 29, 2026 10:51 AM
To: 'Vasconcelos, Daniel B CIV USARMY CENAE (USA)' <Daniel.B.Vasconcelos@usace.army.mil>; Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: McHugh, Michael (DEP) <michael.mchugh@mass.gov>; townhall@sheffieldma.gov; Collins, Lily R. (DOT) <lily.r.collins@dot.state.ma.us>; Matt Lundsted <mlundsted@ceiengineers.com>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>; Courtney Walker <courtney.l.walker@dot.state.ma.us>; jaime.walker@mass.gov
Subject: RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield

Dan,
Attached please find a complete plan set (61 drawings) of the latest drawings in 11”x17” format for your use. Please let me know if you have any questions or issues with any of this information. Thanks.

Tom

Thomas P. Daley, P.E.
Vice President / Principal Project Manager

175 Federal Street, Suite 800, Boston, MA 02110
E: tdaley@gftinc.com
C: 617-276-5125 **| D:** 781-410-3930
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From: Vasconcelos, Daniel B CIV USARMY CENAE (USA) <Daniel.B.Vasconcelos@usace.army.mil>
Sent: Monday, July 20, 2026 3:13 PM
To: Thomas Daley <tdaley@gftinc.com>; Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: McHugh, Michael (DEP) <michael.mchugh@mass.gov>; townhall@sheffieldma.gov; Collins, Lily R. (DOT) <lily.r.collins@dot.state.ma.us>; Matt Lundsted <mlundsted@ceiengineers.com>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>; Courtney Walker <courtney.l.walker@dot.state.ma.us>; jaime.walker@mass.gov
Subject: RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency

Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield

> **[EXTERNAL EMAIL]:** This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Tom,

After inserting these revised sheets into the full plan set I noticed the sheet numbering has become confusing. Some sheets are listed as being out of 55 total sheets, while others say out of 60 or 61. I also have several repeat page numbers now (e.g. I have a sheet 7 of 55 and a sheet 7 of 61, each showing different things).

To avoid this numbering confusion, could you please send me the most up to date complete Corps plan set (all pages), in the 11x17 format? I assume you have a set with sequential numbering on your end, but if not, please include sequential page numbering.

Thank you,
Dan

Daniel B. Vasconcelos, PWS
Senior Project Manager/Environmental Scientist
U.S. Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742
(978) 318-8653

USACE is now accepting pre-construction notifications and applications through the Regulatory Request System (RRS)! In order to better serve you and the Nation, USACE has fully transitioned to the RRS. To help ensure timely receipt and processing, please submit your pre-construction notifications and permit applications via the clickable RRS link below.



USACE RRS Promo 90-sec (youtube.com)

From: Thomas Daley <tdaley@gftinc.com>
Sent: Thursday, July 16, 2026 5:09 PM
To: Vasconcelos, Daniel B CIV USARMY CENAE (USA) <Daniel.B.Vasconcelos@usace.army.mil>; Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: McHugh, Michael (DEP) <michael.mchugh@mass.gov>; Newton, Kevin M CIV USARMY CENAE (USA) <Kevin.M.Newton@usace.army.mil>; townhall@sheffieldma.gov; Collins, Lily R. (DOT) <lily.r.collins@dot.state.ma.us>; Matt Lundsted <mlundsted@ceiengineers.com>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>; Courtney Walker <courtney.l.walker@dot.state.ma.us>
Subject: [Non-DoD Source] RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield

Dan,
Attached please find a copy of the Attachment 1 plans as 11”x17” pdf’s for your use. If you have any comments or need anything else, please just let me know. Thank you.

Tom

Thomas P. Daley, P.E.
Vice President / Principal Project Manager

175 Federal Street, Suite 800, Boston, MA 02110
E: tdaley@gftinc.com
C: 617-276-5125 **| D:** 781-410-3930
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From: Vasconcelos, Daniel B CIV USARMY CENAE (USA) <Daniel.B.Vasconcelos@usace.army.mil>
Sent: Wednesday, July 15, 2026 9:04 AM
To: Thomas Daley <tdaley@gftinc.com>; Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: McHugh, Michael (DEP) <michael.mchugh@mass.gov>; Newton, Kevin M CIV USARMY CENAE (USA) <Kevin.M.Newton@usace.army.mil>; townhall@sheffieldma.gov; Collins, Lily R. (DOT) <lily.r.collins@dot.state.ma.us>; Matt Lundsted <mlundsted@ceiengineers.com>; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>;

Courtney Walker <courtney.l.walker@dot.state.ma.us>
Subject: RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield

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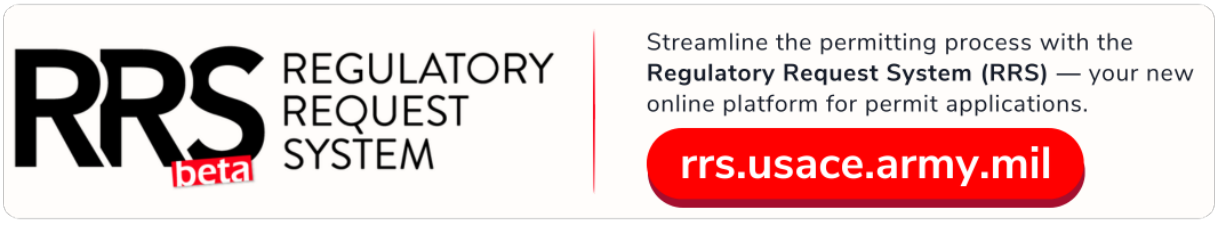
Hi Tom,

It looks like the plans have changed, which will affect the Corps permit as well. Can you please send the revised plans to me in 11x17 format?

Thank you,
Dan

Daniel B. Vasconcelos, PWS
Senior Project Manager/Environmental Scientist
U.S. Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742
(978) 318-8653

USACE is now accepting pre-construction notifications and applications through the Regulatory Request System (RRS)! In order to better serve you and the Nation, USACE has fully transitioned to the RRS. To help ensure timely receipt and processing, please submit your pre-construction notifications and permit applications via the clickable RRS link below.



USACE RRS Promo 90-sec (youtube.com)

From: Thomas Daley <tdaley@gftinc.com>
Sent: Wednesday, July 8, 2026 3:48 PM
To: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: McHugh, Michael (DEP) <michael.mchugh@mass.gov>; Vasconcelos, Daniel B CIV USARMY CENAE

(USA) <Daniel.B.Vasconcelos@usace.army.mil>; Newton, Kevin M CIV USARMY CENAE (USA) <Kevin.M.Newton@usace.army.mil>; townhall@sheffieldma.gov; Collins, Lily R. (DOT) <lily.r.collins@dot.state.ma.us>; Matt Lundsted <mlundsted@ceiengineers.com>; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>; Courtney Walker <courtney.l.walker@dot.state.ma.us>
Subject: [Non-DoD Source] RE: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield

Heidi,
On behalf of MassDOT, attached please find a memo summarizing our responses to your April 17, 2026 Administrative Completeness & Technical Deficiency Review of the 401 Water Quality Certification for the Kelsey Road over Schenob Brook Bridge Replacement project in Sheffield, MA. The attached memo includes responses to each of your comments along with updated documents supporting the 401 Water Quality Certification application.

Please let us know if you have any additional questions or comments. Thank you.

Tom

Thomas P. Daley, P.E.
Vice President / Principal Project Manager

175 Federal Street, Suite 800, Boston, MA 02110
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C: 617-276-5125 **| D:** 781-410-3930
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From: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Sent: Friday, April 17, 2026 4:58 PM
To: Courtney Walker <courtney.l.walker@dot.state.ma.us>
Cc: McHugh, Michael (DEP) <michael.mchugh@mass.gov>; Vasconcelos, Daniel B CIV USARMY CENAE (USA) <daniel.b.vasconcelos@usace.army.mil>; Newton, Kevin M CIV USARMY CENAE (USA) <kevin.m.newton@usace.army.mil>; townhall@sheffieldma.gov; Collins, Lily R. (DOT)

<lily.r.collins@dot.state.ma.us>; Matt Lundsted <mlundsted@ceiengineers.com>; Thomas Daley <tdaley@gftinc.com>; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>; Bartus, Joshua D. (DOT) <joshua.bartus@dot.state.ma.us>
Subject: 401 Water Quality Certification/Administrative Completeness and Technical Deficiency Review/Kelsey Road Bridge Replacement over Schenob Brook (Bridge No. S-10-015), Sheffield

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Good afternoon, Courtney –

Attached is the Administrative Completeness and Technical Deficiency letter for the Kelsey Road Bridge Replacement over Schenob Brook project (Bridge No. S-10-015) in Sheffield.

Please contact me at heidi.davis@mass.gov or Jaime Iannelli at jaime.iannelli@mass.gov if you have any questions concerning this document.

Best regards,
Heidi

Heidi M. Davis
Senior Wetland Analyst
Highway Unit Supervisor
Wetlands Program, Boston Office
MassDEP
339-225-2332

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	1	61
PROJECT FILE NO.	609068		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

KELSEY ROAD OVER SCHENOB BROOK

(BRIDGE NO. S-10-015)

IN THE TOWN OF

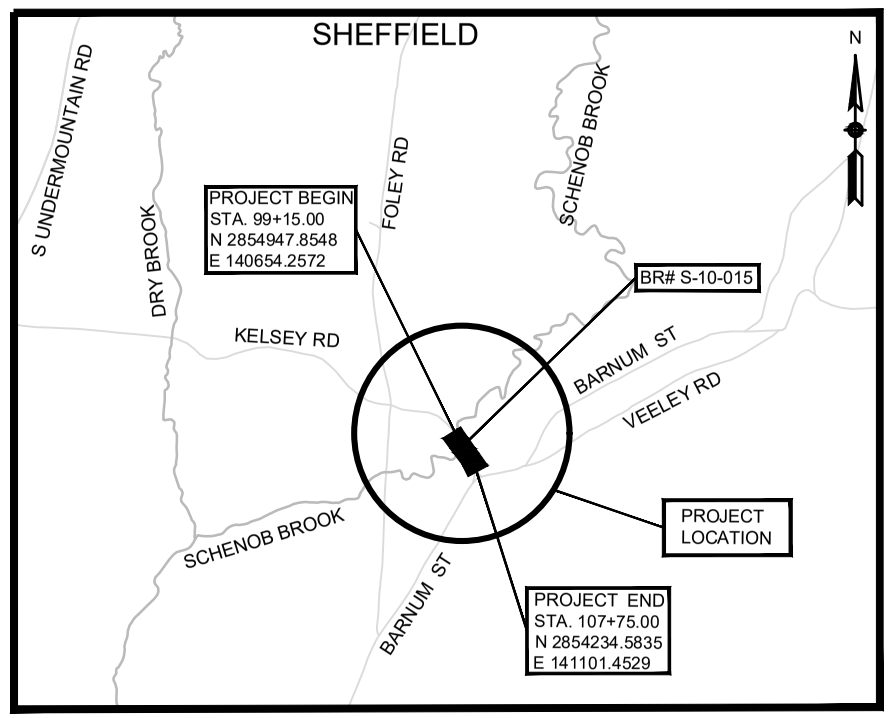
SHEFFIELD

BERKSHIRE COUNTY

THESE PLANS ARE SUPPLEMENTED BY THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS, AS IDENTIFIED IN THE CONTRACT SPECIAL PROVISIONS: THE MASSDOT CONSTRUCTION STANDARD DETAILS, THE MASSDOT STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, THE MASSDOT OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, THE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, AND THE ANSI AMERICAN STANDARD FOR NURSERY STOCK.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN AND BORING LOCATIONS
4-5	BORING LOGS
6	TYPICAL SECTIONS
7-8	CONSTRUCTION PLANS
9-10	ROADWAY PROFILES
11-12	CONSTRUCTION BASELINE TIE PLANS
13-14	GRADING PLANS
15-16	TRAFFIC SIGNING PLANS
17	DRAINAGE DETAILS
18	TEMPORARY TRAFFIC CONTROL PLANS
19-20	UTILITY PLANS
21-22	ENVIRONMENTAL IMPACTS PLANS
23-24	TURTLE EXCLUSION BARRIER PLANS
25	TURTLE EXCLUSION BARRIER DETAILS
26-28	WETLAND REPLICATION PLAN
29-30	LANDSCAPING PLANS
31	LANDSCAPING DETAILS
32-33	CONSTRUCTION DETAILS
34-54	BRIDGE PLANS
55-61	CROSS SECTIONS



0 1000 2000 3000 4000

SCALE: 1" = 1000'

LENGTH OF PROJECT = 860 FEET = 0.163 MILES

DESIGN DESIGNATION (KELSEY ROAD)

DESIGN SPEED	20 MPH
ADT (2026)	121
ADT (2046)	148
K	-
D	-
T (PEAK HOUR)	6%
T (AVERAGE DAY)	6%
DHV	-
DDHV	-
FUNCTIONAL CLASSIFICATION	RURAL LOCAL

DATE	DESCRIPTION	REV #

GFT
175 FEDERAL STREET, SUITE 800
BOSTON, MA 02110

MassDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER ____ DATE ____

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR ____ DATE ____

APPROVED

HIGHWAY ADMINISTRATOR ____ DATE ____

Plotted on 14-Aug-2019 1:54 PM
609068_HD (SHEFFIELD COVER SHEET).DWG

Proposal No. 609068-136649

A00830 - 565

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
OHW		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		EROSION AND SEDIMENT CONTROL BARRIER
		EROSION AND SEDIMENT CONTROL BARRIER-COIR LOGS
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		WETLAND

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
20'	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
ONLY	ONLY	PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
	SL	STOP LINE
	CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

SURVEY NOTES:

1. BOUNDARY INFORMATION SHOWN HEREON WAS COMPILED FROM AN ACTUAL FIELD SURVEY CONDUCTED BY WSP SURVEYORS FROM SEPTEMBER 4, 2020 THROUGH OCTOBER 2, 2020. SURVEY FIELD NOTES CAN BE FOUND IN MASSDOT SURVEY NOTEBOOK 23412.
2. NORTH ORIENTATION AND BEARING BASE PER GRID NORTH.
3. HORIZONTAL COORDINATES RELATIVE TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MASSACHUSETTS MAINLAND ZONE. BASED ON THE NORTH AMERICAN DATUM OF 1983, NAD83 (2011) EPOCH 2010.00. GPS POINTS 2613 & 2614 WERE USED AS SURVEY CONTROL POINTS TO ESTABLISH A DATUM FOR THE PROJECT.
4. ELEVATIONS RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, (NAVD 1988).
5. HORIZONTAL COORDINATE AND ELEVATION UNITS ARE U.S. SURVEY FEET.
6. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY HIGHWAY BOUND OR PRIVATE PROPERTY PIN THAT MAY BE DAMAGED OR DESTROYED DURING CONSTRUCTION, TO ITS LOCATION JUST PRIOR TO CONSTRUCTION.

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	2	61
PROJECT FILE NO.	609068		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PWW	PAVED WATERWAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

Proposal No. 609068 136649

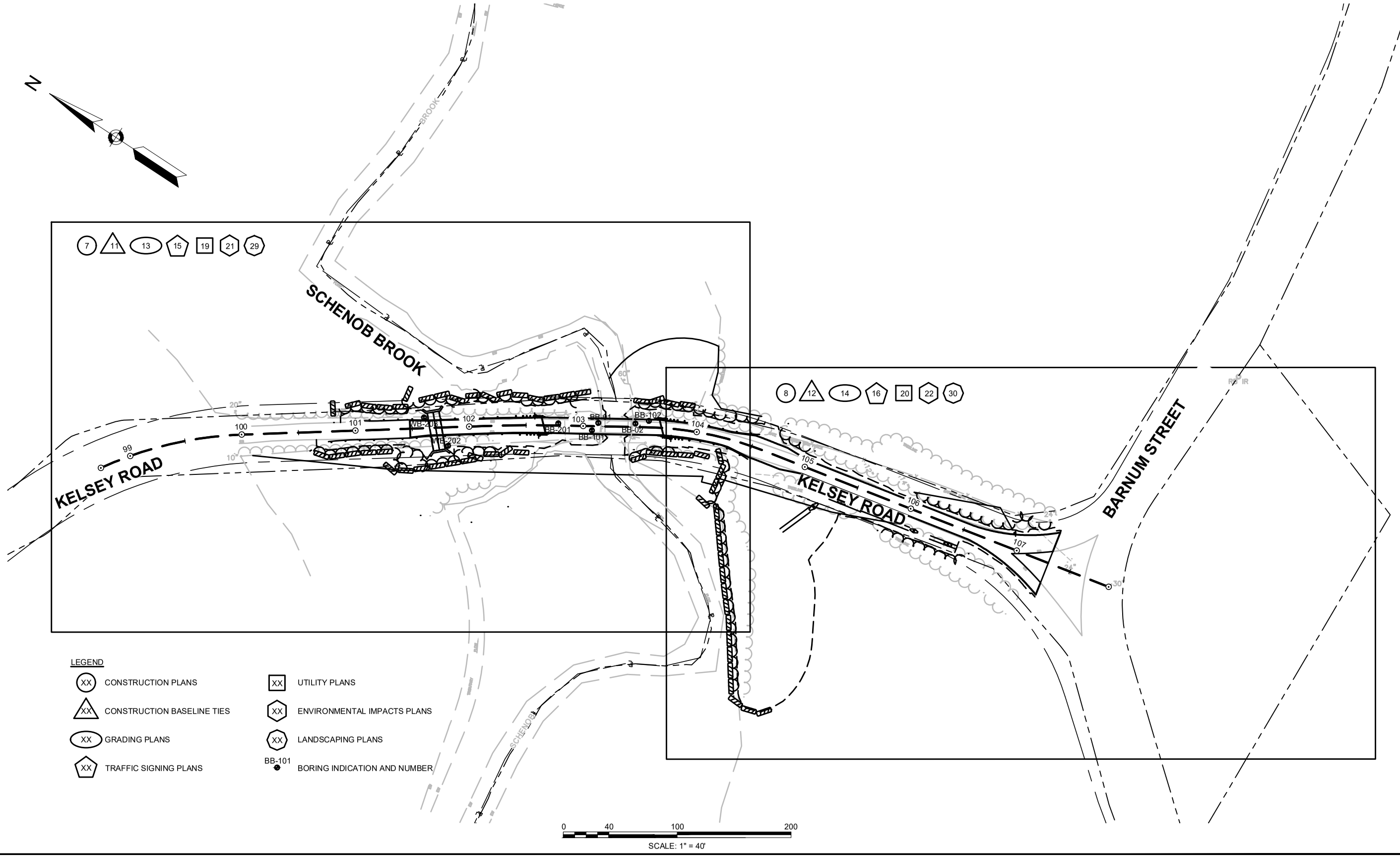
609068_HD (SHEFFIELD LEGEND).DWG Plotted on: 28-Jul-2026 10:09 AM

A008330 - 566

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	3	61
PROJECT FILE NO.	609068		

KEY PLAN AND BORING LOCATIONS



609068_HD(KEY PLAN).DWG Plotted on 28-Jul-2026 10:11 AM

Proposal No. 609068-136649

A00830 - 567

Proposal No. 609068-136649

BORING WB-202
STA. 101+80.9
OFFSET 16.3' RT.

Date Started:	3/19/26	DRILLING LOG	Hole Number: WB-202
Date Finished:	3/19/26	Gannett Fleming	Sheet: 1 of 2
Soil Drilling:	37.0 ft		Line & Station: 101+80.9
Rock Sampling:	0.0 ft	Project: Kelsey Road over Schenob Brook Bridge	Offset: 16.3 ft R
Total Depth of Hole:	37.0 ft	Drilling Company: Seaboard Drilling	N Coordinate: 2854747 ft
No. of Undist. Core Samples:		Driller: Jeff Nitsch	E Coordinate: 140828 ft
Total Number of Core Boxes:	0	Bit Size and Type: Spoon Size: 2.0 in. O.D.	Elev. Top of Hole: +675.0 ft
GROUNDWATER OBSERVATIONS		Casing Size: 4.0 in. Spoon Size:	Direction of Hole
At 5.0 ft After 0 Hrs		Hollow Stem: N/A Hammer wt.: 140lb	Vertical ☒ Inclined ☐
Elev. 670.0 ft After 0 Hrs		Drilling Fluid: Mud Hammer Drop: 30.0"	Degrees from Vertical ---
		Drill Rig: Mobile 53 Truck Drill Rig	Inspector: Allen Winders

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
	0 - 2	S1	15-10-11-16	2.0	100		0.0'-2.0': Brown Silty Sand with Gravel (SM); moist; medium dense
							673.0
Some organics present in sample	2 - 4	S2	13-8-3-2	1.6	79		2.0'-4.0': Gray Lean Clay with Sand (CL); moist; stiff
							671.0
	4 - 6	S3	3-14-6-3	0.8	42		4.0'-8.0': Dark Gray Clayey Sand (SC); moist; loose to medium desnse
Trace organics present in sample	6 - 8	S4	3-3-3-3	0.0	0		
							667.0
Organics present in sample	8 - 10	S5	3-3-6-6	0.8	38		8.0'-10.0': Gray Lean Clay with Sand (CL); moist; stiff
							665.0
	10 - 12	S6	5-5-4-5	1.0	50		10.0'-18.5': Gray Silt (ML); wet; stiff
	15 - 17	S7	4-4-6-8	0.0	0		
							656.5
							18.5'-28.5': Gray Silty Sand with Gravel (SM); wet; loose
	20 - 22	S8	2-4-5-6	0.1	4		
Cobble fragments observed in spoon	25 - 27	S9	3-3-4-5	0.0	0		
							646.5
							28.5'-33.5': Gray Silt with Sand (ML); wet; stiff
	30 - 32	S10	3-3-6-7	1.4	71		

Remarks: Hole grouted upon completion.

NRCS BORING LOG LOG - GF_MASSDOT KELSEY ROAD OVER SCHENOB BROOK LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/2/26

SCALE: 1/4" = 1'-0"
ELEVATION (FT.)

BORING WB-202
STA. 101+80.9
OFFSET 16.3' RT.

Drilling Company:	Seaboard Drilling	DRILLING LOG	Hole Number: WB-202
Driller:	Jeff Nitsch	Gannett Fleming	Sheet: 2 of 2
Inspector:	Allen Winders		Elev. Top of Hole: 675
Kelsey Road over Schenob Brook Bridge			

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							641.5
							33.5'-37.0': Brown Silty Sand (SM); wet; medium dense
	35 - 37	S11	4-6-7-11	1.4	71		
							638.0
							Bottom of borehole at 37.00 feet.

NRCS BORING LOG LOG - GF_MASSDOT KELSEY ROAD OVER SCHENOB BROOK LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/2/26

SCALE: 1/4" = 1'-0"
ELEVATION (FT.)

BORING NOTES:

1. LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: WB-# ⊕
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. BORINGS WERE DRILLED BETWEEN MARCH 18TH 2026 AND MARCH 19TH 2026.
7. BORINGS WERE MADE BY SEABOARD DRILLING, 95 CARANDO DRIVE, SPRINGFIELD, MA 01104.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
9. SEE BRIDGE PLANS FOR ADDITIONAL BORING LOGS.

609068_HD\BORING LOGS\DWG Plotted on 28-Jul-2026 1:37 PM

A00830 - 568

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	5	61
PROJECT FILE NO.	609068		

BORING LOGS

BORING WB-203
STA. 101+49.1
OFFSET 17.3' RT.

Date Started:	3/18/26	Hole Number:	WB-203
Date Finished:	3/18/26	Sheet:	1 of 2
Soil Drilling:	37.0 ft	Line & Station:	101+49.1
Rock Sampling:	0.0 ft	Offset:	17.3 ft R
Total Depth of Hole:	37.0 ft	N Coordinate:	2854770 ft
No. of Undist. Core Samples:		E Coordinate:	140806 ft
Total Number of Core Boxes:	0	Elev. Top of Hole:	+674.9 ft

DRILLING LOG — Gannett Fleming

GROUNDWATER OBSERVATIONS
At 5.0 ft After 0 Hrs
Elev. 669.9 ft After
0 Hrs

Drilling Company: Seaboard Drilling
Project: Kelsey Road over Schenob Brook Bridge
Driller: Jeff Nitsch
Bit Size and Type:
Casing Size: 4.0 in.
Hollow Stem: N/A
Drilling Fluid: Mud
Drill Rig: Mobile 53 Truck Drill Rig
Spoon Size: 2.0 in. O.D.
Spoon Size:
Hammer wt.: 140lb
Hammer Drop: 30.0"
Direction of Hole
Vertical ☒ Inclined ☐
Degrees from Vertical ---
Inspector: Allen Winders

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
	0 - 2	S1	10-9-9-11	0.9	46		0.0'-2.0': Brown Silty Sand with Gravel (SP-SM); moist; medium dense
							672.9
	2 - 4	S2	9-5-4-4	1.3	63		2.0'-4.0': Dark Gray Lean Clay (CL); moist; stiff
							670.9
	4 - 6	S3	3-5-5-7	0.3	13		4.0'-6.0': Brown Clayey Sand (SP-SC); moist; loose
							668.9
	6 - 8	S4	3-5-5-6	1.5	75		6.0'-13.5': Gray Silt (ML); moist to wet; stiff
	8 - 10	S5	5-6-8-10	1.5	75		
	10 - 12	S6	6-6-7-7	1.4	71		
							661.4
	15 - 17	S7	5-4-6-6	0.7	34		13.5'-18.5': Brown poorly-graded Sand with Gravel (SP); wet; loose
							656.4
	20 - 22	S8	3-3-7-6	1.5	75		18.5'-28.5': Gray Silt with Sand (ML); wet; stiff
	25 - 27	S9	4-4-6-6	1.2	59		
							646.4
	30 - 32	S10	5-6-11-15	1.2	59		28.5'-33.5': Brown Silty Sand (SM); wet; medium dense

Remarks:

SCALE: ½" = 1'-0"
ELEVATION (FT.)

680 0
675 0
670 5
665 10
660 15
655 20
650 25
645 30
640 35

NRCS BORING LOG LOG - GF_MASSDOT KELSEY ROAD OVER SCHENOB BROOK LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/2/26

BORING WB-203
STA. 101+49.1
OFFSET 17.3' RT.

Drilling Company:	Seaboard Drilling	Hole Number:	WB-203
Driller:	Jeff Nitsch	Sheet:	2 of 2
Inspector:	Allen Winders	Elev. Top of Hole:	674.9

DRILLING LOG — Gannett Fleming

Kelsey Road over Schenob Brook Bridge

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							641.4
							33.5'-37.0': Brown Silt with Sand (ML); wet; very stiff
	35 - 37	S11	9-12-16-18	1.2	59		
							637.9
							Bottom of borehole at 37.00 feet.

SCALE: ½" = 1'-0"
ELEVATION (FT.)

645 30
640 35
635 40
630 45
625 50
620 55
615 60
610 65
605 70
600 75
595 80

NRCS BORING LOG LOG - GF_MASSDOT KELSEY ROAD OVER SCHENOB BROOK LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/2/26

BORING NOTES:

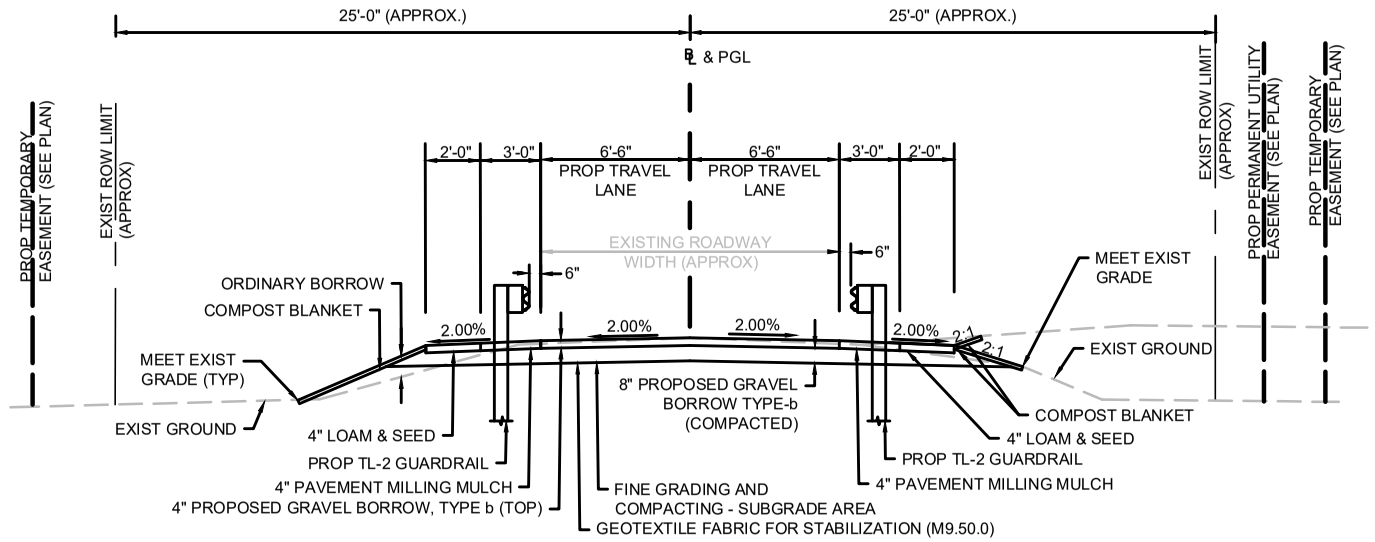
1. LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: WB-#
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. BORINGS WERE DRILLED BETWEEN MARCH 18TH 2026 AND MARCH 19TH 2026.
7. BORINGS WERE MADE BY SEABOARD DRILLING, 95 CARANDO DRIVE, SPRINGFIELD, MA 01104.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
9. SEE BRIDGE PLANS FOR ADDITIONAL BORING LOGS.

Proposal No. 609068-136649

609068_HD(BORING LOGS).DWG Plotted on 28-Jul-2026 1:38 PM

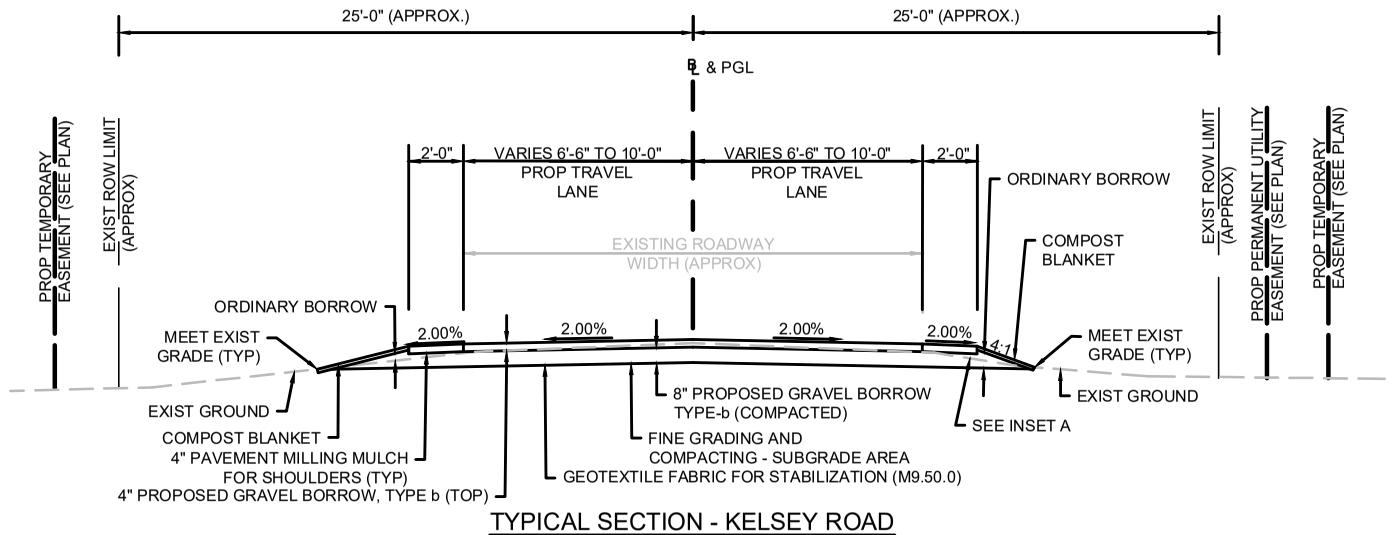
A00830 - 569

Proposal No. 609068-136649



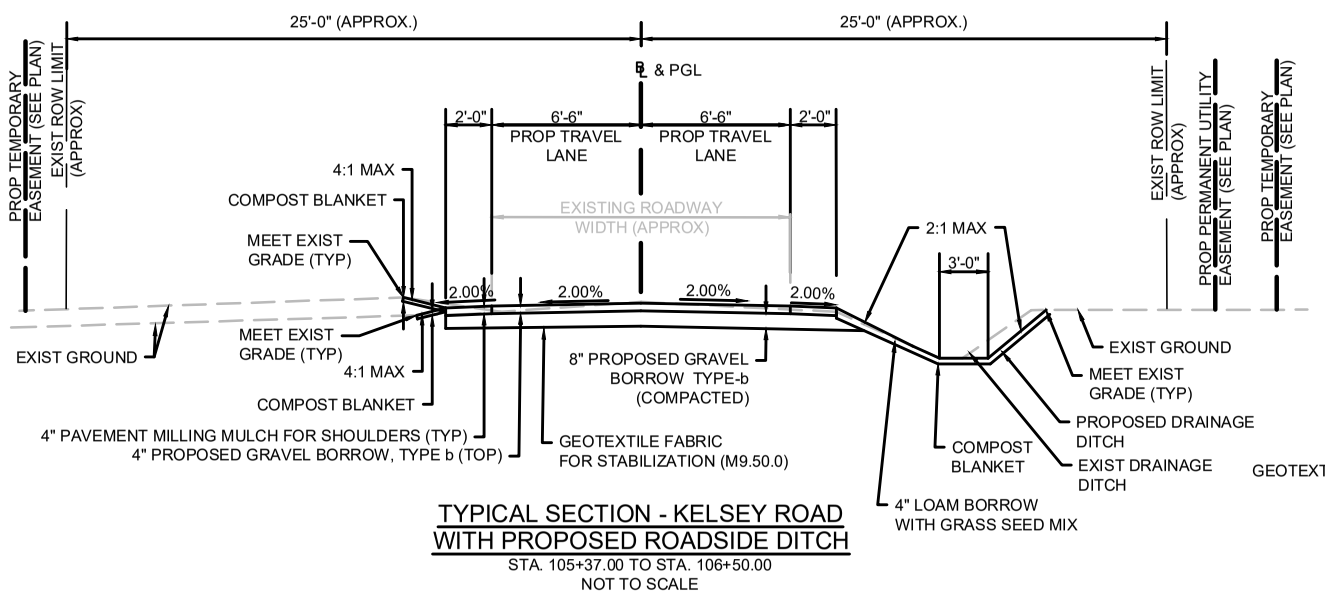
TYPICAL SECTION - KELSEY ROAD

STA. 103+95.00 TO STA. 104+53.97
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD PASSING SECTION AND WETLAND ADJACENT GRADING

STA. 104+53.97 TO STA. 105+37.00
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD WITH PROPOSED ROADSIDE DITCH

STA. 105+37.00 TO STA. 106+50.00
NOT TO SCALE

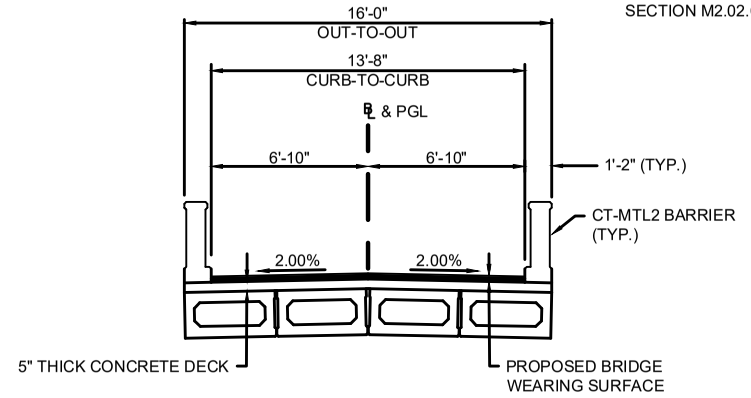
NOTES:

1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED IN ACCORDANCE WITH SECTION 450.
2. SEE LANDSCAPE PLANS FOR COMPOST BLANKET SEEDING DETAILS
3. SEE CONSTRUCTION STANDARD DETAILS (628.24.2, 628.24.3) FOR GUARDRAIL TRANSITIONS AT BRIDGE APPROACHES
4. GRAVEL BORROW TYPE-b SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 4 INCHES.
5. RIP RAP MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION M2.02.0

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	6	61
PROJECT FILE NO.	609068		

TYPICAL SECTIONS



TYPICAL SECTION - KELSEY ROAD BRIDGE

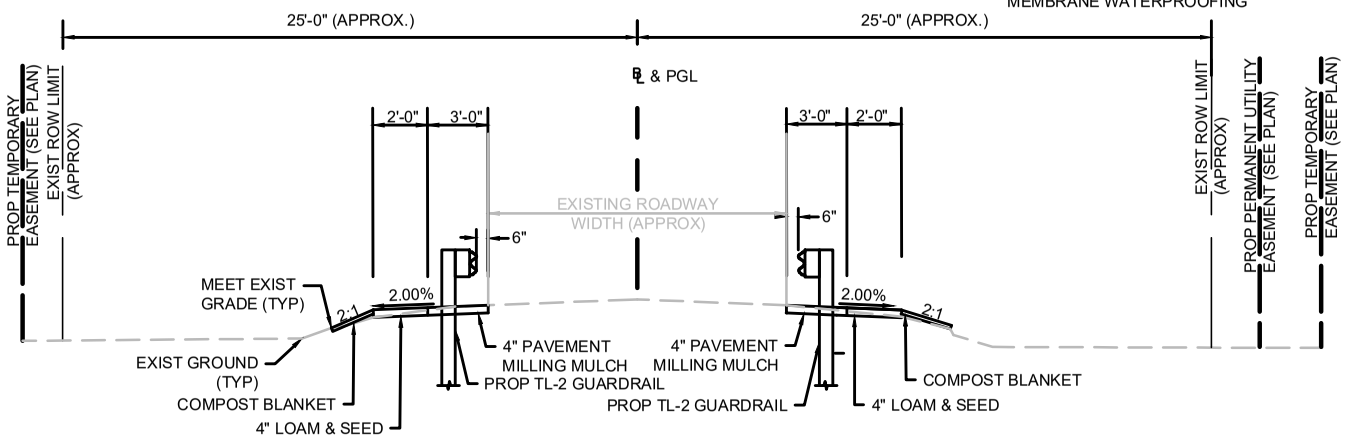
STA. 102+82.23 TO STA. 103+51.98
SCALE: 1/4" = 1'-0"

PAVEMENT NOTES:

PROPOSED GRAVEL FOR SURFACING & GRAVEL DRIVEWAY
4" GRAVEL BORROW, TYPE b (TOP), OVER
8" GRAVEL BORROW, TYPE-b (COMPACTED), OVER
GEOTEXTILE FABRIC (STABILIZATION), OVER
SPECIAL BORROW AS REQUIRED BASED ON EXISTING SUBGRADE MATERIALS ONLY WHEN NEEDED

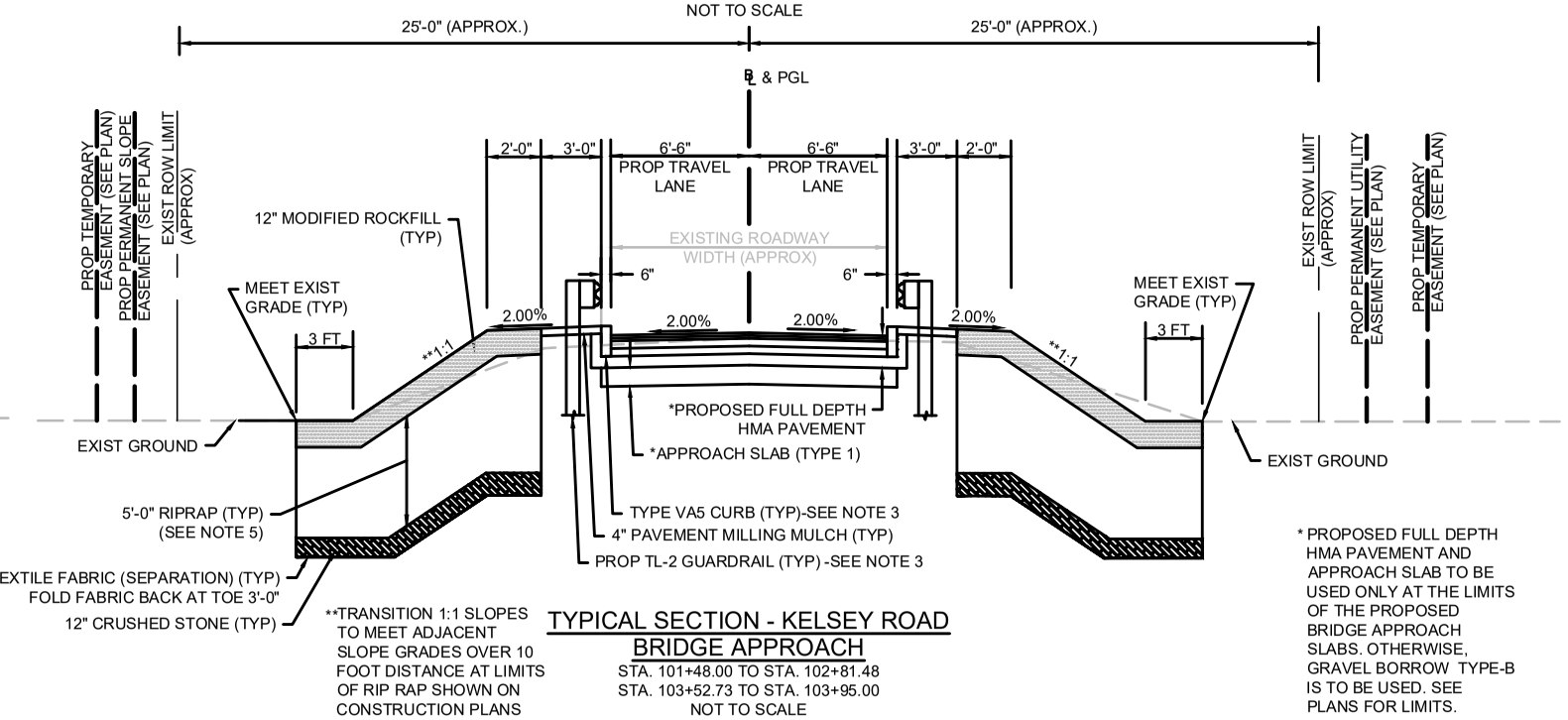
PROPOSED FULL DEPTH HMA PAVEMENT
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P)), OVER
4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5), OVER
4" DENSE GRADED CRUSHED STONE, OVER
6" MIN. GRAVEL BORROW TYPE B, OVER
PROPOSED APPROACH SLAB (TYPE 1)

PROPOSED BRIDGE WEARING SURFACE
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P), OVER
MEMBRANE WATERPROOFING



TYPICAL SECTION - KELSEY ROAD

STA. 101+00.00 TO STA. 101+48.00
NOT TO SCALE



**TRANSITION 1:1 SLOPES TO MEET ADJACENT SLOPE GRADES OVER 10 FOOT DISTANCE AT LIMITS OF RIP RAP SHOWN ON CONSTRUCTION PLANS

TYPICAL SECTION - KELSEY ROAD BRIDGE APPROACH

STA. 101+48.00 TO STA. 102+81.48
STA. 103+52.73 TO STA. 103+95.00
NOT TO SCALE

* PROPOSED FULL DEPTH HMA PAVEMENT AND APPROACH SLAB TO BE USED ONLY AT THE LIMITS OF THE PROPOSED BRIDGE APPROACH SLABS. OTHERWISE, GRAVEL BORROW TYPE-B IS TO BE USED. SEE PLANS FOR LIMITS.

609068_HD (SHEFFIELD TYPICAL SECTIONS).DWG Plotted on 28-Jul-2026 10:12 AM

Proposal No. 609068-136649

609068_HD (SHEFFIELD CONST PLAN 01).DWG Plotted on 28-Jul-2026 10:14 AM

A00830 - 571

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	7	61
PROJECT FILE NO.	609068		

CONSTRUCTION PLANS
SHEET 1 OF 2

HIGHWAY GUARD DETAILS

TANGENT END TREATMENT, STA. 100+97.81 (LT) TO STA. 101+22.80 (LT)
IMPACT HEAD TO BE OFFSET 9.72 LT AT STA. 100+97.81
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+22.80 (LT) TO STA. 102+35.13 (LT)
TRANSITION TO BRIDGE RAIL, STA. 102+35.13 (LT) TO STA. 102+68.68 (LT)
TANGENT END TREATMENT, STA. 100+76.06 (RT) TO STA. 101+01.65 (RT)
IMPACT HEAD TO BE OFFSET 8.93 RT AT STA. 100+76.06
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+01.65 (RT) TO STA. 102+38.65 (RT)
TRANSITION TO BRIDGE RAIL, STA. 102+38.65 (RT) TO STA. 102+72.60 (RT)
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85 (RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00.00 12.00 RT

DRAINAGE DETAILS

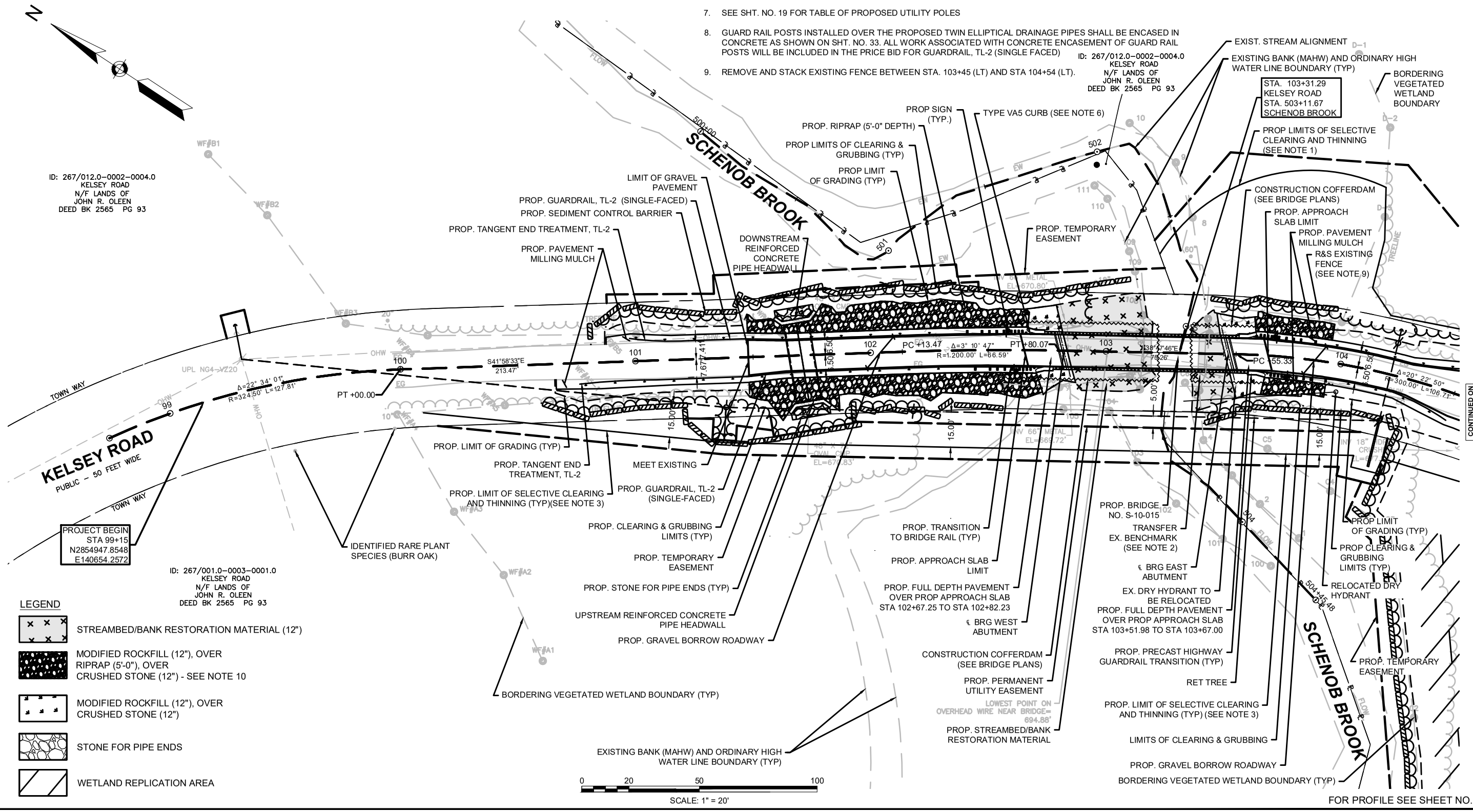
34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+70.47 20.09 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+66.06 13.32 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+75.80 19.36 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+71.43 14.05 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

SEE SHEET 17 FOR DETAILS

NOTES:

1. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
2. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
3. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
4. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.
5. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
6. INSTALL GRANITE CURBING TYPE VA5 AT EACH OF THE TRANSITIONS TO BRIDGE RAIL. REFER TO MASSDOT CONSTRUCTION STANDARD DETAILS, DWG NO. 628.24.2
7. SEE SHT. NO. 19 FOR TABLE OF PROPOSED UTILITY POLES
8. GUARD RAIL POSTS INSTALLED OVER THE PROPOSED TWIN ELLIPTICAL DRAINAGE PIPES SHALL BE ENCASED IN CONCRETE AS SHOWN ON SHT. NO. 33. ALL WORK ASSOCIATED WITH CONCRETE ENCASEMENT OF GUARD RAIL POSTS WILL BE INCLUDED IN THE PRICE BID FOR GUARDRAIL, TL-2 (SINGLE FACED)
9. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
10. WHERE INSTALLED OVER RIPRAP, MODIFIED ROCKFILL SHALL BE PLACED IN A MANNER TO FILL/CHOKE 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.



LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12")
- MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12") - SEE NOTE 10
- MODIFIED ROCKFILL (12"), OVER CRUSHED STONE (12")
- STONE FOR PIPE ENDS
- WETLAND REPLICATION AREA

609068_HD \SHEFFIELD CONST PLAN 02).DWG Plotted on 28-Jul-2026 10:16 AM

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	8	61
PROJECT FILE NO.	609068		

CONSTRUCTION PLANS
SHEET 2 OF 2

HIGHWAY GUARD DETAILS

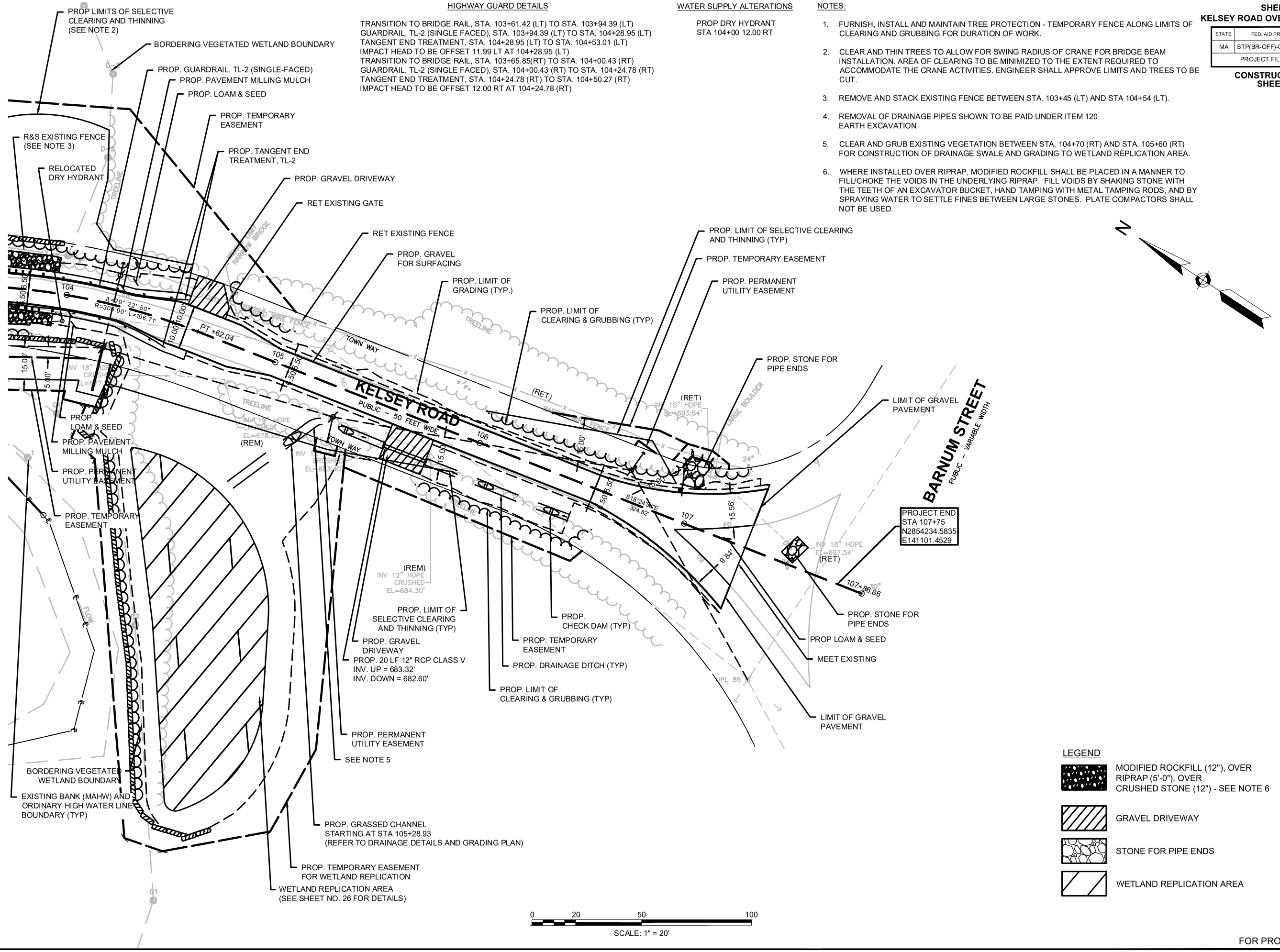
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
IMPACT HEAD TO BE OFFSET 11.99 LT AT 104+28.95 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85(RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)
IMPACT HEAD TO BE OFFSET 12.00 RT AT 104+24.78 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00 12.00 RT

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
4. REMOVAL OF DRAINAGE PIPES SHOWN TO BE PAID UNDER ITEM 120 EARTH EXCAVATION
5. CLEAR AND GRUB EXISTING VEGETATION BETWEEN STA. 104+70 (RT) AND STA. 105+60 (RT) FOR CONSTRUCTION OF DRAINAGE SWALE AND GRADING TO WETLAND REPLICATION AREA.
6. WHERE INSTALLED OVER RIPRAP, MODIFIED ROCKFILL SHALL BE PLACED IN A MANNER TO FILL/CHOKE 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.



LEGEND

- MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12") - SEE NOTE 6
- GRAVEL DRIVEWAY
- STONE FOR PIPE ENDS
- WETLAND REPLICATION AREA

FOR PROFILE SEE SHEET NO. 10

FOR CONSTRUCTION PLAN:
SEE SHT. NO. 7

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8

KELSEY ROAD PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 4'

Benchmark 8284
Rivet in Wingwall
Elevation = 676.68'
Sta. 103+39.89, 09.93' RT

99+00 100+00 101+00 102+00 103+00 104+00

NAVD 88
BASE ELEV
655.00

660 670 680 690 700 710

EXISTING ELEV.
PROPOSED ELEV.

678.3 678.0 678.9 676.1 676.07 678.0 676.50 677.50 678.6 678.51 678.6 678.52

BEGINNING OF PROJECT
STA. 99+15.00
N 2854947.8548
E 1406542572

GRADE BREAK STA = 101+48.03
ELEV = 676.12

LIMIT OF GRAVEL PAVING
STA. 101+48.03
N 2854782.7350
E 1408176967

EXIST GRADE
PROP BOTTOM OF SUBGRADE
PROP 34" X 53" ELLIPTICAL CLASS V RCP
EXIST 48" X 72" OVAL CMP
TO BE REMOVED
PROP 34" X 53" ELLIPTICAL CLASS V RCP
13.15"
-0.10%

PROP GRADE
APPROACH SLAB (TYP)
LOW CHORD
EL 674.21
EXIST 66" METAL PIPE
TO BE REMOVED
PROP ℄ BRG
W. ABUT.
PROP ℄ BRG
E. ABUT.
EX ℄ BRG
W. ABUT.
EX ℄ BRG
E. ABUT.
ORDINARY HIGH WATER
EL 671±
SCHENOB BROOK

PROP 12" THICK STREAMBED/BANK RESTORATION MATERIAL (TYP)
PROP DRY WILDLIFE
CROSSING (TYP.)

KELSEY ROAD

2.02%
10 YEAR
DESIGN FLOOD
EL 676.61
100 YEAR
BASE FLOOD
EL 678.52
50 YEAR
DESIGN FLOOD
EL 677.88

BRIDGE NO. S-10-015

PVT: 102+58.03
ELEV: 676.65
PVC: 101+98.03
ELEV: 676.08
739.6' HSD
LOW POINT ELEV = 676.07
LOW POINT STA = 102+00.34
PVI STA = 102+28.03
PVI ELEV = 676.05
A.D. = 2.10%
K = 28.56
60' VC

CONTINUED ON SHEET NO. 10

ROADWAY PROFILES

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

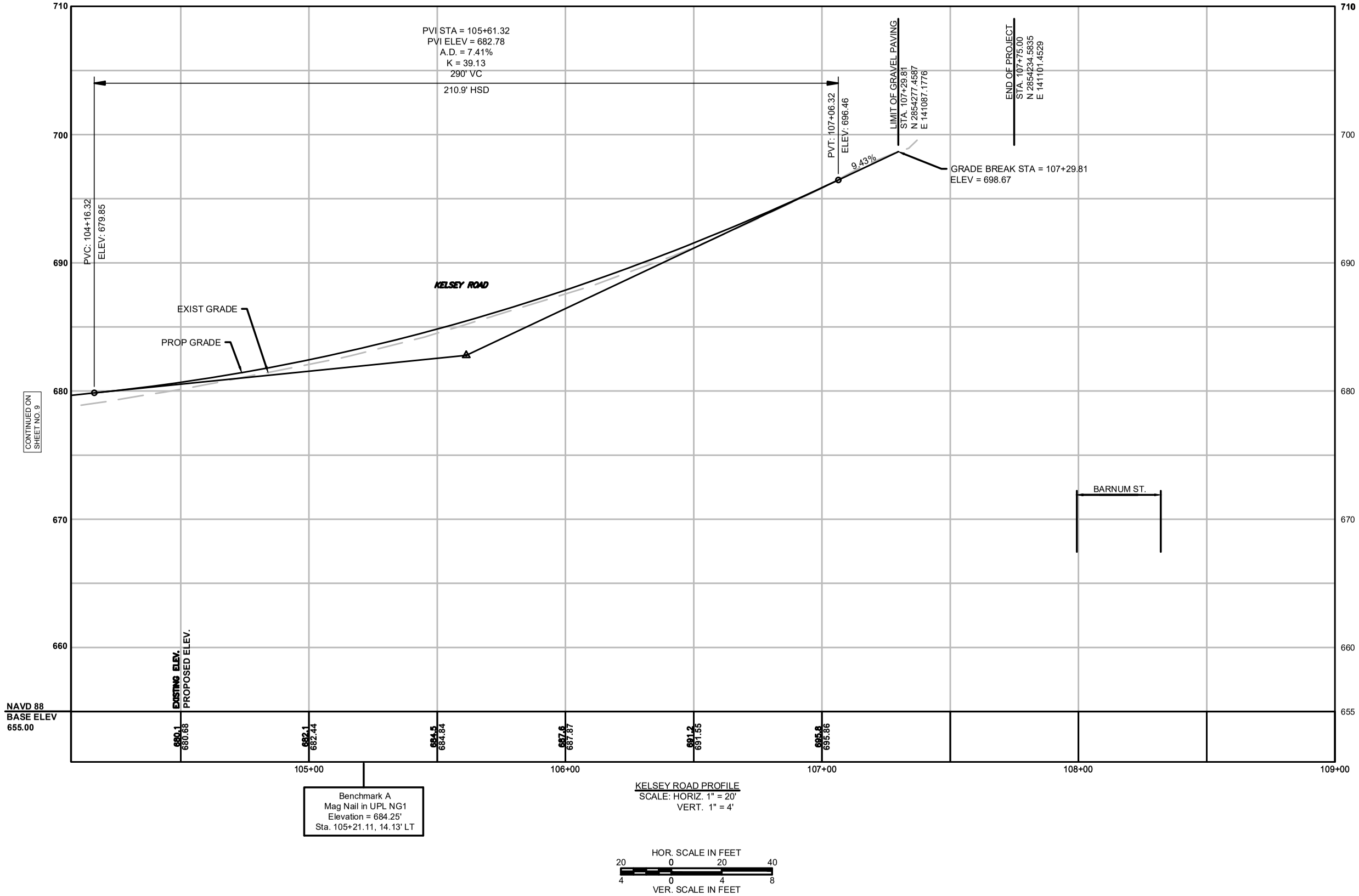
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	9	61
PROJECT FILE NO. 609068			

609068_HD (SHEFFIELD PROFILE 01).DWG Plotted on 28-Jul-2026 1:40 PM

Proposal No. 609068-136649

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	10	61
PROJECT FILE NO.	609068		

ROADWAY PROFILES



Benchmark A
Mag Nail in UPL NG1
Elevation = 684.25'
Sta. 105+21.11, 14.13' LT

KELSEY ROAD PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 4'

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN:
SEE SHT. NO. 8

Proposal No. 609068-136649

609068_HD (SHEFFIELD PROFILE 02).DWG Plotted on 28-Jul-2026 1:42 PM

A00830 - 574

NOTES:

1. NO EXISTING RECORD LAYOUT FOR THE PORTION OF KELSEY ROAD DEPICTED HEREON.

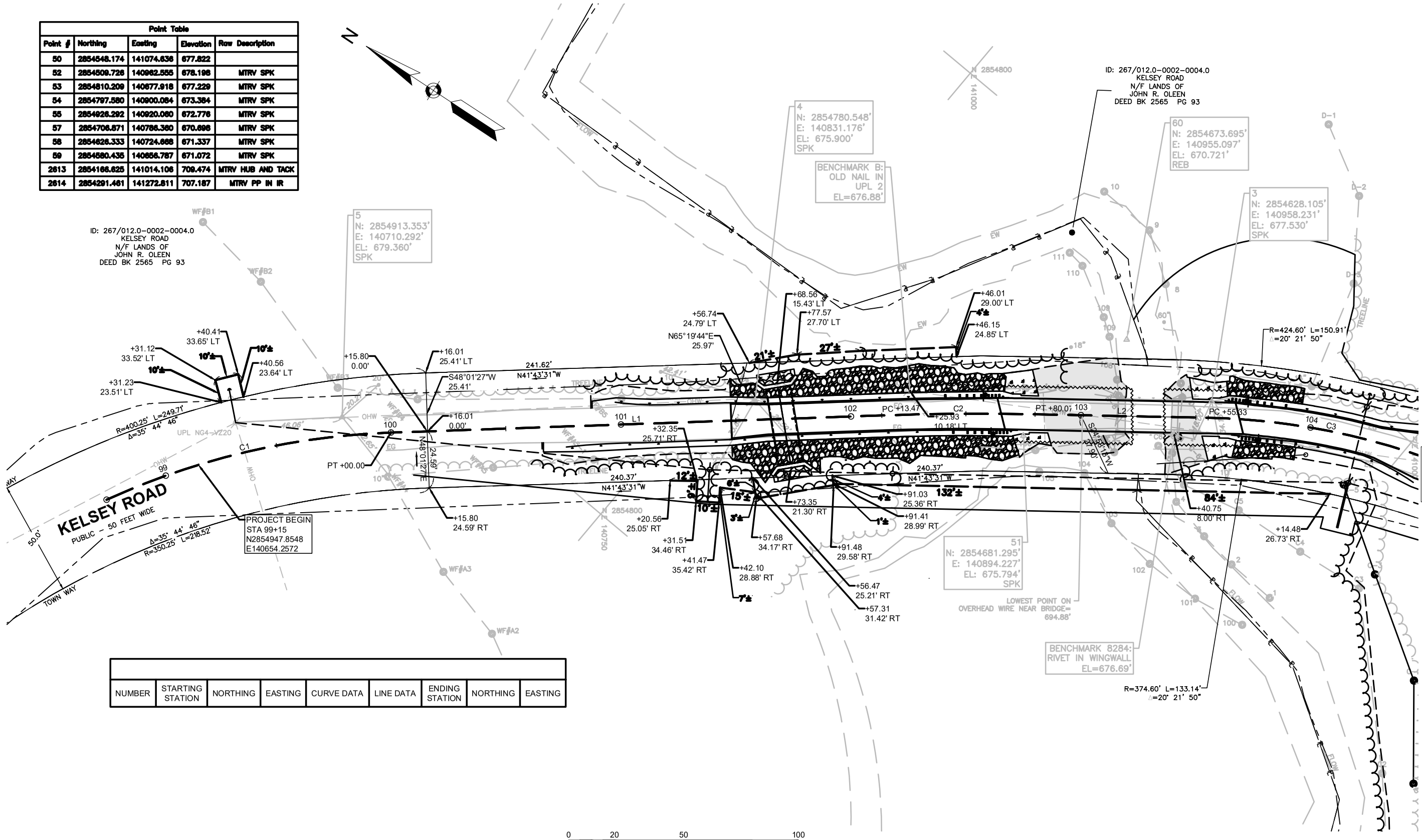
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	11	61
PROJECT FILE NO.	609068		

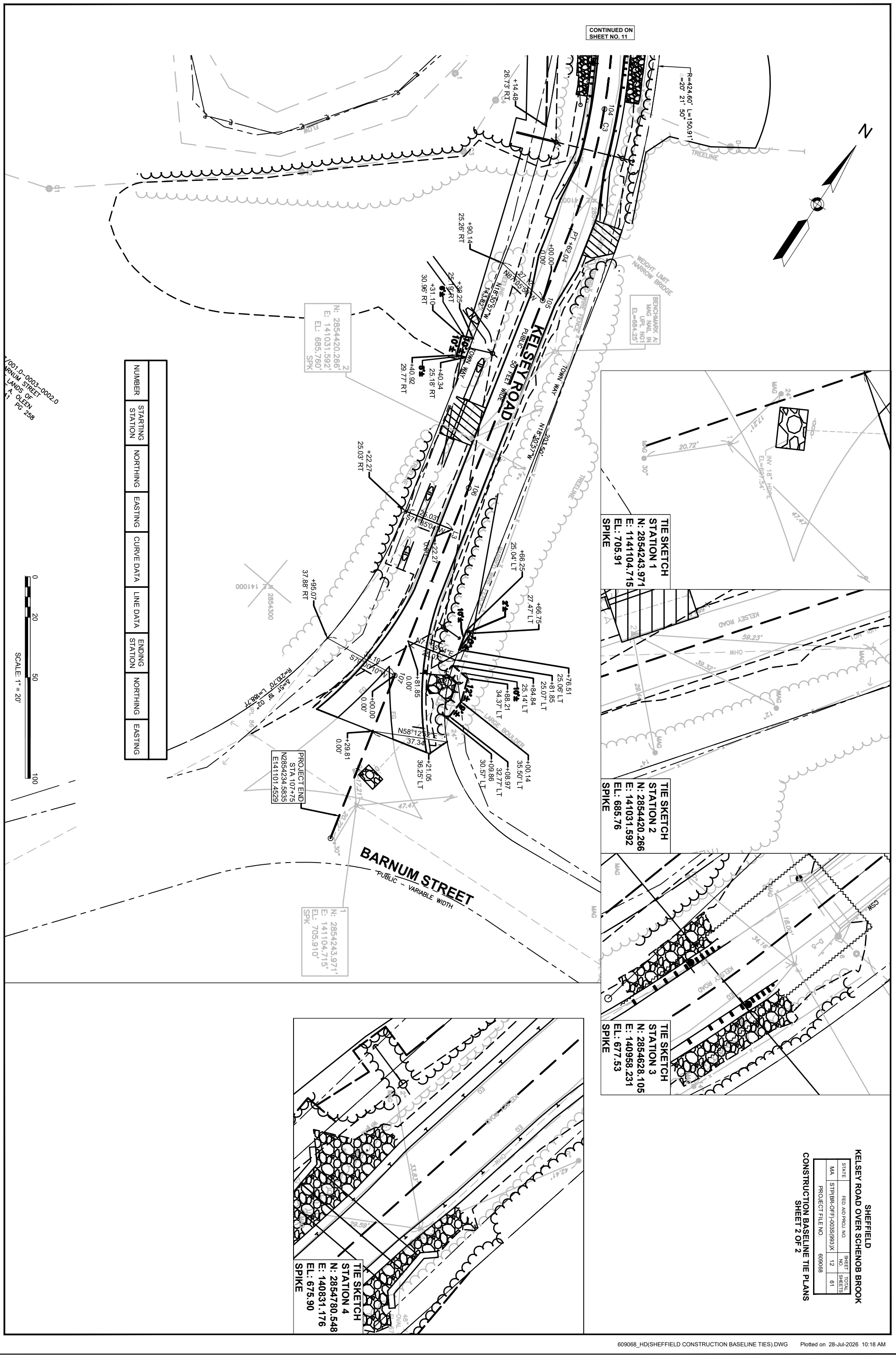
CONSTRUCTION BASELINE TIE PLANS
SHEET 1 OF 2

Point Table				
Point #	Northing	Easting	Elevation	Raw Description
50	2854548.174	141074.636	677.822	
52	2854509.726	140962.555	678.196	MTRV SPK
53	2854610.209	140677.918	677.229	MTRV SPK
54	2854797.580	140900.084	673.384	MTRV SPK
55	2854926.292	140920.080	672.776	MTRV SPK
57	2854706.571	140786.360	670.696	MTRV SPK
58	2854626.333	140724.668	671.337	MTRV SPK
59	2854580.435	140656.787	671.072	MTRV SPK
2613	2854166.625	141014.106	709.474	MTRV HUB AND TACK
2614	2854291.461	141272.811	707.187	MTRV PP IN IR

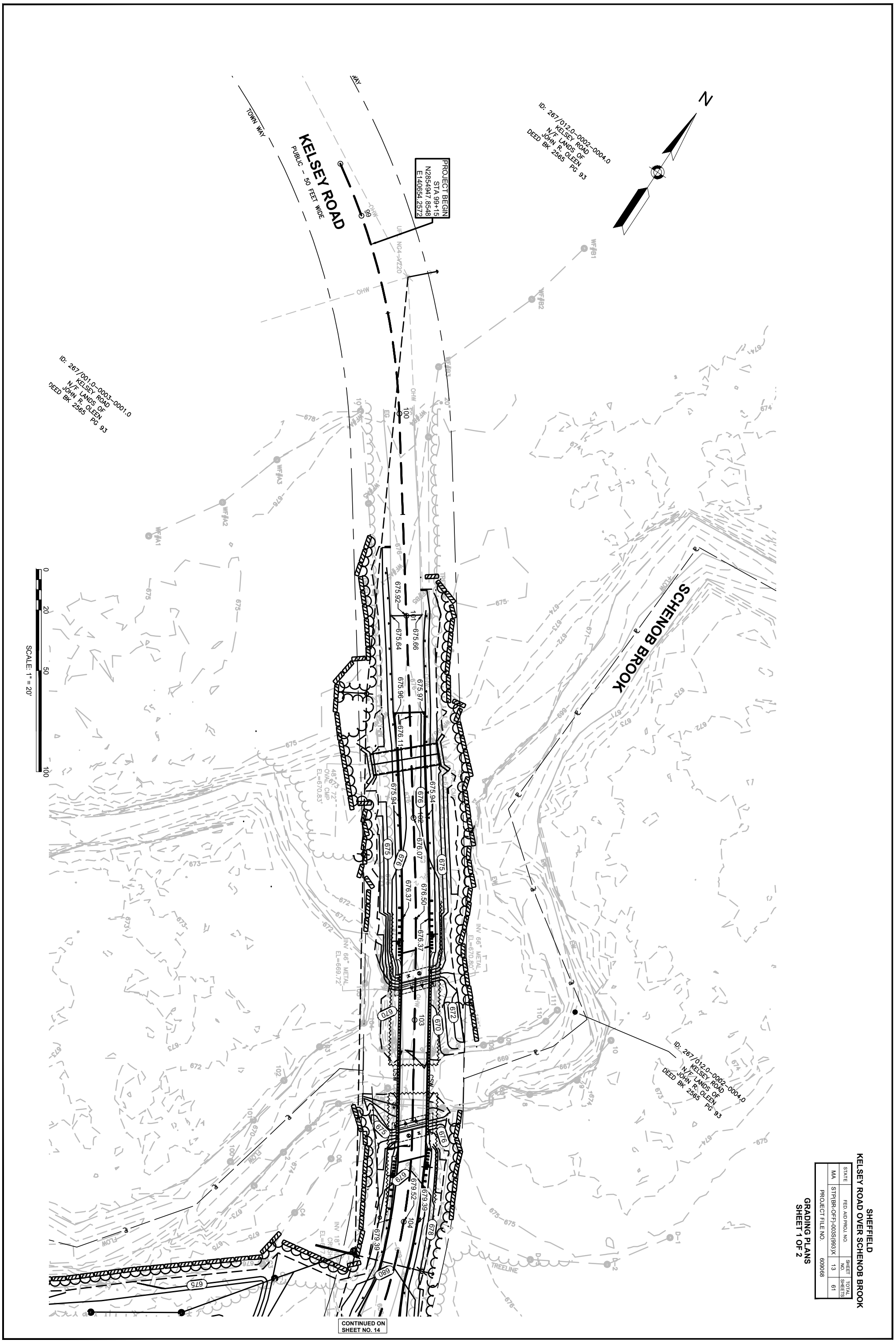
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING



Proposal No. 609068-136649
609068_HD\SHEFFIELD CONSTRUCTION BASELINE TIES).DWG Plotted on 28-Jul-2026 10:18 AM
A00830 - 575



609068_HD(SHEFFIELD CONSTRUCTION BASELINE TIES).DWG Plotted on 28-Jul-2026 10:18 AM

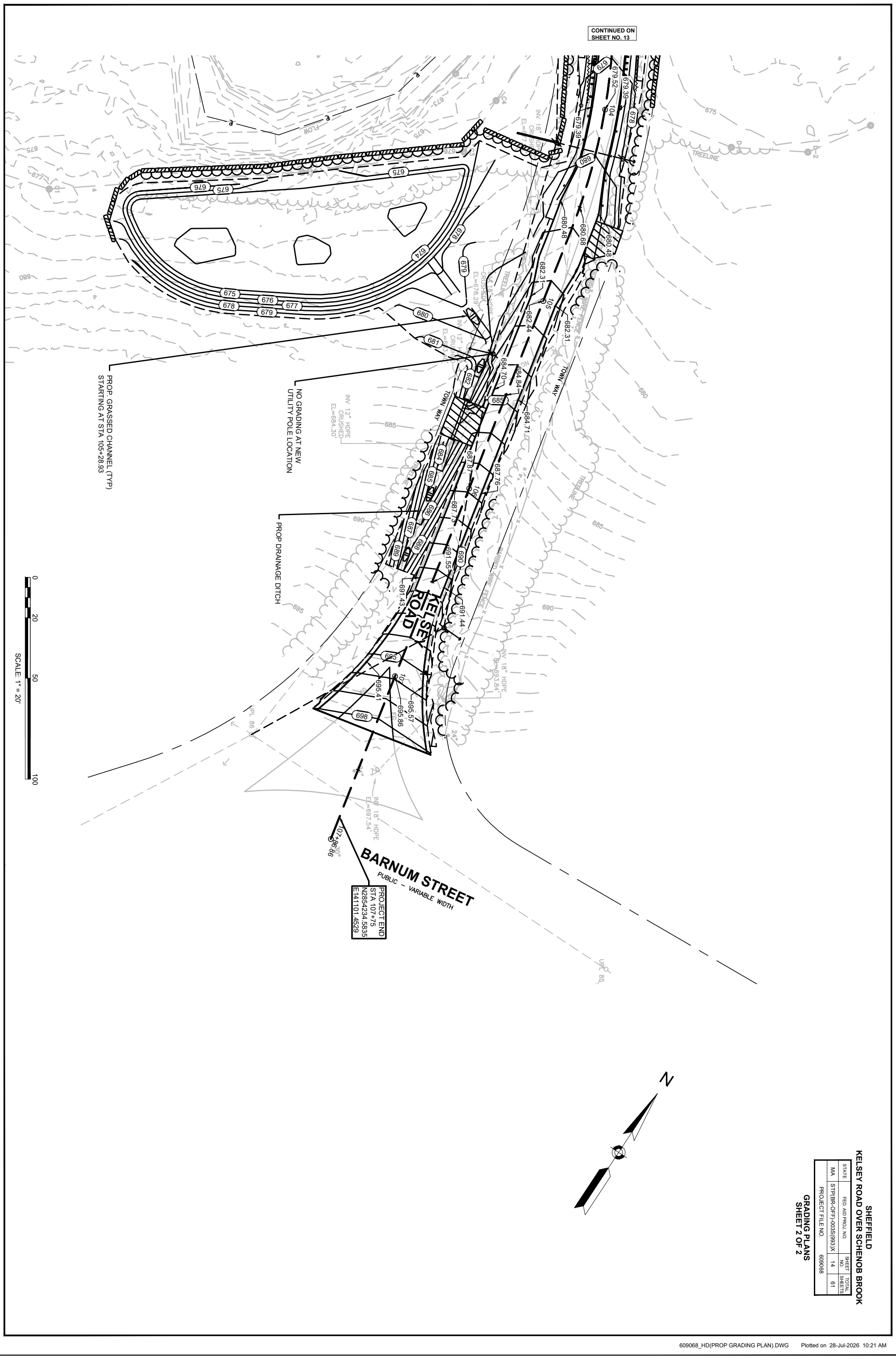


SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	13	61
PROJECT FILE NO.	609068		

GRADING PLANS
SHEET 1 OF 2

609068_HD(PROP GRADING PLAN).DWG Plotted on 28-Jul-2026 10:20 AM



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	14	61
	PROJECT FILE NO. 609068		

GRADING PLANS
SHEET 2 OF 2

609068_HD(PROP GRADING PLAN).DWG Plotted on 28-Jul-2026 10:21 AM

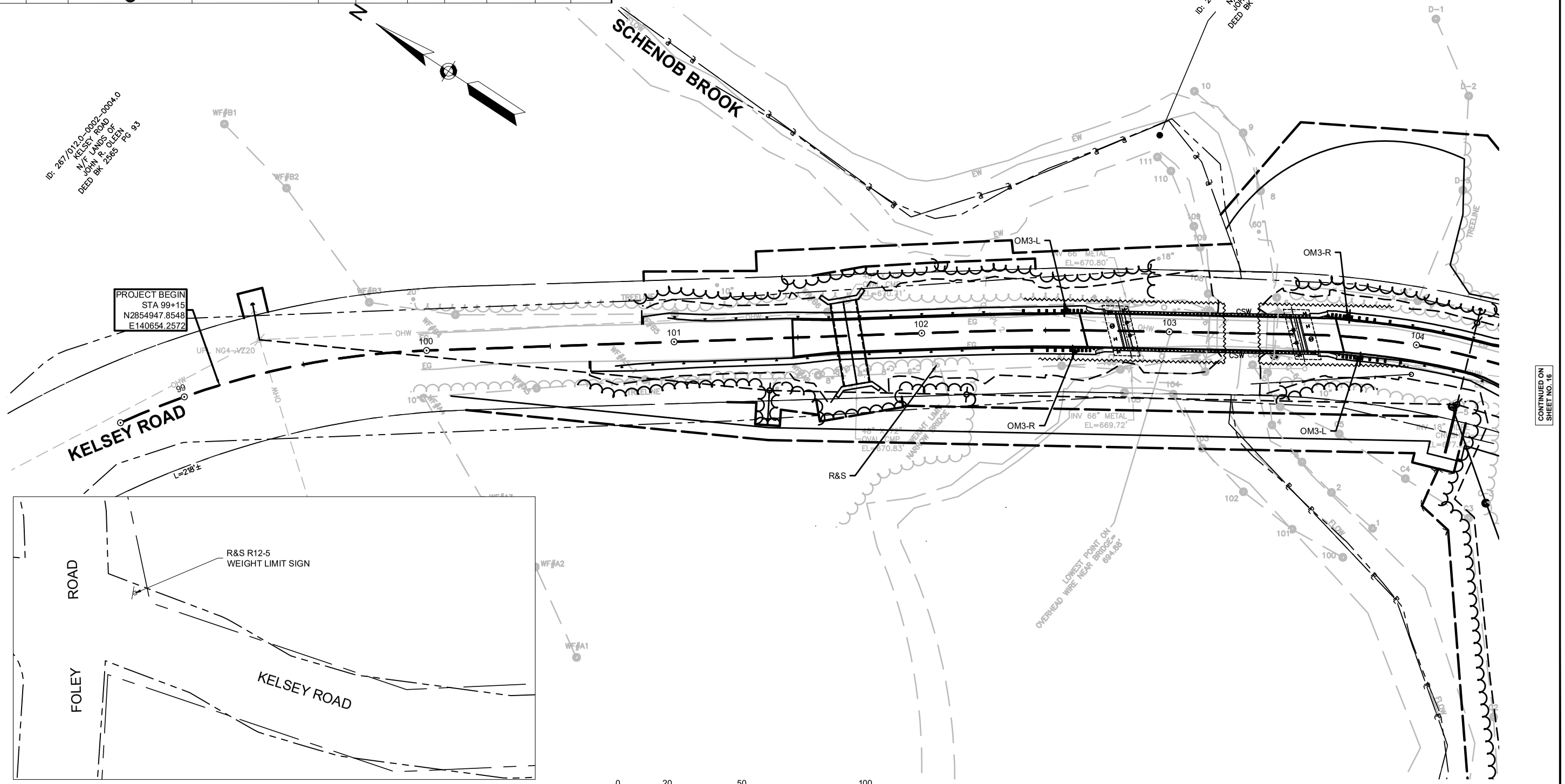
TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
OM3-L	12	48		NONE			2	YELLOW/ BLACK	-	-	1-P5	4.0	8.0
OM3-R	12	48		NONE			2	YELLOW/ BLACK	-	-	1-P5	4.0	8.0
R1-2	36	36	YIELD	SEE MUTCD STANDARDS			1	RED	WHITE	WHITE	1-P5	4.5	4.5

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	15	61
PROJECT FILE NO.	609068		

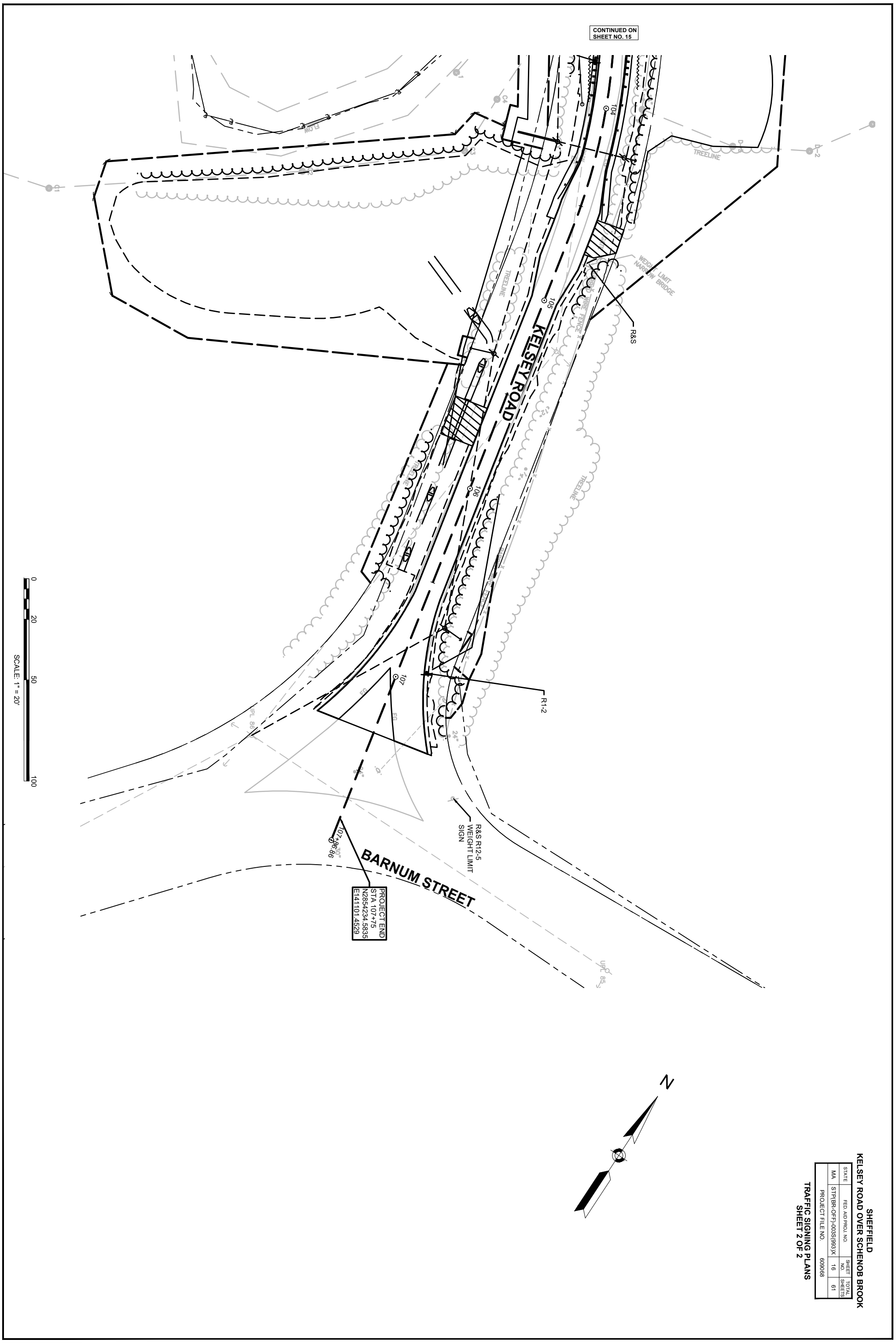
TRAFFIC SIGNING PLANS
SHEET 1 OF 2



Proposal No. 609068-136649

609068_HD(TRAFFIC SIGNING PLAN).DWG Plotted on 28-Jul-2026 11:24 AM

A00830 - 579



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

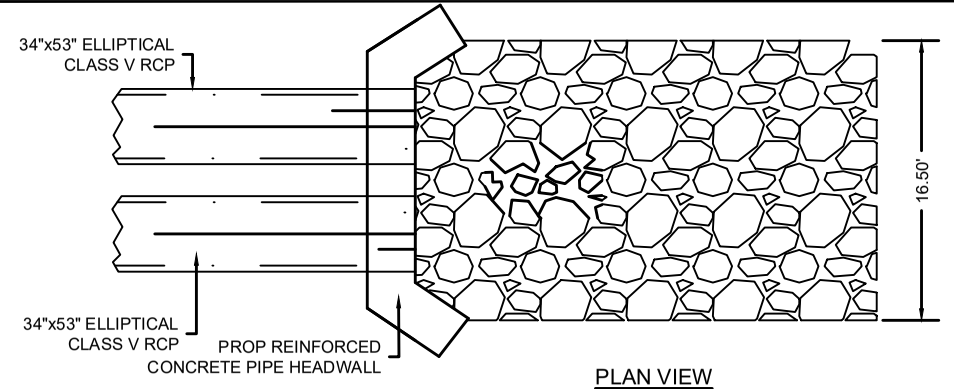
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0033(993)X	16	61
	PROJECT FILE NO. 609068		

TRAFFIC SIGNING PLANS
SHEET 2 OF 2

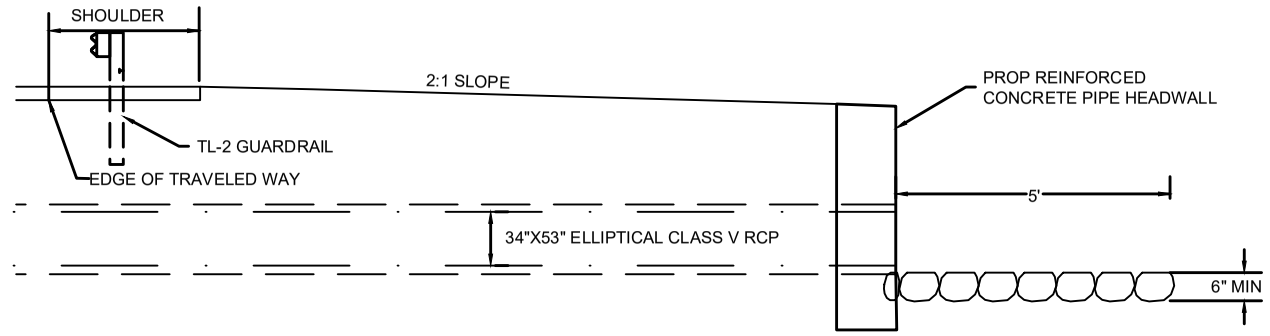
609068_HD(TRAFFIC SIGNING PLAN).DWG Plotted on 28-Jul-2026 1:07 PM

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	17	61
PROJECT FILE NO.	609068		

DRAINAGE DETAILS



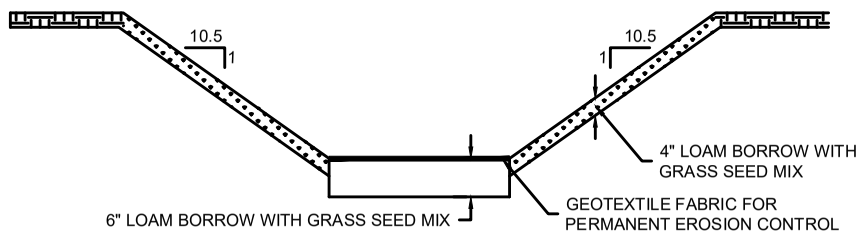
PLAN VIEW



PROFILE VIEW

STONE FOR PIPE ENDS AT ELLIPTICAL CULVERT

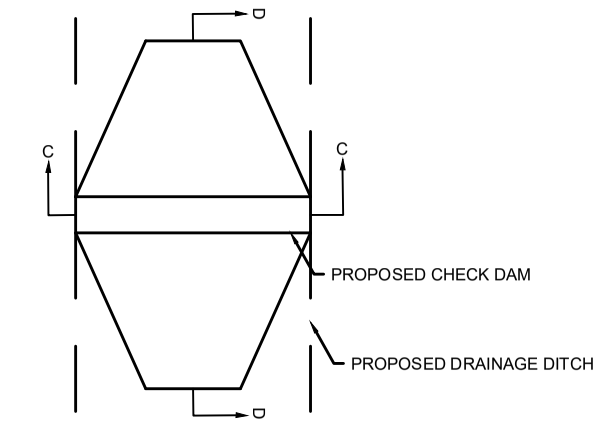
NOT TO SCALE



NOTES:
1. THE LINEAR SLOPE OF THE SWALE SHALL BE A MAXIMUM OF 5%.

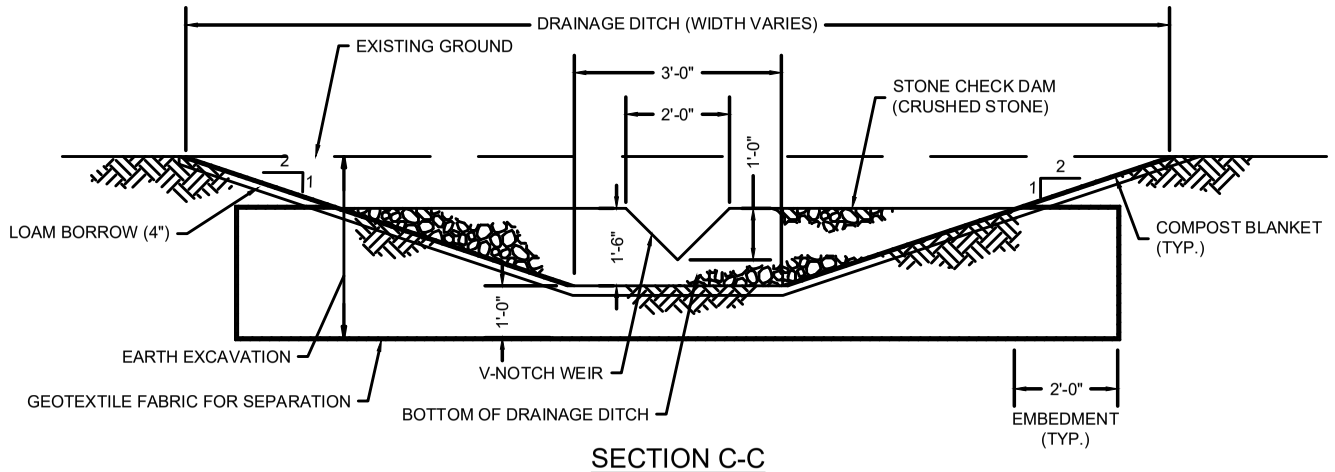
GRASSED CHANNEL

NOT TO SCALE



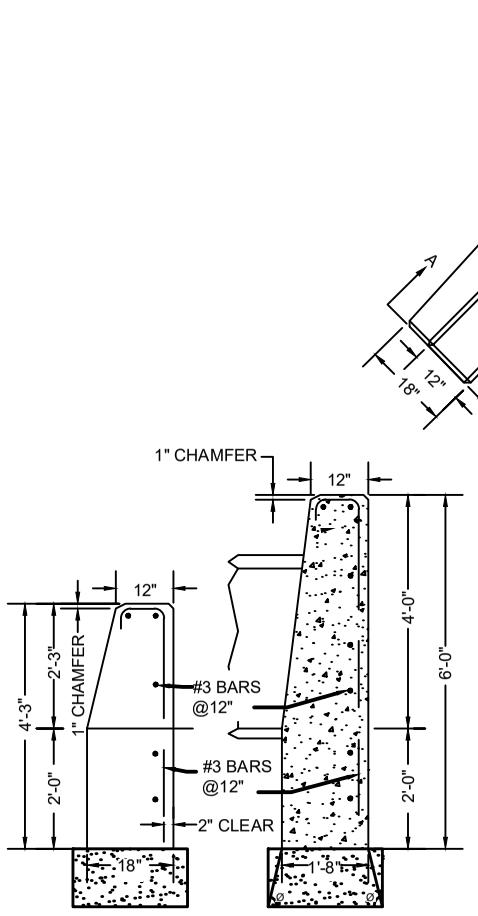
STONE CHECK DAM PLAN VIEW

NOT TO SCALE

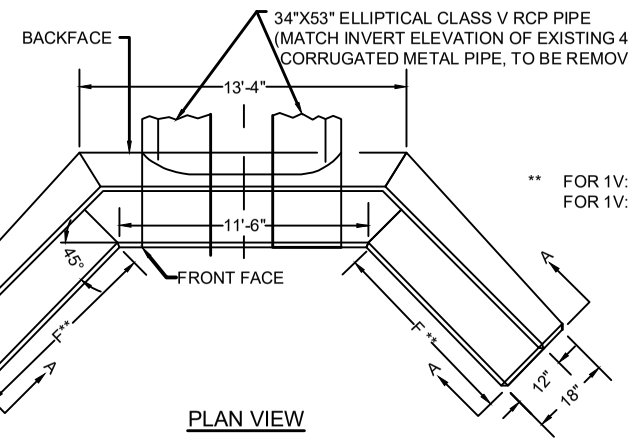


SECTION C-C

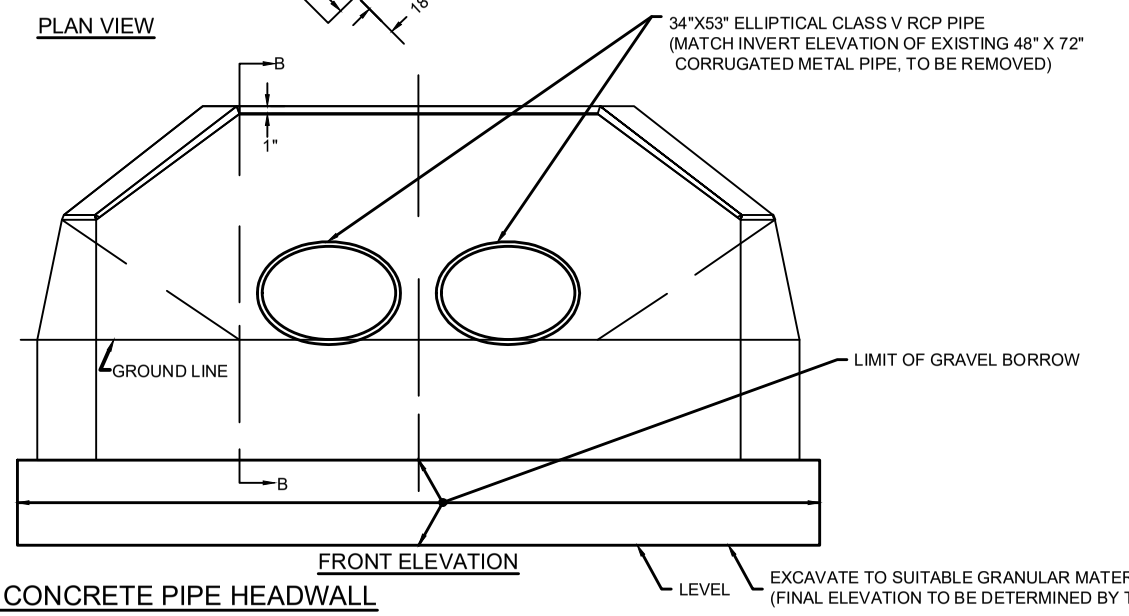
NOT TO SCALE



Ø = 45° FOR DEPTH OF 5'-0" OR LESS
Ø = 60° FOR DEPTH OVER 5'-0"



PLAN VIEW

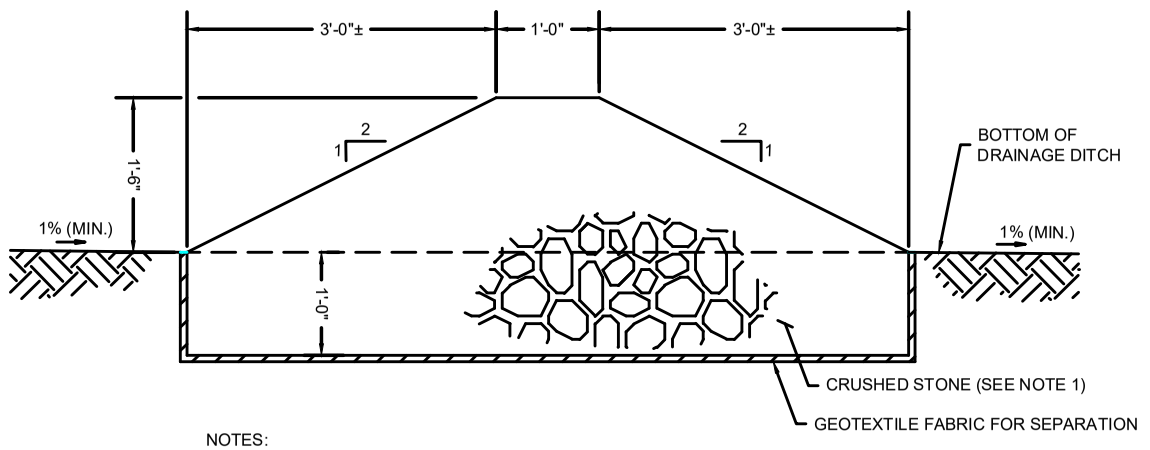


FRONT ELEVATION

REINFORCED CONCRETE PIPE HEADWALL

NOT TO SCALE

(ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM)



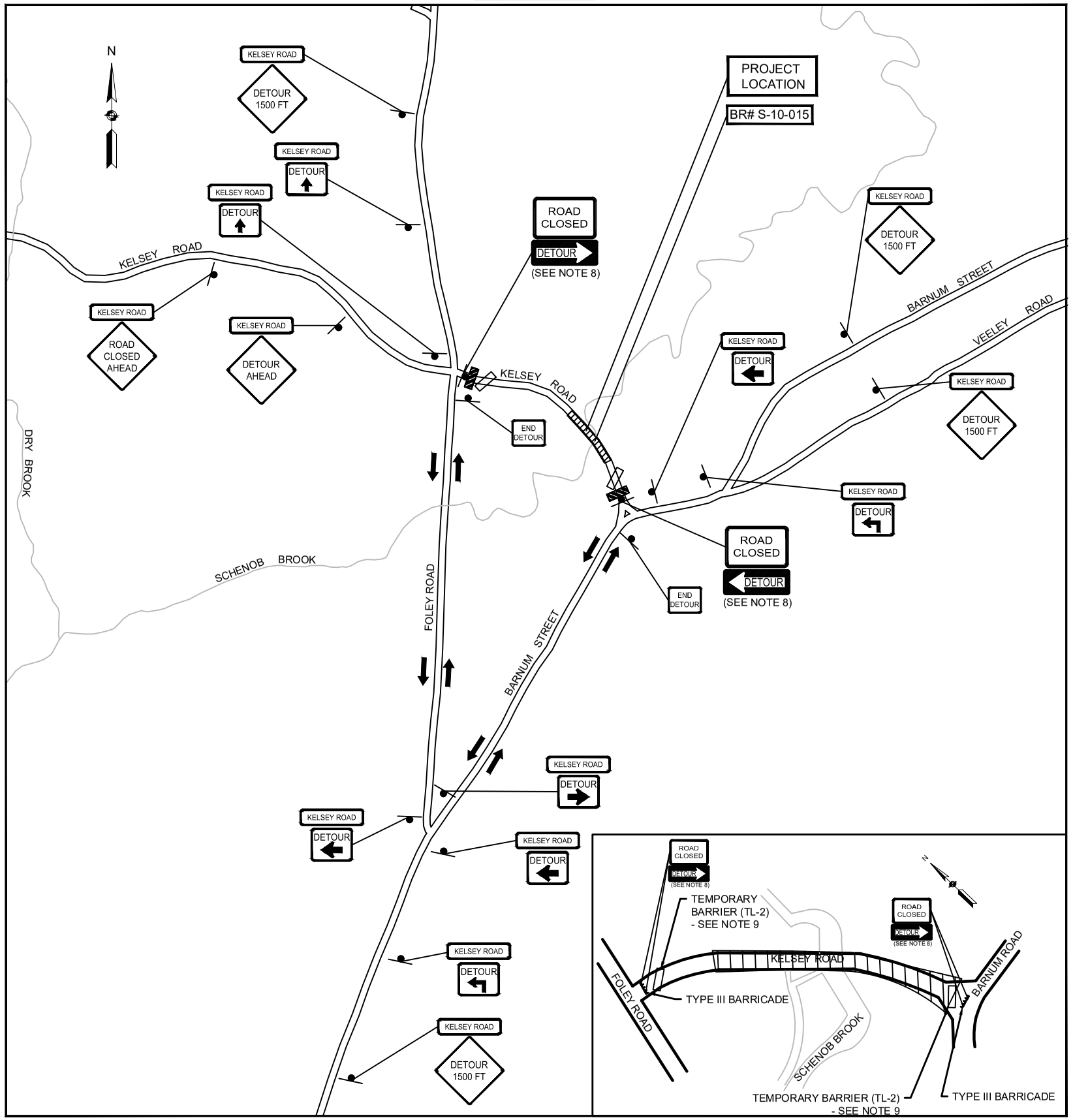
NOTES:
1. CRUSHED STONE SHALL MEET MATERIAL REQUIREMENTS OF SECTION M2.01.2

SECTION D-D

NOT TO SCALE

Proposal No. 609068-136649
A00830 - 581

DETOUR PLAN



DETOUR LENGTH = 0.9 MILES NOT TO SCALE

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- TEMPORARY BARRIER (TL-2)
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

GENERAL NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
6. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
7. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
8. WHERE NOTED, R11-2 (ROAD CLOSED) ALONG WITH THEIR RESPECTIVE M4-10 (DETOUR ARROW) SIGNS, SHALL BE MOUNTED ON TYPE III BARRICADE.
9. PROVIDE TEMPORARY CONCRETE BARRIER PLACED AT 45 DEGREE ANGLE TO ROADWAY SO BLUNT END IS AWAY FROM APPROACHING TRAFFIC.
10. ALL DETOUR SIGNS SHALL BE PLACED WITHIN EXISTING RIGHT OF WAY

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

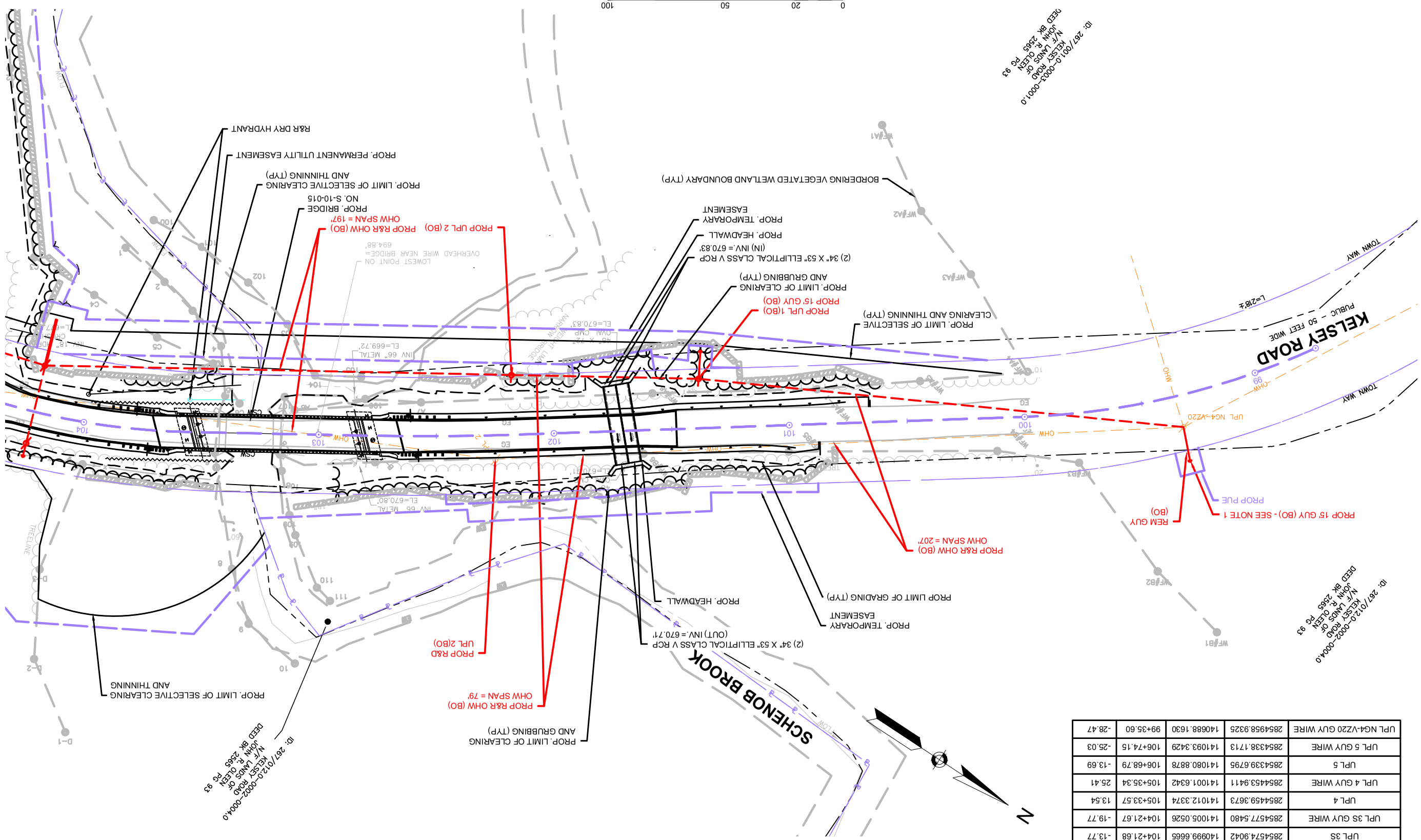
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	18	61
PROJECT FILE NO.	609068		

TEMPORARY TRAFFIC CONTROL PLANS

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES) WIDTH	HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
W16-8P	30	12	KELSEY ROAD	SEE MUTCD STANDARDS			14	FLUORESCENT ORANGE	BLACK	BLACK	2.5	35.0
M4-8a	24	18	END DETOUR				2	FLUORESCENT ORANGE	BLACK	BLACK	3.0	6.0
M4-9R	30	24	DETOUR →				1	FLUORESCENT ORANGE	BLACK	BLACK	5.0	5.0
M4-9L	30	24	DETOUR ←				3	FLUORESCENT ORANGE	BLACK	BLACK	5.0	15.0
M4-9AL	30	24	DETOUR ↰				2	FLUORESCENT ORANGE	BLACK	BLACK	5.0	10.0
M4-9V	30	24	DETOUR ↑				2	FLUORESCENT ORANGE	BLACK	BLACK	5.0	10.0
M4-10R	48	18	DETOUR →				1	FLUORESCENT ORANGE	BLACK	BLACK	6.0	6.0
M4-10L	48	18	← DETOUR				1	FLUORESCENT ORANGE	BLACK	BLACK	6.0	6.0
R11-2	48	30	ROAD CLOSED				2	FLUORESCENT ORANGE	BLACK	BLACK	10.0	20.0
W20-2	36	36	DETOUR 1500 FT				4	FLUORESCENT ORANGE	BLACK	BLACK	9.0	36.0
W20-2	36	36	DETOUR AHEAD				1	FLUORESCENT ORANGE	BLACK	BLACK	9.0	9.0
W20-3	36	36	ROAD CLOSED AHEAD				1	FLUORESCENT ORANGE	BLACK	BLACK	9.0	9.0
TOTAL AREA OF SIGNS (SQUARE FEET)												168.0

Proposal No. 609068-136649
609068_TR (SHEFFIELD_DETOUR PLAN).DWG Plotted on 28-Jul-2026 1:20 PM
A00830 - 582



PROPOSED ELECTRIC UTILITY DATA

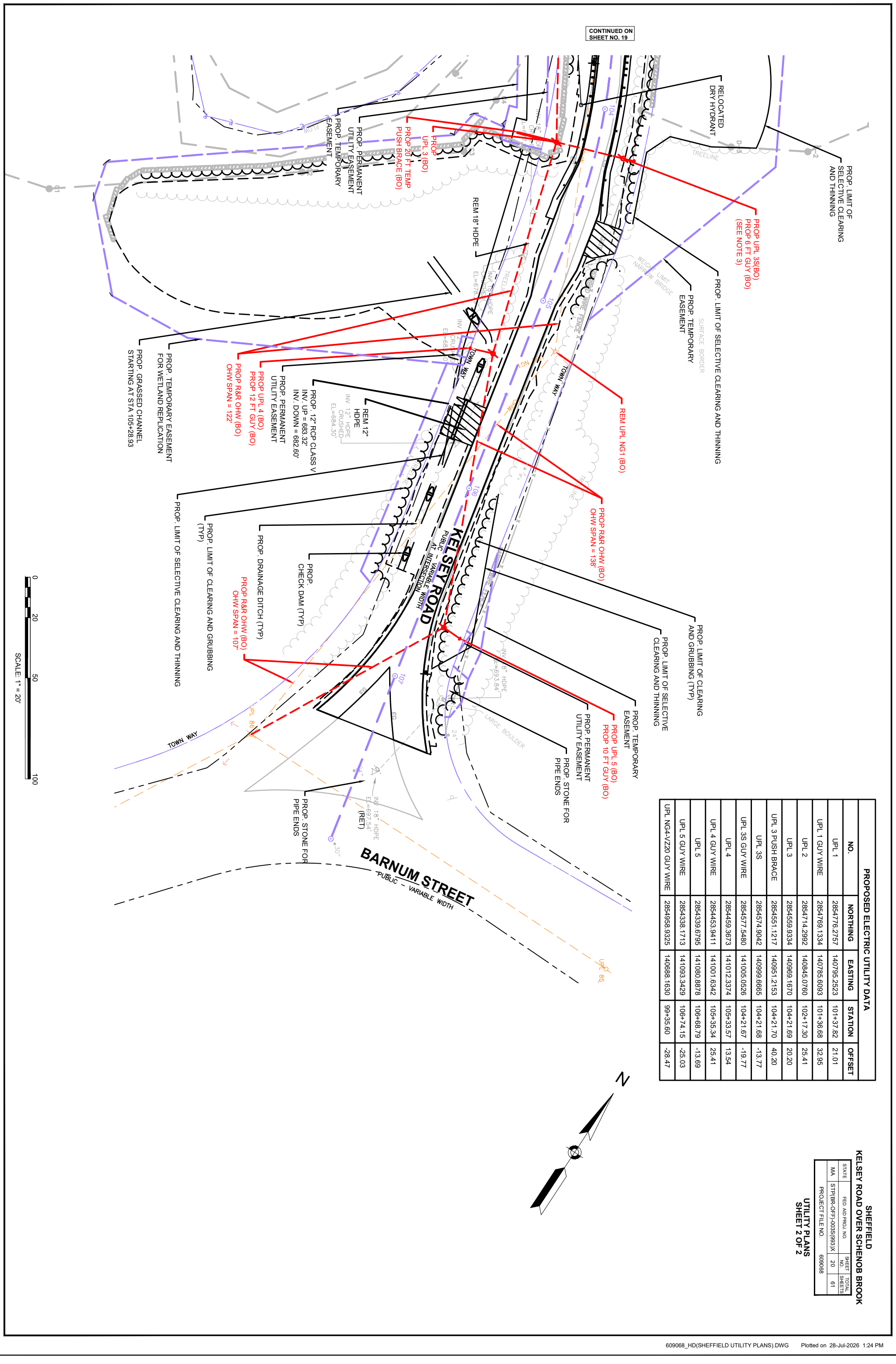
NO.	NORTHING	EASTING	STATION	OFFSET
UPL 1	2854776.2757	1407952.6523	101+37.82	21.01
UPL 1 GUY WIRE	2854769.1334	1407852.6093	101+36.68	32.95
UPL 2	2854714.2992	1408452.0760	102+17.30	25.41
UPL 3	2854559.9334	1409691.6170	104+21.69	20.20
UPL 3 PUSH BRACE	2854551.1217	1409512.2153	104+21.70	40.20
UPL 3S	2854574.9042	1409991.6665	104+21.68	-13.77
UPL 3S GUY WIRE	2854577.5480	1410052.0526	104+21.67	-19.77
UPL 4	2854459.3673	1410123.3374	105+33.57	13.54
UPL 4 GUY WIRE	2854453.9411	1410016.3342	105+35.34	25.41
UPL 5	2854339.6795	1410808.8878	106+68.79	-13.69
UPL 5 GUY WIRE	2854338.1713	1410933.4329	106+74.15	-25.03
UPL NG4-VZ20 GUY WIRE	2854958.9325	1406881.6530	99+35.60	-28.47

NOTES:

1. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL BE RESPONSIBLE FOR TRIMMING TREES PRIOR TO BEGINNING OF UTILITY RELOCATIONS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
2. THE CONTRACTOR SHALL PROVIDE THE UTILITY COMPANIES ACCESS NEEDED FOR POLE AND OVERHEAD WIRE RELOCATIONS. POLE ACCESS SHALL BE RETAINED UNTIL UTILITY RELOCATIONS ARE COMPLETE. THE COST OF PROVIDING ACCESS IS INCIDENTAL TO OTHER CONTRACT ITEMS.
3. UPL 3S SHALL BE INSTALLED BY OTHERS FOLLOWING THE COMPLETION OF THE BRIDGE REPLACEMENT. CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES TO COORDINATE THE INSTALLATION OF THIS POLE AND GUY WIRE.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
UTILITY PLANS
SHEET 1 OF 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	19	61
PROJECT FILE NO. 609068			



PROPOSED ELECTRIC UTILITY DATA

NO.	NORTHING	EASTING	STATION	OFFSET
UPL 1	2854776.2757	140795.2523	101+37.82	21.01
UPL 1 GUY WIRE	2854769.1334	140785.6093	101+36.68	32.95
UPL 2	2854714.2992	140845.0760	102+17.30	25.41
UPL 3	2854559.9334	140969.1670	104+21.69	20.20
UPL 3 PUSH BRACE	2854551.1217	140951.2153	104+21.70	40.20
UPL 3S	2854574.9042	140999.6665	104+21.68	-13.77
UPL 3S GUY WIRE	2854577.5480	141005.0526	104+21.67	-19.77
UPL 4	2854459.3673	141012.3374	105+33.57	13.54
UPL 4 GUY WIRE	2854453.9411	141001.6342	105+35.34	25.41
UPL 5	2854339.6795	141080.8878	106+68.79	-13.69
UPL 5 GUY WIRE	2854338.1713	141093.3429	106+74.15	-25.03
UPL NG4-VZ20 GUY WIRE	2854958.9325	140688.1630	99+35.60	-28.47

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	20	61
	PROJECT FILE NO. 609068		

UTILITY PLANS
SHEET 2 OF 2

609068_HD(SHEFFIELD UTILITY PLANS).DWG Plotted on 28-Jul-2026 1:24 PM

WETLAND FLAG NOTES:

1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW)/ FEDERAL WETLANDS. FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.

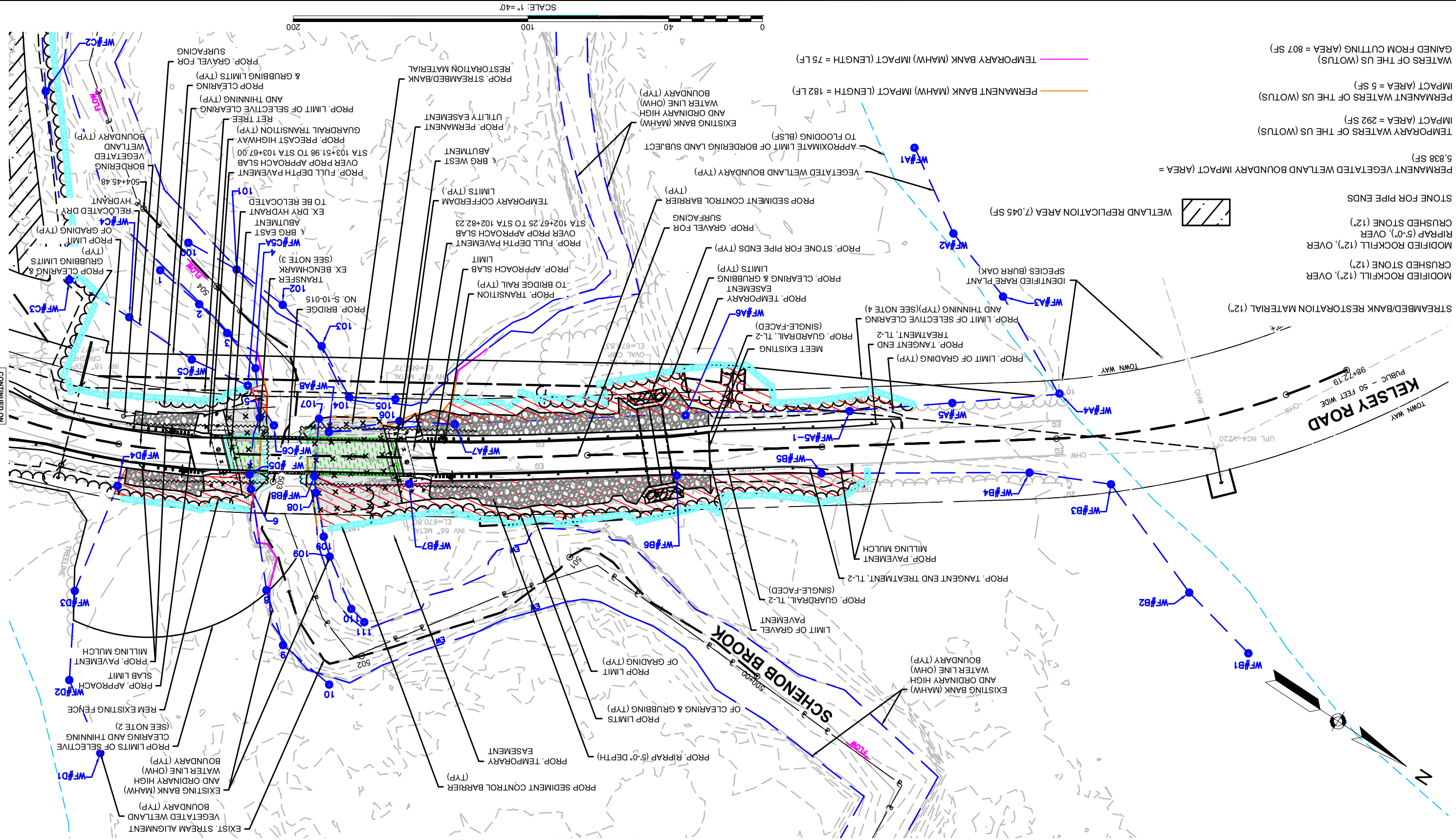
NOTES:

1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED. SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
4. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
5. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.

ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	21	61
	PROJECT FILE NO. 609068		

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	22	61
PROJECT FILE NO.	609068		

ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.

2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.

CONTINUED ON SHEET NO. 21

PROP LIMITS OF SELECTIVE CLEARING AND THINNING (SEE NOTE 2)
VEGETATED WETLAND BOUNDARY (TYP)
REM EXISTING FENCE
PROP. GUARDRAIL, TL-2 (SINGLE-FACED)
PROP. PAVEMENT MILLING MULCH
PROP. LOAM & SEED
PROP. TEMPORARY EASEMENT
PROP. TANGENT END TREATMENT, TL-2
PROP. GRAVEL DRIVEWAY
RET EXISTING GATE
RET EXISTING FENCE
PROP. GRAVEL FOR SURFACING
PROP. LIMIT OF GRADING (TYP.)
PROP. LIMIT OF CLEARING & GRUBBING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. TEMPORARY EASEMENT
PROP. PERMANENT UTILITY EASEMENT
PROP. STONE FOR PIPE ENDS
LIMIT OF GRAVEL PAVEMENT
PROP. STONE FOR PIPE ENDS
PROP LOAM & SEED
MEET EXISTING
LIMIT OF GRAVEL PAVEMENT
PROP. DRAINAGE DITCH WITH CHECK DAMS (TYP)
PROP. LIMIT OF CLEARING & GRUBBING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. GRASSED CHANNEL WITH CHECK DAMS (TYP) STARTING AT STA 105+28.93
PROP. TEMPORARY EASEMENT FOR WETLAND REPLICATION
APPROXIMATE LIMIT OF BORDERING LAND SUBJECT TO FLOODING (BLSF)
SEE WETLAND REPLICATION PLAN (SHEET 26) FOR DETAILS
PROPOSED LIMIT OF GRADING (TYP.)
EXISTING ORDINARY HIGH WATER LINE (OHW) BOUNDARY (TYP)
VEGETATED WETLANDS BOUNDARY (TYP)
PROP. LOAM & SEED
PROP. PAVEMENT MILLING MULCH
PROP. PERMANENT UTILITY EASEMENT
PROP. TEMPORARY EASEMENT
WF#C1
WF#C2
WF#C3
WF#C4
WF#D2
WF#D3
WF#D4
504+45.48
104
105
106
107
107+86.86
KELSEY ROAD
PUBLIC – 50 FEET WIDE
BARNUM STREET
PUBLIC – VARIABLE WIDTH
TOWN WAY
TREELINE
BARBED WIRE FENCE
LARGE BOULDER
INV 18" HDPE CRUSHED EL=678.25'
INV 12" HDPE CRUSHED EL=683.40'
INV 12" HDPE CRUSHED EL=684.30'
INV 18" HDPE EL=693.84'
INV 18" HDPE EL=697.54'
UPL 85
UPL 86
24"
30"
PROJECT END
STA 107+75
N2854234.5835
E141101.4529
FLOW

0 40 100 200
SCALE: 1" =40'

LEGEND

MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")

PERMANENT VEGETATED WETLANDS BOUNDARY IMPACT (AREA = 5,838 SF)

WETLAND REPLICATION AREA (7,045 SF)

Proposal No. 609068-136649
A00830 - 586

NOTES:

1. TURTLE EXCLUSION BARRIER SHALL BE PLACED AS SHOWN ON THE TURTLE EXCLUSION BARRIER PLAN. FINAL LOCATION SHALL BE DETERMINED BY FIELD CONDITIONS AND MUST BE APPROVED BY THE MASSDOT WILDLIFE MONITOR.
2. INSTALLATION AND MONITORING SHALL BE AS SHOWN AND AS DESCRIBED IN THE SPECIFICATIONS.
3. THE BARRIER MUST CONNECT, WITHOUT GAPS, TO ANY PROPOSED WATER CONTROL STRUCTURES SUCH AS COFFERDAMS OR SANDBAGS TO PREVENT TURTLES FROM ENTERING THE WORKZONE.
4. CONSTRUCTION VEHICLE ENTRANCES TO THE WORK AREA MUST BE CLOSED EACH NIGHT DURING THE TURTLE ACTIVE SEASON (MARCH 15 - OCTOBER 31) WITH EITHER A GATE AND/OR SEDIMENTATION FENCING. THE CONSTRUCTION VEHICLE ENTRANCES SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.
5. SIGNAGE NOTING THE LIMIT OF WORK SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.

N

ID: 267/012.0-0002-0004.0
KELSEY ROAD
N/F LANDS OF
JOHN R. OLEEN
DEED BK 2565 PG 93

KELSEY ROAD

PROJECT BEGIN
STA 99+15
N2854947.8548
E140654.2572

L=218'±

STA. 100+59.25
OFFSET: 17.47

STA. 100+60.10
OFFSET: 8.62

TURTLE EXCLUSION BARRIER

TURTLE EXCLUSION BARRIER

SCHENOB BROOK

TEMPORARY COFFERDAM LIMITS (TYP.)

ID: 267/001.0-0003-0001.0
KELSEY ROAD
N/F LANDS OF
JOHN R. OLEEN
DEED BK 2565 PG 93

ID: 267/012.0-0002-0004.0
KELSEY ROAD
N/F LANDS OF
JOHN R. OLEEN
DEED BK 2565 PG 93

LEGEND:

- SEDIMENT CONTROL BARRIER-COIR LOG (ITEM 767.122)
- TEMPORARY COFFERDAM (ITEM 991.1)
- TURTLE EXCLUSION BARRIER (ITEM 670.1)

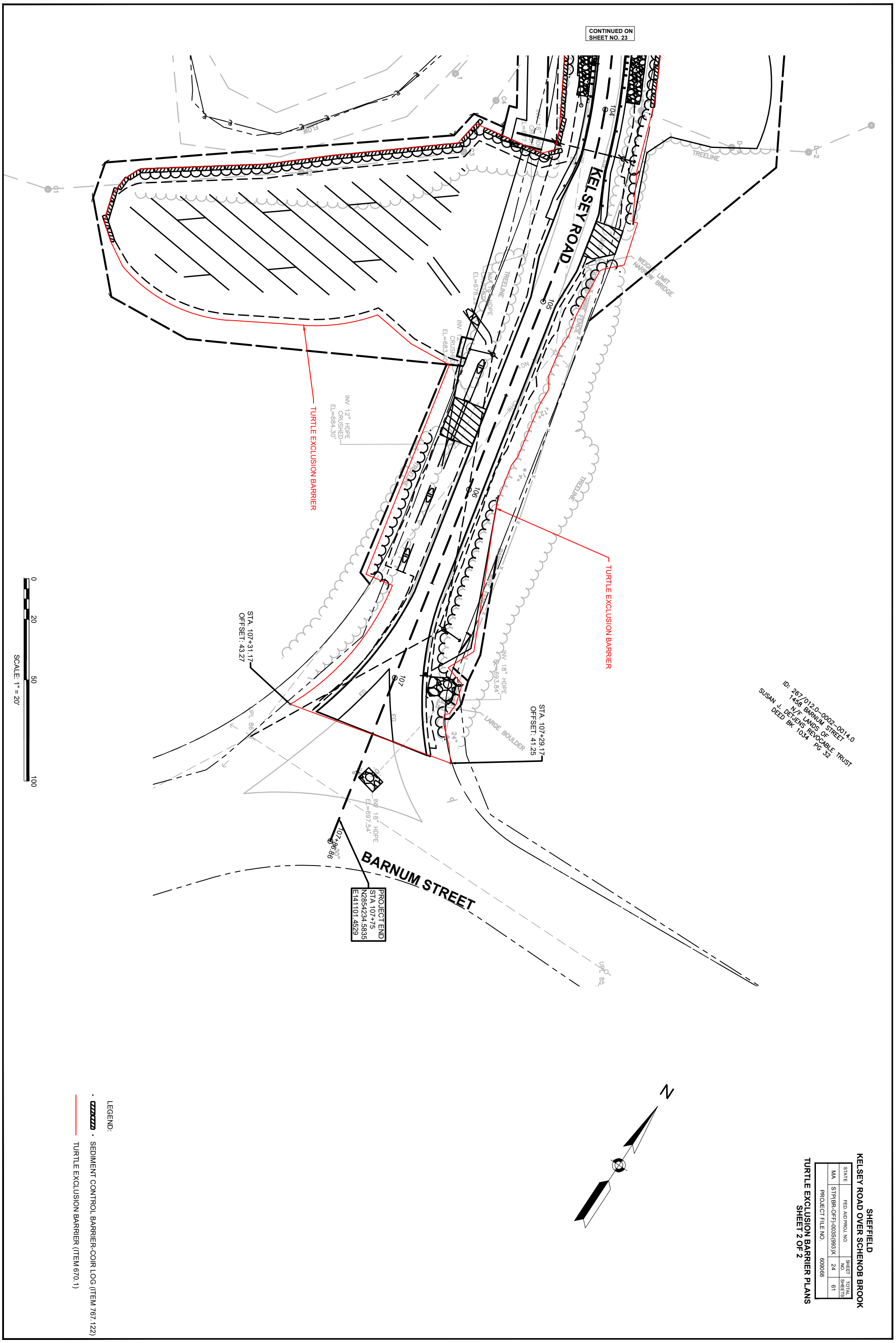
0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 24

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
TURTLE EXCLUSION BARRIER PLANS
SHEET 1 OF 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(GR-OFF)-003S(993)X	23	61
PROJECT FILE NO.	609068		

609068_HD(TURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 28-Jul-2026 11:28 AM



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

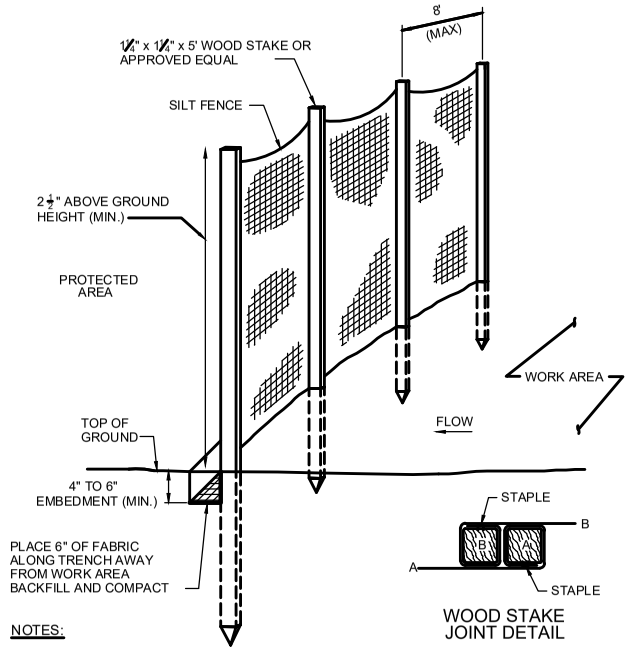
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	24	61
	PROJECT FILE NO. 609068		

TURTLE EXCLUSION BARRIER PLANS
SHEET 2 OF 2

609068_HD(TURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 28-Jul-2026 1:04 PM

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	25	61
PROJECT FILE NO.	609068		

TURTLE EXCLUSION BARRIER DETAILS

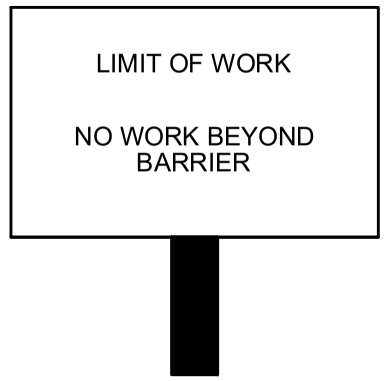


NOTES:

1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

TURTLE EXCLUSION BARRIER

SCALE: N.T.S.

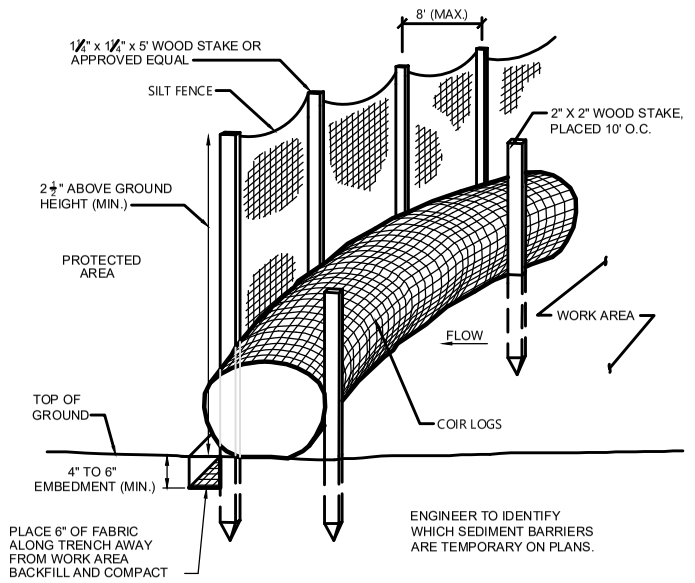


NOTES:

1. SIGNAGE MUST CLEARLY IDENTIFY THE LIMIT OF WORK IN ALL 4 QUADRANTS OF THE WORK SITE.

ENVIRONMENTALLY SENSITIVE AREA SIGNAGE

SCALE: N.T.S.



NOTES:

1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

TURTLE EXCLUSION BARRIER WITH SEDIMENT CONTROL BARRIER

SCALE: NTS

Proposal No. 609068-136649

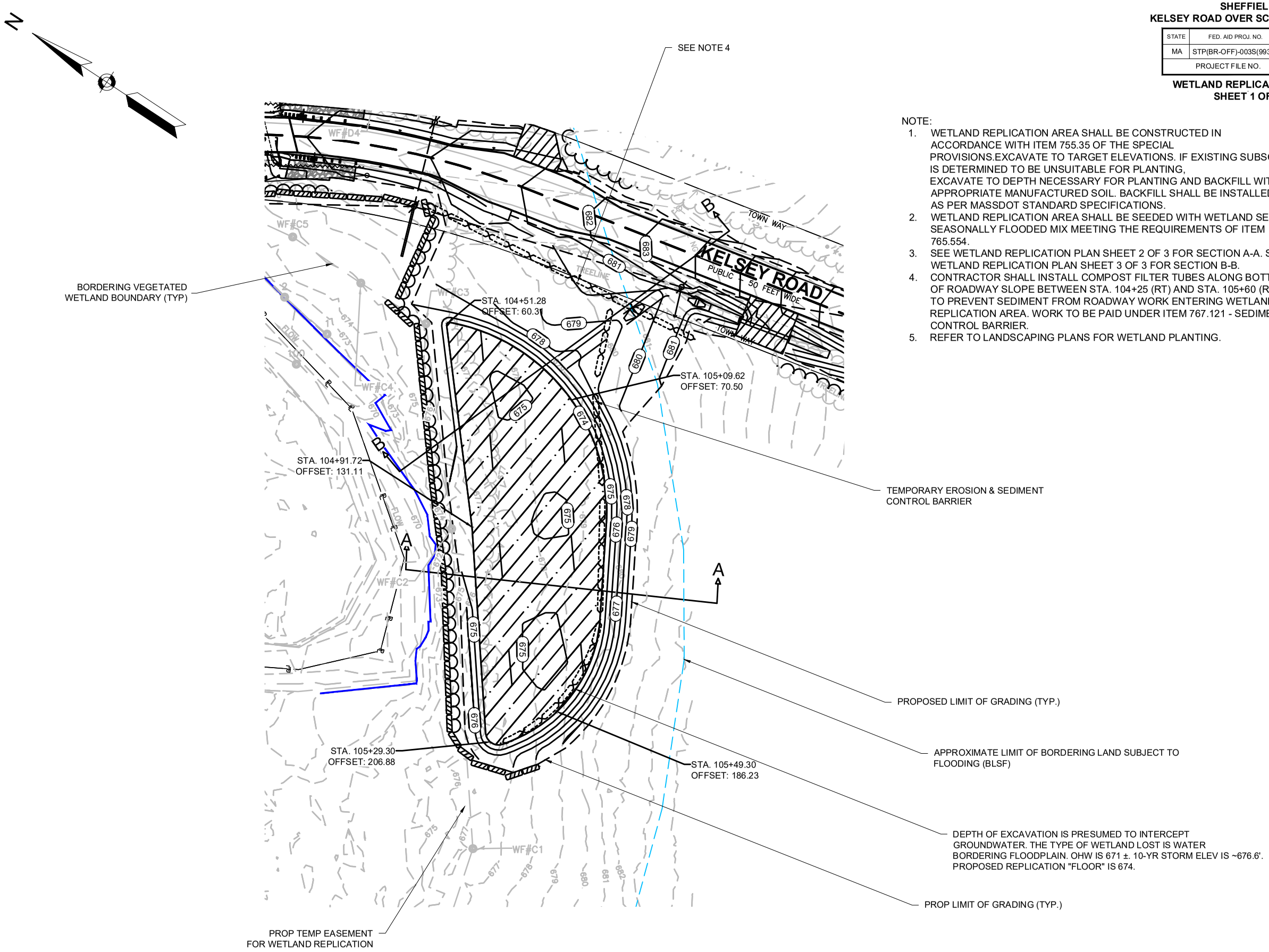
609068_HD\TURTLE BARRIER EXCLUSION PLAN DETAILS).DWG Plotted on 28-Jul-2026 1:05 PM

A00830 - 589

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	26	61
PROJECT FILE NO. 609068			

WETLAND REPLICATION PLAN
SHEET 1 OF 3



NOTE:

1. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS.EXCAVATE TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
2. WETLAND REPLICATION AREA SHALL BE SEEDED WITH WETLAND SEED - SEASONALLY FLOODED MIX MEETING THE REQUIREMENTS OF ITEM 765.554.
3. SEE WETLAND REPLICATION PLAN SHEET 2 OF 3 FOR SECTION A-A. SEE WETLAND REPLICATION PLAN SHEET 3 OF 3 FOR SECTION B-B.
4. CONTRACTOR SHALL INSTALL COMPOST FILTER TUBES ALONG BOTTOM OF ROADWAY SLOPE BETWEEN STA. 104+25 (RT) AND STA. 105+60 (RT) TO PREVENT SEDIMENT FROM ROADWAY WORK ENTERING WETLAND REPLICATION AREA. WORK TO BE PAID UNDER ITEM 767.121 - SEDIMENT CONTROL BARRIER.
5. REFER TO LANDSCAPING PLANS FOR WETLAND PLANTING.

LEGEND

- OHW/ELEV 671±
- TEMPORARY EROSION & SEDIMENT CONTROL
- TEMPORARY EROSION & SEDIMENT CONTROL - COIR LOGS
- WETLAND REPLICATION AREA (7,044 SF)

Proposal No. 609068-136649

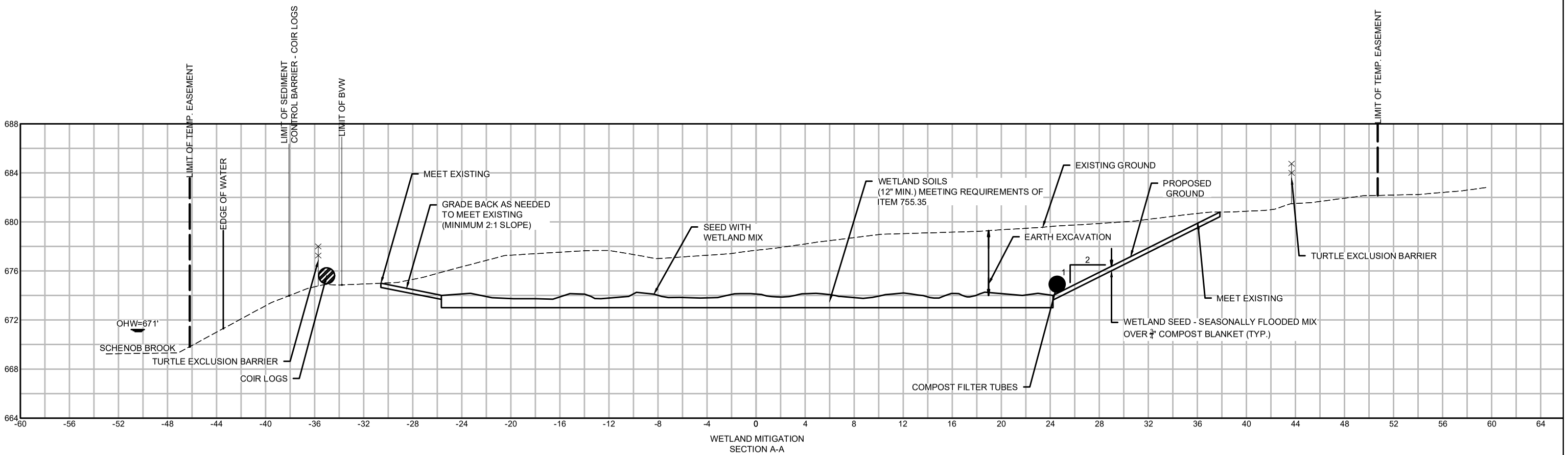
A008830 - 590

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	27	61
PROJECT FILE NO. 609068			

WETLAND REPLICATION PLAN
SHEET 2 OF 3

NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE

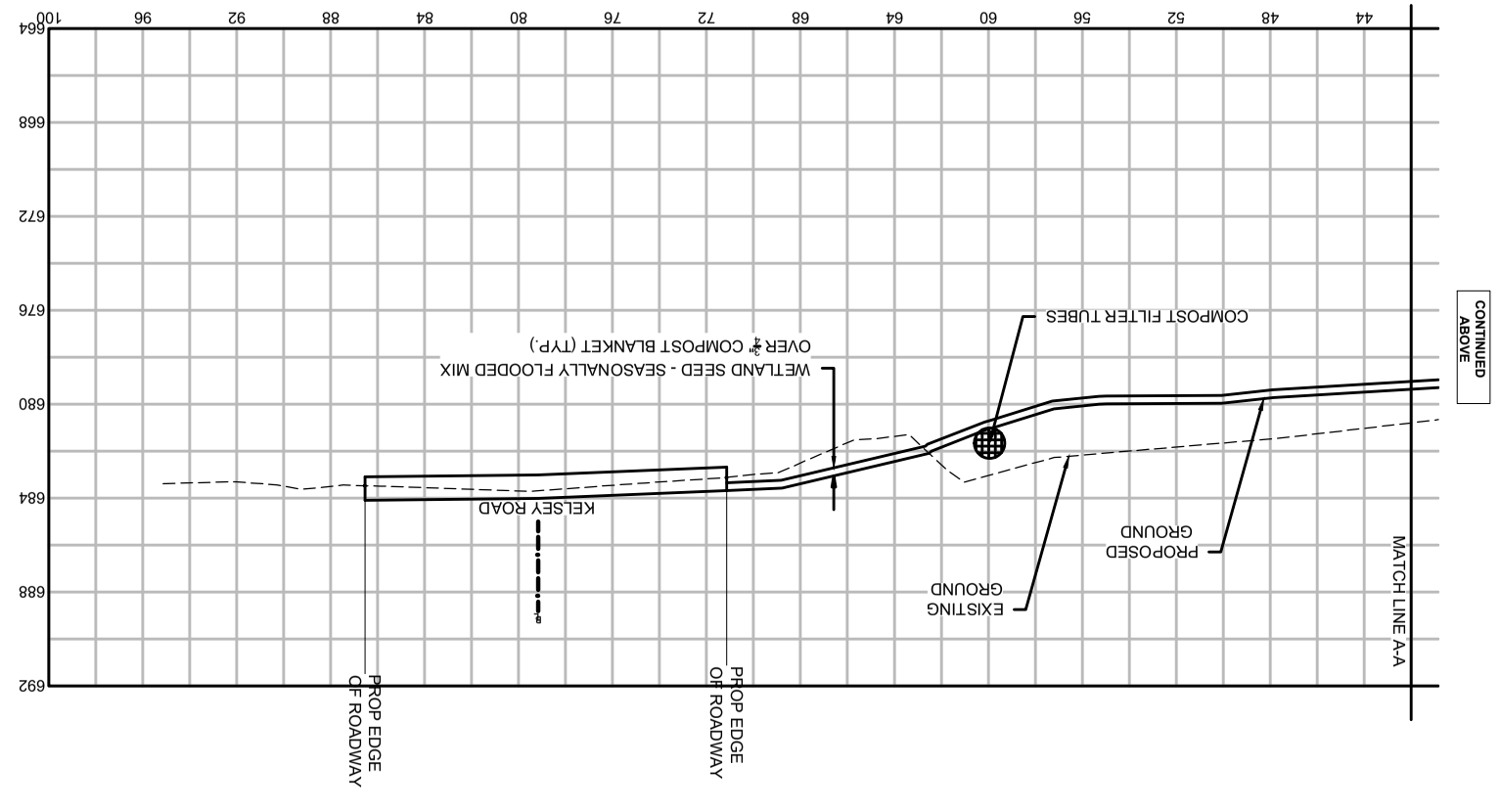


WETLAND MITIGATION
SECTION A-A

4 0 4 8
SCALE IN FEET

Proposal No. 609068-136649
A00830 - 591

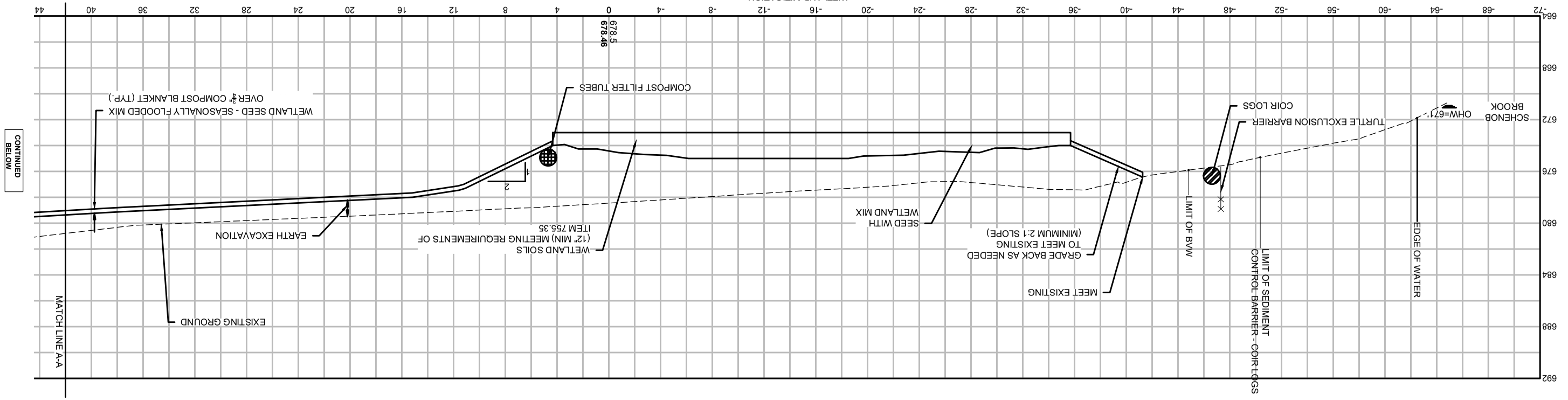
WETLAND MITIGATION
SECTION B-B CONT.





NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE

WETLAND MITIGATION
SECTION B-B



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	28	61
PROJECT FILE NO. 609068			

WETLAND REPLICATION PLAN
SHEET 3 OF 3

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

KELSEY ROAD OVER SCHENOB BROOK
SHEFFIELD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	29	61
PROJECT FILE NO. 609068			

LANDSCAPE PLAN
KELSEY ROAD (1 OF 2)

SCALE: 1" = 20'

0 20 50 100

LEGEND

LOAM AND SEED

WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET

VEGETATED WETLAND BOUNDARY (TYP.)

SCHENOB BROOK

PROP. WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET (TYP.)

EXISTING TREES TO RECEIVE TREE PROTECTION - ROOT ZONE

PROP. LIMIT OF SELECTIVE CLEARING AND TRIMMING (SEE CONSTRUCTION PLANS)

PROP. LIMIT OF CLEARING AND GRUBBING (SEE CONSTRUCTION PLANS)

PROP. LIMIT OF GRADING (SEE CONSTRUCTION PLANS)

PROP. LIMIT OF CLEARING AND GRUBBING (SEE CONSTRUCTION PLANS)

PROP. EROSION CONTROL (SEE CONSTRUCTION PLANS)

PROP. STREAMBED RESTORATION MATERIAL (SEE CONSTRUCTION PLANS)

PROP. RIP RAP (SEE CONSTRUCTION PLANS)

CONSTRUCTION COFFERDAM (SEE BRIDGE PLANS)

PROP. LIMIT OF SELECTIVE CLEARING AND TRIMMING (SEE CONSTRUCTION PLANS)

PROJECT BEGIN STA 99+15 N2854941 8548 E1405421 2572

CONTINUED ON SHEET NO. 30

N

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	30	61
PROJECT FILE NO. 609068			

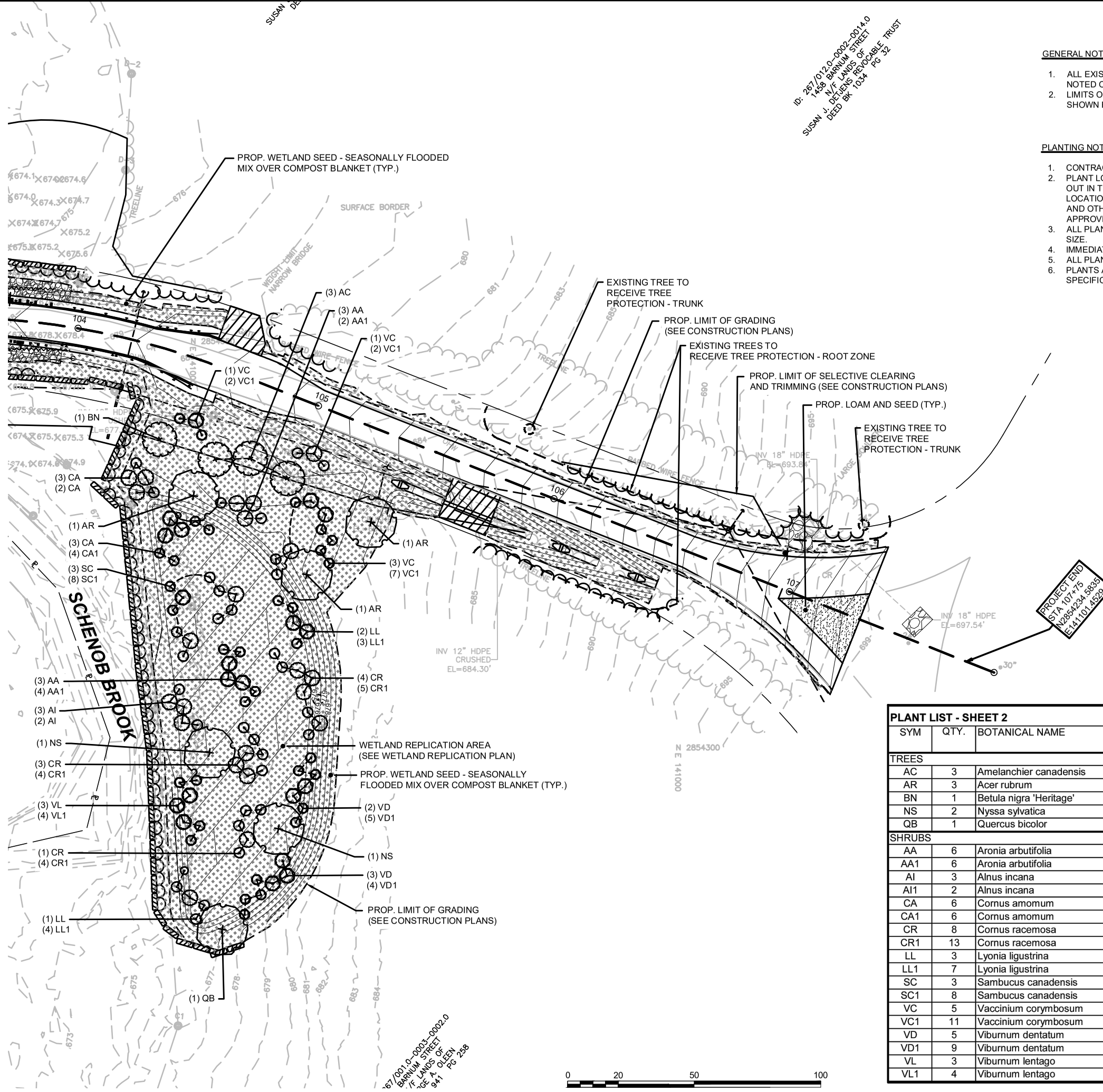
LANDSCAPE PLAN
KELSEY ROAD (2 OF 2)

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

PLANTING NOTES:

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL SHALL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, CULTIVAR, & SIZE.
4. IMMEDIATELY AFTER ACCEPTANCE OF PLANTING, TAGS AND RIBBONS SHALL BE REMOVED.
5. ALL PLANTS SHALL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS AND DETAILS.



