Maine Turnpike Authority
2360 Congress Street
Portland, Maine 04102



September 12, 2018

Mr. Jay Clement, Senior Project Manager
Army Corp of Engineers, Maine Project Office
442 Civic Center Drive, Suite 350
Augusta, Maine 04330

Re: Permit Application
Stroudwater Bridge Improvements, I-95 Mile Marker 46.7

Dear Jay:

Please find enclosed the ACOE CAT II application for the above referenced project. Included with this cover letter are:

- A Completed ACOE CAT II application form; and
- Supporting narratives, attachments, maps, plan, photographs and appendices.

Thank you for your attention to MTA's application. Please do not hesitate to contact me at 482-8348 or at rnorwood@maineturnpike.com with any questions that you may have regarding this project.

Sincerely,

Maine Turnpike Authority

Ralph Norwood IV, P.E.
Project Manger

Stroudwater River Bridge Improvement Project, Mile Marker 46.7

U.S. Army Corps of Engineers
New England District

# General Permit Application

Category 2: Pre-Construction Notification (PCN)

September 2018

**Maine Turnpike Authority**
2360 Congress Street
Portland, ME 04102

Prepared By:

**HNTB Corporation**
340 County Road, Suite 6-C
Westbrook, ME 04092

Table of Contents



List of Appendices

U.S. Army Corps of Engineers (USACE)

# APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

***Form Approved - OMB No. 0710-0003 Expires: 01-08-2018***

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the 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. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

**(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)**

| 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 | 8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) |
|---|---|
| First - Ralph Middle - Last - Norwood | First - Middle - Last - |
| Company - Maine Turnpike Authority | Company - |
| E-mail Address - RNorwood@mainturnpike.com | E-mail Address - |
| **6. APPLICANT'S ADDRESS:** | **9. AGENT'S ADDRESS:** |
| Address- 2360 Congress Street | Address- |
| City - Portland State - ME Zip - 04102 Country - USA | City - State - Zip - Country - |
| **7. APPLICANT'S PHONE NOs. w/AREA CODE** | **10. AGENTS PHONE NOs. w/AREA CODE** |
| a. Residence b. Business (207) 482 - 8348 c. Fax | a. Residence b. Business c. Fax |

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ SIGNATURE OF APPLICANT _____ DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME OR TITLE (see instructions)
Stroudwater River Bridge Improvement Project

| 13. NAME OF WATERBODY, IF KNOWN (if applicable) | 14. PROJECT STREET ADDRESS (if applicable) |
|---|---|
| Stroudwater River | Address Maine Turnpike (I-95), mile marker 46.7 |
| 15. LOCATION OF PROJECT | City - Portland State- ME Zip- 04102 |
| Latitude: ◦N 43.65501 Longitude: ◦W 70.33126 | |

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID 238 X001 Municipality Portland

Section - Township - Range -

17. DIRECTIONS TO THE SITE

I-95, Mile Marker 46.7, MTA Bridges No. 0344 Northbound and No.1484 Southbound.

18. Nature of Activity (Description of project, include all features)

See Attachment 1.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

See Attachment 2.

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**

20. Reason(s) for Discharge

Fill material will be placed in wetlands and the stream for construction of roadways, bridges, and other activities described in Block 18.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

| Type<br>Amount in Cubic Yards | Type<br>Amount in Cubic Yards | Type<br>Amount in Cubic Yards |
|---|---|---|

See Attachment 3.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See Attachment 4.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See Attachment 5.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See Attachment 6.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

| AGENCY | TYPE APPROVAL* | IDENTIFICATION NUMBER | DATE APPLIED | DATE APPROVED | DATE DENIED |
|---|---|---|---|---|---|
| Maine DEP | PBR | | Pending | Pending | |
| | | | | | |
| | | | | | |
| | | | | | |

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application 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.

Ralph Morrow Jr — SIGNATURE OF APPLICANT

9-11-18 — DATE

SIGNATURE OF AGENT

DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

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.

# ATTACHMENT 1

# BLOCK 18. NATURE OF ACTIVITY

## Attachment 1 – Block 18. Nature of Activity

*A. Project Description*

The Maine Turnpike Authority's (MTA) Stroudwater River Bridges are twin structures constructed in 1956 and carry the northbound and southbound lanes of the Turnpike over the Stroudwater River at Mile Marker 46.7 (Bridge No. 0344 Northbound and Bridge No. 1484 Southbound). Both bridges feature six lines of continuous steel girders composite with a concrete deck overlain by a bituminous wearing surface. The four spans of the bridges are configured with 66'-6" end spans and 83'6" interior spans. The substructure unit (abutments and hammerhead piers) are founded on H-piles driven to bedrock. Each of the bridges has two twelve-foot-wide lanes, a four-foot right shoulder, and a ten-foot right shoulder.

In 1992, the bridge decks were replaced and the steel bridge railings were removed. As part of the rehabilitation, a sixth girder was added to each bridge. The decks, abutments, and piers were widened to provide improved shoulder widths. Bridge repairs were, also performed in 2014 to address repairs to bridge joints, abutments bearings, and pavement.

The purpose of the project is to extend the service life of the existing bridges, address areas of deterioration, modernize the structure, and promote safety of travelers and MTA workers. The planned improvements to the bridges include backwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridges to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be expanded to allow for the maintenance of two lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be consistent with anticipated future corridor mobility needs. This project has been programmed, funded and developed as a distinct item of capital work in the MTA's financial and asset management plans.

Avoidance of wetland impacts is not possible due to the expansion of the approach to the bridges and because the wetlands are located immediately adjacent to the existing road and bridges. Impacts to the stream channel are likewise unavoidable due to the need to improve and expand the piers to support the enlargement of the bridges, repair of slope stabilizing rip rap and to install cofferdams to facilitate work on the supporting piers in the dry. Minimization efforts focused primarily on the use of guardrail with 2H:1V fill slopes to minimize encroachment on the nearby wetlands and waterbodies. Approximately 19,790 square feet of permanent wetland and stream impacts are anticipated from the proposed project. An additional 10,225 square feet of temporary wetland and stream impacts are anticipated. Note that a wetland of special significance (wetland area that contains more than 20,000 sq. ft. aquatic or emergent vegetation) occurs within the project area and will be affected by both permanent and temporary impacts. The affected waterbody, Stroudwater River, is not listed as a special status waterway.

*B. Construction Plan*

The project is scheduled to be completed over two construction seasons from December 2018 to November 2020, following the issuance of environmental permits. Construction is anticipated to occur consistently throughout the entire period, but peak activities will occur during the spring and summer months. A winter shut down may occur November through April, due to the weather constraints of the season. A construction schedule has been included in Appendix B.

At the start of construction, approximately February 2019, tree clearing and other site preparation will commence. Concurrently, erosion and sediment controls will be installed. Erosion and sediment controls are discussed more in depth in Section C: *Temporary and Permanent Erosion and Sediment Control.* Information regarding tree clearing is provided in Section E: *Threatened & Endangered Species*.

Following site preparation completion, the construction process will be performed in two phases so that there will be two lanes of traffic in each direction available at all times. During Phase I of the project, work will be completed on the outside portion of the bridges and the approach. Some of the steps during this phase include removing the existing deck, widening the north and south abutments, constructing three piers, work on the superstructure, and approaches will be graded. During the construction of the three piers (one not in the river and two in the river), piers will be enlarged to accommodate the expansion of the bridge. Construction of the superstructure will involve construction of the new steel structural beams and deck formwork will occur. The approaches and subbase will also be graded and paved.

Phase II of the construction process will focus on the median side of the bridges. During this phase of construction, the existing deck will be removed and work will be performed on the superstructure. Following the completion of the superstructure, the approach and roadway will be graded and paved.

*C. Temporary and Permanent Erosion and Sediment Control*

1. Standard Practices

The Maine Turnpike Authority proposes to construct the project so that the construction will not unreasonably:

- interfere with any existing recreational or navigational uses;
- cause erosion of the soil or siltation of the water;
- interfere with the natural flow of water;
- harm any wildlife or fish habitat; or
- degrade water quality.

The proposed erosion and sedimentation control measures are based on the Maine Department of Transportation Best Management Practices (BMPs) and the Maine Turnpike Authority's standards and specifications. A full description of the erosion and sediment controls can be seen in Appendix C. These practices, construction standards, and specifications have been successfully utilized by the Maine Turnpike Authority on several recent construction projects that have been reviewed and approved by the Maine Department of Environmental Protection. It is anticipated that erosion and sediment controls would be installed in February 2019, prior to the start of construction to prevent any unintended impact to wetlands.

2. Compliance

A Resident Engineer (RE) is assigned to inspect all construction projects. The RE is assisted by project inspectors. The role of the RE and project inspectors is to ensure that the project is constructed in accordance with the contract documents, including the permit conditions.

An inspector will be assigned to monitor installation and performance of temporary and permanent erosion and sediment controls. The inspector will be designated as the Compliance Officer (CO). The CO will inspect the erosion and sedimentation control devices bi-weekly and immediately following a significant rain event. The inspections will begin at the start of construction and will continue until permanent erosion control measures have been properly installed and the project site has been stabilized. The CO will compile a written log which will note conditions of all devices, actions required to correct any deficiencies or damage, and contractor response time to implement corrective measures.

The CO, along with other inspectors, has the authority to direct the contractor to maintain, repair or replace the erosion and sedimentation controls facilities as required, immediately upon the discovery of a deficiency. The CO, along with the RE, will monitor and review the construction schedule and method of construction to avoid and/or mitigate possible impacts. The RE has the authority to assess monetary penalties which are outlined in the specifications for noncompliance with the erosion and sedimentation measures included in the contract documents. Also, if

warranted the resident engineer has the authority to direct the contractor to change the scope of work to mitigate erosion and sedimentation impacts.

*D. Alternatives Analysis*

Purpose

As stated in Block 19 Project Purpose (Attachment 2), the current state of the north and southbound Stroudwater bridges includes general deterioration of concrete abutment seats and backwalls. Repairs to both bridges are, therefore, needed to contribute to the added safety for maintenance activities on the bridge. Lack of bridge maintenance could contribute to a decrease in traveler safety across the bridges and result in deterioration of the bridge and the shortening of its life span.

The purpose of the project, therefore, is to address areas of deterioration, extend the service life of the existing bridges, modernize the structures, and promote safety for travelers and maintenance personnel. Several alternatives; including off-site, on-site, and the no action alternative, were evaluated to determine the preferred alternative at reaching project goals while limiting the environmental impact to the project area. The alternatives reviewed are described below.

Description of Alternatives

*Alternatives Considered but Eliminated*

*Off-site Locations*

An off-site location would not meet the purpose of the project, which is to repair and maintain the existing bridge. Therefore, the off-site alternative was eliminated and no further investigation into this alternative occurred.

*No Action Alternative*

The no action alternative would leave the bridges in their current state and the maintenance activities described above would not be performed. Under the no action alternative, no discharges to Waters of the United States (WOTUS) would occur. However, the no action alternative would not meet the purpose of the project, which is to repair and maintain the existing bridge. Therefore, the no action alternative was eliminated from further consideration as part of this alternatives analysis.

*Evaluated Alternatives*

*On-site Alternatives*

Three bridge alternatives are presented below and are evaluated for environmental impacts, cost, and alignment with project objectives and needs. The cross sections for the three on-site alternatives can be seen in Appendix D.

*Alternative A – Partial bridge deck replacement, maintaining existing open highway median*: This alternate was considered to reduce the project scope and preserve as much of the existing deck as practical. This alternative would leave an approximately 22-foot-wide strip of the existing bridge deck in place. The remaining service life of this existing deck portion is approximately 20 to 25 years.

*Alternative B – Complete bridge deck replacement, maintaining existing open highway median:* This alternate was considered to provide a solution that provides a service life of at least 50 years. Overall, this proposed alternative achieves the desired bridge improvements in a cost-effective manner.

*Alternative C – Complete bridge deck replacement, including closing the highway median:* This alternate was considered to address a possible future Turnpike configuration where the median will be comprised of pavement and median concrete barrier rather than vegetation and the beam guardrail.

Analysis of Alternative for Practicability

Results of the comparison of practicability for Alternative A, B, and C can be seen in Table 1. As can be seen in Table 1, all three alternatives are practicable based on selected criteria, which included logistics, existing technology, and cost.

Alternative A is the most cost-efficient option; however, the anticipated service life of the bridge may not yield it as most productive use of funds in the long run. Alternative B provides a larger increase in deck service life for a small increase in cost as compared to Alternative A. Alternative C is the most expensive option, however, it does provide the same service life as Alternative B. All three of the alternatives qualified as a practicable alternative and were, therefore, further evaluated to determine the least environmentally damaging alternative.

Table 1: Comparison Matrix for Practicability

| Practicability Category | Factor | Alternative A | Alternative B | Alternative C |
|---|---|---|---|---|
| Logistics | Availability of Access | Yes | Yes | Yes |
| Existing Technology | Efficient Construction Methods | Yes | Yes | Yes |
| | Engineered Slope to Minimize Impacts | Yes | Yes | Yes |
| | Anticipated Deck Service Life | 20 – 30 years | 50 - 60 years | 50 - 60 years |
| | Bridge Safety for Maintenance Workers | Yes | Yes | Yes |
| Cost | Bridge Construction | $6,400,000 | $7,100,000 | $9,400,000 |
| | Future Maintenance | Yes | Yes | Yes |

Least Environmentally Damaging Alternative Analysis

The on-site alternatives were evaluated based on the criteria of wetland impact, wetland function and value impacts and impacts to threatened and endangered species. A comparison table of the environmental impacts can be seen in Table 2.

*Wetland Impacts*

Both Alternative A and Alternative B would result in approximately 29,000 square feet of both temporary and permanent impacts to the Waters of the United States (WOTUS). The permanent impacts to the WOTUS include the filling of wetlands in order to accommodate the repair and maintenance work for the bridges and their associated approach. The temporary impacts would include temporary fill for access and dewatering of an area in the Stroudwater River to create new piers.

Alternative C would have the greatest amount of wetland impact because the width of the bridge (64.4 ft. as opposed to the width of Alternative A and Alternative B which is 57 ft.) would result in a larger footprint of impact to the stream, and the associated widening of the approach as compared to Alternatives A and B. The roadway would need to extend farther into the impacted wetland and would result in a larger surface area of wetlands being filled.

*Wetland Function and Value Impacts*

Of the 29,000 square feet of impact in Alternatives A and B, approximately 25,000 square feet of impact is to emergent wetlands in the area and another approximately 4,000 square feet of forest wetland impacts. Impacts to the two wetland types will result in the loss of functions and values including nutrient cycling and wildlife habitat. However, many of the impacted wetlands are of low quality due to their proximity to the road, and would not present a substantial loss in function and values as compared to wetlands in farther proximity from the road. Again, with the increased amount of impacts in Alternative C, this would also correspond with more function and values being impacted compared to Alternative A and B.

*Impacts to Threatened and Endangered Species*

The project area contains potential habitat for the federally listed northern long-eared bat (NLEB). Potential habitat for the NLEB is relatively widespread throughout the region and includes forested areas for roosting and wetlands for foraging habitat. All three alternatives have the potential to impact this species due to the presence of potential roosting habitat and foraging habitat in the project area.

Table 2: Environmental Factor Matrix

| Environmental Factors | Alternative A | Alternative B | Alternative C |
|---|---|---|---|
| Wetland Impacts (Sq. Ft) | 29,205 | 29,205 | >30,000 |
| Open Water Impacts (Sq. Ft) | 810 | 810 | >1,000 |
| Impacts to Federally Listed T & E Upland Species | Potential | Potential | Potential |
| Floodplain Upland Impacts (Sq. Ft) | 0.0 | 0.0 | 0.0 |
| LEDPA | Yes | Yes | No |

Conclusion

Following the least environmentally damaging alternative analysis, it was determined that both Alternative A and Alternative B would produce the least amount of environmental impact. However, Alternative B would be the most cost effective and give the desired 50 years of service life. Alternative A would provide a marginal savings in cost as compared to Alternative B but would not yield the desired service life of the bridges. Therefore, Alternative B was selected as the preferred alternative.

*E. Threatened & Endangered Species*

In preparing for this submittal, an agency coordination letter was submitted to the Maine Department of Inland Fisheries and Wildlife (MDIFW) and the US Fish and Wildlife Service (USFWS) regarding rare plants, animals, and unusual natural areas in the project area (Appendix E). Also, an official species list was also obtained through the USFWS IPaC Project Builder/Official Species List (Appendix F). Based on the results on the IPaC, it was indicated that there is potential for north long-eared bat in the project area.

A written response from the MDIFW indicated that there were no locations of endangered, threatened, or special concerns species within the project area that would be affect by the project (see Appendix D). There were no mapped essential or significant wildlife habitat that would be directly affected by the project. MDIFW did, however, recommend that construction best management practices be closely followed to prevent erosion and sedimentation into fish habitat. They suggested that any instream work be completed between July 15 and October 1. This recommendation has been accounted for and is built into the construction plan.

The USFWS responded via phone and indicated that there was the potential for northern long-eared bat (*Myotis septentrionalis*) to be present in the area and recommended that a 4(d) Consultation Form be completed for the project if tree clearing was to occur. Within the project area there will be approximately 57,833 square feet of tree clearing. However, all tree clearing will occur October through April in accordance with USFWS recommendations.

*F. Historical/Archaeological Resources*

Application materials were submitted to the Maine Historic Preservation Commission (MHPC), and the Tribal Historic Preservation Officers (THPOs) of the Houlton Band of Maliseet Indians, Aroostook Band of Micmacs, Passamaquoddy Tribe of Indians, and Penobscot Nation to be reviewed for the presence of historic, archaeological or tribal resources in the project area that the proposed work could affect. The cover letters and responses have been attached in Appendix H.

Responses have been received from the Houlton Band of Maliseets, Penobscot Nation, and the Passamaquoddy Tribe (Appendix G). All received responses from the THPOs did not have any immediate concerns with the project or project site. However, it was their wishes that if any historical or archaeological items were uncovered that the project be stopped and that they are informed.

At this current time, responses have not been received from the MHPC and the rest of the THPOs.

ATTACHMENT 2

BLOCK 19. PROJECT PURPOSE

## Attachment 2 – Block 19. Project Purpose

*Project Purpose*

The purpose of the Stroudwater River Bridge Improvement project is to extend the service life of the existing bridges, address areas of deterioration, modernize the structure, and promote safety for travelers and maintenance personnel. The bridges will be expanded to provide safer work zones for maintenance activities, to allow two lanes of traffic to be maintained in each direction during construction, and to be consistent with anticipated future corridor mobility needs.

*Project Need*

The Stroudwater River Bridges are part of the Maine Turnpike designated Interstate 95 (I-95), which facilitates highway travel between the Maine/New Hampshire state line and Augusta, Maine. The highway serves a wide range of users from throughout the state, including Maine residents, tourists, and interstate and international commerce. The Stroudwater River bridge is an integral link to maintaining the efficiency and safety of traveling on I-95, as such there is a need for this project to be completed.

The current state of the bridges includes general deterioration of concrete abutment seats and backwalls. Also, abutment bearings have accelerated deterioration and tilt due to past joint failure. The planned improvements include backwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. These repairs will contribute to the long-term safe operation of this structure, improve safety for maintenance activities on the bridges, allow two lanes of traffic to be maintained in each direction during construction, and will be consistent with future corridor mobility needs.

Maintenance is an important aspect in upkeep of the bridges. Deferring these planned improvements could contribute to accelerated deterioration of the bridges and the shortening of its life span. Lack of maintenance could contribute to a decrease in traveler safety across the bridges.

The Maine Turnpike is a critical local and regional transportation corridor and is heavily traveled on a daily basis. Therefore, it is imperative the proposed bridge improvements be completed in a manner that accommodates transportation mobility needs. The proposed project accommodates this need by providing two lanes of traffic in each direction while construction is underway and facilitates the movement of traffic over the bridges. By having two lanes available during construction on the bridges, traffic backups will not be an issue and more efficient and safer travel is in accordance with future corridor needs.

*Summary*

Through the implementation of the proposed project, the Maine Turnpike Authority is meeting its objective to extend the service life of the existing bridges, address areas of deterioration, modernize the structure, and promote safety for travelers and maintenance personnel.

ATTACHMENT 3

BLOCK 21. TYPES OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

## Attachment 3 – Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards

The total volume of fill to be placed within the delineated wetland boundaries and below the ordinary high-water line (OHW) of Stroudwater River is 2,979 cubic yards. This includes 2,763 cubic yards to be placed in project area wetlands and 216 cubic yards in Stroudwater River. The 216 cubic yards that will be placed in the Stroudwater River will be the existing soil that was removed during excavation. For wetland areas impacted by the project, fill will consist of granular or common borrow. The source of this material will be primarily native soil from the project site. Fill placed in the Stroudwater River will primarily be granular fill and/or native soil; however, approximately 10% of the 216 cubic yards of fill material placed in the river will be a layer of rip rap material placed over the fill. Appendix H provides cross sections of the impacts and fill placement in project area wetlands. Note that the OHW at the Stroudwater River is approximately 23 feet in elevation.

ATTACHMENT 4

BLOCK 22. SURFACE AREA IN WETLANDS OR OTHER WATER FILLED

## Attachment 4 – Block 22. Surface Area in Acres of Wetland or Other Waters Filled

*A. Project Area Wetlands and Other Waters of the U.S.*

The wetland delineation report in Appendix J was prepared for the Maine Turnpike Authority's Turnpike Future Widening Project from Exits 44 to 48, which includes the Stroudwater Bridge project area. This data has been used as the basis for development of the Stroudwater River Bridge Improvement project. Wetlands and other waters described in the delineation report, that are within the Stroudwater Bridge project area, include Wetlands W-12, W-13, W-32, W-33, W-34, W-35, and W-49 and Waterbody S3. Wetland W-12 is a relatively narrow Palustrine Forested (PFO) wetland located immediately adjacent to the Stroudwater River. Wetlands W-13, W-32, W-33, and W-34 are Palustrine Emergent (PEM) wetlands primarily associated with the roadside area. Wetland W-35 is both a PFO and PEM wetland adjacent to the road. Waterbody S3 includes a segment of the Stroudwater River. This portion of the Stroudwater River is a relatively low gradient, non-tidal waterway and is approximately 40 feet in width. Wetlands W-12 and W-13 are classified as Wetlands of Special Significance (WOSS) under Chapter 310 of the Maine Wetlands Protection Act. W-12 meets WOSS criteria because it includes a stream and W-13 contains more than 20,000 square feet of emergent vegetation.

As described in the following wetland delineation report, a wetland functional assessment was performed concurrent to the wetland delineation effort and in accordance with the *Wetlands Functions and Values: A Descriptive Approach* described in *The Highway Methodology Workbook Supplement* (USACE, 2015). In addition, the Stroudwater River was visually evaluated and rated for three general functional categories including Biological Condition (diversity and quality of the biological community), Geochemical Condition (temperature, oxygen content etc.), and Geomorphology (natural stream structure). **Table 1** summarizes the functions and values identified for the wetlands and waterbody found within the project area.

**Table 1. Functions and Values Provided by Wetlands in the Stroudwater River Bridge Project Area.**

| Wetland ID | Groundwater Recharge Discharge | Flood flow Alteration | Fish and Shellfish Habitat | Sediment-Toxicant Retention | Nutrient Removal-Retention-Transformation | Production Export | Sediment-Shoreline Stabilization | Wildlife Habitat | Recreational | Educational-Scientific Value | Uniqueness-Heritage | Visual | Rare, Threatened and Endangered Species |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **W-12** | X | X | X | X | - | - | X | X | - | - | - | - | - |
| **W-13** | - | - | - | X | - | - | - | X | - | - | - | - | - |
| **W-32** | - | - | - | X | - | - | - | X | - | - | - | - | - |
| **W-33** | - | - | - | - | - | - | - | X | - | - | - | - | - |
| **W-34** | - | - | - | - | - | - | - | X | - | - | - | - | - |
| **W-35** | - | - | - | - | - | - | - | X | - | - | - | - | - |
| **W-49** | - | - | - | - | - | - | - | X | - | - | - | - | - |
| **Stroudwater River** | Biological – low due to turbid conditions and previous disturbance history; Physiochemical – low due to turbid, warm and likely low oxygen conditions, Geomorphology – Low to Moderate – Mostly natural channel conditions | | | | | | | | | | | | |

Key: - not provided, X – function or value is present. Gray shading indicates the variable was the primary function or value offered by the wetland.
Note that the Stroudwater River near the bridge is characterized as a low gradient channel with well-defined bed and bank bordered primarily by upland shrub vegetation. Areas of steep slope containing rip rap and a small terrace containing invasive *Phragmites australis* occur immediately beneath the bridge.

The majority of the wetlands within the project area were found to have relatively few functions and values with Wetlands W-33, W-34, W-35, and W-49 determined to have only one function or value, Wildlife Habitat. Wetlands W-13 and W-32 were determined to contain two functions and values including Wildlife Habitat and Sediment/Toxicant Retention. Wetland W-12 had the greatest number of functions and was determined to contain six functions and values. This is primarily due to W-12 being immediately adjacent to the Stroudwater River, which provides a wider range of functions and values including fisheries habitat and flood flow.

*B. Project Area Wetland and Waterbody Impacts*

**Appendix K** depicts the location of all impacts to wetlands and waterbodies, while **Table 2** indicates each impact area in square feet.

**Table 2. Impacts Area in Square Feet to Wetlands and Waterbodies within the Stroudwater Bridge Project Area.**

| Wetland/Waterbody ID | Type[1] | Type of Impact | Permanent Impacts (sq. ft.) | Temporary Impacts (sq. ft.) | Combined Impact (sq. ft.) |
|---|---|---|---|---|---|
| W12[2] | PFO | Fill, Temporary Cofferdam Installation & Dewatering | 2,150 | 1,300 | 3,450 |
| W13[2] | PEM | Fill | 10,900 | 5,050 | 15,950 |
| W32 | PEM | Fill | 5,700 | 2,900 | 8,600 |
| W33 | PEM | Fill | 50 | 250 | 300 |
| W34 | PEM | None | 0 | 0 | 0 |
| W35 | PFO and PEM | Fill | 280 | 275 | 555 |
| W49 | PFO | Fill | 0 | 350 | 350 |
| S3 (Stroudwater River) | Perennial Stream | Fill | 710 | 100 | 810 |
| **TOTAL IMPACT** | | | **19,790** | **10,225** | **30,015** |
| PEM IMPACTS | | | 16,650 | 8,200 | 24,850 |
| PFO IMPACTS | | | 2,430 | 1,925 | 4,355 |
| WOSS IMPACTS | | | 13,050 | 6,350 | 19,400 |

Note:

1. Based on Cowardin Classification.
2. These wetlands are Wetlands of Special Significance.

As indicated in **Table 2**, the total area of impacts to wetlands and other waters of the U.S. resulting from project activities would be 30,015 sf, of which 19,790 sf would be permanent impact and 10,225 sf would be temporary impact. Impact to wetlands classified as PFO would total 4,355 sf including 2,430 sf of permanent and 1,925 sf of temporary impact. Impacts to wetlands classified as PEM would total 24,850 (16,650 sf of permanent and 8,200 sf of temporary impacts). There would 19,400 sf of impact to WOSS (W-12 and W-13) including 13,050 sf of permanent and 6,350 sf of temporary impact. Impacts to the Stroudwater River would include 810 sf (710 sf of permanent and 100 sf of temporary impact).

**Table 3** indicates the specific functions and values that would be affected within each wetland impacted by the project. As can be seen in Table 2 above, the majority of the impact to wetlands and waterbodies associated with project activities (26,565 sf of the total 30,015 sf) will be to wetlands providing a relatively low number of functions and values. Functions and values that will be affected by much of the work at Stroudwater Bridge include Sediment/Toxicant Reduction and Wildlife Habitat. A relatively small portion of project related impacts (3,450 sf of the total 30,015 sf) will be to Wetland W-12, which was determined to provide the greatest number of functions and values including Groundwater Recharge/Discharge, Floodflow Alteration, Fish and Shellfish Habitat, Sediment and Shoreline Stabilization, and Wildlife Habitat.

**Table 3. Impacts to Functions and Values Provided by Wetlands in the Stroudwater River Bridge Project Area.**

| Wetland ID | Groundwater Recharge Discharge | Floodflow Alteration | Fish and Shellfish Habitat | Sediment-Toxicant Retention | Nutrient Removal-Retention- | Production Export | Sediment-Shoreline Stabilization | Wildlife Habitat | Recreational | Educational-Scientific Value | Uniqueness-Heritage | Visual | Rare, Threatened and Endangered Species | Total Impact (sq. ft.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-12 | X | X | X | X | - | - | X | X | - | - | - | - | - | 3,450 |
| W-13 | - | - | - | X | - | - | - | X | - | - | - | - | - | 15,950 |
| W-32 | - | - | - | X | - | - | - | X | - | - | - | - | - | 8,600 |
| W-33 | - | - | - | - | - | - | - | X | - | - | - | - | - | 300 |
| W-34 | - | - | - | - | - | - | - | X | - | - | - | - | - | 0 |
| W-35 | - | - | - | - | - | - | - | X | - | - | - | - | - | 555 |
| W-49 | - | - | - | - | - | - | - | X | - | - | - | - | - | 350 |
| Stroudwater River | Biological – low due to turbid conditions and previous disturbance history; Physiochemical – low due to turbid, warm and likely low oxygen conditions, Geomorphology – Low to Moderate – Mostly natural channel conditions | | | | | | | | | | | | | 810 |

Key: - not provided, X – function or value is present. Gray shading indicates the variable was the primary function or value offered by the wetland.

Note that the Stroudwater River near the bridge is characterized as a low gradient channel with well-defined bed and bank bordered primarily by upland shrub vegetation. Areas of steep slope containing rip rap and a small terrace containing invasive *Phragmites australis* occur immediately beneath the bridge.

## Photograph of a Portion of Wetland 12 Showing the Southwesterly Pier

ATTACHMENT 5

# BLOCK 23. DESCRIPTION OF AVOIDANCE, MINIMIZATION, AND COMPENSATION

## Attachment 5 – Block 23. Description of Avoidance, Minimization, and Compensation

Avoidance of wetland impacts are not possible due to the need to widen the approach to the bridges to maintain two lanes of traffic in each direction during construction and because the wetlands are located immediately adjacent to the existing road and bridge. Impacts to the stream channel are likewise unavoidable due to the need to improve and expand the piers to support the bridge expansion, repair of slope stabilizing rip rap and to install cofferdams to facilitate work on the supporting piers in the dry. Minimization efforts focused primarily on the use of guardrail with 2H:1V fill slopes to minimize encroachment on the nearby wetlands and water bodies. Approximately 19,790 square feet of permanent wetland and stream impacts are anticipated from the proposed project and are associated with the widening of the approach roadway and bridge.

It is our understanding that USACOE will require mitigation for the permanent impacts and MTA proposes to provide mitigation for the above described unavoidable impacts to wetlands and other waters of the U.S. through the State of Maine In Lieu of Fee Compensation Program.

### Table 5. In Lieu of Fee Compensation Estimate for Stroudwater River Improvement Project

| Wetland/Waterbody ID | Direct Permanent Impact[1] (sq. ft) | Natural Resource Enhancement & Restoration Cost[2] | Average Assessed Land Valuation[3] | Resource Multiplier[4] | In Lieu of Fee Payment[5] |
|---|---|---|---|---|---|
| In Lieu of Fee Payment for Wetlands of Special Significance | | | | | |
| W12 | 2,150 | $3.61 | $0.69 | 2 | $18,490.00 |
| W13 | 10,900 | $3.61 | $0.69 | 2 | $93,740.00 |
| In Lieu of Fee Payment for Other Impacted Wetlands/Waterbodies | | | | | |
| W32 | 5,700 | $3.61 | $0.69 | 1 | $24,510.00 |
| W33 | 50 | $3.61 | $0.69 | 1 | $215.00 |
| W34 | 0 | $3.61 | $0.69 | 1 | $0.00 |
| W35 | 280 | $3.61 | $0.69 | 1 | $1,204.00 |
| W49 | 0 | $3.61 | $0.69 | 1 | $0.00 |
| S3 (Stroudwater River) | 710 | $3.61 | $0.69 | 1 | $3,053.00 |
| Summary Totals | | | | | |
| In Lieu of Fee Payment for Wetlands of Special Significance | | | | | $112,230.00 |
| In Lieu of Fee Payment for Other Impacted Wetlands/Waterbodies | | | | | $28,982.00 |
| Total In Lieu of Fee Payment | | | | | **$141,212.00** |

Notes:

1. The estimated direct wetland impacts include only the permanent impacts for both the stream and the wetlands.
2. The natural resource enhancement and restoration cost is based on the 2013 MRS statistical summary for Cumberland County as provided on the State of Maine Department of Environmental Protection DEP Fact Sheet "In Lieu of Compensation Program".
3. The assessed land valuation is based on the 2013 MRS statistical summary for Cumberland County as provided on the State of Maine Department of Environmental Protection DEP Fact Sheet "In Lieu of Compensation Program".
4. The resource qualifier of 2 is used for direct impacts to wetland areas containing 20,000 square feet of emergent marsh vegetation and a resource qualifier of 1 is used for other impacts to wetlands.
5. The Wetland Compensation Formula is taken from the State of Maine Department of Environmental Protection DEP Fact Sheet "In Lieu of Compensation Program".

ATTACHMENT 6

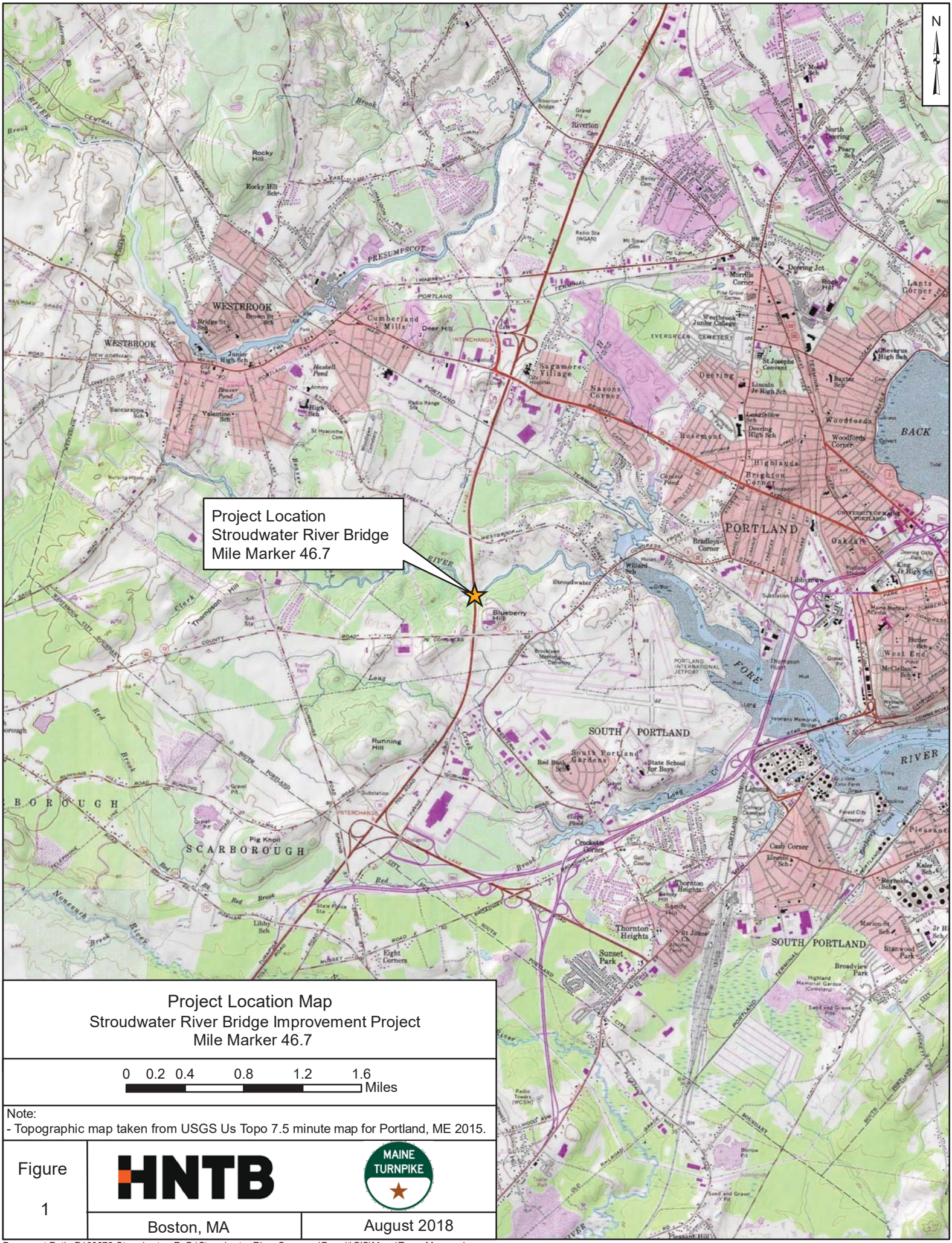
BLOCK 25. ADDRESSES OF ADJOINING PROPERTY OWNERS WHOSE PROPERTY ADJOINS THE WATERBODY

HNTB
31 St. James Ave
Suite 300
Boston, MA 02116

| Parcel ID | Property Address | Owner Name | Mailing Address |
|---|---|---|---|
| 215 B002001 | 2211 Congress St | UNUM Corp | 2211 Congress St, Portland, ME 04102 |
| 230 A003001 | 1714 Westbrook St | Stroudwater Development Partners LLC | 40 South St, STE 305, Marblehead, MA 01945 |
| 230 A006 | - | - | - |
| 231 B002 | - | - | - |
| 231 X001 | - | - | - |
| 237 B014 | - | - | - |
| 237 B014001 | 39 Blueberry Rd | Ruth's Reuseable Resources | 39 Blueberry Rd, Portland, ME 04102 |
| 238 A002 | - | - | - |
| 238 A002001 | 49 Blueberry Rd | Mansir LLC | 49 Blueberry Rd, Portland, ME 04102 |
| 238 A003 | - | - | - |
| 238 A003001 | 104 Blueberry Rd | Portland Trails | 1 India St Portland ME 04101 |
| 238 A004 | - | - | - |
| 238 A006 | - | - | - |
| 238 A006001 | 103 Blueberry Rd | City of Portland | 389 Congress St, Portland, ME 04101 |
| 238 A007 | - | - | - |
| 238 A007001 | 1752 Westbrook St | Maine Turnpike Authority | 430 Riverside St, Portland, ME 04103 |
| 238 A018 | - | - | - |
| 238 A018001 | 2 Blueberry Rd | Sturbridge Yankee Workshop Inc. | 90 Blueberry Rd, Portland, ME 04102 |
| 238 B001 | - | - | - |
| 238 B004 | - | - | - |
| 238 B005 | - | - | - |
| 238 B005001 | 1741 Westbrook St | Maine Turnpike Authority | 430 Riverside St, Portland, ME 04103 |
| 245 A007 | - | - | - |
| 245 X001 | - | - | - |
| 247 A007 | - | - | - |
| 247 X001 | - | - | - |

# APPENDIX A

## U.S.G.S TOPOGRAPHICAL MAP & AERIAL SITE PLAN




Project Location Map
Stroudwater River Bridge Improvement Project
Mile Marker 46.7

0 0.2 0.4 0.8 1.2 1.6 Miles

Note:
- Topographic map taken from USGS Us Topo 7.5 minute map for Portland, ME 2015.

| Figure 1 | HNTB | MAINE TURNPIKE |
|---|---|---|
| | Boston, MA | August 2018 |

Document Path: P:\63272-Stroudwater_R_Br\Stroudwater River Overpass\Permit\GIS\Maps\Topo_Map.mxd

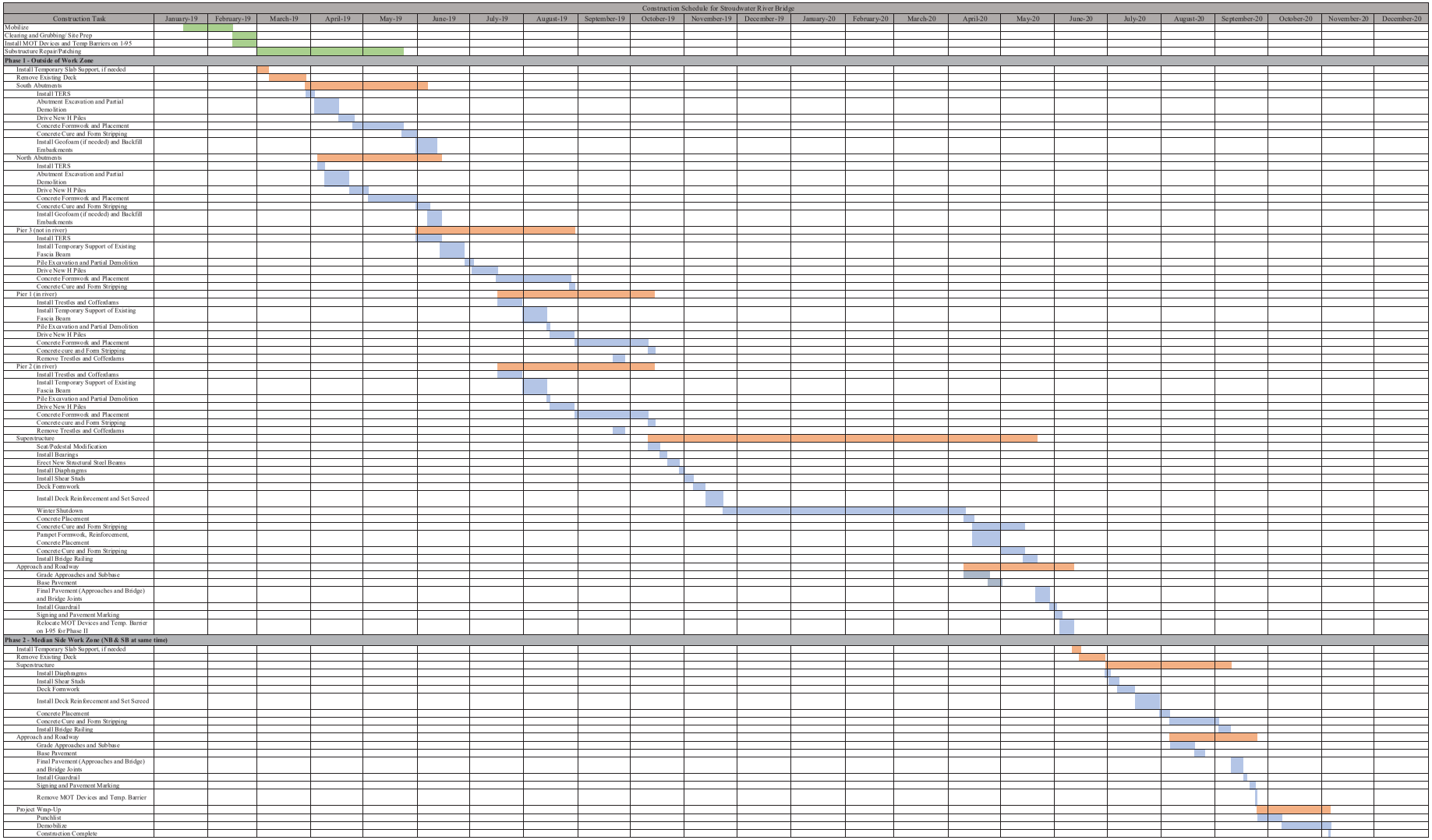

**Site Overview**
Stroudwater River Bridge Improvement Project
Mile Marker 46.7

| Figure | HNTB | MAINE TURNPIKE |
|---|---|---|
| 2 | Boston, MA | August 2018 |

Document Path: P:\63272-Stroudwater_R_Br\Stroudwater River Overpass\Permit\GIS\Maps\Site_Overview.mxd

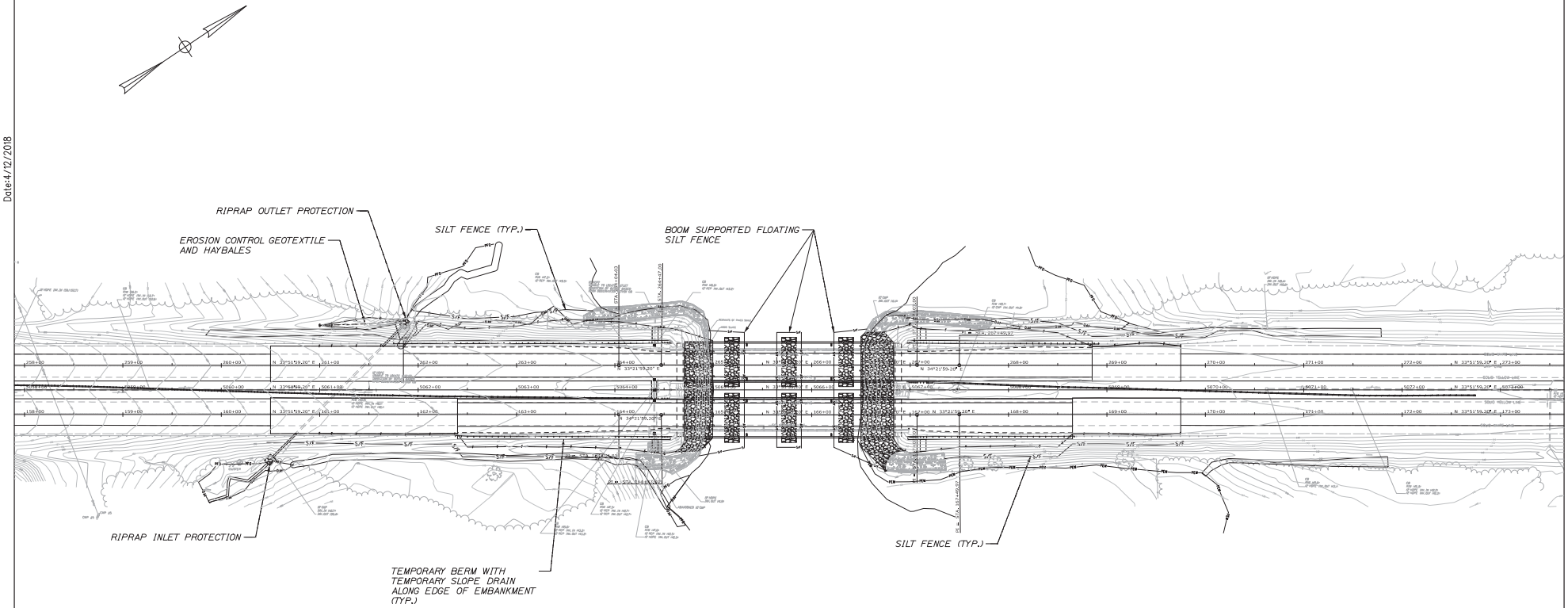
# APPENDIX B

# CONSTRUCTION SCHEDULE


Construction Schedule for Stroudwater River Bridge
Construction Task
January-19
February-19
March-19
April-19
May-19
June-19
July-19
August-19
September-19
October-19
November-19
December-19
January-20
February-20
March-20
April-20
May-20
June-20
July-20
August-20
September-20
October-20
November-20
December-20
Mobilize
Clearing and Grubbing/ Site Prep
Install MOT Devices and Temp Barriers on I-95
Substructure Repair/Patching
Phase 1 - Outside of Work Zone
Install Temporary Slab Support, if needed
Remove Existing Deck
South Abutments
Install TERS
Abutment Excavation and Partial Demolition
Drive New H Piles
Concrete Formwork and Placement
Concrete Cure and Form Stripping
Install Geofoam (if needed) and Backfill Embankments
North Abutments
Install TERS
Abutment Excavation and Partial Demolition
Drive New H Piles
Concrete Formwork and Placement
Concrete Cure and Form Stripping
Install Geofoam (if needed) and Backfill Embankments
Pier 3 (not in river)
Install TERS
Install Temporary Support of Existing Fascia Beam
Pile Excavation and Partial Demolition
Drive New H Piles
Concrete Formwork and Placement
Concrete Cure and Form Stripping
Pier 1 (in river)
Install Trestles and Cofferdams
Install Temporary Support of Existing Fascia Beam
Pile Excavation and Partial Demolition
Drive New H Piles
Concrete Formwork and Placement
Concrete cure and Form Stripping
Remove Trestles and Cofferdams
Pier 2 (in river)
Install Trestles and Cofferdams
Install Temporary Support of Existing Fascia Beam
Pile Excavation and Partial Demolition
Drive New H Piles
Concrete Formwork and Placement
Concrete cure and Form Stripping
Remove Trestles and Cofferdams
Superstructure
Seat/Pedestal Modification
Install Bearings
Erect New Structural Steel Beams
Install Diaphragms
Install Shear Studs
Deck Formwork
Install Deck Reinforcement and Set Screed
Winter Shutdown
Concrete Placement
Concrete Cure and Form Stripping
Parapet Formwork, Reinforcement, Concrete Placement
Concrete Cure and Form Stripping
Install Bridge Railing
Approach and Roadway
Grade Approaches and Subbase
Base Pavement
Final Pavement (Approaches and Bridge) and Bridge Joints
Install Guardrail
Signing and Pavement Marking
Relocate MOT Devices and Temp. Barrier on I-95 for Phase II
Phase 2 - Median Side Work Zone (NB & SB at same time)
Install Temporary Slab Support, if needed
Remove Existing Deck
Superstructure
Install Diaphragms
Install Shear Studs
Deck Formwork
Install Deck Reinforcement and Set Screed
Concrete Placement
Concrete Cure and Form Stripping
Install Bridge Railing
Approach and Roadway
Grade Approaches and Subbase
Base Pavement
Final Pavement (Approaches and Bridge) and Bridge Joints
Install Guardrail
Signing and Pavement Marking
Remove MOT Devices and Temp. Barrier
Project Wrap-Up
Punchlist
Demobilize
Construction Complete

# APPENDIX C

# EROSION & SEDIMENT CONTROL PLAN




Date:4/12/2018

Filename: 001_ErosionControlPlan.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Craig R. Morin, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | EDD | 04\18 | Checked | CDH | 04\18 |
| Drawn | EDD | 04\18 | In Charge of | RAL | 04\18 |

HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909

MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE REHABILITATION
# COBBOSSEECONTEE STREAM OVERPASS

## EROSION CONTROL PLAN

SHEET NUMBER: GP-01

CONTRACT:2018.15

SUPPLEMENTAL SPECIFICATION

SECTION 656

TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL

Section 656 of the Standard Specifications is deleted in its entirety and replaced with the following:

656.01 Description

This work shall consist of providing temporary erosion and water pollution control during construction in accordance with these Specifications, standard details, Best Management Practices, or as otherwise directed.