LEGEND

- DECIDUOUS TREE
- SHRUB
- LOAM AND SEED
- WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET

N

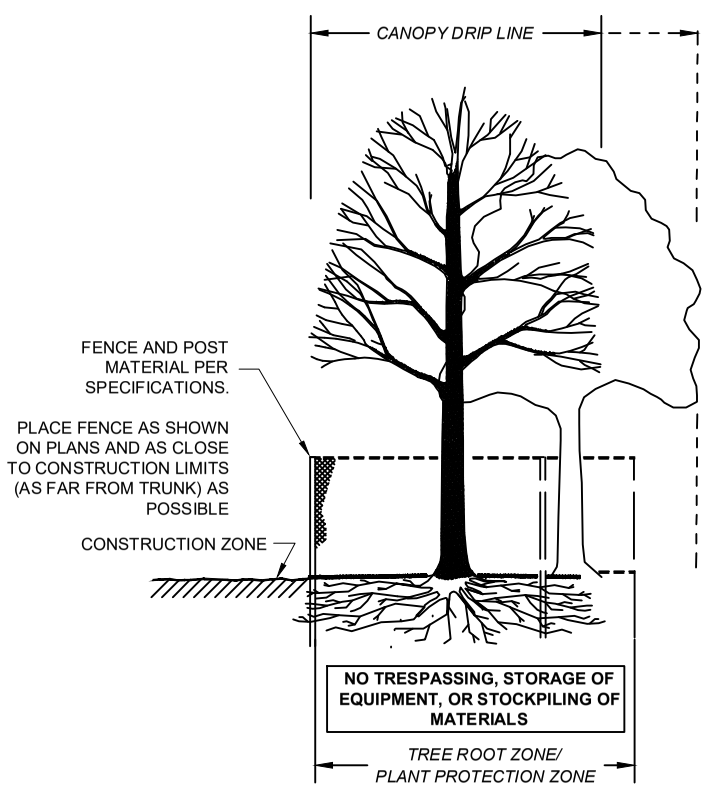
PLANT LIST - SHEET 2

SYM	QTY.	BOTANICAL NAME	COMMON NAME	HEIGHT INSTALL	CALIPER INSTALL	COMMENTS
TREES						
AC	3	Amelanchier canadensis	Serviceberry	7-8'	-	Standard Item, Clump
AR	3	Acer rubrum	Red Maple	12-14'	2"-2 1/2"	Standard item, Type 1
BN	1	Betula nigra 'Heritage'	River Birch (clump)	8-10'	-	Standard Item, Clump
NS	2	Nyssa sylvatica	Black Tupelo	7-10'	1 1/2" - 2"	Standard item, Type 2
QB	1	Quercus bicolor	Swamp White Oak	10-12'	1 1/2" - 2"	Standard item, Type 1, fall plant only
SHRUBS						
AA	6	Aronia arbutifolia	Red Chokeberry	12-18"	-	Type 3
AA1	6	Aronia arbutifolia	Red Chokeberry	18-24"	-	Type 3
AI	3	Alnus incana	Speckled Alder	12-18"	-	Type 3
AI1	2	Alnus incana	Speckled Alder	18-24"	-	Type 3
CA	6	Cornus amomum	Silky Dogwood	12-18"	-	Type 3
CA1	6	Cornus amomum	Silky Dogwood	18-24"	-	Type 3
CR	8	Cornus racemosa	Gray Dogwood	12-18"	-	Type 3
CR1	13	Cornus racemosa	Gray Dogwood	18-24"	-	Type 3
LL	3	Lyonia ligustrina	Maleberry	12-18"	-	Type 3
LL1	7	Lyonia ligustrina	Maleberry	18-24"	-	Type 3
SC	3	Sambucus canadensis	Common Elderberry	12-18"	-	Type 3
SC1	8	Sambucus canadensis	Common Elderberry	18-24"	-	Type 3
VC	5	Vaccinium corymbosum	Highbush Blueberry	12-18"	-	Type 3
VC1	11	Vaccinium corymbosum	Highbush Blueberry	18-24"	-	Type 3
VD	5	Viburnum dentatum	Northern Arrowwood	12-18"	-	Type 3
VD1	9	Viburnum dentatum	Northern Arrowwood	18-24"	-	Type 3
VL	3	Viburnum lentago	Nannyberry	12-18"	-	Type 3
VL1	4	Viburnum lentago	Nannyberry	18-24"	-	Type 3

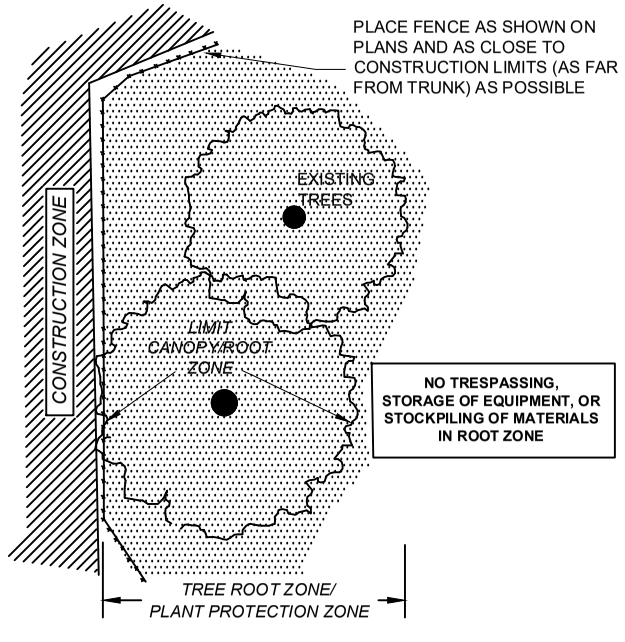
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	31	61
PROJECT FILE NO.	609068		

LANDSCAPE DETAILS
KELSEY ROAD (1 OF 1)



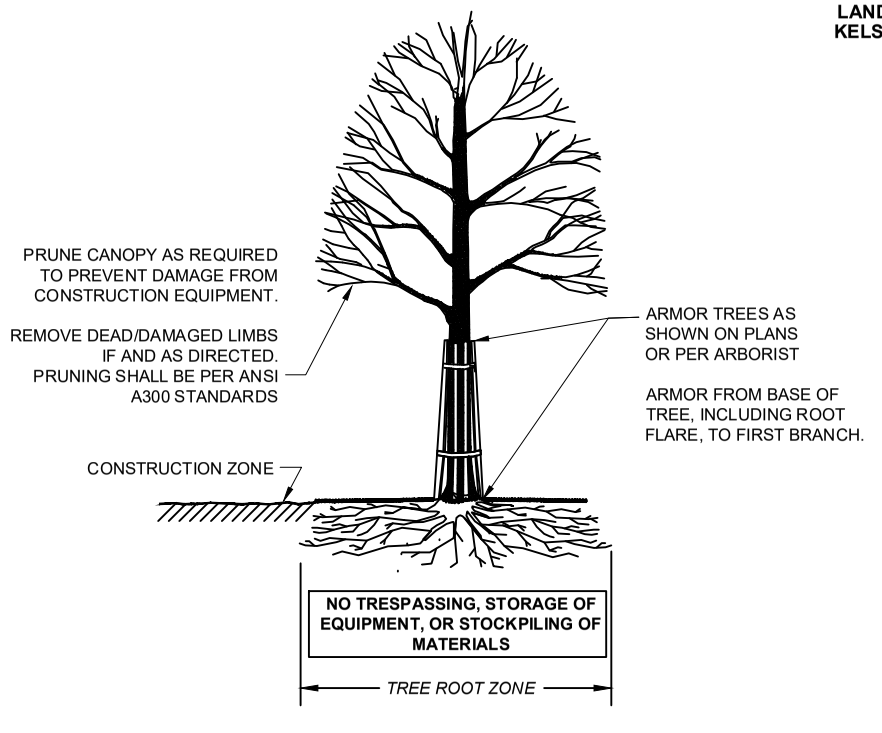
SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

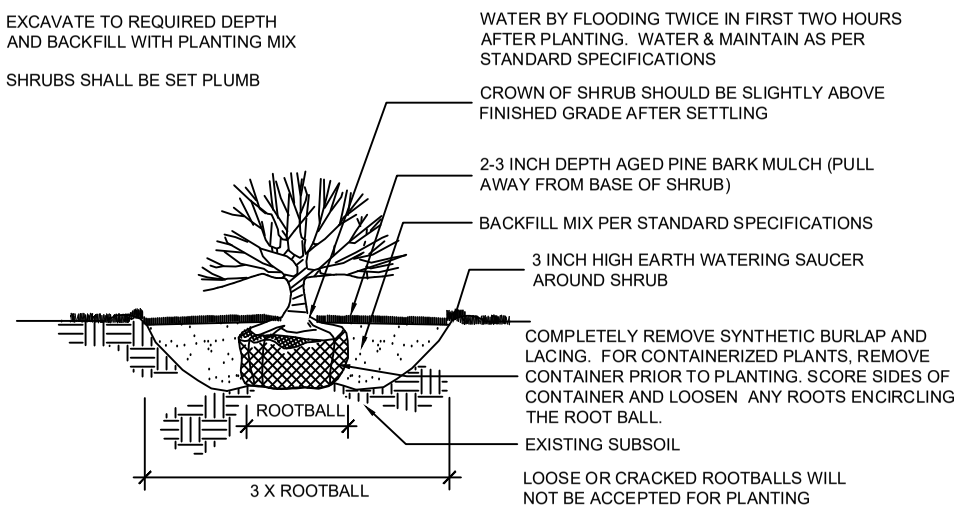
TREE PROTECTION - ROOT ZONE

NOT TO SCALE



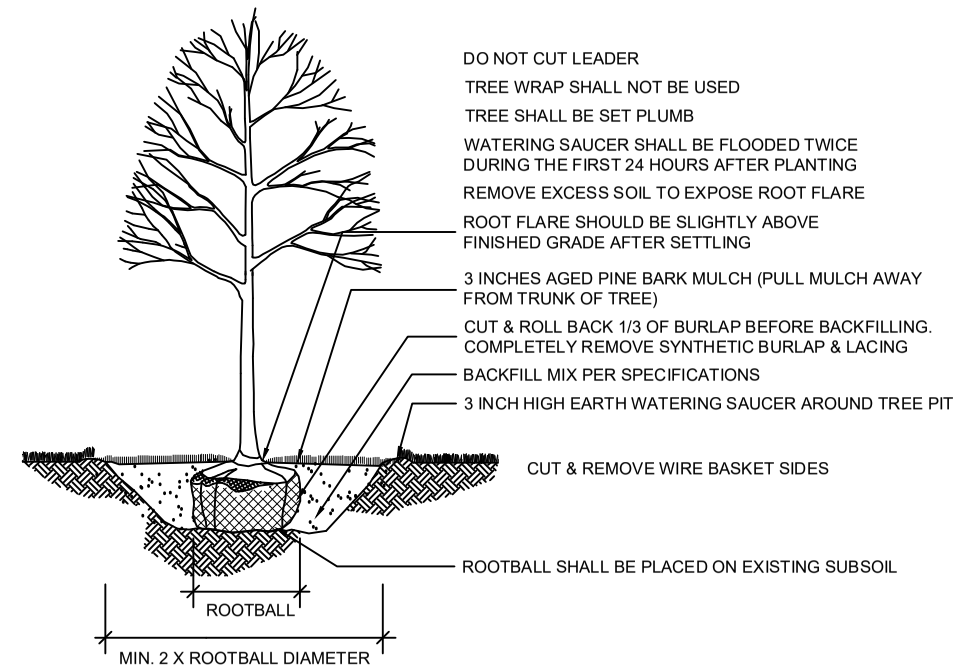
SECTION - TRUNK ARMORING & PRUNING

TREE PROTECTION - TRUNK



SHRUB PLANTING

NOT TO SCALE



DECIDUOUS TREE PLANTING

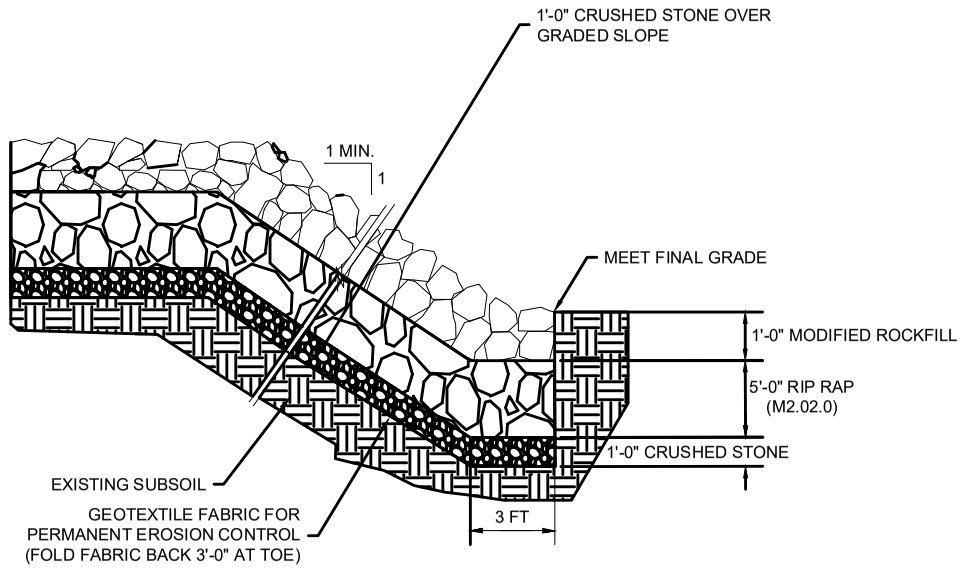
NOT TO SCALE

Proposal No. 609068-136649

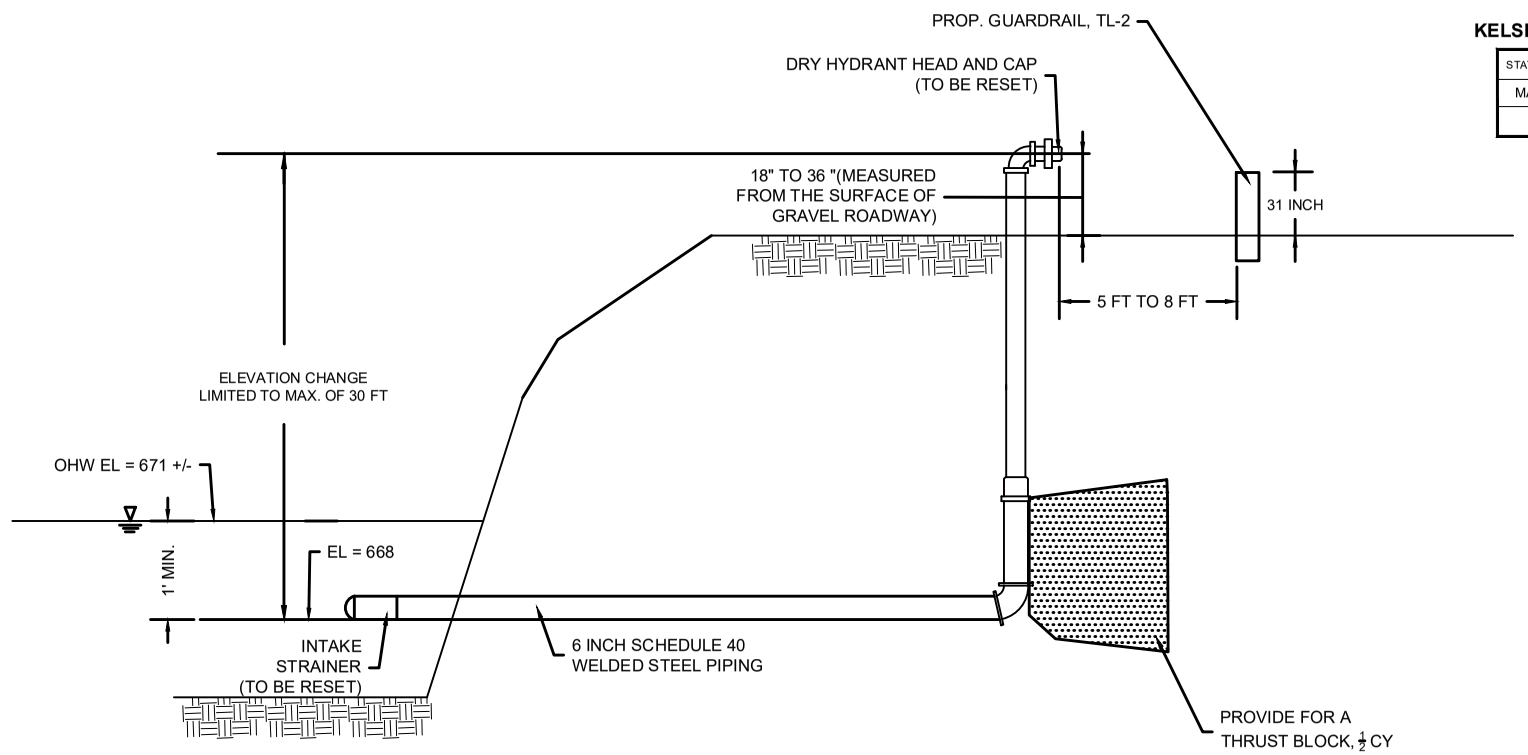
A00830 - 595

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	32	61
PROJECT FILE NO.	609068		

CONSTRUCTION DETAILS

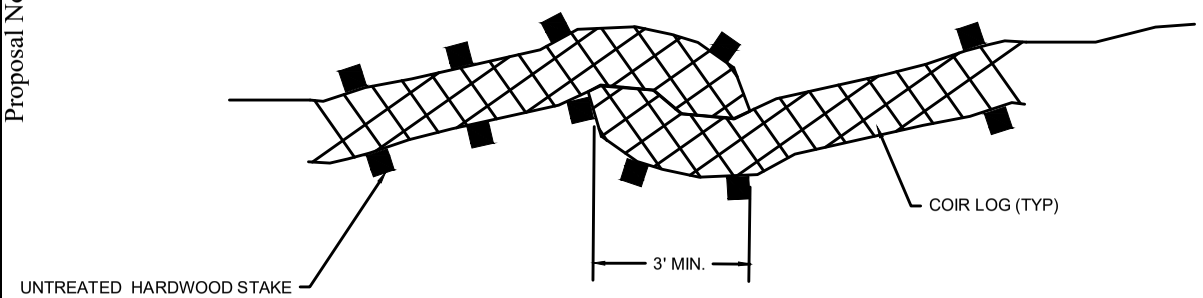


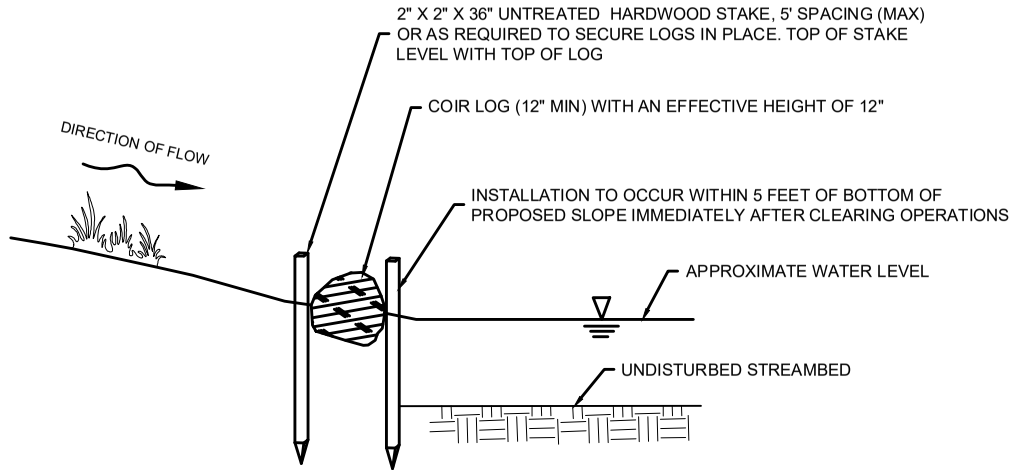
RIPRAP SIDE SLOPE DETAIL
NTS



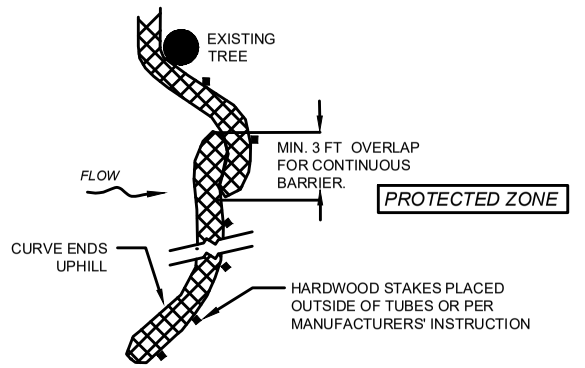
DRY HYDRANT DETAILS
NTS

STREAM OR VEGETATED WETLANDS





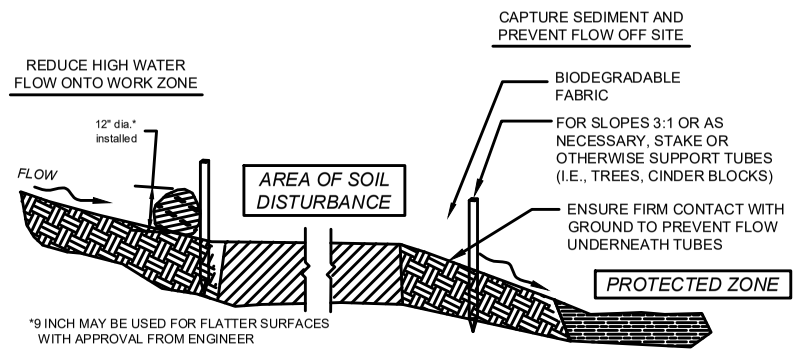
COIR LOG DETAILS
NTS



PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW



SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBE
NTS

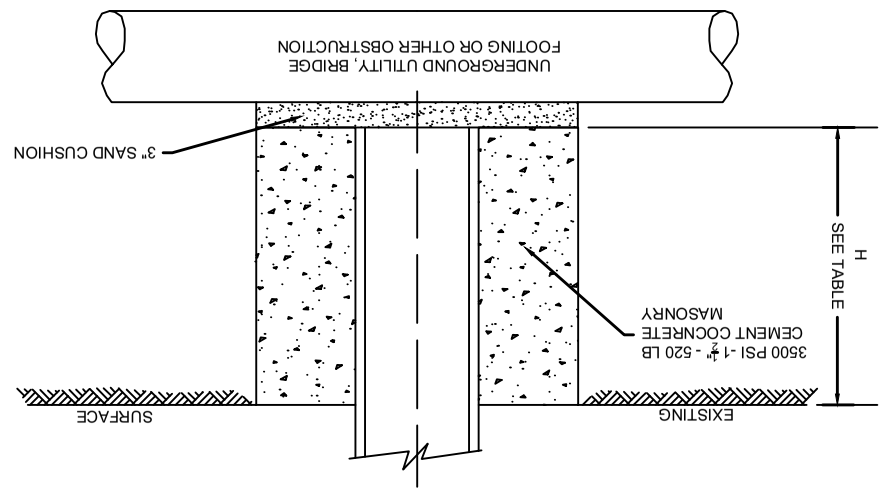
Proposal No. 609068-136649
A00830 - 596

MODIFIED HIGHWAY GUARD
POST INSTALLATION
NTS

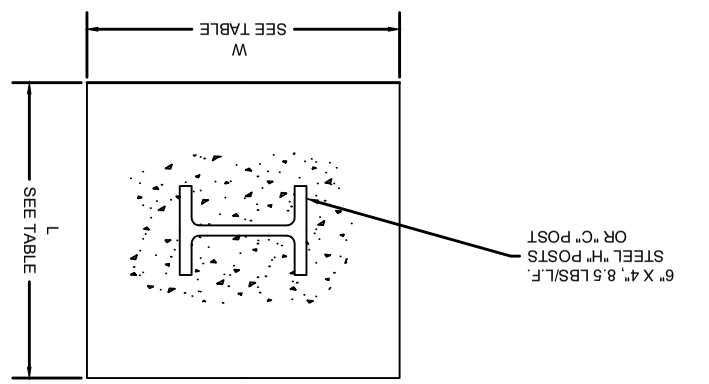
NOTES:
1. OFFSET BRACKETS ARE TO BE INSTALLED AND RAILS ARE TO BE MOUNTED AS SHOWN ON DRAWINGS 620.12.1
2. NOT TO BE USED ON MORE THAN 2 POSTS IN A ROW

HEIGHT OF EXISTING SURFACE ABOVE TOP OF SAND CUSHION	DIMENSION OF CONCRETE ENVELOPE			
	H HEIGHT OF SURFACE ABOVE SAND CUSHION	W	L
1'-0" - 1'-6"	VARIES 1'-0" - 1'-6"	2'-6"	2'-6"
1'-6" - 2'-6"	VARIES 1'-6" - 2'-6"	2'-0"	1'-6"
OVER 2'-6"	2'-6"	1'-6"	1'-6"

ELEVATION



PLAN

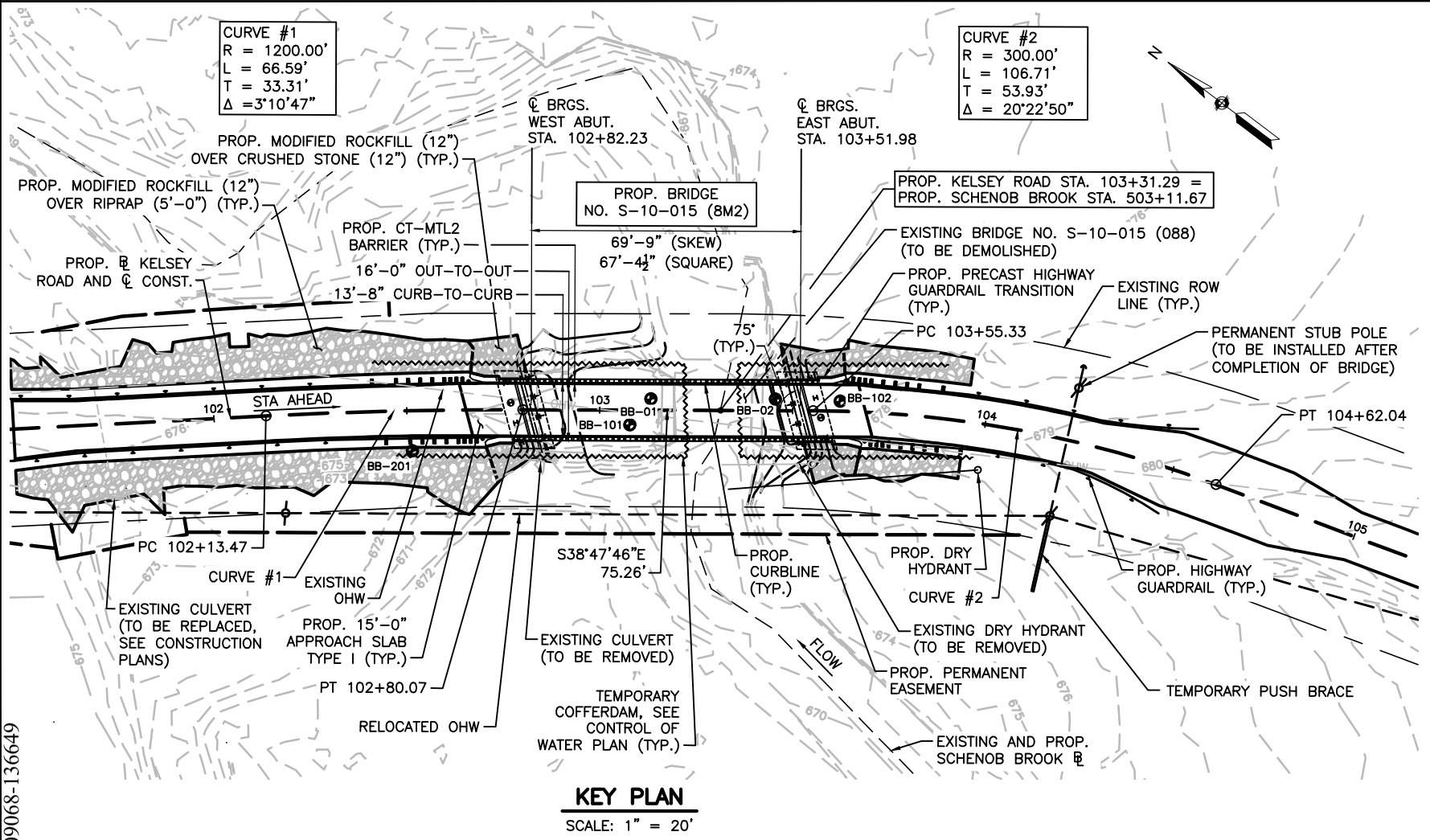


SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

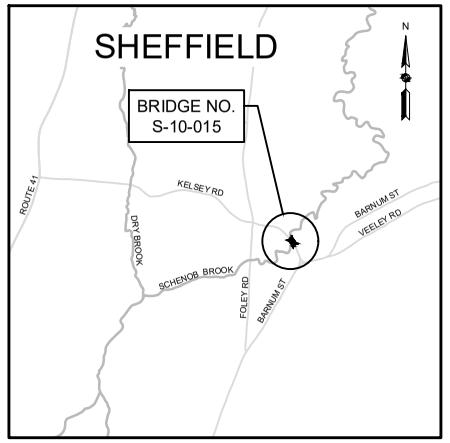
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	33	61
PROJECT FILE NO. 609068			

CONSTRUCTION DETAILS

609068_HD (CONSTRUCTION DETAILS.DWG Plotted on 28-Jul-2026 1:29 PM



KEY PLAN
SCALE: 1" = 20'



LOCUS
SCALE: 1" = 2000'

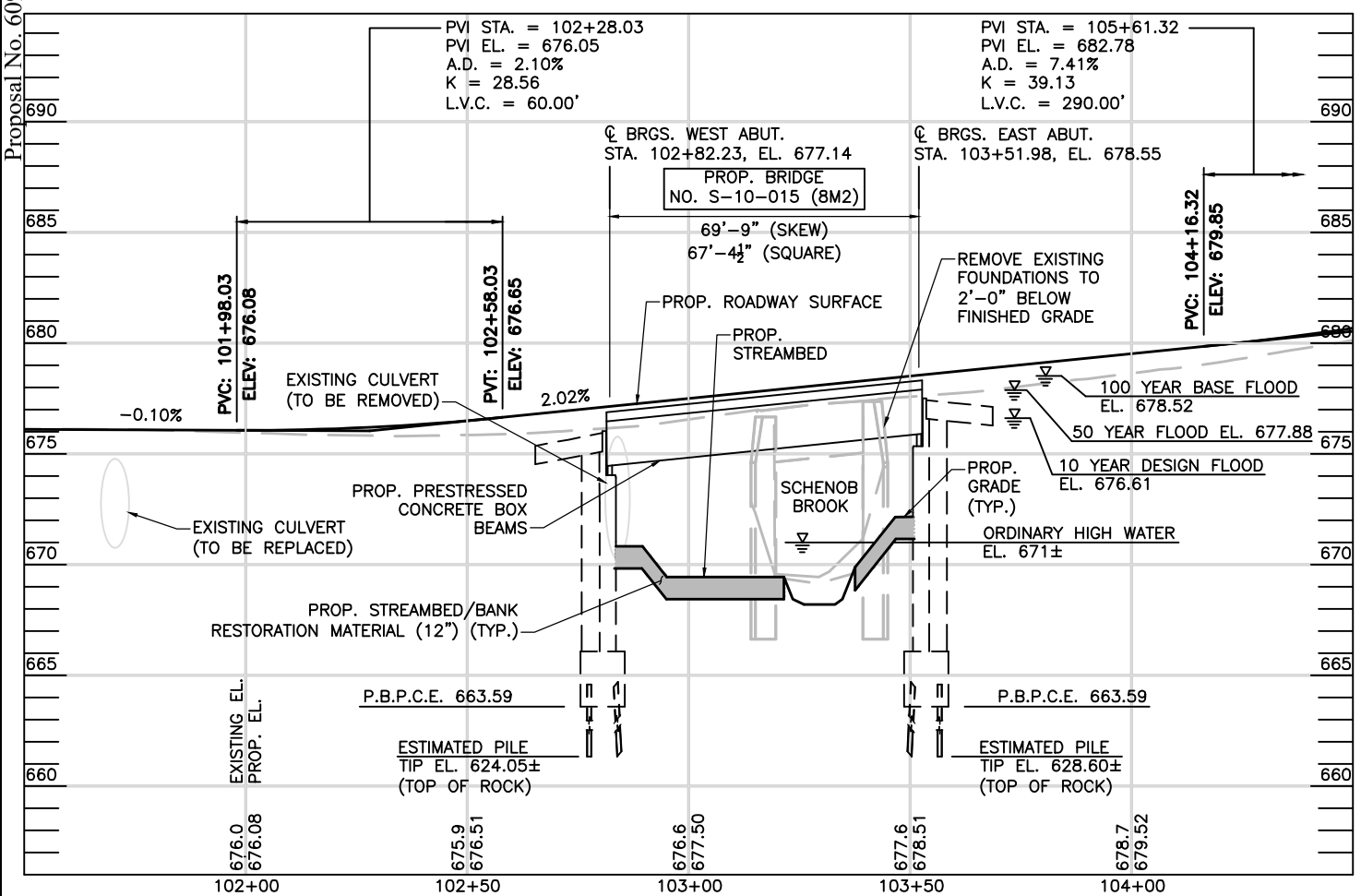
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	34	61
PROJECT FILE NO.	609068		

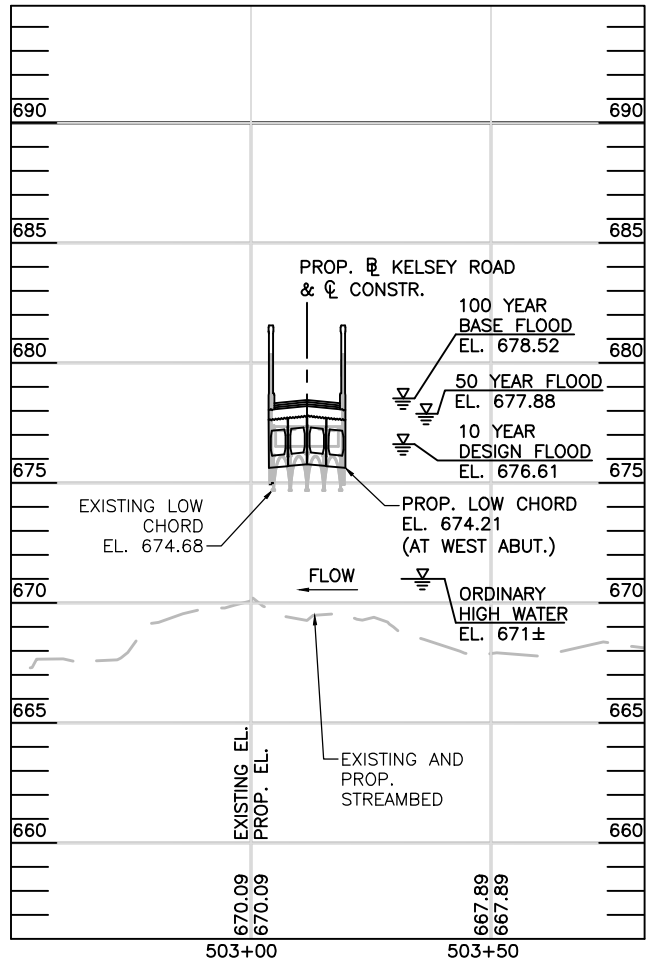
KEY PLAN, LOCUS, AND PROFILES

INDEX OF DRAWINGS

BRIDGE SHEET NO.	TITLE
1	KEY PLAN, LOCUS, AND PROFILES
2	GENERAL NOTES
3	BORING LOGS – 1
4	BORING LOGS – 2
5	BORING LOGS – 3
6	BORING LOGS – 4
7	BORING LOGS – 5
8	GENERAL PLAN AND ELEVATION
9	BRIDGE DEMOLITION PLAN
10	CONTROL OF WATER PLAN
11	WEST ABUTMENT PLAN AND ELEVATION
12	EAST ABUTMENT PLAN AND ELEVATION
13	SUBSTRUCTURE DETAILS – 1
14	SUBSTRUCTURE DETAILS – 2
15	FRAMING PLAN
16	BEAM DETAILS – 1
17	BEAM DETAILS – 2
18	DECK SECTION AND APPROACH SLAB DETAILS
19	BRIDGE RAILING DETAILS
20	HIGHWAY GUARDRAIL TRANSITION DETAILS – 1
21	HIGHWAY GUARDRAIL TRANSITION DETAILS – 2



PROFILE – ℄ CONSTRUCTION – KELSEY ROAD
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'



PROFILE – SCHENOB BROOK
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'

	MONTH DD, YYYY — ISSUED FOR CONSTRUCTION

massDOT Highway Division

PROPOSED BRIDGE
SHEFFIELD
KELSEY ROAD
OVER SCHENOB BROOK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

GFT
175 FEDERAL STREET
SUITE 800
BOSTON, MA 02110
781-326-4605

STATE BRIDGE ENGINEER — CHIEF ENGINEER

SHEET 1 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

Proposal No. 609068-136649
A00830 - 598

GENERAL NOTES:

DESIGN:

IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020, FOR HL–93 LOADING.

MASSDOT BENCH MARK:

BENCHMARK #8284, BRASS RIVET SET IN THE TOP OF THE SOUTHEAST CONCRETE WINGWALL OF A BRIDGE OVER SCHENOB BROOK, EL. = 676.68.

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

DATE:

TO BE PLACED ON THE INSIDE FACE OF THE SOUTHWEST AND NORTHEAST HIGHWAY GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST HIGHWAY GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:

SURVEY NOTEBOOK NO. 23412. FIELD SURVEY WAS PERFORMED BY WSP USA, INC. AND WAS ELECTRONICALLY RECORDED. COPIES OF THE FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION–HIGHWAY DIVISION.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF–SIZE PRINTS (A3).

CONCRETE:

UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE, EXCEPT THAT THE CT–MTL2 BARRIERS SHALL BE 5000 $\frac{3}{4}$ IN. HP CONCRETE.

ALL CONCRETE POURS SHOWN ON THESE CONSTRUCTION DRAWINGS MEETING THE CONDITIONS FOR MASS PLACEMENT CONCRETE IN SECTION 901.32.A OF THE MASSDOT STANDARD SPECIFICATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THAT SECTION.

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. COATED BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	17"	21"
2. 12" OF CONCRETE BELOW BAR	18"	22"	27"
3. EPOXY COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	21"	26"	31"
4. COATED BARS, ALL OTHER CASES	17"	21"	25"
5. CONDITION 2. AND 3.	23"	29"	35"
6. CONDITION 2. AND 4.	21"	27"	32"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

FOUNDATIONS:

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

EXISTING CONDITIONS:

THE CONFIGURATION AND LAYOUT OF THE EXISTING BRIDGE STRUCTURE AND FOUNDATIONS ARE BASED ON INFORMATION CONTAINED IN THE 2016 BRIDGE RATING REPORT AND PROJECT SURVEY. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO CONSTRUCTION DETAILS AND WORK QUANTITIES. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH FIELD CONDITIONS.

THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED FIELD VERIFICATIONS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. THE EXISTING STRUCTURE IS SHOWN IN A SCREENED LINEWEIGHT.

TRAFFIC:

THE BRIDGE WILL BE CLOSED TO ALL VEHICULAR TRAFFIC DURING ALL PHASES OF DEMOLITION AND RECONSTRUCTION. TRAFFIC WILL BE CONTROLLED AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

UTILITIES:

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE, OR RELOCATE, AS NECESSARY, ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR THE BRIDGE WORK.

THE LOCATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL UTILITIES. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION REGARDING UTILITIES.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM	QTY.	UNIT
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. B–10–015 (088)	1	LS
MUCK EXCAVATION	400	CY
REINFORCED CONCRETE EXCAVATION	50	CY
BRIDGE EXCAVATION WITHIN COFFERDAM	420	CY
TEST PIT FOR EXPLORATION	50	CY
CLASS B ROCK EXCAVATION	7	CY
GRAVEL BORROW FOR BRIDGE FOUNDATION	65	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	75	CY
CRUSHED STONE	30	TON
CONTROLLED LOW–STRENGTH MATERIAL–STRUCTURAL NON–EXCAVATABLE	2	CY
DISPOSAL OF TREATED WOOD PRODUCTS	0.5	TON
SUPERPAVE BRIDGE SURFACE COURSE – 9.5 POLYMER (SSC–B–9.5–P)	11	TON
SUPERPAVE BRIDGE PROTECTIVE COURSE – 9.5 POLYMER (SPC–B–9.5–P)	11	TON
SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	30	FT
GEOTEXTILE FABRIC FOR SEPARATION	70	SY
STEEL PILE HP 12 X 84	620	FT
DYNAMIC LOAD TEST BY CONTRACTOR	2	EA
PILE SHOES	16	EA
STREAMBED/BANK RESTORATION	212	SY
MODIFIED ROCKFILL	30	TON
CONTROL OF WATER – STRUCTURE NO. S–10–015 (8M2)	1	LS
TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S–10–015 (088)	1	LS
BRIDGE STRUCTURE, BRIDGE NO. S–10–015 (8M2)	1	LS

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	35	61
PROJECT FILE NO.	609068		

GENERAL NOTES

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2046	
AVERAGE DAILY TRAFFIC – PRESENT	121	
AVERAGE DAILY TRAFFIC – DESIGN YEAR	148	
DESIGN HOURLY VOLUME	N/A	
DIRECTIONAL DISTRIBUTION	50%	
TRUCK PERCENTAGE – AVERAGE DAY	6%	
TRUCK PERCENTAGE – PEAK HOUR	6%	
DESIGN SPEED	20 MPH	
DIRECTIONAL DESIGN HOURLY VOLUME	N/A	

SEISMIC DESIGN CRITERIA

DESIGN RETURN PERIOD:	1000 YR
DESIGN SPECTRA	
As	0.096
SDs	0.232
SD1	0.084
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

HYDRAULIC DESIGN FLOOD (HDF) DATA

DRAINAGE AREA (SQ. MILES)	19.00
HDF DISCHARGE (C.F.S.)	2,000
HDF FREQUENCY (YEARS)	10
HDF VELOCITY (F.P.S.)	4.02
HDF ELEVATION (FEET, NAVD, UPSTREAM)	676.61
BASE (100–YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	4,460
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	678.52
SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	25
SDF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.29
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	3.36
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	50
SCF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.88
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	4.27
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	N/A
FREQUENCY (IF KNOWN, YEARS)	N/A
MAXIMUM ELEVATION (FEET, NAVD)	N/A
DATE (MM/YYYY)	N/A
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	N/A

TEMPORARY WATER CONTROL DESIGN DATA

DESIGN FLOOD DISCHARGE (C.F.S.)	864
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	8.45
DESIGN FLOOD ELEVATION (FEET, NAVD)	676.13

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
A00830 - 599
609068_BR2.DWG Plotted on 28-Jul-2026 2:29 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026

BORING BB–201

STA. 102+51.2
OFFSET 10.4' RT.

Date Started:	3/19/26	DRILLING LOG	Hole Number: BB-201
Date Finished:	3/20/26	Gannett Fleming	Sheet: 1 of 2
Soil Drilling:	54.5 ft		Line & Station: 102+51.2
Rock Sampling:	7.5 ft	Project: Kelsey Road over Schenob Brook Bridge	Offset: 10.4 ft R
Total Depth of Hole:	70.0 ft	Drilling Company: Seaboard Drilling	N Coordinate: 2854699 ft
No. of Undist. Core Samples:		Driller: Jeff Nitsch	E Coordinate: 140878 ft
Total Number of Core Boxes:	1	Bit Size and Type: Spoon Size: 2.0 in. O.D.	Elev. Top of Hole: +675.1 ft
GROUNDWATER OBSERVATIONS		Casing Size: 4.0 in. Spoon Size:	Direction of Hole
At 5.0 ft After 0 Hrs		Hollow Stem: N/A Hammer wt.: 140lb	Vertical ☒ Inclined ☐
Elev. 670.1 ft After 0 Hrs		Drilling Fluid: Mud Hammer Drop: 30.0"	Degrees from Vertical ---
		Drill Rig: Mobile 53 Truck Drill Rig	Inspector: Allen Winders

SCALE: ¼" = 1'–0"
ELEVATION (FT.)

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							0.0'-2.0': Brown Silty Sand with Gravel (SM); moist; medium dense
Trace organics present in sample	0 - 2	S1	6-11-11-11	0.5	25		673.1
	2 - 4	S2	7-9-9-4	0.8	38		2.0'-6.0': Brown Clayey Sand with Gravel (SC); moist; very loose to medium dense
Trace organics present in sample	4 - 6	S3	2-1-1-1	0.3	17		669.1
	6 - 8	S4	1-2-2-2	0.6	29		6.0'-8.0': Dark Brown Sandy Lean Clay with Gravel (CL); moist; soft
							667.1
	8 - 10	S5	2-3-3-3	1.3	63		8.0'-18.5': Gray Silty Sand with Gravel (SM); moist; loose to medium dense
	10 - 12	S6	3-5-8-5	0.8	42		661.6
							13.5'-18.5': Gray poorly-graded Sand with Silt (SP-SM); moist; loose
	15 - 17	S7	5-5-4-4	1.0	50		656.6
							18.5'-38.5': Gray Silt with Sand (ML); moist to wet; very soft to hard
	20 - 22	S8	3-2-2-2	0.8	38		OBSERVED GROUND WATER EL. 670.10 (3/19/2026)
	25 - 27	S9	WH-WH-3-3	1.1	54		BOTTOM OF PROPOSED WEST ABUTMENT PILE CAP EL. 663.59
	30 - 32	S10	2-2-3-3	1.3	63		

Remarks: Hole grouted upon completion.

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

BORING BB–201 (CONT.)

102+51.2
OFFSET 10.4' RT.

Drilling Company:	Seaboard Drilling	DRILLING LOG	Hole Number: BB-201
Driller:	Jeff Nitsch	Gannett Fleming	Sheet: 2 of 2
Inspector:	Allen Winders	Kelsey Road over Schenob Brook Bridge	Elev. Top of Hole: 675.1

SCALE: ¼" = 1'–0"
ELEVATION (FT.)

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							18.5'-38.5': Gray Silt with Sand (ML); moist to wet; very soft to hard *(continued)*
Spoon was damaged, unable to retrieve the sample Boulder felt at 36'-38' depth	35 - 37	S11	17-20-33-50/1	0.0	0		639.1
							38.5'-54.5': Gray to brown Silty Gravel with Sand (GM); wet; medium dense to dense
Attempted to core boulder from 38-43'. No recovery achieved from rock coring attempt.							
Drilled down to 45' to sample	45 - 47	S12	16-9-12-8	0.3	17		
							ESTIMATED PILE TIP EL. 620.60± (TOP OF ROCK)
	50 - 52	S13	13-12-23-46	1.3	63		
Top of rock at approx. 54.5' depth							Top of Rock @ 54.5 ft 620.6
	54.5 - 59.5	C1		1.2	23		54.5'-63.0': DOLOSTONE, gray, hard, slightly weathered, thickly bedding, slightly fractured
Attempted to core C-2. Core barrel got plugged after coring 2.5'. Attempted to start coring again at 62' depth but hole had completely collapsed to the bottom of the casing at 54.5'. Collasped due to water pumped down hole into carbonate rock Drilled through weathered rock from 62-70'	59.5 - 62	C2		0.0	0		
							605.1
							Bottom of borehole at 70.00 feet.

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	36	61
PROJECT FILE NO.	609068		

BORING LOGS - 1

BORING NOTES:

1. LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: BB–#
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. EXISTING BORINGS BB–01 AND BB–02 WERE DRILLED BETWEEN DECEMBER 17TH 2002 AND DECEMBER 19TH 2002. BORINGS BB–101 AND BB–102 WERE DRILLED BETWEEN JUNE 15TH 2021 AND JUNE 18TH 2021. BORING BB–201 WAS DRILLED BETWEEN MARCH 19TH 2026 AND MARCH 20TH 2026.
7. BORINGS BB–01 AND BB–02 WERE MADE BY NEW HAMPSHIRE BORING, INC, P.O. BOX 165, DERRY, NH 03038. BORINGS BB–101 AND BB–102 WERE MADE BY NORTHERN DRILL SERVICE, INC, 130 EAST MAIN STREET, BLDG. A, NORTHBOROUGH, MA 01532. BORING BB–201 WAS MADE BY SEABOARD DRILLING, 95 CARANDO DRIVE, SPRINGFIELD, MA 01104.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
9. EXISTING BOTTOM OF FOOTING ELEVATION UNKNOWN.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR3.DWG Plotted on 28-Jul-2026 2:30 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 600

BORING BB–101

STA. 103+07.8
OFFSET 3.8' RT.

Date Started:	6/17/21	DRILLING LOG	Hole Number: BB-101
Date Finished:	6/18/21	Gannett Fleming	Sheet: 1 of 2
Soil Drilling:	49.3 ft		Line & Station: 103+07.8
Rock Sampling:	10.0 ft	Project: Kelsey Road over Schenob Brook Bridge	Offset: 3.8 ft R
Total Depth of Hole:	59.3 ft	Drilling Company: Northern Drill Service, Inc.	N Coordinate: 2854659 ft
No. of Undist. Core Samples:		Driller: Tyler Kennedy	E Coordinate: 140919 ft
Total Number of Core Boxes:	1	Bit Size and Type: Spoon Size: 2.0 in. O.D.	Elev. Top of Hole: +676.8 ft
GROUNDWATER OBSERVATIONS		Casing Size: 3.5 in. Spoon Size:	Direction of Hole
At 4.6 ft After 27.5 Hrs		Hollow Stem: 4.5 in. O.D. Hammer wt.: 140lb	Vertical ☒ Inclined ☐
Elev. 672.2 ft After 27.5 Hrs		Drilling Fluid: Mud Hammer Drop: 30.0"	Degrees from Vertical ---
		Drill Rig: Diedrich D-25 Skid Rig - Automatic Hammer	Inspector: Hratch A. Agopian

SCALE: ¼" = 1'–0"
ELEVATION (FT.)

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
Cobbles present in sample - heterogeneous	0 - 2	S1	8-11-17-10	1.3	65		0.0'-27.5': Light Brown Silty Sand (SM); moist to wet; very loose to medium dense
Homogeneous	2 - 4	S2	14-14-15-18	1.3	65		
Contains wood fragments and organics - heterogeneous	4 - 6	S3	10-4-3-3	1.0	50		
Homogeneous - Dark Brown organic	6 - 8	S4	3-2-2-2	0.8	40		
Contains wood fragments and organics - heterogeneous	8 - 10	S5	1-1-1-1	1.1	55		
							OBSERVED GROUND WATER EL. 672.20 (6/18/2021)
Homogeneous	14 - 16	S6	5-4-5-8	0.9	45		BOTTOM OF PROPOSED WEST ABUTMENT PILE CAP EL. 663.59
Homogeneous	19 - 21	S7	2-3-4-3	1.1	55		
Homogeneous	24 - 26	S8	3-2-3-3	1.0	50		
Homogeneous	29 - 31	S9	5-5-5-11	1.0	50		
31.5'-33': Cobbles							649.3 27.5'-32.5': Light Gray Sandy Silt (ML); wet; medium stiff to stiff 644.3

Remarks: Rock cored comparable as pressure and torque remained constant throughout core run.
Hole grouted upon completion.

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

BORING BB–101 (CONT.)

STA. 103+07.8
OFFSET 3.8' RT.

Drilling Company:	Northern Drill Service, Inc.	DRILLING LOG	Hole Number: BB-101
Driller:	Tyler Kennedy	Gannett Fleming	Sheet: 2 of 2
Inspector:	Hratch A. Agopian		Elev. Top of Hole: 676.8

Kelsey Road over Schenob Brook Bridge

SCALE: ¼" = 1'–0"
ELEVATION (FT.)

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							32.5'-49.3': Light Gray Silty Sand (SM); wet; medium dense to dense
Homogeneous	34 - 36	S10	10-12-17-24	0.7	35		
Tip brown Silty Sand SM	39 - 41	S11	18-25-20-11	0.8	40		
Homogeneous	44 - 46	S12	10-9-8-6	0.9	45		ESTIMATED PILE TIP EL. 627.50± (TOP OF ROCK)
	49 - 49.3	S13	50/4"	0.0	0		Top of Rock @ 49.3 ft 627.5
Sedminetary rock appears banded	49.3 - 54.3	C1		5.0	100		49.3'-59.3': DOLOSTONE, white, hard, slightly weathered, thickly bedding, very slightly fractured
	54.3 - 59.3	C2		5.0	100		617.5 Bottom of borehole at 59.30 feet.

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	37	61
PROJECT FILE NO.	609068		

BORING LOGS - 2

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.

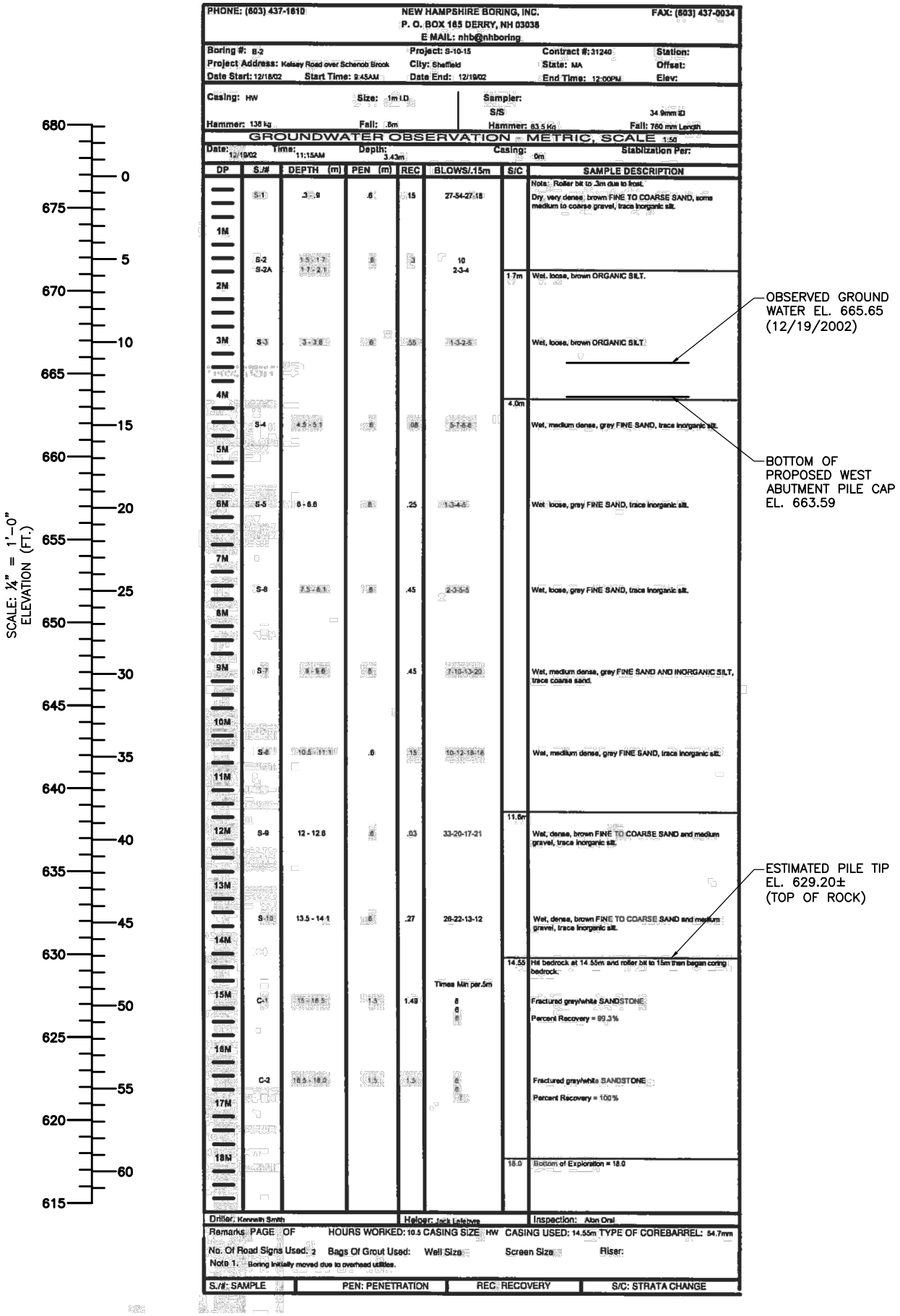
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR4.DWG Plotted on 28-Jul-2026 2:31 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 601

EXISTING BORING BB–01

STA. 103+13.2
OFFSET 2.9' LT.



SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	38	61
PROJECT FILE NO.	609068		

BORING LOGS - 3

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.
2. BORING BB–01 IS A HISTORICAL BORING TAKEN 12/19/2002. ELEVATIONS SHOWN ARE BASED ON 2020 SURVEY DATA. SEE BORING LOCATION PLAN CONTAINED WITHIN THE GEOTECHNICAL REPORT.

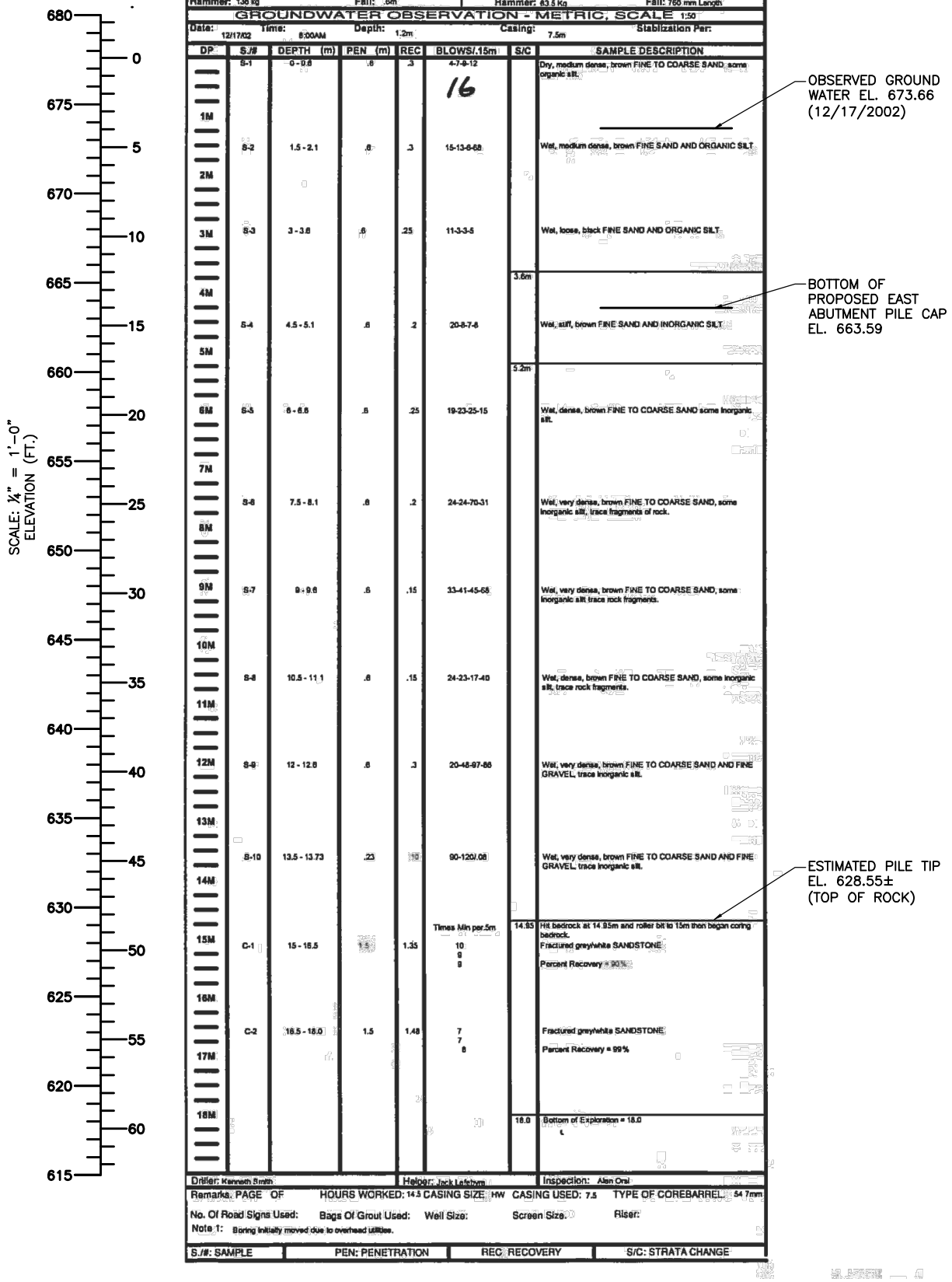
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BRS.DWG Plotted on 28-Jul-2026 2:32 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 602

EXISTING BORING BB–02

STA. 103+45.5
OFFSET 3.0' LT.



PHONE: (603) 437-1610 — NEW HAMPSHIRE BORING, INC. — FAX: (603) 437-0034
P. O. BOX 165 DERRY, NH 03038
E MAIL: nhb@nhboring

Boring #: B-1 | Project: S-10-15 | Contract #:31240 | Station:
Project Address: Kelsey Road over Schenob Brook | City: Sheffield | State: MA | Offset:
Date Start: 12/16/02 | Start Time: 2:00PM | Date End: 12/18/02 | End Time: 9:30AM | Elev:

Casing: HW | Size: 1m I.D. | Sampler: S/S 34.9mm ID
Hammer: 136 kg | Fall: .6m | Hammer: 63.5 Kg | Fall: 760 mm Length

GROUNDWATER OBSERVATION - METRIC, SCALE 1:50

Date: 12/17/02 | Time: 8:00AM | Depth: 1.2m | Casing: 7.5m | Stabilization Per:

DP	S./#	DEPTH (m)	PEN (m)	REC	BLOWS/.15m	S/C	SAMPLE DESCRIPTION
	S-1	0 - 0.6	.6	.3	4-7-9-12 16		Dry, medium dense, brown FINE TO COARSE SAND, some organic silt.
	S-2	1.5 - 2.1	.6	.3	15-13-6-58		Wet, medium dense, brown FINE SAND AND ORGANIC SILT
	S-3	3 - 3.6	.6	.25	11-3-3-5		Wet, loose, black FINE SAND AND ORGANIC SILT
						3.6m	
	S-4	4.5 - 5.1	.6	.2	20-8-7-8		Wet, stiff, brown FINE SAND AND INORGANIC SILT
						5.2m	
	S-5	6 - 6.6	.6	.25	19-23-25-15		Wet, dense, brown FINE TO COARSE SAND some inorganic silt.
	S-6	7.5 - 8.1	.6	.2	24-24-70-31		Wet, very dense, brown FINE TO COARSE SAND, some inorganic silt, trace fragments of rock.
	S-7	9 - 9.6	.6	.15	33-41-45-65		Wet, very dense, brown FINE TO COARSE SAND, some inorganic silt trace rock fragments.
	S-8	10.5 - 11.1	.6	.15	24-23-17-40		Wet, dense, brown FINE TO COARSE SAND, some inorganic silt, trace rock fragments.
	S-9	12 - 12.6	.6	.3	20-48-97-86		Wet, very dense, brown FINE TO COARSE SAND AND FINE GRAVEL, trace inorganic silt.
	S-10	13.5 - 13.73	.23	.15	90-120/.08		Wet, very dense, brown FINE TO COARSE SAND AND FINE GRAVEL, trace inorganic silt.
					Times Min per.5m	14.53	Hit bedrock at 14.85m and roller bit to 15m then began coring bedrock.
	C-1	15 - 16.5	1.5	1.35	10 9 9		Fractured greywhite SANDSTONE Percent Recovery = 90%
	C-2	16.5 - 18.0	1.5	1.48	7 7 8		Fractured greywhite SANDSTONE Percent Recovery = 99%
						18.0	Bottom of Exploration = 18.0

Driller: Kenneth Smith | Helper: Jack Lefebvre | Inspection: Alan Orsi

Remarks: PAGE OF | HOURS WORKED: 14.5 | CASING SIZE: HW | CASING USED: 7.5 | TYPE OF COREBARREL: 54.7mm
No. Of Road Signs Used: | Bags Of Grout Used: | Well Size: | Screen Size: | Riser:
Note 1: Boring initially moved due to overhead utilities.

S./#: SAMPLE | PEN: PENETRATION | REC: RECOVERY | S/C: STRATA CHANGE

OBSERVED GROUND WATER EL. 673.66 (12/17/2002)

BOTTOM OF PROPOSED EAST ABUTMENT PILE CAP EL. 663.59

ESTIMATED PILE TIP EL. 628.55± (TOP OF ROCK)

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	39	61
PROJECT FILE NO.	609068		

BORING LOGS - 4

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.
2. BORING BB–02 IS A HISTORICAL BORING TAKEN 12/17/2002. ELEVATIONS SHOWN ARE BASED ON 2020 SURVEY DATA. SEE BORING LOCATION PLAN CONTAINED WITHIN THE GEOTECHNICAL REPORT.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR6.DWG Plotted on 28-Jul-2026 2:33 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 603

BORING BB–102

STA. 103+62.2
OFFSET 2.6' LT.

Date Started:	6/15/21	DRILLING LOG	Hole Number: BB-102
Date Finished:	6/16/21	Gannett Fleming	Sheet: 1 of 2
Soil Drilling:	51.0 ft		Line & Station: 103+62.2
Rock Sampling:	10.0 ft	Project: Kelsey Road over Schenob Brook Bridge	Offset: 2.6 ft L
Total Depth of Hole:	61.0 ft	Drilling Company: Northern Drill Service, Inc.	N Coordinate: 2854626 ft
No. of Undist. Core Samples:		Driller: Carl Beirholm	E Coordinate: 140958 ft
Total Number of Core Boxes:	1	Bit Size and Type: Spoon Size: 2.0 in. O.D.	Elev. Top of Hole: +677.8 ft
GROUNDWATER OBSERVATIONS		Casing Size: 3.5 in. Spoon Size:	Direction of Hole
At 5.3 ft After 27.5 Hrs		Hollow Stem: 4.5 in. O.D. Hammer wt.: 140lb	Vertical ☒ Inclined ☐
Elev. 672.5 ft After 27.5 Hrs		Drilling Fluid: Mud Hammer Drop: 30.0"	Degrees from Vertical ---
		Drill Rig: B-57 Mobile Drill Rig - Automatic Hammer	Inspector: Hratch A. Agopian

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							0.0'-27.5': Light Brown Silty Sand (SM); moist to wet; very loose to medium dense
Homogeneous	0 - 2	S1	15-12-16-13	1.0	50		
Homogeneous	2 - 4	S2	9-9-9-6	1.2	60		
Wood chips in tip of spoon	4 - 6	S3	5-5-8-5	0.7	35		
Homogeneous - Dark Brown organic	6 - 8	S4	14-3-WOH-1	0.8	40		
Wood chips hindered recovery (contained decomposed wood chips)	8 - 10	S5	1-1-2-2	0.1	5		
							OBSERVED GROUND WATER EL. 672.50 (6/16/2021)
Homogeneous	14 - 16	S6	4-7-8-11	0.8	40		BOTTOM OF PROPOSED EAST ABUTMENT PILE CAP EL. 663.59
Homogeneous	19 - 21	S7	8-14-10-24	0.9	45		
Homogeneous	24 - 26	S8	15-20-19-29	1.3	65		
							650.3
Homogeneous	29 - 31	S9	23-20-16-18	0.8	40		27.5'-32.5': Light Gray Sandy Silt (ML); wet; medium stiff to stiff
32'-34': Probable boulder or cobbles at							645.3

Remarks: Hole grouted upon completion.

SCALE: ¼" = 1'–0"
ELEVATION (FT.)

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

BORING BB–102 (CONT.)

103+62.2
OFFSET 2.6' LT.

Drilling Company:	Northern Drill Service, Inc.	DRILLING LOG	Hole Number: BB-102
Driller:	Carl Beirholm	Gannett Fleming	Sheet: 2 of 2
Inspector:	Hratch A. Agopian	Kelsey Road over Schenob Brook Bridge	Elev. Top of Hole: 677.8

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
tip							32.5'-49.0': Light Gray Silty Sand (SM); wet; medium dense to very dense
	34 - 36	S10	50/3"	0.0	0		
Heterogeneous	36 - 38	S11	7-15-11-27	2.0	100		
Homogeneous	39 - 41	S12	24-22-18-23	0.8	40		
42'-44': Cobbles - Heterogeneous							
	44 - 46	S13	49-50/4"	0.8	40		ESTIMATED PILE TIP EL. 628.80± (TOP OF ROCK)
							Top of Rock @ 49.0 ft
	48.9 - 49	S14	50/0"	0.0	0		628.8
							49.0'-61.0': DOLOSTONE, white to light gray, moderately hard to very hard, slightly to moderately weathered, thinly to thickly bedding, very slightly to slightly fractured
Rock contains seam = 1/4" @ 53', filled with silt and clay	51 - 56	C1		5.0	100		
Sedimentary rock appears banded	56 - 61	C2		5.0	100		
							616.8
							Bottom of borehole at 61.00 feet.

SCALE: ¼" = 1'–0"
ELEVATION (FT.)

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	40	61
PROJECT FILE NO.	609068		

BORING LOGS - 5

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

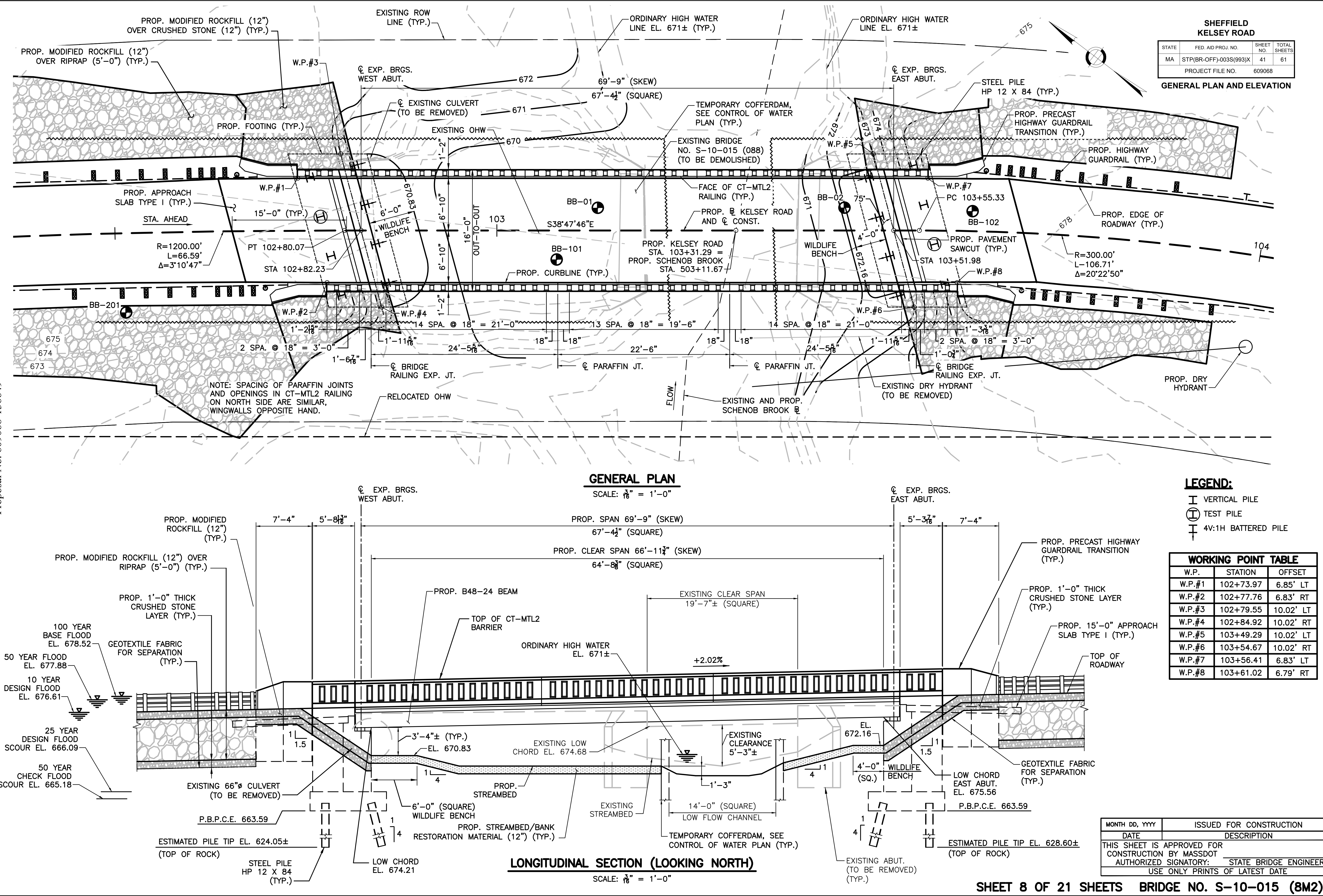
SHEET 7 OF 21 SHEETS BRIDGE NO. S–10–015 (8M2)

Proposal No. 609068-136649

609068_BR7.DWG Plotted on 28-Jul-2026 2:34 PM

609068 Final Structural Submittal (SF2) 8-Jul-2026

A00830 - 604



SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	41	61
	PROJECT FILE NO.	609068	

GENERAL PLAN AND ELEVATION

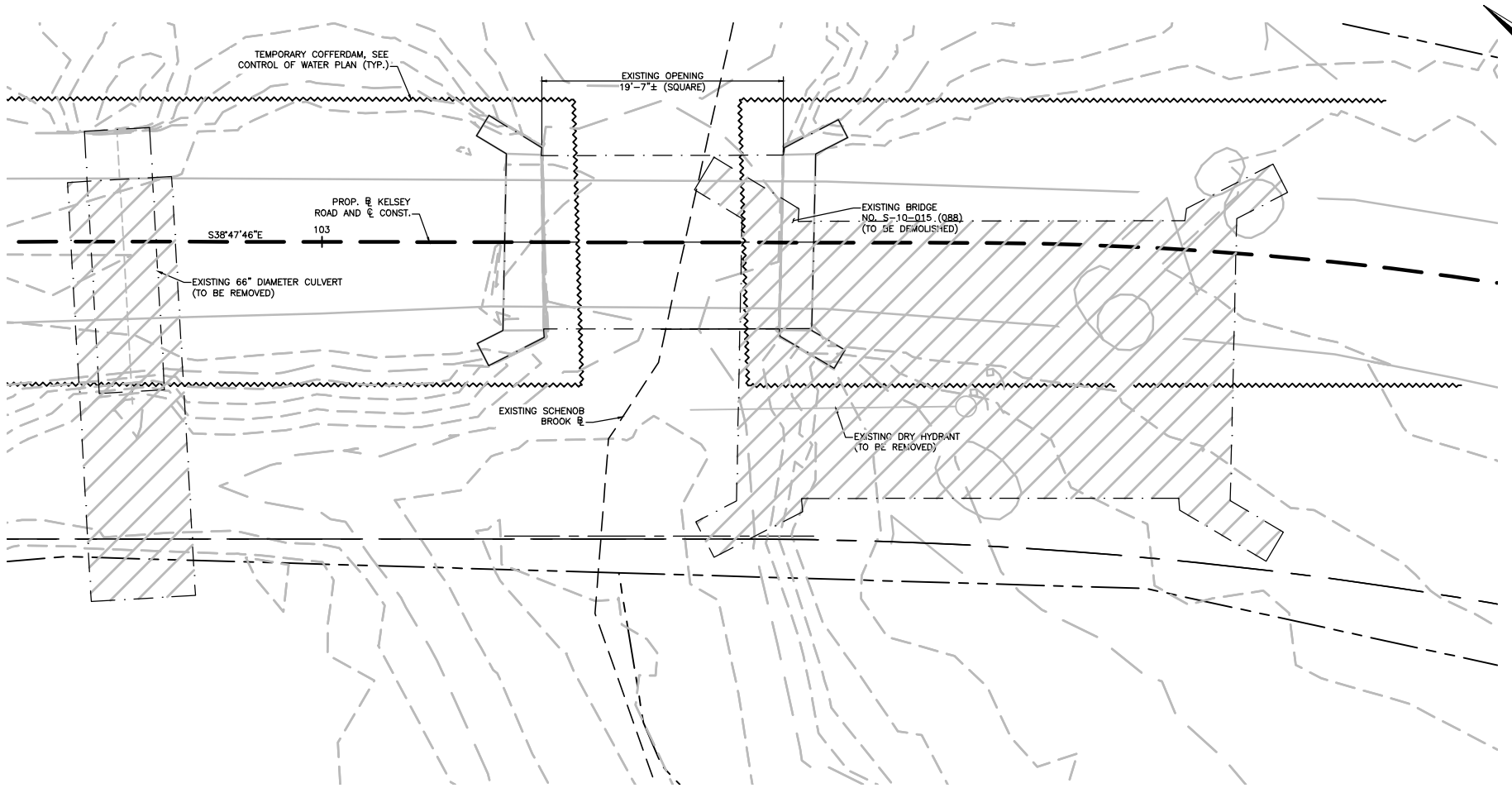
WORKING POINT TABLE

W.P.	STATION	OFFSET
W.P.#1	102+73.97	6.85' LT
W.P.#2	102+77.76	6.83' RT
W.P.#3	102+79.55	10.02' LT
W.P.#4	102+84.92	10.02' RT
W.P.#5	103+49.29	10.02' LT
W.P.#6	103+54.67	10.02' RT
W.P.#7	103+56.41	6.83' LT
W.P.#8	103+61.02	6.79' RT

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

SHEET 8 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)



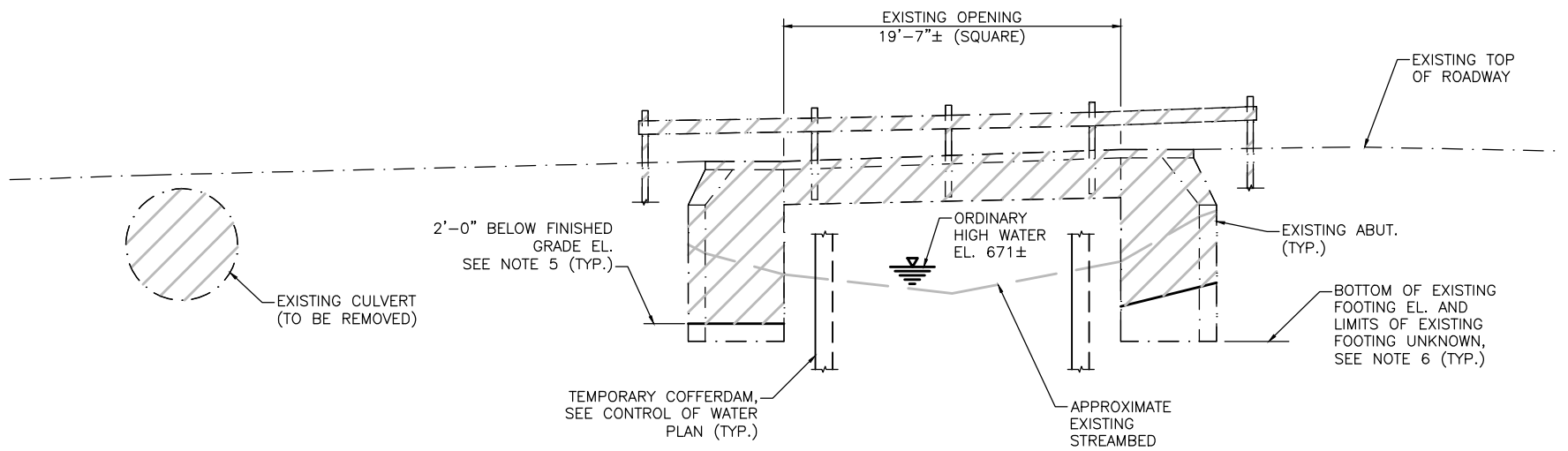
DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

LEGEND:

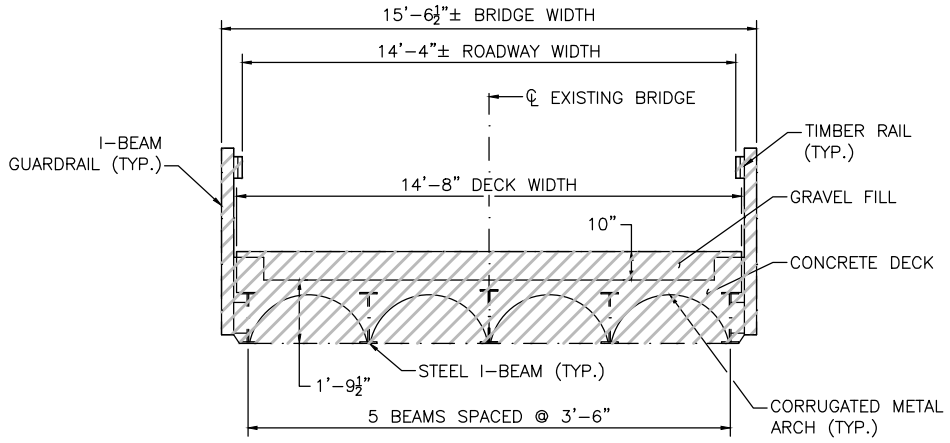
TO BE REMOVED

DEMOLITION NOTES:

1. THE EXISTING BRIDGE SHALL BE DEMOLISHED TO THE LIMITS SHOWN ON THE PLANS. THE CONTRACTOR SHALL TAKE ALL MEASURES REQUIRED TO PROTECT THE SCHENOB BROOK AND ADJACENT WETLAND AREAS FROM ALL CONSTRUCTION OPERATIONS.
2. CONTRACTOR MUST CONTAIN ALL DEBRIS FROM FALLING INTO THE BROOK DURING CONSTRUCTION ACTIVITIES. TEMPORARY PROTECTIVE SHIELDING ASSOCIATED WITH DEMOLITION SHALL BE INCLUDED IN THE PAY ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088). SEE SPECIAL PROVISIONS.
3. THE INFORMATION PRESENTED HERE IS FOR BIDDING PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL INFORMATION PRIOR TO SUBMITTING BIDS.
4. EXACT LIMITS OF THE EXISTING SUBSTRUCTURE ARE UNKNOWN. TEST PITS ARE TO BE PERFORMED TO LOCATE EXISTING FOUNDATIONS PRIOR TO ANY DEMOLITION WORK. TEST PITS WILL BE PAID UNDER PAY ITEM 141.1 TEST PIT FOR EXPLORATION.
5. EXISTING SUBSTRUCTURES ARE TO BE REMOVED A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.
6. EXISTING WINGWALLS AND FOUNDATIONS IN CONFLICT WITH PROPOSED SUBSTRUCTURE SHALL BE REMOVED ENTIRELY WITHIN 1 FOOT FROM PROPOSED SUBSTRUCTURE.



DEMOLITION ELEVATION
SCALE: 1/4" = 1'-0"



EXISTING BRIDGE TYPICAL CROSS SECTION
SCALE: 3/8" = 1'-0"

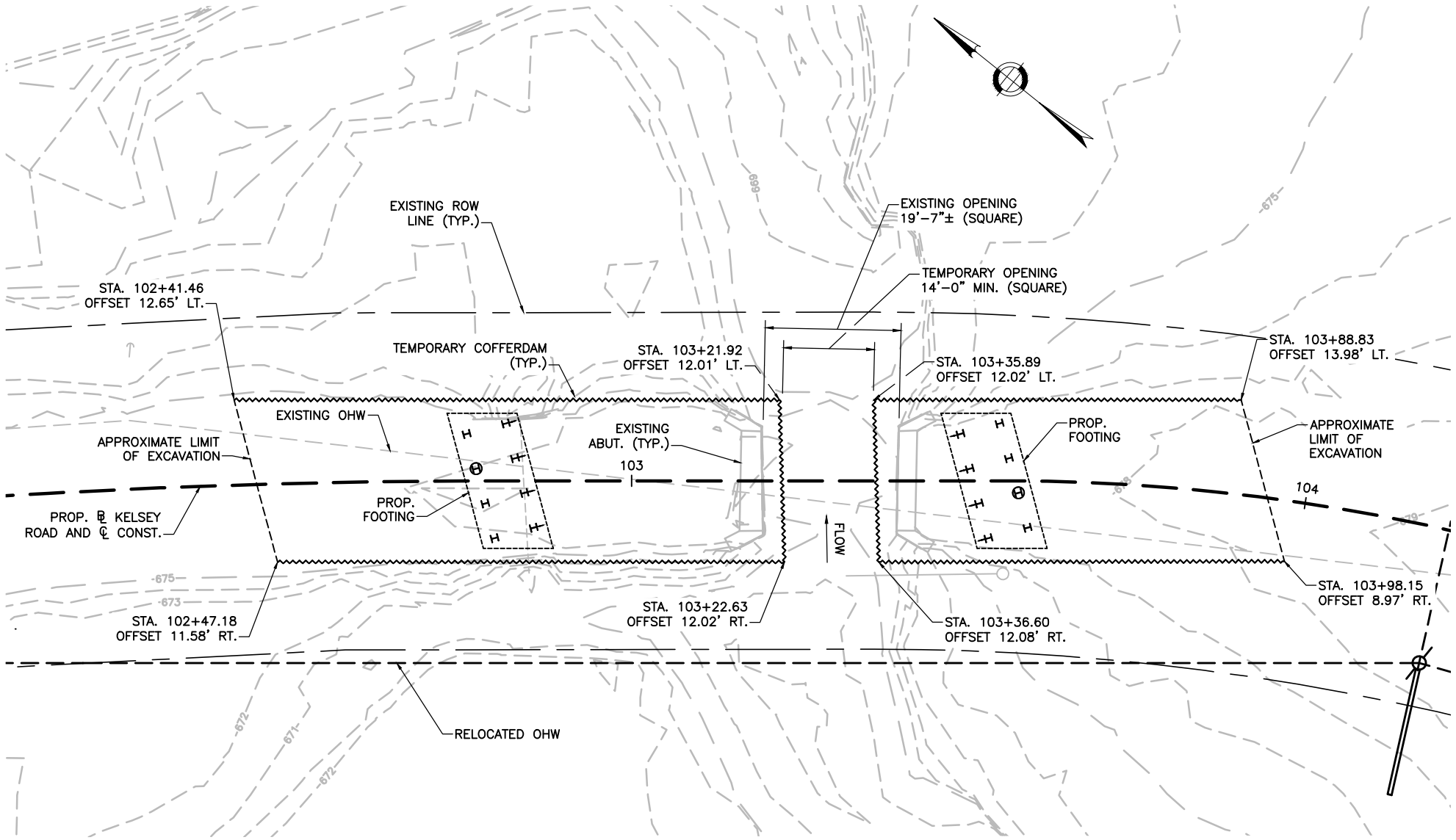
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR9.DWG Plotted on 28-Jul-2026 2:37 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 606

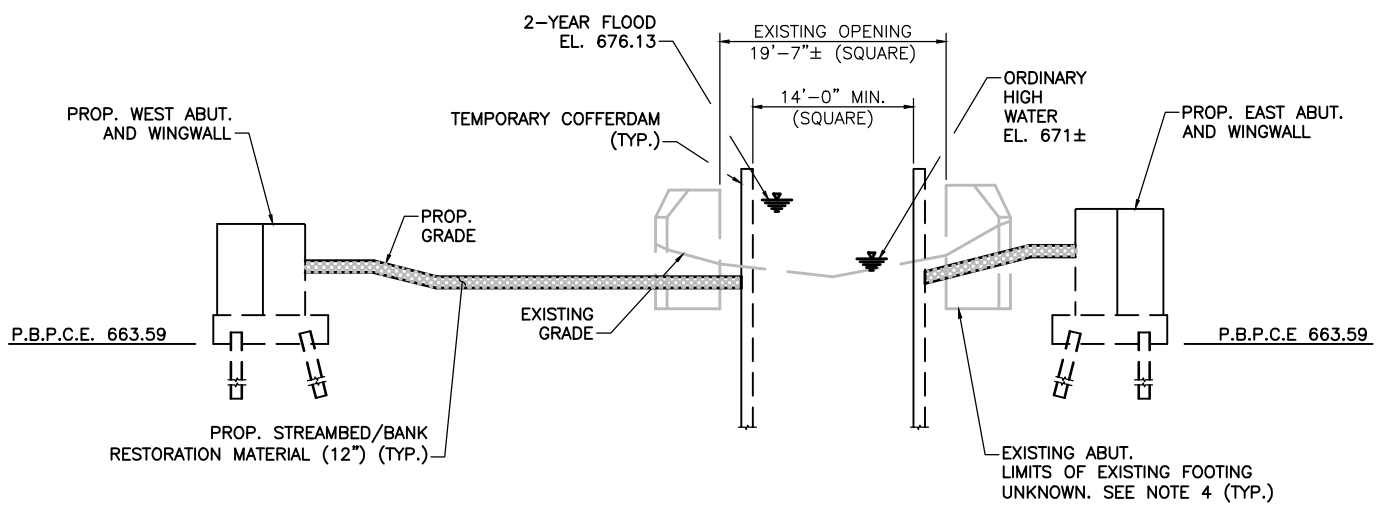
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	43	61
PROJECT FILE NO.	609068		

CONTROL OF WATER PLAN



WATER CONTROL PLAN

SCALE: 1" = 10'



WATER CONTROL ELEVATION

SCALE: 1/8" = 1'-0"

WATER CONTROL NOTES:

1. THE COST OF COFFERDAM AND ALL OTHER MEASURES NECESSARY FOR CONTROL OF WATER SHALL BE INCLUDED IN ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2). SEE SPECIAL PROVISIONS.
2. THE COFFERDAM SHALL BE DESIGNED BY CONTRACTOR TO CONSTRUCT THE BRIDGE FOUNDATIONS IN THE DRY. THE TEMPORARY WATER CONTROL DESIGN DATA SHOWN ON THESE PLANS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE AWARE THAT THE ROADWAY WILL BE OVERTOPPED DURING THE 2-YEAR FLOOD EVENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUSLY MONITORING THE FORECAST AND TAKING THE NECESSARY PRECAUTIONS TO ENSURE THAT THE EXCAVATIONS REMAIN DRY DURING CONSTRUCTION.
3. STATIONS AND OFFSETS SHOWN ARE APPROXIMATE.
4. EXISTING FOOTING LIMITS ARE UNKNOWN. CONTRACTOR SHALL ESTABLISH EXISTING FOOTING LIMITS PRIOR TO DESIGNING COFFERDAMS.
5. INSTALLATION OF COFFERDAM SHALL BE COORDINATED WITH RELOCATION OF OVERHEAD WIRES.
6. THE TEMPORARY COFFERDAM SYSTEM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION. FULL REMOVAL OF ANY STEEL SHEETING IS REQUIRED.
7. SEE BRIDGE DEMOLITION PLAN FOR EXISTING STRUCTURE DEMOLITION NOTES.

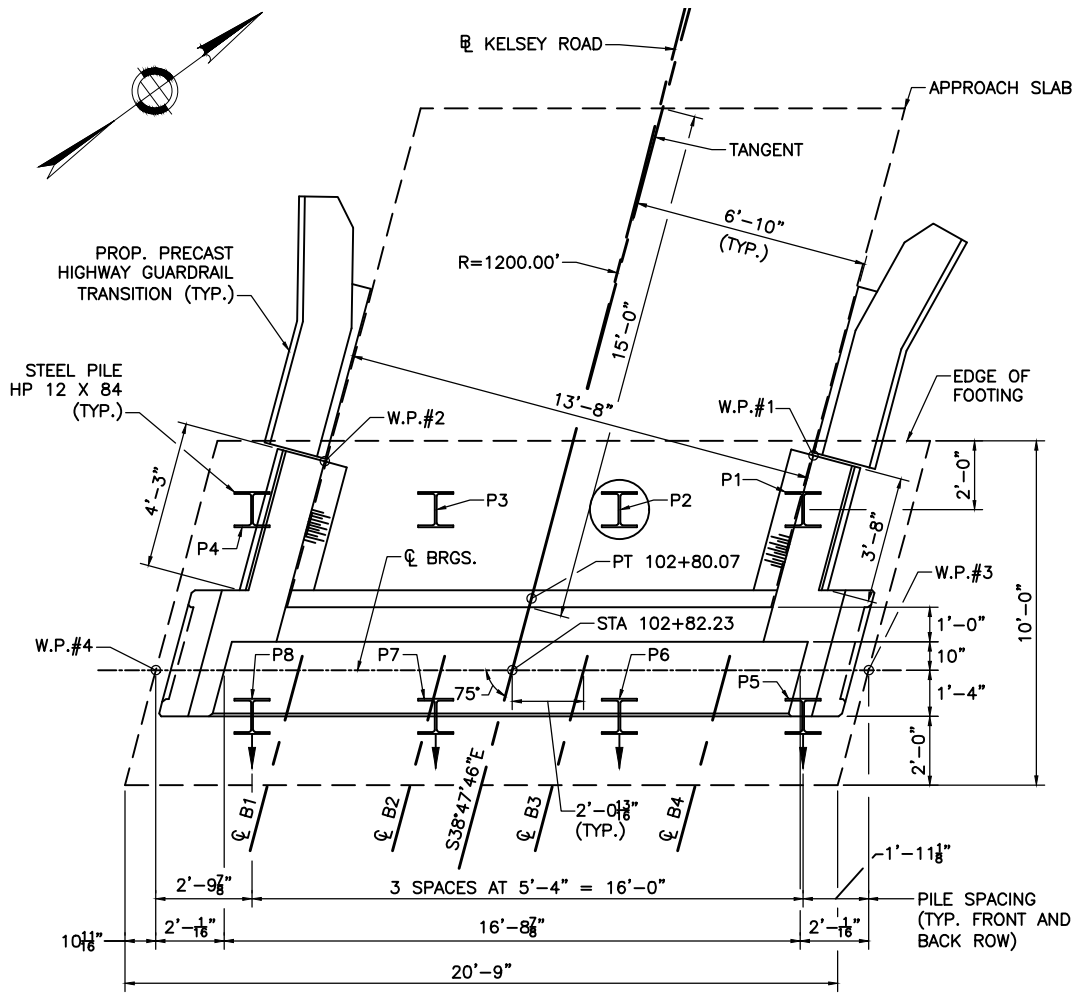
TEMPORARY WATER CONTROL DESIGN DATA:

FLOOD FREQUENCY:	2-YEAR
PEAK FLOW:	864 C.F.S.
WATER SURFACE ELEVATION:	676.13
VELOCITY	8.45 F.P.S.
FREE BOARD:	N/A
TOP ELEVATION OF COFFERDAM:	677.13

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

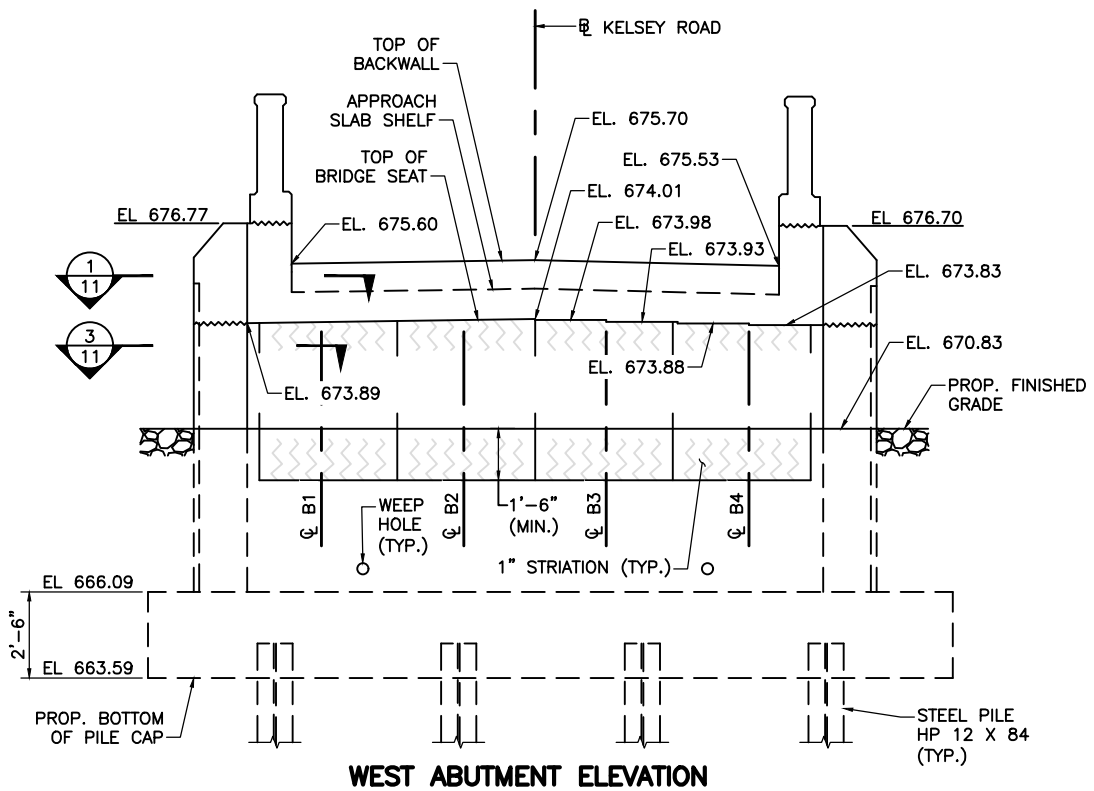
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Proposal No. 609068-136649
A008301 - 607
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609068 Final Structural Submittal (SF2) 8-Jul-2026



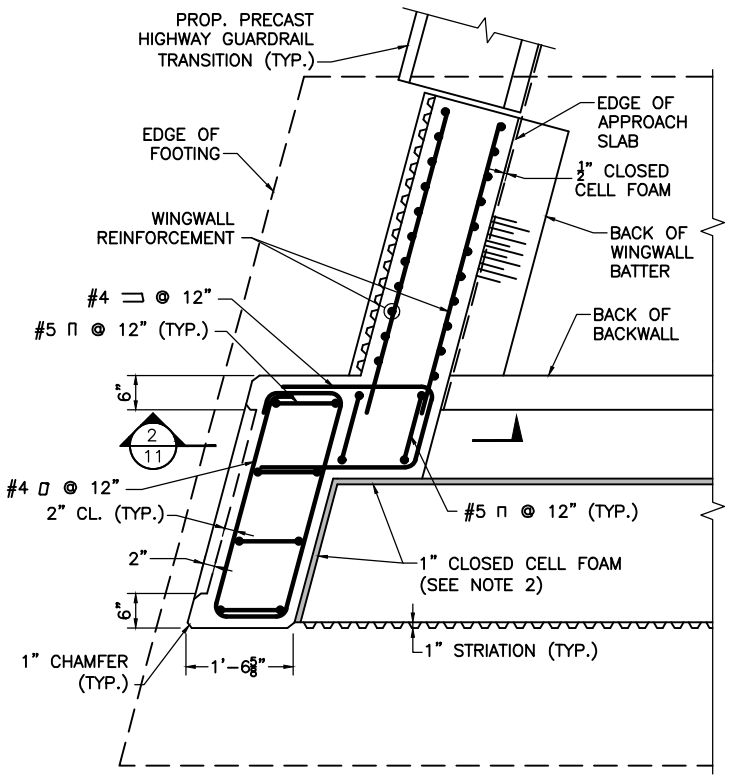
WEST ABUTMENT PLAN

SCALE: 3/8" = 1'-0"



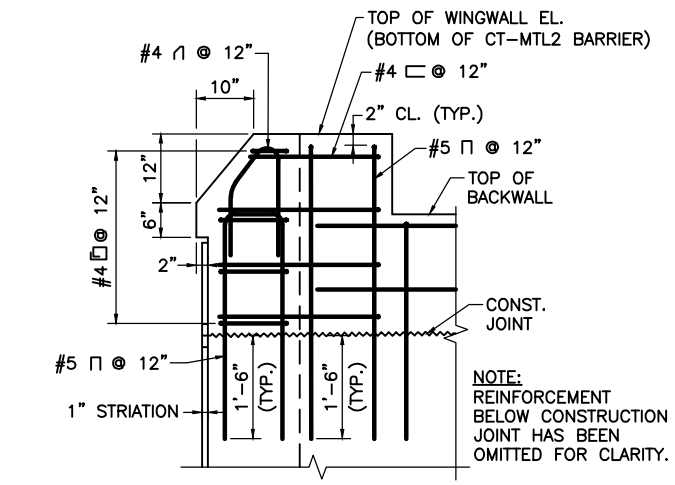
WEST ABUTMENT ELEVATION

SCALE: 3/8" = 1'-0"



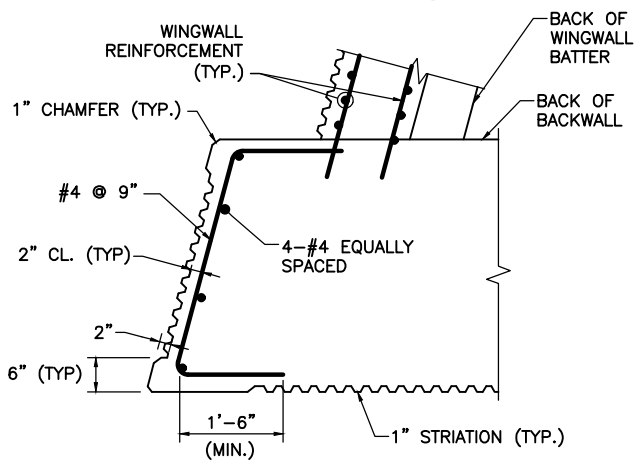
SECTION 1/11

SCALE: 3/4" = 1'-0"



SECTION 2/11

SCALE: 3/4" = 1'-0"



SECTION 3/11

SCALE: 3/4" = 1'-0"

PILE NOTES:

1. PILES SHALL CONFORM TO AASHTO M270 GRADE 50.
2. HEAVY DUTY PILE SHOES SHALL BE INSTALLED ON THE TIPS OF ALL PILES. PREFABRICATED PILE SHOES MAY BE USED IF APPROVED BY THE ENGINEER.
3. ALL PILE SPLICES SHALL BE EITHER BUTT JOINTS MADE USING COMPLETE JOINT PENETRATION (CJP) WELDS OR MECHANICAL TYPE SPLICERS INSTALLED IN ACCORDANCE WITH THE APPROVED INSTALLATION NOTES. ALL SPLICES WITHIN 16 FEET FROM THE TOP OF PILE SHALL BE CJP SPLICES WITH CJP WELDS 100% INSPECTED USING UT. THE COST OF PILE SPLICES SHALL BE INCLUDED IN THE COST OF PAY ITEM 942.124 STEEL PILE HP 12 X 84.
4. FACTORED AXIAL DESIGN LOAD PER PILE PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

   STRENGTH I LIMIT STATE
   FACTORED AXIAL DESIGN LOAD = 228 KIPS.
5. PILES SHALL BE DRIVEN TO BEDROCK WITH THE ESTIMATED TIP ELEVATION AT EL. 620.6 TO 629.2. THE FACTORED STRUCTURAL RESISTANCE PER PILE IS 428 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 857 KIPS AND A RESISTANCE FACTOR OF 0.5.
6. DETERMINATION OF THE DRIVEN PILE RESISTANCE, PILE DRIVING CRITERIA, AND PILE INTEGRITY SHALL BE PERFORMED ON AT LEAST 1 PILE PER ABUTMENT USING DYNAMIC TESTING WITH A RESISTANCE FACTOR OF 0.65. PILES SHALL BE INSTALLED TO ACHIEVE A FACTORED DRIVEN RESISTANCE EQUAL TO OR GREATER THAN THE FACTORED AXIAL DESIGN LOAD.
7. LOAD TESTS SHALL BE PERFORMED AT THE PRODUCTION PILE LOCATIONS SHOWN. ALTERNATE LOCATIONS MAY BE SUBMITTED FOR APPROVAL BY ENGINEER. THE TEST PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK TO ACHIEVE THE REQUIRED RESISTANCE. THE CONTRACTOR SHALL SUBMIT THE TEST PILE DRIVING RESULTS TO SHOW THE CAPABILITY OF THE PILE HAMMER TO DRIVE THE PILES TO THE REQUIRED RESISTANCE WITHOUT EXCEEDING THE ALLOWABLE PILE DRIVING STRESS OF 45 KSI FOR 50 KSI STEEL. ACCEPTED TEST PILES SHALL REMAIN AS FINAL PRODUCTION PILES.
8. THE DYNAMIC LOAD TEST SHALL BE PERFORMED WITH THE PILE DRIVING ANALYZER (PDA) AND THE TEST DATA SHALL BE ANALYZED WITH THE CASE PILE WAVE ANALYZER PROGRAM (CAPWAP).
9. DIVERSION OF RIVER WATER (FROM CULVERT TO SCHENOB BROOK) WILL BE NEEDED TO AID THE DEWATERING MEASURES AND PROVIDE SUPPORT OF EXCAVATIONS. THE CONTRACTOR WILL BE RESPONSIBLE TO DESIGN AND INSTALL ADEQUATE SUPPORT OF EXCAVATION AND DEWATERING MEASURES.
10. EXCAVATIONS MUST BE DRY FOR INSPECTION BY THE ENGINEER PRIOR TO FOUNDATION CONSTRUCTION. EXCAVATION AND DEWATERING SHALL BE PERFORMED IN A WAY THAT DOES NOT UNDERMINE SURROUNDING STRUCTURES, ROADWAYS, AND UTILITIES.
11. THE CONTRACTOR SHALL SUBMIT A PILE SCHEDULE, PILE INSTALLATION, AND PILE DRIVING/TESTING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER.
12. AFTER PILE DRIVING IS COMPLETE THE CONTRACTOR SHALL SUBMIT PILE DRIVING LOGS INCLUDING THE FINAL TIP ELEVATIONS AND THE RESULTS OF ANY DYNAMIC OR STATIC LOAD TESTING. SIGNIFICANT DEVIATIONS SHALL BE NOTED AS REVISIONS ON THE CONSTRUCTION DRAWINGS.

℄ PILE COORDINATES TABLE

PILE NO.	NORTHING	EASTING
P1	2854691.2523	140907.1871
P2	2854686.9487	140904.0370
P3	2854682.6452	140900.8868
P4	2854678.3416	140897.7366
P5	2854687.7084	140912.0287
P6	2854683.4048	140908.8785
P7	2854679.1012	140905.7283
P8	2854674.7976	140902.5781

LEGEND:

- VERTICAL PILE
- TEST PILE
- 4V:1H BATTERED PILE

NOTES:

1. FOR SUBSTRUCTURE DETAILS, SEE SHEETS 13 AND 14.
2. ATTACH CLOSED CELL FOAM AS REQUIRED TO ALL BEAMS PRIOR TO PLACING THE CONCRETE FOR THE BACKWALL AND CURTAIN WALL.
3. SEAT ELEVATIONS ARE PROVIDED AT CENTERLINE OF BEARINGS. TOP OF BACKWALL AND PARAPET CONSTRUCTION JOINT ELEVATIONS ARE PROVIDED AT FRONT FACE OF BACKWALL.
4. CENTERLINE OF PILE COORDINATES ARE AT BOTTOM OF PILE CAP.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	44	61
PROJECT FILE NO.		609068	

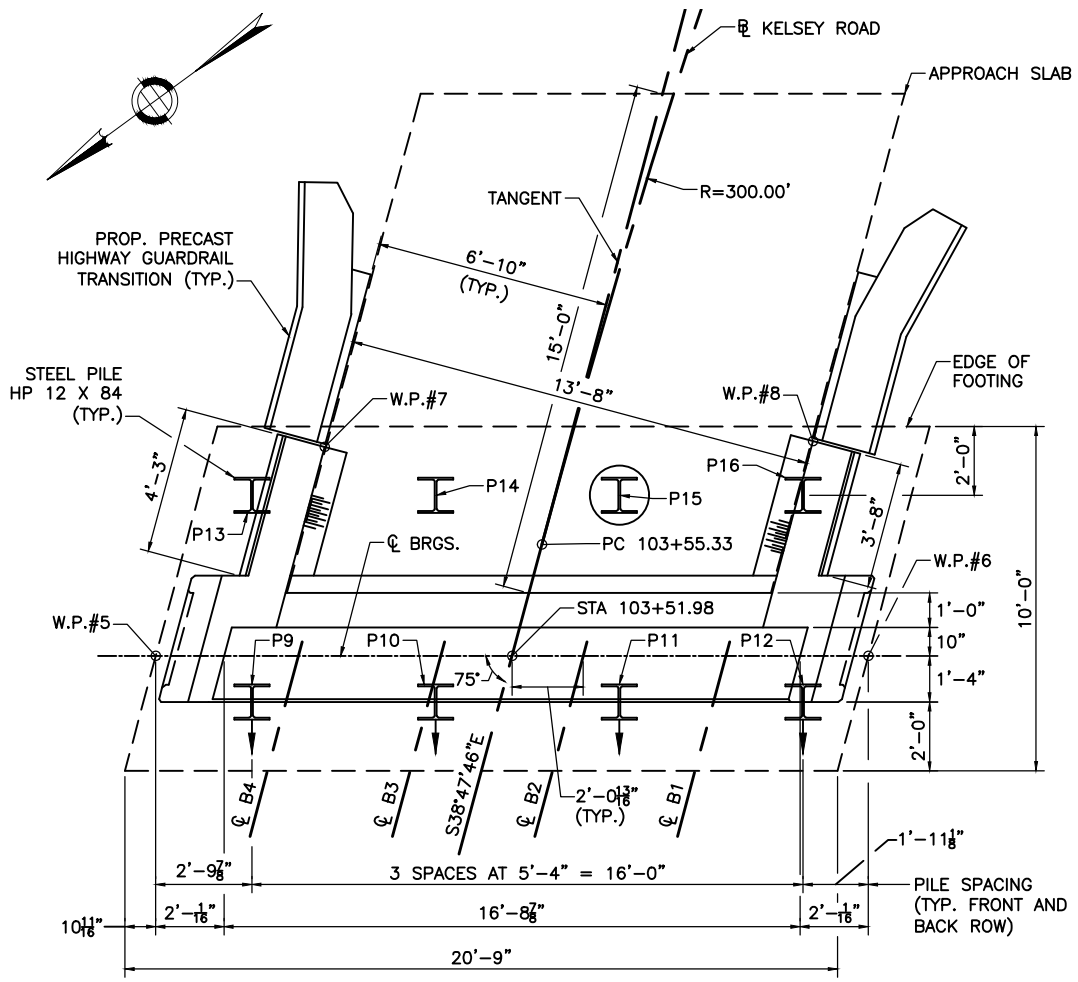
WEST ABUTMENT PLAN AND ELEVATION

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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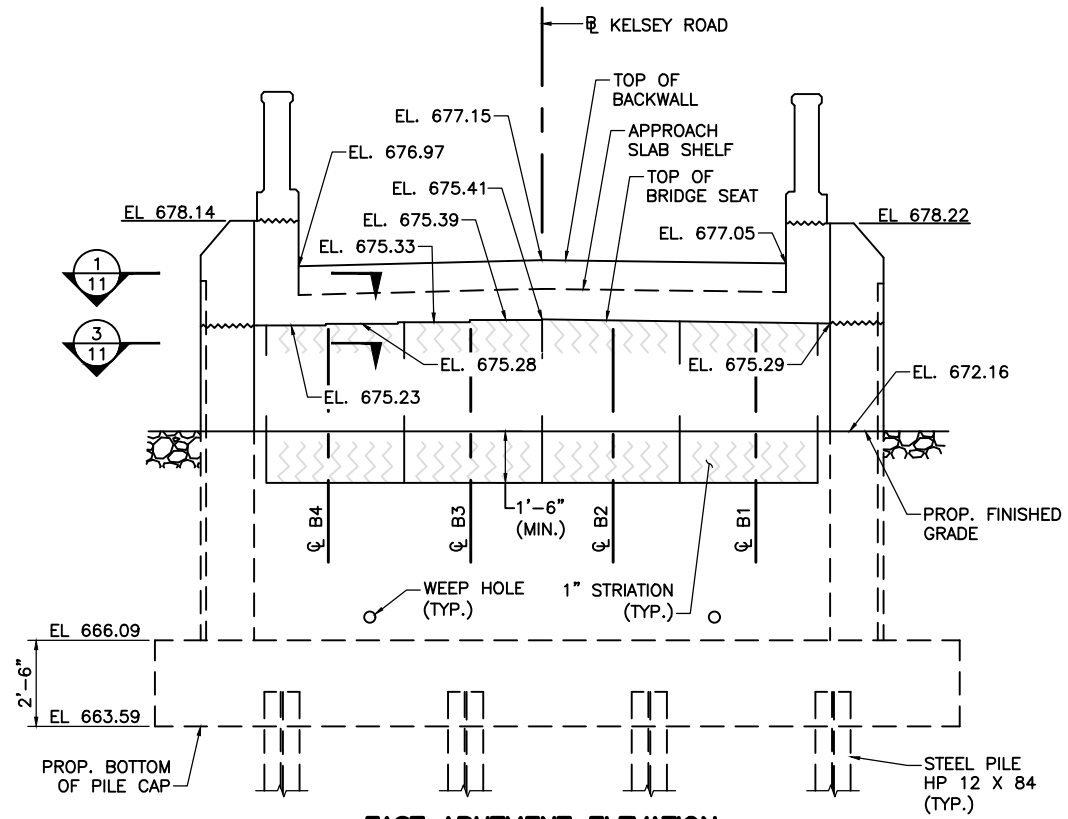
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Proposal No. 609068-136649
609068_BR11.DWG Plotted on 28-Jul-2026 2:45 PM
A00830 - 608
609068 Final Structural Submittal (SF2) 8-Jul-2026



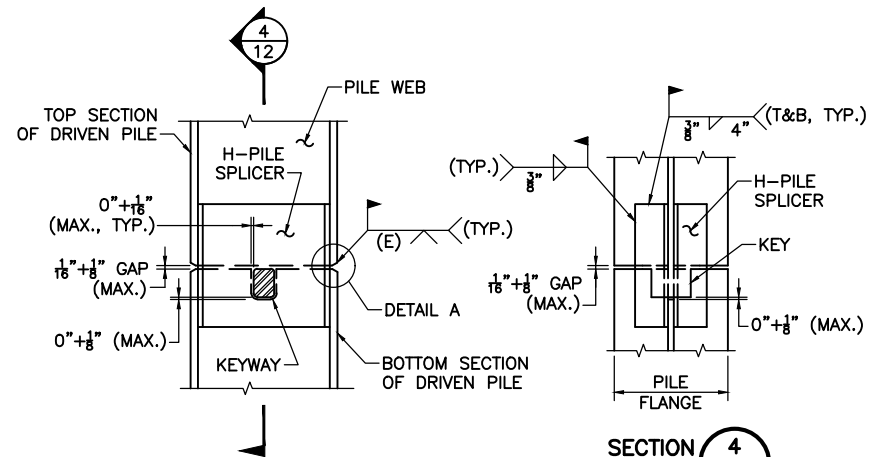
EAST ABUTMENT PLAN

SCALE: 3/8" = 1'-0"



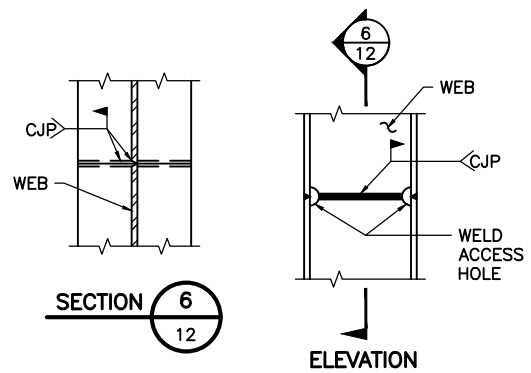
EAST ABUTMENT ELEVATION

SCALE: 3/8" = 1'-0"



WELDED MECHANICAL H-PILE SPLICE DETAILS

NOT TO SCALE



NOTES:

1. ALL WELDS SHALL BE COMPLETE PENETRATION AND SHALL CONFORM TO THE AASHTO/AWS BRIDGE WELDING CODE, D1.5.
2. WELDING PROCEDURE SPECIFICATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO WELDING.
3. WHENEVER POSSIBLE ALL PILES SHALL BE SPLICED ON THE GROUND IN THE FLAT POSITION.
4. WEB SHALL BE COPED TO ALLOW FOR COMPLETE PENETRATION WELDING OF FLANGES.
5. WELDED MECHANICAL PILE SPLICERS MAY BE USED PROVIDED THAT COMPLETE DETAILS AND WELDING PROCEDURES HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER.

CJP H-PILE SPLICE DETAILS

NOT TO SCALE

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	45	61
PROJECT FILE NO.		609068	

EAST ABUTMENT PLAN AND ELEVATION

H-PILE SPLICER INSTALLATION NOTES:

1. CUT OFF AND SQUARE A MINIMUM LENGTH OF 1 FOOT FROM THE TOP OF THE PILE THAT HAS JUST BEEN DRIVEN INTO THE GROUND.
2. BEVEL THE TWO FLANGES OF THE DRIVEN PILE 30° DEGREES (+10°, −5°) EACH WITH A MAXIMUM ROOT FACE OF 3/32" (+0, −3/32).
3. GRIND ALL FLAME CUT SURFACES SMOOTH.
4. LAYOUT AND FLAME CUT THE KEYWAY IN THE WEB OF THE DRIVEN PILE FOR THE KEY OF THE H-PILE SPLICER WITH THE SPECIFIED TOLERANCES. RADIUS THE BOTTOM OF THE SLOT 3/8" IN EACH CORNER.
5. GRIND ALL FLAME CUT SURFACES SMOOTH.
6. SLIDE THE H-PILE SPLICER ONTO THE PILE. THE KEY OF THE SPLICER MUST SLIDE DOWN THE KEYWAY IN THE WEB OF THE DRIVEN PILE.
7. SQUARE THE END OF THE PILE SECTION TO BE ADDED TO THE PREVIOUSLY DRIVEN PILE. BEVEL BOTH FLANGES OF THE PILE 30° DEGREES (+10°, −5°) EACH WITH A MAXIMUM ROOT FACE OF 3/32" (+0, −3/32).
8. GRIND ALL FLAME CUT SURFACES SMOOTH.
9. SLIDE THE TOP PILE SECTION WITH A CRANE INTO THE H-PILE SPLICER SLEEVE. PLUMB PILE; ALIGN THE FLANGES OF BOTH PILE SECTIONS. THE FLANGES MUST BE IN ALIGNMENT WITH THE MAXIMUM TOLERANCE OF +1/8". TACK WELD IN PLACE ON BACK SIDE OF JOINT AS PER THE APPROVED FILLET WELDING PROCEDURE.
10. FAYING SURFACES BETWEEN THE H-PILE SPLICER AND THE PILE FLANGES SHALL HAVE A GAP OF 0" (+1/8"). CLAMPS OR HYDRAULIC JACKS MAY BE USED TO ACCOMPLISH THIS. NO HEATING WILL BE ALLOWED.
11. USING A 3/8" FILLET WELD, WELD THE H-PILE SPLICER TO THE FLANGES, 4 INCHES OF WELD AT THE TOP AND BOTTOM AT EACH CORNER AND THE LENGTH OF THE SPLICER AS PER THE APPROVED FILLET WELDING PROCEDURE.
12. USING A PARTIAL PENETRATION GROOVE WELD, WELD THE FLANGES AS PER THE APPROVED GROOVE WELDING PROCEDURE. THE SIZE SHALL BE SHOWN ON THE WELDING PROCEDURE.

℄ PILE COORDINATES TABLE

PILE NO.	NORTHING	EASTING
P9	2854634.2011	140953.0512
P10	2854629.8974	140949.9010
P11	2854625.5937	140946.7510
P12	2854621.2900	140943.6009
P13	2854630.6573	140957.8927
P14	2854626.3536	140954.7427
P15	2854622.0499	140951.5926
P16	2854617.7462	140948.4426

LEGEND:

- VERTICAL PILE
- TEST PILE
- 4V:1H BATTERED PILE

NOTES:

1. FOR PILE NOTES, SEE SHEET 11.
2. FOR SUBSTRUCTURE DETAILS, SEE SHEETS 13 AND 14.
3. ATTACH CLOSED CELL FOAM AS REQUIRED TO ALL BEAMS PRIOR TO PLACING THE CONCRETE FOR THE BACKWALL AND CURTAIN WALL.
4. SEAT ELEVATIONS ARE PROVIDED AT CENTERLINE OF BEARINGS. TOP OF BACKWALL AND PARAPET CONSTRUCTION JOINT ELEVATIONS ARE PROVIDED AT FRONT FACE OF BACKWALL.
5. CENTERLINE OF PILE COORDINATES ARE AT BOTTOM OF PILE CAP.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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609068_BR12.DWG Plotted on 28-Jul-2026 2:46 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 609

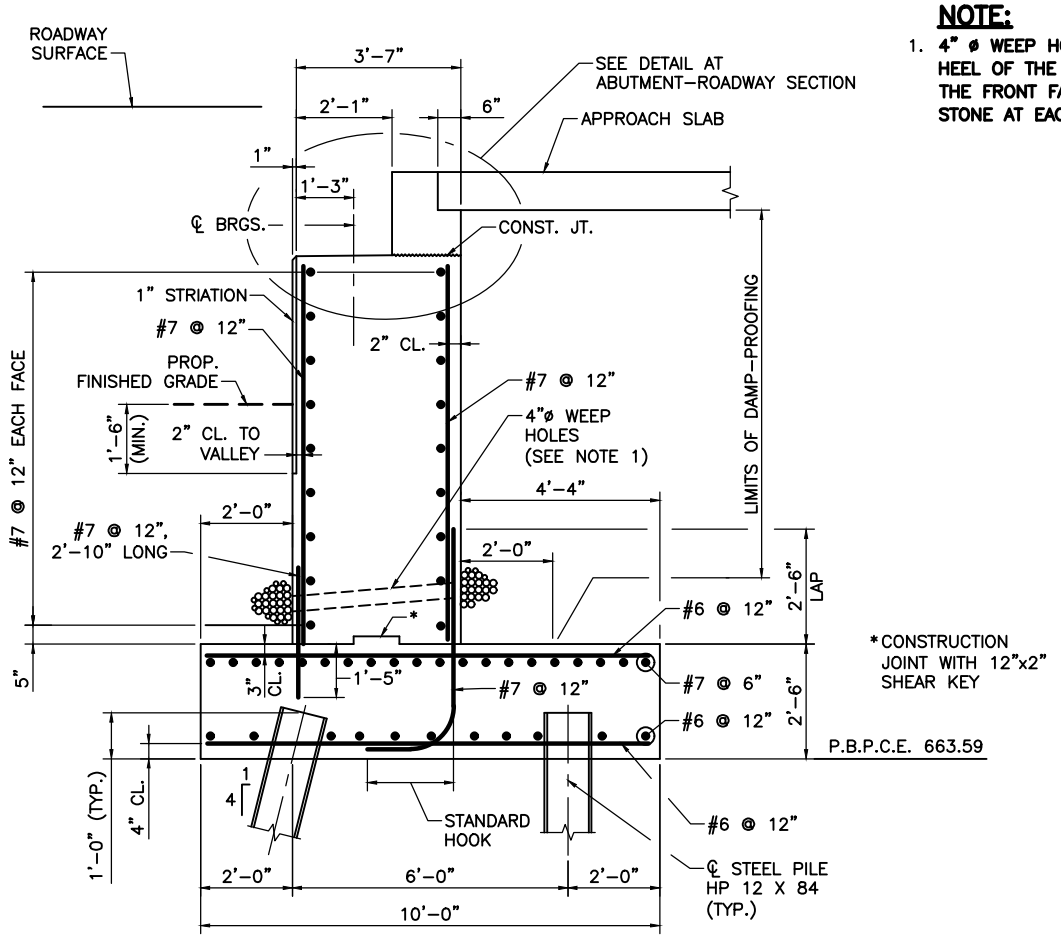
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Proposal No. 609068-136649

A00830 - 610

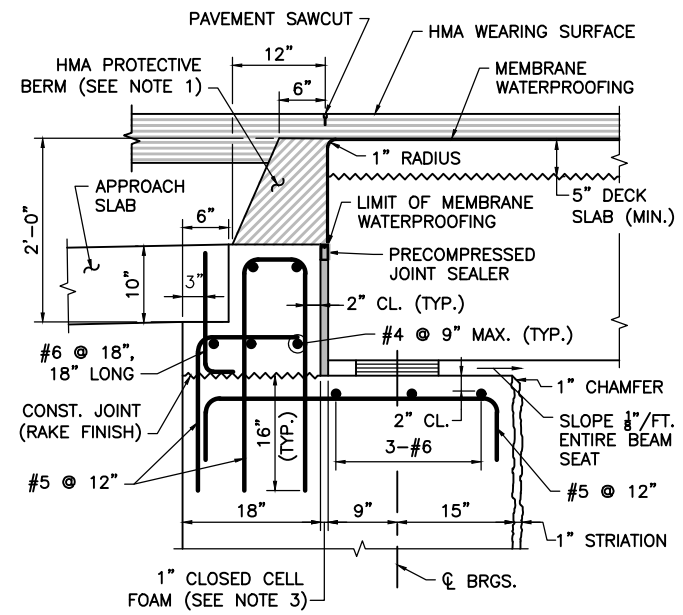
NOTE:

1. 4" ø WEEP HOLES 10'–0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.



TYPICAL ABUTMENT SECTION

SCALE: 1" = 1'–0"

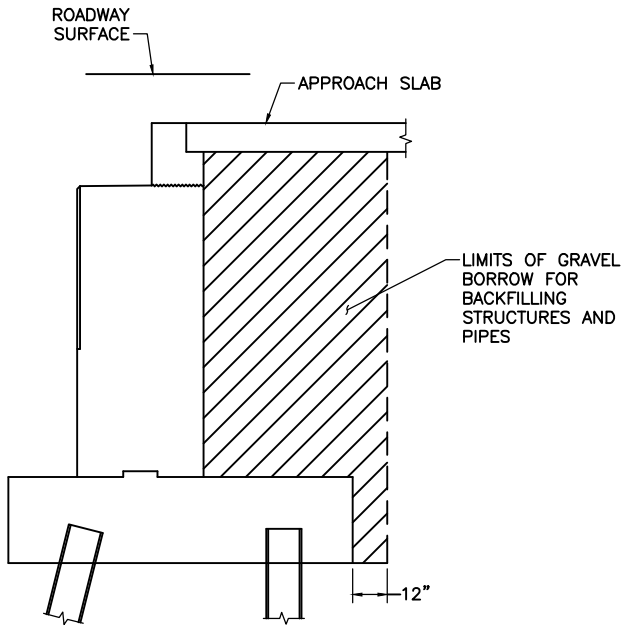


DETAIL AT ABUTMENT – ROADWAY SECTION

SCALE: 1" = 1'–0"

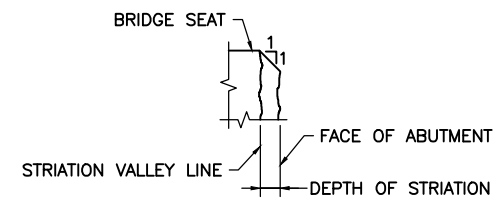
ROADWAY SECTION NOTES:

1. HMA PROTECTIVE BERM TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE–9.5 POLYMER (SPC–B–9.5–P), PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND–GUIDED TAMPER.
2. ALL REINFORCING SHOWN IN THIS DETAIL SHALL BE COATED BARS.
3. ATTACH CLOSED CELL FOAM TO BACK OF PRECAST BEAM WITH ADHESIVE.
4. ALL CURTAIN WALL AND BACKWALL CONCRETE SHALL BE PLACED AFTER ALL BEAMS HAVE BEEN ERECTED.



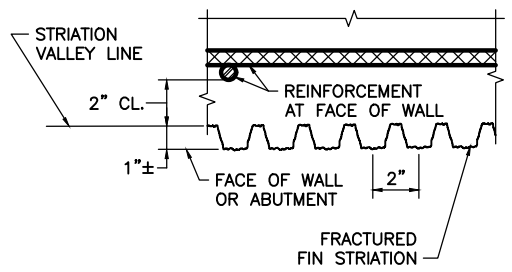
LIMITS OF GRAVEL BORROW FOR BACKFILLING ABUTMENTS

NOT TO SCALE



DETAIL AT BRIDGE SEAT

SCALE: 3" = 1'–0"

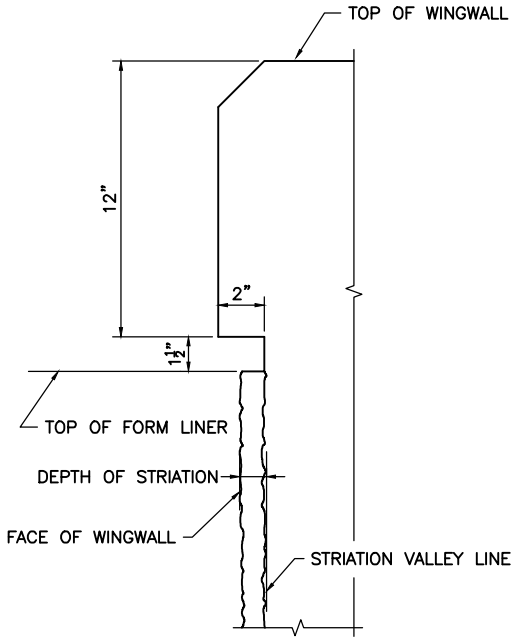


NOTE:

1. THE CONTRACTOR SHALL MAKE SURE THAT THE STRIATION FINS ARE PLUMB AND LINED UP VERTICALLY FROM PANEL TO PANEL FOR THE FULL HEIGHT OF THE WALL.

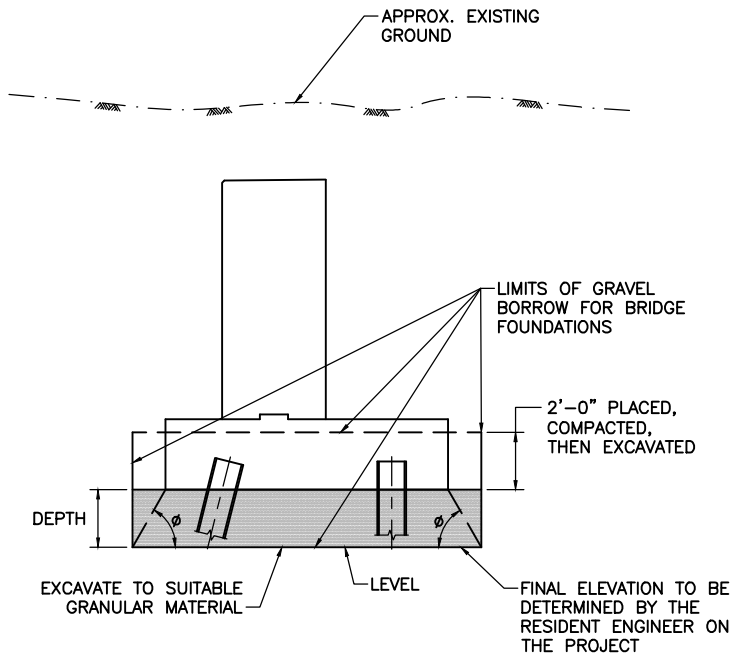
TYPICAL STRIATION DETAIL

SCALE: 3" = 1'–0"



DETAIL AT TOP OF WINGWALL

SCALE: 3" = 1'–0"



NOTE:

1. ø = 45° FOR DEPTH OF 5'–0" OR LESS.
   ø = 60° FOR DEPTH OVER 5'–0".

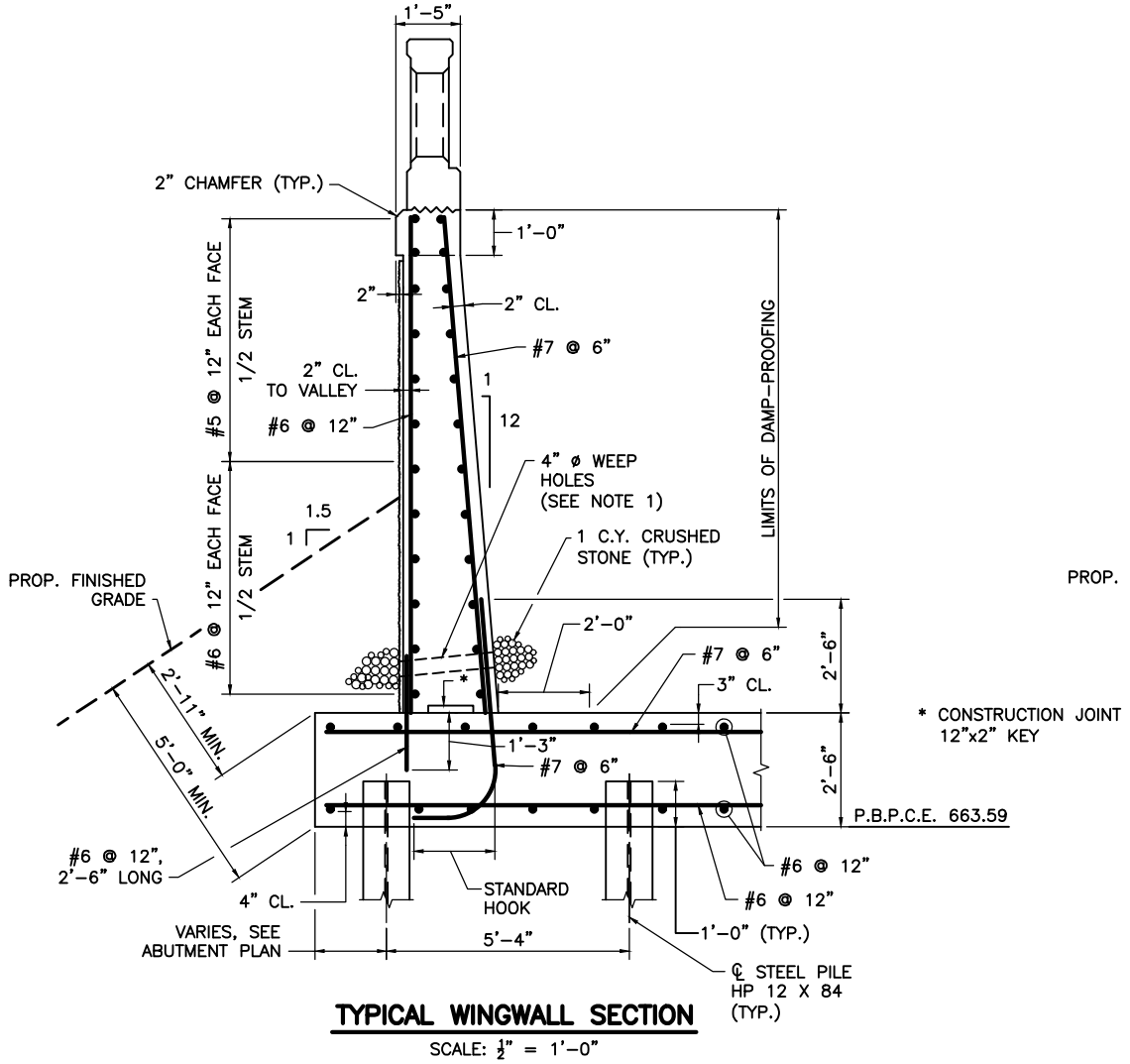
LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS

NOT TO SCALE

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

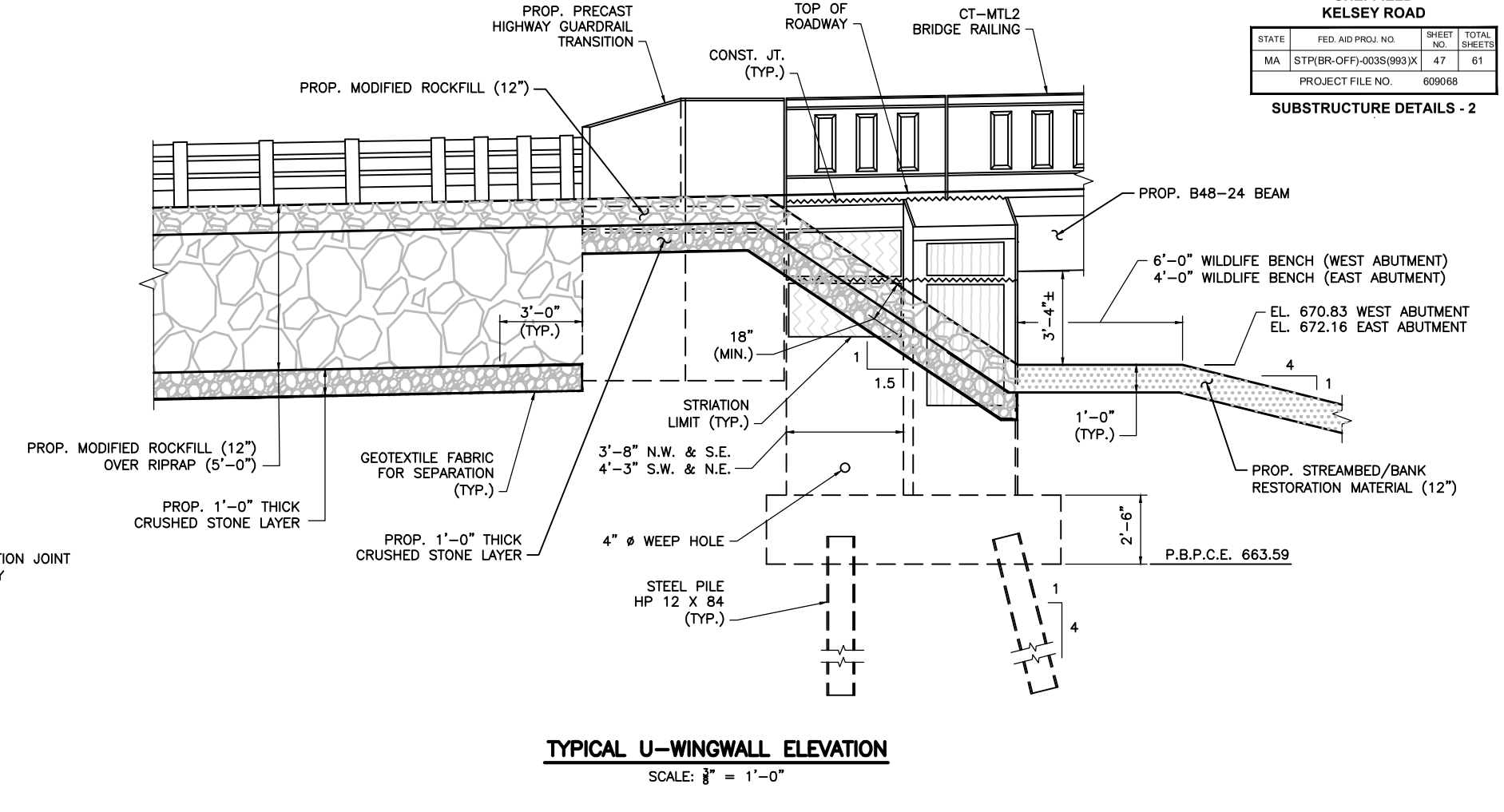
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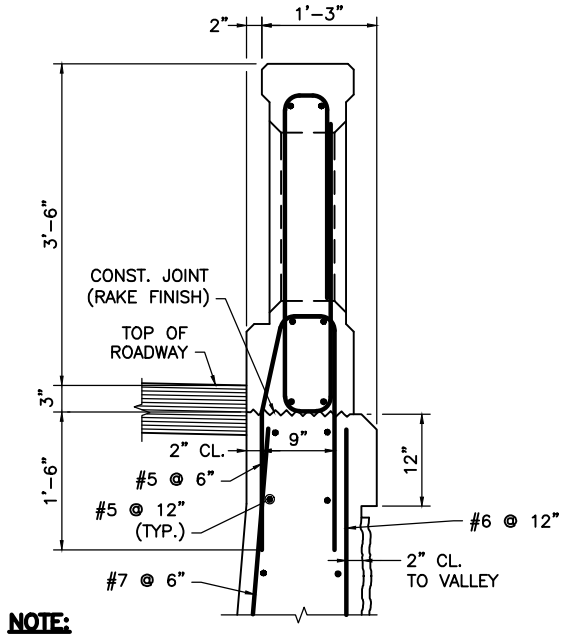
TYPICAL WINGWALL SECTION

SCALE: $\frac{1}{2}$" = 1'–0"



TYPICAL U–WINGWALL ELEVATION

SCALE: $\frac{3}{8}$" = 1'–0"



NOTE:

1. SEE SECTION THRU CT–MTL2 RAILING AT SAFETY CURB FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN HERE.

TOP OF U–WINGWALL DETAILS AT SAFETY CURB

SCALE: 1" = 1'–0"

NOTES:

1. 4" ø WEEP HOLES 10'–0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
2. RIPRAP SHALL BE SIZE D_{50} = 30 INCHES, D_{100} = 60 INCHES AND SHALL CONFORM TO M2.02.0 OF THE STANDARD SPECIFICATIONS.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	47	61
PROJECT FILE NO.		609068	

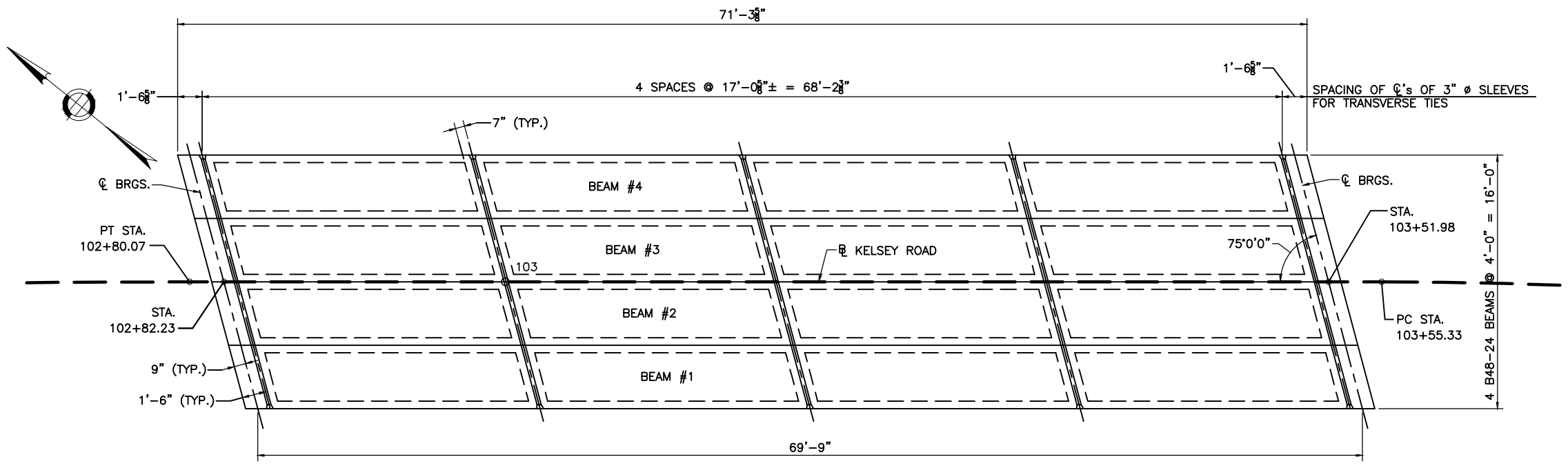
SUBSTRUCTURE DETAILS - 2

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

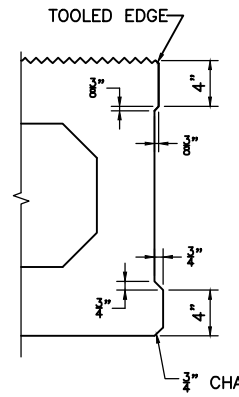
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
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SHEET 14 OF 21 SHEETS BRIDGE NO. S–10–015 (8M2)

Proposal No. 609068-136649
609068_BR14.DWG Plotted on 28-Jul-2026 2:49 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 611



FRAMING PLAN
SCALE: ¼" = 1'-0"



SHEAR KEY DETAIL
SCALE: 1½" = 1'-0"

ESTIMATED CAMBER AND DEFLECTIONS AT MIDSPAN (INCHES)		
STATE OF BEAM	DIRECTION	BEAMS #1, #2, #3, #4
CAMBER AT TRANSFER (2)	UP	1.66
CAMBER AT ERECTION	UP	3.15
FINAL NCDL DEFLECTION (3)	DOWN	0.59
FINAL CDL DEFLECTION (3)	DOWN	0.43

NOTES:

1. CAMBER AND DEFLECTIONS IN THE TABLE ARE NOT GUARANTEED AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
2. THE BEAM CONCRETE MODULUS OF ELASTICITY AT TRANSFER USED IN THE ABOVE BEAM CAMBER IS ASSUMED TO BE 4,347,000 PSI.
3. THE BEAM CONCRETE MODULUS OF ELASTICITY USED IN THE ABOVE BEAM DEFLECTION IS ASSUMED TO BE 4,679,000 PSI (AT 28 DAYS).

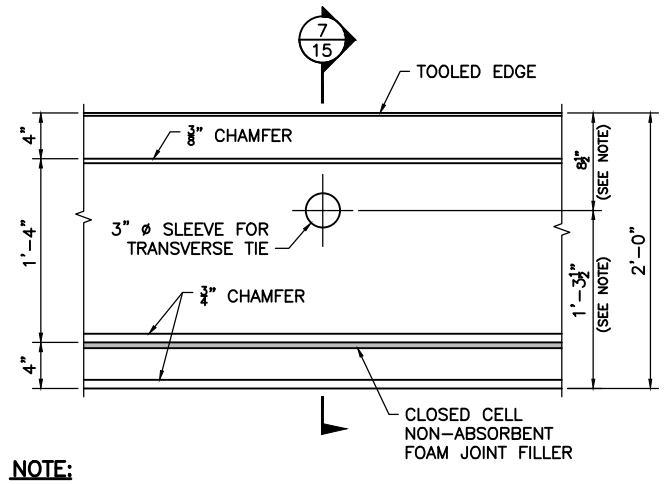
BEAM DEAD LOAD FORCE EFFECTS AND LIVE LOAD DISTRIBUTION FACTORS								
BEAM	DC1		DC2		DW (3)		LL	
	MOMENT (FT-KIP)	SHEAR (KIP)	MOMENT (FT-KIP)	SHEAR (KIP)	MOMENT (FT-KIP)	SHEAR (KIP)	MOMENT (LANES)	SHEAR (LANES)
BEAMS #1 & #4	664	35	244	20	36	3	0.324	0.457
BEAMS #2 & #3	668	36	253	13	70	2	0.310	0.452

NOTES:

1. DEAD LOAD FORCE EFFECTS AND LIVE LOAD DISTRIBUTION FACTORS ARE FROM 3D FEM ANALYSIS USING AASHTOWare BrR VERSION 7.4.0.3001.
2. THE LIVE LOAD DISTRIBUTION FACTORS ASSUME A MULTIPLE PRESENCE FACTOR OF 1.00.
3. DW EFFECTS ARE DUE TO AN ASSUMED FUTURE UTILITY LOAD OF 125 PLF.

CONSTRUCTION SEQUENCE NOTES:

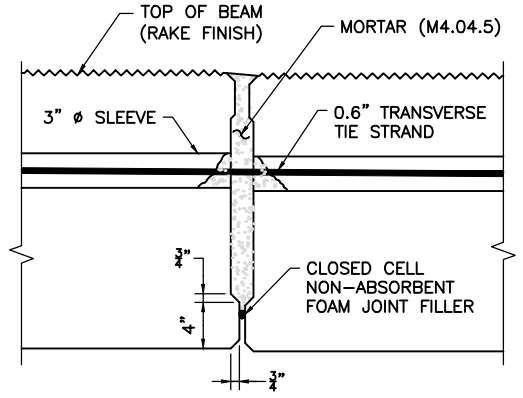
1. AFTER ALL BEAMS HAVE BEEN ERECTED, TENSION EACH TRANSVERSE TIE TO 5 KIPS.
2. FILL ALL KEYWAYS WITH MORTAR (M4.04.5). IF THE KEYWAYS ARE NOT FILLED WITHIN FIVE (5) DAYS AFTER THE BEAMS ARE ERECTED, THE CONTRACTOR SHALL COVER AND PROTECT THE KEYWAYS FROM WEATHER AND DEBRIS UNTIL THEY ARE FILLED.
3. AFTER THE MORTAR HAS CURED (24 HOURS MINIMUM), TENSION EACH TRANSVERSE TIE TO 44 KIPS.
4. CONCRETE FOR DECK SLAB SHALL BE PLACED AFTER THE TRANSVERSE TIES HAVE BEEN FULLY TENSIONED.
5. NO TRAFFIC OR HEAVY EQUIPMENT WILL BE PERMITTED ON THE BRIDGE UNTIL ALL TRANSVERSE TIES HAVE BEEN PROPERLY TENSIONED AND THE DECK HAS BEEN CAST AND CURED PER THE STANDARD SPECIFICATIONS.



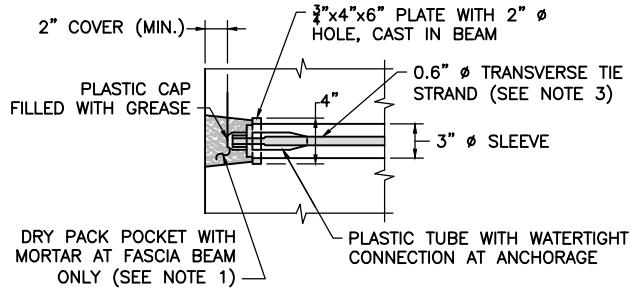
NOTE:

THE VERTICAL POSITION OF THE TRANSVERSE TIE STRANDS MUST BE COORDINATED WITH THE LOCATIONS OF THE PRESTRESSING STRANDS AND ADJUSTED AS NECESSARY TO AVOID INTERFERENCE.

TYPICAL BEAM ELEVATION AT TRANSVERSE TIE LOCATIONS
SCALE: 1½" = 1'-0"



SECTION 7/15
SCALE: 1½" = 1'-0"



NOTES:

1. MORTAR FOR EXTERIOR POCKETS SHALL CONFORM TO M4.04.5 AND SHALL BE THE SAME COLOR AND TEXTURE AS THE BEAM CONCRETE.
2. OTHER ANCHORAGE SYSTEMS MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. ALTERNATE ANCHORAGE SYSTEMS SHALL BE WATERTIGHT AND CORROSION PROOF.
3. TRANSVERSE TIES SHALL BE COVERED BY A SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITING GREASE BETWEEN THE STRAND AND SHEATH) FOR THE FULL LENGTH OF THE STRAND, EXCEPT AT THE ANCHORAGE LOCATION.

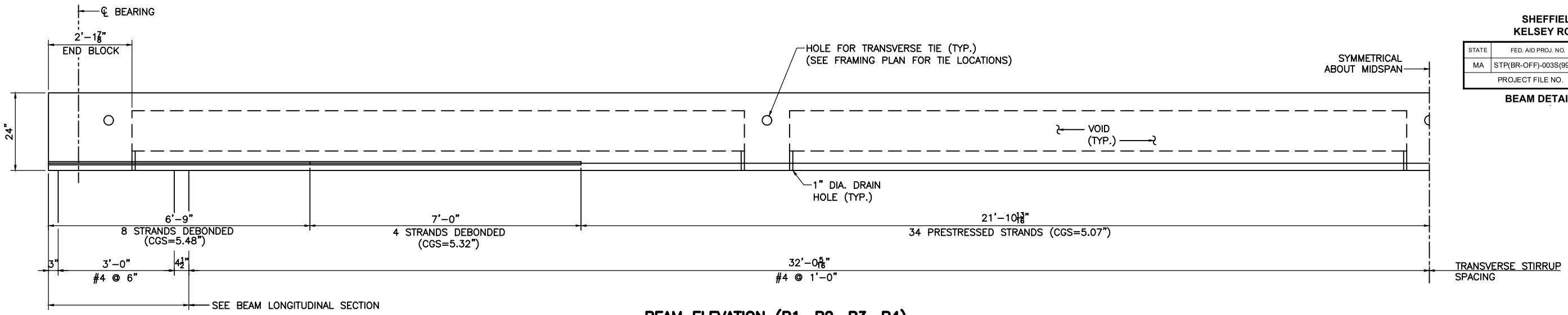
TRANSVERSE TIE ANCHORAGE
SCALE: 1½" = 1'-0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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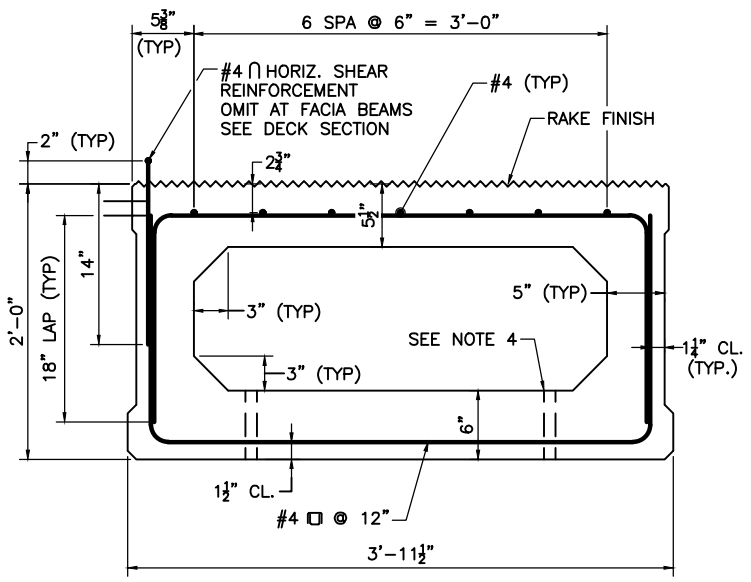
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Proposal No. 609068-136649
609068_BR15.DWG Plotted on 28-Jul-2026 2:50 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
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BEAM ELEVATION (B1, B2, B3, B4)

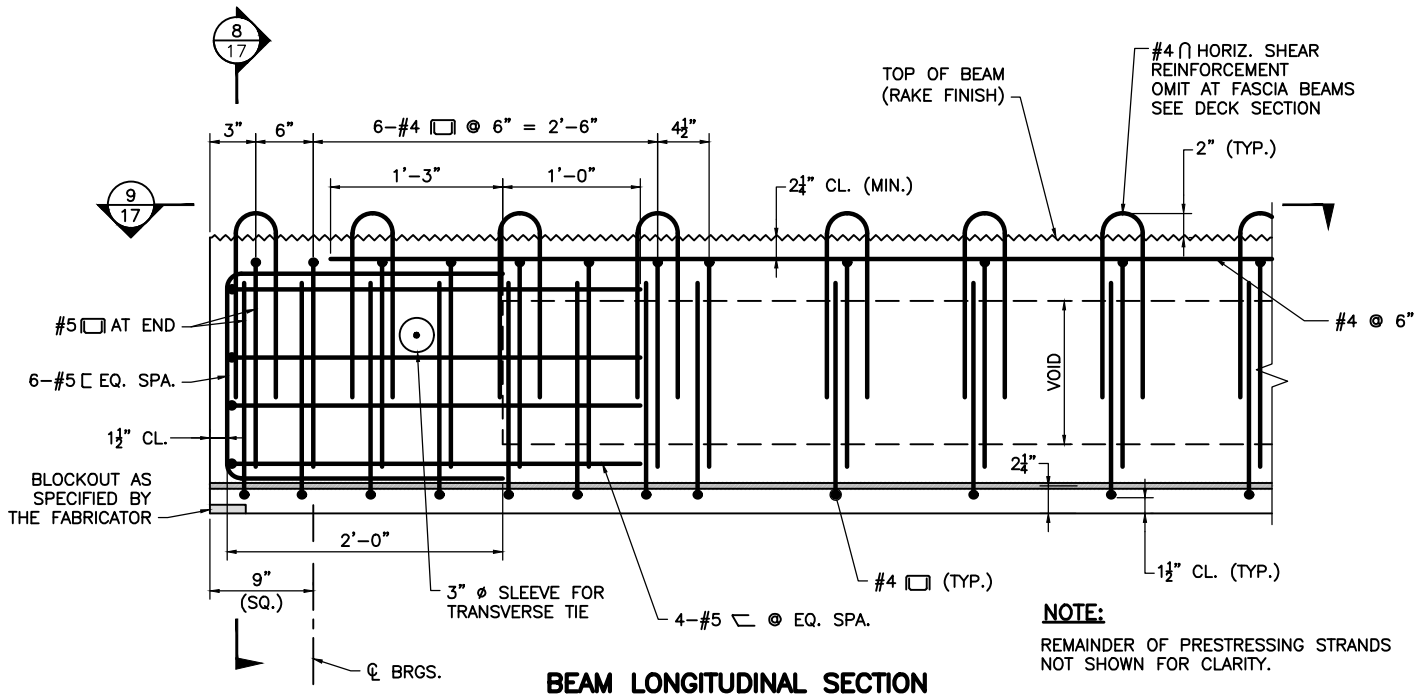
SCALE: ¾" = 1'-0"



(PRESTRESSING STRANDS ARE NOT SHOWN FOR CLARITY)

MIDSPAN BEAM SECTION

SCALE: 1½" = 1'-0"



BEAM LONGITUDINAL SECTION

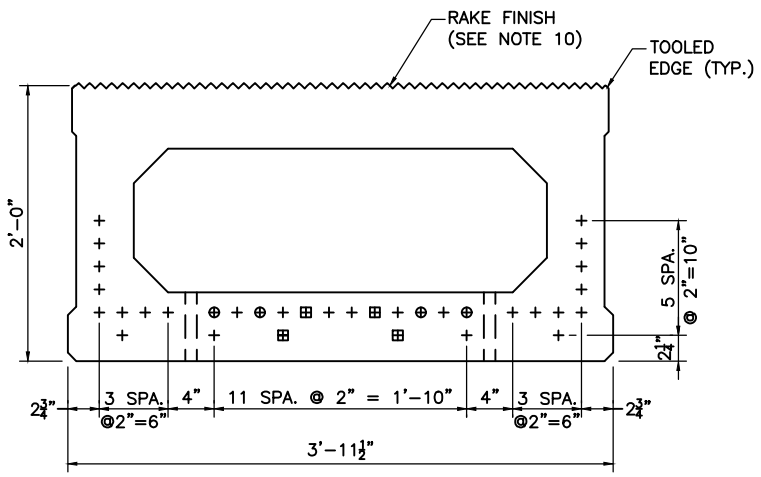
SCALE: 1½" = 1'-0"

NOTE:

REMAINDER OF PRESTRESSING STRANDS NOT SHOWN FOR CLARITY.

NOTES:

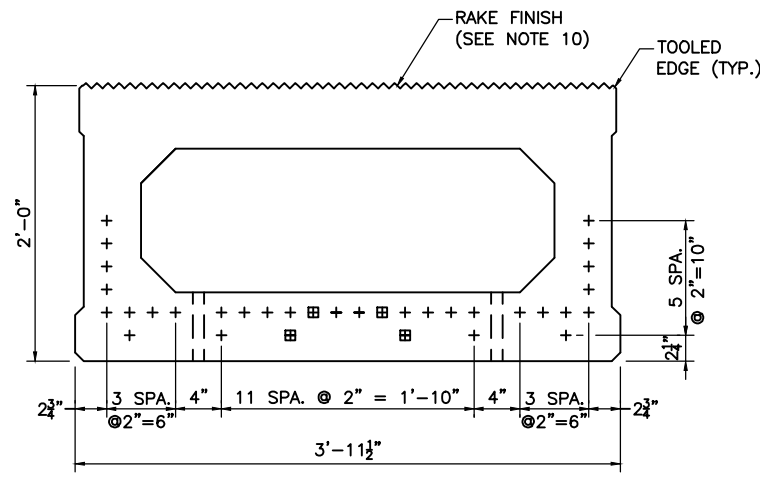
1. + DENOTES STRAIGHT STRANDS.
2. ⊕ DENOTES DEBONDED STRANDS AT 6'-9".
3. ⊞ DENOTES DEBONDED STRANDS AT 13'-9".
4. 1" ø DRAINS PLACED AT BOTH ENDS OF EACH VOID.
5. ALL PRETENSIONING ELEMENTS SHALL BE 0.6" ø, UNCOATED, SEVEN-WIRE, LOW RELAXATION STEEL STRANDS AND SHALL CONFORM TO AASHTO M 203.
6. THE NOMINAL TENSILE STRENGTH OF THE PRETENSIONING STRANDS SHALL BE 270 KSI.
7. THE INITIAL TENSION PER 0.6" ø STRAND SHALL BE 44 KIPS.
8. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL BE 6500 PSI.
9. NO PRESTRESS SHALL BE TRANSFERRED TO THE CONCRETE UNTIL IT HAS ATTAINED A COMPRESSIVE STRENGTH, AS SHOWN BY A CYLINDER TEST, OF AT LEAST 5200 PSI.
10. THE TOP OF ALL BEAMS SHALL BE GIVEN A RAKED FINISH (¼" AMPLITUDE) ACROSS THE WIDTH (PERPENDICULAR TO THE BEAM'S AXIS).
11. THE FABRICATOR IS FULLY RESPONSIBLE FOR THE DESIGN OF THE LIFTING DEVICES WHICH SHALL BE ADEQUATE FOR THE SAFETY FACTORS REQUIRED BY THE ERECTION PROCEDURE.
12. TO CONTROL CRACKING AT THE END OF THE BEAM, THE FABRICATOR SHALL DEBOND APPROXIMATELY 50% OF THE STRANDS FOR THE FIRST 6" FROM THE END OF THE BEAM.



(REINFORCEMENT BARS ARE NOT SHOWN FOR CLARITY)

STRAND LOCATION AT 6'-9" FROM END OF BEAM

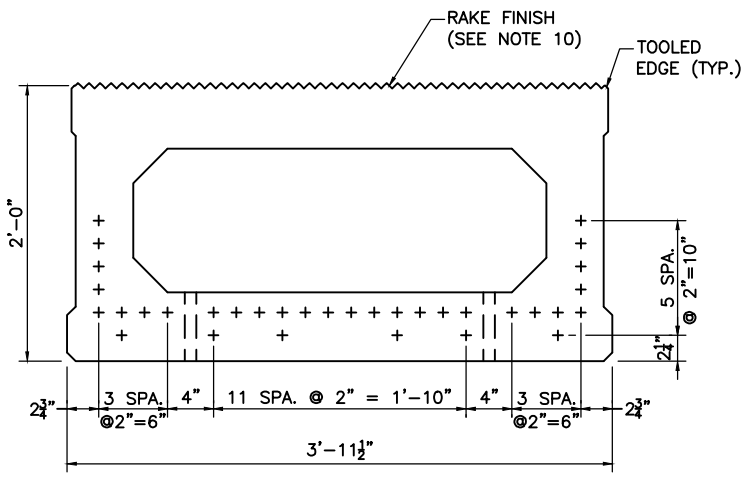
SCALE: 1½" = 1'-0"



(REINFORCEMENT BARS ARE NOT SHOWN FOR CLARITY)

STRAND LOCATION AT 13'-9" FROM END OF BEAM

SCALE: 1½" = 1'-0"



(REINFORCEMENT BARS ARE NOT SHOWN FOR CLARITY)

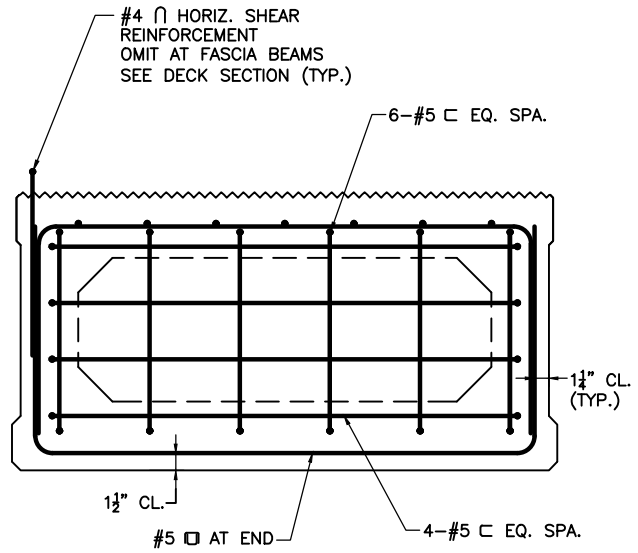
STRAND LOCATION AT MIDSPAN OF BEAM

SCALE: 1½" = 1'-0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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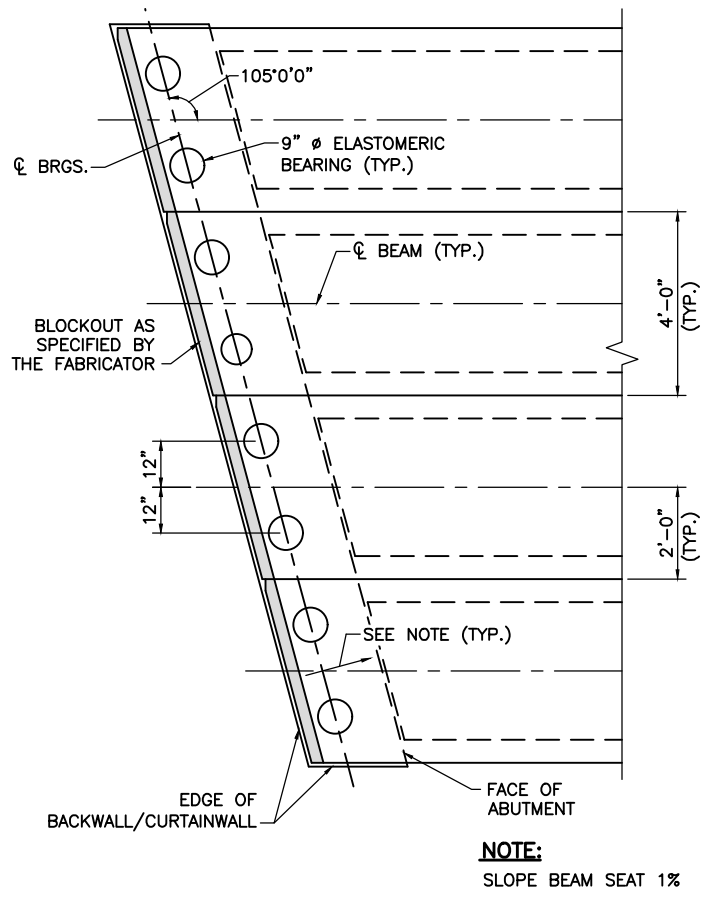
Proposal No. 609068-136649
609068_BR16.DWG Plotted on 28-Jul-2026 2:51 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 613



(PRESTRESSING STRANDS ARE NOT SHOWN FOR CLARITY)

SECTION 8
SCALE: 1½" = 1'–0"

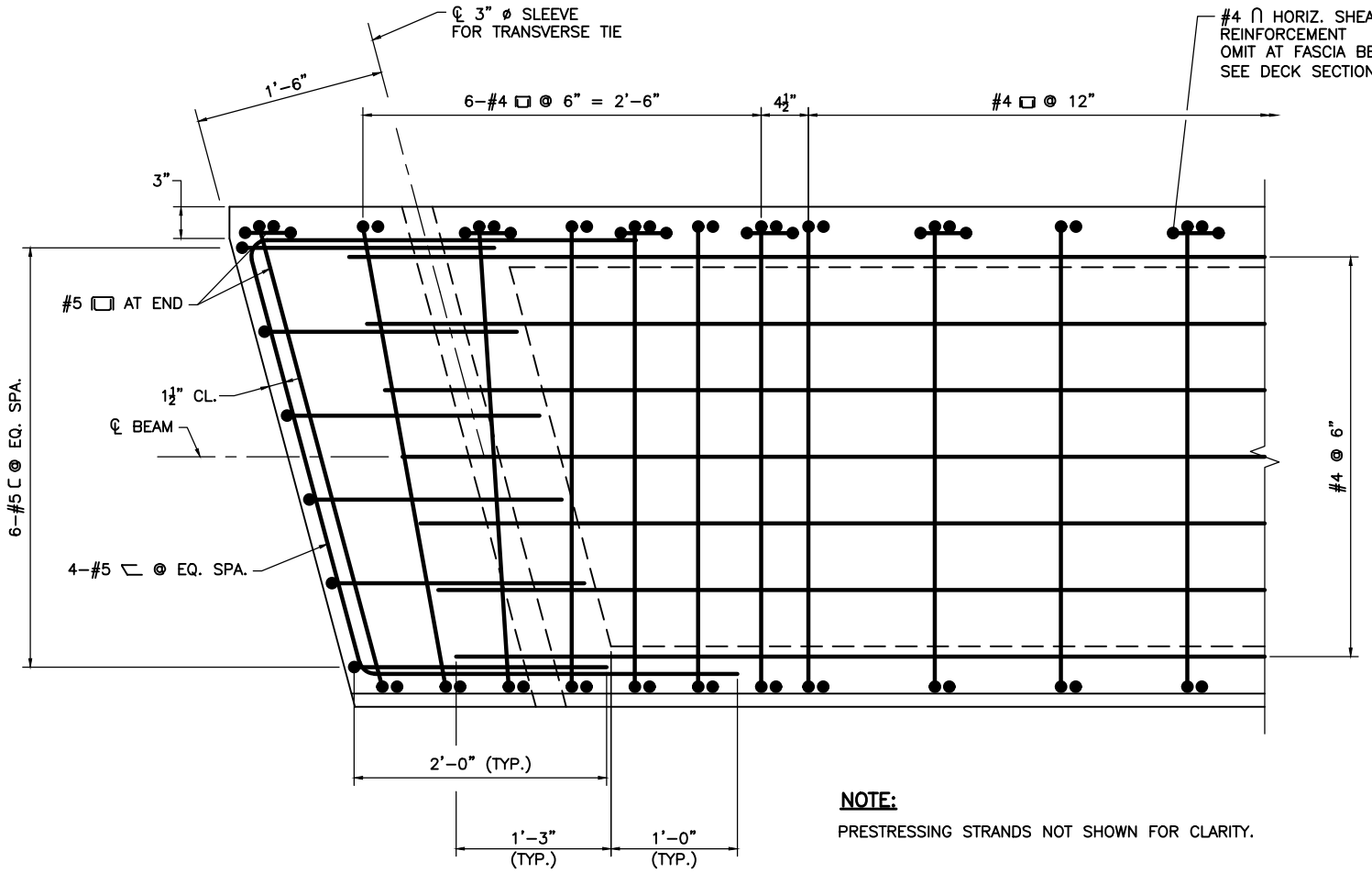
NOTE:
SEE MIDSPAN SECTION FOR DETAILS AND INFORMATION NOT SHOWN.



NOTE:
SLOPE BEAM SEAT 1%

NOTES:

1. BEARING IS DESIGNED USING AASHTO METHOD B.
2. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.
3. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36 OR HIGHER. ALL EDGES OF STEEL LAMINATES SHALL BE GROUND SMOOTH.
4. THE COMPRESSIVE DESIGN LOAD ON THE BEARING PAD IS 49.7 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 0.782 KSI.
5. THE 25 YEAR CREEP STRAIN SHALL BE LIMITED TO 35%.
6. TAPERED INTERNAL LOAD PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36 OR GRADE 50. ALL EDGES OF TAPERED INTERNAL LOAD PLATE SHALL BE GROUND SMOOTH.
7. ALL TAPERED BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A 1/32" DEEP DIRECTION ARROW THAT POINTS UP–STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER BEARING IS INSTALLED.
8. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 30 °F AND 90 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.

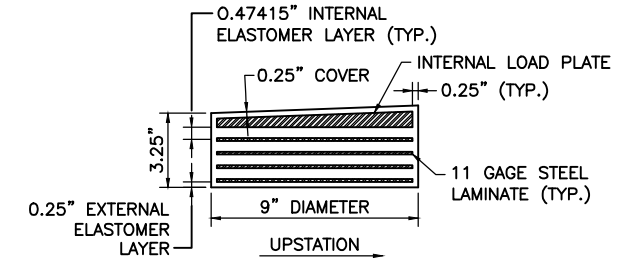


NOTE:
PRESTRESSING STRANDS NOT SHOWN FOR CLARITY.

SECTION 9
SCALE: 1½" = 1'–0"

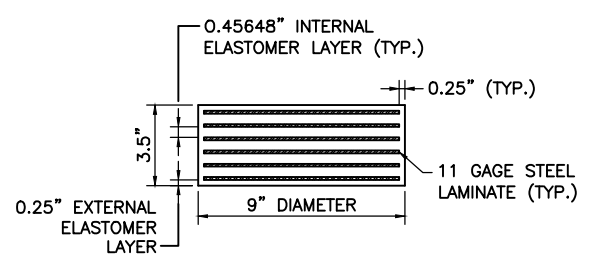
LAYOUT OF BEARINGS

SCALE: ½" = 1'–0"



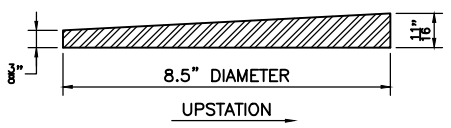
ELASTOMERIC BEARING PAD–WEST ABUTMENT

SCALE: 3" = 1'–0"



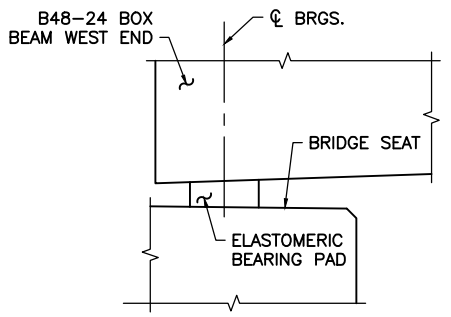
ELASTOMERIC BEARING PAD–EAST ABUTMENT

SCALE: 3" = 1'–0"



INTERNAL LOAD PLATE DETAIL

NOT TO SCALE



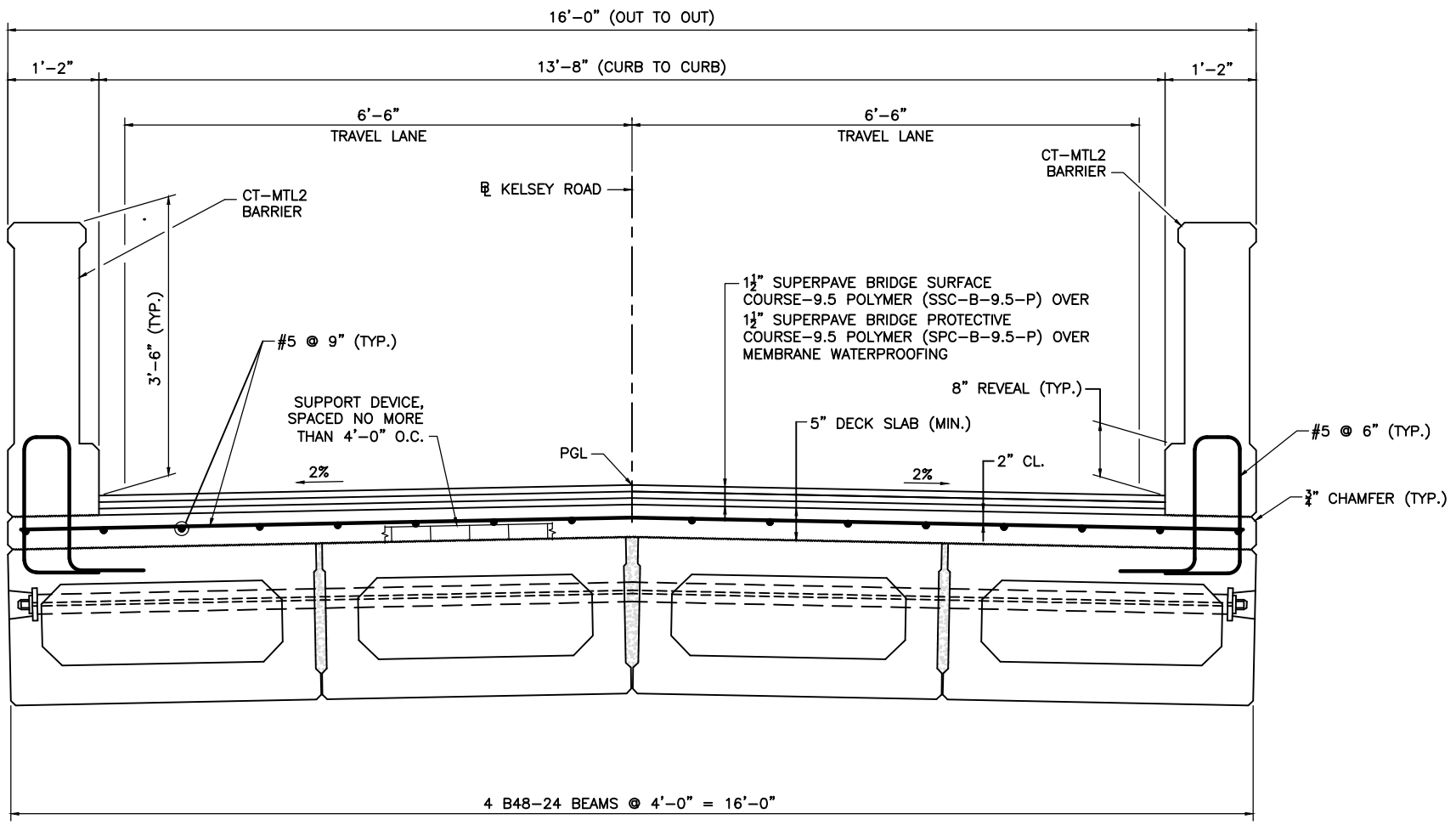
ELEVATION–WEST ABUTMENT

SCALE: 1" = 1'–0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
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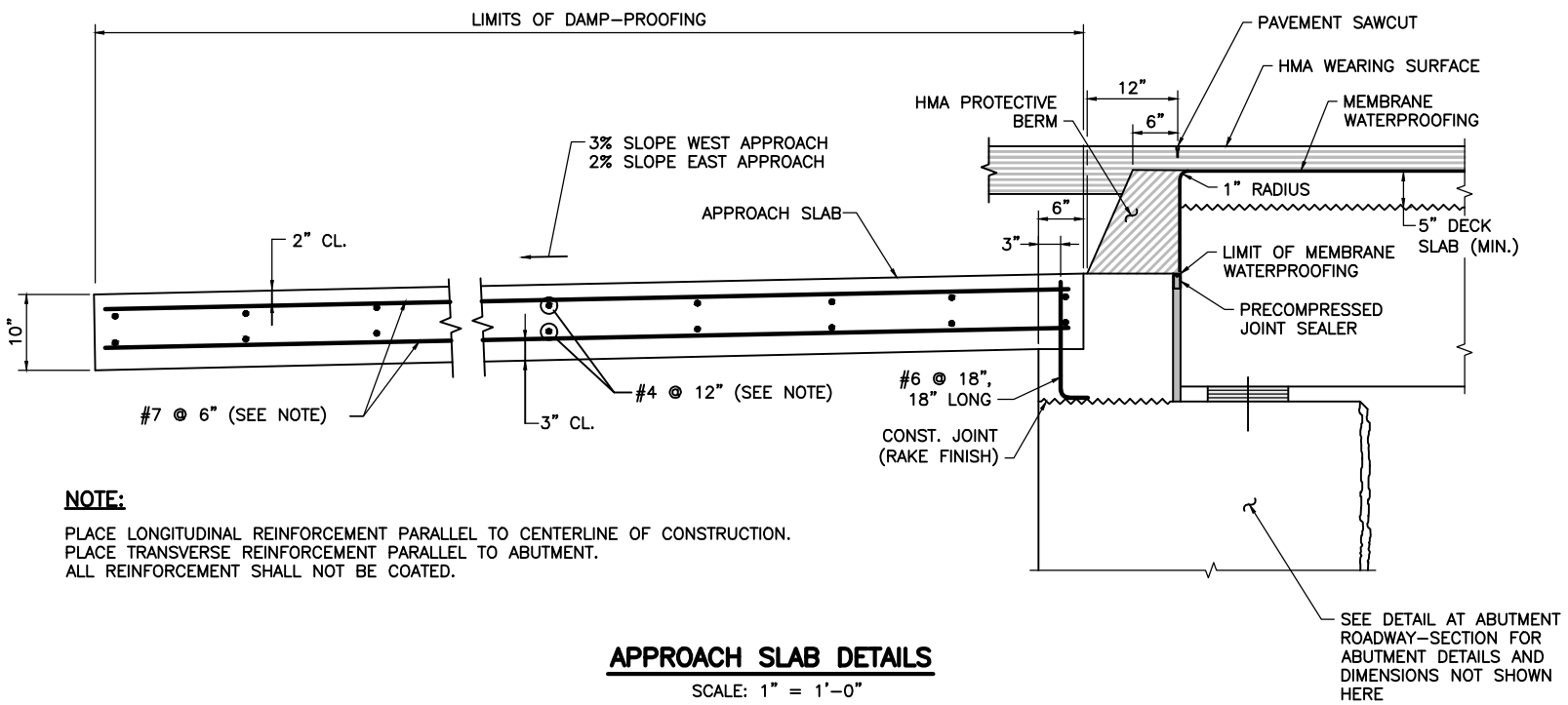
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609068_BR17.DWG Plotted on 28-Jul-2026 2:52 PM
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DECK SECTION

SCALE: 1" = 1'-0"



NOTE:

PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO CENTERLINE OF CONSTRUCTION.
PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.
ALL REINFORCEMENT SHALL NOT BE COATED.

APPROACH SLAB DETAILS

SCALE: 1" = 1'-0"

NOTES:

1. LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE ℄ OF CONSTRUCTION. TRANSVERSE (PRIMARY) REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE ℄ OF CONSTRUCTION.
2. ALL REINFORCEMENT AND SUPPORT DEVICES SHALL BE COATED.
3. THE FINISHED SURFACE OF THE BRIDGE DECK SHALL BE SMOOTH AND WITHOUT ANY PROJECTIONS THAT COULD PUNCTURE THE MEMBRANE WATERPROOFING OR DEPRESSIONS THAT COULD RETAIN WATER.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	51	61
PROJECT FILE NO.	609068		

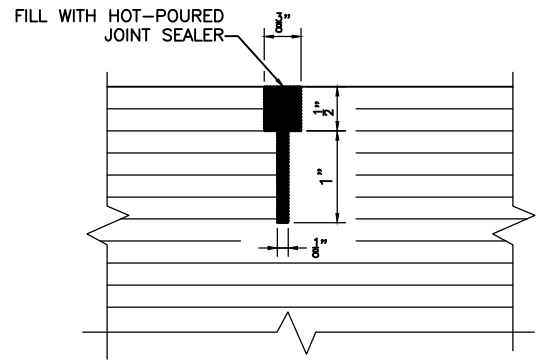
DECK SECTION AND APPROACH SLAB DETAILS

THEORETICAL TOP OF DECK ELEVATIONS ALONG THE SPAN LENGTH

	INCREASING STATIONS →										
	℄ BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG.
LEFT CURBLINE	676.72	676.89	677.06	677.21	677.37	677.51	677.65	677.78	677.90	678.01	678.12
CROWN	676.89	677.06	677.23	677.39	677.54	677.69	677.82	677.95	678.07	678.19	678.30
RIGHT CURBLINE	676.79	676.96	677.12	677.28	677.44	677.59	677.72	677.85	677.98	678.09	678.20

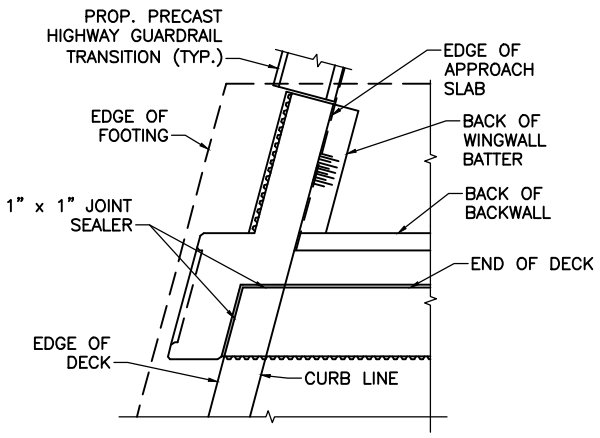
NOTES:

1. REFERENCE FOR RIGHT CURBLINE, CROWN, AND LEFT CURBLINE LOOKING UP STATION.
2. THE THEORETICAL TOP OF DECK ELEVATIONS ARE PROVIDED FOR SETTING THE SCREED ELEVATIONS FOR DECK FINISHING. THESE VALUES ARE CALCULATED BY TAKING THE PROPOSED TOP OF HMA ELEVATION ALONG THE SPAN AT THE POINTS INDICATED IN THE TABLE, SUBTRACTING THE THICKNESS OF THE HMA AND ADDING THE DEFLECTIONS DUE TO THE DECK AND OTHER SUPERIMPOSED DEAD LOADS.



PAVEMENT SAWCUT DETAIL

NOT TO SCALE



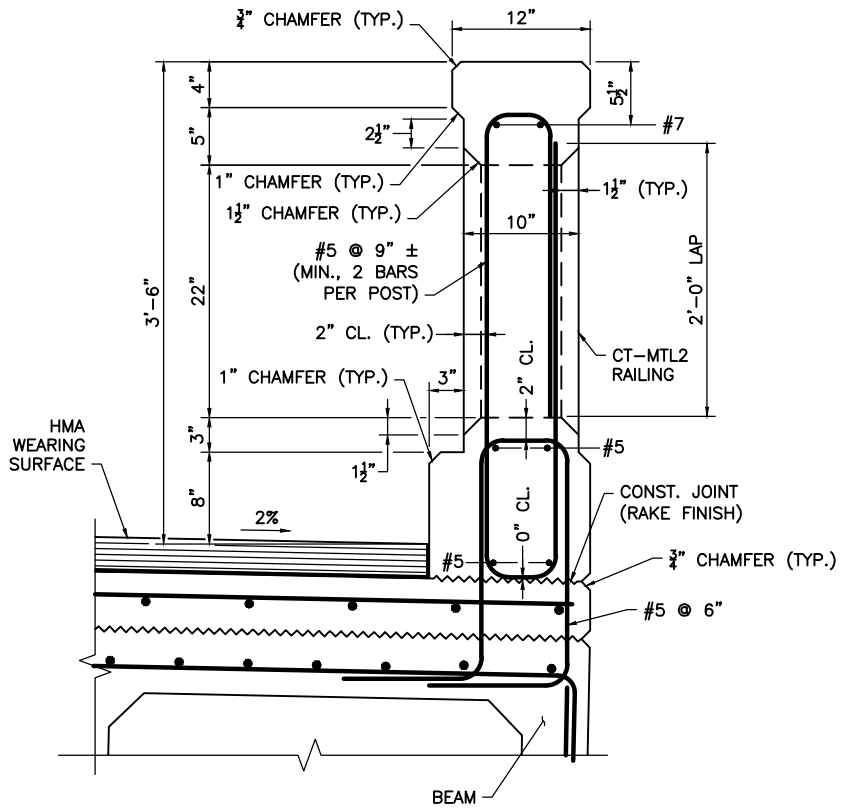
END OF DECK - PLAN

SCALE: ⅜" = 1'-0"

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DATE	DESCRIPTION

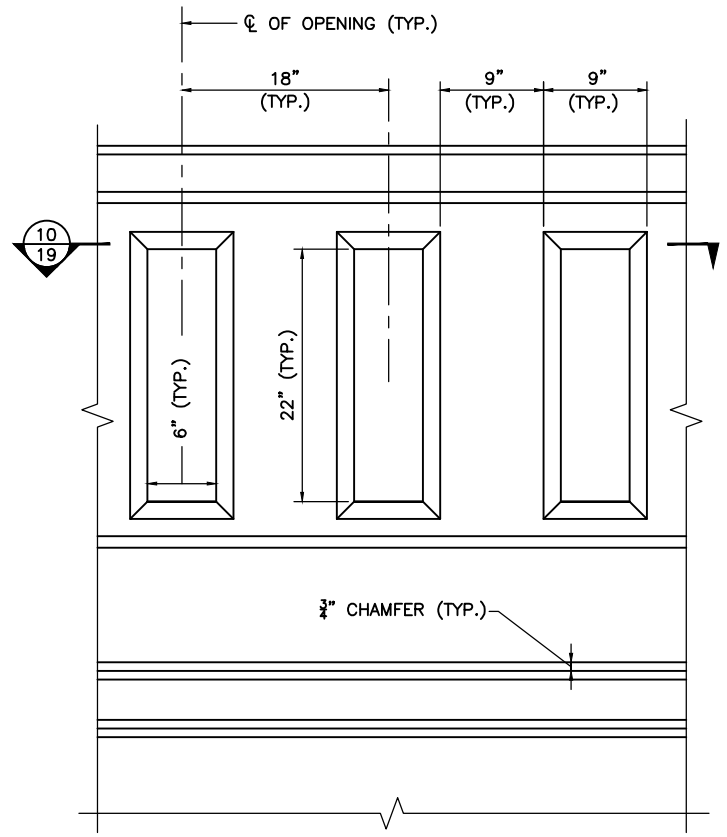
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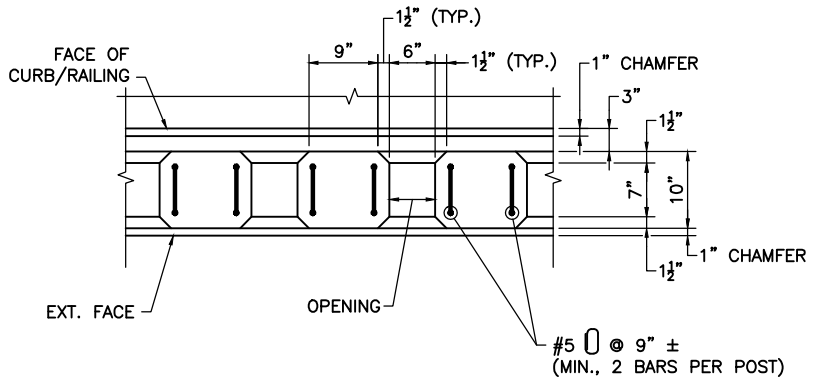
SECTION THRU SAFETY CURB

SCALE: 1½" = 1'-0"



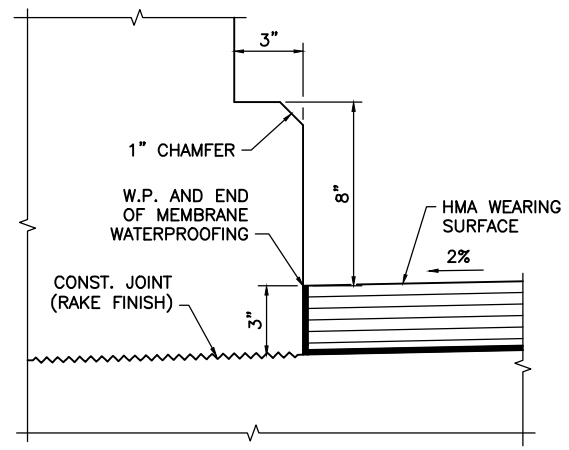
SECTION THRU SAFETY CURB

SCALE: 1½" = 1'-0"



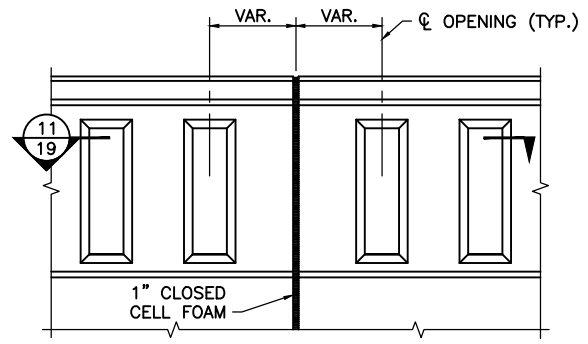
SECTION 10/19

SCALE: 1" = 1'-0"



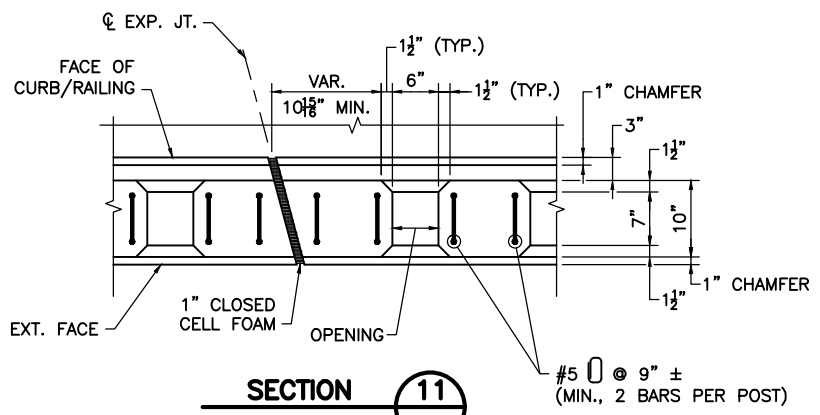
FACE OF SAFETY CURB DETAILS

NOT TO SCALE



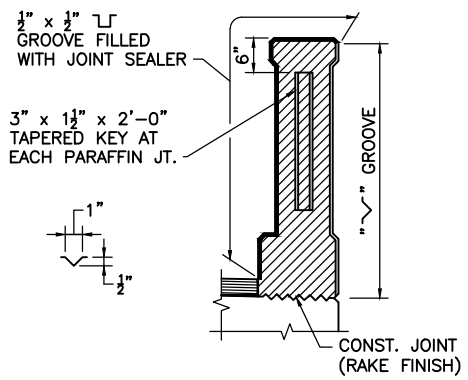
EXPANSION JOINT

SCALE: ¾" = 1'-0"



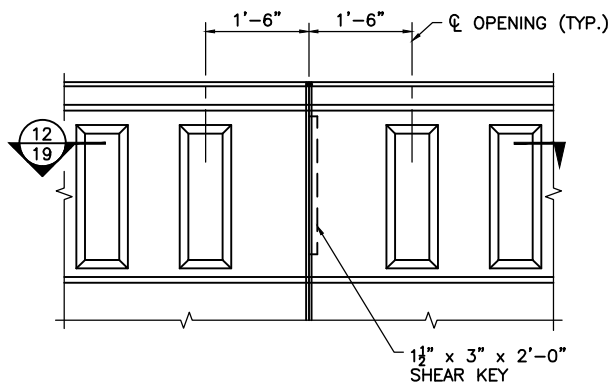
SECTION 11/19

SCALE: 1" = 1'-0"



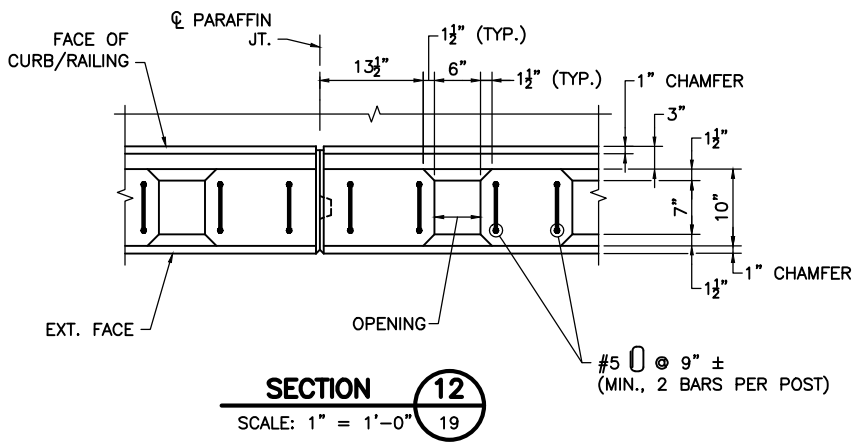
PARAFFIN JOINT DETAILS

SCALE: ¾" = 1'-0"



PARAFFIN JOINT

SCALE: ¾" = 1'-0"



SECTION 12/19

SCALE: 1" = 1'-0"

NOTES:

1. ALL CONCRETE ABOVE SLAB SHALL BE POURED IN ALTERNATING SECTIONS WITH NOT LESS THAN 3 DAYS BETWEEN POURS.
2. DO NOT CARRY LONGITUDINAL BARS THROUGH THE PARAFFIN JOINTS. END THE REINFORCEMENT 2" CLEAR OF JOINT.
3. PARAFFIN JOINT SHALL BE SQUARE TO FACE OF CURB.
4. SEE GENERAL PLAN FOR EXPANSION AND PARAFFIN JOINT LAYOUT.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

Proposal No. 609068-136649
609068_BR19.DWG Plotted on 28-Jul-2026 2:55 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 616

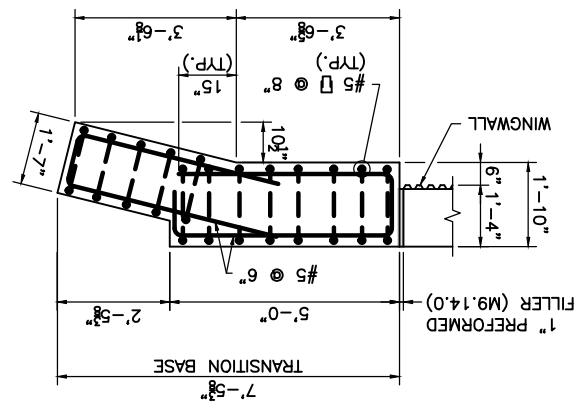
DATE	
MONTH DD, YYYY	DESCRIPTION
	ISSUED FOR CONSTRUCTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

PRECAST HIGHWAY GUARDRAIL TRANSITION ELEVATION AT U-WINGWALL

SCALE: 1/2" = 1'-0"



NOTES:

1. GRAVEL BORROW SHALL BE PLACED AND THOROUGHLY COMPACTED TO THE GRADE OF 3" (MIN.) BELOW THE INTENDED BOTTOM OF THE GUARDRAIL TRANSITION BASE AND TO A HEIGHT OF 2'-0" (MIN.) ON ALL SIDES OF THE TRANSITION BASE TO FORM A TRENCH IN WHICH TO SET THE TRANSITION.
2. CONTRACTOR SHALL SET THE PRECAST GUARDRAIL TRANSITION TO THE REQUIRED ELEVATION AND ALIGNMENT, AND BACKFILL GUARDRAIL TRANSITION WITH CONTROLLED LOW-STRENGTH MATERIAL-STRUCTURAL NON-EXCAVATABLE TO THE ELEVATION SHOWN.
3. BACKFILL THE REMAINDER OF EXCAVATION WITH GRAVEL BORROW, WHICH SHALL BE THOROUGHLY COMPACTED IN 12" LIFTS.
4. THE REST OF REINFORCEMENT IS NOT SHOWN FOR CLARITY.

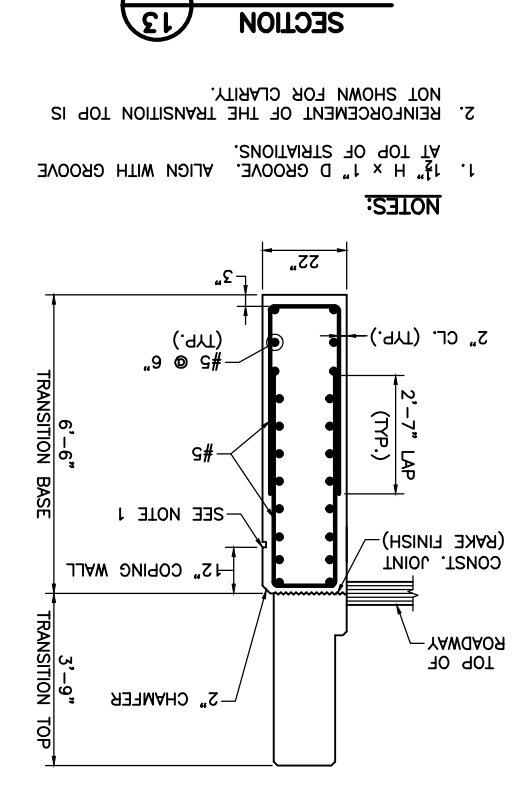
NOTE:
WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.

SECTION 14/20

SCALE: 1/2" = 1'-0"

SECTION 13/20

SCALE: 1/2" = 1'-0"

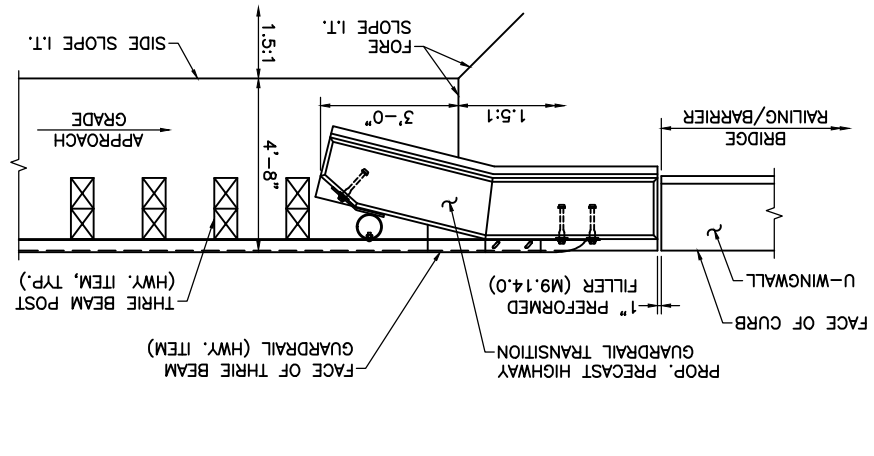


NOTES:

1. 12" H x 1" D GROOVE. ALIGN WITH GROOVE AT TOP OF STRIATIONS.
2. REINFORCEMENT OF THE TRANSITION TOP IS NOT SHOWN FOR CLARITY.

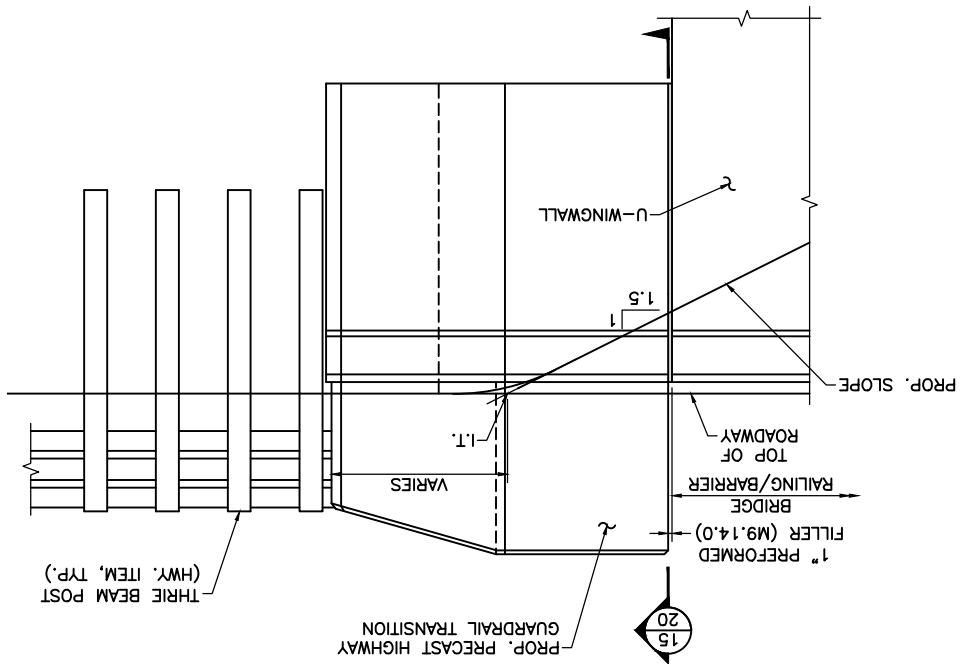
GRADING REQUIREMENTS PLAN

SCALE: 1/2" = 1'-0"



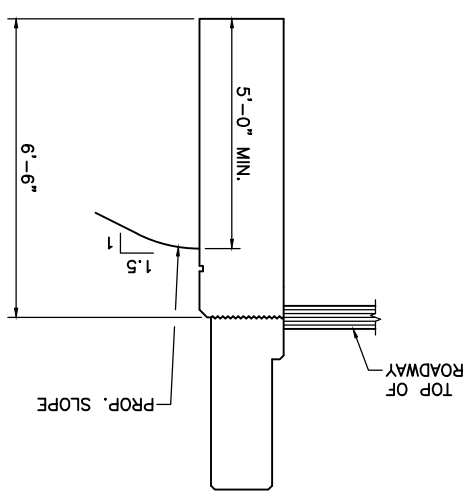
GRADING REQUIREMENTS ELEVATION

SCALE: 1/2" = 1'-0"



SECTION 15/20

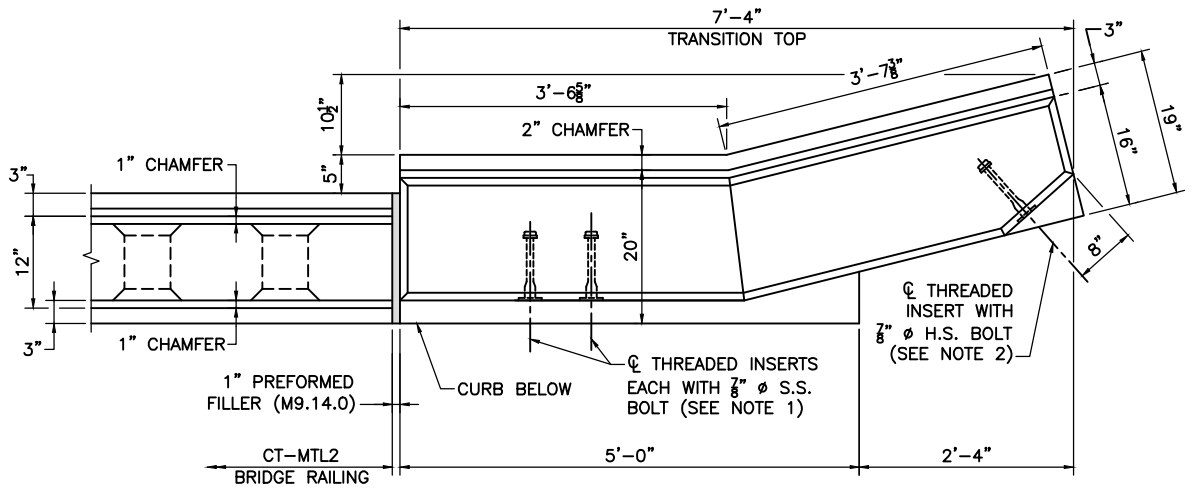
SCALE: 1/2" = 1'-0"



HIGHWAY GUARDRAIL TRANSITION DETAILS - 1

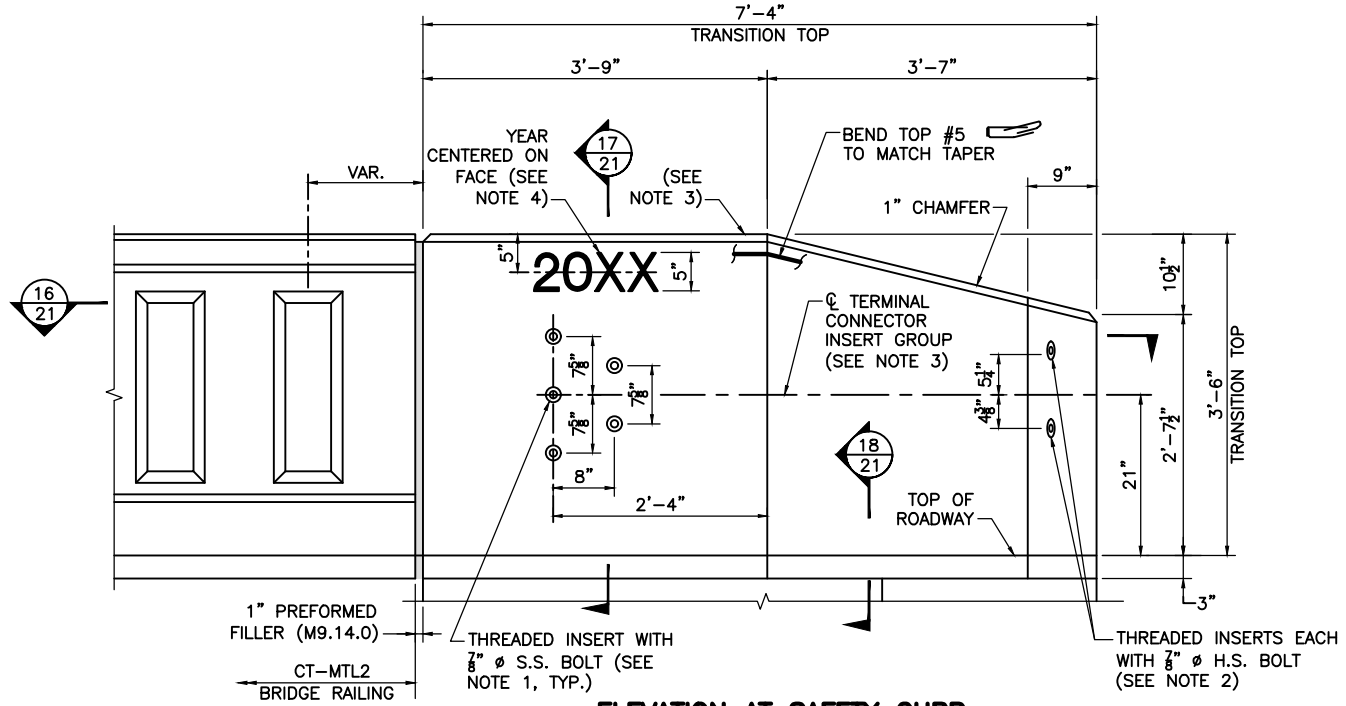
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	53	61
PROJECT FILE NO. 609068			



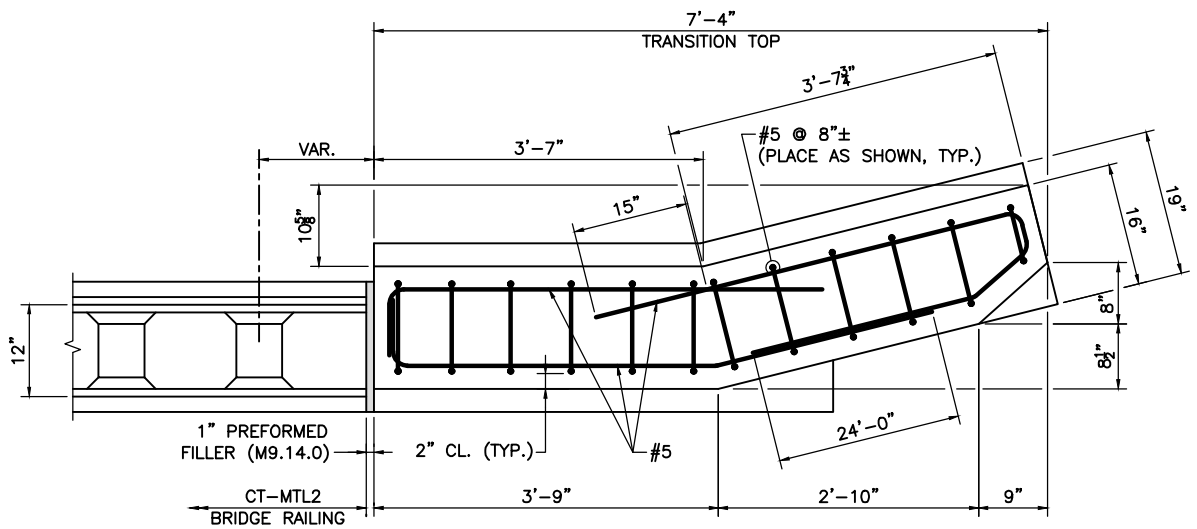
PLAN AT SAFETY CURB

SCALE: 1" = 1'-0"



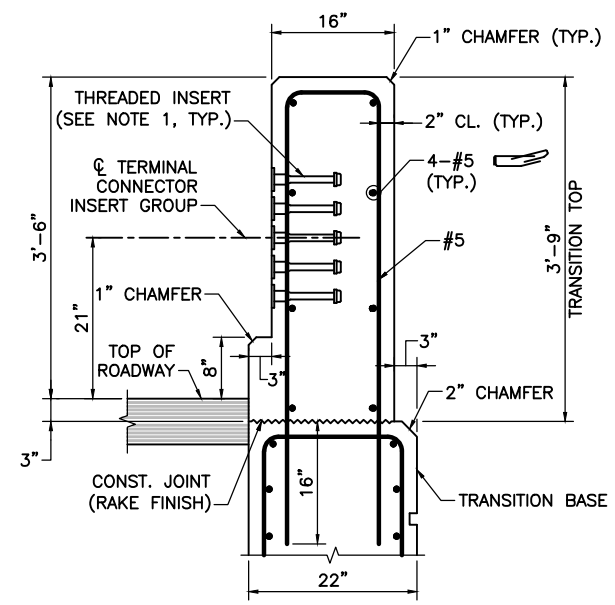
ELEVATION AT SAFETY CURB

SCALE: 1" = 1'-0"



SECTION 16 / 21

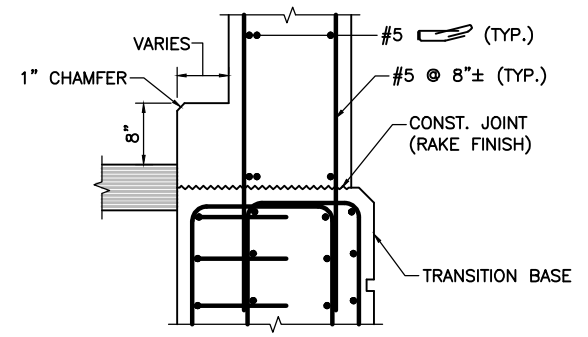
SCALE: 1" = 1'-0"



SECTION AT SAFETY CURB

SECTION 17 / 21

SCALE: 1" = 1'-0"



SECTION AT SAFETY CURB

SECTION 18 / 21

SCALE: 1" = 1'-0"

NOTES:

1. THREADED INSERTS SHALL BE PREQUALIFIED BY THE MANUFACTURER AS BEING CAPABLE OF DEVELOPING A NOMINAL SHEAR RESISTANCE OF 20 KIPS PER ⅞" ø S.S. BOLT. S.S. BOLTS SHALL BE ⅞" ø x 1½" LONG FULLY THREADED CONFORMING TO ASTM F593D WITH AISI TYPE 304N S.S. WASHERS. INSERTS FOR ⅞" STAINLESS STEEL BOLTS SHALL BE GALVANIZED AND CAST INTO THE TRANSITION.
2. ⅞" ø HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F3125 GRADE 325 TYPE 1 GALVANIZED. USE ADDITIONAL WASHERS AS REQUIRED TO PROPERLY ENGAGE THE BOLTS.
3. THE TRANSITION MAY BE CAST SQUARE AND SET PLUMB WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SQUARE TO THE POST.
4. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
5. ALL CONCRETE FOR THE PRECAST HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 HP CEMENT CONCRETE.
6. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE TRANSITION CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST TRANSITION IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH A NON-SHRINK GROUT THAT MATCHES THE COLOR OF THE TRANSITION CONCRETE WHEN CURED AND THE FILLED POCKETS SHALL BE RUBBED WITH A CORUNDUM STONE TO BLEND OUT THE JOINTS.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	54	61
PROJECT FILE NO.	609068		

HIGHWAY GUARDRAIL TRANSITION DETAILS - 2

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT _____
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

SHEET 21 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

Proposal No. 609068-136649

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609068 Final Structural Submittal (SF2) 8-Jul-2026

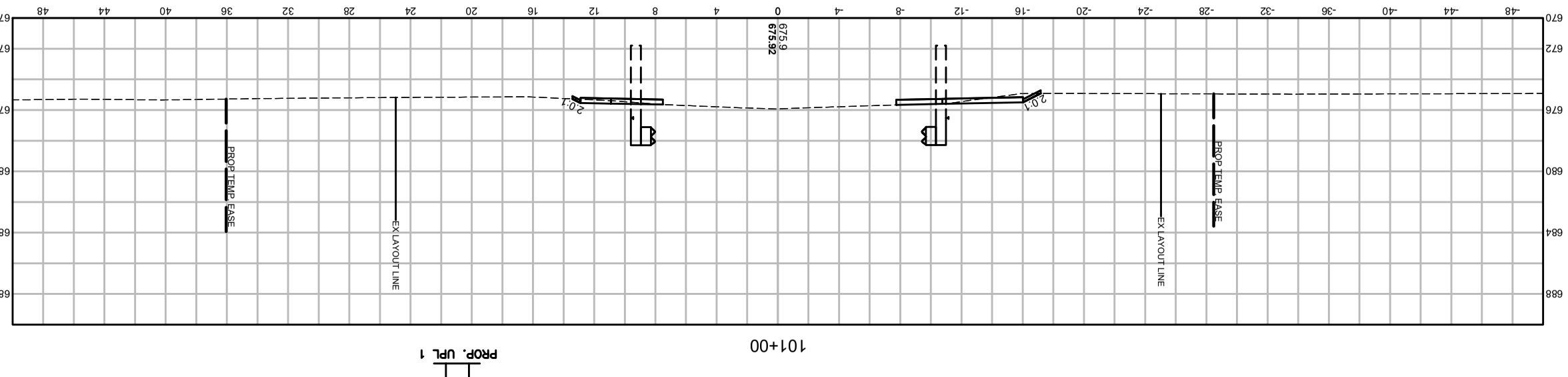
A00830 - 618

CROSS SECTIONS

PROJECT FILE NO. 609068		
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	55	61

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

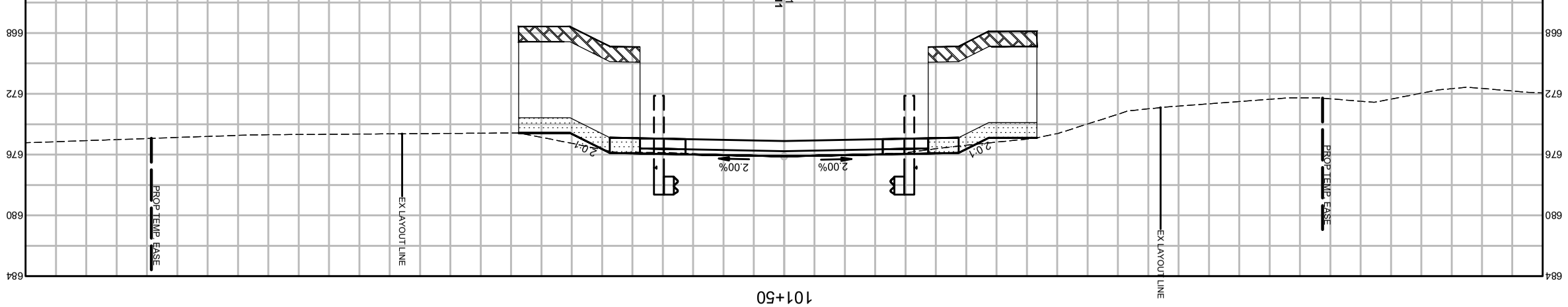
SCALE IN FEET
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101+00

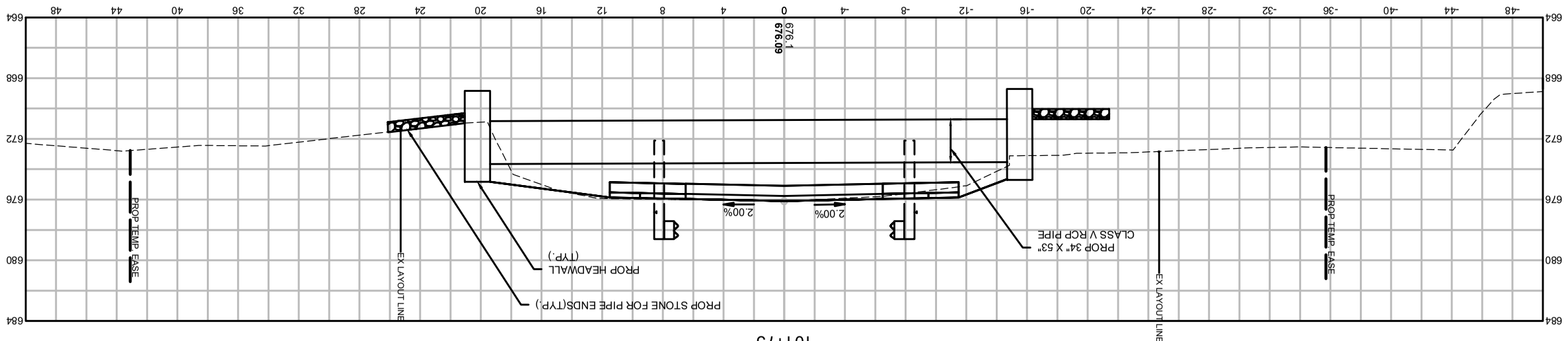
CUT: 2.63 SF
FILL: 2.66 SF

PROP. UPL 1
+37



101+50

CUT: 124.96 SF
FILL: 1.86 SF



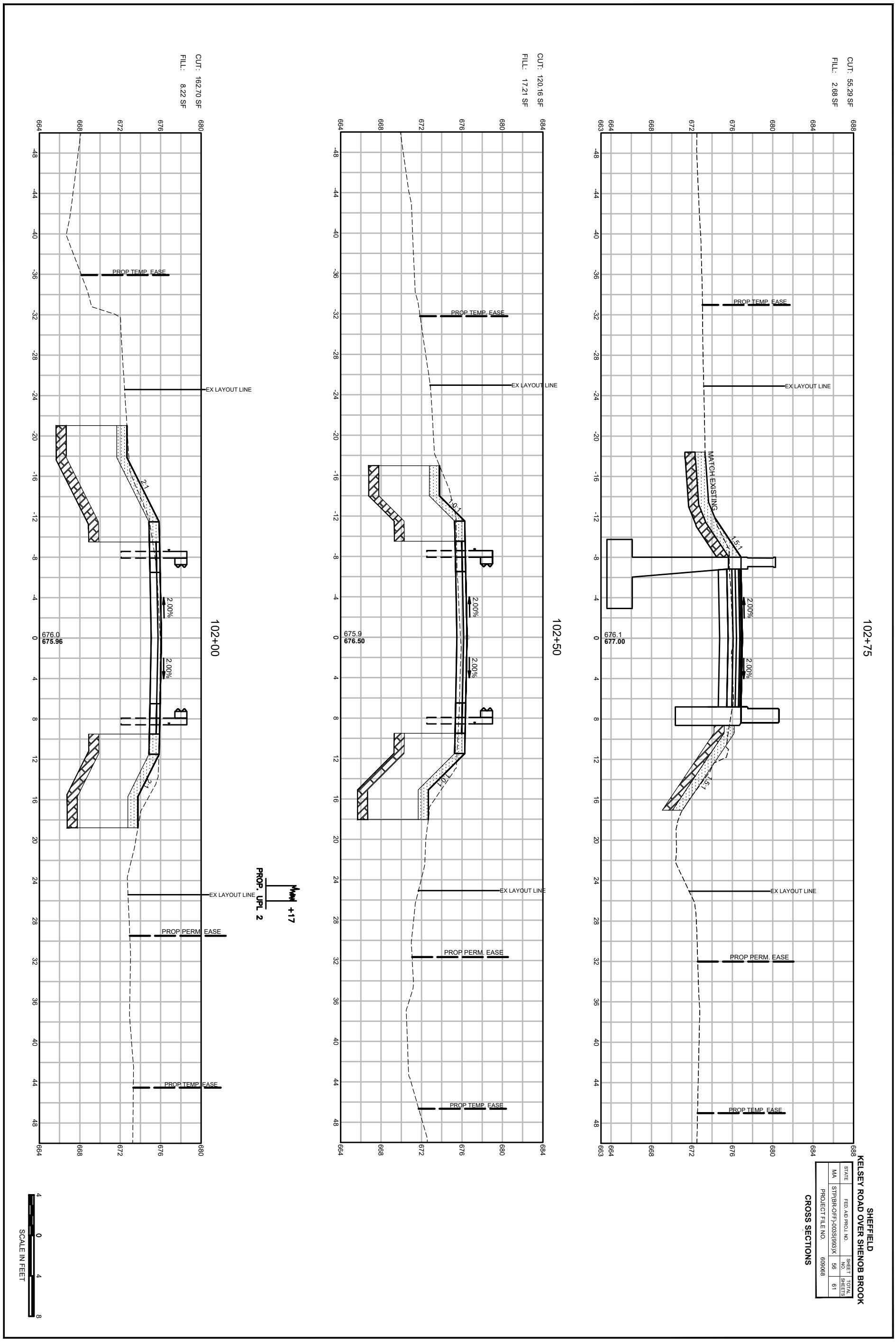
101+75

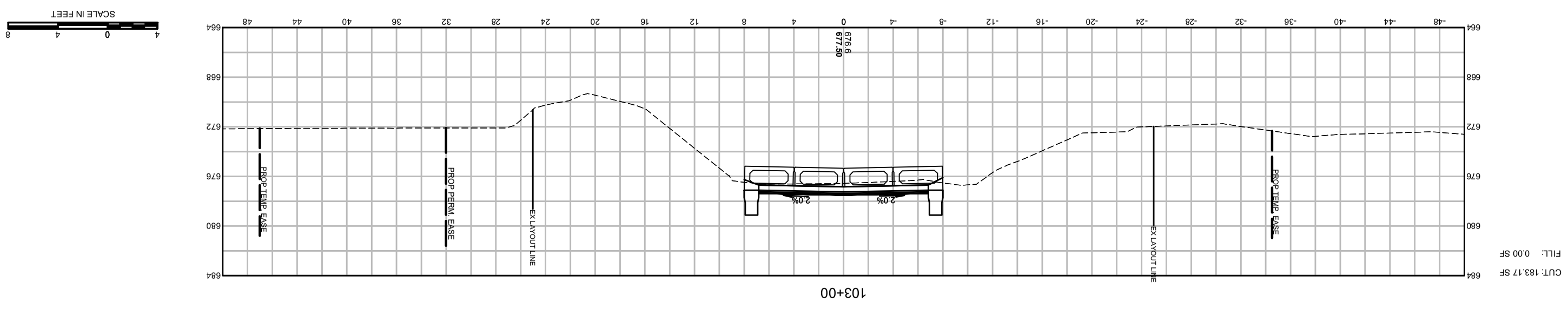
CUT: 38.96 SF
FILL: 9.11 SF

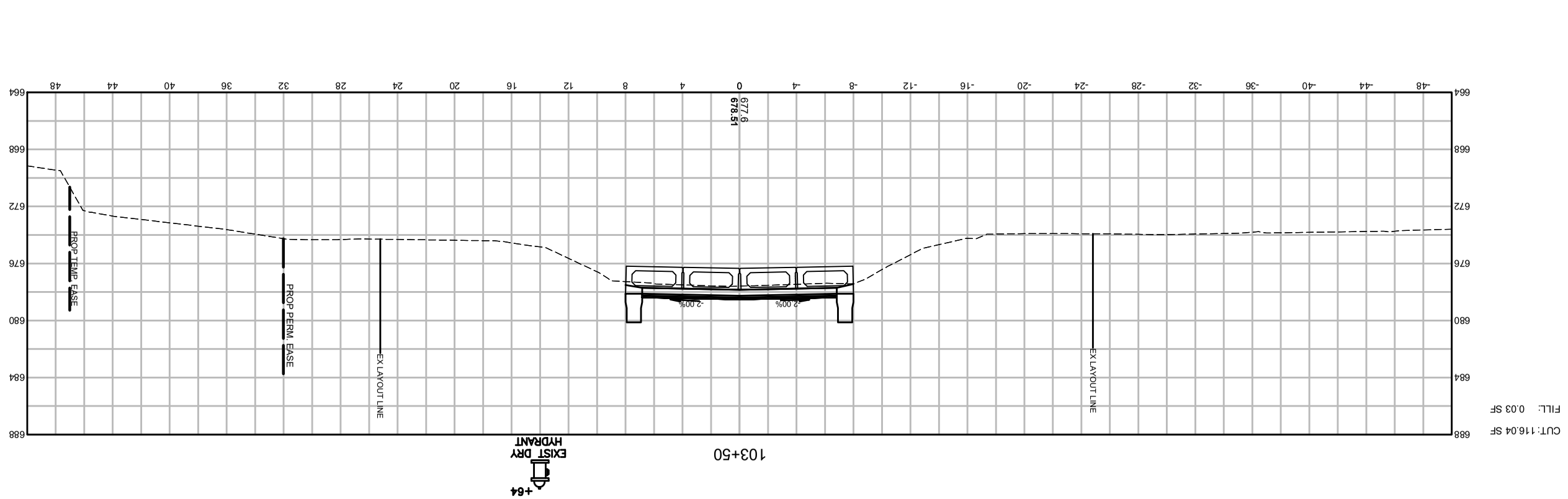
Proposal No. 609068-136649

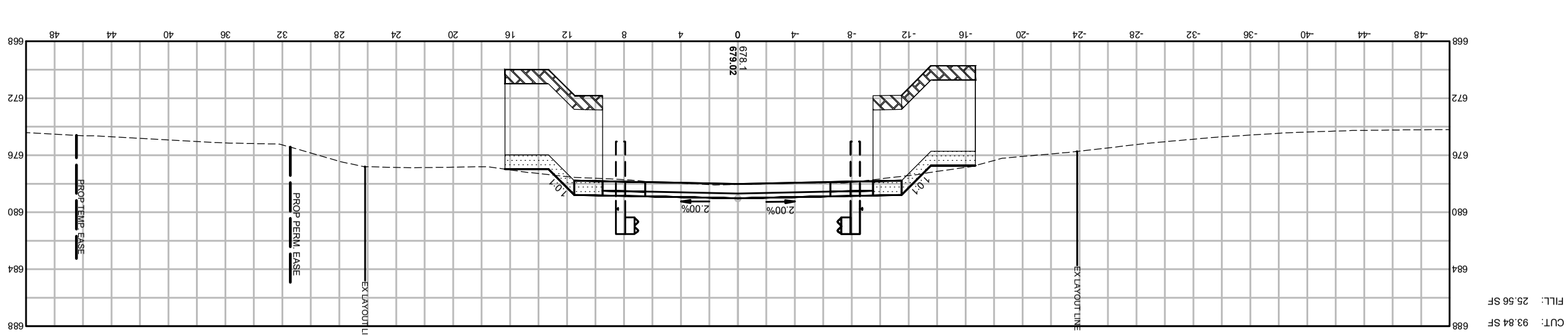
A00830 - 619

609868_HD (SHEFFIELD CROSS SECTION 01).DWG Plotted on 28-Jul-2026 11:40 AM


CUT: 55.29 SF
FILL: 2.68 SF
PROP TEMP. EASE
EX LAYOUT LINE
MATCH EXISTING
1.5:1
2.00%
676.1
677.00
PROP PERM. EASE
102+75
CUT: 120.16 SF
FILL: 17.21 SF
PROP TEMP. EASE
EX LAYOUT LINE
1.0:1
2.00%
675.9
676.50
PROP PERM. EASE
102+50
CUT: 162.70 SF
FILL: 8.22 SF
PROP TEMP. EASE
EX LAYOUT LINE
2:1
2.00%
676.0
675.96
PROP. UPL 2
+17
EX LAYOUT LINE
PROP PERM. EASE
PROP TEMP. EASE
102+00
SCALE IN FEET
SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK
CROSS SECTIONS
STATE
MA
FED. AID PROJ. NO.
STP(BR-OFF)-003S(993)X
SHEET NO.
56
TOTAL SHEETS
61
PROJECT FILE NO.
609068
609068_HD (SHEFFIELD CROSS SECTION 02).DWG
Plotted on 28-Jul-2026 11:33 AM







CROSS SECTIONS

PROJECT FILE NO. 609068			
MA	STP(BR-OFF)-0035(993)X	57	61
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

609068_HD (SHEFFIELD CROSS SECTION 03).DWG Plotted on 28-Jul-2026 1:33 PM

A00830 - 621

Proposal No. 609068-136649

NOTES:
1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREA BETWEEN STA 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN FOR ADDITIONAL INFORMATION

CROSS SECTIONS

PROJECT FILE NO. 609068			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	58	61

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

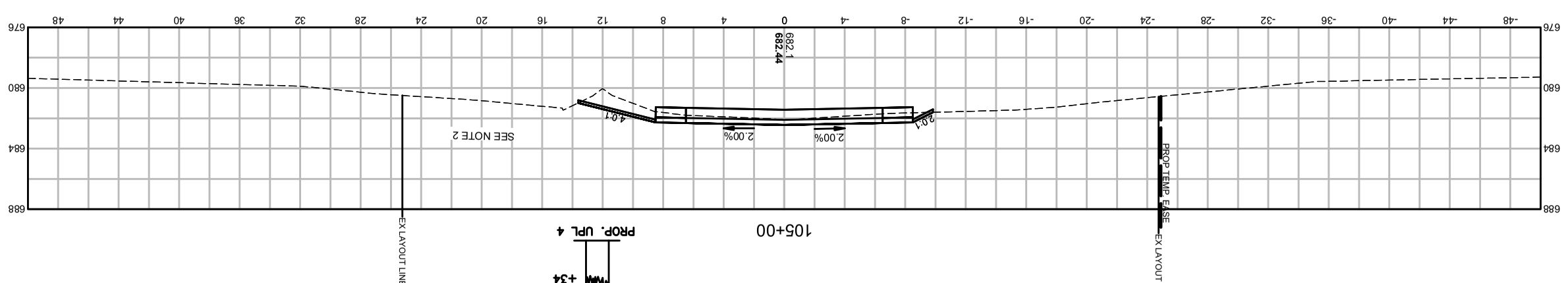
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A00830 - 622

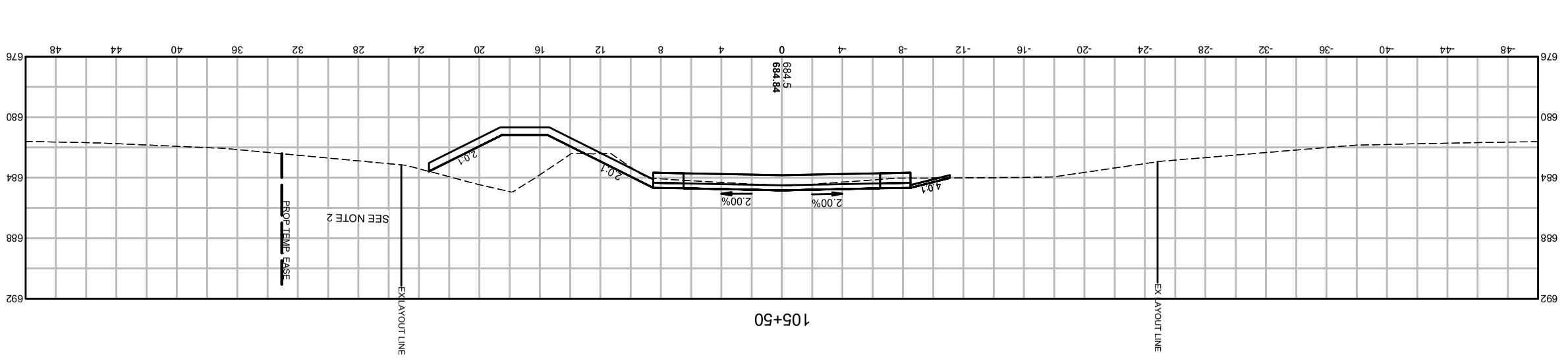
Proposal No. 609068-136649

SCALE IN FEET

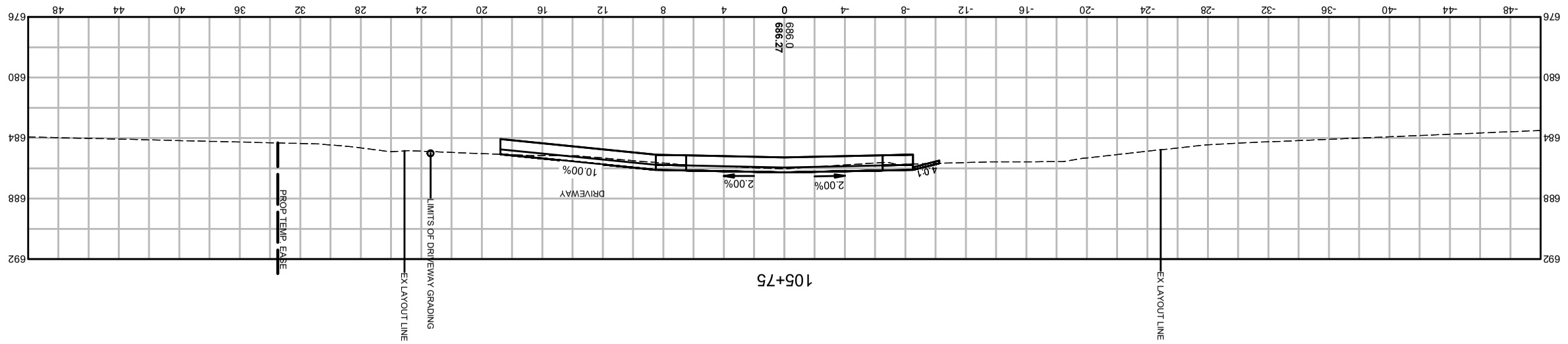
8 4 0 4



CUT: 8.76 SF
FILL: 12.99 SF



CUT: 35.97 SF
FILL: 11.22 SF



CUT: 17.96 SF
FILL: 6.59 SF

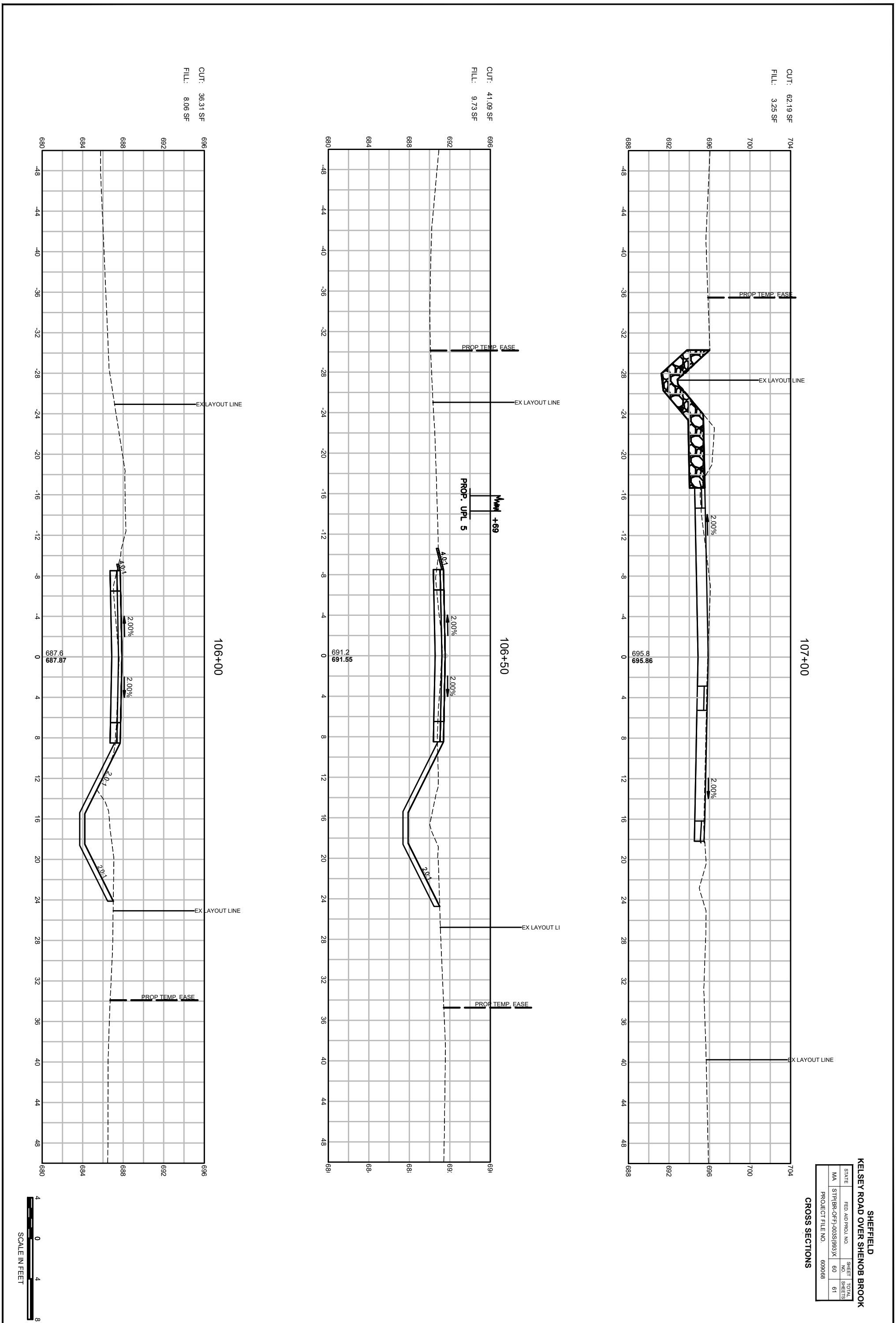
NOTES:

1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREA BETWEEN STA 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN FOR ADDITIONAL INFORMATION

CROSS SECTIONS

PROJECT FILE NO. 609068			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	59	61

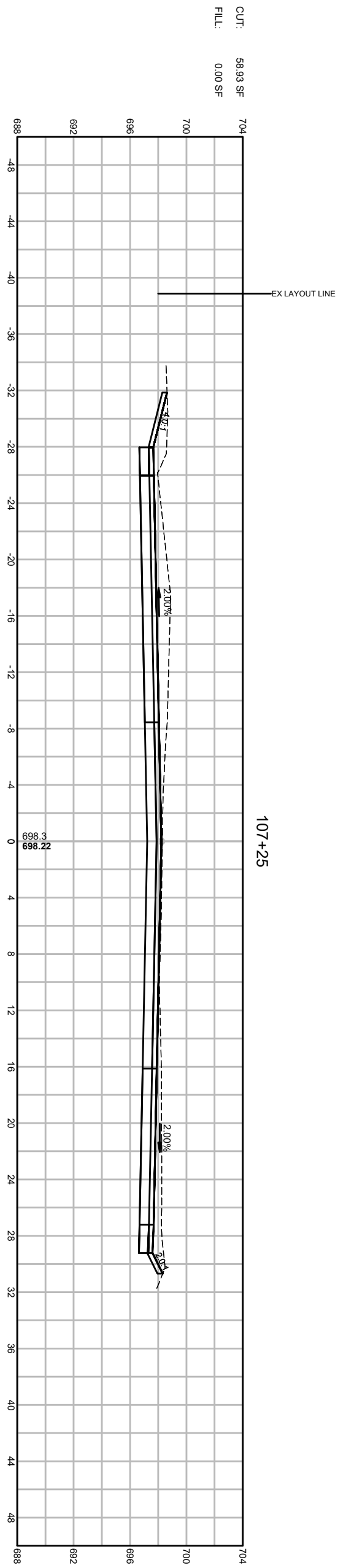
SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK



SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK
CROSS SECTIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	60	61
PROJECT FILE NO.	609068		

609068_HD (SHEFFIELD CROSS SECTION 05).DWG Plotted on 28-Jul-2026 1:45 PM



SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK
CROSS SECTIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	61	61
PROJECT FILE NO.	609068		

SCALE IN FEET
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609068_HD (SHEFFIELD CROSS SECTION 05).DWG Plotted on 28-Jul-2026 1:46 PM

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Department of Environmental Protection
Address: 100 Cambridge Street, Suite 900, Boston MA 02114 | **Phone**: 617-292-5500

Maura T. Healey	**Kim Driscoll**	**Rebecca Tepper**	**Bonnie Heiple**
Governor	Lieutenant Governor	Secretary	Commissioner

April 17, 2026

Massachusetts Department of Transportation, Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116
Attn: Courtney Walker

RE: 401 Water Quality Certification
Administrative Completeness and Technical Deficiency Review
401 WQC Transmittal No: 26-WW10-0009-APP
WW10 Major Fill and Excavation

AT: Kelsey Road Bridge Replacement over Schenob Brook
(Bridge No. S-10-015)
Sheffield, MA

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) Wetlands Program Highway Unit has completed its Administrative Completeness Review of the application for the above-referenced Water Quality Certification (WQC) application. The application requires proof of public notice in the Environmental Monitor and a newspaper of general circulation within the area to be administratively complete.

MassDEP has also completed its Technical Review of the above-referenced application and requests the following additional information:

General

1. Per Section 4.0 of the Narrative, the project proposes to cut off the temporary steel sheeting two feet below the mudline after the bridge approach slabs are constructed and dewatering equipment is removed from the brook. The need for permanent earth support systems (i.e. sheet piles or similar), either operationally or for stabilization following bridge construction, should be demonstrated. If sheet piles are not needed operationally or for stabilization, full removal of the sheet piles is required.

2. MassDEP understands the existing 48-inch x 72-inch elliptical corrugated metal culvert northwest of the bridge will be replaced with twin 34-inch x 53-inch elliptical reinforced concrete pipes.

    a. How were these culvert sizes and type determined?

    b. Sheet 15 of the Project Plans shows a plan view/detail of the proposed culverts with inverts above the ground line, which could impact wildlife passage. Please provide the pipe invert elevations to demonstrate that perching will be avoided.

Resource Area Impacts, Restoration, and Replication

3. Based on the Stream Visual Assessment of Schenob Brook (Attachment I), it appears the bankfull width that was used to assess project compliance with the Massachusetts Stream Crossing Standards (SCS) (i.e. 42 feet) is the average of two cross-sectional measurements taken downstream of the bridge due to the lack of suitable reaches upstream. USGS StreamStats identifies an average bankfull width of 53.9 feet at the bridge crossing, which results in a 1.2 x bankfull width of 64.5 feet. While the proposed crossing span of 67 feet accommodates this bankfull width, eliminating the bridge restriction will allow the stream to spread across a broader area. Accordingly, please evaluate forming a low flow channel through the crossing. MassDEP recommends retaining a Fluvial Geomorphologist (FGM) to review and advise on the proposed LUW restoration.

4. Item 983.521 included in Attachment A specifies methods to fill/choke the voids in underlying riprap of the roadway side slope embankments. To prevent entrapment of terrestrial wildlife, a similar method should be implemented along the proposed dry wildlife passages.

5. The revised Environmental Impact Plans submitted on April 16, 2026, in response to the USACE's comments show two discrepancies in the wetland flag numbers or wetland boundaries: two flags are identified as WF#A5 and, WF#C3 connects directly to WF#C5 instead of WF#C4. Please correct these discrepancies on the plans, and update the impact calculations, if necessary.

6. To minimize permanent impacts to Bordering Vegetated Wetlands (BVWs), please evaluate and/or identify opportunities to reduce the amount of modified rockfill and riprap proposed along the roadway embankments between approximately Sta 101+50 and Sta 102+75, as well as any alternative methods for slope stabilization. If the amount

of fill in BVW cannot be minimized, please expand on the need and selection of the proposed fill size, depth and placement.

7. Section 6.0 of the Narrative and Sheets 1-3 of the Wetland Replication Plan details proposed work for the wetland replication area.

    a. Based on Sheets 1 and 2, the replicated wetland will be constructed 5-10 feet east of the existing BVW and 12 inches below the existing BVW elevation. As a result, it appears a berm will be created between the existing and replicated wetlands. MassDEP recommends the replicated wetland area share a boundary with the adjacent BVW and match its elevation, if not fully then at least through breaks in the berm to create a hydrological connection.

    b. Representatives from MassDOT, MassDEP, Comprehensive Environmental Inc. (CEI Engineers), and GFT Inc. attended a virtual meeting on February 11, 2026, to discuss the proposed wetland replication area. Following the meeting, MassDEP understood the existing BVW boundary south of the brook (Wetland Flag Series C-1 to C-4) would be extended in support of creating a more natural wetland replication area boundary. If it has not already been completed, MassDEP recommends surveying and plotting the extended wetland line on the project plans.

Stormwater

8. In Section 9.0 of the Narrative under subheading “Standard 4. Water Quality”, it states “…Kelsey Road is a gravel roadway, providing a level of permeable pavement as a Low Impact Development (LID) practice.” Elsewhere in the application, Kelsey Road is recognized as an impervious surface. Please note that per the Massachusetts Stormwater Handbook, LID techniques aim to “*to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat*”. As such, the gravel roadway of Kelsey Road is not considered a LID technique.

9. Relevant calculations for Stormwater Management Standard 2 are required including pre- and post-construction peak discharge flow rates in cubic feet per second (cfs) for the 2-, 10-, and 100-year 24-hour storms.

10. Per 314 CMR 9.06(6)(a)6., stormwater discharges near or to any critical area, such as coldwater fisheries, require the use of specific control and pollution prevention

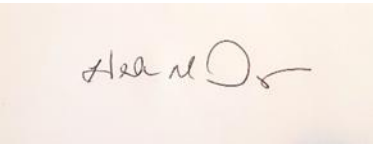
measures and structural stormwater control measures (SCMs) determined by MassDEP to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. Redevelopment projects are required to comply with the pretreatment and structural SCM requirements in Stormwater Standard 6 to the maximum extent practicable. Accordingly, please evaluate the feasibility of converting the proposed drainage swale to a grass channel, water quality swale or other SCM per Volume 2 of the Handbook. This would assist in providing water quality treatment in accordance with Stormwater Management Standard 4.

11. Please provide pre- and post-construction subwatershed maps and identify the area of impervious surface associated with each of the stormwater treatment trains (drainage swale with check dams vs. country drainage). In addition, Total Suspended Solids (TSS) Removal Calculation Worksheets should be completed for each treatment train to show compliance with Stormwater Standard 4.

Upon receipt of all requested supplemental information, MassDEP has 30 calendar days to issue or deny a certification.

Should you have any questions relative to this letter, please contact me at heidi.davis@mass.gov or Jaime Iannelli at jaime.iannelli@mass.gov.

Sincerely,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP WERO – Michael McHugh
USACE – Dan Vasconcelos
USACE – Kevin Newton
Sheffield Conservation Commission – Don Ward, Chair
MassDOT – Lily Collins
MassDOT – Joshua Bartus
CEI Engineers – Matt Lundsted
GFT, Inc – Thomas Daley

GFT

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July 8, 2026

Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114
Attn: Ms. Heidi M. Davis
Wetlands Program Highway Unit

Re: 401 Water Quality Certification
Kelsey Road over Schenob Brook
Bridge Replacement (Bridge No. S-10-015)
Sheffield, MA
MassDOT Project #609068

Dear Ms. Davis:

We are in receipt of the April 17, 2026 Technical Review comments provided to the Massachusetts Department of Transportation Highway Division (MassDOT) as part of MassDEP's Administrative Completeness Review for the subject project. On behalf of MassDOT, we have reviewed your comments and offer the following responses:

1. Per Section 4.0 of the Narrative, the project proposes to cut off the temporary steel sheeting two feet below the mudline after the bridge approach slabs are constructed and dewatering equipment is removed from the brook. The need for permanent earth support systems (i.e. sheet piles or similar), either operationally or for stabilization following bridge construction, should be demonstrated. If sheet piles are not needed operationally or for stabilization, full removal of the sheet piles is required.

   Response: The construction plans and Section 4.0 of the Narrative have been revised to indicate that the temporary sheeting used for control of water shall be removed prior to the completion of the project.

2. MassDEP understands the existing 48-inch x 72-inch elliptical corrugated metal culvert northwest of the bridge will be replaced with twin 34-inch x 53-inch elliptical reinforced concrete pipes.

   a. How were these culvert sizes and type determined?

      Response: The proposed culvert sizes were selected to match the existing culvert's cross-sectional area:
      Existing 48" x 72" = 2,714 in^2
      Proposed dual 34" x 53" = 2,830 in^2
      Utilizing a pair of smaller pipes is intended to allow for an increased vertical clearance between the tops of these pipes and the roadway surface. By utilizing two pipes with a smaller vertical length, sufficient clearance can be provided above the pipe to preserve the integrity of the pipe and avoid roadway maintenance concerns.

   b. Sheet 15 of the Project Plans shows a plan view/detail of the proposed culverts with inverts above the ground line, which could impact wildlife passage. Please provide the pipe invert elevations to demonstrate that perching will be avoided.

      Response: The design intent for these replacement RCP's is to meet the existing ground line, match the invert elevations of the existing 48" x 72" corrugated metal culvert and minimize the grading at the outfalls

to the proposed stone apron. The referenced Reinforced Concrete Pipe Headwall Details have been revised to reflect this.

3. Based on the Stream Visual Assessment of Schenob Brook (Attachment I), it appears the bankfull width that was used to assess project compliance with the Massachusetts Stream Crossing Standards (SCS) (i.e. 42 feet) is the average of two cross-sectional measurements taken downstream of the bridge due to the lack of suitable reaches upstream. USGS StreamStats identifies an average bankfull width of 53.9 feet at the bridge crossing, which results in a 1.2 x bankfull width of 64.5 feet. While the proposed crossing span of 67 feet accommodates this bankfull width, eliminating the bridge restriction will allow the stream to spread across a broader area. Accordingly, please evaluate forming a low flow channel through the crossing. MassDEP recommends retaining a Fluvial Geomorphologist (FGM) to review and advise on the proposed LUW restoration.

   Response: MassDOT has coordinated with a Fluvial Geomorphologist on this matter and we have incorporated changes to the final design to include a Low Flow Channel with a depth of 1'-3" (1/2 the bankfull depth) and a width of 14'-0" (1/3 the bankfull width). Please refer to the revised plans in Attachment 1.

4. Item 983.521 included in Attachment A specifies methods to fill/choke the voids in underlying riprap of the roadway side slope embankments. To prevent entrapment of terrestrial wildlife, a similar method should be implemented along the proposed dry wildlife passages.

   Response: The use of Item 983.521 (Streambed/Bank Restoration Material) is specified for use as the proposed dry wildlife passages underneath the bridge. The special provision has been revised to include requirements to fill/choke voids in underlying material within the limits of the wildlife passages.

   Please note that the use of Item 983.521 over the proposed riprap side slopes has been removed and replaced with Item 986. – Modified Rockfill. Based on discussions with MassDOT Landscape, the Modified Rockfill material will be better-suited for the intended application on top of riprap.

5. The revised Environmental Impact Plans submitted on April 16, 2026, in response to the USACE's comments show two discrepancies in the wetland flag numbers or wetland boundaries: two flags are identified as WF#A5 and, WF#C3 connects directly to WF#C5 instead of WF#C4. Please correct these discrepancies on the plans, and update the impact calculations, if necessary.

   Response: We have updated the wetland flagging on the Environmental Impact Plans. To address the duplication of WF#A5, we have revised one of these flags to be WF#A5-1.

   The existing BVW boundary on the south side of Schenob Brook was reflagged on June 9, 2026 – the updated Environmental Impact Plans reflect the location of the revised flagging #C-1 through #C-6 and the wetland impacts and replication area have been adjusted accordingly. The following is a summary of the changes to the wetland impact areas which are incorporated into the updated WQC Narrative included as Attachment 2:

Resource Area	Previous Area (sf)	Updated Area (sf)
Permanent BVW Impacts	6,939	5,838
Temporary BVW Impacts	9,990	10,423
Permanent LUW Impacts	38	5
Temporary LUW Impacts	292	292

Resource Area	Previous Area (sf)	Updated Area (sf)
LUW Gained from Cutting	*780*	*807*
Wetland Replication Area	*9,123*	*7,045*

6. To minimize permanent impacts to Bordering Vegetated Wetlands (BVWs), please evaluate and/or identify opportunities to reduce the amount of modified rockfill and riprap proposed along the roadway embankments between approximately Sta 101+50 and Sta 102+75, as well as any alternative methods for slope stabilization. If the amount of fill in BVW cannot be minimized, please expand on the need and selection of the proposed fill size, depth and placement.

   Response: In an effort to minimize BVW impacts, GFT evaluated three additional alternatives for the roadway side slopes as summarized below. The Construction Plans and WQC Narrative have been updated to reflect the changes summarized under Option 3:

   - *Option 1 considered the use of permanent sheet piles in lieu of the riprap slope. However, the proposed riprap slope protection is needed to provide scour protection for the bridge approaches and the use of permanent sheet piles is not a proven countermeasure for scour protection. Consequently, this option has been dismissed from consideration.*
   - *Option 2 considered the addition of a concrete retaining wall in lieu of the riprap slope. However, the excavation requirements for the construction of the retaining wall footing will actually result in more wetland impacts during construction. While these disturbed areas would be restored at the completion of construction, we dismissed this option from further consideration because of the construction impacts to the resource areas.*
   - *Option 3 considered a change to the riprap slopes from 1.5:1 (H:V) to 1:1. This change to the riprap slopes was evaluated and resulted in a reduction to the Proposed Permanent BVW impacts from 6,933 sf to 6,877 sf. Based on this, Option 3 has been implemented into the final design.*

   In addition to the permanent BVW impact reductions noted in Option 3, the latest wetland flagging that was conducted on June 9, 2026 defined new BVW limits on the south side of Schenob Brook that resulted in further reductions to BVW. Overall, the revised Permanent BVW Impacts have been reduced to 5,838 square feet as summarized in the table above.

7. Section 6.0 of the Narrative and Sheets 1-3 of the Wetland Replication Plan details proposed work for the wetland replication area.

   a. Based on Sheets 1 and 2, the replicated wetland will be constructed 5-10 feet east of the existing BVW and 12 inches below the existing BVW elevation. As a result, it appears a berm will be created between the existing and replicated wetlands. MassDEP recommends the replicated wetland area share a boundary with the adjacent BVW and match its elevation, if not fully then at least through breaks in the berm to create a hydrological connection.

      Response: The proposed wetland replication area has been revised to remove the berm and create a shared boundary with the existing BVW.

   b. Representatives from MassDOT, MassDEP, Comprehensive Environmental Inc. (CEI Engineers), and GFT Inc. attended a virtual meeting on February 11, 2026, to discuss the proposed wetland replication area. Following the meeting, MassDEP understood the existing BVW boundary south of the brook (Wetland

Flag Series C-1 to C-4) would be extended in support of creating a more natural wetland replication area boundary. If it has not already been completed, MassDEP recommends surveying and plotting the extended wetland line on the project plans.

Response: The existing BVW boundary on the south side of Schenob Brook was reflagged on June 9, 2026 – the updated Environmental Impact Plans reflect the location of the revised flagging #C-1 through #C-6 and the wetland impacts and replication area have been adjusted as summarized in our response to Comment #5.

8. In Section 9.0 of the Narrative under subheading "Standard 4. Water Quality", it states "…Kelsey Road is a gravel roadway, providing a level of permeable pavement as a Low Impact Development (LID) practice." Elsewhere in the application, Kelsey Road is recognized as an impervious surface. Please note that per the Massachusetts Stormwater Handbook, LID techniques aim to *"to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat"*. As such, the gravel roadway of Kelsey Road is not considered a LID technique.

   Response: Section 9.0 of the Narrative and the Stormwater Report Memo have been revised to remove references to the gravel roadway as an LID technique.

9. Relevant calculations for Stormwater Management Standard 2 are required including pre- and post-construction peak discharge flow rates in cubic feet per second (cfs) for the 2-, 10-, and 100-year 24-hour storms.

   Response: Pre- and post-construction peak discharge flow rates have been calculated for the 2-, 10-, and 100-year 24-hour storms. This information has been incorporated into the updated version of the Stormwater Report Memo included as Attachment 4 to this letter.

10. Per 314 CMR 9.06(6)(a)6., stormwater discharges near or to any critical area, such as coldwater fisheries, require the use of specific control and pollution prevention measures and structural stormwater control measures (SCMs) determined by MassDEP to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. Redevelopment projects are required to comply with the pretreatment and structural SCM requirements in Stormwater Standard 6 to the maximum extent practicable. Accordingly, please evaluate the feasibility of converting the proposed drainage swale to a grass channel, water quality swale or other SCM per Volume 2 of the Handbook. This would assist in providing water quality treatment in accordance with Stormwater Management Standard 4.

    Response: The proposed grade of the drainage ditch is in excess of 5% and, therefore, would not meet the design standards for a grassed channel or other SCMs detailed in the MA Stormwater Handbook. However, we were able to utilize the area between the southern limit of this drainage ditch and the proposed Wetland Replication area to incorporate a grassed channel that meets the design requirements as defined in Volume 2, Chapter 2 of the Stormwater Handbook. The introduction of the grassed channel as a stormwater control measure (SCM) will provide water quality treatment prior to discharging stormwater to this critical area, and the inclusion of check dams will help to reduce the velocity of flow and attenuate the peak discharge. The design plans/details (Attachment 1) as well as the Stormwater Report Memo (Attachment 4) have been updated to reflect the addition of this grassed channel.

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11. Please provide pre- and post-construction subwatershed maps and identify the area of impervious surface associated with each of the stormwater treatment trains (drainage swale with check dams vs. country drainage). In addition, Total Suspended Solids (TSS) Removal Calculation Worksheets should be completed for each treatment train to show compliance with Stormwater Standard 4.

    Response: Pre- and post-construction catchment maps have been provided as part of the updated Stormwater Report Memo included as Attachment 4 to this letter.

We trust that this information adequately addresses your comments. If you have any additional questions or comments, please contact Ms. Courtney Walker either by phone at (857) 262-0757 or by email at Courtney.l.walker@dot.state.ma.us or myself at the email/phone numbers noted below.

Sincerely,
GFT Infrastructure, Inc.

Thomas P. Daley, P.E.
Principal Project Manager

E: tdaley@gftinc.com
C: 617.276.5125 **| O**: 781.410.3930

gftinc.com

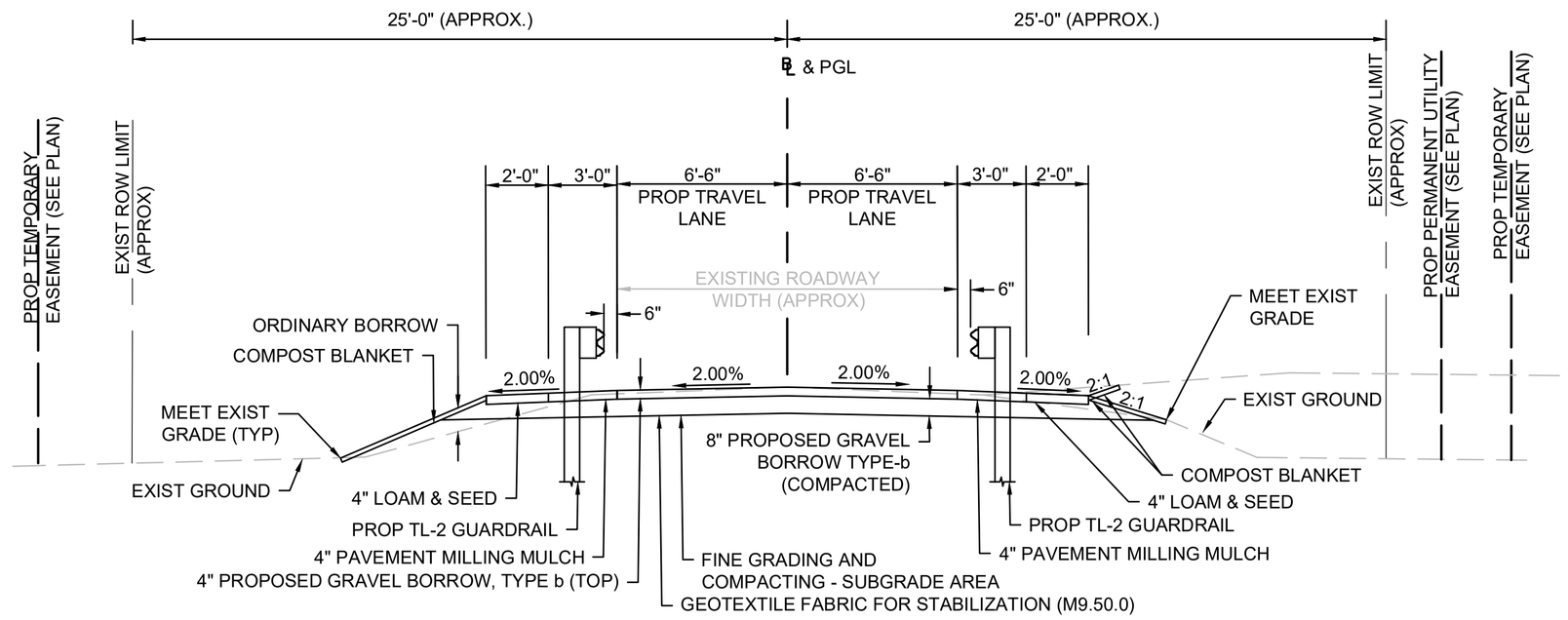
Attachments

cc: Ms. Courtney Walker, MassDOT Highway Division, Environmental Services
Ms. Lily Collins, MassDOT Highway Division, Environmental Services
Mr. Joshua Bartus, MassDOT Highway Division, Project Manager
Mr. Matt Lundsted, CEI Engineers

Attachment 1

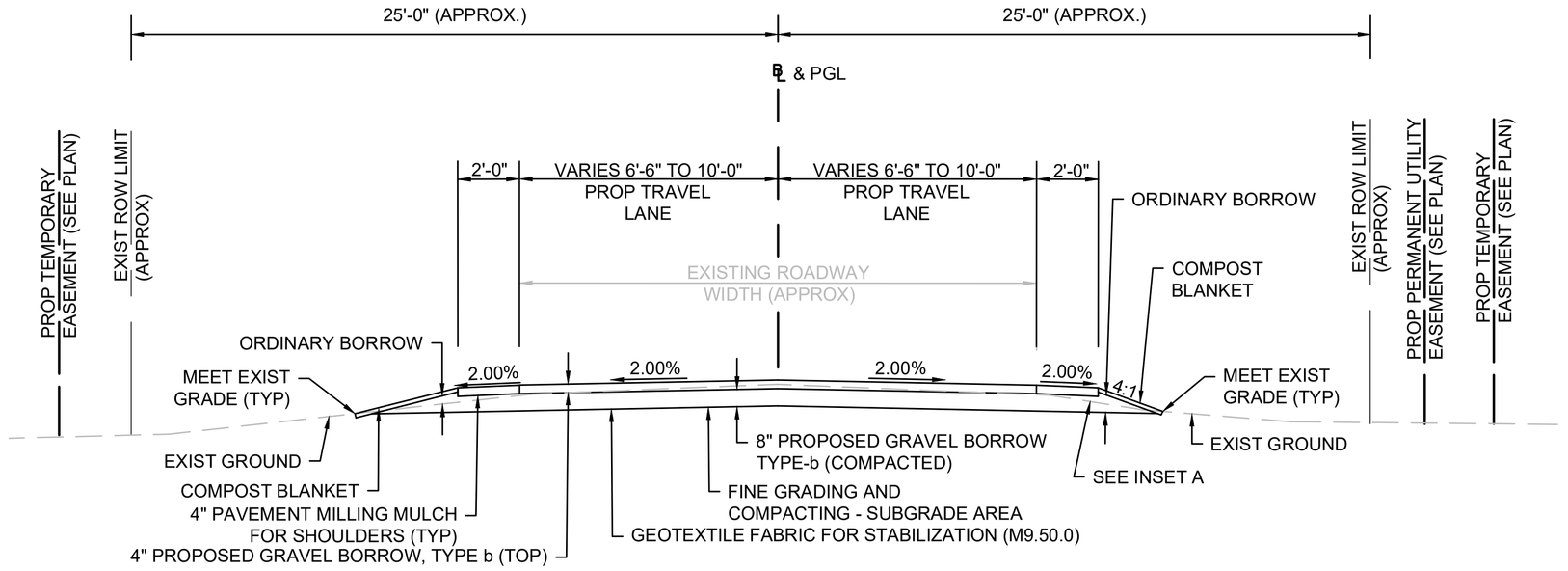
Environmental Impact Plans & Details, Revised

GFT



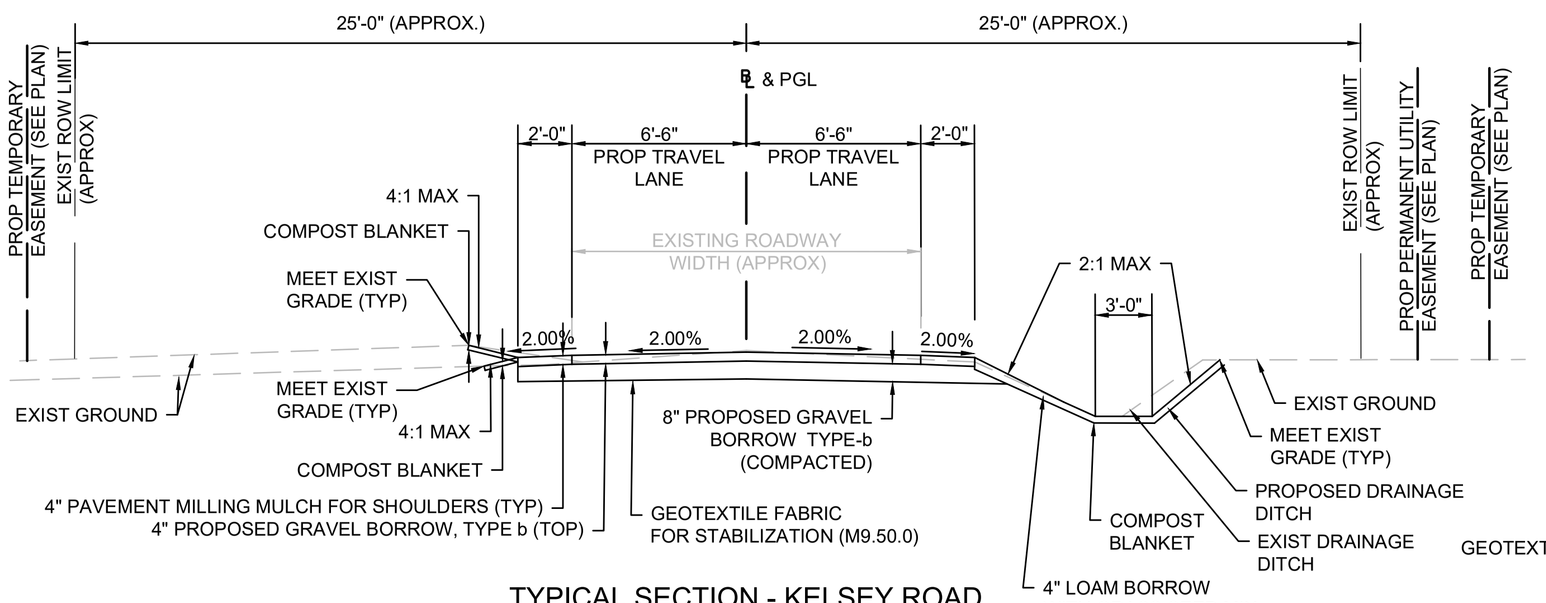
TYPICAL SECTION - KELSEY ROAD

STA. 103+95.00 TO STA. 104+53.97
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD PASSING SECTION AND WETLAND ADJACENT GRADING

STA. 104+53.97 TO STA. 105+37.00
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD WITH PROPOSED ROADSIDE DITCH

STA. 105+37.00 TO STA. 106+50.00
NOT TO SCALE

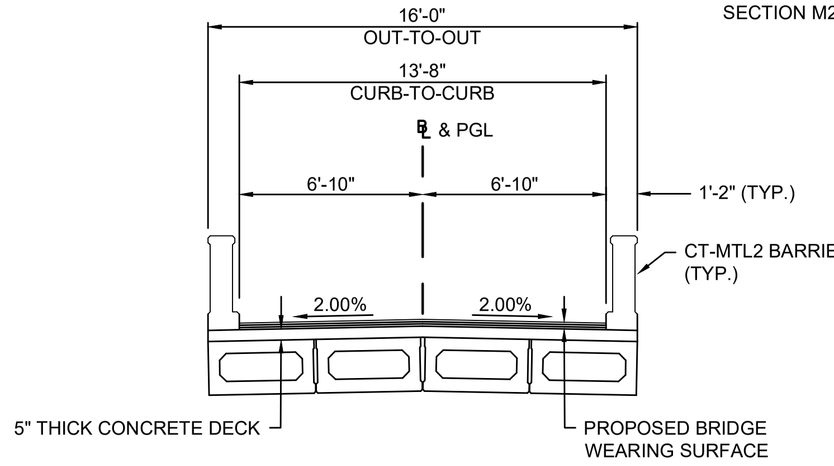
NOTES:

1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED IN ACCORDANCE WITH SECTION 450.
2. SEE LANDSCAPE PLANS FOR COMPOST BLANKET SEEDING DETAILS
3. SEE CONSTRUCTION STANDARD DETAILS (628.24.2, 628.24.3) FOR GUARDRAIL TRANSITIONS AT BRIDGE APPROACHES
4. GRAVEL BORROW TYPE-b SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 4 INCHES.
5. RIP RAP MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION M2.02.0

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	6	61
PROJECT FILE NO.	609068		

TYPICAL SECTIONS



TYPICAL SECTION - KELSEY ROAD BRIDGE

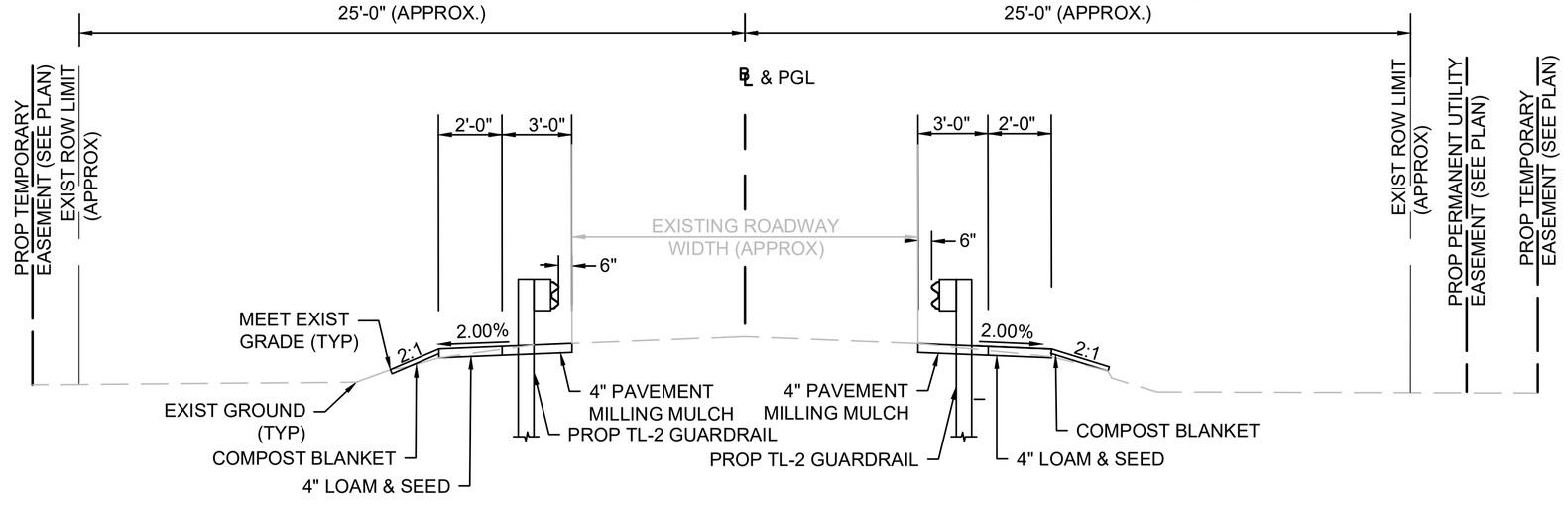
STA. 102+82.23 TO STA. 103+51.98
SCALE: ¼" = 1'-0"

PAVEMENT NOTES:

PROPOSED GRAVEL FOR SURFACING & GRAVEL DRIVEWAY
4" GRAVEL BORROW, TYPE b (TOP), OVER
8" GRAVEL BORROW, TYPE-b (COMPACTED), OVER
GEOTEXTILE FABRIC (STABILIZATION), OVER
SPECIAL BORROW AS REQUIRED BASED ON EXISTING SUBGRADE MATERIALS ONLY WHEN NEEDED

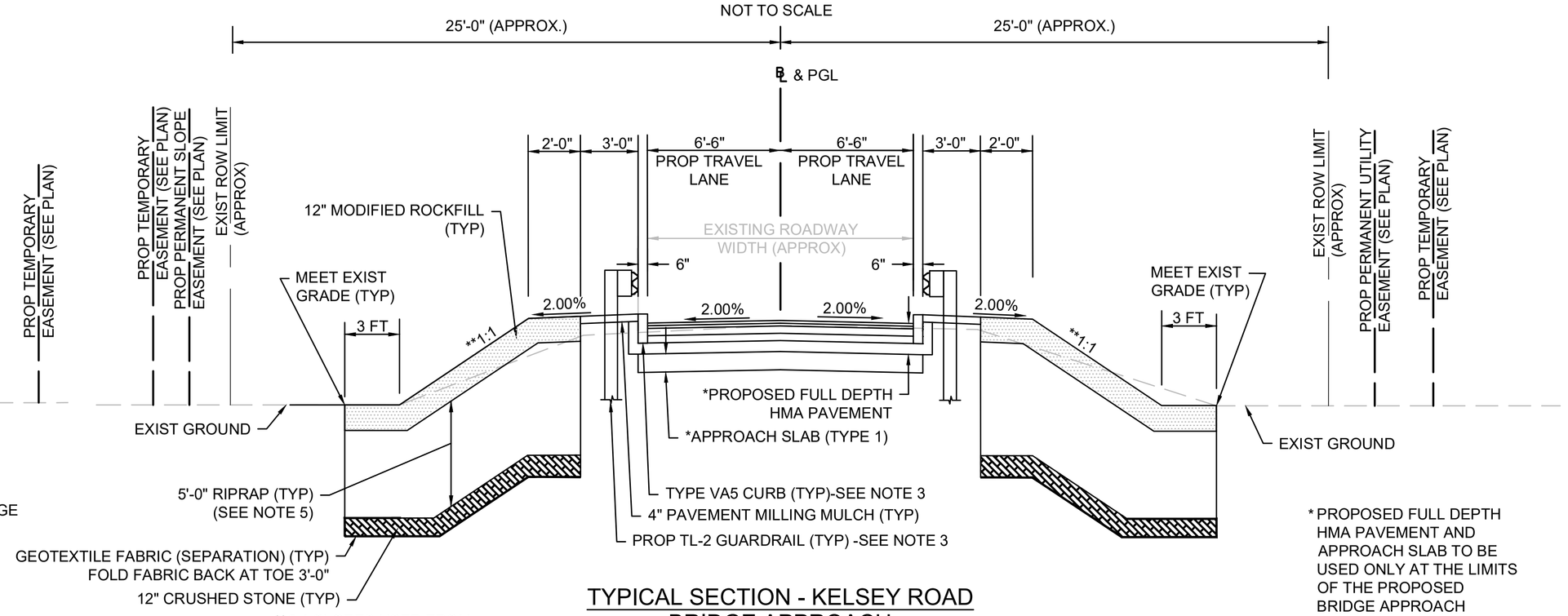
PROPOSED FULL DEPTH HMA PAVEMENT
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P)), OVER
4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5), OVER
4" DENSE GRADED CRUSHED STONE, OVER
6" MIN. GRAVEL BORROW TYPE B, OVER
PROPOSED APPROACH SLAB (TYPE 1)

PROPOSED BRIDGE WEARING SURFACE
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P), OVER
MEMBRANE WATERPROOFING



TYPICAL SECTION - KELSEY ROAD

STA. 101+00.00 TO STA. 101+48.00
NOT TO SCALE



**2:1 SLOPES USED FROM 25 FT RADIUS AWAY FROM THE ABUTMENTS AND BEYOND

TYPICAL SECTION - KELSEY ROAD BRIDGE APPROACH

STA. 101+48.00 TO STA. 102+81.48
STA. 103+52.73 TO STA. 103+95.00
NOT TO SCALE

* PROPOSED FULL DEPTH HMA PAVEMENT AND APPROACH SLAB TO BE USED ONLY AT THE LIMITS OF THE PROPOSED BRIDGE APPROACH SLABS. OTHERWISE, GRAVEL BORROW TYPE-B IS TO BE USED. SEE PLANS FOR LIMITS.

Proposal No. 609068-136649

609068_HD (SHEFFIELD TYPICAL SECTIONS).DWG Plotted on 6-Jul-2026 1:59 PM

A00830 - 636

FOR PROFILE SEE SHEET NO. 9

SCALE: 1" = 20'

0 20 50 100

LEGEND

STREAMBED/BANK RESTORATION MATERIAL (12")

MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12") - SEE NOTE 10

MODIFIED ROCKFILL (12"), OVER CRUSHED STONE (12")

STONE FOR PIPE ENDS

WETLAND REPLICATION AREA

ID: 267/001.0-0003-0001.0
KELSEY ROAD
N/F LANDS OF
JOHN R. OLEEN
DEED BK 2565 PG 93

PROJECT BEGIN
STA 99+15
N2854947.8548
E1406542572

IDENTIFIED RARE PLANT SPECIES (BURR OAK)

KELSEY ROAD
PUBLIC - 50 FEET WIDE

TOWN WAY

PROP. LIMIT OF GRADING (TYP)

PROP. TANGENT END TREATMENT, TL-2

MEET EXISTING

PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)(SEE NOTE 3)

PROP. GUARDRAIL, TL-2 (SINGLE-FACED)

PROP. CLEARING & GRUBBING LIMITS (TYP)

PROP. TEMPORARY EASEMENT

PROP. STONE FOR PIPE ENDS (TYP)

UPSTREAM REINFORCED CONCRETE PIPE HEADWALL

PROP. GRAVEL BORROW ROADWAY

BORDERING VEGETATED WETLAND BOUNDARY (TYP)

EXISTING BANK (MAHW) AND ORDINARY HIGH WATER LINE BOUNDARY (TYP)

PT +00.00

R=324.50' L=127.87'

Δ=22° 34' 07"

99

100

101

102

103

104

S41°58'33"E
213.47'

N 7,677,411

E 736,538.46

PC +13.47

Δ=3° 10' 42"
R=1,200.00' L=66.59'

PT +80.07

S38°47'46"E
76.26'

PC -55.33

R=300.00' L=106.71'

Δ=20° 22' 50"

50.00'

50.00'

15.00'

5.00'

SCHENOB BROOK

500+00

TREELINE

FLOW

CONTINUED ON SHEET NO. 8

PROP. LIMIT OF GRADING (TYP)

PROP. CLEARING & GRUBBING LIMITS (TYP)

RELOCATED DRY HYDRANT

EX. BRG EAST ABUTMENT

EX. DRY HYDRANT TO BE RELOCATED

PROP. FULL DEPTH PAVEMENT OVER PROP APPROACH SLAB STA 103+51.98 TO STA 103+67.00

PROP. PRECAST HIGHWAY GUARDRAIL TRANSITION (TYP)

RET TREE

PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP) (SEE NOTE 3)

LIMITS OF CLEARING & GRUBBING

PROP. GRAVEL BORROW ROADWAY

BORDERING VEGETATED WETLAND BOUNDARY (TYP)

PROP. TEMPORARY EASEMENT

PROP. PAVEMENT MILLING MULCH

R&S EXISTING FENCE (SEE NOTE 9)

PROP. APPROACH SLAB LIMIT

CONSTRUCTION COFFERDAM (SEE BRIDGE PLANS)

PROP. STREAMBED/BANK RESTORATION MATERIAL

CONSTRUCTION COFFERDAM (SEE BRIDGE PLANS)

PROP. PERMANENT UTILITY EASEMENT

℄ BRG WEST ABUTMENT

PROP. FULL DEPTH PAVEMENT OVER PROP APPROACH SLAB STA 102+67.25 TO STA 102+82.23

PROP. APPROACH SLAB LIMIT

PROP. TRANSITION TO BRIDGE RAIL (TYP)

PROP. BRIDGE NO. S-10-015

TRANSFER EX. BENCHMARK (SEE NOTE 2)

PROP. LIMIT OF GRADING (TYP)

EX. BENCHMARK

PROP CLEARING & GRUBBING LIMITS (TYP)

SCHENOB BROOK

STA. 503+11.67

KELSEY ROAD

STA. 103+31.29

PROP LIMITS OF SELECTIVE CLEARING AND THINNING (SEE NOTE 1)

BORDERING VEGETATED WETLAND BOUNDARY (TYP)

EXISTING BANK (MAHW) AND ORDINARY HIGH WATER LINE BOUNDARY (TYP)

EXIST. STREAM ALIGNMENT

PROP SIGN (TYP.)

TYPE VA5 CURB (SEE NOTE 6)

PROP. RIPRAP (5'-0" DEPTH)

PROP LIMITS OF CLEARING & GRUBBING (TYP)

PROP LIMIT OF GRADING (TYP)

LIMIT OF GRAVEL PAVEMENT

PROP. GUARDRAIL, TL-2 (SINGLE-FACED)

PROP. SEDIMENT CONTROL BARRIER

PROP. TANGENT END TREATMENT, TL-2

DOWNSTREAM REINFORCED CONCRETE PIPE HEADWALL

ID: 267/012.0-0002-0004.0
KELSEY ROAD
N/F LANDS OF
JOHN R. OLEEN
DEED BK 2565 PG 93

N

HIGHWAY GUARD DETAILS

TANGENT END TREATMENT, STA. 100+97.81 (LT) TO STA. 101+22.80 (LT)
IMPACT HEAD TO BE OFFSET 9.72 LT AT STA. 100+97.81
TRANSITION TO BRIDGE RAIL, STA. 102+35.13 (LT) TO STA. 102+68.68 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+22.80 (LT) TO STA. 102+35.13 (LT)
TANGENT END TREATMENT, STA. 100+76.06 (RT) TO STA. 101+01.65 (RT)
IMPACT HEAD TO BE OFFSET 8.93 RT AT STA. 100+76.06
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+01.65 (RT) TO STA. 102+38.65 (RT)
TRANSITION TO BRIDGE RAIL, STA. 102+38.65 (RT) TO STA. 102+72.60 (RT)
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85 (RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00.00 12.00 RT

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+70.47 20.09 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+66.06 13.32 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+75.80 19.36 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+71.43 14.05 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

SEE SHEET 17 FOR DETAILS

NOTES:

1. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
2. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
3. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT BE 10'.
4. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.
5. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
6. INSTALL GRANITE CURBING TYPE VA5 AT EACH OF THE TRANSITIONS TO BRIDGE RAIL. REFER TO MASSDOT CONSTRUCTION STANDARD DETAILS, DWG NO. 628.24.2
7. SEE SHT. NO. 19 FOR TABLE OF PROPOSED UTILITY POLES
8. GUARD RAIL POSTS INSTALLED OVER THE PROPOSED TWIN ELLIPTICAL DRAINAGE PIPES SHALL BE ENCASED IN CONCRETE AS SHOWN ON SHT. NO. 33. ALL WORK ASSOCIATED WITH CONCRETE ENCASEMENT OF GUARD RAIL POSTS WILL BE INCLUDED IN THE PRICE BID FOR GUARDRAIL, TL-2 (SINGLE FACED)
9. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
10. WHERE INSTALLED OVER RIPRAP, MODIFIED ROCKFILL SHALL BE PLACED IN A MANNER TO FILL/CHOKE 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.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	7	61
PROJECT FILE NO. 609068			

CONSTRUCTION PLANS
SHEET 1 OF 2

609068_HD (SHEFFIELD CONST PLAN 01).DWG Plotted on 6-Jul-2026 11:39 AM

A90830 - 637

Proposal No. 609068-136649

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	8	61
PROJECT FILE NO.	609068		

CONSTRUCTION PLANS
SHEET 2 OF 2

HIGHWAY GUARD DETAILS

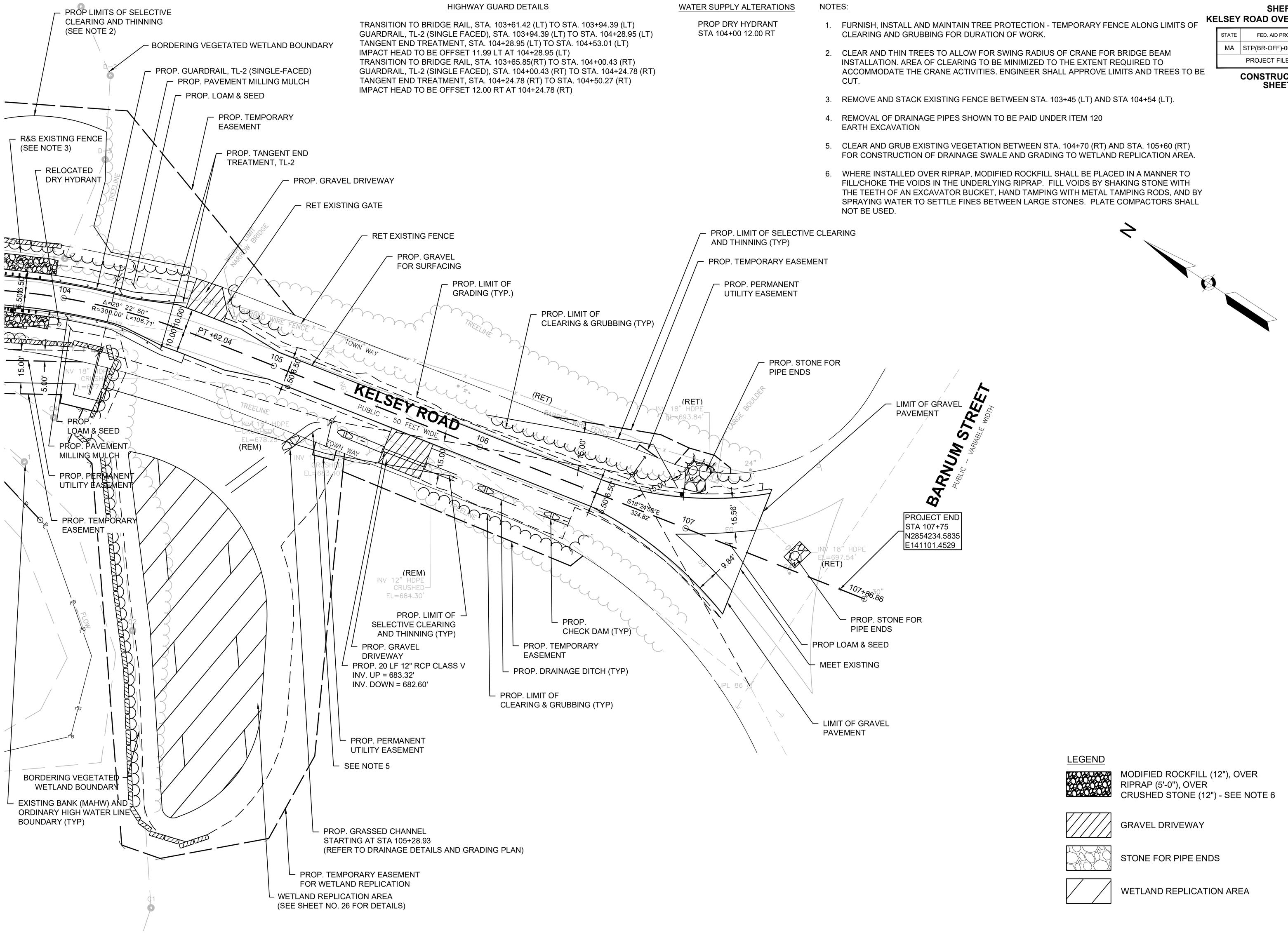
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
IMPACT HEAD TO BE OFFSET 11.99 LT AT 104+28.95 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85(RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)
IMPACT HEAD TO BE OFFSET 12.00 RT AT 104+24.78 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00 12.00 RT

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
4. REMOVAL OF DRAINAGE PIPES SHOWN TO BE PAID UNDER ITEM 120 EARTH EXCAVATION
5. CLEAR AND GRUB EXISTING VEGETATION BETWEEN STA. 104+70 (RT) AND STA. 105+60 (RT) FOR CONSTRUCTION OF DRAINAGE SWALE AND GRADING TO WETLAND REPLICATION AREA.
6. WHERE INSTALLED OVER RIPRAP, MODIFIED ROCKFILL SHALL BE PLACED IN A MANNER TO FILL/CHOKE 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.

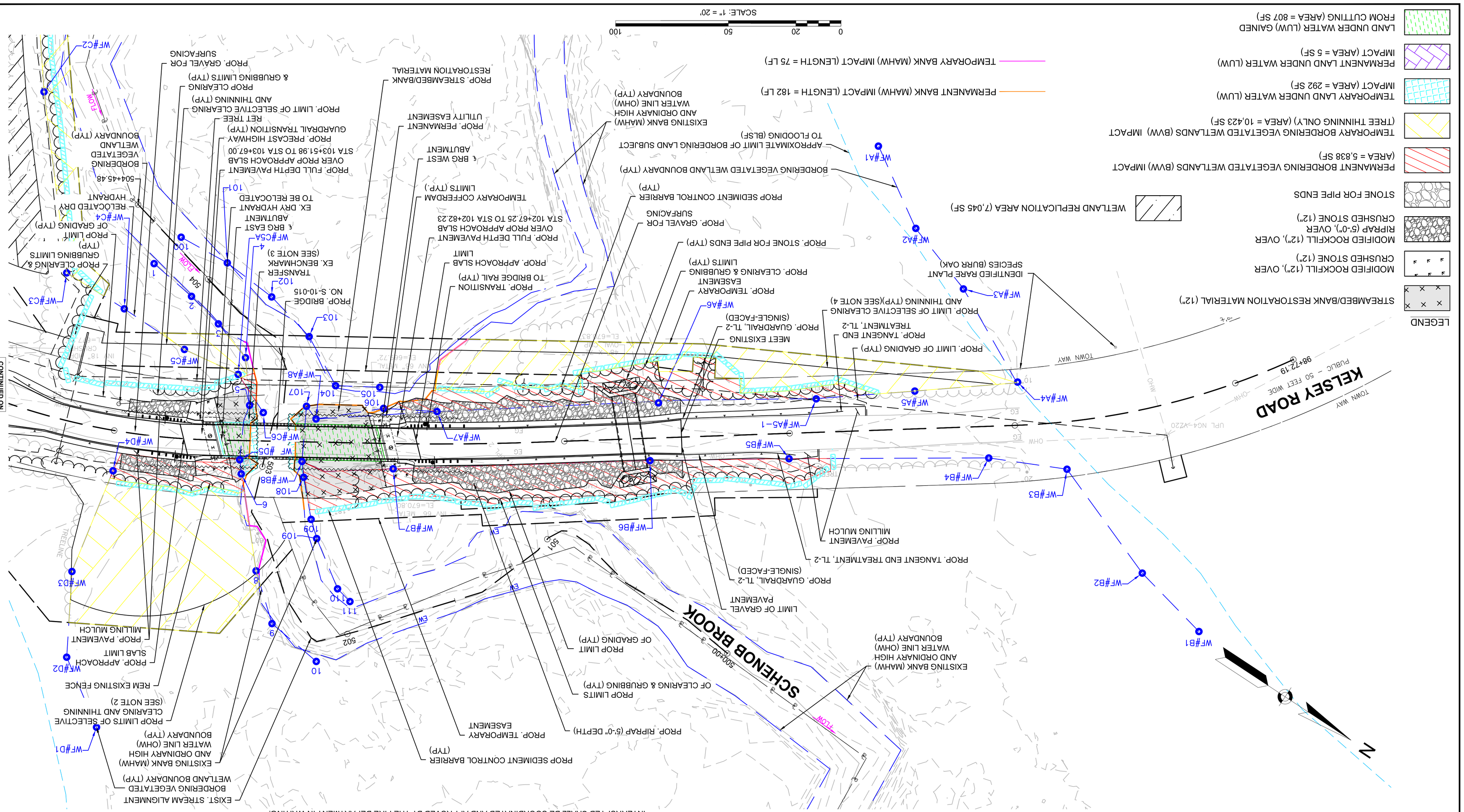


LEGEND

- MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12") - SEE NOTE 6
- GRAVEL DRIVEWAY
- STONE FOR PIPE ENDS
- WETLAND REPLICATION AREA

FOR PROFILE SEE SHEET NO. 10

Proposal No. 609068-136649
609068_HD (SHEFFIELD CONST PLAN 02).DWG Plotted on 6-Jul-2026 11:39 AM
A00830 - 638



NOTES:

1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
4. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
5. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.

WETLAND FLAG NOTES:

1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW)/ FEDERAL WETLANDS. FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2

PROJECT FILE NO.		609068	
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	21	61

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

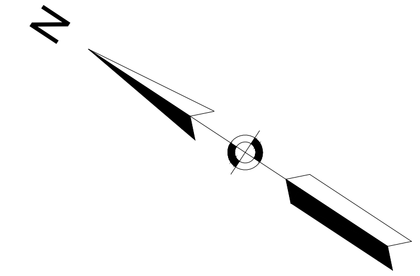
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MA	STP(BR-OFF)-003S(993)X	22	61
PROJECT FILE NO.	609068		

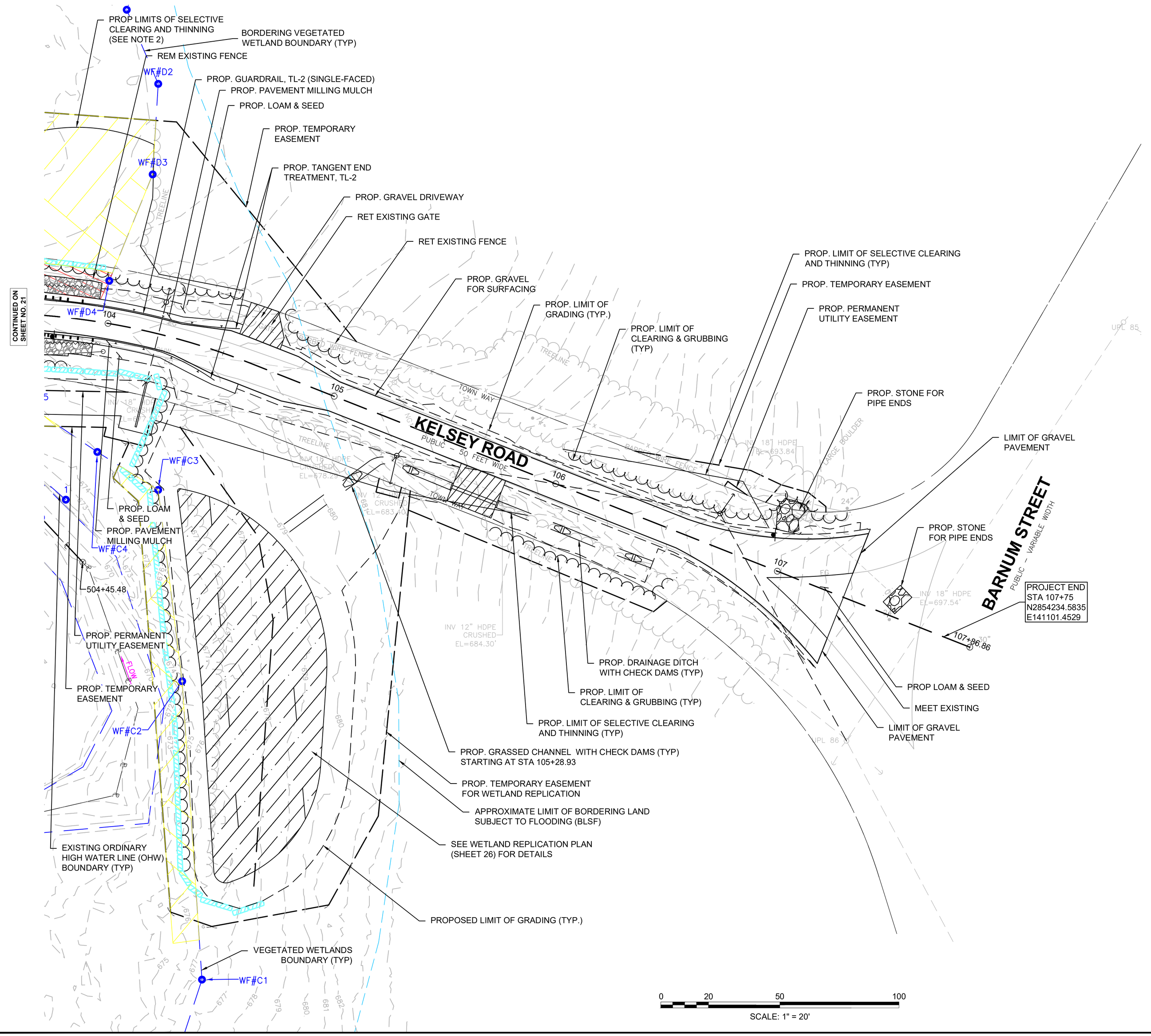
ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.

2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.





LEGEND

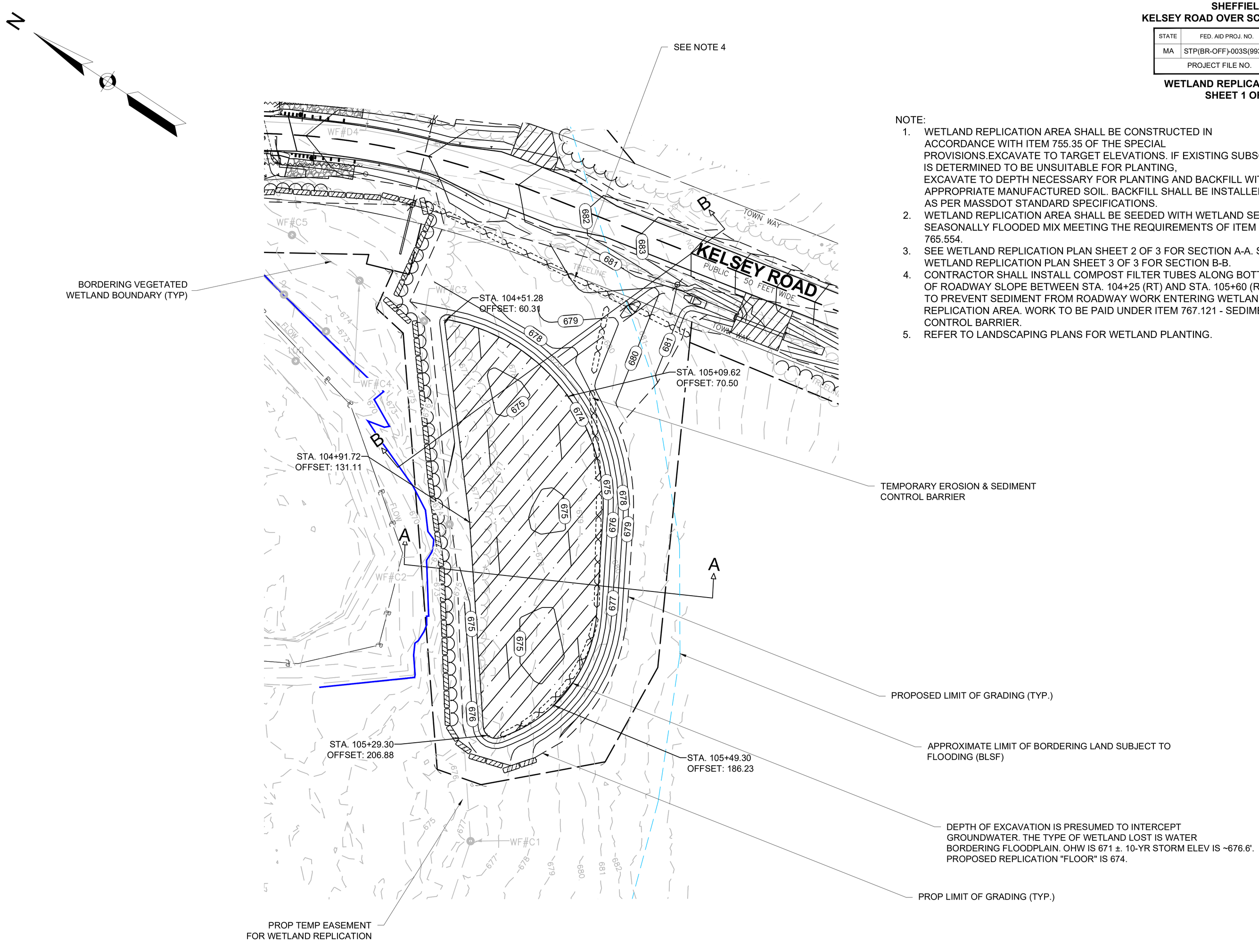
- MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- PERMANENT BORDERING VEGETATED WETLANDS (BVW) IMPACT (AREA = 5,838 SF)
- TEMPORARY BORDERING VEGETATED WETLANDS (BVW) IMPACT (TREE THINNING ONLY) (AREA = 10,423 SF)
- WETLAND REPLICATION AREA (7,045 SF)

Proposal No. 609068-136649
609068_HD(WETLAND REPLICATION PLANS).DWG Plotted on 6-Jul-2026 11:41 AM
A00830 - 640

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	26	61
PROJECT FILE NO.	609068		

WETLAND REPLICATION PLAN
SHEET 1 OF 3



NOTE:

1. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS.EXCAVATE TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
2. WETLAND REPLICATION AREA SHALL BE SEEDED WITH WETLAND SEED - SEASONALLY FLOODED MIX MEETING THE REQUIREMENTS OF ITEM 765.554.
3. SEE WETLAND REPLICATION PLAN SHEET 2 OF 3 FOR SECTION A-A. SEE WETLAND REPLICATION PLAN SHEET 3 OF 3 FOR SECTION B-B.
4. CONTRACTOR SHALL INSTALL COMPOST FILTER TUBES ALONG BOTTOM OF ROADWAY SLOPE BETWEEN STA. 104+25 (RT) AND STA. 105+60 (RT) TO PREVENT SEDIMENT FROM ROADWAY WORK ENTERING WETLAND REPLICATION AREA. WORK TO BE PAID UNDER ITEM 767.121 - SEDIMENT CONTROL BARRIER.
5. REFER TO LANDSCAPING PLANS FOR WETLAND PLANTING.

LEGEND

- OHW/ELEV 671±
- TEMPORARY EROSION & SEDIMENT CONTROL
- TEMPORARY EROSION & SEDIMENT CONTROL - COIR LOGS
- WETLAND REPLICATION AREA (7,044 SF)

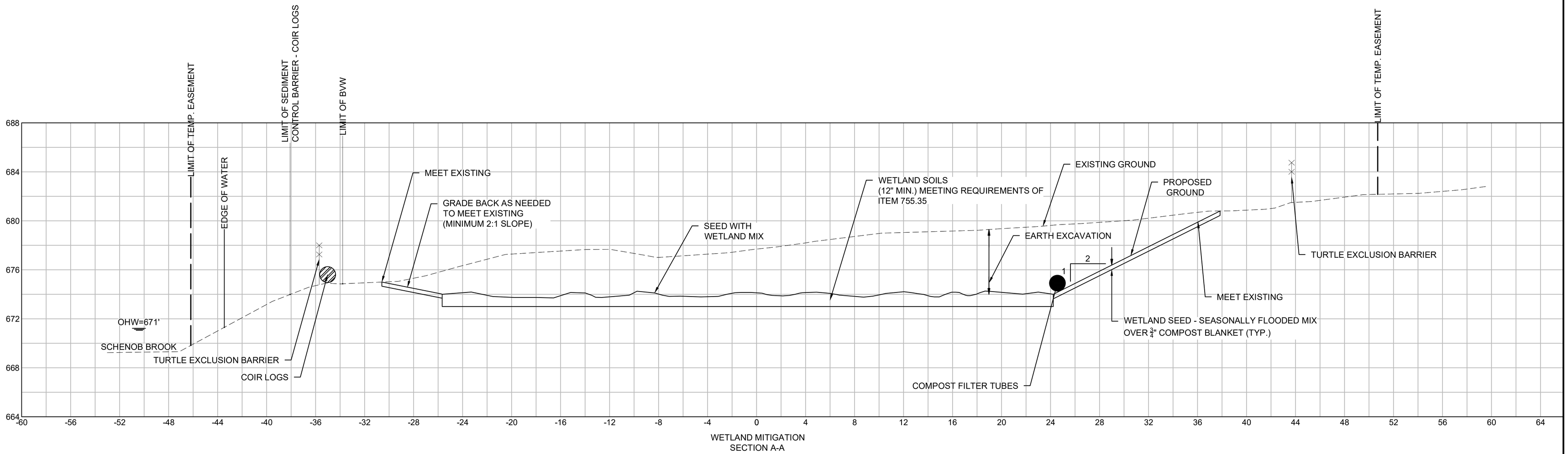
0 20 50 100
SCALE: 1" = 20'

Proposal No. 609068-136649
609068_HD(WETLAND REPLICATION PLANS).DWG Plotted on 6-Jul-2026 11:41 AM
A00830 - 641

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	27	61
PROJECT FILE NO.	609068		

WETLAND REPLICATION PLAN
SHEET 2 OF 3

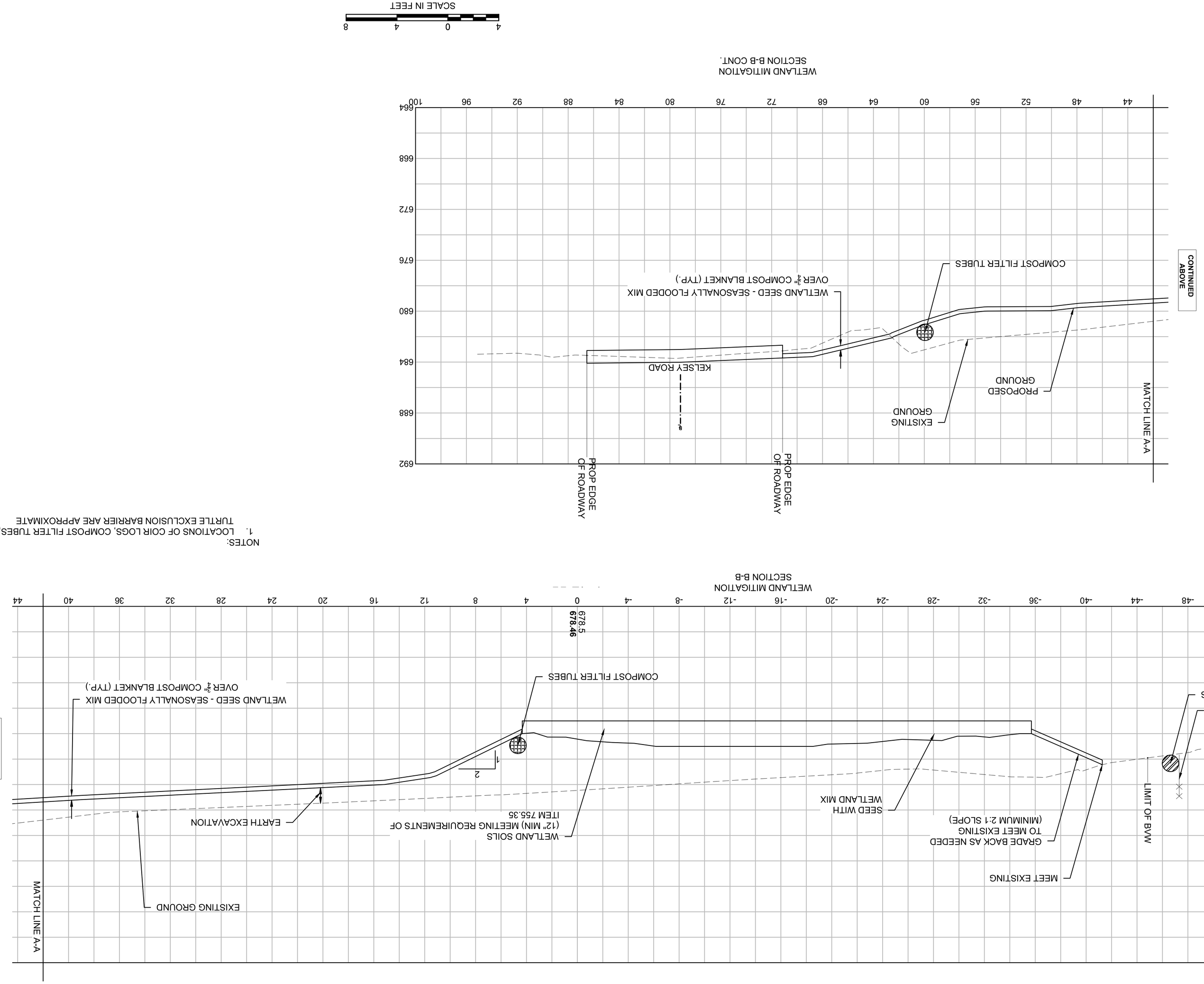
NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE



WETLAND MITIGATION
SECTION A-A

4 0 4 8
SCALE IN FEET

Proposal No. 609068-136649
609068_HD\WETLAND REPLICATION PLANS).DWG Plotted on 6-Jul-2026 11:41 AM
A00830 - 642



NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE

WETLAND REPLICATION PLAN
SHEET 3 OF 3

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	28	61
PROJECT FILE NO. 609068			

609068_HDWETLAND REPLICATION PLANS.DWG Plotted on 6-Jul-2026 11:42 AM

A00830 - 643

Proposal No. 609068-136649

SCALE: 1" = 20'

0 20 50 100

LEGEND

LOAM AND SEED

WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET

VEGETATED WETLAND BOUNDARY (TYP.)

SCHENOB BROOK

PROP. WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET (TYP.)

PROP. LIMIT OF SELECTIVE CLEARING AND TRIMMING (SEE CONSTRUCTION PLANS)

PROP. LIMIT OF CLEARING AND GRUBBING (SEE CONSTRUCTION PLANS)

EXISTING TREES TO RECEIVE TREE PROTECTION - ROOT ZONE

PROJECT BEGIN STA. 99+15 N:2854947.8548 E:1408654.2572

PROP. LIMIT OF GRADING (SEE CONSTRUCTION PLANS)

PROP. LIMIT OF CLEARING AND GRUBBING (SEE CONSTRUCTION PLANS)

PROP. EROSION CONTROL (SEE CONSTRUCTION PLANS)

PROP. STREAMBED RESTORATION MATERIAL (SEE CONSTRUCTION PLANS)

PROP. RIP RAP (SEE CONSTRUCTION PLANS)

PROP. LIMIT OF SELECTIVE CLEARING AND TRIMMING (SEE CONSTRUCTION PLANS)

CONSTRUCTION COFFERDAM (SEE BRIDGE PLANS)

CONTINUED ON SHEET NO. 30

N

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

LANDSCAPE PLAN
KELSEY ROAD (1 OF 2)

	PROJECT FILE NO.	609068	
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	29	61

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

609068_LD1.DWG

Plotted on 7-Jul-2026 2:06 PM

A90830 - 644

Proposal No. 609068-136649

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	30	61
PROJECT FILE NO.	609068		

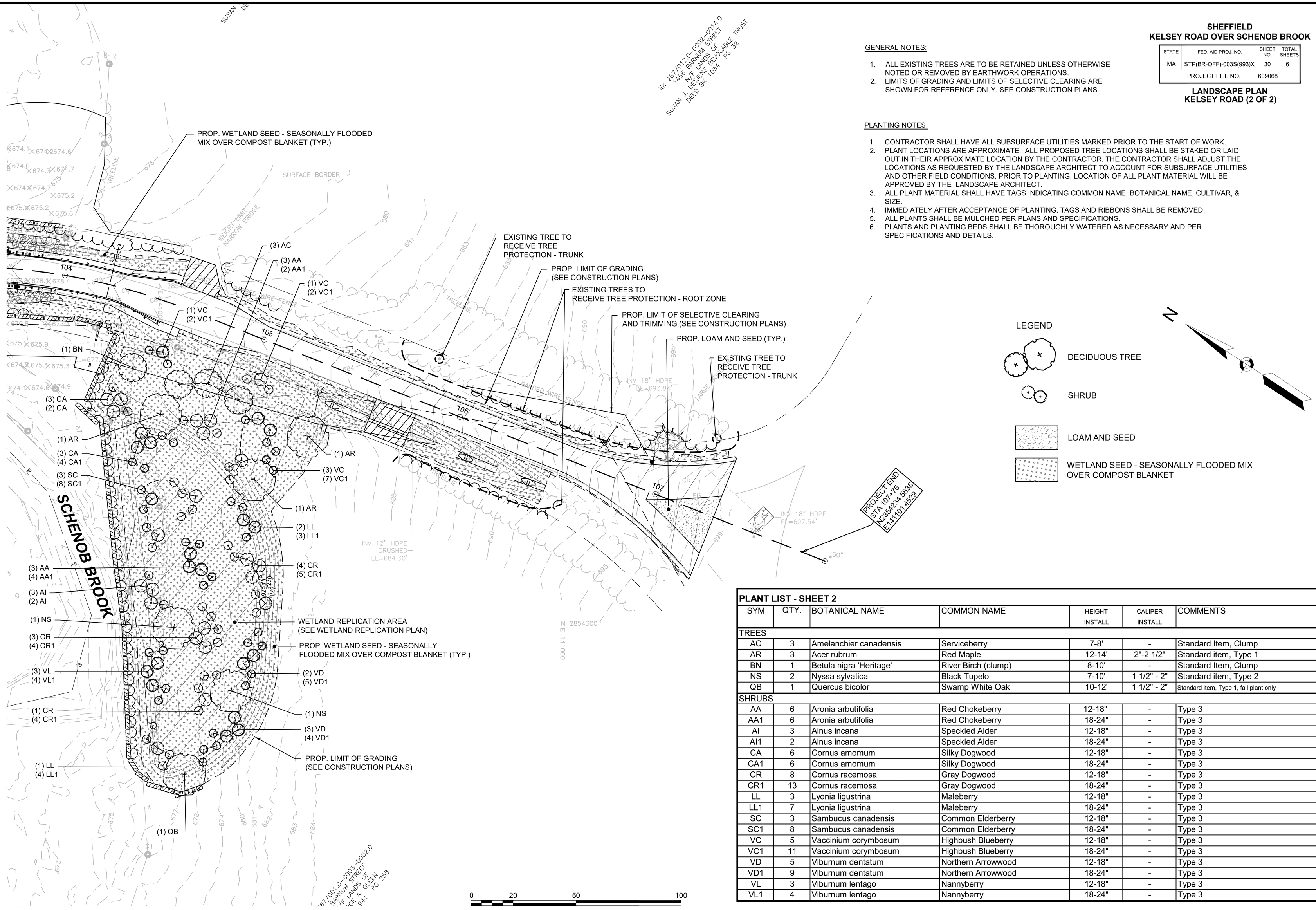
LANDSCAPE PLAN
KELSEY ROAD (2 OF 2)

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

PLANTING NOTES:

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL SHALL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, CULTIVAR, & SIZE.
4. IMMEDIATELY AFTER ACCEPTANCE OF PLANTING, TAGS AND RIBBONS SHALL BE REMOVED.
5. ALL PLANTS SHALL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS AND DETAILS.