The Contractor shall certify in writing to the Resident that an On-Site Responsible Party (OSRP) has been trained and is knowledgeable in erosion and sediment control (ECS) through the MaineDEP's Non-Point Source Training Center, or an equivalent program, or is licensed in the State of Maine as a Professional Engineer, Landscape Architect or Soil Scientist. Proof of certification for the OSRP, and any other Contractor employees charged with conducting ESC inspections, must be submitted to the Authority's Environmental Coordinator prior to starting work.

The Project will be performed in accordance with the MaineDOT Best Management Practices (BMP) latest issue. The Contractor shall fully comply with all erosion and sedimentation control requirements outlined in the BMP's or contained herein. Non-compliance with these requirements as determined by the Resident shall result in a financial penalty of $1,000 per day, per violation. Any fines assessed to the Maine Turnpike Authority as a result of the Contractor's non-compliance shall be paid by the Contractor. If the Contractor fails to pay, the cost of the fine will be deducted from monies due, or which may become due, to the Contractor under this Contract.

In the event of conflict between these Specifications and other erosion and pollution control laws, rules or regulations of other Federal, State and local agencies, the more restrictive law, rules or regulations shall apply.

The standards as described below shall be met on the Project:

Water Pollution Control Requirements

(a) General

1. The Contractor must comply with the applicable Federal, State and local laws and regulations relating to prevention and abatement of water pollution.
2. Except as allowed by an approved permit or otherwise authorized by the Authority in writing, pollutants containing construction debris including excavated material, aggregate, residue from cleaning, sandblasting or painting, cement mixtures,

chemicals, fuels, lubricants, bitumens, raw sewage, wood chips, and other debris shall not be discharged into water bodies, wetlands or natural or manmade channels leading thereto and such materials shall not be located alongside water bodies, wetlands, or such channels such that it will be washed away by high water runoff. Furthermore, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in the areas of the site draining to an infiltration area, unless these portions of the site (where storage and handling of these materials) are isolated using dikes, berms, sumps and other forms of secondary containment that prevent discharge to groundwater.

3. Temporary winter stabilization must be used between November 1st and April 15th or outside of said time period if the ground is frozen or snow covered. Temporary winter stabilization involves, at a minimum, covering all disturbed soils and seeded ground that is not Acceptable Work with an approved method. Use of these methods for over-winter temporary erosion control will be paid for under the appropriate Erosion Control items included in the Contract.
4. Construction operations in water bodies or wetlands shall be restricted to the construction limits shown on the Plans and to those areas that must be entered for the construction of temporary or permanent structures, except as allowed by approved permit or otherwise authorized by the Authority in writing. Mechanized equipment shall not be operated in water bodies or wetlands except as allowed by approved permit or otherwise authorized by the Authority in writing.
5. Upon completion of the work, water bodies or wetlands shall be promptly cleared of all falsework, piling, debris or other obstructions caused by the construction operations, except as allowed by approved permit or otherwise authorized by the Authority in writing.

(b) Earthwork

If earthwork disturbance is part of the Project scope:

1. Erosion control blanket shall be installed in the bottom of all ditches except where a stone lining is planned. Seed shall be applied prior to the placement of the blanket.
2. Permanent slope stabilization measures shall be applied within one (1) week of the last soil disturbance. Newly seeded or sodded areas must be protected from vehicle traffic, excessive pedestrian traffic, and concentrated runoff until the vegetation is well-established. If necessary, areas must be reworked and restabilized if germination is sparse, plant coverage is spotty, or topsoil erosion is evident.
3. Dust control items, other than those under Standard Specification Section 637, Dust Control, if applicable, shall be included in the plan.

Construction Requirements

1. All temporary erosion control devices shall be in place and approved by the Resident prior to any operations resulting in disturbed area. Prior to construction, the Contractor shall properly install sediment barriers (e.g., silt fence) at the edge of any downgradient disturbed area and adjacent to any drainage channels within the distrubed area
2. The Contractor is responsible for all temporary drainage and erosion control measures. The Contractor shall review his construction operations and staging to determine if additional erosion control measures are required. The Resident may also request additional erosion control measures. The cost for all erosion control devices necessary, due solely to the Contractor's construction operations and not shown on the Plans, shall be borne solely by the Contractor.
3. Inspections shall be conducted (1) at least once a week as well as before and after a storm event and prior to completing permanent stabilization measures; and (2) by a person knowledgeable of erosion and stormwater control, including the standards and conditions in the permit if applicable.
4. The Contractor shall maintain all measures in effective operating condition until areas are permanently stabilized. If BMPs need to be modified (i.e., corrective action, additional BMPs installed, etc.), implementation must be completed within seven (7) calendar days and prior to any storm event.
5. Temporary erosion control measures shall be maintained until the site is permanently stabilized with vegetation or other permanent control measures.
6. The Contractor will immediately take appropriate measures to prevent erosion or sedimentation from occurring or to correct any existing problems regardless of the time of year.
7. During periods of approved suspension, the Contractor shall inspect and maintain temporary and permanent erosion and sedimentation controls.
8. Work in wetlands is prohibited except to the minimum extent necessary for completion of the work as detailed on the Plans. Excavated and other material shall not be stockpiled in wetlands. Haybales, silt fence or other suitable barriers shall be used, where necessary, to prevent sedimentation from eroding materials.
9. Disturbance of natural resources beyond the construction limits shown on the Plans is not allowed.
10. Existing ditches shall be maintained until the new ditches are stabilized. Stone check dams shall be placed in existing ditches prior to construction as to prevent the release of sedimentation. Stone check dams shall be installed at the outlets of all existing and proposed ditches adjacent to all stream and wetlands.
11. For proposed ditches, stabilize the outlet first and build from the bottom up. Only excavate what can be stabilized or protected by the end of the work day.
12. Before permitting permanent channels to carry water, they shall be stabilized. This may require the installation of temporary erosion control BMP’s or temporarily diverting flows.
13. All cross culvert outlets shall be armored before the end of the work day.
14. The Contractor’s operation may require the placement of temporary pipes and fill over a ditch line to provide access to the work area. The Resident shall approve the size of

the pipe. The placement and removal of the temporary access shall not be measured for payment and shall be incidental to the Excavation item.

15. Bare earth slopes shall be roughened to dissipate sheet flow. This shall be accomplished by "tracking" the slope perpendicular to the centerline. This work will not be measured separately for payment, but shall be incidental to the Excavation item.
16. Uncured concrete shall not be placed directly into the water body. Concrete may be placed in forms and shall cure at least one (1) week prior to form removal. No washing of tools, forms, etc. shall occur in or adjacent to the water body or wetland.
17. The Contractor shall contain all demolition debris (including debris from wearing surface removal, sawcut slurry, dust, etc.) and shall not allow it to discharge to any resource. Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source. The Contractor shall dispose of debris in accordance with Maine Solid Waste Law, Title 38 M.R.S.A., Section 1301 et. seq.
18. No wheeled or tracked equipment shall be operated in the water. Equipment operating on the shore may reach into the water with a bucket or similar extension. Equipment may NOT cross streams.
19. The Contractor shall not remove rocks from below the normal high water line of any wetland, great pond, river, stream or brook, except to the extent necessary for completion of the work and as allowed by environmental permits.

Spill Prevention Control and Countermeasure (SPCC) Plan

Any areas where petroleum products, oils or non-petroleum hazardous materials are handled or stored will require a Spill Prevention Control and Countermeasure (SPCC) Plan. These materials may not be stored or handled in areas of the site draining to an infiltration area. The Plan will be submitted to the Resident before construction begins. In addition to petroleum products and hazardous materials, controls must be used to prevent additional pollutants (i.e., fertilizers, pesticides, salt/brine, litter, construction demolition debris, etc.) from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. The Plan shall provide the following information at a minimum:

1. The name and emergency response numbers (telephone number, cellular phone and pager numbers, if applicable) of the Contractor's representative responsible for spill prevention and response;

2. Description of handling or storage location noting setbacks from water bodies where relevant. Significant sand and gravel aquifers and other sensitive resources, including infiltration areas, must be avoided wherever possible;

3. Description of storage and containment facilities, such as dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater or surface water;

4. Description of equipment and/or materials used to prevent discharges (including sorbent materials);

5. Preventative measures to minimize the possibility of a spill; and,

6. Contingency plan if spill should occur.

The approved plan must be posted at the Project site. All personnel working in the area are required to read and be familiar with the plan.

There shall be no separate payment for preparation of a SPCC Plan acceptable to the Resident and preparation shall be incidental to the work.

Notification of Authority of Hazardous Material Spills

In addition to MaineDEP reporting requirements for spills greater than five (5) gallons, the Contractor shall notify the on-site Resident Inspector. The on-site Resident Inspector shall notify the Maine Turnpike Radio Room at 207-871-7701. When the on-site Resident Inspector is not available, the Contractor shall notify the Maine Turnpike Radio Room directly at 207-871-7701.

In addition to MaineDEP reporting requirements for all spills where any stream or water body is threatened, the Contractor shall notify the on-site Resident Inspector. The on-site Resident Inspector shall notify the Maine Turnpike Radio Room at 207-871-7701. When the on-site Resident Inspector is not available, the Contractor shall notify the Maine Turnpike Radio Room directly at 207-871-7701.

These notification procedures shall be incorporated into the Spill Prevention Control and Countermeasure (SPCC) Plan.

Responsibility for Control and Cleanup of Hazardous Material Spills

The Contractor shall be responsible to control spills and properly cleanup, containerize, and dispose of petroleum and/or other hazardous material waste that results from the actions and/or equipment of the Contractor or his employees, subcontractors and suppliers. Chemicals, exposed to stormwater must be prevented from becoming a pollutant source.

The Contractor shall also be responsible for all direct and indirect costs associated with the control of spills and proper cleanup, containerization, and disposal of petroleum and/or other hazardous material waste that results from the actions and/or equipment of the Contractor or his employees, subcontractors and suppliers.

656.02 Temporary Erosion and Sedimentation Control Devices - Materials

The Contractor shall install and maintain all temporary erosion and sedimentation control materials in accordance with the manufacturer's recommendations or the latest BMP's.

1. Baled hay shall be bales at approximately 14 by 18 by 30 inches, or an equivalent, securely tied to form a firm bale.
2. Flexible drainage pipe shall consist of collapsible neoprene pipe, a minimum of 12 inches in diameter or equal.
3. Silt Fence

   (a) Posts - Either hardwood posts or steel posts shall be used. Hardwood posts shall be straight, at least 18 inches longer than the height of the silt fence and at least one inch by one inch.

   Staples shall be of No. 9 wire.

   Steel posts shall be at least 18 inches longer than the height of the silt fence and have the means provided for fastening wire to the fence.

   (b) Wire Support Fence - If required, wire support fence shall be at least two inches higher than the height of the silt fence. Horizontal and vertical wires shall be spaced no more than six inches apart. The top and bottom wires shall be at least 10 gauge; all other wires at least 12 gauge.

   (c) Fabric - The woven geotextile fabric and components shall be made from polypropylene, polyester, polymide or other chemically stable material and be resistant to ultraviolet radiation degradation for at least 12 months of installation. Silt retention capacity shall be no less than 75 percent. The fabric shall have a Mullen burst test of no less than 260 pounds per square inch with a maximum average sieve opening size of No. 20 to No. 60. Roll width of the fabric shall be no less than six inches wider than the height of the fence, except fabric for boom supported floating silt fence which shall be no less than two feet wider than the design width.

   (d) Flotation Devices – Boom supported floating silt fence shall consist of suitable, flexible plastic or synthetic rubber barrier supported on the top (or floated on the top using six inch "minimum" Styrofoam logs) and sides, and weighted or anchored on the bottom to form a continuous vertical barrier to contain within the designated area(s), silt and clay-size particles suspended or carried by water. The flotation boom and weighing devices for boom supported floating silt fence shall be sufficient to hold the fence in an approximately vertical position.

656.03 Temporary Erosion and Sedimentation Control Devices - General

Temporary Erosion Checks - Temporary erosion checks shall be constructed in ditches and at other locations designated. Checks shall be in accordance with the Standard Detail unless otherwise directed.

Baled hay shall be used in other areas as necessary to inhibit soil erosion.

During winter construction, November 1st through April 15th, all areas being constructed within 75 feet of a protected natural resource shall be protected with a double row of silt fence.

Sediment deposits behind haybales and silt fence shall be removed when the depth of sediment reaches 50 percent of the erosion control device height.

The Contractor is also required to have on-site, at all times, 25 percent additional Contract quantities of silt fence for use as backup devices.

656.04 Temporary Erosion and Sedimentation Control Devices – Construction Requirements

1. Erosion Control Filter Berm

   The Contractor may opt to furnish and install an erosion control filter berm in lieu of silt fence. The erosion control filter berm shall be a water permeable windrow of a composted bark mix to remove suspended soil particles from water moving off the site. Erosion control filter berm shall be considered an erosion control device. The material and specific application shall be submitted to the Resident for approval.

   The erosion control berm shall be placed uncompacted, in a windrow in locations approved by the Resident. The cross section of the berm shall be four feet wide at the base and 1-1/2 feet high at the center. The erosion control filter berm shall be removed when no longer required, as determined by the Resident, and shall be distributed over an adjacent area.

2. Temporary Berms

   When designated, temporary barriers shall be constructed along the edge of the embankment. The barriers shall be of embankment earth material, gravel or sand as available and shaped approximately as shown in the Standard Details. The barriers shall be compacted with the wheels of construction equipment. When placed on pavement, the berms shall be constructed of asphalt grindings or other non-erodible soil material as approved by the Resident, and shaped as shown in the Standard Details.

   At designated intervals, temporary slope drains shall be constructed with a crescent shaped barrier placed at each slope drain to direct the water into the inlet pipe.

3. Temporary Slope Drains

   Collapsible pipe with corrugated metal pipe inlet shall be placed down the embankment slopes at designated locations and in accordance with the Best Management Practices. At the outlet end of the drain, dumped stone shall be placed to prevent scoring unless otherwise directed.

4. Silt Fence

The silt fence shall be installed downhill of disturbed slopes as shown on the Plans or as approved. The Contractor shall have the option to provide a reinforced filter fabric or an un-reinforced filter fabric attached to a wire fence.

The fence posts shall be spaced as specified by the Resident, however, not to exceed a maximum of eight feet [2.5 m] apart when either type of silt fence is used and be driven a minimum of 18 inches [450 mm] into the ground.

The geotextile fabric shall be secured to the post or fence by suitable staples, tie wire or hog rings in such a manner as to prevent tearing and sagging of the fabric. The bottom flap of the geotextile fabric shall be entrenched into the ground a minimum depth of six inches [150 mm] to prevent water from flowing under the fence. The geotextile shall be spliced together only at support posts with a minimum six inches [150 mm] overlap and secure post connection which prevents leakage of silt. The top of the geotextile shall be installed with a reinforced top end section.

The Contractor shall maintain the silt fence in a functional condition at all times. All deficiencies shall be immediately corrected by the Contractor. The Contractor shall make a daily inspection of silt fences in areas where construction activity causes drainage runoff, to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, additional silt fences shall be installed as approved or otherwise directed.

Sediment deposits shall be removed when sediments reach 50 percent of the height of the device. All sediment deposits remaining in place after the device is no longer required shall be graded to conform to the existing ground, seeded and mulched immediately.

Geotextile fabric which has decomposed or has become ineffective and is still needed shall be replaced with material equal to the original design.

5. Boom Supported Floating Silt Fence

Prior to starting any work within the river, the Contractor shall furnish and install a boom supported floating silt fence to completely surround the work area as shown on the Plans or as approved by the Resident. The boom supported floating silt fence shall remain in place a minimum of 48-hours after the completion of the work. The Contractor shall then remove the boom supported floating silt fence from the river.

The silt fence fabric shall be securely attached to the flotation boom with a continuous weight placed the entire length of the fence to maintain the fence in a vertical submerged position from the surface of the water to the design depth.

Anchor's shall be placed at the ends of the fence, and intermediate locations if

necessary, to hold the fence securely in place.

6. Temporary Mulch

Temporary stabilization with mulch or other non-erodable cover is required on all exposed soils that will not be worked for more than 7 days. Areas within 75 feet of a wetland or waterbody shall be stabilized within 48 hours of the initial disturbance of the soil or prior to any storm event, whichever comes first.

The Contractor is responsible for applying temporary mulch as necessary, in accordance with the latest edition of the BMP's, to minimize soil erosion prior to the application of the final slope treatment.

Temporary mulch applied during the winter months of November 1st through April 15th shall be applied at twice the standard temporary stabilization rate or 150 lbs. per 1,000 square feet or three tons/acre. Mulch shall not be spread on top of snow and shall be anchored with mulch netting on slopes steeper than eight percent unless erosion control blankets or erosion control mix is being used on the slopes.

The Contractor shall review his construction operations and staging to determine how much temporary mulching is required.

656.05 Temporary Erosion and Sedimentation Control Devices - Maintenance

The erosion control devices will be cleaned, repaired or replaced as necessary. All deficiencies shall be corrected immediately by the Contractor.

656.06 Temporary Erosion and Sedimentation Control Devices - Removing and Disposing

When disturbed areas have been permanently stabilized, temporary erosion control devices, including stone check dams, shall be removed. However, erosion control mix filter berms may be spread out, seeded and left to decompose. Areas disturbed during the removal of the erosion control devices shall be repaired and properly stabilized.

When removed, such devices may be reused in other locations provided they are in good condition and suitable to perform the erosion control for which they are intended. Reused devices, if approved, will be measured for payment.

656.07 Erosion Control Compliance Officer

The Contractor shall designate an Erosion Control Compliance Officer (CECCO) on this Project who shall be a "DEP Certified Contractor" or have had equivalent training approved by the Authority. The Contractor shall provide the Resident with the name of the CECCO and any phone numbers or pager numbers that can be used to contact the person in case of emergency.

Before commencing any work that could disturb soils or impact water quality, the CECCO must field review the Project with the Resident's ECCO (RECCO).

656.08 Inspection and Recordkeeping

The CECCO shall accompany the RECCO in the inspection of all erosion control devices. An inspection log shall be maintained by the Resident for the duration of the Project. The log will include daily on-site precipitation and air temperature as well as the performance, failure and/or any corrective action for all erosion and sedimentation controls in place. The log will be updated at least weekly and after all significant storm runoff or flood events. The log shall be signed by the RECCO and the CECCO after each inspection.

Failure to comply with the erosion and sedimentation control requirements herein or as directed by the RECCO within 24-hours after the violation is noted in the inspection log, will result in the $1,000 per day per violation penalty until the violation is corrected to the satisfaction of the Resident.

656.09 Method of Measurement

Baled hay will be measured for payment by the number of bales or bags satisfactorily placed.

Temporary berms and temporary slope drains will be measured for payment by the linear foot measured parallel with the flow line including the pipe inlet.

Temporary silt fence will be measured by the linear foot along the gradient of the fence, end post to end post.

Boom supported floating silt fence will be measured by the linear foot.

Erosion control filter berm shall be measured by the linear foot.

The quantity of additional haybales and silt fence material required herein will be measured for payment only when and if they are actually put to use as additional measures on the Project as approved by the Resident. Haybales and silt fence material used for maintenance or replacement of existing devices will not be measured for payment.

The removal of silt and other material from behind the erosion control devices will not be measured separately for payment, but shall be incidental to the Erosion Control items.

Temporary Mulch – See Section 619 Mulch.

656.10 Basis of Payment

The accepted quantity of baled hay or sandbags will be paid for at the Contract unit price each for each bale or bag which price shall be full compensation for furnishing and placing the bales or sandbags, for furnishing and driving the stakes for baled hay, for maintaining the bales, stakes or

sandbags, and for the removing and disposing of the bales, stakes or sandbags when no longer needed.

The accepted quantity of temporary berms will be paid for at the Contract unit price per linear foot of berm which price shall be full compensation for furnishing, placing and compacting material, for maintaining and for removing the berm when no longer needed.

There will be no separate payment for excavation in the construction of temporary erosion control items under this Section and all necessary excavation shall be incidental to the work.

The accepted quantity of dumped stone will be paid for at the Contract unit price per cubic yard which price shall be full compensation for furnishing the stone, transporting, placing and shaping. Payment for removal or for covering will be made under Item 629.05, Hand Labor, and the appropriate Equipment Rental items.

The accepted quantity of temporary silt fence and boom supported floating silt fence will be paid for at the Contract unit price per linear foot complete in place. Payment shall be full compensation for furnishing, installing, maintaining, anchoring, replacing deteriorated geotextile and clogged geotextile when required and for removing and disposing of the fence when no longer needed.

The accepted quantity of erosion control filter berm will be paid for at the Contract unit price per linear foot under Item 656.632, 30 Inch Temporary Silt Fence, which price shall be full compensation for furnishing, placing, maintaining, and removing the erosion control filter berm.

Cost of seeding and mulching the area after removal of the temporary silt fence will be paid for at the Contract unit prices for Item 618, Seeding, and Item 619, Mulch.

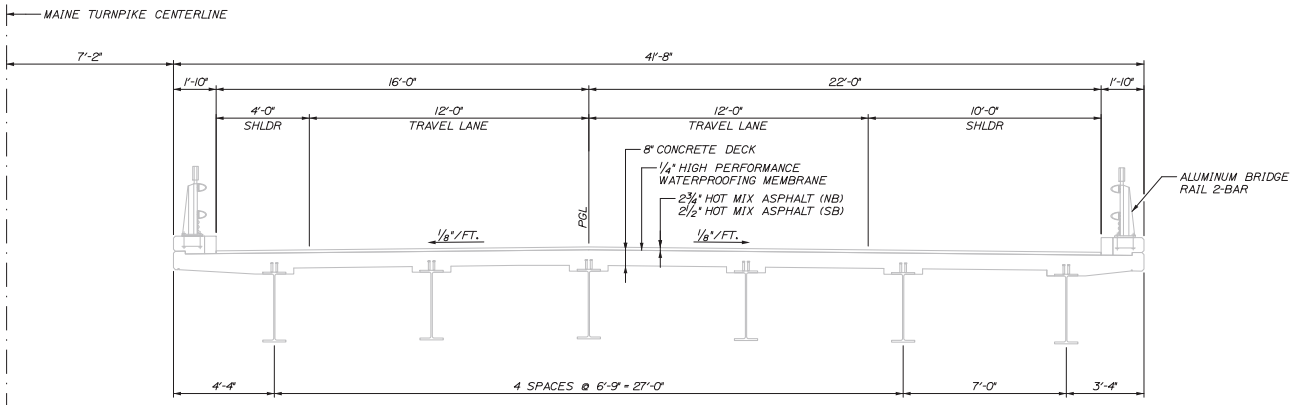
Temporary Mulch – See Section 619 Mulch.

Payment will be made under:

| Pay Item | | Pay Unit |
|---|---|---|
| 656.50 | Baled Hay, in place | Each |
| 656.60 | Temporary Berms | Linear Foot |
| 656.62 | Temporary Slope Drains | Linear Foot |
| 656.632 | 30 inch Temporary Silt Fence | Linear Foot |
| 656.64 | Boom Supported Floating Silt Fence | Linear Foot |

# APPENDIX D

# ALTERNATIVE DESIGN DRAWINGS



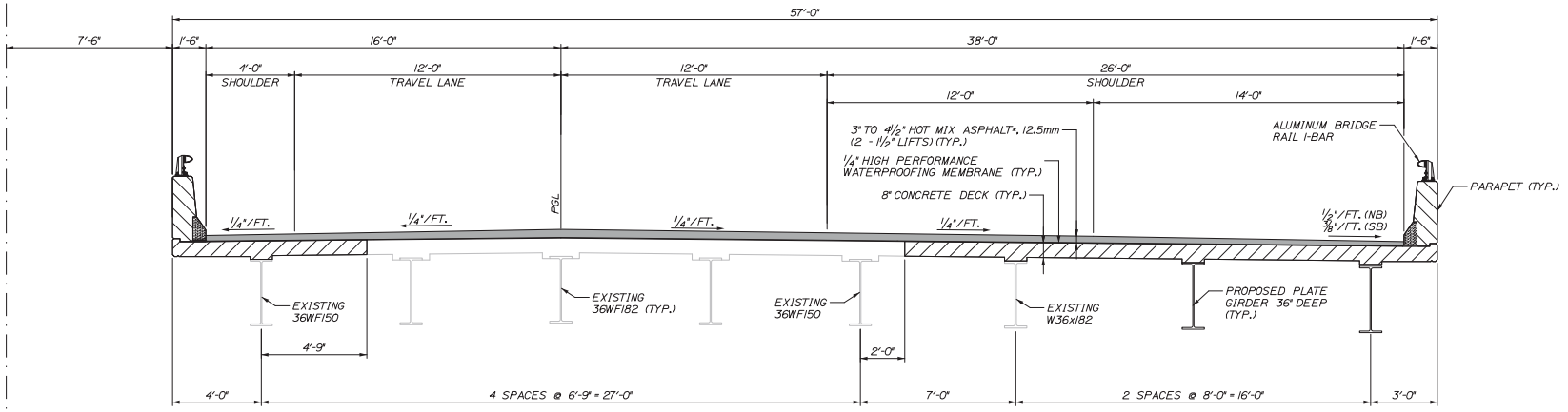

EXISTING SECTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

3/8" = 1'-0"

*NOTE:

EXISTING DECK AND BRIDGE JOINT ASSEMBLY IS CONSTRUCTED BASED ON A 1/8" CROSS SLOPE AND 2 3/4" PAVEMENT. MODIFICATIONS TO ADJUST PAVEMENT THICKNESS TO 3" AND TO PROVIDE VARIABLE PAVEMENT THICKNESS TO PROVIDE 1/4"/FT CROSS SLOPE ARE ASSUMED




TRANSVERSE SECTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

3/8" = 1'-0"

PRELIMINARY DESIGN
APRIL 30, 2018

Date:4/28/2018

Filename: 0XX_Typical Sections Option A.dgn

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Scale:

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | KEB | 04\18 | Checked | TRC | 04\18 |
| Drawn | PEB | 04\18 | In Charge of | RAL | 04\18 |


HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909


MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

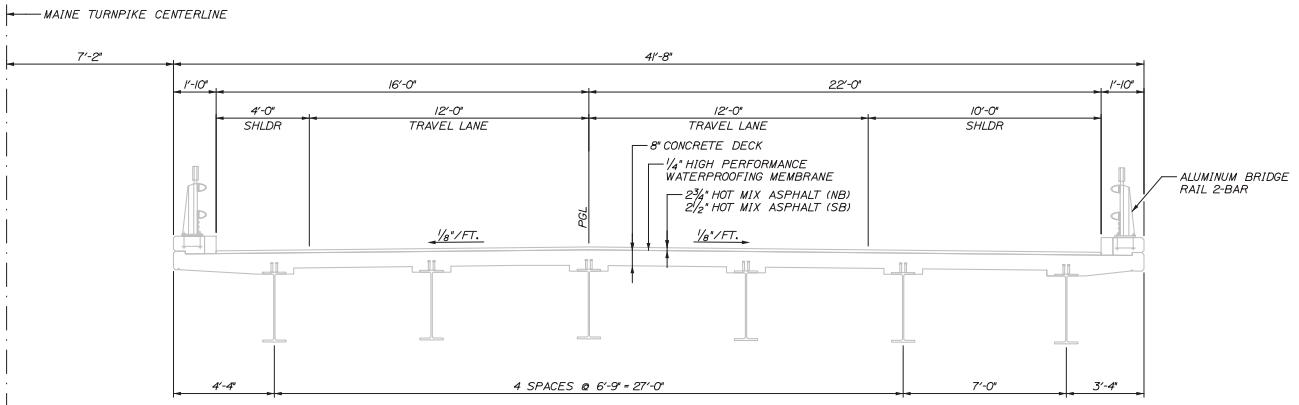
MTA PROJECT MANAGER: Ralph C. Norwood IV, P.E., P.T.O.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## TYPICAL SECTIONS
## ALTERNATE A

SHEET NUMBER: TYP-1

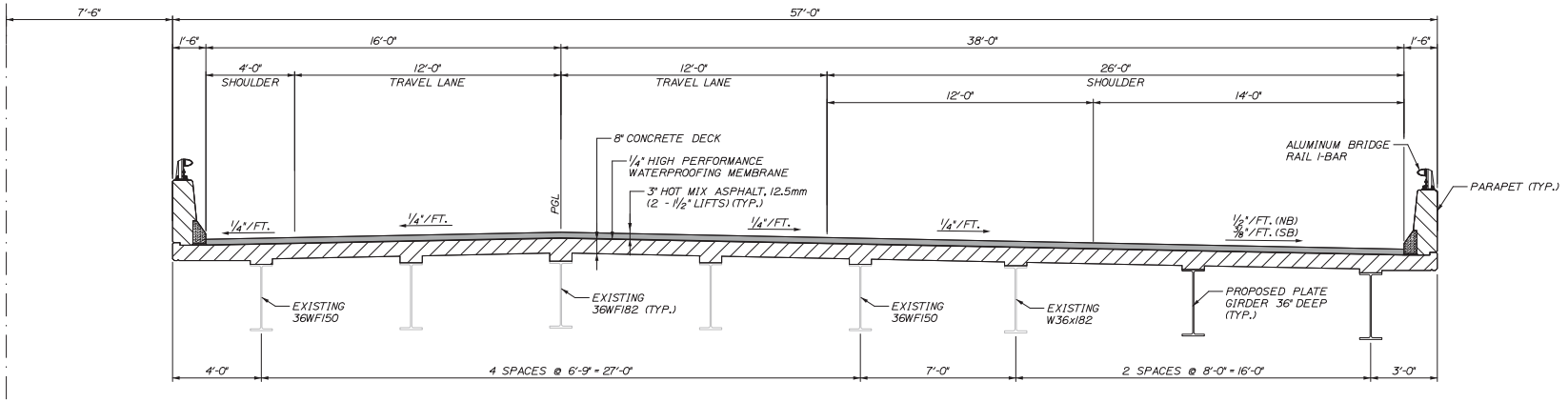
CONTRACT:2019.16

1OF 3




EXISTING SECTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)
3/8" = 1'-0"




TRANSVERSE SECTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)
3/8" = 1'-0"

PRELIMINARY DESIGN
APRIL 30, 2018

Date:4/28/2018

Filename: 0XX_Typical Sections Option B.dgn

Scale:

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |
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Designed by:

HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | KEB | 04\18 | Checked | TRC | 04\18 |
| Drawn | PEB | 04\18 | In Charge of | RAL | 04\18 |

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MAINE TURNPIKE

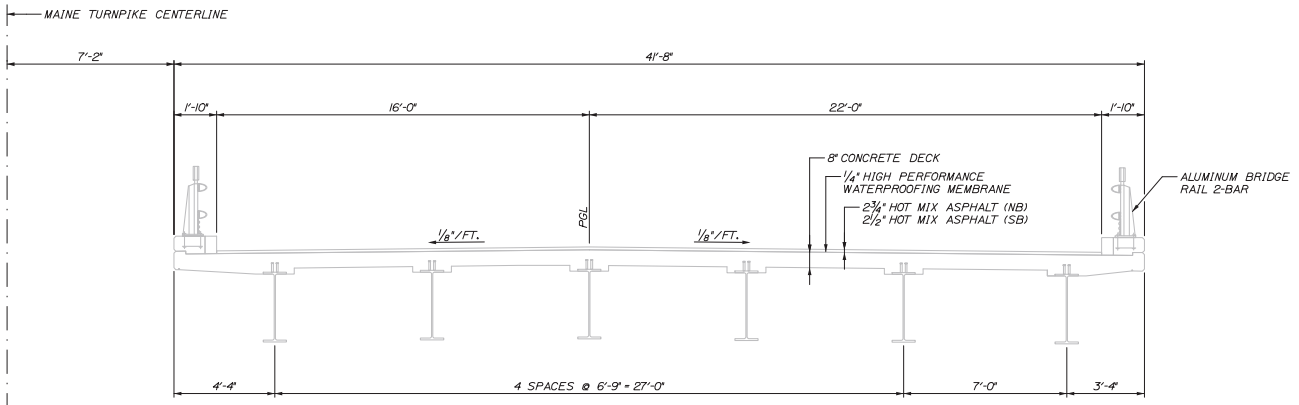
THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Ralph C. Norwood IV, P.E., P.T.O.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
TYPICAL SECTIONS
ALTERNATE B

SHEET NUMBER: TYP-2

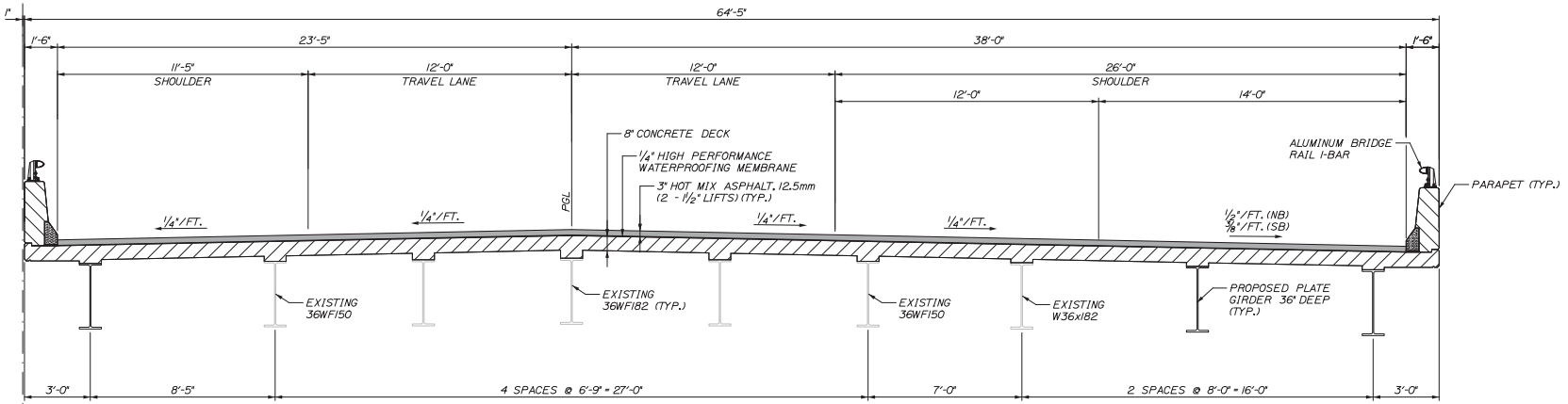
CONTRACT:2019.16




EXISTING SECTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

3/8" = 1'-0"




TRANSVERSE SECTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

3/8" = 1'-0"

PRELIMINARY DESIGN
APRIL 30, 2018

Date:4/28/2018

Filename: 0XX_Typical Sections Option C.dgn

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Scale:

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | KEB | 04\18 | Checked | TRC | 04\18 |
| Drawn | PEB | 04\18 | In Charge of | RAL | 04\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Ralph C. Norwood IV, P.E., P.T.O.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
TYPICAL SECTIONS
ALTERNATE C

SHEET NUMBER: TYP-3

CONTRACT:2019.16

3 OF 3

# APPENDIX E

## CORRESPONDENCE WITH MAINE DEPARTMENT OF INLAND FISHERIES & WILDLIFE AND U.S. FISH & WILDLIFE SERVICE

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
www.hntb.com

July 17, 2018

John Perry
Maine Department of Inland Fisheries and Wildlife
41 State House Station
284 State Street
Augusta, ME 04333-0041

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7

Dear Mr. Perry:

We are writing to notify the Maine Department of Inland Fisheries and Wildlife of the Maine Turnpike Authority's intent to make repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs. The Maine Turnpike Authority seeks the Maine Department of Inland Fisheries and Wildlife review of the proposal in advance of filing permit applications (see attached locus map and preliminary project plans).

The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include backwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs.

We are writing to request information on the presence of state threatened or endangered species or critical or other sensitive habitats at the project site (see attached map). We greatly appreciate your assistance in this matter. Please feel free to call me at (617) 532-2220 if you should have any questions on this matter.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA, Timothy Cote, HNTB, Paul Myers, HNTB

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

August 10, 2018

Marissa Simpson
HNTB
31 St. James Avenue, Suite 300
Boston, MA 02116

**RE: Information Request - MTA Stroudwater Bridge Widening, Portland**

Dear Marissa:

Per your request, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *MTA Stroudwater Bridge Widening Project* in Portland. For purposes of this review, we are assuming that some components of the project will involve instream work.

Our information indicates no locations of Endangered, Threatened, or Special Concern species within the project area that would be affected by your project. Additionally, our Department has not mapped any Essential or Significant Wildlife Habitats that would be directly affected by your project.

***Fisheries Habitat***

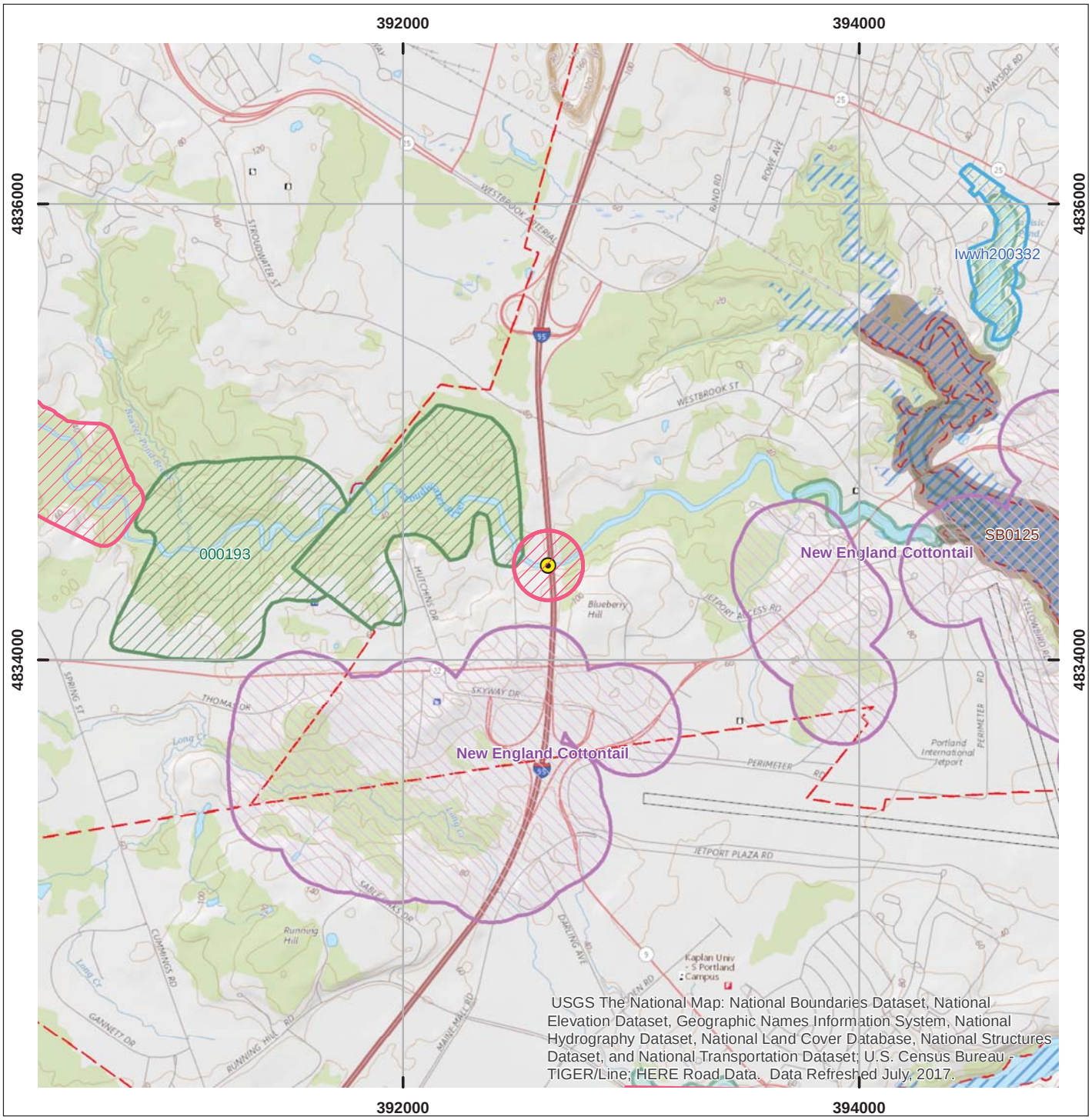
Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

John Perry
Environmental Review Coordinator




# Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Portland, MTA Stroudwater Bridge Widening (Version 1)

Maine Department of
Inland Fisheries and Wildlife

0 0.125 0.25 0.5 0.75 1 Miles

Projection: UTM, NAD83, Zone 19N

Date: 8/7/2018

- ProjectPoints
- ProjectSearchAreas
- Deer Winter Area
- Shorebird Areas
- Inland Waterfowl/Wading Bird
- Tidal Waterfowl/Wading Bird
- ETSc Environmental Review Polygons
- Special Concern-occupied habitats(100ft buffer)

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
www.hntb.com

July 17, 2018

Mark McCollough
U.S. Fish and Wildlife Service
Maine Ecological Services Field Office
P.O. Box A
306 Hatchery Road
East Orland, ME 04431

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7

Dear Dr. McCollough:

We are writing to notify the Maine Ecological Services Field Office of the Maine Turnpike Authority's intent to make repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs. The Maine Turnpike Authority seeks the Maine Ecological Services' review of the proposal in advance of filing permit applications (see attached locus map and preliminary project plans).

The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include blackwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs.

We are writing to request information on the presence of endangered species or critical habitats at the project site (see attached map). We have reviewed information on the IPAC site and identified that the northern long-eared bat occurs in the general project area. We greatly appreciate your assistance in this matter. Please feel free to call me at (617) 532-2220 if you should have any questions on this matter.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA, Timothy Cote, HNTB, Paul Myers, HNTB

# APPENDIX F

# OFFICIAL SPECIES LIST

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588
http://www.fws.gov/mainefieldoffice/index.html

In Reply Refer To: July 17, 2018
Consultation Code: 05E1ME00-2018-SLI-0921
Event Code: 05E1ME00-2018-E-01906
Project Name: Stroudwater River Bridge

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site: http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines: http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g.,

cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm and at: http://www.towerkill.com; and at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Maine Ecological Services Field Office**
P. O. Box A
East Orland, ME 04431
(207) 469-7300

# Project Summary

Consultation Code: 05E1ME00-2018-SLI-0921

Event Code: 05E1ME00-2018-E-01906

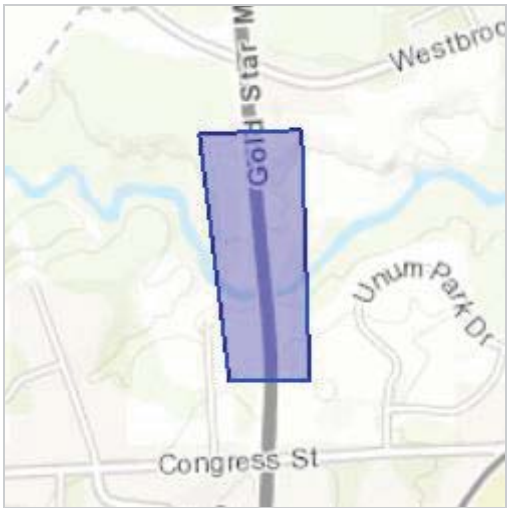
Project Name: Stroudwater River Bridge

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include blackwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs. Construction of the bridges will require two full construction seasons assuming in-water work windows of July 15th through October 1st. Construction is planned to be completed in November 2020.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.6559575965824N70.33143436631244W




Counties: Cumberland, ME

# Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

| NAME | STATUS |
|---|---|
| Northern Long-eared Bat *Myotis septentrionalis*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/9045 | Threatened |

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

# APPENDIX G

## PROOF OF NOTIFICATION TO MAINE HISTORICAL PRESERVATION COMMISSION & NATIVE AMERICAN TRIBES

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
www.hntb.com

July 17, 2018

Kirk F. Mohney
Maine Historic Preservation Commission
55 Capitol Street, State House Station 65
Augusta, Maine 04333-0065

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7

Dear Mr. Mohney:

We are writing to notify the Maine Historic Preservation Commission of the Maine Turnpike Authority's intent to make repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs. In accordance with Section 106, the Maine Turnpike Authority seeks the Maine Historic Preservation Commission's review of the proposal in advance of filing the permit applications (see attached locus map and preliminary project plans).

The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include backwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs.

We are writing to request your review of the proposed project for information on the presence of archaeological and historic resources at the project site (see attached map). We greatly appreciate your assistance in this matter. Please feel free to call me at (617) 532-2220 if you should have any questions on this matter.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA, Timothy Cote, HNTB, Paul Myers, HNTB

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
Facsimile (617) 428-6905
www.hntb.com

July 17, 2018

Aroostook Band of Micmacs
Attn: Edward Peter-Paul, Chief
7 Northern Road
Presque Isle, ME 04769

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7 General Permit Filing

Dear Mr. Peter-Paul,

We are writing to notify the Tribal Historic Preservation Officer of the Maine Turnpike Authority's intent to seek authorization from the Maine DEP and the U.S. Army Corps of Engineers for repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs in Portland, Maine (see attached locus map).

The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include blackwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs.

In accordance with the requirements of the federal Section 404 permit process, we request that you address any comments you have to:

Jay Clement
US Army Corps of Engineers
675 Western Ave, #3
Manchester, ME 04351
(207) 623-8367
Email: jay.l.clement@USACE.army.mil

In addition, please copy me on your response letter or e-mail.  Thank you for your time and consideration.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA
Timothy Cote, HNTB
Paul Myers, HNTB

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The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
Facsimile (617) 428-6905
www.hntb.com

July 17, 2018

Houlton Band of Maliseet Indians
Attn: Clarissa Sabattis, Chief
88 Bell Road
Littleton, ME 04730

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7 General Permit Filing

Dear Ms. Sabattis,

We are writing to notify the Tribal Historic Preservation Officer of the Maine Turnpike Authority's intent to seek authorization from the Maine DEP and the U.S. Army Corps of Engineers for repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs in Portland, Maine (see attached locus map).

The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include blackwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs.

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US Army Corps of Engineers
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Manchester, ME 04351
(207) 623-8367
Email: jay.l.clement@USACE.army.mil

In addition, please copy me on your response letter or e-mail.  Thank you for your time and consideration.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA
Timothy Cote, HNTB
Paul Myers, HNTB

**From:** Sue Young
**To:** Marissa Seifert
**Subject:** Maine Turnpike Authority - Mile Maker 46.7
**Date:** Monday, July 30, 2018 10:43:34 AM

---

Ms. Simpson,

We do not have an immediate concern with your project or project site, and do not currently have the resources to fully investigate same. Should any human remains, archaelogical properties or other items of historical importance be unearthed while working on this project, we recommend that you stop your project and report your findings to the appropriate authorities including the Houlton Band of Maliseet Indians.