LEGEND

- DECIDUOUS TREE
- SHRUB
- LOAM AND SEED
- WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET

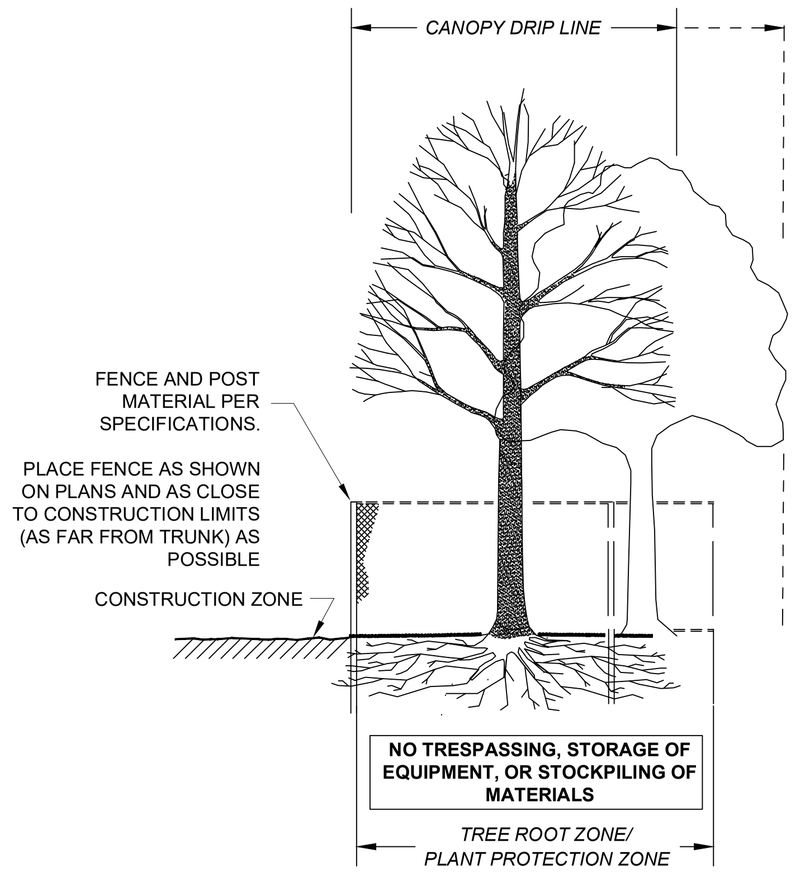
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PLANT LIST - SHEET 2

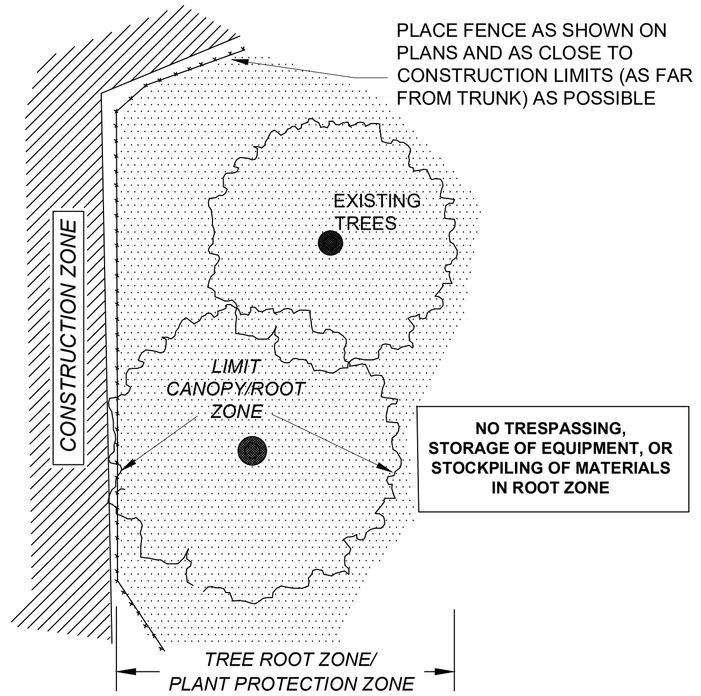
SYM	QTY.	BOTANICAL NAME	COMMON NAME	HEIGHT INSTALL	CALIPER INSTALL	COMMENTS
TREES						
AC	3	Amelanchier canadensis	Serviceberry	7-8'	-	Standard Item, Clump
AR	3	Acer rubrum	Red Maple	12-14'	2"-2 1/2"	Standard item, Type 1
BN	1	Betula nigra 'Heritage'	River Birch (clump)	8-10'	-	Standard Item, Clump
NS	2	Nyssa sylvatica	Black Tupelo	7-10'	1 1/2" - 2"	Standard item, Type 2
QB	1	Quercus bicolor	Swamp White Oak	10-12'	1 1/2" - 2"	Standard item, Type 1, fall plant only
SHRUBS						
AA	6	Aronia arbutifolia	Red Chokeberry	12-18"	-	Type 3
AA1	6	Aronia arbutifolia	Red Chokeberry	18-24"	-	Type 3
AI	3	Alnus incana	Speckled Alder	12-18"	-	Type 3
AI1	2	Alnus incana	Speckled Alder	18-24"	-	Type 3
CA	6	Cornus amomum	Silky Dogwood	12-18"	-	Type 3
CA1	6	Cornus amomum	Silky Dogwood	18-24"	-	Type 3
CR	8	Cornus racemosa	Gray Dogwood	12-18"	-	Type 3
CR1	13	Cornus racemosa	Gray Dogwood	18-24"	-	Type 3
LL	3	Lyonia ligustrina	Maleberry	12-18"	-	Type 3
LL1	7	Lyonia ligustrina	Maleberry	18-24"	-	Type 3
SC	3	Sambucus canadensis	Common Elderberry	12-18"	-	Type 3
SC1	8	Sambucus canadensis	Common Elderberry	18-24"	-	Type 3
VC	5	Vaccinium corymbosum	Highbush Blueberry	12-18"	-	Type 3
VC1	11	Vaccinium corymbosum	Highbush Blueberry	18-24"	-	Type 3
VD	5	Viburnum dentatum	Northern Arrowwood	12-18"	-	Type 3
VD1	9	Viburnum dentatum	Northern Arrowwood	18-24"	-	Type 3
VL	3	Viburnum lentago	Nannyberry	12-18"	-	Type 3
VL1	4	Viburnum lentago	Nannyberry	18-24"	-	Type 3

Proposal No. 609068-136649
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A00830 - 645

609068_LD1.DWG Plotted on 7-Jul-2026 1:43 PM



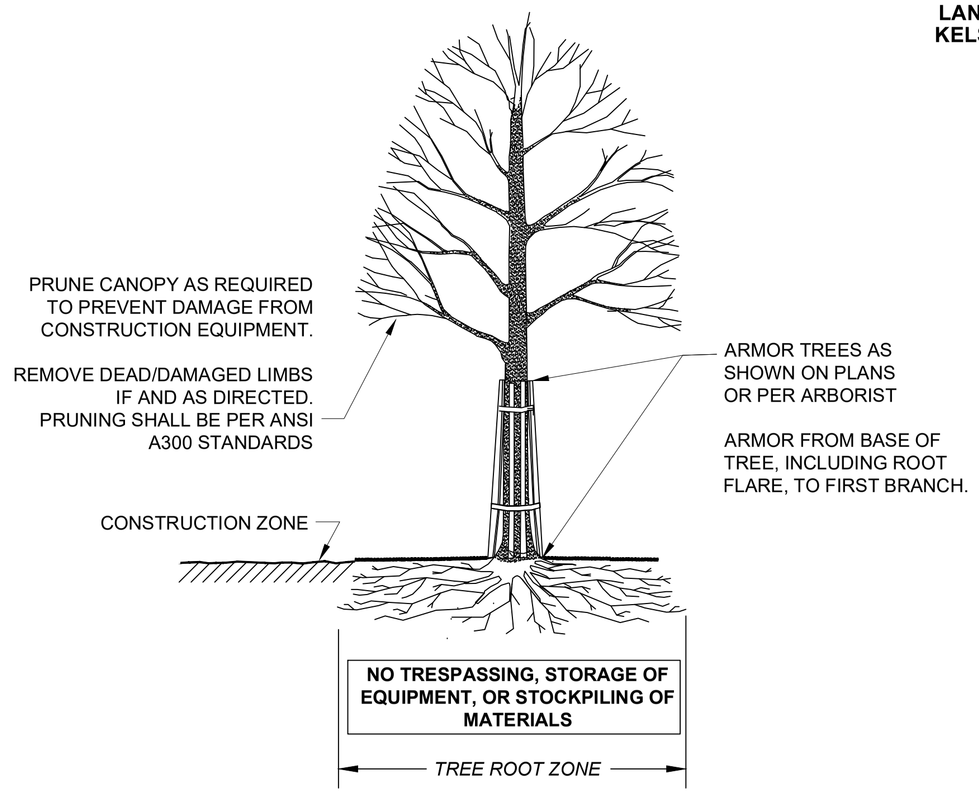
SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

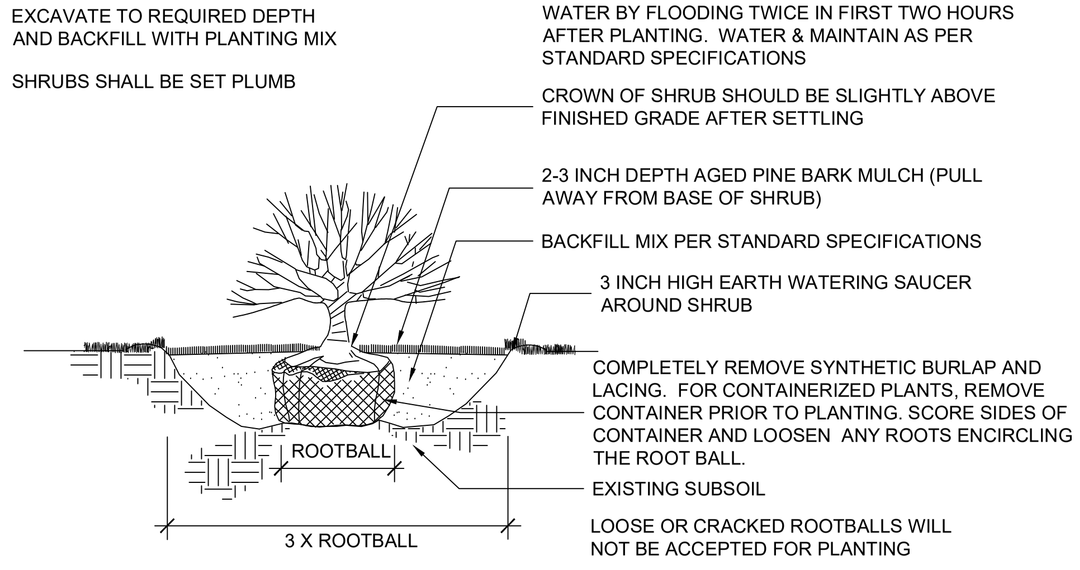
TREE PROTECTION - ROOT ZONE

NOT TO SCALE



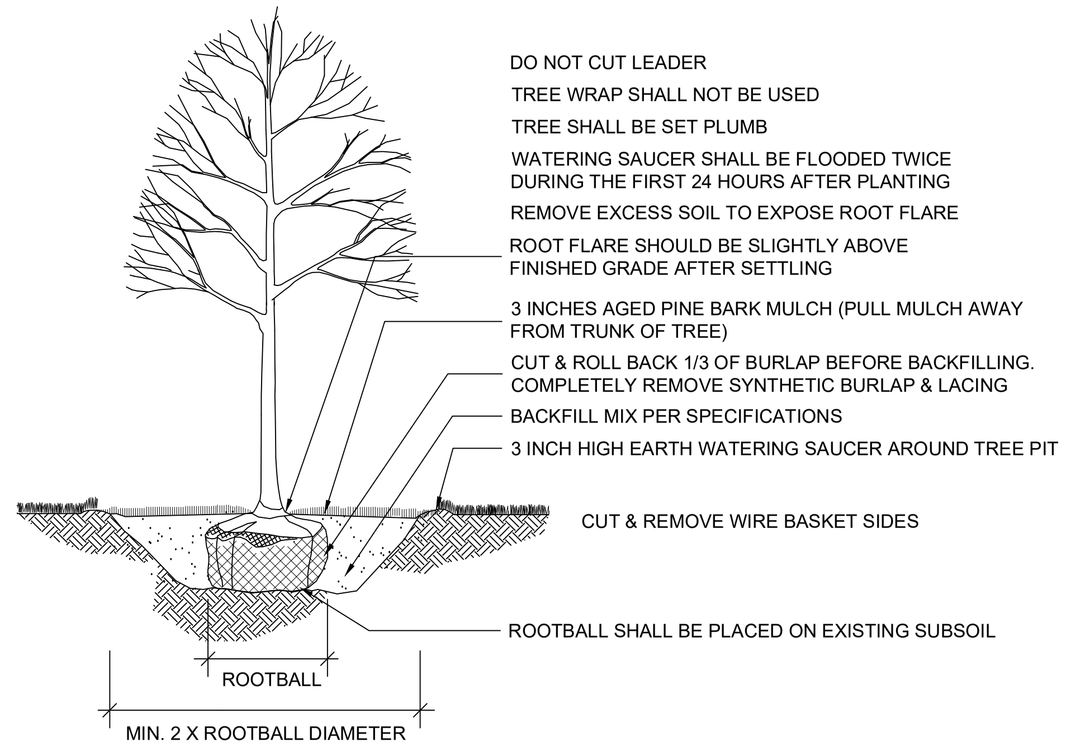
SECTION - TRUNK ARMORING & PRUNING

TREE PROTECTION - TRUNK



SHRUB PLANTING

NOT TO SCALE



DECIDUOUS TREE PLANTING

NOT TO SCALE

Proposal No. 609068-136649
A00830 - 646

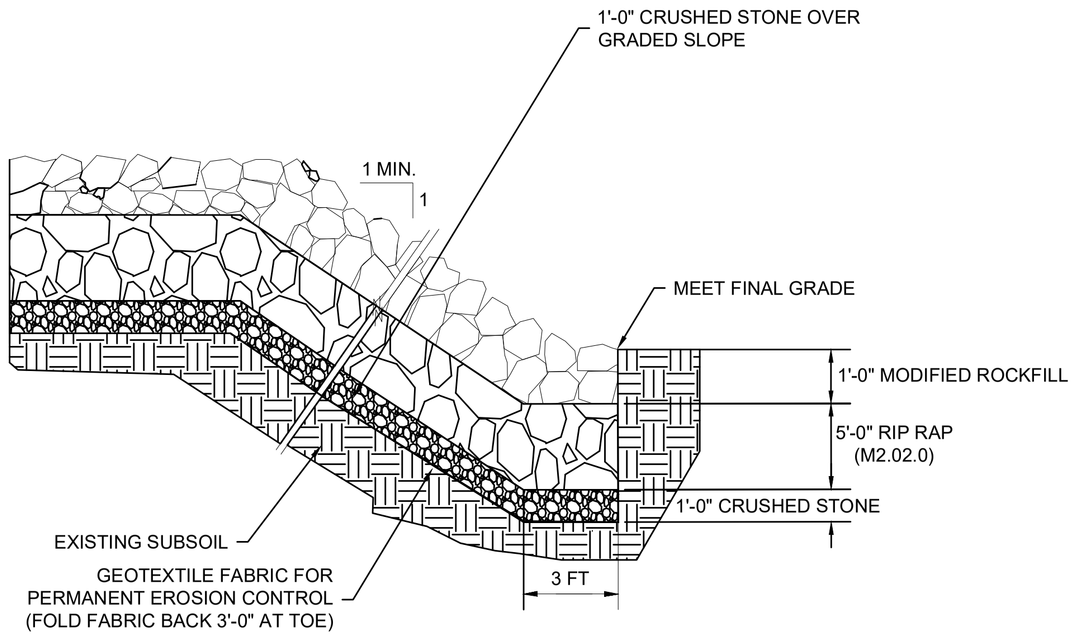
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	32	61
PROJECT FILE NO.	609068		

CONSTRUCTION DETAILS

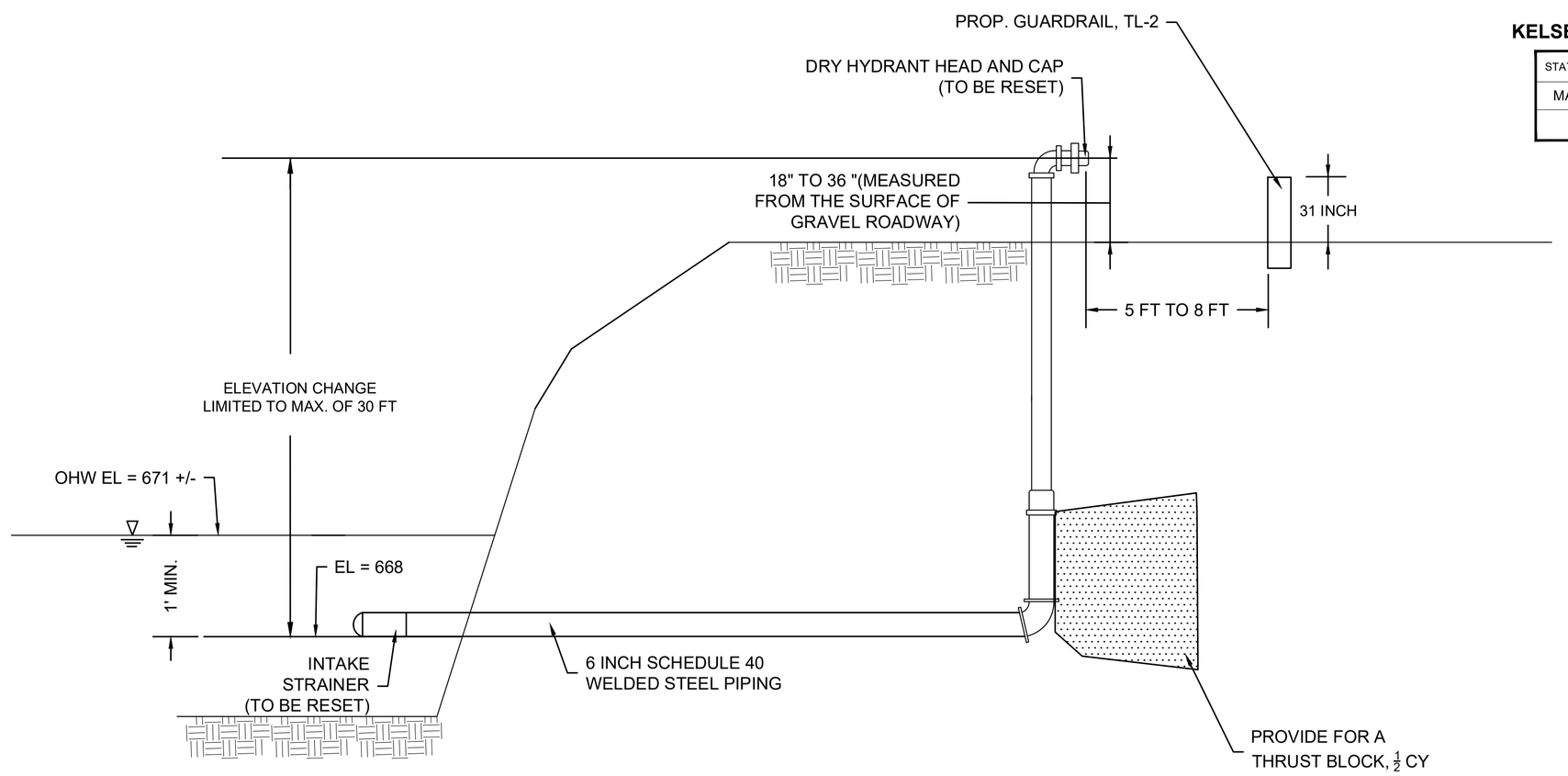
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Proposal No. 609068-136649

A00830 - 647

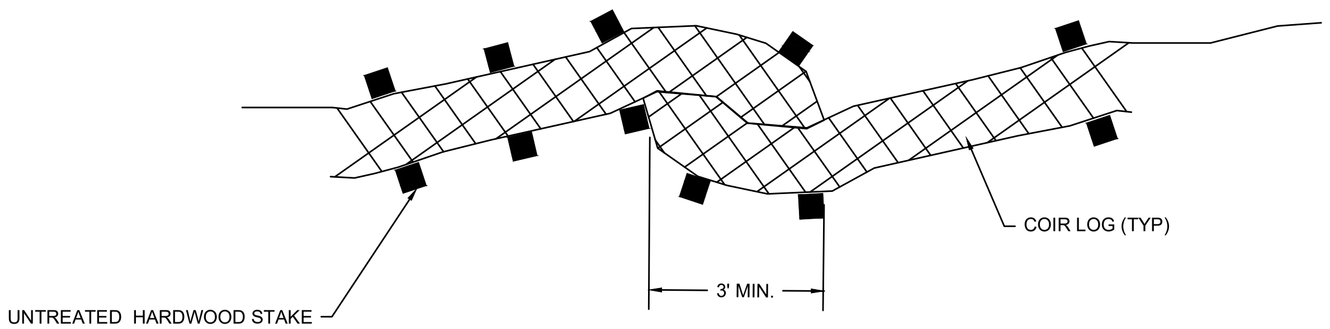


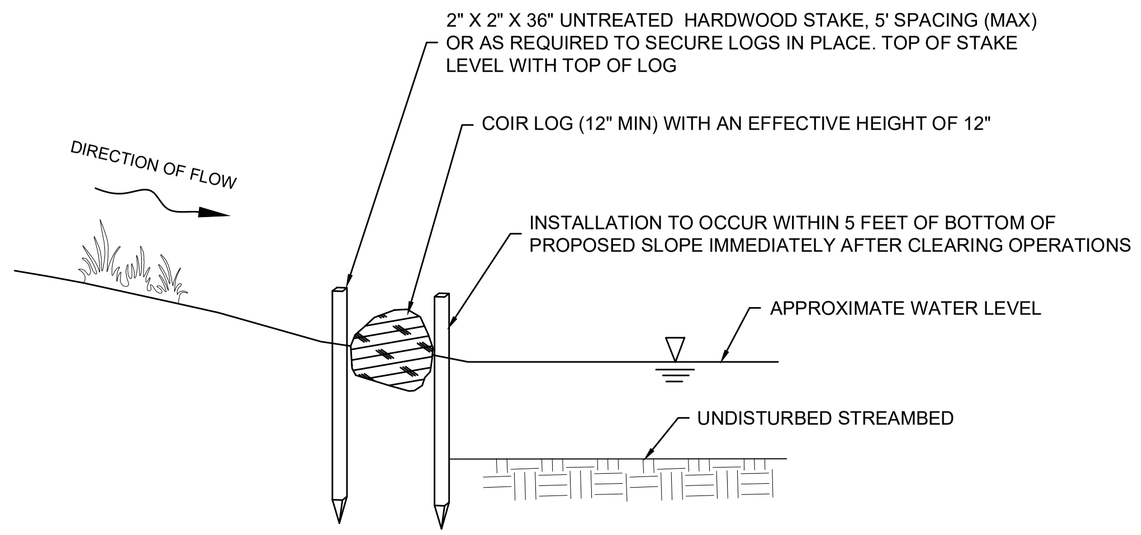
RIPRAP SIDE SLOPE DETAIL
NTS



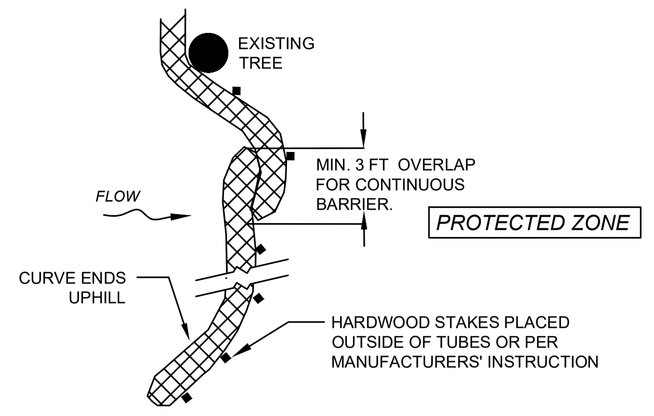
DRY HYDRANT DETAILS
NTS

STREAM OR VEGETATED WETLANDS





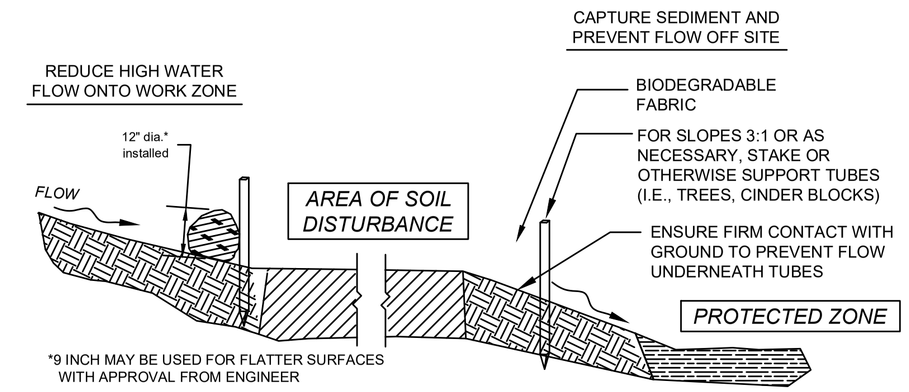
COIR LOG DETAILS
NTS



PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW



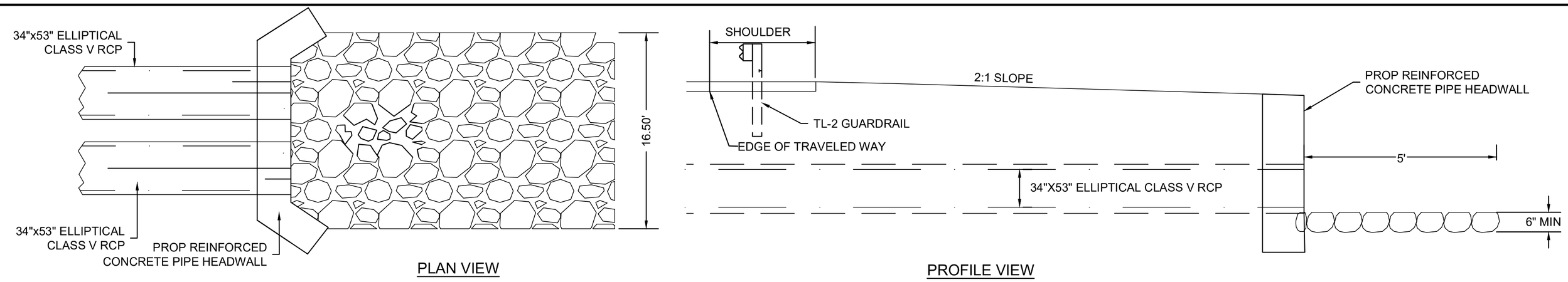
SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBE
NTS

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	17	61
PROJECT FILE NO.	609068		

DRAINAGE DETAILS

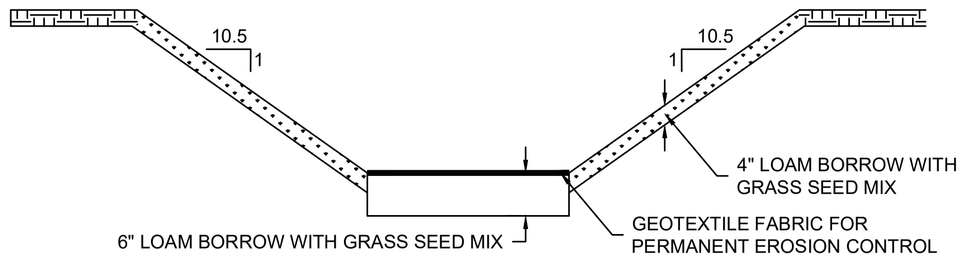


PLAN VIEW

PROFILE VIEW

STONE FOR PIPE ENDS AT ELLIPTICAL CULVERT

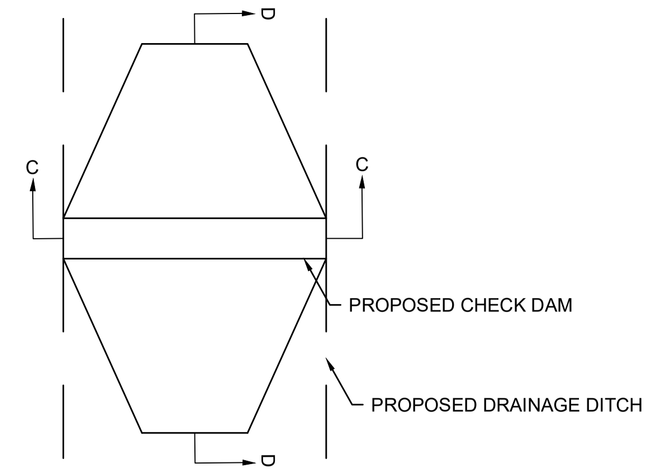
NOT TO SCALE



NOTES:
1. THE LINEAR SLOPE OF THE SWALE SHALL BE A MAXIMUM OF 5%.

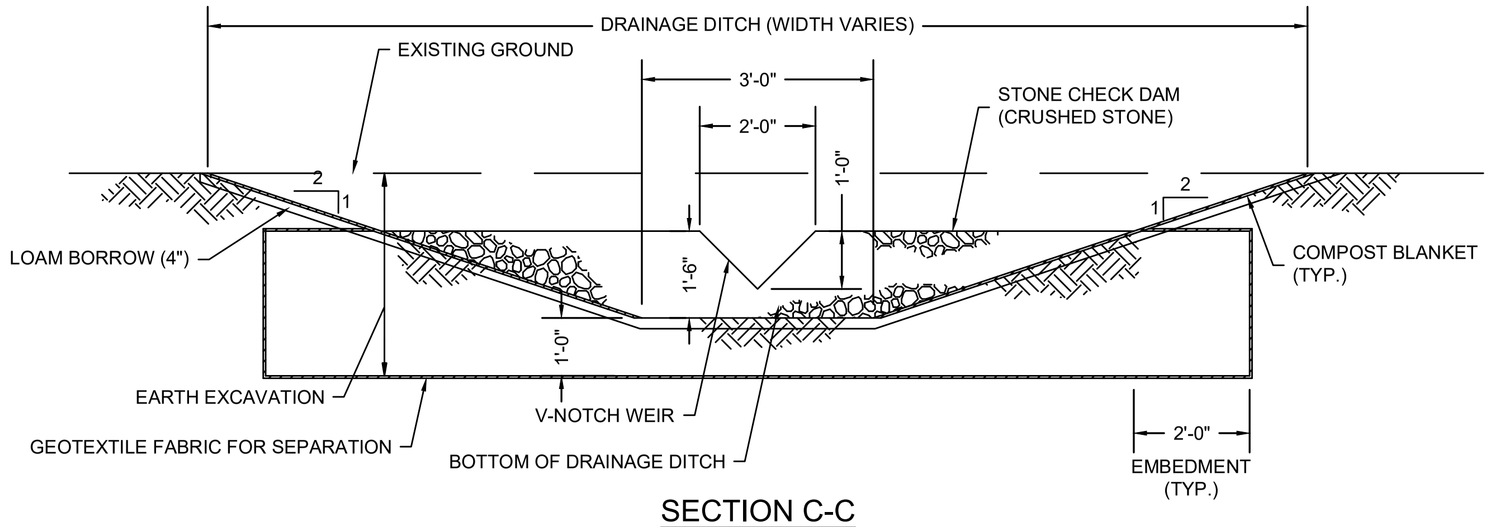
GRASSED CHANNEL

NOT TO SCALE



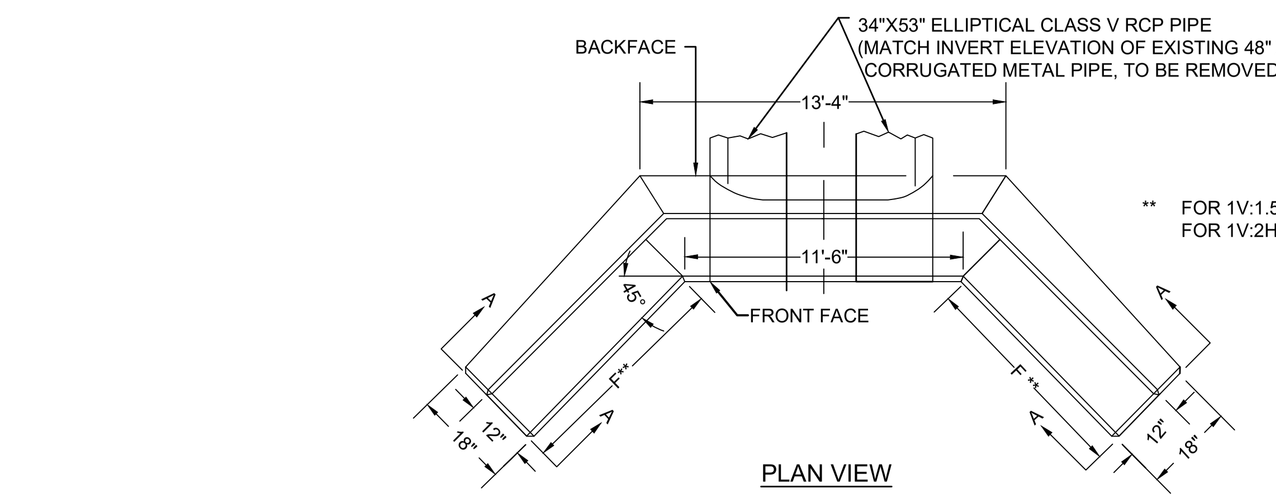
STONE CHECK DAM PLAN VIEW

NOT TO SCALE

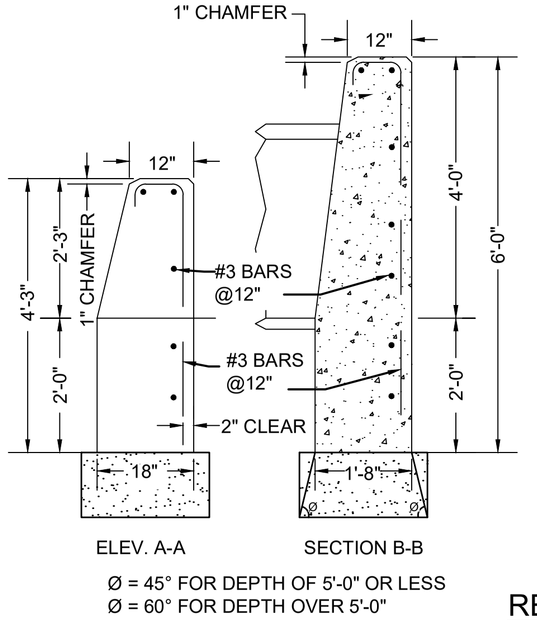


SECTION C-C

NOT TO SCALE

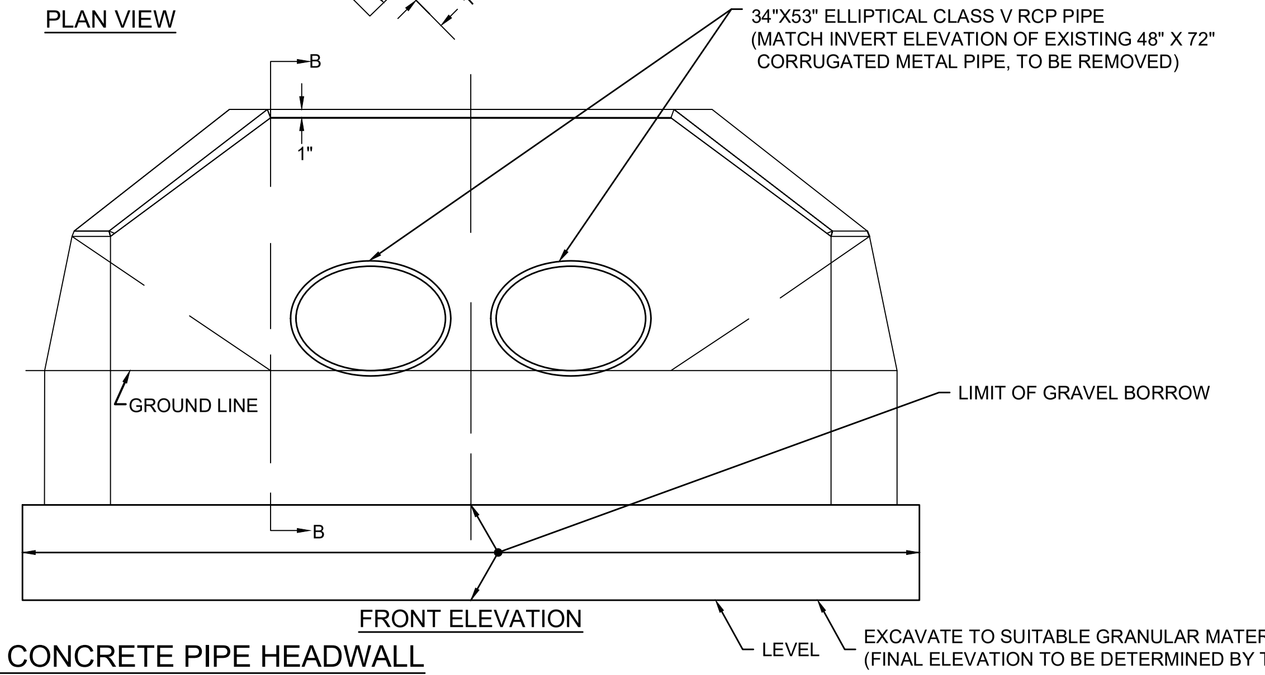


PLAN VIEW



ELEV. A-A SECTION B-B

Ø = 45° FOR DEPTH OF 5'-0" OR LESS
Ø = 60° FOR DEPTH OVER 5'-0"

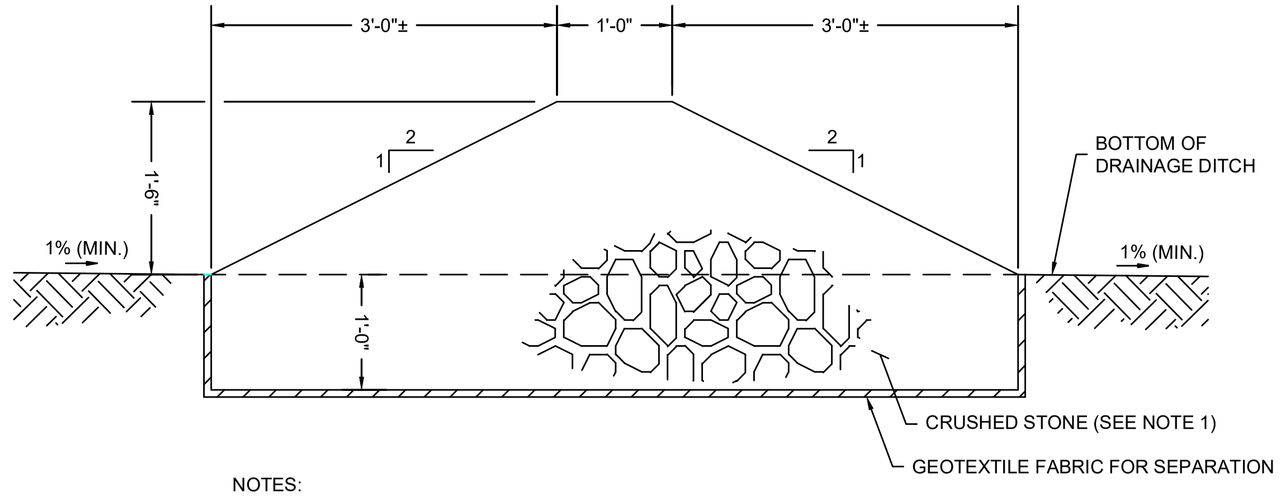


FRONT ELEVATION

REINFORCED CONCRETE PIPE HEADWALL

NOT TO SCALE

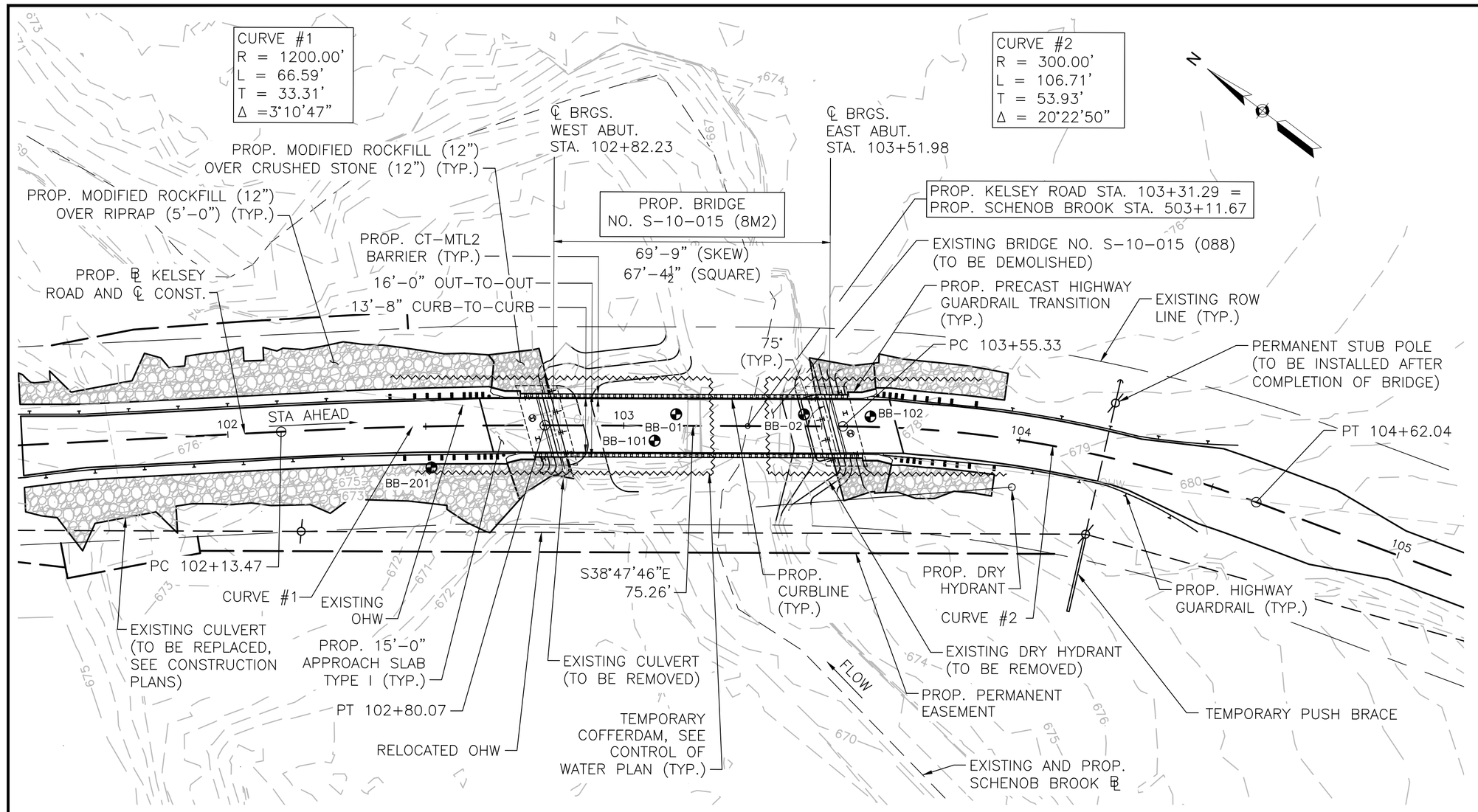
(ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM)



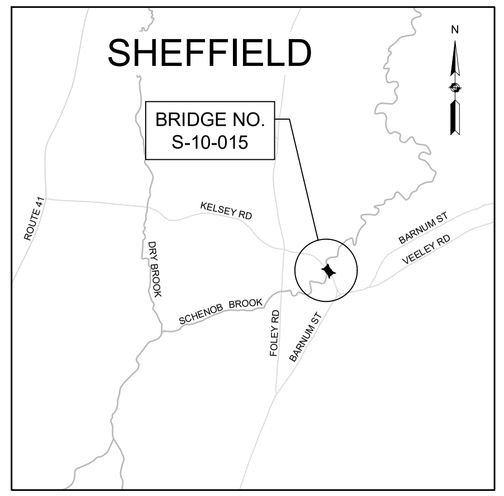
NOTES:
1. CRUSHED STONE SHALL MEET MATERIAL REQUIREMENTS OF SECTION M2.01.2

SECTION D-D

NOT TO SCALE



KEY PLAN
SCALE: 1" = 20'



LOCUS
SCALE: 1" = 2000'

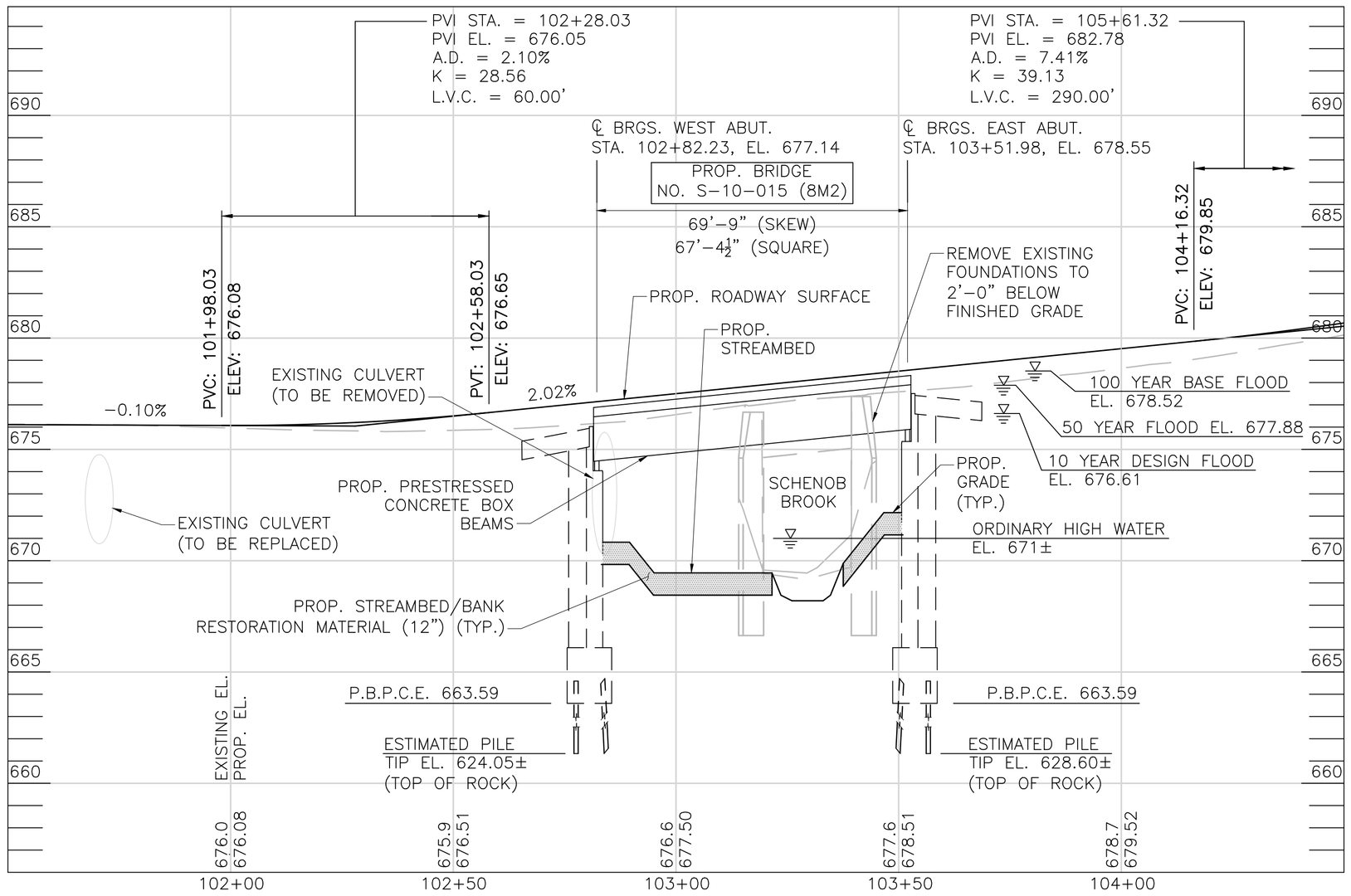
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	34	61
PROJECT FILE NO. 609068			

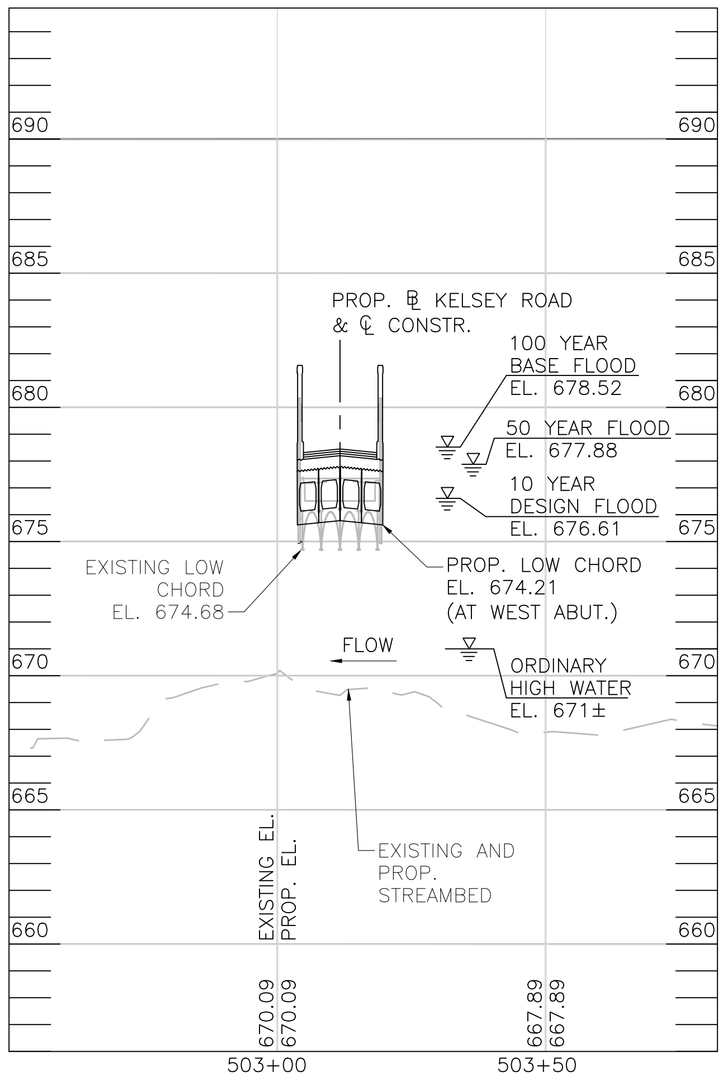
KEY PLAN, LOCUS, AND PROFILES

INDEX OF DRAWINGS

BRIDGE SHEET NO.	TITLE
1	KEY PLAN, LOCUS, AND PROFILES
2	GENERAL NOTES
3	BORING LOGS – 1
4	BORING LOGS – 2
5	BORING LOGS – 3
6	BORING LOGS – 4
7	BORING LOGS – 5
8	GENERAL PLAN AND ELEVATION
9	BRIDGE DEMOLITION PLAN
10	CONTROL OF WATER PLAN
11	WEST ABUTMENT PLAN AND ELEVATION
12	EAST ABUTMENT PLAN AND ELEVATION
13	SUBSTRUCTURE DETAILS – 1
14	SUBSTRUCTURE DETAILS – 2
15	FRAMING PLAN
16	BEAM DETAILS – 1
17	BEAM DETAILS – 2
18	DECK SECTION AND APPROACH SLAB DETAILS
19	BRIDGE RAILING DETAILS
20	HIGHWAY GUARDRAIL TRANSITION DETAILS – 1
21	HIGHWAY GUARDRAIL TRANSITION DETAILS – 2



PROFILE – ℄ CONSTRUCTION – KELSEY ROAD
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'



PROFILE – SCHENOB BROOK
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'

	MONTH DD, YYYY: ISSUED FOR CONSTRUCTION

massDOT Massachusetts Department of Transportation Highway Division

PROPOSED BRIDGE
SHEFFIELD
KELSEY ROAD
OVER SCHENOB BROOK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

GFT
175 FEDERAL STREET
SUITE 800
BOSTON, MA 02110
781-326-4605

STATE BRIDGE ENGINEER

CHIEF ENGINEER

SHEET 1 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

Proposal No. 609068-136649
609068_BR1.DWG Plotted on 5-Jul-2026 7:36 AM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00830 - 649

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

GENERAL PLAN

SCALE: $\frac{3}{16}$" = 1'-0"

LONGITUDINAL SECTION (LOOKING NORTH)

SCALE: $\frac{3}{16}$" = 1'-0"

LEGEND:
- I VERTICAL PILE
- T TEST PILE
- 4V:1H BATTERED PILE

WORKING POINT TABLE		
W.P.	STATION	OFFSET
W.P.#1	102+73.97	6.83' LT
W.P.#2	102+77.76	6.83' RT
W.P.#3	102+79.55	10.02' LT
W.P.#4	102+84.92	10.02' RT
W.P.#5	103+49.29	10.02' LT
W.P.#6	103+54.67	10.02' RT
W.P.#7	103+56.41	6.83' LT
W.P.#8	103+61.02	6.79' RT

SHEFFIELD
KELSEY ROAD

GENERAL PLAN AND ELEVATION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0033(993)X	41	61
PROJECT FILE NO. 609068			

609068 Final Structural Submittal (SF2) 8-Jul-2026

609068_BR8.DWG Plotted on 5-Jul-2026 7:37 AM

A00830 - 650

Proposal No. 609068-136649

Attachment 2

401 WQC Form and the WQC Narrative, Revised

GFT

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

1. Introduction

The Massachusetts Department of Transportation (MassDOT) Highway Division is planning the replacement of the existing Kelsey Road bridge (Bridge No. S-10-015) superstructure and substructure over Schenob Brook, due to structural deficiencies. The resource areas surrounding the existing structure consist of Bank, Land Under Water (LUW), and Bordering Vegetated Wetlands (BVW). Both permanent and temporary impacts are expected throughout construction. Mitigation measures are proposed to minimize these impacts including: constructing a wetland replication area, creating LUW from cutting roadway to install the larger span/opening bridge, implementing an invasive species management plan, and riprap lined side slopes to minimize the extents of lateral slope limits. As part of the permitting process for this project, a Water Quality Certification (WQC) is being filed with the Massachusetts Department of Environmental Protection (MassDEP). Additionally, a Pre-Construction Notification (PCN) is being filed concurrently with the Army Corps of Engineers. MassDOT is the main project proponent/applicant for the WQC, acting through its agent Comprehensive Environmental Inc. (CEI). The project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement is substantially the functional equivalent of, and in similar alignment to, the existing bridge. Therefore, the project is exempt from permitting through the Wetlands Protection Act (WPA), Chapter 91, and Massachusetts Environmental Policy Act (MEPA) permitting are exempt. Required permits for this project include the MassDEP Water Quality Certification (BRP WW 10) and U.S. Army Corps (USACE) Pre-Construction Notification under the Massachusetts Section 404 Nationwide Permits (NWP) 3: Maintenance, NWP 14: Linear Transportation Projects, and NWP 33: Temporary Construction, Access, and Dewatering.

2. Existing Conditions

The project is located in Massachusetts Department of Transportation (MassDOT) District 1, in the Town of Sheffield, Massachusetts in the southern part of Berkshire County.

Kelsey Road is an unpaved rural local road running primarily east/west between South Undermountain Road (MA Route 41) to the west and Barnum Street to the east. There are existing overhead, pole-mounted utility lines (electric and communications) running along the length of Kelsey Road. There are no underground utilities. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent floodplain wetlands along the outside shoulders.

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

Schenob Brook flows from south to north beneath the bridge. The main channel of Schenob Brook is restricted by the bridge at Kelsey Road where it flows full from abutment face to abutment face. The clear opening is approximately 20' wide by 5'-6" high at its deepest point. The observed water depth is approximately 20"; there is approximately 3'-9" of vertical clearance between the observed water surface and low chord of the bridge. The brook turns 90° to the northwest, just north of the bridge and runs roughly parallel to Kelsey Road for approximately 150' before turning again sharply to the northeast. The bankful width of the Schenob Brook is 42'. A Stream Visual Assessment Protocol (SVAP) form was completed during an initial in-field stream evaluation in early September of 2025 and is included in **Attachment I**. Information within this form is strictly for illustrating stream features.

Two additional floodplain culverts pass under Kelsey Road, west of the bridge at distances of approximately 40' (66" diameter corrugated metal pipe) and 150' (48" x 72" elliptical corrugated metal pipe) northwest of the west abutment. The culverts allow flow from two floodplain wetlands to pass beneath the west. These two culverts don't connect to the main stem of the channel and lack clear bank definition on all sides.

The existing bridge was constructed in 1915 and is owned and maintained by MassDOT. The single-span structure is approximately 23 feet long and carries a gravel surfaced roadway approximately 13 feet wide. 9½" wide concrete curbs are located on each side of the bridge along with bridge railings consisting of a single timber rail bolted to steel I-shaped posts. There are no sidewalks along the bridge or roadway approaches. The out-to-out bridge width is 14'-8".

The bridge superstructure consists of five rolled steel beams with a cast-in-place concrete jack arch deck encasing the beams. The jack arches are formed by stay-in-place, half- round, corrugated steel pipes supported by the beam bottom flanges. The concrete deck is topped by approximately 6" of gravel riding surface. The substructure consists of cast-in- place concrete abutments with monolithic, flared wingwalls.

Overall, the bridge structure is in poor to satisfactory condition and the bridge is posted for reduced weight limits based on section loss to the south exterior beam.

The resource areas surrounding the existing structure consists of Bank, LUW and BVW. A wetland delineation was conducted throughout the project area on August 18, 2025 and June 6th, 2026 by Comprehensive Environmental Inc's wetland scientists.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsey Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The

delineated wetland resource areas along this crossing include areas with BVW and Bank, as seen in **Attachment G**. The area surrounding the site is predominantly forest to the north and agriculture to the south. Topography of the site is moderately sloped towards these resource areas. The area was delineated using the A, B, C, D and RB series of flags. Flags RB-01 through RB-10 and RB-100 through RB-111 represent Bank. Flags A-WF-01 through A-WF-08, B-WF-01 through B-WF-08, C-WF-01 through C-WF-06, and D-WF-01 through D-WF-05 represent BVW.

A deciduous wooded swamp and shrub swamp abuts Schenob Brook on both sides of the crossing. A moderately dense canopy exists dominated by American elm (*Ulmus americana*), hemlock (*Tsuga canadensis)* and black willow (*Salix nigra)*. Shrubs in the understory include winterberry holly (*Ilex verticillate),* highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Swida amomum*), green ash (*Fraxinus pennsylvanica*), and saplings from the canopy. The herbaceous stratum of the BVW includes jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Joe-Pye weed (*Eutrochium fistulosum*), purple loosestrife (*Lythrum salicaria*), reed canary 2 grass (*Phalaris arundinacea*), narrow leaved cattails (*Typha angustifolia*), dotted smartweed (*Persicaria punctata)*, cardinal flower (*Lobelia cardinalis*) and sedges (*Carex* spp.)

The upland/wetland boundary to the BVW was delineated in the field using flags:

- A-WF-01 through A-WF-08 are along the northwest boundary of the floodplain.
- B-WF-01 through B-WF-08 are along the northeast boundary of the floodplain.
- C-WF-01 through C-WF-06 are along the southwest boundary of the floodplain.
- D-WF-01 through D-WF-05 are along the southeast boundary of the floodplain.

Bank was delineated in the field through observation of vegetation change, bank cutting, water-stained leaves, shelving, and wrack lines. The banks of Schenob Brook were approximately three feet high with a channel 20 to 30 feet wide. Water was slowly flowing northeast at the time of inspection with depths of over six feet in portions of the thalweg.

- Flags RB-01 through RB-10 delineate the mean annual high-water mark along the southern bank of the brook.
- Flags RB-100 through RB-111 delineate the mean annual high-water mark along the northern bank of the brook.

According to USDA soil surveys (Attachment A), the site is underlaid with soils consisting of moderately sloped, Farmington-Rock outcrop complex (108C) and Amenia silt loam

(500C) in the upland areas and nearly level, frequently flooded Saco silt loam (5A) in the BVW and brook. A detailed Wetland Delineation Report is included in **Attachment G**.

The bridge is not located within any Outstanding Resource Waters (ORW), certified vernal pools, within 0.25 miles of a National Wild Scenic River, or near any federal lands. It is however located within the following resource areas: Area of Critical Environmental Concerns (ACEC) – Schenob Brook Drainage Basin, a Zone II- Mountain Water Systems Inc, and Natural Heritage & Endangered Species (NHESP) Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674. Schenob Brook is a Coldwater Fishery. Maps of these resources are located in **Attachment C**.

There are Section 7 Endangered Species found within project limits: the Northern Long-eared Bat (*Myotis septentrionalis)*, the Tricolored Bat (*Perimyotis subflavus)*, the Bog Turtle (*Glyptemys muhlenbergii)*, and the Monarch Butterfly, *Danaus Plexippus.* A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. In coordination with MassDOT, the Natural Heritage and Endangered Species Program (NHESP) received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed species. See **Attachment D** for all species determination letters. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS. A Turtle Protection Plan is found in **Attachment G.**

The United States Federal Emergency Management Agency (FEMA) Flood Map Service Center's online map viewer indicates that the existing bridge is within Zone A/Areas of 100-Year flood; base flood elevations and flood hazard factors not determined. Therefore, the No-Rise evaluation is not required for this project. See **Attachment C**.

The project area was reviewed for invasive species in mid-Summer of 2025. Asian Bittersweet, Multiflora Rose, Japanese Bittersweet, and Autumn Olive were observed throughout the project site.

3. Proposed Conditions

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

This project involves the replacement of the existing bridge, No. S-10-015, in the same location with a new substructure and superstructure of larger capacity. This increase in capacity will yield a net gain in LUW. A Preliminary Hydraulic Analysis was conducted to determine requirements for the proposed bridge hydraulic opening. The low chord of the existing bridge is at an elevation of 674.68'. The low chord of the proposed bridge will be at an elevation of 674.21; the 10-year and 100-year flood elevations are 677.83 and 678.73, respectively. The existing bridge is therefore subject to overtopping during flood events. Alternative bridge designs assumed that the existing low chord elevation would be maintained – increasing this elevation so that it would be above the flood elevations would require a four foot increase in the roadway profile which would push the limits of side slope grading an additional six or more feet beyond the proposed limits along the approach roadways adjacent to wetlands. It was estimated that this would result in an additional 4,700 square feet or more of permanent wetland impacts, which was deemed unacceptable. Based on these controlling criteria, the proposed structure will have a span length of 66.98'. With a bankful width of 42', this span length exceeds the minimum requirements for meeting the 1.2 bankful width standards in accordance with Massachusetts Stream Crossing Standards (SCS). Wildlife shelving on both sides of the bank within the crossing are proposed, tying back to the existing Banks on all corners post construction.

The replacement structure will consist of four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls. The bridge railings will be concrete CT-TL2 barriers. The total out-to-out structure width will be 16.56' as measured along the length of the stream. With a cross-sectional area of 335.2 square feet, the openness ratio is approximately 20.24 feet, exceeding the minimum 0.82 foot requirement of the Massachusetts SCS.

The proposed roadway cross section will include a single 13' wide travel lane with a crown at the center and 2% cross slopes. Guardrails are proposed for both sides of the roadway along each bridge approach. The bridge and approach slabs will have an asphalt riding surface; beyond the approach slabs the roadway approaches will remain gravel. There will be no sidewalks along the approaches or across the bridge. Roadway side slopes will be constructed with a 1:1 slope to minimize impacts to the adjacent resource areas. These side slopes will be lined with modified rockfill over riprap to protect the embankment and bridge wingwalls from overtopping flood events.

A minimum 12-inch thick layer of streambed/bank restoration material will be placed along the widened streambed area within the new abutment limits (at and around the abutments only) to allow for natural substrate; existing channel will remain untouched. With the increased bridge span length and hydraulic opening, the closer of the two culverts (66" corrugated metal pipe) beneath Kelsey Road to the west of the bridge will be removed. This

existing floodplain culvert falls within the proposed bridge's opening. The second flood plain culvert (48" x 72" elliptical corrugated metal pipe) will be replaced in its current location with twin elliptical (34" x 53") reinforced concrete pipes, closely matching the existing culvert's cross-sectional area. This flood plain culvert doesn't connect to the main channel and therefore is not required to meet MA SCS.

During the demolition and construction of the bridge, Kelsey Road will be closed to traffic and a detour plan will be implemented. The detour length for both directions of traffic will be approximately 0.9 miles. With the full closure of Kelsey Road, construction equipment will be able to access the project site from either side of Schenob Brook along Kelsey Road and the Contractor will be able to use the approach roadway on each side of the project area for staging equipment and stockpiling materials. At the beginning of the project, sedimentation controls measures will be installed at the limits of grading and/or clearing.

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas. Alternate water handling means and methods may be submitted by the contractor for approval.

Due to the replacement of the existing bridge's substructure and superstructure, as well as the approach roadway reconstruction and replacement of the western flood plain culvert, Bank, LUW, and BVW will be impacted during the construction of the proposed bridge (See Section 5).

The existing gravel roadway surface on the bridge and the approach roadways is considered to be impervious and, as such, the pre-construction impervious area total is approximately 10,053 SF within the project limits. The post-construction impervious area, consisting of the gravel and paved roadway/bridge surfaces, totals 10,201 SF. This resulted in a net increase of 148 SF.

Approximately 9 cubic yards (streambed removed within limits of LUW) of dredge will be needed to construct the bridge replacement. This includes dredging activities for the demolition and removal of the existing bridge structure abutments and subsurface foundations as well as installing the proposed cofferdam systems around these foundations to allow the work to be performed in the dry while maintaining a streambed opening throughout construction. If legacy streambed material is encountered beneath the roadway embankment and is determined to be suitable, it will be utilized as natural stream substrate and augmented to the additional manufactured streambed material, meeting the required specifications as necessary (for quantity). A limited amount of excavated soil from the project site will be reused for fill where needed and where the material meets required soil classification for the intended use. All other excavated soil from the project site, included the dredged soil from these excavations, will be removed from the project site and disposed of by the Contractor.

4. Bridge Replacement Construction Sequence

Note: While the Department does not dictate Contractor's Means and Methods for construction, the Contractor will be required to perform construction near and in portions of the Schenob Brook (LUW) in the dry.

1. Construction staging and layout.
2. Placement of erosion and sedimentation controls and turtle protection barriers throughout the work area.
3. Clearing and grubbing.
4. Utility relocations.
5. Detour Kelsey Road to Foley Road and Barnum Street.
6. Provide a debris shield under the existing bridge prior to demolition to control demolition debris from entering Schenob Brook.
7. Remove existing bridge superstructure (deck, railing and steel beams).
8. Remove and reset existing dry hydrant at an interim location.
9. Drive temporary steel sheet piling for cofferdams. Provide dewatering equipment (sump pump and temporary dewatering sediment containment structure), as necessary to maintain any work in the dry.
10. Remove, segregate and stockpile top 12" of existing riverbed material from between steel sheeting and existing abutments taking care not to intermingle material from each abutment.

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

11. Remove the existing abutments. Once the riverbed material has been salvaged the existing abutments will be removed by hydraulic hoe-ram or similar demolition equipment. At no time will equipment or debris be allowed outside temporary cofferdam or upland areas. Abutments may be cut off 24" below proposed streambed.
12. Drive piles for proposed bridge foundations.
13. Prepare subgrade for placement of new abutments and wingwalls.
14. Construct abutments and wingwalls.
15. Place streambed/bank restoration material in areas between existing and proposed bridge abutments.
16. Backfill behind abutments and wingwalls.
17. Construct bridge approach slabs.
18. Remove dewatering equipment and temporary steel sheeting.
19. Grading for Low Flow Channel section of Schenob Brook.
20. Set bridge beams. Beams will be delivered on the east roadway approach via Barnum Street. Using a crane located along the east roadway approach, beams will be placed.
21. Form and pour concrete bridge deck and bridge barrier/rail.
22. Pave and waterproof bridge.
23. Install new dry hydrant in final location.
24. Remove and replace western culvert.
25. Construct remainder of roadway approaches.
26. Install approach roadway guardrail and signing.
27. Final grading, seeding and landscape plantings, including development of wetland replication area.
28. Restore wetlands/streambed within limits of temporary impacts.
29. Stabilize all roadway slopes prior to the removal of erosion and sedimentation controls.
30. Remove all temporary traffic control devices and open roadway to traffic.
31. Cleanup area and return to pre-construction condition.

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
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5. Wetland Resource Areas Impacts

Site visits were conducted in June 2026 and August 2025 where wetland boundaries were reverified/adjusted from a previous 2020 delineation. These updated flags are delineated on the Environmental Impact Plans. Wetland delineation includes the boundaries of Bank (MAHW) and BVW. BVW were delineated on both the east and west sides of Schenob Brook within approximately 75' of Bridge No. S-10-015. On the west approach, these wetlands flank both sides of the roadway from the bridge to the further of the two culverts to the west. More information is illustrated in **Attachment F**.

A total of 5,838 square feet of permanent BVW impacts are anticipated. These permanent impacts are due to the following: regrading of the approach roadway side slopes, bridge reconstruction, replacement of the western flood plain culvert and clearing & grubbing.

A total of 10,423 square feet of temporary BVW impacts are anticipated. These impacts are due to selective clearing and thinning within 15' of the proposed utility lines and within the swing radius of the crane used to install the bridge beams. Selective clearing and thinning will not include the removal of stumps or any other grubbing activities within BVW.

A total of 292 square feet of temporary LUW impacts are anticipated. These temporary impacts are due to the installation of the temporary steel sheet pile cofferdams. 5 square feet of permanent LUW impacts expected. These are due to the addition of stone sloping along the wingwalls.

LUW under the existing bridge equates to 325 square feet and LUW under the proposed bridge equates to 1,137 square feet. Including the 5 square feet of permanent LUW impacts, there will be an increase of 807 square feet of LUW gained due to widening the bridge span and cutting existing roadway fill. Streambed/bank restoration material will be provided in these gained LUW areas.

182 linear feet of permanent impacts to Bank are anticipated due to the following; regrading approach roadways, bridge reconstruction, the addition of riprap, streambed/bank restoration material between the abutments, and clearing & grubbing. 75 linear feet of temporary Bank impacts are expected due to selective clearing & trimming.

Table 1 below provides a summary of the overall wetland impacts for the proposed alternative:

Table 1 – Wetland Impact Summary

WATER QUALITY CERTIFICATION – NARRATIVE

MassDOT Project No. 609068
Kelsey Road Bridge Replacement over Schenob Brook
Bridge No. S-10-015
Sheffield, MA

Resource Area	Permanent Impacts	Temporary Impacts
Bordering Vegetated Wetlands (BVW)	5,838 sf	10,423 sf
Land Under Water (LUW)	5 sf	292 sf
Bank	182 lf	75 lf

The project will also involve impacts to the regulatory FEMA flood Zone A. The hydraulic capacity of the structure is being increased due to the widening of the bridge. Based on hydraulic modeling, the widening of the bridge will result in a decrease of the 100-year water surface elevation by approximately 0.20-foot at the bridge crossing when compared to existing conditions (existing WSE = 678.75', Proposed WSE = 678.52').

6. Wetland Mitigation

Proposed mitigation for the Wetland Resource Area impacts described in Section 5 are as follows:

BVW: To provide mitigation for 5,838 SF of permanent impact to BVW (palustrine shrub-dominated wetland along the floodplain of Schenob Brook), construction of a 7,045 SF wetland replication is proposed. The replication area will provide mitigation at a ratio of approximately 1.2:1 to account for potential failure.

The wetland replication is proposed to be located south of the bridge, south of ~STA 104+40 +/- RT, in the adjacent field area southeast of wetland flags WF#C-1 through WF#C-4 (sharing a boundary with the existing BVW).

Areas proximate to the BVW impact area to the immediate north and south of the bridge crossing were evaluated for wetland replication feasibility, including the goal of minimizing tree clearing required to construct the replication area. The town indicated that the abutters of the northeast quadrant were in the process of submitting a building application. To avoid adversely impacting their potential use of property, this quadrant was not chosen. The southeast quadrant was investigated but due to crane laydown and potential soil compaction caused by construction activity, this quadrant was not chosen. No off-site locations were determined to be available or feasible for a replication area proximate to the impact area. The proposed location was selected as the best available option for wetland replication because (1) it is immediately adjacent to the BVW bordering Schenob Brook and (2) it is an open field requiring minimal disturbance of exiting vegetation.

The proposed replication will be constructed with the following features, as specified on the Plans:

- The proposed replication final base elevation is 674 feet, with microtopography up to plus or minus six inches from the base elevation. This design elevation is approximately 12 inches below the adjacent wetland boundary elevation.
- The area will be subgraded to allow for 12 inches of backfill with wetland topsoil.
- The replication area will be planted with thirty-six specimens of three wetland shrub species: silky dogwood (*Cornus amomum*), gray dogwood (*Cornus racemosa*), and speckled alder (*Alnus incana*). These species will be planted in twelve clusters with three plantings per cluster. The entire area will also be seeded with a wetland seed mix.

LUW: Impacted existing LUW will be restored and an additional 807 SF of LUW will be constructed, with natural substrate placed over any necessary scour protection. The additional LUW area is due to the widening of the bridge opening from approximately 20 feet to 65 feet. LUW will be restored and new areas will be developed with the construction of a 12" layer of Streambed/Bank Restoration material (Item 983.521) between the two proposed bridge abutments.

Bank: A Streambed/Bank Restoration specification (Item 983.521) is provided in Attachment A. Roadway embankments approaching the bridge will be restored using riprap with a 12" layer of Modified Rockfill (Item 986.) on top. Riprap is necessary to protect and stabilize the slopes of the roadway embankment due to flooding events that may overtop the roadway. If any invasive species are to be impacted during construction, they shall be handled and disposed of in accordance with the following specifications: Herbicide Treatment of Invasive Plants (Item 102.3) and Invasive Plant Management Strategy (Item 102.33). Fill materials brought onsite or transported within the site would be free of invasive species or treated in accordance with the above noted specifications to prevent the spread of such species.

7. Sedimentation Control

Measures will be taken to minimize sedimentation/siltation into the resource areas, Schenob Brook, and the surrounding community during construction activities. Implementation of accepted and usual methods of sedimentation erosion control will be used at the site during all phases of construction. The perimeter erosion controls will also serve to demarcate the limits of work.

The sediment control barrier installations will be checked daily for any degradation or failures in the barrier. These will either be repaired or restored with new sediment control barriers. The Contractor will be required to maintain adequate stocks of sediment control barriers onsite to affect immediate repairs. These barriers may include compost filter tubes and silt fencing.

These erosion control devices/ methods will remain in place/use until all disturbed surfaces have stabilized. Additional control measures will be employed as necessary. All silt collected behind the erosion controls shall be removed before such measures are removed.

8. Dewatering

The demolition and construction of the bridge substructures will need to be performed in the dry. This will be accomplished using a steel sheeting cofferdam system installed in front of the existing bridge abutments and parallel to the outside edges of the approach roadways, extending beyond the limits of the proposed bridge footings. The existing stream flow will be maintained throughout construction; however, the opening will be temporarily reduced from 19'-7" to no less than 14'. The cofferdam system will be watertight, but dewatering may be necessary due to groundwater. The dewatering will consist of a sump pump to remove water from the areas of excavation and to allow for the placement of concrete. The discharge pipe will transfer this pumped water to a temporary dewatering sediment containment structure which will serve to filter out sediments before the runoff is discharged into the surrounding environment. The dewatering sediment containment structure(s) will be located along the roadway approaches on either side of the bridge, outside of environmentally sensitive resource areas.

The dewatered area inside the temporary sheeting and sandbag cofferdam are classified as temporary impacts as summarized above.

9. Storm Water Management

There are no existing stormwater Best Management Practices (BMPs) along Kelsey Road. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders.

<u>Stormwater Management Standards:</u>

WATER QUALITY CERTIFICATION – NARRATIVE

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Standard 1. No New Untreated Discharges
Currently, there are no existing outfalls to treat stormwater runoff, and no new stormwater outfalls are proposed for the Project. The existing and proposed gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders. Minimal newly exposed impervious area is proposed as part of this project. Existing roadway widths will be matched and road widening is not proposed. This standard will be met.

Standard 2. Peak Rate Attenuation
The Project has been designed to comply with Standard 2 to the maximum extent practicable. There are minimal newly exposed impervious areas proposed as part of this project. As such, post-development peak rate attenuation is anticipated to remain the same as pre-development rates. Existing roadway pavement widths will be matched and road widening is not proposed. However, there is an existing drainage swale located along the south shoulder of Kelsey Road on the east side of Schenob Brook. The project will introduce stone check dams along the length of this swale to reduce the velocity of flow and attenuate the peak discharge.

Standard 3. Recharge
The Project has been designed to comply with Standard 3 to the maximum extent practicable. The purpose of this standard is to replenish groundwater baseflows by ensuring that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions. Loss of annual recharge to groundwater is eliminated with the bridge replacement design. The proposed roadway and bridge cross-sections closely match those of the existing pavement widths; road widening is not proposed. As such, there is only a minimal amount of newly exposed impervious areas and, therefore, annual recharge from the post-development site approximates the annual recharge from the pre-development conditions.

Standard 4. Water Quality
The Project has been designed to comply with Standard 4 to the maximum extent practicable.

The addition of Deep Sump Catch Basins as a SCM to achieve some measure of removal of post-construction TSS was evaluated. Based on the roadway profile, the location of these catch basins would need to be located immediately west of the replacement bridge structure, at approximate Sta. 102+00. However, as shown on the cross-section included in Appendix A of the Stormwater Management Memorandum, the elevation of a discharge pipe from deep sump catch basins at this location would fall below the Ordinary High Water Elevation. As a result, this alternative was dismissed from further consideration.

the proposed side slopes of Kelsey Road (where stormwater runoff is directed via country drainage) will be lined with stone materials (combination of riprap and modified rockfill) that will provide a level of disconnection between the roadway surface and the wetlands.

Because of the site constraints (ROW and resource areas) and the minimal grade difference between the roadway surface and the surrounding wetlands, the use of Infiltration BMPs, Filtration BMPs and Detention and Flow Control BMPs were deemed infeasible. Based on soil borings collected along Kelsey Road, groundwater is estimated at a depth of 2 to 8 feet below the roadway surface.

One measure that is proposed to be installed is the addition of a grass channel with check dams running along the south shoulder of Kelsey Road on the east side of Schenob Brook. The introduction of the grass channel as a stormwater control measure (SCM) will provide water quality treatment prior to discharging stormwater to this critical area, and the inclusion of check dams will help to reduce the velocity of flow and attenuate the peak discharge.

A Long-Term Pollution Prevention Plan (LTPPP) has been developed for the project in compliance with Standard 4. The Standard 9 section of this document includes this LTPPP.

Standard 5. Land Uses with Higher Potential Pollutant Loads
Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area**.**

Standard 6. Critical Areas
The Project has been designed to comply with Standard 6. The project is located within an Area of Critical Environmental Concern (ACEC), designated as the Schenob Brook Drainage Basin. Additionally, Schenob Brook is classified as a coldwater fishery. **Attachment C** of this Water Quality Certification shows the Critical Areas in the vicinity of the project site. As noted under Standard 1, there are no existing or proposed outfalls to treat stormwater runoff entering these critical areas. Kelsey Road relies upon country drainage, with the runoff draining off the edge of the road and flowing to these resource areas along the outside shoulders. The side slopes off the edge of Kelsey Road will be lined with a combination of riprap and modified rockfill that will provide a level of disconnection between the roadway surface and the wetlands as a Low Impact Development practice.

Standards 7. Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable
The Project is considered a redevelopment and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable.

Standard 8. Construction Period Pollution Prevention and Erosion and Sedimentation Control
The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans (**Attachment F**) and include the use of coir logs along the limits of land disturbance. The project is expected to be completed within one construction season. In the event work extends longer than one season, these E&S controls will be replaced prior to the beginning of the second season.

The project consists of less than 1 acre of disturbance; therefore, a Construction Pollution Prevention Plan is required (CPPP). See **Attachment H**.

Standard 9. Operations & Maintenance Plan
The roadway included in this project is not owned by MassDOT. The O&M Plan will be implemented by the municipality. The Town of Sheffield will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be addressed to Sheffield Highway Department located at Pike Road East, Sheffield, MA; phone (413) 229-7030.

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, maintenance of landscaped areas, snow and ice management, street sweeping, prohibition of illicit discharges, and spill prevention and response. See **Attachment H**.

Standard 10. Prohibition of Illicit Discharges
The project's stormwater management system, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's Illicit Discharge Detention and Elimination (IDDE) Program.

10. Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools

An online review of the NHESP using the MassGIS MassMapper revealed that the project site is located within Priority Habitats of Rare Species PH 860 and Estimated Habitats of Rare Wildlife EH 674, an ACEC designated as the Schenob Brook Drainage Basin, and the Schenob Brook is designated as a Coldwater Fishery. However, the current project limits

aren't within certified/potential vernal pools, an ORW, or an Essential Fish Habitat. See **Attachment C**. In coordination with MassDOT, NHESP received a Massachusetts Endangered Species Act (MESA) determination letter dated December 31, 2025. It was determined that the project has to follow the conditions of the letter to avoid a prohibited take of the state-listed reptile. A Turtle Protection Plan is found in **Attachment G**.

According to an Information for Planning and Consultation (IPaC) inquiry for the area on August 22nd 2025, the following species were listed as follows; the Northern Long-eared Bat, *Myotis septentrionalis* is endangered, the Tricolored Bat, *Perimyotis subflavus* is proposed endangered, the Bog Turtle, *Glyptemys muhlenbergii* is threatened, and the Monarch Butterfly, *Danaus Plexippus* as proposed threatened. A Section 7 determination letter dated September 4, 2025 states that this project "may affect, not likely to adversely affect" (NLAA) both the Northern Long-eared and Tricolored Bats. A concurrence letter from U.S Fish and Wildlife Service (USFWS) dated March 13, 2026 stated the project may affect, but is not likely to adversely affect, a federally threatened reptile. To avoid adverse effects, conservation measures are to be followed as listed within the letter. Rare turtle protections plans will be implemented during construction as approved by NHESP and USFWS.

11. Massachusetts Stream Crossing Performance Standards

1. *Type of Crossing- Spans and/or Open Bottom Preferred*
   The bridge replacement will be an open bottom structure. This qualifies as "optimum" for the Type of Crossing under the Massachusetts Stream Crossing Standards (SCS)
2. *Embedment*
   a. *All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%;*
      This project is a bridge replacement project with an open clear span, and therefore, this standard does not apply.
   b. *If pipe culverts cannot be embedded this deep, then they should not be used;*
      N/A- no pipe is proposed.
   c. *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 bridge abutments will be embedded approximately 3.36 feet below the streambed and aren't under riprap or crushed stone. The hydraulic study detailing scour protection design is attached to this application. Scour protection design was based on the standards set forth in the MassDOT LRFD Bridge Manual.
3. *Crossing Span- Span is a minimum of 1.2 times the bankfull width of the stream.*

A minimum span of 50.4' is necessary to meet 1.2 bankfull (42'). The proposed crossing span is 66.98'. 66.98/42 = 1.59, which exceeds the minimum 1.2 ratio. The roadway will be overtopped during the design and base flood events, see the attached hydraulic study.

4. *Openness Ratio*
    a. *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;* The proposed openness ratio is 335.2 SF/ 16.56 LF = 20.24 feet, which exceeds the minimum 0.82 feet.
    b. *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);*
    The proposed crossing meets the optimum standards of exceeding 6' in height (6.1' proposed) and 1.64 feet openness ratio (20.24 feet proposed).
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 dis-placement during floods and maintain an appropriate bottom during normal flows.* The proposed natural substrate will be salvaged from excavations below the existing bridge (historical streambed) and be re-used for the disturbed and proposed substrate sections through the bridge channel. Within the widened section of the bridge opening, a 12-inch layer of streambed/bank restoration material will be placed to replicate the natural substrate.
6. *Water Depth and Velocity- Water depths and velocities are comparable to those found in the natural channel at a variety of flows.*
Hydraulic modeling of the proposed crossing indicates that velocities and water surface elevations better match the downstream natural channel. This is the result of "opening up" the crossing cross-section.

12. Alternatives Analysis

Alternatives for the project include the "No-Build Alternative". The project involves the replacement of a structurally deficient bridge that has been posted for reduced vehicular traffic loads. The No-Build Alternative does not meet the purpose and need requirements of the project and would result in continued deterioration of the structure. Therefore, this alternative was not selected as the preferred alternative.

WATER QUALITY CERTIFICATION – NARRATIVE

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Based on the need to replace the bridge structure, various bridge superstructure and substructure alternatives were considered. The proposed bridge type was determined to include four (4) adjacent prestressed concrete box beams supported on full height concrete cantilever abutments with pile foundations and U-wingwalls.

The existing roadway alignment and cross-section will be maintained, consisting of a 13' wide, unpaved travel lane on the roadway approaches (the bridge structure will have an asphalt riding surface). Beyond the edge of the roadway, 2-foot wide usable shoulder areas are proposed to provide safety and operational improvements such as lateral support of the pavement, reduced sedimentation that may result from country drainage, and support emergency stopping and errant vehicles. There are no sidewalks proposed along the bridge or approach roadways. Further widening of the roadway and bridge section was not considered due to the impacts this would have on the right-of-way and adjacent resource areas.

In terms of bridge construction, full road closure was considered but decided against as it would interfere with emergency vehicle access and response time. Nearby properties adjacent to the site would be negatively impacted if through traffic was closed off. The use of retaining walls to aid in lessening the amount of grading were considered as well. It was decided against as the excavation to install the foundations for these walls would extend to similar or further distances then the current "toe of slope", ultimately causing more impacts.

Several alternatives were evaluated using the proposed bridge type and roadway alignment/cross-section summarized above. These alternatives focused on opportunities that would minimize impacts to the adjacent wetland resource areas and existing right-of-way. These alternatives are summarized as follows:

<u>Alternative #1 – Bridge Replacement with Spread Footing</u>

This alternative considered the use of shallow spread footings for the new bridge abutments. Based on the Preliminary Hydraulic Analysis, it was determined that the potential scour depth would require full width countermeasure protection (i.e. riprap) from abutment to abutment with the top of footing located below the countermeasure apron. Because of the pressure scour issues and the impacts to Land Under Water that would be associated with the added countermeasures across the width of Schenob Brook, this alternative was not deemed to be desirable.

<u>Alternative #2 – Bridge Replacement with Deep Foundations (Preferred Alternative)</u>

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The Preliminary Hydraulic Analysis indicates that the proposed bridge design will result in contraction scour depth of approximately 3.36 feet from the bottom of the streambed. Under this alternative, the streambed between the existing abutments would be retained and would not be disturbed. The widened section of Schenob Brook (created by the increased bridge span length) would be graded with Streambed/Bank Restoration material (Item 983.521) in an effort to replicate the existing streambed conditions. The recommendation under this alternative was to provide a proposed substructure consisting of full height bridge abutments on deep pile foundations extending below the scour depth. With the pile supported foundation designed for foundation supports located below the scour depth, the Hydraulic Analysis suggests that Riprap Scour Protection within the channel is not warranted. Eliminating the riprap scour protection within the channel would reduce the permanent LUW impacts by 1,442 square feet, relative to Alternative #1. Based on this reduction to the LUW impacts and the improved scour countermeasures for the bridge structure, Alternative #2 was deemed to be the preferred alternative.

Alternative #3 – Bridge Replacement with Brook Realignment

Realigning a section of Schenob Brook north of Kelsey Road to provide a more natural flow alignment and reduce potential for erosion and bank scour beyond the limits of the bridge was investigated. It was agreed that this was not required hydraulically as the brook will realign naturally (to allow for free sediment transport). This work is not directly linked to the purpose and need of this project and could be eliminated. Eliminating this work would reduce the overall wetland impacts by 5,567 square feet for Vegetated Wetlands and 4,153 square feet for LUW.

13. Conclusion

The project proposes to replace the existing structurally deficient bridge along Kelsey Road in Town of Sheffield, MA. As part of project activities, there are impacts to jurisdictional wetland resource areas. Permanent and temporary impacts to BVW total 5,838 square feet and 10,423 square feet. Permanent and temporary impacts to LUW total 5 square feet and 292 square feet. Permanent and temporary impacts to Bank total 182 linear feet and 75 linear feet. A portion of the permanent impacts include the dredging required for the reconstruction of the new bridge. Approximately 9 cubic yards of dredging is proposed.

Although there are impacts within resource areas, the applicant respectfully requests that MassDEP and the United States Army Corps of Engineers find these measures adequately protective of the interests identified under Section 401 and 404 of the Clean Water Act

Regulations and issue a 401 WQC and 404 PCN under the NWPs approving the work shown on the accompanying plan set.

14. Environmental Related Specifications to be Included into the Contract

- Herbicide Treatment of Invasive Plants
- Invasive Plant Management Strategy
- Turtle Exclusion Barrier
- Floating Turbidity Barrier
- Geotextile Fabric For Stabilization & Separation
- Compost Blanket
- 755.35 Inland Wetland Replication Area
- 755.45 Wetland Restoration
- Wetland Specialist
- Wetland Monitoring Reports
- 756.1 Construction Pollution Prevention Plan
- Wetland Seasonally Flooded Mix
- Native Seeding and Establishment
- Sediment Barrier – Coir Log
- Timber Matting
- 983.521 Streambed & Bank Restoration
- Control of Water – Structure No. S-10-015
- Temporary Protective Shielding

Attachment 3

Revised Special Provisions:
Item #983.521 – Streambed/Bank Restoration

GFT

ITEM 983.521 STREAMBED/BANK RESTORATION SQUARE YARD

This work shall consist of restoring the streambed where disturbance takes place in the project area within the limits of work. Work will primarily include furnishing and installing streambed material at the Bridge No. S-10-015 crossing structure. The streambed restoration beneath the proposed bridge structure and immediately adjacent to Schenob Brook 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 an Environmental Specialist or a Fluvial Geomorphologist (Geomorphologist) to provide review of the final design and on-site assistance during streambed restoration construction to ensure the restoration is constructed 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 the MassDOT Wildlife Unit to set up an initial (virtual or in person) meeting with MassDOT's Environmental Specialist, Geomorphologist, Contractor, and Resident Engineer. The MassDOT Wildlife Unit Contact Information is:

David Paulson, Wildlife and Endangered Species Unit Supervisor
David.J.Paulson@dot.state.ma.us; cell: 857-262-3378

At this meeting, the Environmental Specialist or 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 additional onsite meeting to discuss the streambed restoration with the Environmental Specialist or Geomorphologist and respective parties from MassDOT. The Environmental Specialist or Geomorphologist shall be onsite during initial streambed restoration. The Contractor shall provide the Environmental Specialist or 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.

MATERIAL

The streambed/bank construction material is to be placed along the limits of the proposed Schenob Brook channel in the area beneath the proposed bridge span.

ITEM 983.521 (Continued)

The streambed material shall be comprised of two primary components.

1. Stone 4 inches and under shall meet the following gradation:

Sieve Opening	% Passing (by Mass)
4”	95
2”	55 – 65
¾”	30 – 45
#4	0 - 5

2. Stone 6 inches to 2.5 feet in diameter:

Stone Size	% Passing (by Mass)
2.0’	80
1.5’	25
0.5’	0

The streambed/bank stone for all two components shall be native cobbles and boulders similar in shape and size of the streambed/bank stone adjacent to the work area. Partially angular rock is preferred over round, and shall be able to lock together to prevent movement during high flows. Crushed Stone will not be acceptable for any of the components. The elevations and conditions of the existing streambed shall be maintained to the maximum extent practicable.

CONSTRUCTION METHODS

Streambed

Components One and Two shall be pre-blended outside the project area at a volume ratio of 30% and 70% respectively. The pre-blending shall be done in a way that will prevent the mass from being contaminated by work-place soils The final streambed shape and appearance between the bridge abutments shall be finalized in the field as directed by the Environmental Specialist or Geomorphologist.

The streambed materials shall be installed during normal low water conditions behind cofferdams in accordance with the environmental permits.

The pre-blended mass shall be placed in a manner to fill/choke any voids in the underlying material. 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.

ITEM 983.521 (Continued)

Completion

Once all material has been placed in the stream channel and approved by the Environmental Specialist or 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 organisms following construction. Terrestrial wildlife must be able to walk along the riverbank.

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 Environmental Specialist or Geomorphologist.

METHOD OF MEASUREMENT

Streambed/Bank Restoration will be measured for payment per square yard of Natural Substrate material complete and in place.

BASIS OF PAYMENT

The work to be done under this item shall be paid for at the Contract Unit Price per Square Yard which Contract unit price bid shall be considered full compensation for all labor, tools, equipment, and materials necessary to rebuild the streambed.

The Environmental Specialist or Geomorphologist will be provided by MassDOT at no cost to the Contractor.

ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-015 (8M2) LUMP SUM

The work to be performed under this Item shall be in accordance with Section 140.60.C, 140.60.E, and as specified herein. Work under this Item shall include all cofferdams, pumping, sandbagging, barriers, earth and other measures, necessary for sufficient water control to accomplish the removal and replacement of Bridge No. S-10-015, including wingwalls, foundations, and streambed/bank restoration in the dry. Work under this Item shall consist of dewatering within the bridge work limits as shown on the plans to facilitate the reconstruction of the bridge, wingwalls, and streambed/bank restoration. Water within the work area shall be discharged as specified in the contract documents, environmental permits obtained for this project, and as directed by the Engineer. No direct discharge will be allowed into Schenob Brook or adjacent wetland resource areas during the dewatering operations. Dewatering shall be conducted to ensure that all structural concrete is placed and cured in the dry. For demolition purposes, dewatering shall be conducted for portions of the existing bridge as determined by the Engineer. It is the responsibility of the Contractor to determine the need and extent of dewatering required; identify sedimentation and dewatering techniques and controls to be utilized; and submit method and materials he/she proposes to use for approval by the Engineer.

The handling of flood flows and the protection of existing structures, and any or all of the finished construction during high water, are included in the scope of work under this item.

Plans and calculations for all the sheeting, sandbagging, dikes, and other water control measures, including pumping, shall be developed by the Contractor. These plans and calculations shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted for approval prior to the start of construction. The Contractor shall use such equipment and shall perform the operations in such a manner that disturbances of the soil in the foundation areas will be prevented. The Contractor shall keep the excavated areas dry by such means that the water will be prevented from entering from the adjacent soils and adversely affecting the stability of the foundation material or supporting soils.

The Contractor shall investigate and verify existing river flow/elevation conditions, and evaluate the need for protection during construction and the type of temporary measures required. Before commencing construction, the Contractor shall furnish the Engineer with the plan and methods he/she proposes to use for work within or adjacent to the river including details for cofferdams and pumping as needed to accomplish the work within these areas. The Contractor may use sandbags, barriers, or other types of protective facilities as approved by the Engineer. The furnishings of such plans and methods shall not relieve the Contractor of his responsibility for the safety of the work and for the successful completion of the project.

The height of any cofferdams and/or barriers shall be sufficient to provide reasonable protection from flooding as described on the Contract Plans. All such temporary structures or facilities shall be safely designed, extended to sufficient depth and be of such dimensions and water-tightness to assure construction of the permanent work in the dry. Water control structures shall not interfere with the proper performance of the work. Their construction shall be such as to permit excavation for the permanent work and any conflicts shall be corrected at the sole expense of the Contractor.

Attachment 4

Stormwater Memo, Revised

GFT

Template Version: January 2025

To: MassDOT

Date: *July 6, 2026*

Project #: *609068*

From: GFT Engineers & Architects, P.C.

Re: *Kelsey Road over Schenob Brook Bridge Replacement Sheffield, MA*

This Stormwater Management Memorandum has been prepared to show compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Water Quality Certification Regulations (314 CMR 9.00) to support the Project's Section 401 Water Quality Certificate Application. As the subject project is considered a redevelopment project, MassDOT is only required to meet the standards to the maximum extent practicable.

Project Description

The Applicant, MassDOT, is proposing Project 609068 to construct a bridge replacement (the Project) located in the Town of Sheffield, MA. As proposed, the Project consists of the replacement of the existing Kelsey Road over Schenob Brook bridge (Bridge No. S-10-015) to address structural deficiencies. The bridge structure is in poor to satisfactory condition and the bridge is posted for reduced weight limits based on section loss to the south exterior beam.

Kelsey Road is an unpaved rural local road running primarily east/west between South Undermountain Road (MA Route 41) to the west and Barnum Street to the east. Schenob Brook generally flows from south to north beneath the bridge. The proposed work limits include improvements to the approach roadways that extend approximately 220 feet to the northwest and 380 feet to the southeast for a total project length of 860feet (0.163 miles).

Kelsey Road is a two-way roadway featuring a single 13-foot-wide lane without delineated shoulders. It is an unpaved road with a cross slope of approximately 2% along its existing approach. There are no sidewalks.

The recommended bridge replacement entails a superstructure measuring 69 feet and 9 inches in length and 16 feet in width (this span length exceeds the minimum requirements for meeting the 1.2 bankfull width standards in accordance with the MassDOT's *Design of Bridges and Culverts for Wildlife Passage at Freshwater Streams*). The superstructure comprises four adjacent prestressed concrete box beams (B48-24) supported by full-height concrete cantilever abutments with pile foundations and U-wing walls. To ensure safety, the bridge railings will be constructed using concrete CT-TL2 barriers.

A Hydraulic Analysis concluded that the existing bridge is subject to overtopping during flood events. To mitigate the effects of overtopping and pressure flow during design flood events, riprap will be installed along the roadway embankments on each side of the bridge and adjacent to the bridge wingwalls.

The bridge and approach slabs will be paved with an asphalt riding surface, while the remainder of Kelsey Road will retain its existing gravel riding surface. The proposed roadway cross section will consist of a single lane, measuring 13 feet in width, featuring a crown at the center and 2% cross slopes. Guardrails will be installed on both sides of the roadway along each bridge approach. The project does not include the construction of sidewalks either along the approaches or across the bridge.

Existing and Proposed Drainage Conditions

The project area shares boundaries with three distinct properties. Within the project limits, all three properties primarily consist of undeveloped land characterized by a combination of wooded areas and wetlands that extend to approximately 100 feet east of the bridge. Further east (towards Barnum Street), the lands on both sides of Kelsey Road are agricultural farmlands.

Kelsey Road is an unpaved, gravel roadway that is considered to be impervious. The gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook (DP-1) and adjacent wetlands along the outside shoulders. At the southern end of the project, there is an existing drainage ditch that is used to convey runoff towards existing wetlands and the Schenob Brook. There arenoexisting Stormwater Control Measures (SCMs) within the project area.

Schenob Brook flows from south to north beneath the bridge. The main channel of Schenob Brook is restricted by the bridge at Kelsey Road where it flows full from abutment face to abutment face. The clear opening is approximately 20′ wide by 5′-6″ high at its deepest point. The observed water depth is approximately 20″; there is approximately 3′-9″ of vertical clearance between the observed water surface and low chord of the bridge. The brook turns 90° to the west, just north of the bridge and runs roughly parallel to Kelsey Road for approximately 150′ before turning again sharply to the north. The bankfull width of the Schenob Brook is 42′.

The project is located within the Schenob Brook Drainage Basin, which is an Area of Critical Environmental Concerns (ACEC).

The resource areas surrounding the existing structure consists of Bank (MAHW), LUW and BVW. A wetland delineation was conducted throughout the project area on August 18, 2025.

A shrub swamp exists within the Schenob Brook floodplain on the southwest side of Kelsy Road and turns into a deciduous wooded swamp on the northeast side of the crossing. The delineated wetland resource areas along this crossing include areas with BVW and Bank (MAHW). Topography of the site is moderately sloped towards these resource areas.

The Project includes t construction of a new bridge over Schenob Brook as described in the Project Description section above. North of the bridge, the proposed roadway width will generally match existing conditions, and the proposed bridge width will closely match the existing bridge width. South of the bridge, localized roadway widening is proposed to accommodate access to an adjacent agricultural field. In addition, two new gravel driveways will be constructed to provide access to nearby agricultural fields. Milling mulch is proposed along the length of the project to accommodate the updated roadway construction and guardrail installation. For analysis purposes, the milling mulch surface is considered equivalent to the existing gravel roadway and is therefore classified as impervious. Under existing conditions, the project area contains approximately 12,290 SF of impervious surface area. Under proposed conditions, the project area contains approximately 15,853 SF of impervious surface area as a result of the improvements described above, representing a net increase of 3,563 SF. Supporting catchment maps detailing these areas can be viewed in Appendix F.

The proposed drainage patterns will generally mimic existing drainage conditions with runoff continuing to sheet flow from the roadway and draining towards Schenob Brook (DP-1) via country drainage. The existing drainage ditch at the southern end of the Project will be reconstructed maintaining efficient conveyance of runoff to the reconstructed wetland area proposed as part of the Project. A grassed channel is proposed at the end of the drainage ditch to help provide water quality treatment while conveying runoff to the wetland replication area.

Massachusetts Department of Environmental Protection (MassDEP) – Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards). Under the Stormwater Management Standards, the Project is considered a redevelopment project because it involves maintenance and improvement of an existing roadway.

The new bridge over Schenob Brook and approach roadways will closely match the cross-section of the existing:

	Existing	Proposed
Out-to-Out Bridge Width	15′-6½″	16′-0″
Curb-to-Curb Width	14′-4″	13′-8″

The Project has been designed to meet the Stormwater Management Standards to the maximum extent practicable and to improve upon existing conditions.

Standard 1: No New Untreated Discharges

No new stormwater conveyance (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project has been designed to comply with Standard 1.

Currently, there are no existing outfalls to treat stormwater runoff, and no new stormwater outfalls are proposed for the Project. The existing and proposed gravel roadway relies upon country drainage, with the runoff draining off the edge of the road and flowing to the Schenob Brook and adjacent wetlands along the outside shoulders. Minimal newly exposed impervious area is proposed as part of this project.

As a means of bettering the quality of the runoff drainage discharging off the edge of Kelsey Road, the roadway side slopes will be lined with a combination of riprap and modified rockfill that will provide a level of disconnection between the roadway surface and the wetlands as a Low Impact Development practice.

Standard 2: Peak Rate Attenuation

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.

The Project has been designed to comply with Standard 2 to the maximum extent practicable.

Peak discharge rates are projected to increase slightly over pre-development peak discharge rates. The largest rate increase will be 0.20 CFS during the 100-year storm which is not anticipated to have adverse effects on the receiving water body (Schenob Brook). Proposed drainage patterns will generally mimic existing patterns, with runoff continuing to be conveyed towards Schenob Brook. Check dams placed within the reconstructed drainage swale and grassed channel will help contribute towards peak rate attenuation.

Table 1 provides a summary of peak rates for the design point (Schenob Brook) under existing and proposed conditions. Computations and supporting information regarding hydrologic modeling are included in Appendix D.

Table 1 Peak Discharge Rates (cfs)

Design Point	Existing			Proposed		
	2-year	10-year	100-year	2-year	10-year	100-year
DP-1	*1.33*	*2.94*	*5.62*	*1.46*	*3.11*	*5.82*

Standard 3: Stormwater Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater 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 types. 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.

The Project has been designed to comply with Standard 3 to the maximum extent practicable. The purpose of this standard is to replenish groundwater baseflows by ensuring that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions. Loss of annual recharge to groundwater is eliminated with the bridge replacement design. The proposed roadway and bridge cross-sections closely match those of the existing pavement widths; road widening is not proposed. As such, there is only a minimal amount of newly exposed impervious areas and, therefore, annual recharge from the post-development site approximates the annual recharge from the pre-development conditions.

Standard 4: Water Quality

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 Project has been designed to comply with Standard 4 to the maximum extent practicable.

The addition of Deep Sump Catch Basins as a SCM to achieve some measure of removal of post-construction TSS was evaluated. Based on the roadway profile, the location of these catch basins would need to be located immediately west of the replacement bridge structure, at approximate Sta. 102+00. However, as shown on the cross-section included in Appendix A, the elevation of a discharge pipe from deep sump catch basins at this location would fall below the Ordinary High Water Elevation. As a result, this alternative was dismissed from further consideration.

The proposed side slopes of Kelsey Road (where stormwater runoff is directed via country drainage) will be lined with stone materials (combination of riprap and modified rockfill) that will provide a level of disconnection between the roadway surface and the wetlands.

Because of the site constraints (ROW and resource areas) and the minimal grade difference between the roadway surface and the surrounding wetlands, the use of Infiltration BMPs, Filtration BMPs and Detention and Flow Control BMPs were deemed infeasible. Based on soil borings collected along Kelsey Road, groundwater is estimated at a depth of 2 to 8 feet below the roadway surface.

One measure that is proposed to be installed is the addition of a grassed channel. This grassed channel will be constructed at the end of the roadway drainage ditch running along the south shoulder of Kelsey Road on the east side of Schenob Brook. While similar to the grassed channel, this roadway drainage ditch is in excess of 5% and, therefore, would not meet the design standards for a grassed channel or other SCMs detailed in the MA Stormwater Handbook. However, the area between the southern limit of this drainage ditch (approximate Sta. 105+29) and the proposed Wetland Replication area is flatter and, as such, can support the minimum design requirements for a grassed channel as defined in Volume 2, Chapter 2 of the Stormwater Handbook. The introduction of the grassed channel in this area as a stormwater control measure (SCM) will provide water quality treatment prior to discharging stormwater to this critical resource area, and the inclusion of check dams will help to reduce the velocity of flow and attenuate the peak discharge.

A Long-Term Pollution Prevention Plan (LTPPP) has been developed for the project in compliance with Standard 4. The Standard 9 section of this document includes this LTPPP.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), 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 LUHPPLs 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 LUHPPLs 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 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area**.**

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of 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 "stormwater 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 a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

The Project has been designed to comply with Standard 6. The project is located within an Area of Critical Environmental Concern (ACEC), designated as the Schenob Brook Drainage Basin. Additionally, Schenob Brook is classified as a coldwater fishery. Figure 3 shows the Critical Areas in the vicinity of the project site. As noted under Standard 1, there are no existing or proposed outfalls to treat stormwater runoff entering these critical areas. Kelsey Road relies upon country drainage, with the runoff draining off the edge of the road and flowing to these resource areas along the outside shoulders. The side slopes off the edge of Kelsey Road will be lined with a combination of riprap and modified rockfill that will provide a level of disconnection between the roadway surface and the wetlands as a Low Impact Development practice.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

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.

The Project is considered a redevelopment and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

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.

The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans and include silt fence along the limits of land disturbance. The project is expected to be completed within one construction season. In the event work extends longer than one season, these E&S controls will be replaced prior to the beginning of the second season.

The project consists of less than 1 acre of disturbance; therefore, coverage under the NPDES Construction General Permit (CGP) is not required.

Standard 9: Operation and Maintenance Plan

A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The roadway included in this project is not owned by MassDOT. The O&M Plan will be implemented by the municipality. The Town of Sheffield will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be address to Sheffield Highway Department located at Pike Road East, Sheffield, MA; phone (413) 229-7030.

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, snow and ice management, prohibition of illicit discharges, and spill prevention and response.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

The project's stormwater management system, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's Illicit Discharge Detention and Elimination (IDDE) Program.

Appendix A

Stormwater Checklist

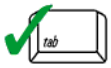
GFT

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

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Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

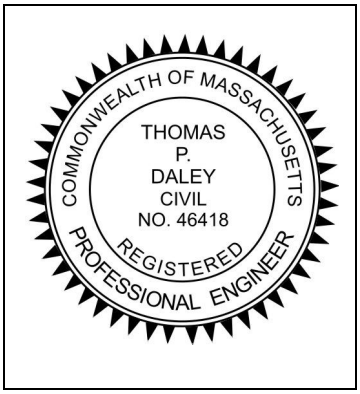
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



07/02/2026

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Massachusetts Department of Environmental Protection
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Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☒ Use of “country drainage” versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Massachusetts Department of Environmental Protection
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Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

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Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Massachusetts Department of Environmental Protection
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Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☒ Critical areas and BMPs are identified in the Stormwater Report.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☒ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

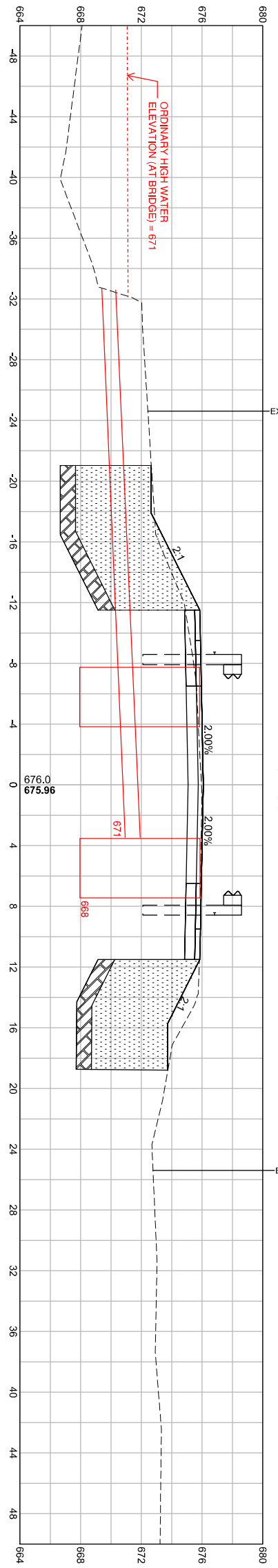
☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Appendix B

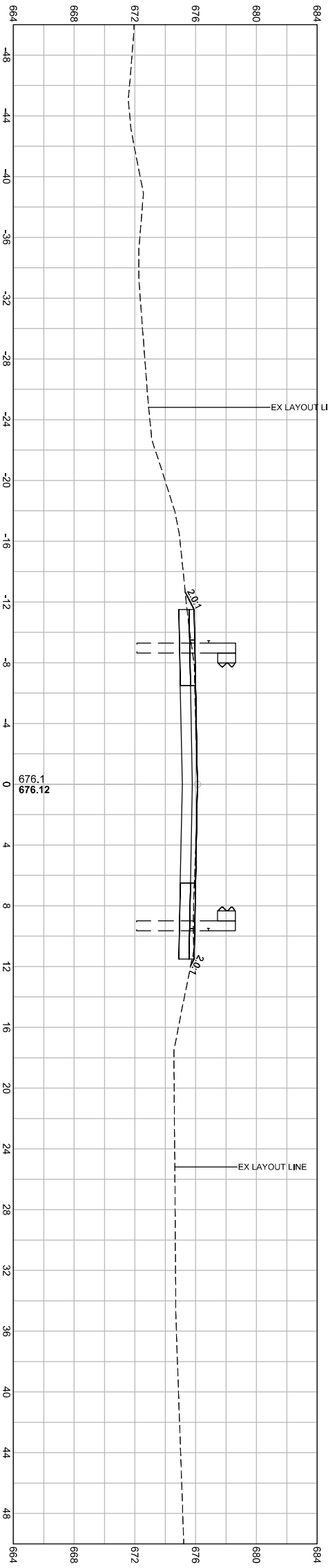
Deep Sump Catch Basin Evaluation

GFT

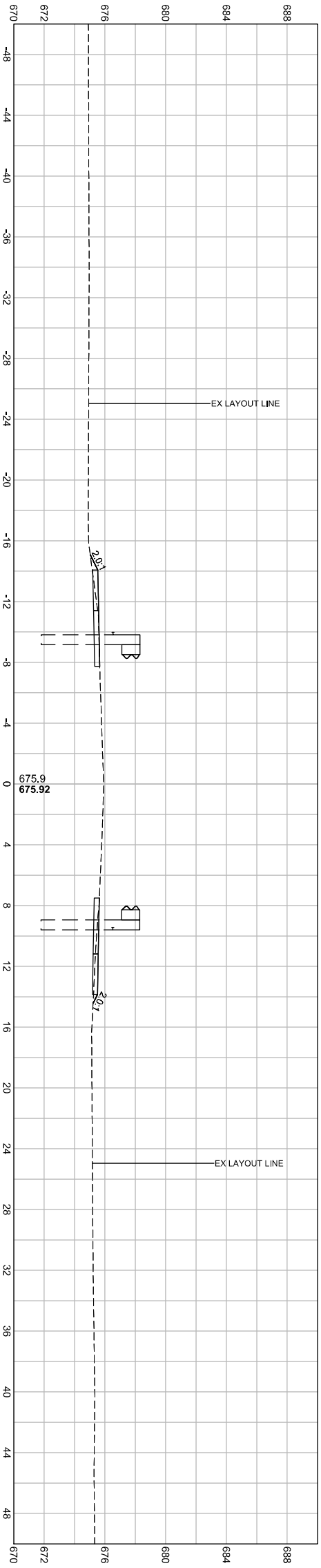
CUT: 126.96 SF
FILL: 8.34 SF



CUT: 21.23 SF
FILL: 2.11 SF



CUT: 2.64 SF
FILL: 1.85 SF



SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	40	44
PROJECT FILE NO.	609068		

CROSS SECTIONS

SCALE IN FEET

609068_HD (SHEFFIELD CROSS SECTION 01).DWG Plotted on 17-Sep-2025 12:44 PM

Appendix C

Stormwater Management System Operation & Maintenance Plan And Long-Term Pollution Prevention Plan

GFT

Kelsey Road over Schenob Brook Bridge Replacement

Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan

Sheffield, MA

PREPARED FOR

massDOT

10 Park Plaza
Boston, MA 02116

PREPARED BY

GFT Engineers & Architects, PC
75 Federal Street, Suite 800
Boston, MA 02110

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

7/6/26

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Appendices

Appendix A – Structural Stormwater BMP Inspection Checklists

1

Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for the Kelsey Road over Schenob Brook Bridge Replacement project (MassDOT Project #609068) in the Town of Sheffield, MA. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

1.1 Responsible Party

The Town of Sheffield will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be address to the Sheffield Highway Department located at Pike Road East, Sheffield, MA 01257, phone (413) 229-7010.

1.2 Inspection and Maintenance Measures and Record-Keeping

The stormwater management system covered by this O&M Plan consists of the following measures:

- Grassed Channel with Check Dams

The Town of Sheffield will inspect structural stormwater BMPs annually at a minimum. Recommended inspection activities and frequency are summarized in Table 1.

Table 1: Maintenance Inspection Schedule for Grassed Channel

Activity	Time of Year	Frequency
Inspect grassed channel & check dams	Spring and fall	Bi-annually and during and after major storms
Examine discharge area for clogging or high outflow release velocities	Spring and fall	Bi-annually
Mow side slopes	Spring through fall	Bi-annually, or as needed to keep grass under 6”
Remove trash and debris	Spring	Prior to mowing
Remove sediment from grassed channel	Year round	Annually

A Recommended inspection checklist is provided in ***Appendix A***.

Based on the results of the inspection, repairs will be made in accordance with the Town of Sheffield’s standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff. Maintenance may require contracting if existing contracts are unavailable to perform the work. More intensive remedial activities may require permitting and/or an engineering solution.

1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, pipe plugs, cofferdams deployed within stormwater structures, or other practices designed to prevent such discharges. Additional measures to manage erosion and sediment control measures during maintenance operations may include:

1. Vegetated and wooded buffers shall be protected, and left undisturbed to the extent possible.
2. Runoff shall not be diverted into a sensitive area unless this has been specifically approved.
3. Snow shall not be plowed into BMPs.
4. Easements shall be maintained, to enable maintenance equipment to access BMPs for regular cleaning.

1.4 O&M Budget

The Town of Sheffield performs maintenance for stormwater management systems as part of their annual operation and maintenance budget for roadways and bridges.

2

Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for the Kelsey Road over Schenob Brook Bridge Replacement project (MassDOT Project #609068) in the Town of Sheffield, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with:

- The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4),

This LTPPP satisfies the requirements related to pollution prevention under Massachusetts Stormwater Standards 4, 5, 6, and 10.

2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

- good housekeeping;
- storing materials and waste products inside or under cover;
- vehicle washing;
- routine inspections and maintenance of SCMs;
- spill prevention and response;
- maintenance of lawns, gardens, and other landscaped areas;
- storage and use of fertilizers, herbicides, and pesticides;
- pet waste management;
- operation and management of septic systems; and
- proper management of deicing chemicals and snow.

2.1.1 Litter Pick-up

The Town of Sheffield will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

2.1.2 Inspection and Maintenance of Stormwater Assets

The Town of Sheffield will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

2.1.3 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard Town of Sheffield practices. SCM basin bottoms and embankments designed to impound water should be mowed as required to prevent establishment of woody vegetation.

Except in rare circumstances, the Town of Sheffield does not use fertilizers, herbicides, and pesticides for the maintenance of facilities. Exceptions include using fertilizer to ensure the survival of new plantings and herbicides to control invasive plants. Local Conservation Commission review may also be required.

2.1.4 Snow and Ice Management

Snow and Ice Management will be conducted consistent with the practices outlined in the Town of Sheffield Snow Plowing Guidelines.

In accordance with the Town of Sheffield Snow Plowing Guidelines, the Town will use sand and salt when there are hazardous ice or slippery conditions. The Town is concerned about the effect of such chemicals on the environment and will limit its use for this reason.

2.1.5 Street Sweeping

Kelsey Road is a gravel roadway and, as such, street sweeping is not anticipated within the project area.

2.1.6 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- Firefighting activities*
- Foundation drains
- Water line flushing
- Footing drains
- Landscape irrigation
- Individual residential car washing
- Uncontaminated groundwater
- Flows from riparian habitats/wetlands
- Potable water sources
- Dechlorinated swimming pool water
- Street wash waters
- Wash water from residential buildings (no detergents)
- Condensation from air conditioning units
- Run-on from private driveways caused by precipitation

- Rising groundwater
- Diverted stream flows
- Lawn watering
- Water from crawl space pumps

*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the Kelsey Road over Schenob Brook Bridge Replacement project (MassDOT Project #609068).

2.1.7 Spill Prevention and Response

Response procedures will be implemented at all outfalls for any significant release of hazardous materials such as fuels, oils, or chemical materials that have the potential of discharging to Schenob Brook, a waterbody located within an Area of Critical Environmental Concerns (ACEC) – Schenob Brook Drainage Basin, a Zone II- Mountain Water Systems Inc, and a Coldwater Fishery. Spill containment measures may include booms, caps, covers, pneumatic plugs, absorbent materials, etc.

Reportable quantities will immediately be reported to the applicable Federal, State, and local agencies as required by law. Reportable quantities of chemical, fuels, or oils are established under the Clean Water Act and enforced through MassDEP. The MassDEP Emergency Response Program shall be immediately notified in accordance with required procedures for the report of a release (telephone (888) 304-1133).

The Town of Sheffield fire department, working closely with the Town police department, takes the lead on hazardous materials spills. Sheffield's fire department has informal mutual aid agreements with many surrounding communities. In the case of a spill, applicable containment and clean-up procedures will be performed immediately. These procedures are implemented in accordance with the Unified Response Manual at the local level by first responders, which includes Sheffield's local public safety departments (e.g., fire, police, public works, board of health). Spill material collected during the response will be promptly removed and disposed of in accordance with Federal, State, and local requirements.

APPENDIX A:

Structural Stormwater BMP Inspection Checklists

INSPECTION CHECKLIST – GRASSED CHANNEL

Inspections should be conducted bi-annually, and during and after major storm events.

General Information

BMP Description	Grassed Channel		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Examine discharge area for clogging or high outflow release velocities	Bi-Annually	Yes ☐ No ☐	
Mow side slopes and embankment	Bi-Annually	Yes No	
Remove trash and debris	Bi-Annually	Yes No	

Appendix D

Pre- and Post-Construction Peak Discharge Calculations

GFT

Kelsey Road Existing Conditions

Project Summary	
Title	Existing Conditions Analysis
Engineer	Michael Wagner
Company	GFT
Date	6/24/2026

Notes

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SCHENOB BROOK

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Kelsey Road Existing Conditions

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)
E-1	2-Year	2	0.024	726.000	0.30
E-1	10-Year	10	0.049	726.000	0.60
E-1	100-Year	100	0.093	726.000	1.09
E-2	2-Year	2	0.019	726.000	0.24
E-2	10-Year	10	0.040	726.000	0.49
E-2	100-Year	100	0.076	726.000	0.90
E-3	2-Year	2	0.017	726.000	0.21
E-3	10-Year	10	0.036	726.000	0.45
E-3	100-Year	100	0.070	726.000	0.83
E-4	2-Year	2	0.052	729.000	0.60
E-4	10-Year	10	0.121	726.000	1.41
E-4	100-Year	100	0.244	726.000	2.80

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)
SCHENOB BROOK	2-Year	2	0.112	726.000	1.33
SCHENOB BROOK	10-Year	10	0.247	726.000	2.94
SCHENOB BROOK	100-Year	100	0.482	726.000	5.62

Kelsey Road Existing Conditions

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Time-Depth Curve: 100-Year	
Label	100-Year
Start Time	0.000 min
Increment	6.000 min
End Time	1,440.000 min
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
30.000	0.0	0.1	0.1	0.1	0.1
60.000	0.1	0.1	0.1	0.1	0.1
90.000	0.1	0.1	0.1	0.2	0.2
120.000	0.2	0.2	0.2	0.2	0.2
150.000	0.2	0.2	0.2	0.2	0.2
180.000	0.3	0.3	0.3	0.3	0.3
210.000	0.3	0.3	0.3	0.3	0.3
240.000	0.4	0.4	0.4	0.4	0.4
270.000	0.4	0.4	0.4	0.4	0.5
300.000	0.5	0.5	0.5	0.5	0.5
330.000	0.5	0.5	0.6	0.6	0.6
360.000	0.6	0.6	0.6	0.6	0.7
390.000	0.7	0.7	0.7	0.7	0.7
420.000	0.8	0.8	0.8	0.8	0.8
450.000	0.8	0.9	0.9	0.9	0.9
480.000	1.0	1.0	1.0	1.0	1.0
510.000	1.1	1.1	1.1	1.2	1.2
540.000	1.2	1.2	1.3	1.3	1.3
570.000	1.4	1.4	1.5	1.5	1.5
600.000	1.6	1.6	1.7	1.7	1.8
630.000	1.8	1.9	1.9	2.0	2.0
660.000	2.1	2.2	2.2	2.3	2.4
690.000	2.5	2.6	2.8	3.1	3.5
720.000	4.2	4.9	5.2	5.5	5.7
750.000	5.9	6.0	6.0	6.1	6.2
780.000	6.3	6.3	6.4	6.4	6.5
810.000	6.5	6.6	6.6	6.7	6.7
840.000	6.8	6.8	6.9	6.9	6.9
870.000	7.0	7.0	7.0	7.1	7.1
900.000	7.1	7.2	7.2	7.2	7.3
930.000	7.3	7.3	7.3	7.4	7.4
960.000	7.4	7.4	7.4	7.5	7.5
990.000	7.5	7.5	7.5	7.6	7.6

Kelsey Road Existing Conditions

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
1,020.000	7.6	7.6	7.6	7.6	7.7
1,050.000	7.7	7.7	7.7	7.7	7.7
1,080.000	7.7	7.8	7.8	7.8	7.8
1,110.000	7.8	7.8	7.8	7.9	7.9
1,140.000	7.9	7.9	7.9	7.9	7.9
1,170.000	7.9	7.9	8.0	8.0	8.0
1,200.000	8.0	8.0	8.0	8.0	8.0
1,230.000	8.0	8.1	8.1	8.1	8.1
1,260.000	8.1	8.1	8.1	8.1	8.1
1,290.000	8.1	8.2	8.2	8.2	8.2
1,320.000	8.2	8.2	8.2	8.2	8.2
1,350.000	8.2	8.2	8.2	8.3	8.3
1,380.000	8.3	8.3	8.3	8.3	8.3
1,410.000	8.3	8.3	8.3	8.3	8.3
1,440.000	8.4	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Time-Depth Curve: 10-Year	
Label	10-Year
Start Time	0.000 min
Increment	6.000 min
End Time	1,440.000 min
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
30.000	0.0	0.0	0.0	0.0	0.0
60.000	0.1	0.1	0.1	0.1	0.1
90.000	0.1	0.1	0.1	0.1	0.1
120.000	0.1	0.1	0.1	0.1	0.1
150.000	0.1	0.1	0.1	0.1	0.2
180.000	0.2	0.2	0.2	0.2	0.2
210.000	0.2	0.2	0.2	0.2	0.2
240.000	0.2	0.2	0.2	0.2	0.2
270.000	0.3	0.3	0.3	0.3	0.3
300.000	0.3	0.3	0.3	0.3	0.3
330.000	0.3	0.3	0.3	0.4	0.4
360.000	0.4	0.4	0.4	0.4	0.4
390.000	0.4	0.4	0.4	0.4	0.5
420.000	0.5	0.5	0.5	0.5	0.5
450.000	0.5	0.5	0.5	0.6	0.6
480.000	0.6	0.6	0.6	0.6	0.6
510.000	0.7	0.7	0.7	0.7	0.7
540.000	0.7	0.8	0.8	0.8	0.8
570.000	0.9	0.9	0.9	0.9	0.9
600.000	1.0	1.0	1.0	1.1	1.1
630.000	1.1	1.1	1.2	1.2	1.2
660.000	1.3	1.3	1.4	1.4	1.5
690.000	1.5	1.6	1.7	1.9	2.1
720.000	2.6	3.0	3.2	3.4	3.5
750.000	3.6	3.7	3.7	3.8	3.8
780.000	3.9	3.9	3.9	4.0	4.0
810.000	4.0	4.1	4.1	4.1	4.1
840.000	4.2	4.2	4.2	4.2	4.3
870.000	4.3	4.3	4.3	4.4	4.4
900.000	4.4	4.4	4.4	4.4	4.5
930.000	4.5	4.5	4.5	4.5	4.5
960.000	4.6	4.6	4.6	4.6	4.6
990.000	4.6	4.6	4.6	4.7	4.7

Kelsey Road Existing Conditions

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
1,020.000	4.7	4.7	4.7	4.7	4.7
1,050.000	4.7	4.7	4.7	4.8	4.8
1,080.000	4.8	4.8	4.8	4.8	4.8
1,110.000	4.8	4.8	4.8	4.8	4.8
1,140.000	4.8	4.9	4.9	4.9	4.9
1,170.000	4.9	4.9	4.9	4.9	4.9
1,200.000	4.9	4.9	4.9	4.9	4.9
1,230.000	5.0	5.0	5.0	5.0	5.0
1,260.000	5.0	5.0	5.0	5.0	5.0
1,290.000	5.0	5.0	5.0	5.0	5.0
1,320.000	5.0	5.0	5.1	5.1	5.1
1,350.000	5.1	5.1	5.1	5.1	5.1
1,380.000	5.1	5.1	5.1	5.1	5.1
1,410.000	5.1	5.1	5.1	5.1	5.1
1,440.000	5.1	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Time-Depth Curve: 2-year	
Label	2-year
Start Time	0.000 min
Increment	6.000 min
End Time	1,440.000 min
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
30.000	0.0	0.0	0.0	0.0	0.0
60.000	0.0	0.0	0.0	0.0	0.0
90.000	0.0	0.0	0.1	0.1	0.1
120.000	0.1	0.1	0.1	0.1	0.1
150.000	0.1	0.1	0.1	0.1	0.1
180.000	0.1	0.1	0.1	0.1	0.1
210.000	0.1	0.1	0.1	0.1	0.1
240.000	0.1	0.1	0.1	0.1	0.2
270.000	0.2	0.2	0.2	0.2	0.2
300.000	0.2	0.2	0.2	0.2	0.2
330.000	0.2	0.2	0.2	0.2	0.2
360.000	0.2	0.2	0.2	0.2	0.2
390.000	0.3	0.3	0.3	0.3	0.3
420.000	0.3	0.3	0.3	0.3	0.3
450.000	0.3	0.3	0.3	0.3	0.3
480.000	0.4	0.4	0.4	0.4	0.4
510.000	0.4	0.4	0.4	0.4	0.4
540.000	0.5	0.5	0.5	0.5	0.5
570.000	0.5	0.5	0.5	0.6	0.6
600.000	0.6	0.6	0.6	0.6	0.7
630.000	0.7	0.7	0.7	0.7	0.8
660.000	0.8	0.8	0.8	0.9	0.9
690.000	0.9	1.0	1.1	1.2	1.3
720.000	1.6	1.8	2.0	2.1	2.1
750.000	2.2	2.2	2.3	2.3	2.3
780.000	2.3	2.4	2.4	2.4	2.4
810.000	2.4	2.5	2.5	2.5	2.5
840.000	2.5	2.5	2.6	2.6	2.6
870.000	2.6	2.6	2.6	2.6	2.7
900.000	2.7	2.7	2.7	2.7	2.7
930.000	2.7	2.7	2.7	2.7	2.8
960.000	2.8	2.8	2.8	2.8	2.8
990.000	2.8	2.8	2.8	2.8	2.8

Kelsey Road Existing Conditions

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
1,020.000	2.8	2.8	2.9	2.9	2.9
1,050.000	2.9	2.9	2.9	2.9	2.9
1,080.000	2.9	2.9	2.9	2.9	2.9
1,110.000	2.9	2.9	2.9	2.9	2.9
1,140.000	2.9	2.9	3.0	3.0	3.0
1,170.000	3.0	3.0	3.0	3.0	3.0
1,200.000	3.0	3.0	3.0	3.0	3.0
1,230.000	3.0	3.0	3.0	3.0	3.0
1,260.000	3.0	3.0	3.0	3.0	3.0
1,290.000	3.0	3.0	3.0	3.1	3.1
1,320.000	3.1	3.1	3.1	3.1	3.1
1,350.000	3.1	3.1	3.1	3.1	3.1
1,380.000	3.1	3.1	3.1	3.1	3.1
1,410.000	3.1	3.1	3.1	3.1	3.1
1,440.000	3.1	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): At = Ai+Ap
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^-1)
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of 0.1333Tc, rtm, and th (Smallest dt is then adjusted to match up with Tp)
UDdt	User specified override computational main time increment (only used if UDdt is => .1333Tc)
D(t)	Point on distribution curve (fraction of P) for time step t
K	2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks	Hydrograph shape factor = Unit Conversions * K: = ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K Default Ks = 645.333 * 0.75 = 484
Lag	Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: Si = (1000/CNi) - 10
Sp	S for pervious area: Sp = (1000/CNp) - 10
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp	Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr	Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method
Computational Notes
Precipitation

Column (1)	Time for time step t
Column (2)	D(t) = Point on distribution curve for time step t
Column (3)	Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4)	Pa(t) = D(t) x P: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	Rap(t) = Accumulated pervious runoff for time step t
	If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
	If (Pa(t) is > 0.2Sp) then use:
	
	Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6)	Rip(t) = Incremental pervious runoff for time step t Rip(t) = Rap(t) - Rap(t-1) Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.

Incremental Weighted Runoff

Column (9)	R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t) R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS Unit Hydrograph Method

Column (10)	Q(t) is computed with the SCS unit hydrograph method using R(t) and Qu(t).

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,492.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	0.30 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.30 ft³/s

Drainage Area	
SCS CN (Composite)	84.563
Area (User Defined)	7,492.000 ft²
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.7 in
Runoff Volume (Pervious)	0.024 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.024 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak, qp	2.34 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,492.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
525.000	0.00	0.00	0.00	0.00	0.00
540.000	0.00	0.00	0.00	0.00	0.00
555.000	0.00	0.00	0.00	0.00	0.00
570.000	0.00	0.00	0.00	0.00	0.00
585.000	0.00	0.00	0.00	0.00	0.00
600.000	0.01	0.01	0.01	0.01	0.01
615.000	0.01	0.01	0.01	0.01	0.01
630.000	0.01	0.01	0.01	0.01	0.01
645.000	0.01	0.01	0.01	0.01	0.01
660.000	0.01	0.01	0.01	0.02	0.02
675.000	0.02	0.02	0.02	0.02	0.02
690.000	0.02	0.03	0.04	0.05	0.06
705.000	0.07	0.09	0.10	0.12	0.18
720.000	0.25	0.28	0.30	0.25	0.18
735.000	0.16	0.14	0.12	0.11	0.09
750.000	0.07	0.06	0.05	0.05	0.04
765.000	0.04	0.04	0.04	0.04	0.03
780.000	0.03	0.03	0.03	0.03	0.03
795.000	0.03	0.03	0.03	0.03	0.03
810.000	0.03	0.03	0.03	0.02	0.02
825.000	0.02	0.02	0.02	0.02	0.02
840.000	0.02	0.02	0.02	0.02	0.02
855.000	0.02	0.02	0.02	0.02	0.02
870.000	0.02	0.02	0.02	0.02	0.02
885.000	0.02	0.02	0.02	0.02	0.02
900.000	0.02	0.02	0.02	0.02	0.02
915.000	0.02	0.02	0.01	0.01	0.01
930.000	0.01	0.01	0.01	0.01	0.01
945.000	0.01	0.01	0.01	0.01	0.01
960.000	0.01	0.01	0.01	0.01	0.01
975.000	0.01	0.01	0.01	0.01	0.01
990.000	0.01	0.01	0.01	0.01	0.01
1,005.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: E-1 Storm Event: 2-year
Scenario: 2-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,020.000	0.01	0.01	0.01	0.01	0.01
1,035.000	0.01	0.01	0.01	0.01	0.01
1,050.000	0.01	0.01	0.01	0.01	0.01
1,065.000	0.01	0.01	0.01	0.01	0.01
1,080.000	0.01	0.01	0.01	0.01	0.01
1,095.000	0.01	0.01	0.01	0.01	0.01
1,110.000	0.01	0.01	0.01	0.01	0.01
1,125.000	0.01	0.01	0.01	0.01	0.01
1,140.000	0.01	0.01	0.01	0.01	0.01
1,155.000	0.01	0.01	0.01	0.01	0.01
1,170.000	0.01	0.01	0.01	0.01	0.01
1,185.000	0.01	0.01	0.01	0.01	0.01
1,200.000	0.01	0.01	0.01	0.01	0.01
1,215.000	0.01	0.01	0.01	0.01	0.01
1,230.000	0.01	0.01	0.01	0.01	0.01
1,245.000	0.01	0.01	0.01	0.01	0.01
1,260.000	0.01	0.01	0.01	0.01	0.01
1,275.000	0.01	0.01	0.01	0.01	0.01
1,290.000	0.01	0.01	0.01	0.01	0.01
1,305.000	0.01	0.01	0.00	0.00	0.00
1,320.000	0.00	0.00	0.00	0.00	0.00
1,335.000	0.00	0.00	0.00	0.00	0.00
1,350.000	0.00	0.00	0.00	0.00	0.00
1,365.000	0.00	0.00	0.00	0.00	0.00
1,380.000	0.00	0.00	0.00	0.00	0.00
1,395.000	0.00	0.00	0.00	0.00	0.00
1,410.000	0.00	0.00	0.00	0.00	0.00
1,425.000	0.00	0.00	0.00	0.00	0.00
1,440.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,492.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.60 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.60 ft³/s

Drainage Area	
SCS CN (Composite)	84.563
Area (User Defined)	7,492.000 ft²
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.5 in
Runoff Volume (Pervious)	0.050 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.049 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	2.34 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,492.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
399.000	0.00	0.00	0.00	0.00	0.00
414.000	0.00	0.00	0.00	0.00	0.00
429.000	0.00	0.00	0.00	0.00	0.00
444.000	0.00	0.00	0.00	0.00	0.00
459.000	0.00	0.00	0.00	0.00	0.00
474.000	0.00	0.00	0.00	0.00	0.00
489.000	0.01	0.01	0.01	0.01	0.01
504.000	0.01	0.01	0.01	0.01	0.01
519.000	0.01	0.01	0.01	0.01	0.01
534.000	0.01	0.01	0.01	0.01	0.01
549.000	0.01	0.01	0.01	0.01	0.01
564.000	0.01	0.01	0.01	0.01	0.01
579.000	0.02	0.02	0.02	0.02	0.02
594.000	0.02	0.02	0.02	0.02	0.02
609.000	0.02	0.02	0.02	0.02	0.02
624.000	0.02	0.03	0.03	0.03	0.03
639.000	0.03	0.03	0.03	0.03	0.03
654.000	0.03	0.03	0.04	0.04	0.04
669.000	0.04	0.04	0.05	0.05	0.05
684.000	0.06	0.06	0.06	0.07	0.09
699.000	0.11	0.14	0.17	0.20	0.23
714.000	0.27	0.38	0.53	0.58	0.60
729.000	0.50	0.36	0.31	0.27	0.24
744.000	0.20	0.17	0.14	0.11	0.10
759.000	0.09	0.08	0.08	0.08	0.07
774.000	0.07	0.07	0.06	0.06	0.06
789.000	0.06	0.06	0.05	0.05	0.05
804.000	0.05	0.05	0.05	0.05	0.05
819.000	0.05	0.05	0.04	0.04	0.04
834.000	0.04	0.04	0.04	0.04	0.04
849.000	0.04	0.04	0.04	0.04	0.04
864.000	0.04	0.04	0.04	0.03	0.03
879.000	0.03	0.03	0.03	0.03	0.03

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: E-1 Storm Event: 10-Year
Scenario: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
894.000	0.03	0.03	0.03	0.03	0.03
909.000	0.03	0.03	0.03	0.03	0.03
924.000	0.03	0.03	0.03	0.03	0.03
939.000	0.02	0.02	0.02	0.02	0.02
954.000	0.02	0.02	0.02	0.02	0.02
969.000	0.02	0.02	0.02	0.02	0.02
984.000	0.02	0.02	0.02	0.02	0.02
999.000	0.02	0.02	0.02	0.02	0.02
1,014.000	0.02	0.02	0.02	0.02	0.02
1,029.000	0.02	0.02	0.02	0.02	0.02
1,044.000	0.02	0.02	0.02	0.02	0.01
1,059.000	0.01	0.01	0.01	0.01	0.01
1,074.000	0.01	0.01	0.01	0.01	0.01
1,089.000	0.01	0.01	0.01	0.01	0.01
1,104.000	0.01	0.01	0.01	0.01	0.01
1,119.000	0.01	0.01	0.01	0.01	0.01
1,134.000	0.01	0.01	0.01	0.01	0.01
1,149.000	0.01	0.01	0.01	0.01	0.01
1,164.000	0.01	0.01	0.01	0.01	0.01
1,179.000	0.01	0.01	0.01	0.01	0.01
1,194.000	0.01	0.01	0.01	0.01	0.01
1,209.000	0.01	0.01	0.01	0.01	0.01
1,224.000	0.01	0.01	0.01	0.01	0.01
1,239.000	0.01	0.01	0.01	0.01	0.01
1,254.000	0.01	0.01	0.01	0.01	0.01
1,269.000	0.01	0.01	0.01	0.01	0.01
1,284.000	0.01	0.01	0.01	0.01	0.01
1,299.000	0.01	0.01	0.01	0.01	0.01
1,314.000	0.01	0.01	0.01	0.01	0.01
1,329.000	0.01	0.01	0.01	0.01	0.01
1,344.000	0.01	0.01	0.01	0.01	0.01
1,359.000	0.01	0.01	0.01	0.01	0.01
1,374.000	0.01	0.01	0.01	0.01	0.01
1,389.000	0.01	0.01	0.01	0.01	0.01
1,404.000	0.01	0.01	0.01	0.01	0.01
1,419.000	0.01	0.01	0.01	0.01	0.01
1,434.000	0.01	0.01	0.01	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,492.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	1.09 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	1.09 ft³/s

Drainage Area	
SCS CN (Composite)	84.563
Area (User Defined)	7,492.000 ft²
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.5 in
Runoff Volume (Pervious)	0.093 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.093 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	2.34 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,492.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
273.000	0.00	0.00	0.00	0.00	0.00
288.000	0.00	0.00	0.00	0.00	0.00
303.000	0.00	0.00	0.00	0.00	0.00
318.000	0.00	0.00	0.00	0.00	0.00
333.000	0.00	0.00	0.00	0.00	0.00
348.000	0.00	0.00	0.00	0.00	0.00
363.000	0.00	0.01	0.01	0.01	0.01
378.000	0.01	0.01	0.01	0.01	0.01
393.000	0.01	0.01	0.01	0.01	0.01
408.000	0.01	0.01	0.01	0.01	0.01
423.000	0.01	0.01	0.01	0.01	0.01
438.000	0.01	0.01	0.01	0.01	0.01
453.000	0.01	0.01	0.01	0.01	0.01
468.000	0.01	0.01	0.01	0.02	0.02
483.000	0.02	0.02	0.02	0.02	0.02
498.000	0.02	0.02	0.02	0.02	0.02
513.000	0.02	0.02	0.02	0.02	0.02
528.000	0.03	0.03	0.03	0.03	0.03
543.000	0.03	0.03	0.03	0.03	0.03
558.000	0.03	0.03	0.03	0.03	0.04
573.000	0.04	0.04	0.04	0.04	0.04
588.000	0.04	0.04	0.04	0.04	0.04
603.000	0.05	0.05	0.05	0.05	0.05
618.000	0.05	0.05	0.06	0.06	0.06
633.000	0.06	0.06	0.06	0.07	0.07
648.000	0.07	0.07	0.07	0.07	0.08
663.000	0.08	0.08	0.09	0.09	0.10
678.000	0.10	0.11	0.12	0.12	0.13
693.000	0.15	0.18	0.22	0.28	0.33
708.000	0.39	0.45	0.51	0.72	0.99
723.000	1.07	1.09	0.90	0.65	0.55
738.000	0.48	0.42	0.36	0.30	0.24
753.000	0.20	0.17	0.15	0.15	0.14

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
768.000	0.13	0.13	0.12	0.11	0.11
783.000	0.10	0.10	0.10	0.10	0.09
798.000	0.09	0.09	0.09	0.09	0.09
813.000	0.08	0.08	0.08	0.08	0.08
828.000	0.08	0.07	0.07	0.07	0.07
843.000	0.07	0.07	0.07	0.07	0.06
858.000	0.06	0.06	0.06	0.06	0.06
873.000	0.06	0.06	0.06	0.06	0.06
888.000	0.06	0.06	0.05	0.05	0.05
903.000	0.05	0.05	0.05	0.05	0.05
918.000	0.05	0.05	0.05	0.05	0.04
933.000	0.04	0.04	0.04	0.04	0.04
948.000	0.04	0.04	0.04	0.04	0.04
963.000	0.04	0.04	0.04	0.04	0.03
978.000	0.03	0.03	0.03	0.03	0.03
993.000	0.03	0.03	0.03	0.03	0.03
1,008.000	0.03	0.03	0.03	0.03	0.03
1,023.000	0.03	0.03	0.03	0.03	0.03
1,038.000	0.03	0.03	0.03	0.03	0.03
1,053.000	0.03	0.03	0.03	0.02	0.02
1,068.000	0.02	0.02	0.02	0.02	0.02
1,083.000	0.02	0.02	0.02	0.02	0.02
1,098.000	0.02	0.02	0.02	0.02	0.02
1,113.000	0.02	0.02	0.02	0.02	0.02
1,128.000	0.02	0.02	0.02	0.02	0.02
1,143.000	0.02	0.02	0.02	0.02	0.02
1,158.000	0.02	0.02	0.02	0.02	0.02
1,173.000	0.02	0.02	0.02	0.02	0.02
1,188.000	0.02	0.02	0.02	0.02	0.02
1,203.000	0.02	0.02	0.02	0.02	0.02
1,218.000	0.02	0.02	0.02	0.02	0.02
1,233.000	0.02	0.02	0.02	0.02	0.02
1,248.000	0.02	0.02	0.02	0.02	0.02
1,263.000	0.02	0.02	0.02	0.02	0.02
1,278.000	0.02	0.02	0.02	0.02	0.02
1,293.000	0.02	0.02	0.02	0.02	0.02
1,308.000	0.02	0.02	0.02	0.02	0.02
1,323.000	0.02	0.01	0.01	0.01	0.01
1,338.000	0.01	0.01	0.01	0.01	0.01
1,353.000	0.01	0.01	0.01	0.01	0.01
1,368.000	0.01	0.01	0.01	0.01	0.01
1,383.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: E-1 Storm Event: 100-Year
Scenario: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,398.000	0.01	0.01	0.01	0.01	0.01
1,413.000	0.01	0.01	0.01	0.01	0.01
1,428.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-2
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,176.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	0.24 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.24 ft³/s

Drainage Area	
SCS CN (Composite)	83.918
Area (User Defined)	6,176.000 ft²
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.6 in
Runoff Volume (Pervious)	0.019 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.019 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-2
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak, qp	1.93 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: E-2 Storm Event: 2-year
Scenario: 2-Year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,176.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
540.000	0.00	0.00	0.00	0.00	0.00
555.000	0.00	0.00	0.00	0.00	0.00
570.000	0.00	0.00	0.00	0.00	0.00
585.000	0.00	0.00	0.00	0.00	0.00
600.000	0.00	0.00	0.00	0.00	0.00
615.000	0.00	0.01	0.01	0.01	0.01
630.000	0.01	0.01	0.01	0.01	0.01
645.000	0.01	0.01	0.01	0.01	0.01
660.000	0.01	0.01	0.01	0.01	0.01
675.000	0.01	0.01	0.02	0.02	0.02
690.000	0.02	0.02	0.03	0.04	0.05
705.000	0.06	0.07	0.08	0.09	0.14
720.000	0.20	0.22	0.24	0.20	0.15
735.000	0.13	0.11	0.10	0.08	0.07
750.000	0.06	0.05	0.04	0.04	0.04
765.000	0.03	0.03	0.03	0.03	0.03
780.000	0.03	0.03	0.02	0.02	0.02
795.000	0.02	0.02	0.02	0.02	0.02
810.000	0.02	0.02	0.02	0.02	0.02
825.000	0.02	0.02	0.02	0.02	0.02
840.000	0.02	0.02	0.02	0.02	0.02
855.000	0.02	0.02	0.02	0.02	0.02
870.000	0.02	0.02	0.02	0.01	0.01
885.000	0.01	0.01	0.01	0.01	0.01
900.000	0.01	0.01	0.01	0.01	0.01
915.000	0.01	0.01	0.01	0.01	0.01
930.000	0.01	0.01	0.01	0.01	0.01
945.000	0.01	0.01	0.01	0.01	0.01
960.000	0.01	0.01	0.01	0.01	0.01
975.000	0.01	0.01	0.01	0.01	0.01
990.000	0.01	0.01	0.01	0.01	0.01
1,005.000	0.01	0.01	0.01	0.01	0.01
1,020.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: E-2 Storm Event: 2-year
Scenario: 2-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,035.000	0.01	0.01	0.01	0.01	0.01
1,050.000	0.01	0.01	0.01	0.01	0.01
1,065.000	0.01	0.01	0.01	0.01	0.01
1,080.000	0.01	0.01	0.01	0.01	0.01
1,095.000	0.01	0.01	0.01	0.01	0.01
1,110.000	0.01	0.01	0.01	0.01	0.01
1,125.000	0.01	0.01	0.01	0.01	0.01
1,140.000	0.01	0.01	0.01	0.01	0.01
1,155.000	0.01	0.01	0.01	0.01	0.01
1,170.000	0.01	0.01	0.01	0.00	0.00
1,185.000	0.00	0.00	0.00	0.00	0.00
1,200.000	0.00	0.00	0.00	0.00	0.00
1,215.000	0.00	0.00	0.00	0.00	0.00
1,230.000	0.00	0.00	0.00	0.00	0.00
1,245.000	0.00	0.00	0.00	0.00	0.00
1,260.000	0.00	0.00	0.00	0.00	0.00
1,275.000	0.00	0.00	0.00	0.00	0.00
1,290.000	0.00	0.00	0.00	0.00	0.00
1,305.000	0.00	0.00	0.00	0.00	0.00
1,320.000	0.00	0.00	0.00	0.00	0.00
1,335.000	0.00	0.00	0.00	0.00	0.00
1,350.000	0.00	0.00	0.00	0.00	0.00
1,365.000	0.00	0.00	0.00	0.00	0.00
1,380.000	0.00	0.00	0.00	0.00	0.00
1,395.000	0.00	0.00	0.00	0.00	0.00
1,410.000	0.00	0.00	0.00	0.00	0.00
1,425.000	0.00	0.00	0.00	0.00	0.00
1,440.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,176.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.49 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.49 ft³/s

Drainage Area	
SCS CN (Composite)	83.918
Area (User Defined)	6,176.000 ft²
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.4 in
Runoff Volume (Pervious)	0.040 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.040 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	1.93 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,176.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
417.000	0.00	0.00	0.00	0.00	0.00
432.000	0.00	0.00	0.00	0.00	0.00
447.000	0.00	0.00	0.00	0.00	0.00
462.000	0.00	0.00	0.00	0.00	0.00
477.000	0.00	0.00	0.00	0.00	0.00
492.000	0.00	0.00	0.00	0.00	0.00
507.000	0.00	0.01	0.01	0.01	0.01
522.000	0.01	0.01	0.01	0.01	0.01
537.000	0.01	0.01	0.01	0.01	0.01
552.000	0.01	0.01	0.01	0.01	0.01
567.000	0.01	0.01	0.01	0.01	0.01
582.000	0.01	0.01	0.01	0.01	0.01
597.000	0.01	0.01	0.01	0.02	0.02
612.000	0.02	0.02	0.02	0.02	0.02
627.000	0.02	0.02	0.02	0.02	0.02
642.000	0.02	0.02	0.02	0.03	0.03
657.000	0.03	0.03	0.03	0.03	0.03
672.000	0.03	0.04	0.04	0.04	0.04
687.000	0.05	0.05	0.06	0.07	0.09
702.000	0.11	0.14	0.16	0.19	0.21
717.000	0.31	0.43	0.47	0.49	0.41
732.000	0.30	0.25	0.22	0.19	0.17
747.000	0.14	0.11	0.09	0.08	0.07
762.000	0.07	0.07	0.06	0.06	0.06
777.000	0.05	0.05	0.05	0.05	0.05
792.000	0.04	0.04	0.04	0.04	0.04
807.000	0.04	0.04	0.04	0.04	0.04
822.000	0.04	0.04	0.04	0.04	0.03
837.000	0.03	0.03	0.03	0.03	0.03
852.000	0.03	0.03	0.03	0.03	0.03
867.000	0.03	0.03	0.03	0.03	0.03
882.000	0.03	0.03	0.03	0.03	0.03
897.000	0.03	0.03	0.02	0.02	0.02

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: E-2 Storm Event: 10-Year
Scenario: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
912.000	0.02	0.02	0.02	0.02	0.02
927.000	0.02	0.02	0.02	0.02	0.02
942.000	0.02	0.02	0.02	0.02	0.02
957.000	0.02	0.02	0.02	0.02	0.02
972.000	0.02	0.02	0.02	0.02	0.02
987.000	0.02	0.02	0.02	0.02	0.02
1,002.000	0.02	0.01	0.01	0.01	0.01
1,017.000	0.01	0.01	0.01	0.01	0.01
1,032.000	0.01	0.01	0.01	0.01	0.01
1,047.000	0.01	0.01	0.01	0.01	0.01
1,062.000	0.01	0.01	0.01	0.01	0.01
1,077.000	0.01	0.01	0.01	0.01	0.01
1,092.000	0.01	0.01	0.01	0.01	0.01
1,107.000	0.01	0.01	0.01	0.01	0.01
1,122.000	0.01	0.01	0.01	0.01	0.01
1,137.000	0.01	0.01	0.01	0.01	0.01
1,152.000	0.01	0.01	0.01	0.01	0.01
1,167.000	0.01	0.01	0.01	0.01	0.01
1,182.000	0.01	0.01	0.01	0.01	0.01
1,197.000	0.01	0.01	0.01	0.01	0.01
1,212.000	0.01	0.01	0.01	0.01	0.01
1,227.000	0.01	0.01	0.01	0.01	0.01
1,242.000	0.01	0.01	0.01	0.01	0.01
1,257.000	0.01	0.01	0.01	0.01	0.01
1,272.000	0.01	0.01	0.01	0.01	0.01
1,287.000	0.01	0.01	0.01	0.01	0.01
1,302.000	0.01	0.01	0.01	0.01	0.01
1,317.000	0.01	0.01	0.01	0.01	0.01
1,332.000	0.01	0.01	0.01	0.01	0.01
1,347.000	0.01	0.01	0.01	0.01	0.01
1,362.000	0.01	0.01	0.01	0.01	0.01
1,377.000	0.01	0.01	0.01	0.01	0.01
1,392.000	0.01	0.01	0.01	0.01	0.01
1,407.000	0.01	0.01	0.01	0.01	0.01
1,422.000	0.01	0.01	0.01	0.01	0.01
1,437.000	0.01	0.01	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,176.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.90 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.90 ft³/s

Drainage Area	
SCS CN (Composite)	83.918
Area (User Defined)	6,176.000 ft²
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.4 in
Runoff Volume (Pervious)	0.076 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.076 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	1.93 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: E-2 Storm Event: 100-Year
Scenario: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,176.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
288.000	0.00	0.00	0.00	0.00	0.00
303.000	0.00	0.00	0.00	0.00	0.00
318.000	0.00	0.00	0.00	0.00	0.00
333.000	0.00	0.00	0.00	0.00	0.00
348.000	0.00	0.00	0.00	0.00	0.00
363.000	0.00	0.00	0.00	0.00	0.00
378.000	0.00	0.00	0.00	0.00	0.01
393.000	0.01	0.01	0.01	0.01	0.01
408.000	0.01	0.01	0.01	0.01	0.01
423.000	0.01	0.01	0.01	0.01	0.01
438.000	0.01	0.01	0.01	0.01	0.01
453.000	0.01	0.01	0.01	0.01	0.01
468.000	0.01	0.01	0.01	0.01	0.01
483.000	0.01	0.01	0.01	0.01	0.01
498.000	0.01	0.02	0.02	0.02	0.02
513.000	0.02	0.02	0.02	0.02	0.02
528.000	0.02	0.02	0.02	0.02	0.02
543.000	0.02	0.02	0.02	0.02	0.03
558.000	0.03	0.03	0.03	0.03	0.03
573.000	0.03	0.03	0.03	0.03	0.03
588.000	0.03	0.03	0.03	0.03	0.04
603.000	0.04	0.04	0.04	0.04	0.04
618.000	0.04	0.04	0.04	0.05	0.05
633.000	0.05	0.05	0.05	0.05	0.05
648.000	0.06	0.06	0.06	0.06	0.06
663.000	0.06	0.07	0.07	0.07	0.08
678.000	0.08	0.09	0.09	0.10	0.10
693.000	0.12	0.14	0.18	0.23	0.27
708.000	0.32	0.36	0.41	0.59	0.81
723.000	0.87	0.90	0.74	0.53	0.45
738.000	0.39	0.34	0.29	0.25	0.20
753.000	0.16	0.14	0.13	0.12	0.11
768.000	0.11	0.10	0.10	0.09	0.09