Please submit all future requests/permit applications to my attention via fax or email to the number or email address below. Thank you.

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

*Susan Young*

Tribal Historic Preservation Officer
Natural Resources Director
Houlton Band of Maliseets
88 Bell Road
Littleton, ME 04730
207-532-4273 ext. 202
fax 207-532-6883

ogs1@maliseets.com
www.maliseets.com

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
Facsimile (617) 428-6905
www.hntb.com

July 17, 2017

Passamaquoddy Tribe of Indians
Indian Township Reservation
Attn: Donald Soctomah, THPO
P.O. Box 159
Perry, ME 04668

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7 General Permit Filing

Dear Mr. Soctomah,

We are writing to notify the Tribal Historic Preservation Officer of the Maine Turnpike Authority's intent to seek authorization from the Maine DEP and the U.S. Army Corps of Engineers for repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs in Portland, Maine (see attached locus map).

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Jay Clement
US Army Corps of Engineers
675 Western Ave, #3
Manchester, ME 04351
(207) 623-8367
Email: jay.l.clement@USACE.army.mil

In addition, please copy me on your response letter or e-mail. Thank you for your time and consideration.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA
Timothy Cote, HNTB
Paul Myers, HNTB

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
Facsimile (617) 428-6905
www.hntb.com

July 17, 2018

Passamaquoddy Tribe of Indians
Pleasant Point Reservation
Attn: Donald Soctomah, THPO
P.O. Box 159
Perry, ME 04668

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7 General Permit Filing

Dear Mr. Soctomah,

We are writing to notify the Tribal Historic Preservation Officer of the Maine Turnpike Authority's intent to seek authorization from the Maine DEP and the U.S. Army Corps of Engineers for repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs in Portland, Maine (see attached locus map and preliminary project plans).

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(207) 623-8367
Email: jay.l.clement@USACE.army.mil

In addition, please copy me on your response letter or e-mail.  Thank you for your time and consideration

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA
Timothy Cote, HNTB
Paul Myers, HNTB

# Tribal Historic Preservation Office

Passamaquoddy Tribe
PO Box 159 Princeton, Me. 04668
207-796-5533

HNTB
31 James Ave
Boston, Mass

August 20, 2018

Re: Maine Turnpike -0 Stroudwater River Bridge Project

Dear Marissa;

The Passamaquoddy THPO has reviewed the following applications regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.

The above listed proposed projects will not have any impact on cultural and historical concerns of the Passamaquoddy Tribe.

Sincerely;

Donald Soctomah
Soctomah@gmail.com
THPO
Passamaquoddy Tribe

**HNTB Corporation**
The HNTB Companies
Engineers Architects Planners

31 St. James Avenue, Suite 300
Boston, MA 02116

Telephone (617) 542-6900
Facsimile (617) 428-6905
www.hntb.com

July 17, 2018

Penobscot Indian Nation
Indian Island Reservation
Attn: Christopher Sockalexis, THPO
12 Wabanaki Way
Indian Island, ME 04468

Re: Maine Turnpike Authority, Stroudwater River Bridge Widening Project, Mile Marker 46.7 General Permit Filing

Dear Mr. Sockalexis,

We are writing to notify the Tribal Historic Preservation Officer of the Maine Turnpike Authority's intent to seek authorization from the Maine DEP and the U.S. Army Corps of Engineers for repairs to the Stroudwater River Bridge in Portland, Maine and to widen the bridge to be consistent with anticipated future corridor needs in Portland, Maine (see attached locus map).

The purpose of the project is to extend the service life of the existing bridge, address areas of deterioration, modernize the structure and promote safety of travelers for the Stroudwater River Bridges on the Maine Turnpike. The planned improvements to the bridge include blackwall reconstruction to address areas of weakened concrete, replacement of the bridge deck and substandard bridge rail system, increase the roadway cross slope on the bridge to improve surface drainage, girder strengthening to improve load carrying capacity, and abutment and pier concrete repairs. The bridges will also be widened to allow for the maintenance of lanes of traffic on each bridge during construction, to provide a safer work zones for maintenance, and to be updated for anticipated future corridor mobility needs.

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US Army Corps of Engineers
675 Western Ave, #3
Manchester, ME 04351
(207) 623-8367
Email: jay.l.clement@USACE.army.mil

In addition, please copy me on your response letter or e-mail.  Thank you for your time and consideration.

Best regards,

Marissa Simpson, WPIT
Environmental Scientist
msimpson@hntb.com

Copy to: Ralph Norwood, MTA
Timothy Cote, HNTB
Paul Myers, HNTB

PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION
12 WABANAKI WAY, INDIAN ISLAND, ME 04468

CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER
E-MAIL: chris.sockalexis@penobscotnation.org

| | |
|---|---|
| **NAME** | Marissa Simpson |
| **ADDRESS** | HNTB Corporation<br>31 St. James Avenue, Suite 300<br>Boston, MA 02116 |
| **OWNER'S NAME** | Maine Turnpike Authority |
| **TELEPHONE** | (617) 542-6900 |
| **FAX** | |
| **EMAIL** | msimpson@hntb.com |
| **PROJECT NAME** | Stroudwater River Bridge Widening Project – Mile 46.7 |
| **PROJECT SITE** | Portland, ME |
| **DATE OF REQUEST** | July 17, 2018 |
| **DATE REVIEWED** | August 14, 2018 |

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended.

If Native American cultural materials are encountered during the course of the project, please contact my office at (207) 817-7471. Thank you for consulting with the Penobscot Nation Tribal Historic Preservation Office with this project.

Chris Sockalexis, THPO
Penobscot Nation

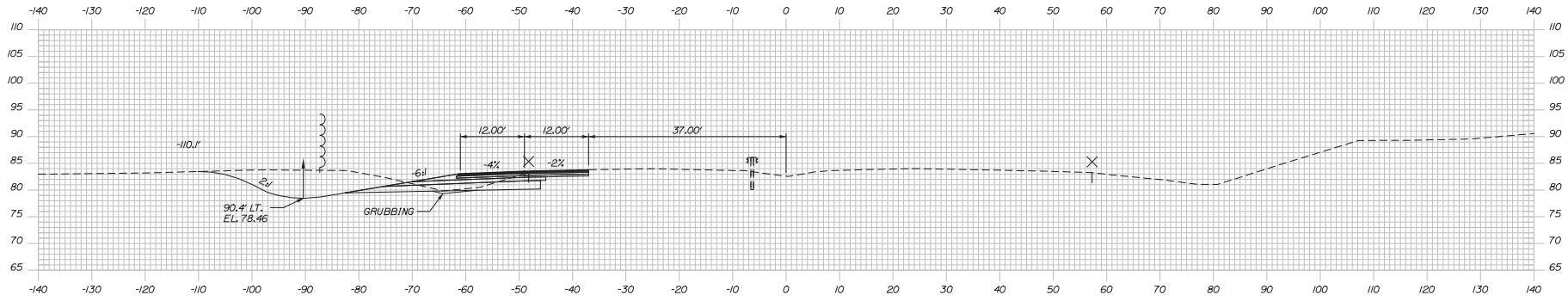
# APPENDIX H

# CROSS SECTIONS

98% SUBMISSION
August 31, 2018

Date:9/5/2018

C = 250 CY
F = 0 CY
G = 5 CY




C = 169 CY
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G = 2 CY

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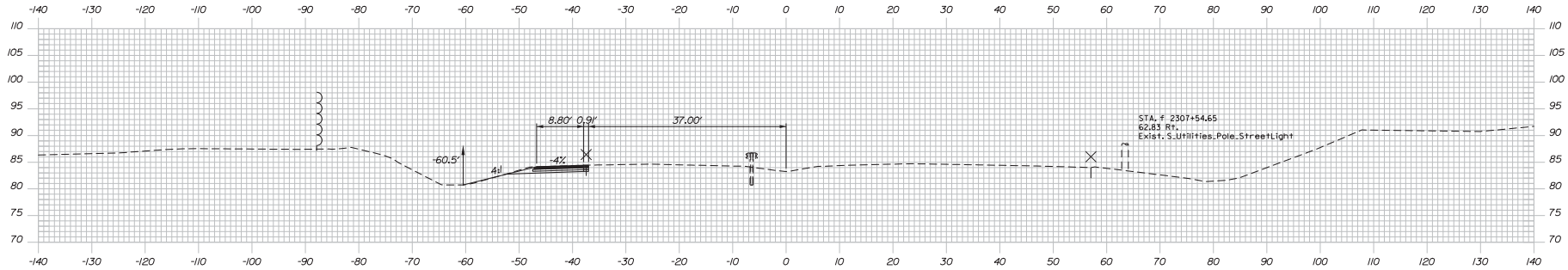
(OUTSIDE SHOULDER)

2308+00.00




STA. 12307+50.00, SB
LIMIT OF WORK

2307+50.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909


MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2307+50 TO STA. 2308+00

SHEET NUMBER: XS-01

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

Date:9/5/2018

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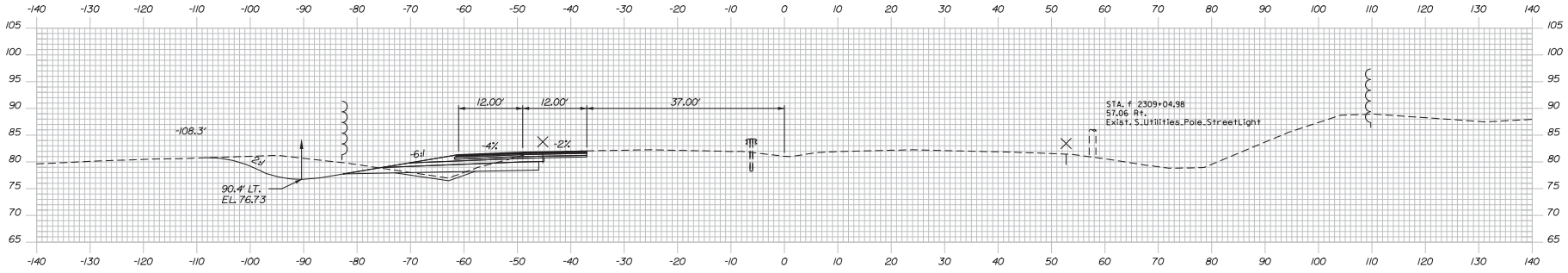
G = 17 CY




2309+00.00

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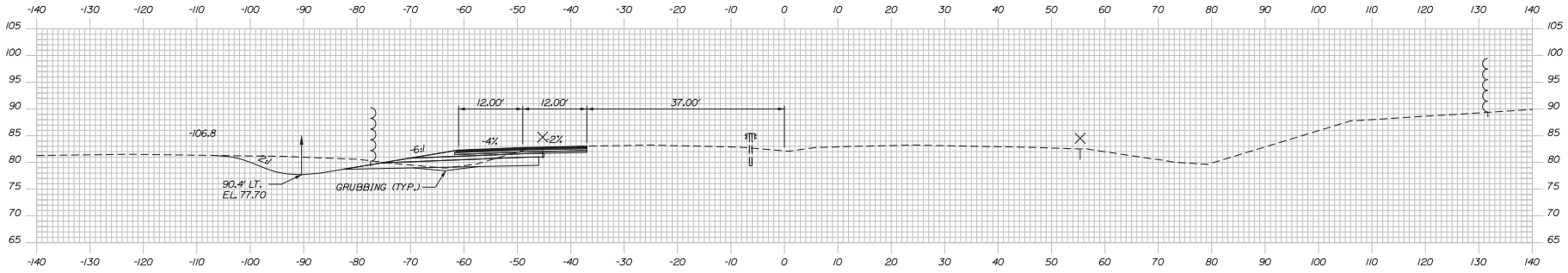
G = 9 CY




2308+50.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


HNTB CORPORATION
340 County Road, Suite 6-C
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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

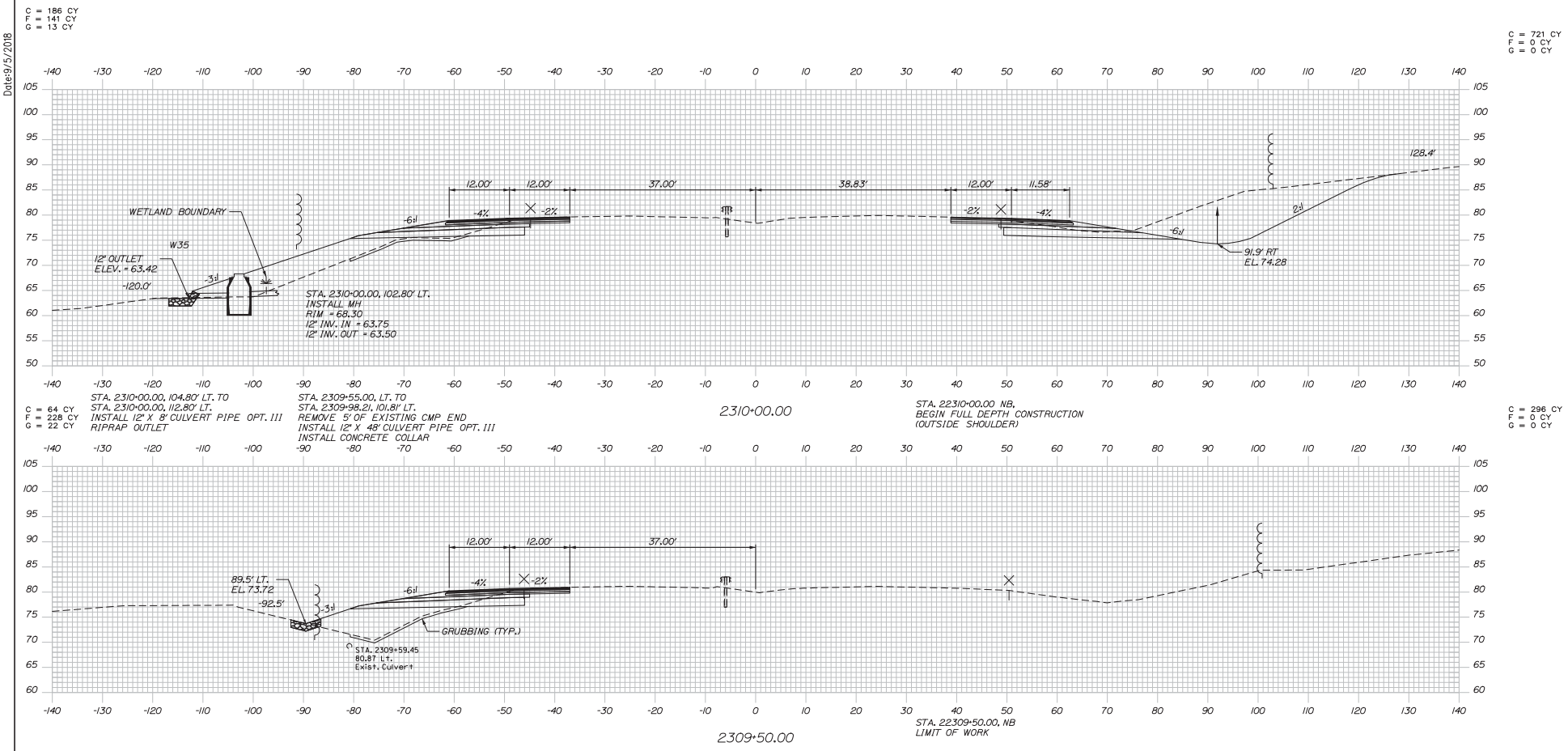
## STA. 2308+50 TO STA. 2309+00

SHEET NUMBER: XS-02

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909


MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

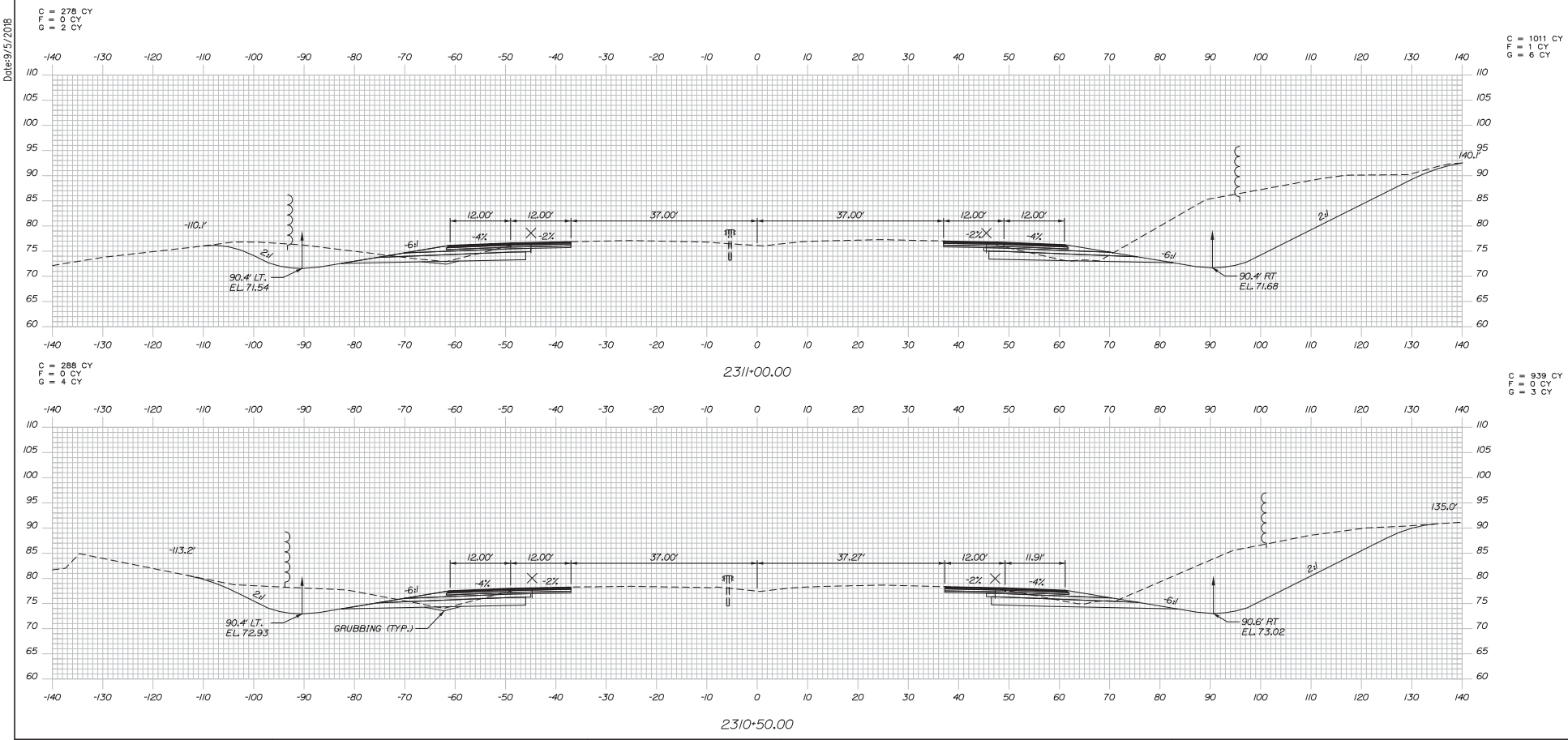
## STA. 2309+50 TO STA. 2310+00

SHEET NUMBER: XS-03

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909


MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

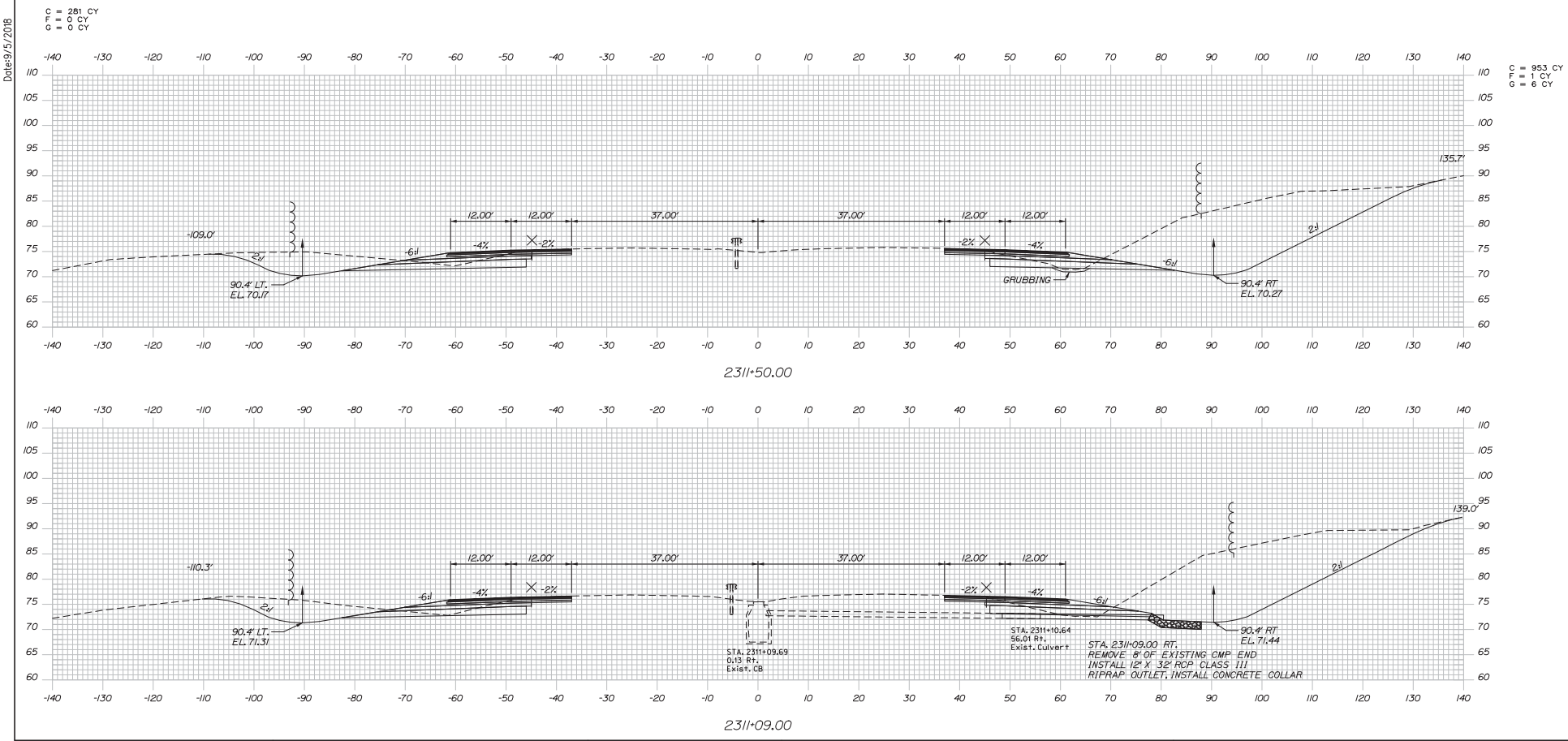
## STA. 2310+50 TO STA. 2311+00

SHEET NUMBER: XS-04

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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FAX (207) 228-0909


MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

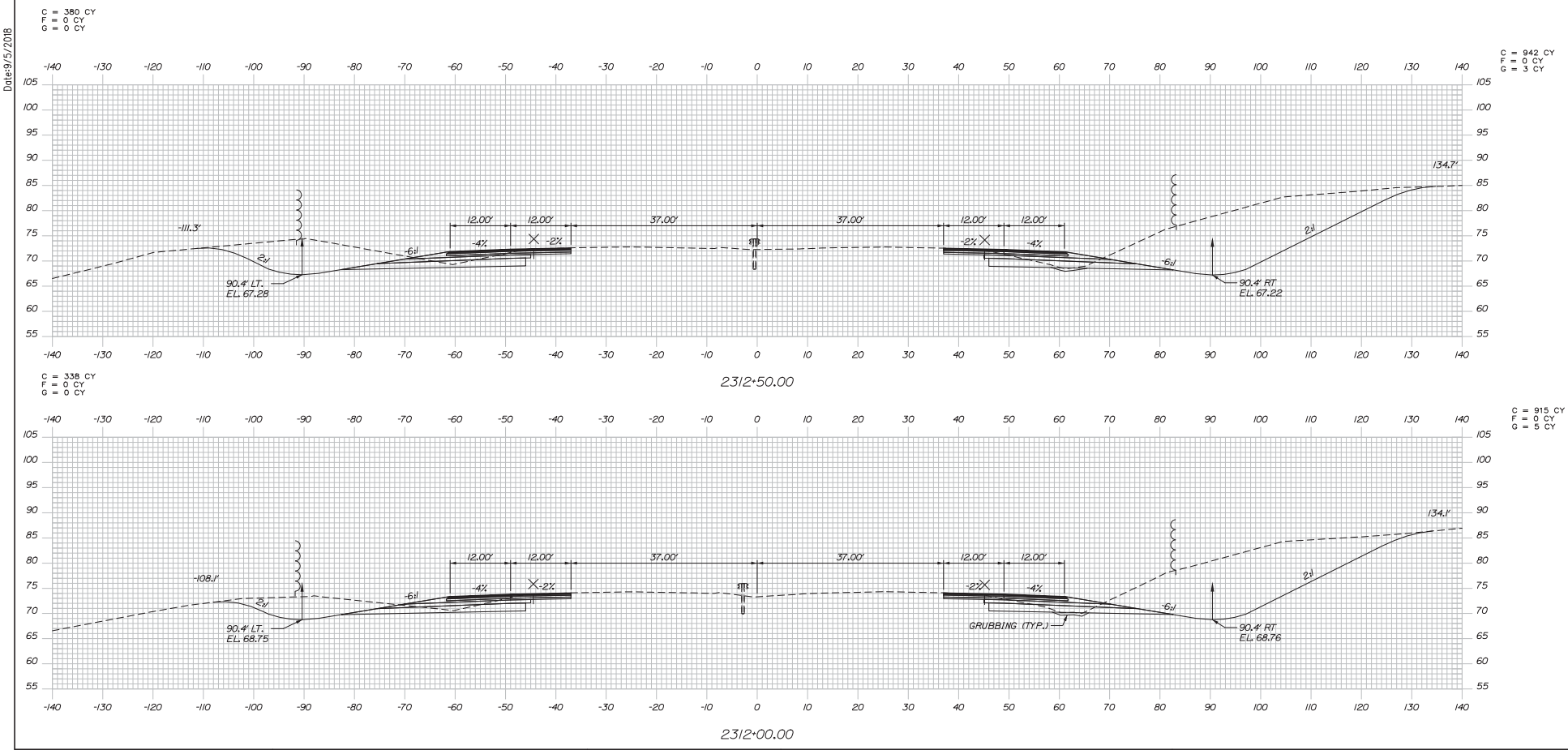
## STA. 2311+09 TO STA. 2311+50

SHEET NUMBER: XS-05

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

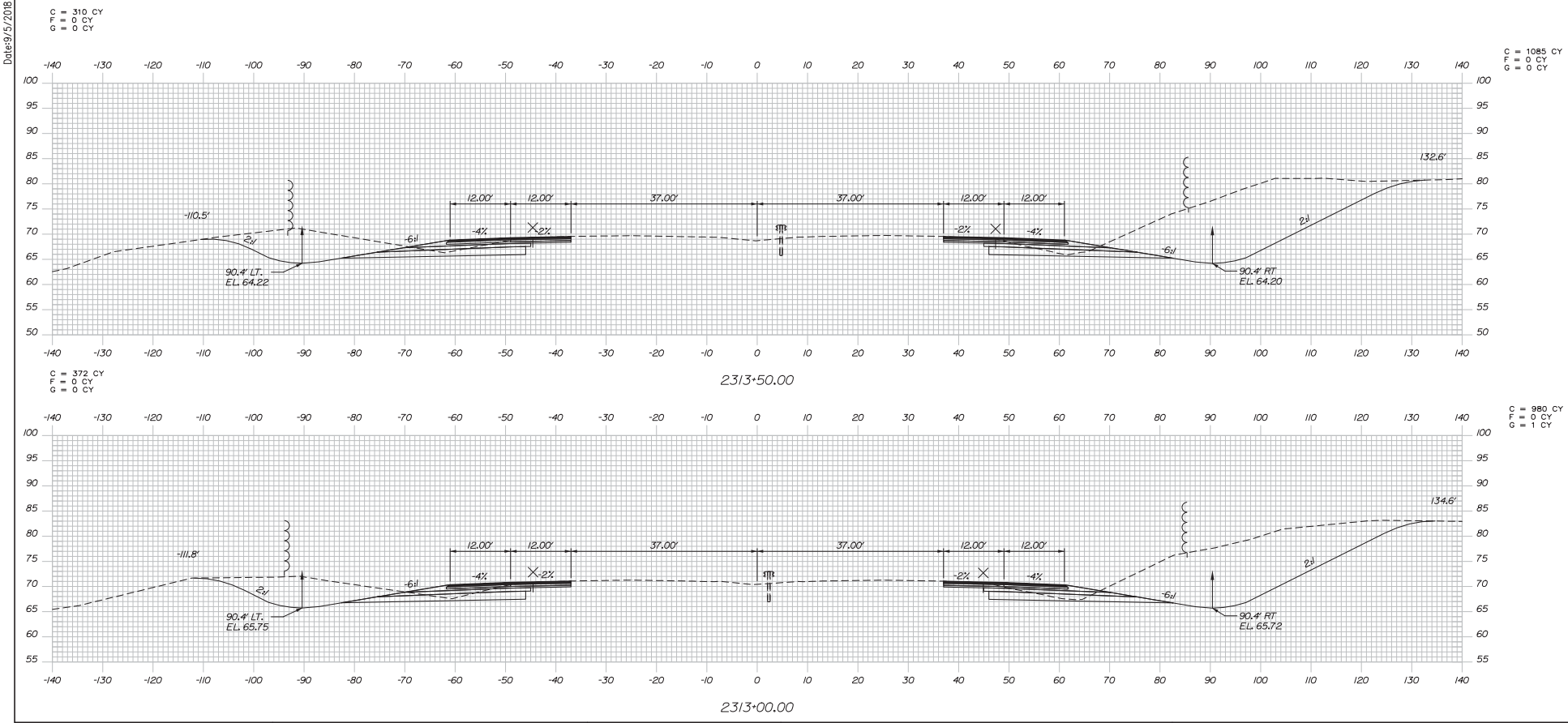
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2312+00 TO STA. 2312+50

SHEET NUMBER: XS-06

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
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THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

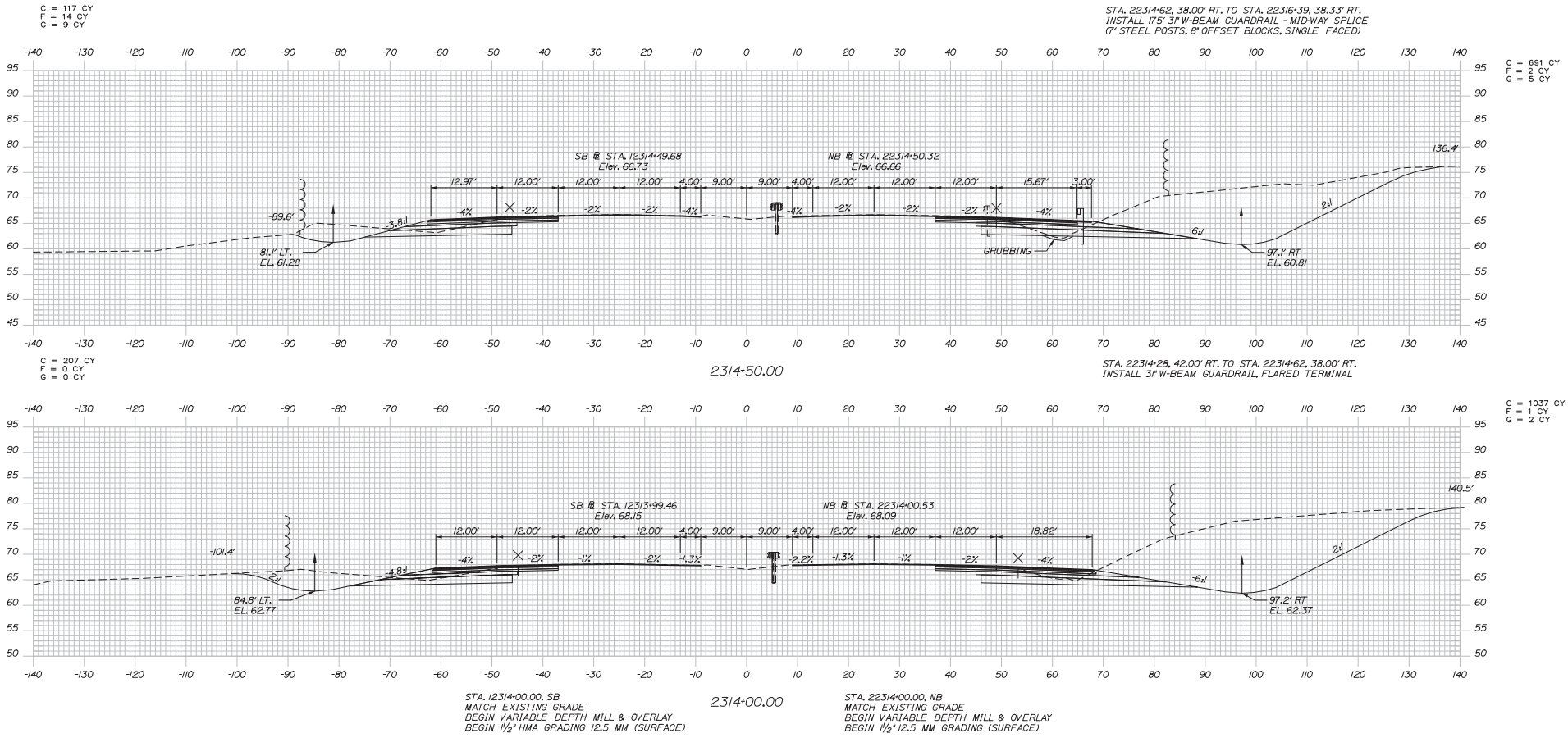
## STA. 2313+00 TO STA. 2313+50

SHEET NUMBER: XS-07

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
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MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2314+00 TO STA. 2314+50

SHEET NUMBER: XS-08

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

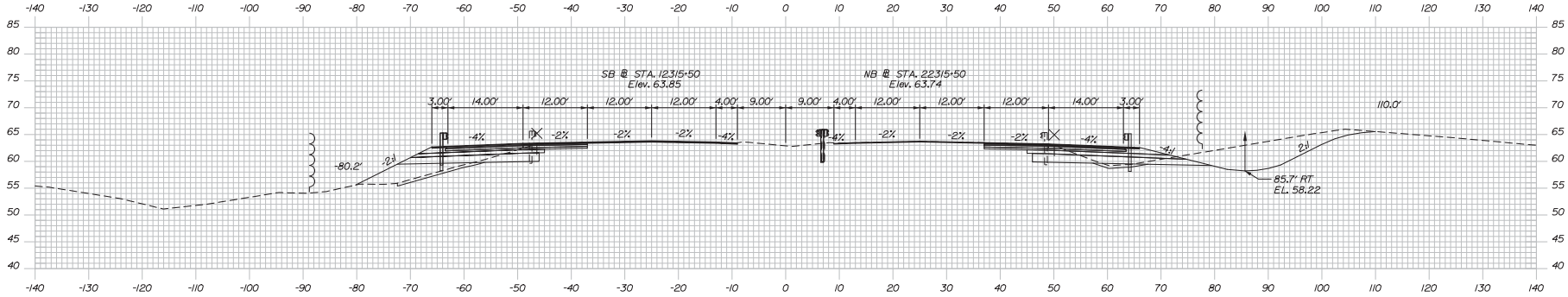
Date:9/5/2018

C = 55 CY
F = 74 CY
G = 14 CY

STA. 1231+75.00, SB
BEGIN 2½" HMA GRADING 19 MM (BASE)
CONTINUE VARIABLE DEPTH MILL & OVERLAY
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)
CONTINUE 1½" HMA GRADING 12.5 MM (BINDER)

STA. 2231+75.00, NB
BEGIN 1½" HMA GRADING 12.5 MM (BINDER)
CONTINUE VARIABLE DEPTH MILL & OVERLAY
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)

C = 181 CY
F = 13 CY
G = 11 CY

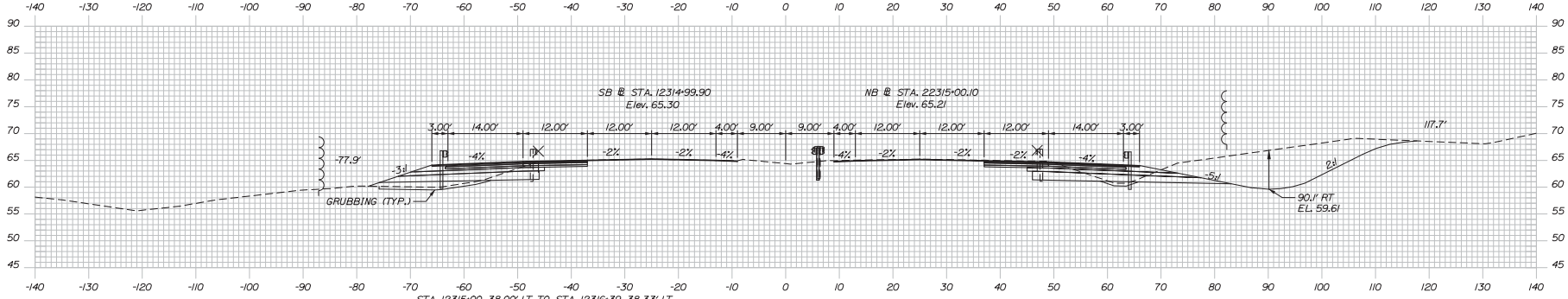



C = 54 CY
F = 50 CY
G = 17 CY

STA. 1231+25.00, SB
BEGIN 1½" HMA GRADING 12.5 MM (BINDER)
CONTINUE VARIABLE DEPTH MILL & OVERLAY
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)

2315+50.00

C = 383 CY
F = 2 CY
G = 7 CY




STA. 1231+91, 38.00' LT. TO STA. 1231+00, 38.00' LT.
INSTALL TERMINAL END - ANCHORED END, 31" W-BEAM GUARDAIL

STA. 1231+00, 38.00' LT. TO STA. 1231+39, 38.33' LT.
INSTALL 137.5' 31" W-BEAM GUARDRAIL - MID-WAY SPLICE
(STEEL POSTS, 8' OFFSET BLOCKS, SINGLE FACED)

2315+00.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

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|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy Cote, PE

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2315+00 TO STA. 2315+50

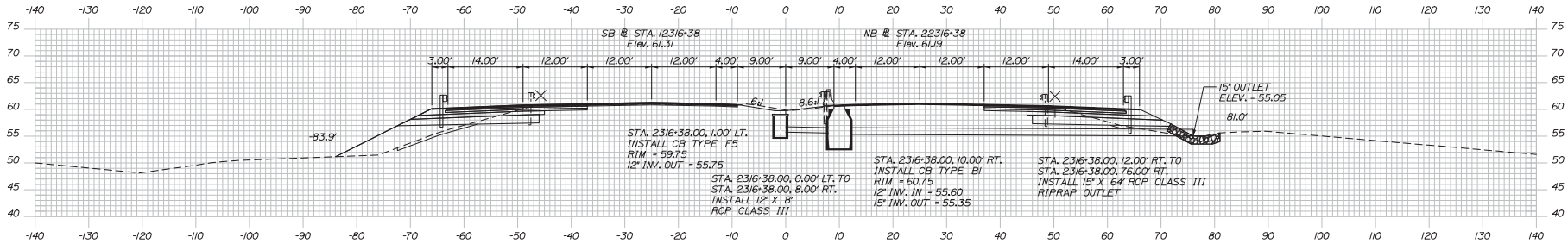
SHEET NUMBER: XS-09

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

Date:9/5/2018




C = 158 CY
F = 107 CY
G = 15 CY

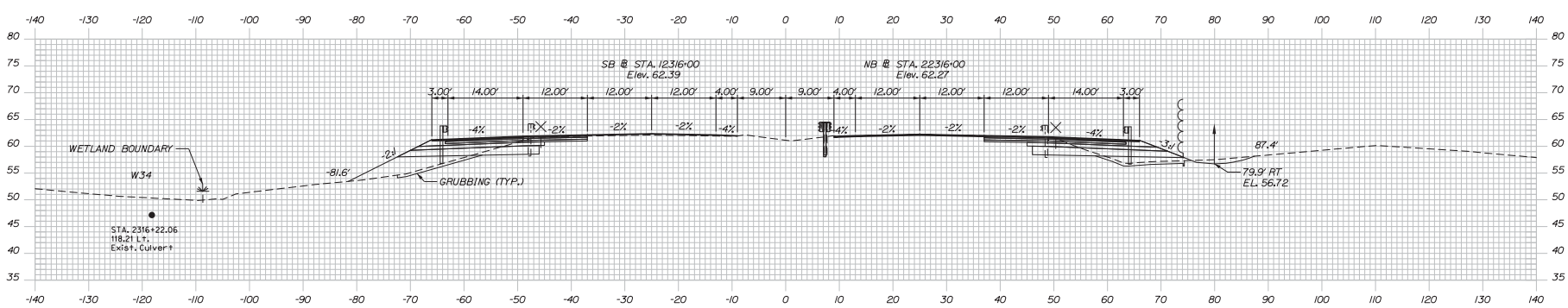
STA. 12316+39, 38.33' LT. TO STA. 12316+59, 38.33' LT.
INSTALL BRIDGE TRANSITION - TYPE III

2316+38.00

STA. 2315+58, 2.56' RT. TO STA. 2316+99, 10.00' RT.
INSTALL 140' TEMPORARY CONCRETE BARRIER TO
REMAIN AFTER CONTRACT

STA. 22316+39, 38.33' RT. TO STA. 22316+59, 38.33' RT.
INSTALL BRIDGE TRANSITION - TYPE III

C = 181 CY
F = 32 CY
G = 14 CY




2316+00.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
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CONSULTANT PROJECT MANAGER: Timothy Cote, PE

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# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

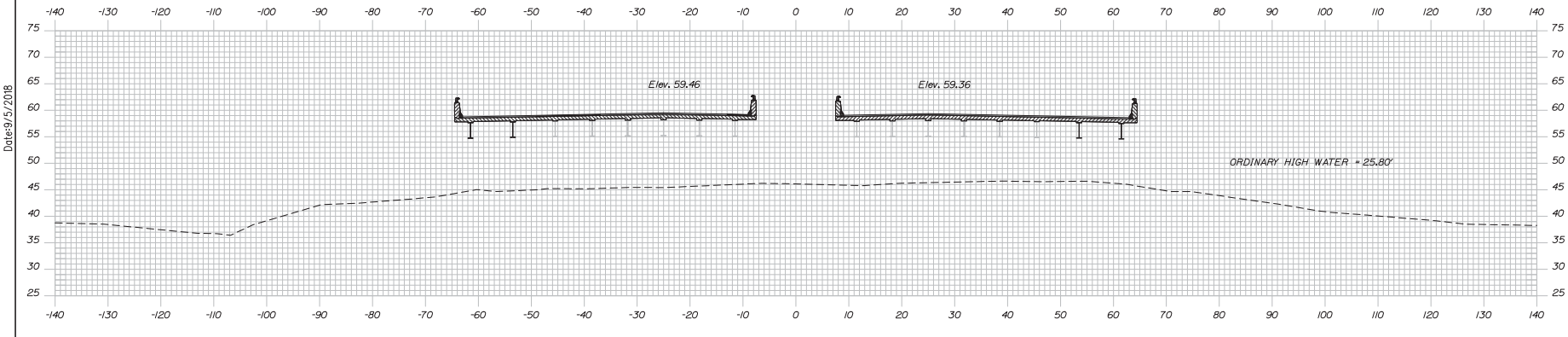
## STA. 2316+00 TO STA. 2316+38

SHEET NUMBER: XS-10

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018



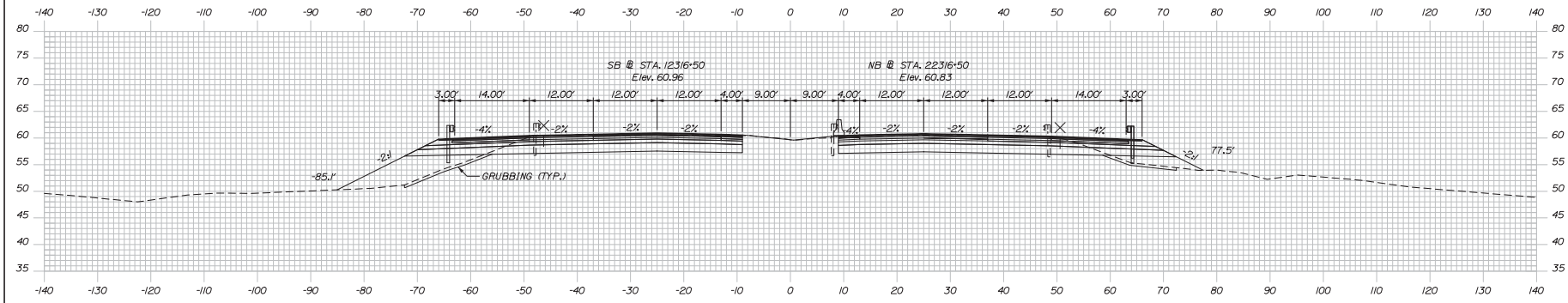

2317+00.00

STA. 12316+74.00, SB
END FULL DEPTH CONSTRUCTION
END 2¼" HMA GRADING 19 MM (BASE)
END 2¼" HMA GRADING 19 MM (BASE)
END 2½" HMA GRADING 19 MM (BASE)
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)
CONTINUE 1½" HMA GRADING 12.5 MM (BINDER)

STA. 22316+74.00, NB
END FULL DEPTH CONSTRUCTION
END 2½" HMA GRADING 19 MM (BASE)
END 2¼" HMA GRADING 19 MM (BASE)
END 2½" HMA GRADING 19 MM (BASE)
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)
CONTINUE 1½" HMA GRADING 12.5 MM (BINDER)

C = 125 CY
F = 67 CY
G = 4 CY

C = 134 CY
F = 19 CY
G = 3 CY




2316+50.00

STA. 12316+50.00, SB
END VARIABLE DEPTH MILL & OVERLAY
BEGIN FULL DEPTH CONSTRUCTION
BEGIN 2¼" HMA GRADING 19 MM (BASE)
BEGIN 2¼" HMA GRADING 19 MM (BASE)
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)
CONTINUE 1½" HMA GRADING 12.5 MM (BINDER)
CONTINUE 2½" HMA GRADING 19 MM (BASE)

STA. 22316+50.00, NB
END VARIABLE DEPTH MILL & OVERLAY
BEGIN FULL DEPTH CONSTRUCTION
BEGIN 2½" HMA GRADING 19 MM (BASE)
BEGIN 2¼" HMA GRADING 19 MM (BASE)
BEGIN 2¼" HMA GRADING 19 MM (BASE)
CONTINUE 1½" HMA GRADING 12.5 MM (SURFACE)
CONTINUE 1½" HMA GRADING 12.5 MM (BINDER)

Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

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# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