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: E-2 Storm Event: 100-Year
Scenario: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
783.000	0.08	0.08	0.08	0.08	0.08
798.000	0.08	0.07	0.07	0.07	0.07
813.000	0.07	0.07	0.07	0.07	0.06
828.000	0.06	0.06	0.06	0.06	0.06
843.000	0.06	0.06	0.05	0.05	0.05
858.000	0.05	0.05	0.05	0.05	0.05
873.000	0.05	0.05	0.05	0.05	0.05
888.000	0.05	0.05	0.04	0.04	0.04
903.000	0.04	0.04	0.04	0.04	0.04
918.000	0.04	0.04	0.04	0.04	0.04
933.000	0.04	0.04	0.04	0.03	0.03
948.000	0.03	0.03	0.03	0.03	0.03
963.000	0.03	0.03	0.03	0.03	0.03
978.000	0.03	0.03	0.03	0.03	0.03
993.000	0.03	0.03	0.03	0.03	0.03
1,008.000	0.03	0.03	0.02	0.02	0.02
1,023.000	0.02	0.02	0.02	0.02	0.02
1,038.000	0.02	0.02	0.02	0.02	0.02
1,053.000	0.02	0.02	0.02	0.02	0.02
1,068.000	0.02	0.02	0.02	0.02	0.02
1,083.000	0.02	0.02	0.02	0.02	0.02
1,098.000	0.02	0.02	0.02	0.02	0.02
1,113.000	0.02	0.02	0.02	0.02	0.02
1,128.000	0.02	0.02	0.02	0.02	0.02
1,143.000	0.02	0.02	0.02	0.02	0.02
1,158.000	0.02	0.02	0.02	0.02	0.02
1,173.000	0.02	0.02	0.02	0.02	0.02
1,188.000	0.02	0.02	0.02	0.02	0.02
1,203.000	0.01	0.01	0.01	0.01	0.01
1,218.000	0.01	0.01	0.01	0.01	0.01
1,233.000	0.01	0.01	0.01	0.01	0.01
1,248.000	0.01	0.01	0.01	0.01	0.01
1,263.000	0.01	0.01	0.01	0.01	0.01
1,278.000	0.01	0.01	0.01	0.01	0.01
1,293.000	0.01	0.01	0.01	0.01	0.01
1,308.000	0.01	0.01	0.01	0.01	0.01
1,323.000	0.01	0.01	0.01	0.01	0.01
1,338.000	0.01	0.01	0.01	0.01	0.01
1,353.000	0.01	0.01	0.01	0.01	0.01
1,368.000	0.01	0.01	0.01	0.01	0.01
1,383.000	0.01	0.01	0.01	0.01	0.01
1,398.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: E-2 Storm Event: 100-Year
Scenario: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,413.000	0.01	0.01	0.01	0.01	0.01
1,428.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-3
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,836.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	0.21 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.21 ft³/s

Drainage Area	
SCS CN (Composite)	82.419
Area (User Defined)	5,836.000 ft²
Maximum Retention (Pervious)	2.1 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.5 in
Runoff Volume (Pervious)	0.017 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.017 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-3
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak, qp	1.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: E-3 Storm Event: 2-year
Scenario: 2-Year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,836.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
561.000	0.00	0.00	0.00	0.00	0.00
576.000	0.00	0.00	0.00	0.00	0.00
591.000	0.00	0.00	0.00	0.00	0.00
606.000	0.00	0.00	0.00	0.00	0.00
621.000	0.00	0.00	0.00	0.00	0.01
636.000	0.01	0.01	0.01	0.01	0.01
651.000	0.01	0.01	0.01	0.01	0.01
666.000	0.01	0.01	0.01	0.01	0.01
681.000	0.01	0.01	0.01	0.02	0.02
696.000	0.02	0.03	0.04	0.05	0.06
711.000	0.07	0.08	0.12	0.17	0.20
726.000	0.21	0.18	0.13	0.11	0.10
741.000	0.09	0.08	0.06	0.05	0.04
756.000	0.04	0.03	0.03	0.03	0.03
771.000	0.03	0.03	0.03	0.02	0.02
786.000	0.02	0.02	0.02	0.02	0.02
801.000	0.02	0.02	0.02	0.02	0.02
816.000	0.02	0.02	0.02	0.02	0.02
831.000	0.02	0.02	0.02	0.02	0.02
846.000	0.02	0.02	0.01	0.01	0.01
861.000	0.01	0.01	0.01	0.01	0.01
876.000	0.01	0.01	0.01	0.01	0.01
891.000	0.01	0.01	0.01	0.01	0.01
906.000	0.01	0.01	0.01	0.01	0.01
921.000	0.01	0.01	0.01	0.01	0.01
936.000	0.01	0.01	0.01	0.01	0.01
951.000	0.01	0.01	0.01	0.01	0.01
966.000	0.01	0.01	0.01	0.01	0.01
981.000	0.01	0.01	0.01	0.01	0.01
996.000	0.01	0.01	0.01	0.01	0.01
1,011.000	0.01	0.01	0.01	0.01	0.01
1,026.000	0.01	0.01	0.01	0.01	0.01
1,041.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: E-3 Storm Event: 2-year
Scenario: 2-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,056.000	0.01	0.01	0.01	0.01	0.01
1,071.000	0.01	0.01	0.01	0.01	0.01
1,086.000	0.01	0.01	0.01	0.01	0.01
1,101.000	0.01	0.01	0.01	0.01	0.01
1,116.000	0.01	0.01	0.00	0.00	0.00
1,131.000	0.00	0.00	0.00	0.00	0.00
1,146.000	0.00	0.00	0.00	0.00	0.00
1,161.000	0.00	0.00	0.00	0.00	0.00
1,176.000	0.00	0.00	0.00	0.00	0.00
1,191.000	0.00	0.00	0.00	0.00	0.00
1,206.000	0.00	0.00	0.00	0.00	0.00
1,221.000	0.00	0.00	0.00	0.00	0.00
1,236.000	0.00	0.00	0.00	0.00	0.00
1,251.000	0.00	0.00	0.00	0.00	0.00
1,266.000	0.00	0.00	0.00	0.00	0.00
1,281.000	0.00	0.00	0.00	0.00	0.00
1,296.000	0.00	0.00	0.00	0.00	0.00
1,311.000	0.00	0.00	0.00	0.00	0.00
1,326.000	0.00	0.00	0.00	0.00	0.00
1,341.000	0.00	0.00	0.00	0.00	0.00
1,356.000	0.00	0.00	0.00	0.00	0.00
1,371.000	0.00	0.00	0.00	0.00	0.00
1,386.000	0.00	0.00	0.00	0.00	0.00
1,401.000	0.00	0.00	0.00	0.00	0.00
1,416.000	0.00	0.00	0.00	0.00	0.00
1,431.000	0.00	0.00	0.00	0.00	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,836.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.45 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.45 ft³/s

Drainage Area	
SCS CN (Composite)	82.419
Area (User Defined)	5,836.000 ft²
Maximum Retention (Pervious)	2.1 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.2 in
Runoff Volume (Pervious)	0.036 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.036 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	1.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,836.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
441.000	0.00	0.00	0.00	0.00	0.00
456.000	0.00	0.00	0.00	0.00	0.00
471.000	0.00	0.00	0.00	0.00	0.00
486.000	0.00	0.00	0.00	0.00	0.00
501.000	0.00	0.00	0.00	0.00	0.00
516.000	0.00	0.00	0.00	0.00	0.01
531.000	0.01	0.01	0.01	0.01	0.01
546.000	0.01	0.01	0.01	0.01	0.01
561.000	0.01	0.01	0.01	0.01	0.01
576.000	0.01	0.01	0.01	0.01	0.01
591.000	0.01	0.01	0.01	0.01	0.01
606.000	0.01	0.01	0.01	0.01	0.01
621.000	0.02	0.02	0.02	0.02	0.02
636.000	0.02	0.02	0.02	0.02	0.02
651.000	0.02	0.02	0.02	0.02	0.03
666.000	0.03	0.03	0.03	0.03	0.03
681.000	0.04	0.04	0.04	0.04	0.05
696.000	0.06	0.08	0.10	0.12	0.14
711.000	0.17	0.19	0.28	0.39	0.43
726.000	0.45	0.37	0.27	0.23	0.20
741.000	0.18	0.15	0.13	0.10	0.09
756.000	0.07	0.07	0.06	0.06	0.06
771.000	0.05	0.05	0.05	0.05	0.04
786.000	0.04	0.04	0.04	0.04	0.04
801.000	0.04	0.04	0.04	0.04	0.04
816.000	0.04	0.04	0.03	0.03	0.03
831.000	0.03	0.03	0.03	0.03	0.03
846.000	0.03	0.03	0.03	0.03	0.03
861.000	0.03	0.03	0.03	0.03	0.03
876.000	0.03	0.03	0.03	0.02	0.02
891.000	0.02	0.02	0.02	0.02	0.02
906.000	0.02	0.02	0.02	0.02	0.02
921.000	0.02	0.02	0.02	0.02	0.02

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
936.000	0.02	0.02	0.02	0.02	0.02
951.000	0.02	0.02	0.02	0.02	0.02
966.000	0.02	0.02	0.02	0.02	0.02
981.000	0.02	0.01	0.01	0.01	0.01
996.000	0.01	0.01	0.01	0.01	0.01
1,011.000	0.01	0.01	0.01	0.01	0.01
1,026.000	0.01	0.01	0.01	0.01	0.01
1,041.000	0.01	0.01	0.01	0.01	0.01
1,056.000	0.01	0.01	0.01	0.01	0.01
1,071.000	0.01	0.01	0.01	0.01	0.01
1,086.000	0.01	0.01	0.01	0.01	0.01
1,101.000	0.01	0.01	0.01	0.01	0.01
1,116.000	0.01	0.01	0.01	0.01	0.01
1,131.000	0.01	0.01	0.01	0.01	0.01
1,146.000	0.01	0.01	0.01	0.01	0.01
1,161.000	0.01	0.01	0.01	0.01	0.01
1,176.000	0.01	0.01	0.01	0.01	0.01
1,191.000	0.01	0.01	0.01	0.01	0.01
1,206.000	0.01	0.01	0.01	0.01	0.01
1,221.000	0.01	0.01	0.01	0.01	0.01
1,236.000	0.01	0.01	0.01	0.01	0.01
1,251.000	0.01	0.01	0.01	0.01	0.01
1,266.000	0.01	0.01	0.01	0.01	0.01
1,281.000	0.01	0.01	0.01	0.01	0.01
1,296.000	0.01	0.01	0.01	0.01	0.01
1,311.000	0.01	0.01	0.01	0.01	0.01
1,326.000	0.01	0.01	0.01	0.01	0.01
1,341.000	0.01	0.01	0.01	0.01	0.01
1,356.000	0.01	0.01	0.01	0.01	0.01
1,371.000	0.01	0.01	0.01	0.01	0.01
1,386.000	0.01	0.01	0.01	0.01	0.01
1,401.000	0.01	0.01	0.01	0.01	0.01
1,416.000	0.01	0.01	0.01	0.01	0.01
1,431.000	0.01	0.01	0.01	0.01	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,836.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.83 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.83 ft³/s

Drainage Area	
SCS CN (Composite)	82.419
Area (User Defined)	5,836.000 ft²
Maximum Retention (Pervious)	2.1 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.2 in
Runoff Volume (Pervious)	0.070 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.070 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	1.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,836.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
315.000	0.00	0.00	0.00	0.00	0.00
330.000	0.00	0.00	0.00	0.00	0.00
345.000	0.00	0.00	0.00	0.00	0.00
360.000	0.00	0.00	0.00	0.00	0.00
375.000	0.00	0.00	0.00	0.00	0.00
390.000	0.00	0.00	0.00	0.00	0.00
405.000	0.00	0.00	0.01	0.01	0.01
420.000	0.01	0.01	0.01	0.01	0.01
435.000	0.01	0.01	0.01	0.01	0.01
450.000	0.01	0.01	0.01	0.01	0.01
465.000	0.01	0.01	0.01	0.01	0.01
480.000	0.01	0.01	0.01	0.01	0.01
495.000	0.01	0.01	0.01	0.01	0.01
510.000	0.01	0.01	0.02	0.02	0.02
525.000	0.02	0.02	0.02	0.02	0.02
540.000	0.02	0.02	0.02	0.02	0.02
555.000	0.02	0.02	0.02	0.02	0.02
570.000	0.02	0.03	0.03	0.03	0.03
585.000	0.03	0.03	0.03	0.03	0.03
600.000	0.03	0.03	0.03	0.03	0.03
615.000	0.04	0.04	0.04	0.04	0.04
630.000	0.04	0.04	0.04	0.05	0.05
645.000	0.05	0.05	0.05	0.05	0.05
660.000	0.05	0.06	0.06	0.06	0.07
675.000	0.07	0.08	0.08	0.08	0.09
690.000	0.09	0.11	0.13	0.17	0.21
705.000	0.25	0.29	0.33	0.38	0.54
720.000	0.74	0.80	0.83	0.69	0.50
735.000	0.42	0.36	0.32	0.27	0.23
750.000	0.18	0.15	0.13	0.12	0.11
765.000	0.11	0.10	0.10	0.09	0.09
780.000	0.08	0.08	0.08	0.07	0.07
795.000	0.07	0.07	0.07	0.07	0.07

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
810.000	0.07	0.06	0.06	0.06	0.06
825.000	0.06	0.06	0.06	0.06	0.05
840.000	0.05	0.05	0.05	0.05	0.05
855.000	0.05	0.05	0.05	0.05	0.05
870.000	0.05	0.05	0.05	0.04	0.04
885.000	0.04	0.04	0.04	0.04	0.04
900.000	0.04	0.04	0.04	0.04	0.04
915.000	0.04	0.04	0.04	0.04	0.04
930.000	0.03	0.03	0.03	0.03	0.03
945.000	0.03	0.03	0.03	0.03	0.03
960.000	0.03	0.03	0.03	0.03	0.03
975.000	0.03	0.03	0.03	0.03	0.03
990.000	0.03	0.03	0.02	0.02	0.02
1,005.000	0.02	0.02	0.02	0.02	0.02
1,020.000	0.02	0.02	0.02	0.02	0.02
1,035.000	0.02	0.02	0.02	0.02	0.02
1,050.000	0.02	0.02	0.02	0.02	0.02
1,065.000	0.02	0.02	0.02	0.02	0.02
1,080.000	0.02	0.02	0.02	0.02	0.02
1,095.000	0.02	0.02	0.02	0.02	0.02
1,110.000	0.02	0.02	0.02	0.02	0.02
1,125.000	0.02	0.02	0.02	0.02	0.02
1,140.000	0.02	0.02	0.02	0.02	0.02
1,155.000	0.02	0.02	0.02	0.02	0.01
1,170.000	0.01	0.01	0.01	0.01	0.01
1,185.000	0.01	0.01	0.01	0.01	0.01
1,200.000	0.01	0.01	0.01	0.01	0.01
1,215.000	0.01	0.01	0.01	0.01	0.01
1,230.000	0.01	0.01	0.01	0.01	0.01
1,245.000	0.01	0.01	0.01	0.01	0.01
1,260.000	0.01	0.01	0.01	0.01	0.01
1,275.000	0.01	0.01	0.01	0.01	0.01
1,290.000	0.01	0.01	0.01	0.01	0.01
1,305.000	0.01	0.01	0.01	0.01	0.01
1,320.000	0.01	0.01	0.01	0.01	0.01
1,335.000	0.01	0.01	0.01	0.01	0.01
1,350.000	0.01	0.01	0.01	0.01	0.01
1,365.000	0.01	0.01	0.01	0.01	0.01
1,380.000	0.01	0.01	0.01	0.01	0.01
1,395.000	0.01	0.01	0.01	0.01	0.01
1,410.000	0.01	0.01	0.01	0.01	0.01
1,425.000	0.01	0.01	0.01	0.01	0.01

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,440.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	8.250 min
Area (User Defined)	22,240.000 ft²

Computational Time Increment	1.100 min
Time to Peak (Computed)	728.200 min
Flow (Peak, Computed)	0.61 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	729.000 min
Flow (Peak Interpolated Output)	0.60 ft³/s

Drainage Area	
SCS CN (Composite)	78.202
Area (User Defined)	22,240.000 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.2 in
Runoff Volume (Pervious)	0.052 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.052 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	8.250 min
Computational Time Increment	1.100 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak, qp	4.21 ft³/s
Unit peak time, Tp	5.500 min
Unit receding limb, Tr	22.000 min
Total unit time, Tb	27.500 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	8.250 min
Area (User Defined)	22,240.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
600.000	0.00	0.00	0.00	0.00	0.00
615.000	0.00	0.00	0.00	0.00	0.01
630.000	0.01	0.01	0.01	0.01	0.01
645.000	0.01	0.01	0.01	0.01	0.01
660.000	0.01	0.02	0.02	0.02	0.02
675.000	0.02	0.02	0.03	0.03	0.03
690.000	0.04	0.04	0.05	0.06	0.08
705.000	0.10	0.13	0.16	0.20	0.26
720.000	0.39	0.51	0.59	0.60	0.51
735.000	0.42	0.36	0.32	0.28	0.24
750.000	0.20	0.17	0.14	0.12	0.11
765.000	0.11	0.10	0.10	0.09	0.09
780.000	0.08	0.08	0.08	0.07	0.07
795.000	0.07	0.07	0.07	0.07	0.07
810.000	0.07	0.06	0.06	0.06	0.06
825.000	0.06	0.06	0.06	0.06	0.06
840.000	0.05	0.05	0.05	0.05	0.05
855.000	0.05	0.05	0.05	0.05	0.05
870.000	0.05	0.05	0.05	0.05	0.05
885.000	0.04	0.04	0.04	0.04	0.04
900.000	0.04	0.04	0.04	0.04	0.04
915.000	0.04	0.04	0.04	0.04	0.04
930.000	0.04	0.04	0.03	0.03	0.03
945.000	0.03	0.03	0.03	0.03	0.03
960.000	0.03	0.03	0.03	0.03	0.03
975.000	0.03	0.03	0.03	0.03	0.03
990.000	0.03	0.03	0.03	0.03	0.03
1,005.000	0.03	0.03	0.02	0.02	0.02
1,020.000	0.02	0.02	0.02	0.02	0.02
1,035.000	0.02	0.02	0.02	0.02	0.02
1,050.000	0.02	0.02	0.02	0.02	0.02
1,065.000	0.02	0.02	0.02	0.02	0.02
1,080.000	0.02	0.02	0.02	0.02	0.02

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: E-4 Storm Event: 2-year
Scenario: 2-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,095.000	0.02	0.02	0.02	0.02	0.02
1,110.000	0.02	0.02	0.02	0.02	0.02
1,125.000	0.02	0.02	0.02	0.02	0.02
1,140.000	0.02	0.02	0.02	0.02	0.02
1,155.000	0.02	0.02	0.02	0.02	0.02
1,170.000	0.02	0.02	0.02	0.02	0.02
1,185.000	0.02	0.02	0.02	0.02	0.02
1,200.000	0.02	0.02	0.01	0.01	0.01
1,215.000	0.01	0.01	0.01	0.01	0.01
1,230.000	0.01	0.01	0.01	0.01	0.01
1,245.000	0.01	0.01	0.01	0.01	0.01
1,260.000	0.01	0.01	0.01	0.01	0.01
1,275.000	0.01	0.01	0.01	0.01	0.01
1,290.000	0.01	0.01	0.01	0.01	0.01
1,305.000	0.01	0.01	0.01	0.01	0.01
1,320.000	0.01	0.01	0.01	0.01	0.01
1,335.000	0.01	0.01	0.01	0.01	0.01
1,350.000	0.01	0.01	0.01	0.01	0.01
1,365.000	0.01	0.01	0.01	0.01	0.01
1,380.000	0.01	0.01	0.01	0.01	0.01
1,395.000	0.01	0.01	0.01	0.01	0.01
1,410.000	0.01	0.01	0.01	0.01	0.01
1,425.000	0.01	0.01	0.01	0.01	0.01
1,440.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	8.250 min
Area (User Defined)	22,240.000 ft²

Computational Time Increment	1.100 min
Time to Peak (Computed)	727.100 min
Flow (Peak, Computed)	1.43 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	1.41 ft³/s

Drainage Area	
SCS CN (Composite)	78.202
Area (User Defined)	22,240.000 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.8 in
Runoff Volume (Pervious)	0.121 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.121 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	8.250 min
Computational Time Increment	1.100 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	4.21 ft³/s
Unit peak time, Tp	5.500 min
Unit receding limb, Tr	22.000 min
Total unit time, Tb	27.500 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	8.250 min
Area (User Defined)	22,240.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
483.000	0.00	0.00	0.00	0.00	0.00
498.000	0.00	0.00	0.00	0.00	0.00
513.000	0.01	0.01	0.01	0.01	0.01
528.000	0.01	0.01	0.01	0.01	0.01
543.000	0.01	0.01	0.01	0.01	0.01
558.000	0.02	0.02	0.02	0.02	0.02
573.000	0.02	0.02	0.02	0.02	0.02
588.000	0.02	0.03	0.03	0.03	0.03
603.000	0.03	0.03	0.03	0.03	0.04
618.000	0.04	0.04	0.04	0.04	0.04
633.000	0.05	0.05	0.05	0.05	0.06
648.000	0.06	0.06	0.06	0.06	0.07
663.000	0.07	0.07	0.08	0.08	0.09
678.000	0.10	0.10	0.11	0.12	0.12
693.000	0.14	0.17	0.20	0.26	0.32
708.000	0.39	0.46	0.55	0.70	1.01
723.000	1.26	1.41	1.39	1.15	0.94
738.000	0.80	0.70	0.61	0.52	0.43
753.000	0.36	0.30	0.26	0.24	0.22
768.000	0.21	0.20	0.19	0.18	0.17
783.000	0.16	0.16	0.15	0.15	0.15
798.000	0.14	0.14	0.14	0.14	0.13
813.000	0.13	0.13	0.13	0.12	0.12
828.000	0.12	0.12	0.12	0.11	0.11
843.000	0.11	0.11	0.10	0.10	0.10
858.000	0.10	0.10	0.10	0.10	0.10
873.000	0.09	0.09	0.09	0.09	0.09
888.000	0.09	0.09	0.09	0.09	0.08
903.000	0.08	0.08	0.08	0.08	0.08
918.000	0.08	0.08	0.07	0.07	0.07
933.000	0.07	0.07	0.07	0.07	0.07
948.000	0.06	0.06	0.06	0.06	0.06
963.000	0.06	0.06	0.06	0.06	0.06

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
978.000	0.06	0.05	0.05	0.05	0.05
993.000	0.05	0.05	0.05	0.05	0.05
1,008.000	0.05	0.05	0.05	0.05	0.05
1,023.000	0.05	0.05	0.05	0.05	0.04
1,038.000	0.04	0.04	0.04	0.04	0.04
1,053.000	0.04	0.04	0.04	0.04	0.04
1,068.000	0.04	0.04	0.04	0.04	0.04
1,083.000	0.04	0.04	0.04	0.04	0.04
1,098.000	0.04	0.03	0.03	0.03	0.03
1,113.000	0.03	0.03	0.03	0.03	0.03
1,128.000	0.03	0.03	0.03	0.03	0.03
1,143.000	0.03	0.03	0.03	0.03	0.03
1,158.000	0.03	0.03	0.03	0.03	0.03
1,173.000	0.03	0.03	0.03	0.03	0.03
1,188.000	0.03	0.03	0.03	0.03	0.03
1,203.000	0.03	0.03	0.03	0.03	0.03
1,218.000	0.03	0.03	0.03	0.03	0.03
1,233.000	0.03	0.03	0.03	0.03	0.03
1,248.000	0.03	0.03	0.03	0.03	0.03
1,263.000	0.03	0.03	0.03	0.03	0.03
1,278.000	0.03	0.03	0.03	0.03	0.03
1,293.000	0.03	0.03	0.03	0.03	0.03
1,308.000	0.03	0.02	0.02	0.02	0.02
1,323.000	0.02	0.02	0.02	0.02	0.02
1,338.000	0.02	0.02	0.02	0.02	0.02
1,353.000	0.02	0.02	0.02	0.02	0.02
1,368.000	0.02	0.02	0.02	0.02	0.02
1,383.000	0.02	0.02	0.02	0.02	0.02
1,398.000	0.02	0.02	0.02	0.02	0.02
1,413.000	0.02	0.02	0.02	0.02	0.02
1,428.000	0.02	0.02	0.02	0.02	0.02

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	8.250 min
Area (User Defined)	22,240.000 ft²

Computational Time Increment	1.100 min
Time to Peak (Computed)	727.100 min
Flow (Peak, Computed)	2.83 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	2.80 ft³/s

Drainage Area	
SCS CN (Composite)	78.202
Area (User Defined)	22,240.000 ft²
Maximum Retention (Pervious)	2.8 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.7 in
Runoff Volume (Pervious)	0.244 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.244 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	8.250 min
Computational Time Increment	1.100 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph Summary
Label: E-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	4.21 ft³/s
Unit peak time, Tp	5.500 min
Unit receding limb, Tr	22.000 min
Total unit time, Tb	27.500 min

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	8.250 min
Area (User Defined)	22,240.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
354.000	0.00	0.00	0.00	0.00	0.00
369.000	0.00	0.00	0.00	0.00	0.00
384.000	0.00	0.00	0.01	0.01	0.01
399.000	0.01	0.01	0.01	0.01	0.01
414.000	0.01	0.01	0.01	0.01	0.01
429.000	0.01	0.01	0.01	0.01	0.01
444.000	0.02	0.02	0.02	0.02	0.02
459.000	0.02	0.02	0.02	0.02	0.02
474.000	0.02	0.02	0.02	0.03	0.03
489.000	0.03	0.03	0.03	0.03	0.03
504.000	0.03	0.03	0.04	0.04	0.04
519.000	0.04	0.04	0.04	0.05	0.05
534.000	0.05	0.05	0.05	0.05	0.06
549.000	0.06	0.06	0.06	0.06	0.06
564.000	0.07	0.07	0.07	0.07	0.08
579.000	0.08	0.08	0.08	0.08	0.09
594.000	0.09	0.09	0.09	0.10	0.10
609.000	0.10	0.10	0.11	0.11	0.12
624.000	0.12	0.12	0.13	0.13	0.14
639.000	0.14	0.15	0.15	0.15	0.16
654.000	0.16	0.17	0.17	0.18	0.19
669.000	0.20	0.21	0.22	0.24	0.25
684.000	0.27	0.28	0.30	0.33	0.39
699.000	0.47	0.59	0.72	0.87	1.01
714.000	1.18	1.48	2.08	2.56	2.80
729.000	2.73	2.24	1.80	1.52	1.33
744.000	1.14	0.98	0.81	0.67	0.55
759.000	0.48	0.44	0.41	0.39	0.37
774.000	0.35	0.34	0.32	0.30	0.29
789.000	0.28	0.27	0.27	0.26	0.26
804.000	0.25	0.25	0.25	0.24	0.24
819.000	0.23	0.23	0.22	0.22	0.21
834.000	0.21	0.21	0.20	0.20	0.19

Kelsey Road Existing Conditions

Subsection: Unit Hydrograph (Hydrograph Table)
Label: E-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
849.000	0.19	0.19	0.18	0.18	0.18
864.000	0.18	0.18	0.17	0.17	0.17
879.000	0.17	0.16	0.16	0.16	0.16
894.000	0.16	0.15	0.15	0.15	0.15
909.000	0.15	0.14	0.14	0.14	0.14
924.000	0.13	0.13	0.13	0.13	0.13
939.000	0.12	0.12	0.12	0.12	0.11
954.000	0.11	0.11	0.11	0.11	0.10
969.000	0.10	0.10	0.10	0.10	0.10
984.000	0.10	0.10	0.09	0.09	0.09
999.000	0.09	0.09	0.09	0.09	0.09
1,014.000	0.09	0.09	0.09	0.08	0.08
1,029.000	0.08	0.08	0.08	0.08	0.08
1,044.000	0.08	0.08	0.08	0.07	0.07
1,059.000	0.07	0.07	0.07	0.07	0.07
1,074.000	0.07	0.07	0.07	0.06	0.06
1,089.000	0.06	0.06	0.06	0.06	0.06
1,104.000	0.06	0.06	0.06	0.06	0.06
1,119.000	0.06	0.06	0.06	0.06	0.06
1,134.000	0.06	0.06	0.06	0.06	0.06
1,149.000	0.06	0.06	0.06	0.06	0.06
1,164.000	0.06	0.06	0.06	0.05	0.05
1,179.000	0.05	0.05	0.05	0.05	0.05
1,194.000	0.05	0.05	0.05	0.05	0.05
1,209.000	0.05	0.05	0.05	0.05	0.05
1,224.000	0.05	0.05	0.05	0.05	0.05
1,239.000	0.05	0.05	0.05	0.05	0.05
1,254.000	0.05	0.05	0.05	0.05	0.05
1,269.000	0.05	0.05	0.05	0.05	0.05
1,284.000	0.05	0.05	0.05	0.05	0.05
1,299.000	0.04	0.04	0.04	0.04	0.04
1,314.000	0.04	0.04	0.04	0.04	0.04
1,329.000	0.04	0.04	0.04	0.04	0.04
1,344.000	0.04	0.04	0.04	0.04	0.04
1,359.000	0.04	0.04	0.04	0.04	0.04
1,374.000	0.04	0.04	0.04	0.04	0.04
1,389.000	0.04	0.04	0.04	0.04	0.04
1,404.000	0.04	0.04	0.04	0.04	0.04
1,419.000	0.04	0.04	0.04	0.04	0.04
1,434.000	0.03	0.03	0.03	(N/A)	(N/A)

Kelsey Road Existing Conditions

Subsection: Addition Summary
Label: SCHENOB BROOK
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Summary for Hydrograph Addition at 'SCHENOB BROOK'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	E-1
<Catchment to Outflow Node>	E-2
<Catchment to Outflow Node>	E-3
<Catchment to Outflow Node>	E-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	E-1	0.024	726.000	0.30
Flow (From)	E-2	0.019	726.000	0.24
Flow (From)	E-3	0.017	726.000	0.21
Flow (From)	E-4	0.052	729.000	0.60
Flow (In)	SCHENOB BROOK	0.112	726.000	1.33

Kelsey Road Existing Conditions

Subsection: Addition Summary
Label: SCHENOB BROOK
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Summary for Hydrograph Addition at 'SCHENOB BROOK'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	E-1
<Catchment to Outflow Node>	E-2
<Catchment to Outflow Node>	E-3
<Catchment to Outflow Node>	E-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	E-1	0.049	726.000	0.60
Flow (From)	E-2	0.040	726.000	0.49
Flow (From)	E-3	0.036	726.000	0.45
Flow (From)	E-4	0.121	726.000	1.41
Flow (In)	SCHENOB BROOK	0.247	726.000	2.94

Kelsey Road Existing Conditions

Subsection: Addition Summary
Label: SCHENOB BROOK
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Summary for Hydrograph Addition at 'SCHENOB BROOK'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	E-1
<Catchment to Outflow Node>	E-2
<Catchment to Outflow Node>	E-3
<Catchment to Outflow Node>	E-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	E-1	0.093	726.000	1.09
Flow (From)	E-2	0.076	726.000	0.90
Flow (From)	E-3	0.070	726.000	0.83
Flow (From)	E-4	0.244	726.000	2.80
Flow (In)	SCHENOB BROOK	0.482	726.000	5.62

Kelsey Road Existing Conditions

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Kelsey Road
Sheffield, MA

Drainage Calculations
Existing Time of Concentration

June 2026
By: MJW
Checked by: TD

Worksheet 2: Time of Concentration (Tc) or Travel time (T_t)

Project:	Kelsey Road	By:	MJW	Date:	6/9/2026
Location:	E4	Checked:	TD	Date:	6/9/2026

Check one: [x] Present [ ] Developed

Check one: [x] Tc [ ] T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Overland flow (Applicable to Tc only)

Segment ID		1				
1. Surface description (Table 3-1 in TR-55 Manual)		Grass, Dense				
2. Manning's roughness coefficient, n (Table 3-1 in TR-55 Manual)		0.24				
3. Flow length, L (total L ≤ 100 ft)	ft	84				
4. Rainfall Intensity	in	3.12				
5. Slope of hydraulic grade line (land slope), s	ft/ft	0.059				
6. $T_t = \frac{0.007*(n*L^{0.8})}{P_2^{0.5}*s^{0.4}}$ Compute T_t	min	8.13	+		=	8.13

Shallow concentrated flow

Segment ID		2				
7. Surface description (paved or unpaved)		Unpaved				
8. Flow length, L	ft	17				
9. Watercourse slope, s	ft/ft	0.024				
10. Average velocity, V (figure 3-1)	ft/s	2.49				
11. $T_t = \frac{L}{3600*V}$ Compute T_t	min	0.11	+		=	0.11

12. Watershed or subarea T_c or T_t (add T_t in steps 6 and 11), minimum 5 min — min 8.25

Kelsey Road Proposed Conditions

Project Summary	
Title	Proposed Peak Rates Analysis
Engineer	Michael Wagner
Company	GFT
Date	6/25/2026

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
P-1	2-Year	2	0.030	726.000	0.36
P-1	10-Year	10	0.058	726.000	0.69
P-1	100-Year	100	0.105	726.000	1.21
P-2	2-Year	2	0.022	726.000	0.27
P-2	10-Year	10	0.044	726.000	0.53
P-2	100-Year	100	0.081	726.000	0.94
P-3	2-Year	2	0.019	726.000	0.23
P-3	10-Year	10	0.038	726.000	0.46
P-3	100-Year	100	0.070	726.000	0.82
P-4	2-Year	2	0.049	726.000	0.60
P-4	10-Year	10	0.117	726.000	1.43
P-4	100-Year	100	0.237	726.000	2.86

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
SCHENOB BROOK	2-Year	2	0.119	726.000	1.46
SCHENOB BROOK	10-Year	10	0.256	726.000	3.11
SCHENOB BROOK	100-Year	100	0.494	726.000	5.82

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Time-Depth Curve: 100-Year	
Label	100-Year
Start Time	0.000 min
Increment	6.000 min
End Time	1,440.000 min
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
30.000	0.0	0.1	0.1	0.1	0.1
60.000	0.1	0.1	0.1	0.1	0.1
90.000	0.1	0.1	0.1	0.2	0.2
120.000	0.2	0.2	0.2	0.2	0.2
150.000	0.2	0.2	0.2	0.2	0.2
180.000	0.3	0.3	0.3	0.3	0.3
210.000	0.3	0.3	0.3	0.3	0.3
240.000	0.4	0.4	0.4	0.4	0.4
270.000	0.4	0.4	0.4	0.4	0.5
300.000	0.5	0.5	0.5	0.5	0.5
330.000	0.5	0.5	0.6	0.6	0.6
360.000	0.6	0.6	0.6	0.6	0.7
390.000	0.7	0.7	0.7	0.7	0.7
420.000	0.8	0.8	0.8	0.8	0.8
450.000	0.8	0.9	0.9	0.9	0.9
480.000	1.0	1.0	1.0	1.0	1.0
510.000	1.1	1.1	1.1	1.2	1.2
540.000	1.2	1.2	1.3	1.3	1.3
570.000	1.4	1.4	1.5	1.5	1.5
600.000	1.6	1.6	1.7	1.7	1.8
630.000	1.8	1.9	1.9	2.0	2.0
660.000	2.1	2.2	2.2	2.3	2.4
690.000	2.5	2.6	2.8	3.1	3.5
720.000	4.2	4.9	5.2	5.5	5.7
750.000	5.9	6.0	6.0	6.1	6.2
780.000	6.3	6.3	6.4	6.4	6.5
810.000	6.5	6.6	6.6	6.7	6.7
840.000	6.8	6.8	6.9	6.9	6.9
870.000	7.0	7.0	7.0	7.1	7.1
900.000	7.1	7.2	7.2	7.2	7.3
930.000	7.3	7.3	7.3	7.4	7.4
960.000	7.4	7.4	7.4	7.5	7.5
990.000	7.5	7.5	7.5	7.6	7.6
1,020.000	7.6	7.6	7.6	7.6	7.7

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
1,050.000	7.7	7.7	7.7	7.7	7.7
1,080.000	7.7	7.8	7.8	7.8	7.8
1,110.000	7.8	7.8	7.8	7.9	7.9
1,140.000	7.9	7.9	7.9	7.9	7.9
1,170.000	7.9	7.9	8.0	8.0	8.0
1,200.000	8.0	8.0	8.0	8.0	8.0
1,230.000	8.0	8.1	8.1	8.1	8.1
1,260.000	8.1	8.1	8.1	8.1	8.1
1,290.000	8.1	8.2	8.2	8.2	8.2
1,320.000	8.2	8.2	8.2	8.2	8.2
1,350.000	8.2	8.2	8.2	8.3	8.3
1,380.000	8.3	8.3	8.3	8.3	8.3
1,410.000	8.3	8.3	8.3	8.3	8.3
1,440.000	8.4	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Time-Depth Curve: 10-Year	
Label	10-Year
Start Time	0.000 min
Increment	6.000 min
End Time	1,440.000 min
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
30.000	0.0	0.0	0.0	0.0	0.0
60.000	0.1	0.1	0.1	0.1	0.1
90.000	0.1	0.1	0.1	0.1	0.1
120.000	0.1	0.1	0.1	0.1	0.1
150.000	0.1	0.1	0.1	0.1	0.2
180.000	0.2	0.2	0.2	0.2	0.2
210.000	0.2	0.2	0.2	0.2	0.2
240.000	0.2	0.2	0.2	0.2	0.2
270.000	0.3	0.3	0.3	0.3	0.3
300.000	0.3	0.3	0.3	0.3	0.3
330.000	0.3	0.3	0.3	0.4	0.4
360.000	0.4	0.4	0.4	0.4	0.4
390.000	0.4	0.4	0.4	0.4	0.5
420.000	0.5	0.5	0.5	0.5	0.5
450.000	0.5	0.5	0.5	0.6	0.6
480.000	0.6	0.6	0.6	0.6	0.6
510.000	0.7	0.7	0.7	0.7	0.7
540.000	0.7	0.8	0.8	0.8	0.8
570.000	0.9	0.9	0.9	0.9	0.9
600.000	1.0	1.0	1.0	1.1	1.1
630.000	1.1	1.1	1.2	1.2	1.2
660.000	1.3	1.3	1.4	1.4	1.5
690.000	1.5	1.6	1.7	1.9	2.1
720.000	2.6	3.0	3.2	3.4	3.5
750.000	3.6	3.7	3.7	3.8	3.8
780.000	3.9	3.9	3.9	4.0	4.0
810.000	4.0	4.1	4.1	4.1	4.1
840.000	4.2	4.2	4.2	4.2	4.3
870.000	4.3	4.3	4.3	4.4	4.4
900.000	4.4	4.4	4.4	4.4	4.5
930.000	4.5	4.5	4.5	4.5	4.5
960.000	4.6	4.6	4.6	4.6	4.6
990.000	4.6	4.6	4.6	4.7	4.7
1,020.000	4.7	4.7	4.7	4.7	4.7

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
1,050.000	4.7	4.7	4.7	4.8	4.8
1,080.000	4.8	4.8	4.8	4.8	4.8
1,110.000	4.8	4.8	4.8	4.8	4.8
1,140.000	4.8	4.9	4.9	4.9	4.9
1,170.000	4.9	4.9	4.9	4.9	4.9
1,200.000	4.9	4.9	4.9	4.9	4.9
1,230.000	5.0	5.0	5.0	5.0	5.0
1,260.000	5.0	5.0	5.0	5.0	5.0
1,290.000	5.0	5.0	5.0	5.0	5.0
1,320.000	5.0	5.0	5.1	5.1	5.1
1,350.000	5.1	5.1	5.1	5.1	5.1
1,380.000	5.1	5.1	5.1	5.1	5.1
1,410.000	5.1	5.1	5.1	5.1	5.1
1,440.000	5.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Time-Depth Curve: 2-year	
Label	2-year
Start Time	0.000 min
Increment	6.000 min
End Time	1,440.000 min
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
30.000	0.0	0.0	0.0	0.0	0.0
60.000	0.0	0.0	0.0	0.0	0.0
90.000	0.0	0.0	0.1	0.1	0.1
120.000	0.1	0.1	0.1	0.1	0.1
150.000	0.1	0.1	0.1	0.1	0.1
180.000	0.1	0.1	0.1	0.1	0.1
210.000	0.1	0.1	0.1	0.1	0.1
240.000	0.1	0.1	0.1	0.1	0.2
270.000	0.2	0.2	0.2	0.2	0.2
300.000	0.2	0.2	0.2	0.2	0.2
330.000	0.2	0.2	0.2	0.2	0.2
360.000	0.2	0.2	0.2	0.2	0.2
390.000	0.3	0.3	0.3	0.3	0.3
420.000	0.3	0.3	0.3	0.3	0.3
450.000	0.3	0.3	0.3	0.3	0.3
480.000	0.4	0.4	0.4	0.4	0.4
510.000	0.4	0.4	0.4	0.4	0.4
540.000	0.5	0.5	0.5	0.5	0.5
570.000	0.5	0.5	0.5	0.6	0.6
600.000	0.6	0.6	0.6	0.6	0.7
630.000	0.7	0.7	0.7	0.7	0.8
660.000	0.8	0.8	0.8	0.9	0.9
690.000	0.9	1.0	1.1	1.2	1.3
720.000	1.6	1.8	2.0	2.1	2.1
750.000	2.2	2.2	2.3	2.3	2.3
780.000	2.3	2.4	2.4	2.4	2.4
810.000	2.4	2.5	2.5	2.5	2.5
840.000	2.5	2.5	2.6	2.6	2.6
870.000	2.6	2.6	2.6	2.6	2.7
900.000	2.7	2.7	2.7	2.7	2.7
930.000	2.7	2.7	2.7	2.7	2.8
960.000	2.8	2.8	2.8	2.8	2.8
990.000	2.8	2.8	2.8	2.8	2.8
1,020.000	2.8	2.8	2.9	2.9	2.9

Subsection: Time-Depth Curve
Label: Time-Depth - 1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

CUMULATIVE RAINFALL (in)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
1,050.000	2.9	2.9	2.9	2.9	2.9
1,080.000	2.9	2.9	2.9	2.9	2.9
1,110.000	2.9	2.9	2.9	2.9	2.9
1,140.000	2.9	2.9	3.0	3.0	3.0
1,170.000	3.0	3.0	3.0	3.0	3.0
1,200.000	3.0	3.0	3.0	3.0	3.0
1,230.000	3.0	3.0	3.0	3.0	3.0
1,260.000	3.0	3.0	3.0	3.0	3.0
1,290.000	3.0	3.0	3.0	3.1	3.1
1,320.000	3.1	3.1	3.1	3.1	3.1
1,350.000	3.1	3.1	3.1	3.1	3.1
1,380.000	3.1	3.1	3.1	3.1	3.1
1,410.000	3.1	3.1	3.1	3.1	3.1
1,440.000	3.1	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): At = Ai+Ap
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^-1)
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of 0.1333Tc, rtm, and th (Smallest dt is then adjusted to match up with Tp)
UDdt	User specified override computational main time increment (only used if UDdt is => .1333Tc)
D(t)	Point on distribution curve (fraction of P) for time step t
K	2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks	Hydrograph shape factor = Unit Conversions * K: = ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K Default Ks = 645.333 * 0.75 = 484
Lag	Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: Si = (1000/CNi) - 10
Sp	S for pervious area: Sp = (1000/CNp) - 10
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp	Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr	Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method
Computational Notes
Precipitation

Column (1)	Time for time step t
Column (2)	D(t) = Point on distribution curve for time step t
Column (3)	Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4)	Pa(t) = D(t) x P: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	Rap(t) = Accumulated pervious runoff for time step t
	If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
	If (Pa(t) is > 0.2Sp) then use:
	
	Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6)	Rip(t) = Incremental pervious runoff for time step t Rip(t) = Rap(t) - Rap(t-1) Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.

Incremental Weighted Runoff

Column (9)	R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t) R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS Unit Hydrograph Method

Column (10)	Q(t) is computed with the SCS unit hydrograph method using R(t) and Qu(t).

Subsection: Unit Hydrograph Summary
Label: P-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,914.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.36 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.36 ft³/s

Drainage Area	
SCS CN (Composite)	88.348
Area (User Defined)	7,914.000 ft²
Maximum Retention (Pervious)	1.3 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.0 in
Runoff Volume (Pervious)	0.030 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.030 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.47 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,914.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
453.000	0.00	0.00	0.00	0.00	0.00
468.000	0.00	0.00	0.00	0.00	0.00
483.000	0.00	0.00	0.00	0.00	0.00
498.000	0.00	0.00	0.00	0.00	0.00
513.000	0.00	0.00	0.00	0.00	0.00
528.000	0.00	0.00	0.00	0.00	0.00
543.000	0.01	0.01	0.01	0.01	0.01
558.000	0.01	0.01	0.01	0.01	0.01
573.000	0.01	0.01	0.01	0.01	0.01
588.000	0.01	0.01	0.01	0.01	0.01
603.000	0.01	0.01	0.01	0.01	0.01
618.000	0.01	0.01	0.01	0.01	0.01
633.000	0.01	0.01	0.02	0.02	0.02
648.000	0.02	0.02	0.02	0.02	0.02
663.000	0.02	0.02	0.02	0.02	0.03
678.000	0.03	0.03	0.03	0.03	0.04
693.000	0.04	0.05	0.06	0.08	0.10
708.000	0.12	0.14	0.16	0.23	0.32
723.000	0.35	0.36	0.30	0.22	0.19
738.000	0.16	0.14	0.12	0.10	0.08
753.000	0.07	0.06	0.05	0.05	0.05
768.000	0.05	0.04	0.04	0.04	0.04
783.000	0.04	0.04	0.03	0.03	0.03
798.000	0.03	0.03	0.03	0.03	0.03
813.000	0.03	0.03	0.03	0.03	0.03
828.000	0.03	0.03	0.03	0.03	0.02
843.000	0.02	0.02	0.02	0.02	0.02
858.000	0.02	0.02	0.02	0.02	0.02
873.000	0.02	0.02	0.02	0.02	0.02
888.000	0.02	0.02	0.02	0.02	0.02
903.000	0.02	0.02	0.02	0.02	0.02
918.000	0.02	0.02	0.02	0.02	0.02
933.000	0.02	0.02	0.02	0.02	0.01
948.000	0.01	0.01	0.01	0.01	0.01

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
963.000	0.01	0.01	0.01	0.01	0.01
978.000	0.01	0.01	0.01	0.01	0.01
993.000	0.01	0.01	0.01	0.01	0.01
1,008.000	0.01	0.01	0.01	0.01	0.01
1,023.000	0.01	0.01	0.01	0.01	0.01
1,038.000	0.01	0.01	0.01	0.01	0.01
1,053.000	0.01	0.01	0.01	0.01	0.01
1,068.000	0.01	0.01	0.01	0.01	0.01
1,083.000	0.01	0.01	0.01	0.01	0.01
1,098.000	0.01	0.01	0.01	0.01	0.01
1,113.000	0.01	0.01	0.01	0.01	0.01
1,128.000	0.01	0.01	0.01	0.01	0.01
1,143.000	0.01	0.01	0.01	0.01	0.01
1,158.000	0.01	0.01	0.01	0.01	0.01
1,173.000	0.01	0.01	0.01	0.01	0.01
1,188.000	0.01	0.01	0.01	0.01	0.01
1,203.000	0.01	0.01	0.01	0.01	0.01
1,218.000	0.01	0.01	0.01	0.01	0.01
1,233.000	0.01	0.01	0.01	0.01	0.01
1,248.000	0.01	0.01	0.01	0.01	0.01
1,263.000	0.01	0.01	0.01	0.01	0.01
1,278.000	0.01	0.01	0.01	0.01	0.01
1,293.000	0.01	0.01	0.01	0.01	0.01
1,308.000	0.01	0.01	0.01	0.01	0.01
1,323.000	0.01	0.01	0.01	0.01	0.01
1,338.000	0.01	0.01	0.01	0.01	0.01
1,353.000	0.01	0.01	0.01	0.01	0.01
1,368.000	0.01	0.01	0.01	0.01	0.00
1,383.000	0.00	0.00	0.00	0.00	0.00
1,398.000	0.00	0.00	0.00	0.00	0.00
1,413.000	0.00	0.00	0.00	0.00	0.00
1,428.000	0.00	0.00	0.00	0.00	0.00

Subsection: Unit Hydrograph Summary
Label: P-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,914.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.69 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.69 ft³/s

Drainage Area	
SCS CN (Composite)	88.348
Area (User Defined)	7,914.000 ft²
Maximum Retention (Pervious)	1.3 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.8 in
Runoff Volume (Pervious)	0.058 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.058 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.47 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,914.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
321.000	0.00	0.00	0.00	0.00	0.00
336.000	0.00	0.00	0.00	0.00	0.00
351.000	0.00	0.00	0.00	0.00	0.00
366.000	0.00	0.00	0.00	0.00	0.00
381.000	0.00	0.00	0.00	0.00	0.00
396.000	0.00	0.00	0.00	0.00	0.00
411.000	0.00	0.00	0.00	0.00	0.00
426.000	0.01	0.01	0.01	0.01	0.01
441.000	0.01	0.01	0.01	0.01	0.01
456.000	0.01	0.01	0.01	0.01	0.01
471.000	0.01	0.01	0.01	0.01	0.01
486.000	0.01	0.01	0.01	0.01	0.01
501.000	0.01	0.01	0.01	0.01	0.01
516.000	0.01	0.01	0.01	0.01	0.01
531.000	0.01	0.01	0.02	0.02	0.02
546.000	0.02	0.02	0.02	0.02	0.02
561.000	0.02	0.02	0.02	0.02	0.02
576.000	0.02	0.02	0.02	0.02	0.02
591.000	0.02	0.02	0.03	0.03	0.03
606.000	0.03	0.03	0.03	0.03	0.03
621.000	0.03	0.03	0.03	0.03	0.04
636.000	0.04	0.04	0.04	0.04	0.04
651.000	0.04	0.04	0.04	0.05	0.05
666.000	0.05	0.05	0.06	0.06	0.06
681.000	0.07	0.07	0.07	0.08	0.09
696.000	0.11	0.14	0.17	0.21	0.24
711.000	0.28	0.32	0.45	0.62	0.67
726.000	0.69	0.57	0.41	0.35	0.30
741.000	0.27	0.23	0.19	0.15	0.13
756.000	0.11	0.10	0.09	0.09	0.08
771.000	0.08	0.08	0.07	0.07	0.07
786.000	0.06	0.06	0.06	0.06	0.06
801.000	0.06	0.06	0.06	0.05	0.05
816.000	0.05	0.05	0.05	0.05	0.05

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
831.000	0.05	0.05	0.05	0.04	0.04
846.000	0.04	0.04	0.04	0.04	0.04
861.000	0.04	0.04	0.04	0.04	0.04
876.000	0.04	0.04	0.04	0.04	0.04
891.000	0.04	0.03	0.03	0.03	0.03
906.000	0.03	0.03	0.03	0.03	0.03
921.000	0.03	0.03	0.03	0.03	0.03
936.000	0.03	0.03	0.03	0.03	0.03
951.000	0.03	0.02	0.02	0.02	0.02
966.000	0.02	0.02	0.02	0.02	0.02
981.000	0.02	0.02	0.02	0.02	0.02
996.000	0.02	0.02	0.02	0.02	0.02
1,011.000	0.02	0.02	0.02	0.02	0.02
1,026.000	0.02	0.02	0.02	0.02	0.02
1,041.000	0.02	0.02	0.02	0.02	0.02
1,056.000	0.02	0.02	0.02	0.02	0.02
1,071.000	0.02	0.02	0.01	0.01	0.01
1,086.000	0.01	0.01	0.01	0.01	0.01
1,101.000	0.01	0.01	0.01	0.01	0.01
1,116.000	0.01	0.01	0.01	0.01	0.01
1,131.000	0.01	0.01	0.01	0.01	0.01
1,146.000	0.01	0.01	0.01	0.01	0.01
1,161.000	0.01	0.01	0.01	0.01	0.01
1,176.000	0.01	0.01	0.01	0.01	0.01
1,191.000	0.01	0.01	0.01	0.01	0.01
1,206.000	0.01	0.01	0.01	0.01	0.01
1,221.000	0.01	0.01	0.01	0.01	0.01
1,236.000	0.01	0.01	0.01	0.01	0.01
1,251.000	0.01	0.01	0.01	0.01	0.01
1,266.000	0.01	0.01	0.01	0.01	0.01
1,281.000	0.01	0.01	0.01	0.01	0.01
1,296.000	0.01	0.01	0.01	0.01	0.01
1,311.000	0.01	0.01	0.01	0.01	0.01
1,326.000	0.01	0.01	0.01	0.01	0.01
1,341.000	0.01	0.01	0.01	0.01	0.01
1,356.000	0.01	0.01	0.01	0.01	0.01
1,371.000	0.01	0.01	0.01	0.01	0.01
1,386.000	0.01	0.01	0.01	0.01	0.01
1,401.000	0.01	0.01	0.01	0.01	0.01
1,416.000	0.01	0.01	0.01	0.01	0.01
1,431.000	0.01	0.01	0.01	0.01	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,914.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	1.21 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	1.21 ft³/s

Drainage Area	
SCS CN (Composite)	88.348
Area (User Defined)	7,914.000 ft²
Maximum Retention (Pervious)	1.3 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.0 in
Runoff Volume (Pervious)	0.105 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.105 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.47 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	7,914.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
210.000	0.00	0.00	0.00	0.00	0.00
225.000	0.00	0.00	0.00	0.00	0.00
240.000	0.00	0.00	0.00	0.00	0.00
255.000	0.00	0.00	0.00	0.00	0.00
270.000	0.00	0.00	0.00	0.00	0.00
285.000	0.00	0.00	0.00	0.01	0.01
300.000	0.01	0.01	0.01	0.01	0.01
315.000	0.01	0.01	0.01	0.01	0.01
330.000	0.01	0.01	0.01	0.01	0.01
345.000	0.01	0.01	0.01	0.01	0.01
360.000	0.01	0.01	0.01	0.01	0.01
375.000	0.01	0.01	0.01	0.01	0.01
390.000	0.01	0.01	0.01	0.01	0.01
405.000	0.01	0.01	0.01	0.01	0.01
420.000	0.01	0.01	0.02	0.02	0.02
435.000	0.02	0.02	0.02	0.02	0.02
450.000	0.02	0.02	0.02	0.02	0.02
465.000	0.02	0.02	0.02	0.02	0.02
480.000	0.02	0.02	0.02	0.02	0.02
495.000	0.03	0.03	0.03	0.03	0.03
510.000	0.03	0.03	0.03	0.03	0.03
525.000	0.03	0.03	0.03	0.04	0.04
540.000	0.04	0.04	0.04	0.04	0.04
555.000	0.04	0.04	0.04	0.04	0.04
570.000	0.05	0.05	0.05	0.05	0.05
585.000	0.05	0.05	0.05	0.05	0.05
600.000	0.05	0.06	0.06	0.06	0.06
615.000	0.06	0.06	0.07	0.07	0.07
630.000	0.07	0.07	0.07	0.08	0.08
645.000	0.08	0.08	0.08	0.09	0.09
660.000	0.09	0.09	0.10	0.10	0.11
675.000	0.12	0.12	0.13	0.13	0.14
690.000	0.15	0.17	0.21	0.26	0.32
705.000	0.38	0.44	0.51	0.57	0.81

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
720.000	1.10	1.18	1.21	0.99	0.71
735.000	0.60	0.52	0.45	0.39	0.33
750.000	0.26	0.22	0.18	0.17	0.16
765.000	0.15	0.14	0.14	0.13	0.12
780.000	0.12	0.11	0.11	0.11	0.10
795.000	0.10	0.10	0.10	0.10	0.09
810.000	0.09	0.09	0.09	0.09	0.09
825.000	0.08	0.08	0.08	0.08	0.08
840.000	0.08	0.07	0.07	0.07	0.07
855.000	0.07	0.07	0.07	0.07	0.07
870.000	0.07	0.06	0.06	0.06	0.06
885.000	0.06	0.06	0.06	0.06	0.06
900.000	0.06	0.06	0.06	0.05	0.05
915.000	0.05	0.05	0.05	0.05	0.05
930.000	0.05	0.05	0.05	0.05	0.05
945.000	0.04	0.04	0.04	0.04	0.04
960.000	0.04	0.04	0.04	0.04	0.04
975.000	0.04	0.04	0.04	0.04	0.04
990.000	0.04	0.04	0.03	0.03	0.03
1,005.000	0.03	0.03	0.03	0.03	0.03
1,020.000	0.03	0.03	0.03	0.03	0.03
1,035.000	0.03	0.03	0.03	0.03	0.03
1,050.000	0.03	0.03	0.03	0.03	0.03
1,065.000	0.03	0.03	0.03	0.03	0.02
1,080.000	0.02	0.02	0.02	0.02	0.02
1,095.000	0.02	0.02	0.02	0.02	0.02
1,110.000	0.02	0.02	0.02	0.02	0.02
1,125.000	0.02	0.02	0.02	0.02	0.02
1,140.000	0.02	0.02	0.02	0.02	0.02
1,155.000	0.02	0.02	0.02	0.02	0.02
1,170.000	0.02	0.02	0.02	0.02	0.02
1,185.000	0.02	0.02	0.02	0.02	0.02
1,200.000	0.02	0.02	0.02	0.02	0.02
1,215.000	0.02	0.02	0.02	0.02	0.02
1,230.000	0.02	0.02	0.02	0.02	0.02
1,245.000	0.02	0.02	0.02	0.02	0.02
1,260.000	0.02	0.02	0.02	0.02	0.02
1,275.000	0.02	0.02	0.02	0.02	0.02
1,290.000	0.02	0.02	0.02	0.02	0.02
1,305.000	0.02	0.02	0.02	0.02	0.02
1,320.000	0.02	0.02	0.02	0.02	0.02
1,335.000	0.02	0.02	0.02	0.02	0.02
1,350.000	0.02	0.02	0.02	0.02	0.02

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-1
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,365.000	0.01	0.01	0.01	0.01	0.01
1,380.000	0.01	0.01	0.01	0.01	0.01
1,395.000	0.01	0.01	0.01	0.01	0.01
1,410.000	0.01	0.01	0.01	0.01	0.01
1,425.000	0.01	0.01	0.01	0.01	0.01
1,440.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-2
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,279.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	0.27 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.27 ft³/s

Drainage Area	
SCS CN (Composite)	86.443
Area (User Defined)	6,279.000 ft²
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.8 in
Runoff Volume (Pervious)	0.022 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.022 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.96 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-2
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: P-2 Storm Event: 2-year
Scenario: 2-Year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,279.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
498.000	0.00	0.00	0.00	0.00	0.00
513.000	0.00	0.00	0.00	0.00	0.00
528.000	0.00	0.00	0.00	0.00	0.00
543.000	0.00	0.00	0.00	0.00	0.00
558.000	0.00	0.00	0.00	0.00	0.00
573.000	0.00	0.00	0.00	0.00	0.00
588.000	0.01	0.01	0.01	0.01	0.01
603.000	0.01	0.01	0.01	0.01	0.01
618.000	0.01	0.01	0.01	0.01	0.01
633.000	0.01	0.01	0.01	0.01	0.01
648.000	0.01	0.01	0.01	0.01	0.01
663.000	0.01	0.01	0.02	0.02	0.02
678.000	0.02	0.02	0.02	0.02	0.02
693.000	0.03	0.03	0.04	0.06	0.07
708.000	0.08	0.10	0.11	0.16	0.23
723.000	0.25	0.27	0.23	0.17	0.14
738.000	0.12	0.11	0.09	0.08	0.06
753.000	0.05	0.04	0.04	0.04	0.04
768.000	0.04	0.03	0.03	0.03	0.03
783.000	0.03	0.03	0.03	0.03	0.03
798.000	0.02	0.02	0.02	0.02	0.02
813.000	0.02	0.02	0.02	0.02	0.02
828.000	0.02	0.02	0.02	0.02	0.02
843.000	0.02	0.02	0.02	0.02	0.02
858.000	0.02	0.02	0.02	0.02	0.02
873.000	0.02	0.02	0.02	0.02	0.02
888.000	0.02	0.02	0.01	0.01	0.01
903.000	0.01	0.01	0.01	0.01	0.01
918.000	0.01	0.01	0.01	0.01	0.01
933.000	0.01	0.01	0.01	0.01	0.01
948.000	0.01	0.01	0.01	0.01	0.01
963.000	0.01	0.01	0.01	0.01	0.01
978.000	0.01	0.01	0.01	0.01	0.01
993.000	0.01	0.01	0.01	0.01	0.01

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-2
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,008.000	0.01	0.01	0.01	0.01	0.01
1,023.000	0.01	0.01	0.01	0.01	0.01
1,038.000	0.01	0.01	0.01	0.01	0.01
1,053.000	0.01	0.01	0.01	0.01	0.01
1,068.000	0.01	0.01	0.01	0.01	0.01
1,083.000	0.01	0.01	0.01	0.01	0.01
1,098.000	0.01	0.01	0.01	0.01	0.01
1,113.000	0.01	0.01	0.01	0.01	0.01
1,128.000	0.01	0.01	0.01	0.01	0.01
1,143.000	0.01	0.01	0.01	0.01	0.01
1,158.000	0.01	0.01	0.01	0.01	0.01
1,173.000	0.01	0.01	0.01	0.01	0.01
1,188.000	0.01	0.01	0.01	0.01	0.01
1,203.000	0.01	0.01	0.01	0.01	0.01
1,218.000	0.00	0.00	0.00	0.00	0.00
1,233.000	0.00	0.00	0.00	0.00	0.00
1,248.000	0.00	0.00	0.00	0.00	0.00
1,263.000	0.00	0.00	0.00	0.00	0.00
1,278.000	0.00	0.00	0.00	0.00	0.00
1,293.000	0.00	0.00	0.00	0.00	0.00
1,308.000	0.00	0.00	0.00	0.00	0.00
1,323.000	0.00	0.00	0.00	0.00	0.00
1,338.000	0.00	0.00	0.00	0.00	0.00
1,353.000	0.00	0.00	0.00	0.00	0.00
1,368.000	0.00	0.00	0.00	0.00	0.00
1,383.000	0.00	0.00	0.00	0.00	0.00
1,398.000	0.00	0.00	0.00	0.00	0.00
1,413.000	0.00	0.00	0.00	0.00	0.00
1,428.000	0.00	0.00	0.00	0.00	0.00

Subsection: Unit Hydrograph Summary
Label: P-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,279.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.53 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.53 ft³/s

Drainage Area	
SCS CN (Composite)	86.443
Area (User Defined)	6,279.000 ft²
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.6 in
Runoff Volume (Pervious)	0.044 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.044 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.96 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,279.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
372.000	0.00	0.00	0.00	0.00	0.00
387.000	0.00	0.00	0.00	0.00	0.00
402.000	0.00	0.00	0.00	0.00	0.00
417.000	0.00	0.00	0.00	0.00	0.00
432.000	0.00	0.00	0.00	0.00	0.00
447.000	0.00	0.00	0.00	0.00	0.00
462.000	0.00	0.00	0.00	0.00	0.00
477.000	0.00	0.01	0.01	0.01	0.01
492.000	0.01	0.01	0.01	0.01	0.01
507.000	0.01	0.01	0.01	0.01	0.01
522.000	0.01	0.01	0.01	0.01	0.01
537.000	0.01	0.01	0.01	0.01	0.01
552.000	0.01	0.01	0.01	0.01	0.01
567.000	0.01	0.01	0.01	0.01	0.02
582.000	0.02	0.02	0.02	0.02	0.02
597.000	0.02	0.02	0.02	0.02	0.02
612.000	0.02	0.02	0.02	0.02	0.02
627.000	0.02	0.02	0.03	0.03	0.03
642.000	0.03	0.03	0.03	0.03	0.03
657.000	0.03	0.03	0.03	0.04	0.04
672.000	0.04	0.04	0.05	0.05	0.05
687.000	0.05	0.06	0.07	0.08	0.10
702.000	0.13	0.15	0.18	0.21	0.24
717.000	0.34	0.47	0.51	0.53	0.44
732.000	0.32	0.27	0.23	0.20	0.18
747.000	0.15	0.12	0.10	0.08	0.08
762.000	0.07	0.07	0.07	0.06	0.06
777.000	0.06	0.05	0.05	0.05	0.05
792.000	0.05	0.05	0.05	0.04	0.04
807.000	0.04	0.04	0.04	0.04	0.04
822.000	0.04	0.04	0.04	0.04	0.04
837.000	0.04	0.03	0.03	0.03	0.03
852.000	0.03	0.03	0.03	0.03	0.03
867.000	0.03	0.03	0.03	0.03	0.03

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-2
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
882.000	0.03	0.03	0.03	0.03	0.03
897.000	0.03	0.03	0.03	0.03	0.03
912.000	0.02	0.02	0.02	0.02	0.02
927.000	0.02	0.02	0.02	0.02	0.02
942.000	0.02	0.02	0.02	0.02	0.02
957.000	0.02	0.02	0.02	0.02	0.02
972.000	0.02	0.02	0.02	0.02	0.02
987.000	0.02	0.02	0.02	0.02	0.02
1,002.000	0.02	0.02	0.02	0.02	0.02
1,017.000	0.01	0.01	0.01	0.01	0.01
1,032.000	0.01	0.01	0.01	0.01	0.01
1,047.000	0.01	0.01	0.01	0.01	0.01
1,062.000	0.01	0.01	0.01	0.01	0.01
1,077.000	0.01	0.01	0.01	0.01	0.01
1,092.000	0.01	0.01	0.01	0.01	0.01
1,107.000	0.01	0.01	0.01	0.01	0.01
1,122.000	0.01	0.01	0.01	0.01	0.01
1,137.000	0.01	0.01	0.01	0.01	0.01
1,152.000	0.01	0.01	0.01	0.01	0.01
1,167.000	0.01	0.01	0.01	0.01	0.01
1,182.000	0.01	0.01	0.01	0.01	0.01
1,197.000	0.01	0.01	0.01	0.01	0.01
1,212.000	0.01	0.01	0.01	0.01	0.01
1,227.000	0.01	0.01	0.01	0.01	0.01
1,242.000	0.01	0.01	0.01	0.01	0.01
1,257.000	0.01	0.01	0.01	0.01	0.01
1,272.000	0.01	0.01	0.01	0.01	0.01
1,287.000	0.01	0.01	0.01	0.01	0.01
1,302.000	0.01	0.01	0.01	0.01	0.01
1,317.000	0.01	0.01	0.01	0.01	0.01
1,332.000	0.01	0.01	0.01	0.01	0.01
1,347.000	0.01	0.01	0.01	0.01	0.01
1,362.000	0.01	0.01	0.01	0.01	0.01
1,377.000	0.01	0.01	0.01	0.01	0.01
1,392.000	0.01	0.01	0.01	0.01	0.01
1,407.000	0.01	0.01	0.01	0.01	0.01
1,422.000	0.01	0.01	0.01	0.01	0.01
1,437.000	0.01	0.01	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,279.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.94 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.94 ft³/s

Drainage Area	
SCS CN (Composite)	86.443
Area (User Defined)	6,279.000 ft²
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.7 in
Runoff Volume (Pervious)	0.081 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.081 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.96 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	6,279.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
246.000	0.00	0.00	0.00	0.00	0.00
261.000	0.00	0.00	0.00	0.00	0.00
276.000	0.00	0.00	0.00	0.00	0.00
291.000	0.00	0.00	0.00	0.00	0.00
306.000	0.00	0.00	0.00	0.00	0.00
321.000	0.00	0.00	0.00	0.00	0.00
336.000	0.00	0.00	0.00	0.00	0.00
351.000	0.01	0.01	0.01	0.01	0.01
366.000	0.01	0.01	0.01	0.01	0.01
381.000	0.01	0.01	0.01	0.01	0.01
396.000	0.01	0.01	0.01	0.01	0.01
411.000	0.01	0.01	0.01	0.01	0.01
426.000	0.01	0.01	0.01	0.01	0.01
441.000	0.01	0.01	0.01	0.01	0.01
456.000	0.01	0.01	0.01	0.01	0.01
471.000	0.01	0.01	0.01	0.02	0.02
486.000	0.02	0.02	0.02	0.02	0.02
501.000	0.02	0.02	0.02	0.02	0.02
516.000	0.02	0.02	0.02	0.02	0.02
531.000	0.02	0.03	0.03	0.03	0.03
546.000	0.03	0.03	0.03	0.03	0.03
561.000	0.03	0.03	0.03	0.03	0.03
576.000	0.03	0.04	0.04	0.04	0.04
591.000	0.04	0.04	0.04	0.04	0.04
606.000	0.04	0.04	0.04	0.05	0.05
621.000	0.05	0.05	0.05	0.05	0.05
636.000	0.06	0.06	0.06	0.06	0.06
651.000	0.06	0.06	0.07	0.07	0.07
666.000	0.07	0.08	0.08	0.09	0.09
681.000	0.10	0.10	0.11	0.11	0.13
696.000	0.16	0.20	0.24	0.29	0.34
711.000	0.39	0.44	0.63	0.85	0.91
726.000	0.94	0.77	0.56	0.47	0.41
741.000	0.35	0.30	0.25	0.20	0.17

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
756.000	0.14	0.13	0.12	0.12	0.11
771.000	0.11	0.10	0.10	0.09	0.09
786.000	0.08	0.08	0.08	0.08	0.08
801.000	0.08	0.08	0.07	0.07	0.07
816.000	0.07	0.07	0.07	0.07	0.06
831.000	0.06	0.06	0.06	0.06	0.06
846.000	0.06	0.06	0.06	0.05	0.05
861.000	0.05	0.05	0.05	0.05	0.05
876.000	0.05	0.05	0.05	0.05	0.05
891.000	0.05	0.05	0.05	0.04	0.04
906.000	0.04	0.04	0.04	0.04	0.04
921.000	0.04	0.04	0.04	0.04	0.04
936.000	0.04	0.04	0.04	0.03	0.03
951.000	0.03	0.03	0.03	0.03	0.03
966.000	0.03	0.03	0.03	0.03	0.03
981.000	0.03	0.03	0.03	0.03	0.03
996.000	0.03	0.03	0.03	0.03	0.03
1,011.000	0.03	0.03	0.03	0.03	0.02
1,026.000	0.02	0.02	0.02	0.02	0.02
1,041.000	0.02	0.02	0.02	0.02	0.02
1,056.000	0.02	0.02	0.02	0.02	0.02
1,071.000	0.02	0.02	0.02	0.02	0.02
1,086.000	0.02	0.02	0.02	0.02	0.02
1,101.000	0.02	0.02	0.02	0.02	0.02
1,116.000	0.02	0.02	0.02	0.02	0.02
1,131.000	0.02	0.02	0.02	0.02	0.02
1,146.000	0.02	0.02	0.02	0.02	0.02
1,161.000	0.02	0.02	0.02	0.02	0.02
1,176.000	0.02	0.02	0.02	0.02	0.02
1,191.000	0.02	0.02	0.02	0.02	0.02
1,206.000	0.02	0.02	0.02	0.02	0.02
1,221.000	0.01	0.01	0.01	0.01	0.01
1,236.000	0.01	0.01	0.01	0.01	0.01
1,251.000	0.01	0.01	0.01	0.01	0.01
1,266.000	0.01	0.01	0.01	0.01	0.01
1,281.000	0.01	0.01	0.01	0.01	0.01
1,296.000	0.01	0.01	0.01	0.01	0.01
1,311.000	0.01	0.01	0.01	0.01	0.01
1,326.000	0.01	0.01	0.01	0.01	0.01
1,341.000	0.01	0.01	0.01	0.01	0.01
1,356.000	0.01	0.01	0.01	0.01	0.01
1,371.000	0.01	0.01	0.01	0.01	0.01
1,386.000	0.01	0.01	0.01	0.01	0.01

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-2
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,401.000	0.01	0.01	0.01	0.01	0.01
1,416.000	0.01	0.01	0.01	0.01	0.01
1,431.000	0.01	0.01	0.01	0.01	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-3
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,477.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	0.23 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.23 ft³/s

Drainage Area	
SCS CN (Composite)	86.257
Area (User Defined)	5,477.000 ft²
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.8 in
Runoff Volume (Pervious)	0.019 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.019 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.71 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-3
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,477.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
507.000	0.00	0.00	0.00	0.00	0.00
522.000	0.00	0.00	0.00	0.00	0.00
537.000	0.00	0.00	0.00	0.00	0.00
552.000	0.00	0.00	0.00	0.00	0.00
567.000	0.00	0.00	0.00	0.00	0.00
582.000	0.00	0.00	0.00	0.00	0.00
597.000	0.00	0.00	0.01	0.01	0.01
612.000	0.01	0.01	0.01	0.01	0.01
627.000	0.01	0.01	0.01	0.01	0.01
642.000	0.01	0.01	0.01	0.01	0.01
657.000	0.01	0.01	0.01	0.01	0.01
672.000	0.01	0.02	0.02	0.02	0.02
687.000	0.02	0.02	0.02	0.03	0.04
702.000	0.05	0.06	0.07	0.08	0.10
717.000	0.14	0.20	0.22	0.23	0.20
732.000	0.14	0.12	0.11	0.09	0.08
747.000	0.07	0.05	0.05	0.04	0.04
762.000	0.03	0.03	0.03	0.03	0.03
777.000	0.03	0.03	0.02	0.02	0.02
792.000	0.02	0.02	0.02	0.02	0.02
807.000	0.02	0.02	0.02	0.02	0.02
822.000	0.02	0.02	0.02	0.02	0.02
837.000	0.02	0.02	0.02	0.02	0.02
852.000	0.02	0.02	0.02	0.01	0.01
867.000	0.01	0.01	0.01	0.01	0.01
882.000	0.01	0.01	0.01	0.01	0.01
897.000	0.01	0.01	0.01	0.01	0.01
912.000	0.01	0.01	0.01	0.01	0.01
927.000	0.01	0.01	0.01	0.01	0.01
942.000	0.01	0.01	0.01	0.01	0.01
957.000	0.01	0.01	0.01	0.01	0.01
972.000	0.01	0.01	0.01	0.01	0.01
987.000	0.01	0.01	0.01	0.01	0.01
1,002.000	0.01	0.01	0.01	0.01	0.01

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,017.000	0.01	0.01	0.01	0.01	0.01
1,032.000	0.01	0.01	0.01	0.01	0.01
1,047.000	0.01	0.01	0.01	0.01	0.01
1,062.000	0.01	0.01	0.01	0.01	0.01
1,077.000	0.01	0.01	0.01	0.01	0.01
1,092.000	0.01	0.01	0.01	0.01	0.01
1,107.000	0.01	0.01	0.01	0.01	0.01
1,122.000	0.01	0.01	0.01	0.01	0.00
1,137.000	0.00	0.00	0.00	0.00	0.00
1,152.000	0.00	0.00	0.00	0.00	0.00
1,167.000	0.00	0.00	0.00	0.00	0.00
1,182.000	0.00	0.00	0.00	0.00	0.00
1,197.000	0.00	0.00	0.00	0.00	0.00
1,212.000	0.00	0.00	0.00	0.00	0.00
1,227.000	0.00	0.00	0.00	0.00	0.00
1,242.000	0.00	0.00	0.00	0.00	0.00
1,257.000	0.00	0.00	0.00	0.00	0.00
1,272.000	0.00	0.00	0.00	0.00	0.00
1,287.000	0.00	0.00	0.00	0.00	0.00
1,302.000	0.00	0.00	0.00	0.00	0.00
1,317.000	0.00	0.00	0.00	0.00	0.00
1,332.000	0.00	0.00	0.00	0.00	0.00
1,347.000	0.00	0.00	0.00	0.00	0.00
1,362.000	0.00	0.00	0.00	0.00	0.00
1,377.000	0.00	0.00	0.00	0.00	0.00
1,392.000	0.00	0.00	0.00	0.00	0.00
1,407.000	0.00	0.00	0.00	0.00	0.00
1,422.000	0.00	0.00	0.00	0.00	0.00
1,437.000	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,477.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.46 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.46 ft³/s

Drainage Area	
SCS CN (Composite)	86.257
Area (User Defined)	5,477.000 ft²
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.6 in
Runoff Volume (Pervious)	0.038 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.038 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.71 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,477.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
381.000	0.00	0.00	0.00	0.00	0.00
396.000	0.00	0.00	0.00	0.00	0.00
411.000	0.00	0.00	0.00	0.00	0.00
426.000	0.00	0.00	0.00	0.00	0.00
441.000	0.00	0.00	0.00	0.00	0.00
456.000	0.00	0.00	0.00	0.00	0.00
471.000	0.00	0.00	0.00	0.00	0.00
486.000	0.00	0.00	0.01	0.01	0.01
501.000	0.01	0.01	0.01	0.01	0.01
516.000	0.01	0.01	0.01	0.01	0.01
531.000	0.01	0.01	0.01	0.01	0.01
546.000	0.01	0.01	0.01	0.01	0.01
561.000	0.01	0.01	0.01	0.01	0.01
576.000	0.01	0.01	0.01	0.01	0.01
591.000	0.01	0.01	0.02	0.02	0.02
606.000	0.02	0.02	0.02	0.02	0.02
621.000	0.02	0.02	0.02	0.02	0.02
636.000	0.02	0.02	0.02	0.02	0.03
651.000	0.03	0.03	0.03	0.03	0.03
666.000	0.03	0.03	0.03	0.04	0.04
681.000	0.04	0.04	0.05	0.05	0.06
696.000	0.07	0.09	0.11	0.13	0.16
711.000	0.18	0.21	0.30	0.41	0.44
726.000	0.46	0.38	0.28	0.23	0.20
741.000	0.18	0.15	0.13	0.10	0.09
756.000	0.07	0.07	0.06	0.06	0.06
771.000	0.05	0.05	0.05	0.05	0.04
786.000	0.04	0.04	0.04	0.04	0.04
801.000	0.04	0.04	0.04	0.04	0.04
816.000	0.04	0.03	0.03	0.03	0.03
831.000	0.03	0.03	0.03	0.03	0.03
846.000	0.03	0.03	0.03	0.03	0.03
861.000	0.03	0.03	0.03	0.03	0.03
876.000	0.03	0.03	0.02	0.02	0.02

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
891.000	0.02	0.02	0.02	0.02	0.02
906.000	0.02	0.02	0.02	0.02	0.02
921.000	0.02	0.02	0.02	0.02	0.02
936.000	0.02	0.02	0.02	0.02	0.02
951.000	0.02	0.02	0.02	0.02	0.02
966.000	0.02	0.02	0.02	0.02	0.02
981.000	0.01	0.01	0.01	0.01	0.01
996.000	0.01	0.01	0.01	0.01	0.01
1,011.000	0.01	0.01	0.01	0.01	0.01
1,026.000	0.01	0.01	0.01	0.01	0.01
1,041.000	0.01	0.01	0.01	0.01	0.01
1,056.000	0.01	0.01	0.01	0.01	0.01
1,071.000	0.01	0.01	0.01	0.01	0.01
1,086.000	0.01	0.01	0.01	0.01	0.01
1,101.000	0.01	0.01	0.01	0.01	0.01
1,116.000	0.01	0.01	0.01	0.01	0.01
1,131.000	0.01	0.01	0.01	0.01	0.01
1,146.000	0.01	0.01	0.01	0.01	0.01
1,161.000	0.01	0.01	0.01	0.01	0.01
1,176.000	0.01	0.01	0.01	0.01	0.01
1,191.000	0.01	0.01	0.01	0.01	0.01
1,206.000	0.01	0.01	0.01	0.01	0.01
1,221.000	0.01	0.01	0.01	0.01	0.01
1,236.000	0.01	0.01	0.01	0.01	0.01
1,251.000	0.01	0.01	0.01	0.01	0.01
1,266.000	0.01	0.01	0.01	0.01	0.01
1,281.000	0.01	0.01	0.01	0.01	0.01
1,296.000	0.01	0.01	0.01	0.01	0.01
1,311.000	0.01	0.01	0.01	0.01	0.01
1,326.000	0.01	0.01	0.01	0.01	0.01
1,341.000	0.01	0.01	0.01	0.01	0.01
1,356.000	0.01	0.01	0.01	0.01	0.01
1,371.000	0.01	0.01	0.01	0.01	0.01
1,386.000	0.01	0.01	0.01	0.01	0.01
1,401.000	0.01	0.01	0.01	0.01	0.01
1,416.000	0.01	0.01	0.01	0.01	0.01
1,431.000	0.01	0.01	0.01	0.01	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,477.000 ft²

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.000 min
Flow (Peak, Computed)	0.82 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.82 ft³/s

Drainage Area	
SCS CN (Composite)	86.257
Area (User Defined)	5,477.000 ft²
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.7 in
Runoff Volume (Pervious)	0.070 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.070 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.71 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	5,477.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
255.000	0.00	0.00	0.00	0.00	0.00
270.000	0.00	0.00	0.00	0.00	0.00
285.000	0.00	0.00	0.00	0.00	0.00
300.000	0.00	0.00	0.00	0.00	0.00
315.000	0.00	0.00	0.00	0.00	0.00
330.000	0.00	0.00	0.00	0.00	0.00
345.000	0.00	0.00	0.00	0.00	0.00
360.000	0.00	0.00	0.00	0.00	0.01
375.000	0.01	0.01	0.01	0.01	0.01
390.000	0.01	0.01	0.01	0.01	0.01
405.000	0.01	0.01	0.01	0.01	0.01
420.000	0.01	0.01	0.01	0.01	0.01
435.000	0.01	0.01	0.01	0.01	0.01
450.000	0.01	0.01	0.01	0.01	0.01
465.000	0.01	0.01	0.01	0.01	0.01
480.000	0.01	0.01	0.01	0.01	0.01
495.000	0.02	0.02	0.02	0.02	0.02
510.000	0.02	0.02	0.02	0.02	0.02
525.000	0.02	0.02	0.02	0.02	0.02
540.000	0.02	0.02	0.02	0.02	0.02
555.000	0.03	0.03	0.03	0.03	0.03
570.000	0.03	0.03	0.03	0.03	0.03
585.000	0.03	0.03	0.03	0.03	0.03
600.000	0.03	0.04	0.04	0.04	0.04
615.000	0.04	0.04	0.04	0.04	0.04
630.000	0.05	0.05	0.05	0.05	0.05
645.000	0.05	0.05	0.05	0.06	0.06
660.000	0.06	0.06	0.06	0.07	0.07
675.000	0.08	0.08	0.08	0.09	0.09
690.000	0.10	0.11	0.14	0.17	0.21
705.000	0.25	0.29	0.34	0.38	0.54
720.000	0.74	0.80	0.82	0.67	0.48
735.000	0.41	0.35	0.31	0.27	0.22
750.000	0.18	0.15	0.12	0.11	0.11

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
765.000	0.10	0.10	0.09	0.09	0.08
780.000	0.08	0.08	0.07	0.07	0.07
795.000	0.07	0.07	0.07	0.07	0.06
810.000	0.06	0.06	0.06	0.06	0.06
825.000	0.06	0.06	0.06	0.05	0.05
840.000	0.05	0.05	0.05	0.05	0.05
855.000	0.05	0.05	0.05	0.05	0.05
870.000	0.04	0.04	0.04	0.04	0.04
885.000	0.04	0.04	0.04	0.04	0.04
900.000	0.04	0.04	0.04	0.04	0.04
915.000	0.04	0.04	0.03	0.03	0.03
930.000	0.03	0.03	0.03	0.03	0.03
945.000	0.03	0.03	0.03	0.03	0.03
960.000	0.03	0.03	0.03	0.03	0.03
975.000	0.03	0.03	0.03	0.02	0.02
990.000	0.02	0.02	0.02	0.02	0.02
1,005.000	0.02	0.02	0.02	0.02	0.02
1,020.000	0.02	0.02	0.02	0.02	0.02
1,035.000	0.02	0.02	0.02	0.02	0.02
1,050.000	0.02	0.02	0.02	0.02	0.02
1,065.000	0.02	0.02	0.02	0.02	0.02
1,080.000	0.02	0.02	0.02	0.02	0.02
1,095.000	0.02	0.02	0.02	0.02	0.02
1,110.000	0.02	0.02	0.02	0.02	0.02
1,125.000	0.02	0.02	0.02	0.02	0.02
1,140.000	0.02	0.01	0.01	0.01	0.01
1,155.000	0.01	0.01	0.01	0.01	0.01
1,170.000	0.01	0.01	0.01	0.01	0.01
1,185.000	0.01	0.01	0.01	0.01	0.01
1,200.000	0.01	0.01	0.01	0.01	0.01
1,215.000	0.01	0.01	0.01	0.01	0.01
1,230.000	0.01	0.01	0.01	0.01	0.01
1,245.000	0.01	0.01	0.01	0.01	0.01
1,260.000	0.01	0.01	0.01	0.01	0.01
1,275.000	0.01	0.01	0.01	0.01	0.01
1,290.000	0.01	0.01	0.01	0.01	0.01
1,305.000	0.01	0.01	0.01	0.01	0.01
1,320.000	0.01	0.01	0.01	0.01	0.01
1,335.000	0.01	0.01	0.01	0.01	0.01
1,350.000	0.01	0.01	0.01	0.01	0.01
1,365.000	0.01	0.01	0.01	0.01	0.01
1,380.000	0.01	0.01	0.01	0.01	0.01
1,395.000	0.01	0.01	0.01	0.01	0.01

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-3
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,410.000	0.01	0.01	0.01	0.01	0.01
1,425.000	0.01	0.01	0.01	0.01	0.01
1,440.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.840 min
Area (User Defined)	22,074.000 ft²

Computational Time Increment	0.779 min
Time to Peak (Computed)	727.275 min
Flow (Peak, Computed)	0.61 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	0.60 ft³/s

Drainage Area	
SCS CN (Composite)	77.272
Area (User Defined)	22,074.000 ft²
Maximum Retention (Pervious)	2.9 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.2 in
Runoff Volume (Pervious)	0.049 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.049 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.840 min
Computational Time Increment	0.779 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.90 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.893 min
Unit receding limb, Tr	15.573 min
Total unit time, Tb	19.467 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Storm Event	2-year
Return Event	2 years
Duration	1,440.000 min
Depth	3.1 in
Time of Concentration (Composite)	5.840 min
Area (User Defined)	22,074.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
609.000	0.00	0.00	0.00	0.00	0.00
624.000	0.00	0.00	0.00	0.01	0.01
639.000	0.01	0.01	0.01	0.01	0.01
654.000	0.01	0.01	0.01	0.01	0.01
669.000	0.02	0.02	0.02	0.02	0.02
684.000	0.03	0.03	0.03	0.04	0.05
699.000	0.06	0.09	0.11	0.14	0.17
714.000	0.20	0.30	0.45	0.54	0.60
729.000	0.55	0.42	0.36	0.31	0.28
744.000	0.24	0.21	0.17	0.14	0.12
759.000	0.11	0.10	0.10	0.09	0.09
774.000	0.09	0.08	0.08	0.07	0.07
789.000	0.07	0.07	0.07	0.07	0.07
804.000	0.06	0.06	0.06	0.06	0.06
819.000	0.06	0.06	0.06	0.06	0.05
834.000	0.05	0.05	0.05	0.05	0.05
849.000	0.05	0.05	0.05	0.05	0.05
864.000	0.05	0.05	0.05	0.04	0.04
879.000	0.04	0.04	0.04	0.04	0.04
894.000	0.04	0.04	0.04	0.04	0.04
909.000	0.04	0.04	0.04	0.04	0.04
924.000	0.04	0.04	0.03	0.03	0.03
939.000	0.03	0.03	0.03	0.03	0.03
954.000	0.03	0.03	0.03	0.03	0.03
969.000	0.03	0.03	0.03	0.03	0.03
984.000	0.03	0.03	0.03	0.03	0.03
999.000	0.02	0.02	0.02	0.02	0.02
1,014.000	0.02	0.02	0.02	0.02	0.02
1,029.000	0.02	0.02	0.02	0.02	0.02
1,044.000	0.02	0.02	0.02	0.02	0.02
1,059.000	0.02	0.02	0.02	0.02	0.02
1,074.000	0.02	0.02	0.02	0.02	0.02
1,089.000	0.02	0.02	0.02	0.02	0.02
1,104.000	0.02	0.02	0.02	0.02	0.02

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-4
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,119.000	0.02	0.02	0.02	0.02	0.02
1,134.000	0.02	0.02	0.02	0.02	0.02
1,149.000	0.02	0.02	0.02	0.02	0.02
1,164.000	0.02	0.02	0.02	0.02	0.02
1,179.000	0.02	0.02	0.01	0.01	0.01
1,194.000	0.01	0.01	0.01	0.01	0.01
1,209.000	0.01	0.01	0.01	0.01	0.01
1,224.000	0.01	0.01	0.01	0.01	0.01
1,239.000	0.01	0.01	0.01	0.01	0.01
1,254.000	0.01	0.01	0.01	0.01	0.01
1,269.000	0.01	0.01	0.01	0.01	0.01
1,284.000	0.01	0.01	0.01	0.01	0.01
1,299.000	0.01	0.01	0.01	0.01	0.01
1,314.000	0.01	0.01	0.01	0.01	0.01
1,329.000	0.01	0.01	0.01	0.01	0.01
1,344.000	0.01	0.01	0.01	0.01	0.01
1,359.000	0.01	0.01	0.01	0.01	0.01
1,374.000	0.01	0.01	0.01	0.01	0.01
1,389.000	0.01	0.01	0.01	0.01	0.01
1,404.000	0.01	0.01	0.01	0.01	0.01
1,419.000	0.01	0.01	0.01	0.01	0.01
1,434.000	0.01	0.01	0.01	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.840 min
Area (User Defined)	22,074.000 ft²

Computational Time Increment	0.779 min
Time to Peak (Computed)	726.496 min
Flow (Peak, Computed)	1.44 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	1.43 ft³/s

Drainage Area	
SCS CN (Composite)	77.272
Area (User Defined)	22,074.000 ft²
Maximum Retention (Pervious)	2.9 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.8 in
Runoff Volume (Pervious)	0.117 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.117 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.840 min
Computational Time Increment	0.779 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.90 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.893 min
Unit receding limb, Tr	15.573 min
Total unit time, Tb	19.467 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	1,440.000 min
Depth	5.1 in
Time of Concentration (Composite)	5.840 min
Area (User Defined)	22,074.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
492.000	0.00	0.00	0.00	0.00	0.00
507.000	0.00	0.00	0.00	0.00	0.00
522.000	0.01	0.01	0.01	0.01	0.01
537.000	0.01	0.01	0.01	0.01	0.01
552.000	0.01	0.01	0.01	0.01	0.01
567.000	0.02	0.02	0.02	0.02	0.02
582.000	0.02	0.02	0.02	0.02	0.02
597.000	0.03	0.03	0.03	0.03	0.03
612.000	0.03	0.03	0.03	0.04	0.04
627.000	0.04	0.04	0.04	0.05	0.05
642.000	0.05	0.05	0.05	0.06	0.06
657.000	0.06	0.06	0.07	0.07	0.07
672.000	0.08	0.09	0.09	0.10	0.11
687.000	0.11	0.12	0.14	0.17	0.22
702.000	0.28	0.34	0.41	0.49	0.57
717.000	0.80	1.16	1.34	1.43	1.29
732.000	0.96	0.80	0.70	0.62	0.53
747.000	0.46	0.37	0.31	0.25	0.23
762.000	0.22	0.21	0.20	0.19	0.18
777.000	0.17	0.16	0.16	0.15	0.15
792.000	0.14	0.14	0.14	0.14	0.13
807.000	0.13	0.13	0.13	0.13	0.12
822.000	0.12	0.12	0.12	0.11	0.11
837.000	0.11	0.11	0.10	0.10	0.10
852.000	0.10	0.10	0.10	0.10	0.10
867.000	0.09	0.09	0.09	0.09	0.09
882.000	0.09	0.09	0.09	0.09	0.08
897.000	0.08	0.08	0.08	0.08	0.08
912.000	0.08	0.08	0.07	0.07	0.07
927.000	0.07	0.07	0.07	0.07	0.07
942.000	0.06	0.06	0.06	0.06	0.06
957.000	0.06	0.06	0.06	0.06	0.06
972.000	0.05	0.05	0.05	0.05	0.05
987.000	0.05	0.05	0.05	0.05	0.05

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-4
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,002.000	0.05	0.05	0.05	0.05	0.05
1,017.000	0.05	0.05	0.05	0.05	0.04
1,032.000	0.04	0.04	0.04	0.04	0.04
1,047.000	0.04	0.04	0.04	0.04	0.04
1,062.000	0.04	0.04	0.04	0.04	0.04
1,077.000	0.04	0.04	0.04	0.03	0.03
1,092.000	0.03	0.03	0.03	0.03	0.03
1,107.000	0.03	0.03	0.03	0.03	0.03
1,122.000	0.03	0.03	0.03	0.03	0.03
1,137.000	0.03	0.03	0.03	0.03	0.03
1,152.000	0.03	0.03	0.03	0.03	0.03
1,167.000	0.03	0.03	0.03	0.03	0.03
1,182.000	0.03	0.03	0.03	0.03	0.03
1,197.000	0.03	0.03	0.03	0.03	0.03
1,212.000	0.03	0.03	0.03	0.03	0.03
1,227.000	0.03	0.03	0.03	0.03	0.03
1,242.000	0.03	0.03	0.03	0.03	0.03
1,257.000	0.03	0.03	0.03	0.03	0.03
1,272.000	0.03	0.03	0.03	0.03	0.03
1,287.000	0.03	0.03	0.02	0.02	0.02
1,302.000	0.02	0.02	0.02	0.02	0.02
1,317.000	0.02	0.02	0.02	0.02	0.02
1,332.000	0.02	0.02	0.02	0.02	0.02
1,347.000	0.02	0.02	0.02	0.02	0.02
1,362.000	0.02	0.02	0.02	0.02	0.02
1,377.000	0.02	0.02	0.02	0.02	0.02
1,392.000	0.02	0.02	0.02	0.02	0.02
1,407.000	0.02	0.02	0.02	0.02	0.02
1,422.000	0.02	0.02	0.02	0.02	0.02
1,437.000	0.02	0.02	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary
Label: P-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.840 min
Area (User Defined)	22,074.000 ft²

Computational Time Increment	0.779 min
Time to Peak (Computed)	726.496 min
Flow (Peak, Computed)	2.87 ft³/s
Output Increment	3.000 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	2.86 ft³/s

Drainage Area	
SCS CN (Composite)	77.272
Area (User Defined)	22,074.000 ft²
Maximum Retention (Pervious)	2.9 in
Maximum Retention (Pervious, 20 percent)	0.6 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.6 in
Runoff Volume (Pervious)	0.238 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.237 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.840 min
Computational Time Increment	0.779 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.90 ft³/s

Subsection: Unit Hydrograph Summary
Label: P-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

SCS Unit Hydrograph Parameters	
Unit peak time, Tp	3.893 min
Unit receding limb, Tr	15.573 min
Total unit time, Tb	19.467 min

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	1,440.000 min
Depth	8.4 in
Time of Concentration (Composite)	5.840 min
Area (User Defined)	22,074.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
366.000	0.00	0.00	0.00	0.00	0.00
381.000	0.00	0.00	0.00	0.00	0.00
396.000	0.00	0.01	0.01	0.01	0.01
411.000	0.01	0.01	0.01	0.01	0.01
426.000	0.01	0.01	0.01	0.01	0.01
441.000	0.01	0.01	0.01	0.01	0.02
456.000	0.02	0.02	0.02	0.02	0.02
471.000	0.02	0.02	0.02	0.02	0.02
486.000	0.02	0.02	0.03	0.03	0.03
501.000	0.03	0.03	0.03	0.03	0.03
516.000	0.04	0.04	0.04	0.04	0.04
531.000	0.04	0.05	0.05	0.05	0.05
546.000	0.05	0.05	0.06	0.06	0.06
561.000	0.06	0.06	0.07	0.07	0.07
576.000	0.07	0.07	0.08	0.08	0.08
591.000	0.08	0.08	0.09	0.09	0.09
606.000	0.09	0.10	0.10	0.10	0.11
621.000	0.11	0.12	0.12	0.12	0.13
636.000	0.13	0.14	0.14	0.14	0.15
651.000	0.15	0.16	0.16	0.17	0.17
666.000	0.18	0.19	0.21	0.22	0.24
681.000	0.25	0.27	0.28	0.30	0.34
696.000	0.41	0.51	0.65	0.77	0.93
711.000	1.07	1.25	1.70	2.42	2.72
726.000	2.86	2.53	1.86	1.55	1.33
741.000	1.18	1.00	0.86	0.69	0.58
756.000	0.47	0.43	0.40	0.39	0.37
771.000	0.35	0.33	0.32	0.30	0.29
786.000	0.28	0.27	0.26	0.26	0.26
801.000	0.25	0.25	0.24	0.24	0.23
816.000	0.23	0.23	0.22	0.22	0.21
831.000	0.21	0.20	0.20	0.19	0.19
846.000	0.19	0.18	0.18	0.18	0.18
861.000	0.18	0.17	0.17	0.17	0.17

Subsection: Unit Hydrograph (Hydrograph Table)
Label: P-4
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
876.000	0.17	0.16	0.16	0.16	0.16
891.000	0.15	0.15	0.15	0.15	0.15
906.000	0.14	0.14	0.14	0.14	0.13
921.000	0.13	0.13	0.13	0.13	0.12
936.000	0.12	0.12	0.12	0.12	0.11
951.000	0.11	0.11	0.11	0.10	0.10
966.000	0.10	0.10	0.10	0.10	0.10
981.000	0.10	0.09	0.09	0.09	0.09
996.000	0.09	0.09	0.09	0.09	0.09
1,011.000	0.09	0.09	0.08	0.08	0.08
1,026.000	0.08	0.08	0.08	0.08	0.08
1,041.000	0.08	0.08	0.07	0.07	0.07
1,056.000	0.07	0.07	0.07	0.07	0.07
1,071.000	0.07	0.07	0.07	0.06	0.06
1,086.000	0.06	0.06	0.06	0.06	0.06
1,101.000	0.06	0.06	0.06	0.06	0.06
1,116.000	0.06	0.06	0.06	0.06	0.06
1,131.000	0.06	0.06	0.06	0.06	0.06
1,146.000	0.06	0.06	0.06	0.06	0.06
1,161.000	0.06	0.05	0.05	0.05	0.05
1,176.000	0.05	0.05	0.05	0.05	0.05
1,191.000	0.05	0.05	0.05	0.05	0.05
1,206.000	0.05	0.05	0.05	0.05	0.05
1,221.000	0.05	0.05	0.05	0.05	0.05
1,236.000	0.05	0.05	0.05	0.05	0.05
1,251.000	0.05	0.05	0.05	0.05	0.05
1,266.000	0.05	0.05	0.05	0.05	0.05
1,281.000	0.05	0.05	0.05	0.04	0.04
1,296.000	0.04	0.04	0.04	0.04	0.04
1,311.000	0.04	0.04	0.04	0.04	0.04
1,326.000	0.04	0.04	0.04	0.04	0.04
1,341.000	0.04	0.04	0.04	0.04	0.04
1,356.000	0.04	0.04	0.04	0.04	0.04
1,371.000	0.04	0.04	0.04	0.04	0.04
1,386.000	0.04	0.04	0.04	0.04	0.04
1,401.000	0.04	0.04	0.04	0.04	0.04
1,416.000	0.04	0.04	0.04	0.04	0.03
1,431.000	0.03	0.03	0.03	0.03	(N/A)

Subsection: Addition Summary
Label: SCHENOB BROOK
Scenario: 2-Year

Return Event: 2 years
Storm Event: 2-year

Summary for Hydrograph Addition at 'SCHENOB BROOK'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	P-1
<Catchment to Outflow Node>	P-2
<Catchment to Outflow Node>	P-3
<Catchment to Outflow Node>	P-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	P-1	0.030	726.000	0.36
Flow (From)	P-2	0.022	726.000	0.27
Flow (From)	P-3	0.019	726.000	0.23
Flow (From)	P-4	0.049	726.000	0.60
Flow (In)	SCHENOB BROOK	0.119	726.000	1.46

Subsection: Addition Summary
Label: SCHENOB BROOK
Scenario: 10-Year

Return Event: 10 years
Storm Event: 10-Year

Summary for Hydrograph Addition at 'SCHENOB BROOK'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	P-1
<Catchment to Outflow Node>	P-2
<Catchment to Outflow Node>	P-3
<Catchment to Outflow Node>	P-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	P-1	0.058	726.000	0.69
Flow (From)	P-2	0.044	726.000	0.53
Flow (From)	P-3	0.038	726.000	0.46
Flow (From)	P-4	0.117	726.000	1.43
Flow (In)	SCHENOB BROOK	0.256	726.000	3.11

Subsection: Addition Summary
Label: SCHENOB BROOK
Scenario: 100-Year

Return Event: 100 years
Storm Event: 100-Year

Summary for Hydrograph Addition at 'SCHENOB BROOK'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	P-1
<Catchment to Outflow Node>	P-2
<Catchment to Outflow Node>	P-3
<Catchment to Outflow Node>	P-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	P-1	0.105	726.000	1.21
Flow (From)	P-2	0.081	726.000	0.94
Flow (From)	P-3	0.070	726.000	0.82
Flow (From)	P-4	0.237	726.000	2.86
Flow (In)	SCHENOB BROOK	0.494	726.000	5.82

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P-2 (Unit Hydrograph (Hydrograph Table), 100 years (100-Year))...34, 35, 36

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Kelsey Road
Sheffield, MA

Drainage Calculations
Proposed Time of Concentration

June2026
By: MJW
Checked by: TD

Worksheet 2: Time of Concentration (Tc) or Travel time (T_t)

Project:	Kelsey Road	By:	MJW	Date:	6/25/2026
Location:	P4	Checked:	TD	Date:	6/25/2026

Check one: [ ] Present [X] Developed

Check one: [x] Tc [ ] Tt through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Overland flow (Applicable to Tc only)

		Segment ID	1	2			
1. Surface description (Table 3-1 in TR-55 Manual)			Gravel	Grass, Dense			
2. Manning's roughness coefficient, n (Table 3-1 in TR-55 Manual)			0.011	0.24			
3. Flow length, L (total L ≤ 100 ft)		ft	13	60			
4. Rainfall Intensity		in	3.2	3.20			
5. Slope of hydraulic grade line (land slope), s		ft/ft	0.020	0.133			
6. $T_t = \frac{0.007*(n*L^{0.8})}{P_2^{0.5}*s^{0.4}}$	Compute T_t	min	0.24	+ 4.45	=		4.77

Shallow concentrated flow

		Segment ID	2				
7. Surface description (paved or unpaved)			Unpaved				
8. Flow length, L		ft	73				
9. Watercourse slope, s		ft/ft	0.005				
10. Average velocity, V (figure 3-1)		ft/s	1.14				
11. $T_t = \frac{L}{3600*V}$	Compute T_t	min	1.07	+		=	1.07

12. Watershed or subarea T_c or T_t (add T_t in steps 6 and 11), minimum 5 min — min 5.84

Appendix E

Pre- and Post-Construction Catchment Maps

GFT

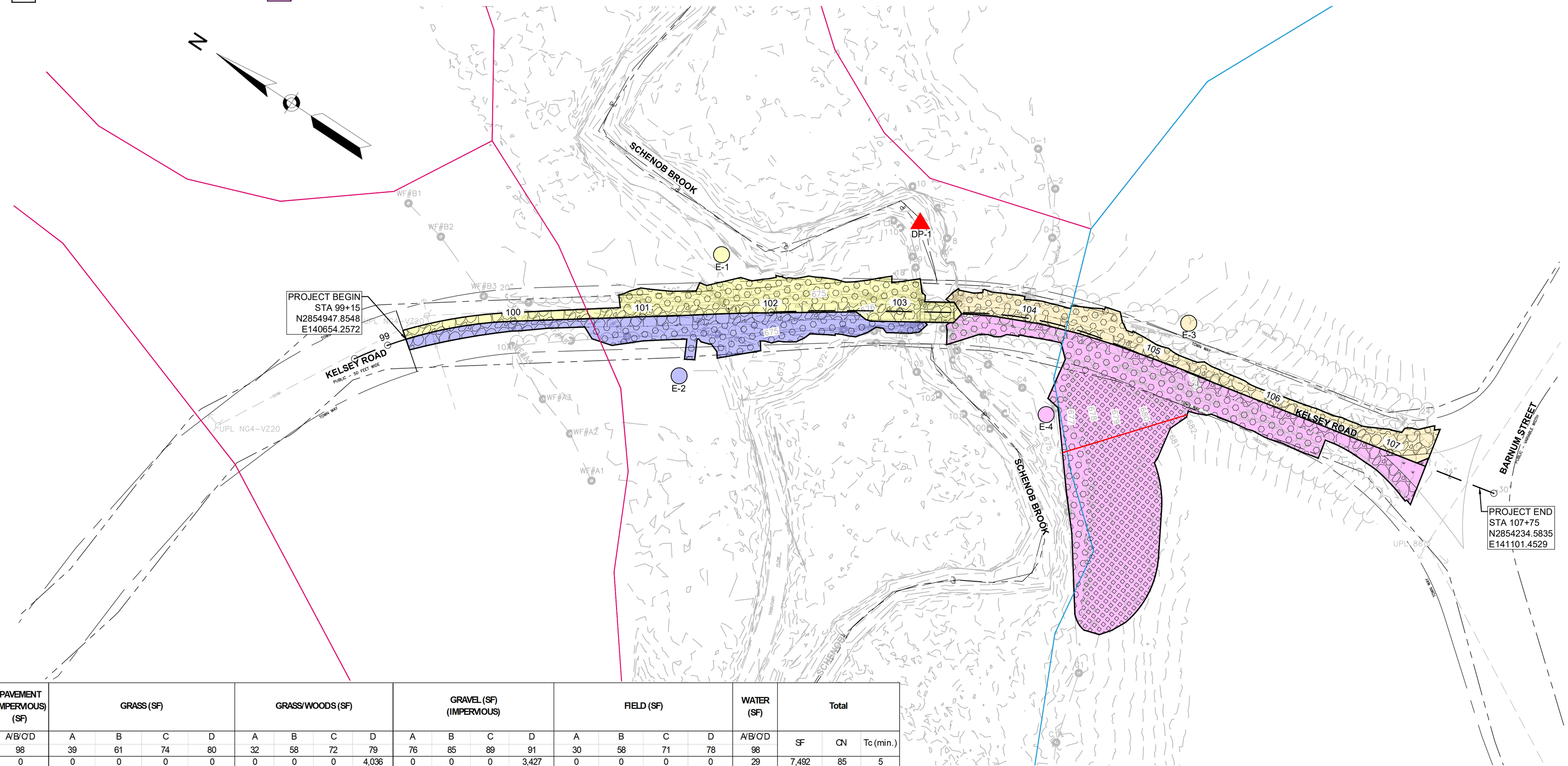
LEGEND

- D SOILS
- C SOILS
- GRAVEL AREA
- GRASS/WOODS AREA
- FIELD AREA
- GRASS AREA
- DESIGN POINT (DP-X)
- CATCHMENT AREA RUNOFF POINT
- E1 CATCHMENT
- E2 CATCHMENT
- E3 CATCHMENT
- E4 CATCHMENT
- CATCHMENT AREA AND BOUNDARY
- TC FLOW PATH

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	1	3
PROJECT FILE NO.	609068		

EXISTING CATCHMENT MAPS
SHEET 1 OF 3



Existing Catchment Area (E-X)	PAVEMENT (IMPERVIOUS) (SF)	GRASS (SF)				GRASS/WOODS (SF)				GRAVEL (SF) (IMPERVIOUS)				FIELD (SF)				WATER (SF)	Total		
HSG	A/B/C/D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A/B/C/D	SF	CN	Tc (min.)
CN	98	39	61	74	80	32	58	72	79	76	85	89	91	30	58	71	78	98			
1	0	0	0	0	0	0	0	0	4,036	0	0	0	3,427	0	0	0	0	29	7,492	85	5
2	0	0	0	0	0	0	0	0	3,645	0	0	0	2,531	0	0	0	0	0	6,176	84	5
3	0	0	0	96	0	0	0	1,638	1,028	0	0	2,495	579	0	0	0	0	0	5,836	82	5
4	0	0	0	367	0	0	0	5,300	1,782	0	0	2,790	468	0	0	115	11,418	0	22,240	78	8.25
Totals	0	0	0	463	0	0	0	6,938	10,491	0	0	5,285	7,005	0	0	115	11,418	29	41,744		

0 40 100 200

SCALE: 1" = 40'

Proposal No. 609068-136649

609068_EV(SHEFFIELD EXISTING CATCHMENT MAPS).DWG Plotted on 24-Jun-2026 11:08 AM

A00830 - 848

LEGEND

- D SOILS
- C SOILS
- GRAVEL AREA
- GRASS/WOODS AREA
- FIELD AREA
- DESIGN POINT (DP-X)
- CATCHMENT AREA RUNOFF POINT
- E1 CATCHMENT
- E2 CATCHMENT
- E3 CATCHMENT
- E4 CATCHMENT
- CATCHMENT AREA AND BOUNDARY

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	2	3
PROJECT FILE NO.	609068		

EXISTING CATCHMENT MAPS
SHEET 2 OF 3



CONTINUED ON SHEET NO. 3

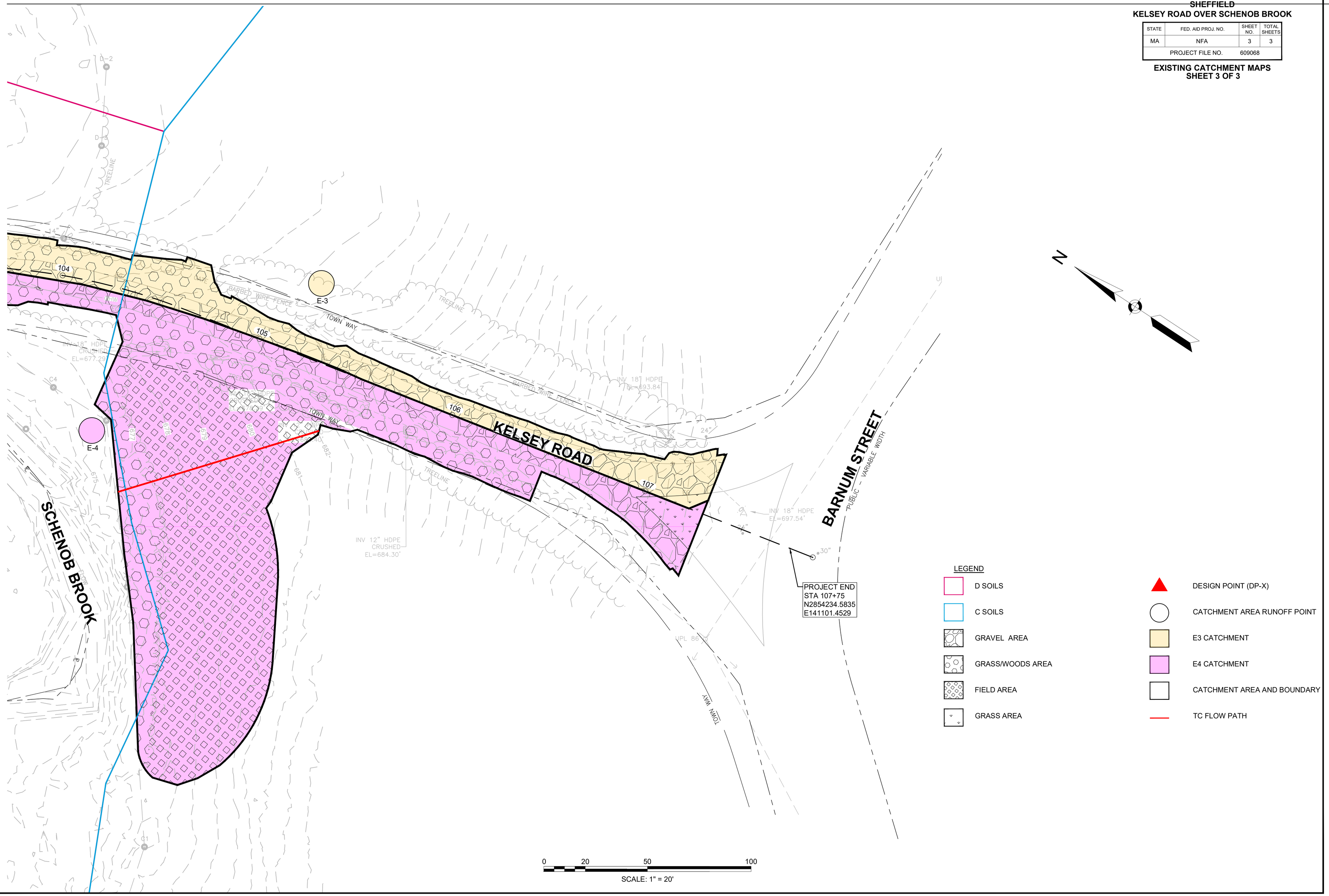
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A00830 - 849

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	3	3
PROJECT FILE NO.	609068		

EXISTING CATCHMENT MAPS
SHEET 3 OF 3

CONTINUED ON SHEET NO. 2



Proposal No. 609068-136649
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A00830 - 859

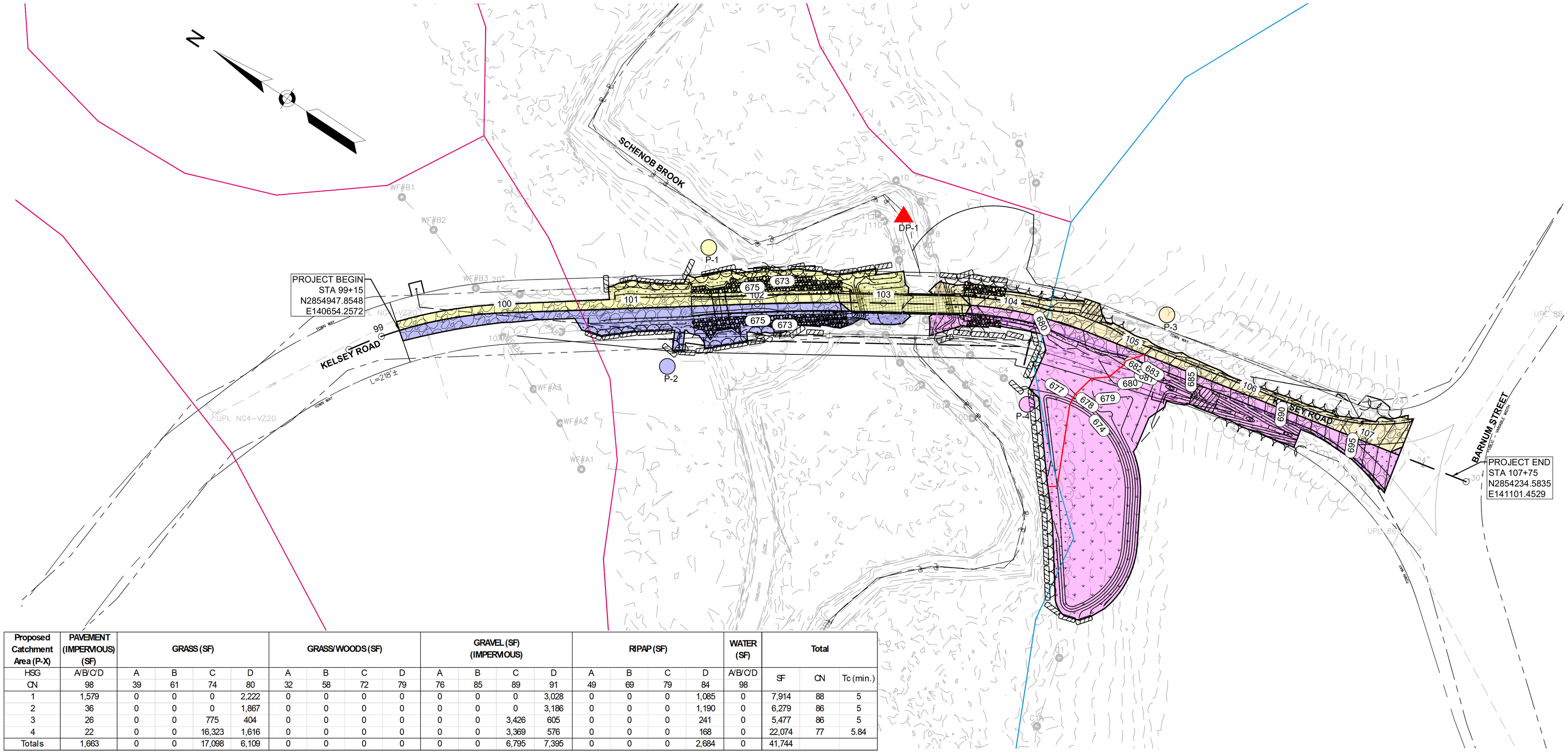
LEGEND

- D SOILS
- C SOILS
- GRAVEL AND MILLING MULCH AREA
- GRASS AREA
- IMPERVIOUS AREA
- RIPRAP AREA
- DESIGN POINT (DP-X)
- CATCHMENT AREA RUNOFF POINT
- P1 CATCHMENT
- P2 CATCHMENT
- P3 CATCHMENT
- P4 CATCHMENT
- CATCHMENT AREA BOUNDARY
- TC FLOWPATH

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	1	3
PROJECT FILE NO.	609068		

PROPOSED CATCHMENT MAPS
SHEET 1 OF 2



Proposed Catchment Area (P-X)	PAVEMENT (IMPERVIOUS) (SF)	GRASS (SF)				GRASS/WOODS (SF)				GRAVEL (SF) (IMPERVIOUS)				RIPAP (SF)				WATER (SF)	Total		
HSG	A/B/C/D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A/B/C/D	SF	CN	Tc (min.)
CN	98	39	61	74	80	32	58	72	79	76	85	89	91	49	69	79	84	98			
1	1,579	0	0	0	2,222	0	0	0	0	0	0	0	3,028	0	0	0	1,085	0	7,914	88	5
2	36	0	0	0	1,867	0	0	0	0	0	0	0	3,186	0	0	0	1,190	0	6,279	86	5
3	26	0	0	775	404	0	0	0	0	0	0	3,426	605	0	0	0	241	0	5,477	86	5
4	22	0	0	16,323	1,616	0	0	0	0	0	0	3,369	576	0	0	0	168	0	22,074	77	5.84
Totals	1,663	0	0	17,098	6,109	0	0	0	0	0	0	6,795	7,395	0	0	0	2,684	0	41,744		

0 40 100 200

SCALE: 1" = 40'

Proposal No. 609068-136649

609068_EV(SHEFFIELD PROPOSED CATCHMENT MAPS).DWG Plotted on 25-Jun-2026 3:25 PM

A00830 - 851

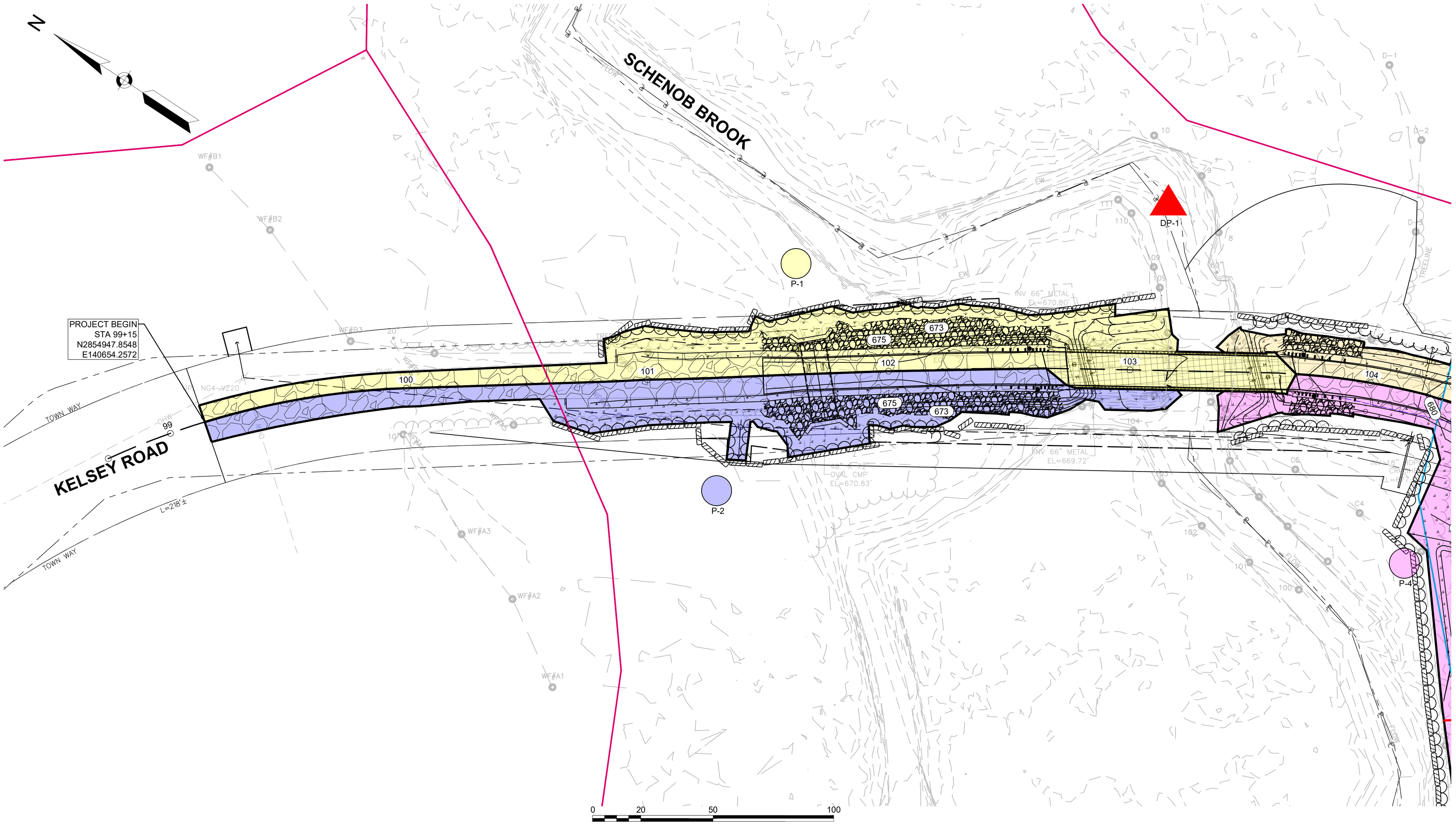
LEGEND

- D SOILS
- C SOILS
- GRAVEL AND MILLING MULCH AREA
- GRASS AREA
- IMPERVIOUS AREA
- RIPRAP AREA
- DESIGN POINT (DP-X)
- CATCHMENT AREA RUNOFF POINT
- P1 CATCHMENT
- P2 CATCHMENT
- P3 CATCHMENT
- P4 CATCHMENT
- CATCHMENT AREA BOUNDARY

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	2	3
PROJECT FILE NO.	609068		

PROPOSED CATCHMENT MAPS
SHEET 2 OF 3



CONTINUED ON SHEET NO. 3

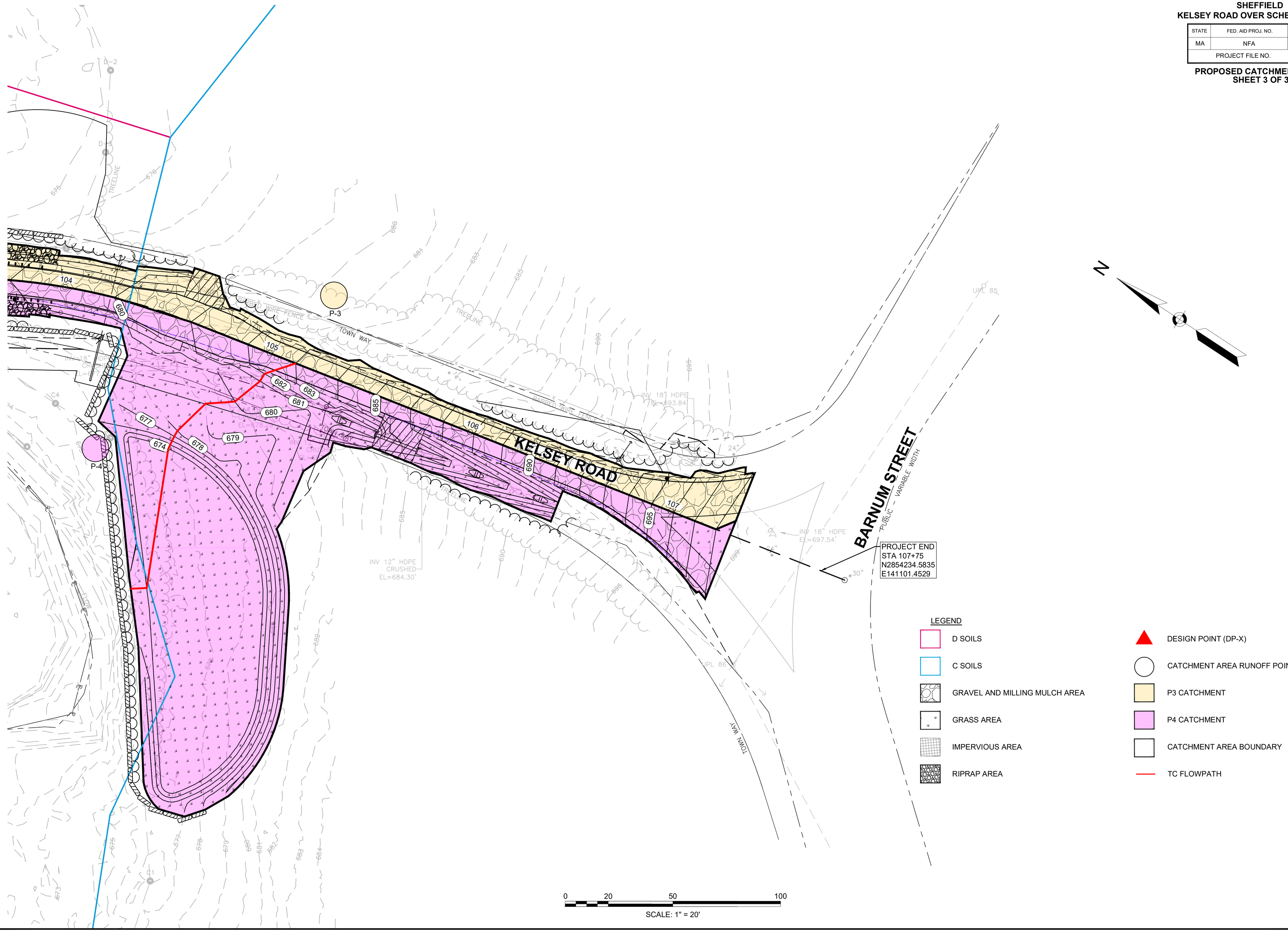
Proposal No. 609068-136649
609068_EV(SHEFFIELD PROPOSED CATCHMENT MAPS).DWG Plotted on 25-Jun-2026 3:06 PM
A00830 - 852

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	3	3
PROJECT FILE NO.	609068		

PROPOSED CATCHMENT MAPS
SHEET 3 OF 3

CONTINUED ON SHEET NO. 19



LEGEND

- D SOILS
- C SOILS
- GRAVEL AND MILLING MULCH AREA
- GRASS AREA
- IMPERVIOUS AREA
- RIPRAP AREA
- DESIGN POINT (DP-X)
- CATCHMENT AREA RUNOFF POINT
- P3 CATCHMENT
- P4 CATCHMENT
- CATCHMENT AREA BOUNDARY
- TC FLOWPATH

Proposal No. 609068-136649

609068_EV(SHEFFIELD PROPOSED CATCHMENT MAPS).DWG Plotted on 25-Jun-2026 3:06 PM

A00830 - 853

Proposal No. 609068-136649

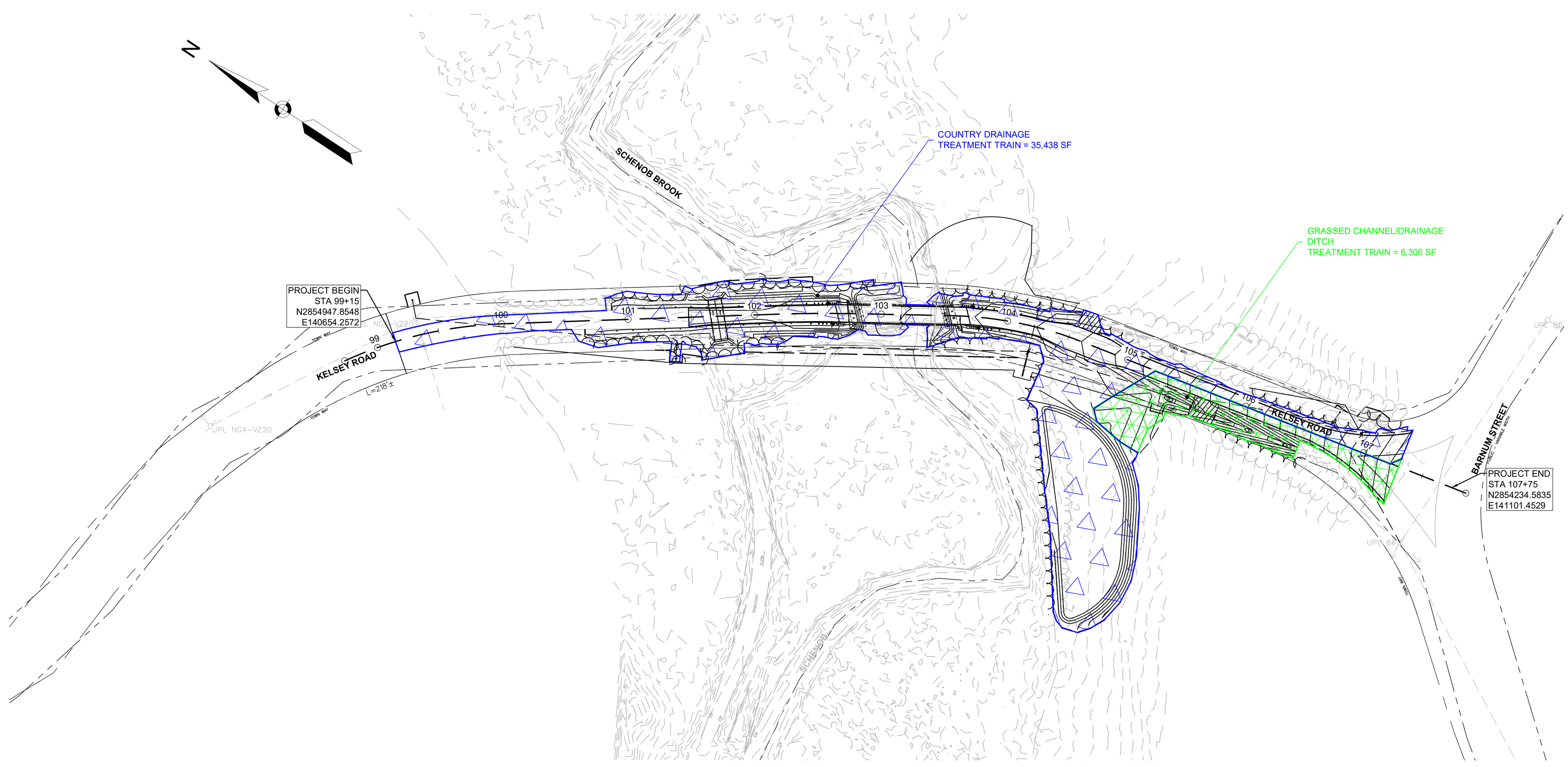
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	1	1
PROJECT FILE NO.	609068		

TREATMENT TRAIN BREAKDOWN
SHEET 1 OF 1

609068_EV(SHEFFIELD PROPOSED CATCHMENT MAPS).DWG Plotted on 25-Jun-2026 3:53 PM

A00830 - 854



GFT

Ingenuity That Shapes Lives™

July 30, 2026

Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114
Attn: Ms. Heidi M. Davis
Wetlands Program Highway Unit

Re: 401 Water Quality Certification
Kelsey Road over Schenob Brook
Bridge Replacement (Bridge No. S-10-015)
Sheffield, MA
MassDOT Project #609068

Dear Ms. Davis:

We are in receipt of the comments/questions provided in your July 27, 2026 email to the Massachusetts Department of Transportation Highway Division (MassDOT) as part of MassDEP's Administrative Completeness Review for the subject project. On behalf of MassDOT, we have reviewed your comments/questions and offer the following responses:

1. The BVW boundary is missing on the revised plans where wetland flags were added or revised. Please complete the connections between WF#A5-1 to WF#A5 and WF#C4 to WF#C5, and connect WF#A5 to WF#A4 and WF#C5 to WF#C6.

   Response: We reviewed the CAD files for these drawings and verified that all these flags are connected; however, the order in which the linework is printing is causing the BVW to be obscured by the adjacent hatching boundary. We have updated the drawings so that the BVW boundary (blue line) between all flags is fully presented. Refer to the updated drawings (Sheet Nos. 21 & 22) included as part of Attachment 1.

2. Per the response to Comment # 7a, the proposed wetland replication area was revised to share a boundary with the existing Bordering Vegetated Wetland (BVW). However, the wetland replication area shown on Sheets 26 through 28 does not abut the existing BVW boundary. Please provide revised plans showing the shared western wetland replication area boundary with wetland flag series C.

   Response: The hatching for the Wetland Replication area on Sht. No. 22 has been revised to show the connectivity of the wetland replication area to the existing BVW boundary between WF#C3 and WF#C1. We have also updated the grading limits on the cross-section (Sht. Nos. 27 & 28) to show the full depth of wetland soils and wetland seed mix extending along the slope between the Limit of BVW and the El. 674 contour limit of the mitigation area. Please note that the Wetland Replication Area hatching has been removed from Sht. No. 26 in response to comments from the MassDOT Landscape Design section. See Attachment 1 for the referenced plan updates.

3. Please complete and provide a Total Suspended Solids (TSS) Removal Calculation Worksheet for the newly proposed grassed channel.

   Response: A copy of the TSS Removal Calculation Worksheet for the proposed grassed channel is included as Attachment 2.

GFT

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In addition to the above noted changes, we would like to bring the following additional changes to your attention, as shown on the revised plans included as part of Attachment 1:

- The Plant List included as part of the Landscape Plan (Sht. No. 30) has been revised. 12"-18" shrubs have been eliminated and number of 18"-24" shrubs have been increased. Tree sizes have also been reduced.
- The Grassed Channel Detail on Sht. No. 17 has been revised to specify jute mesh in lieu of geotextile fabric along the bottom of the channel.

We trust that this information adequately addresses your concerns. If you have any additional questions or comments, please contact Ms. Courtney Walker either by phone at (857) 262-0757 or by email at Courtney.l.walker@dot.state.ma.us or myself at the email/phone numbers noted below.

Sincerely,
GFT Infrastructure, Inc.

Thomas P. Daley, P.E.
Principal Project Manager

E: tdaley@gftinc.com
C: 617.276.5125 **| O**: 781.410.3930

gftinc.com

Attachments

cc: Ms. Courtney Walker, MassDOT Highway Division, Environmental Services
Ms. Lily Collins, MassDOT Highway Division, Environmental Services
Mr. Joshua Bartus, MassDOT Highway Division, Project Manager
Mr. Matt Lundsted, CEI Engineers

Attachment 1

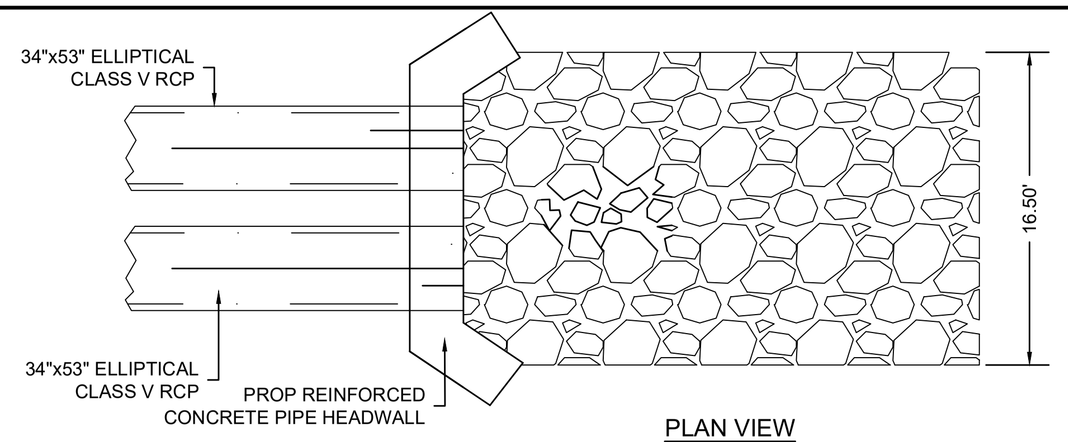
Environmental Impact Plans & Details, Revised

GFT

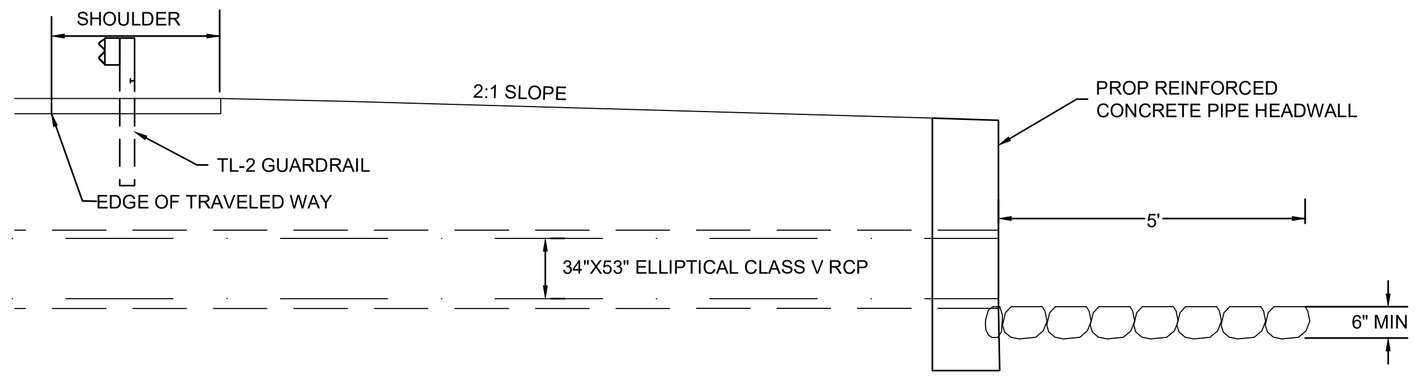
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	17	61
PROJECT FILE NO.	609068		

DRAINAGE DETAILS



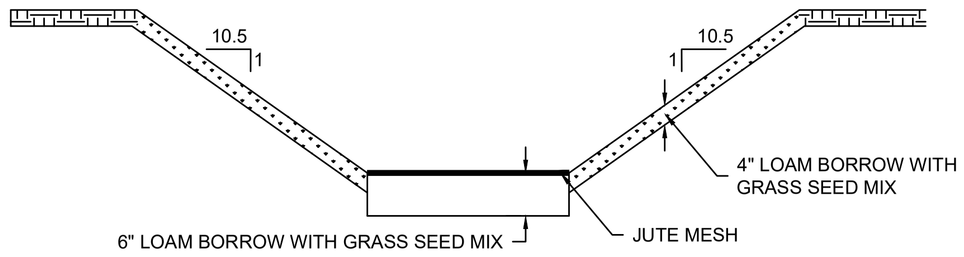
PLAN VIEW



PROFILE VIEW

STONE FOR PIPE ENDS AT ELLIPTICAL CULVERT

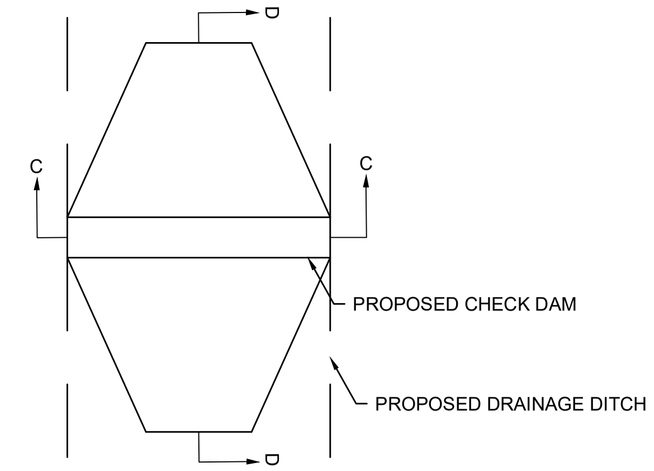
NOT TO SCALE



NOTES:
1. THE LINEAR SLOPE OF THE SWALE SHALL BE A MAXIMUM OF 5%.

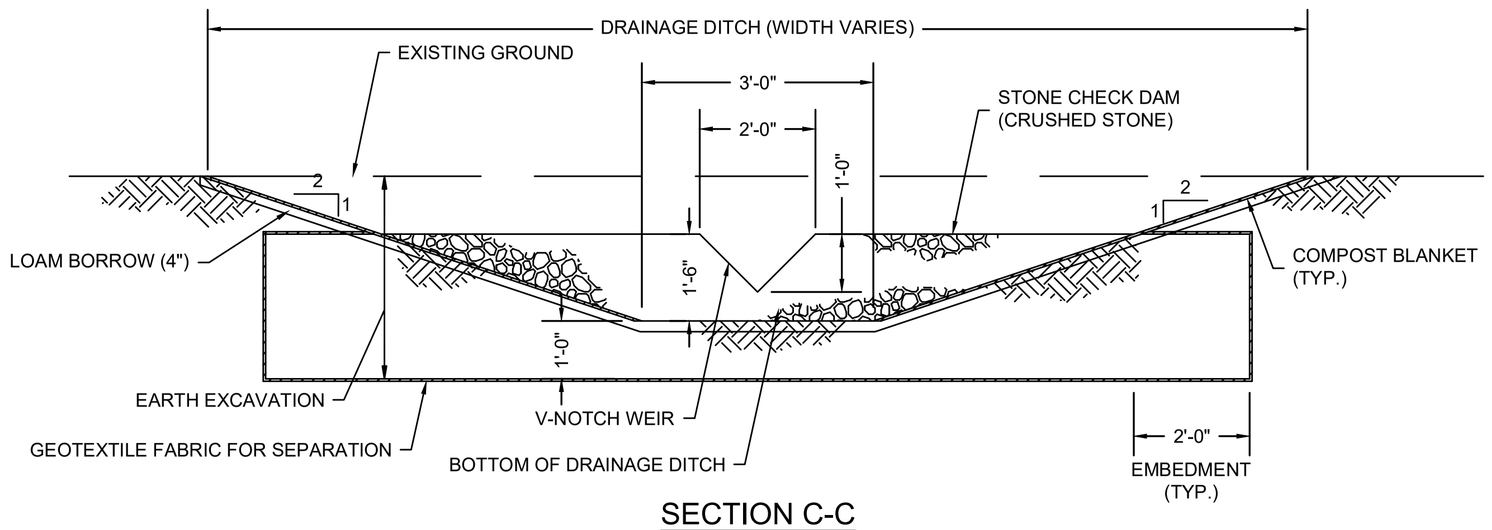
GRASSED CHANNEL

NOT TO SCALE



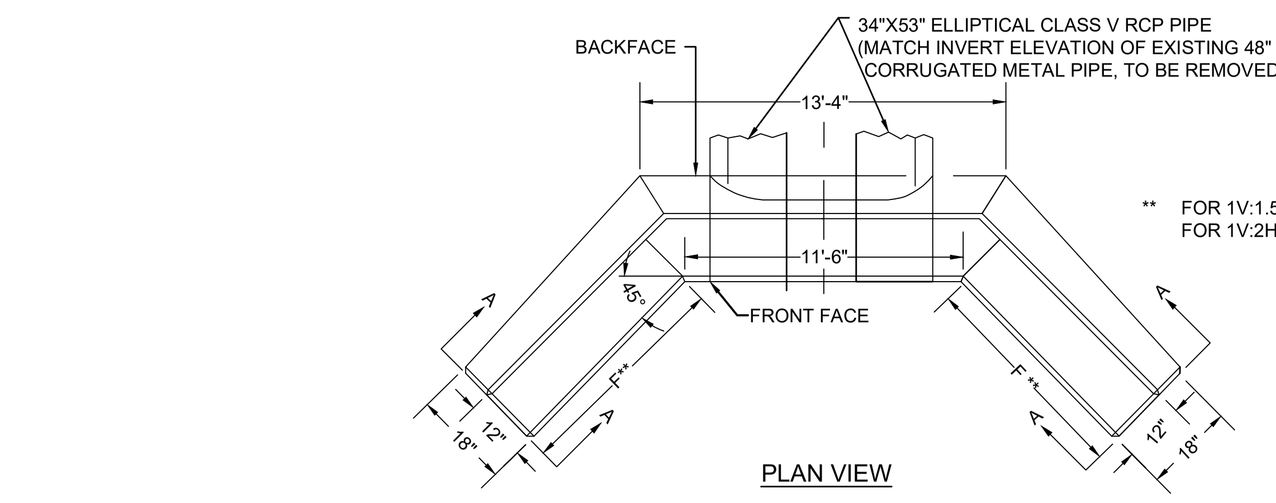
STONE CHECK DAM PLAN VIEW

NOT TO SCALE

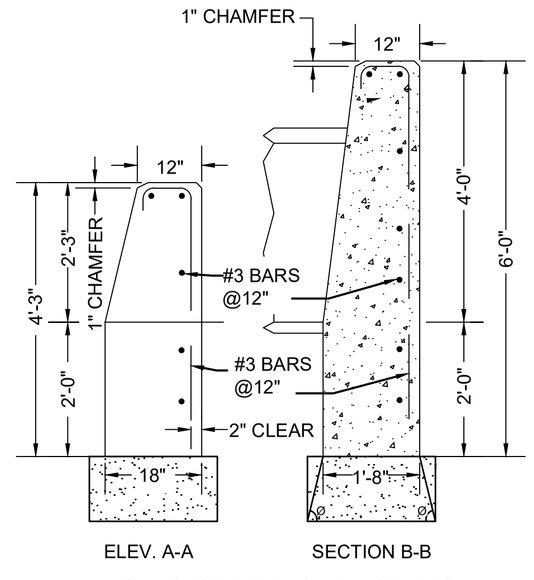


SECTION C-C

NOT TO SCALE

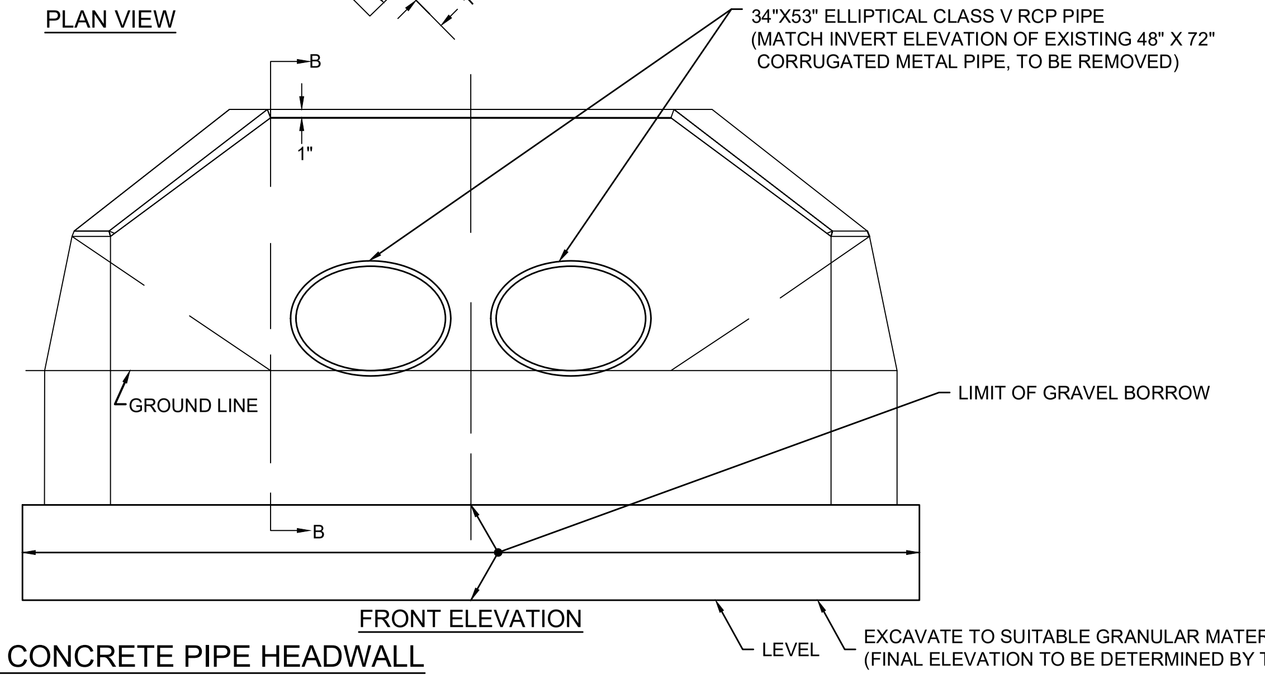


PLAN VIEW



ELEV. A-A SECTION B-B

Ø = 45° FOR DEPTH OF 5'-0" OR LESS
Ø = 60° FOR DEPTH OVER 5'-0"

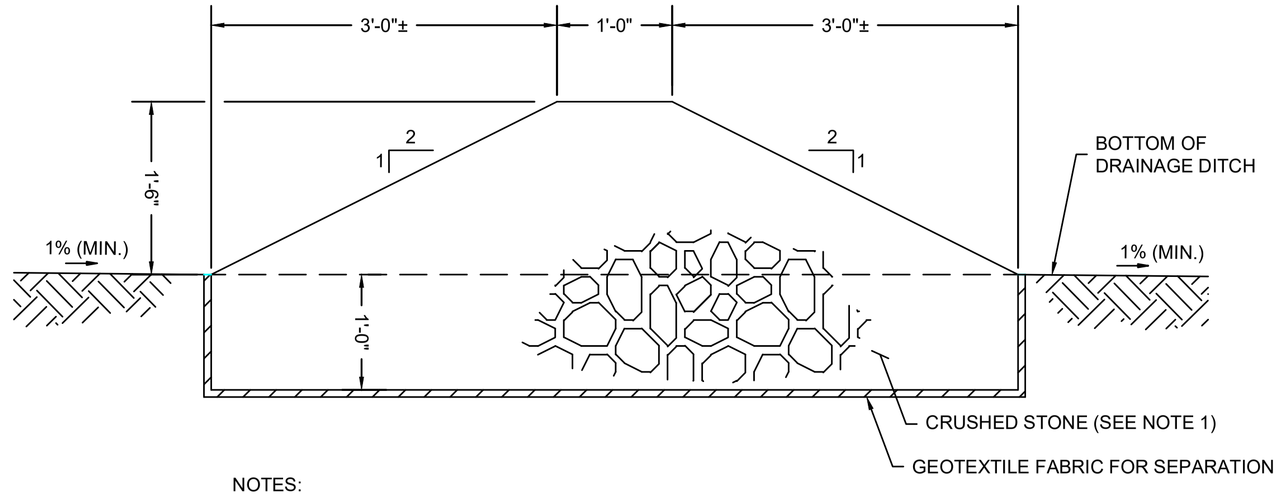


FRONT ELEVATION

REINFORCED CONCRETE PIPE HEADWALL

NOT TO SCALE

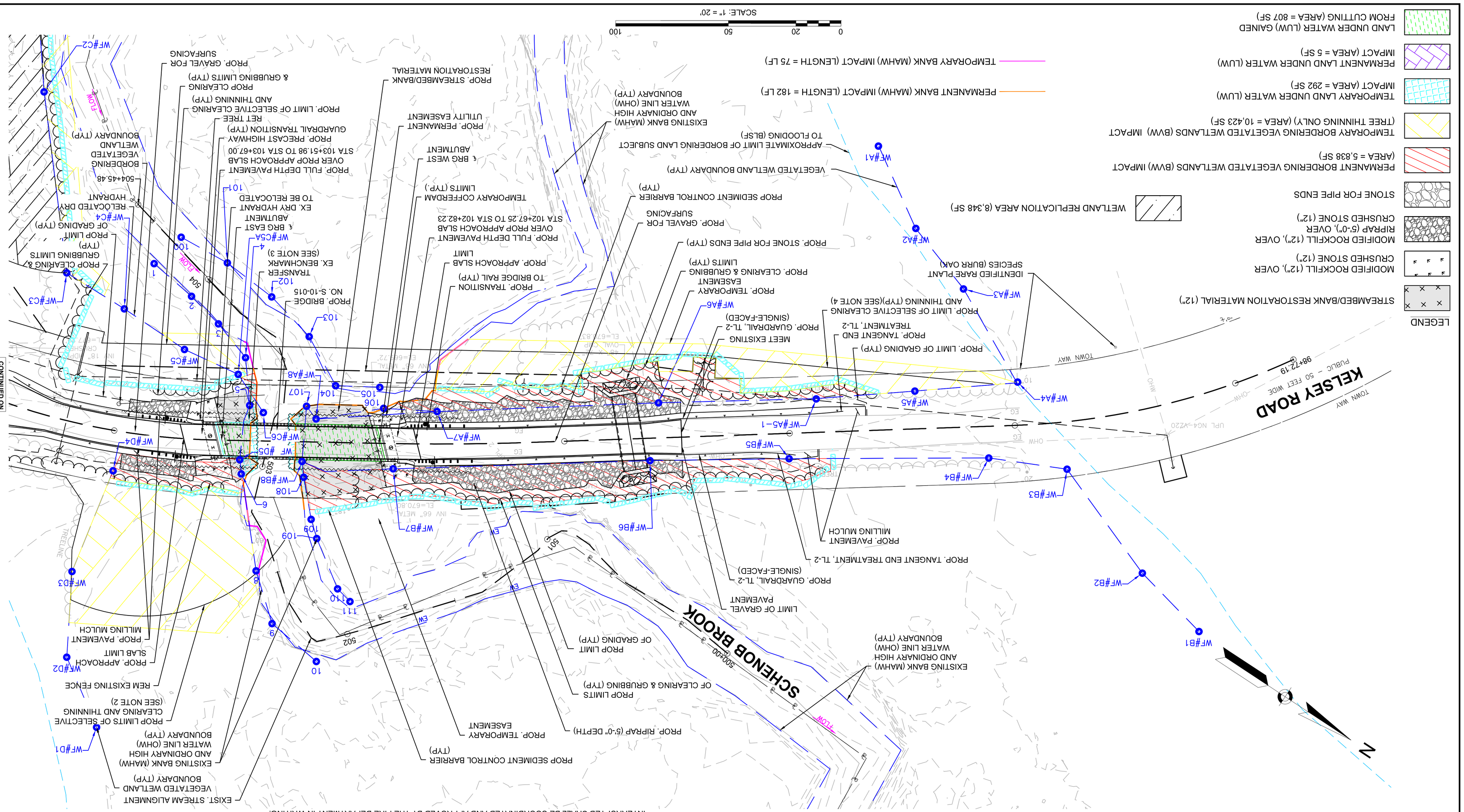
(ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM)



NOTES:
1. CRUSHED STONE SHALL MEET MATERIAL REQUIREMENTS OF SECTION M2.01.2

SECTION D-D

NOT TO SCALE



NOTES:

1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
4. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
5. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.

WETLAND FLAG NOTES:

1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW)/ FEDERAL WETLANDS. FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2

PROJECT FILE NO.		609068	
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	21	61

609068_HD\WETLAND REPLICATION PLANS).DWG Plotted on: 30-Jul-2026 8:36 AM

A90830 - 859

Proposal No. 609068-136649

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

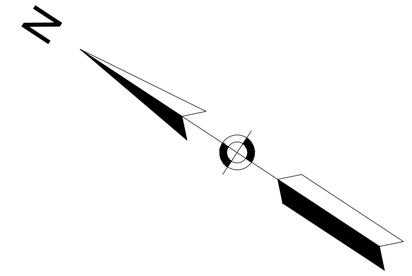
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MA	STP(BR-OFF)-003S(993)X	22	61
PROJECT FILE NO.	609068		

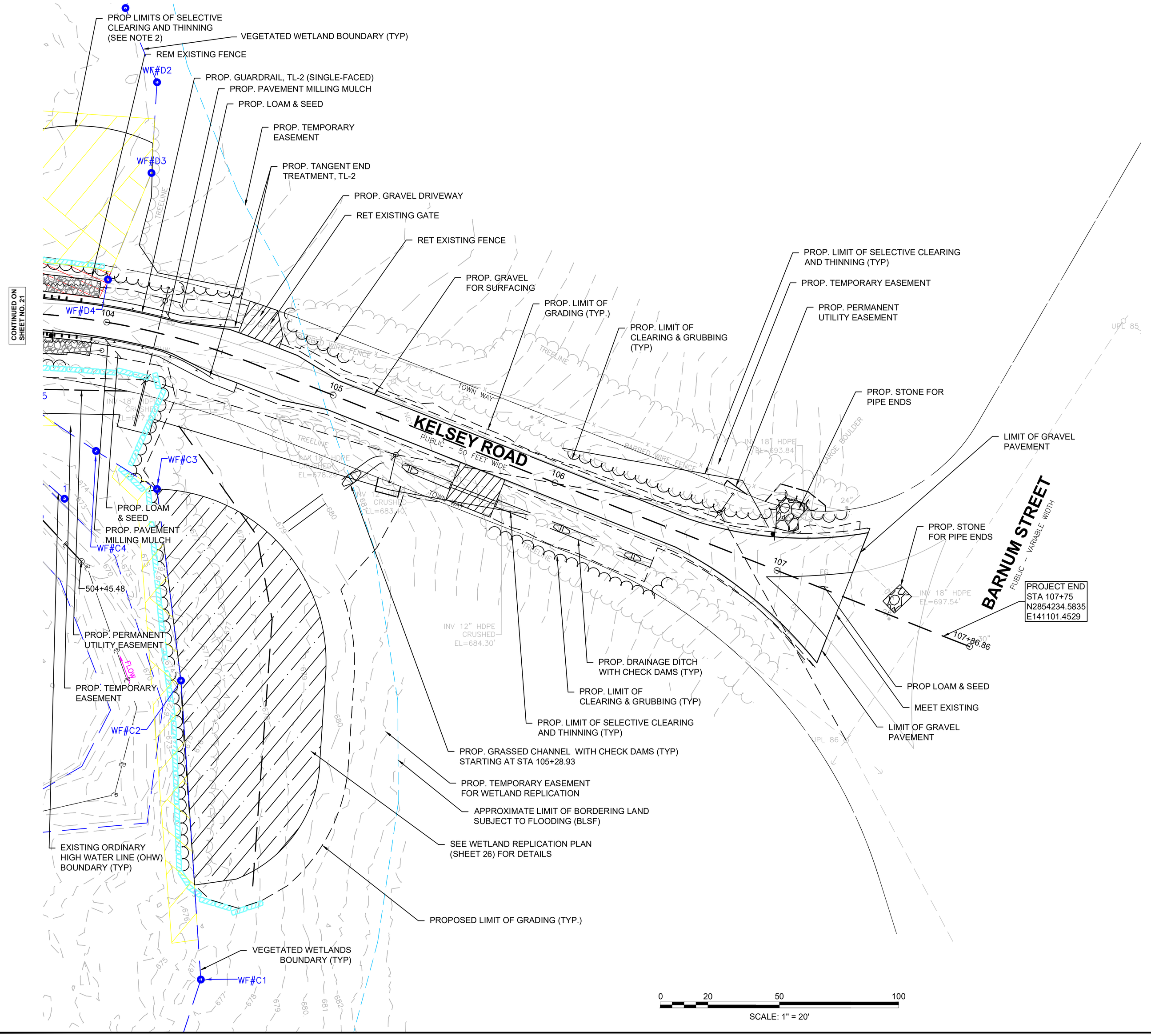
ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2

NOTES:

1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.

2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.





LEGEND

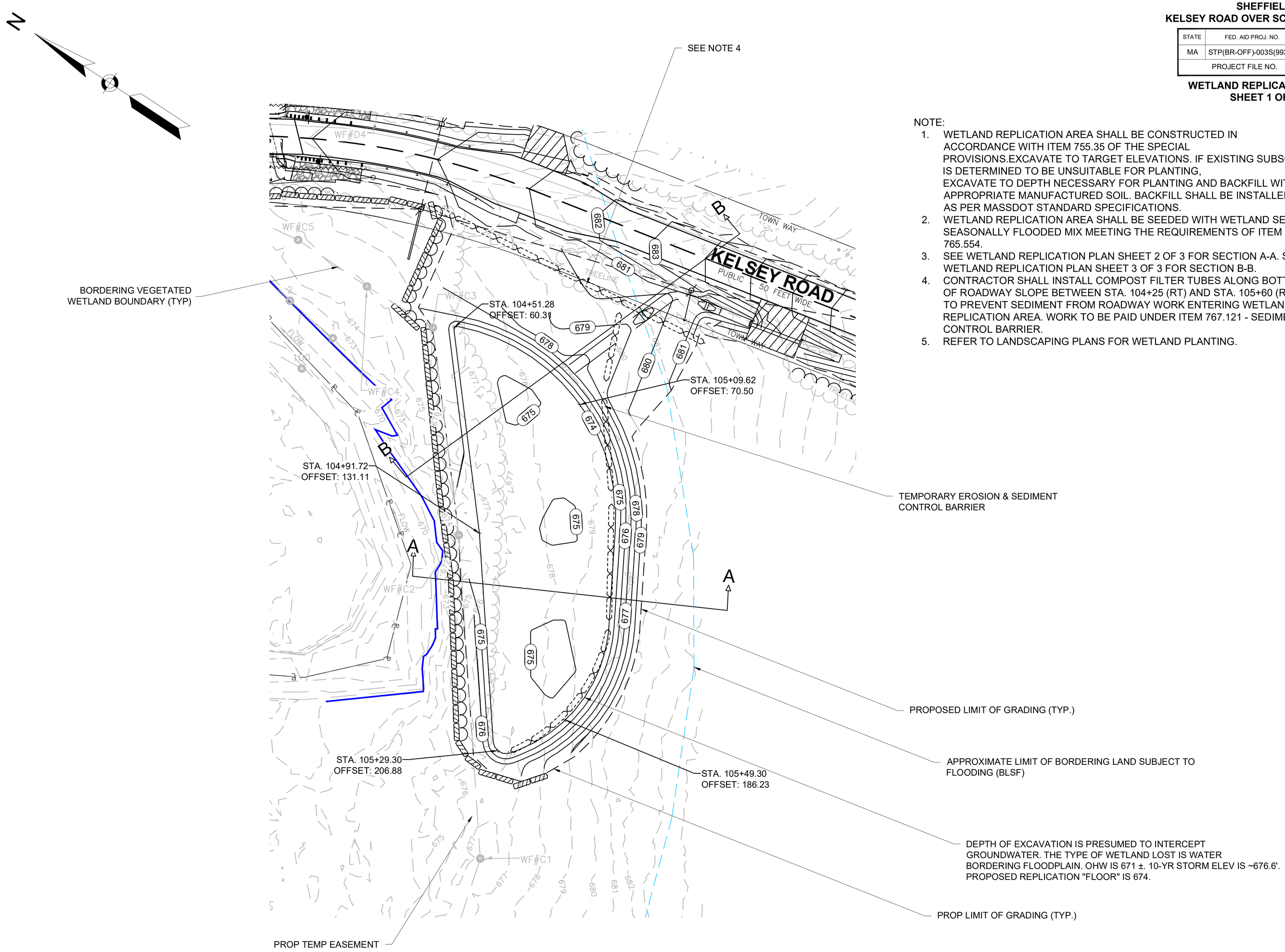
- MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
- PERMANENT BORDERING VEGETATED WETLANDS (BVW) IMPACT (AREA = 5,838 SF)
- TEMPORARY BORDERING VEGETATED WETLANDS (BVW) IMPACT (TREE THINNING ONLY) (AREA = 10,423 SF)
- WETLAND REPLICATION AREA (8,348 SF)

Proposal No. 609068-136649
609068_HD(WETLAND REPLICATION PLANS).DWG Plotted on 30-Jul-2026 8:25 AM
A00830 - 860

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	26	61
PROJECT FILE NO.	609068		

WETLAND REPLICATION PLAN
SHEET 1 OF 3



NOTE:

1. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS.EXCAVATE TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
2. WETLAND REPLICATION AREA SHALL BE SEEDED WITH WETLAND SEED - SEASONALLY FLOODED MIX MEETING THE REQUIREMENTS OF ITEM 765.554.
3. SEE WETLAND REPLICATION PLAN SHEET 2 OF 3 FOR SECTION A-A. SEE WETLAND REPLICATION PLAN SHEET 3 OF 3 FOR SECTION B-B.
4. CONTRACTOR SHALL INSTALL COMPOST FILTER TUBES ALONG BOTTOM OF ROADWAY SLOPE BETWEEN STA. 104+25 (RT) AND STA. 105+60 (RT) TO PREVENT SEDIMENT FROM ROADWAY WORK ENTERING WETLAND REPLICATION AREA. WORK TO BE PAID UNDER ITEM 767.121 - SEDIMENT CONTROL BARRIER.
5. REFER TO LANDSCAPING PLANS FOR WETLAND PLANTING.

LEGEND

- OHW/ELEV 671±
- TEMPORARY EROSION & SEDIMENT CONTROL
- TEMPORARY EROSION & SEDIMENT CONTROL - COIR LOGS

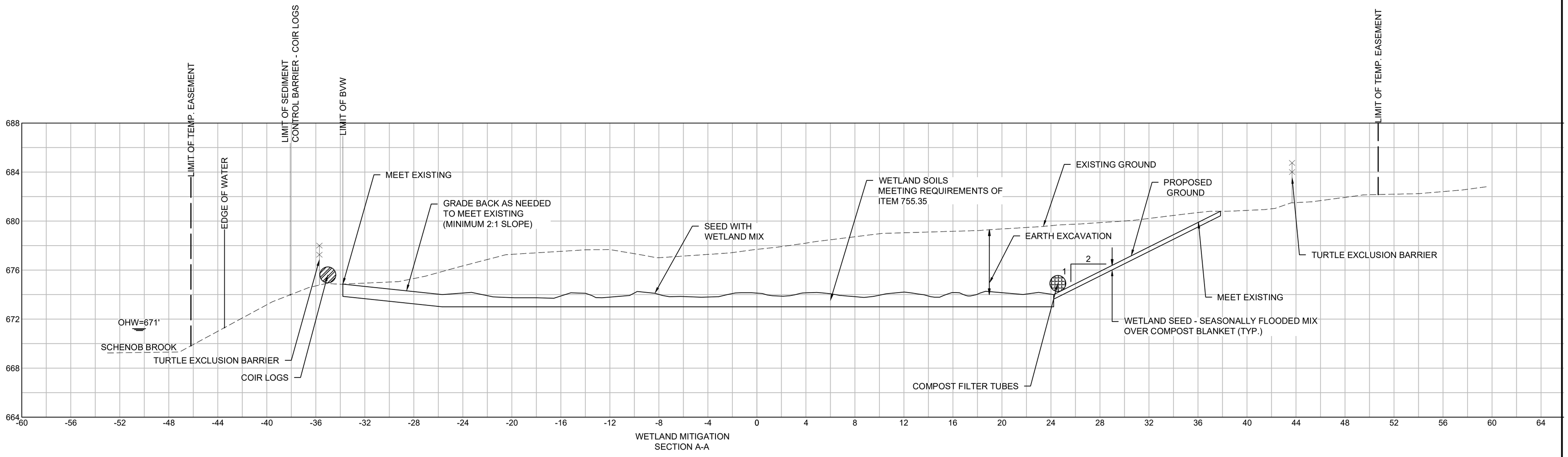
0 20 50 100
SCALE: 1" = 20'

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	27	61
PROJECT FILE NO.	609068		

WETLAND REPLICATION PLAN
SHEET 2 OF 3

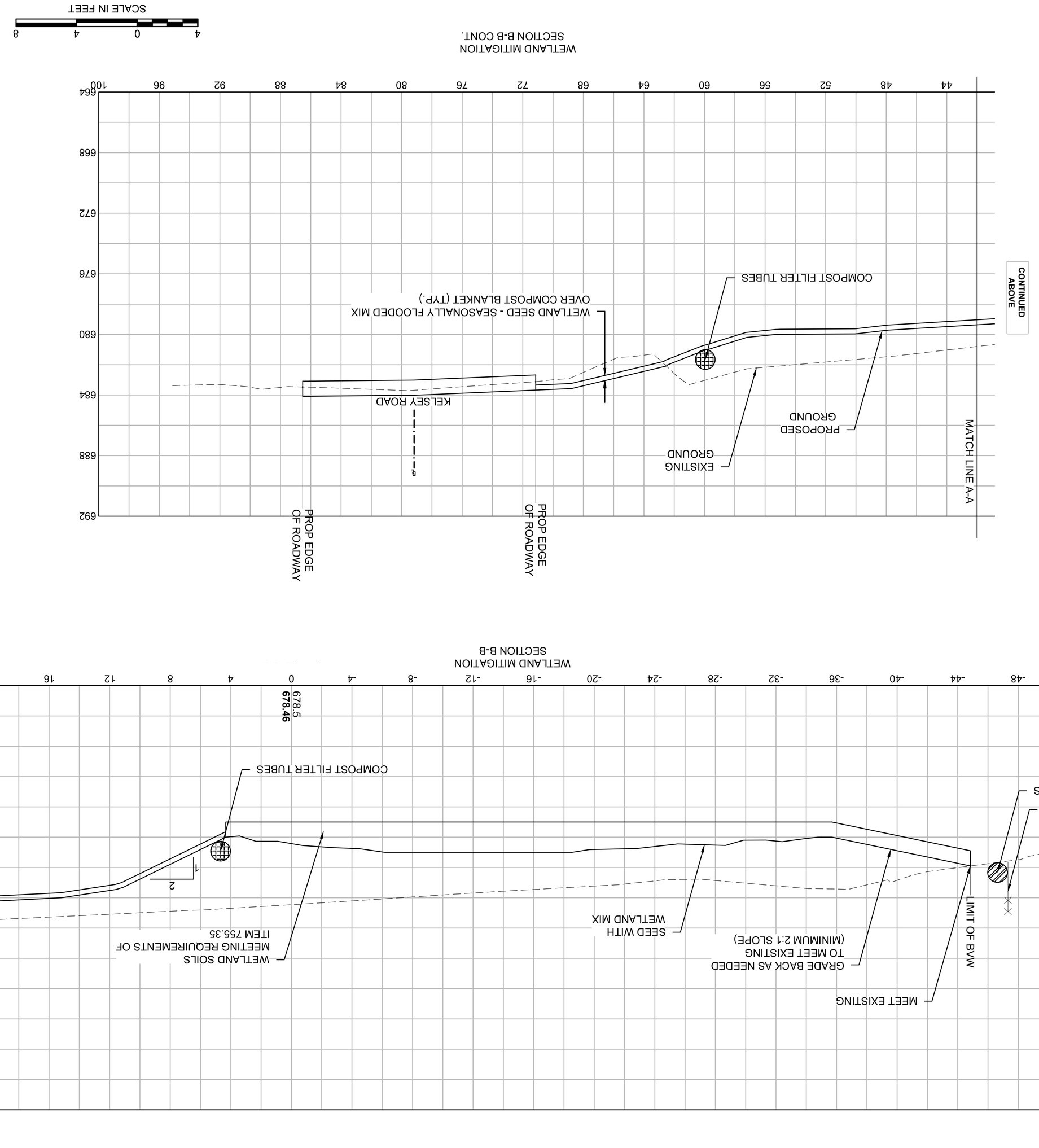
NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE



WETLAND MITIGATION
SECTION A-A

4 0 4 8
SCALE IN FEET

Proposal No. 609068-136649
609068_HD\WETLAND REPLICATION PLANS.DWG Plotted on: 29-Jul-2026 2:13 PM
A00830 - 862



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

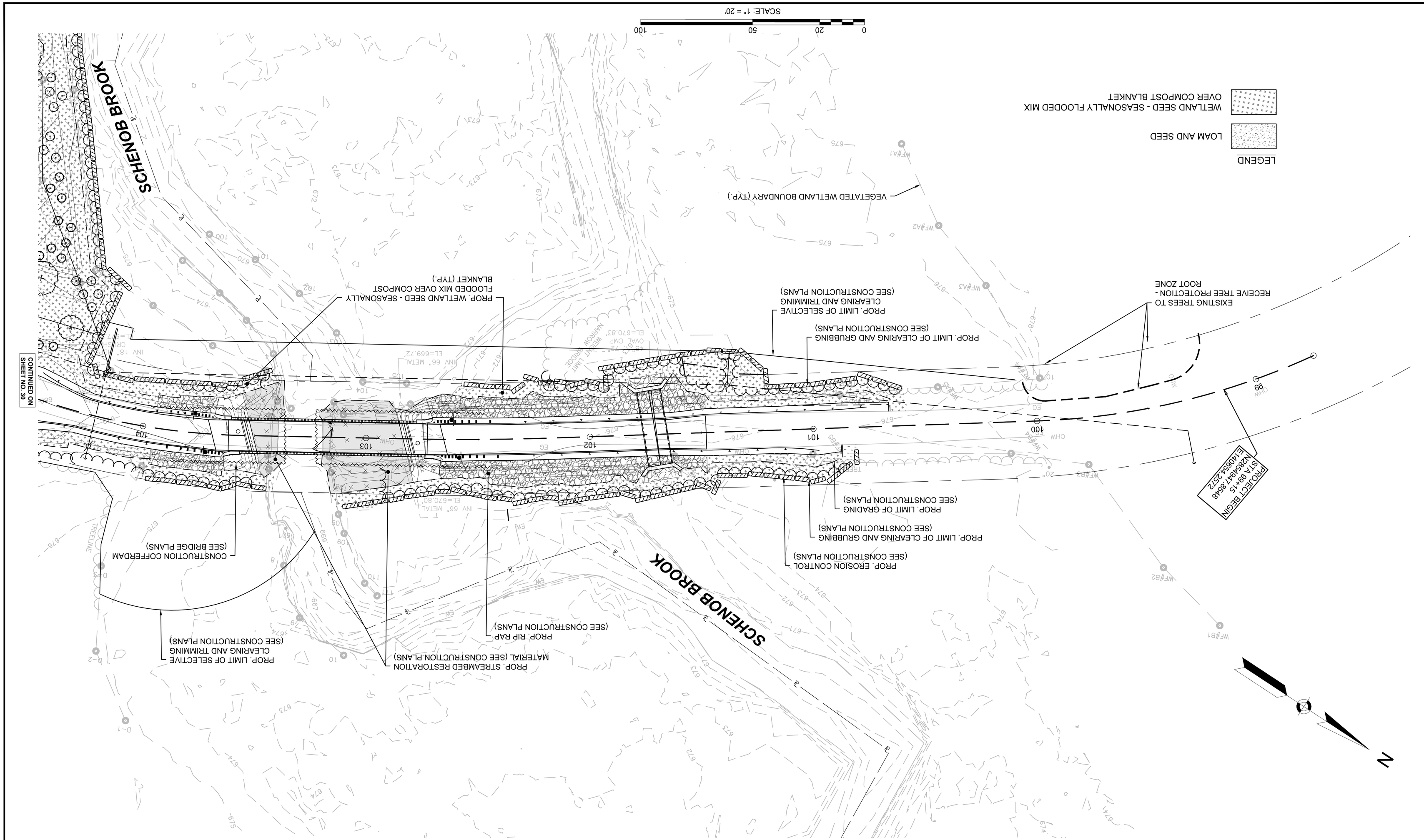
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	28	61
	PROJECT FILE NO. 609068		

WETLAND REPLICATION PLAN
SHEET 3 OF 3

609068_HDWETLAND REPLICATION PLANS.DWG Plotted on 29-Jul-2026 2:14 PM

A00830 - 863

Proposal No. 609068-136649



GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

LANDSCAPE PLAN
KELSEY ROAD (1 OF 2)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	29	61
	PROJECT FILE NO. 609068		

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

609068_LD1.DWG Plotted on 21-Jul-2026 9:52 AM

A00830 - 864

Proposal No. 609068-136649

Proposal No. 609068-136649

609068_LD2.DWG Plotted on 21-Jul-2026 11:28 AM

A00830 - 865

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	30	61
PROJECT FILE NO.	609068		

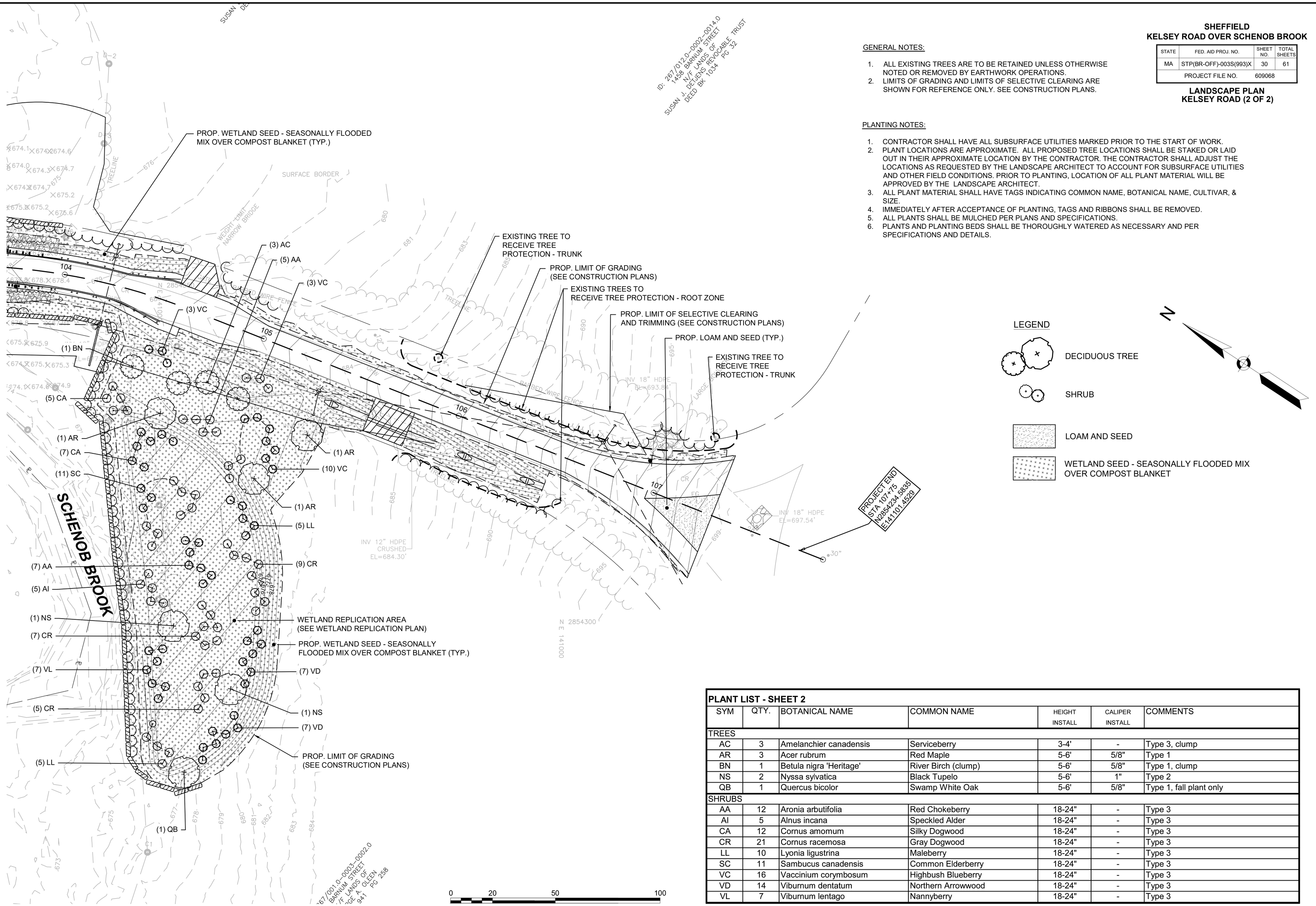
LANDSCAPE PLAN
KELSEY ROAD (2 OF 2)

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

PLANTING NOTES:

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL SHALL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, CULTIVAR, & SIZE.
4. IMMEDIATELY AFTER ACCEPTANCE OF PLANTING, TAGS AND RIBBONS SHALL BE REMOVED.
5. ALL PLANTS SHALL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS AND DETAILS.



LEGEND

- DECIDUOUS TREE
- SHRUB
- LOAM AND SEED
- WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET

PLANT LIST - SHEET 2

SYM	QTY.	BOTANICAL NAME	COMMON NAME	HEIGHT INSTALL	CALIPER INSTALL	COMMENTS
TREES						
AC	3	Amelanchier canadensis	Serviceberry	3-4'	-	Type 3, clump
AR	3	Acer rubrum	Red Maple	5-6'	5/8"	Type 1
BN	1	Betula nigra 'Heritage'	River Birch (clump)	5-6'	5/8"	Type 1, clump
NS	2	Nyssa sylvatica	Black Tupelo	5-6'	1"	Type 2
QB	1	Quercus bicolor	Swamp White Oak	5-6'	5/8"	Type 1, fall plant only
SHRUBS						
AA	12	Aronia arbutifolia	Red Chokeberry	18-24"	-	Type 3
AI	5	Alnus incana	Speckled Alder	18-24"	-	Type 3
CA	12	Cornus amomum	Silky Dogwood	18-24"	-	Type 3
CR	21	Cornus racemosa	Gray Dogwood	18-24"	-	Type 3
LL	10	Lyonia ligustrina	Maleberry	18-24"	-	Type 3
SC	11	Sambucus canadensis	Common Elderberry	18-24"	-	Type 3
VC	16	Vaccinium corymbosum	Highbush Blueberry	18-24"	-	Type 3
VD	14	Viburnum dentatum	Northern Arrowwood	18-24"	-	Type 3
VL	7	Viburnum lentago	Nannyberry	18-24"	-	Type 3

Attachment 2

Total Suspended Solids (TSS) Removal Calculation Worksheet

GFT

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Grassed Channel Treatment Train

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Grass Channel	0.50	1.00	0.50	0.50
	0.00	0.50	0.00	0.50
	0.00	0.50	0.00	0.50
	0.00	0.50	0.00	0.50
	0.00	0.50	0.00	0.50

Total TSS Removal = 50%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Sheffield, Kelsey Road
Prepared By: MJW
Date: TD

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

Proposal No. 609068-136649

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DOCUMENT A00831

ARMY CORPS OF ENGINEERS

GENERAL PERMIT

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT OFFICE
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

August 26, 2026

Regulatory Division
File No. NAE-2026-00570

Courtney Walker
MassDOT, Highway Division
10 Park Plaza
Room 7360
Boston, Massachusetts 02116
courtney.l.walker@dot.state.ma.us

Dear Courtney Walker:

The U.S. Army Corps of Engineers (Corps) has reviewed your request to permanently discharge fill material within five square feet below the Ordinary High Water (OHW) mark of Schenob Brook, and within 5,838 square feet of wetlands, associated with the replacement of the bridge conveying Kelsey Road over Schenob Brook in Sheffield, Massachusetts (latitude 42.065210° and longitude -73.397480°). The existing single-span bridge will be removed and replaced with a new single-span bridge with a wider span. Rip-rap slope protection overtopped with 12 inches of streambank restoration material will be placed along the approaches. An existing 66" corrugated metal pipe culvert connecting wetlands beneath Kelsey Road to the west of the bridge will be removed since it is within the span opening of the new bridge. An existing 48" x 72" elliptical corrugated metal pipe culvert connecting wetlands beneath Kelsey Road further to the west will be replaced in its current location with twin elliptical 34" x 53" reinforced concrete pipes. The project also includes temporary impacts within 292 square feet below OHW due to the installation of cofferdams and associated dewatering. The proposed regulated activities associated with this project are detailed on the attached drawings titled "MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF KELSEY ROAD OVER SCHENOB BROOK (BRIDGE NO. S-10-015) IN THE TOWN OF SHEFFIELD BERKSHIRE COUNTY," on 61 sheets dated August 24, 2026. This letter follows a provisional notification letter from this office, dated June 9, 2026.

Based on the information provided, the Corps has verified that the proposed actions are authorized under Nationwide Permit (NWP) NWP 14, Linear Transportation Projects, pursuant to authorities under Section 404 of the Clean Water Act (33 U.S.C. § 1344). You can find a copy of these permits at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/. You must ensure the proposed work is performed in accordance with the enclosed applicable terms and conditions.

Special Conditions

In addition, this verification is subject to the following special conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.

2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.

3. Prior to initiating the authorized work in waters of the United States, you must provide verification to the Corps that compensatory mitigation for 0.13 wetland credits has been purchased from the Massachusetts In Lieu Fee (MA ILF) Program administered by the Massachusetts Department of Fish and Game (MA DFG). The wetland credit calculation is shown on the enclosed MA ILF worksheet. Please contact Brian Kelter at the MA DFG at brian.kelter@mass.gov and/or visit the MA ILF website at https://www.mass.gov/how-to/make-ilfpayments-to-dfg for instructions on how to purchase the required credits.

A change in location or project plans may require re-evaluation of your project. Proposed changes should be coordinated with this office prior to construction. Failure to comply with all terms and conditions of these permits (NWP) invalidates this authorization and could result in a violation of Section 301 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. You must also obtain all local, state, Tribal, and other Federal permits that apply to this project.

Water Quality Certification (WQC)

The Commonwealth of Massachusetts issued a conditioned individual WQC decision (enclosed). You must comply with the conditions specified in the WQC decision for this NWP authorization to be valid.

Permit Expiration

The Corps verification of this NWP authorization is valid until March 14, 2031, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work for the NWP authorization has not been completed by that date and you have commenced or are under contract to commence this activity before March 14, 2031, you will have until March 14, 2032, to complete the activity under the enclosed terms and conditions of this NWP.

Contact Information

If you have any questions, please contact Daniel Vasconcelos at 978-318-8653, or by email at daniel.b.vasconcelos@usace.army.mil. To better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

Grace Moses
Chief, Technical Support Branch
Regulatory Division

Enclosures:
Project Plans
Work Start Notification Form
Compliance Certification Form
MA ILF Project Impact Table and Worksheet
Water Quality Certification
NWP 14, Linear Transportation Projects and General/Regional Conditions

cc:
Heidi Davis, MassDEP, heidi.davis@mass.gov
Brian Kelter, MA ILF Program, brian.kelter@mass.gov
Matthew Lundsted, Comprehensive Environmental Inc., mlundsted@ceiengineers.com
U.S. EPA, Region 1; R1_CWA404_REG@epa.gov

Work-Start Notification Form

File Number: NAE-2026-00570 State: . County: Berkshire

Permittee: MassDOT, Highway Division, Courtney Walker
Date Verification Issued: 8/26/2026
Project Manager: Daniel Vasconcelos

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District
Attn: Daniel Vasconcelos
696 Virginia Road
Concord, MA 01742
or
daniel.b.vasconcelos@usace.army.mil
978-318-8653

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____
Business Address: _____
_____
Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ Finish: _____

_____ _____
Signature of Permittee Date

U.S. Army Corps of Engineers (USACE)

CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

Form Approved - OMB No. 0710-0003 Expires 2027-10-31

The Agency Disclosure Notice (ADN)

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PURPOSE: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions.

Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, New England District, Regulatory Office.

The certification can be submitted by email at daniel.b.vasconcelos@usace.army.mil or by mail at the below address:

U.S. Army Corps of Engineers
New England District Office
Street Address: 696 Virginia Road
City: Concord State: Massachusetts Zip Code: 01742-2751

COMPLETED BY THE CORPS

Corps Action Number: NAE-2026-00570

Permit Type: General Permit

General Permit Number and Name (*if applicable*): NWP 14 (Linear Transportation)

Name of Permittee: Courtney Walker

Project Name: MassDOT-Highway Division Sheffield, MA - Kelsey Road Bridge Replacement

Project Location (*physical address*): Kelsey Road
Sheffield, .

PERMITTEE'S CERTIFICATION

Date Work Started: _____

Date Work Completed: _____

Enclose photographs showing the completed project (*if available*).

I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.

Name	Date	Signature

ENG FORM 6285, DEC 2024 PREVIOUS EDITIONS ARE OBSOLETE.

MASSACHUSETTS IN-LIEU FEE (ILF) PROJECT IMPACT WORKSHEET	
Corps file number:	NAE-2026-00570
Date permit issued:	8/26/2026
Corps project manager:	Dan Vasconcelos
Permittee(s):	MassDOT - Highway Division
Project location/address/Lat/Long (from ORM Location page):	42.06522 -73.39748
8-digit hydrologic unit code:	1100005
Service area from ILF interactive statewide map (include subarea):	Berkshire/Taconic
Area subject to compensation:	5838 SF 0 LF
Number of credits to be purchased from spreadsheet :	
Wetlands:	0.134022
Stream:	0
Comments	

Wetlands and Aquatic Resource Impacts						
Resource Type List all that apply Cowardin	Latitude °N	Longitude °W	SF of Impacts to Aquatic Resources Impacted SF	% of the Standard Amount %	SF of Impacts to Aquatic Resources Subject to Compensation SF	Credits
			5838	100	5838	0.134022
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
				Total	5838	0.134022

Use this table for Wetlands and Aquatic Resource Impacts
Use the Aqutic Resources Tab from ORM to populate this table

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

KELSEY ROAD OVER SCHENOB BROOK

(BRIDGE NO. S-10-015)

IN THE TOWN OF

SHEFFIELD

BERKSHIRE COUNTY

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	1	61
PROJECT FILE NO.	609068		

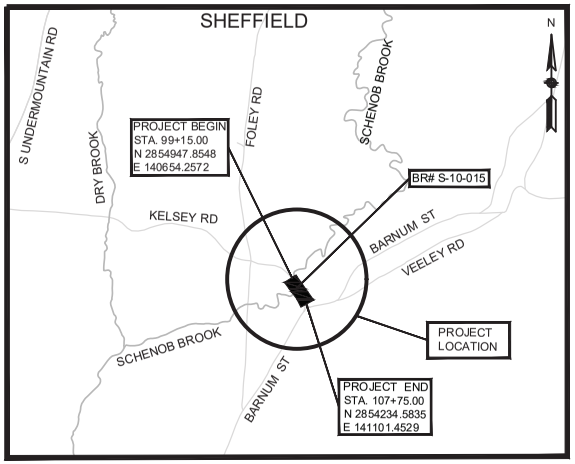
TITLE SHEET & INDEX

THESE PLANS ARE SUPPLEMENTED BY THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS, AS IDENTIFIED IN THE CONTRACT SPECIAL PROVISIONS: THE MASSDOT CONSTRUCTION STANDARD DETAILS, THE MASSDOT STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, THE MASSDOT OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, THE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, AND THE ANSI AMERICAN STANDARD FOR NURSERY STOCK.

August 24, 2026

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN AND BORING LOCATIONS
4-5	BORING LOGS
6	TYPICAL SECTIONS
7-8	CONSTRUCTION PLANS
9-10	ROADWAY PROFILES
11-12	CONSTRUCTION BASELINE TIE PLANS
13-14	GRADING PLANS
15-16	TRAFFIC SIGNING PLANS
17	DRAINAGE DETAILS
18	TEMPORARY TRAFFIC CONTROL PLANS
19-20	UTILITY PLANS
21-22	ENVIRONMENTAL IMPACTS PLANS
23-24	TURTLE EXCLUSION BARRIER PLANS
25	TURTLE EXCLUSION BARRIER DETAILS
26-28	WETLAND REPLICATION PLAN
29-30	LANDSCAPING PLANS
31	LANDSCAPING DETAILS
32-33	CONSTRUCTION DETAILS
34-54	BRIDGE PLANS
55-61	CROSS SECTIONS



0 1000 2000 3000 4000

SCALE: 1" = 1000'

LENGTH OF PROJECT = 860 FEET = 0.163 MILES

DESIGN DESIGNATION (KELSEY ROAD)

DESIGN SPEED	20 MPH
ADT (2026)	121
ADT (2046)	148
K	-
D	-
T (PEAK HOUR)	6%
T (AVERAGE DAY)	6%
DHV	-
DDHV	-
FUNCTIONAL CLASSIFICATION	RURAL LOCAL

DATE	DESCRIPTION	REV #

GFT
175 FEDERAL STREET, SUITE 800
BOSTON, MA 02110

massDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER _____ DATE _____

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR _____ DATE _____

APPROVED

HIGHWAY ADMINISTRATOR _____ DATE _____

609068_HD (SHEFFIELD COVER SHEET).DWG Plotted on: 14-Aug-2019 1:54 PM

A00831 - 10

Proposal No. 609068-136649

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
		TOWN OR CITY BOUND
TB		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
OHW		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		EROSION AND SEDIMENT CONTROL BARRIER
		EROSION AND SEDIMENT CONTROL BARRIER-COIR LOGS
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		WETLAND

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
SN		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	30'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE
	CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

SURVEY NOTES:

1. BOUNDARY INFORMATION SHOWN HEREON WAS COMPILED FROM AN ACTUAL FIELD SURVEY CONDUCTED BY WSP SURVEYORS FROM SEPTEMBER 4, 2020 THROUGH OCTOBER 2, 2020. SURVEY FIELD NOTES CAN BE FOUND IN MASSDOT SURVEY NOTEBOOK 23412.
2. NORTH ORIENTATION AND BEARING BASE PER GRID NORTH.
3. HORIZONTAL COORDINATES RELATIVE TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MASSACHUSETTS MAINLAND ZONE. BASED ON THE NORTH AMERICAN DATUM OF 1983, NAD83 (2011) EPOCH 2010.00. GPS POINTS 2613 & 2614 WERE USED AS SURVEY CONTROL POINTS TO ESTABLISH A DATUM FOR THE PROJECT.
4. ELEVATIONS RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, (NAVD 1988).
5. HORIZONTAL COORDINATE AND ELEVATION UNITS ARE U.S. SURVEY FEET.
6. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY HIGHWAY BOUND OR PRIVATE PROPERTY PIN THAT MAY BE DAMAGED OR DESTROYED DURING CONSTRUCTION, TO ITS LOCATION JUST PRIOR TO CONSTRUCTION.

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	2	61
	PROJECT FILE NO. 609068		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PWW	PAVED WATERWAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

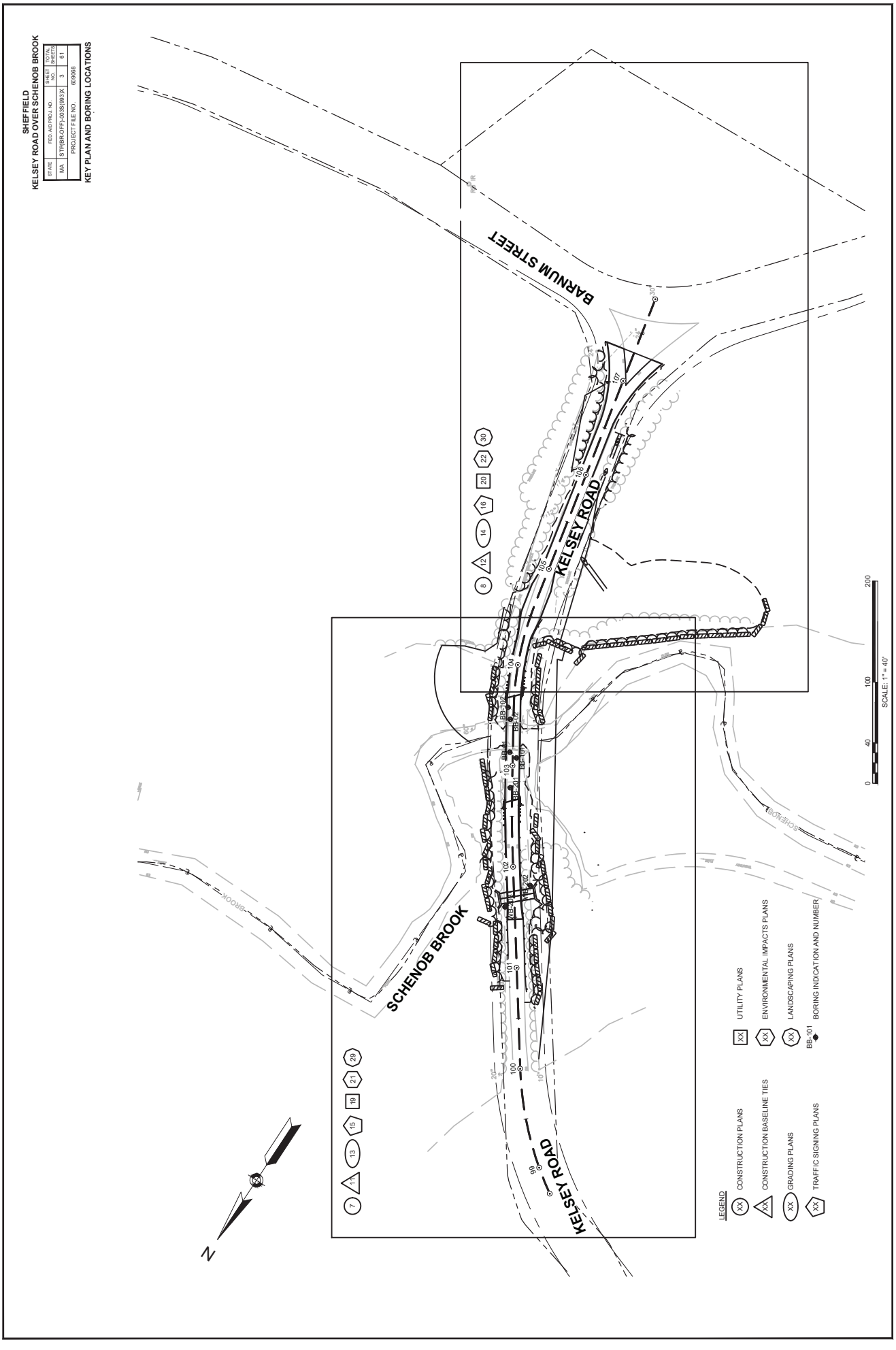
TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

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Proposal No. 609068-136649

A00831 11


609068_HDKEY PLAN).DWG Plotted on 28-Jul-2026 10:11 AM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
STATE
MA
FED. AID PROJ. NO.
STP(BR-OFF)-003(983)X
PROJECT FILE NO.
609068
SHEET NO.
3
TOTAL SHEETS
61
KEY PLAN AND BORING LOCATIONS
BARNUM STREET
KELSEY ROAD
SCHENOB BROOK
KELSEY ROAD
N
SCALE: 1" = 40'
0
40
100
200
LEGEND
CONSTRUCTION PLANS
CONSTRUCTION BASELINE TIES
GRADING PLANS
TRAFFIC SIGNING PLANS
UTILITY PLANS
ENVIRONMENTAL IMPACTS PLANS
LANDSCAPING PLANS
BORING INDICATION AND NUMBER

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	4	61
PROJECT FILE NO.	609068		

BORING LOGS

BORING WB-202
STA. 101+80.9
OFFSET 16.3' RT.

Date Started:	3/19/26	Hole Number:	WB-202
Date Finished:	3/19/26	Sheet:	1 of 2
Soil Drilling:	37.0 ft	Line & Station:	101+80.9
Rock Sampling:	0.0 ft	Offset:	16.3 ft R
Total Depth of Hole:	37.0 ft	N Coordinate:	2854747 ft
No. of Undist. Core Samples:		E Coordinate:	140828 ft
Total Number of Core Boxes:	0	Elev. Top of Hole:	+675.0 ft

DRILLING LOG — Gannett Fleming

Project: Kelsey Road over Schenob Brook Bridge
Drilling Company: Seaboard Drilling
Driller: Jeff Nitsch
Bit Size and Type: Spoon Size: 2.0 in. O.D.
Casing Size: 4.0 in. Spoon Size:
Hollow Stem: N/A Hammer wt.: 140lb
Drilling Fluid: Mud Hammer Drop: 30.0"
Drill Rig: Mobile 53 Truck Drill Rig
Inspector: Allen Winders

GROUNDWATER OBSERVATIONS
At 5.0 ft After 0 Hrs
Elev. 670.0 ft After
0 Hrs

Direction of Hole
Vertical ☒ Inclined ☐
Degrees from Vertical ---

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
	0 - 2	S1	15-10-11-16	2.0	100		0.0'-2.0': Brown Silty Sand with Gravel (SM); moist; medium dense
Some organics present in sample	2 - 4	S2	13-8-3-2	1.6	79		673.0 2.0'-4.0': Gray Lean Clay with Sand (CL); moist; stiff
	4 - 6	S3	3-14-6-3	0.8	42		671.0 4.0'-8.0': Dark Gray Clayey Sand (SC); moist; loose to medium desnse
Trace organics present in sample	6 - 8	S4	3-3-3-3	0.0	0		
Organics present in sample	8 - 10	S5	3-3-6-6	0.8	38		667.0 8.0'-10.0': Gray Lean Clay with Sand (CL); moist; stiff
	10 - 12	S6	5-5-4-5	1.0	50		665.0 10.0'-18.5': Gray Silt (ML); wet; stiff
	15 - 17	S7	4-4-6-8	0.0	0		
							656.5 18.5'-28.5': Gray Silty Sand with Gravel (SM); wet; loose
	20 - 22	S8	2-4-5-6	0.1	4		
Cobble fragments observed in spoon	25 - 27	S9	3-3-4-5	0.0	0		
							646.5 28.5'-33.5': Gray Silt with Sand (ML); wet; stiff
	30 - 32	S10	3-3-6-7	1.4	71		

Remarks: Hole grouted upon completion.

SCALE: ½" = 1'-0"
ELEVATION (FT.)
680 675 670 665 660 655 650 645 640
0 5 10 15 20 25 30 35

NRCS BORING LOG LOG - GE_MASSDOT KELSEY ROAD OVER SCHENOB BROOK LOGS - 2026 - R1.GPJ GE_DATATMPLFINAL.GDT 4/2/26

BORING WB-202
STA. 101+80.9
OFFSET 16.3' RT.

Drilling Company:	Seaboard Drilling	Hole Number:	WB-202
Driller:	Jeff Nitsch	Sheet:	2 of 2
Inspector:	Allen Winders	Elev. Top of Hole:	675

DRILLING LOG — Gannett Fleming

Kelsey Road over Schenob Brook Bridge

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							641.5 33.5'-37.0': Brown Silty Sand (SM); wet; medium dense
	35 - 37	S11	4-6-7-11	1.4	71		638.0 Bottom of borehole at 37.00 feet.

SCALE: ½" = 1'-0"
ELEVATION (FT.)
645 640 635 630 625 620 615 610 605 600 595
30 35 40 45 50 55 60 65 70 75 80

NRCS BORING LOG LOG - GE_MASSDOT KELSEY ROAD OVER SCHENOB BROOK LOGS - 2026 - R1.GPJ GE_DATATMPLFINAL.GDT 4/2/26

BORING NOTES:

1. LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: WB-#
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. BORINGS WERE DRILLED BETWEEN MARCH 18TH 2026 AND MARCH 19TH 2026.
7. BORINGS WERE MADE BY SEABOARD DRILLING, 95 CARANDO DRIVE, SPRINGFIELD, MA 01104.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
9. SEE BRIDGE PLANS FOR ADDITIONAL BORING LOGS.

609068_HD\BORING LOGS\.DWG Plotted on 28-Jul-2026 1:37 PM

Proposal No. 609068-136649

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609068_HD(BORING LOGS).DWG Plotted on 28-Jul-2026 1:38 PM

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-D03S(963)X	5	61
	PROJECT FILE NO. 609068		

BORING LOGS

BORING NOTES:

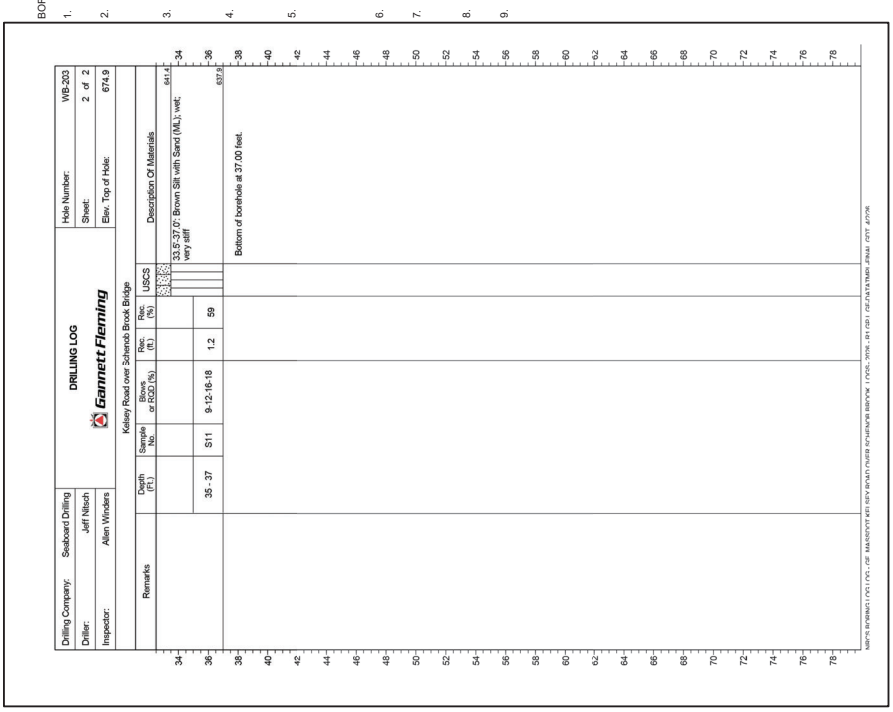
1. LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: WB-#
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ONE COURTE 114 (219 WINTHROP AVE) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. BORINGS WERE DRILLED BETWEEN MARCH 18TH 2026 AND MARCH 19TH 2026.
7. BORINGS WERE MADE BY SEABOARD DRILLING, 95 CARANDO DRIVE, SPRINGFIELD, MA 01104.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
9. SEE BRIDGE PLANS FOR ADDITIONAL BORING LOGS.

BORING WB-203
STA. 101+49.1
OFFSET 17.3 RT.

Drilling Company:	Seaboard Drilling	Hole Number:	WB-203
Driller:	Jeff Nitsch	Sheet:	2 of 2
Inspector:	Allen Winders	Elev. Top of Hole:	674.9

Kelsey Road over Schenob Brook Bridge

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
	35 - 37	S11	9-12-16-18	1.2	59		35.5'-37.0': Brown Silt with Sand (ML); wet; very stiff
							Bottom of borehole at 37.00 feet.



BORING WB-203
STA. 101+49.1
OFFSET 17.3 RT.

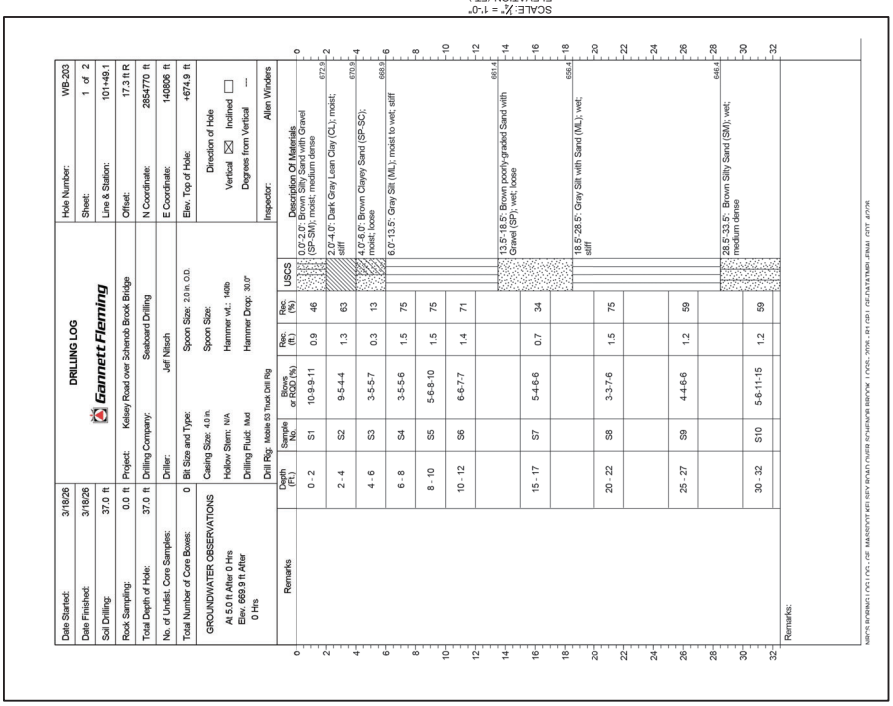
Date Started:	3/18/26	Hole Number:	WB-203
Date Finished:	3/18/26	Sheet:	1 of 2
Soil Drilling:	37.0 ft	Line & Station:	101+49.1
Rock Sampling:	0.0 ft	Project:	Kelsey Road over Schenob Brook Bridge
Total Depth of Hole:	37.0 ft	Offset:	17.3 ft R
Drilling Company:	Seaboard Drilling	N Coordinate:	2854770. ft
Driller:	Jeff Nitsch	E Coordinate:	140806. ft
No. of Undist. Core Samples:		Elev. Top of Hole:	+674.9 ft.
Total Number of Core Boxes:	0	Inspector:	Allen Winders

Bit Size and Type: Spoon Size: 2.0 in. O.D.
Casing Size: 4.0 in. Spoon Size:
Hollow Stem: N/A Hammer wt.: 140lb
Drilling Fluid: Mud Hammer Drop: 30.0"
Drill Rig: Mobile 53 Truck Drill Rig
Direction of Hole: Vertical ☒ Inclined ☐ Degrees from Vertical —

GROUNDWATER OBSERVATIONS
At 5.0 ft After 0 Hrs
Elev. 669.9 ft After 0 Hrs

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
	0 - 2	S1	10-9-9-11	0.9	46		0.0'-2.2': Brown Sand and Gravel (SP-SM); moist; medium dense
	2 - 4	S2	9-5-4-4	1.3	63		2.2'-4.0': Dark Gray Lean Clay (CL); moist; stiff
	4 - 6	S3	3-5-5-7	0.3	13		4.0'-6.0': Brown Clayey Sand (SP-SC); moist; loose
	6 - 8	S4	3-5-5-6	1.5	75		6.0'-13.5': Gray Silt (ML); moist to wet; stiff
	8 - 10	S5	5-6-8-10	1.5	75		
	10 - 12	S6	6-6-7-7	1.4	71		
							13.5'-18.5': Brown poorly-graded Sand with Gravel (SP); wet; loose
	15 - 17	S7	5-4-6-6	0.7	34		
							18.5'-28.5': Gray Silt with Sand (ML); wet; stiff
	20 - 22	S8	3-3-7-6	1.5	75		
	25 - 27	S9	4-4-6-6	1.2	59		
							28.5'-33.5': Brown Silty Sand (SM); wet; medium dense
	30 - 32	S10	5-6-11-15	1.2	59		

Remarks:



609068_HD (SHEFFIELD TYPICAL SECTIONS).DWG Plotted on 28-Jul-2026 10:12 AM

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-X038(963)X	6	61
PROJECT FILE NO.	609068		

TYPICAL SECTIONS

NOTES:

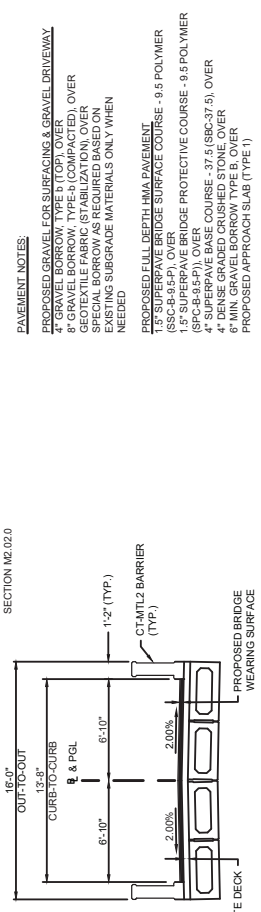
1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED IN ACCORDANCE WITH SECTION 450.
2. SEE LANDSCAPE PLANS FOR COMPOST BLANKET SEEDING TYPES.
3. SEE CONSTRUCTION STANDARD DETAILS (628.24.2, 628.24.3) FOR GUARDRAIL TRANSITIONS AT BRIDGE APPROACHES
4. GRAVEL BORROW TYPE-b SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 4 INCHES.
5. RIP RAP MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION M2.02.0

PAVEMENT NOTES:

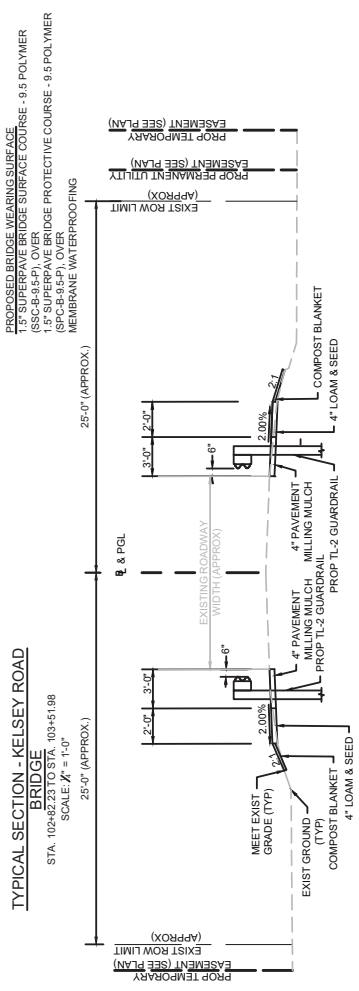
PROPOSED GRAVEL FOR SURFACING & GRAVEL DRIVEWAY
4" GRAVEL BORROW, TYPE b (TOP), OVER
8" GRAVEL BORROW, TYPE-b (COMPACTED), OVER
GEOTEXTILE FABRIC (STABILIZATION), OVER
SPECIAL BORROW AS REQUIRED BASED ON
EXISTING SUBGRADE MATERIALS ONLY WHEN
NEEDED

PROPOSED FULL DEPTH HMA PAVEMENT
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P), OVER
4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5), OVER
4" DENSE GRADED CRUSHED STONE, OVER
6" MIN. GRAVEL BORROW TYPE B, OVER
PROPOSED APPROACH SLAB (TYPE 1)

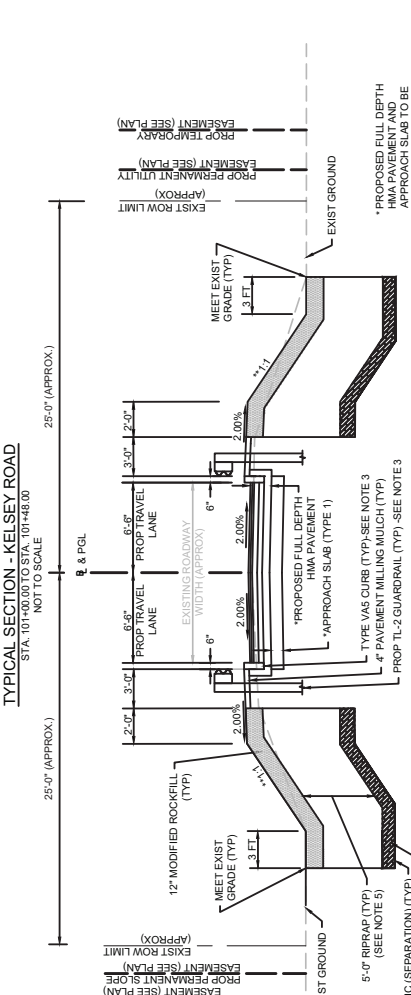
PROPOSED BRIDGE WEARING SURFACE
1.5" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P), OVER
1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P), OVER
MEMBRANE WATERPROOFING



TYPICAL SECTION - KELSEY ROAD
BRIDGE
STA. 102+92.23 TO STA. 103+51.98
SCALE: X" = 1'-0"



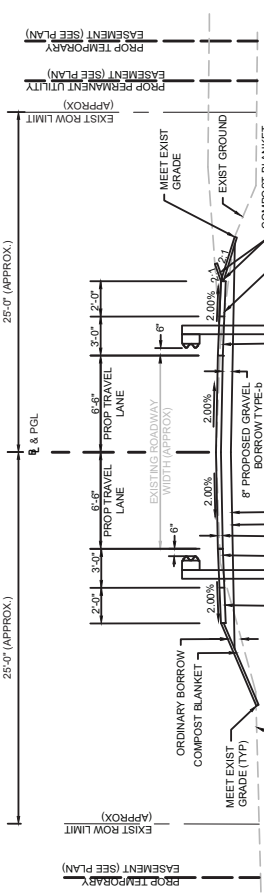
TYPICAL SECTION - KELSEY ROAD
STA. 101+00.00 TO STA. 101+48.00
NOT TO SCALE



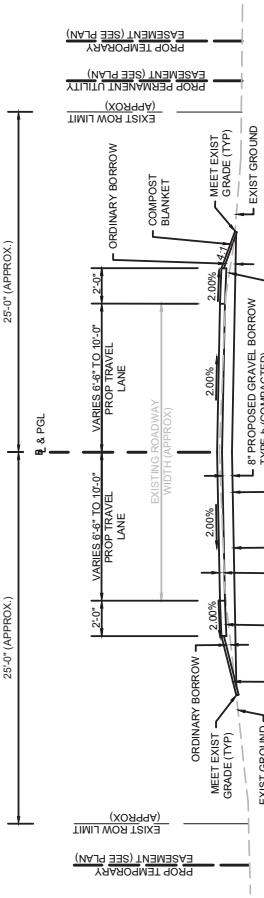
TYPICAL SECTION - KELSEY ROAD
BRIDGE APPROACH
STA. 101+48.00 TO STA. 102+81.48
STA. 103+52.73 TO STA. 103+95.00
NOT TO SCALE

*PROPOSED FULL DEPTH HMA PAVEMENT AND APPROACH SLAB TO BE USED ONLY AT THE LIMITS OF THE PROPOSED BRIDGE APPROACH SLABS. OTHERWISE, GRAVEL BORROW TYPE-B IS TO BE USED. SEE PLANS FOR LIMITS.

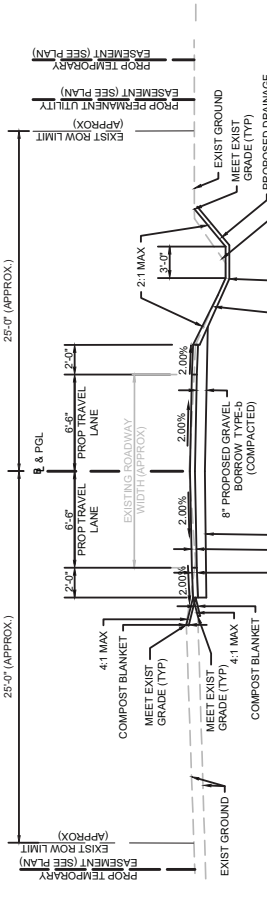
TYPICAL SECTION - KELSEY ROAD
STA. 103+95.00 TO STA. 104+53.97
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD
PASSING SECTION AND WETLAND
ADJACENT GRADING
STA. 104+53.97 TO STA. 105+37.00
NOT TO SCALE



TYPICAL SECTION - KELSEY ROAD
WITH PROPOSED ROADSIDE DITCH
STA. 105+37.00 TO STA. 106+50.00
NOT TO SCALE



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Proposal No. 609068-136949

HIGHWAY GUARD DETAILS

TANGENT END TREATMENT, STA. 100+97.81 (LT) TO STA. 101+22.80 (LT)
IMPACT HEAD TO BE OFFSET 9.72 LT AT STA. 100+97.81
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+22.80 (LT) TO STA. 102+35.13 (LT)
TRANSITION TO BRIDGE RAIL, STA. 102+35.13 (LT) TO STA. 102+68.68 (LT)
TANGENT END TREATMENT, STA. 100+76.06 (RT) TO STA. 101+01.65 (RT)
IMPACT HEAD TO BE OFFSET 8.93 RT AT STA. 100+76.06
GUARDRAIL, TL-2 (SINGLE FACED), STA. 101+01.65 (RT) TO STA. 102+38.65 (RT)
TRANSITION TO BRIDGE RAIL, STA. 102+38.65 (RT) TO STA. 102+72.60 (RT)
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.85 (RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+24.78 (RT)
TANGENT END TREATMENT, STA. 104+24.78 (RT) TO STA. 104+50.27 (RT)

WATER SUPPLY ALTERATIONS

PROP DRY HYDRANT
STA 104+00.00 12.00 RT

DRAINAGE DETAILS

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+70.47 20.09 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+66.06 13.32 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

34" X 53" ELLIPTICAL CLASS V RCP
STA. 101+75.80 19.36 RT (UPSTREAM CENTER OF PIPE END AT HEADWALL) TO
STA. 101+71.43 14.05 LT (DOWNSTREAM CENTER OF PIPE END AT HEADWALL)
SKEW ANGLE =9°

SEE SHEET 17 FOR DETAILS

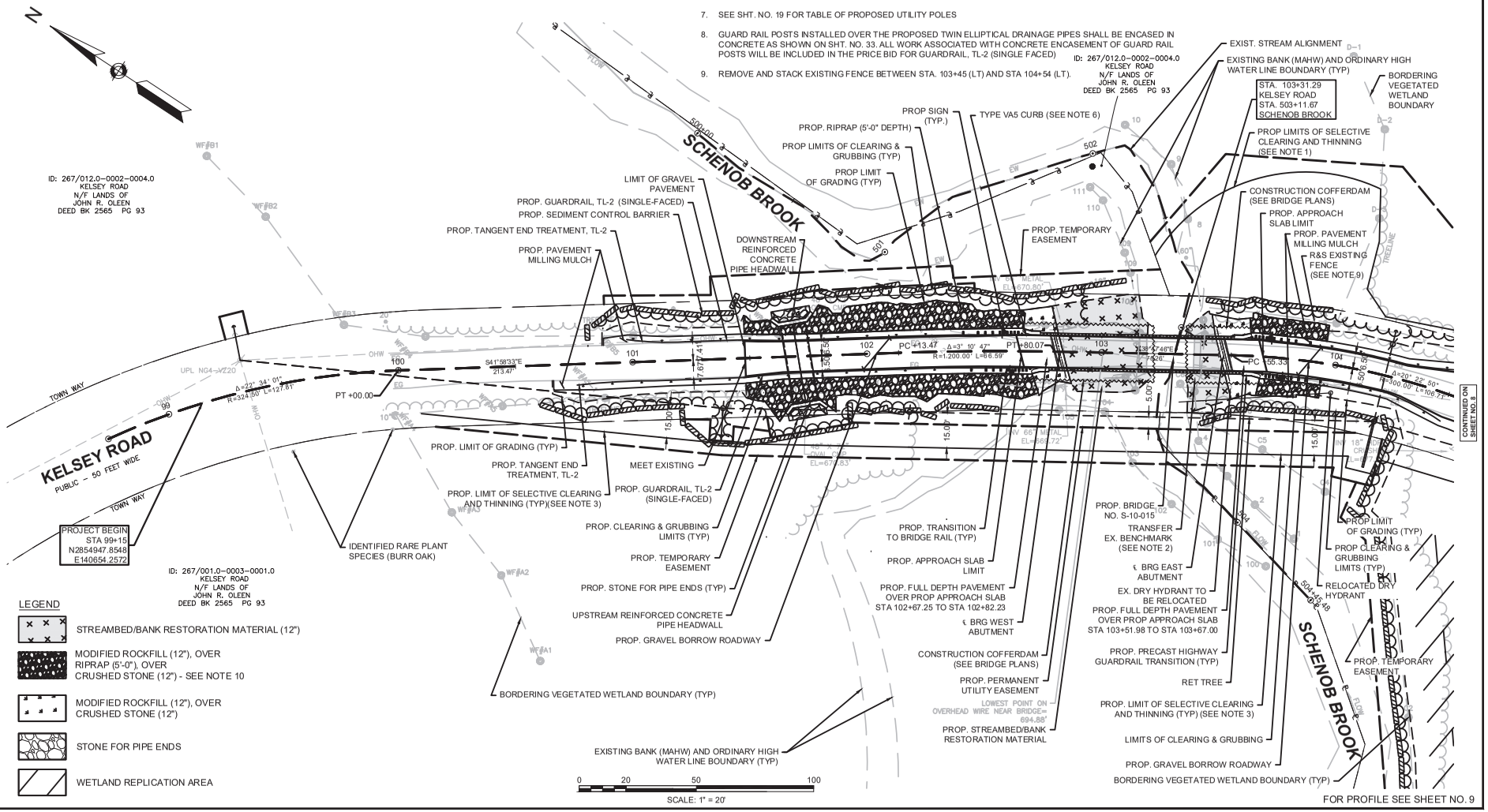
NOTES:

1. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
2. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
3. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
4. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.
5. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
6. INSTALL GRANITE CURBING TYPE VA5 AT EACH OF THE TRANSITIONS TO BRIDGE RAIL. REFER TO MASSDOT CONSTRUCTION STANDARD DETAILS, DWG NO. 628.24.2
7. SEE SHT. NO. 19 FOR TABLE OF PROPOSED UTILITY POLES
8. GUARD RAIL POSTS INSTALLED OVER THE PROPOSED TWIN ELLIPTICAL DRAINAGE PIPES SHALL BE ENCASED IN CONCRETE AS SHOWN ON SHT. NO. 33. ALL WORK ASSOCIATED WITH CONCRETE ENCASEMENT OF GUARD RAIL POSTS WILL BE INCLUDED IN THE PRICE BID FOR GUARDRAIL, TL-2 (SINGLE FACED)
9. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
10. WHERE INSTALLED OVER RIPRAP, MODIFIED ROCKFILL SHALL BE PLACED IN A MANNER TO FILL/CHOKE 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.

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	7	61
PROJECT FILE NO.	609068		

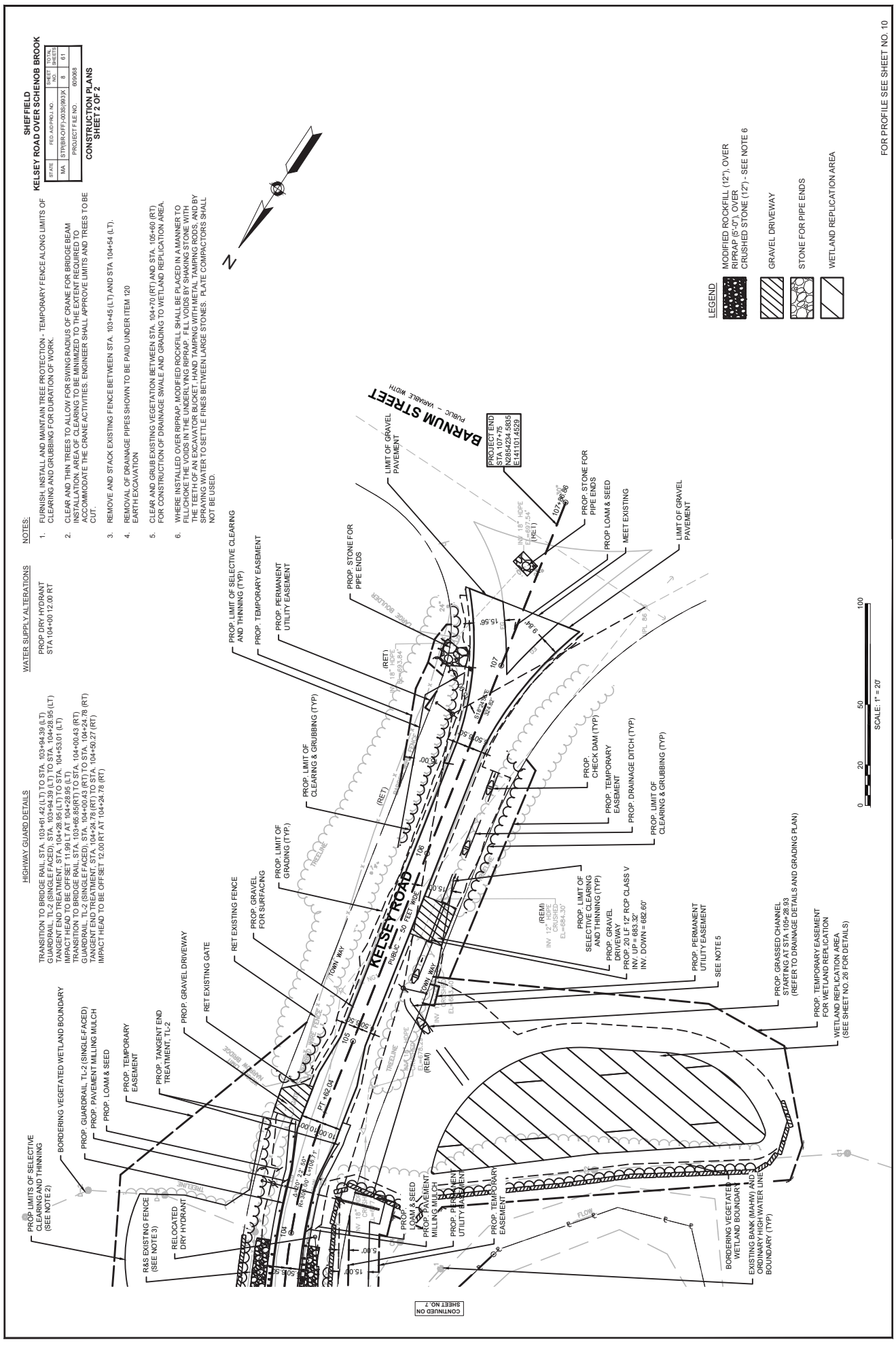
CONSTRUCTION PLANS
SHEET 1 OF 2

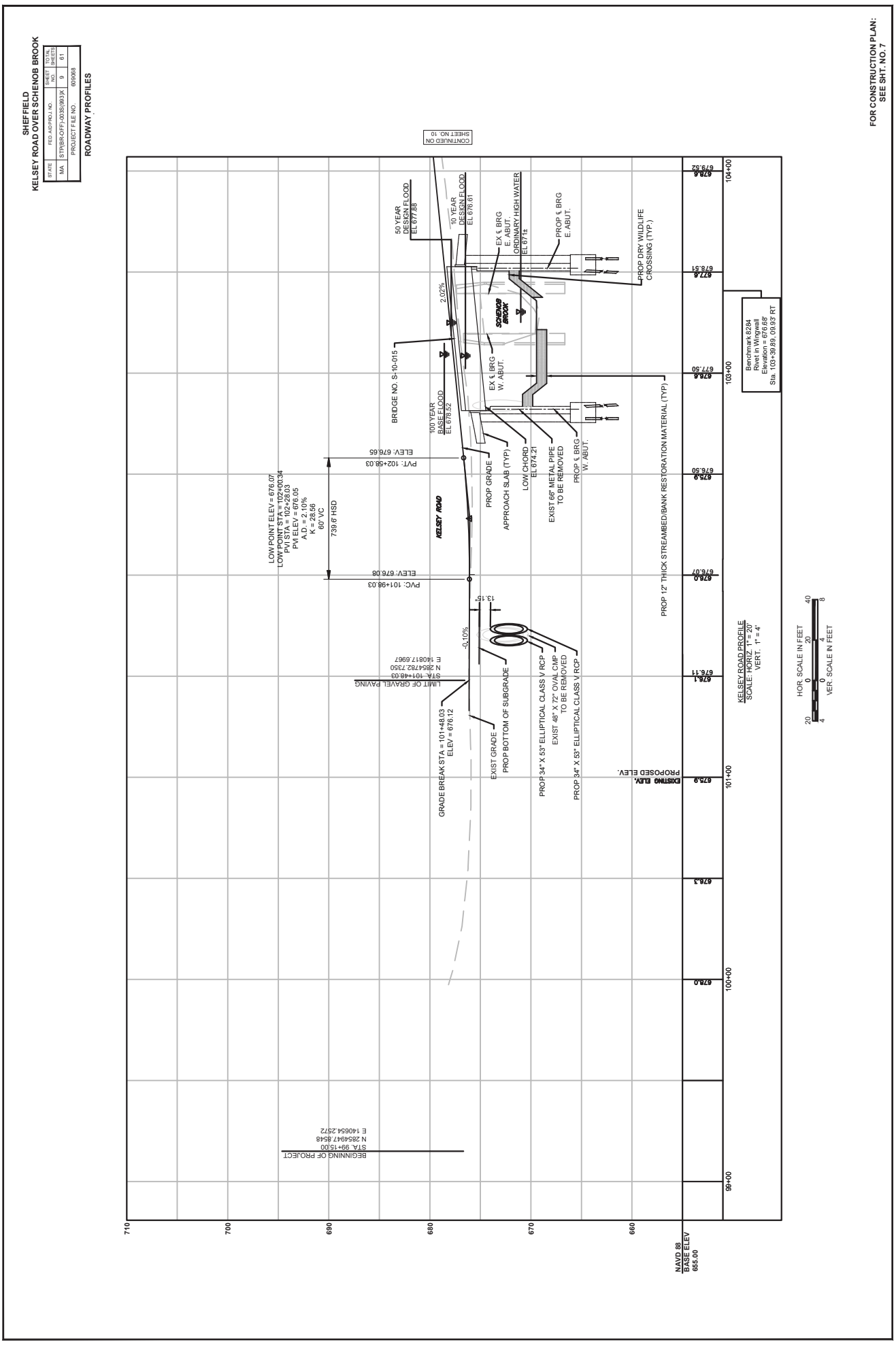


LEGEND

- STREAMBED/BANK RESTORATION MATERIAL (12")
- MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12") - SEE NOTE 10
- MODIFIED ROCKFILL (12"), OVER CRUSHED STONE (12")
- STONE FOR PIPE ENDS
- WETLAND REPLICATION AREA

609068_HD (SHEFFIELD CONST PLAN 01).DWG Plotted on 28-Jul-2026 10:14 AM


609068_HD (SHEFFIELD CONST PLAN 02).DWG Plotted on 28-Jul-2026 10:16 AM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
CONSTRUCTION PLANS
SHEET 2 OF 2
STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
MA | STP(BR-OFF)-0035(993)X | 8 | 61
PROJECT FILE NO. 609068
NOTES:
1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. REMOVE AND STACK EXISTING FENCE BETWEEN STA. 103+45 (LT) AND STA 104+54 (LT).
4. REMOVAL OF DRAINAGE PIPES SHOWN TO BE PAID UNDER ITEM 120 EARTH EXCAVATION
5. CLEAR AND GRUB EXISTING VEGETATION BETWEEN STA. 104+70 (RT) AND STA. 105+60 (RT) FOR CONSTRUCTION OF DRAINAGE SWALE AND GRADING TO WETLAND REPLICATION AREA.
6. WHERE INSTALLED, OVER RIPRAP, MODIFIED ROCKFILL SHALL BE PLACED IN A MANNER TO FILL/CHOKE 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.
HIGHWAY GUARD DETAILS
TRANSITION TO BRIDGE RAIL, STA. 103+61.42 (LT) TO STA. 103+94.39 (LT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 103+94.39 (LT) TO STA. 104+28.95 (LT)
TANGENT END TREATMENT, STA. 104+28.95 (LT) TO STA. 104+53.01 (LT)
IMPACT HEAD TO BE OFFSET 11.99 LT AT 104+28.95 (LT)
TRANSITION TO BRIDGE RAIL, STA. 103+65.86(RT) TO STA. 104+00.43 (RT)
GUARDRAIL, TL-2 (SINGLE FACED), STA. 104+00.43 (RT) TO STA. 104+44.78 (RT)
TANGENT END TREATMENT, STA. 104+44.78 (RT) TO STA. 104+68.27 (RT)
IMPACT HEAD TO BE OFFSET 12.00 RT AT 104+24.78 (RT)
WATER SUPPLY ALTERATIONS
PROP DRY HYDRANT
STA 104+00 12.00 RT
PROP. LIMITS OF SELECTIVE CLEARING AND THINNING (SEE NOTE 2)
BORDERING VEGETATED WETLAND BOUNDARY
PROP. GUARDRAIL, TL-2 (SINGLE-FACED)
PROP. PAVEMENT MILLING MULCH
PROP. LOAM & SEED
PROP. TEMPORARY EASEMENT
PROP. TANGENT END TREATMENT, TL-2
PROP. GRAVEL DRIVEWAY
RET EXISTING GATE
RET EXISTING FENCE
PROP. GRAVEL FOR SURFACING
PROP. LIMIT OF GRADING (TYP.)
PROP. LIMIT OF CLEARING & GRUBBING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. TEMPORARY EASEMENT
PROP. PERMANENT UTILITY EASEMENT
PROP. STONE FOR PIPE ENDS
LIMIT OF GRAVEL PAVEMENT
PROJECT END
STA 107+75
N2854234.5835
E1411014529
PROP. LOAM & SEED
MEET EXISTING
PROP. CHECK DAM (TYP)
PROP. TEMPORARY EASEMENT
PROP. DRAINAGE DITCH (TYP)
PROP. LIMIT OF CLEARING & GRUBBING (TYP)
PROP. GRAVEL DRIVEWAY
PROP. 24" X 12" RCP CLASS V
INV. UP = 683.32'
INV. DOWN = 682.60'
PROP. PERMANENT UTILITY EASEMENT
SEE NOTE 5
PROP. GRASSED CHANNEL
STARTING AT STA 105+28.93
(REFER TO DRAINAGE DETAILS AND GRADING PLAN)
PROP. TEMPORARY EASEMENT FOR WETLAND REPLICATION
WETLAND REPLICATION AREA
(SEE SHEET NO. 26 FOR DETAILS)
R&S EXISTING FENCE (SEE NOTE 3)
RELOCATED DRY HYDRANT
PROP. PERMANENT UTILITY EASEMENT
PROP. TEMPORARY EASEMENT
BORDERING VEGETATED WETLAND BOUNDARY
EXISTING BANK (MAHW) AND ORDINARY HIGH WATER LINE/ BOUNDARY (TYP)
KELSEY ROAD
PUBLIC - 50 FEET WIDE
BARNUM STREET
PUBLIC - VARIABLE WIDTH
TOWN WAY
TREELINE
CHASE BOULDER
(RET) 18" HDPE @ -683.84'
(REM) 12" HDPE CRUSHED EL=684.30'
INV 18" HDPE CRUSHED EL=697.54' (RET)
INV 18" HDPE CRUSHED EL=697.54' (REM)
PT =682.04
107+88.86
107+90.00
LEGEND
MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12") - SEE NOTE 6
GRAVEL DRIVEWAY
STONE FOR PIPE ENDS
WETLAND REPLICATION AREA
SCALE: 1" = 20'
0 20 50 100
CONTINUED ON SHEET NO. 7
FOR PROFILE SEE SHEET NO. 10
N


609068_HD (SHEEFIELD PROFILE 01).DWG Plotted on 28-Jul-2026 1:40 PM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
ROADWAY PROFILES
STATE
MA
FED. AID PROJ. NO.
STP(BR-OFF)-X038(963)X
PROJECT FILE NO.
609068
SHEET NO.
9
TOTAL SHEETS
61
FOR CONSTRUCTION PLAN:
SEE SHT. NO. 7
CONTINUED ON SHEET NO. 10
50 YEAR DESIGN FLOOD EL 677.88
10 YEAR DESIGN FLOOD EL 676.61
EX ℄ BRG E. ABUT. ORDINARY HIGH WATER EL 671±
PROP ℄ BRG E. ABUT.
PROP DRY WILDLIFE CROSSING (TYP.)
2.02%
SCHENOB BROOK
BRIDGE NO. S-10-015
EX ℄ BRG W. ABUT.
100 YEAR BASE FLOOD EL 678.52
KELSEY ROAD
PROP GRADE
APPROACH SLAB (TYP)
LOW CHORD EL 674.21
EXIST 66" METAL PIPE TO BE REMOVED
PROP ℄ BRG W. ABUT.
PROP 12" THICK STREAMBED/BANK RESTORATION MATERIAL (TYP)
Benchmark 8294
Rivet in Wingwall
Elevation = 676.68'
Sta. 103+39.89, 09.93' RT
LOW POINT ELEV = 676.07'
LOW POINT STA = 102+00.34
PVI STA = 102+28.03
PVI ELEV = 676.05
A.D. = 2.10%
K = 28.56
60' VC
739.6' HSD
PVT: 102+58.03
ELEV: 676.65
PVC: 101+98.03
ELEV: 676.08
13.15'
-0.10%
LIMIT OF GRAVEL PAVING
STA: 101+48.03
N 2854782.7350
E 1408172.6967
GRADE BREAK STA = 101+48.03
ELEV = 676.12
EXIST GRADE
PROP BOTTOM OF SUBGRADE
PROP 34" X 53" ELLIPTICAL CLASS V RCP
EXIST 48" X 72" OVAL CMP TO BE REMOVED
PROP 34" X 53" ELLIPTICAL CLASS V RCP
EXISTING ELEV.
PROPOSED ELEV.
BEGINNING OF PROJECT
STA. 99+15.00
N 2854947.8548
E 1406542572
KELSEY ROAD PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 4'
HOR. SCALE IN FEET
VER. SCALE IN FEET
NAVD 88
BASE ELEV
655.00
710
700
690
680
670
660
99+00
100+00
101+00
102+00
103+00
104+00
679.6
679.52
677.6
676.51
676.6
677.50
676.9
676.50
676.0
676.07
676.1
676.11
676.9
676.3
676.0

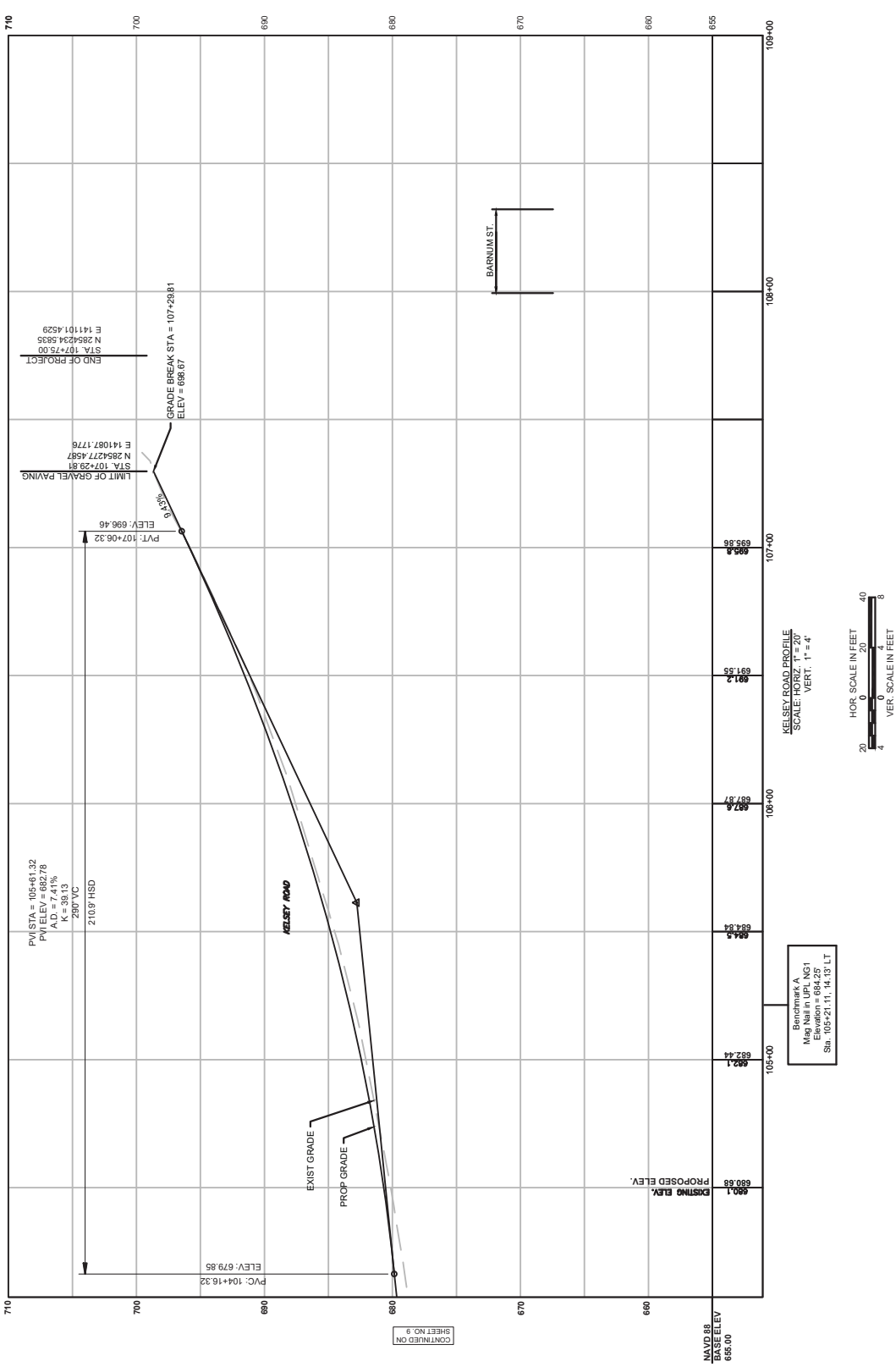
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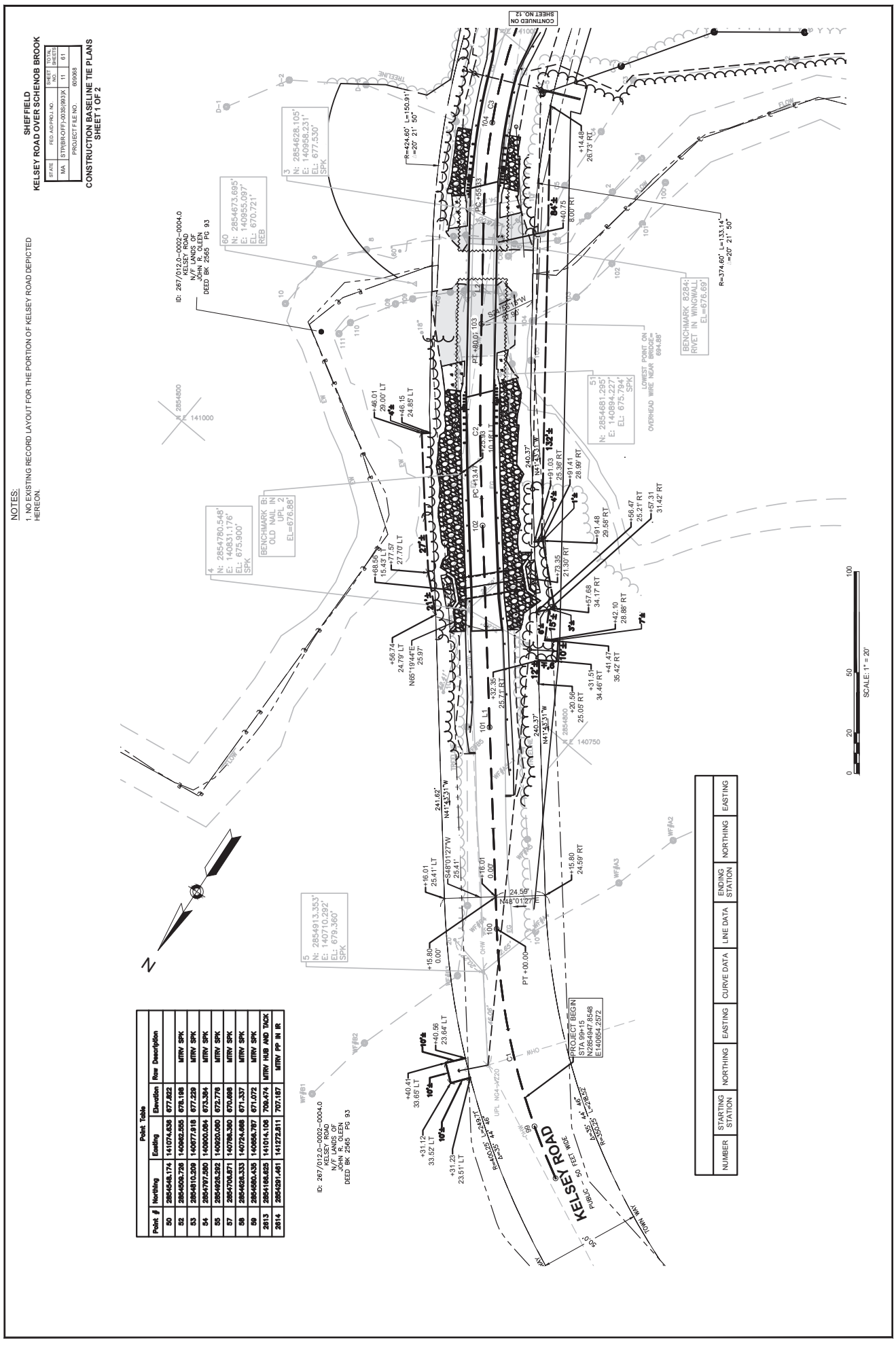
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

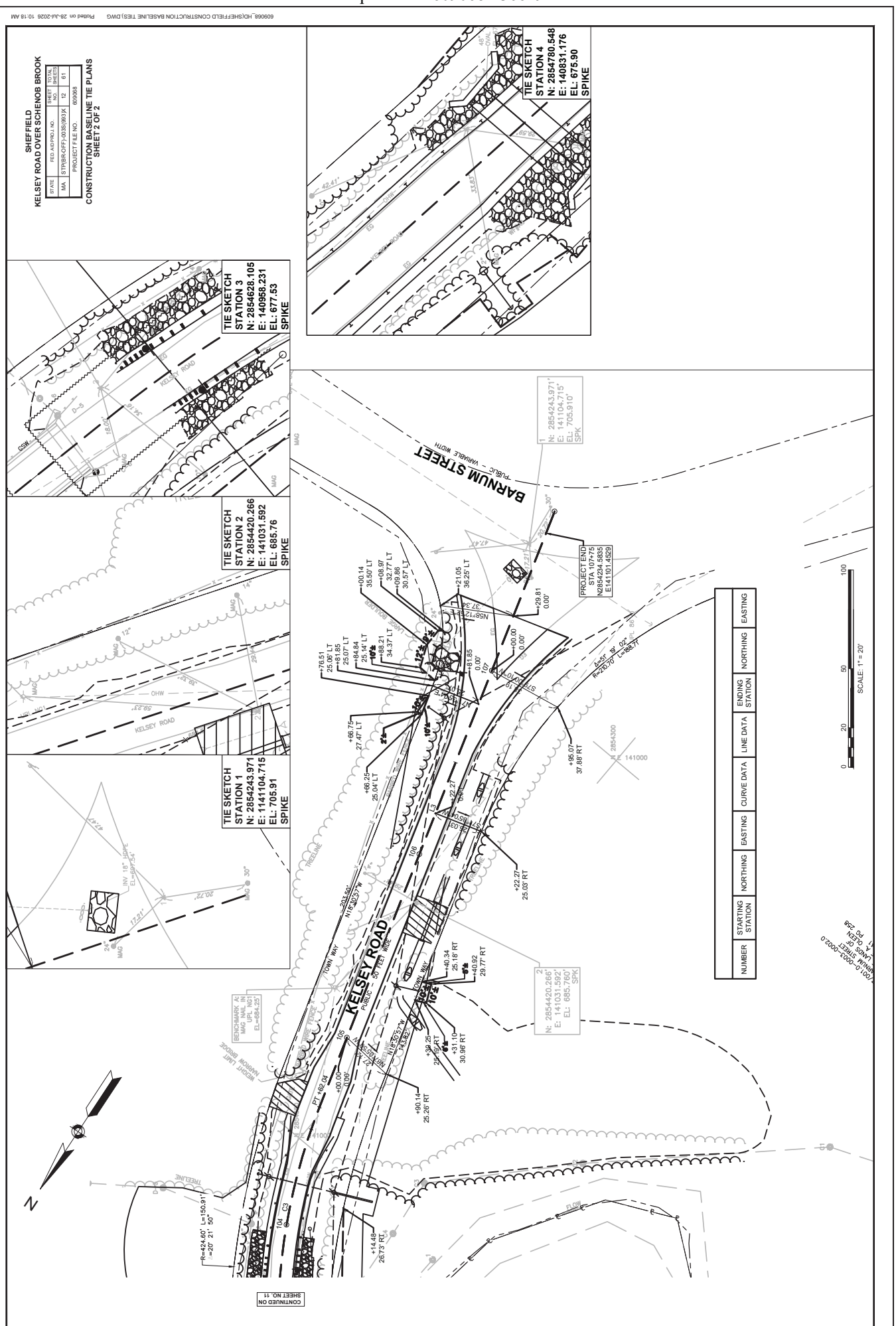
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STPBR-OFF-X038(963)X	10	61
	PROJECT FILE NO.	609068	

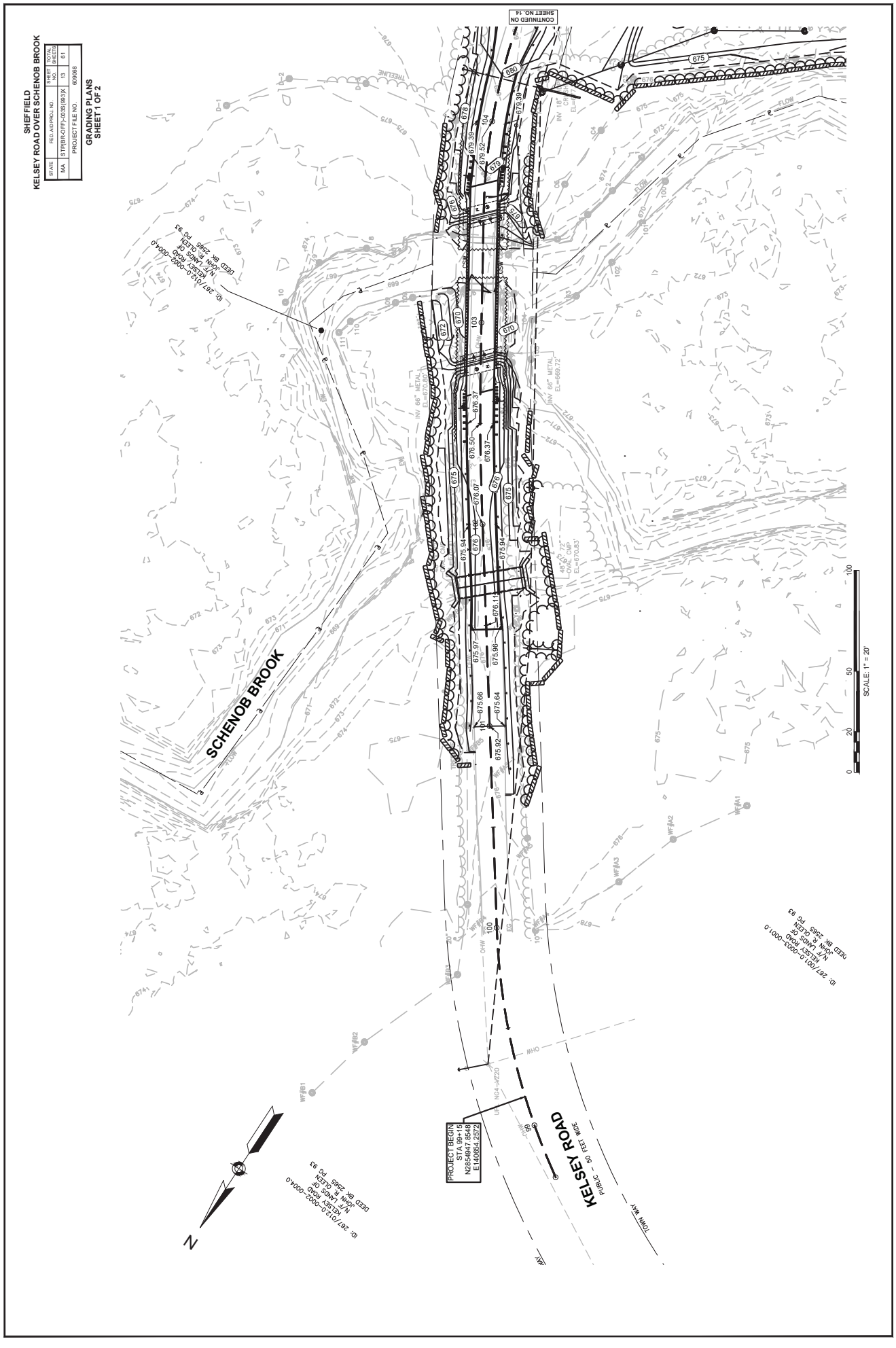
ROADWAY PROFILES

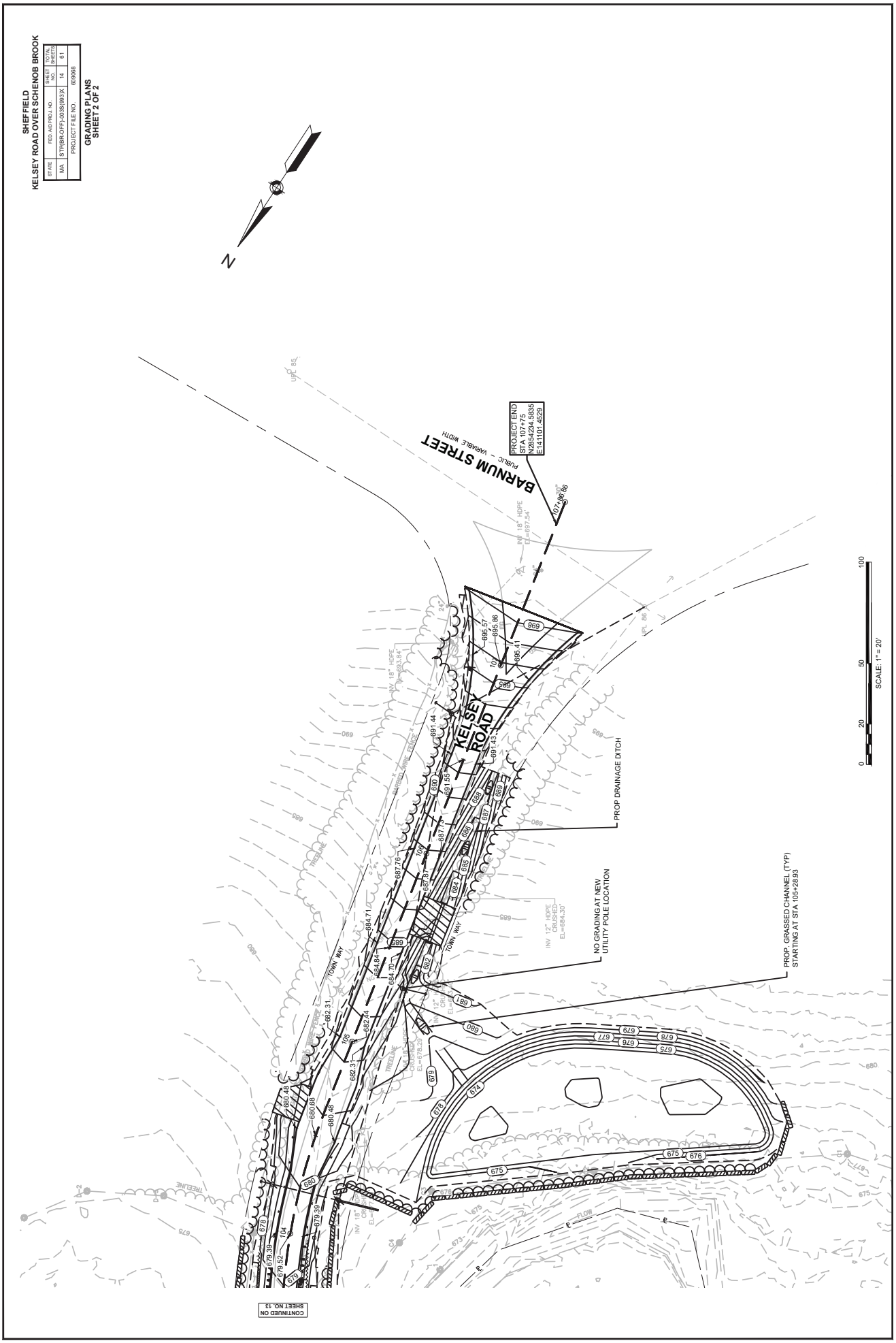
FOR CONSTRUCTION PLAN:
SEE SHT. NO. 8




609068_HD\SHEFFIELD CONSTRUCTION BASELINE TIES.DWG Plotted on 28-Jul-2026 10:18 AM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
CONSTRUCTION BASELINE TIE PLANS
SHEET 1 OF 2
STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
MA | STP(BR-OFF)-0035(993)X | 11 | 61
PROJECT FILE NO. 609068
NOTES:
1. NO EXISTING RECORD LAYOUT FOR THE PORTION OF KELSEY ROAD DEPICTED HEREON.
Point Table
Point # | Northing | Easting | Elevation | Raw Description
50 | 2854548.174 | 141074.436 | 677.822 |
52 | 2854509.728 | 140962.595 | 676.198 | MTRV SPK
53 | 2854810.209 | 140677.916 | 677.229 | MTRV SPK
54 | 2854797.590 | 140900.094 | 673.394 | MTRV SPK
55 | 2854928.592 | 140920.060 | 672.779 | MTRV SPK
57 | 2854706.671 | 140786.360 | 670.698 | MTRV SPK
58 | 2854628.333 | 140724.986 | 671.357 | MTRV SPK
59 | 2854580.438 | 140858.767 | 671.072 | MTRV SPK
2813 | 2854166.625 | 141014.106 | 708.474 | MTRV HUB AND TACK
2814 | 2854291.461 | 141272.811 | 707.187 | MTRV PP IN IR
ID: 267/012.0-0002-0004.0
KELSEY ROAD
N/F LANDS OF
JOHN R. KLEIN
DEED BK 2565 PG 93
ID: 267/012.0-0002-0004.0
KELSEY ROAD
N/F LANDS OF
JOHN R. KLEIN
DEED BK 2565 PG 93
1 N: 2854913.353' E: 140710.292' EL: 679.360' SPK
2 N: 2854780.548' E: 140831.176' EL: 675.900' SPK
BENCHMARK B1: OLD NAIL IN UPL 2 EL=676.88'
3 N: 2854628.105' E: 140958.231' EL: 677.530' SPK
60 N: 2854673.695' E: 140955.097' EL: 670.721' REB
51 N: 2854681.295' E: 140894.227' EL: 675.794' SPK
LOWEST POINT ON OVERHEAD WIRE NEAR BRIDGE= 694.88'
BENCHMARK 8284: RIVET IN WINGWALL EL=676.69'
PROJECT BEGIN STA 99+15 N2854947.8548 E140854.2572
KELSEY ROAD
PUBLIC - 50' FEET WIDE
TOWN WAY
NUMBER | STARTING STATION | NORTHING | EASTING | CURVE DATA | LINE DATA | ENDING STATION | NORTHING | EASTING
SCALE: 1" = 20'
CONTINUED ON SHEET NO. 12


SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
CONSTRUCTION BASELINE TIE PLANS
SHEET 2 OF 2
STATE
FED. AID PROJ. NO.
SHEET NO.
TOTAL SHEETS
MA
STP(BR-OFF-)-D(3S)963(X)
12
61
PROJECT FILE NO.
609068
TIE SKETCH
STATION 1
N: 2854243.971
E: 1141104.715
EL: 705.91
SPIKE
TIE SKETCH
STATION 2
N: 2854420.266
E: 141031.592
EL: 685.76
SPIKE
TIE SKETCH
STATION 3
N: 2854628.105
E: 140968.231
EL: 677.53
SPIKE
TIE SKETCH
STATION 4
N: 2854780.548
E: 140831.176
EL: 675.90
SPIKE
KELSEY ROAD
BARNUM STREET
PUBLIC - VARIABLE WIDTH
PROJECT END
STA 107+75
N2854234.5835
E141101.4529
NUMBER
STARTING STATION
NORTHING
EASTING
CURVE DATA
LINE DATA
ENDING STATION
NORTHING
EASTING
SCALE: 1" = 20'
CONTINUED ON SHEET NO. 11


609068_HD\PROP GRADING PLAN).DWG Plotted on 28-Jul-2026 10:20 AM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
GRADING PLANS
SHEET 1 OF 2
STATE
FED. AID PROJ. NO.
SHEET NO.
TOTAL SHEETS
MA
STP(BR-OFF)-D03(983)X
13
61
PROJECT FILE NO.
609068
CONTINUED ON SHEET NO. 14
SCHENOB BROOK
KELSEY ROAD
PUBLIC - 50 FEET WIDE
TOWN WAY
PROJECT BEGIN
STA 99+15
N2854947.8548
E140654.2572
ID: 267/012-0002-0004.0
N/F KELSEY ROAD OF TOWN LANDS OF KELSEY OLSEN
DEED BK 2585 PG 93
ID: 267/012-0002-0004.0
N/F KELSEY ROAD OF TOWN LANDS OF KELSEY OLSEN
DEED BK 2585 PG 93
ID: 267/001.0-0003-0001.0
N/F KELSEY ROAD OF TOWN LANDS OF KELSEY OLSEN
DEED BK 2585 PG 93
SCALE: 1" = 20'
0
20
50
100
N


609068_HD\PROP GRADING PLAN).DWG Plotted on 28-Jul-2026 10:21 AM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
STATE
MA
FED. AID PROJ. NO.
STP(BR-OFF)-003(993)X
PROJECT FILE NO.
609068
SHEET NO.
14
TOTAL SHEETS
61
GRADING PLANS
SHEET 2 OF 2
N
BARNUM STREET
PUBLIC - VARIABLE WIDTH
PROJECT END
STA 107+75
N2854234.5885
E141014.4928
107+86.86
KELSEY ROAD
PROP DRAINAGE DITCH
NO GRADING AT NEW UTILITY POLE LOCATION
PROP. GRASSED CHANNEL (TYP)
STARTING AT STA 105+28.93
TOWN WAY
TREELINE
FLOW
CONTINUED ON SHEET NO. 13
SCALE: 1" = 20'
0
20
50
100

609068_HDTRAFFIC SIGNING PLAN).DWG Plotted on 28-Jul-2026 11:24 AM

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

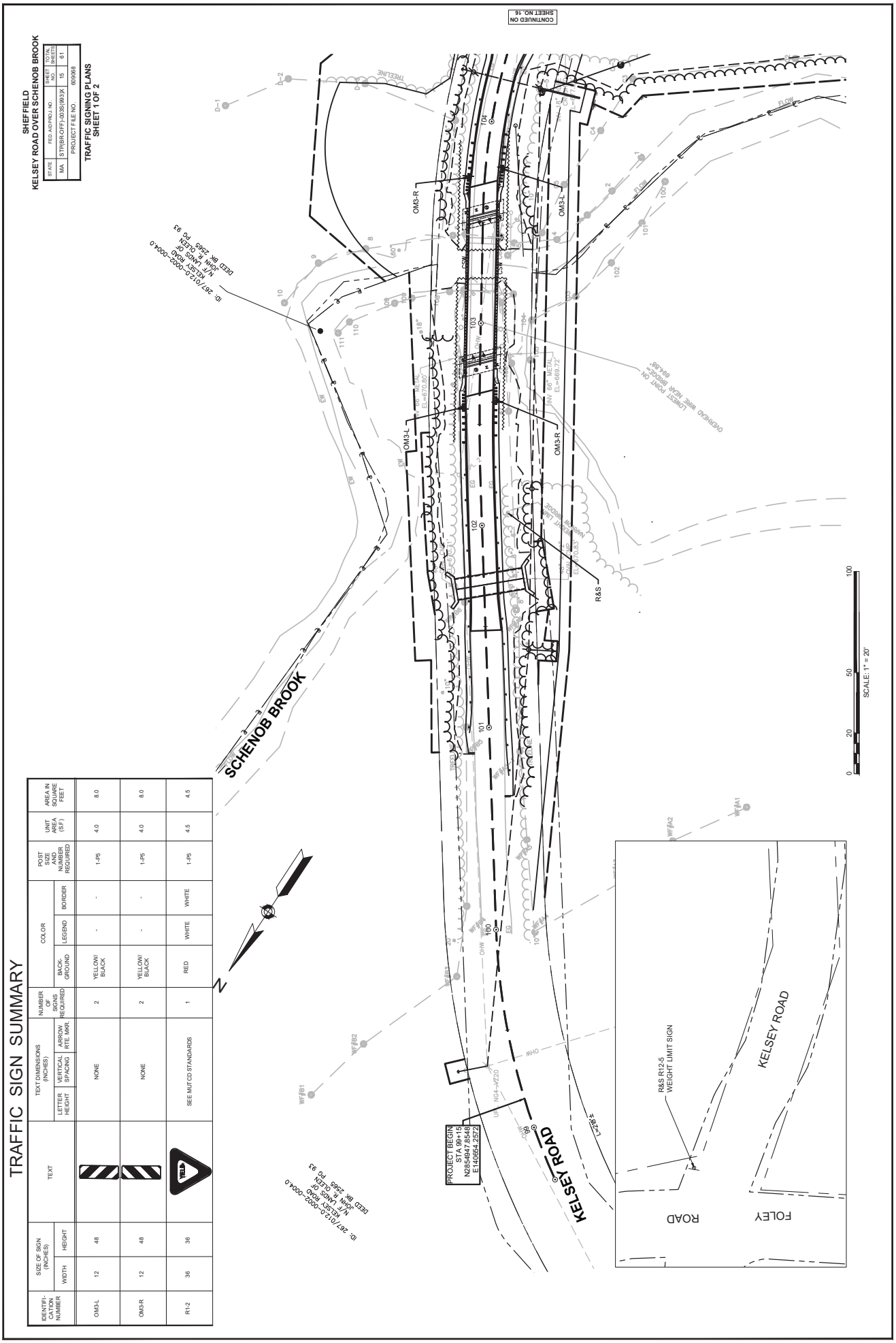
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STPBR-OFF-X035(963)X	15	61
	PROJECT FILE NO. 609068		

TRAFFIC SIGNING PLANS
SHEET 1 OF 2

CONTINUED ON SHEET NO. 16

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES) WIDTH	SIZE OF SIGN (INCHES) HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
OM3-L	12	48		NONE			2	YELLOW/ BLACK	-	-	1-P5	4.0	8.0
OM3-R	12	48		NONE			2	YELLOW/ BLACK	-	-	1-P5	4.0	8.0
R1-2	36	36	YIELD	SEE MUTCD STANDARDS			1	RED	WHITE	WHITE	1-P5	4.5	4.5

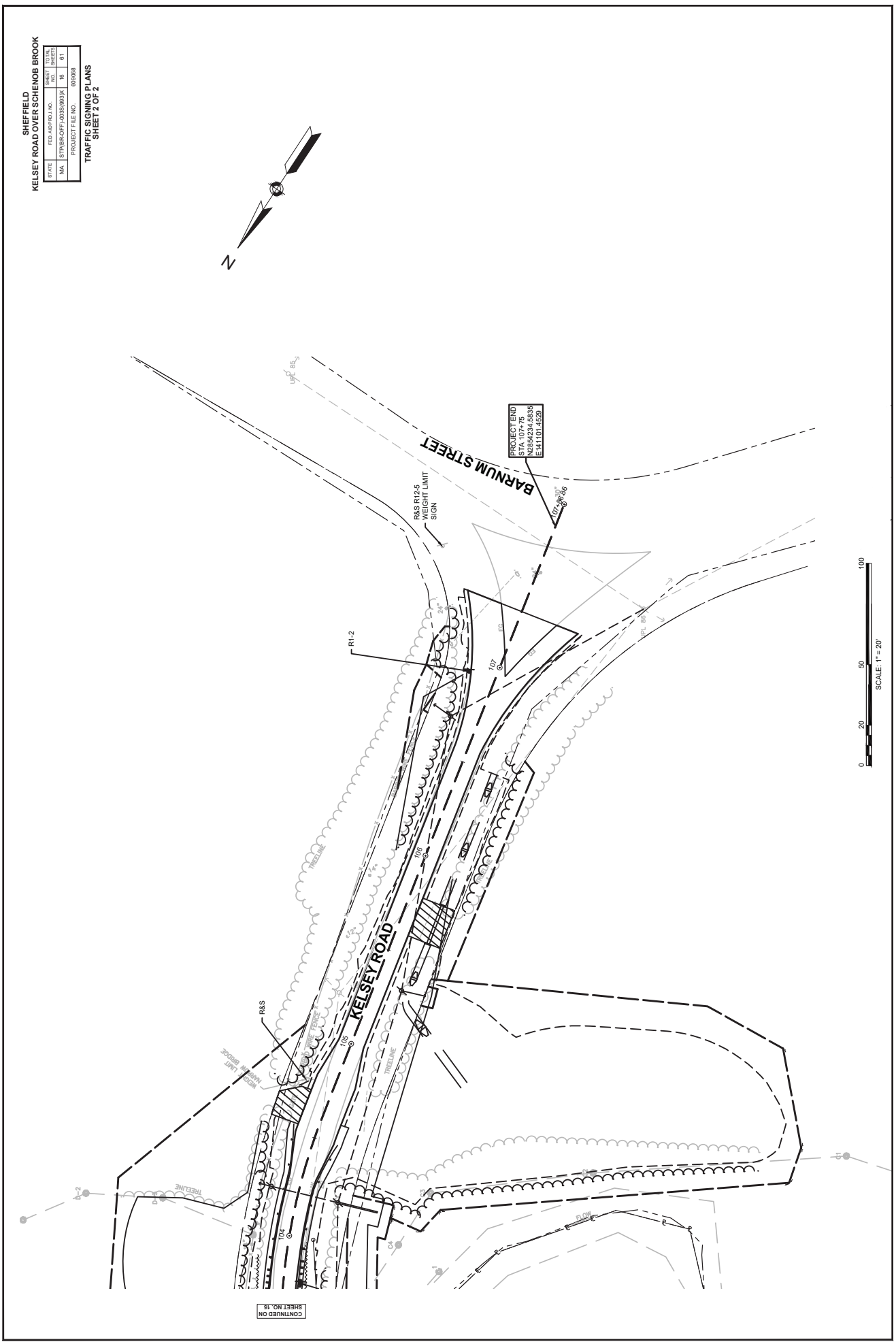


609068_HD(TRAFFIC SIGNING PLAN).DWG Plotted on 28-Jul-2026 1:07 PM

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STPBR-OFF-X038(983)X	16	61
	PROJECT FILE NO.	609068	

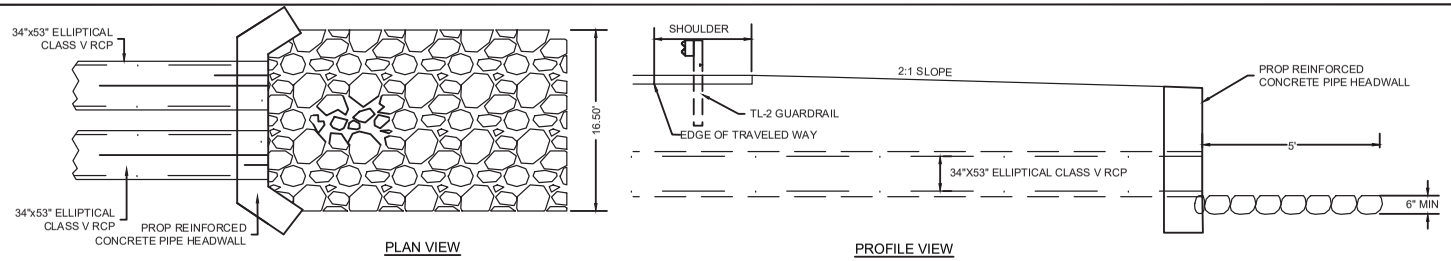
TRAFFIC SIGNING PLANS
SHEET 2 OF 2



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	17	61
PROJECT FILE NO.	609068		

DRAINAGE DETAILS

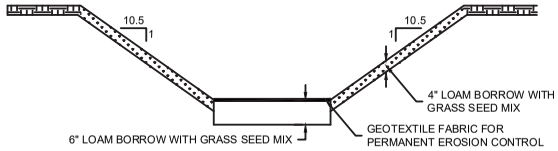


PLAN VIEW

PROFILE VIEW

STONE FOR PIPE ENDS AT ELLIPTICAL CULVERT

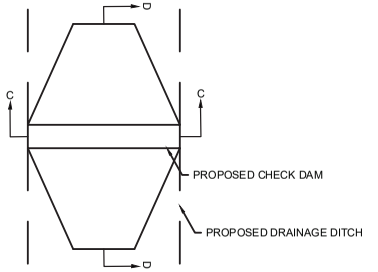
NOT TO SCALE



NOTES:
1. THE LINEAR SLOPE OF THE SWALE SHALL BE A MAXIMUM OF 5%.

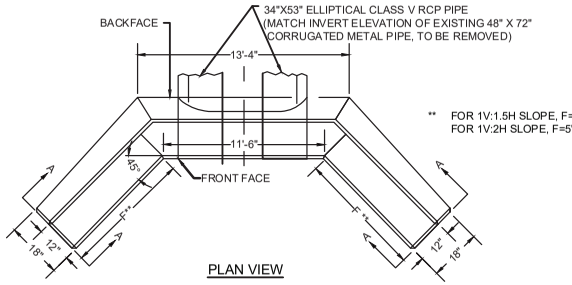
GRASSED CHANNEL

NOT TO SCALE

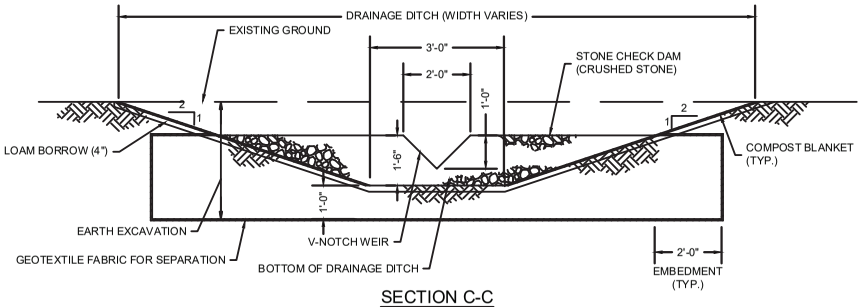


STONE CHECK DAM PLAN VIEW

NOT TO SCALE

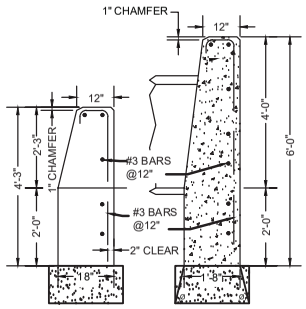


PLAN VIEW

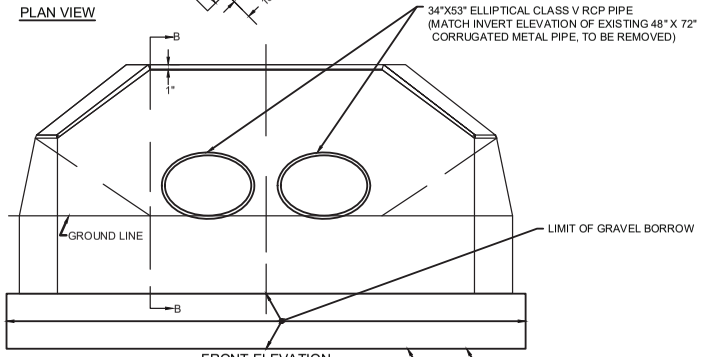


SECTION C-C

NOT TO SCALE



Ø = 45° FOR DEPTH OF 5'-0" OR LESS
Ø = 60° FOR DEPTH OVER 5'-0"

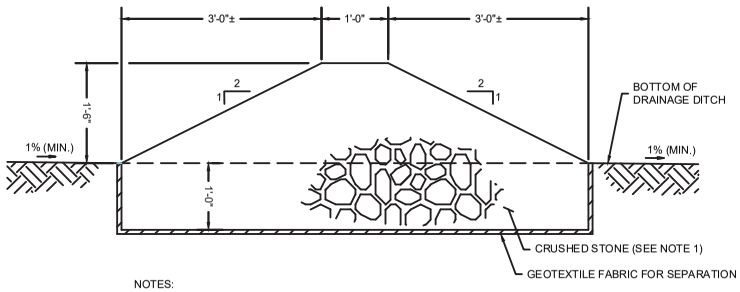


FRONT ELEVATION

REINFORCED CONCRETE PIPE HEADWALL

NOT TO SCALE

(ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM)

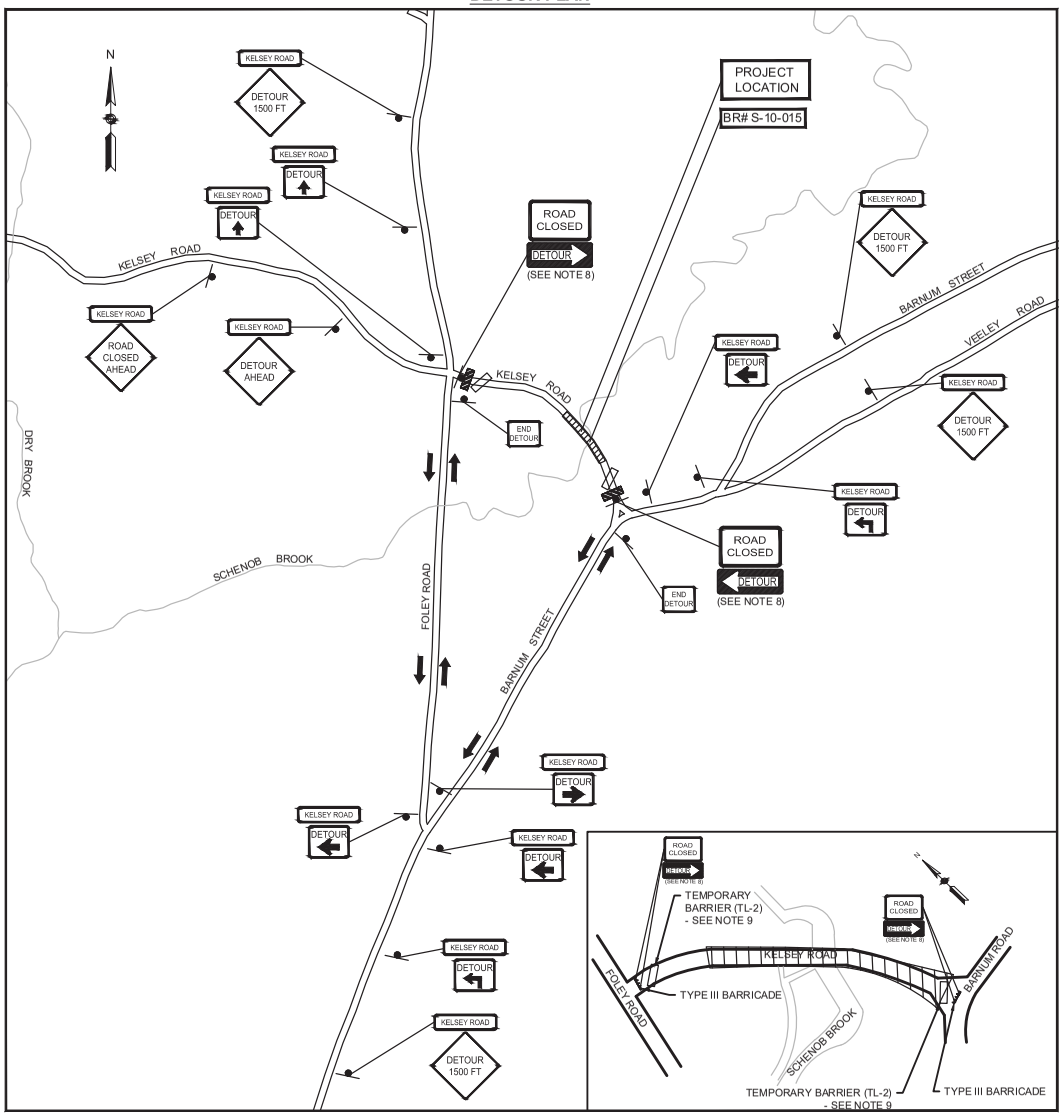


NOTES:
1. CRUSHED STONE SHALL MEET MATERIAL REQUIREMENTS OF SECTION M2.01.2

SECTION D-D

NOT TO SCALE

DETOUR PLAN



DETOUR LENGTH = 0.9 MILES NOT TO SCALE

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- TEMPORARY BARRIER (TL-2)
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

GENERAL NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
6. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
7. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
8. WHERE NOTED, R11-2 (ROAD CLOSED) ALONG WITH THEIR RESPECTIVE M4-10 (DETOUR ARROW) SIGNS, SHALL BE MOUNTED ON TYPE III BARRICADE.
9. PROVIDE TEMPORARY CONCRETE BARRIER PLACED AT 45 DEGREE ANGLE TO ROADWAY SO BLUNT END IS AWAY FROM APPROACHING TRAFFIC.
10. ALL DETOUR SIGNS SHALL BE PLACED WITHIN EXISTING RIGHT OF WAY

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	18	61
PROJECT FILE NO.	609068		

TEMPORARY TRAFFIC CONTROL PLANS

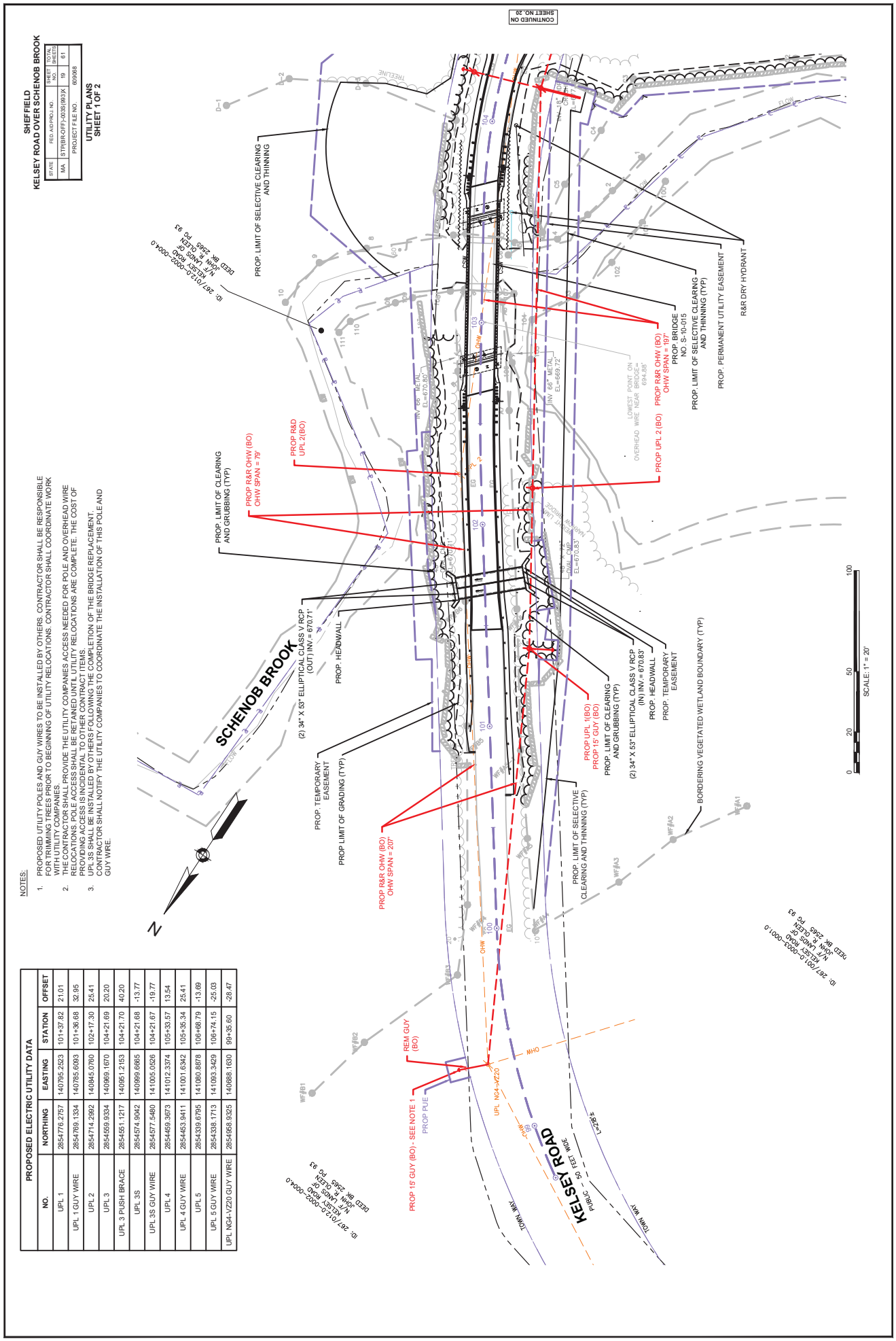
TRAFFIC SIGN SUMMARY

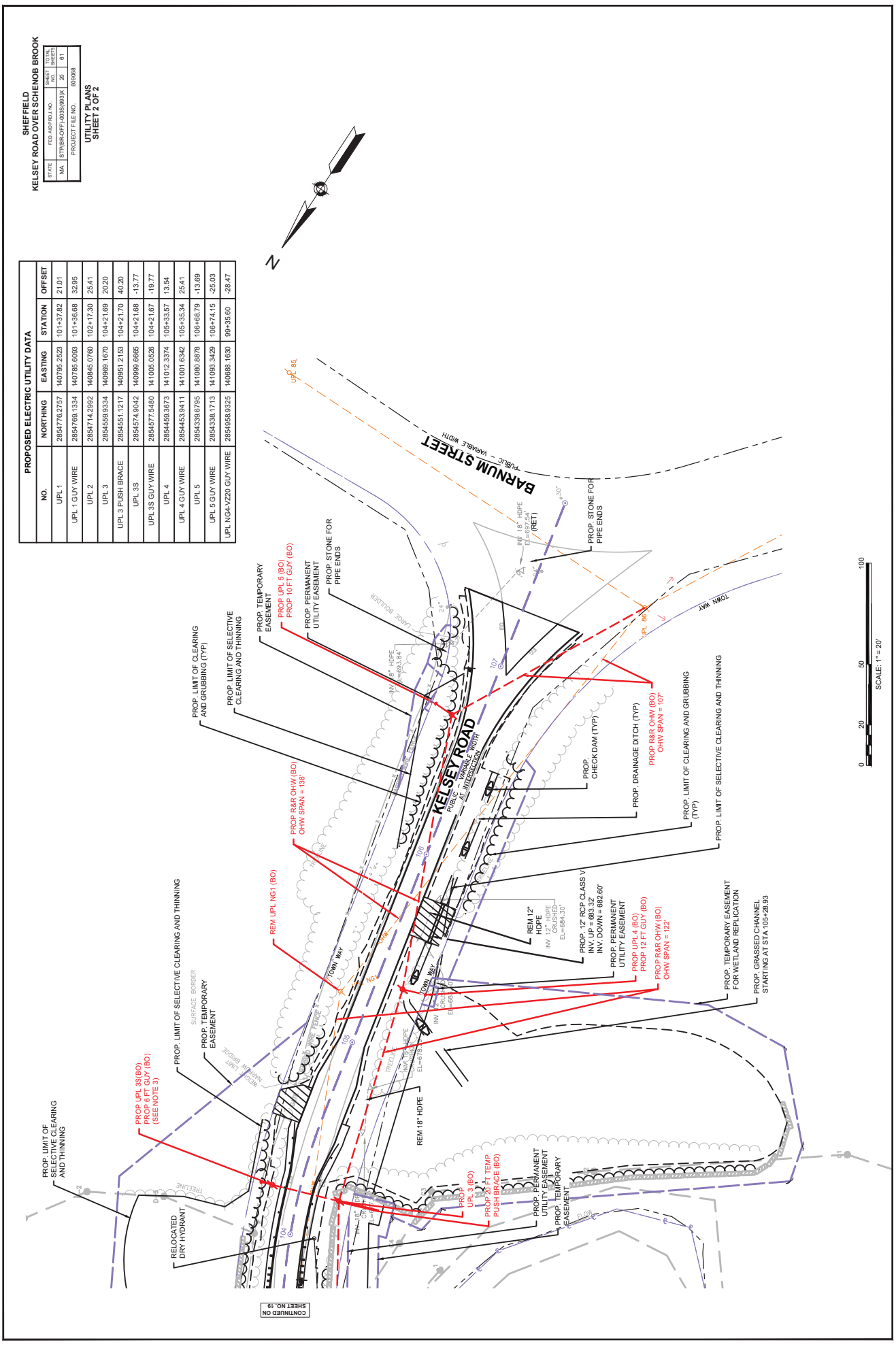
IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES) WIDTH	HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
W16-8P	30	12	KELSEY ROAD	SEE MUTCD STANDARDS			14	FLUORESCENT ORANGE	BLACK	BLACK	2.5	35.0
M4-8a	24	18	END DETOUR				2	FLUORESCENT ORANGE	BLACK	BLACK	3.0	6.0
M4-9R	30	24	DETOUR				1	FLUORESCENT ORANGE	BLACK	BLACK	5.0	5.0
M4-9L	30	24	DETOUR				3	FLUORESCENT ORANGE	BLACK	BLACK	5.0	15.0
M4-9AL	30	24	DETOUR				2	FLUORESCENT ORANGE	BLACK	BLACK	5.0	10.0
M4-9V	30	24	DETOUR				2	FLUORESCENT ORANGE	BLACK	BLACK	5.0	10.0
M4-10R	48	18	DETOUR				1	FLUORESCENT ORANGE	BLACK	BLACK	6.0	6.0
M4-10L	48	18	DETOUR				1	FLUORESCENT ORANGE	BLACK	BLACK	6.0	6.0
R11-2	48	30	ROAD CLOSED				2	FLUORESCENT ORANGE	BLACK	BLACK	10.0	20.0
W20-2	36	36	DETOUR 1500 FT				4	FLUORESCENT ORANGE	BLACK	BLACK	9.0	36.0
W20-2	36	36	DETOUR AHEAD				1	FLUORESCENT ORANGE	BLACK	BLACK	9.0	9.0
W20-3	36	36	ROAD CLOSED AHEAD				1	FLUORESCENT ORANGE	BLACK	BLACK	9.0	9.0
TOTAL AREA OF SIGNS (SQUARE FEET)												168.0

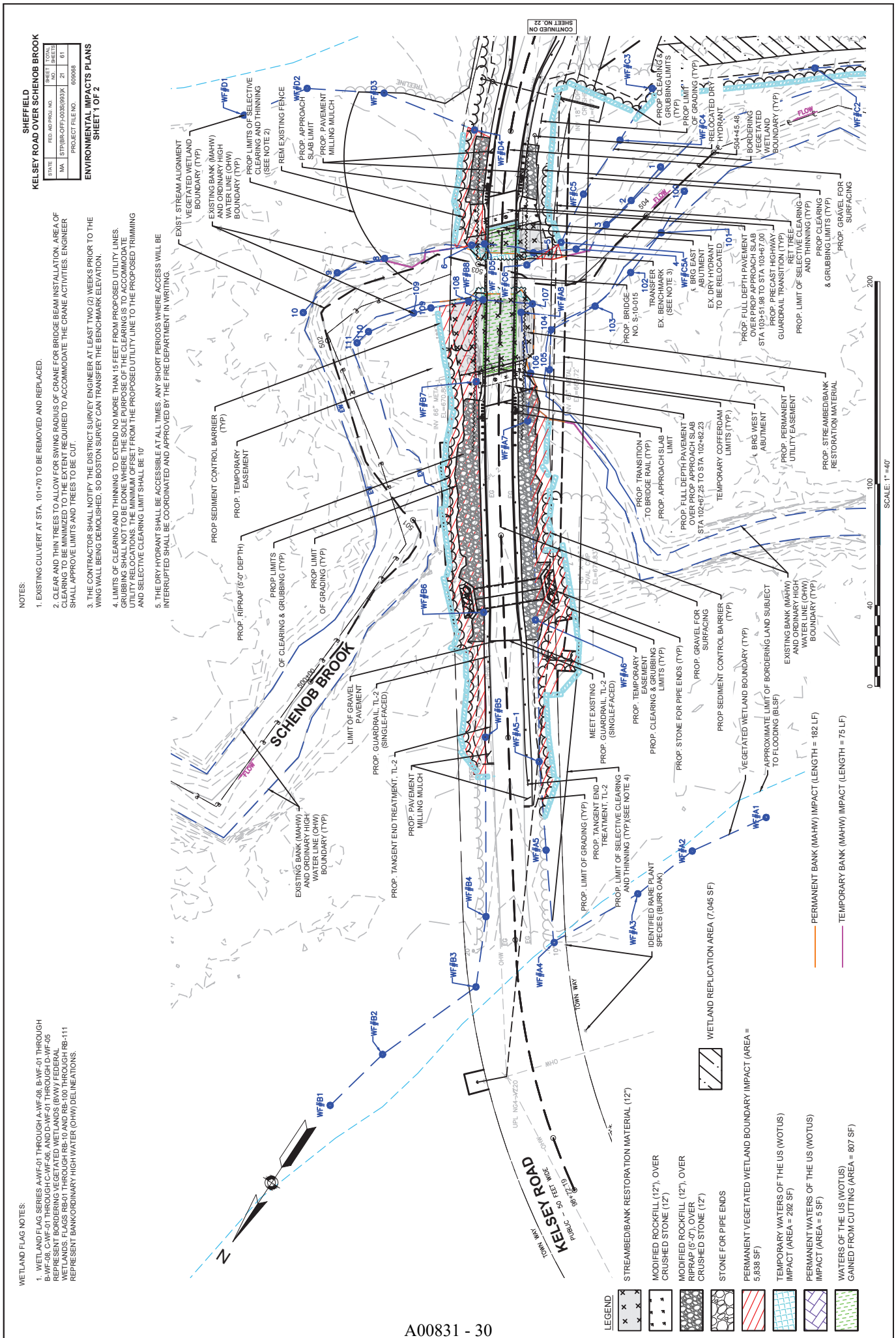
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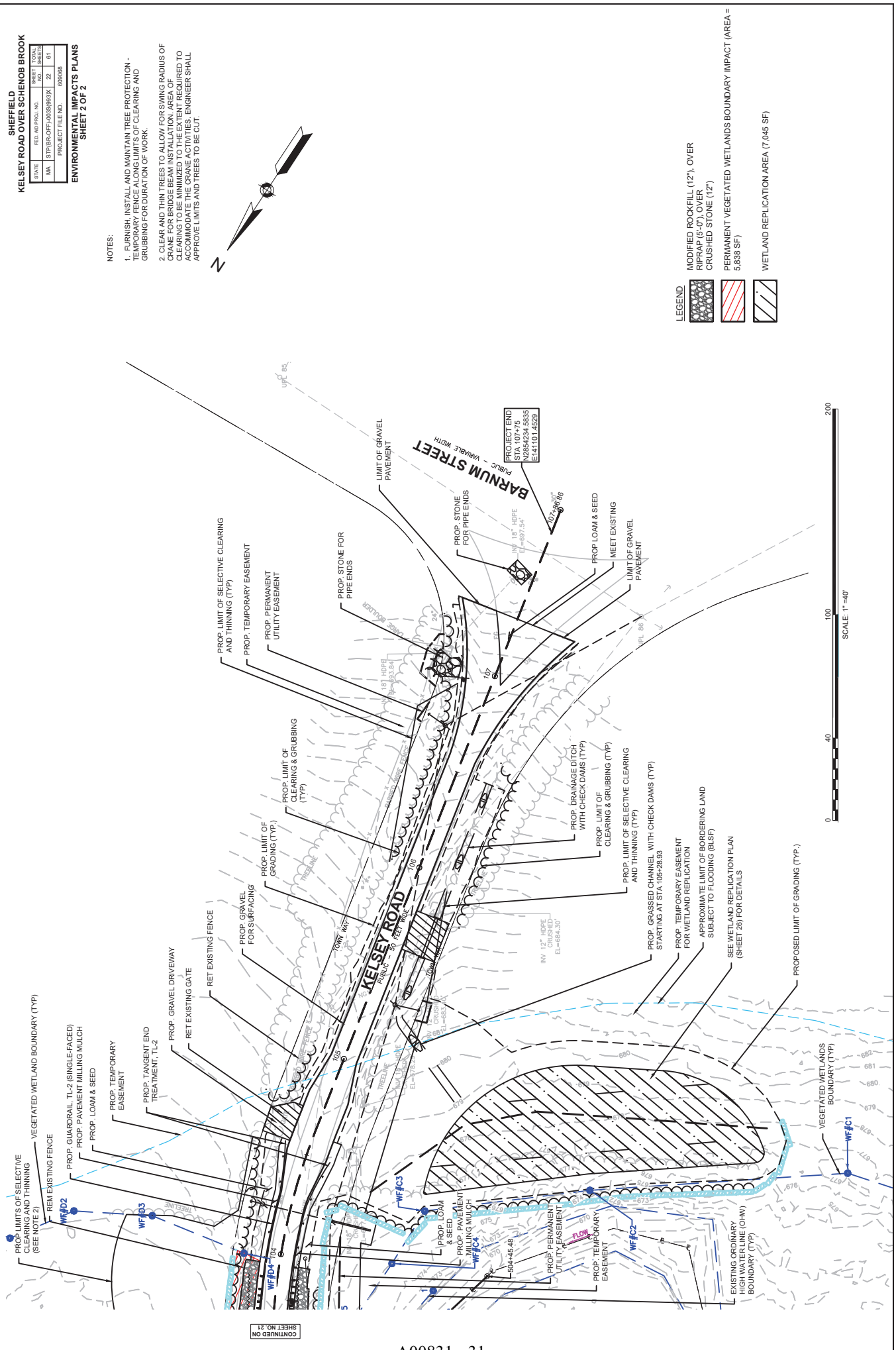
Proposal No. 609068-136649

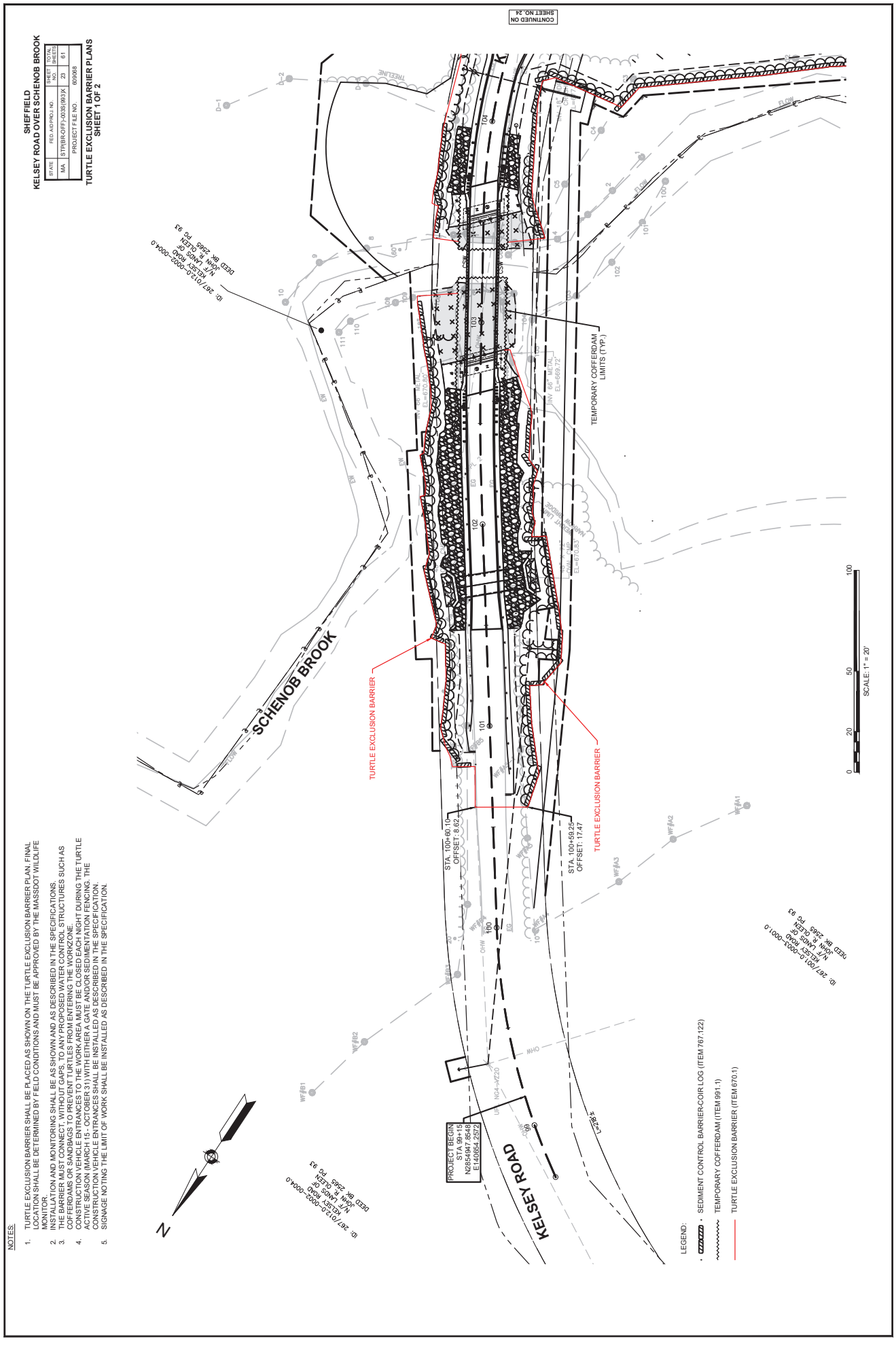
A00831 - 27

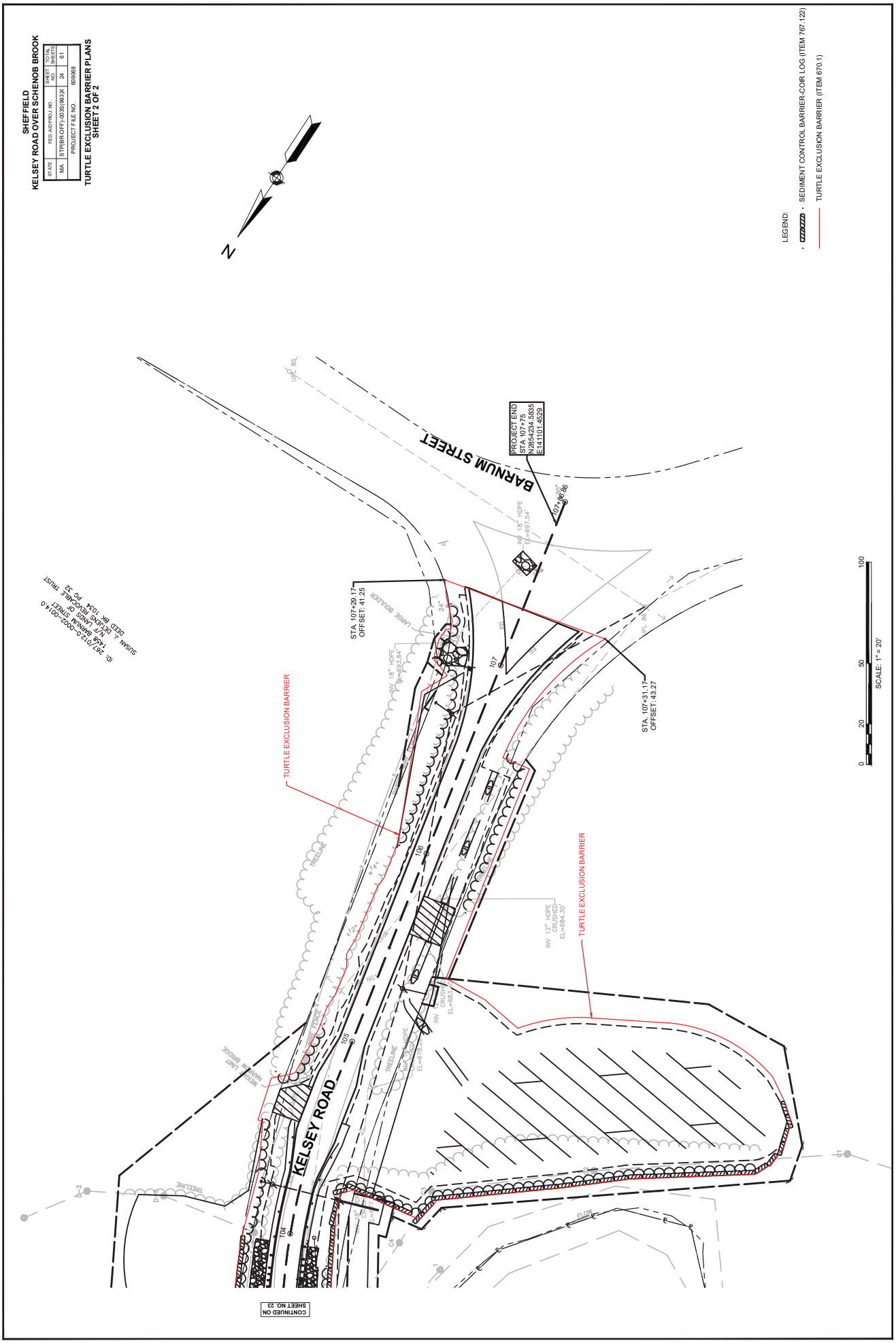

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
UTILITY PLANS
SHEET 1 OF 2
STATE
FED. AID PROJ. NO.
SHEET NO.
TOTAL SHEETS
MA
STP(BR-OFF)-003B(993)X
19
61
PROJECT FILE NO.
609068
CONTINUED ON SHEET NO. 20
NOTES:
1. PROPOSED UTILITY POLES AND GUY WIRES TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL BE RESPONSIBLE FOR TRIMMING TREES PRIOR TO BEGINNING OF UTILITY RELOCATIONS. CONTRACTOR SHALL COORDINATE WORK WITH UTILITY COMPANIES.
2. THE CONTRACTOR SHALL PROVIDE THE UTILITY COMPANIES ACCESS NEEDED FOR POLE AND OVERHEAD WIRE RELOCATIONS. POLE ACCESS SHALL BE RETAINED UNTIL UTILITY RELOCATIONS ARE COMPLETE. THE COST OF PROVIDING ACCESS IS INCIDENTAL TO OTHER CONTRACT ITEMS.
3. UPL 3S SHALL BE INSTALLED BY OTHERS FOLLOWING THE COMPLETION OF THE BRIDGE REPLACEMENT. CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES TO COORDINATE THE INSTALLATION OF THIS POLE AND GUY WIRE.
PROPOSED ELECTRIC UTILITY DATA
NO. | NORTHING | EASTING | STATION | OFFSET
UPL 1 | 2854776.2757 | 140795.2523 | 101+37.82 | 21.01
UPL 1 GUY WIRE | 2854769.1334 | 140785.6093 | 101+36.68 | 32.95
UPL 2 | 2854714.2982 | 140845.0760 | 102+17.30 | 25.41
UPL 3 | 2854569.9334 | 140969.1670 | 104+21.69 | 20.20
UPL 3 PUSH BRACE | 2854561.1217 | 140951.2153 | 104+21.70 | 40.20
UPL 3S | 2854574.9042 | 140999.6665 | 104+21.68 | -13.77
UPL 3S GUY WIRE | 2854577.5480 | 141005.0526 | 104+21.67 | -19.77
UPL 4 | 2854459.3673 | 141012.3374 | 105+33.57 | 13.54
UPL 4 GUY WIRE | 2854463.9411 | 141001.6342 | 105+35.34 | 25.41
UPL 5 | 2854339.6795 | 141080.8878 | 106+68.79 | -13.69
UPL 5 GUY WIRE | 2854338.1713 | 141093.3429 | 106+74.15 | -25.03
UPL NG4-V220 GUY WIRE | 2854968.9325 | 140888.1630 | 99+35.60 | -28.47
SCHENOB BROOK
KELSEY ROAD
PUBLIC - 50 FEET WIDE
TOWN WAY
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING
PROP. LIMIT OF CLEARING AND GRUBBING (TYP)
PROP R&R OHW (BO) OHW SPAN = 79'
PROP R&D UPL 2 (BO)
PROP UPL 2 (BO)
PROP R&R OHW (BO) OHW SPAN = 197'
PROP BRIDGE NO. S-10-015
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. PERMANENT UTILITY EASEMENT
R&R DRY HYDRANT
PROP. TEMPORARY EASEMENT
PROP LIMIT OF GRADING (TYP)
PROP. HEADWALL
(2) 34" X 53" ELLIPTICAL CLASS V RCP (OUT) INV.= 670.71'
PROP R&R OHW (BO) OHW SPAN = 207'
PROP UPL 1(BO)
PROP 15' GUY (BO)
(2) 34" X 53" ELLIPTICAL CLASS V RCP (IN) INV.= 670.83'
PROP. TEMPORARY EASEMENT
BORDERING VEGETATED WETLAND BOUNDARY (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
REM GUY (BO)
PROP 15' GUY (BO) - SEE NOTE 1
PROP PUE
UPL NG4-V220
OHW
SCALE: 1" = 20'
ID: 267/012-0002-0004.0
N/F KELSEY ROAD OF NEW LANDS OF OLSEN
DEED BK 2585 PG 93
ID: 267/001.0-0003-0001.0
N/F KELSEY ROAD OF NEW LANDS OF OLSEN
DEED BK 2585 PG 93


609068_HD(SHEEFIELD UTILITY PLANS).DWG
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SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
STATE
FED. AID PROJ. NO.
SHEET NO.
TOTAL SHEETS
MA
STP(BR-OFF)-D03(993)X
20
61
PROJECT FILE NO.
609068
UTILITY PLANS
SHEET 2 OF 2
PROPOSED ELECTRIC UTILITY DATA
NO.
NORTHING
EASTING
STATION
OFFSET
UPL 1
2854776.2757
140795.2523
101+37.82
21.01
UPL 1 GUY WIRE
2854769.1334
140785.6093
101+36.68
32.95
UPL 2
2854714.2992
140845.0760
102+17.30
25.41
UPL 3
2854559.9334
140969.1670
104+21.69
20.20
UPL 3 PUSH BRACE
2854551.1217
140951.2153
104+21.70
40.20
UPL 3S
2854574.9042
140999.6665
104+21.68
-13.77
UPL 3S GUY WIRE
2854577.5480
141005.0526
104+21.67
-19.77
UPL 4
2854459.3673
141012.3374
105+33.57
13.54
UPL 4 GUY WIRE
2854453.9411
141001.6342
105+35.34
25.41
UPL 5
2854339.6795
141080.8878
106+68.79
-13.69
UPL 5 GUY WIRE
2854338.1713
141093.3429
106+74.15
-25.03
UPL NG4-VZ20 GUY WIRE
2854958.9325
140688.1630
99+35.60
-28.47
N
BARNUM STREET
PUBLIC - VARIABLE WIDTH
KELSEY ROAD
PUBLIC - VARIABLE WIDTH
INTERSECTION
TOWN WAY
PROP. LIMIT OF CLEARING AND GRUBBING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING
PROP. TEMPORARY EASEMENT
PROP. PERMANENT UTILITY EASEMENT
PROP. STONE FOR PIPE ENDS
PROP UPL 5 (BO)
PROP 10 FT GUY (BO)
PROP R&R OHW (BO)
OHW SPAN = 138'
REM UPL NG1 (BO)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING
PROP. TEMPORARY EASEMENT
PROP UPL 3S(BO)
PROP 6 FT GUY (BO)
(SEE NOTE 3)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING
RELOCATED DRY HYDRANT
REM 18" HDPE
PROP UPL 3 (BO)
PROP 20 FT TEMP PUSH BRACE (BO)
PROP. PERMANENT UTILITY EASEMENT
PROP. TEMPORARY EASEMENT
REM 12" HDPE
INV 12" HDPE CRUSHED EL=684.30'
PROP. 12" RCP CLASS V
INV. UP = 683.32'
INV. DOWN = 682.60'
PROP. PERMANENT UTILITY EASEMENT
PROP UPL4 (BO)
PROP 12 FT GUY (BO)
PROP R&R OHW (BO)
OHW SPAN = 122'
PROP. TEMPORARY EASEMENT FOR WETLAND REPLICATION
PROP. GRASSED CHANNEL STARTING AT STA 105+28.93
PROP. CHECK DAM (TYP)
PROP. DRAINAGE DITCH (TYP)
PROP R&R OHW (BO)
OHW SPAN = 107'
PROP. LIMIT OF CLEARING AND GRUBBING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. STONE FOR PIPE ENDS
INV 18" HDPE EL=697.54' (RET)
INV 18" HDPE EL=693.64'
INV 18" HDPE EL=678.00'
INV 12" HDPE EL=685.00'
UPL 85
UPL 3S
UPL 5
FENCE
TREELINE
SURFACE BORDER
MEDIUM MARSH LIMIT
LARGE BOULDER
CONTINUED ON SHEET NO. 19
0
20
50
100
SCALE: 1" = 20'


SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
ENVIRONMENTAL IMPACTS PLANS
SHEET 1 OF 2
STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
MA | STP(BR-OFF)-0035(093)X | 21 | 61
PROJECT FILE NO. 609068
NOTES:
1. EXISTING CULVERT AT STA. 101+70 TO BE REMOVED AND REPLACED.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE CRANE ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
3. THE CONTRACTOR SHALL NOTIFY THE DISTRICT SURVEY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE WING WALL BEING DEMOLISHED, SO BOSTON SURVEY CAN TRANSFER THE BENCHMARK ELEVATION.
4. LIMITS OF CLEARING AND THINNING TO EXTEND NO MORE THAN 15 FEET FROM PROPOSED UTILITY LINES. GRUBBING SHALL NOT TO BE DONE WHERE THE SOLE PURPOSE OF THE CLEARING IS TO ACCOMMODATE UTILITY RELOCATIONS. THE MINIMUM OFFSET FROM THE PROPOSED UTILITY LINE TO THE PROPOSED TRIMMING AND SELECTIVE CLEARING LIMIT SHALL BE 10'
5. THE DRY HYDRANT SHALL BE ACCESSIBLE AT ALL TIMES. ANY SHORT PERIODS WHERE ACCESS WILL BE INTERRUPTED SHALL BE COORDINATED AND APPROVED BY THE FIRE DEPARTMENT IN WRITING.
WETLAND FLAG NOTES:
1. WETLAND FLAG SERIES A-WF-01 THROUGH A-WF-08, B-WF-01 THROUGH B-WF-08, C-WF-01 THROUGH C-WF-06, AND D-WF-01 THROUGH D-WF-05 REPRESENT BORDERING VEGETATED WETLANDS (BVW) FEDERAL WETLANDS FLAGS RB-01 THROUGH RB-10 AND RB-100 THROUGH RB-111 REPRESENT BANK/ORDINARY HIGH WATER (OHW) DELINEATIONS.
CONTINUED ON SHEET NO. 22
SCHENOB BROOK
KELSEY ROAD
TOWN WAY
PUBLIC - 50 FEET WIDE
EXIST. STREAM ALIGNMENT
VEGETATED WETLAND BOUNDARY (TYP)
EXISTING BANK (MAHW) AND ORDINARY HIGH WATER LINE (OHW) BOUNDARY (TYP)
PROP LIMITS OF SELECTIVE CLEARING AND THINNING (SEE NOTE 2)
REM EXISTING FENCE
PROP. APPROACH SLAB LIMIT
PROP. PAVEMENT MILLING MUCH
PROP SEDIMENT CONTROL BARRIER (TYP)
PROP. TEMPORARY EASEMENT
PROP. RIPRAP (5'-0" DEPTH)
PROP LIMITS OF CLEARING & GRUBBING (TYP)
PROP LIMIT OF GRADING (TYP)
PROP. GUARDRAIL, TL-2 (SINGLE-FACED)
LIMIT OF GRAVEL PAVEMENT
PROP. TANGENT END TREATMENT, TL-2
PROP. PAVEMENT MILLING MUCH
EXISTING BANK (MAHW) AND ORDINARY HIGH WATER LINE (OHW) BOUNDARY (TYP)
PROP. LIMIT OF GRADING (TYP)
PROP. TANGENT END TREATMENT, TL-2
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)(SEE NOTE 4)
IDENTIFIED RARE PLANT SPECIES (BURR OAK)
MEET EXISTING
PROP. GUARDRAIL, TL-2 (SINGLE-FACED)
PROP. TEMPORARY EASEMENT
PROP. CLEARING & GRUBBING LIMITS (TYP)
PROP. STONE FOR PIPE ENDS (TYP)
PROP. GRAVEL FOR SURFACING
PROP SEDIMENT CONTROL BARRIER (TYP)
VEGETATED WETLAND BOUNDARY (TYP)
APPROXIMATE LIMIT OF BORDERING LAND SUBJECT TO FLOODING (BLSF)
EXISTING BANK (MAHW) AND ORDINARY HIGH WATER LINE (OHW) BOUNDARY (TYP)
PROP. TRANSITION TO BRIDGE RAIL (TYP)
PROP. APPROACH SLAB LIMIT
PROP. FULL DEPTH PAVEMENT OVER PROP APPROACH SLAB STA 102+67.25 TO STA 102+92.23
TEMPORARY COFFERDAM LIMITS (TYP.)
PROP. BRIDGE NO. S-10-015
EX. BENCHMARK (SEE NOTE 3)
TRANSFER
EX. DRY HYDRANT TO BE RELOCATED
PROP. FULL DEPTH PAVEMENT OVER PROP APPROACH SLAB STA 103+51.98 TO STA 103+67.00
PROP. PRECAST HIGHWAY GUARDRAIL TRANSITION (TYP)
RET TREE
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP CLEARING & GRUBBING LIMITS (TYP)
PROP. GRAVEL FOR SURFACING
PROP. CLEARING & GRUBBING LIMITS (TYP)
PROP LIMIT OF GRADING (TYP)
RELOCATED DRY HYDRANT
504+45.48
BORDERING VEGETATED WETLAND BOUNDARY (TYP)
PROP. PERMANENT UTILITY EASEMENT
PROP. STREAMBED/BANK RESTORATION MATERIAL
WETLAND REPLICATION AREA (7,045 SF)
PERMANENT BANK (MAHW) IMPACT (LENGTH = 182 LF)
TEMPORARY BANK (MAHW) IMPACT (LENGTH = 75 LF)
LEGEND
STREAMBED/BANK RESTORATION MATERIAL (12")
MODIFIED ROCKFILL (12"), OVER CRUSHED STONE (12")
MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
STONE FOR PIPE ENDS
PERMANENT VEGETATED WETLAND BOUNDARY IMPACT (AREA = 5,838 SF)
TEMPORARY WATERS OF THE US (WOTUS) IMPACT (AREA = 292 SF)
PERMANENT WATERS OF THE US (WOTUS) IMPACT (AREA = 5 SF)
WATERS OF THE US (WOTUS) GAINED FROM CUTTING (AREA = 807 SF)
SCALE: 1" =40'
0
40
100
200
N

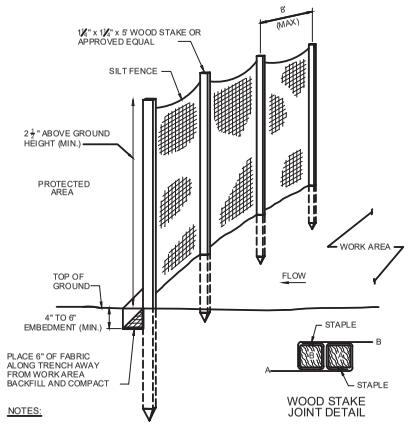

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
MA | STP(BR-OFF)-0035(993)X | 22 | 61
PROJECT FILE NO. 609068
ENVIRONMENTAL IMPACTS PLANS
SHEET 2 OF 2
NOTES:
1. FURNISH, INSTALL AND MAINTAIN TREE PROTECTION - TEMPORARY FENCE ALONG LIMITS OF CLEARING AND GRUBBING FOR DURATION OF WORK.
2. CLEAR AND THIN TREES TO ALLOW FOR SWING RADIUS OF CRANE FOR BRIDGE BEAM INSTALLATION. AREA OF CLEARING TO BE MINIMIZED TO THE EXTENT REQUIRED TO ACCOMMODATE THE PROPOSED ACTIVITIES. ENGINEER SHALL APPROVE LIMITS AND TREES TO BE CUT.
N
LEGEND
MODIFIED ROCKFILL (12"), OVER RIPRAP (5'-0"), OVER CRUSHED STONE (12")
PERMANENT VEGETATED WETLANDS BOUNDARY IMPACT (AREA = 5,838 SF)
WETLAND REPLICATION AREA (7,045 SF)
SCALE: 1" =40'
0
40
100
200
KELSEY ROAD
PUBLIC - 50 FEET WIDE
BARNUM STREET
PUBLIC - VARIABLE WIDTH
PROJECT END STA 107+75 N2854234.5835 E141101.4529
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. TEMPORARY EASEMENT
PROP. PERMANENT UTILITY EASEMENT
PROP. STONE FOR PIPE ENDS
LIMIT OF GRAVEL PAVEMENT
PROP. LOAM & SEED
MEET EXISTING
PROP. LIMIT OF CLEARING & GRUBBING (TYP)
PROP. LIMIT OF GRADING (TYP.)
PROP. GRAVEL FOR SURFACING
PROP. DRAINAGE DITCH WITH CHECK DAMS (TYP)
PROP. LIMIT OF CLEARING & GRUBBING (TYP)
PROP. LIMIT OF SELECTIVE CLEARING AND THINNING (TYP)
PROP. GRASSED CHANNEL WITH CHECK DAMS (TYP) STARTING AT STA 105+28.93
PROP. TEMPORARY EASEMENT FOR WETLAND REPLICATION
APPROXIMATE LIMIT OF BORDERING LAND SUBJECT TO FLOODING (BLSF)
SEE WETLAND REPLICATION PLAN (SHEET 26) FOR DETAILS
PROPOSED LIMIT OF GRADING (TYP.)
VEGETATED WETLANDS BOUNDARY (TYP)
EXISTING ORDINARY HIGH WATER LINE (OHW) BOUNDARY (TYP)
PROP. PAVEMENT MILLING MULCH
PROP. TEMPORARY EASEMENT
PROP. PERMANENT UTILITY EASEMENT
PROP. LIMITS OF SELECTIVE CLEARING AND THINNING (SEE NOTE 2)
VEGETATED WETLAND BOUNDARY (TYP)
REM EXISTING FENCE
PROP. GUARDRAIL, TL-2 (SINGLE-FACED)
PROP. PAVEMENT MILLING MULCH
PROP. LOAM & SEED
PROP. TEMPORARY EASEMENT
PROP. TANGENT END TREATMENT, TL-2
PROP. GRAVEL DRIVEWAY
RET EXISTING GATE
RET EXISTING FENCE
CONTINUED ON SHEET NO. 21


SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
TURTLE EXCLUSION BARRIER PLANS
SHEET 1 OF 2
STATE | FED. AID PROJ. NO. | SHEET | TOTAL SHEETS
MA | STP(BR-OFF)-D03S(963)X | 23 | 61
PROJECT FILE NO. 609068
NOTES:
1. TURTLE EXCLUSION BARRIER SHALL BE PLACED AS SHOWN ON THE TURTLE EXCLUSION BARRIER PLAN. FINAL LOCATION SHALL BE DETERMINED BY FIELD CONDITIONS AND MUST BE APPROVED BY THE MASSDOT WILDLIFE MONITOR.
2. INSTALLATION AND MONITORING SHALL BE AS SHOWN AND AS DESCRIBED IN THE SPECIFICATIONS.
3. THE BARRIER MUST CONNECT, WITHOUT GAPS, TO ANY PROPOSED WATER CONTROL STRUCTURES SUCH AS COFFERDAMS OR SANDBAGS TO PREVENT TURTLES FROM ENTERING THE WORKZONE.
4. CONSTRUCTION VEHICLE ENTRANCES TO THE WORK AREA MUST BE CLOSED EACH NIGHT DURING THE TURTLE ACTIVE SEASON (MARCH 15 - OCTOBER 31) WITH EITHER A GATE AND/OR SEDIMENTATION FENCING. THE CONSTRUCTION VEHICLE ENTRANCES SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.
5. SIGNAGE NOTING THE LIMIT OF WORK SHALL BE INSTALLED AS DESCRIBED IN THE SPECIFICATION.
LEGEND:
SEDIMENT CONTROL BARRIER-COIR LOG (ITEM 767.122)
TEMPORARY COFFERDAM (ITEM 991.1)
TURTLE EXCLUSION BARRIER (ITEM 670.1)
SCHENOB BROOK
KELSEY ROAD
TURTLE EXCLUSION BARRIER
TEMPORARY COFFERDAM LIMITS (TYP.)
PROJECT BEGIN STA 99+15 N2854947.8548 E140854.2572
STA. 100+60.10 OFFSET: 8.62
STA. 100+59.25 OFFSET: 17.47
SCALE: 1" = 20'
0 20 50 100
N
CONTINUED ON SHEET NO. 24
609068_HDTLTURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 28-Jul-2026 11:28 AM


609068_HDTURTLE BARRIER EXCLUSION PLAN).DWG Plotted on 28-Jul-2026 1:04 PM
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
TURTLE EXCLUSION BARRIER PLANS
SHEET 2 OF 2
STATE NO. MA
FED. AID PROJ. NO. STP(BR-OFF)-X038(983)X
PROJECT FILE NO. 609068
SHEET NO. 24
TOTAL SHEETS 61
LEGEND:
SEDIMENT CONTROL BARRIER-COIR LOG (ITEM 767.122)
TURTLE EXCLUSION BARRIER (ITEM 670.1)
N
SCALE: 1" = 20'
0
20
50
100
BARNUM STREET
PROJECT END
STA 107+75
N:2854234.3885
E:1101.4928
107+86.86
INV. 18" HDPE
EL=697.54'
STA. 107+29.17
OFFSET: 41.25
STA. 107+31.17
OFFSET: 43.27
TURTLE EXCLUSION BARRIER
KELSEY ROAD
INV. 12" HDPE CRUSHED
EL=684.30'
INV. 18" HDPE
EL=683.84'
INV. 18" HDPE
EL=676.
TREELINE
LARGE BOULDER
CONTINUED ON SHEET NO. 23

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	25	61
	PROJECT FILE NO. 609068		

TURTLE EXCLUSION BARRIER DETAILS



NOTES:

1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

TURTLE EXCLUSION BARRIER

SCALE: N.T.S.