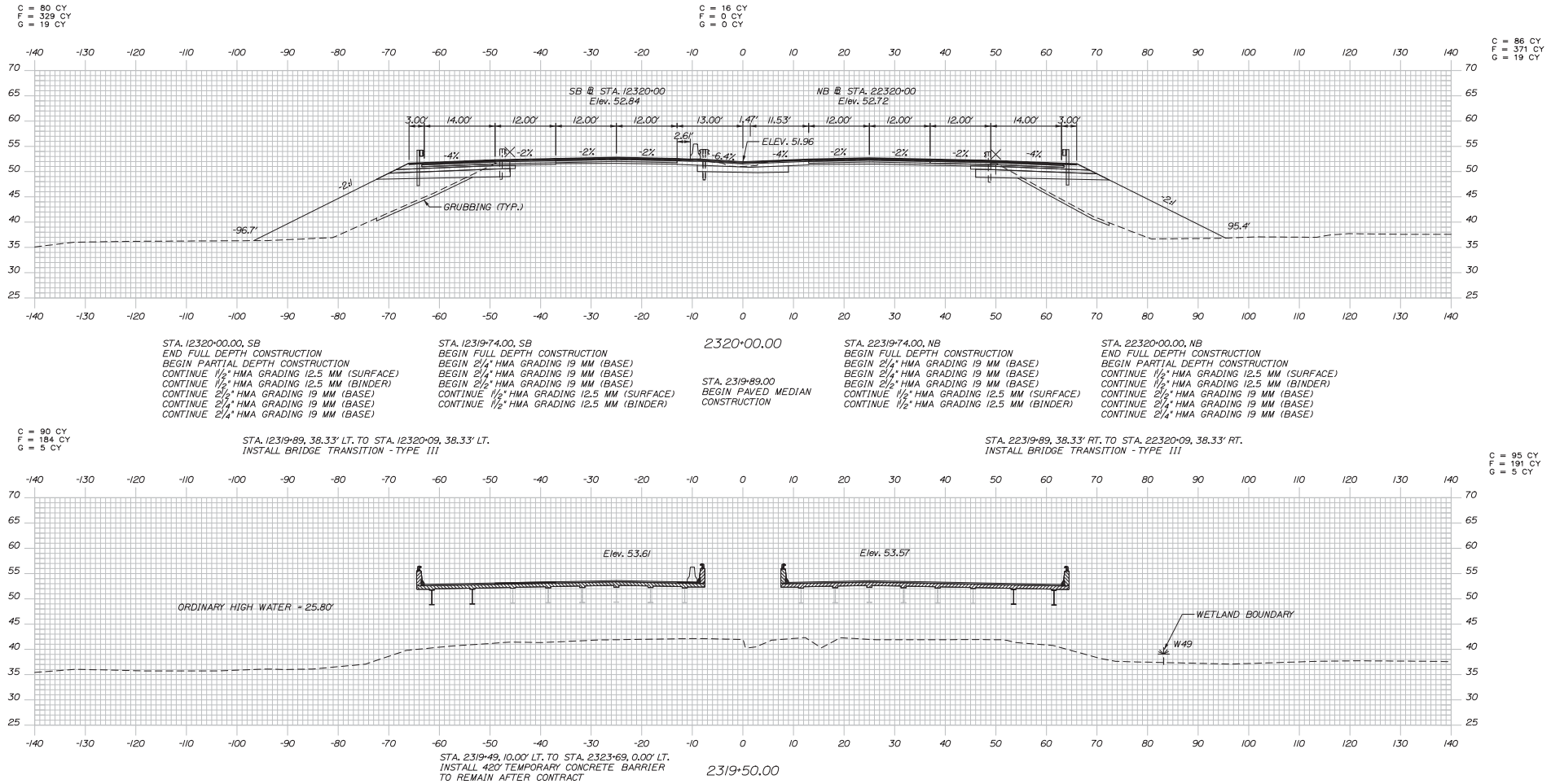
## STA. 2316+50 TO STA. 2317+00

SHEET NUMBER: XS-11

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

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# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

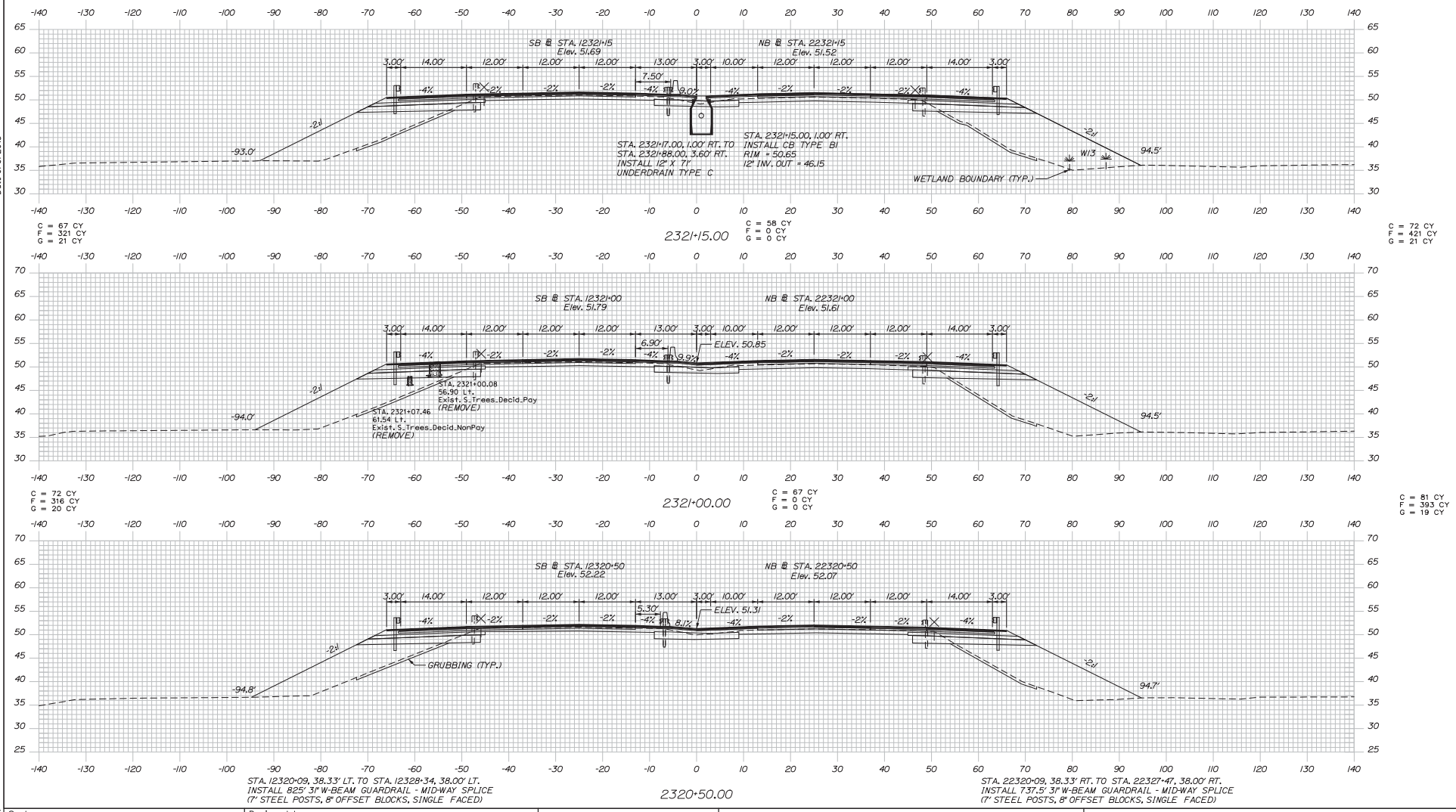
## STA. 2319+50 TO STA. 2320+00

SHEET NUMBER: XS-12

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

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Scale: 10 0 10 20
Scale of Feet

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# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

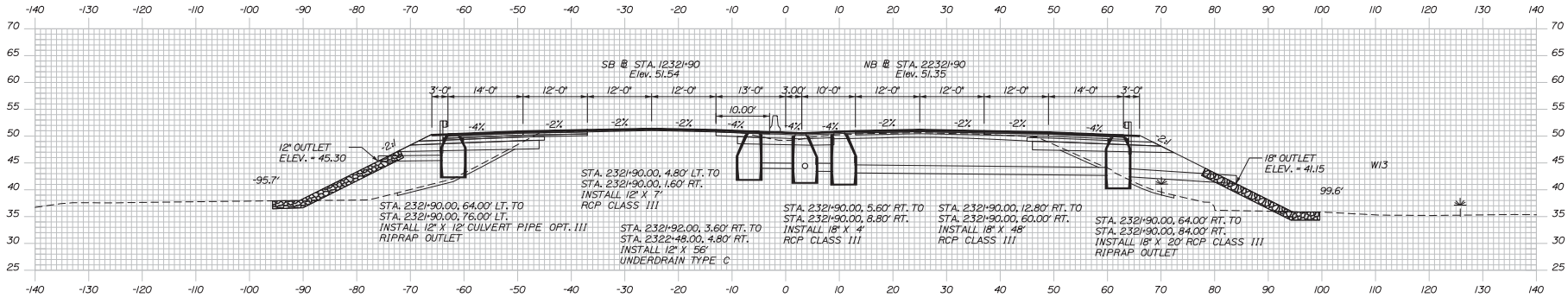
## STA. 2320+50 TO STA. 2321+15

SHEET NUMBER: XS-13

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




2321+90.00

STA. 2321+90.00, 62.00' LT.
INSTALL CB TYPE BI
RIM = 50.40
12" INV. OUT = 45.45

STA 2321+90.00, 6.80' LT.
INSTALL CB TYPE B5
RIM = 50.80
12" INV. OUT = 44.00

STA. 2321+90.00, 3.60' RT.
INSTALL CB TYPE B5
RIM = 50.50
12" INV. IN = 43.95
12" INV. IN = 43.95
12" INV. IN = 43.95
18" INV. OUT = 43.45

STA 2321+90.00, 10.80' RT.
INSTALL CB TYPE B5
RIM = 50.85
18" INV. IN = 43.40
18" INV. OUT = 43.16

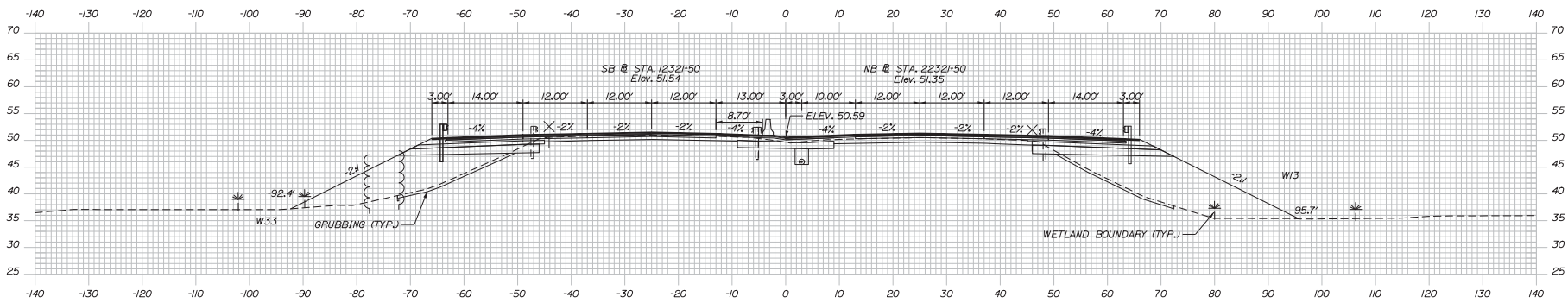
STA. 2321+90.00, 62.00' RT.
INSTALL CB TYPE BI
RIM = 50.20
18" INV. IN = 42.90
18" INV. OUT = 42.65

STA. 1232+75.00, SB
END PARTIAL DEPTH CONSTRUCTION
END 2 1/4" HMA GRADING 19 MM (BASE)
END 2 1/4" HMA GRADING 19 MM (BASE)
BEGIN VARIABLE DEPTH MILL & OVERLAY
CONTINUE 1 1/2" HMA GRADING 12.5 MM (SURFACE)
CONTINUE 1 1/2" HMA GRADING 12.5 MM (BINDER)
CONTINUE 2 1/2" HMA GRADING 19 MM (BASE)

C = 48 CY
F = 309 CY
G = 21 CY

C = 59 CY
F = 0 CY
G = 0 CY

C = 66 CY
F = 396 CY
G = 21 CY




2321+50.00

Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

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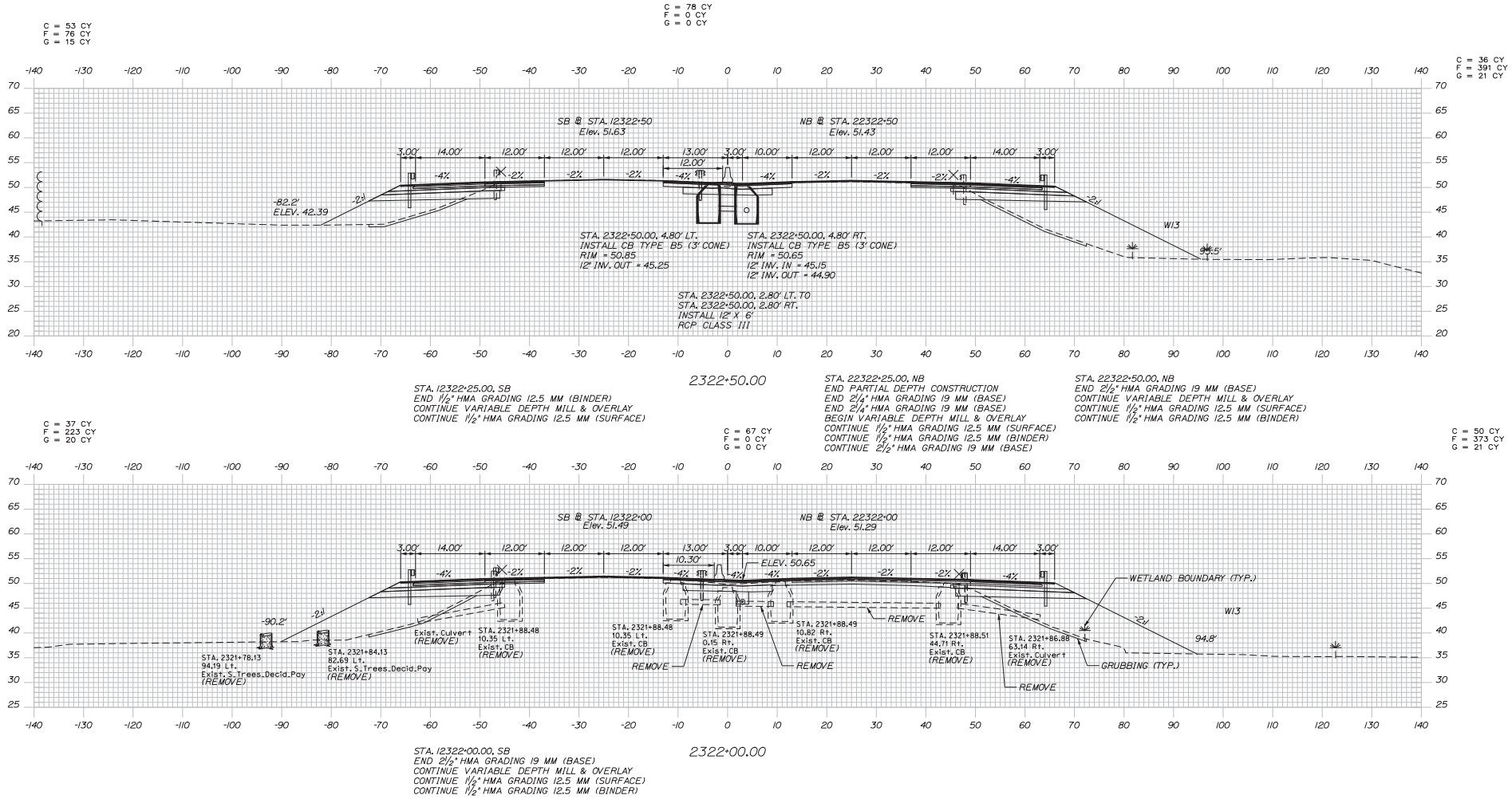
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2321+50 TO STA. 2321+90

SHEET NUMBER: XS-14

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

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# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

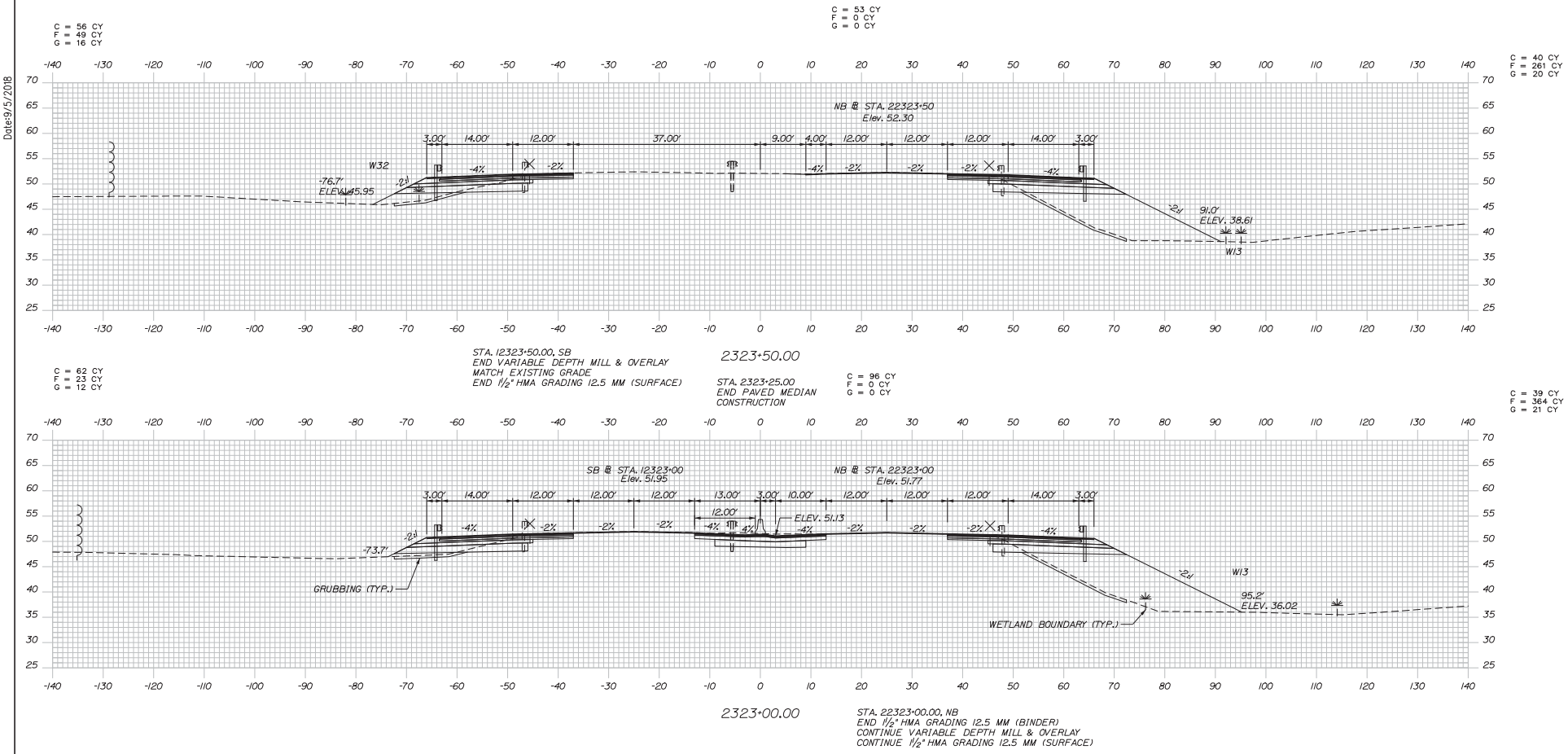
## STA. 2322+00 TO STA. 2322+50

SHEET NUMBER: XS-15

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

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Scale of Feet

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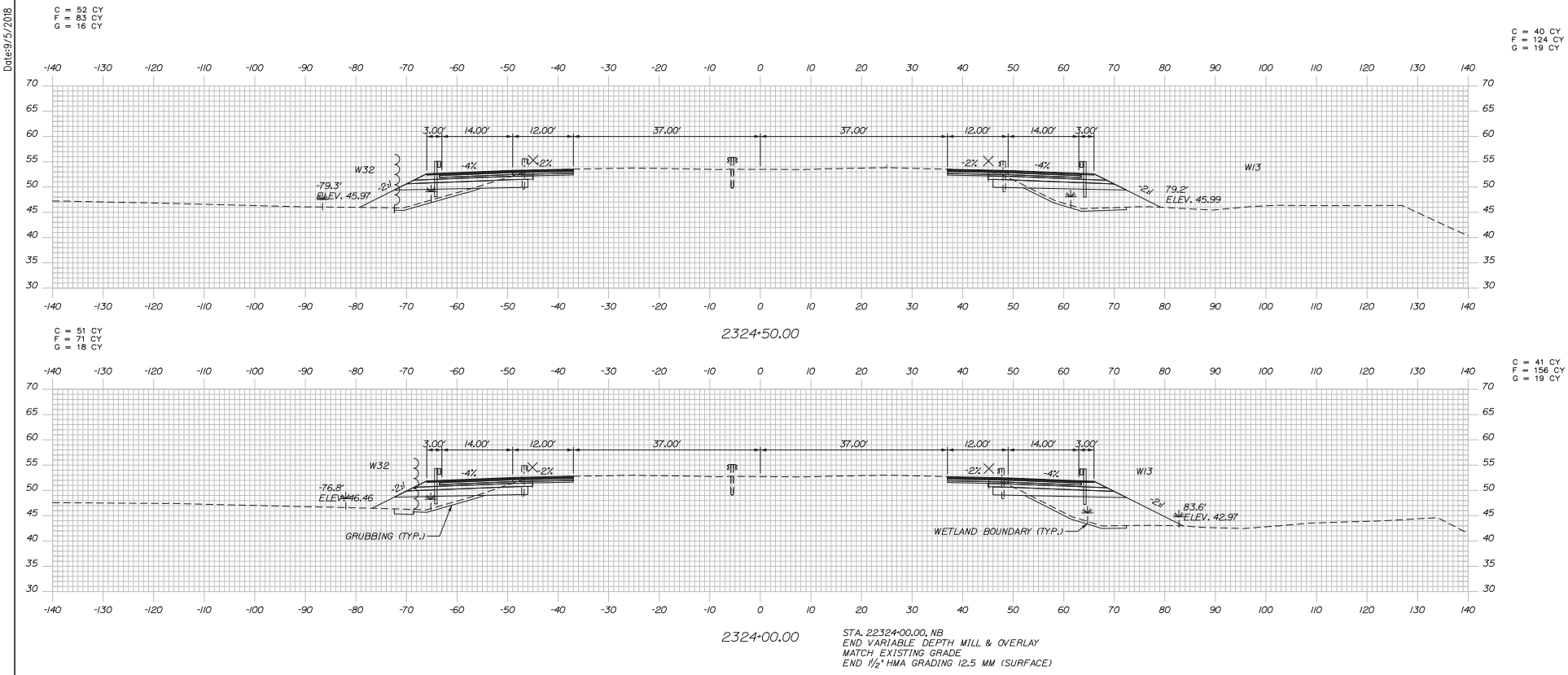
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2323+00 TO STA. 2323+50

SHEET NUMBER: XS-16

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20 Scale of Feet

| No. | Revision | By | Date |
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

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MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2324+00 TO STA. 2324+50

SHEET NUMBER: XS-17

CONTRACT:2019.16

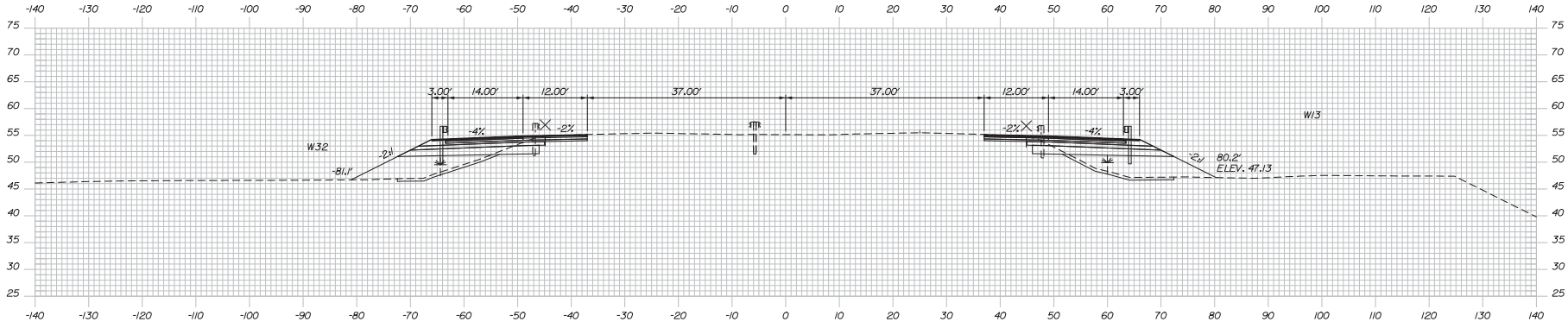
$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

Date:9/5/2018

C = 45 CY
F = 130 CY
G = 18 CY

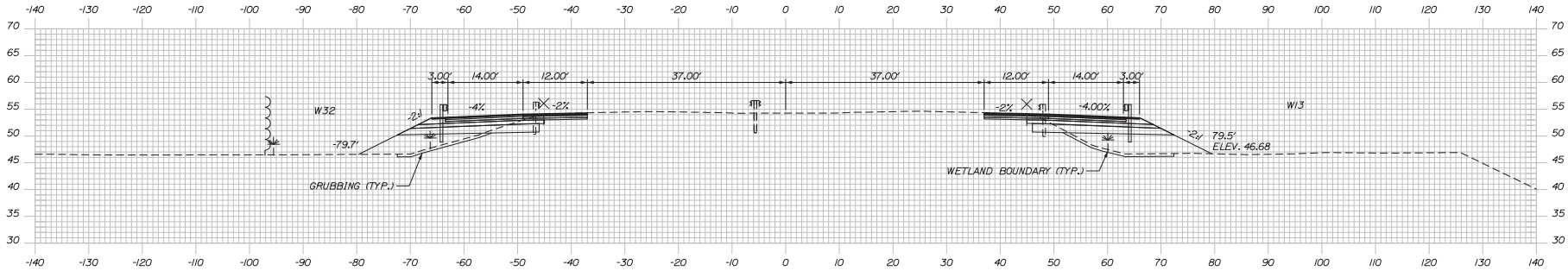
C = 38 CY
F = 144 CY
G = 20 CY




2325+50.00

C = 49 CY
F = 103 CY
G = 17 CY

C = 39 CY
F = 132 CY
G = 20 CY




2325+00.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
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FAX (207) 228-0909


MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

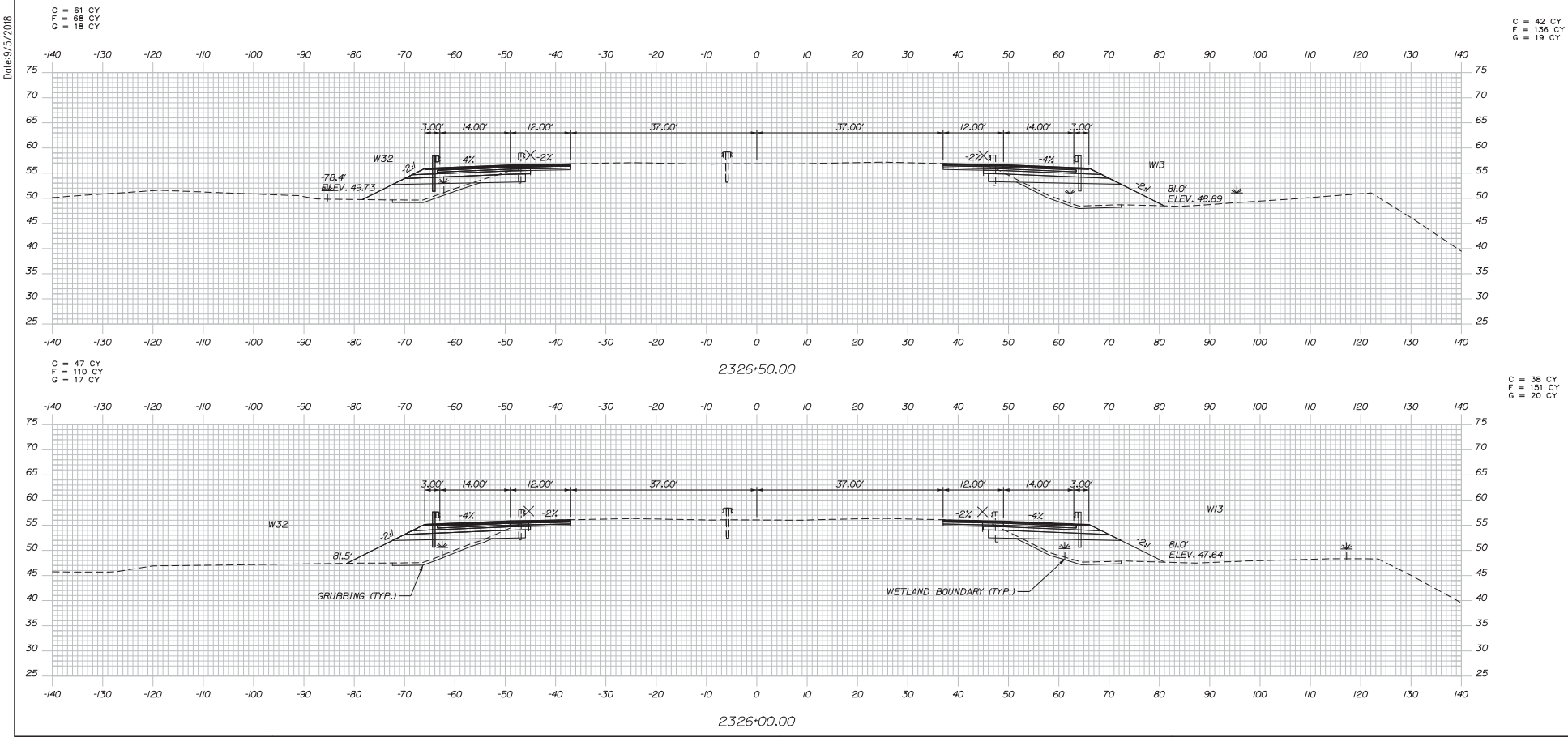
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2325+00 TO STA. 2325+50

SHEET NUMBER: XS-18

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2326+00 TO STA. 2326+50

SHEET NUMBER: XS-19

CONTRACT:2019.16

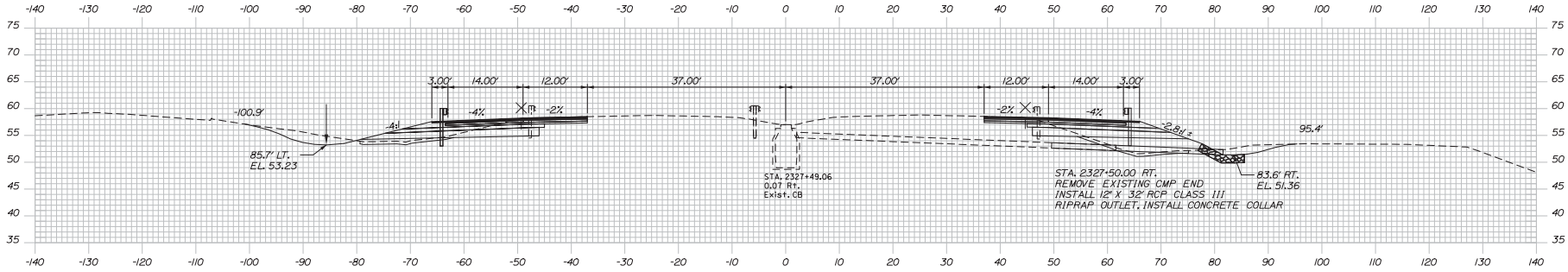
$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

Date:9/5/2018

C = 204 CY
F = 9 CY
G = 13 CY

C = 59 CY
F = 101 CY
G = 18 CY




C = 99 CY
F = 33 CY
G = 17 CY

2327+50.00

STA. 22327+47, 38.00' RT. TO STA. 22327+56, 38.00' RT.
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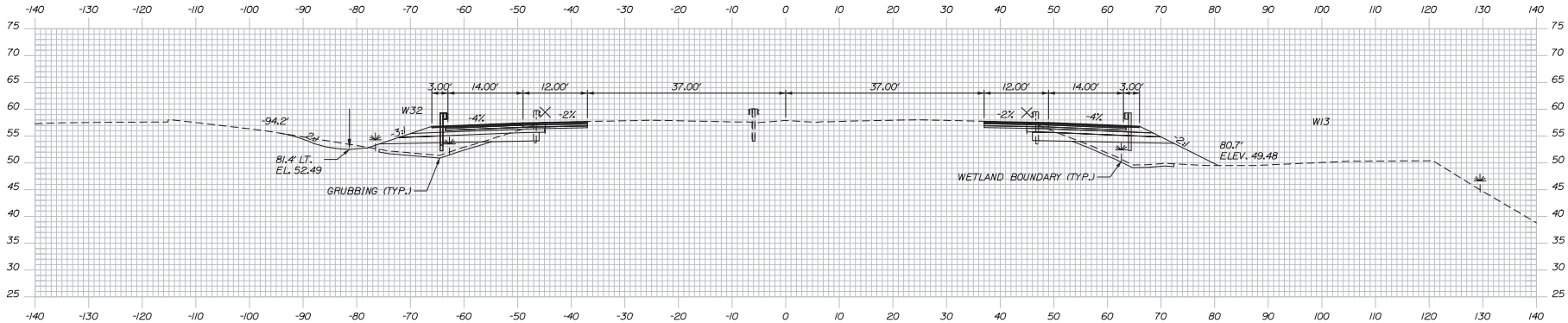
F = 136 CY
G = 19 CY




2327+00.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2327+00 TO STA. 2327+50

SHEET NUMBER: XS-20

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

Date:9/5/2018

C = 630 CY
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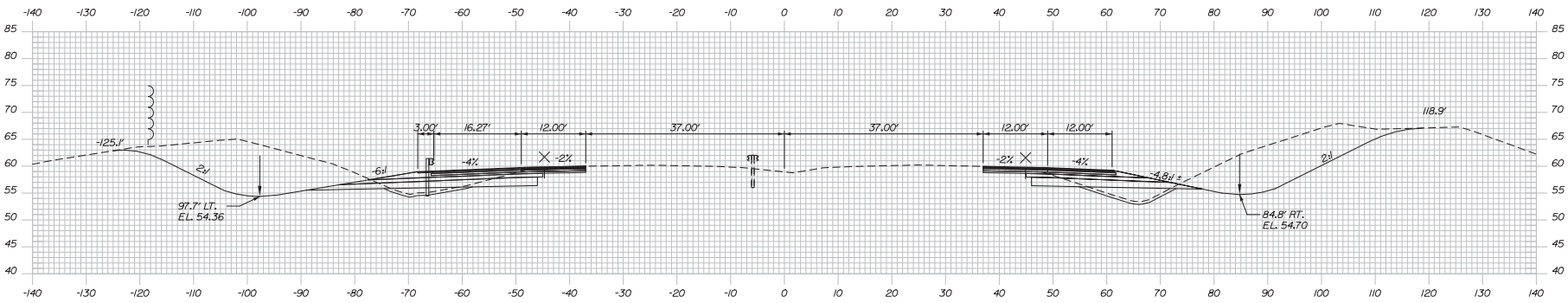
G = 14 CY

C = 338 CY
F = 45 CY
G = 17 CY




2328+50.00

C = 420 CY
F = 12 CY
G = 13 CY

STA. 12328+34, 38.00' LT. TO STA. 12328+69, 42.00' LT.
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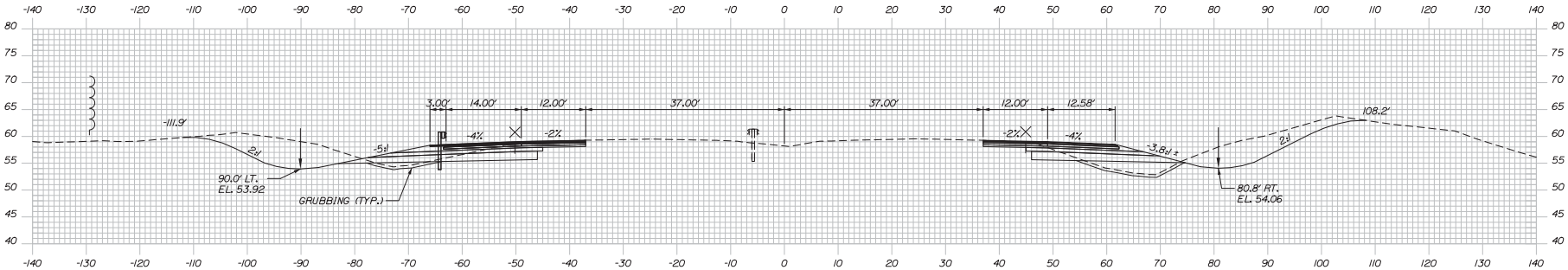
C = 145 CY
F = 64 CY
G = 19 CY




2328+00.00

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2328+00 TO STA. 2328+50

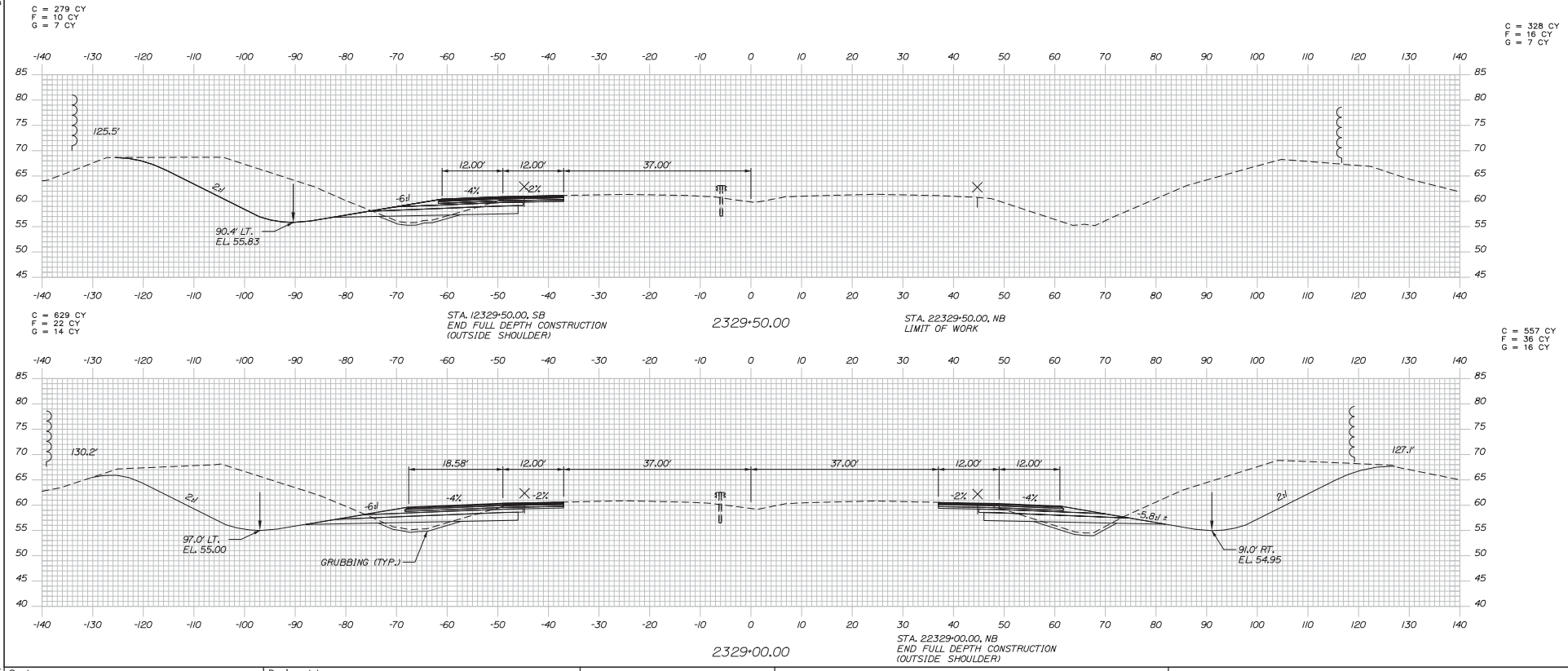
SHEET NUMBER: XS-21

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018

Date:9/5/2018




Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

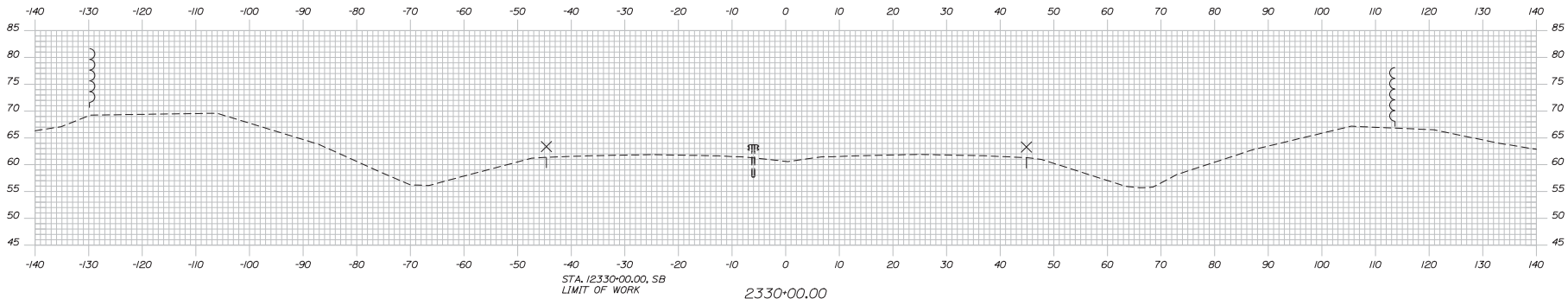
## STA. 2329+00 TO STA. 2329+50

SHEET NUMBER: XS-22

CONTRACT:2019.16

$PSETNO$ OF 121

98% SUBMISSION
August 31, 2018




Date:9/5/2018

Filename: Wetland XSect.dgn

Scale: 10 0 10 20
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## STA. 2330+00

SHEET NUMBER: XS-23

CONTRACT:2019.16

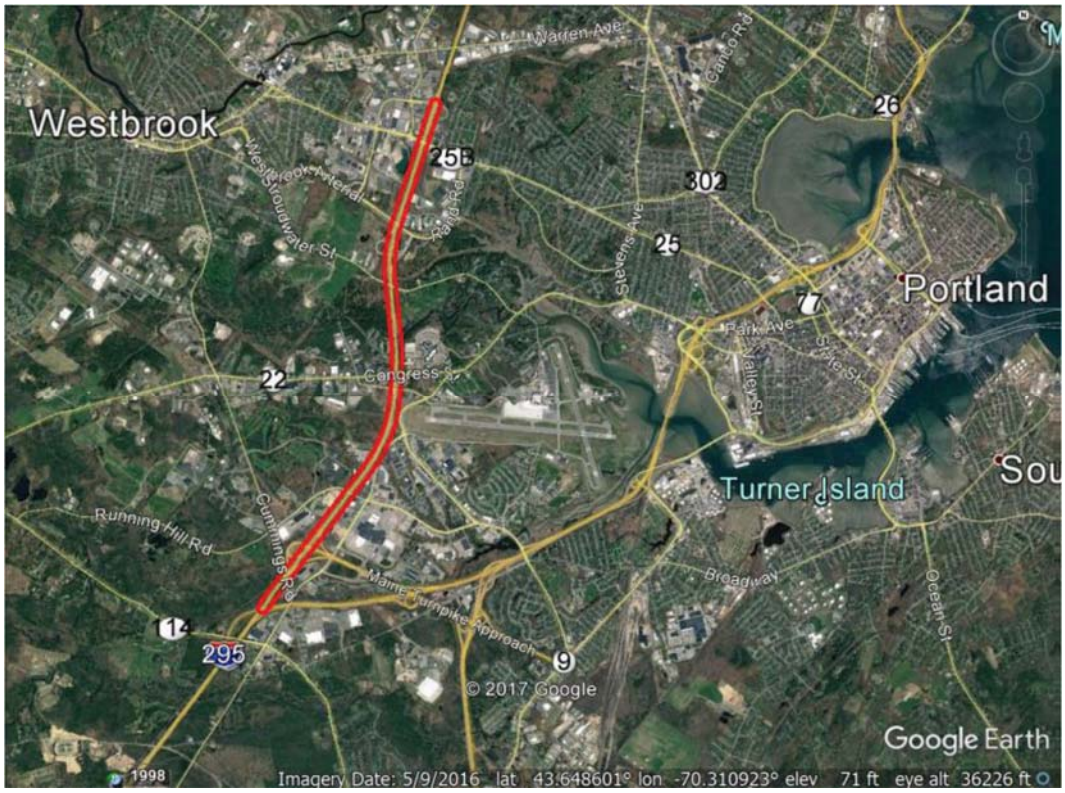
$PSETNO$ OF 121

# APPENDIX I

# WETLAND DELINEATION REPORT

# Wetland and Waterbody Resource Delineation and Vernal Pool Survey Report

## Turnpike Widening Project – Exits 44 to 48
## Portland, Scarborough and South Portland, Maine




DRAFT – August 28, 2017


Prepared by: NewEarth Ecological Consulting
169 Watson Mill Road
Saco, ME 04072


NewEarth
ECOLOGICAL CONSULTING, LLC

For: HNTB Corporation
340 County Road, Suite 6C
Westbrook, Maine 04092

# TABLE OF CONTENTS

**SECTION** **PAGE**

## LIST OF APPENDICES

**APPENDIX**



## LIST OF TABLES

**TABLE** **PAGE**

# 1.0 INTRODUCTION

The Maine Turnpike Authority (MTA) is proposing a Turnpike Widening Project (Project), which will involve expanding the breakdown lanes located along the north and southbound lanes of the Maine Turnpike - Interstate 95 (I-95) in Portland, Scarborough and South Portland, Cumberland County, Maine and crosses over as shown in (Appendix A, Figure 1).

NewEarth Ecological Consulting, LLC (NewEarth) was contracted by Project Engineer, HNTB Corporation (HNTB) to conduct surveys for potential vernal pool habitat and to perform a field delineation and functional assessment of wetlands and waterbodies between Exits 44 and 48 of the Project site. Surveys were performed within areas that generally included an approximately four mile-long and up to 200-foot-wide survey area, generally within MTAs mowed/maintained right-of way (ROW) easement on each side of I-95 (Appendix A, Figure 1). The purpose of the investigation was to determine the presence and extent of wetland, waterbody and ephemeral pool features within the Project area that meet the criteria for federal or state regulation under Section 404 of the Clean Water Act (CWA) and/or Maine's Natural Resource Protection Act (NRPA), and to conduct a wetland functional assessment of identified wetlands. Results will be used to facilitate environmental permitting and construction planning and design efforts.

# 2.0 METHODS

## 2.1 BACKGROUND INFORMATION

Prior to conducting fieldwork a desktop review of existing site information was conducted to aid in the identification of potential protected resources in the Project area, including:

- Google Earth™ high resolution satellite imagery (Google Earth 2016);
- Maine Department of Agriculture, Conservation and Forestry (MDACF) online floodplain maps (MDACF 2016);
- Maine Department of Environmental Protection (MDEP) regulations and digital data (MDEP 2016a, 2016b, 2017a, 2017b);
- Maine Natural Areas Program (MNHP), Beginning with Habitat program (BwH 2017);
- Maine Office of Geographic Information Systems (MEGIS) online data (MEGIS 2011);
- United States Department of Agriculture (USDA)/Natural Resources Conservation Service (NRCS), online soil survey database for Cumberland County, Maine (USDA/NRCS 2013a);
- U.S. Geological Survey (USGS) Topographic Quadrangle Map for Portland West, Maine, (USGS 2014); and,
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps (USFWS 2017).

## 2.2 ON-SITE FIELD DETERMINATION

### 2.2.1 Wetland Delineation

Wetlands were delineated pursuant to the currently accepted federal methodology provided in the US Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE 2012). This method involved collection and review of background information, followed by an on-site survey and delineation.

A certified professional wetland scientist (PWS) from NewEarth performed systematic field surveys within the Project area survey limits between May 27, 2017 and June 3, 2017 (Appendix A, Figure 1). The wetland delineation was initiated with a walkover inspection of the area to identify topographic, drainage, and vegetation features that would indicate potential wetland and/or waterbody features. Sampling locations were then identified within potential wetland areas and investigated using the Routine On-Site Determination Method and Regional Supplement (Environmental Laboratory 1987, USACE 2012). At each sampling location, Wetland Determination Data Forms were completed to evaluate and document vegetation, soils, hydrology, and general site characteristics (completed forms are provided in Appendix B).

Boundaries of all evaluated areas that exhibited the required parameters for potential designation as a jurisdictional wetland feature (i.e., hydrophytic vegetation, hydric soils, and hydrology) were demarcated with pink vinyl flagging. Each was assigned a wetland cover type classification based on the USFWS classification system for wetlands and deepwater habitats of the United States (Cowardin et al. 1979), and representative photographs of the feature were collected. Wetlands were also evaluated to determine if the features met criteria for designation as MDEP Wetlands of Special Significance (WOSS) and Significant Wildlife Habitat (SWH) under Maine's NRPA (MDEP 2014).

### 2.2.2 Waterbody Identification

Prior to field surveys, USGS topographic quadrangle maps were reviewed to identify waterbodies and topography conducive to transfer of hydrologic flow near the site. This was followed by a site visit, conducted concurrent to the wetland delineation effort, to identify topographic, drainage, and vegetation features that would indicate potential waterbody features. Any waterbodies encountered on the site were demarcated with blue vinyl flagging and evaluated to characterize each feature. Photographs were collected, and all data was recorded on a Waterbody Assessment Form (completed forms are provided in Appendix B).