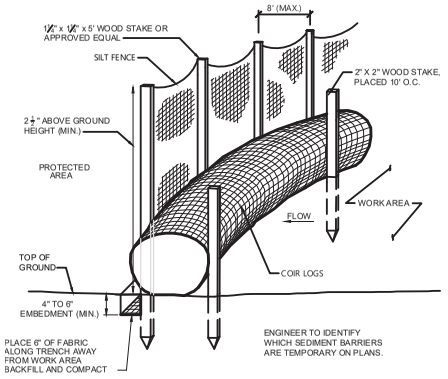


NOTES:

1. SIGNAGE MUST CLEARLY IDENTIFY THE LIMIT OF WORK IN ALL 4 QUADRANTS OF THE WORK SITE.

ENVIRONMENTALLY SENSITIVE AREA SIGNAGE

SCALE: N.T.S.



NOTES:

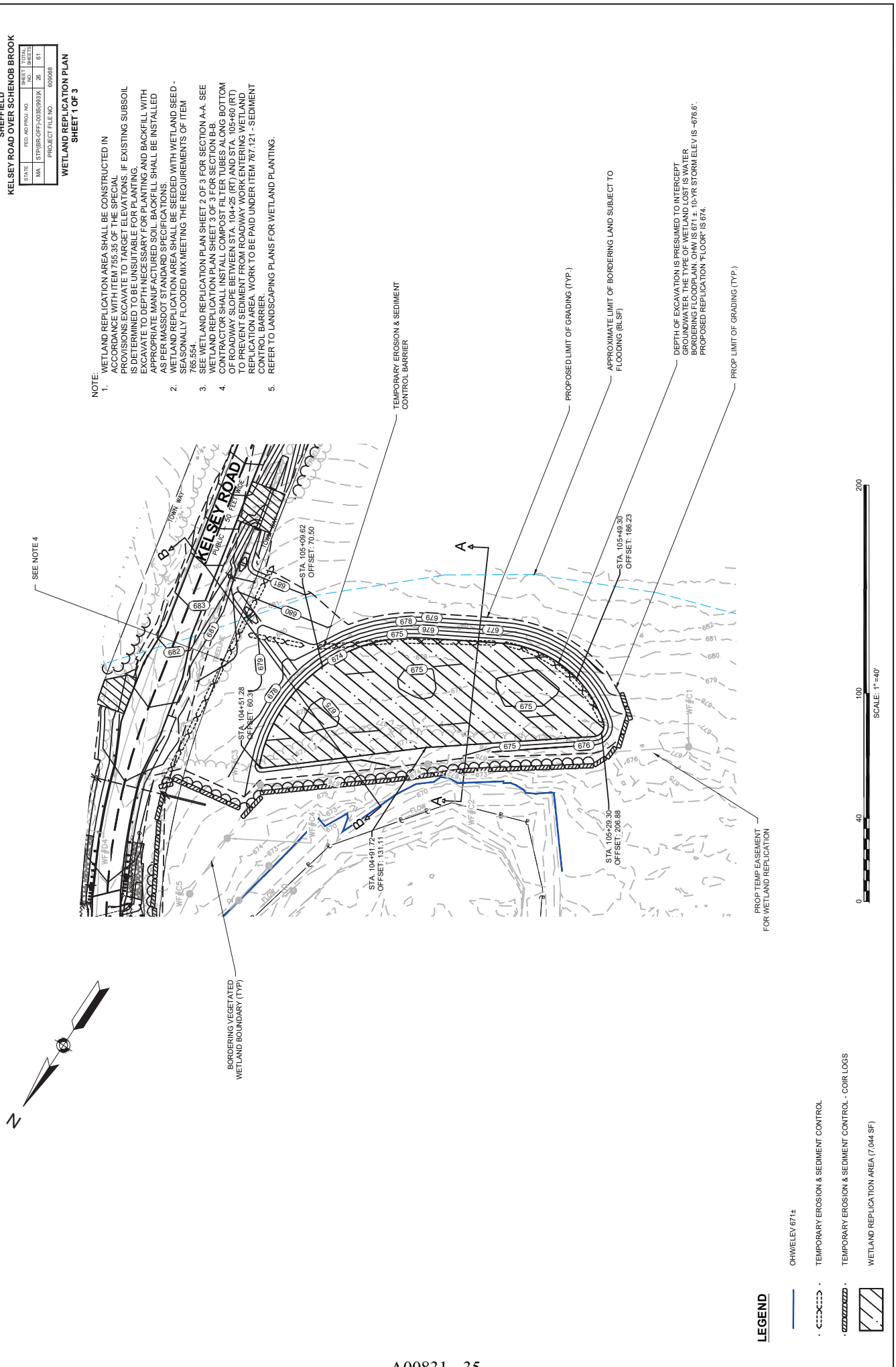
1. ENSURE THE TURTLE EXCLUSION BARRIER CONNECTS, WITHOUT GAPS, TO ANY WATER CONTROL STRUCTURES, SUCH AS COFFERDAMS OR SAND BAGS, TO PREVENT TURTLES FROM ENTERING WORK ZONE
2. INSPECT TURTLE EXCLUSION BARRIER DAILY AND REPAIR AS NEEDED AROUND WORK AREA AT THE END OF EACH WORK DAY.

TURTLE EXCLUSION BARRIER WITH SEDIMENT CONTROL BARRIER

SCALE: NTS

609068_HD\TURTLE BARRIER EXCLUSION PLAN DETAILS).DWG Plotted on 28-Jul-2026 1:05 PM

Proposal No. 609068-136649

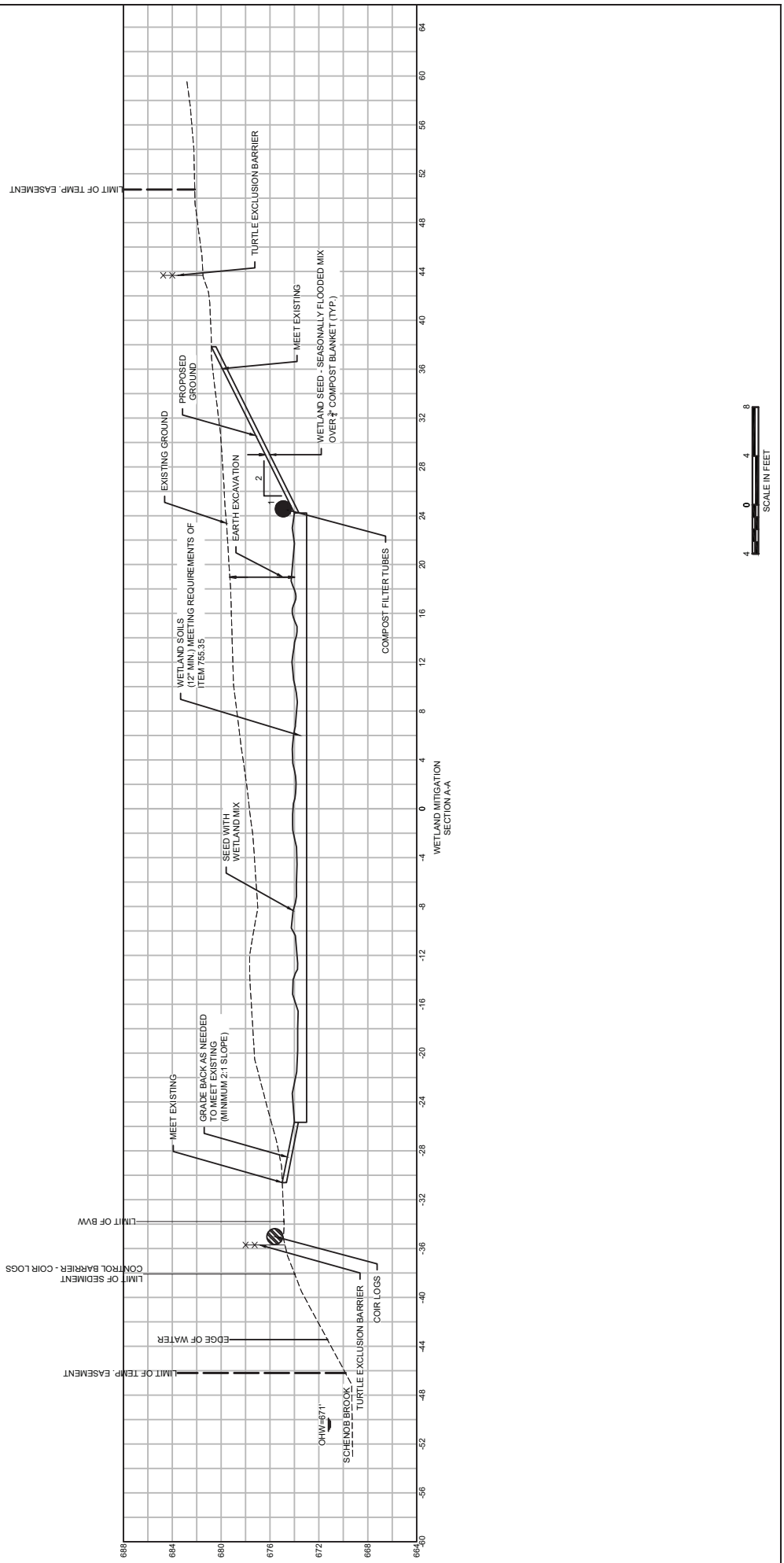

SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
MA | STP(BR-OFF)-0035(993)X | 29 | 61
PROJECT FILE NO. 609068
WETLAND REPLICATION PLAN
SHEET 1 OF 3
NOTE:
1. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS EXCAVATE TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
2. WETLAND REPLICATION AREA SHALL BE SEEDED WITH WETLAND SEED - SEASONALLY FLOODED MIX MEETING THE REQUIREMENTS OF ITEM 765.554.
3. SEE WETLAND REPLICATION PLAN SHEET 2 OF 3 FOR SECTION A-A. SEE WETLAND REPLICATION PLAN SHEET 3 OF 3 FOR SECTION B-B.
4. CONTRACTOR SHALL INSTALL COMPOST FILTER TUBES ALONG BOTTOM OF ROADWAY SLOPE BETWEEN STA. 104+25 (RT) AND STA. 105+60 (RT) TO PREVENT SEDIMENT FROM ROADWAY WORK ENTERING WETLAND REPLICATION AREA. WORK TO BE PAID UNDER ITEM 767.121 - SEDIMENT CONTROL BARRIER.
5. REFER TO LANDSCAPING PLANS FOR WETLAND PLANTING.
SEE NOTE 4
KELSEY ROAD
PUBLIC - 50 FEET WIDE
TOWN WAY
TOWN WAY
TEMPORARY EROSION & SEDIMENT CONTROL BARRIER
PROPOSED LIMIT OF GRADING (TYP.)
APPROXIMATE LIMIT OF BORDERING LAND SUBJECT TO FLOODING (BLSF)
DEPTH OF EXCAVATION IS PRESUMED TO INTERCEPT GROUNDWATER, THE TYPE OF WETLAND LOST IS WATER BORDERING FLOODPLAIN. OHW IS 671 ±. 10-YR STORM ELEV IS ~676.6'. PROPOSED REPLICATION "FLOOR" IS 674.
PROP LIMIT OF GRADING (TYP.)
STA. 105+09.62
OFFSET: 70.50
STA. 105+49.30
OFFSET: 186.23
STA. 104+51.28
OFFSET: 60.31
STA. 104+91.72
OFFSET: 131.11
STA. 105+29.30
OFFSET: 206.88
BORDERING VEGETATED WETLAND BOUNDARY (TYP)
PROP TEMP EASEMENT FOR WETLAND REPLICATION
WF#C1
WF#C2
WF#C3
WF#C4
WF#C5
FLOW
N
0
40
100
200
SCALE: 1" = 40'
LEGEND
OHW/ELEV 671±
TEMPORARY EROSION & SEDIMENT CONTROL
TEMPORARY EROSION & SEDIMENT CONTROL - COIR LOGS
WETLAND REPLICATION AREA (7,044 SF)

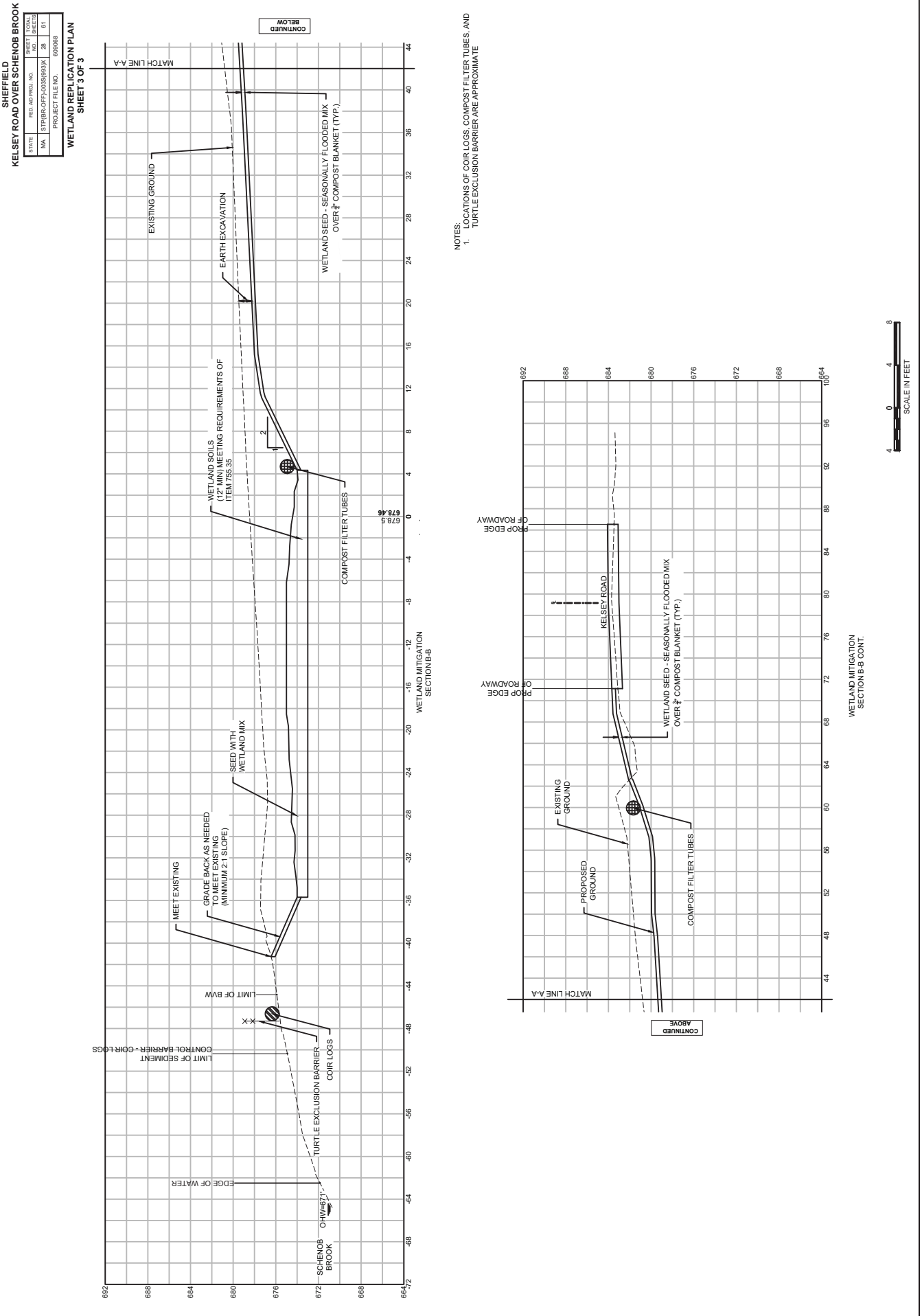
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-X038(993)X	27	61
PROJECT FILE NO. 609068			

WETLAND REPLICATION PLAN
SHEET 2 OF 3

NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE




SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK
STATE
MA
FED. AID PROJ. NO.
STP(BR-OFF)-0035(093)X
PROJECT FILE NO.
609068
SHEET NO.
29
TOTAL SHEETS
61
WETLAND REPLICATION PLAN
SHEET 3 OF 3
NOTES:
1. LOCATIONS OF COIR LOGS, COMPOST FILTER TUBES, AND TURTLE EXCLUSION BARRIER ARE APPROXIMATE
MATCH LINE A-A
CONTINUED BELOW
EXISTING GROUND
EARTH EXCAVATION
WETLAND SEED - SEASONALLY FLOODED MIX OVER ¾" COMPOST BLANKET (TYP.)
WETLAND SOILS (12" MIN) MEETING REQUIREMENTS OF ITEM 755.35
COMPOST FILTER TUBES
678.5
678.46
WETLAND MITIGATION SECTION B-B
SEED WITH WETLAND MIX
GRADE BACK AS NEEDED TO MEET EXISTING (MINIMUM 2:1 SLOPE)
MEET EXISTING
LIMIT OF BVW
LIMIT OF SEDIMENT CONTROL BARRIER - COIR LOGS
TURTLE EXCLUSION BARRIER - COIR LOGS
EDGE OF WATER
OHW=671'
SCHENOB BROOK
MATCH LINE A-A
CONTINUED ABOVE
PROP EDGE OF ROADWAY
KELSEY ROAD
WETLAND SEED - SEASONALLY FLOODED MIX OVER ¾" COMPOST BLANKET (TYP.)
EXISTING GROUND
PROPOSED GROUND
COMPOST FILTER TUBES
WETLAND MITIGATION SECTION B-B CONT.
SCALE IN FEET

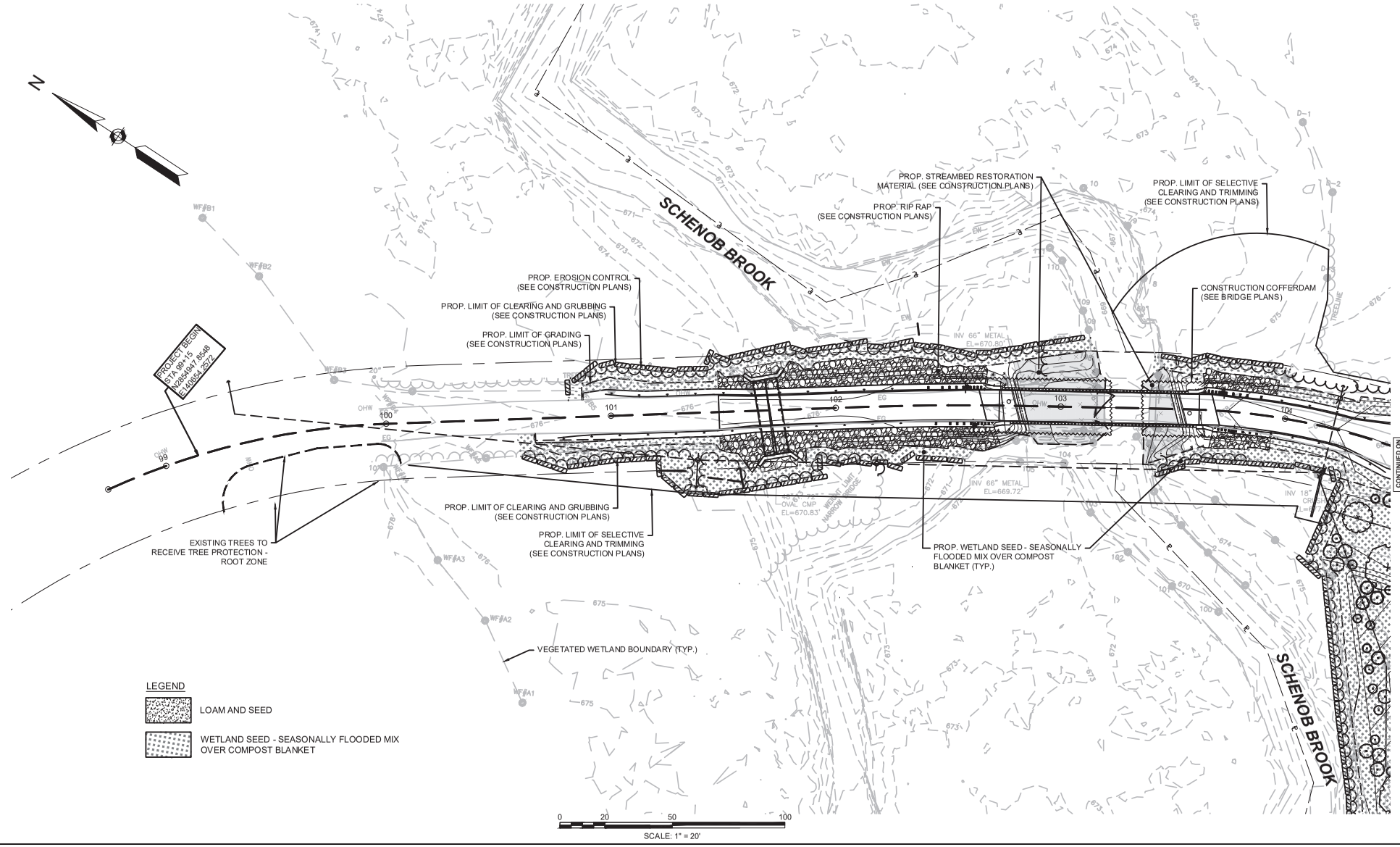
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	29	61
	PROJECT FILE NO. 609068		

LANDSCAPE PLAN
KELSEY ROAD (1 OF 2)

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.



SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	30	61
	PROJECT FILE NO. 609068		

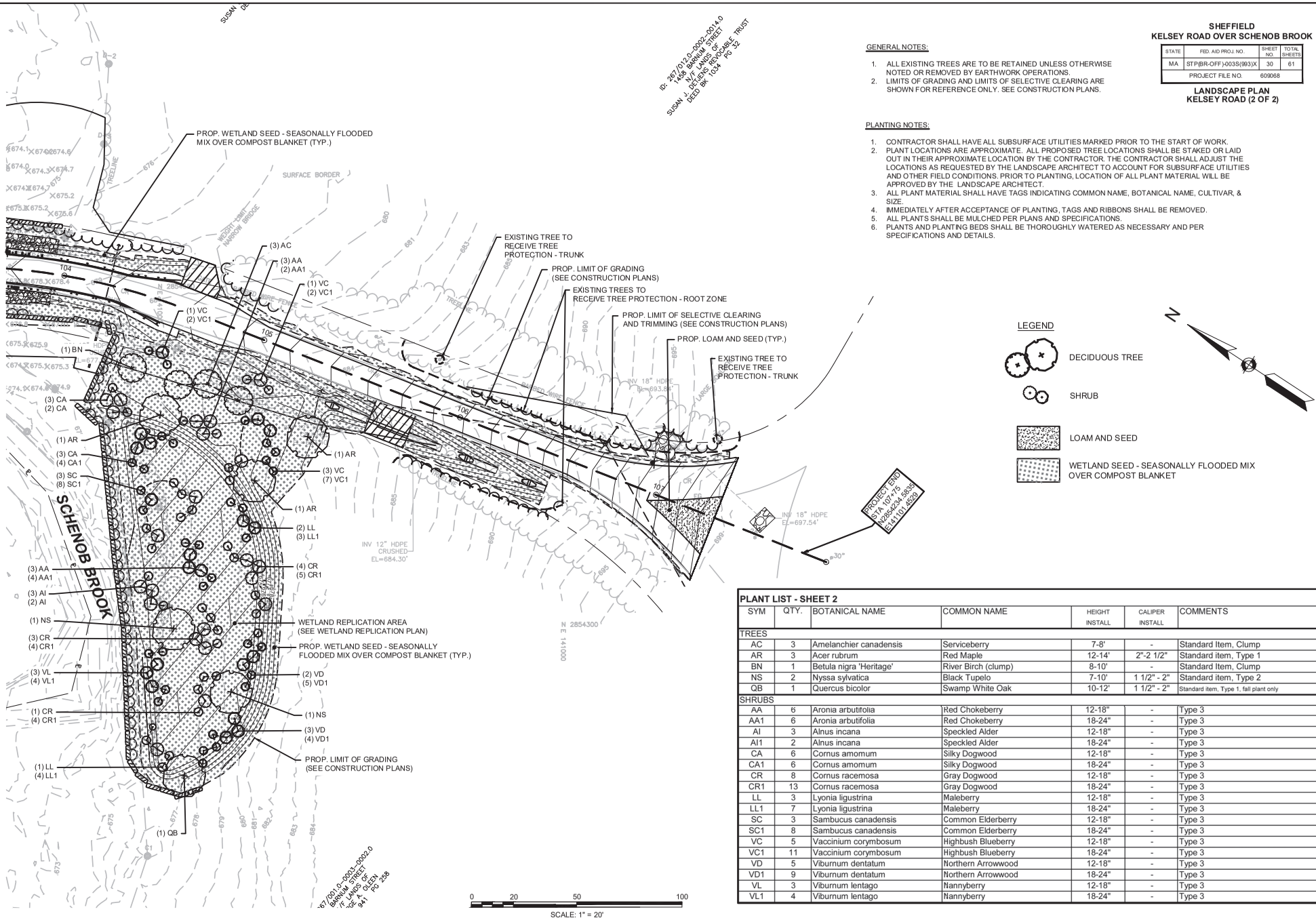
LANDSCAPE PLAN
KELSEY ROAD (2 OF 2)

GENERAL NOTES:

1. ALL EXISTING TREES ARE TO BE RETAINED UNLESS OTHERWISE NOTED OR REMOVED BY EARTHWORK OPERATIONS.
2. LIMITS OF GRADING AND LIMITS OF SELECTIVE CLEARING ARE SHOWN FOR REFERENCE ONLY. SEE CONSTRUCTION PLANS.

PLANTING NOTES:

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL SHALL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, CULTIVAR, & SIZE.
4. IMMEDIATELY AFTER ACCEPTANCE OF PLANTING, TAGS AND RIBBONS SHALL BE REMOVED.
5. ALL PLANTS SHALL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS AND DETAILS.



LEGEND

- DECIDUOUS TREE
- SHRUB
- LOAM AND SEED
- WETLAND SEED - SEASONALLY FLOODED MIX OVER COMPOST BLANKET

N

0 20 50 100

SCALE: 1" = 20'

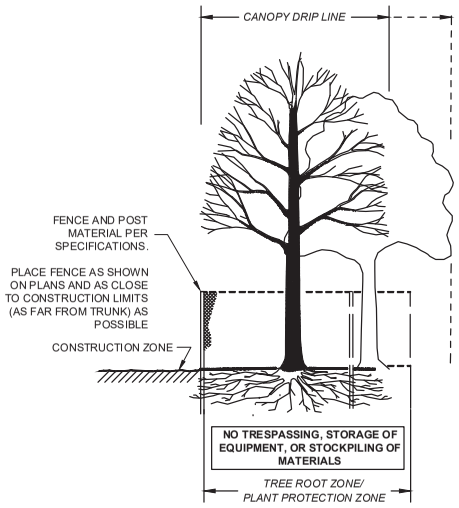
PLANT LIST - SHEET 2

SYM	QTY.	BOTANICAL NAME	COMMON NAME	HEIGHT INSTALL	CALIPER INSTALL	COMMENTS
TREES						
AC	3	Amelanchier canadensis	Serviceberry	7-8'	-	Standard Item, Clump
AR	3	Acer rubrum	Red Maple	12-14'	2"-2 1/2"	Standard item, Type 1
BN	1	Betula nigra 'Heritage'	River Birch (clump)	8-10'	-	Standard Item, Clump
NS	2	Nyssa sylvatica	Black Tupelo	7-10'	1 1/2" - 2"	Standard item, Type 2
QB	1	Quercus bicolor	Swamp White Oak	10-12'	1 1/2" - 2"	Standard item, Type 1, fall plant only
SHRUBS						
AA	6	Aronia arbutifolia	Red Chokeberry	12-18"	-	Type 3
AA1	6	Aronia arbutifolia	Red Chokeberry	18-24"	-	Type 3
AI	3	Alnus incana	Speckled Alder	12-18"	-	Type 3
AI1	2	Alnus incana	Speckled Alder	18-24"	-	Type 3
CA	6	Cornus amomum	Silky Dogwood	12-18"	-	Type 3
CA1	6	Cornus amomum	Silky Dogwood	18-24"	-	Type 3
CR	8	Cornus racemosa	Gray Dogwood	12-18"	-	Type 3
CR1	13	Cornus racemosa	Gray Dogwood	18-24"	-	Type 3
LL	3	Lyonia ligustrina	Maleberry	12-18"	-	Type 3
LL1	7	Lyonia ligustrina	Maleberry	18-24"	-	Type 3
SC	3	Sambucus canadensis	Common Elderberry	12-18"	-	Type 3
SC1	8	Sambucus canadensis	Common Elderberry	18-24"	-	Type 3
VC	5	Vaccinium corymbosum	Highbush Blueberry	12-18"	-	Type 3
VC1	11	Vaccinium corymbosum	Highbush Blueberry	18-24"	-	Type 3
VD	5	Viburnum dentatum	Northern Arrowwood	12-18"	-	Type 3
VD1	9	Viburnum dentatum	Northern Arrowwood	18-24"	-	Type 3
VL	3	Viburnum lentago	Nannyberry	12-18"	-	Type 3
VL1	4	Viburnum lentago	Nannyberry	18-24"	-	Type 3

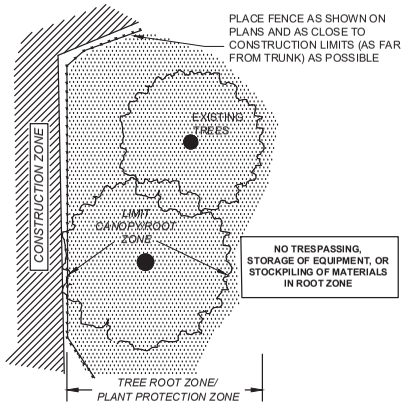
SHEFFIELD
KELSEY ROAD OVER SCHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	31	61
	PROJECT FILE NO. 609068		

LANDSCAPE DETAILS
KELSEY ROAD (1 OF 1)



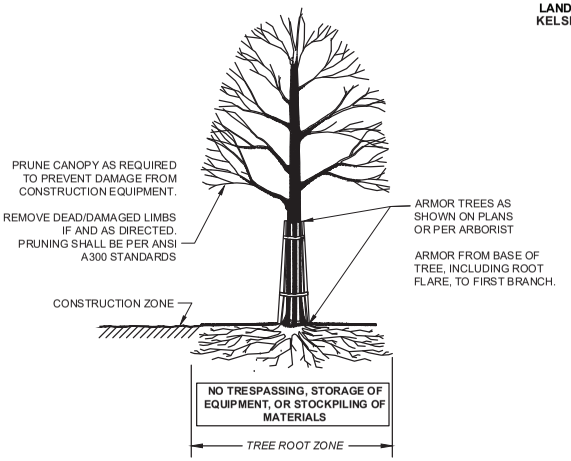
SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

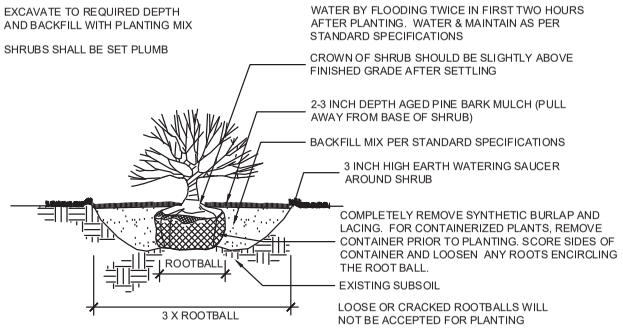
TREE PROTECTION - ROOT ZONE

NOT TO SCALE



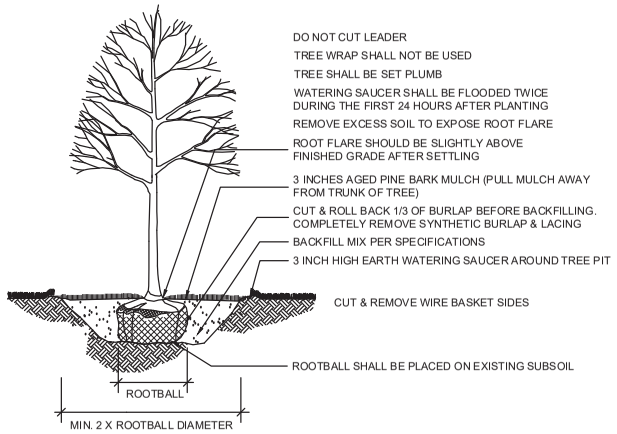
SECTION - TRUNK ARMORING & PRUNING

TREE PROTECTION - TRUNK



SHRUB PLANTING

NOT TO SCALE

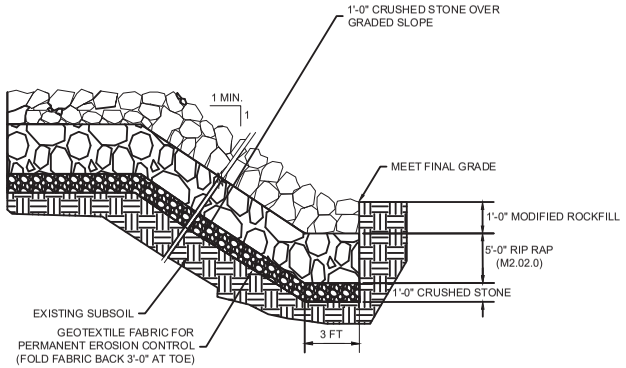


DECIDUOUS TREE PLANTING

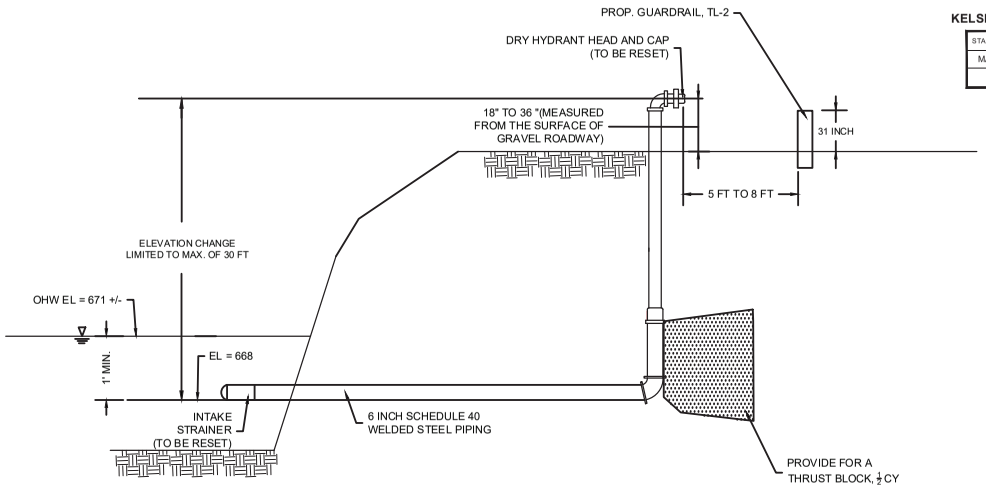
NOT TO SCALE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	32	61
PROJECT FILE NO.	609068		

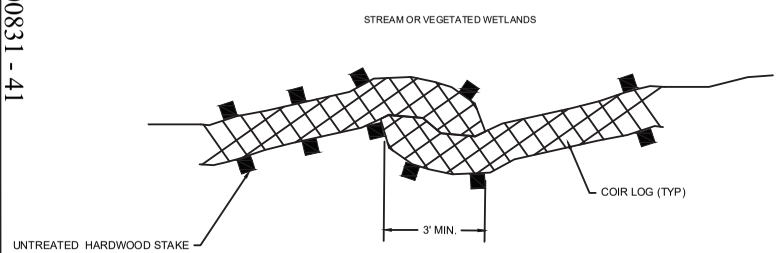
CONSTRUCTION DETAILS

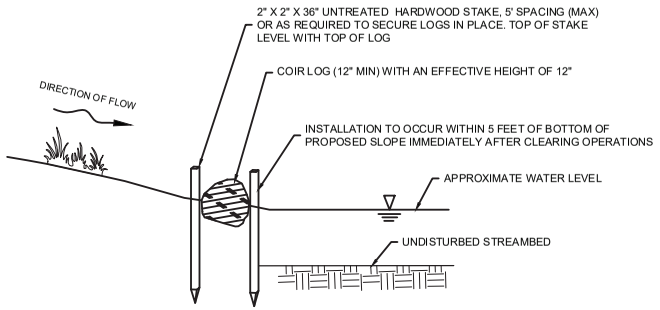


RIPRAP SIDE SLOPE DETAIL
NTS

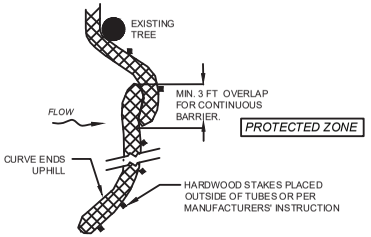


DRY HYDRANT DETAILS
NTS





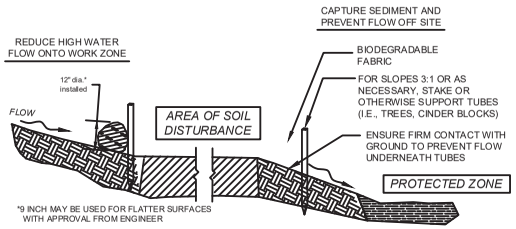
COIR LOG DETAILS
NTS



PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW

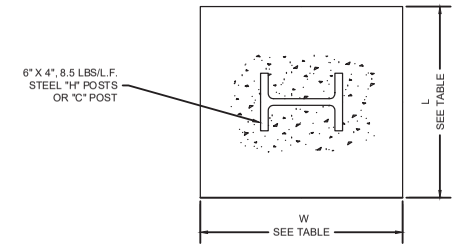


SECTION

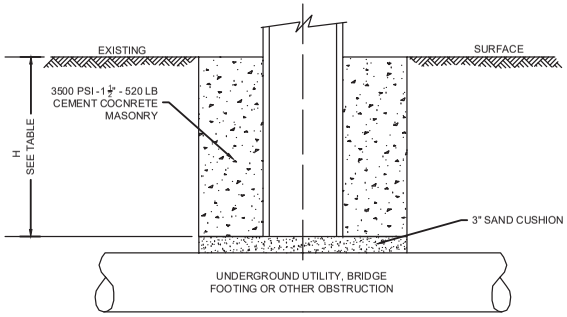
SEDIMENT BARRIER - COMPOST FILTER TUBE
NTS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	33	61
PROJECT FILE NO.	609068		

CONSTRUCTION DETAILS



PLAN



ELEVATION

HEIGHT OF EXISTING SURFACE ABOVE TOP OF SAND CUSHION	DIMENSION OF CONCRETE ENVELOPE		
	H HEIGHT OF SURFACE ABOVE SAND CUSHION	W	L
1'-0" - 1'-6"	VARIES 1'-0" - 1'-6"	2'-6"	2'-6"
1'-6" - 2'-6"	VARIES 1'-6" - 2'-6"	2'-0"	1'-6"
OVER 2'-6"	2'-6"	1'-6"	1'-6"

NOTES:

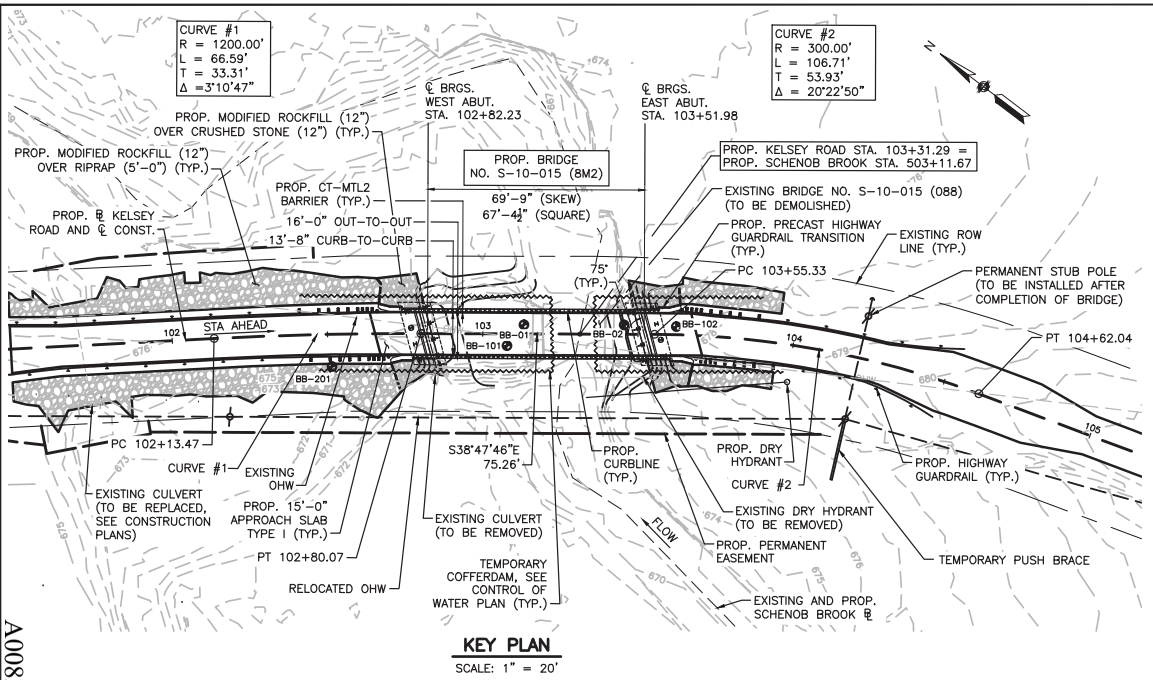
1. OFFSET BRACKETS ARE TO BE INSTALLED AND RAILS ARE TO BE MOUNTED AS SHOWN ON DRAWINGS 620.12.1
2. NOT TO BE USED ON MORE THAN 2 POSTS IN A ROW

MODIFIED HIGHWAY GUARD POST INSTALLATION

NTS

609068_HD (CONSTRUCTION DETAILS.DWG Plotted on 28-Jul-2026 1:29 PM

Proposal No. 609068-136649



KEY PLAN
SCALE: 1" = 20'



LOCUS
SCALE: 1" = 2000'

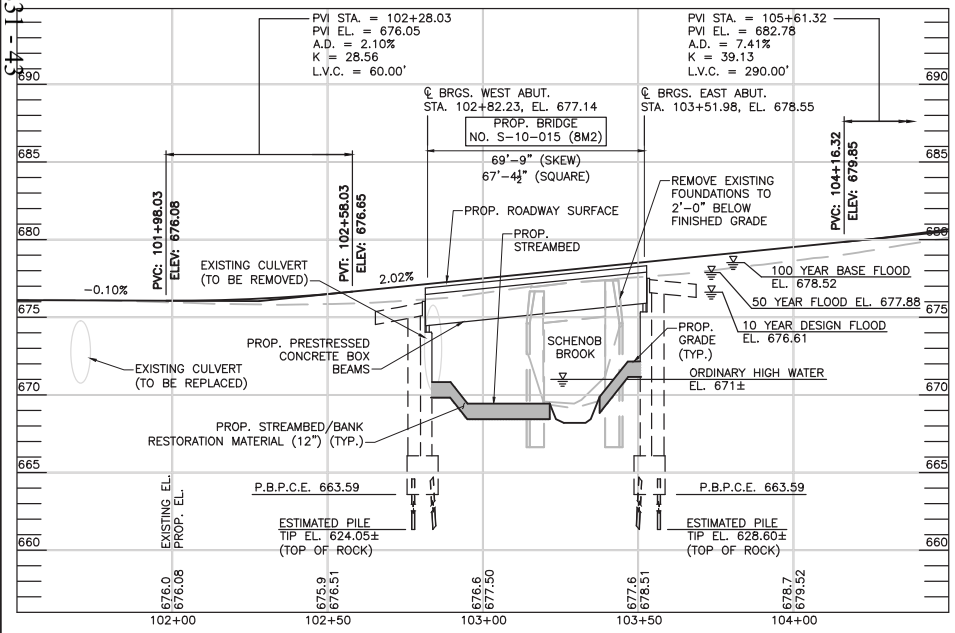
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	34	61
PROJECT FILE NO.	609068		

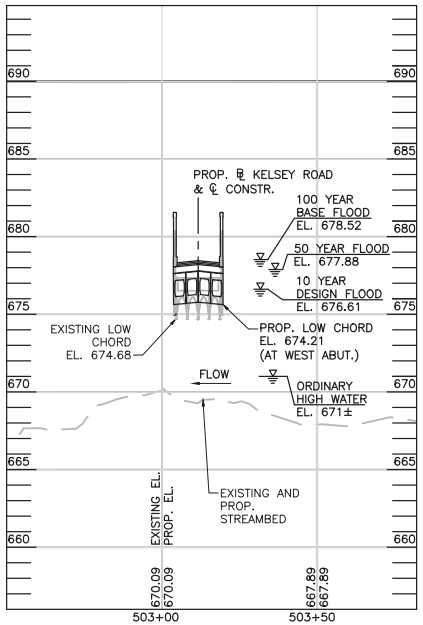
KEY PLAN, LOCUS, AND PROFILES

INDEX OF DRAWINGS

BRIDGE SHEET NO.	TITLE
1	KEY PLAN, LOCUS, AND PROFILES
2	GENERAL NOTES
3	BORING LOGS – 1
4	BORING LOGS – 2
5	BORING LOGS – 3
6	BORING LOGS – 4
7	BORING LOGS – 5
8	GENERAL PLAN AND ELEVATION
9	BRIDGE DEMOLITION PLAN
10	CONTROL OF WATER PLAN
11	WEST ABUTMENT PLAN AND ELEVATION
12	EAST ABUTMENT PLAN AND ELEVATION
13	SUBSTRUCTURE DETAILS – 1
14	SUBSTRUCTURE DETAILS – 2
15	FRAMING PLAN
16	BEAM DETAILS – 1
17	BEAM DETAILS – 2
18	DECK SECTION AND APPROACH SLAB DETAILS
19	BRIDGE RAILING DETAILS
20	HIGHWAY GUARDRAIL TRANSITION DETAILS – 1
21	HIGHWAY GUARDRAIL TRANSITION DETAILS – 2



PROFILE – ℄ CONSTRUCTION – KELSEY ROAD
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'



PROFILE – SCHENOB BROOK
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: ¼" = 1'

GFT
175 FEDERAL STREET
SUITE 800
BOSTON, MA 02110
781-326-4605

MONTH DD, YYYY | ISSUED FOR CONSTRUCTION

MassDOT

PROPOSED BRIDGE

SHEFFIELD
KELSEY ROAD
OVER SCHENOB BROOK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

STATE BRIDGE ENGINEER

CHIEF ENGINEER

SHEET 1 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

A00831 - 43

Proposal No. 609068-136649

GENERAL NOTES:

DESIGN:

IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020, FOR HL-93 LOADING.

MASSDOT BENCH MARK:

BENCHMARK #8284, BRASS RIVET SET IN THE TOP OF THE SOUTHEAST CONCRETE WINGWALL OF A BRIDGE OVER SCHENOB BROOK, EL. = 676.68.

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

DATE:

TO BE PLACED ON THE INSIDE FACE OF THE SOUTHWEST AND NORTHEAST HIGHWAY GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST HIGHWAY GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:

SURVEY NOTEBOOK NO. 23412. FIELD SURVEY WAS PERFORMED BY WSP USA, INC. AND WAS ELECTRONICALLY RECORDED. COPIES OF THE FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF-SIZE PRINTS (A3).

CONCRETE:

UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE, EXCEPT THAT THE CT-MTL2 BARRIERS SHALL BE 5000 $\frac{3}{4}$ IN. HP CONCRETE.

ALL CONCRETE POURS SHOWN ON THESE CONSTRUCTION DRAWINGS MEETING THE CONDITIONS FOR MASS PLACEMENT CONCRETE IN SECTION 901.32.A OF THE MASSDOT STANDARD SPECIFICATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THAT SECTION.

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. COATED BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	17"	21"
2. 12" OF CONCRETE BELOW BAR	18"	22"	27"
3. EPOXY COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	21"	26"	31"
4. COATED BARS, ALL OTHER CASES	17"	21"	25"
5. CONDITION 2. AND 3.	23"	29"	35"
6. CONDITION 2. AND 4.	21"	27"	32"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

FOUNDATIONS:

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

EXISTING CONDITIONS:

THE CONFIGURATION AND LAYOUT OF THE EXISTING BRIDGE STRUCTURE AND FOUNDATIONS ARE BASED ON INFORMATION CONTAINED IN THE 2016 BRIDGE RATING REPORT AND PROJECT SURVEY. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO CONSTRUCTION DETAILS AND WORK QUANTITIES. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH FIELD CONDITIONS.

THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED FIELD VERIFICATIONS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. THE EXISTING STRUCTURE IS SHOWN IN A SCREENED LINEWEIGHT.

TRAFFIC:

THE BRIDGE WILL BE CLOSED TO ALL VEHICULAR TRAFFIC DURING ALL PHASES OF DEMOLITION AND RECONSTRUCTION. TRAFFIC WILL BE CONTROLLED AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

UTILITIES:

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE, OR RELOCATE, AS NECESSARY, ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR THE BRIDGE WORK.

THE LOCATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL UTILITIES. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION REGARDING UTILITIES.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM	QTY.	UNIT
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. B-10-015 (088)	1	LS
MUCK EXCAVATION	400	CY
REINFORCED CONCRETE EXCAVATION	50	CY
BRIDGE EXCAVATION WITHIN COFFERDAM	420	CY
TEST PIT FOR EXPLORATION	50	CY
CLASS B ROCK EXCAVATION	7	CY
GRAVEL BORROW FOR BRIDGE FOUNDATION	65	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	75	CY
CRUSHED STONE	30	TON
CONTROLLED LOW-STRENGTH MATERIAL-STRUCTURAL NON-EXCAVATABLE	2	CY
DISPOSAL OF TREATED WOOD PRODUCTS	0.5	TON
SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B-9.5-P)	11	TON
SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B-9.5-P)	11	TON
SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	30	FT
GEOTEXTILE FABRIC FOR SEPARATION	70	SY
STEEL PILE HP 12 X 84	620	FT
DYNAMIC LOAD TEST BY CONTRACTOR	2	EA
PILE SHOES	16	EA
STREAMBED/BANK RESTORATION	212	SY
MODIFIED ROCKFILL	30	TON
CONTROL OF WATER - STRUCTURE NO. S-10-015 (8M2)	1	LS
TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088)	1	LS
BRIDGE STRUCTURE, BRIDGE NO. S-10-015 (8M2)	1	LS

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	35	61
PROJECT FILE NO.	609068		

GENERAL NOTES

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2046	
AVERAGE DAILY TRAFFIC - PRESENT	121	
AVERAGE DAILY TRAFFIC - DESIGN YEAR	148	
DESIGN HOURLY VOLUME	N/A	
DIRECTIONAL DISTRIBUTION	50%	
TRUCK PERCENTAGE - AVERAGE DAY	6%	
TRUCK PERCENTAGE - PEAK HOUR	6%	
DESIGN SPEED	20 MPH	
DIRECTIONAL DESIGN HOURLY VOLUME	N/A	

SEISMIC DESIGN CRITERIA

DESIGN RETURN PERIOD:	1000 YR
DESIGN SPECTRA	
As	0.096
SDs	0.232
SD1	0.084
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

HYDRAULIC DESIGN FLOOD (HDF) DATA

DRAINAGE AREA (SQ. MILES)	19.00
HDF DISCHARGE (C.F.S.)	2,000
HDF FREQUENCY (YEARS)	10
HDF VELOCITY (F.P.S.)	4.02
HDF ELEVATION (FEET, NAVD, UPSTREAM)	676.61
BASE (100-YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	4,460
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	678.52
SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	25
SDF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.29
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	3.36
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	50
SCF ELEVATION (FEET, NAVD, UNDER BRIDGE)	677.88
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	4.27
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	N/A
FREQUENCY (IF KNOWN, YEARS)	N/A
MAXIMUM ELEVATION (FEET, NAVD)	N/A
DATE (MM/YYYY)	N/A
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	N/A

TEMPORARY WATER CONTROL DESIGN DATA

DESIGN FLOOD DISCHARGE (C.F.S.)	864
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	8.45
DESIGN FLOOD ELEVATION (FEET, NAVD)	676.13

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

609068_BR2.DWG Plotted on 28-Jul-2026 2:29 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
Proposal No. 609068-136649
A00831 - 44

BORING BB–201

STA. 102+51.2
OFFSET 10.4' RT.

Date Started:	3/19/26	DRILLING LOG	Hole Number: BB-201
Date Finished:	3/20/26	Gannett Fleming	Sheet: 1 of 2
Soil Drilling:	54.5 ft		Line & Station: 102+51.2
Rock Sampling:	7.5 ft	Project: Kelsey Road over Schenob Brook Bridge	Offset: 10.4 ft R
Total Depth of Hole:	70.0 ft	Drilling Company: Seaboard Drilling	N Coordinate: 2854699 ft
No. of Undist. Core Samples:		Driller: Jeff Nitsch	E Coordinate: 140878 ft
Total Number of Core Boxes:	1	Bit Size and Type: Spoon Size: 2.0 in. O.D.	Elev. Top of Hole: +675.1 ft
GROUNDWATER OBSERVATIONS		Casing Size: 4.0 in. Spoon Size:	Direction of Hole
At 5.0 ft After 0 Hrs		Hollow Stem: N/A Hammer wt.: 140lb	Vertical ☒ Inclined ☐
Elev. 670.1 ft After 0 Hrs		Drilling Fluid: Mud Hammer Drop: 30.0"	Degrees from Vertical ---
		Drill Rig: Mobile 53 Truck Drill Rig	Inspector: Allen Winders

SCALE: ¼" = 1'-0" ELEVATION (FT.)

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
	0 - 2	S1	6-11-11-11	0.5	25		0.0'-2.0': Brown Silty Sand with Gravel (SM); moist; medium dense
Trace organics present in sample	2 - 4	S2	7-9-9-4	0.8	38		673.1 2.0'-6.0': Brown Clayey Sand with Gravel (SC); moist; very loose to medium dense
	4 - 6	S3	2-1-1-1	0.3	17		669.1
Trace organics present in sample	6 - 8	S4	1-2-2-2	0.6	29		6.0'-8.0': Dark Brown Sandy Lean Clay with Gravel (CL); moist; soft 667.1
	8 - 10	S5	2-3-3-3	1.3	63		8.0'-18.5': Gray Silty Sand with Gravel (SM); moist; loose to medium dense
	10 - 12	S6	3-5-8-5	0.8	42		661.6
	15 - 17	S7	5-5-4-4	1.0	50		13.5'-18.5': Gray poorly-graded Sand with Silt (SP-SM); moist; loose 656.6
	20 - 22	S8	3-2-2-2	0.8	38		18.5'-38.5': Gray Silt with Sand (ML); moist to wet; very soft to hard
	25 - 27	S9	WH-WH-3-3	1.1	54		
	30 - 32	S10	2-2-3-3	1.3	63		

OBSERVED GROUND WATER EL. 670.10 (3/19/2026)

BOTTOM OF PROPOSED WEST ABUTMENT PILE CAP EL. 663.59

Remarks: Hole grouted upon completion.

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS- 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

BORING BB–201 (CONT.)

102+51.2
OFFSET 10.4' RT.

Drilling Company:	Seaboard Drilling	DRILLING LOG	Hole Number: BB-201
Driller:	Jeff Nitsch	Gannett Fleming	Sheet: 2 of 2
Inspector:	Allen Winders		Elev. Top of Hole: 675.1
Kelsey Road over Schenob Brook Bridge			

SCALE: ¼" = 1'-0" ELEVATION (FT.)

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
							18.5'-38.5': Gray Silt with Sand (ML); moist to wet; very soft to hard *(continued)*
Spoon was damaged, unable to retrieve the sample Boulder felt at 36'-38' depth	35 - 37	S11	17-20-33-50/1	0.0	0		639.1 38.5'-54.5': Gray to brown Silty Gravel with Sand (GM); wet; medium dense to dense
Attempted to core boulder from 38-43'. No recovery achieved from rock coring attempt. Drilled down to 45' to sample	45 - 47	S12	16-9-12-8	0.3	17		
	50 - 52	S13	13-12-23-46	1.3	63		ESTIMATED PILE TIP EL. 620.60± (TOP OF ROCK)
Top of rock at approx. 54.5' depth	54.5 - 59.5	C1		1.2	23		Top of Rock @ 54.5 ft 620.6 54.5'-63.0': DOLOSTONE, gray, hard, slightly weathered, thickly bedding, slightly fractured
Attempted to core C-2. Core barrel got plugged after coring 2.5'. Attempted to start coring again at 62' depth but hole had completely collapsed to the bottom of the casing at 54.5'. Collapsed due to water pumped down hole into carbonate rock Drilled through weathered rock from 62-70'	59.5 - 62	C2		0.0	0		
							605.1 Bottom of borehole at 70.00 feet.

NRCS BORING LOG LOG - GF MASSDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS- 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

BORING NOTES:

1. LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: ⊕ BB–#
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. EXISTING BORINGS BB–01 AND BB–02 WERE DRILLED BETWEEN DECEMBER 17TH 2002 AND DECEMBER 19TH 2002. BORINGS BB–101 AND BB–102 WERE DRILLED BETWEEN JUNE 15TH 2021 AND JUNE 18TH 2021. BORING BB–201 WAS DRILLED BETWEEN MARCH 19TH 2026 AND MARCH 20TH 2026.
7. BORINGS BB–01 AND BB–02 WERE MADE BY NEW HAMPSHIRE BORING, INC, P.O. BOX 165, DERRY, NH 03038. BORINGS BB–101 AND BB–102 WERE MADE BY NORTHERN DRILL SERVICE, INC, 130 EAST MAIN STREET, BLDG. A, NORTHBOROUGH, MA 01532. BORING BB–201 WAS MADE BY SEABOARD DRILLING, 95 CARANDO DRIVE, SPRINGFIELD, MA 01104.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
9. EXISTING BOTTOM OF FOOTING ELEVATION UNKNOWN.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	36	61
PROJECT FILE NO.	609068		

BORING LOGS - 1

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

609068_BR3.DWG Plotted on 28-Jul-2026 2:30 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
Proposal No. 609068-136649
A00831 - 45

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-D03S(963)X	37	61
PROJECT FILE NO.	609068		

BORING LOGS - 2

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.

BORING BB-101
STA. 103+07.8
OFFSET 3.8' RT.

DRILLING LOG — Gannett Fleming

Date Started:	6/17/21	Hole Number:	BB-101
Date Finished:	6/18/21	Sheet:	1 of 2
Soil Drilling:	49.3 ft	Line & Station:	103+07.8
Rock Sampling:	10.0 ft	Project:	Kelsey Road over Schenob Brook Bridge
Total Depth of Hole:	59.3 ft	Offset:	3.8 ft R
Drilling Company:	Northern Drill Service, Inc.	N Coordinate:	2854659 ft
Driller:	Tyler Kennedy	E Coordinate:	140919 ft
Bit Size and Type:	Spoon Size: 2.0 in. O.D.	Elev. Top of Hole:	+676.8 ft
Casing Size: 3.5 in.	Spoon Size:	Direction of Hole	
Hollow Stem: 4.5 in. O.D.	Hammer wt.: 140lb	Vertical ☒ Inclined ☐	
Drilling Fluid: Mud	Hammer Drop: 30.0"	Degrees from Vertical	—
Drill Rig: Deidon D-25 Skid Rig - Automatic Hammer		Inspector: Hratch A. Agopian	

GROUNDWATER OBSERVATIONS
At 4.6 ft After 27.5 Hrs
Elev. 672.2 ft After 27.5 Hrs

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
Cobbles present in sample - heterogeneous	0 - 2	S1	8-11-17-10	1.3	65		0.0'-27.5': Light Brown Silty Sand (SM); moist to wet, very loose to medium dense
Homogeneous	2 - 4	S2	14-14-15-18	1.3	65		
Contains wood fragments and organics - heterogeneous	4 - 6	S3	10-4-3-3	1.0	50		
Homogeneous - Dark Brown organic	6 - 8	S4	3-2-2-2	0.8	40		
Contains wood fragments and organics - heterogeneous	8 - 10	S5	1-1-1-1	1.1	55		
							OBSERVED GROUND WATER EL. 672.20 (6/18/2021)
Homogeneous	14 - 16	S6	5-4-5-8	0.9	45		
							BOTTOM OF PROPOSED WEST ABUTMENT PILE CAP EL. 663.59
Homogeneous	19 - 21	S7	2-3-4-3	1.1	55		
Homogeneous	24 - 26	S8	3-2-3-3	1.0	50		
							27.5'-32.5': Light Gray Sandy Silt (ML); wet; medium stiff to stiff
Homogeneous	29 - 31	S9	5-5-5-11	1.0	50		
31.5'-32': Cobbles							

Remarks: Rock cored comparable as pressure and torque remained constant throughout core run.
Hole grouted upon completion.

MRCS BORING LOG LOG - GF MASSDOT/KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATA/TMPL-FINAL-GDT 4/3/26

SCALE: ¾" = 1'-0"
ELEVATION (FT.)

BORING BB-101 (CONT.)
STA. 103+07.8
OFFSET 3.8' RT.

DRILLING LOG — Gannett Fleming

Drilling Company:	Northern Drill Service, Inc.	Hole Number:	BB-101
Driller:	Tyler Kennedy	Sheet:	2 of 2
Inspector:	Hratch A. Agopian	Elev. Top of Hole:	676.8

Kelsey Road over Schenob Brook Bridge

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
Homogeneous	34 - 36	S10	10-12-17-24	0.7	35		32.5'-49.3': Light Gray Silty Sand (SM); wet; medium dense to dense
Tip brown Silty Sand SM	39 - 41	S11	18-25-20-11	0.8	40		ESTIMATED PILE TIP EL. 627.50± (TOP OF ROCK)
Homogeneous	44 - 46	S12	10-9-8-6	0.9	45		
	49 - 49.3	S13	50/4"	0.0	0		Top of Rock @ 49.3 ft
Sedimentary rock appears banded	49.3 - 54.3	C1		5.0	100		49.3'-59.3': DOLOSTONE; white, hard, slightly weathered, thinly bedded, very slightly fractured
	54.3 - 59.3	C2		5.0	100		
							Bottom of borehole at 59.30 feet.

MRCS BORING LOG LOG - GF MASSDOT/KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATA/TMPL-FINAL-GDT 4/3/26

SCALE: ¾" = 1'-0"
ELEVATION (FT.)

MONTH DD, YYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

SHEET 4 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

609068 Final Structural Submittal (SFJ) 8-Jul-2026 609068_BRS.DWG Plotted on 28-Jul-2026 2:32 PM

SHEFFIELD
KELSEY ROAD

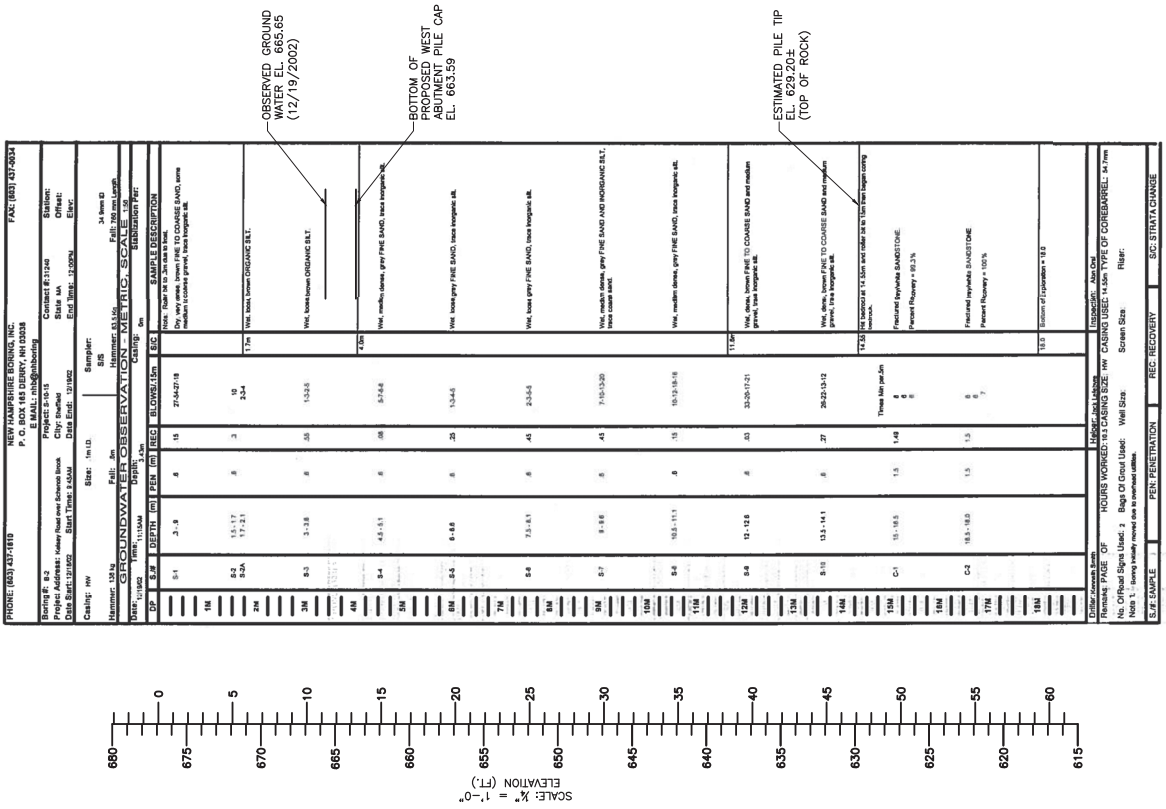
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-D03(983)X	38	61
PROJECT FILE NO. 609068			

BORING LOGS - 3

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.
2. BORING BB-01 IS A HISTORICAL BORING TAKEN 12/19/2002. ELEVATIONS SHOWN ARE BASED ON 2020 SURVEY DATA. SEE BORING LOCATION PLAN CONTAINED WITHIN THE GEOTECHNICAL REPORT.

EXISTING BORING BB-01
STA. 103+13.2
OFFSET 2.9' LT.



MONTH DD, YYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

SHEET 5 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

609068 Final Structural Submittal (SFJ) 8-Jul-2026 609068_BR6.DWG Plotted on 28-Jul-2026 2:33 PM

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STPBR-OFFI-X03(983)X	39	61
PROJECT FILE NO. 609068			

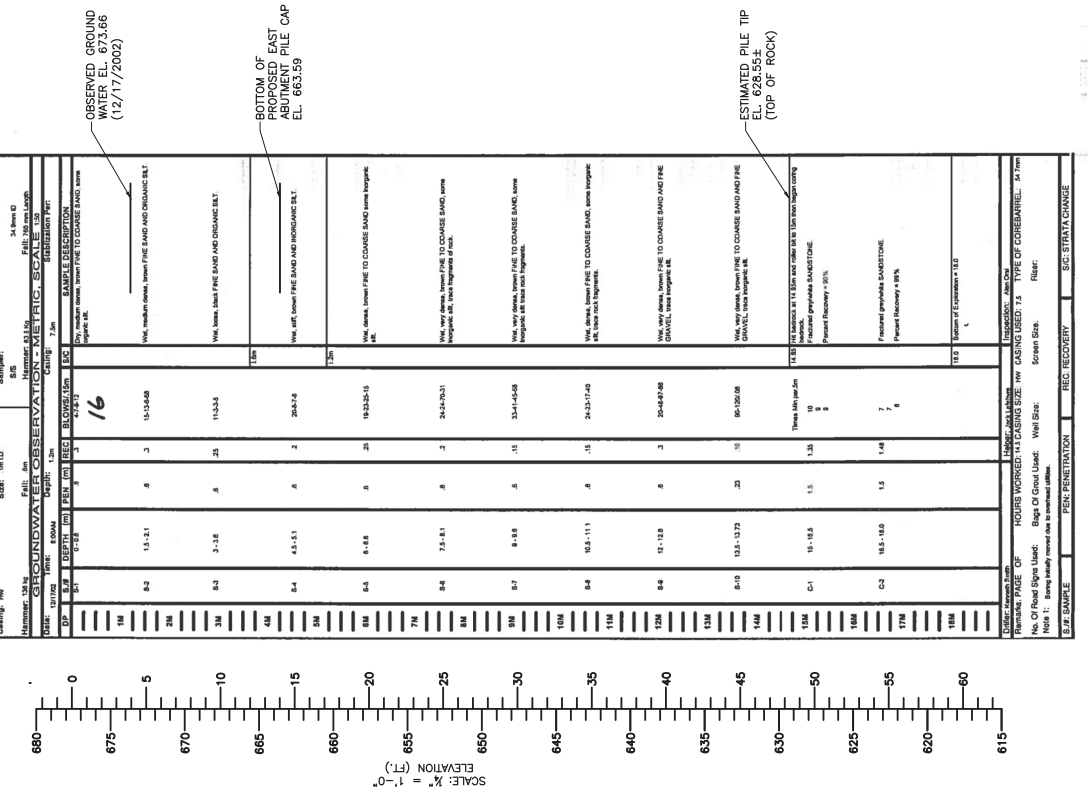
BORING LOGS - 4

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.
2. BORING BB-02 IS A HISTORICAL BORING TAKEN 12/17/2002. ELEVATIONS SHOWN ARE BASED ON 2020 SURVEY DATA. SEE BORING LOCATION PLAN CONTAINED WITHIN THE GEOTECHNICAL REPORT.

EXISTING BORING BB-02

STA. 103+45.5
OFFSET 3.0' LT.



MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

SHEET 6 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

BORING BB–102

STA. 103+62.2
OFFSET 2.6' LT.

Date Started:	6/15/21	DRILLING LOG	Hole Number: BB-102
Date Finished:	6/16/21	Gannett Fleming	Sheet: 1 of 2
Soil Drilling:	51.0 ft		Line & Station: 103+62.2
Rock Sampling:	10.0 ft	Project: Kelsey Road over Schenob Brook Bridge	Offset: 2.6 ft L
Total Depth of Hole:	61.0 ft	Drilling Company: Northern Drill Service, Inc.	N Coordinate: 2854626 ft
No. of Undist. Core Samples:		Driller: Carl Beirholm	E Coordinate: 140958 ft
Total Number of Core Boxes:	1	Bit Size and Type: Spoon Size: 2.0 in. O.D.	Elev. Top of Hole: +677.8 ft
GROUNDWATER OBSERVATIONS		Casing Size: 3.5 in. Spoon Size:	Direction of Hole
At 5.3 ft After 27.5 Hrs		Hollow Stem: 4.5 in. O.D. Hammer wt.: 140lb	Vertical ☒ Inclined ☐
Elev. 672.5 ft After 27.5 Hrs		Drilling Fluid: Mud Hammer Drop: 30.0"	Degrees from Vertical —
		Drill Rig: B-57 Mobile Drill Rig - Automatic Hammer	Inspector: Hratch A. Agopian

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
Homogeneous	0 - 2	S1	15-12-16-13	1.0	50		0.0'-27.5': Light Brown Silty Sand (SM); moist to wet; very loose to medium dense
Homogeneous	2 - 4	S2	9-9-9-6	1.2	60		
Wood chips in tip of spoon	4 - 6	S3	5-5-8-5	0.7	35		
Homogeneous - Dark Brown organic	6 - 8	S4	14-3-WOH-1	0.8	40		
Wood chips hindered recovery (contained decomposed wood chips)	8 - 10	S5	1-1-2-2	0.1	5		
Homogeneous	14 - 16	S6	4-7-8-11	0.8	40		
Homogeneous	19 - 21	S7	8-14-10-24	0.9	45		
Homogeneous	24 - 26	S8	15-20-19-29	1.3	65		
							650.3
Homogeneous	29 - 31	S9	23-20-16-18	0.8	40		27.5'-32.5': Light Gray Sandy Silt (ML); wet; medium stiff to stiff
32'-34': Probable boulder or cobbles at							645.3

OBSERVED GROUND WATER EL. 672.50 (6/16/2021)

BOTTOM OF PROPOSED EAST ABUTMENT PILE CAP EL. 663.59

Remarks: Hole grouted upon completion.

SCALE: ¼" = 1'-0"
ELEVATION (FT.)

NRCS BORING LOG LOG - GF MASIDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

BORING BB–102 (CONT.)

103+62.2
OFFSET 2.6' LT.

Drilling Company: Northern Drill Service, Inc.		DRILLING LOG	Hole Number: BB-102
Driller: Carl Beirholm		Gannett Fleming	Sheet: 2 of 2
Inspector: Hratch A. Agopian			Elev. Top of Hole: 677.8
Kelsey Road over Schenob Brook Bridge			

Remarks	Depth (Ft.)	Sample No.	Blows or RQD (%)	Rec. (ft.)	Rec. (%)	USCS	Description Of Materials
tip							32.5'-49.0': Light Gray Silty Sand (SM); wet; medium dense to very dense
	34 - 36	S10	50/3"	0.0	0		
Heterogeneous	36 - 38	S11	7-15-11-27	2.0	100		
Homogeneous	39 - 41	S12	24-22-18-23	0.8	40		
42'-44': Cobbles - Heterogeneous							
	44 - 46	S13	49-50/4"	0.8	40		
	48.9 - 49	S14	50/0"	0.0	0		Top of Rock @ 49.0 ft 628.8
Rock contains seam = 1/4" @ 53', filled with silt and clay	51 - 56	C1		5.0	100		49.0'-61.0': DOLOSTONE, white to light gray, moderately hard to very hard, slightly to moderately weathered, thinly to thickly bedding, very slightly to slightly fractured
Sedimentary rock appears banded	56 - 61	C2		5.0	100		616.8
							Bottom of borehole at 61.00 feet.

ESTIMATED PILE TIP EL. 628.80± (TOP OF ROCK)

SCALE: ¼" = 1'-0"
ELEVATION (FT.)

NRCS BORING LOG LOG - GF MASIDOT KELSEY ROAD OVER SCHENOB BROOK_LOGS - 2026 - R1.GPJ GF-DATATMPL-FINAL.GDT 4/3/26

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	40	61
PROJECT FILE NO.	609068		

BORING LOGS - 5

BORING NOTES:

1. FOR BORING NOTES, SEE SHEET 3.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
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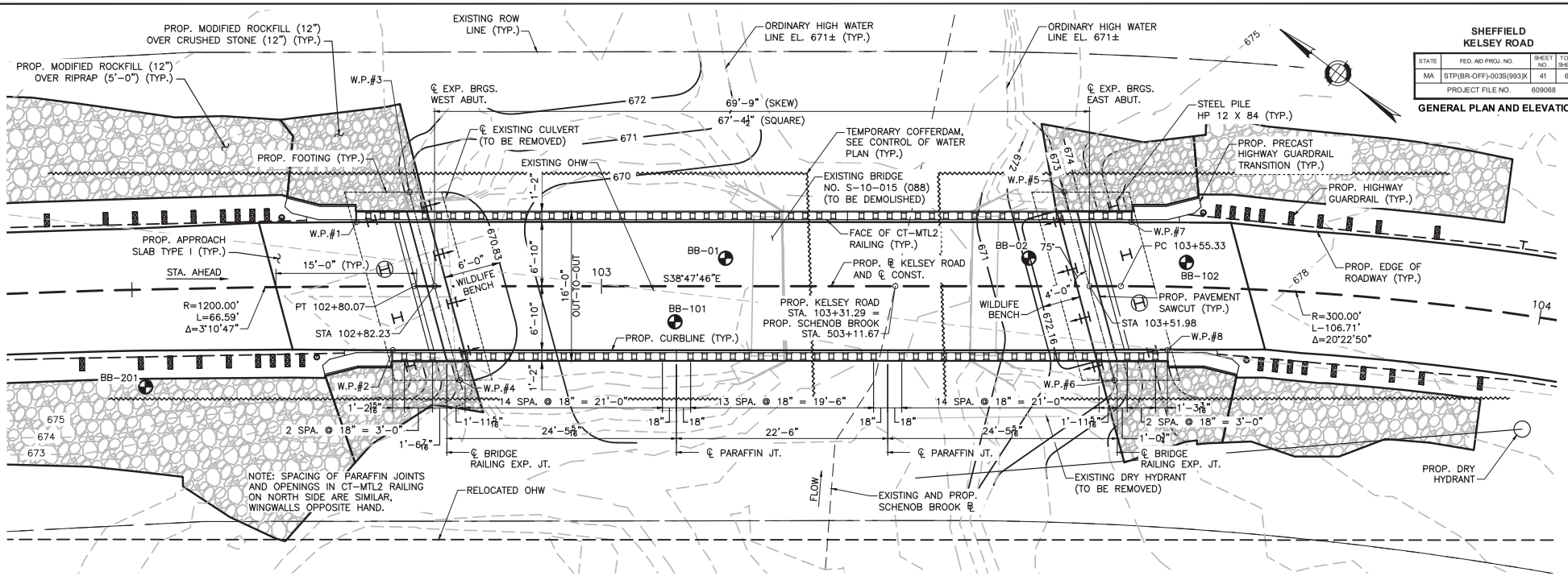
SHEET 7 OF 21 SHEETS BRIDGE NO. S–10–015 (8M2)

609068_BR7.DWG Plotted on 28-Jul-2026 2:34 PM

609068 Final Structural Submittal (SF2) 8-Jul-2026

Proposal No. 609068-136649

A00831 - 49



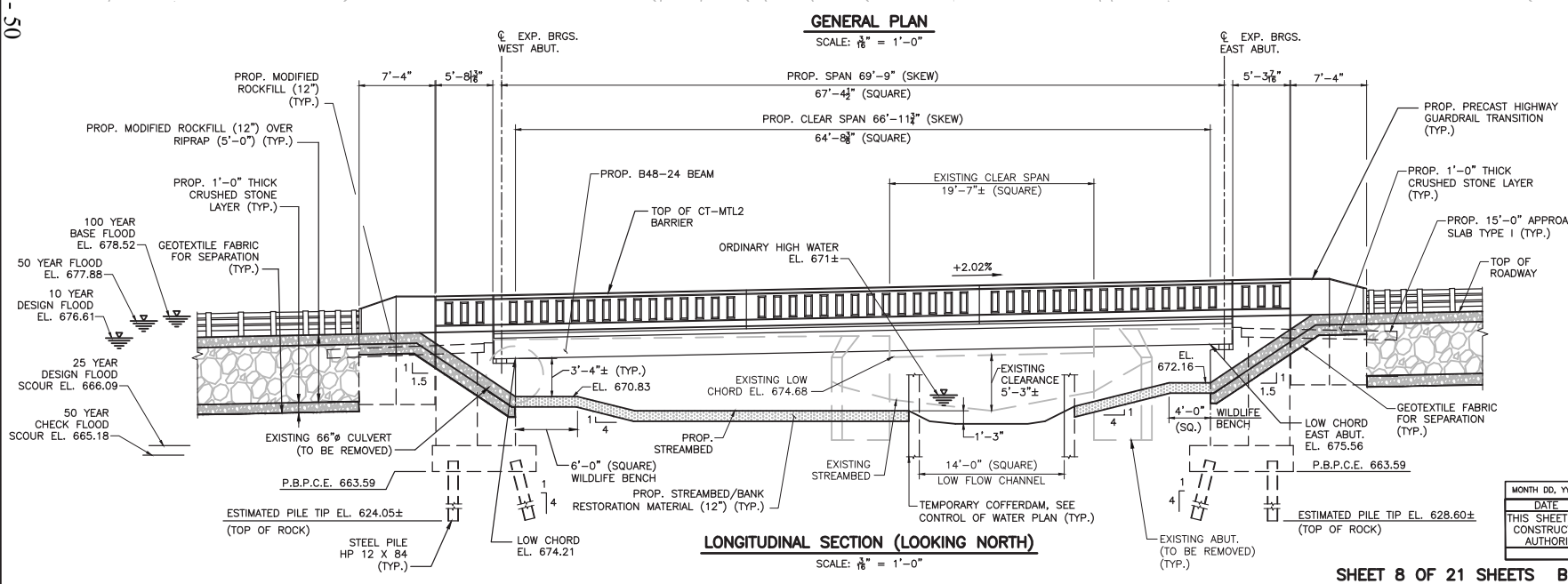
GENERAL PLAN

SCALE: 1/16" = 1'-0"

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	41	61
PROJECT FILE NO.	609068		

GENERAL PLAN AND ELEVATION



LONGITUDINAL SECTION (LOOKING NORTH)

SCALE: 1/16" = 1'-0"

LEGEND:

- VERTICAL PILE
- TEST PILE
- 4V:1H BATTERED PILE

WORKING POINT TABLE

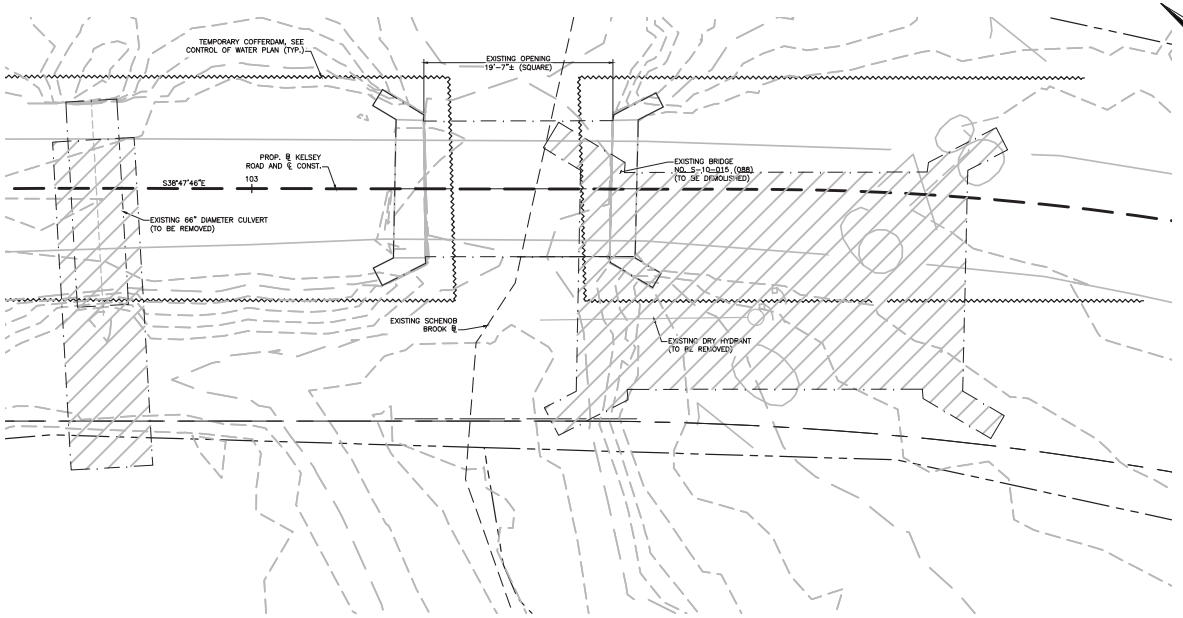
W.P.	STATION	OFFSET
W.P.#1	102+73.97	6.85' LT
W.P.#2	102+77.76	6.83' RT
W.P.#3	102+79.55	10.02' LT
W.P.#4	102+84.92	10.02' RT
W.P.#5	103+49.29	10.02' LT
W.P.#6	103+54.67	10.02' RT
W.P.#7	103+56.41	6.83' LT
W.P.#8	103+61.02	6.79' RT

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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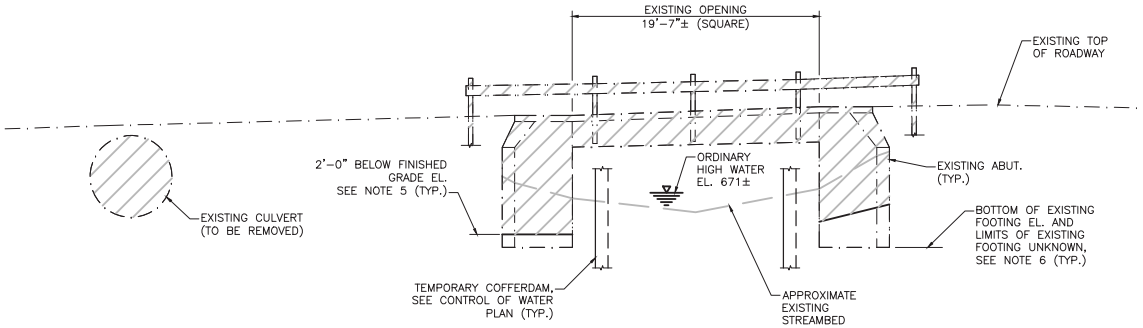
A00831 - 50

Proposal No. 609068-136649



DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



DEMOLITION ELEVATION

SCALE: 1/4" = 1'-0"

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	42	61
PROJECT FILE NO.	609068		

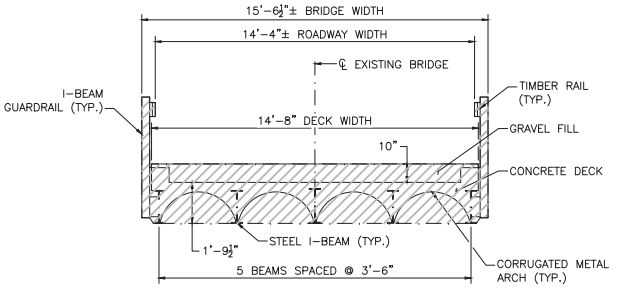
BRIDGE DEMOLITION PLAN

LEGEND:

TO BE REMOVED

DEMOLITION NOTES:

1. THE EXISTING BRIDGE SHALL BE DEMOLISHED TO THE LIMITS SHOWN ON THE PLANS. THE CONTRACTOR SHALL TAKE ALL MEASURES REQUIRED TO PROTECT THE SCHENOB BROOK AND ADJACENT WETLAND AREAS FROM ALL CONSTRUCTION OPERATIONS.
2. CONTRACTOR MUST CONTAIN ALL DEBRIS FROM FALLING INTO THE BROOK DURING CONSTRUCTION ACTIVITIES. TEMPORARY PROTECTIVE SHIELDING ASSOCIATED WITH DEMOLITION SHALL BE INCLUDED IN THE PAY ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088). SEE SPECIAL PROVISIONS.
3. THE INFORMATION PRESENTED HERE IS FOR BIDDING PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL INFORMATION PRIOR TO SUBMITTING BIDS.
4. EXACT LIMITS OF THE EXISTING SUBSTRUCTURE ARE UNKNOWN. TEST PITS ARE TO BE PERFORMED TO LOCATE EXISTING FOUNDATIONS PRIOR TO ANY DEMOLITION WORK. TEST PITS WILL BE PAID UNDER PAY ITEM 141.1 TEST PIT FOR EXPLORATION.
5. EXISTING SUBSTRUCTURES ARE TO BE REMOVED A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.
6. EXISTING WINGWALLS AND FOUNDATIONS IN CONFLICT WITH PROPOSED SUBSTRUCTURE SHALL BE REMOVED ENTIRELY WITHIN 1 FOOT FROM PROPOSED SUBSTRUCTURE.



EXISTING BRIDGE TYPICAL CROSS SECTION

SCALE: 3/8" = 1'-0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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SHEET 9 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

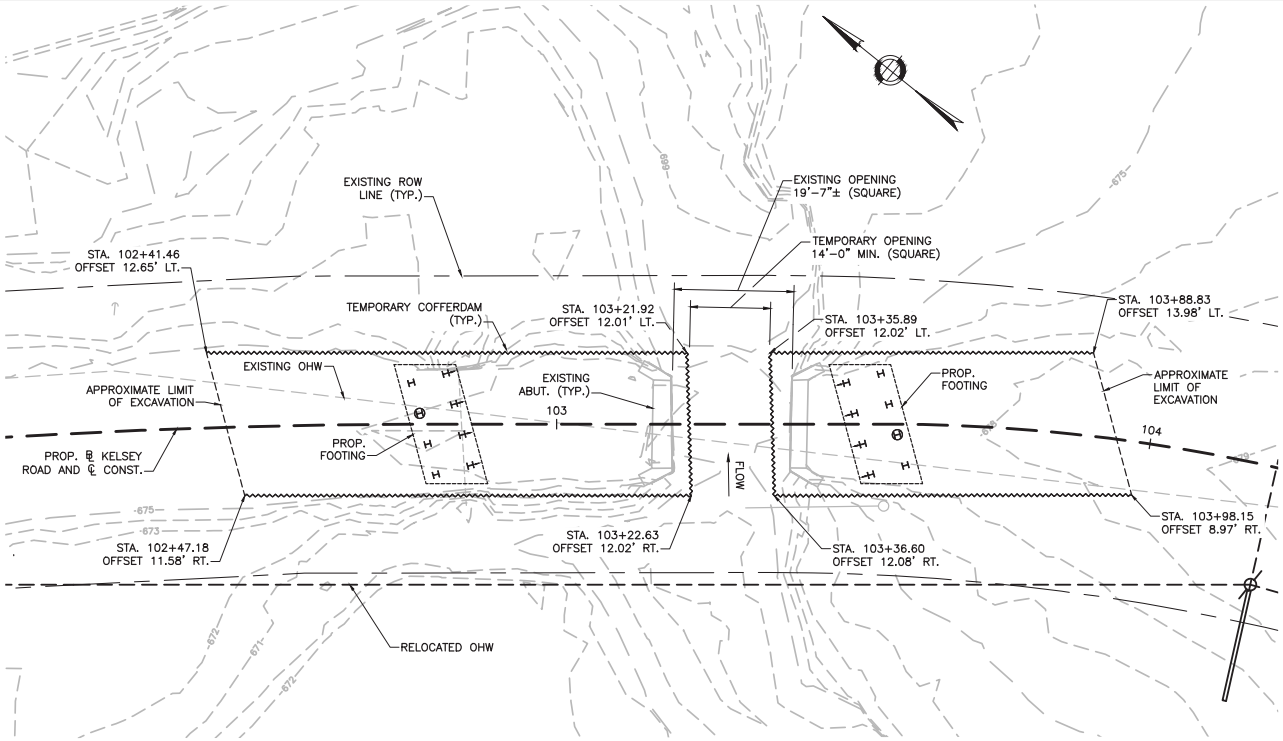
609068_BRG.DWG Plotted on 28-Jul-2026 2:37 PM

609068 Final Structural Submittal (SF2) 8-Jul-2026

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	43	61
PROJECT FILE NO.	609068		

CONTROL OF WATER PLAN



WATER CONTROL PLAN

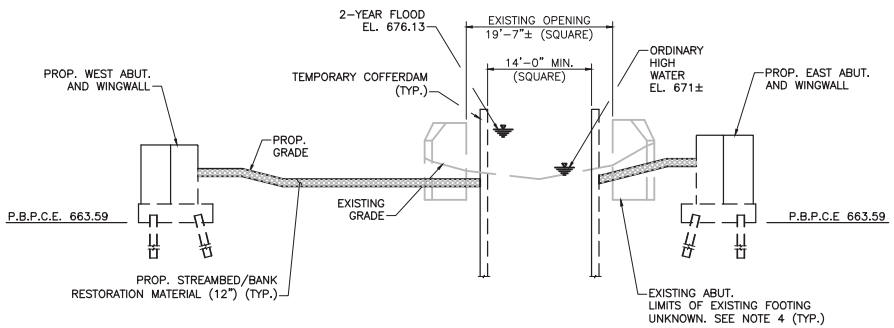
SCALE: 1" = 10'

WATER CONTROL NOTES:

1. THE COST OF COFFERDAM AND ALL OTHER MEASURES NECESSARY FOR CONTROL OF WATER SHALL BE INCLUDED IN ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S–10–015 (8M2). SEE SPECIAL PROVISIONS.
2. THE COFFERDAM SHALL BE DESIGNED BY CONTRACTOR TO CONSTRUCT THE BRIDGE FOUNDATIONS IN THE DRY. THE TEMPORARY WATER CONTROL DESIGN DATA SHOWN ON THESE PLANS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE AWARE THAT THE ROADWAY WILL BE OVERTOPPED DURING THE 2–YEAR FLOOD EVENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUSLY MONITORING THE FORECAST AND TAKING THE NECESSARY PRECAUTIONS TO ENSURE THAT THE EXCAVATIONS REMAIN DRY DURING CONSTRUCTION.
3. STATIONS AND OFFSETS SHOWN ARE APPROXIMATE.
4. EXISTING FOOTING LIMITS ARE UNKNOWN. CONTRACTOR SHALL ESTABLISH EXISTING FOOTING LIMITS PRIOR TO DESIGNING COFFERDAMS.
5. INSTALLATION OF COFFERDAM SHALL BE COORDINATED WITH RELOCATION OF OVERHEAD WIRES.
6. THE TEMPORARY COFFERDAM SYSTEM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION. FULL REMOVAL OF ANY STEEL SHEETING IS REQUIRED.
7. SEE BRIDGE DEMOLITION PLAN FOR EXISTING STRUCTURE DEMOLITION NOTES.

TEMPORARY WATER CONTROL DESIGN DATA:

FLOOD FREQUENCY:	2–YEAR
PEAK FLOW:	864 C.F.S.
WATER SURFACE ELEVATION:	676.13
VELOCITY	8.45 F.P.S.
FREE BOARD:	N/A
TOP ELEVATION OF COFFERDAM:	677.13



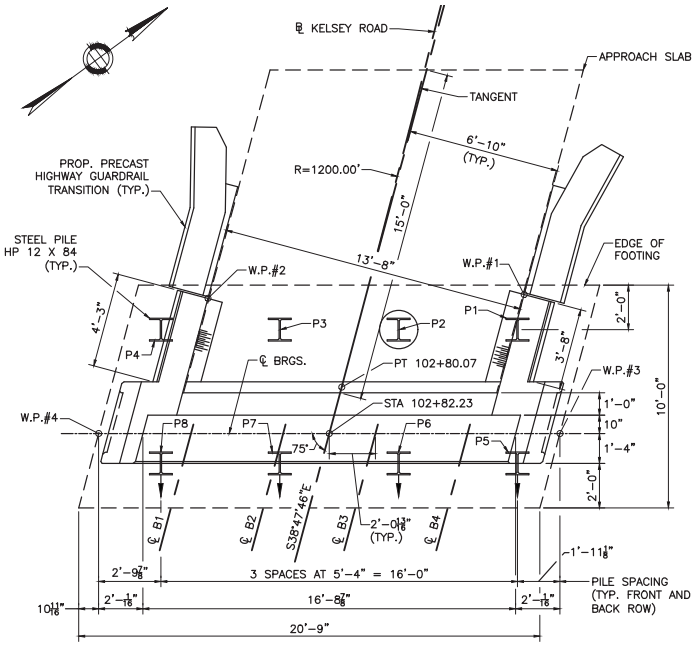
WATER CONTROL ELEVATION

SCALE: $\frac{1}{8}$" = 1'–0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

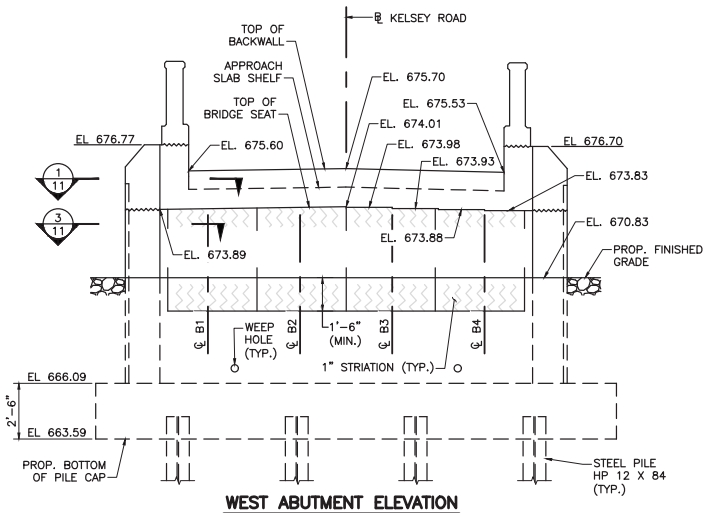
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
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609068 Final Structural Submittal (SF2) 8-Jul-2026
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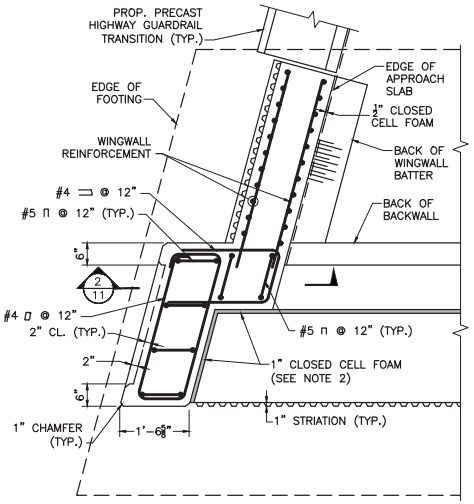
WEST ABUTMENT PLAN

SCALE: 3/8" = 1'-0"



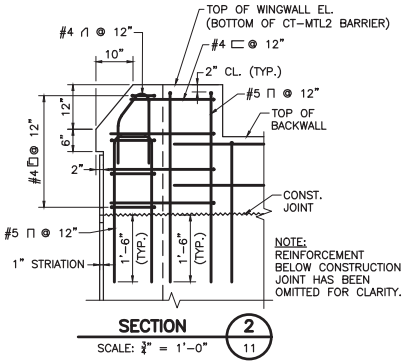
WEST ABUTMENT ELEVATION

SCALE: 3/8" = 1'-0"



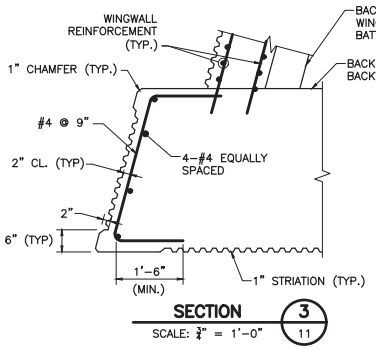
SECTION 1/11

SCALE: 3/4" = 1'-0"



SECTION 2/11

SCALE: 3/4" = 1'-0"



SECTION 3/11

SCALE: 3/4" = 1'-0"

PILE NOTES:

1. PILES SHALL CONFORM TO AASHTO M270 GRADE 50.
2. HEAVY DUTY PILE SHOES SHALL BE INSTALLED ON THE TIPS OF ALL PILES. PREFABRICATED PILE SHOES MAY BE USED IF APPROVED BY THE ENGINEER.
3. ALL PILE SPLICES SHALL BE EITHER BUTT JOINTS MADE USING COMPLETE JOINT PENETRATION (CJP) WELDS OR MECHANICAL TYPE SPLICERS INSTALLED IN ACCORDANCE WITH THE APPROVED INSTALLATION NOTES. ALL SPLICES WITHIN 16 FEET FROM THE TOP OF PILE SHALL BE CJP SPLICES WITH CJP WELDS 100% INSPECTED USING UT. THE COST OF PILE SPLICES SHALL BE INCLUDED IN THE COST OF PAY ITEM 942.124 STEEL PILE HP 12 X 84.
4. FACTORED AXIAL DESIGN LOAD PER PILE PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

   STRENGTH I LIMIT STATE
   FACTORED AXIAL DESIGN LOAD = 228 KIPS.
5. PILES SHALL BE DRIVEN TO BEDROCK WITH THE ESTIMATED TIP ELEVATION AT EL. 620.6 TO 629.2. THE FACTORED STRUCTURAL RESISTANCE PER PILE IS 428 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 857 KIPS AND A RESISTANCE FACTOR OF 0.5.
6. DETERMINATION OF THE DRIVEN PILE RESISTANCE, PILE DRIVING CRITERIA, AND PILE INTEGRITY SHALL BE PERFORMED ON AT LEAST 1 PILE PER ABUTMENT USING DYNAMIC TESTING WITH A RESISTANCE FACTOR OF 0.65. PILES SHALL BE INSTALLED TO ACHIEVE A FACTORED DRIVEN RESISTANCE EQUAL TO OR GREATER THAN THE FACTORED AXIAL DESIGN LOAD.
7. LOAD TESTS SHALL BE PERFORMED AT THE PRODUCTION PILE LOCATIONS SHOWN. ALTERNATE LOCATIONS MAY BE SUBMITTED FOR APPROVAL BY ENGINEER. THE TEST PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK TO ACHIEVE THE REQUIRED RESISTANCE. THE CONTRACTOR SHALL SUBMIT THE TEST PILE DRIVING RESULTS TO SHOW THE CAPABILITY OF THE PILE HAMMER TO DRIVE THE PILES TO THE REQUIRED RESISTANCE WITHOUT EXCEEDING THE ALLOWABLE PILE DRIVING STRESS OF 45 KSI FOR 50 KSI STEEL. ACCEPTED TEST PILES SHALL REMAIN AS FINAL PRODUCTION PILES.
8. THE DYNAMIC LOAD TEST SHALL BE PERFORMED WITH THE PILE DRIVING ANALYZER (PDA) AND THE TEST DATA SHALL BE ANALYZED WITH THE CASE PILE WAVE ANALYZER PROGRAM (CAPWAP).
9. DIVERSION OF RIVER WATER (FROM CULVERT TO SCHENOB BROOK) WILL BE NEEDED TO AID THE DEWATERING MEASURES AND PROVIDE SUPPORT OF EXCAVATIONS. THE CONTRACTOR WILL BE RESPONSIBLE TO DESIGN AND INSTALL ADEQUATE SUPPORT OF EXCAVATION AND DEWATERING MEASURES.
10. EXCAVATIONS MUST BE DRY FOR INSPECTION BY THE ENGINEER PRIOR TO FOUNDATION CONSTRUCTION. EXCAVATION AND DEWATERING SHALL BE PERFORMED IN A WAY THAT DOES NOT UNDERMINE SURROUNDING STRUCTURES, ROADWAYS, AND UTILITIES.
11. THE CONTRACTOR SHALL SUBMIT A PILE SCHEDULE, PILE INSTALLATION, AND PILE DRIVING/TESTING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER.
12. AFTER PILE DRIVING IS COMPLETE THE CONTRACTOR SHALL SUBMIT PILE DRIVING LOGS INCLUDING THE FINAL TIP ELEVATIONS AND THE RESULTS OF ANY DYNAMIC OR STATIC LOAD TESTING. SIGNIFICANT DEVIATIONS SHALL BE NOTED AS REVISIONS ON THE CONSTRUCTION DRAWINGS.

℄ PILE COORDINATES TABLE

PILE NO.	NORTHING	EASTING
P1	2854691.2523	140907.1871
P2	2854686.9487	140904.0370
P3	2854682.6452	140900.8868
P4	2854678.3416	140897.7366
P5	2854687.7084	140912.0287
P6	2854683.4048	140908.8785
P7	2854679.1012	140905.7283
P8	2854674.7976	140902.5781

LEGEND:

VERTICAL PILE

TEST PILE

4V:1H BATTERED PILE

NOTES:

1. FOR SUBSTRUCTURE DETAILS, SEE SHEETS 13 AND 14.
2. ATTACH CLOSED CELL FOAM AS REQUIRED TO ALL BEAMS PRIOR TO PLACING THE CONCRETE FOR THE BACKWALL AND CURTAIN WALL.
3. SEAT ELEVATIONS ARE PROVIDED AT CENTERLINE OF BEARINGS. TOP OF BACKWALL AND PARAPET CONSTRUCTION JOINT ELEVATIONS ARE PROVIDED AT FRONT FACE OF BACKWALL.
4. CENTERLINE OF PILE COORDINATES ARE AT BOTTOM OF PILE CAP.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	44	61
PROJECT FILE NO.	609068		

WEST ABUTMENT PLAN AND ELEVATION

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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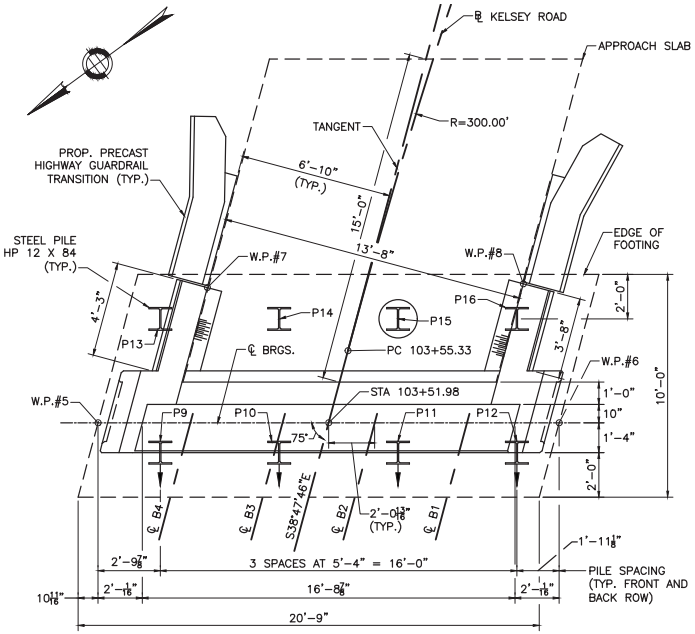
609068 Final Structural Submittal (SF2) 8-Jul-2026

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Proposal No. 609068-136649

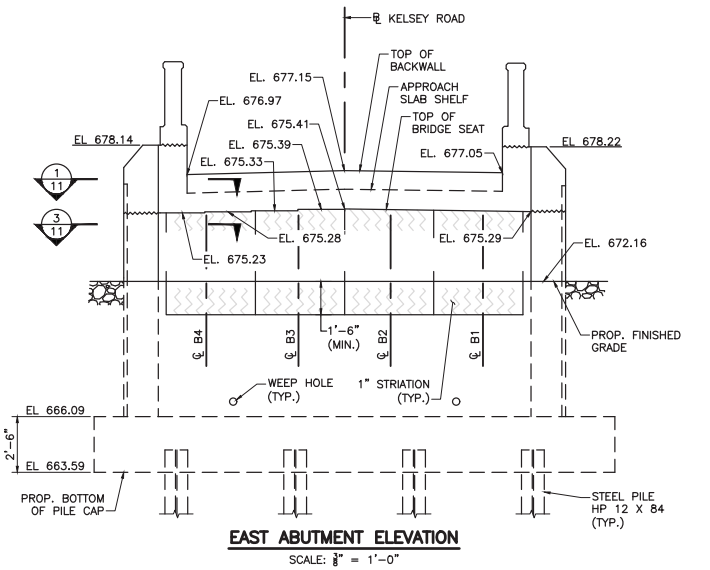
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	45	61
PROJECT FILE NO.	609068		

EAST ABUTMENT PLAN AND ELEVATION



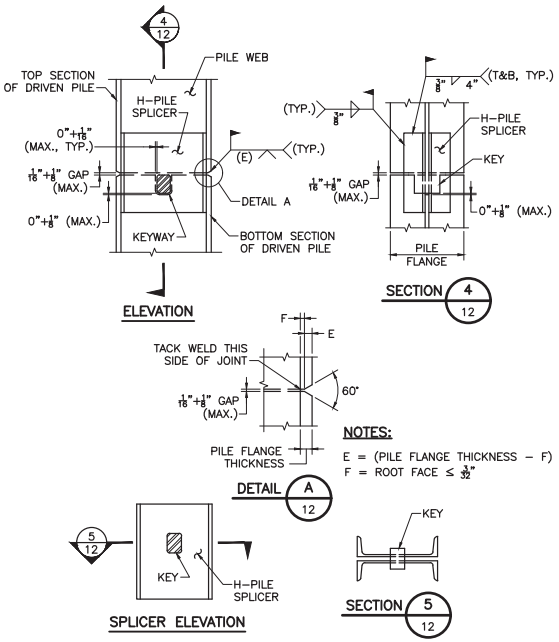
EAST ABUTMENT PLAN

SCALE: 3/8" = 1'-0"



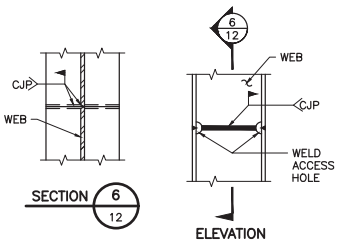
EAST ABUTMENT ELEVATION

SCALE: 3/8" = 1'-0"



WELDED MECHANICAL H-PILE SPLICE DETAILS

NOT TO SCALE



NOTES:

1. ALL WELDS SHALL BE COMPLETE PENETRATION AND SHALL CONFORM TO THE AASHTO/AWS BRIDGE WELDING CODE, D1.5.
2. WELDING PROCEDURE SPECIFICATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO WELDING.
3. WHENEVER POSSIBLE ALL PILES SHALL BE SPLICED ON THE GROUND IN THE FLAT POSITION.
4. WEB SHALL BE COPED TO ALLOW FOR COMPLETE PENETRATION WELDING OF FLANGES.
5. WELDED MECHANICAL PILE SPLICERS MAY BE USED PROVIDED THAT COMPLETE DETAILS AND WELDING PROCEDURES HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER.

CJP H-PILE SPLICE DETAILS

NOT TO SCALE

H-PILE SPLICER INSTALLATION NOTES:

1. CUT OFF AND SQUARE A MINIMUM LENGTH OF 1 FOOT FROM THE TOP OF THE PILE THAT HAS JUST BEEN DRIVEN INTO THE GROUND.
2. BEVEL THE TWO FLANGES OF THE DRIVEN PILE 30° DEGREES (+10°, −5°) EACH WITH A MAXIMUM ROOT FACE OF 3/32" (+0, −3/32).
3. GRIND ALL FLAME CUT SURFACES SMOOTH.
4. LAYOUT AND FLAME CUT THE KEYWAY IN THE WEB OF THE DRIVEN PILE FOR THE KEY OF THE H-PILE SPLICER WITH THE SPECIFIED TOLERANCES. RADIUS THE BOTTOM OF THE SLOT 3/8" IN EACH CORNER.
5. GRIND ALL FLAME CUT SURFACES SMOOTH.
6. SLIDE THE H-PILE SPLICER ONTO THE PILE. THE KEY OF THE SPLICER MUST SLIDE DOWN THE KEYWAY IN THE WEB OF THE DRIVEN PILE.
7. SQUARE THE END OF THE PILE SECTION TO BE ADDED TO THE PREVIOUSLY DRIVEN PILE. BEVEL BOTH FLANGES OF THE PILE 30° DEGREES (+10°, −5°) EACH WITH A MAXIMUM ROOT FACE OF 3/32" (+0, −3/32).
8. GRIND ALL FLAME CUT SURFACES SMOOTH.
9. SLIDE THE TOP PILE SECTION WITH A CRANE INTO THE H-PILE SPLICER SLEEVE. PLUMB PILE; ALIGN THE FLANGES OF BOTH PILE SECTIONS. THE FLANGES MUST BE IN ALIGNMENT WITH THE MAXIMUM TOLERANCE OF 1/8". TACK WELD IN PLACE ON BACK SIDE OF JOINT AS PER THE APPROVED FILLET WELDING PROCEDURE.
10. FAYING SURFACES BETWEEN THE H-PILE SPLICER AND THE PILE FLANGES SHALL HAVE A GAP OF 0" (+1/8"). CLAMPS OR HYDRAULIC JACKS MAY BE USED TO ACCOMPLISH THIS. NO HEATING WILL BE ALLOWED.
11. USING A 3/8" FILLET WELD, WELD THE H-PILE SPLICER TO THE FLANGES, 4 INCHES OF WELD AT THE TOP AND BOTTOM AT EACH CORNER AND THE LENGTH OF THE SPLICER AS PER THE APPROVED FILLET WELDING PROCEDURE.
12. USING A PARTIAL PENETRATION GROOVE WELD, WELD THE FLANGES AS PER THE APPROVED GROOVE WELDING PROCEDURE. THE SIZE SHALL BE SHOWN ON THE WELDING PROCEDURE.

℄ PILE COORDINATES TABLE

PILE NO.	NORTHING	EASTING
P9	2854634.2011	140953.0512
P10	2854629.8974	140949.9010
P11	2854625.5937	140946.7510
P12	2854621.2900	140943.6009
P13	2854630.6573	140957.8927
P14	2854626.3536	140954.7427
P15	2854622.0499	140951.5926
P16	2854617.7462	140948.4426

LEGEND:

- VERTICAL PILE
- TEST PILE
- 4V:1H BATTERED PILE

NOTES:

1. FOR PILE NOTES, SEE SHEET 11.
2. FOR SUBSTRUCTURE DETAILS, SEE SHEETS 13 AND 14.
3. ATTACH CLOSED CELL FOAM AS REQUIRED TO ALL BEAMS PRIOR TO PLACING THE CONCRETE FOR THE BACKWALL AND CURTAIN WALL.
4. SEAT ELEVATIONS ARE PROVIDED AT CENTERLINE OF BEARINGS. TOP OF BACKWALL AND PARAPET CONSTRUCTION JOINT ELEVATIONS ARE PROVIDED AT FRONT FACE OF BACKWALL.
5. CENTERLINE OF PILE COORDINATES ARE AT BOTTOM OF PILE CAP.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

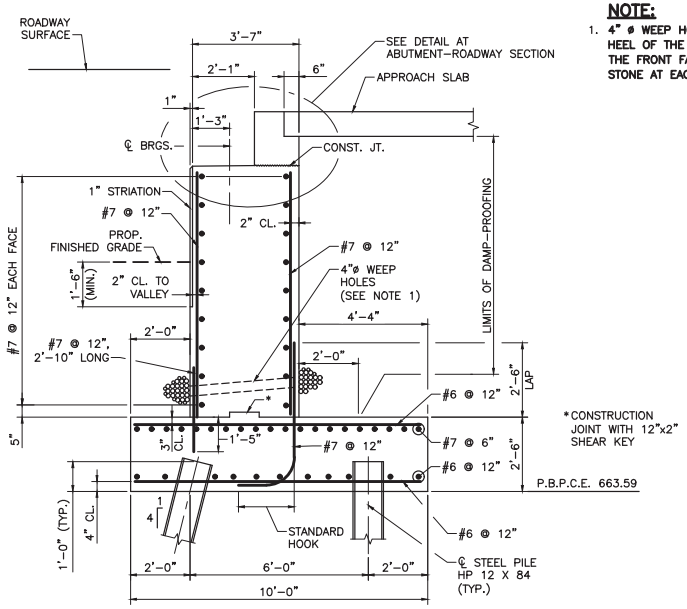
609068_BR12.DWG Plotted on 28-Jul-2026 2:46 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
Proposal No. 609068-136649
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STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	46	61
PROJECT FILE NO.	609068		

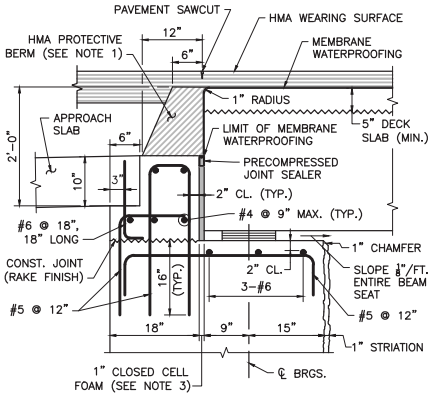
SUBSTRUCTURE DETAILS - 1

NOTE:

1. 4" ø WEEP HOLES 10'–0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.



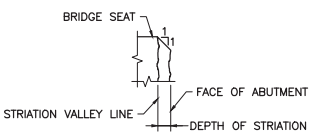
TYPICAL ABUTMENT SECTION
SCALE: ½" = 1'–0"



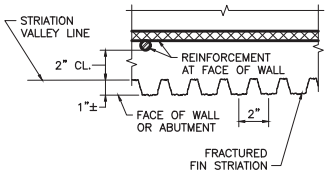
DETAIL AT ABUTMENT – ROADWAY SECTION
SCALE: 1" = 1'–0"

ROADWAY SECTION NOTES:

1. HMA PROTECTIVE BERM TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE–9.5 POLYMER (SPC–B–9.5–P), PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND–GUIDED TAMPER.
2. ALL REINFORCING SHOWN IN THIS DETAIL SHALL BE COATED BARS.
3. ATTACH CLOSED CELL FOAM TO BACK OF PRECAST BEAM WITH ADHESIVE.
4. ALL CURTAIN WALL AND BACKWALL CONCRETE SHALL BE PLACED AFTER ALL BEAMS HAVE BEEN ERECTED.



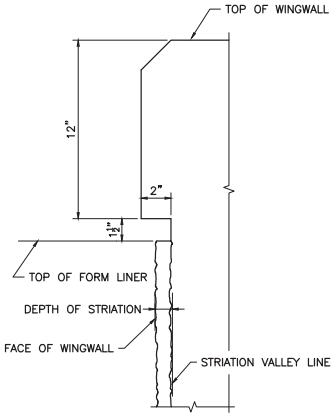
DETAIL AT BRIDGE SEAT
SCALE: 3" = 1'–0"



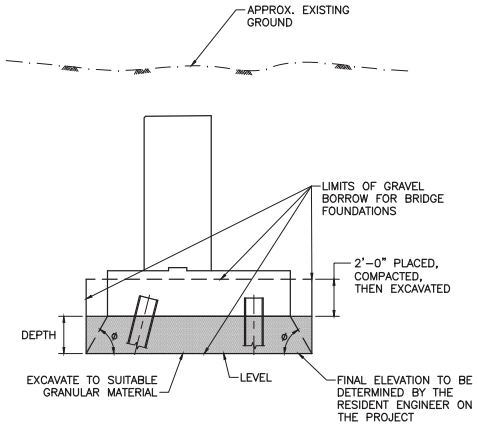
NOTE:

1. THE CONTRACTOR SHALL MAKE SURE THAT THE STRIATION FINS ARE PLUMB AND LINED UP VERTICALLY FROM PANEL TO PANEL FOR THE FULL HEIGHT OF THE WALL.

TYPICAL STRIATION DETAIL
SCALE: 3" = 1'–0"



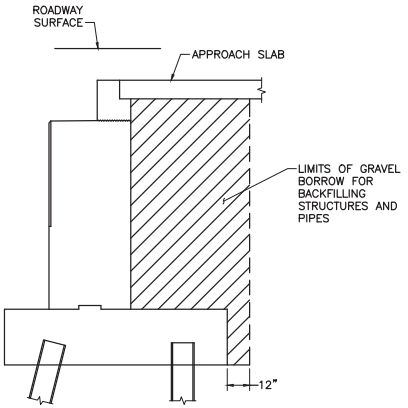
DETAIL AT TOP OF WINGWALL
SCALE: 3" = 1'–0"



NOTE:

1. ø = 45° FOR DEPTH OF 5'–0" OR LESS.
   ø = 60° FOR DEPTH OVER 5'–0".

LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS
NOT TO SCALE



LIMITS OF GRAVEL BORROW FOR BACKFILLING ABUTMENTS
NOT TO SCALE

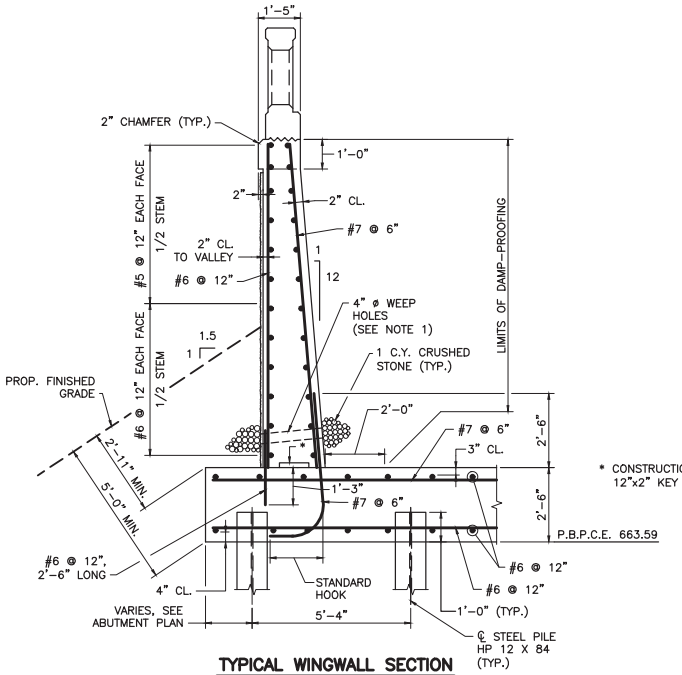
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
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609068_BR13.DWG Plotted on 28-Jul-2026 2:47 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
Proposal No. 609068-136649
A00831 - 55

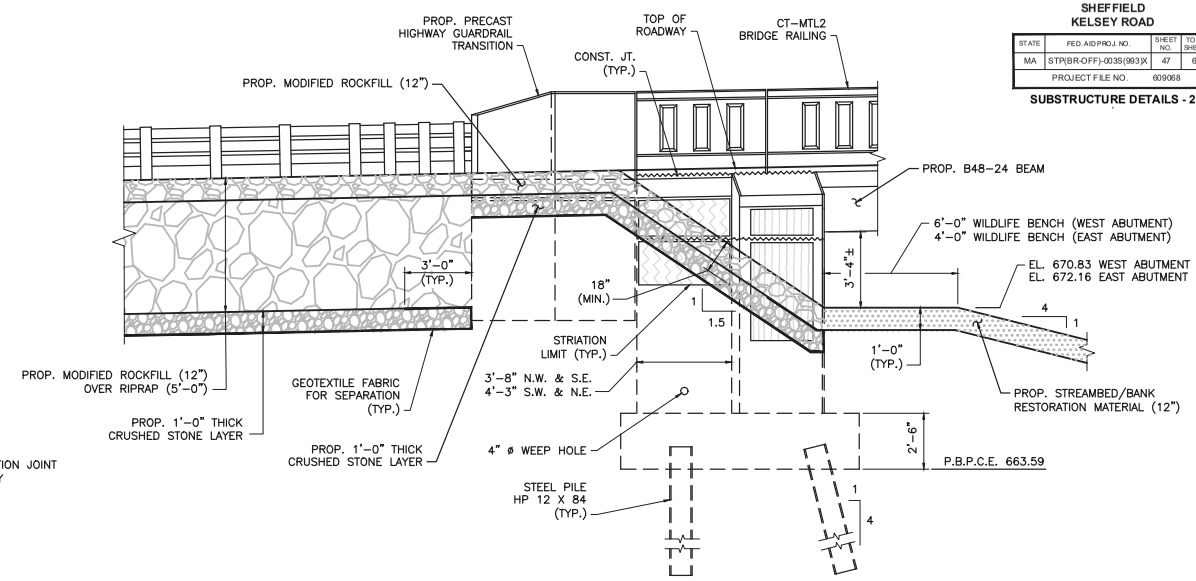
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	47	61
PROJECT FILE NO.	609068		

SUBSTRUCTURE DETAILS - 2



TYPICAL WINGWALL SECTION

SCALE: $\frac{1}{2}$" = 1'-0"

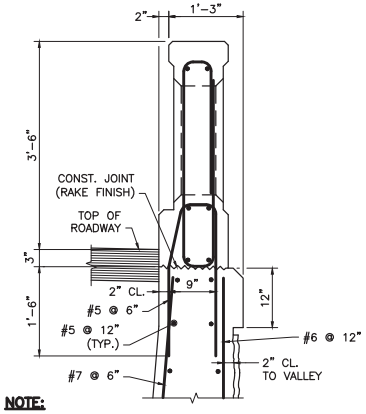


TYPICAL U-WINGWALL ELEVATION

SCALE: $\frac{3}{8}$" = 1'-0"

NOTES:

1. 4" ø WEEP HOLES 10'-0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
2. RIPRAP SHALL BE SIZE D_{50} = 30 INCHES, D_{100} = 60 INCHES AND SHALL CONFORM TO M2.02.0 OF THE STANDARD SPECIFICATIONS.



NOTE:

1. SEE SECTION THRU CT-MTL2 RAILING AT SAFETY CURB FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN HERE.

TOP OF U-WINGWALL DETAILS AT SAFETY CURB

SCALE: 1" = 1'-0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

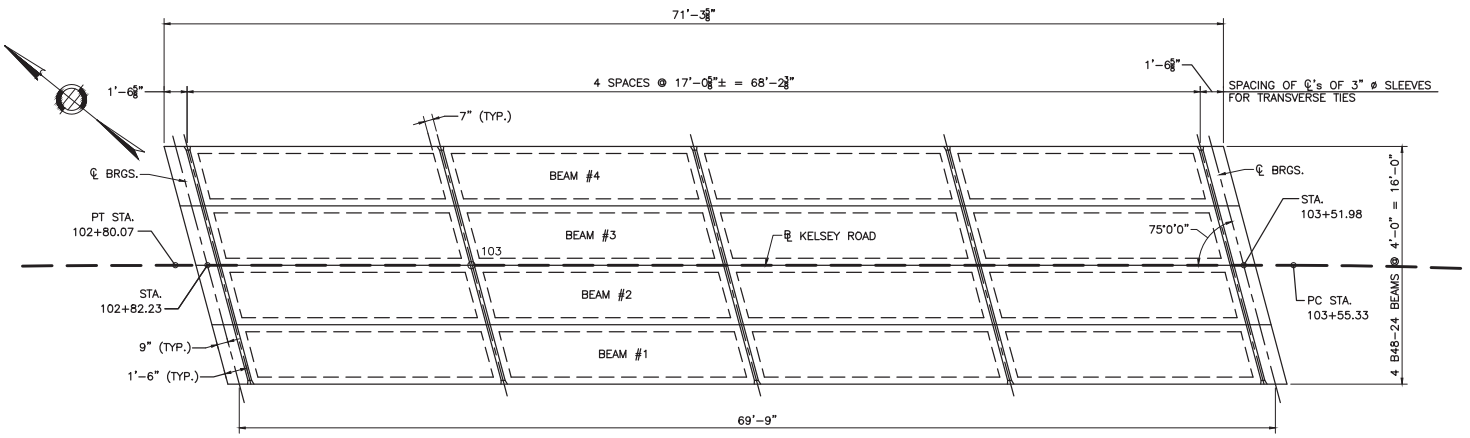
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
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609068_BR14.DWG Plotted on 28-Jul-2026 2:49 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00831 - 56
Proposal No. 609068-136649

SHEFFIELD
KELSEY ROAD

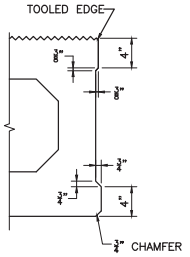
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	48	61
PROJECT FILE NO.	609068		

FRAMING PLAN



FRAMING PLAN

SCALE: ¼" = 1'-0"



SHEAR KEY DETAIL

SCALE: 1½" = 1'-0"

ESTIMATED CAMBER AND DEFLECTIONS AT MIDSPAN (INCHES)

STATE OF BEAM	DIRECTION	BEAMS #1, #2, #3, #4
CAMBER AT TRANSFER (2)	UP	1.66
CAMBER AT ERECTION	UP	3.15
FINAL NCDL DEFLECTION (3)	DOWN	0.59
FINAL CDL DEFLECTION (3)	DOWN	0.43

NOTES:

1. CAMBER AND DEFLECTIONS IN THE TABLE ARE NOT GUARANTEED AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
2. THE BEAM CONCRETE MODULUS OF ELASTICITY AT TRANSFER USED IN THE ABOVE BEAM CAMBER IS ASSUMED TO BE 4,347,000 PSI.
3. THE BEAM CONCRETE MODULUS OF ELASTICITY USED IN THE ABOVE BEAM DEFLECTION IS ASSUMED TO BE 4,679,000 PSI (AT 28 DAYS).

BEAM DEAD LOAD FORCE EFFECTS AND LIVE LOAD DISTRIBUTION FACTORS

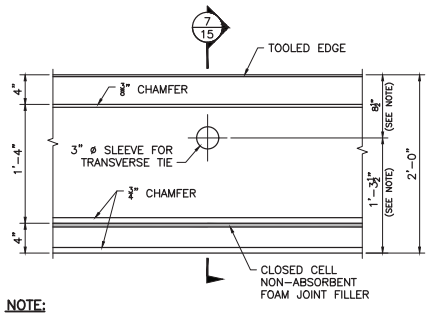
BEAM	DC1		DC2		DW (3)		LL	
	MOMENT (FT-KIP)	SHEAR (KIP)	MOMENT (FT-KIP)	SHEAR (KIP)	MOMENT (FT-KIP)	SHEAR (KIP)	MOMENT (LANES)	SHEAR (LANES)
BEAMS #1 & #4	664	35	244	20	36	3	0.324	0.457
BEAMS #2 & #3	668	36	253	13	70	2	0.310	0.452

NOTES:

1. DEAD LOAD FORCE EFFECTS AND LIVE LOAD DISTRIBUTION FACTORS ARE FROM 3D FEM ANALYSIS USING AASHTOWare BrR VERSION 7.4.0.3001.
2. THE LIVE LOAD DISTRIBUTION FACTORS ASSUME A MULTIPLE PRESENCE FACTOR OF 1.00.
3. DW EFFECTS ARE DUE TO AN ASSUMED FUTURE UTILITY LOAD OF 125 PLF.

CONSTRUCTION SEQUENCE NOTES:

1. AFTER ALL BEAMS HAVE BEEN ERECTED, TENSION EACH TRANSVERSE TIE TO 5 KIPS.
2. FILL ALL KEYWAYS WITH MORTAR (M4.04.5). IF THE KEYWAYS ARE NOT FILLED WITHIN FIVE (5) DAYS AFTER THE BEAMS ARE ERECTED, THE CONTRACTOR SHALL COVER AND PROTECT THE KEYWAYS FROM WEATHER AND DEBRIS UNTIL THEY ARE FILLED.
3. AFTER THE MORTAR HAS CURED (24 HOURS MINIMUM), TENSION EACH TRANSVERSE TIE TO 44 KIPS.
4. CONCRETE FOR DECK SLAB SHALL BE PLACED AFTER THE TRANSVERSE TIES HAVE BEEN FULLY TENSIONED.
5. NO TRAFFIC OR HEAVY EQUIPMENT WILL BE PERMITTED ON THE BRIDGE UNTIL ALL TRANSVERSE TIES HAVE BEEN PROPERLY TENSIONED AND THE DECK HAS BEEN CAST AND CURED PER THE STANDARD SPECIFICATIONS.

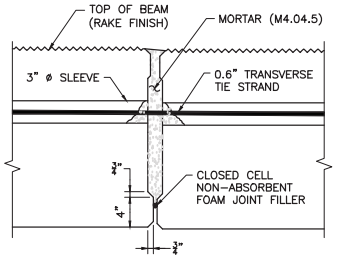


NOTE:

THE VERTICAL POSITION OF THE TRANSVERSE TIE STRANDS MUST BE COORDINATED WITH THE LOCATIONS OF THE PRESTRESSING STRANDS AND ADJUSTED AS NECESSARY TO AVOID INTERFERENCE.

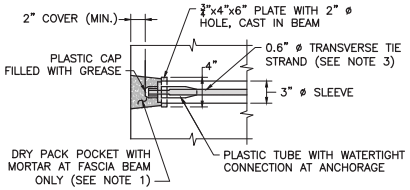
TYPICAL BEAM ELEVATION AT TRANSVERSE TIE LOCATIONS

SCALE: 1½" = 1'-0"



SECTION 7/15

SCALE: 1½" = 1'-0"



NOTES:

1. MORTAR FOR EXTERIOR POCKETS SHALL CONFORM TO M4.04.5 AND SHALL BE THE SAME COLOR AND TEXTURE AS THE BEAM CONCRETE.
2. OTHER ANCHORAGE SYSTEMS MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. ALTERNATE ANCHORAGE SYSTEMS SHALL BE WATERTIGHT AND CORROSION PROOF.
3. TRANSVERSE TIES SHALL BE COVERED BY A SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITING GREASE BETWEEN THE STRAND AND SHEATH) FOR THE FULL LENGTH OF THE STRAND, EXCEPT AT THE ANCHORAGE LOCATION.

TRANSVERSE TIE ANCHORAGE

SCALE: 1½" = 1'-0"

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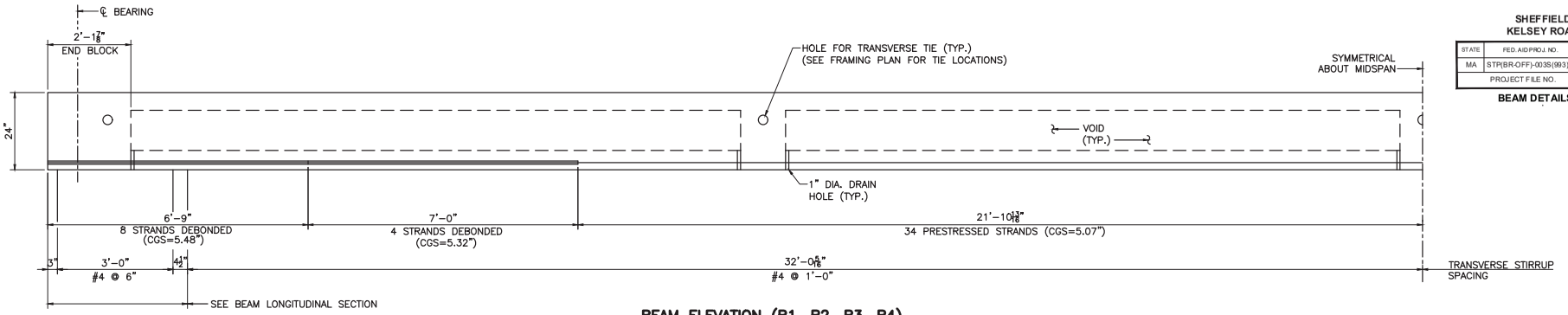
609068_BR15.DWG Plotted on 28-Jul-2026 2:50 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00831 - 57
Proposal No. 609068-136649

609068_BR16.DWG Plotted on 28-Jul-2026 2:51 PM

SHEFFIELD
KELSEY ROAD

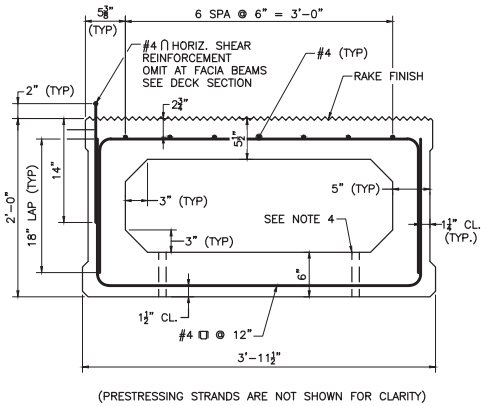
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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BEAM DETAILS - 1



BEAM ELEVATION (B1, B2, B3, B4)

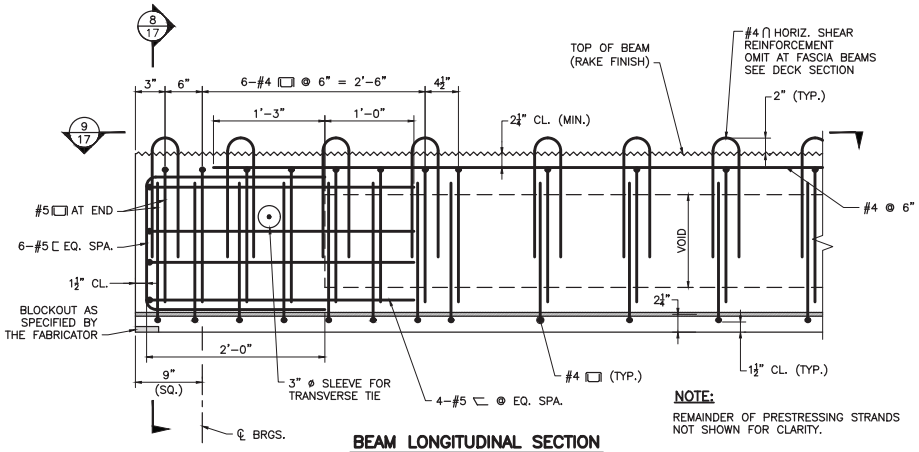
SCALE: ¾" = 1'-0"



(PRESTRESSING STRANDS ARE NOT SHOWN FOR CLARITY)

MIDSPAN BEAM SECTION

SCALE: 1½" = 1'-0"



BEAM LONGITUDINAL SECTION

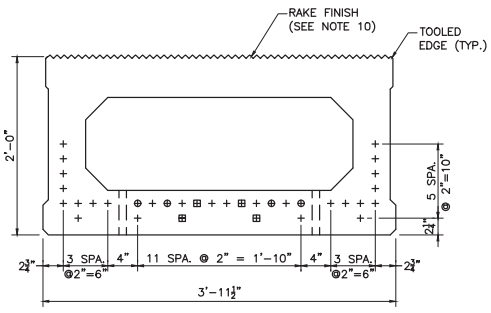
SCALE: 1½" = 1'-0"

NOTE:

REMAINDER OF PRESTRESSING STRANDS NOT SHOWN FOR CLARITY.

NOTES:

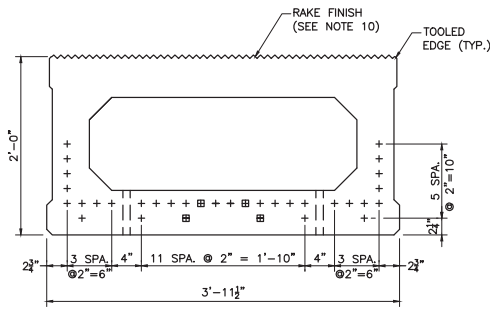
1. + DENOTES STRAIGHT STRANDS.
2. ⊕ DENOTES DEBONDED STRANDS AT 6'-9".
3. ⊞ DENOTES DEBONDED STRANDS AT 13'-9".
4. 1" ø DRAINS PLACED AT BOTH ENDS OF EACH VOID.
5. ALL PRETENSIONING ELEMENTS SHALL BE 0.6" ø, UNCOATED, SEVEN-WIRE, LOW RELAXATION STEEL STRANDS AND SHALL CONFORM TO AASHTO M 203.
6. THE NOMINAL TENSILE STRENGTH OF THE PRETENSIONING STRANDS SHALL BE 270 KSI.
7. THE INITIAL TENSION PER 0.6" ø STRAND SHALL BE 44 KIPS.
8. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL BE 6500 PSI.
9. NO PRESTRESS SHALL BE TRANSFERRED TO THE CONCRETE UNTIL IT HAS ATTAINED A COMPRESSIVE STRENGTH, AS SHOWN BY A CYLINDER TEST, OF AT LEAST 5200 PSI.
10. THE TOP OF ALL BEAMS SHALL BE GIVEN A RAKED FINISH (¼" AMPLITUDE) ACROSS THE WIDTH (PERPENDICULAR TO THE BEAM'S AXIS).
11. THE FABRICATOR IS FULLY RESPONSIBLE FOR THE DESIGN OF THE LIFTING DEVICES WHICH SHALL BE ADEQUATE FOR THE SAFETY FACTORS REQUIRED BY THE ERECTION PROCEDURE.
12. TO CONTROL CRACKING AT THE END OF THE BEAM, THE FABRICATOR SHALL DEBOND APPROXIMATELY 50% OF THE STRANDS FOR THE FIRST 6" FROM THE END OF THE BEAM.



(REINFORCEMENT BARS ARE NOT SHOWN FOR CLARITY)

STRAND LOCATION AT 6'-9" FROM END OF BEAM

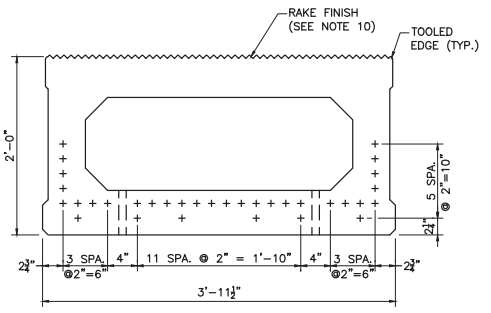
SCALE: 1½" = 1'-0"



(REINFORCEMENT BARS ARE NOT SHOWN FOR CLARITY)

STRAND LOCATION AT 13'-9" FROM END OF BEAM

SCALE: 1½" = 1'-0"



(REINFORCEMENT BARS ARE NOT SHOWN FOR CLARITY)

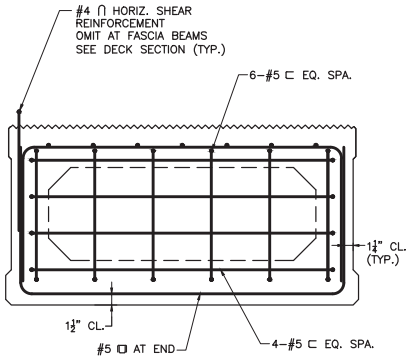
STRAND LOCATION AT MIDSPAN OF BEAM

SCALE: 1½" = 1'-0"

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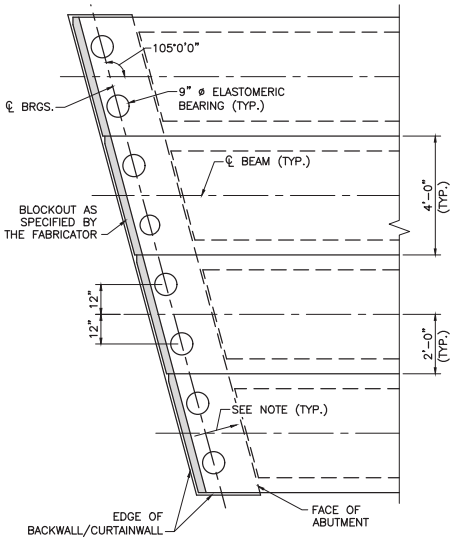
609068 Final Structural Submittal (SF2) 8-Jul-2026



(PRESTRESSING STRANDS ARE NOT SHOWN FOR CLARITY)

NOTE:
SEE MIDSPAN SECTION FOR DETAILS AND INFORMATION NOT SHOWN.