Waterbodies include both permanent deepwater features such as lakes and ponds as well as linear features such as creeks, rivers and streams. Each linear waterbody was classified as one of the following based on its origin and hydrologic regime as follows:

**Ephemeral Stream** – is a feature that carries only storm water in direct response to precipitation with water flowing only during and shortly after large precipitation events.

An ephemeral stream has a somewhat-defined channel, the aquatic bed is always above the water table, and storm water runoff is the primary source of water.

**Intermittent Stream** – has a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table. The flow may be heavily supplemented by storm water runoff.

**Perennial Stream** – has a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year. Groundwater is the primary source of water for a perennial stream, but it also carries storm water runoff.

**Ditches –** are man-made waterbodies or features constructed and often maintained solely for the purpose of draining storm water. Ditches may meet any of the above definitions of a river, steam, or brook, but are not regulated under NRPA and generally are not regulated under USACE Section 404. However, each agency reserves the right to determine if permits are necessary for maintaining non-tidal drainage ditches.

Each linear waterbody was also evaluated to determine if it met the definition of a stream per Maine Statute §480-B, Article 5-A of the NRPA and the Clean Water Act; which means, the feature must be a natural channel between defined banks, be created by the action of surface water, and must have two or more of the following characteristics:

A. Feature is depicted as a solid or broken blue line on the most recent edition of the USGS 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map.

B. Feature contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years.

C. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water.

D. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed.

E. The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

## 2.3 WETLAND FUNCTIONAL ASSESSMENT

A wetland functional assessment was performed concurrent to the wetland delineation effort and in accordance with the *Wetlands Functions and Values: A Descriptive Approach* described in *The Highway Methodology Workbook Supplement* (USACE 2015). This descriptive approach to wetland evaluation uses a series of questions relating to the qualitative characteristics of a wetland to determine if a wetland effectively provides up to 13 key functions (8 each) and values

(5 each) as described below. Evaluators identify if a function or value is present and if present, determine if the characteristic serves as a principal component of the wetland ecosystem or special value to society. Completed functions and values data forms and a description of the Consideration and Qualifier codes used in this assessment are included in Appendix B.

**Functions** - are properties within the wetland ecosystem that are present in the absence of humans, and occur without regard to subjective human values. Functions are a result of the interactions between the living and nonliving components of a specific wetland. They are processes necessary for the self-maintenance of the wetland, including nutrient cycling and primary production. The wetland functions assessed included:

1) Groundwater Recharge/Discharge – The potential for a wetland to serve as a groundwater recharge and/or discharge area.
2) Flood-flow Alteration – The effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events.
3) Fish - The effectiveness of the wetland to provide fish habitat.
4) Sediment/Toxicant/Pathogen Retention – The ability of the wetland to reduce or prevent degradation of water quality by trapping sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.
5) Nutrient Removal/Retention/Transformation – The effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.
6) Production Export (Nutrients) – The effectiveness of the wetland to produce food or usable products for humans or other living organisms.
7) Sediment/Shoreline Stabilization – The effectiveness of a wetland to stabilize streambanks and shorelines against erosion.
8) Wildlife Habitat – The effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge.

**Values** - are perceived benefits (to humans) that derive from one or more wetland functions and/or the physical characteristics. The value of a wetland function is based on societal judgment of the worth, quality, or importance of the function. The primary wetland values assessed included:

1) Recreational (consumptive & non-consumptive) – The effectiveness of the wetland and associated watercourses to provide recreational opportunities.
2) Educational/Scientific Value – The effectiveness of the wetland as a site for an "outdoor classroom", or as a location for scientific study or research.
3) Uniqueness/Heritage – The effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location.
4) Visual Quality/Aesthetics – The overall visual and aesthetic quality of the wetland.
5) Rare, Threatened and Endangered Species – The effectiveness of the wetland to support threatened or endangered species.

## 2.4 VERNAL POOL SURVEY

Field surveys for vernal pools (VPs) were conducted by a Certified Wildlife Biologist from NewEarth on April 20th, 21st and 22nd, the second on May 3rd and 4th, 2017. The survey timing and approach were based on the Maine Association of Wetland Scientists' (MAWS) Vernal Pool Survey Protocol (April 2014) and per Maine state survey requirements (MDEP 2013). All low-lying water-filled areas were considered potential VP, and were evaluated to determine if they were being used by target VP indicator species and if the areas met the physical definition of VP habitat. Data for pools meeting the requirements for designation as VP habitat were recorded on MDIFW/MDEP approved Vernal Pool Data Collection Forms.

Potential VPs were evaluated based on the following physical and biological criteria:

### Physical Criteria

VPs include those areas that meet the physical definition of a vernal pool in accordance with Maine's NRPA Chapter 335 which states "*A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (Rana sylvatica), spotted salamander (Ambystoma maculatum), blue-spotted salamanders (Ambystoma laterale), and fairy shrimp (Eubranchipus sp.), as well as valuable habitat for other plants and wildlife including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.*"

Similar are Indicator Breeding Areas (IBAs), which includes features that provide habitat for target breeding amphibians and other target species, but that do not meet the NRPA physical definition of a vernal pool. They do however meet the USACE Programmatic General Permit definition of a vernal pool which states that vernal pools are: *"Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.*" The primary distinction between PVPs and IBAs are that IBAs may be of un-natural origin, may be in permanent bodies of water, and may have a permanent inlet so long as fish are not present.

### Biological Criteria

All VPs and IBAs were further evaluated and classified based on whether they met the criteria defined in NRPA, Chapter 335(9) for designation as a significant vernal pool (SVP) habitat. Pools must meet one of more of the following biological criteria for SVP designation:

A. Presence of fairy shrimp in any life stage.

B. 10 or more blue spotted salamander egg masses

C. 20 or more spotted salamander egg masses.

D. 40 or more wood frog egg masses.

E. Presence of a state-listed endangered or threatened species that commonly requires a vernal pool to complete a critical portion of its life-history, including: Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), or ringed boghaunter dragonfly (*Williamsonia lintneri*).

F. Presence of any of the following rare species: ribbon snake (*Thamnophis sauritus*), wood turtle (*Clemmys insculpta*), swamp darner dragonfly (*Epiaeschna heros*), or comet darner dragonfly (*Anax longipes*).

Pools that meet both the physical criterial for designation as a VP and the biological criteria for designation as a SVP are protected as SWH by law under Maine's NRPA (MDEP 1988). An activity in, on, or over the vernal pool itself and the area within a 250-foot radius of the spring or fall high water mark of the pool (which is considered critical terrestrial habitat), must avoid unreasonable impacts on the SVP habitat and obtain approval from the DEP, through a Permit by Rule or individual NRPA approval. Pools that meet the physical criteria for designation as an IBA fall under regulatory jurisdiction by the USACE regardless of whether they meet the biological criteria for designation as a SVP, so long as the pool is located within a wetland under USACE jurisdiction. The USACE criteria are similar to Chapter 335, except that non-natural (i.e., human created) pools can be regulated as a vernal pool, and their definition does not differentiate highly productive pools from those that are less productive (although the biological aspects of each is taken into consideration). Pools are evaluated on a case-by-case basis by the USACE, but can include avoidance and minimization requirements up to 750-feet from a vernal pool under a condition of the Maine General Permit (GP).

## 2.5 OTHER PROTECTED WETLAND AND AQUATIC RESOURCES

Wetland and aquatic resources such as designated shorebird nesting, feeding and staging areas and high to moderate value inland and tidal waterfowl and wading bird habitats, as well as significant vernal pools, are also considered SWH and are regulated under Maine's NRPA. The MDEP regulates activities in, on, over and adjacent to (adjacent typically meaning within 250 feet of) designated SWH which are often wetlands or are associated with wetlands (MDEP 2013, 2014a). Locations of Maine's designated SWH areas are available online (MDEP 2017a, 2017b).

Maine's NRPA also provides additional protections and mitigation/compensation requirements for wetlands which are defined as WOSS. These wetlands contain features that have special ecological value, and the preservation of the wetlands ensures the protection of the features and must meet at least one of the following criteria:

A. Are within 250 feet of a coastal wetland;

B. Contain one of the critically imperiled (S1) or imperiled (S2) wetland communities as identified by the Maine Department of Conservation Natural Areas Program;

C. Are within 250 feet of a great pond;

D. Contain or are a stream;

E. Contain at least 20,000 square feet of aquatic or emergent vegetation or open water;

F. Contain significant wildlife habitat, including significant vernal pools;

G. Contain peatland; and/or,

H. Are within a floodplain.

Natural resource agencies responsible for oversight of protected plant and animal resources were not contacted directly regarding possible presence of protected species in the Project area under this survey effort.

## 2.6 GPS AND GIS MAPPING

Wetland boundaries and waterbody features were demarcated using pink (wetland) or blue (water bodies) flagging by wetland scientists in the field. Depending on size, either the center point or boundary of VPs and IBAs were flagged with blue-white striped flagging. Submeteraccurate global positioning system (GPS) data was collected at each flag, using a Trimble®GeoExplorer 7000 series GPS, or equivalent. Reference points were also collected at fixed features such as utility and transportation poles and markers to facilitate geo-referencing with other survey data. A geo-referenced wetland and waterbody verification file suitable for overlay onto survey area maps and aerial photographs were created using ArcGIS Version 9.3.1 geographic information system (GIS) mapping software.

# 3.0 SUMMARY OF BACKGROUND INFORMATION

## 3.1 SITE DESCRIPTION

The Project site is located within the Presumpscot watershed (USGS Identification Number 01060001), and situated to the east and west along the toe of slope for the roadbed of the Maine Turnpike (i.e., I-95). The area included in this survey effort was located between Exits 44 and 48 (Appendix A, Figure 1). The site is bisected generally east-west by numerous utility corridors, a railroad as well as numerous primary and secondary roadways. Land uses include commercial and residential development, which abuts most of the east-west perimeter of the survey area except for several small open spaces associated with active farmlands. Remaining undeveloped areas within and surrounding the site are generally forested with a relatively dense undergrowth of shrubs (many of which are invasive species), except for roadside easement areas, that are mowed/maintained as low growing herbaceous ground cover.

Topography in and surrounding the Project site has only a slight elevational change generally from 40 feet to 100 feet, with most prominent elevational changes in the northernmost half of the surveyed area (Appendix A, Figure 1). Some notable elevational differences occur along the existing roadway/bridge embankments and roadside ditches, but elevational changes are typically less than 20-feet and not depicted on topographic maps. Hydrologic flow from the site generally drains from the west/northwest toward the east/southeast and eventually enters major waterbodies and ultimately dumping into Casco Bay. A system of roadside stormwater drainage ditches and culverts exist along the toe of slope for I-95 throughout most of the project site, and are periodically excavated at the toe of slope and mowed. Many are also lined with large rock stabilization material. Depending on the time since last mowed/maintained, some drainage areas can be dominated by dense wetland vegetation.

## 3.2 SOILS

Twenty-one (21) soil types are mapped within the Project survey area (Table 1). Of these, four are hydric soil types (USDA/NRCS 2013a), and include: Au Gres Loamy Sand (Au); Biddeford Mucky Peat (Bo); Scantic Silt Loam (Sn); and, Swanton Fine Sandy Loam (Sz) (Appendix A, Figures 2a, 2b and 2c). Hydric soil types are often an indicator of the presence of jurisdictional wetlands. Soil types BbB, BuB, HlB, HrB, PbC, and WmD, are designated as farmlands of statewide importance by the USDA, and soil EmB is designated as prime farmland.

**Table 1. Soil Units in the Maine Turnpike Exits 44-48 Project Area.**

| Symbol | Description | Farmland of Importance or Prime Farmland | Hydric Soil |
|---|---|---|---|
| Au | Au Gres loamy sand | | yes |
| BgB | Belgrade very fine sandy loam, 0 to 8 percent slopes | yes | |
| Bo | Biddeford mucky peat, 0 to 3 percent slopes | | yes |
| BuB | Lamoine silt loam, 3 to 8 percent slopes | yes | |
| BuC2 | Buxton silt loam, 8 to 15 percent slopes | | |
| Cu | Cut and fill land | | |
| EmB | Elmwood fine sandy loam, 0 to 8 percent slopes | yes | |
| HlB | Hinckley loamy sand, 3 to 8 percent slopes | yes | |
| HlC | Hinckley loamy sand, 8 to 15 percent slopes | | |
| HrB | Hollis fine sandy loam, 3 to 8 percent slopes | yes | |
| HrC | Hollis fine sandy loam, 8 to 15 percent slopes | | |
| HrD | Hollis fine sandy loam, 15 to 25 percent slopes | | |
| Md | Made land | | |
| PbC | Paxton fine sandy loam, 8 to 15 percent slopes | yes | |
| Qu | Quarry | | |
| Sn | Scantic silt loam, 0 to 3 percent slopes | | yes |
| SuC2 | Suffield silt loam, 8 to 15 percent slopes, eroded | | |
| SuD2 | Suffield silt loam, 15 to 25 percent slopes, eroded | | |
| Sz | Swanton fine sandy loam | | yes |
| WmB | Windsor loamy sand, 0 to 8 percent slopes | yes | |
| WmD | Windsor loamy sand, 15 to 35 percent slopes | | |

Source: USDA/NRCS 2013a

## 3.3 NWI MAPPED WETLANDS

According to USFWS NWI data (USFWS 2017), freshwater palustrine emergent (PEM) and palustrine forest/scrub-shrub (PFO/PSS) wetlands occur throughout the Project site and adjacent area (Appendix A, Figures 3a, 3b and 3c). Much of the NWI data has not been field verified, however, presence of NWI wetlands is often a good indicator that jurisdictional wetlands occur in the area.

## 3.4 USGS MAPPED WATERBODIES

Based on topographic quadrangle maps (USGS 2013), five steams or rivers occur within the Project area (Appendix A, Figure 1). Beginning from the south end of the Project site and heading north, mapped USGS waterbodies include: Red Brook, a first order tributary to the Nonesuch River; an unnamed second order tributary to Clark Pond/Long Creek; Long Creek, a first order tributary to Clark Pond/Long Creek; Stroudwater River, a first order tributary to Fore River; and, an unnamed second order tributary to Fore River.

## 3.5 OTHER PROTECTED WETLAND AND AQUATIC RESOURCES

According to the MNAP BwH program database and maps (BwH 2015a, 2015b), low value Inland Waterfowl and Wading Bird Habitat (IWWH) exists at several locations along I-95; four are within the Project area boundary (Appendix A, Figures 3a, 3b and 3c). Low value IWWH, are considered important habitats for various bird species, but are not regulated under Maine's NRPA (MDEP 1988). Based on the review of available data, no WOSS or SWH, including vernal pools, have been documented by regulatory agencies within or immediately adjacent to the Project site (MDEP 2017a, 2017b).

# 4.0 FIELD SURVEY RESULTS

## 4.1 WETLANDS

Fifty-six wetland complexes were delineated during this survey and are summarized in Table 2 (Appendix A, Figure 4). Nearly all of the identified wetlands are hydrologically-connected to one another via roadside stormwater drainages, but were identified as distinct complexes when separated by roadways or railroads. Twenty-two (39%) of wetlands were associated exclusively with stormwater drainage areas (Table 2). Six wetlands (11%) appeared to be isolated features with no obvious direct connection to other wetlands, waterbodies, or channelized drainages. Fifty (89%) of the complexes encountered extend beyond the survey limits (Table 2). In these cases, wetlands were classified based on the predominant classification within the survey area as defined by Classification of Wetlands and Deepwater Habitats (Cowardin, et al. 1979). Wetlands identified within the survey area fall primarily within two classification types (Table 2); 43 (77%) are palustrine (non-tidal) emergent (PEM), and 4 (7%) are palustrine forest (PFO). The remaining complexes 9 (16%) are combinations of PFO and PEM wetland types. Wetland data forms are provided in Appendix B.

**Table 2. Delineated Wetlands in the Maine Turnpike Exits 44-48 Project Area.**

| ID | Classification[1] | WOSS or SWH[2] | WOSS or SWH Criteria Met[3] | Exclusively Stormwater Drainage | Monoculture | Extends Off Row | General Description |
|---|---|---|---|---|---|---|---|
| W1 | PEM | no | | yes | no | no | Roadside drainage flow, follows rip-rap area to S1. |
| W2 | PEM | no | | no | no | yes | Series of low compacted areas. Stormwater input from development via culverts. |
| W3 | PEM | WOSS | 1 | no | yes | yes | Part ditch/part large cattail-dominated wetland. |
| W4 | PEM | no | | no | no | yes | Hydrologic output ties into W3. Some open water areas. Likely originally part of a large complex in this area. |
| W5 | PEM | no | | yes | no | no | Isolated, except during excess flow - then drains into W3. |
| W6 | PEM | no | | no | no | yes | Is >20,000 sq ft., but includes man-made ditch areas. Likely originally part of a large complex in this area. |
| W7 | PEM | WOSS | 1 | no | no | yes | Numerous culverts provide stormwater input. Several low-compacted areas and ditch lines. Dense common reed in some areas. |
| W8 | PFO and PEM | WOSS | 2, 3 | no | no | yes | Large areas of dense common reed and/or cattails, includes PFO floodplain wetland along Stream S2, connects to large cattail/common reed/scrub-shrub marsh. |
| W9 | PEM | no | | yes | no | yes | Some areas of dense common reed and/or cattails, Likely once part of a large wetland, now wetland follows stormwater drainages. |
| W10 | PEM | WOSS | 1 | no | yes | yes | Some plant diversity, but primarily cattail and common reed dominated. |
| W11 | PEM | no | | yes | no | yes | Follows ledge. Some scrub-shrub. Drains into S3 via rip-rap lined ditch D1. |
| W12 | PFO | WOSS | 2, 3 | no | no | yes | Floodplain wetland along S3. Some dense pockets of common reed. Open areas dominated by PEM and scrub-shrub. |
| W13 | PEM | WOSS | 1 | no | no | yes | Roadside drainages and emergent meadow, extends into adjacent pasture area. |

| ID | Classification[1] | WOSS or SWH[2] | WOSS or SWH Criteria Met[3] | Exclusively Stormwater Drainage | Monoculture | Extends Off Row | General Description |
|---|---|---|---|---|---|---|---|
| W14 | PEM | WOSS | 2 | no | no | yes | Small area may have been a stream, now stagnant and dominated by PEM and some aquatics, small amount of PFO and scrub-shrub along edges < 30% cover. Forms into stream outside of survey ROW. |
| W15 | PEM | no | | yes | yes | yes | Some diversity, but mostly common reed dominated. Likely once part of larger wetland complex in vicinity. |
| W16 | PEM | no | | yes | no | yes | Likely once part of larger wetland complex in vicinity. Some dense pockets of cattails and common reed. |
| W17 | PFO and PEM | no | | no | yes | yes | Mostly common reed. But small pocket along survey limit is PFO and associated with Vernal Pool 3 (only pool with egg masses; but not significant). |
| W18 | PEM | no | | no | yes | yes | Predominately common reed, small pockets of sedges and rushes. |
| W19 | PFO and PEM | WOSS | 1, 2, 3 | no | no | yes | Ties into large PEM (mostly cattail monoculture) at survey edge. |
| W20 | PEM | no | | no | no | yes | Series of low compacted areas, PFO wetland off ROW, dense wood chips throughout. |
| W21 | PEM | no | | yes | no | no | Wetland drainage ditch follows ledge, north end filled with wood chips. |
| W22 | PEM | no | | no | no | yes | Is >20,000 sq ft., but includes man-made ditch areas. Some common reed dominated areas. |
| W23 | PEM | no | | yes | no | yes | Roadside drainage area. |
| W24 | PEM | no | | yes | yes | yes | Roadside drainage. Some diversity, but cattails and common reed dominant in most areas. |
| W25 | PEM | no | | yes | no | no | Roadside drainage area. |
| W26 | PEM | no | | yes | no | yes | Roadside drainage area. Some scrub-shrub areas. |
| W27 | PFO and PEM | WOSS | 1, 2, 3 | no | no | yes | Associated with stream S4. Floodplain is 0.2% risk zone. Connects to large cattail marsh. Dense wood chips throughout. Recently mowed. Common reed will likely dominate in many areas. |

| ID | Classification[1] | WOSS or SWH[2] | WOSS or SWH Criteria Met[3] | Exclusively Stormwater Drainage | Monoculture | Extends Off Row | General Description |
|---|---|---|---|---|---|---|---|
| W28 | PEM | no | | yes | yes | yes | Drainage area along toe of railroad, mostly common reed. Some scrub-shrub east end. |
| W29 | PEM | WOSS | 1 | yes | no | yes | Ties into dense cattail/open water/PSS marsh, likely once part of the wetland complex; now bermed. |
| W30 | PFO and PEM | WOSS | 1 | no | yes | yes | Associated with pond, area around pond is cattail monoculture. Mostly PEM complex, but some PFO/PSS. |
| W31 | PEM | WOSS | 1 | no | yes | yes | Northern section cattail monoculture, connected to large cattail marsh. Common reed throughout. |
| W32 | PEM | no | | no | yes | yes | Connects to PFO/PSS wetland, much of wetland is stormwater drainage, ties into Stroudwater River, cattail-dominated. |
| W33 | PEM | no | | no | no | no | Isolated low compacted area associated with collapsed culvert and washout. |
| W34 | PEM | no | | yes | no | yes | Area where several small storm drainages connect. |
| W35 | PFO and PEM | no | | yes | no | yes | Follows ledge at toe of road. Small channelized drainage forms in forest at north end. |
| W36 | PEM | no | | no | yes | yes | Connects to small cattail and shrub swamp. |
| W37 | PEM | WOSS | 1 | no | yes | yes | Connects to cattail-dominated marsh |
| W38 | PEM | no | | yes | no | yes | Likely once part of larger wetland complex in vicinity (same marsh that W37, W39 and W56 connect to). Much of ditch is cattail dominated. |
| W39 | PFO and PEM | WOSS | 2, 3 | no | yes | yes | Riparian/floodplain wetland along S2b. Large area, portions connect to cattail dominated marsh (same marsh that W37, W38 and W56 connect to). Dense cattails or common reed in many areas. |
| W40 | PFO and PEM | no | | no | yes | yes | Mostly common reed and poison ivy. Likely once part of a large wetland, now mostly follows stormwater drainages. Portions are on compacted mowed low areas. Several ephemeral drainages converge at culvert. |

| ID | Classification[1] | WOSS or SWH[2] | WOSS or SWH Criteria Met[3] | Exclusively Stormwater Drainage | Monoculture | Extends Off Row | General Description |
|---|---|---|---|---|---|---|---|
| W41 | PEM | no | | yes | no | yes | Some diversity, but pockets of dense common reed. |
| W42 | PEM | WOSS | 1 | no | no | yes | Connects to extensive cattail (some PSS) complex, altered by development, includes numerous low compacted areas along ROW easement. Likely originally part of same wetland as W43, W44 and W45. |
| W43 | PEM | WOSS | 1 | no | yes | yes | Part of large off ROW wetland altered by development; deep channels cut into area hold H2O. Likely originally part of same wetland as W42, W44 and W45. Some pockets of dense common reed and/or cattails. |
| W44 | PEM | WOSS | 1 | no | no | yes | Part of larger off ROW complex altered by road development/ramps; deep channels cut into area hold H2O, cattail dominated areas. Likely originally part of same wetland as W42, W43 and W45. Some pockets of dense common reed, cattails, and areas of open water. |
| W45 | PFO and PEM | no | | no | no | yes | Part of larger off ROW complex altered by road development/ramps; deep channels cut into area holds H2O. Likely originally part of same wetland as W42, W43 and W44. Some pockets of dense common reed and/or cattails. |
| W46 | PEM | no | | yes | no | yes | Drainage ties into W47 and S1 during storm events. High diversity of sedges and rushes. |
| W47 | PFO | WOSS | 2, 3 | no | no | yes | Riparian/floodplain wetland along S1, has extensive seep wetlands along north bank. |
| W48 | PEM | no | | yes | no | yes | Roadside drainage, follows rip-rap to S1. |
| W49 | PFO | no | | no | no | yes | Only a very small part of this PFO wetland extends into survey area. |
| W50 | PEM | no | | no | yes | yes | Cattail and common reed dominated depression at culvert. Isolated, but ties to W17 via culvert during storm events. |
| W51 | PEM | no | | no | no | yes | Series of low compacted areas, PFO wetland off ROW, dense wood chips throughout. |

| ID | Classification[1] | WOSS or SWH[2] | WOSS or SWH Criteria Met[3] | Exclusively Stormwater Drainage | Monoculture | Extends Off Row | General Description |
|---|---|---|---|---|---|---|---|
| W52 | PEM | WOSS | 1 | no | no | yes | Low compacted areas, dense wood chips throughout. Includes drainage along railroad, associated with large cattail complex off ROW, same complex as W27. |
| W53 | PEM | WOSS | 1 | yes | no | yes | Drains into same cattail-dominated wetland complex as W27 and W52. |
| W54 | PEM | no | | yes | no | no | Isolated PEM depression. |
| W55 | PFO | no | | no | no | yes | Associated with Vernal Pool 9; no egg masses noted. Berms in area; may have originally tied to PFO/PSS wetland to west. |
| W56 | PEM | no | | yes | yes | yes | Likely once part of larger wetland in vicinity (same marsh that W37, W39 and W56 connect to). Much of ditch cattail dominated. |

[1] Cowardin classification (1979): PEM = palustrine emergent, PFO = palustrine forest, PSS = palustrine scrub-shrub.
[2] Wetland of Special Significance or Significant Wildlife Habitat.
[3] 1 = Contains at least 20,000 square feet of aquatic or emergent vegetation or open water; 2 = Contains or is a stream; 3 = Is within a floodplain.

### 4.1.1 Palustrine Emergent (PEM)

Wetlands of this type meet the Cowardin classification of a freshwater palustrine emergent (PEM) wetland, which are comprised of an upper layer of vegetation dominated by greater than 30% areal cover of herbaceous vegetation. Shrubs, and in a few cases sapling trees, are found in some of the PEM wetlands identified, but areal coverage of woody vegetation was below 30%. PEM wetlands were the most common wetland class found in the Project area and comprised 77% of all wetlands delineated (Table 2) (Appendix A, Figure 4through 4f; Appendix C, Photographs). Nearly all PEM complexes found were in some way associated with toe of slope roadside stormwater management drainages and swales. However, unlike Project area features identified as drainage ditches, PEM wetland areas support the hydrology, hydric soils and vegetation, sufficient to meet the definition of a wetland feature. The portions of PEM complexes within the MTA ROW easement are also periodically mowed and maintained. Many of the vegetated drainages are lined with rock stabilization material in some areas and most have culverts along their length; particularly at their inflow and outflow. Sand, gravel and tar from adjacent roadways is common throughout most wetlands, as is a significant amount of trash and other debris.

Plants found in Project area PEM wetlands, in order of abundance throughout the Project area, include; cattails (*Typha latifolia and T. angustifolia*), soft rush (*Juncus effusus)*, sensitive fern *(Onoclea sensibilis),* spike rush *(Elecharis spp.),* path rush *(juncus tenuis),* wool grass (*Scirpus cyperinus*), fox sedge *(Carex vulpenoides),* fringed sedge (*Carex crinita),* panicled bulrush *(Scirpus microcarpus),* pointed broom sedge *(Carex scoparia),* and horsetail *(Equisetum arvense).* Less common non-woody species include; royal fern (*Osmunda spectabilis), cinnamon fern (Osmundastrum cinnamomeum),* jewelweed (*Impatiens capensis*), iris *(Iris versicolor),* spotted ladysthumb (*Polygonum persicaria*), bladder sedge (*Carex intumescens*), green bulrush (*Scirpus atrovirens*), as well as a variety of grasses and mosses. Maintenance and mowing activities within the MTA ROW easement generally does not allow for robust growth of woody species within the survey area, but some PEM wetlands are comprised of low densities of woody species. The most common species include meadowsweet (*Spirea latifolia*), steeplebush (*Spirea angustifolia*), northern arrowwood (*Viburnum dentatum*), speckled alder (*Alnus incana rugosa*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), redosier dogwood (*Cornus sericea*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), and willow (*Salix* spp.).

Invasive and noxious species are relatively common in or along the boundary of most of the Project area wetlands, and have formed monocultures in 17 (30%) of the wetlands delineated. In addition, many of the wetlands are hydrologically-connected to larger wetland complexes outside of the survey limits which are dominated by invasive and noxious species. Invasive/noxious species noted, in order of abundance throughout the Project area, include; cattails, common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), reed canarygrass (*Phalaris arundinacea*), honeysuckles (*Lonicera japonica, L. morrowii*), multiflora rose (*rosa multiflora*), poison ivy (*Toxicodendron radicans*), hedge bindweed (Calystegia sepium), bittersweet nightshade (*Solanum dulcamara),* and black swallow-wort (*Cynanchum louiseae*).

Soils of mapped wetlands generally fell into one of five hydric soil classification types; histolsols

or histic epipedons (soil with greater than 8 inches of organic matter); sandy redox (sandy soil with depleted matrix with chroma < 2 and redox concentrations); depleted matrix (non-sandy soil with depleted matrix of chroma < 2, with/without redox concentrations); or redox depressions (at least 2 inches of distinct or prominent redox concentrations within upper 6 inches of soil with any color matrix). Coarse sand, gravel, and other debris from adjacent roadway runoff, was often encountered on the soil surface and upper soil horizons.

Hydrologic input appears to come primarily from groundwater and surface flow from adjacent road embankments, paved areas, and the overall Turnpike stormwater drainage system of storm drains and culverts. Nearly all wetlands encountered had standing water, high water table, or saturated soil conditions when surveyed. Many also had primary and/or secondary evidence of hydrology including; water-stained leaves, sparsely-vegetated concave surfaces, drift deposits, drainage patterns, oxidized rhizospheres, and micro-topographic relief. Hydrologic output from most of the wetland complexes drains into larger wetlands located beyond the surveyed area, or into tributaries that ultimately drain into Casco Bay.

### 4.1.2 Palustrine Forest (PFO) Wetland

PFO wetlands are comprised of an upper vegetative layer of trees with greater than 30% areal cover, and most complexes also have a dense shrub layer with greater than 50% cover. In openings and along edges, the shrub cover is often the dominant vegetative community. Due to periodic mowing of the MTA ROW easement, this wetland class is uncommon in the surveyed areas (< 7%), and generally was only found along waterbodies or areas that are difficult to access, such as along ledges and steep banks.

The dominant trees found in PFO wetlands, in order of commonness in the Project area, include red maple, willows, green ash, gray birch (*Betula populifolia*), and occasional white pine (*Pinus strobus*). The shrub stratum can be quite dense, particularly along riparian edges and in openings of the upper tree canopy. Dominant woody species in the shrub stratum include saplings of the canopy tree species and often a diversity of species such as broad-leaf meadowsweet, chokeberry (*Aronia sp.*), winterberry, highbush blueberry, northern arrowwood, speckled alder, and steeplebush. Overall herbaceous cover in the PEM community is typically sparse due to the density of tree and shrub canopy. When present, the dominant species found in the herb layer include cinnamon fern, sensitive fern, royal fern, horsetail, jewelweed, and sphagnum moss (*Sphagnum* spp.). Similar to the PEM wetlands, invasive and noxious species are fairly common in or along the boundary of the PFO wetland complexes and, in order of abundance throughout the Project area, include common reed, purple loosestrife, reed canarygrass, honeysuckles, common buckthorn (*Ramnus cathartica*), poison ivy, Japanese knotweed (*Fallopia japonica*), bittersweet nightshade, oriental bittersweet (*Celastrus orbiculatus*), and autumn olive (*Elaeagnus umbellate).*

Soils of mapped PFO/PSS wetlands generally fell into one of two hydric soil classification types; sandy redox (sandy soil with depleted matrix with chroma < 2 and redox concentrations); or depleted matrix (non-sandy soil with depleted matrix of chroma < 2, with/without redox concentrations). When in proximity to road edges, coarse sand, gravel, and other debris from adjacent roadway runoff, was often encountered on the soil surface and upper soil horizons.

Hydrology of most of the PFO/PSS wetlands encountered were characterized by a high water table or saturated soil conditions. Many also had primary and/or secondary evidence of hydrology including; water-stained leaves, sparsely-vegetated concave surfaces, and microtopographic relief. Hydrologic output from most of the wetland complexes drains into larger wetlands located beyond the surveyed area, or into tributaries that ultimately drain into Casco Bay.

## 4.2 WATERBODIES

Five altered streams and four roadside stormwater ditches were identified within the Project site (Appendix A, Figures 4a, 4b, 4c, 4d and 4e). Waterbodies W1, W2, W3 and W4 are consistent with USGS data, and meet the criteria for designation as a regulated waterbody per Maine Statute §480-B, Article 5-A of the NRPA and Section 404 of the Clean Water Act. The unnamed second order tributary to Clark Pond/Long Creek identified on USGS maps and located just north of Red Brook (Appendix A, Figure 1), begins outside of the area surveyed; thus was not mapped during this effort. Waterbody W5 was not identified on USGS maps.

### Waterbody S1

Stream S1 is identified on USGS maps as Red Brook, a first order perennial tributary to the Nonesuch River (Appendix A, Figures 1 and 4a; Appendix C, Photographs). The stream flows toward the north then east, and at the time of survey had an average width of 20 feet and water depth of flow of 18 inches. The stream substrate was primarily silt and sand with some cobble and boulders. Banks were generally 10 feet in height on average. Those to the east side of the turnpike and had a steep profile, but were more gradual to the west. The waterbody met four of the five criteria for the definition of a stream per Maine Statute §480-B, Article 5-A of the NRPA.

### Waterbody S2

Stream S2 is identified on USGS maps as Long Creek, a first order intermittent tributary to Clark Pond/Long Creek (Appendix A, Figures 1, 4b and 4c; Appendix C, Photographs). The stream flows toward the east, then south. At the time of survey had an average width of 10 feet and water depth of 14 inches. The stream substrate was primarily silt and sand with some cobble and boulders. Banks were generally less than 5 feet in height on average and had a gradual profile. Some bank areas were stabilized with rip-rap. The waterbody met four of the five criteria for the definition of a stream per Maine Statute §480-B, Article 5-A of the NRPA.

### Waterbody S3

Stream S3 is identified on USGS maps as the perennial Stroudwater River, a first order tributary to Fore River (Appendix A, Figures 1, 4d; Appendix C, Photographs). The river flows toward the east/southeast. At the time of survey, the water was very turbid/muddy and 24 inches deep on average. The river is roughly 40 feet wide and comprised of a primarily silty substrate with some cobble. Banks were variable, but generally eight feet in height and with a gradual profile.

Some bank areas were stabilized with rip-rap. The waterbody met three of the five criteria for the definition of a stream per Maine Statute §480-B, Article 5-A of the NRPA.

### Waterbody S4

Stream S4 is identified on USGS maps as an unnamed second order tributary to Fore River, likely an intermittent stream feature (Appendix A, Figures 1 and 4e; Appendix C, Photographs). Standing water in the stream was 10 inches deep and under flowing conditions moves toward the southeast. Aquatic vegetation observed in the channel is indicative of low velocity flow. The stream is on average 15 feet wide and its substrate comprised primarily of silt, sand and cobble. Banks were generally 3 feet in height and with a steep profile in most areas. The waterbody met four of the five criteria for the definition of a stream per Maine Statute §480-B, Article 5-A of the NRPA.

### Waterbody S5

Waterbody S5 is an ephemeral stream within forest canopy along the south edge of the Cummings Road embankment (Appendix A, Figure 4a; Appendix C, Photographs). The feature may have been part of a natural stream, but has since been modified, straightened and is part of roadside stormwater management. The waterbody connects to stormwater drainage feature D1 and eventually ties into Red Brook. The waterbody is four feet wide on average, and the bottom is primarily comprised of organic material, silt, sand and fine gravel. Banks are one foot in height and have a steep profile. Waterbody S5 does not appear on USGS topographic maps and at the time of the survey did not meet any of the criteria for designation as a regulated waterbody per Maine Statute §480-B, Article 5-A of the NRPA.

### Waterbodies D1, D2, D3 and D4

Waterbodies D1 (Appendix A, Figure 4d), D2, D3 and D4 (Appendix A, Figure 4a) are all mostly unvegetated man-made roadside drainage ditches that follow the toe of slope of the I-95 road bed (Appendix C, Photographs). These features were designed specifically for the transfer of stormwater, and although they provide hydrologic connection between many of the wetlands and streams of the site, they do not meet the criteria for designation as stream or wetland features. Hydrologic input is primarily from surface flow via upland areas and adjacent paved roadways. The ditches are on average five feet wide and their substrate is comprised of large rock stabilization material, organic matter, and significant coarse sand and gravel from adjacent roadways. None of the features had flow during the survey, but most had small areas of stagnant standing water. Coarse sand, gravel, tar and a significant amount of trash were found throughout the features.

## 4.3 WETLAND FUNCTIONAL ASSESSMENT

Of the 13 functions and values evaluated, eight are provided at documentable levels by the wetlands located within the Project area (Table 3). Of the functions observed, none are provided at what would be considered a high level when compared to nearby wetlands located outside of

the survey limits. Wildlife habitat is the primary function identified in most Project area wetlands. However, the overall habitat function provided at most portions of wetlands within the survey area is generally low due to periodic mowing and maintenance within the MTA ROW easement, as well as the abundance of invasive/noxious weed species which tend to have lower value to wildlife. In addition, numerous wetlands are exclusively associated with stormwater management drainages, which tend to provide little overall wetland function/value other than some sediment retention and wildlife habitat. While roadside drainages likely capture sediment, nutrients, pollutants, etc., retention time is likely short-lived in many areas and ultimately the captured materials are deposited into nearby streams.

Other factors relating to overall low functions and values of the Project area wetlands include: degraded conditions due to sand/sediment/trash input from the adjacent roadway and past site disturbances; lack of undisturbed buffer along much of wetland boundary; incised waterbody channels which allows water to pass through quickly; proximity to a major highway, roads, and commercial/residential development; isolated areas; small size; and fast water flow through the features during normal conditions.

**Table 3. Functions and Values Provided by Wetlands in the Maine Turnpike Exits 44-48 Project Area.**

| Wetland ID | Groundwater Recharge-Discharge | Floodflow Alteration | Fish and Shellfish Habitat | Sediment-Toxicant Retention | Nutrient Removal-Retention-Transformation | Production Export | Sediment-Shoreline Stabilization | Wildlife Habitat | Recreational | Educational-Scientific Value | Uniqueness-Heritage | Visual | Rare, Threatened and Endangered Species |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W1 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W2 | - | L | - | M | L | - | - | L | - | - | - | - | - |
| W3 | L | H | - | M | M | - | - | L | - | - | - | - | - |
| W4 | - | - | - | M | - | - | - | L | - | - | - | - | - |
| W5 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W6 | - | L | - | L | - | - | - | L | - | - | - | - | - |
| W7 | - | L | - | L | L | - | - | M | - | - | - | - | - |
| W8 | - | L | L | M | - | - | L | M | - | - | - | - | - |
| W9 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W10 | L | M | - | M | - | - | - | M | - | - | - | - | - |
| W11 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W12 | L | L | L | L | - | - | L | M | - | - | - | - | - |
| W13 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W14 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W15 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W16 | - | - | - | L | - | - | - | L | - | - | - | - | - |

| Wetland ID | Groundwater Recharge-Discharge | Floodflow Alteration | Fish and Shellfish Habitat | Sediment-Toxicant Retention | Nutrient Removal-Retention-Transformation | Production Export | Sediment-Shoreline Stabilization | Wildlife Habitat | Recreational | Educational-Scientific Value | Uniqueness-Heritage | Visual | Rare, Threatened and Endangered Species |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W17 | - | - | - | L | - | - | - | M | - | - | - | - | L |
| W18 | - | L | - | L | - | - | - | L | - | - | - | - | - |
| W19 | L | M | M | M | L | - | L | M | - | - | - | - | - |
| W20 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W21 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W22 | - | L | - | L | - | - | - | M | - | - | - | - | - |
| W23 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W24 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W25 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W26 | - | - | - | L | - | - | - | M | - | - | - | - | - |
| W27 | - | M | L | L | L | - | L | M | - | - | - | - | - |
| W28 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W29 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W30 | - | L | - | M | - | - | - | M | - | - | - | - | - |
| W31 | - | L | - | M | - | - | - | M | - | - | - | - | - |
| W32 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W33 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W34 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W35 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W36 | - | L | - | M | - | - | - | M | - | - | - | - | - |
| W37 | L | M | - | M | L | - | - | M | - | - | - | - | - |
| W38 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W39 | - | L | L | M | - | - | L | M | - | - | - | - | - |
| W40 | - | - | - | L | - | - | - | M | - | - | - | - | - |
| W41 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W42 | L | H | - | M | M | - | - | L | - | - | - | - | - |
| W43 | - | M | - | M | L | - | - | L | - | - | - | - | - |
| W44 | - | M | - | M | L | - | - | L | - | - | - | - | - |
| W45 | L | M | - | M | L | - | - | M | - | - | - | - | - |
| W46 | - | - | - | L | - | - | - | L | - | - | - | - | - |
| W47 | L | L | L | L | - | - | L | M | - | - | - | - | - |
| W48 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W49 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W50 | - | - | - | L | - | - | - | L | - | - | - | - | - |

| Wetland ID | Groundwater Recharge-Discharge | Floodflow Alteration | Fish and Shellfish Habitat | Sediment-Toxicant Retention | Nutrient Removal-Retention-Transformation | Production Export | Sediment-Shoreline Stabilization | Wildlife Habitat | Recreational | Educational-Scientific Value | Uniqueness-Heritage | Visual | Rare, Threatened and Endangered Species |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W51 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W52 | - | M | - | M | - | - | - | M | - | - | - | - | - |
| W53 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W54 | - | - | - | - | - | - | - | L | - | - | - | - | - |
| W55 | - | - | - | L | - | - | | M | - | - | - | - | - |
| W56 | - | - | - | - | - | - | - | L | - | - | - | - | - |

Key: - not provided, L = low; M = moderate; H = high. Gray shading indicates the variable was the primary function or value offered by the wetland.

## 4.4 VERNAL POOLS

Seventeen (17) low-lying water filled areas were evaluated during April and May survey events, and included natural features as well as several man-made linear drainage channels, roadside ditches, and areas of compacted soils and tire ruts that resulted from roadside right-of-way maintenance activities (Table 4). Of the 17 areas evaluated, only two met Maine's definitions for designation as VP habitat (Pools 3 and 9); of these, only one (Pool 3) had evidence of use by target indicator species. The remaining 15 pools had either: dried out after the April survey event and were deemed non-viable as vernal pool breeding habitat; were man-made features; or, were permanently inundated features. Man-made features and permanently inundated areas do not meet the definition of a vernal pool under Maine's NRPA, but do meet the USACE's definition. Each of the 17 potential VP's are located within mapped wetland complexes. As such, each would be protected under state and federal wetland protection rules regardless of whether the pool had evidence of use by target species.

### Pool 3

This pool is the only one of the 17 features monitored that contained evidence of breeding activity or use by target VP species; 14 spotted salamander eggs. The pool is comprised of lowlying water-filled areas located primarily within contiguous forest habitat (60 feet x 40 feet), but also extending into the mowed right-of way easement along the turnpike (40 feet x 15 feet). Egg masses were noted within the forested component as well as in the open right-of-way. The pool is mostly un-vegetated within the forest basin area, but dominated by emergent vegetation where the feature has been modified (i.e., trees removed) within the open maintained turnpike ROW. This pool meets the NRPA and USACE physical criteria for designation as a VP. However, there were an insufficient number of egg masses of target species present for designation as a SVP.

**Table 4. Potential Vernal Pools Evaluated in the Maine Turnpike Exits 44-48 Project Area.**

| Pool ID[1] | Event 1 | | Event 2 | | Summary | Meets State Definition | Meets USACE Definition |
|---|---|---|---|---|---|---|---|
| | Max. Water (in.) | # Masses | Max. Water (in.) | # Masses | | | |
| 1 | 16 | 0 | 5 | 0 | Natural-modified isolated depression. Mowed. **Nearly dry by second visit**, water restricted to small areas of tire ruts. | No | No |
| 2 | 24 | 0 | 7 | 0 | Natural-modified/Man-made cattail marsh at culvert, connected to larger wetland complex. Originally was ponded due to nearby water main break. **Nearly dry by second visit.** Remaining water only at culvert outfall and ditch. | No | Yes |
| 3 | 12 | 0 | 10 | 14 (SS) | Natural-modified forest pool (60 ft x 40 ft), extends onto mowed right-of-way (40 ft x 15 ft). Portions < 2 inches deep second visit. | Yes | Yes |
| 4 | 8 | 0 | 6 | 0 | **Man-made** low area result of equipment movement and staging. Soil compaction. Mowed. | No | Yes |
| 5 | 8 | 0 | 6 | 0 | **Man-made** low area result of equipment movement and staging. Soil compaction. Mowed. | No | Yes |
| 6 | 6 | 0 | 2 | 0 | **Man-made** low area of mowed right-of-way. **Nearly dry by second visit**, water restricted to small area. | No | No |
| 7 | 26 | 0 | 23 | 0 | Natural-modified cattail marsh at culvert, connected to larger wetland complex and man-made ditches. **Permanent water feature** and vegetation likely too dense to support target species. | No | Yes |
| 8 | 34 | 0 | 28 | 0 | Natural-modified pond and cattail marsh at culvert, connected to larger wetland complex. **Permanent water feature.** | No | Yes |
| 9 | 6 | 0 | 4 | 0 | Natural-modified shrub wetland, 45 ft x 20 ft, connected to larger wetland complex. | Yes | Yes |
| 10 | 7 | 0 | 2 | 0 | Natural-modified shrub wetland, connected to larger wetland complex. **Nearly dry by second visit**, water restricted to small area. | No | No |
| 11 | 5 | 0 | 3 | 0 | Natural-modified cattail/shrub marsh, connected to larger cattail-dominated wetland complex. **Nearly dry by second visit**, water restricted to small area. | No | No |

| Pool ID[1] | Event 1 | | Event 2 | | Summary | Meets State Definition | Meets USACE Definition |
|---|---|---|---|---|---|---|---|
| | Max. Water (in.) | # Masses | Max. Water (in.) | # Masses | | | |
| 12 | 18 | 0 | 14 | 0 | Mowed portion (175 ft x 35 ft) of natural-modified cattail marsh, connected to large cattail complex. Vegetation likely too dense to support target species, but area of marsh in right-of-way is mowed and vegetation/canopy is open and less dense. **Permanent water feature.** | No | Yes |
| 13 | 10 | 0 | 10 | 0 | **Man-made** linear drainage channel. | No | Yes |
| 14 | 24 | 0 | 5 | 0 | Natural-modified dense cattail marsh at culvert, connected to larger wetland complex. Originally was ponded due to nearby water main break. Mowed. **Nearly dry by second visit**, remaining water only in tire ruts. | No | Yes |
| 15 | 28 | 0 | 24 | 0 | **Man-made** linear drainage channel. Mowed. | No | Yes |
| 16 | 21 | 0 | 14 | 0 | **Man-made** linear channel. Several within open ramp area. Mowed. | No | Yes |
| 17 | 18 | 0 | 12 | 0 | **Man-made** linear drainage channel. | No | Yes |

[1] Gray shaded row indicates pools met NRPA definition of a vernal pool; but none are SVP's

## 4.5 OTHER PROTECTED WETLAND AND AQUATIC RESOURCES

Maine's NRPA also provides additional protections and mitigation/compensation requirements for wetlands which are defined as WOSS. None of 56 the identified wetlands are within 250 feet of a coastal wetland; contain one of the critically imperiled (S1) or imperiled (S2) wetland communities; are within 250 feet of a great pond; contain significant wildlife habitat, including significant vernal pools; or contain peatland. However, 21 delineated complexes (38%) meet the criteria for designation as WOSS and are identified in Table 5.

**Table 5. Wetlands of Special Significance in the Maine Turnpike Exits 44-48 Project Area.**

| Wetland ID | NRPA Criteria Met |
|---|---|
| W3 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W6 | Contains or is a stream (channelized part of stream begins at survey edge) |
| W7 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W8 | Contains or is a stream; in 1% risk floodplain |
| W10 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W13 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W14 | Contains or is a stream (channelized part of stream begins at survey edge) |
| W19 | Contains or is a stream; in 0.2% risk floodplain; Contain at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W22 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W27 | Contains or is a stream; in 0.2% risk floodplain; Contain at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W29 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W30 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W31 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W37 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W39 | Contains or is a stream; in 1% risk floodplain |
| W42 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W43 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W44 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W47 | Contains or is a stream; in 1% risk floodplain |
| W52 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |
| W53 | Contains at least 20,000 square feet of aquatic or emergent vegetation or open water |

## 5.0 SUMMARY

Below is a summary of the findings of potential protected resources documented in this report. Further coordination with appropriate MDEP and USACE staff and other relevant natural resource protection agencies is recommended for a final determination regarding environmental permitting requirements for any potential project impacts to these resources, and for information on known protected species or habitats that agencies may be aware of in the project area. Typically, this would include correspondence with the Maine Natural Areas Program (MNAP),

Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Historic Preservation Commission (MHPC), the USFWS, and Native American tribal organizations.

### Wetlands and Other Protected Resources

Field investigations identified and delineated 56 jurisdictional wetland areas within the survey area (Table 2). Of these 43 (77%) are predominately PEM, 4 (7%) are predominately PFO, and 9 (16%) are a combination of PEM and PFO. Nearly all are in some way associated with roadside stormwater management areas and 50 (89%) extend beyond the survey limits (Appendix A, Figures 4a, 4b, 4c, 4d, 4e and 4f; Appendix C, Photographs).

### Waterbodies

Five roadside ditches and five modified waterbodies were mapped within the Project area (Appendix A, Figures 4a, 4b, 4c, 4d, 4e and 4f; Appendix C, Photographs). Four features (Waterbodies W1, W2, W3, and W4) meet the criteria for designation as a regulated waterbody per Maine Statute §480-B, Article 5-A of the NRPA or Section 404 of the Clean Water Act. However, each agency reserves the right to determine permitting requirements on a case-by-case basis for features that convey water even if the feature is man-made, modified, or part of stormwater drainage system.

### Vernal Pools

Seventeen potential vernal pool areas were evaluated (Table 4). None met the biological or physical criteria for designation as an SVP under Maine's NRPA, and none met the biological criteria for designation as a VP by the USACE. All evaluated potential vernal pool areas occur within wetlands and would be protected under state and federal wetland regulations.

### Other Protected Wetland and Aquatic Resources

None of the features identified during this survey meet the criteria for designation as SWH. Twenty-one (38%) of the 56 wetlands documented meet the criteria for designation as WOSS under Maine's NRPA and include W3, W6, W7, W8, W10, W13, W19, W22, W27, W29, W30, W31, W37, W39, W42, W43, W44, W52, AND W53 (Table 5).

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Prepared For: HNTB

Prepared By: NewEarth Ecological Consulting, LLC

## Legend

Estimated Project Boundary

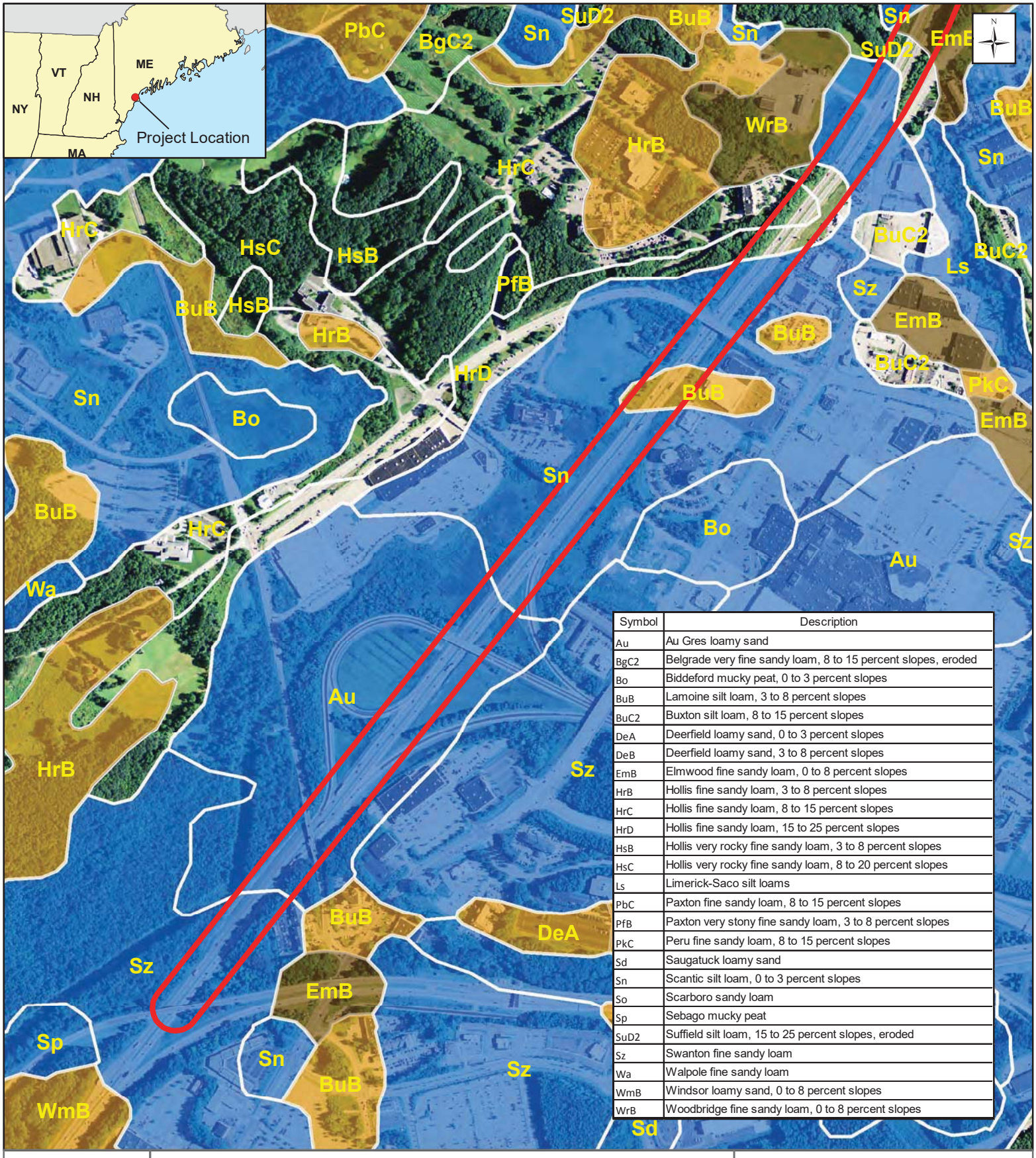
0 1,000 2,000 4,000 6,000 Feet

Figure 1. Site Location and Topography

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: United States Geological Survey, 2014.

Date: 7/21/2017




| Symbol | Description |
|---|---|
| Au | Au Gres loamy sand |
| BgC2 | Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded |
| Bo | Biddeford mucky peat, 0 to 3 percent slopes |
| BuB | Lamoine silt loam, 3 to 8 percent slopes |
| BuC2 | Buxton silt loam, 8 to 15 percent slopes |
| DeA | Deerfield loamy sand, 0 to 3 percent slopes |
| DeB | Deerfield loamy sand, 3 to 8 percent slopes |
| EmB | Elmwood fine sandy loam, 0 to 8 percent slopes |
| HrB | Hollis fine sandy loam, 3 to 8 percent slopes |
| HrC | Hollis fine sandy loam, 8 to 15 percent slopes |
| HrD | Hollis fine sandy loam, 15 to 25 percent slopes |
| HsB | Hollis very rocky fine sandy loam, 3 to 8 percent slopes |
| HsC | Hollis very rocky fine sandy loam, 8 to 20 percent slopes |
| Ls | Limerick-Saco silt loams |
| PbC | Paxton fine sandy loam, 8 to 15 percent slopes |
| PfB | Paxton very stony fine sandy loam, 3 to 8 percent slopes |
| PkC | Peru fine sandy loam, 8 to 15 percent slopes |
| Sd | Saugatuck loamy sand |
| Sn | Scantic silt loam, 0 to 3 percent slopes |
| So | Scarboro sandy loam |
| Sp | Sebago mucky peat |
| SuD2 | Suffield silt loam, 15 to 25 percent slopes, eroded |
| Sz | Swanton fine sandy loam |
| Wa | Walpole fine sandy loam |
| WmB | Windsor loamy sand, 0 to 8 percent slopes |
| WrB | Woodbridge fine sandy loam, 0 to 8 percent slopes |

Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Hydric Soils
- Prime Farmland
- Farmland of Statewide Importance

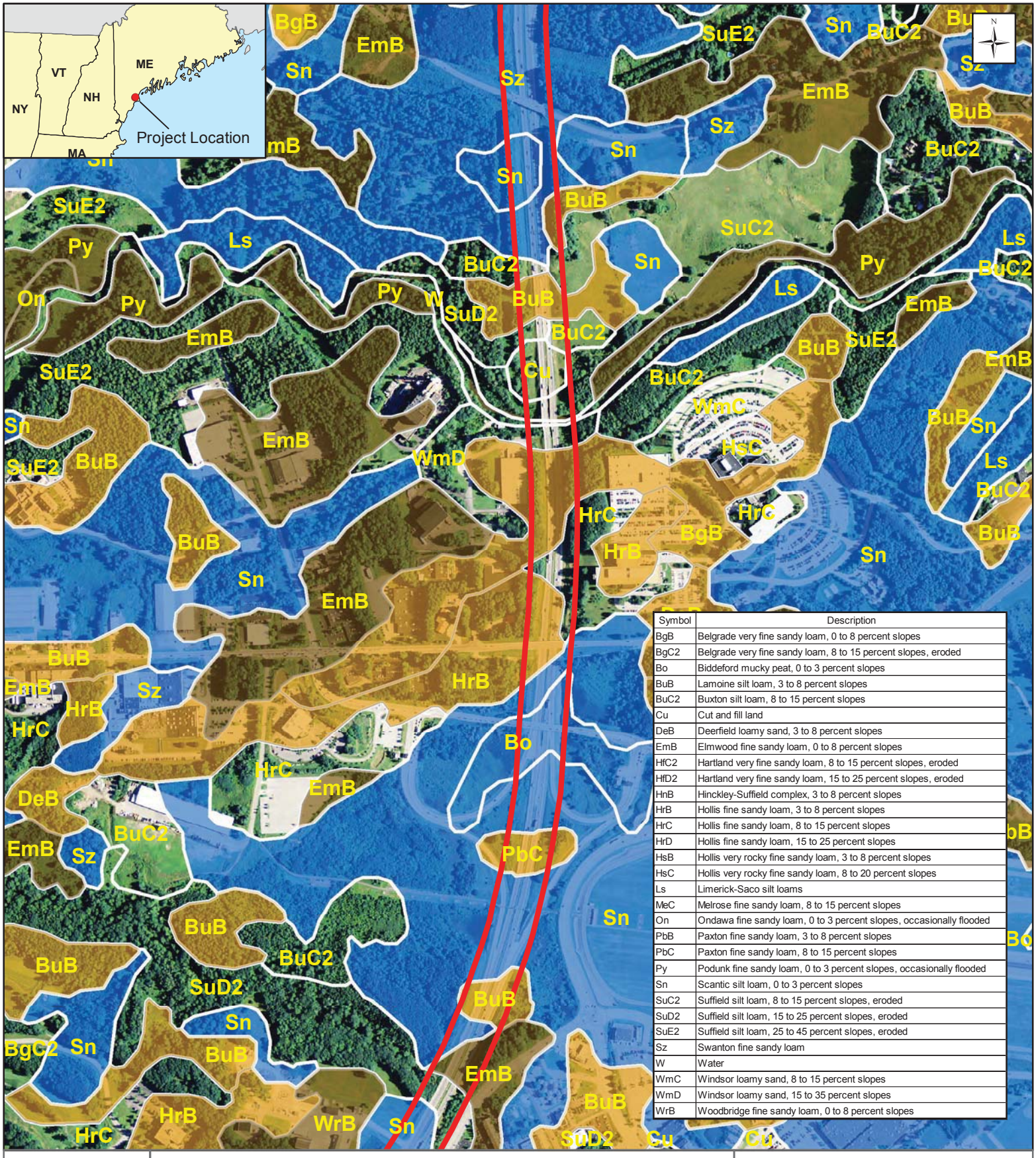
0 500 1,000 2,000 Feet

Figure 2a. Soil Types

Maine Turnpike Authority
Scarborough, South Portland, and
Portland, Maine

Source: USDA, 2016; NAIP, 2013.

Date: 7/21/2017




| Symbol | Description |
|---|---|
| BgB | Belgrade very fine sandy loam, 0 to 8 percent slopes |
| BgC2 | Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded |
| Bo | Biddeford mucky peat, 0 to 3 percent slopes |
| BuB | Lamoine silt loam, 3 to 8 percent slopes |
| BuC2 | Buxton silt loam, 8 to 15 percent slopes |
| Cu | Cut and fill land |
| DeB | Deerfield loamy sand, 3 to 8 percent slopes |
| EmB | Elmwood fine sandy loam, 0 to 8 percent slopes |
| HfC2 | Hartland very fine sandy loam, 8 to 15 percent slopes, eroded |
| HfD2 | Hartland very fine sandy loam, 15 to 25 percent slopes, eroded |
| HnB | Hinckley-Suffield complex, 3 to 8 percent slopes |
| HrB | Hollis fine sandy loam, 3 to 8 percent slopes |
| HrC | Hollis fine sandy loam, 8 to 15 percent slopes |
| HrD | Hollis fine sandy loam, 15 to 25 percent slopes |
| HsB | Hollis very rocky fine sandy loam, 3 to 8 percent slopes |
| HsC | Hollis very rocky fine sandy loam, 8 to 20 percent slopes |
| Ls | Limerick-Saco silt loams |
| MeC | Melrose fine sandy loam, 8 to 15 percent slopes |
| On | Ondawa fine sandy loam, 0 to 3 percent slopes, occasionally flooded |
| PbB | Paxton fine sandy loam, 3 to 8 percent slopes |
| PbC | Paxton fine sandy loam, 8 to 15 percent slopes |
| Py | Podunk fine sandy loam, 0 to 3 percent slopes, occasionally flooded |
| Sn | Scantic silt loam, 0 to 3 percent slopes |
| SuC2 | Suffield silt loam, 8 to 15 percent slopes, eroded |
| SuD2 | Suffield silt loam, 15 to 25 percent slopes, eroded |
| SuE2 | Suffield silt loam, 25 to 45 percent slopes, eroded |
| Sz | Swanton fine sandy loam |
| W | Water |
| WmC | Windsor loamy sand, 8 to 15 percent slopes |
| WmD | Windsor loamy sand, 15 to 35 percent slopes |
| WrB | Woodbridge fine sandy loam, 0 to 8 percent slopes |

Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Hydric Soils
- Prime Farmland
- Farmland of Statewide Importance

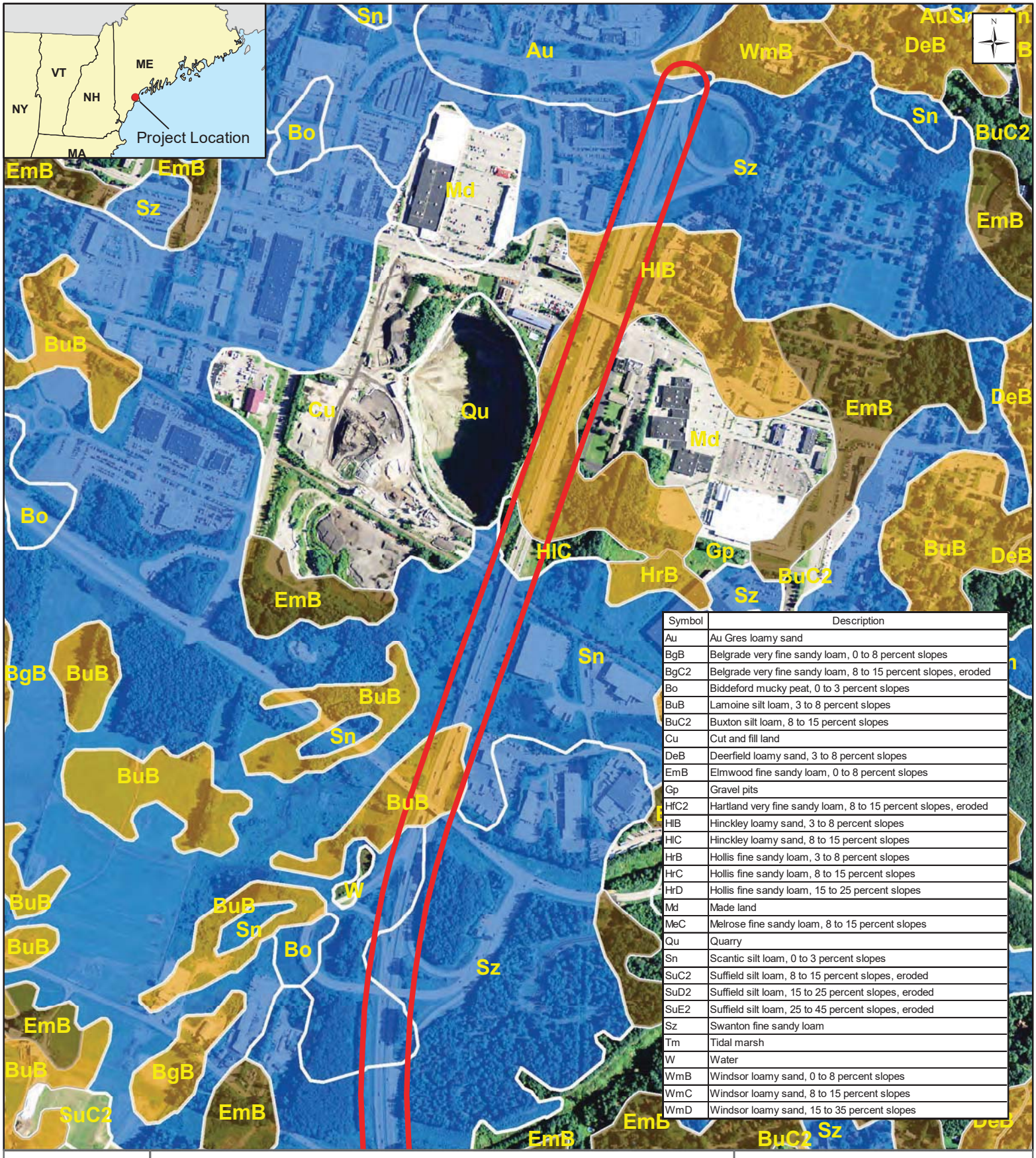
0 500 1,000 2,000 Feet

Figure 2b. Soil Types

Maine Turnpike Authority
Scarborough, South Portland, and
Portland, Maine

Source: USDA, 2016; NAIP, 2013.

Date: 8/24/2017




| Symbol | Description |
|---|---|
| Au | Au Gres loamy sand |
| BgB | Belgrade very fine sandy loam, 0 to 8 percent slopes |
| BgC2 | Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded |
| Bo | Biddeford mucky peat, 0 to 3 percent slopes |
| BuB | Lamoine silt loam, 3 to 8 percent slopes |
| BuC2 | Buxton silt loam, 8 to 15 percent slopes |
| Cu | Cut and fill land |
| DeB | Deerfield loamy sand, 3 to 8 percent slopes |
| EmB | Elmwood fine sandy loam, 0 to 8 percent slopes |
| Gp | Gravel pits |
| HfC2 | Hartland very fine sandy loam, 8 to 15 percent slopes, eroded |
| HlB | Hinckley loamy sand, 3 to 8 percent slopes |
| HlC | Hinckley loamy sand, 8 to 15 percent slopes |
| HrB | Hollis fine sandy loam, 3 to 8 percent slopes |
| HrC | Hollis fine sandy loam, 8 to 15 percent slopes |
| HrD | Hollis fine sandy loam, 15 to 25 percent slopes |
| Md | Made land |
| MeC | Melrose fine sandy loam, 8 to 15 percent slopes |
| Qu | Quarry |
| Sn | Scantic silt loam, 0 to 3 percent slopes |
| SuC2 | Suffield silt loam, 8 to 15 percent slopes, eroded |
| SuD2 | Suffield silt loam, 15 to 25 percent slopes, eroded |
| SuE2 | Suffield silt loam, 25 to 45 percent slopes, eroded |
| Sz | Swanton fine sandy loam |
| Tm | Tidal marsh |
| W | Water |
| WmB | Windsor loamy sand, 0 to 8 percent slopes |
| WmC | Windsor loamy sand, 8 to 15 percent slopes |
| WmD | Windsor loamy sand, 15 to 35 percent slopes |

Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Hydric Soils
- Prime Farmland
- Farmland of Statewide Importance

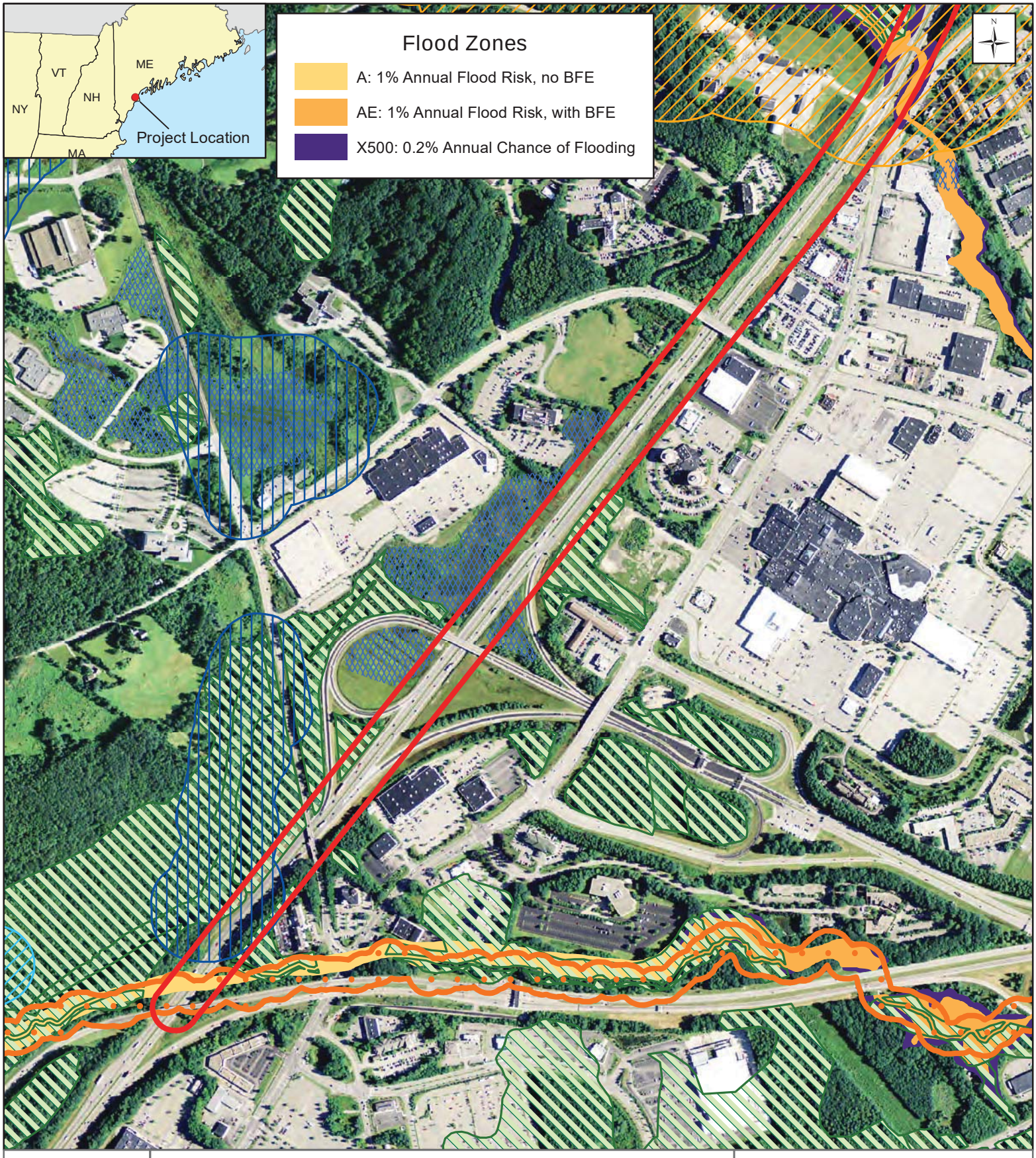
0 500 1,000 2,000 Feet

Figure 2c. Soil Types

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: USDA, 2016; NAIP, 2013.

Date: 7/21/2017




Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- New England Cottontail Habitat
- Low Value Inland Waterfowl / Wading Bird Habitat
- Significant Vernal Pools
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Wild Brook Trout Habitat

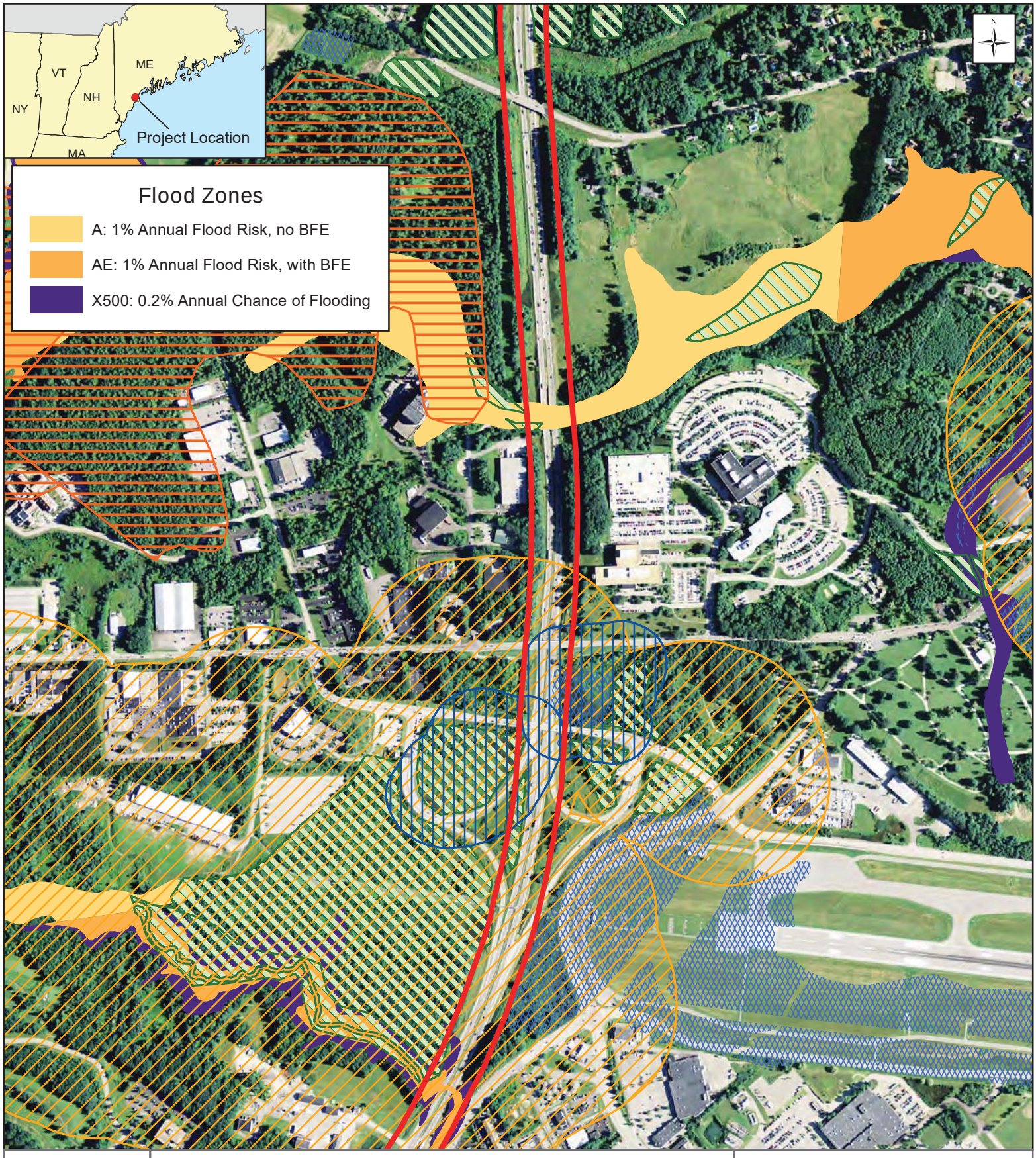
0 500 1,000 2,000 Feet

Figure 3a. NWI Wetlands and Species/Habitats of Special Concern

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: USFWS NWI, 2017; Beginning with Habitat, 2017; MDIF&W Wild Brook Trout Habitat, 2011; FEMA Flood Zones, 1996; NAIP, 2013.

Date: 7/23/2017




Prepared For:

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Prepared By:

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ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Deer Winter Areas
- New England Cottontail Habitat
- Low Value Inland Waterfowl / Wading Bird Habitat
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland

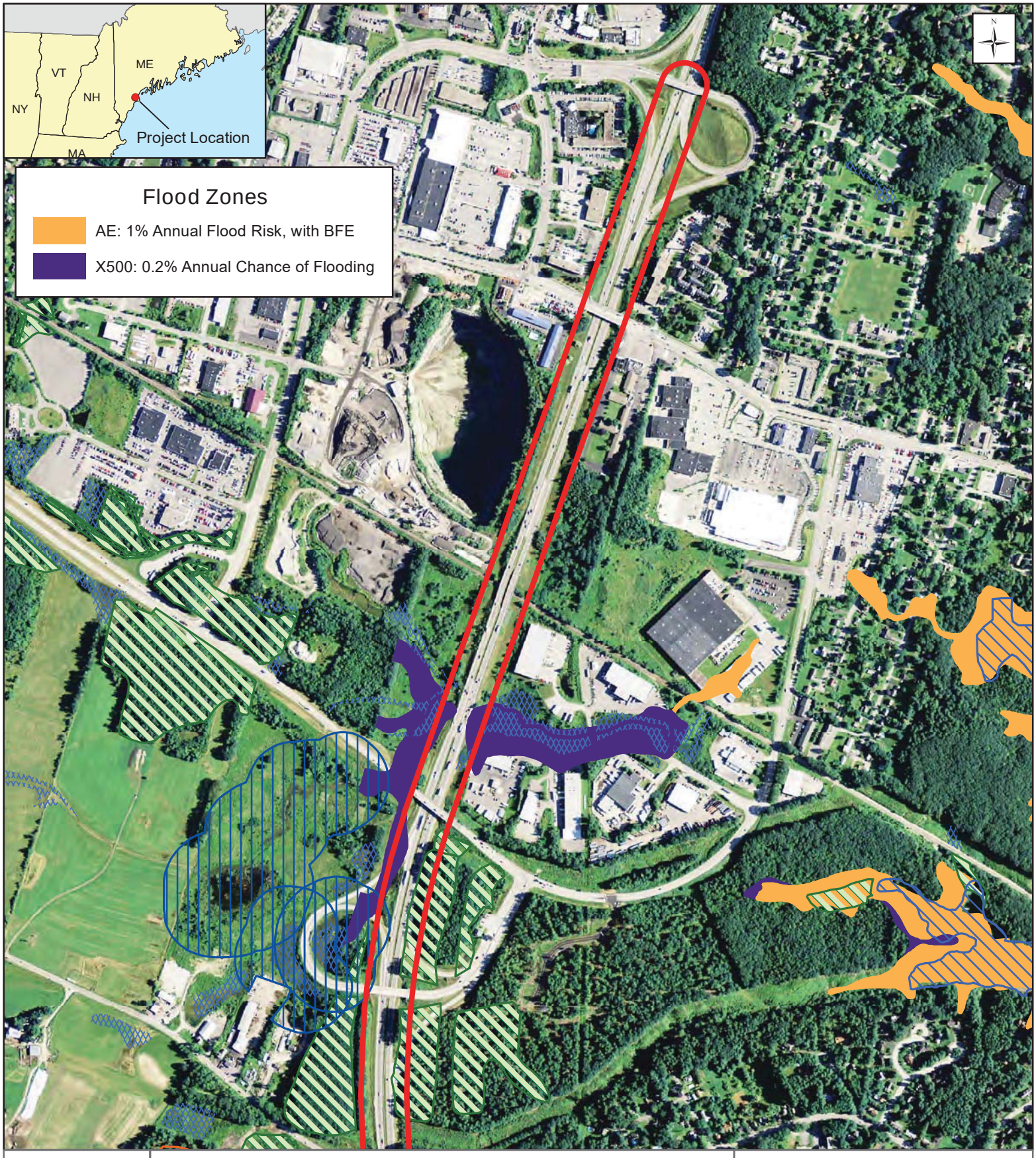
0 500 1,000 2,000 Feet

Figure 3b. NWI Wetlands and Species/Habitats of Special Concern

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: USFWS NWI, 2017; Beginning with Habitat, 2017; MDIF&W Wild Brook Trout Habitat, 2011; FEMA Flood Zones, 1996; NAIP, 2013.

Date: 7/23/2017




Prepared For:

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Prepared By:

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ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Deer Winter Areas
- Low Value Inland Waterfowl / Wading Bird Habitat
- Tidal Waterfowl / Wading Bird Habitat
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland

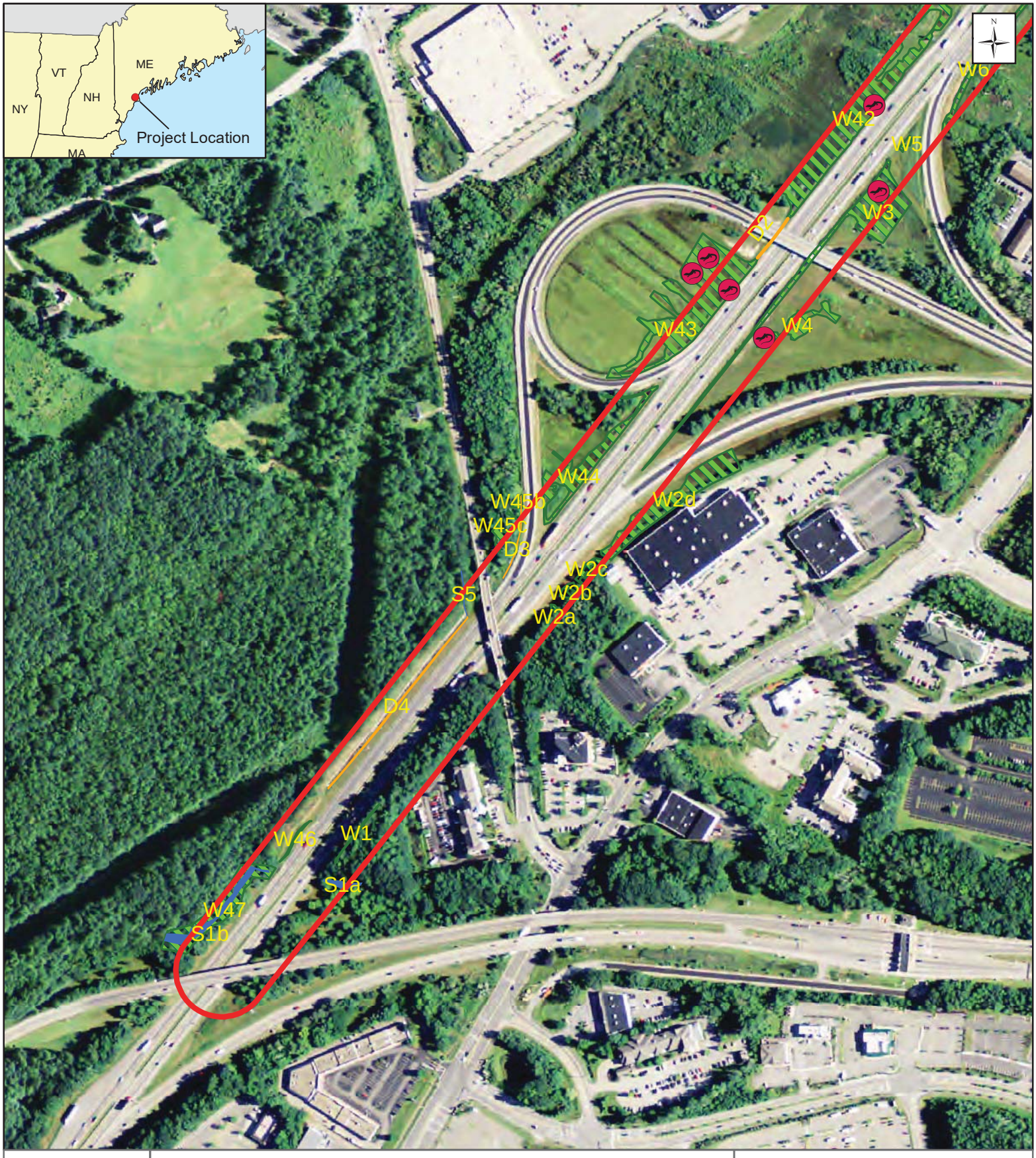
0 500 1,000 2,000 Feet

Figure 3c. NWI Wetlands and Species/Habitats of Special Concern

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: USFWS NWI, 2017; Beginning with Habitat, 2017; MDIF&W Wild Brook Trout Habitat, 2011; FEMA Flood Zones, 1996; NAIP, 2013.

Date: 7/23/2017




Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Evaluated Potential Amphibian Breeding Habitat
- Ditches
- Streams
- Wetlands

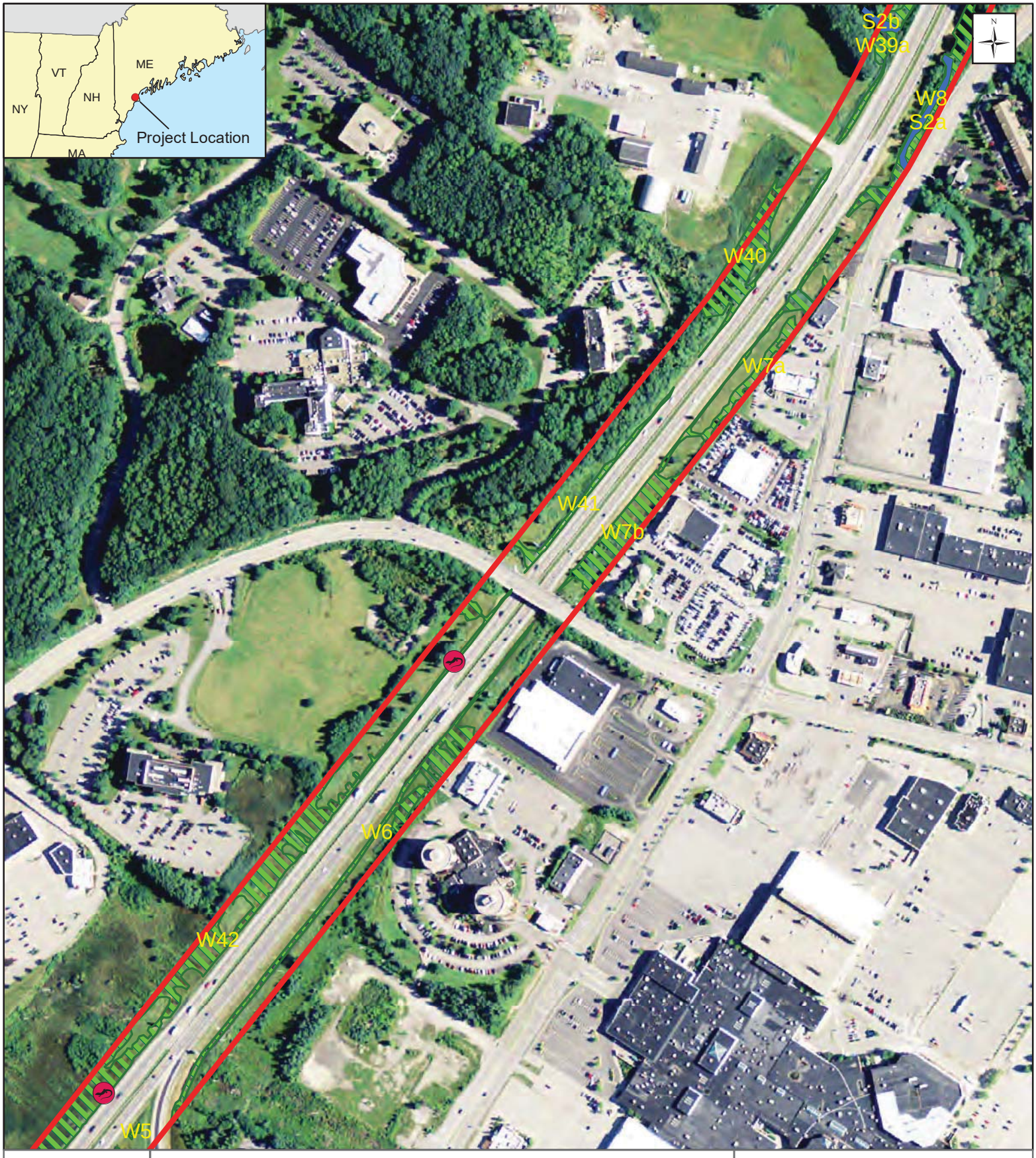
0 500 1,000 Feet

Figure 4a. Delineated Aquatic and Wetland Resources

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: NAIP, 2013; NewEarth Ecological, 2017.

Date: 7/21/2017




Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Evaluated Potential Amphibian Breeding Habitat
- Streams
- Wetlands

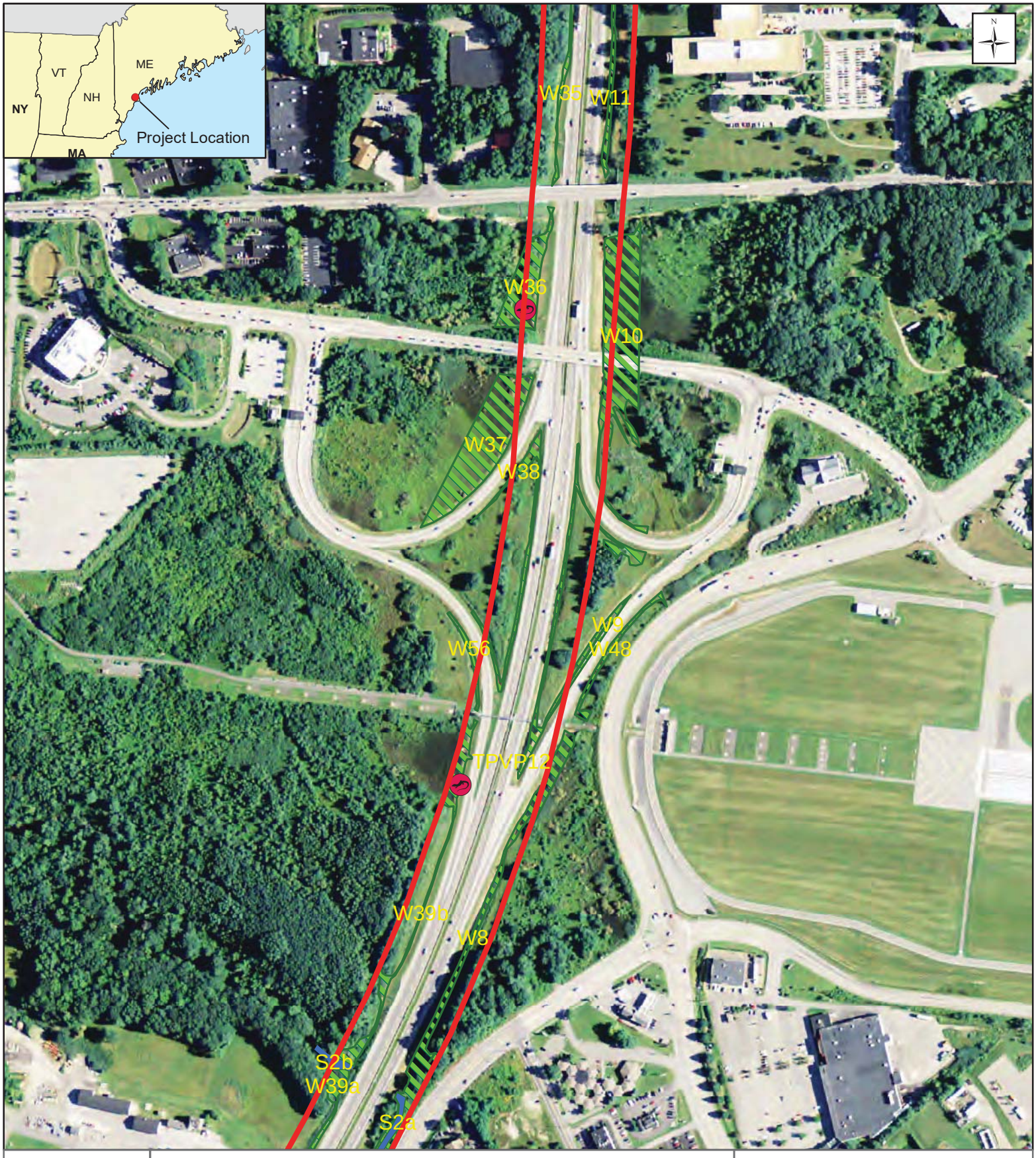
0 500 1,000 Feet

Figure 4b. Delineated Aquatic and Wetland Resources

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: NAIP, 2013; NewEarth Ecological, 2017.

Date: 7/21/2017




Prepared For:

HNTB

Prepared By:

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ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Evaluated Potential Amphibian Breeding Habitat
- Streams
- Wetlands

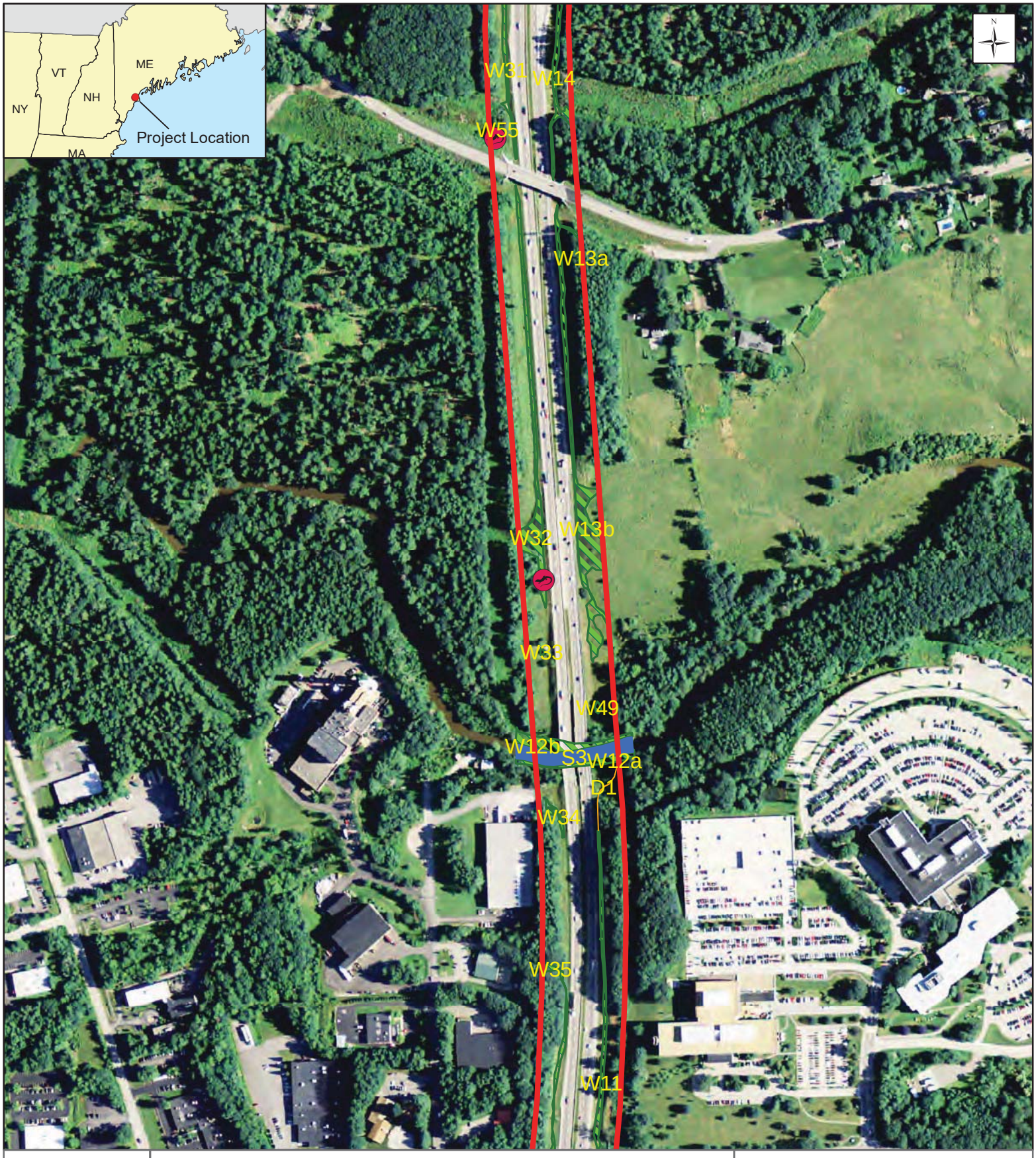
0 500 1,000 Feet

Figure 4c. Delineated Aquatic and Wetland Resources

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: NAIP, 2013; NewEarth Ecological, 2017.