SECTION 8
SCALE: 1½" = 1'–0"



NOTE:
SLOPE BEAM SEAT 1%

LAYOUT OF BEARINGS
SCALE: ½" = 1'–0"

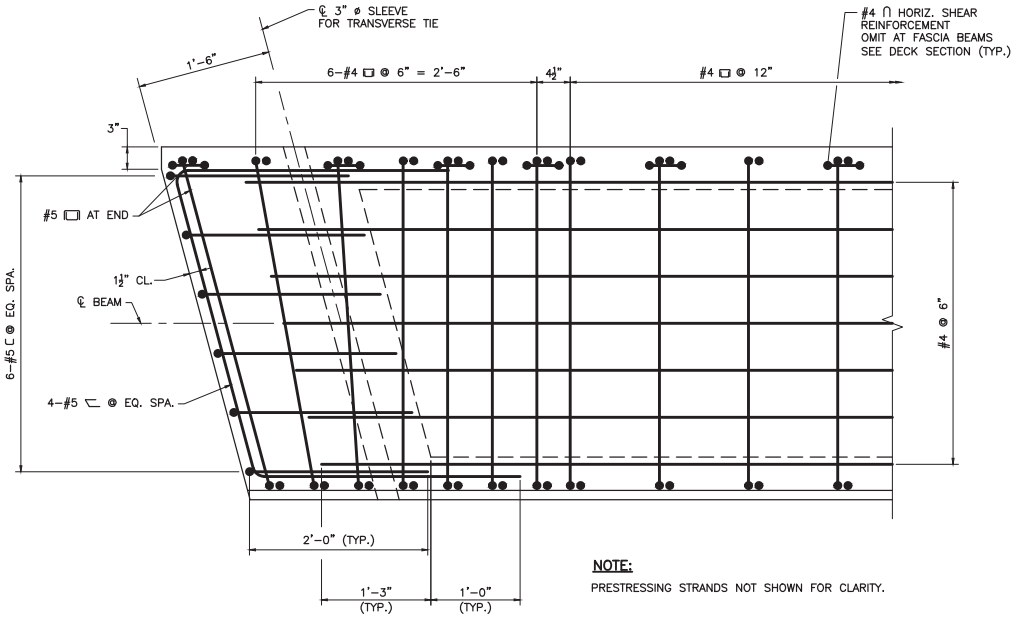
SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-0035(993)X	50	61
PROJECT FILE NO.	609068		

BEAM DETAILS - 2

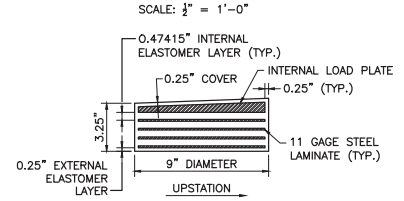
NOTES:

1. BEARING IS DESIGNED USING AASHTO METHOD B.
2. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.
3. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36 OR HIGHER. ALL EDGES OF STEEL LAMINATES SHALL BE GROUND SMOOTH.
4. THE COMPRESSIVE DESIGN LOAD ON THE BEARING PAD IS 49.7 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 0.782 KSI.
5. THE 25 YEAR CREEP STRAIN SHALL BE LIMITED TO 35%.
6. TAPERED INTERNAL LOAD PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36 OR GRADE 50. ALL EDGES OF TAPERED INTERNAL LOAD PLATE SHALL BE GROUND SMOOTH.
7. ALL TAPERED BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A $\frac{1}{32}$" DEEP DIRECTION ARROW THAT POINTS UP–STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER BEARING IS INSTALLED.
8. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 30 °F AND 90 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.

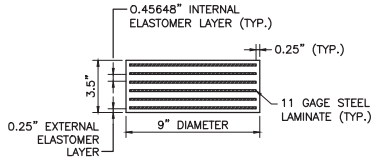


NOTE:
PRESTRESSING STRANDS NOT SHOWN FOR CLARITY.

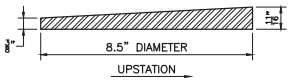
SECTION 9
SCALE: 1½" = 1'–0"



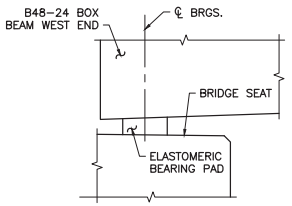
ELASTOMERIC BEARING PAD–WEST ABUTMENT
SCALE: 3" = 1'–0"



ELASTOMERIC BEARING PAD–EAST ABUTMENT
SCALE: 3" = 1'–0"



INTERNAL LOAD PLATE DETAIL
NOT TO SCALE



ELEVATION–WEST ABUTMENT
SCALE: 1" = 1'–0"

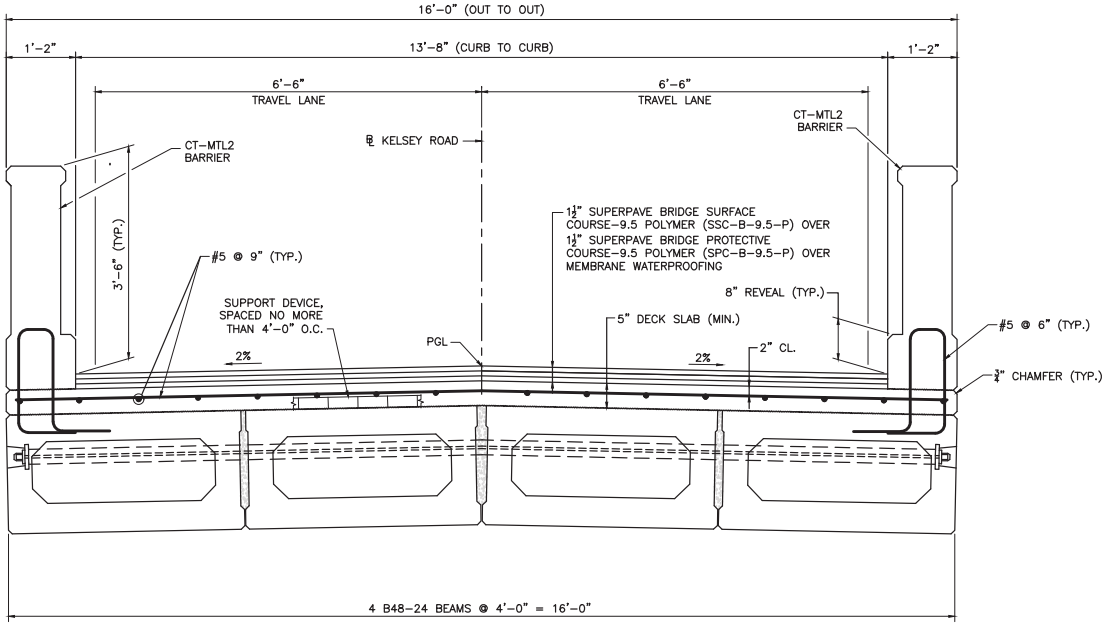
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DECK SECTION AND APPROACH SLAB DETAILS



DECK SECTION
SCALE: 1" = 1'-0"

NOTES:

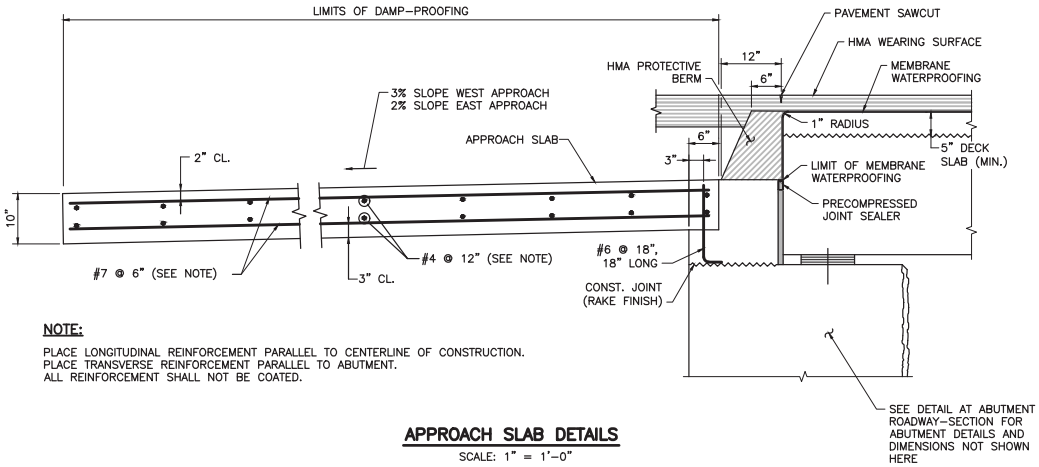
1. LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE ℄ OF CONSTRUCTION. TRANSVERSE (PRIMARY) REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE ℄ OF CONSTRUCTION.
2. ALL REINFORCEMENT AND SUPPORT DEVICES SHALL BE COATED.
3. THE FINISHED SURFACE OF THE BRIDGE DECK SHALL BE SMOOTH AND WITHOUT ANY PROJECTIONS THAT COULD PUNCTURE THE MEMBRANE WATERPROOFING OR DEPRESSIONS THAT COULD RETAIN WATER.

THEORETICAL TOP OF DECK ELEVATIONS ALONG THE SPAN LENGTH

	INCREASING STATIONS →										
	℄ BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG.
LEFT CURBLINE	676.72	676.89	677.06	677.21	677.37	677.51	677.65	677.78	677.90	678.01	678.12
CROWN	676.89	677.06	677.23	677.39	677.54	677.69	677.82	677.95	678.07	678.19	678.30
RIGHT CURBLINE	676.79	676.96	677.12	677.28	677.44	677.59	677.72	677.85	677.98	678.09	678.20

NOTES:

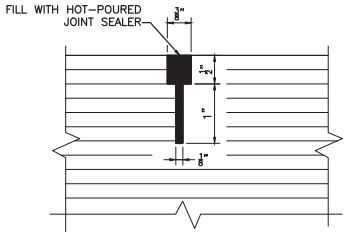
1. REFERENCE FOR RIGHT CURBLINE, CROWN, AND LEFT CURBLINE LOOKING UP STATION.
2. THE THEORETICAL TOP OF DECK ELEVATIONS ARE PROVIDED FOR SETTING THE SCREED ELEVATIONS FOR DECK FINISHING. THESE VALUES ARE CALCULATED BY TAKING THE PROPOSED TOP OF HMA ELEVATION ALONG THE SPAN AT THE POINTS INDICATED IN THE TABLE, SUBTRACTING THE THICKNESS OF THE HMA AND ADDING THE DEFLECTIONS DUE TO THE DECK AND OTHER SUPERIMPOSED DEAD LOADS.



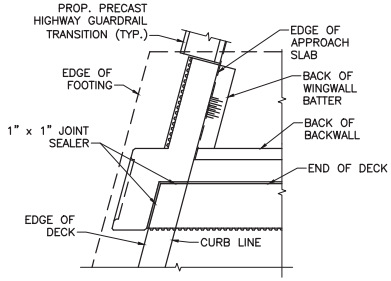
NOTE:

PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO CENTERLINE OF CONSTRUCTION.
PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.
ALL REINFORCEMENT SHALL NOT BE COATED.

APPROACH SLAB DETAILS
SCALE: 1" = 1'-0"



PAVEMENT SAWCUT DETAIL
NOT TO SCALE



END OF DECK – PLAN
SCALE: ⅛" = 1'-0"

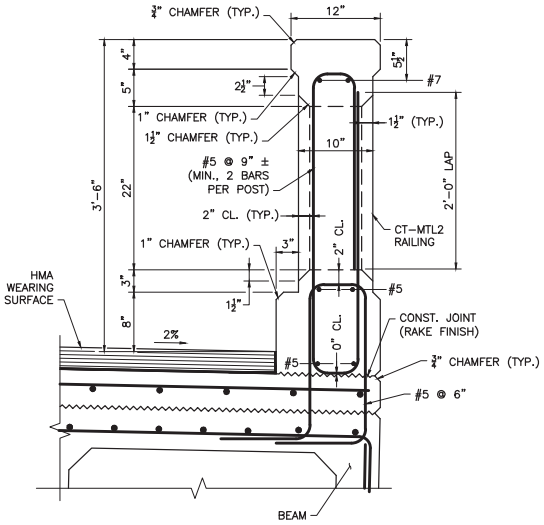
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

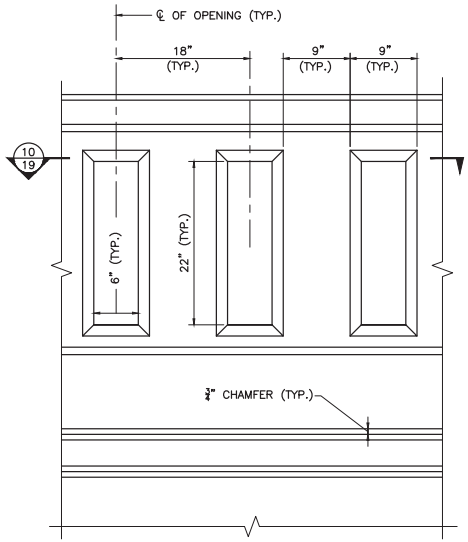
609068_BR18.DWG Plotted on 28-Jul-2026 2:54 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
A00831 - 60
Proposal No. 609068-136649

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	52	61
PROJECT FILE NO.	609068		

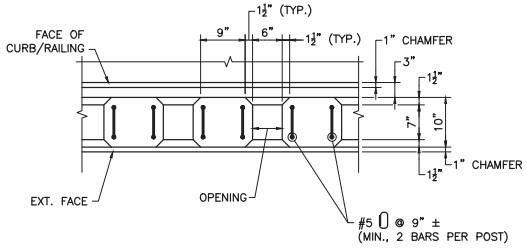
BRIDGE RAILING DETAILS



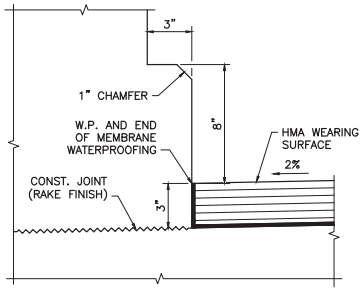
SECTION THRU SAFETY CURB
SCALE: 1½" = 1'-0"



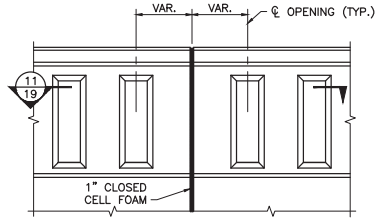
SECTION THRU SAFETY CURB
SCALE: 1½" = 1'-0"



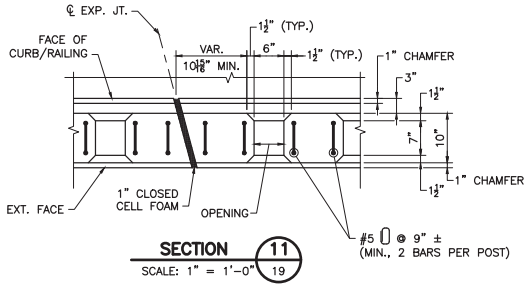
SECTION 10
SCALE: 1" = 1'-0" (10/19)



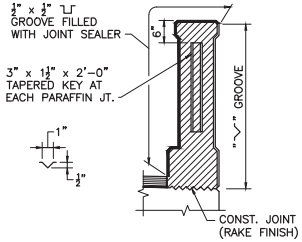
FACE OF SAFETY CURB DETAILS
NOT TO SCALE



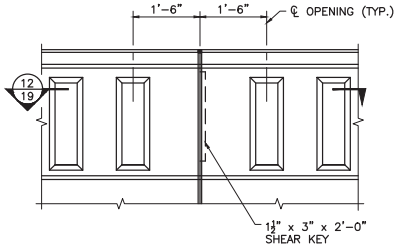
EXPANSION JOINT
SCALE: ¾" = 1'-0"



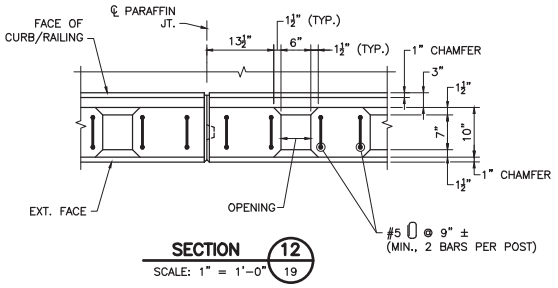
SECTION 11
SCALE: 1" = 1'-0" (11/19)



PARAFFIN JOINT DETAILS
SCALE: ¾" = 1'-0"



PARAFFIN JOINT
SCALE: ¾" = 1'-0"



SECTION 12
SCALE: 1" = 1'-0" (12/19)

NOTES:

1. ALL CONCRETE ABOVE SLAB SHALL BE POURED IN ALTERNATING SECTIONS WITH NOT LESS THAN 3 DAYS BETWEEN POURS.
2. DO NOT CARRY LONGITUDINAL BARS THROUGH THE PARAFFIN JOINTS. END THE REINFORCEMENT 2" CLEAR OF JOINT.
3. PARAFFIN JOINT SHALL BE SQUARE TO FACE OF CURB.
4. SEE GENERAL PLAN FOR EXPANSION AND PARAFFIN JOINT LAYOUT.

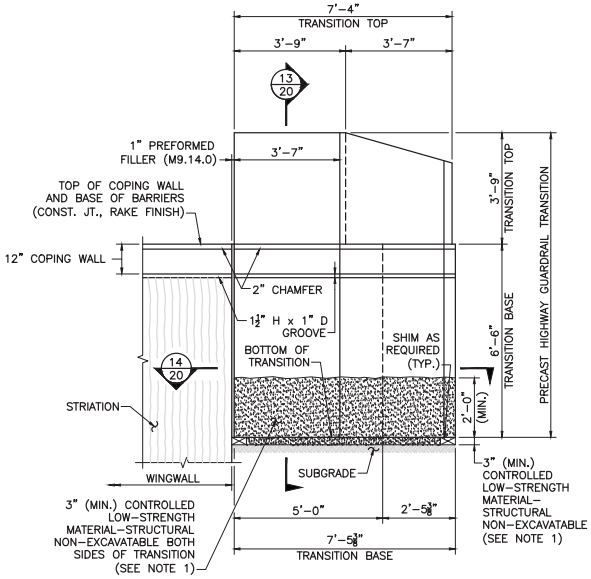
MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: _____ STATE BRIDGE ENGINEER
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609068_BR19.DWG Plotted on 28-Jul-2026 2:55 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
Proposal No. 609068-136649
A00831 - 61

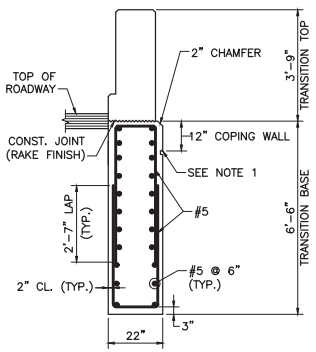
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	53	61
PROJECT FILE NO.	609068		

HIGHWAY GUARDRAIL TRANSITION DETAILS - 1



PRECAST HIGHWAY GUARDRAIL TRANSITION ELEVATION AT U-WINGWALL

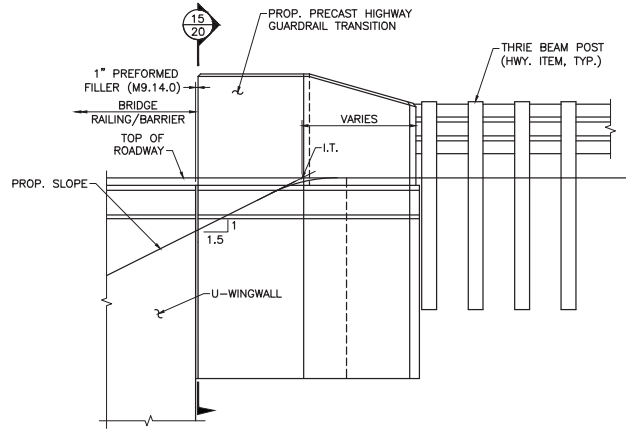
SCALE: ½" = 1'-0"



NOTES:

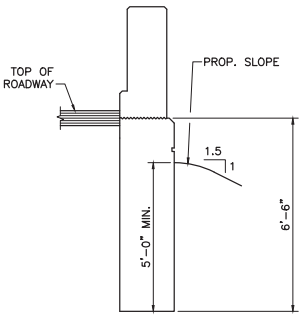
1. 1½" H x 1" D GROOVE. ALIGN WITH GROOVE AT TOP OF STRIATIONS.
2. REINFORCEMENT OF THE TRANSITION TOP IS NOT SHOWN FOR CLARITY.

SECTION 13 (20)
SCALE: ½" = 1'-0"

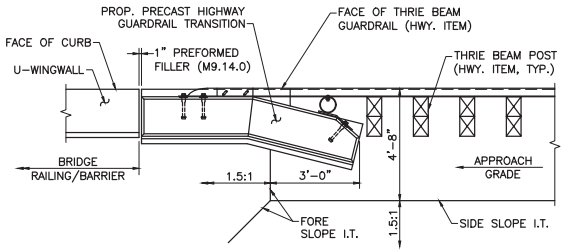


GRADING REQUIREMENTS ELEVATION

SCALE: ½" = 1'-0"

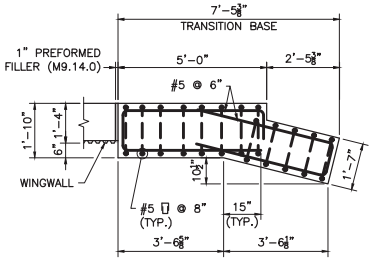


SECTION 15 (20)
SCALE: ½" = 1'-0"



GRADING REQUIREMENTS PLAN

SCALE: ½" = 1'-0"



NOTE:
WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.

SECTION 14 (20)
SCALE: ½" = 1'-0"

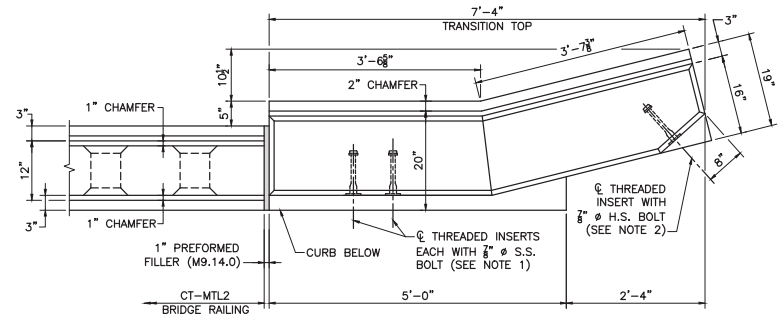
NOTES:

1. GRAVEL BORROW SHALL BE PLACED AND THOROUGHLY COMPACTED TO THE GRADE OF 3" (MIN.) BELOW THE INTENDED BOTTOM OF THE GUARDRAIL TRANSITION BASE AND TO A HEIGHT OF 2'-0" (MIN.) ON ALL SIDES OF THE TRANSITION BASE TO FORM A TRENCH IN WHICH TO SET THE TRANSITION.
2. CONTRACTOR SHALL SET THE PRECAST GUARDRAIL TRANSITION TO THE REQUIRED ELEVATION AND ALIGNMENT, AND BACKFILL GUARDRAIL TRANSITION WITH CONTROLLED LOW-STRENGTH MATERIAL-STRUCTURAL NON-EXCAVATABLE TO THE ELEVATION SHOWN.
3. BACKFILL THE REMAINDER OF EXCAVATION WITH GRAVEL BORROW, WHICH SHALL BE THOROUGHLY COMPACTED IN 12" LIFTS.
4. THE REST OF REINFORCEMENT IS NOT SHOWN FOR CLARITY.

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

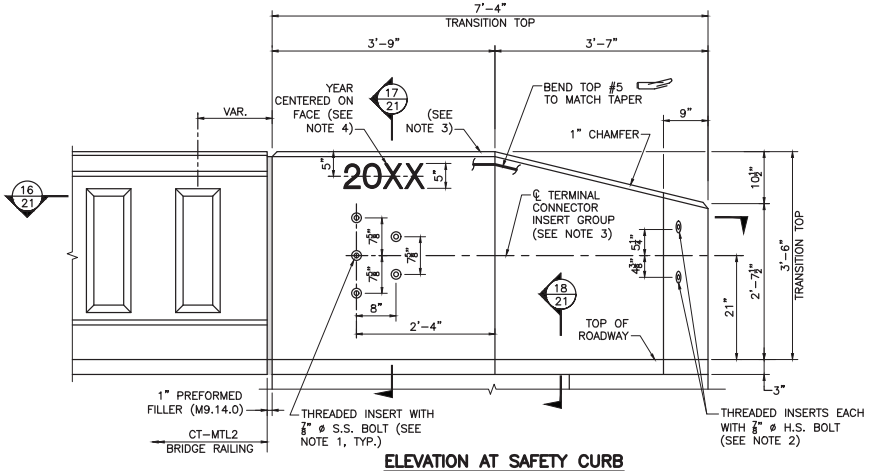
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AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
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609068_BR20.DWG Plotted on 28-Jul-2026 2:56 PM
609068 Final Structural Submittal (SF2) 8-Jul-2026
Proposal No. 609068-136649
A00831 - 62



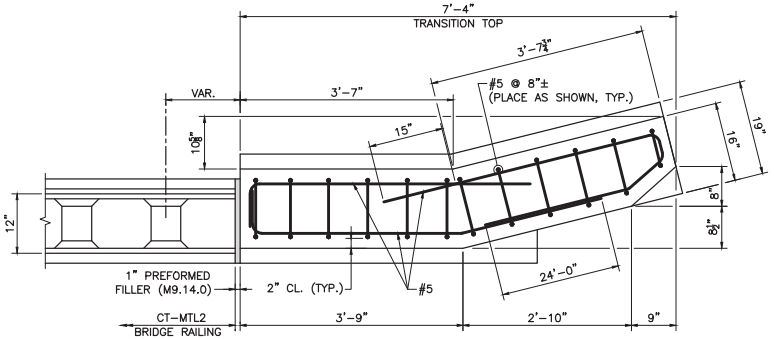
PLAN AT SAFETY CURB

SCALE: 1" = 1'-0"



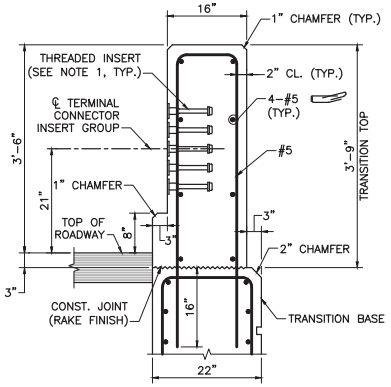
ELEVATION AT SAFETY CURB

SCALE: 1" = 1'-0"



SECTION 16/21

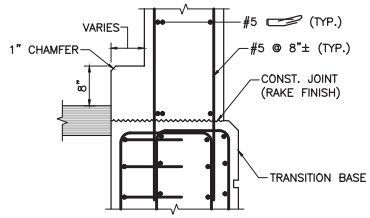
SCALE: 1" = 1'-0"



SECTION AT SAFETY CURB

SECTION 17/21

SCALE: 1" = 1'-0"



SECTION AT SAFETY CURB

SECTION 18/21

SCALE: 1" = 1'-0"

NOTES:

1. THREADED INSERTS SHALL BE PREQUALIFIED BY THE MANUFACTURER AS BEING CAPABLE OF DEVELOPING A NOMINAL SHEAR RESISTANCE OF 20 KIPS PER ⅞" ø S.S. BOLT. S.S. BOLTS SHALL BE ⅞" ø x 1½" LONG FULLY THREADED CONFORMING TO ASTM F593D WITH AISI TYPE 304N S.S. WASHERS. INSERTS FOR ⅞" STAINLESS STEEL BOLTS SHALL BE GALVANIZED AND CAST INTO THE TRANSITION.
2. ⅞" ø HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F3125 GRADE 325 TYPE 1 GALVANIZED. USE ADDITIONAL WASHERS AS REQUIRED TO PROPERLY ENGAGE THE BOLTS.
3. THE TRANSITION MAY BE CAST SQUARE AND SET PLUMB WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SQUARE TO THE POST.
4. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
5. ALL CONCRETE FOR THE PRECAST HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 HP CEMENT CONCRETE.
6. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE TRANSITION CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST TRANSITION IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH A NON-SHRINK GROUT THAT MATCHES THE COLOR OF THE TRANSITION CONCRETE WHEN CURED AND THE FILLED POCKETS SHALL BE RUBBED WITH A CORUNDUM STONE TO BLEND OUT THE JOINTS.

SHEFFIELD
KELSEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(993)X	54	61
PROJECT FILE NO.	609068		

HIGHWAY GUARDRAIL TRANSITION DETAILS - 2

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

SHEET 21 OF 21 SHEETS BRIDGE NO. S-10-015 (8M2)

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609068 Final Structural Submittal (SF2) 8-Jul-2026

A00831 - 63

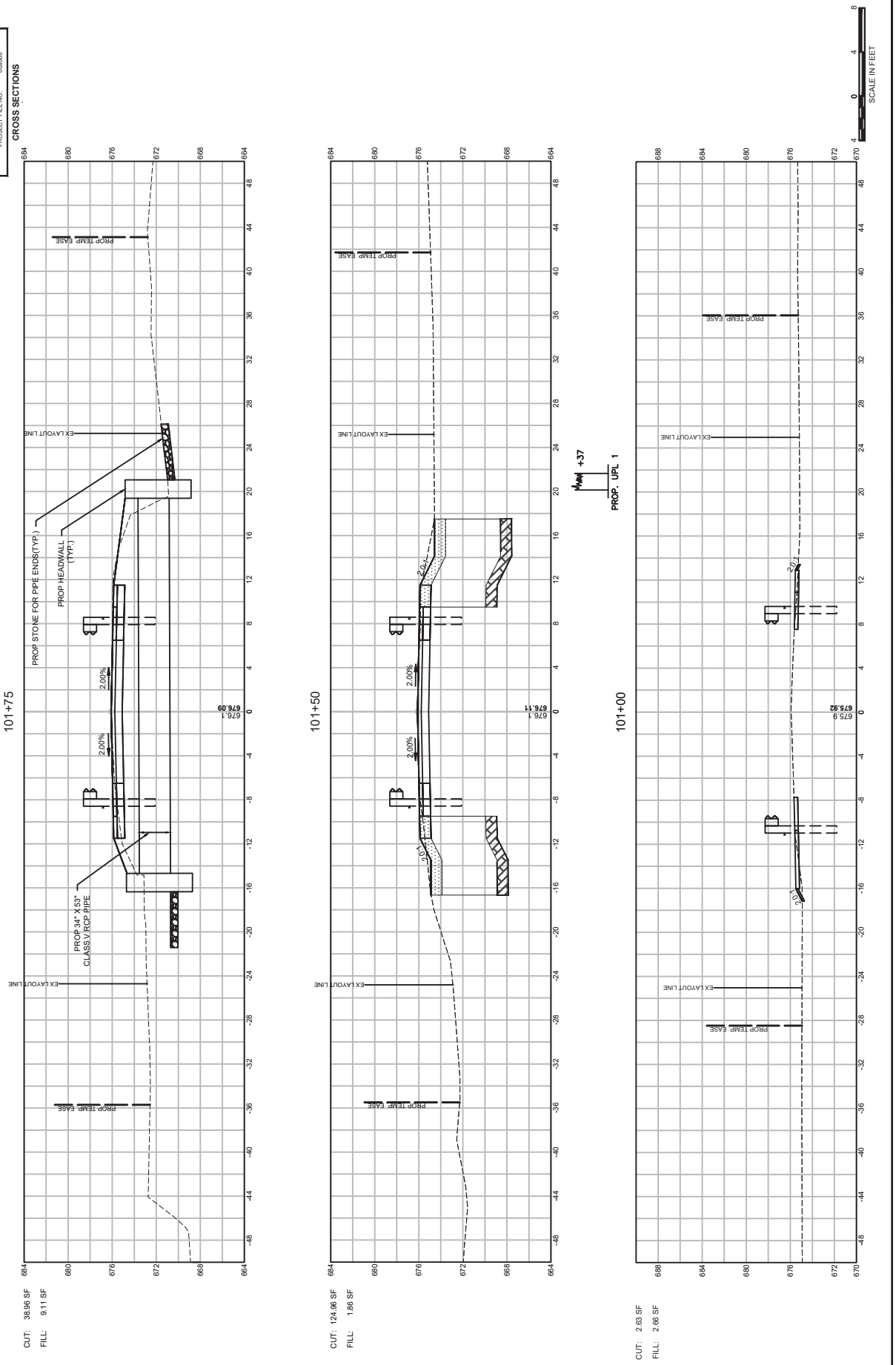
Proposal No. 609068-136649

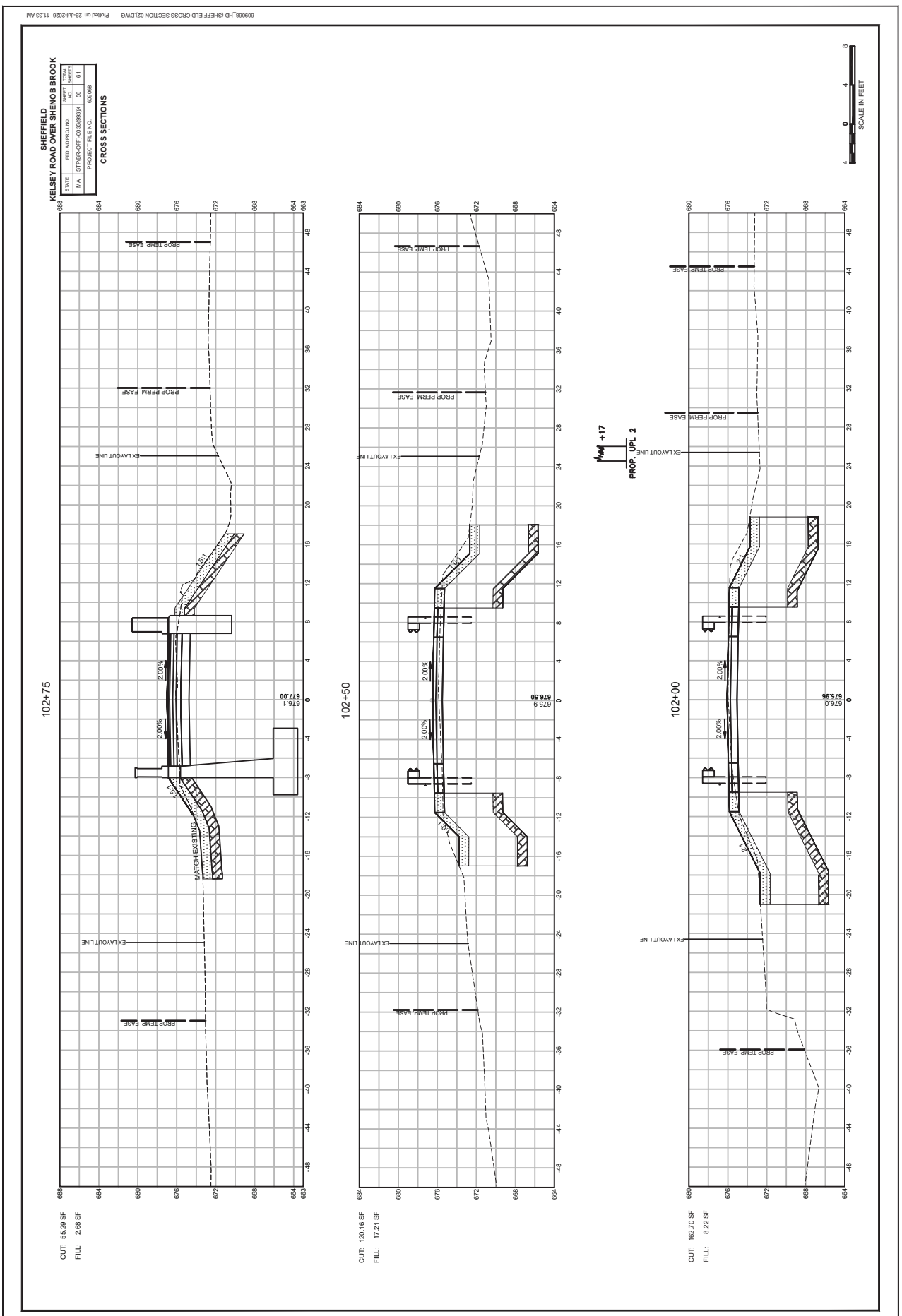
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SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003(903)X	55	61
PROJECT FILE NO. 609068			

CROSS SECTIONS



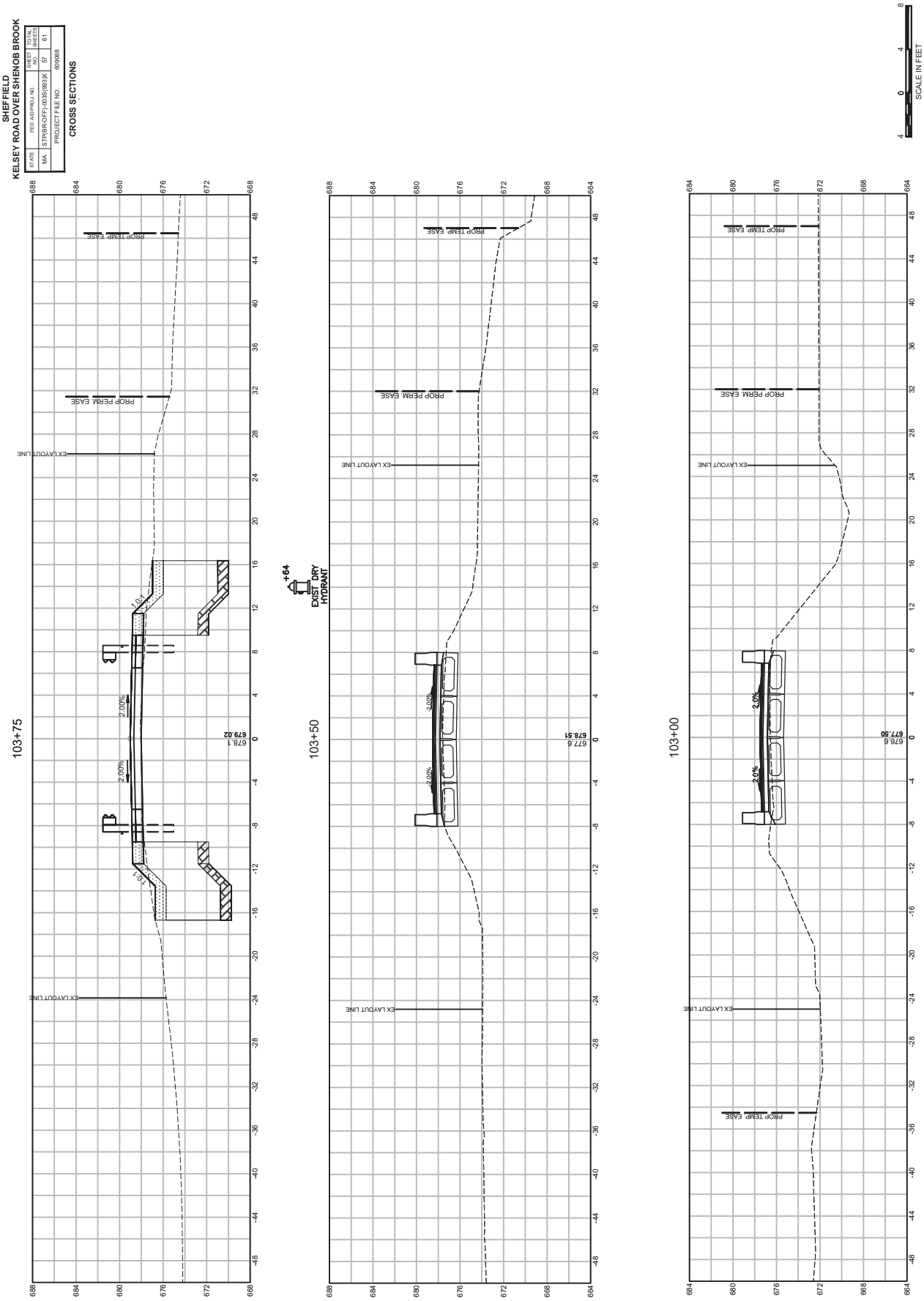

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SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK
CROSS SECTIONS
STATE: MA
FED. AID PROJ. NO.: STP(BR-OFF-)-D3S(983)X
PROJECT FILE NO.: 609068
SHEET NO.: 55
TOTAL SHEETS: 61
SCALE IN FEET
102+75
102+50
102+00
PROP TEMP EASE
PROP PERM EASE
EX LAYOUT LINE
MATCH EXISTING
PROP. UPL 2
CUT: 55.29 SF
FILL: 2.68 SF
CUT: 120.16 SF
FILL: 17.21 SF
CUT: 162.70 SF
FILL: 8.22 SF

609068_HD (SHEFFIELD CROSS SECTION 03).DWG Plotted on 28-Jul-2026 1:33 PM

SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STPBR-OFF-X(353)X	57	61
	PROJECT FILE NO. 609068		

CROSS SECTIONS



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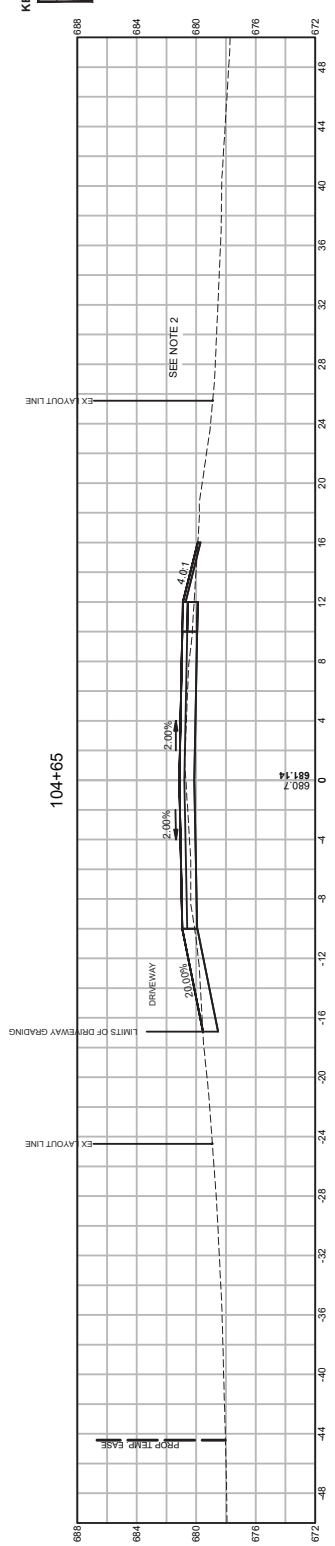
SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

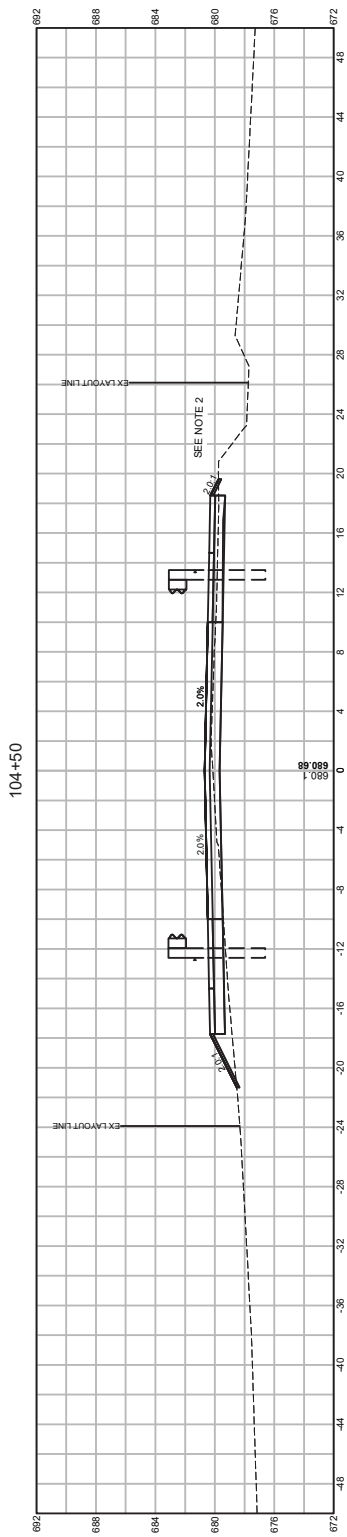
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MA	STPBR-OFF-X038(983)X	58	61
	PROJECT FILE NO. 609068		

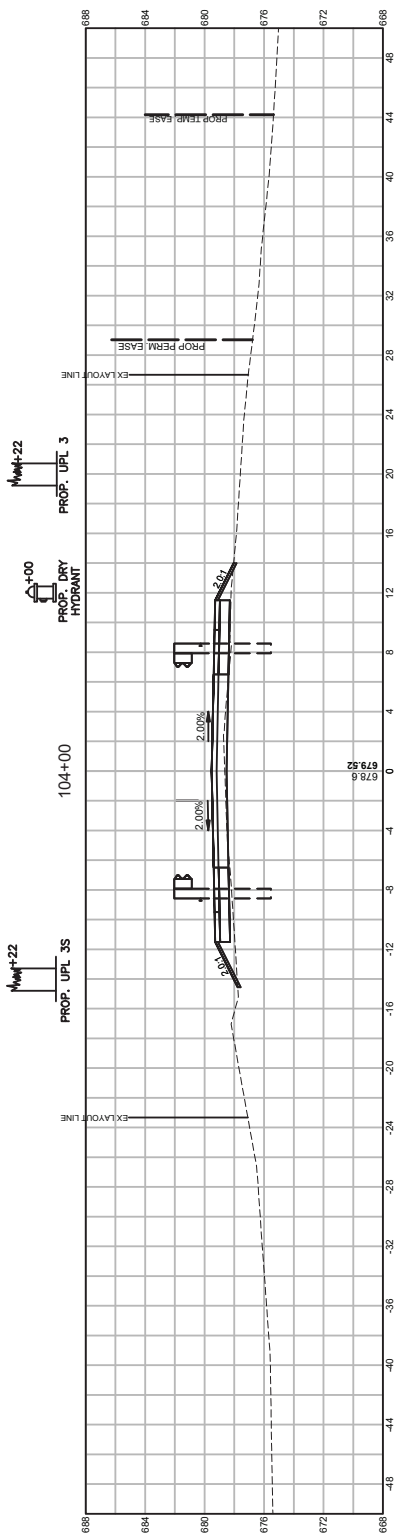
CROSS SECTIONS

NOTES:
1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREA BETWEEN STA. 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN FOR ADDITIONAL INFORMATION

SCALE IN FEET
0 4 8







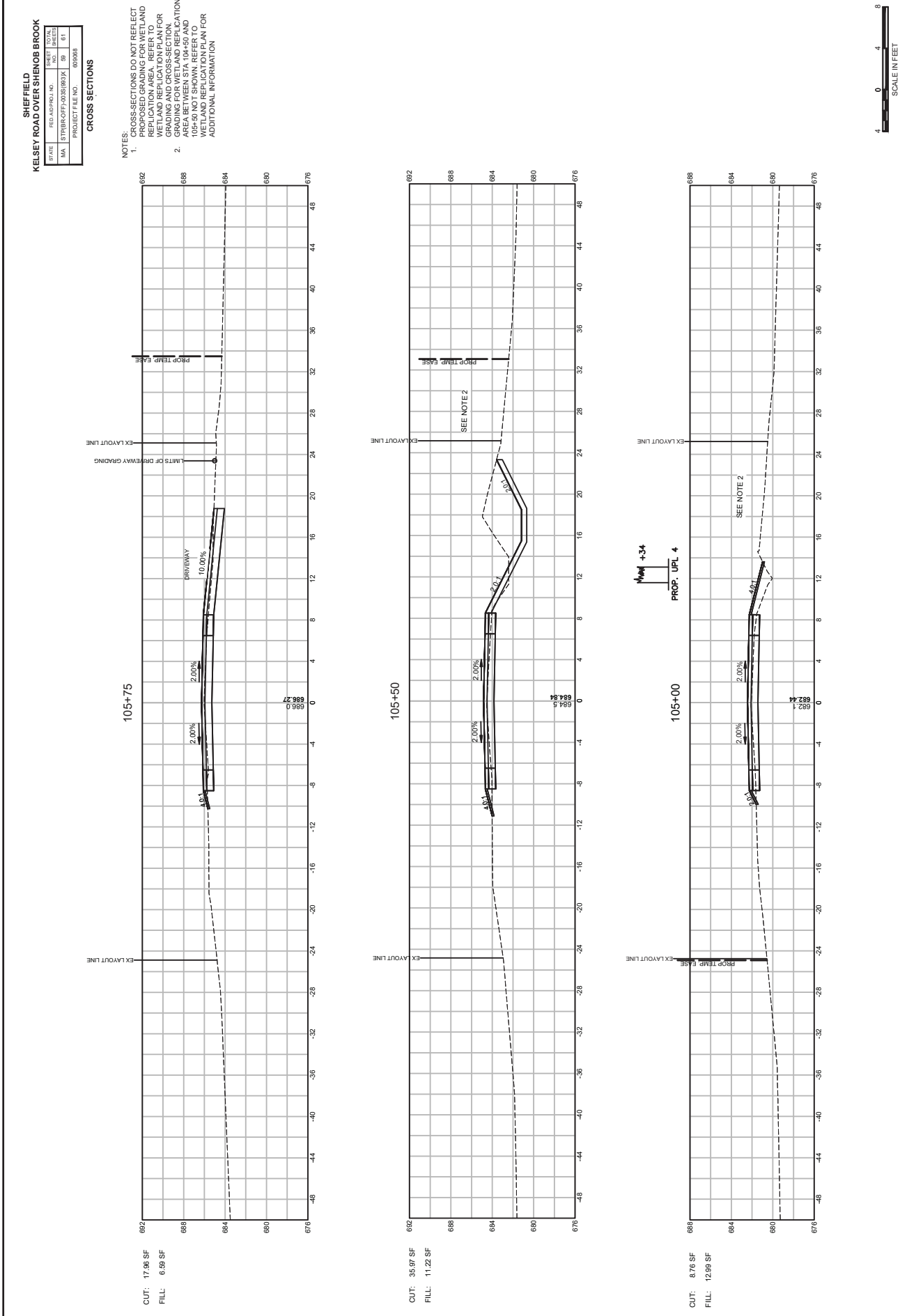
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SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-X038(983)X	59	61
	PROJECT FILE NO.	609068	

CROSS SECTIONS

NOTES:
1. CROSS-SECTIONS DO NOT REFLECT PROPOSED GRADING FOR WETLAND REPLICATION AREA. REFER TO WETLAND REPLICATION PLAN FOR GRADING AND CROSS-SECTION.
2. GRADING FOR WETLAND REPLICATION AREA BETWEEN STA 104+50 AND 105+50 NOT SHOWN. REFER TO WETLAND REPLICATION PLAN FOR ADDITIONAL INFORMATION

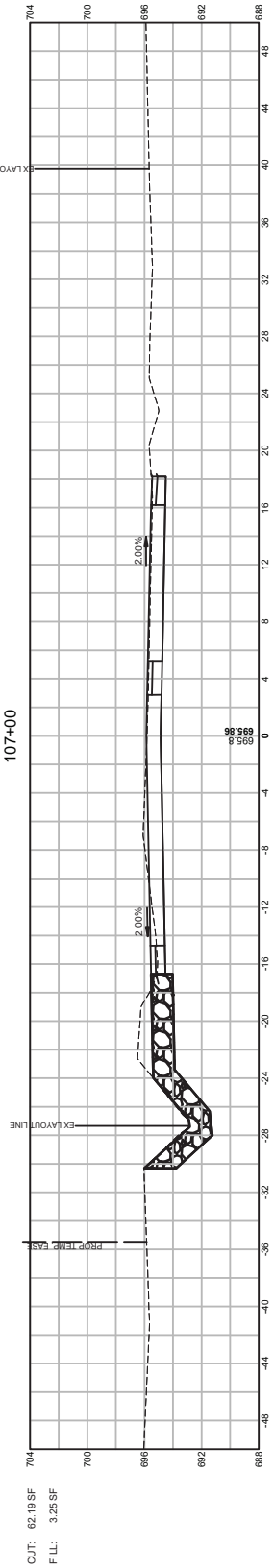


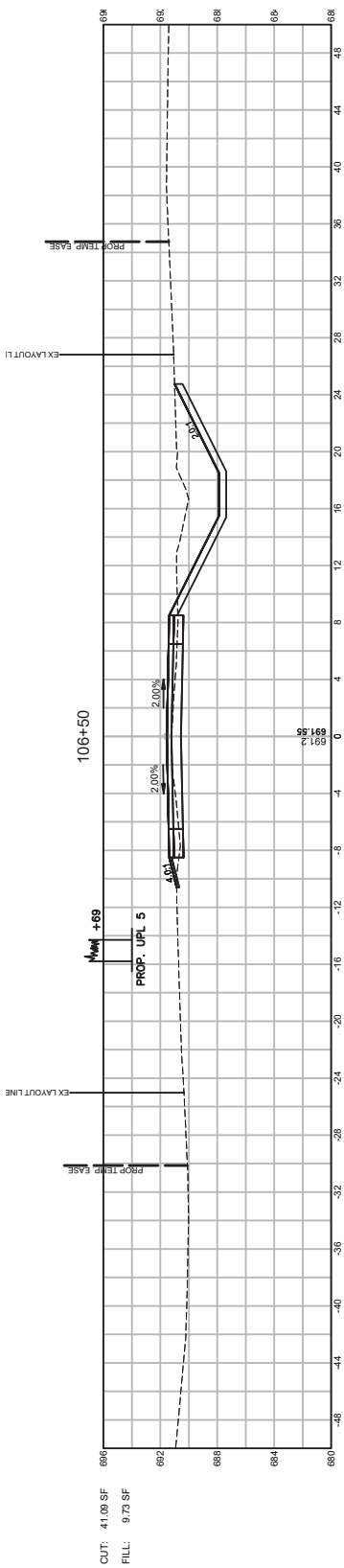
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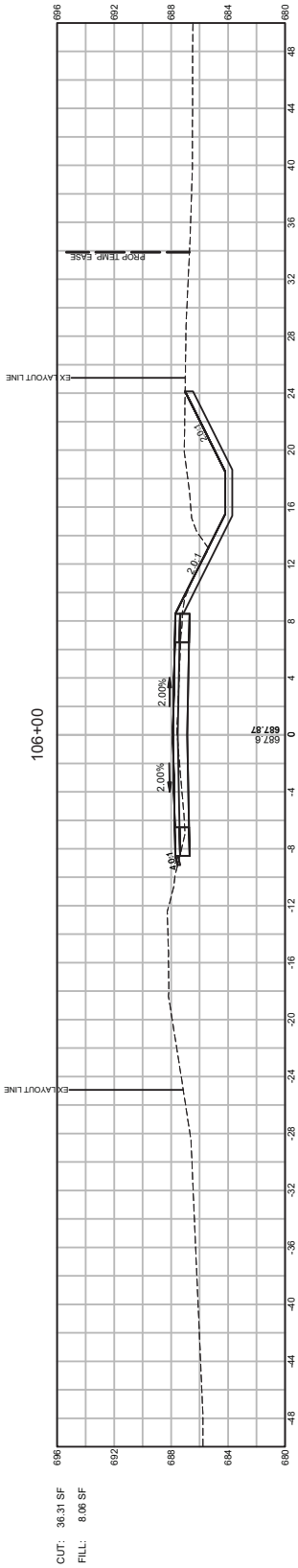
SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK
CROSS SECTIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STPBR-OFF-X(035)963X	60	61
	PROJECT FILE NO. 609068		

SCALE IN FEET







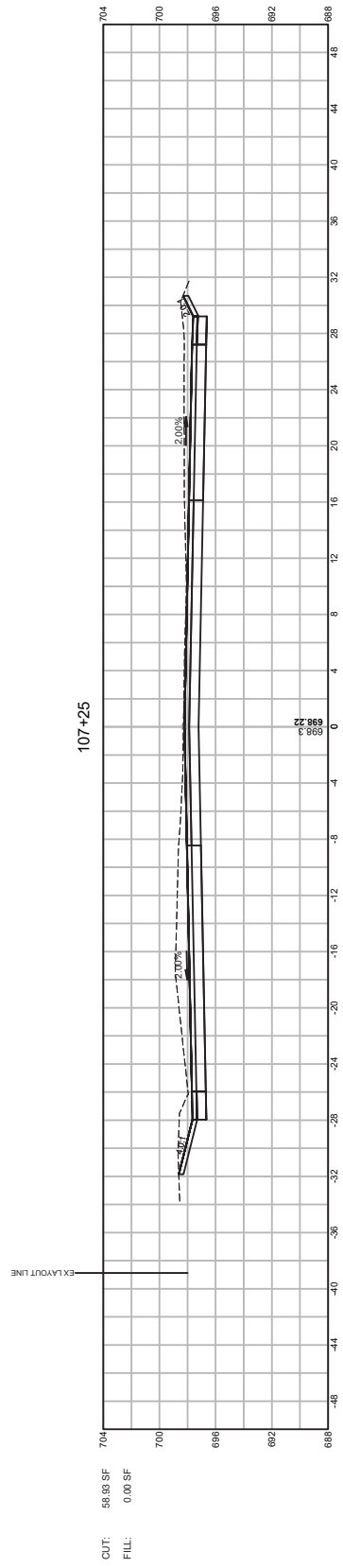
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SHEFFIELD
KELSEY ROAD OVER SHENOB BROOK

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003(983)X	61	61
	PROJECT FILE NO. 609068		

CROSS SECTIONS

SCALE IN FEET
8 4 0 4 8



CUT: 58.93 SF
FILL: 0.00 SF

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Department of Environmental Protection
Address: 100 Cambridge Street, Suite 900, Boston MA 02114 | **Phone**: 617-292-5500

Maura T. Healey	**Kim Driscoll**	**Rebecca Tepper**	**Bonnie Heiple**
Governor	Lieutenant Governor	Secretary	Commissioner

August 13, 2026

Massachusetts Department of Transportation, Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116
Attn: Courtney Walker

RE: 401 Water Quality Certification
BRP WW 10, Major Fill Project
Kelsey Road Bridge Replacement over Schenob Brook
(Bridge No. S-10-015)
Sheffield, Massachusetts

401 WQC Filing Number: 26-WW10-0009-APP
USACE Application Number: NAE-2026-00570
MassDOT Project Number: 609068

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed your application for a Water Quality Certification (WQC), as referenced above. The WQC application was deemed complete on August 3, 2026. 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 will replace the structurally deficient bridge that carries Kelsey Road over Schenob Brook in Sheffield (the Project). Reconstruction of the approach slabs, stabilization of the roadway embankments, stormwater infrastructure improvements, and stream and wetland restoration and replication will also be completed as part of the Project.

Kelsey Road is an unpaved rural local road that runs in a northwest/southeast orientation over Schenob Brook. The existing single-span bridge that takes Kelsey Road over the brook was constructed in 1915 with an overall length of 23 feet and width of 14.7 feet. The bridge includes a single travel lane with concrete curbs and railings on either side. Underneath the bridge, Schenob Brook fully occupies the 20 feet from abutment to abutment and flows

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generally southwest to northeast to its confluence with Hubbard Brook. A 66-inch-diameter corrugated metal pipe (CMP) and 48-inch by 72-inch elliptical CMP extend under Kelsey Road 40 feet and 150 feet northwest of the bridge, respectively, to connect Bordering Vegetated Wetlands (BVWs) on either side of the roadway. Stormwater drainage within the Project area is entirely country drainage.

The Project is located within an Area of Critical Environmental Concern (ACEC; Schenob Brook Drainage Basin), Zone II Wellhead Protection Area (WPA), and Federal Emergency Management Agency (FEMA) 1% annual chance of flooding zone (Zone A). In addition, Schenob Brook is classified as a Coldwater Fishery Critical Area with a field-delineated bankfull width of 42 feet.

The existing bridge will be replaced with a new 16.5-foot-wide bridge that accommodates a single 13-foot-wide travel lane with guardrails on either side. The proposed abutment-to-abutment span width will increase from 20 feet to 67 feet and the culvert closest to the bridge will be removed. Kelsey Road will be closed to traffic making the roadway available to stage equipment and stockpile materials during construction. Once the superstructure is removed, temporary sheet pile cofferdams will be installed around each of the existing abutments and the area within the cofferdams will be dewatered. Once dry working conditions are established, the existing abutments will be removed and replaced with new abutments and wingwalls and the brook will be restored.

The bridge and approach slabs will be comprised of asphalt, while gravel will be maintained along the roadway approaches approximately 220 feet northwest and 380 feet southeast of the bridge. The southeastern approach will be widened slightly, and two gravel driveways will be constructed to provide access to nearby agricultural fields. The roadway embankments adjacent to the bridge will be cleared/grubbed, re-graded, and stabilized with modified rockfill over riprap and crushed stone, and a nearby dry hydrant near the southwestern abutment will be relocated and replaced. The existing 48-inch by 72-inch elliptical CMP will be replaced with dual 34-inch by 53-inch elliptical CMPs to increase the vertical clearance between the pipes and roadway surface while maintaining a similar cross-sectional area.

In total, 5 square feet (sf) of permanent impacts to Land Under Water (LUW) will be required for work associated with the proposed wingwalls. An additional 292 sf of temporary impacts to LUW and 9 cubic yards (cy) of dredging will also be needed for cofferdam installation, dewatering, and replacement of the abutments.

Following construction, LUW temporarily impacted during construction will be restored to existing conditions. In addition, 807 sf of LUW will be restored from increasing the bridge span

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and removing existing roadway fill. A 12-inch-layer of stockpiled natural streambed material will be placed in the area between the existing and proposed abutments and slope gently downward to form a low flow channel in the location of the existing channel. Terrestrial wildlife passages will be created between the abutments and stream banks. Once the LUW replication is complete, water will be slowly introduced into the stream channel under the direction of a Fluvial Geomorphologist (FGM), as conditioned herein.

The Project meets or exceeds all MA Stream Crossing Standards. The proposed crossing span of 67 feet exceeds the 1.2 times bankfull width standard of 50.4 feet. Natural substrate will be used to create LUW and the water depth and velocity of the proposed channel will be comparable to the native channel upstream and downstream of the bridge. The proposed openness ratio of 20.2 feet exceeds the recommended openness ratio of 0.82 feet. A low flow channel will be formed that gradually slopes upward to terrestrial wildlife passages along both stream banks.

Construction activities associated with stabilizing the roadway embankments will result in 5,838 sf of permanent impact to BVW. Over the course of Project review, the proposed slope of the roadway embankments was adjusted from 1.5:1 to 1:1 to reduce permanent impacts to BVW. No temporary impacts to BVW are proposed.

To mitigate for permanent loss of BVW, 8,348 sf will be replicated in the southeastern quadrant of the Project area. The replication area will be excavated one foot below the final grade to establish and maintain wetland hydrology. Excavated soil (if suitable) or imported clean, evenly mixed organic/mineral soil will be used to backfill the area and graded to create micro-topographic features. A wetland seed mix and native tree and shrub plantings will be applied/installed throughout the BVW replication area. All BVW replication work will be overseen and monitored by a Wetland Specialist, as conditioned herein.

The Project meets the MA Stormwater Management Standards to the maximum extent practicable per 314 CMR 9.06(6). Widening the southeastern roadway approach and constructing new gravel driveways will increase impervious surfaces in the Project area by 3,563 sf. An existing drainage swale south of the bridge and west of Kelsey Road will be reconstructed to include check dams and a grassed channel.

Country drainage will be maintained in the remaining portions of the Project area. Additional infiltration and conveyance Stormwater Control Measures were deemed infeasible in the Project area due to adjacent Resource Areas. As such, Stormwater Management Standards 2, 3, and 4 will be met to the maximum extent practicable.

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Existing invasive species in the Project area will be documented prior to construction and managed in accordance with an Invasive Plant Management Strategy (IPMS) per Special Conditions 15 and 16.

The Project is located within Massachusetts Natural Heritage and Endangered Species Program (NHESP) Priority Habitat for wood turtles (*Glyptemys insculpta*). NHESP issued a Conditional No-Take Determination for the Project on December 31, 2025, that requires the Project to incorporate a NHESP-approved construction-period Wood Turtle Protection Plan (TPP) to avoid a prohibited Take, as conditioned herein.

In an email dated October 20, 2025, the Division of Fisheries and Wildlife (DFW) stated no time of year (TOY) restrictions are required if Best Management Practices (BMPs) for sedimentation control are implemented to prevent adverse impacts on spawning and rearing coldwater fish species. This WQC is conditioned to require compliance with the recommendations outlined by DFW.

The following alternatives were evaluated in accordance with 314 CMR 9.00: no-build, bridge replacement with spread footings, bridge replacement with deep foundations, and bridge replacement with brook realignment. The no-build alternative was eliminated as it would result in continued deterioration of the bridge. Bridge replacements with spread footings and brook realignment would cause significantly more impact on adjacent Resource Areas. Accordingly, bridge replacement with deep foundations was selected as the preferred alternative as it achieves Project goals without the use of extensive riprap scour protection, and thus, significantly reduces permanent impacts to LUW.

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 April 9, 2026, and in the MEPA Environmental Monitor on April 24, 2026. No comment letters were received during the public comment period.

Therefore, based on information currently in the record, MassDEP grants a WQC 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. The Department 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, the Department 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

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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 and are summarized in Attachment A. In addition, those conditions with the (Submittal) designation shall be included in the Special Provisions and, as applicable, reviewed at the Pre-Construction Meeting.

1. All work shall be performed in accordance with the following documents and plans:

    a. Application for Water Quality Certification with cover letter and attachments. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Prepared by Comprehensive Environmental Inc. (CEI) on behalf of MassDOT. Dated April 3, 2026.

    b. Plans entitled: “Plan and Profile of Kelsey Road over Schenob Brook (Bridge No. S-10-015) in the Town of Sheffield, Berkshire County”. Sheets 1 through 55. Prepared by Gannett Fleming Inc (GFT) on behalf of MassDOT. Dated April 3, 2026, last revised on July 29, 2026.

    c. MassDEP Administrative Completeness and Technical Deficiency Review. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Dated April 17, 2026.

    d. MassDOT Responses to MassDEP Administrative Completeness and Technical Deficiency Review, with cover letter and attachments. 401 WQC Filing Number:

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26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Prepared by GFT on behalf of MassDOT. Dated July 8, 2026.

e. MassDEP Supplemental Technical Deficiency Review, sent via email. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Dated July 27, 2026.

f. MassDOT Responses to MassDEP Supplemental Technical Deficiency Review, sent via email. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Prepared by GFT on behalf of MassDOT. Dated August 3, 2026.

Pre-Construction

2. A qualified **Wetland Scientist** (WS) with a minimum of five years of relevant professional experience with wetland replication projects shall be employed to oversee all BVW replication activities as proposed in the WQC application and approved herein, including but not limited to grading, placement of substrate, seeding, vegetation plantings, and placement of wildlife habitat features. The name, contact information, and qualifications of the WS shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. **(Submittal)**

3. A qualified **Fluvial Geomorphologist** (FGM) with a minimum of five years of relevant professional experience in stream replication and restoration projects shall be employed to oversee all LUW replication and restoration activities as proposed in the WQC application and approved herein. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. The FGM shall either attend the Pre-Construction Meeting required in Condition 6 or a separate virtual or onsite meeting with MassDEP, MassDOT, and the construction contractor (Contractor) prior to any LUW replacement or restoration work. **(Submittal)**

4. One individual with at least three years of experience with construction period erosion and sedimentation controls shall be employed to be responsible for Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) inspections (CP/PP Inspector). The name, contact information, and qualifications of the CP/PP

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Inspector shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. **(Submittal)**

5. Prior to the Pre-Construction Meeting required in Condition 6, 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 terms and conditions of this WQC. **(Submittal)**

6. A minimum of 21 days prior to the start of ground disturbance or vegetation clearing, MassDOT shall contact MassDEP to schedule an onsite Pre-Construction Meeting to review the approved plans and terms and conditions of this WQC. The RE, the Contractor, the WS, the CP/PP Inspector, a representative from the MassDOT Environmental Section and/or the District Environmental Engineer shall attend the Pre-Construction Meeting. **No work shall commence prior to the Pre-Construction Meeting.**

7. Prior to the Pre-Construction Meeting, the boundaries of BVW and LUW shall be re-flagged where they are within 50 feet of the limits of work. 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 WS. All construction personnel shall be made aware of these markers.

8. MassDEP shall be copied on applicable submittals to the U.S. Army Corps of Engineers (USACE). These include but are not limited to: Pre-Construction Notification; Work-Start Notification Form; Mitigation Work-Start Notification Form; and Compliance Certification Form. The Work-Start Notification Form shall be submitted at least 14 days before the anticipated start of work. **(Submittal)**

9. A CP/PP shall be developed and implemented as required by 314 CMR 9.06(6)(a)8. A minimum of 21 days prior to the start of work, MassDOT shall submit the CP/PP to MassDEP for review and approval. If the U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) applies, the Stormwater Pollution Prevention Plan (SWPPP) may serve as the CP/PP, providing it includes the measures required to be in the CP/PP per these Special Conditions, in addition to the measures specifically required by the CGP. Any subsequent changes to the approved CP/PP (defined herein as

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including the construction period SWPPP if applicable) must be approved by MassDEP. **(Submittal)**

10. Training regarding erosion and sedimentation controls is required. The CP/PP Inspector and any other relevant personnel responsible for erosion and sedimentation controls shall complete the EPA CGP Inspector Training, or other training that meets the CGP requirements, as well as complete a comprehensive review of the approved CP/PP. Proof of completion of the training shall be submitted to MassDEP prior to the start of work. **(Submittal)**

11. The CP/PP shall identify, but shall not be limited to, staging and laydown areas in relation to BVW and LUW, proposed dewatering methods and locations, proposed stockpile locations and their proximity to catch basins or other drainage conveyances that discharge to BVWs or LUW, and the location of construction-period erosion and sedimentation controls. The CP/PP shall include all the relevant provisions included in the Construction Period Conditions herein.

12. A minimum of 21 days prior to the start of work, MassDOT shall submit a Control of Water Plan for review and approval. The Plan shall include a description of proposed methods to isolate and dewater work areas within streams while maintaining stream flow, including but not limited to the method of isolation (e.g., steel sheeting or sandbag cofferdam), dewatering methods and locations and specifications for stream bypass systems as applicable. The Control of Water Plan shall include a plan depicting approved BVW and LUW boundaries, and the location of all relevant methods and materials which shall be located within the BVW and LUW impact areas approved herein. The plan shall meet the requirements of the CP/PP and be specific to the Project. Dewatering and stream bypasses shall be conducted under the supervision of the RE or other project staff with knowledge of these practices and comply with the applicable conditions identified herein. **(Submittal)**

13. 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 sedimentation control measures may consist of, but are not limited to, silt fence, staked straw bales, silt/turbidity curtains, compost filter tubes, etc.

14. Prior to any work within the 1% annual chance of flooding zone within Project limits, including mobilization or storage of equipment and materials, a Flood Contingency Plan

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shall be submitted to MassDEP for review and approval that includes at a minimum the following information and provisions: **(Submittal)**

a. The RE and/or Contractor shall monitor the National Weather Service forecast daily, and upon issuance of a flood watch or flood warning for the Project area, the Flood Contingency Plan shall be implemented.

b. Upon implementation of the Flood Contingency Plan, all construction equipment and materials located below the Base Flood Elevation (BFE) shall be removed and placed in an upland location above the BFE and outside of BVW and LUW.

c. Anchored stationary equipment may remain below the BFE if demonstrated to be required and upon written approval from MassDEP. In the event semi-stationary equipment cannot be feasibly removed before the arrival of the storm, they shall be adequately secured and MassDEP shall be notified prior to the storm.

d. A requirement to inspect and maintain all erosion and sedimentation controls, and stabilize all exposed soils as needed below the BFE prior to the storm shall be included.

e. A plan depicting at a minimum, but not limited to, BVW and LUW boundaries, the Project limits, and the BFE boundary based on ground elevations shall be included.

f. Staff and materials must be available 24 hours per day, seven days per week to implement the Flood Contingency Plan. The name, affiliation, title, email address, and phone number of each person responsible for implementing the Flood Contingency Plan shall be included.

g. No work shall commence until the flood watch or flood warning has ended, all areas below the BFE have been inspected, and erosion and sedimentation controls are maintained as needed.

15. The Contractor shall develop an Invasive Plant Management Strategy (IPMS) to be submitted to MassDEP for review and approval at least 21 days prior to the Pre-Construction Meeting. The IPMS shall be implemented as approved. **(Submittal)**

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16. If needed, use of herbicides to control invasive species shall be implemented in accordance with the approved IPMS and with the following requirements:

    a. Herbicides shall only be applied by a Licensed Applicator;

    b. Only herbicides registered with the Massachusetts Pesticide Board Subcommittee shall be applied to the targeted area/species;

    c. The manufacturer's label directions must be followed, in addition to any conditions imposed by other state or local authorities;

    d. Herbicide application shall use no more than the minimum application rate to accomplish removal of the target species; and

    e. Applicants may need to obtain a BRP WM04 Herbicide Permit from the MassDEP Wetlands Program Dredge Unit before applying herbicides in wetlands, and shall consult with the Dredge Unit regarding the applicability of a WM04 permit and shall obtain such permit if required by MassDEP. A WM04 permit is required for chemical application to open water bodies and wetlands.

17. A minimum of 21 days prior to the start of demolition work, a Demolition Plan shall be submitted for review and approval describing how the existing bridge will be demolished and what measures will be taken to ensure that demolition material, including but not limited to any pollutants, construction debris, toxic or hazardous substances, and airborne dust, is properly contained and does not enter Schenob Brook. **(Submittal)**

18. In accordance with the NHESP Conditional No-Take Determination, dated December 31, 2025, a Wood Turtle Protection Plan (TPP) shall be submitted to NHESP for review and approval prior to the start of work. MassDEP shall be copied on the TPP submittal to NHESP, and proof of NHESP approval of the TPP shall be submitted to MassDEP prior to the start of work. **(Submittal)**

Construction Period

19. No more than **5,838 sf** of permanent and **0 sf** of temporary impacts to BVW shall occur. No more than **5 sf** of permanent and **292 sf** of temporary impacts to LUW shall occur. No more than **9 cy** of dredging in LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.

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20. Under the direction of the CP/PP Inspector, inspection and maintenance of erosion and sediment controls in active work areas may be performed by both the Contractor and RE or other MassDOT project staff. Maintenance is the responsibility of the Contractor; however, the permittee shall be ultimately responsible for erosion and sedimentation control failure. The RE and/or contractor shall immediately notify MassDEP and the Sheffield Conservation Commission if any unauthorized discharges to BVWs or LUW occur.

21. 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.

22. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.

23. 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 disturbed areas have been inactive.

24. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Sheffield Conservation Commission within 24 hours prior to the commencement of dewatering. Dewatering methods and location(s) shall be approved by the RE or other project staff with knowledge of these practices prior to use to ensure consistency with the approved Control of Water Plan, 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.

25. 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 CP/PP Inspector 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.

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26. The Contractor 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 14.

27. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

28. 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.

29. 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.

30. The contractor shall have spill containment kits on site. In the event of a release of fuels and/or oils, the local fire department, MassDEP Emergency Response and MassDEP Wetlands Program Highway Unit shall be immediately contacted, and in addition, the MassDEP Bureau of Waste Site Cleanup shall be notified per the requirements of the Massachusetts Contingency Plan, 310 CMR 40.0000.

31. All work shall be completed in accordance with the Wood Turtle Protection Plan, as approved by NHESP.

32. All work shall be completed in accordance with the recommendations of DFW, which are hereby incorporated into this WQC by reference.

33. Construction vehicles and equipment shall not enter the BVW or LUW unless authorization is provided by way of this permit or amendment. The Contractor shall use equipment with boom reach capabilities and other measures to avoid inadvertent impacts to jurisdictional resource areas as a result of excavation, riprap placement, and/or bridge/pier demolition materials.

34. Sheet piles shall be fully removed from LUW 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,

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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.

35. A temporary shielding or containment system shall be in place beneath the bridge structure prior to removal to prevent debris from falling into the water below. In the event that any debris accidentally enters Schenob Brook, it shall be immediately retrieved. Notice shall be provided to MassDEP if debris enters the river and that it has been removed with photo-documentation (if practicable) submitted by email.

Wetland Mitigation

36. A minimum of 8,348 sf of BVW replication shall be completed in coordination with an approved WS. The WS shall oversee all BVW replication, including final grading, seeding, and planting. The WS shall confirm that constructed BVW replication area has adequate soils and hydrology to promote wetland plant species prior to seeding and installation of plantings and shall recommend measures to amend soils and promote wetland hydrology as needed.

37. Planting and seeding shall not take place between November 15th and April 15th, except as allowed by MassDEP in writing. The WS shall inspect trees and shrubs to ensure they are healthy prior to planting. Trees and shrubs deemed unhealthy in the professional judgment of the WS shall be replaced. Plantings and seed mixes shall consist of native and non-invasive species. Species may be substituted at the recommendation of the WS, and review and approval by MassDEP.

38. At least 75% of the surface area of the BVW replication area shall be vegetated with indigenous wetland plant species within two growing seasons, or the period required by the Section 404 permit, whichever is longer. Additionally, evidence of hydrology, including hydric soil formation shall be submitted at the same time. Annual monitoring reports shall be submitted by the WS no later than January 15th each year. Monitoring reports shall include an assessment based on the approved success criteria, representative photos, and recommended corrective actions as needed. **(Submittal)**

39. MassDEP reserves the right to determine the success or failure of the BVW replication area, and reserves the right to require additional plantings, regrading, invasive species removal or other measures deemed necessary to promote success.

Stream Mitigation

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40. The FGM shall oversee all LUW replication and restoration. Placement of streambed materials shall take place in no- or low-flow conditions. The Control of Water Plan required in Condition 12 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.

41. A minimum of 14 days prior to installation of the streambed materials, the FGM shall meet with the contractor to determine the suitability of stockpiled streambed material for reuse and whether there is sufficient stockpiled material to complete streambed restoration.

42. 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. The FGM shall provide final approval of the streambed restoration upon re-wetting of banks and removal of water controls (photographs will suffice unless otherwise determined by the FGM).

43. Upon completion of the LUW replication and restoration, the FGM shall provide photographs and a summary of the completed work to MassDEP and the Sheffield Conservation Commission. **(Submittal)**

44. MassDEP reserves the right to determine the success or failure of the LUW replication and restoration areas and reserves the right to require additional measures deemed necessary to promote success.

Post-Construction

45. All temporary erosion and sedimentation controls shall be removed at the conclusion of work once the surrounding area has achieved final stabilization.

46. Compost or mulch used as an erosion or sedimentation control may be spread evenly in upland areas at a depth of no more than two inches and shall not be spread in BVWs or LUW.

47. The USACE Compliance Certification Form shall be submitted within 30 days following the completion of the authorized work. **(Submittal)**

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General Conditions

48. Any proposed 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 jaime.walker@mass.gov. **(Submittal)**

49. This WQC remains in effect for the same duration as the Section 404 permit that requires it.

50. No Special Condition set forth herein shall be construed or operate to prohibit MassDEP from taking enforcement against MassDOT or its contractors for any failure to comply with the terms and requirements of this WQC.

51. 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; (c) 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

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

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, 9th Floor
Boston, MA 02114

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:

Department of Environmental Protection
Wetlands Program, Highway Unit
100 Cambridge Street, 8th floor
Boston, MA 02114

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):

1. the 401 Certification Transmittal Number;
2. the complete name of the applicant and address of the project;
3. 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;
4. 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;
5. a clear and concise statement that an adjudicatory hearing is being requested;
6. 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
7. 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

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

Conservation and Recreation (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

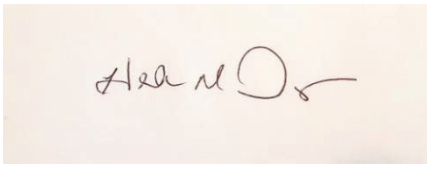
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

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.

Should you have any questions relative to this permit, please contact myself or Jaime Walker at heidi.davis@mass.gov and jaime.walker@mass.gov.

Very truly yours,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP WERO – Michael McHugh
USACE – Dan Vasconcelos

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

USACE via email – cenae-r-ma@usace.army.mil
Sheffield Conservation Commission
MassDOT – Lily Collins
MassDOT – Joshua Bartus
MassDOT – Amer Raza
GFT – Thomas Daley
CEI – Matt Lundsted

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

Attachment A

Submittal Checklist

Kelsey Road Bridge Replacement over Schenob Brook
(Bridge No. S-10-015)
Sheffield, Massachusetts

Each required submittal must be completed by the designated due date. 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. In the event of a conflict, the Special Conditions above shall preside.

Pre-Construction Meeting Date: _____

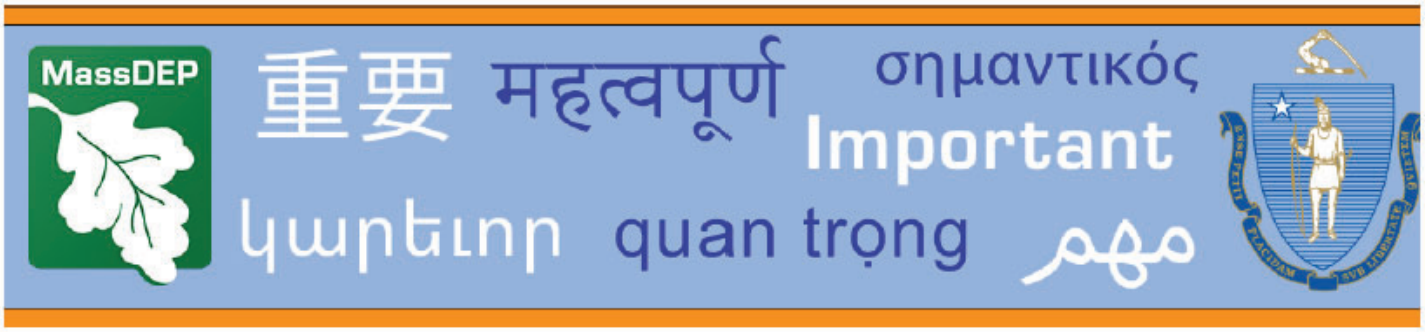
Condition	Required Submittal	Due Date	Date Submitted	Date Approved
Pre-Construction and Construction-Period				
2	Name, contact information, and qualifications of the WS, including specific experience and years to meet requirement	21 days prior to Pre-Construction Meeting		
3	Name, contact information, and qualifications of the FGM, including specific experience and years to meet requirement	21 days prior to Pre-Construction Meeting		
4	Name, contact information, and qualifications of the CP/PP Inspector, including specific experience and years to meet requirement	21 days prior to Pre-Construction Meeting		
5	Name and contact information of the RE	Prior to Pre-Construction Meeting		
6	Schedule Pre-Construction Meeting	21 days prior to work start		

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Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

Condition	Required Submittal	Due Date	Date Submitted	Date Approved
8	USACE Work-Start Notification Form	14 days prior to work start		
9	CP/PP	21 days prior to work start		
10	Verification of CP/PP Training	Prior to work start		
12	Control of Water Plan	21 days prior to work start		
14	Flood Contingency Plan	Prior to any work within 1% annual chance of flooding zone		
15	Invasive Plant Management Strategy	21 days prior to Pre-Construction Meeting		
17	Demolition Plan	21 days prior to demolition work		
18	NHESP Turtle Protection Plan Approval	Prior to work start		
Wetland and Stream Mitigation				
38	WS Annual Wetland Monitoring Report	No later than January 15th each year		
43	FGM Stream Monitoring Report	Upon completion of work		
Project Close-Out				
47	USACE Compliance Certification Form	Within 30 days following the completion of work		

The Commonwealth of Massachusetts
Department of Environmental Protection



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmantal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគប្បីគួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu immediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telifoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738

The Commonwealth of Massachusetts
Department of Environmental Protection

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다.
본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود.
اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice *(Direktor für Umweltgerechtigkeit in Massachusetts)* unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

14. Linear Transportation Projects.
Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, driveways, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge of dredged or fill material cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge of dredged or fill material cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. 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. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge of dredged or fill material in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges of dredged or fill material for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army

authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, “District Engineer’s Decision.” The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

2026 Nationwide Permits General Conditions

1. 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, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

c) The permittee understands and agrees that, if future operations by the United States 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 or her 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 the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

NAE Note: *Compliance with this condition can be achieved by ensuring no unreasonable interference with navigation by the existence or use of any activity authorized by any Nationwide Permit (NWP), and no attempt made by a permittee to prevent the full and free use by the public of all navigable waters at or adjacent to any activity authorized by any NWP.*

2. Aquatic Life Movements

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 shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

NAE Note: *Compliance with this condition may be achieved by ensuring that during in-stream work, the low flow channel/thalweg remains unobstructed during periods of low flow, except when it is necessary to perform the authorized work. Additionally, for work in tidal waters, in-stream controls should be installed in such a manner that do not obstruct fish passage.*

3. Spawning Areas

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.

4. Migratory Bird Breeding Areas
Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds
No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

Maine Note: *Contact the Maine Department of Marine Resource (ME DMR) for further conservation measures if a proposed activity would result in excess turbidity (i.e., dredging) and is located within 100 feet of ME DMR shellfish areas. Reference material can be found at: https://dmr-maine.opendata.arcgis.com/datasets/mainedmr-molluscan-shellfish-2010/explore?location=43.733484%2C-69.767928%2C10.43 and https://mgs-maine.opendata.arcgis.com/datasets/maine-coastal-marine-geologic-environments/explore.*

6. Suitable Material
No activity may use unsuitable material (*e.g.,* trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. 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.

8. Adverse Effects from Impoundments
If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows
To the maximum extent practicable, the pre-construction 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, including tidal flows. The activity must not restrict or impede the passage of normal or high flows including tidal 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).

10. Fills Within 100-year Floodplains
The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

Massachusetts Note: *For activities located within the Commonwealth of Massachusetts, activities may be required to comply with the Bordering Lands Subject to Flooding provisions of the Commonwealth's Wetland Protection Act. Applicants should contact Massachusetts Department of Environmental Protection to determine whether this provision applies to their proposed activity/ies.*

11. Equipment
Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

If mats are used to minimize soil disturbance, the affected areas must be returned to pre-construction elevations, and revegetated as appropriate. In circumstances where the use of mats has caused significant soil compaction efforts using techniques (*e.g.,* soil reaeration techniques) to break up the compaction should be employed to return the soil to a pre-construction state prior to returning to pre-construction elevations.

NAE Notes: *(1) Compliance with this condition may be achieved through the implementation of best management practices outline in NAE's "Construction Mat Best Management Practices" document available at https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Permit-Resources/.*

(2) Compliance with this condition may be achieved by ensuring that construction equipment such as barges in tidal waters always provide adequate clearance above the substrate to avoid impacts to SAS during all tides.

(3) Compliance with this condition may be achieved by ensuring that construction equipment that would cross or access streams utilizes temporary bridges, spans, construction mats, culverts, or cofferdams to minimize disturbance to the waterway.

12. Soil Erosion and Sediment Controls
Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

NAE Note: *Compliance with this condition may be achieved by ensuring that all discharge points back into waters of the U.S., including wetlands use appropriate energy dissipaters and erosion and sedimentation control BMPs. Controls that are biodegradable can be left in place, but should be removed if they are not biodegradable.*

Temporary controls should be removed upon completion of work, but not before all exposed soil and other fills and any work waterward of the OHWM are permanently stabilized. Once permanently stabilized, temporary controls should be removed as soon as possible. Sediment and debris collected by these controls should be removed and placed at an upland location and in a manner that will prevent its later erosion into a waterway or wetland.

Massachusetts Note: *In Massachusetts, compliance with this condition may be achieved by ensuring, as applicable, that all activities are compliant with the State of Massachusetts' Stormwater Management Standards at 314 CMR 9.06(6)(a)-(f) and the State of Massachusetts' Stormwater Handbook.*

13. Removal of Temporary Structures and Fills
Temporary structures must be removed to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

NAE Note: *Compliance with this general condition may be achieved by underlying temporary fills with geotextile fabric which may help to facilitate the restoration to pre-construction elevations.*

14. Proper Maintenance
Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

NAE Note: *Compliance with this general condition may be achieved by the complete removal, cutting, and/or driving to three feet below the substrate of* d*erelict, degraded, or abandoned piles and sheet piles located in navigable waters of the U.S., except for those inside existing work footprints for piers to prevent interference with navigation. Existing creosote piles that are affected by project activities may be completely removed if practicable. In areas of fine-grained substrates, piles may be removed by the direct, vibratory or clamshell pull method to minimize sedimentation, and turbidity impacts and prevent interference with navigation from cut piles. Removed piles should be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands, their substrate, or mudflats.*

15. Single and Complete Project
The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers
a) No NWP 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.

b) If a proposed NWP activity 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, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

c) Information on Wild and Scenic Rivers 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/.

NAE Note: *See also: Regional Condition C, Additional PCN Requirement (Wild and Scenic Rivers).*

17. Tribal Rights
No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species
a) No activity is authorized under any NWP 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 NWP 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.

b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer 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) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

e) Authorization of an activity by an NWP 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.

f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal permittee should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this

general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their web pages at http://www.fws.gov/ or http:// www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

NAE Note: *For information on how to comply with General Condition 18, please visit our website at https://www.nae.usace.army.mil/missions/regulatory/endangered-species-act/.*

Maine Note: *Federal agencies should refer to "Multiple Federal Agency & Lead Federal Agency Best Practices" when a Corps permit is required, which can be found on the Corps' webpage at: www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit. (This is a pending document and will be published on our website when completed.)*

19. Migratory Birds and Bald and Golden Eagles

The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties

a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district

engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective Federal agency is responsible for fulfilling its obligation to comply with section 106.

c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

d) Where the non-federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and so notified the Corps, the non-federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects on historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected 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 Corps, 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 Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects 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.

NAE Note: *The following link to the Corps' website provides SHPO and THPO contact information and additional procedures to expedite Corps regulatory review regarding the NHPA. Please contact the appropriate SHPO and/or THPO based on the geographic location of the regulated activity: https://www.nae.usace.army.mil/Missions/Regulatory/Historic-and-Tribal-Resources/.*

21. Discovery of Previously Unknown Remains and Artifacts
Permittees that discover any previously unknown historic, cultural or archaeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters
Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57, and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation

The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (*i.e.*, on site).

b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (*e.g.*, conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (*e.g.*, riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the

NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines 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)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another Federal agency holds an easement, the district engineer will coordinate with that Federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

6) Compensatory mitigation requirements (*e.g.*, resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). 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. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or

scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

NAE Note: *Applicants are encouraged to utilize the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) in order to determine which in-lieu fee programs and/or mitigation banks have a sufficient amount of appropriate and available credits which they may propose to use to offset their proposed activity's unavoidable impacts to waters of the U.S., including wetlands. RIBITS is available at https://ribits.ops.usace.army.mil/ords/f?p=107:2::::::. See also: Regional Condition I, Compensatory Mitigation.*

24. Safety of Impoundment Structures
To ensure that all impoundment structures are safely designed, the district engineer may require non-federal applicants to demonstrate that the structures comply with established state or Federal dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality
a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed activity which may result in any discharge from a point source into waters of the United States must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed activity which may result in any discharge from a point source into waters of the United States in order for the activity to be authorized by an NWP.

b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed activity which may result in any discharge from a point source into waters of the United States is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge into waters of the United States, the permittee must submit a copy of the certification to the district engineer. The discharge into waters of the United States is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied (*i.e.,* by the issuance of a water quality certification or a waiver and completion of the Section 401(a)(2) process).

c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

NAE Note: *For information concerning how to apply to EPA for a Water Quality Certification for activities located within Tribal lands or within lands of exclusive Federal jurisdiction, please see: https://www.epa.gov/cwa-401/resources-when-epa-acts-certifying-authority-under-section-401 and/or contact: R1CWA401@epa.gov.*

Connecticut Note: *For information concerning how to apply to CTDEEP for a Water Quality Certification, please see: https://portal.ct.gov/deep/permits-and-licenses/factsheets-inland-water/401-water-quality-certification-fact-sheet.*

Maine Note: *For information concerning how to apply to LUPC or MEDEP for a Water Quality Certification, please see: https://www.maine.gov/dep/water/wd/wqc/.*

Massachusetts Note: *For information concerning how to apply to MassDEP for a Water Quality Certification, please see: https://www.mass.gov/lists/wetlands-permitting-forms.*

New Hampshire Note: *For information concerning how to apply to NHDES for a Water Quality Certification, please see: https://www.des.nh.gov/water/rivers-and-lakes/water-quality-certification.*

Rhode Island Note: *For information concerning how to apply to RIDEM for a Water Quality Certification, please see: https://dem.ri.gov/sites/g/files/xkgbur861/files/2025-06/wqcheck.pdf.*

Vermont Note: *For information concerning how to apply to VTDEC for a Water Quality Certification, please see: https://dec.vermont.gov/act250/watershed/business-support/water-quality-certification-section-401.*

26. Coastal Zone Management

In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

NAE Note: *If an individual state coastal zone management consistency concurrence is required, applicants should submit a consistency certification to the state (see 15 CFR 930.31(d)) at the same time as the PCN is submitted to the Corps, or shortly thereafter.*

Connecticut Note: *For information concerning how to apply to CTDEEP for a coastal zone management consistency certification, please see: https://portal.ct.gov/deep/coastal-resources/coastal-permitting/coastal-consistency.*

Maine Note: *For information concerning how to apply to the Maine Office of Community Affairs for a coastal zone management consistency certification, please see: https://www.maine.gov/dmr/programs/maine-coastal-program/federal-consistency-review.*

Massachusetts Note: *For information concerning how to apply to Mass CZM for a coastal zone management consistency certification, please see: https://www.mass.gov/federal-consistency-review-program.*

New Hampshire Note: *For information concerning how to apply to NHDES for a coastal zone management consistency certification, please see: https://www.des.nh.gov/water/coastal-waters/federal-consistency.*

Rhode Island Note: *For information concerning how to apply to CRMC for projects within the coastal zone, please see: https://www.crmc.ri.gov/applicationforms.html and https://www.crmc.ri.gov/regulations/fed_consistency.pdf.*

27. Regional and Case-by-Case Conditions
The activity must comply with any regional conditions that may have been added by the division engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits
The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

a) The total acreage of loss of waters of the United States for a single and complete project cannot exceed the acreage limit of the NWP with the highest specified acreage limit when multiple NWPs are used to authorize an activity.

b) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States for that single and complete project cannot exceed that specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14 (which has an acreage limit of 1/3-acre in tidal waters), with associated bank stabilization authorized by NWP 13 (which does not have a specified acreage limit), the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

c) If two or more of the NWPs used to authorize the single and complete project have specified acreage limits, the acreage loss of waters of the United States authorized by each of those NWPs cannot exceed the specified acreage limits of each of those NWPs. For example, if a commercial development is constructed under NWP 39 (which has a 1/2-acre limit), and the single and complete project

includes the filling of a ditch authorized by NWP 46 (which has a 1-acre limit), the maximum acreage loss of waters of the United States for the construction of the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States caused by the combination of the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications

If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____

(Transferee)

_____

(Date)

30. Compliance Certification

Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The successful completion of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States
If an NWP activity also requires review by, or permission from, the Corps 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 (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

NAE Note: *Refer to the New England District's Section 408 Program webpage that can be found at: https://www.nae.usace.army.mil/Missions/Section-408/. See also: Regional Condition B, Additional PCN Requirement (Federal Projects).*

32. Pre-Construction Notification
a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential

to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

b) Contents of the Pre-Construction Notification: The PCN must be in writing and include the following information:

1) Name, address and telephone numbers of the prospective permittee;

2) Location of the proposed activity;

3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (*e.g.,* a conceptual plan), but do not need to be detailed engineering plans);

5) The PCN must include a delineation of waters, wetlands, and other special aquatic sites on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate. For NWP 27 activities that require PCNs because of other general conditions or regional conditions imposed by division engineers, see Note 2 of that NWP;

NAE Note: *To comply with the above GC 32(5), the following methodologies should be utilized:*

(a) Wetlands should be delineated in accordance with the Corps Wetlands Delineation Manual and the most recent Northcentral/Northeast Regional Supplement. Wetland delineation and jurisdiction information can be found at: www.nae.usace.army.mil/missions/regulatory/jurisdiction-and-wetlands and https://www.usace.army.mil/Media/Announcements/Article/4262089/1-august-2025-us-army-corps-of-engineers-enhances-aquatic-resource-delineation/*.*

(b) Refer to the "Best Practices for Jurisdictional Determinations and Wetland Delineations," which can be found on the Corps webpage at: https://www.nae.usace.army.mil/missions/regulatory/state-general-permits/maine-general-permit/. (This is a pending document and will be published on our website when completed.)

(c) The ordinary high water mark should be delineated (on both sides) when streams, rivers, non-tidal open waters are present on the project site. Ordinary high water mark guidance can be found in RGL 05-05 (https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll9/id/1253). For complex, atypical, or problematic sites see: https://www.erdc.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/486085/ordinary-high-water-mark-ohwm-research-development-and-training/.

(d) Vegetated shallows should be delineated when present on the project site. Vegetated shallow survey guidance and maps can be found on the Corps webpage at: https://www.nae.usace.army.mil/Missions/Regulatory/Jurisdiction-and-Wetlands/.

(e) All Essential Fish Habitat should be delineated when present on the project site. EFH survey guidance can be found in the current EFH programmatic, which can be found on the Corps webpage at https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/.

6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the compensatory mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

9) For an 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, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

10) For an NWP activity that requires permission from, or review by, the Corps 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, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

c) Form of Pre-Construction Notification: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for:

(i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States;

(ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and

(iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

Maine Note: *The Corps will additionally coordinate with the State of Maine on all activities that require a waiver.*

(3) When agency coordination is required, the district engineer will immediately provide (*e.g.,* via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

Regional Conditions

The U.S. Army Corps of Engineers (Corps) New England District Regulatory Division issues the following Regional Conditions (RCs) to ensure that activities authorized by the 2026 Nationwide Permits (NWPs) in the New England states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont will not cause more than minimal adverse environmental impacts, both individually and cumulatively. Before the New England District will verify an activity under one or more NWPs, the activity must be demonstrated to comply with the applicable NWP terms and all applicable NWP General Conditions (GCs) and RCs. Prior to commencement of a "non-notifying" activity (i.e., activities authorized by NWPs which do not require submission of a pre-construction notification [PCN]), the proponent (i.e., the person and/or the entity performing the work) is responsible for ensuring the activity meets all applicable:

- Terms of the NWP
- GCs
- RCs
- State Water Quality Certification, if applicable
- State Coastal Zone Consistency, if applicable

PCN Summary Table. The following activities may require a PCN regardless of the terms of the applicable NWP. Please read the applicable RCs to determine if a PCN is required.

Applicable to All New England States	
Exceedance of loss thresholds within streams, tidal/non-tidal wetlands, tidal submerged aquatic vegetation, mudflats, and intertidal areas	See RC A
Located within, or within the vicinity of a Federal Project	See RC B
Located within, or within the vicinity of a Wild and Scenic River	See RC C
Involving discharges of temporary fill material	See RC D
Involving slip lining	See RC E
Involving stream crossings	See RC F
Located within Essential Fish Habitat	See RC J
Applicable to Specific New England States	
Activities within Time-of-Year Restrictions	See RCs N, O, S, U, V, W
Located within the Saint John and Saint Croix River basins (Maine)	See RC P
Authorized by NWP 48, Commercial Shellfish Mariculture Activities and within the State of Maine > 5 acres	See RC Q
Located within Important or Rare Resources within the State of Maine	See RC R
Discharges of fill >10 cubic yards in Lake Champlain and Lake Memphremagog and/or their adjacent wetlands (Vermont)	See RC X

Regional Conditions

The following RCs apply to all applicable NWPs in **all New England States** (unless otherwise specified):

A. Additional PCN Requirement (Specific Resources): A PCN is required for any proposed activities that would result in the loss of waters of the U.S. that exceed the listed thresholds to the following aquatic resources if a PCN is not already required by the NWP.

Aquatic Resource	Threshold
Non-tidal Wetlands	4,356 square feet (1/10-acre)
Tidal and Non-Tidal Stream	200 linear feet or 3/100-acre (whichever is less)
Tidal Wetland	500 square feet
Tidal Submerged Aquatic Vegetation (SAV)	25 square feet
Mudflat	1,000 square feet
Intertidal	1,000 square feet

B. Additional PCN Requirement (Federal Projects): A PCN is required for any proposed activities that would involve the temporary or permanent occupation of, 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). This includes all structures and work in, over, or under a Corps' 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 three times the FNP's authorized depth.

The activity may also require review and approval by the Corps pursuant to 33 USC 408 (Section 408 Permission). The applicant may reach out to the points of contact listed here: https://www.nae.usace.army.mil/Missions/Section-408/ and https://www.nan.usace.army.mil/Missions/Regulatory/Section-408/ (for activities located within the Lake Champlain watershed) and consult the National Channel Framework mapper: https://experience.arcgis.com/experience/b413139f18c046009ebcf62abea941dd/page/Map/. For activities which require a Section 408 permission, verification under an NWP will not be issued prior to the decision the Section 408 permission requires. Any structure or work constructed in an FNP, or its buffer zone shall be subject to removal at the owner's expense prior to any future Corps dredging or hydrographic surveys.

Applicants should contact the Corps Real Estate Division (https://www.nae.usace.army.mil/Missions/Real-Estate-Division/) at (978) 318-8585 for work that would occur on or would potentially affect a Corps property (or properties) and/or Corps-controlled easements. Work may not commence on Corps properties and/or Corps-controlled easements until they have received any required

Corps real estate documents demonstrating site-specific permission to perform work.

A PCN is not required if an applicant has previously obtained a Section 408 permission for their proposed activities, or a determination from the Corps that a Section 408 permission is not required for their proposed activities, and the proposed activities qualify for a non-notifying NWP.

C. Additional PCN Requirement (Wild and Scenic Rivers): A PCN is required under NWP GC 16, Wild and Scenic Rivers, and for: 1) any proposed activities that would be located in and within 1/4-mile up- or downstream of a Wild and Scenic River (WSR) segment, or in tributaries within 1/4-mile of a WSR segment; 2) any proposed activities that would be located in wetlands within 1/4-mile of a WSR segment; and 3) any proposed activities that have the potential to alter free-flowing characteristics in a WSR segment. Applicants should utilize http://www.rivers.gov/ for the most up-to-date WSR designations.

Note: Applicants may coordinate with the Federal agency that has direct management responsibility of the WSR segment or tributary their proposed activity would be within 1/4-mile of prior to submitting a PCN to the Corps. This regional condition does not require a PCN to be submitted if that Federal agency determines that the proposed activity would not adversely affect the subject WSR.

D. Additional PCN Requirement (Temporary Fills): A PCN is required for any proposed activities that would involve the discharge of temporary fill (33 CFR 323.2(e) and (f)) greater than 1/10-acre to be left in place in non-tidal wetlands for more than one growing season. The growing season is generally defined as April 1 to September 30 (See the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* for more information about determining growing season. https://www.nae.usace.army.mil/Missions/Regulatory/Jurisdiction-and-Wetlands/Wetland-Delineation-Manual/).

Note 1: The Corps will determine on a case-by-case basis, after evaluating site-specific and activity-specific circumstances whether temporary construction mats proposed for use are considered as temporary fill.

Note 2: For linear projects, crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization (33 CFR 330.2(i)). Therefore, each crossing of a water of the U.S., including wetlands could have up to 1/10-acre of temporary fill without requiring the submittal of a PCN. *Applicants should be aware that the definition of what constitutes a single and complete project per state regulations may differ from the Corps' definition. Applicants should consult with the state in order to determine state requirements. *

E. Additional PCN Requirement (Slip Lining): A PCN is required for any proposed activity that involves slip lining a stream crossing that is not currently meeting the stream crossing BMPs found in Regional Condition F (e.g., slip lining and invert-lining).

F. Additional PCN Requirement (Stream Crossing Standards): A PCN is required for any proposed stream crossing activities that cannot comply with the below "Stream Crossing Best Management Practices (BMPs)" unless the district engineer provides the applicant written verification removing the below requirements.

1. The width of the crossing shall be greater than or equal to 1.2 times the bank full width.
2. The crossing shall be embedded greater than or equal to 2 feet and/or at least 25 percent of the conveyance's height.
3. The crossing shall be constructed with a natural bottom substrate, as applicable.
4. The crossing shall match the gradient (i.e., slope) of the natural stream channel profile.
5. The crossing shall meet an openness ratio of greater than 0.82 feet.

Regardless of whether a proposed crossing can implement the above BMPs, the applicant should first coordinate with the appropriate state office to obtain required or recommended alternate stream crossing BMPs, prior to submitting a PCN to the Corps. If a stream crossing is designed to meet the standards required or recommended by the appropriate state agency for which the proposed activity is located within, those standards can serve in-lieu of these BMPs and submittal of a PCN is not required.

Note: Below are links to the stream crossing standards/guidelines for those New England states that have published such standards/guidelines. Applicants are highly encouraged to contact their state for additional information regarding those requirements and/or recommendations, as state requirements may be more stringent than the above listed BMPs.

Connecticut: CTDEEP Inland Fisheries Division Habitat Conservation and Enhancement Program's Stream Crossing Guidelines (https://portal.ct.gov/-/media/DEEP/fishing/restoration/StreamCrossingGuidelinespdf.pdf)

Maine: Maine Interagency Stream Crossing Guidelines: (https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit/) and CoastWise (https://www.maine.gov/dmr/sites/maine.gov.dmr/files/inline-files/CoastWiseManualJuly2023_updated.pdf)

Massachusetts: Massachusetts River and Stream Crossing Standards as implemented through 314 CMR 9.06(2)(b).

(https://www.mass.gov/doc/massachusetts-river-and-stream-crossing-standards/download)

New Hampshire: New Hampshire RSA 482-A (https://www.gc.nh.gov/rsa/html/L/482-A/482-A-mrg.htm)

Rhode Island: Regardless of whether a proposed crossing can meet the above BMP's, all wetland and watercourse crossings in Rhode Island are evaluated on a site-by-site basis that account for on-site environmental characteristics by the state. For freshwater crossings, please contact them using the following link: https://dem.ri.gov/environmental-protection-bureau/customer-and-technical-assistance/pre-application-meetings. If a proposed crossing is within the coastal zone and under the jurisdiction of CRMC, please contact them using the following link: https://www.crmc.ri.gov/contact.html.

Vermont: *Vermont Stream Alteration Rule and General Permit* available at https://dec.vermont.gov/watershed/rivers/river-management#rules.

G. Aquaculture: Applicants proposing new aquaculture operations or modifications of existing aquaculture operations are required to coordinate with the appropriate U.S. Coast Guard (USCG) Sector for siting review, Navigation Risk Assessment (NRA), and navigation risk mitigation needs.

1. Coordination with the USCG can be completed by contacting via email:

   Sector Northern New England: (Maine, New Hampshire, Vermont, and Northeastern New York, Lake Champlain) D01-SMB-SecNNE-Waterways@uscg.mil

   Sector Boston: (New Hampshire border southward to Plymouth, Massachusetts) D01-SMB-SECBOSWaterways@uscg.mil

   Sector Southeastern New England: (Rhode Island and Southeastern Massachusetts, Cape Cod, and Islands) SENEWWM@uscg.mil

   Sector Long Island Sound: (New York to Connecticut border at Port Chester, Connecticut to Rhode Island border at Watch Hill) SECLISSPWMarineEvent@uscg.mil

   Sector New York: (Sandy Hook, New Jersey north through Port of New York/New Jersey, Hudson River to Whitehall, NY (south of Lake Champlain) D01-SMB-SecNY-Waterways@uscg.mil

   The applicant shall provide the following information to facilitate completion of the NRA: applicant name/company affiliation, license/lease type (commercial, research, shellfish, kelp, new or modified), nautical chart, detailed drawing with

dimensions, time of year, potential lighting/marking, types/materials of structures in water, planned anchoring, cultivation techniques (number of weekly/monthly visits, vessel tending/type), and any other significant information.

If the applicant receives a medium or high-risk assessment, they shall coordinate with the Corps and apply safety risk mitigations. The USCG will refer the project to the Corps unless the Corps makes the determination that it may proceed.

Any safety lights and signals prescribed by the USCG, through regulations or otherwise, must be installed and maintained at the permittee's expense. For required permitting, the applicant shall contact USCG First District Private Aid Program Manager through D01-SMB-D01PrivateAtoN@uscg.mil. Only actual AtoNs are permitted; floats, balls, markers, mooring balls and 'highflier flags' are not considered Aids to Navigation (AtoN). See: http://www.usharbormaster.com.

Applicants shall notify NOAA's National Ocean Service (NOS) Nautical Data Branch Office of Coast Survey to initiate chart and Coast Pilot corrections. See: https://nauticalcharts.noaa.gov/. Applicants must also notify NOAA on removal. See Note 2.

2. For marine safety information during construction or other significant periods, applicants may use the First District's Marine Safety Information form and email to: D01-SMB-LNM@uscg.mil.

Note 1: If a PCN is required, applicants shall include documentation of all required coordination with their PCN.

Note 2: For nautical chart and coast pilot updates, activities owners should use the status report form at https://nauticalcharts.noaa.gov/charts/docs/charts-updates/USACE+Permit+Status+Report.pdf. For aquaculture activities owners should use: https://nauticalcharts.noaa.gov/charts/docs/charts-updates/Artificial+Reef+Aquaculture+Status+Report.pdf to notify the Office of Coast Survey of the project completion. The form should be emailed to ocs.ndb@noaa.gov and should include a copy of as-built drawings.

H. Hydrology: Permanent wetland crossings shall be constructed in such a manner as to prevent excessive ponding or drying on either side of the authorized crossing after completion of the work. Measures shall be taken to maintain the existing hydrology. Such measures may include road cross drains such as culverts that are appropriately sized and placed at intervals to maintain the existing hydrology of the contiguous wetland.

I. Compensatory Mitigation: In addition to the requirements of NWP GC 23, Mitigation, compensatory mitigation requirements for unavoidable impacts to waters of the U.S. will be evaluated in accordance with the latest version of the *New England District Compensatory Mitigation Standard Operating Procedures* (https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/).

J. Essential Fish Habitat: Essential Fish Habitat (EFH) is defined as those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S.C. 1802).

The following NWPs have been determined to result in no more than minimal adverse effects, provided the permittee complies with all terms and conditions of the NWP as applicable to the activity, including all activity thresholds and activity-specific Conservation Recommendations (CRs) identified in the current EFH and Fish and Wildlife Coordination Act (FWCA) Programmatic Consultation (https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/). The National Marine Fisheries Service (NMFS) has granted General Concurrence (50 CFR 600.920(g)) for the below listed NWPs, and these activities do not require activity-specific EFH consultation.

Nationwide Permit	Authorized Activities with General Concurrence
NWPs: 1, 4, 5, 6, 9, 10, 11, 15, 16, 19, 20, 27, 28, 32, 35, & 41	All authorized activities
NWP 3	Parts (a) and (c) (i.e., non-notifying)
NWP 12	Section 404 only activities that do not result in the loss of greater than 1/10-acre and is not a new pipeline greater than 250 miles (i.e., non-notifying)
NWP 13	Activities less than 500 linear feet in length with a discharge of less than one (1) cubic yard per running foot below the ordinary high water mark or high tide line, and no discharges into special aquatic sites (i.e., non-notifying)
NWP 14	Activities less than 1/10-acre with no discharges into special aquatic sites (i.e., non-notifying)
NWP 18	Activities that discharge less than ten (10) cubic yards of fill material below the plane of the ordinary high water mark or high tide line with no discharges into special aquatic sites (i.e., non-notifying)
NWP 22	Activities associated with vessels that are not listed or eligible for listing on the National Register of Historic Places and not located within special aquatic sites (i.e., non-notifying)
NWP 23	Activities not identified as notifying within Regulatory Guidance Letter 05-07 (i.e., non-notifying)
NWP 33	Section 404 only activities (i.e., non-notifying)
NWP 36	Activities that discharge less than 50 cubic yards of fill material and are less than 20 feet wide (i.e., non-notifying)

NWP 43	Activities that do not involve the expansion or construction of a new stormwater management facility (i.e., non-notifying)
NWP 48	Activities that are not the installation of a new operation and do not directly affect greater than 1/2-acre of submerged aquatic vegetation (i.e., non-notifying)
NWPs: 51 & 60	Activities that do not result in the loss of greater than 1/10-acre (i.e., non-notifying)
NWP 54	Maintenance activities (i.e., non-notifying)
NWPs: 57 & 58	Section 404 only activities that do not result in the loss of greater than 1/10-acre (i.e., non-notifying)

For non-federal applicants whose proposed activities would be located within EFH and that do not require a PCN per the language of the NWP or per any other general or regional condition (i.e., non-notifying), the applicant shall review the current EFH and FWCA Programmatic Consultation (https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/) to ensure their proposed activity complies with all applicable CRs.

1. A PCN is required for any proposed project that would exceed the activity thresholds that are included within the current EFH and FWCA Programmatic Consultation. Any proposed project that exceeds an activity threshold requires preliminary coordination/project-specific consultation.

2. For all activities that do not exceed the activity-based thresholds included within the current EFH and FWCA Programmatic Consultation, the project proponent shall implement the activity-specific applicable CRs. If the applicable CRs cannot be implemented, a PCN must be submitted to the Corps, and work may not commence until the Corps verifies the project under the applicable NWP(s).

Federal applicants should follow their own procedures for compliance with the Magnuson-Stevens Fishery Conservation and Management Act and Fish and Wildlife Coordination Act.

Note 1: For activities proposed for authorization by an NWP that requires the submittal of a PCN, applicants are encouraged to review the current EFH and FWCA Programmatic Consultation and design their proposed activities with the activity-based thresholds and incorporate applicable CRs.

Note 2: Applicants can utilize the NMFS EFH mapper to determine if their proposed activities are located within EFH: https://www.habitat.noaa.gov/apps/efhmapper/. Applicants can also utilize the current EFH and FWCA Programmatic Consultation (https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/) for guidance on non-tidal waterbodies with diadromous fish.

K. Invasive Species: 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 into areas adjacent to the project site caused by the site work shall be avoided. Native, non-invasive vegetation must be used unless otherwise authorized by the Corps, and shall not contain any species listed in Appendix K ("Invasive and Other Unacceptable Plant Species") of the current *New England District Compensatory Mitigation Standard Operating Procedures* located at: https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/. 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. Information about how to avoid the spread of invasive species can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species.

L. NWP Documentation On-Site: The permittee shall ensure that a copy of their verification letter (for notifying NWPs only) and applicable NWP with all applicable GCs and RCs are at the worksite whenever work is being performed, and that all personnel performing work are fully aware of its terms and conditions.

M. Abandonment: If the permittee decides to abandon the activity authorized by an NWP, unless such abandonment is merely the transfer of property to another party, the permittee may be required to restore the area to the satisfaction of the Corps.

State-Specific Regional Conditions

The following RCs apply to all applicable NWPs in the **State of Connecticut**:

N. Regional Condition N is reserved for the state of Connecticut.

The following RCs apply to all applicable NWPs in the **State of Maine**:

O. Regional Condition O is reserved for the state of Maine.
P. Regional Condition P is reserved for the state of Maine.
Q. Regional Condition Q is reserved for the state of Maine.
R. Regional Condition R is reserved for the state of Maine.

The following RCs apply to all applicable NWPs in the **Commonwealth of Massachusetts**:

S. Additional PCN Requirement (Time-of-Year Windows and Restrictions): A PCN is required for any proposed activity located in waters of the U.S. (excluding wetlands) that does not comply with the following time-of-year (TOY) restrictions, unless the Massachusetts Division of Marine Fisheries (MA DMF) provides alternate TOY restrictions. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47* can apply instead if they are provided for a specific waterbody where the activity is proposed. Additionally, if MA DMF provides project-specific TOY restrictions those may also apply in lieu of the TOY restrictions listed below.

	TOY Work Restriction	TOY Work Window
Non-Tidal Waters	October 1 to June 30	July 1 to September 30
Tidal Waters and Diadromous Fish Migratory Habitat**	January 15 to November 15	November 16 to January 14

*Massachusetts Department of Marine Fisheries (MA DMF) Technical Report, TR-47, available at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/

**Information regarding diadromous fish migratory habitat can be obtained from the following GIS website maintained by the Commonwealth of Massachusetts: https://www.mass.gov/info-details/massgis-data-diadromous-fish.

For proposed activities that require a PCN, applicants should first coordinate with the MA DMF to obtain TOY windows and/or restrictions for their activity. Applicants should include documentation of this coordination when submitting their PCN.

Any proposed activity located in waters of the U.S. (excluding wetlands) shall be completed entirely "in-the-dry" or be isolated from active flows/the water column using temporary measures (i.e., cofferdams, sandbags, flume pipes, etc.) to the maximum extent practicable. The term "in-the-dry" means work that is done under dry conditions, e.g., work behind cofferdams or when the stream or tide is waterward of the work.

T. Underwater Archaeological Resources: Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the Board of Underwater Archaeological Resources (BUAR) has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged within 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.

The following RCs apply to all applicable NWPs in the **State of New Hampshire**:

U. Regional Condition U is reserved for the state of New Hampshire.

The following Regional Conditions apply to all applicable NWPs in the **State of Rhode Island**:

V. Regional Condition V is reserved for the state of Rhode Island.

The following Regional Conditions apply to all applicable NWPs in the **State of Vermont**:

W. Regional Condition W is reserved for the state of Vermont.
X. Regional Condition X is reserved for the state of Vermont.

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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 and Environmental Affairs
Department of Environmental Protection
Address: 100 Cambridge Street, Suite 900, Boston MA 02114 | **Phone:** 617-292-5500

Maura T. Healey	Kim Driscoll	Rebecca Tepper	Bonnie Heiple
Governor	Lieutenant Governor	Secretary	Commissioner

August 13, 2026

Massachusetts Department of Transportation, Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116
Attn: Courtney Walker

RE: 401 Water Quality Certification
BRP WW 10, Major Fill Project
Kelsey Road Bridge Replacement over Schenob Brook
(Bridge No. S-10-015)
Sheffield, Massachusetts

401 WQC Filing Number: 26-WW10-0009-APP
USACE Application Number: NAE-2026-00570
MassDOT Project Number: 609068

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed your application for a Water Quality Certification (WQC), as referenced above. The WQC application was deemed complete on August 3, 2026. 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 will replace the structurally deficient bridge that carries Kelsey Road over Schenob Brook in Sheffield (the Project). Reconstruction of the approach slabs, stabilization of the roadway embankments, stormwater infrastructure improvements, and stream and wetland restoration and replication will also be completed as part of the Project.

Kelsey Road is an unpaved rural local road that runs in a northwest/southeast orientation over Schenob Brook. The existing single-span bridge that takes Kelsey Road over the brook was constructed in 1915 with an overall length of 23 feet and width of 14.7 feet. The bridge includes a single travel lane with concrete curbs and railings on either side. Underneath the bridge, Schenob Brook fully occupies the 20 feet from abutment to abutment and flows

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generally southwest to northeast to its confluence with Hubbard Brook. A 66-inch-diameter corrugated metal pipe (CMP) and 48-inch by 72-inch elliptical CMP extend under Kelsey Road 40 feet and 150 feet northwest of the bridge, respectively, to connect Bordering Vegetated Wetlands (BVWs) on either side of the roadway. Stormwater drainage within the Project area is entirely country drainage.

The Project is located within an Area of Critical Environmental Concern (ACEC; Schenob Brook Drainage Basin), Zone II Wellhead Protection Area (WPA), and Federal Emergency Management Agency (FEMA) 1% annual chance of flooding zone (Zone A). In addition, Schenob Brook is classified as a Coldwater Fishery Critical Area with a field-delineated bankfull width of 42 feet.

The existing bridge will be replaced with a new 16.5-foot-wide bridge that accommodates a single 13-foot-wide travel lane with guardrails on either side. The proposed abutment-to-abutment span width will increase from 20 feet to 67 feet and the culvert closest to the bridge will be removed. Kelsey Road will be closed to traffic making the roadway available to stage equipment and stockpile materials during construction. Once the superstructure is removed, temporary sheet pile cofferdams will be installed around each of the existing abutments and the area within the cofferdams will be dewatered. Once dry working conditions are established, the existing abutments will be removed and replaced with new abutments and wingwalls and the brook will be restored.

The bridge and approach slabs will be comprised of asphalt, while gravel will be maintained along the roadway approaches approximately 220 feet northwest and 380 feet southeast of the bridge. The southeastern approach will be widened slightly, and two gravel driveways will be constructed to provide access to nearby agricultural fields. The roadway embankments adjacent to the bridge will be cleared/grubbed, re-graded, and stabilized with modified rockfill over riprap and crushed stone, and a nearby dry hydrant near the southwestern abutment will be relocated and replaced. The existing 48-inch by 72-inch elliptical CMP will be replaced with dual 34-inch by 53-inch elliptical CMPs to increase the vertical clearance between the pipes and roadway surface while maintaining a similar cross-sectional area.

In total, 5 square feet (sf) of permanent impacts to Land Under Water (LUW) will be required for work associated with the proposed wingwalls. An additional 292 sf of temporary impacts to LUW and 9 cubic yards (cy) of dredging will also be needed for cofferdam installation, dewatering, and replacement of the abutments.

Following construction, LUW temporarily impacted during construction will be restored to existing conditions. In addition, 807 sf of LUW will be restored from increasing the bridge span

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and removing existing roadway fill. A 12-inch-layer of stockpiled natural streambed material will be placed in the area between the existing and proposed abutments and slope gently downward to form a low flow channel in the location of the existing channel. Terrestrial wildlife passages will be created between the abutments and stream banks. Once the LUW replication is complete, water will be slowly introduced into the stream channel under the direction of a Fluvial Geomorphologist (FGM), as conditioned herein.

The Project meets or exceeds all MA Stream Crossing Standards. The proposed crossing span of 67 feet exceeds the 1.2 times bankfull width standard of 50.4 feet. Natural substrate will be used to create LUW and the water depth and velocity of the proposed channel will be comparable to the native channel upstream and downstream of the bridge. The proposed openness ratio of 20.2 feet exceeds the recommended openness ratio of 0.82 feet. A low flow channel will be formed that gradually slopes upward to terrestrial wildlife passages along both stream banks.

Construction activities associated with stabilizing the roadway embankments will result in 5,838 sf of permanent impact to BVW. Over the course of Project review, the proposed slope of the roadway embankments was adjusted from 1.5:1 to 1:1 to reduce permanent impacts to BVW. No temporary impacts to BVW are proposed.

To mitigate for permanent loss of BVW, 8,348 sf will be replicated in the southeastern quadrant of the Project area. The replication area will be excavated one foot below the final grade to establish and maintain wetland hydrology. Excavated soil (if suitable) or imported clean, evenly mixed organic/mineral soil will be used to backfill the area and graded to create micro-topographic features. A wetland seed mix and native tree and shrub plantings will be applied/installed throughout the BVW replication area. All BVW replication work will be overseen and monitored by a Wetland Specialist, as conditioned herein.

The Project meets the MA Stormwater Management Standards to the maximum extent practicable per 314 CMR 9.06(6). Widening the southeastern roadway approach and constructing new gravel driveways will increase impervious surfaces in the Project area by 3,563 sf. An existing drainage swale south of the bridge and west of Kelsey Road will be reconstructed to include check dams and a grassed channel.

Country drainage will be maintained in the remaining portions of the Project area. Additional infiltration and conveyance Stormwater Control Measures were deemed infeasible in the Project area due to adjacent Resource Areas. As such, Stormwater Management Standards 2, 3, and 4 will be met to the maximum extent practicable.

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Existing invasive species in the Project area will be documented prior to construction and managed in accordance with an Invasive Plant Management Strategy (IPMS) per Special Conditions 15 and 16.

The Project is located within Massachusetts Natural Heritage and Endangered Species Program (NHESP) Priority Habitat for wood turtles (*Glyptemys insculpta*). NHESP issued a Conditional No-Take Determination for the Project on December 31, 2025, that requires the Project to incorporate a NHESP-approved construction-period Wood Turtle Protection Plan (TPP) to avoid a prohibited Take, as conditioned herein.

In an email dated October 20, 2025, the Division of Fisheries and Wildlife (DFW) stated no time of year (TOY) restrictions are required if Best Management Practices (BMPs) for sedimentation control are implemented to prevent adverse impacts on spawning and rearing coldwater fish species. This WQC is conditioned to require compliance with the recommendations outlined by DFW.

The following alternatives were evaluated in accordance with 314 CMR 9.00: no-build, bridge replacement with spread footings, bridge replacement with deep foundations, and bridge replacement with brook realignment. The no-build alternative was eliminated as it would result in continued deterioration of the bridge. Bridge replacements with spread footings and brook realignment would cause significantly more impact on adjacent Resource Areas. Accordingly, bridge replacement with deep foundations was selected as the preferred alternative as it achieves Project goals without the use of extensive riprap scour protection, and thus, significantly reduces permanent impacts to LUW.

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 April 9, 2026, and in the MEPA Environmental Monitor on April 24, 2026. No comment letters were received during the public comment period.

Therefore, based on information currently in the record, MassDEP grants a WQC 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. The Department 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, the Department 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

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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 and are summarized in Attachment A. In addition, those conditions with the (Submittal) designation shall be included in the Special Provisions and, as applicable, reviewed at the Pre-Construction Meeting.

1. All work shall be performed in accordance with the following documents and plans:

    a. Application for Water Quality Certification with cover letter and attachments. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Prepared by Comprehensive Environmental Inc. (CEI) on behalf of MassDOT. Dated April 3, 2026.

    b. Plans entitled: “Plan and Profile of Kelsey Road over Schenob Brook (Bridge No. S-10-015) in the Town of Sheffield, Berkshire County”. Sheets 1 through 55. Prepared by Gannett Fleming Inc (GFT) on behalf of MassDOT. Dated April 3, 2026, last revised on July 29, 2026.

    c. MassDEP Administrative Completeness and Technical Deficiency Review. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Dated April 17, 2026.

    d. MassDOT Responses to MassDEP Administrative Completeness and Technical Deficiency Review, with cover letter and attachments. 401 WQC Filing Number:

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26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Prepared by GFT on behalf of MassDOT. Dated July 8, 2026.

e. MassDEP Supplemental Technical Deficiency Review, sent via email. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Dated July 27, 2026.

f. MassDOT Responses to MassDEP Supplemental Technical Deficiency Review, sent via email. 401 WQC Filing Number: 26-WW10-0009-APP (Major Fill). Kelsey Road over Schenob Brook Bridge Replacement (Bridge No. S-10-015), Sheffield, MA. Prepared by GFT on behalf of MassDOT. Dated August 3, 2026.

Pre-Construction

2. A qualified **Wetland Scientist** (WS) with a minimum of five years of relevant professional experience with wetland replication projects shall be employed to oversee all BVW replication activities as proposed in the WQC application and approved herein, including but not limited to grading, placement of substrate, seeding, vegetation plantings, and placement of wildlife habitat features. The name, contact information, and qualifications of the WS shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. **(Submittal)**

3. A qualified **Fluvial Geomorphologist** (FGM) with a minimum of five years of relevant professional experience in stream replication and restoration projects shall be employed to oversee all LUW replication and restoration activities as proposed in the WQC application and approved herein. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. The FGM shall either attend the Pre-Construction Meeting required in Condition 6 or a separate virtual or onsite meeting with MassDEP, MassDOT, and the construction contractor (Contractor) prior to any LUW replacement or restoration work. **(Submittal)**

4. One individual with at least three years of experience with construction period erosion and sedimentation controls shall be employed to be responsible for Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) inspections (CP/PP Inspector). The name, contact information, and qualifications of the CP/PP

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Inspector shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. **(Submittal)**

5. Prior to the Pre-Construction Meeting required in Condition 6, 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 terms and conditions of this WQC. **(Submittal)**

6. A minimum of 21 days prior to the start of ground disturbance or vegetation clearing, MassDOT shall contact MassDEP to schedule an onsite Pre-Construction Meeting to review the approved plans and terms and conditions of this WQC. The RE, the Contractor, the WS, the CP/PP Inspector, a representative from the MassDOT Environmental Section and/or the District Environmental Engineer shall attend the Pre-Construction Meeting. **No work shall commence prior to the Pre-Construction Meeting.**

7. Prior to the Pre-Construction Meeting, the boundaries of BVW and LUW shall be re-flagged where they are within 50 feet of the limits of work. 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 WS. All construction personnel shall be made aware of these markers.

8. MassDEP shall be copied on applicable submittals to the U.S. Army Corps of Engineers (USACE). These include but are not limited to: Pre-Construction Notification; Work-Start Notification Form; Mitigation Work-Start Notification Form; and Compliance Certification Form. The Work-Start Notification Form shall be submitted at least 14 days before the anticipated start of work. **(Submittal)**

9. A CP/PP shall be developed and implemented as required by 314 CMR 9.06(6)(a)8. A minimum of 21 days prior to the start of work, MassDOT shall submit the CP/PP to MassDEP for review and approval. If the U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) applies, the Stormwater Pollution Prevention Plan (SWPPP) may serve as the CP/PP, providing it includes the measures required to be in the CP/PP per these Special Conditions, in addition to the measures specifically required by the CGP. Any subsequent changes to the approved CP/PP (defined herein as

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including the construction period SWPPP if applicable) must be approved by MassDEP. **(Submittal)**

10. Training regarding erosion and sedimentation controls is required. The CP/PP Inspector and any other relevant personnel responsible for erosion and sedimentation controls shall complete the EPA CGP Inspector Training, or other training that meets the CGP requirements, as well as complete a comprehensive review of the approved CP/PP. Proof of completion of the training shall be submitted to MassDEP prior to the start of work. **(Submittal)**

11. The CP/PP shall identify, but shall not be limited to, staging and laydown areas in relation to BVW and LUW, proposed dewatering methods and locations, proposed stockpile locations and their proximity to catch basins or other drainage conveyances that discharge to BVWs or LUW, and the location of construction-period erosion and sedimentation controls. The CP/PP shall include all the relevant provisions included in the Construction Period Conditions herein.

12. A minimum of 21 days prior to the start of work, MassDOT shall submit a Control of Water Plan for review and approval. The Plan shall include a description of proposed methods to isolate and dewater work areas within streams while maintaining stream flow, including but not limited to the method of isolation (e.g., steel sheeting or sandbag cofferdam), dewatering methods and locations and specifications for stream bypass systems as applicable. The Control of Water Plan shall include a plan depicting approved BVW and LUW boundaries, and the location of all relevant methods and materials which shall be located within the BVW and LUW impact areas approved herein. The plan shall meet the requirements of the CP/PP and be specific to the Project. Dewatering and stream bypasses shall be conducted under the supervision of the RE or other project staff with knowledge of these practices and comply with the applicable conditions identified herein. **(Submittal)**

13. 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 sedimentation control measures may consist of, but are not limited to, silt fence, staked straw bales, silt/turbidity curtains, compost filter tubes, etc.

14. Prior to any work within the 1% annual chance of flooding zone within Project limits, including mobilization or storage of equipment and materials, a Flood Contingency Plan

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shall be submitted to MassDEP for review and approval that includes at a minimum the following information and provisions: **(Submittal)**

a. The RE and/or Contractor shall monitor the National Weather Service forecast daily, and upon issuance of a flood watch or flood warning for the Project area, the Flood Contingency Plan shall be implemented.

b. Upon implementation of the Flood Contingency Plan, all construction equipment and materials located below the Base Flood Elevation (BFE) shall be removed and placed in an upland location above the BFE and outside of BVW and LUW.

c. Anchored stationary equipment may remain below the BFE if demonstrated to be required and upon written approval from MassDEP. In the event semi-stationary equipment cannot be feasibly removed before the arrival of the storm, they shall be adequately secured and MassDEP shall be notified prior to the storm.

d. A requirement to inspect and maintain all erosion and sedimentation controls, and stabilize all exposed soils as needed below the BFE prior to the storm shall be included.

e. A plan depicting at a minimum, but not limited to, BVW and LUW boundaries, the Project limits, and the BFE boundary based on ground elevations shall be included.

f. Staff and materials must be available 24 hours per day, seven days per week to implement the Flood Contingency Plan. The name, affiliation, title, email address, and phone number of each person responsible for implementing the Flood Contingency Plan shall be included.

g. No work shall commence until the flood watch or flood warning has ended, all areas below the BFE have been inspected, and erosion and sedimentation controls are maintained as needed.

15. The Contractor shall develop an Invasive Plant Management Strategy (IPMS) to be submitted to MassDEP for review and approval at least 21 days prior to the Pre-Construction Meeting. The IPMS shall be implemented as approved. **(Submittal)**

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16. If needed, use of herbicides to control invasive species shall be implemented in accordance with the approved IPMS and with the following requirements:

    a. Herbicides shall only be applied by a Licensed Applicator;

    b. Only herbicides registered with the Massachusetts Pesticide Board Subcommittee shall be applied to the targeted area/species;

    c. The manufacturer's label directions must be followed, in addition to any conditions imposed by other state or local authorities;

    d. Herbicide application shall use no more than the minimum application rate to accomplish removal of the target species; and

    e. Applicants may need to obtain a BRP WM04 Herbicide Permit from the MassDEP Wetlands Program Dredge Unit before applying herbicides in wetlands, and shall consult with the Dredge Unit regarding the applicability of a WM04 permit and shall obtain such permit if required by MassDEP. A WM04 permit is required for chemical application to open water bodies and wetlands.

17. A minimum of 21 days prior to the start of demolition work, a Demolition Plan shall be submitted for review and approval describing how the existing bridge will be demolished and what measures will be taken to ensure that demolition material, including but not limited to any pollutants, construction debris, toxic or hazardous substances, and airborne dust, is properly contained and does not enter Schenob Brook. **(Submittal)**

18. In accordance with the NHESP Conditional No-Take Determination, dated December 31, 2025, a Wood Turtle Protection Plan (TPP) shall be submitted to NHESP for review and approval prior to the start of work. MassDEP shall be copied on the TPP submittal to NHESP, and proof of NHESP approval of the TPP shall be submitted to MassDEP prior to the start of work. **(Submittal)**

Construction Period

19. No more than **5,838 sf** of permanent and **0 sf** of temporary impacts to BVW shall occur. No more than **5 sf** of permanent and **292 sf** of temporary impacts to LUW shall occur. No more than **9 cy** of dredging in LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.

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20. Under the direction of the CP/PP Inspector, inspection and maintenance of erosion and sediment controls in active work areas may be performed by both the Contractor and RE or other MassDOT project staff. Maintenance is the responsibility of the Contractor; however, the permittee shall be ultimately responsible for erosion and sedimentation control failure. The RE and/or contractor shall immediately notify MassDEP and the Sheffield Conservation Commission if any unauthorized discharges to BVWs or LUW occur.

21. 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.

22. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.

23. 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 disturbed areas have been inactive.

24. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Sheffield Conservation Commission within 24 hours prior to the commencement of dewatering. Dewatering methods and location(s) shall be approved by the RE or other project staff with knowledge of these practices prior to use to ensure consistency with the approved Control of Water Plan, 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.

25. 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 CP/PP Inspector 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.

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26. The Contractor 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 14.

27. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

28. 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.

29. 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.

30. The contractor shall have spill containment kits on site. In the event of a release of fuels and/or oils, the local fire department, MassDEP Emergency Response and MassDEP Wetlands Program Highway Unit shall be immediately contacted, and in addition, the MassDEP Bureau of Waste Site Cleanup shall be notified per the requirements of the Massachusetts Contingency Plan, 310 CMR 40.0000.

31. All work shall be completed in accordance with the Wood Turtle Protection Plan, as approved by NHESP.

32. All work shall be completed in accordance with the recommendations of DFW, which are hereby incorporated into this WQC by reference.

33. Construction vehicles and equipment shall not enter the BVW or LUW unless authorization is provided by way of this permit or amendment. The Contractor shall use equipment with boom reach capabilities and other measures to avoid inadvertent impacts to jurisdictional resource areas as a result of excavation, riprap placement, and/or bridge/pier demolition materials.

34. Sheet piles shall be fully removed from LUW 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,

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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.

35. A temporary shielding or containment system shall be in place beneath the bridge structure prior to removal to prevent debris from falling into the water below. In the event that any debris accidentally enters Schenob Brook, it shall be immediately retrieved. Notice shall be provided to MassDEP if debris enters the river and that it has been removed with photo-documentation (if practicable) submitted by email.

Wetland Mitigation

36. A minimum of 8,348 sf of BVW replication shall be completed in coordination with an approved WS. The WS shall oversee all BVW replication, including final grading, seeding, and planting. The WS shall confirm that constructed BVW replication area has adequate soils and hydrology to promote wetland plant species prior to seeding and installation of plantings and shall recommend measures to amend soils and promote wetland hydrology as needed.

37. Planting and seeding shall not take place between November 15th and April 15th, except as allowed by MassDEP in writing. The WS shall inspect trees and shrubs to ensure they are healthy prior to planting. Trees and shrubs deemed unhealthy in the professional judgment of the WS shall be replaced. Plantings and seed mixes shall consist of native and non-invasive species. Species may be substituted at the recommendation of the WS, and review and approval by MassDEP.

38. At least 75% of the surface area of the BVW replication area shall be vegetated with indigenous wetland plant species within two growing seasons, or the period required by the Section 404 permit, whichever is longer. Additionally, evidence of hydrology, including hydric soil formation shall be submitted at the same time. Annual monitoring reports shall be submitted by the WS no later than January 15th each year. Monitoring reports shall include an assessment based on the approved success criteria, representative photos, and recommended corrective actions as needed. **(Submittal)**

39. MassDEP reserves the right to determine the success or failure of the BVW replication area, and reserves the right to require additional plantings, regrading, invasive species removal or other measures deemed necessary to promote success.

Stream Mitigation

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40. The FGM shall oversee all LUW replication and restoration. Placement of streambed materials shall take place in no- or low-flow conditions. The Control of Water Plan required in Condition 12 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.

41. A minimum of 14 days prior to installation of the streambed materials, the FGM shall meet with the contractor to determine the suitability of stockpiled streambed material for reuse and whether there is sufficient stockpiled material to complete streambed restoration.

42. 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. The FGM shall provide final approval of the streambed restoration upon re-wetting of banks and removal of water controls (photographs will suffice unless otherwise determined by the FGM).

43. Upon completion of the LUW replication and restoration, the FGM shall provide photographs and a summary of the completed work to MassDEP and the Sheffield Conservation Commission. **(Submittal)**

44. MassDEP reserves the right to determine the success or failure of the LUW replication and restoration areas and reserves the right to require additional measures deemed necessary to promote success.

Post-Construction

45. All temporary erosion and sedimentation controls shall be removed at the conclusion of work once the surrounding area has achieved final stabilization.

46. Compost or mulch used as an erosion or sedimentation control may be spread evenly in upland areas at a depth of no more than two inches and shall not be spread in BVWs or LUW.

47. The USACE Compliance Certification Form shall be submitted within 30 days following the completion of the authorized work. **(Submittal)**

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

General Conditions

48. Any proposed 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 jaime.walker@mass.gov. **(Submittal)**

49. This WQC remains in effect for the same duration as the Section 404 permit that requires it.

50. No Special Condition set forth herein shall be construed or operate to prohibit MassDEP from taking enforcement against MassDOT or its contractors for any failure to comply with the terms and requirements of this WQC.

51. 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; (c) 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

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

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, 9th Floor
Boston, MA 02114

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:

Department of Environmental Protection
Wetlands Program, Highway Unit
100 Cambridge Street, 8th floor
Boston, MA 02114

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):

1. the 401 Certification Transmittal Number;
2. the complete name of the applicant and address of the project;
3. 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;
4. 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;
5. a clear and concise statement that an adjudicatory hearing is being requested;
6. 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
7. 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

The Commonwealth of Massachusetts
Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

Conservation and Recreation (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

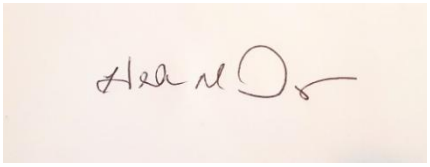
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

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.

Should you have any questions relative to this permit, please contact myself or Jaime Walker at heidi.davis@mass.gov and jaime.walker@mass.gov.

Very truly yours,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP WERO – Michael McHugh
USACE – Dan Vasconcelos

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Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

USACE via email – cenae-r-ma@usace.army.mil
Sheffield Conservation Commission
MassDOT – Lily Collins
MassDOT – Joshua Bartus
MassDOT – Amer Raza
GFT – Thomas Daley
CEI – Matt Lundsted

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Department of Environmental Protection

Address: 100 Cambridge Street, Suite 900, Boston, MA 02114
Phone: 617-292-5500

Attachment A

Submittal Checklist

Kelsey Road Bridge Replacement over Schenob Brook
(Bridge No. S-10-015)
Sheffield, Massachusetts

Each required submittal must be completed by the designated due date. 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. In the event of a conflict, the Special Conditions above shall preside.

Pre-Construction Meeting Date: _____

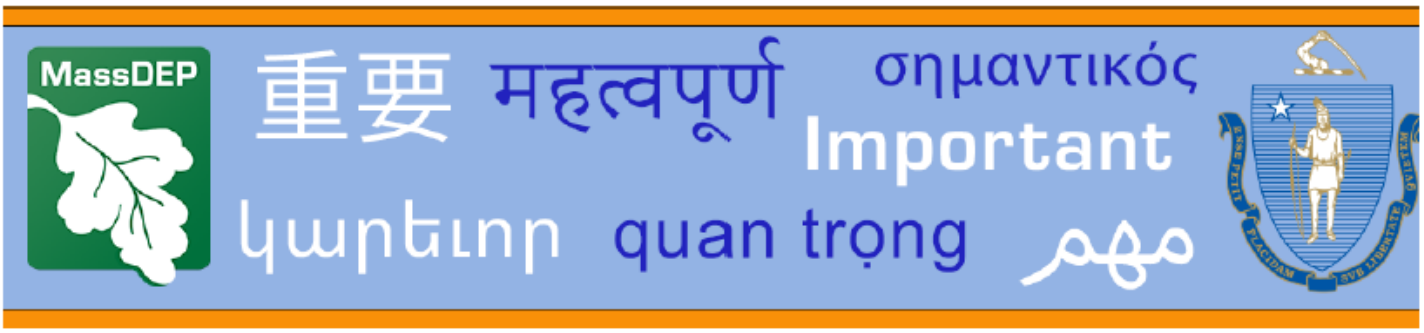
Condition	Required Submittal	Due Date	Date Submitted	Date Approved
Pre-Construction and Construction-Period				
2	Name, contact information, and qualifications of the WS, including specific experience and years to meet requirement	21 days prior to Pre-Construction Meeting		
3	Name, contact information, and qualifications of the FGM, including specific experience and years to meet requirement	21 days prior to Pre-Construction Meeting		
4	Name, contact information, and qualifications of the CP/PP Inspector, including specific experience and years to meet requirement	21 days prior to Pre-Construction Meeting		
5	Name and contact information of the RE	Prior to Pre-Construction Meeting		
6	Schedule Pre-Construction Meeting	21 days prior to work start		

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Phone: 617-292-5500

Condition	Required Submittal	Due Date	Date Submitted	Date Approved
8	USACE Work-Start Notification Form	14 days prior to work start		
9	CP/PP	21 days prior to work start		
10	Verification of CP/PP Training	Prior to work start		
12	Control of Water Plan	21 days prior to work start		
14	Flood Contingency Plan	Prior to any work within 1% annual chance of flooding zone		
15	Invasive Plant Management Strategy	21 days prior to Pre-Construction Meeting		
17	Demolition Plan	21 days prior to demolition work		
18	NHESP Turtle Protection Plan Approval	Prior to work start		
Wetland and Stream Mitigation				
38	WS Annual Wetland Monitoring Report	No later than January 15th each year		
43	FGM Stream Monitoring Report	Upon completion of work		
Project Close-Out				
47	USACE Compliance Certification Form	Within 30 days following the completion of work		

The Commonwealth of Massachusetts
Department of Environmental Protection



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmantal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគប្បីត្រូវត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu immediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telifoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection

The Commonwealth of Massachusetts
Department of Environmental Protection

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다.
본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود.
اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice *(Direktor für Umweltgerechtigkeit in Massachusetts)* unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection

DOCUMENT A00844

U.S. FISH AND WILDLIFE SERVICE

NLAA CONCURRENCE VERIFICATION LETTER

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 3301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 09/04/2025 15:46:27 UTC
Project code: 2025-0109843
Project Name: 609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

Federal Nexus: yes
Federal Action Agency (if applicable): Federal Highway Administration

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK'

Dear Julia Hoogeboom:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on September 04, 2025, for '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK' (here forward, Project). This project has been assigned Project Code 2025-0109843 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your Project, the Project may need to apply***

the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office.

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	NLAA

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete for northern long-eared bat and/or tricolored bat and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat or tricolored bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat or tricolored bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat and/or tricolored bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat and Tricolored Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Bog Turtle *Glyptemys muhlenbergii* Threatened
- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2025-0109843 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK

2. Description

The following description was provided for the project '609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK':

> 609068- SHEFFIELD- BRIDGE REPLACEMENT, S-10-015, KELSEY ROAD OVER SCHENOB BROOK
> The recommended bridge replacement entails a superstructure with an increased hydraulic opening measuring approximately 70 feet in length and 16 feet in width. The superstructure comprises four adjacent prestressed concrete box beams supported by full-height concrete cantilever abutments with pile foundations and U-wing walls. Riprap will be installed along the entire channel of Schenob Brook beneath the bridge. The bridge and approach slabs will be paved with an asphalt riding surface, while the remainder of Kelsey Road will retain its existing gravel riding surface. The proposed roadway cross section will consist of a single lane, measuring 13 feet in width, featuring a crown at the center and 2% cross slopes. Guiderails will be installed on both sides of the roadway along each bridge approach
> Tricolored Bat: Proposed Threatened Species only. The project action will not jeopardize the continued existence of the proposed species.
> Monarch Butterfly: Proposed Threatened Species only. The project action will not jeopardize the continued existence of the proposed species.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.06555865,-73.39766969509034,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does the proposed action involve **wind or solar energy**?

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Note for projects in Pennsylvania: Projects requiring authorization under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act would be considered as having a federal nexus. Since the U.S. Army Corps of Engineers (Corps) has issued the Pennsylvania State Programmatic General Permit (PASPGP), which may be verified by the PA Department of Environmental Protection or certain Conservation Districts, the need to receive a Corps authorization to perform the work under the PASPGP serves as a federal nexus. As such, if proposing to use the PASPGP, you would answer 'yes' to this question.

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   Yes

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    Automatically answered

    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    No

13. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    Yes

14. Has the local Service Field Office confirmed that bridge surveys are not needed because project activities are not expected to impact bats, or because NLEBs and TCBs are not using bridges within the action area?

    No

15. Has a site-specific bridge assessment following USFWS guidelines been completed?

    Note: For information on conducting a bridge/structure assessment, please see Appendix K in the USFWS' Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines at:https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines Additional resources can be found at: https://www.fws.gov/media/bats-and-transportation-structures-references-and-additional-resources and a training video is located at: https://www.youtube.com/watch?v=iuFwkT7q8Ws.

    Yes

16. Was evidence of bat use found during the bridge assessment?

    No

    SUBMITTED DOCUMENTS

    - *609068_Sheffield-bat_acoustic_report.pdf https://ipac.ecosphere.fws.gov/project/BRLW5HTKVNB2DIGKVRVDAFS2I4/projectDocuments/163432405*

17. Did you coordinate with your local Ecological Services Field Office (ESFO) and receive approval of the bridge assessment results? If NO, please contact the appropriate local ESFO before completing this determination key.

    Yes

18. Will the action result in effects to a culvert or tunnel at any time of year?

    No

19. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

20. Does the action include the intentional exclusion of bats from a building or building-like structure? **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

21. Does the action involve removal, modification, or maintenance of a human-made building-like structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

22. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

23. Will the action include or cause any construction or other activity that is reasonably certain to increase average night-time traffic permanently or temporarily on one or more existing roads? **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

24. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

25. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

26. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

27. Will the action include drilling or blasting?

    No

28. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use at night)?

    No

29. Will the proposed action involve the use of herbicides or pesticides (e.g., fungicides, insecticides, or rodenticides)?

    No

30. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

31. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

32. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    No

33. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

34. Is the project related to the production of coal, including projects that support the mining of coal, as well as the production and/or distribution of energy produced from coal?

    No

35. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

36. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

37. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

38. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

39. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

40. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

41. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

42. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

43. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

44. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known NLEB hibernacula or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

45. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

46. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.Have you contacted the appropriate agency to determine if your action is within 150 feet of any documented northern long-eared bat roosts?

    Note: A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat roosts is available here. Location information for northern long-eared bat roosts is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

    Automatically answered
    No

47. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

48. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

49. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Fall Swarming season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

50. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Spring Staging** season for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

51. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Summer Occupancy season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects.

    No

52. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

53. Is the action area located within 0.5-mile of radius of an entrance/opening to any known tricolored bat hibernacula or winter roost?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    Automatically answered
    No

54. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

55. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

56. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

57. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Developmental Projects.

    No

58. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

0.6

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation
Name: Julia Hoogeboom
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email julia.a.hoogeboom@dot.state.ma.us
Phone: 8574452880

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

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DOCUMENT A00875

POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002

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massDOT Massachusetts Department of Transportation Highway Division

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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massDOT Massachusetts Department of Transportation Highway Division

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

SHEFFIELD

For: **Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of SHEFFIELD 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:

Kelsey Road

Beginning – Station 99+15.00 +/-
Bridge BR# S-10-015
Ending –Station 107+75.00 +/-

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 **703 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 # 609068	Contract # 136649			
Location : SHEFFIELD				
Description : Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
101.	0.5	CLEARING AND GRUBBING AT _____ PER ACRE		
102.	0.5	SELECTIVE CLEARING AND THINNING AT _____ PER ACRE		
102.1	1,000	TREE TRIMMING AT _____ PER FOOT		
102.3	40	HERBICIDE TREATMENT OF INVASIVE PLANTS AT _____ PER HOUR		
102.33	40	INVASIVE PLANT MANAGEMENT STRATEGY AT _____ PER HOUR		
102.511	2	TREE PROTECTION - ARMORING AND PRUNING AT _____ EACH		
102.522	375	TREE AND PLANT PROTECTION FENCE - CHAIN LINK AT _____ PER FOOT		
114.1	1	DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. S-10-015 (088) AT _____ LUMP SUM		
120.	3,349	EARTH EXCAVATION AT _____ PER CUBIC YARD		

Project # 609068	Contract # 136649			
Location : SHEFFIELD				
Description : Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
121.	170	CLASS A ROCK EXCAVATION AT _____ PER CUBIC YARD		
123.	400	MUCK EXCAVATION AT _____ PER CUBIC YARD		
127.1	50	REINFORCED CONCRETE EXCAVATION AT _____ PER CUBIC YARD		
140.1	420	BRIDGE EXCAVATION WITHIN COFFERDAM AT _____ PER CUBIC YARD		
141.1	50	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		
142.	8	CLASS B TRENCH EXCAVATION AT _____ PER CUBIC YARD		
144.	7	CLASS B ROCK EXCAVATION AT _____ PER CUBIC YARD		
150.1	920	SPECIAL BORROW AT _____ PER CUBIC YARD		
151.	380	GRAVEL BORROW AT _____ PER CUBIC YARD		

Project # 609068	Contract # 136649			
Location : SHEFFIELD				
Description : Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
151.1	65	GRAVEL BORROW FOR BRIDGE FOUNDATION AT _____ PER CUBIC YARD		
151.2	200	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD		
156.	80	CRUSHED STONE AT _____ PER TON		
160.3	2	CONTROLLED LOW-STRENGTH MATERIAL (> 300 PSI) AT _____ PER CUBIC YARD		
170.	1,000	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		
180.02	40	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		
180.03	40	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	3,282	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		

Project # 609068 Contract # 136649				
Location : SHEFFIELD				
Description : Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
181.12	492	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		
181.13	246	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		
181.14	82	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		
184.1	0.5	DISPOSAL OF TREATED WOOD PRODUCTS AT _____ PER TON		
242.	2	REINFORCED CONCRETE PIPE HEADWALL AT _____ EACH		
244.12	20	12 INCH REINFORCED CONCRETE PIPE CLASS V AT _____ PER FOOT		
244.34	70	34 INCH BY 53 INCH ELLIPTICAL RCP CLASS V AT _____ PER FOOT		
258.	20	STONE FOR PIPE ENDS AT _____ PER SQUARE YARD		
376.22	1	DRY HYRDANT - REMOVED AND RESET AT _____ EACH		

Project # 609068	Contract # 136649			
Location : SHEFFIELD				
Description : Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
402.13	600	PAVEMENT MILLING MULCH FOR SHOULDERS AT _____ PER FOOT		
440.	1,400	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL AT _____ PER POUND		
443.	0.01	WATER FOR ROADWAY DUST CONTROL AT _____ PER 1000 GALLONS		
450.42	11	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) AT _____ PER TON		
450.601	15	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B - 9.5 - P) AT _____ PER TON		
450.701	15	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B - 9.5 - P) AT _____ PER TON		
452.	10	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		
453.	35	HMA JOINT ADHESIVE AT _____ PER FOOT		
482.31	30	SAWING AND SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES AT _____ PER FOOT		

Project # 609068	Contract # 136649			
Location : SHEFFIELD				
Description : Bridge Replacement, S-10-015, Kelsey Road over Schenob Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
505.	80	GRANITE CURB TYPE VA5 - STRAIGHT AT _____ PER FOOT		
620.12	310	GUARDRAIL, TL-2 (SINGLE FACED) AT _____ PER FOOT		
627.82	4	GUARDRAIL TANGENT END TREATMENT, TL-2 AT _____ EACH		
628.24	4	TRANSITION TO BRIDGE RAIL AT _____ EACH		
657.	100	TEMPORARY FENCE AT _____ PER FOOT		
669.	110	FENCE REMOVED AND STACKED AT _____ PER FOOT		
670.1	1,900	TURTLE EXCLUSION BARRIER AT _____ PER FOOT		
679.3	30	FLOATING TURBIDITY BARRIER AT _____ PER FOOT		
698.1	878	GEOTEXTILE FABRIC FOR STABILIZATION AT _____ PER SQUARE YARD		

Project # 609068	Contract # 136649			
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ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
698.3	482	GEOTEXTILE FABRIC FOR SEPARATION AT _____ PER SQUARE YARD		
722.3	1	SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $29500 AT Twenty Nine Thousand Five Hundred Dollars LUMP SUM	$29,500.00	$29,500.00
740.	23	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.	20	LOAM FOR ROADSIDES AT _____ PER CUBIC YARD		
751.7	150	COMPOST BLANKET AT _____ PER CUBIC YARD		
755.35	1	INLAND WETLAND REPLICATION AREA AT _____ LUMP SUM		
755.45	790	WETLAND RESTORATION AT _____ PER SQUARE YARD		
755.75	70	WETLAND SPECIALIST AT _____ PER HOUR		

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755.76	1	WETLANDS MONITORING REPORTS AT _____ LUMP SUM		
756.1	1	CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN AT _____ LUMP SUM		
765.	120	SEEDING AT _____ PER SQUARE YARD		
765.554	10	WETLAND SEED - SEASONALLY FLOODED MIX AT _____ PER POUND		
765.635	2,570	NATIVE SEEDING AND ESTABLISHMENT AT _____ PER SQUARE YARD		
767.121	310	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
767.122	870	SEDIMENT BARRIER - COIR LOG AT _____ PER FOOT		
767.9	25	JUTE MESH AT _____ PER SQUARE YARD		
767.91	100	TIMBER MATTING AT _____ PER SQUARE YARD		

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769.	550	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		
776.520	3	MAPLE - RED 5-6 FEET AT _____ EACH		
777.260	1	OAK - SWAMP WHITE 5-6 FEET AT _____ EACH		
778.163	1	BIRCH - RIVER HERITAGE 5-6 FOOT CLUMP AT _____ EACH		
783.045	3	SERVICEBERRY - SHADBLOW 3-4 FEET AT _____ EACH		
783.464	2	TUPELO 1 INCH CALIPER AT _____ EACH		
788.013	5	ALDER SHRUB – SPECKLED 18-24 INCH AT _____ EACH		
789.632	16	BLUEBERRY – HIGHBUSH 18-24 INCH AT _____ EACH		
790.717	12	DOGWOOD - SILKY 18-24 INCH / #1 AT _____ EACH		

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790.721	21	DOGWOOD – GRAY 18-24 INCH AT _____ EACH		
791.031	11	ELDERBERRY 18-24 INCH AT _____ EACH		
795.009	14	VIBURNUM - ARROWWOOD 18-24 INCHES / #2 AT _____ EACH		
795.021	7	VIBURNUM - NANNYBERRY 18-24 INCHES AT _____ EACH		
795.051	12	RED CHOKEBERRY 18-24 INCH AT _____ EACH		
795.061	10	MALEBERRY 18-24 INCH AT _____ EACH		
832.	37	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
833.7	4	DELINEATION FOR GUARD RAIL TERMINI AT _____ EACH		
847.1	5	SIGN SUP (NOT GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL AT _____ EACH		

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852.	200	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
853.1	20	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		
853.2	40	TEMPORARY BARRIER (TL-2) AT _____ PER FOOT		
874.4	4	TRAFFIC SIGN REMOVED AND STACKED AT _____ EACH		
901.	40	4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE AT _____ PER CUBIC YARD		
942.124	620	STEEL PILE HP 12 X 84 AT _____ PER FOOT		
948.41	2	DYNAMIC LOAD TEST BY CONTRACTOR AT _____ EACH		
948.5	16	PILE SHOES AT _____ EACH		
983.1	110	RIPRAP AT _____ PER TON		

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983.521	212	STREAMBED/BANK RESORATION MATERIAL AT _____ PER SQUARE YARD		
986.	235	MODIFIED ROCKFILL AT _____ PER TON		
991.1	1	CONTROL OF WATER - STRUCTURE NO. S-10-015 (8M2) AT _____ LUMP SUM		
994.01	1	TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-015 (088) AT _____ LUMP SUM		
995.01	1	BRIDGE STRUCTURE, BRIDGE NO. S-10-015 (8M2) AT _____ LUMP SUM		
Total Qty:	26,149.51			