Date: 7/21/2017




Prepared For:

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Prepared By:

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## Legend

- Estimated Project Boundary
- Evaluated Potential Amphibian Breeding Habitat
- Ditches
- Streams
- PVP Polygon
- Wetlands

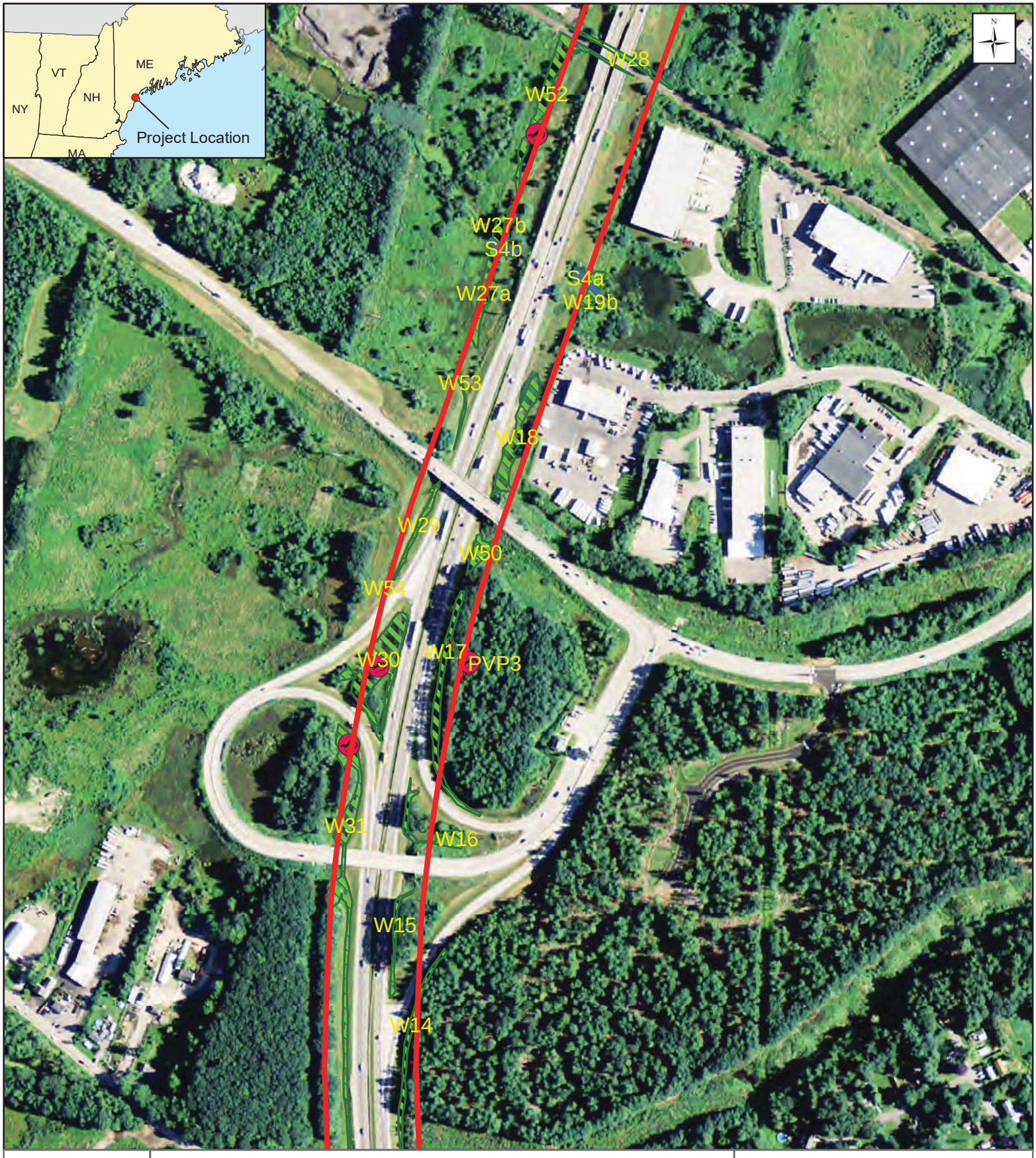
0 500 1,000 Feet

Figure 4d. Delineated Aquatic and Wetland Resources

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: NAIP, 2013; NewEarth Ecological, 2017.

Date: 7/21/2017




Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Evaluated Potential Amphibian Breeding Habitat
- Streams
- PVP Polygon
- Wetlands

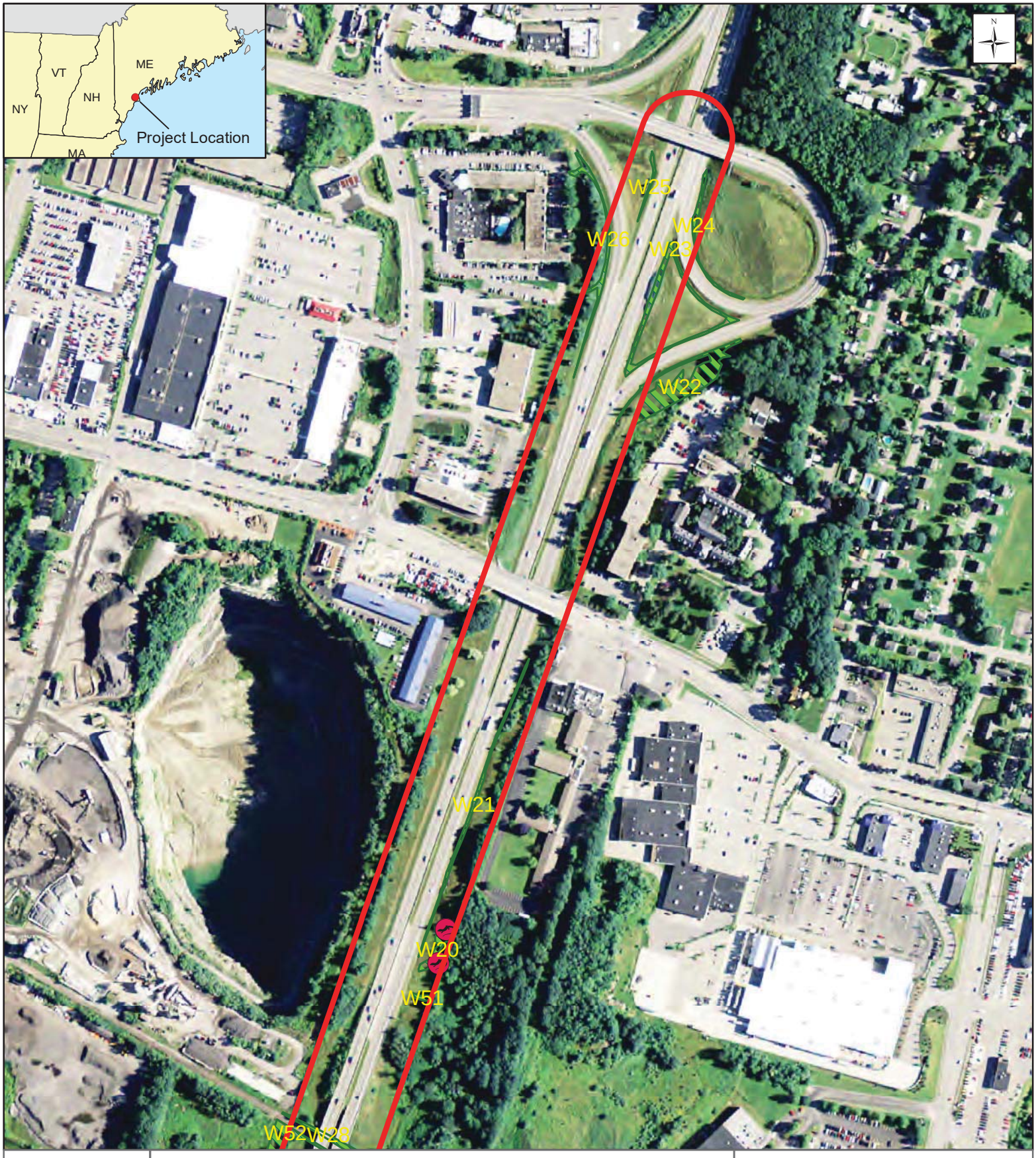
0 500 1,000 Feet

Figure 4e. Delineated Aquatic and Wetland Resources

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: NAIP, 2013; NewEarth Ecological, 2017.

Date: 7/21/2017




Prepared For:

HNTB

Prepared By:

NewEarth
ECOLOGICAL CONSULTING, LLC

## Legend

- Estimated Project Boundary
- Wetlands
- Evaluated Potential Amphibian Breeding Habitat

0 500 1,000 Feet

Figure 4f. Delineated Aquatic and Wetland Resources

Maine Turnpike Authority
Scarborough, South Portland, and Portland, Maine

Source: NAIP, 2013; NewEarth Ecological, 2017.

Date: 7/21/2017

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Exit 44-48 Turnpike Widening City/County: Scarborough-S.Portland/Cumberland Sampling Date: 5/27-31/2018

Applicant/Owner: Maine Turnpike Authority State: ME Sampling Point: see Remarks

Investigator(s): Stacie Grove, Mike Chase-Ortiz Section, Township, Range: NA PEM - Typha

Landform (hillside, terrace, etc.): toe of roadbed slope Local relief (concave, convex, none): slightly concave Slope %: 0-5

Subregion (LRR or MLRA): LRR R Lat: see below Long: see below Datum: WGS 84

Soil Map Unit Name: multiple, all hydric, see report figures 2a, 2b, 2c NWI classification: PEM - Cattail Monoculture

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No ____ | **Is the Sampled Area** |
| Hydric Soil Present? | Yes X | No ____ | **within a Wetland?** **Yes** X **No** ____ |
| Wetland Hydrology Present? | Yes X | No ____ | If yes, optional Wetland Site ID: ____ |

Remarks: (Explain alternative procedures here or in a separate report.)
Cattail-dominated wetland complexes in depressional areas at toe of turnpike road embankments. Most were likely part of large complexes that have been fragmented by roadways/development. Many areas of wetlands within the Turnpike easement are mowed periodically.
Wetlands with these characteristics include W3 (Lat: 43.632271°; Long: -70.343200°), W5 (Lat: 43.633044°; Long: -70.342882°), W14 (Lat: 43.661371°; Long:-70.331618° ), W26 (Lat: 43.680154°; Long:-70.326606° ), W27 (Lat: 43.669364° ; Long: -70.330908°), W30 (Lat: 43.665918°; Long:-70.332010° ), W31 (Lat: 43.664343°; Long:-70.332539° ), W32 (Lat: 43.657171° ; Long: -70.331916°), W36 (Lat: 43.649871° ; Long: -70.331777°), W37 (Lat: 43.648743° ; Long:-70.332039°), and W52 (Lat: 43.671296° ; Long:-70.330136°)

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

| | | |
|---|---|---|
| x Surface Water (A1) | x Water-Stained Leaves (B9) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | x Aquatic Fauna (B13) | ___ Drainage Patterns (B10) |
| ___ Saturation (A3) | ___ Marl Deposits (B15) | ___ Moss Trim Lines (B16) |
| x Water Marks (B1) | ___ Hydrogen Sulfide Odor (C1) | ___ Dry-Season Water Table (C2) |
| ___ Sediment Deposits (B2) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Crayfish Burrows (C8) |
| ___ Drift Deposits (B3) | ___ Presence of Reduced Iron (C4) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Algal Mat or Crust (B4) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Stunted or Stressed Plants (D1) |
| ___ Iron Deposits (B5) | ___ Thin Muck Surface (C7) | ___ Geomorphic Position (D2) |
| ___ Inundation Visible on Aerial Imagery (B7) | ___ Other (Explain in Remarks) | ___ Shallow Aquitard (D3) |
| ___ Sparsely Vegetated Concave Surface (B8) | | ___ Microtopographic Relief (D4) |
| | | X FAC-Neutral Test (D5) |

Secondary Indicators (minimum of two required)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes x | No ____ | Depth (inches): 6 |
| Water Table Present? | Yes ____ | No ____ | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes ____ | No ____ | Depth (inches): ____ |

**Wetland Hydrology Present?** **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology from groundwater as well as runoff from road surfaces, stormwater, and developments. Standing water throughout most complexes, some small un-vegetated areas of open water in W5, W30, W31, W36 and W52. W5 is an isolated feature

**VEGETATION**– Use scientific names of plants.

Sampling Point: see Remarks

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. *Invaised* | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | =Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | =Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft ) | | | |
| 1. *Typha latifolia* | 90 | Yes | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 90 =Total Cover | | |
| **Woody Vine Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | =Total Cover | | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 90 | x 1 = | 90 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 90 (A) | | 90 (B) |

Prevalence Index = B/A = 1.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Other less common plants include sensitive fern (Onoclea sensibilis), jewelweed (Impatiens capensis), smartweed (Persicaria spp.), a variety of sedges (Carex spp.) and narrow-leaved cattail (Typha angustifolia). Invasives include common reed (Phragmites australis), and purple loosestrife (Lythrum salicaria). Other invasives knotweeds, honesuckles, olive, common in upland edges.

## SOIL

Sampling Point see Remarks

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-20 | 10YR 2/1 | 98 | | | | | Muck | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** ____

Remarks:

Sand, gravel, fill material and trash common throughout wetland edges along turnpike and developed areas. Some areas of cattail marshes possessed histic epipedons.

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Exit 44-48 Turnpike Widening City/County: Scarborough-S.Portland/Cumberland Sampling Date: 5/27-6/2/2018

Applicant/Owner: Maine Turnpike Authority State: ME Sampling Point: see Remarks

Investigator(s): Stacie Grove, Mike Chase-Ortiz Section, Township, Range: NA PEM - Mix

Landform (hillside, terrace, etc.): toe of roadbed slope Local relief (concave, convex, none): slightly concave Slope %: 0-5

Subregion (LRR or MLRA): LRR R Lat: see below Long: see below Datum: WGS 84

Soil Map Unit Name: multiple, most are hydric, see report figures 2a, 2b, 2c NWI classification: PEM - Diverse

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No ____ | **Is the Sampled Area** |
| Hydric Soil Present? | Yes x | No ____ | **within a Wetland?** **Yes** X **No** ____ |
| Wetland Hydrology Present? | Yes X | No ____ | If yes, optional Wetland Site ID: ____ |

Remarks: (Explain alternative procedures here or in a separate report.)
Diverse wetland complexes at toe of turnpike road embankments or in depressional areas of interchange ramps, significant components of all are mowed periodically. Most were likely part of large complexes that have been fragmented by roadways/development. Wetlands with these characteristics include W2 (Lat:43.629944°; Long: -70.345372°), W4 (Lat:43.631380°; Long: -70.344236°), W6 (Lat:43.636014°; Long: -70.339637°), W13 (Lat: 43.657616°; Long: -70.331221°), W16 (Lat:43.664319°; Long: -70.331169°), W20 (Lat:43.673279°; Long: -70.328048°), W22 (Lat:43.678526°; Long: -70.324829°), W33 (Lat:43.656053°; Long: -70.331752°), W34 (Lat:43.654365°; Long: -70.331446°), W41 (Lat:43.638239°; Long: -70.338170°), W42 (Lat: 43.634619°; Long: -70.342040°), W43 (Lat:43.631741°; Long: -70.345102°), W44 (Lat:43.629979°; Long: -70.346899°), W51 (Lat:43.672704°; Long: -70.328292°)

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

| | | |
|---|---|---|
| ___ Surface Water (A1) | x Water-Stained Leaves (B9) | ___ Aquatic Fauna (B13) |
| x High Water Table (A2) | ___ Marl Deposits (B15) | ___ Hydrogen Sulfide Odor (C1) |
| x Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Presence of Reduced Iron (C4) |
| ___ Water Marks (B1) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Thin Muck Surface (C7) |
| ___ Sediment Deposits (B2) | ___ Other (Explain in Remarks) | |
| ___ Drift Deposits (B3) | | |
| ___ Algal Mat or Crust (B4) | | |
| ___ Iron Deposits (B5) | | |
| ___ Inundation Visible on Aerial Imagery (B7) | | |
| x Sparsely Vegetated Concave Surface (B8) | | |

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
X FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ____ | No ____ | Depth (inches): ____ |
| Water Table Present? | Yes x | No ____ | Depth (inches): 4 |
| Saturation Present? (includes capillary fringe) | Yes x | No ____ | Depth (inches): 0 |

**Wetland Hydrology Present?** **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology from groundwater as well as runoff from road surfaces, stormwater, and developments. Standing water present in small pockets of several complexes. These are the most common indicators observed, others include standing water (especially in low-lying depressions, manmade trenches, tire ruts), drift deposits, drainage patterns, oxidized rhizospheres, and micro-topographic relief. Evidence of ditching, excavation, deep ruts and/or compacted areas evident in most. Wetlands W20, W33, W51 and Parts of W2 are isolated features on compacted soils within the turnpike ROW easement.

**VEGETATION**– Use scientific names of plants.

Sampling Point: see Remarks

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | =Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | =Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft ) | | | |
| 1. *Juncus effusus* | 15 | Yes | OBL |
| 2. *Phalaris arundinacea* | 15 | Yes | FACW |
| 3. *Scirpus cyperinus* | 10 | Yes | OBL |
| 4. *Onoclea sensibilis* | 10 | Yes | FACW |
| 5. *Eleocharis obtusa* | 10 | Yes | OBL |
| 6. *Vaccinium macrocarpon* | 5 | No | OBL |
| 7. *Carex scoparia* | 5 | No | FACW |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 70 =Total Cover | | |
| **Woody Vine Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | =Total Cover | | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 40 | x 1 = | 40 |
| FACW species | 30 | x 2 = | 60 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 70 (A) | | 100 (B) |

Prevalence Index = B/A = 1.43

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** _X_ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Other species found in varying densities (sometimes enough to be dominant in some areas of wetlands) depending on time since last mowed include, cattails (Typha latifolia and T. angustifolia), fox sedge (Carex vulpenoides), fringed sedge (Carex crinita), panicled bulrush (Scirpus microcarpus), pointed broom sedge (Carex scoparia), horsetail (Equisetum arvense), royal fern (Osmunda spectabilis), cinnamon fern (Osmundastrum cinnamomeum), jewelweed (Impatiens capensis), iris (Iris versicolor), spotted ladysthumb (Polygonum persicaria), bladder sedge (Carex intumescens), green bulrush (Scirpus atrovirens), grasses and mosses. Woody species include meadowsweet (Spirea latifolia), steeplebush (Spirea angustifolia), speckled alder (Alnus incana rugosa), and willow (Salix spp.). Invasives include common reed (phragmites australis), and purple loosetrife (lythrum salicaria).

## SOIL

Sampling Point see Remarks

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-5 | 10YR 4/1 | 90 | 10YR 4/6 | 5 | C | PL/M | Loamy/Clayey | |
| 5-10 | 10YR 5/1 | 80 | 10YR 4/6 | 10 | C | M | Loamy/Clayey | Prominent redox concentrations |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** ____

Remarks:

Sand, gravel, fill material and trash common throughout wetland edges along turnpike and developed areas. Depths and soil colors vary slightly between complexes, but most meet criteria for indicator (F3) of depleted matrix or those with sandy soils met criteria for (S5) sandy redox (sandy soil with depleted matrix with chroma < 2 and redox concentrations). Low areas within W2, W4, W6, W20, W42, W43 and W44 have low-ephemeral pools (NOT vernal pools based on VP survey) with redox depressions (at least 2 inches of distinct or prominent redox concentrations within upper 6 inches of soil with any color matrix). Many low areas likely the result of road building/development activities; W2, W43 and W44 have long linear man-made low areas that drain wetlands. Compacted soils in most low-isolated deperssions parts of W2, and W20, W33, W51

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Exit 44-48 Turnpike Widening City/County: Scarborough-S.Portland/Cumberland Sampling Date: 5/27-6/2/2018

Applicant/Owner: Maine Turnpike Authority State: ME Sampling Point: see Remarks

Investigator(s): Stacie Grove, Mike Chase-Ortiz Section, Township, Range: NA PEM - Phragmites

Landform (hillside, terrace, etc.): toe of roadbed slope Local relief (concave, convex, none): slightly concave Slope %: 0-5

Subregion (LRR or MLRA): LRR R Lat: see below Long: see below Datum: WGS 84

Soil Map Unit Name: multiple, all hydric, see report figures 2a, 2b, 2c NWI classification: PEM - Common Reed Monoculture

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No ____ | **Is the Sampled Area** |
| Hydric Soil Present? | Yes X | No ____ | **within a Wetland?** **Yes** X **No** ____ |
| Wetland Hydrology Present? | Yes X | No ____ | If yes, optional Wetland Site ID: ____ |

Remarks: (Explain alternative procedures here or in a separate report.)
Common Reed-dominated wetland complexes in depressional areas at toe of turnpike road embankments. Most were likely part of large complexes that have been fragmented by roadways/development. Many areas of wetlands within the Turnpike easement are mowed periodically. W17 has component of PFO along turnpike easement limit that contains a non-significant vernal pool (no egg masses detected during VP surveys). Wetlands with these characteristics include W7 (Lat: 43.638132°; Long: -70.337540°), W8 (Lat: 43.645994°; Long: -70.331252°), W9 (Lat: 43.647704°; Long: -70.330367°), W10 (Lat: 43.650453°; Long: -70.330753°), W17 (Lat: 43.666040°; Long: -70.331290°), W18 (Lat: 43.667510°; Long: -70.330737°), W39 (Lat: 43.642952°; Long: -70.333979°), W40 (Lat: 43.641036°; Long: -70.335464°), W50 (Lat: 43.666943°; Long: -70.330928°)

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

| | | |
|---|---|---|
| x Surface Water (A1) | x Water-Stained Leaves (B9) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Aquatic Fauna (B13) | ___ Drainage Patterns (B10) |
| ___ Saturation (A3) | ___ Marl Deposits (B15) | ___ Moss Trim Lines (B16) |
| x Water Marks (B1) | x Hydrogen Sulfide Odor (C1) | ___ Dry-Season Water Table (C2) |
| ___ Sediment Deposits (B2) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Crayfish Burrows (C8) |
| ___ Drift Deposits (B3) | ___ Presence of Reduced Iron (C4) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Algal Mat or Crust (B4) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Stunted or Stressed Plants (D1) |
| ___ Iron Deposits (B5) | ___ Thin Muck Surface (C7) | ___ Geomorphic Position (D2) |
| ___ Inundation Visible on Aerial Imagery (B7) | ___ Other (Explain in Remarks) | ___ Shallow Aquitard (D3) |
| ___ Sparsely Vegetated Concave Surface (B8) | | ___ Microtopographic Relief (D4) |
| | | X FAC-Neutral Test (D5) |

Secondary Indicators (minimum of two required)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes x | No ____ | Depth (inches): 4 |
| Water Table Present? | Yes ____ | No ____ | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes ____ | No ____ | Depth (inches): ____ |

**Wetland Hydrology Present?** **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology from groundwater as well as runoff from road surfaces, stormwater, and developments. Standing water throughout most complexes.

**VEGETATION**– Use scientific names of plants.

Sampling Point: see Remarks

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. *Invaised* | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | =Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | =Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft ) | | | |
| 1. *Phragmites australis* | 90 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 90 =Total Cover | | |
| **Woody Vine Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | =Total Cover | | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 90 | x 2 = | 180 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 90 (A) | | 180 (B) |

Prevalence Index = B/A = 2.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Other less common plants include jewelweed (Impatiens capensis), smartweed (Persicaria spp.), a variety of sedges (Carex spp.) and cattails (Typha angustifolia/latifolia). Invasives include common reed (Phragmites australis), and purple loosestrife (Lythrum salicaria). Other invasives knotweeds, honesuckles, olive, common in upland edges. Small areas of speckeld alder-dominated PSS communites found in W8, W17, W39 and W40, but common reed dominates complex. Many areas within turnpike easement mowed, rutted.

## SOIL

Sampling Point see Remarks

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-20 | 10YR 2/1 | 98 | | | | | Muck | soil slightly sandy |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** ____

Remarks:

Sand, gravel, fill material and trash common throughout wetland edges along turnpike and developed areas. Some areas of common reed-dominated marshes possessed histic epipedons.

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Exit 44-48 Turnpike Widening City/County: Scarborough-S.Portland/Cumberland Sampling Date: 5/27-6/2/2018

Applicant/Owner: Maine Turnpike Authority State: ME Sampling Point: see Remarks PFO

Investigator(s): Stacie Grove, Mike Chase-Ortiz Section, Township, Range: NA

Landform (hillside, terrace, etc.): basins or floodplains Local relief (concave, convex, none): slightly concave Slope %: 0-5

Subregion (LRR or MLRA): LRR R Lat: see below Long: see below Datum: WGS 84

Soil Map Unit Name: multiple, most are hydric, see report figures 2a, 2b, 2c NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No ____ | **Is the Sampled Area** |
| Hydric Soil Present? | Yes X | No ____ | **within a Wetland?** **Yes** X **No** ____ |
| Wetland Hydrology Present? | Yes X | No ____ | If yes, optional Wetland Site ID: ____ |

Remarks: (Explain alternative procedures here or in a separate report.)
Most wetlands meeting this classification are found in floodplains (sometimes narrow) along streams or ponds, in depressional areas of interchange ramps and toe of turnpike slope that are difficult to access. Significant components are mowed periodically and thus, many areas in the easement areas that would likely normally be classified as PFO (or PSS) are maintained as PEM; with the PFO componets in areas that are challenging to mow, or on the edge of, or outside of, the survey limits. Wetlands with these characteristics include W12 (Lat: 43.655141°; Long: -70.331653°), W19 (Lat: 43.669387°; Long:-70.329613°), W35 (Lat: 43.652935°; Long: -70.331585°), W45 (Lat: 43.629421°; Long: -70.347797°), W47 (Lat: 43.626327°; Long: -70.350676°), W49 ( Lat:43.655497°; Long: -70.330973°), W55 (Lat: 43.661185°; Long: -70.332524°).

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

| | | |
|---|---|---|
| ___ Surface Water (A1) | x Water-Stained Leaves (B9) | ___ Aquatic Fauna (B13) |
| x High Water Table (A2) | ___ Marl Deposits (B15) | ___ Hydrogen Sulfide Odor (C1) |
| x Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Presence of Reduced Iron (C4) |
| ___ Water Marks (B1) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Thin Muck Surface (C7) |
| ___ Sediment Deposits (B2) | ___ Other (Explain in Remarks) | |
| ___ Drift Deposits (B3) | | |
| ___ Algal Mat or Crust (B4) | | |
| ___ Iron Deposits (B5) | | |
| ___ Inundation Visible on Aerial Imagery (B7) | | |
| x Sparsely Vegetated Concave Surface (B8) | | |

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
x Microtopographic Relief (D4)
X FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ____ | No ____ | Depth (inches): ____ |
| Water Table Present? | Yes x | No ____ | Depth (inches): 6 |
| Saturation Present? (includes capillary fringe) | Yes x | No ____ | Depth (inches): 0 |

**Wetland Hydrology Present?** **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology from groundwater as well as runoff from road surfaces, stormwater, and developments. Standing water present in low-areas of most complexes. Most dried out quickly, but low ephemeral pool of wetand W55 contains potential vernal pool habitat (PVP #9). No egg masses encountered - pool was determined not to be a significant vernal pool. W12, W19 and W47 are riparian floodplain wetlands, others are low basins.

**VEGETATION**– Use scientific names of plants. Sampling Point: PFO

| Tree Stratum (Plot size: 30 ft) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Acer rubrum* | 55 | Yes | FAC |
| 2. *Fraxinus pennsylvanica* | 20 | Yes | FACW |
| 3. *Betula populifolia* | 10 | No | FAC |
| 4. *Pinus strobus* | 5 | No | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 90 | =Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15 ft) | | | |
| 1. *Alnus incana* | 35 | Yes | FACW |
| 2. *Vaccinium corymbosum* | 20 | Yes | FACW |
| 3. *Viburnum dentatum* | 10 | No | FAC |
| 4. *Acer rubrum* | 5 | No | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 70 | =Total Cover | |
| **Herb Stratum** (Plot size: 5 ft) | | | |
| 1. *Osmundastrum cinnamomeum* | 10 | Yes | FACW |
| 2. *Onoclea sensibilis* | 5 | Yes | FACW |
| 3. *Equisetum arvense* | 5 | Yes | FAC |
| 4. *Impatiens capensis* | 5 | Yes | FACW |
| 5. *Osmunda spectabilis* | 5 | Yes | OBL |
| 6. *Trientalis borealis* | 5 | Yes | FAC |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 35 | =Total Cover | |
| **Woody Vine Stratum** (Plot size: ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 5 | x 1 = | 5 |
| FACW species | 95 | x 2 = | 190 |
| FAC species | 90 | x 3 = | 270 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 195 (A) | | 485 (B) |

Prevalence Index = B/A = 2.49

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Salix nigra and other willows more common in riparian PFO complexes. Denity of shrub and herb layer variable. Other species can be more dominant in some areas (especially opeming and edges) and include several species of carex, meadowsweet (Spirea latifolia), steeplebush (Spirea angustifolia), winterberry (Ilex verticillata), Aronia species, redosier dogwood (Cornus sericea). Invasives such as common reed, purple loosestrife, reed canarygrass, honeysuckles, common buckthorn (Ramnus cathartica), poison ivy, Japanese knotweed (Fallopia japonica), bittersweet nightshade, oriental bittersweet (Celastrus orbiculatus), and autumn olive (Elaeagnus umbellate) all found in or near PFO communities.

PFO

**SOIL**

Sampling Point see Remarks

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-6 | 10YR 3/1 | 95 | | | | | Loamy/Clayey | |
| 6-13 | 10YR 5/1 | 80 | 10YR 4/6 | 10 | C | M | Loamy/Clayey | Prominent redox concentrations |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

**Indicators for Problematic Hydric Soils[3]:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** ____

Remarks:

Sand, gravel, fill material and trash common throughout wetland edges along turnpike and developed areas. Depths and soil colors vary slightly between complexes, but most meet criteria for indicator (F3) of depleted matrix. Those with sandy soils met criteria for (S5) sandy redox (sandy soil with depleted matrix with chroma < 2 and redox concentrations). Some low areas within W35 and W55 have low-ephemeral areas (NOT vernal pools based on VP survey) with redox depressions (at least 2 inches of distinct or prominent redox concentrations within upper 6 inches of soil with any color matrix). Many low areas likely the result of road building/development activities; W2, W43 and W44 have long linear man-made low areas that drain wetlands. Gley soils encountered in B horizon in floodplain areas W12, W19 and W47.

**LINEAR WATERBODY ASSESSMENT DATA FORM**

**Project/Site**: Exit 44-48 Turnpike Widening **City/State:** Scarborough & South Portland, ME

**Survey Date:** 5/27/2017 **Investigator(s):** S. Grove/M. Chase-Ortiz

**Feature ID:** S1 **Associated Wetland ID**: W47

## Feature Characteristics

**Feature Name (from topographic map):** Red Brook, 1st order tributary to Nonesuch River

**Flow Direction**: N then E **Avg. Flow Depth at time of Survey (in.):** 18 **Avg. Water Width at time of Survey (ft):** 20

**Avg. Channelized OHW Width (ft)**: 25 **Avg. Top of Floodplain Bank Width (ft.):** 60 (range 40 to 80)

**Bank Condition**: steep gradual barely discernible Mostly steep to east of tpk., more gradual to west

**Hydrologic Classification:** ephemeral intermittent perennial

**Circle any of the following that apply to the feature, and describe:**

A. It is depicted as a solid or broken blue line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map. **Yes**

B. It contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years. **Likely, although not evaluated over 6-month period of time.**

C. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water. **Yes, comprised of cobble, gravel, sand, silt and boulders (organic material and silt dominates on outflow side of turnpike)**

D. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed. **Yes, contains fish, water striders, and several aquatic invertebrate species**

E. The channel contains aquatic vegetation and is essentially devoid of upland vegetation. **Aquatics dominant in outflow pool on southeast side of turnpike.**

Could the feature be a man-made waterbody or grassy swale constructed, or constructed and maintained, solely for the purpose of draining storm water? **YES or NO** If yes, explain:

Does the feature appear to have been modified by human activities? **YES or NO** If yes, explain: **Altered by turnpike and adjacent development, channel straightened, culverts present at inflow and outflow, several smaller culverts dump flow into resource. Outflow on southeast side of turnpike much less stream-like, somewhat impounded, organic materials and silt over cobble substrate, and dominated by aquatic plants. Trash, fill, sand common in areas close to turnpike.**

**Hydrologic Classifications:**

Ephemeral - An ephemeral feature carries only storm water in direct response to precipitation with water flowing only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel.

Intermittent - An intermittent feature has a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table.

Perennial - A perennial feature has a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year.

**LINEAR WATERBODY ASSESSMENT DATA FORM**

**Project/Site**: Exit 44-48 Turnpike Widening **City/State:** Scarborough & South Portland, ME

**Survey Date:** 5/27/2017 **Investigator(s):** S. Grove/M. Chase-Ortiz

**Feature ID:** S2 **Associated Wetland ID**: W39 & W8

## Feature Characteristics

**Feature Name (from topographic map):** Long Creek, 1st order tributary to Clark Pond/Long Creek

**Flow Direction**: E then S **Avg. Flow Depth at time of Survey (in.):** 14 **Avg. Water Width at time of Survey (ft):** 10

**Avg. Channelized OHW Width (ft)**: 20 **Avg. Top of Floodplain Bank Width (ft.):** 40 (range 35-45)

**Bank Condition**: steep [gradual] barely discernible

**Hydrologic Classification:** ephemeral [intermittent] perennial

**Circle any of the following that apply to the feature, and describe:**

[A.] It is depicted as a solid or broken blue line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map. **Yes**

B. It contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years. **Likely, although not evaluated over 6-month period of time.**

[C]. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water. **Yes, comprised of cobble, some sand, silt and boulders (less scouring, more organics and silt on outflow side)**

[D]. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed. **Yes, contains fish, water striders, and several aquatic invertebrate species**

[E]. The channel contains aquatic vegetation and is essentially devoid of upland vegetation. **Aquatics in small pools on southeast side of turnpike.**

Could the feature be a man-made waterbody or grassy swale constructed, or constructed and maintained, solely for the purpose of draining storm water? **YES or** [**NO**] If yes, explain:

Does the feature appear to have been modified by human activities? [**YES**] **or NO** If yes, explain: **Altered by turnpike and adjacent development, channel straightened, culverts present at inflow and outflow, several smaller culverts dump flow into resource. Outflow on southeast side of turnpike much less stream-like, somewhat impounded, some areas of organic substrate over cobble, and aquatic plants. Trash, fill, sand common in areas close to turnpike.**

**Hydrologic Classifications:**

Ephemeral - An ephemeral feature carries only storm water in direct response to precipitation with water flowing only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel.

Intermittent - An intermittent feature has a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table.

Perennial - A perennial feature has a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year.

**LINEAR WATERBODY ASSESSMENT DATA FORM**

**Project/Site**: Exit 44-48 Turnpike Widening **City/State:** Scarborough & South Portland, ME

**Survey Date:** 5/28/2017 **Investigator(s):** S. Grove/M. Chase-Ortiz

**Feature ID:** S3 **Associated Wetland ID**: W12

## Feature Characteristics

**Feature Name (from topographic map):** Stroudwater River, 1st order tributary to Fore River

**Flow Direction**: E then SE **Avg. Flow Depth at time of Survey (in.):** 24 (estimated)

**Avg. Water Width at time of Survey (ft):** 40

**Avg. Channelized OHW Width (ft)**: 45 **Avg. top of Floodplain Bank Width (ft.):** 90 (range 80-100 ft)

**Bank Condition**: [steep] [gradual] barely discernible **Hydrologic Classification:** ephemeral intermittent [perennial]

**Circle any of the following that apply to the feature, and describe:**

[A.] It is depicted as a solid or broken blue line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map. **Yes**

B. It contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years. **Likely, although not evaluated over 6-month period. Is mapped as perennial by USGS.**

[C]. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water. **Yes, comprised of cobble, some sand, silt and boulders (less scouring, more organics and silt on outflow side)**

[D]. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed. **Yes, contains fish, water striders, and several aquatic invertebrate species**

E. The channel contains aquatic vegetation and is essentially devoid of upland vegetation. **No vegetation noted**

Could the feature be a man-made waterbody or grassy swale constructed, or constructed and maintained, solely for the purpose of draining storm water? **YES or** [**NO**] If yes, explain:

Does the feature appear to have been modified by human activities? [**YES**] **or NO** If yes, explain: **Banks altered by turnpike and adjacent development, several culverts dump flow into resource, banks predominately rip-rap near turnpike bridge. Trash, fill, sand common in areas close to turnpike.**

**Hydrologic Classifications:**

Ephemeral - An ephemeral feature carries only storm water in direct response to precipitation with water flowing only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel.

Intermittent - An intermittent feature has a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table.

Perennial - A perennial feature has a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year.

**LINEAR WATERBODY ASSESSMENT DATA FORM**

**Project/Site**: Exit 44-48 Turnpike Widening **City/State:** Scarborough & South Portland, ME

**Survey Date:** 5/30/2017 **Investigator(s):** S. Grove/M. Chase-Ortiz

**Feature ID:** S4 **Associated Wetland ID**: W27 & W19

## Feature Characteristics

**Feature Name (from topographic map):** Unnamed, 2nd order tributary to Fore River

**Flow Direction**: SE **Avg. Flow Depth at time of Survey (in.):** 10 **Avg. Water Width at time of Survey (ft):** 15

**Avg. Channelized OHW Width (ft)**: 20 **Avg. Top of Floodplain Bank Width (ft.):** 35 (30 to 40 ft range)

**Bank Condition**: [steep] gradual barely discernible **Hydrologic Classification:** ephemeral [intermittent] perennial

**Circle any of the following that apply to the feature, and describe:**

[A.] It is depicted as a solid or broken blue line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map. **Yes**

B. It contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years. **Likely, although not evaluated over 6-month period.**

[C]. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water. **Yes, comprised of cobble, some sand, silt (more organics and silt on outflow side)**

[D]. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed. **Yes, contains fish, water striders, and several aquatic invertebrate species**

[E.] The channel contains aquatic vegetation and is essentially devoid of upland vegetation. **Aquatic vegetation noted throughout, especially at outflow on southeast side of turnpike.**

Could the feature be a man-made waterbody or grassy swale constructed, or constructed and maintained, solely for the purpose of draining storm water? **YES or** [**NO**] If yes, explain:

Does the feature appear to have been modified by human activities? [**YES**] **or NO** If yes, explain: **Banks altered by turnpike, channel straightened, culvert at inflow and outflow. Trash, fill, sand common in areas close to turnpike.**

**Hydrologic Classifications:**

Ephemeral - An ephemeral feature carries only storm water in direct response to precipitation with water flowing only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel.

Intermittent - An intermittent feature has a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table.

Perennial - A perennial feature has a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year.

# Maine State Vernal Pool Assessment Form

## INSTRUCTIONS:

- **Complete all 3 pages of form thoroughly. Most fields are required for pool registration.**
- **Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.**

**Observer's Pool ID:** 3 **MDIFW Pool ID:** _____

### 1. PRIMARY OBSERVER INFORMATION

a. Observer name: Stacie Grove

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ◉ Yes

### 2. PROJECT CONTACT INFORMATION

a. Contact name: ◉ same as observer ○ other _____

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ○ Yes

c. Project Name: Maine Turnpike Widening Project - Exits 40 through 44

### 3. LANDOWNER CONTACT INFORMATION

a. Are you the landowner? ○ Yes ◉ No If no, was landowner permission obtained for survey? ◉ Yes ○ No

b. Landowner's contact information (required)

Name: Maine Turnpike Authority - Steve Tartre Phone: (207) 877-7771

Street Address: 2360 Congress Street City: Portland State: ME Zip: 04102

c. ☐ Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

**a. Location** Township: Westbrook, Cumberland County

Brief site directions to the pool (using mapped landmarks):

Within 250 feet of centerline for northbound lane of Interstate 95, low area within and abutting mowed turnpike right-of-way just north of Exit 47.

**b. Mapping Requirements**

**i.** USGS topographic map OR aerial photograph with pool clearly marked.

**ii. GPS location of vernal pool (use Datum NAD83 / WGS84)**

Longitude/Easting: -70.331134° Latitude/Northing: 43.665966°

Coordinate system: UTM NAD27

Check one:

○ GIS shapefile
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)

○ The pool perimeter is delineated by multiple GPS points. (Excellent)
- Include map or spreadsheet with coordinates.

◉ The above GPS point is at the center of the pool. (Good)

○ The center of the pool is approximately _____ m ○ ft ○ in the compass direction of _____ degrees from the above GPS point. (Acceptable)

## 5. VERNAL POOL HABITAT INFORMATION

**a. Habitat survey date (only if different from indicator survey dates on page 3):** _____

**b. Wetland habitat characterization**

■ Choose the best descriptor for the landscape setting:

- (•) Isolated depression
- ( ) Floodplain depression
- ( ) Pool associated with larger wetland complex
- ( ) Other: portion of orig. depression now part of turnpike right-of-way

■ Check all wetland types that best apply to this pool:

- ☐ Forested swamp
- ☐ Shrub swamp
- ☐ Peatland (fen or bog)
- ☐ Emergent marsh
- ☐ Wet meadow
- ☐ Lake or pond cove
- ☐ Abandoned beaver flowage
- ☐ Active beaver flowage
- ☐ Slow stream
- ☐ Floodplain
- ☑ Mostly unvegetated pool
- ☐ ATV or skidder rut
- ☐ Dug pond or borrow pit
- ☐ Roadside ditch
- ☐ Other: roadside swal

**c. Vernal pool status under the Natural Resources Protection Act (NRPA)**

**i. Pool Origin:** ( ) Natural (•) Natural-Modified ( ) Unnatural ( ) Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Likely originally a larger forest pool, a portion of pool along turnpike was altered and now is a mowed wetland swale with standing water that supports some breeding activity

**ii. Pool Hydrology**

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- ( ) Permanent
- ( ) Semi-permanent (drying partially in all years and completely in drought years)
- (•) Ephemeral (drying out completely in most years)
- ( ) Unknown

Explain:

12 inches of water first visit, 10 during the second, but 3 ft of pool margin was exposed/drying. Deep organics only in very center of pool.

■ Maximum depth at survey: (•) 0-12" (0-1 ft.) ( ) 12-36" (1-3 ft.) ( ) 36-60" (3-5 ft.) ( ) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 40 ( ) m (•) ft Length: 100 ( ) m (•) ft

■ Predominate substrate in order of increasing hydroperiod:

- ( ) Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- ( ) Mineral soil (sphagnum moss present)
- (•) Organic matter (peat/muck) shallow or restricted to deepest portion
- ( ) Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- ☐ Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- ☐ Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- ☑ Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- ☐ Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- ☐ Sphagnum moss (anchored or suspended)
- ☐ Wet site ferns (e.g. royal fern, marsh fern)
- ☐ Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- ☐ Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- ☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- ☐ Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- ☐ No vegetation in pool

■ Faunal indicators (check all that apply):

- ☐ Fish
- ☐ Bullfrog or Green Frog tadpoles
- ☐ Other: _____

**iii. Inlet/Outlet Flow Permanency**

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- ( ) No inlet or outlet
- (•) Intermittent inlet or outlet
- ( ) Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- ( ) Other or Unknown (explain): intermittent outlet into roadside drainage

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** April 20 and May 3, 2017

**b. Indicator abundance criteria and pool survey effort**

- Is pool depression bisected by 2 ownerships (straddler pool)? ○ Yes ◉ No
- Was the entire pool surveyed for egg masses? ◉ Yes ○ No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

| INDICATOR SPECIES | Egg Masses (or adult Fairy Shrimp) | | | | | | | | | Tadpoles/Larvae[4] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Visit #1 | Visit #2 | Visit #3 | Confidence Level[1] | | | Egg Mass Maturity[2] | | | Observed | | | Confidence Level[1] | | |
| Wood Frog | 0 | 0 | NA | 3 | 3 | NA | NA | NA | NA | 0 | 0 | 0 | 3 | 3 | 3 |
| Spotted Salamander | 0 | 14 | NA | 3 | 3 | NA | NA | M | NA | 0 | 0 | 0 | 3 | 3 | 3 |
| Blue-spotted Salamander | 0 | 0 | NA | 3 | 3 | NA | NA | NA | NA | 0 | 0 | 0 | 3 | 3 | 3 |
| Fairy Shrimp[3] | 0 | 0 | NA | 3 | 3 | NA | | | | | | | | | |

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

**c. Rarity criteria**

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

| SPECIES | Method of Verification* | | | CL** | SPECIES | Method of Verification* | | | CL** |
|---|---|---|---|---|---|---|---|---|---|
| | P | H | S | | | P | H | S | |
| Blanding's Turtle | ☐ | ☐ | ☐ | | Wood Turtle | ☐ | ☐ | ☐ | |
| Spotted Turtle | ☐ | ☐ | ☐ | | Ribbon Snake | ☐ | ☐ | ☐ | |
| Ringed Boghaunter | ☐ | ☐ | ☐ | | Other: | ☐ | ☐ | ☐ | |

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

**d. Optional observer recommendation:**

☐ SVP ☐ Potential SVP ☑ Non Significant VP ☐ Indicator Breeding Area

**e. General vernal pool comments and/or observations of other wildlife:**

Natural modified pool with standing water of long enough duration to support amphibian reproduction - meets physical criteria for definition as vernal pool. Less than 20 spotted salamander masses - does not meet biological criteria for SVP

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

**NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.**

**For MDIFW use only** Reviewed by MDIFW Date: _____ Initials: _____

This pool is: ☐ **Significant** ☐ **Potentially Significant** but lacking critical data ☐ **Not Significant** due to: ○ does not meet biological criteria. ○ does not meet MDEP vernal pool criteria.

Comments:

# Maine State Vernal Pool Assessment Form

## INSTRUCTIONS:

- **Complete all 3 pages of form thoroughly. Most fields are required for pool registration.**
- **Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.**

**Observer's Pool ID:** 9 **MDIFW Pool ID:** _____

### 1. PRIMARY OBSERVER INFORMATION

a. Observer name: Stacie Grove

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ◉ Yes

### 2. PROJECT CONTACT INFORMATION

a. Contact name: ◉ same as observer ○ other _____

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ○ Yes

c. Project Name: Maine Turnpike Widening Project - Exits 40 through 44

### 3. LANDOWNER CONTACT INFORMATION

a. Are you the landowner? ○ Yes ◉ No If no, was landowner permission obtained for survey? ◉ Yes ○ No

b. Landowner's contact information (required)

Name: Maine Turnpike Authority - Steve Tartre Phone: (207) 877-7771

Street Address: 2360 Congress Street City: Portland State: ME Zip: 04102

c. ☐ Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

**a. Location** Township: Westbrook, Cumberland County

Brief site directions to the pool (using mapped landmarks):

Within 250 feet of centerline for southbound lane of Interstate 95, part of larger shrub/cattail wetland complex abutting mowed area of turnpike right-of-way, located just north of Stroudwater Street overpass.

**b. Mapping Requirements**

**i.** USGS topographic map OR aerial photograph with pool clearly marked.

**ii. GPS location of vernal pool (use Datum NAD83 / WGS84)**

Longitude/Easting: -70.332486° Latitude/Northing: 43.661232°

Coordinate system: UTM NAD27

Check one:

○ GIS shapefile
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)

○ The pool perimeter is delineated by multiple GPS points. (Excellent)
- Include map or spreadsheet with coordinates.

◉ The above GPS point is at the center of the pool. (Good)

○ The center of the pool is approximately _____ m ○ ft ○ in the compass direction of _____ degrees from the above GPS point. (Acceptable)

## 5. VERNAL POOL HABITAT INFORMATION

**a. Habitat survey date (only if different from indicator survey dates on page 3):** _____

**b. Wetland habitat characterization**

■ Choose the best descriptor for the landscape setting:

- ○ Isolated depression
- ○ Floodplain depression
- ◉ Pool associated with larger wetland complex
- ○ Other: _____

■ Check all wetland types that best apply to this pool:

- ☐ Forested swamp
- ☑ Shrub swamp
- ☐ Peatland (fen or bog)
- ☐ Emergent marsh
- ☐ Wet meadow
- ☐ Lake or pond cove
- ☐ Abandoned beaver flowage
- ☐ Active beaver flowage
- ☐ Slow stream
- ☐ Floodplain
- ☐ Mostly unvegetated pool
- ☐ ATV or skidder rut
- ☐ Dug pond or borrow pit
- ☐ Roadside ditch
- ☐ Other: _____

**c. Vernal pool status under the Natural Resources Protection Act (NRPA)**

**i. Pool Origin:** ○ Natural ◉ Natural-Modified ○ Unnatural ○ Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Likely originally a larger pool located along turnpike and Stroudwater Street overpass and utility line corridor, part of wetland/pool likely modified during road construction

**ii. Pool Hydrology**

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- ○ Permanent
- ○ Semi-permanent (drying partially in all years and completely in drought years)
- ◉ Ephemeral (drying out completely in most years)
- ○ Unknown

Explain:

6 inches of water first visit, 4 inches during the second, but 1 ft of pool margin was exposed/drying. Deep organics only in very center of pool.

■ Maximum depth at survey: ◉ 0-12" (0-1 ft.) ○ 12-36" (1-3 ft.) ○ 36-60" (3-5 ft.) ○ >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 45 ○ m ◉ ft Length: 20 ○ m ◉ ft

■ Predominate substrate in order of increasing hydroperiod:

- ○ Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- ○ Mineral soil (sphagnum moss present)
- ◉ Organic matter (peat/muck) shallow or restricted to deepest portion
- ○ Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- ☐ Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- ☐ Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- ☐ Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- ☐ Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- ☐ Sphagnum moss (anchored or suspended)
- ☐ Wet site ferns (e.g. royal fern, marsh fern)
- ☑ Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- ☐ Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- ☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- ☐ Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- ☐ No vegetation in pool

■ Faunal indicators (check all that apply):

- ☐ Fish
- ☐ Bullfrog or Green Frog tadpoles
- ☐ Other: _____

**iii. Inlet/Outlet Flow Permanency**

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- ○ No inlet or outlet
- ◉ Intermittent inlet or outlet
- ○ Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- ○ Other or Unknown (explain): intermittent drainage into roadside swale

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** April 20 and May 3, 2017

**b. Indicator abundance criteria and pool survey effort**

- Is pool depression bisected by 2 ownerships (straddler pool)? ○ Yes ◉ No
- Was the entire pool surveyed for egg masses? ◉ Yes ○ No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

| INDICATOR SPECIES | Egg Masses (or adult Fairy Shrimp) | | | | | | | | | Tadpoles/Larvae[4] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Visit #1 | Visit #2 | Visit #3 | Confidence Level[1] | | | Egg Mass Maturity[2] | | | Observed | | | Confidence Level[1] | | |
| Wood Frog | 0 | 0 | NA | 3 | 3 | NA | NA | NA | NA | 0 | 0 | 0 | 3 | 3 | 3 |
| Spotted Salamander | 0 | 0 | NA | 3 | 3 | NA | NA | NA | NA | 0 | 0 | 0 | 3 | 3 | 3 |
| Blue-spotted Salamander | 0 | 0 | NA | 3 | 3 | NA | NA | NA | NA | 0 | 0 | 0 | 3 | 3 | 3 |
| Fairy Shrimp[3] | 0 | 0 | NA | 3 | 3 | NA | | | | | | | | | |

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

**c. Rarity criteria**

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

| SPECIES | Method of Verification* | | | CL** | SPECIES | Method of Verification* | | | CL** |
|---|---|---|---|---|---|---|---|---|---|
| | P | H | S | | | P | H | S | |
| Blanding's Turtle | ☐ | ☐ | ☐ | | Wood Turtle | ☐ | ☐ | ☐ | |
| Spotted Turtle | ☐ | ☐ | ☐ | | Ribbon Snake | ☐ | ☐ | ☐ | |
| Ringed Boghaunter | ☐ | ☐ | ☐ | | Other: | ☐ | ☐ | ☐ | |

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

**d. Optional observer recommendation:**

☐ SVP ☐ Potential SVP ☑ Non Significant VP ☐ Indicator Breeding Area

**e. General vernal pool comments and/or observations of other wildlife:**

Natural modified pool with standing water of long enough duration to support amphibian reproduction - meets physical criteria for definition as vernal pool. No evidence of use by indicator species - does not meet biological criteria for SVP

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

**NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.**

**For MDIFW use only** Reviewed by MDIFW Date: _____ Initials: _____

This pool is: ☐ **Significant** ☐ **Potentially Significant** but lacking critical data ☐ **Not Significant** due to: ○ does not meet biological criteria. ○ does not meet MDEP vernal pool criteria.

Comments:

# Maine Wetland Data Form
# NRPA & Functions and Values Addendum

**Project/Site**: **MTA Exit 44-48 Turnpike Widening** **Survey Date: 5/29/2017**

**Investigator(s): S. Grove/M. Chase-Ortiz** **Wetland ID**: W12

**Maine Natural Resource Protection Act (NRPA) Wetlands of Special Significance**

**Check any of the following criteria that apply to the wetland, and describe:**

____ Within 250 feet of a coastal wetland.
____ Is, or contains, a critically imperiled (S1) or imperiled (S2) wetland community as identified by the Maine Department of Conservation Natural Areas Program.
____ Within 250 feet of a great pond.
_X___ Is, or contains, a stream. **Stroudwater River**
____ Contains at least 20,000 square feet of aquatic or emergent vegetation or open water.
____ Contains significant wildlife habitat, including significant vernal pools. **Deer wintering yard to west of Project**
____ Contains peatland.
__X__ Within the 100-year floodplain (Zone A). **Zone A**

**Potential Vernal Pools (**not an official VP survey, but provides information to determine if a survey is recommended)

**Check any of the following that likely apply to this wetland (note any indicator species observed): NO HABITAT OBSERVED**

_____ **Potential Vernal Pool (PVP)** – includes features that meet the definition of a vernal pool per Maine's NRPA. The pool must be natural, temporary to semi-permanent, no permanent inlet, and no viable populations of predatory fish. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition."

_____ **Modified Potential Vernal Pool (MPVP)** – includes features that meet the criteria for a PVP but have been modified by human activities.

_____ **Amphibian Breeding Area (ABA)** - do not meet the NRPA regulatory definition of a vernal pool but do meet the USACE Programmatic General Permit definition of a vernal pool. The primary distinction between PVPs and ABAs are that ABAs may be of unnatural origin, may be in permanent bodies of water, and may have a permanent inlet so long as fish are not present.

## USACE Highway Methodology Functions and Values (provide qualifiers and description)

Natural Manmade **Altered** Adjacent Land Uses: **Transportation, Commercial, Forested, Open**

Distance to nearest road/development: **at site** Percent of wetland with contiguous forest or shrub buffer > 50 ft wide: **60%**

Number of tributaries contributing to wetland feature:

1. Groundwater Recharge/Discharge - The potential for a wetland to serve as a groundwater recharge and/or discharge area.

   **NOT PROVIDED AT MEANINGFUL LEVEL.** Narrow floodplain wetland, significant alteration, rip-rap. Qualifiers Noted: 2, 6, 7, 15

2. Floodflow Alteration - The effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. **NOT PROVIDED AT MEANINGFUL LEVEL.** Floodplain wetland, but narrow, banks steep, many areas in the site altered and covered with rip-rap. Qualifiers Noted: 4, 5, 10, 13

3. Fish - The effectiveness of the wetland to provide habitat for fresh or saltwater fish or shellfish. **NOT PROVIDED AT MEANINGFUL LEVEL.** Floodplain wetland, but narrow, banks steep and low access to wetland areas by fish, some overhanging veg, but most areas in the site altered and covered with rip-rap. Qualifiers Noted: 4, 6, 14, 16, 17

4. Sediment/Toxicant/Pathogen Retention - The ability of the wetland to reduce or prevent degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas. **NOT PROVIDED AT MEANINGFUL LEVEL.** Floodplain wetland, but narrow, banks steep although some small terraces are retaining sand/trash/etc. from adjacent roadway, many areas in the site altered and covered with rip-rap. Qualifiers Noted: 1, 9, 10

5. Nutrient Removal/Retention/Transformation - The effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries. **NOT PROVIDED.** No major sources nearby.

## Maine Wetland Data Form
## NRPA & Functions and Values Addendum

6. Production Export (Nutrients) - The effectiveness of the wetland to produce food or usable products for humans or other living organisms. **NOT PROVIDED**.

7. Sediment/Shoreline Stabilization - The effectiveness of a wetland to stabilize streambanks and shorelines against erosion. **NOT PROVIDED AT MEANINGFUL LEVEL.** Floodplain wetland, but narrow, banks steep although some small terraces are retaining sand/trash/etc. from adjacent roadway, many areas in the site altered and covered with rip-rap. Qualifiers Noted: 1, 2, 3, 7, 9

8. Wildlife Habitat **-** The effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. **PRIMARY FUNCTION, PROVIDED AT MODERATE LEVEL.** Not a high-quality wetland for wildlife but is likely its primary function. Key quality is that area is mostly vegetated with shrubs, and trees and is connected to some large unfragmented habitats. Qualifiers Noted: 2, 4 (some areas) 5, 8, 16, 17. Bird Use - AMRO, GRCA, NOCA, COYE, EUST, and racoon tracks.

9. Recreational Value **-** The suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. **NOT PROVIDED**

10. Educational Value - The suitability of the wetland as a site for an "outdoor classroom". **NOT PROVIDED**

11. Uniqueness and Heritage Value **-** The effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. **NOT PROVIDED**

12. Visual Quality/Aesthetics – "visual/aesthetic appeal or usefulness". **NOT PROVIDED**

13. Rare, Threatened and Endangered Species Value **-** The effectiveness of the wetland in supporting threatened or endangered species (consider forest cover for bats, shrubs for cottontail, vernal pools, etc.). **NOT PROVIDED. Some forest cover, but scattered, significant human activity (major highway), much of site is rip-rap. Good forest cover to east and west of site. Deer wintering yard 100 ft to west.**

# Maine Wetland Data Form
# NRPA & Functions and Values Addendum

**Project/Site**: **MTA Exit 44-48 Turnpike Widening** **Survey Date: 5/27-30/2017**

**Investigator(s): S. Grove/M. Chase-Ortiz** **Wetland ID(s)**: W13, 33, 34, 35, 49

**Maine Natural Resource Protection Act (NRPA) Wetlands of Special Significance** **1 APPLIES - TO W13 ONLY**

**Check any of the following criteria that apply to the wetland, and describe:**

____ Within 250 feet of a coastal wetland.

____ Is, or contains, a critically imperiled (S1) or imperiled (S2) wetland community as identified by the Maine Department of Conservation Natural Areas Program.

____ Within 250 feet of a great pond.

____ Is, or contains, a stream.

X (W13) Contains at least 20,000 square feet of aquatic or emergent vegetation or open water. **W13 is >20,000 sq ft, also LIKELY extends to east. However, on ROW areas are mowed periodically and off ROW appears to be hayfield (confirm WOSS status with agencies)**

____ Contains significant wildlife habitat, including significant vernal pools. **Deer wintering yard to west of Project**

____ Contains peatland.

____ Within the 100-year floodplain (Zone A).

**Potential Vernal Pools (**not an official VP survey, but provides information to determine if a survey is recommended)

**Check any of the following that likely apply to this wetland (note any indicator species observed):** **NO HABITAT OBSERVED**

_____ **Potential Vernal Pool (PVP)** – includes features that meet the definition of a vernal pool per Maine's NRPA. The pool must be natural, temporary to semi-permanent, no permanent inlet, and no viable populations of predatory fish. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition."

_____ **Modified Potential Vernal Pool (MPVP)** – includes features that meet the criteria for a PVP but have been modified by human activities.

_____ **Amphibian Breeding Area (ABA)** - do not meet the NRPA regulatory definition of a vernal pool but do meet the USACE Programmatic General Permit definition of a vernal pool. The primary distinction between PVPs and ABAs are that ABAs may be of unnatural origin, may be in permanent bodies of water, and may have a permanent inlet so long as fish are not present.

## USACE Highway Methodology Functions and Values (provide qualifiers and description)

Description of Wetlands: All are small (< 0.01 acre) relatively isolated features except for W13 (~.9 acres)

W13, W33, W34 and W39 are mowed PEM, W35 is PFO associated with culvert outflow

Natural Manmade **Altered** Adjacent Land Uses: **Transportation, Commercial, Forested, Open**

Distance to nearest road/development: **adjacent to site ~25 feet**

Percent of wetland with contiguous forest or shrub buffer > 50 ft wide: **15% Only W34 & W35 have some forest buffer**

Number of tributaries contributing to wetland feature:

1. Groundwater Recharge/Discharge - The potential for a wetland to serve as a groundwater recharge and/or discharge area.

   **NOT PROVIDED.** Some qualifier are present, but wetlands are small relatively isolated depressions, low water retention time, features located in turnpike ROW and are mowed (except for W35 – PFO).

2. Floodflow Alteration **-** The effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. **NOT PROVIDED.** No major source flow, not associated with waterbody, no significant retention potential.

3. Fish **-** The effectiveness of the wetland to provide habitat for fresh or saltwater fish or shellfish. **NOT APPLICABLE**

4. Sediment/Toxicant/Pathogen Retention - The ability of the wetland to reduce or prevent degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas. **NOT PROVIDED at W33, W34, W35 and W49,** minimal sources present, or fast flow through. **PROVIDED AT LOW LEVEL at W13**. Some sediment from adjacent roadway input into resource and terrace position holds material, but not a major function.

## Maine Wetland Data Form
## NRPA & Functions and Values Addendum

5. Nutrient Removal/Retention/Transformation - The effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries. **NOT PROVIDED.** No major sources nearby.

6. Production Export (Nutrients) - The effectiveness of the wetland to produce food or usable products for humans or other living organisms. **NOT PROVIDED**.

7. Sediment/Shoreline Stabilization - The effectiveness of a wetland to stabilize streambanks and shorelines against erosion. **NOT APPLICABLE**

8. Wildlife Habitat **-** The effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. **PRIMARY FUNCTION, BUT PROVIDED AT VERY LOW LEVELS.** Wetlands are small, and W13, W33, W34 and W49 are mowed periodically. Can and do provide habitat for pollinators/insects, birds, small mammals, etc. when not mowed and value increases depending on time since mowed. Food for deer. Fawn observed bedded down along edge of W13. W35 has forest cover and provides more diverse and less disturbed habitat. In general all areas in high disturbance areas, trash, near commercial development and major highway. Qualifiers noted: 7, 8, 14.

9. Recreational Value **-** The suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. **NOT PROVIDED**

10. Educational Value - The suitability of the wetland as a site for an "outdoor classroom". **NOT PROVIDED**

11. Uniqueness and Heritage Value **-** The effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. **NOT PROVIDED**

12. Visual Quality/Aesthetics – "visual/aesthetic appeal or usefulness". **NOT PROVIDED**

13. Rare, Threatened and Endangered Species Value **-** The effectiveness of the wetland in supporting threatened or endangered species (consider forest cover for bats, shrubs for cottontail, vernal pools, etc.). **NOT PROVIDED. Some forest cover at W35, but adjacent to commercial development, significant human activity (major highway)**

**Wetland W1**

**Wetland W2**

**Wetland W3**

**Wetland W4**

**Wetland W5**

**Wetland W6**

**Wetland W7**

**Wetland W8**

**Wetland W9**

**Wetland W10**

**Wetland W11**

**Wetland W12**


**Wetland W13**

**Wetland W14**

**Wetland W15**

**Wetland W16**

**Wetland W17**

**Wetland W18**

**Wetland W19**

**Wetland W20**

**Wetland W21**

**Wetland W22**

**Wetland W23**

**Wetland W24**

**Wetland W25**

**Wetland W26**

**Wetland W27**

**Wetland W28**

**Wetland W29**

**Wetland W30**

**Wetland W31**

**Wetland W32**

**Wetland W33**

**Wetland W34**

**Wetland W35**

**Wetland W36**

**Wetland W37**

**Wetland W38**

**Wetland W39**

**Wetland W40**

**Wetland W41**

**Wetland W42**

**Wetland W43**

**Wetland W44**

**Wetland W45**

**Wetland W46**

**Wetland W47**

**Wetland W48**

**Wetland W49**

**Wetland W50**

**Wetland W51**

**Wetland W52**

**Wetland W53**

**Wetland W54**

**Wetland W55**

**Wetland W56**

**Waterbody S1**

**Waterbody S2**

**Waterbody S3**

**Waterbody S4**

**Waterbody S5**

**Waterbody D1**

**Waterbody D2**

**Waterbody D3**

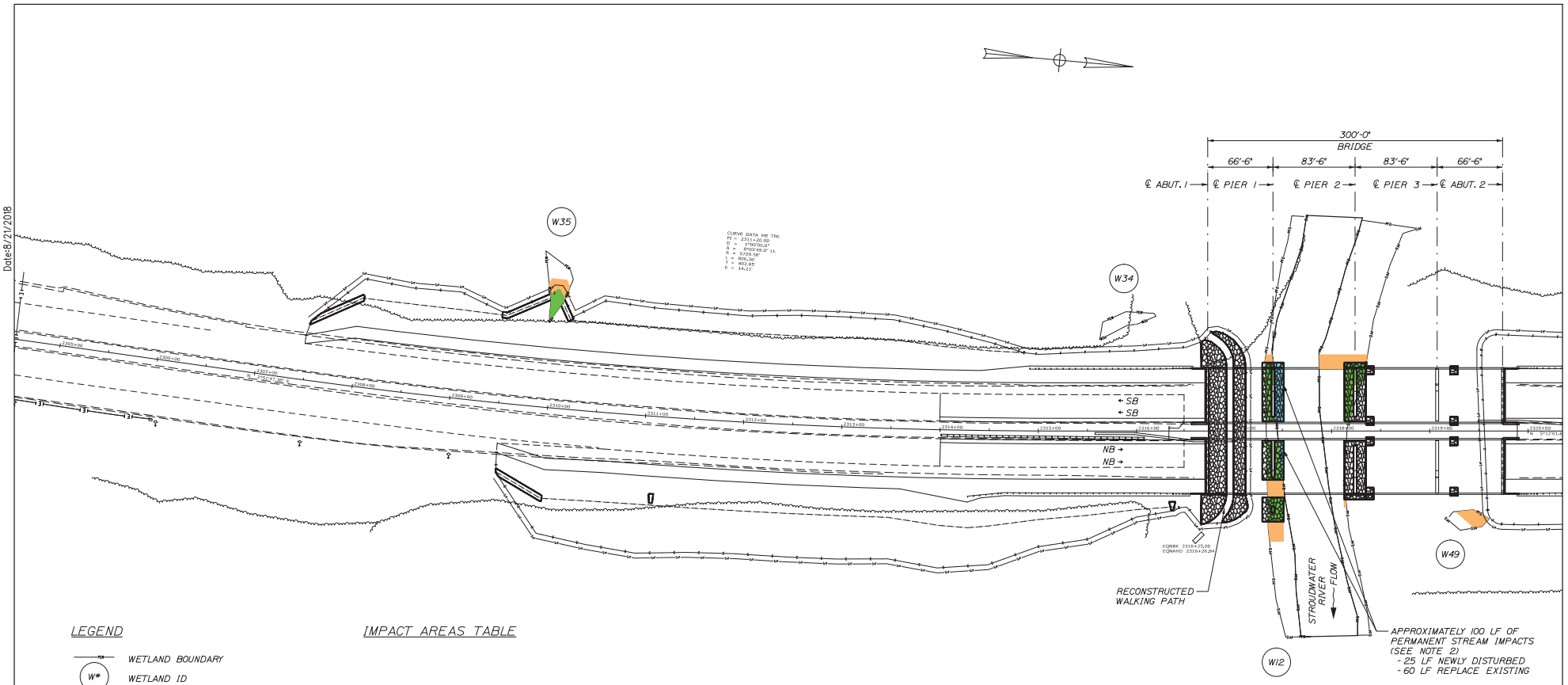
**Waterbody D4**

**Potential Vernal Pool 3**

| | |
|---|---|
|  |  |
| **Egg Masses in Potential Vernal Pool 3** | **Potential Vernal Pool 9 (no egg masses found)** |

# APPENDIX J

# SUMMARY OF WETLAND IMPACTS




## LEGEND

- WETLAND BOUNDARY
- W# WETLAND ID
- PROPOSED RIPRAP
- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT STREAM IMPACTS
- TEMPORARY STREAM IMPACTS

## IMPACT AREAS TABLE

## NOTES:

1. THE SPECIFIC WETLAND FUNCTIONS ARE DEFINED IN THE ATTACHED MEMO.

2. THE PROPOSED PIER WORK WILL INCLUDE WIDENING THE EXISTING PIERS BY APPROXIMATELY 16'-0", THE EXISTING PIER SECTIONS WILL REMAIN. ADDITIONALLY, THE PROPOSED RIPRAP IN SOME INSTANCES REPLACES EXISTING FAILED RIPRAP. REFER TO THE ATTACHED PHOTOS FOR MORE INFORMATION.

3. THE CONTRACTOR WILL BE REQUIRED BY PROJECT SPECIFICATIONS TO AVOID STREAM IMPACTS DURING CONSTRUCTION, THEREFORE ONLY A SMALL AMOUNT OF TEMPORARY STREAM IMPACTS ARE ANTICIPATED TO FACILITATE PIER REPAIRS AND CONSTRUCTION.

Date:8/21/2018

Filename: 001_Wetland Graphic 1.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Tim R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 06\2018 | Checked | JRH | 06\2018 |
| Drawn | SLS | 06\2018 | In Charge of | RAL | 06\2018 |

HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909

MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

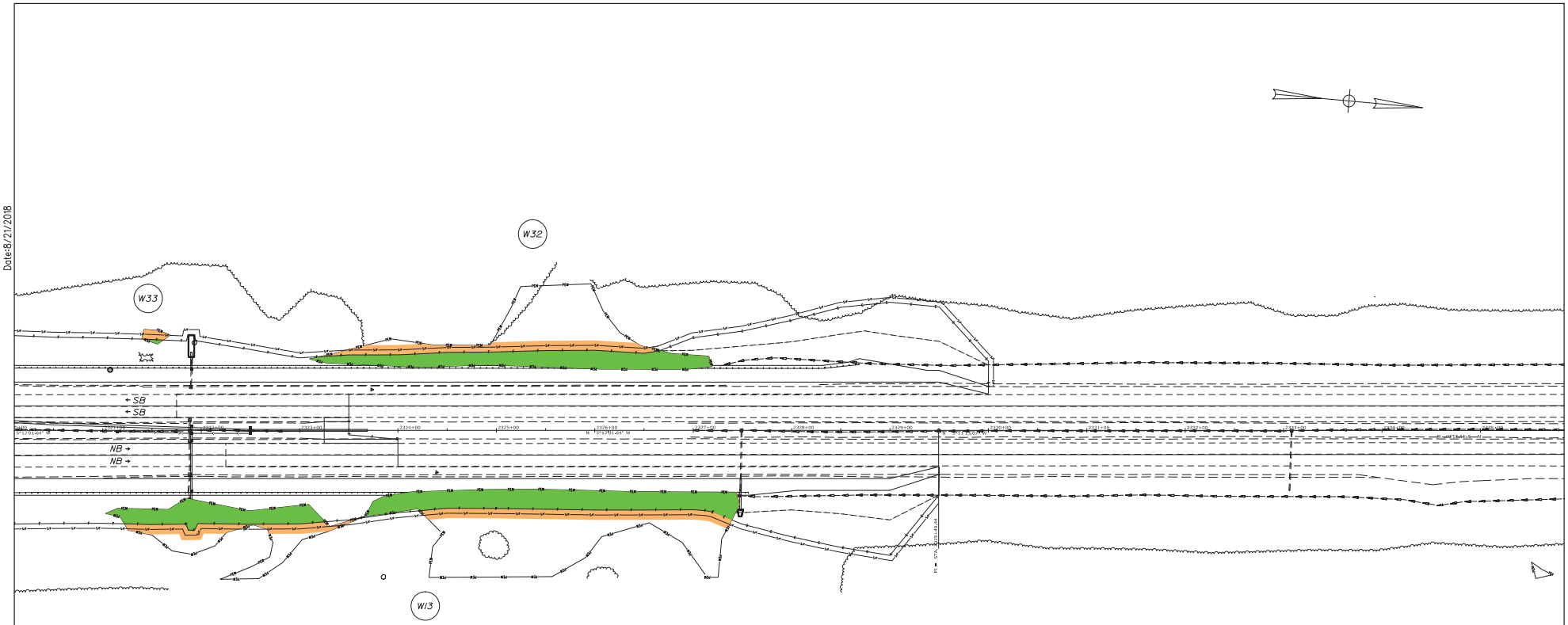
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS STROUDWATER RIVER OVERPASS

## WETLAND GRAPHIC 1

SHEET NUMBER:

CONTRACT:2019.16




Date:8/21/2018

Filename: 002_Wetland Graphic II.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Tim R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 06\2018 | Checked | JRH | 06\2018 |
| Drawn | SLS | 06\2018 | In Charge of | RAL | 06\2018 |

HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

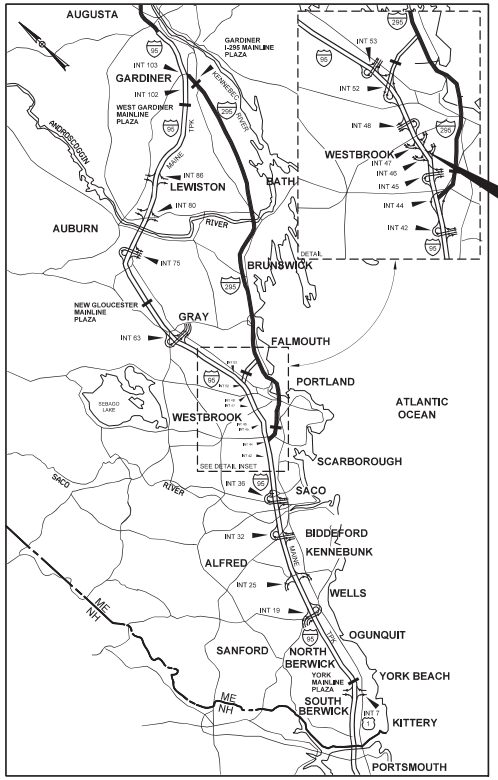
## WETLAND GRAPHIC II

SHEET NUMBER: 2 OF 2

CONTRACT:2019.16

# APPENDIX K

# ENGINEERED PROJECT DRAWINGS




LOCATION MAP

MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

# MAINE TURNPIKE AUTHORITY

DANIEL E. WATHEN, CHAIR
ROBERT D. STONE, VICE CHAIR
MICHAEL J. CIANCHETTE, MEMBER
JOHN E. DORITY, MEMBER
ANN R. ROBINSON, MEMBER
THOMAS J. ZUKE, MEMBER
KAREN S. DOYLE, MEMBER EX-OFFICIO

S. PETER MILLS, EXECUTIVE DIRECTOR

# CONTRACT 2019.16
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
# MILE 46.7

98% SUBMISSION
August 31, 2018

INDEX OF SHEETS



APPROVED:
MAINE TURNPIKE AUTHORITY

PETER S. MERFELD, P.E. - CHIEF OPERATIONS OFFICER — DATE

STEPHEN R. TARTRE, P.E. - DIRECTOR OF ENGINEERING & BUILDING MAINTENANCE — DATE

ROLAND A. LAVALLEE P.E., PLS
VICE PRESIDENT
DIRECTOR OF OPERATIONS — DATE

HNTB

CONTRACT 2019.16

Date:9/7/2018

Filename: 001_Title Sheet.dgn

| ITEM NO. | ITEM DESCRIPTION | UNIT | CIVIL QUANTITY | STRUCTURAL QUANTITY | TOTAL QUANTITY |
|---|---|---|---|---|---|
| 201.11 | Clearing | AC | 1.5 | 1 | 1.5 |
| 202.10 | Removing Existing Superstructure Property of Contractor | LS | | 120 | 1 |
| 202.12 | Removing Existing Structural Concrete | CY | | 1272 | 120 |
| 202.13 | Removing Existing Railings Retained by Authority | LF | | | 1,272 |
| 202.15 | Removing Existing Manhole or Catch Basin | EA | 6 | | 6 |
| 202.202 | Removing Pavement Surface | SY | 2500 | | 2,500 |
| 202.206 | Removing Rumble Strips | LF | 630 | | 630 |
| 203.20 | Common Excavation | CY | 21200 | | 21,200 |
| 203.21 | Rock Excavation | CY | 100 | | 100 |
| 203.25 | Granular Borrow | CY | 5350 | 30 | 5,350 |
| 203.35 | Crushed Stone 3/4 - Inch | CY | | 170 | 30 |
| 206.082 | Structural Earth Excavation - Major Structures, Plan Quantity | CY | | 1200 | 170 |
| 206.10 | Structural Earth Excavation - Piers | CY | | | 1,200 |
| 304.10 | Aggregate Subbase Course - Gravel | CY | 2700 | | 2,700 |
| 304.14 | Aggregate Base Course - Type A | CY | 2300 | | 2,300 |
| 403.207 | Hot Mix Asphalt, 19 mm Nominal Maximum Size | Ton | 4650 | 290 | 4,650 |
| 403.2081 | Hot Mix Asphalt, 12.5 mm (Polymer Modified) - RAP | Ton | 1300 | | 1,590 |
| 403.212 | Hot Mix Asphalt, 4.75 mm | Ton | 70 | 290 | 70 |
| 403.213 | Hot Mix Asphalt, 12.5 mm (base and intermediate course) | Ton | 1200 | 220 | 1,490 |
| 409.15 | Bituminous Tack Coat, Applied | GAL | 2150 | | 2,370 |
| 419.30 | Sawing Bituminous Pavement | LF | 4050 | | 4,050 |
| 470.08 | Berm Dropoff Correction - Grindings | Ton | 29 | | 29 |
| 470.081 | Berm Correction | LF | 100 | 8 | 100 |
| 501.231 | Dynamic Loading Test | EA | | 2500 | 8 |
| 501.42 | Steel H-beam Piles 57 lb/ft, delivered | LF | | 2500 | 2,500 |
| 501.421 | Steel H-beam Piles 57 lb/ft, in place | LF | | 1560 | 2,500 |
| 501.44 | Steel H-beam Piles 63 lb/ft, delivered | LF | | 1560 | 1,560 |
| 501.441 | Steel H-beam Piles 63 lb/ft, in place | LF | | 170 | 1,560 |
| 501.54 | Steel H-beam Piles 117 lb/ft, delivered | LF | | 170 | 170 |
| 501.541 | Steel H-beam Piles 117 lb/ft, in place | LF | | 71 | 170 |
| 501.90 | Pile Tips | EA | | 44 | 71 |
| 501.91 | Pile Splices | EA | | 1 | 44 |
| 501.92 | Pile Driving Equipment Mobilization | LS | | 1 | 1 |
| 502.219 | Structural Concrete, Abutments and Retaining Walls | LS | | 1 | 1 |
| 502.239 | Structural Concrete Piers | LS | | 640 | 1 |
| 502.249 | Structural Concrete Piers (Placed Under Water) | CY | | 1 | 640 |
| 502.26 | Structural Concrete Roadway and Sidewalk Slab on Steel Bridges | LS | | 1 | 1 |
| 502.264 | Structural Concrete Parapets | LS | | 465000 | 1 |
| 503.14 | Epoxy-Coated Reinforcing Steel, Fabricated and Delivered | LB | | 465000 | 465,000 |
| 503.15 | Epoxy-Coated Reinforcing Steel, Placing | LB | | 1260 | 465,000 |
| 503.17 | Mechanical/Welded Splice | EA | | 1 | 2,472 |
| 504.702 | Structural steel, fabricated and delivered, welded | LS | | 1 | 1 |
| 504.71 | Structural steel erection | LS | | 1 | 1 |
| 505.08 | Shear Connectors | LS | | 1 | 1 |
| 506.9102 | Zinc Rich Coating System (Shop Applied) | LS | | 1 | 1 |
| 506.9105 | Field Touch-Up of Existing Steel | LS | | 1 | 1 |
| 507.091 | Aluminum Bridge Railing, 1 Bar | LS | | 1 | 1 |
| 508.14 | High Performance Waterproofing Membrane | LS | | 1 | 1 |
| 511.071 | Cofferdam Pier 1 - NB | LS | | 1 | 1 |
| 511.072 | Cofferdam Pier 1 - SB | LS | | 1 | 1 |
| 511.073 | Cofferdam Pier 2 - NB | LS | | 1 | 1 |
| 511.074 | Cofferdam Pier 2 - SB | LS | | 1 | 1 |
| 511.091 | Temporary Earth Support Systems | LS | | 1 | 1 |
| 514.06 | Curing Box for Concrete Cylinders | EA | | 1500 | 1 |
| 515.202 | Clear Protective Coating for Concrete Surfaces | SY | | 2050 | 1500 |
| 515.23 | Anti-Graffiti Coating | SY | | 40 | 2050 |
| 518.40 | Epoxy Injection Crack Repair | LF | | 89 | 40 |
| 518.51 | Repair of Upward Facing Surfaces - below Reinforcing Steel < 8 inches | SF | | 131 | 89 |
| 518.60 | Repair of Vertical Surfaces < 8 inches | SF | | 4 | 131 |
| 520.221 | Expansion Device - Locking Compression Seal with Steel Edge Beams | EA | | 4 | 4 |
| 523.5303 | Steel Bearings, Fixed, Rocker | EA | | 16 | 4 |
| 523.5304 | Steel Bearings, Expansion, Rocker | EA | | 20 | 16 |
| 523.52 | Bearing Installation | EA | | 10 | 20 |
| 523.56 | Clean and Paint Bearing | EA | | 12 | 10 |
| 523.561 | Clean, Paint, and Reset Bearing | EA | | 2 | 12 |
| 523.562 | Clean, Paint, and Repair Bearing | EA | | 1 | 2 |
| 524.301 | Temporary Structural Support - Jacking | LS | | 1 | 1 |
| 524.302 | Temporary Structural Support - Girders | LS | | 1 | 1 |
| 524.303 | Temporary Structural Support - Braces | LS | | 7400 | 1 |
| 524.40 | Protective Shielding - Steel Girders | SY | | 1 | 7400 |
| 526.304 | Temporary Concrete Barrier, Anchored | LS | | | 1 |
| 526.306 | Temporary Concrete Barrier, Type 1 - Supplied by Authority (4180 LF) | LS | 1 | | 1 |
| 526.3061 | Temporary Concrete Barrier, Type 1 - Supplied by Authority (560 LF); To Remain | LS | 1 | | 1 |

| ITEM NO. | ITEM DESCRIPTION | UNIT | CIVIL QUANTITY | STRUCTURAL QUANTITY | TOTAL QUANTITY |
|---|---|---|---|---|---|
| 527.341 | Work Zone Crash Cushion - TL3 | UNIT | 2 | | 2 |
| 603.155 | 12 Inch Reinforced Concrete Pipe - Class III | LF | 170 | | 170 |
| 603.165 | 15 Inch Reinforced Concrete Pipe - Class III | LF | 65 | | 65 |
| 603.175 | 18 Inch Reinforced Concrete Pipe - Class III | LF | 77 | | 77 |
| 603.28 | Concrete Collar | EA | 3 | | 3 |
| 604.09 | Catch Basin Type B1 | EA | 4 | | 4 |
| 604.15 | Manhole | EA | 1 | | 1 |
| 604.246 | Catch Basin Type F5 | EA | 1 | | 1 |
| 604.26 | Catch Basin Type B5 | EA | 5 | | 5 |
| 604.40 | Secure Catch Basin Grate | EA | 11 | | 11 |
| 605.11 | 12" Underdrain Type C | LF | 140 | | 140 |
| 606.1301 | 31" W-Beam Guardrail - Mid-Way Splice (7' Steel Post, 8" Offset Blocks, Single Faced) | LF | 1900 | | 1,900 |
| 606.1305 | 31" W-Beam Guardrail - Mid-Way Splice Flared Terminal (31" Height) | EA | 2 | | 2 |
| 606.1351 | Terminal End - Anchored End - 31" W-Beam Guardrail | EA | 2 | | 2 |
| 606.1723 | Bridge Transition - Type III | EA | | 4 | 4 |
| 606.353 | Reflectorized Flexible Guardrail Marker | EA | 2 | | 2 |
| 606.354 | Remove and Reset Reflectorized Flexible Guardrail Marker | EA | 6 | | 6 |
| 606.3622 | Guardrail Adjust - Double Rail | LF | 190 | | 190 |
| 609.15 | Sloped Curb Type I | LF | | 1350 | 1,350 |
| 607.17 | Chain Link Fence - 6 foot | LF | | 220 | 220 |
| 610.08 | Plain Riprap | CY | 23 | 920 | 943 |
| 610.18 | Stone Ditch Protection | CY | 72 | 45 | 117 |
| 610.181 | Temporary Stone Check Dam | CY | 40 | | 40 |
| 613.319 | Erosion Control Blanket | SY | 2150 | | 2,150 |
| 615.07 | Loam | CY | 1850 | | 1,850 |
| 618.14 | Seeding Method Number 2 | UNIT | 150 | | 150 |
| 619.1201 | Mulch - Plan Quantity | UNIT | 150 | | 150 |
| 619.1202 | Temporary Mulch | LS | 1 | | 1 |
| 619.1401 | Erosion Control Mix | CY | | 70 | 70 |
| 620.58 | Erosion Control Geotextile | SY | 310 | 710 | 1,020 |
| 627.712 | White or Yellow Pavement Marking Line | LF | 15900 | | 15,900 |
| 627.73 | Temporary 6 Inch Pavement Marking Tape | LF | 3000 | | 3,000 |
| 627.77 | Removing Existing Pavement Marking | SF | 22500 | | 22,500 |
| 627.78 | Temporary Painted Pavement Marking Line, White or Yellow | LF | 41100 | | 41,100 |
| 629.05 | Hand Labor, Straight Time | HR | 20 | | 20 |
| 631.10 | Air Compressor (Including Operator) | HR | 20 | | 20 |
| 631.11 | Air Tool (Including Operator) | HR | 20 | | 20 |
| 631.12 | All Purpose Excavator (Including Operator) | HR | 20 | | 20 |
| 631.172 | Truck - Large (Including Operator) | HR | 20 | | 20 |
| 645.272 | Regulatory, Warning and Bridge Number Signs, Type 1 - Supplied By Authority | EA | 2 | | 2 |
| 645.501 | Remove and Reset Mainline Sign No. 1 | LS | 1 | | 1 |
| 645.502 | Remove and Reset Mainline Sign No. 2 | LS | 1 | | 1 |
| 645.503 | Remove and Reset Mainline Sign No. 3 | LS | 1 | | 1 |
| 645.504 | Remove and Reset Mainline Sign No. 4 | LS | 1 | | 1 |
| 645.505 | Remove and Reset Mainline Sign No. 5 | LS | 1 | | 1 |
| 645.506 | Remove and Reset Mainline Sign No. 6 | LS | 1 | | 1 |
| 645.507 | Remove and Reset Mainline Sign No. 7 | LS | 1 | | 1 |
| 652.30 | Flashing Arrow | EA | 2 | | 2 |
| 652.312 | Type III Barricades | EA | 10 | | 10 |
| 652.33 | Drum | EA | 380 | | 380 |
| 652.34 | Cone | EA | 380 | | 380 |
| 652.35 | Construction Signs | SF | 1650 | | 1,650 |
| 652.361 | Maintenance of Traffic Control Devices | LS | 0.5 | 0.50 | 1 |
| 652.41 | Portable-Changeable Message Sign | EA | 2 | | 2 |
| 652.45 | Truck Mounted Attenuator | CD | 65 | | 65 |
| 652.451 | Automated Trailer Mounted Speed Limit Sign | CD | 65 | | 65 |
| 652.46 | Temporary Portable Rumble Strips | UNIT | 18 | | 18 |
| 656.50 | Baled Hay, In Place | EA | 20 | | 20 |
| 656.60 | Temporary Berms | LF | 500 | | 500 |
| 656.62 | Temporary Slope Drains | LF | 100 | | 100 |
| 656.632 | 30 Inch Temporary Silt Fence | LF | 4900 | | 4,900 |
| 656.64 | Boom Supported Floating Silt Fence | LF | 500 | | 500 |
| 659.10 | Mobilization | LS | 0.5 | 0.5 | 1 |

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 002_Estimated Quantities.dgn

Scale: NOT TO SCALE

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | BRG | 08\18 | Checked | TJP | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## ESTIMATED QUANTITIES

SHEET NUMBER: EQ-01

CONTRACT:2019.16

## GENERAL NOTES:

1. ALL DETAILS SHALL BE IN CONFORMANCE WITH MAINE DEPARTMENT OF TRANSPORTATION (MaineDOT) STANDARD DETAILS HIGHWAYS AND BRIDGES LATEST REVISION AND MDOT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL LATEST REVISION UNLESS OTHERWISE INCLUDED IN THESE PLANS.

2. ALL EXISTING DELINEATOR AND MILE MARKER POSTS SHALL BE REMOVED AND RESET UPON COMPLETION OF THE CONTRACT. PAYMENT FOR RESETTING GUARDRAIL DELINEATOR POSTS WILL BE MADE UNDER ITEM 606.354. DELINEATOR POSTS SUPPLIED BY THE CONTRACTOR SHALL BE PAID FOR UNDER ITEM 606.353.

3. THE CONTRACTOR SHALL SUBMIT THE PROPOSED STAGING AREA(S) AND FIELD TRAILER LOCATION TO THE RESIDENT FOR APPROVAL PRIOR TO STARTING WORK.

4. GEOTECHNICAL INFORMATION FURNISHED OR REFERRED TO IN THIS PLAN SET IS FOR THE BIDDER'S AND CONTRACTOR'S USE. NO ASSURANCE IS GIVEN THAT THE INFORMATION OR INTERPRETATIONS WILL BE REPRESENTATIVE OF ACTUAL SUBSURFACE CONDITIONS AT THE TIME OF CONSTRUCTION. THE AUTHORITY SHALL NOT BE RESPONSIBLE FOR THE BIDDER'S AND CONTRACTOR'S INTERPRETATIONS OF, OR CONCLUSIONS DRAWN FROM THE GEOTECHNICAL INFORMATION. THE BORING LOGS CONTAINED IN THE PLAN SET PRESENT FACTUAL AND INTERPRETIVE SUBSURFACE INFORMATION COLLECTED AT DISCRETE LOCATIONS. DATA PROVIDED MAY NOT BE REPRESENTATIVE OF THE SUBSURFACE CONDITIONS BETWEEN BORING LOCATIONS.

5. CLEARING LIMITS SHOWN ON THE PLANS ARE APPROXIMATE. FINAL CLEARING LIMITS WILL BE APPROVED BY THE RESIDENT.

6. REMOVAL OF SINGLE TREES, STUMPS, OR SHRUBS IS INCIDENTAL TO ITEM 201.11.

7. THE U.S. ARMY CORPS OF ENGINEERS AND THE STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION PERMIT FOR THE STROUDWATER RIVER OVERPASS PROJECT ARE INCLUDED AS PART OF THIS CONTRACT (SEE SPECIFICATIONS). THE CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS OF THESE PERMITS.

8. RIGHT OF WAY AND PROPERTY LINES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.

## EARTHWORK NOTES:

1. THE NORMAL GRUBBING WIDTH IN THE FILLS WHEN SUBGRADE IS LESS THAN 5 FEET ABOVE EXISTING GROUND SHALL BE VARIABLE LEFT OR RIGHT. THE GRUBBING DEPTH HAS BEEN ESTIMATED AS 6 INCHES.

2. WASTE MATERIALS SHALL BE DISPOSED OF OFF THE PROJECT SITE AND IN ACCORDANCE WITH ALL ENVIRONMENTAL REGULATIONS.

3. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH OSHA SUBPART P OF 29 CFR PART 192.6.65D-652 (CONSTRUCTION STANDARDS FOR EXCAVATION).

4. REMOVAL OF EXISTING PAVEMENT, WITHIN THE AREAS OF FULL DEPTH PAVEMENT AND FULL DEPTH RECONSTRUCTION, SHALL BE PAID FOR AS COMMON EXCAVATION. EXISTING PAVEMENT THICKNESS HAS BEEN ESTIMATED TO BE 10 INCHES.

5. FILL/BORROW SHALL BE COMPACTED TO 90% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR, EXCEPT AS AMENDED BY SPECIAL PROVISION 203. GRANULAR BORROW AND AGGREGATE SHALL BE COMPACTED TO 95% OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR, EXCEPT AS AMENDED BY SPECIAL PROVISION 203.

## DRAINAGE NOTES:

1. NO EXISTING DRAINAGE SHALL BE ABANDONED, REMOVED OR PLUGGED WITHOUT PRIOR APPROVAL OF THE RESIDENT. ABANDONED STRUCTURES TO REMAIN SHALL BE PLUGGED WITH BRICK AND MORTAR. THIS WORK SHALL BE INCIDENTAL TO SECTION 604 ITEMS.

2. INLETS AND OUTLETS OF ALL CULVERTS SHALL BE RIPRAPPED UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE RESIDENT.

3. ALL DITCH ELEVATIONS AND OFFSETS SHOWN ON THE CROSS SECTIONS ARE FOR THE FINISHED DITCH FLOW LINE.

## SIGN NOTES:

1. BRIDGE NO. SIGNS SHALL BE SUPPLIED BY THE MAINE TURNPIKE AUTHORITY. THE CONTRACTOR SHALL SUPPLY THE U-CHANNEL POST AND SHALL INSTALL THE SIGNS. PAYMENT SHALL BE UNDER ITEM 645.272.

## UTILITY NOTES:

1. EXISTING UTILITIES ON THESE PLANS WERE COMPILED FROM FIELD SURVEY AND VARIOUS OTHER SOURCES. LOCATIONS ARE NOT GUARANTEED TO BE ACCURATE NOR IS IT GUARANTEED THAT ALL UTILITIES ARE SHOWN. NO SEPARATE OR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR DUE TO ANY VARIANCE BETWEEN THE DATA SHOWN ON THE PLANS AND THE ACTUAL FIELD CONDITIONS ENCOUNTERED. NO WORK SHALL BE STARTED UNTIL THE OWNERS OF THE VARIOUS UTILITIES ARE NOTIFIED BY THE CONTRACTOR OF THE PROPOSED CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 1-888-344-7233 PRIOR TO THE START OF THE WORK. THE CONTRACTOR SHALL NOTIFY THE RESIDENT 10 DAYS PRIOR TO CONSTRUCTION SO THE RESIDENT MAY COORDINATE WITH DIG SMART.

2. SEE SPECIFICATIONS FOR REQUIRED UTILITY COORDINATION.

## GUARDRAIL NOTES:

1. AT THE END OF EACH DAY, THE CONTRACTOR IS REQUIRED TO HAVE AN APPROVED CRASHWORTHY END TREATMENT ON ALL GUARDRAIL WITHIN ALL WORK AREAS THAT ARE ACCESSIBLE TO TRAFFIC.

2. CONNECTIONS FOR PROPOSED GUARDRAIL TO EXISTING GUARDRAIL SHALL BE INCIDENTAL TO THE PROPOSED GUARDRAIL ITEMS, UNLESS NOTED OTHERWISE.

3. ALL GUARDRAIL SHALL BE INSTALLED IN A MANNER TO AVOID DRAINAGE STRUCTURES.

4. SEE DOWNSPOUT DETAILS, SHEET CD-02 FOR THE SHOULDER PAVEMENT LIMITS FROM THE BRIDGE JOINT TO THE STONE DOWNSPOUT.

5. GUARDRAIL REMOVED AND NOT RESET OR STACKED SHALL BE INCIDENTAL TO CONTRACT ITEMS AND INCLUDE ALL REMOVAL, DISPOSAL, EQUIPMENT, AND LABOR NECESARY TO SATISFACTORILY COMPLETE THE WORK.

6. HOLES CREATED BY GUARDRAIL REMOVAL WILL BE FILLED AND COMPACTED WITH APPROVED MATERIALS AS DIRECTED BY THE RESIDENT. PAYMENT TO BE INCIDENTAL TO THE GUARDRAIL ITEMS.

## EROSION CONTROL NOTES:

1. THE ANTICIPATED EROSION CONTROL DEVICES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROPOSE ACTUAL TYPE AND LOCATION OF DEVICES FOR APPROVAL BY THE RESIDENT. ADDITIONAL MEASURES MAY BE PROPOSED BY THE CONTRACTOR DUE TO SITE OR WEATHER CONDITIONS. THE RESIDENT MAY DIRECT THE CONTRACTOR TO IMPLEMENT ADDITIONAL MEASURES. ANY ADDITIONAL MEASURES APPROVED BY THE RESIDENT WILL BE MEASURED FOR PAYMENT UNDER THE APPROPRIATE BID ITEMS.

2. 4" LOAM HAS BEEN ESTIMATED FOR 100% OF THE DISTURBED SLOPE AREA UNLESS OTHERWISE SPECIFIED ON THE PLANS. ACTUAL PLACEMENT OF THE LOAM SHALL BE AS DESIGNATED BY THE RESIDENT.

3. ALL SLOPES SHALL BE SEEDED WITH SEEDING METHOD NO. 1, 2, OR 3. UNLESS OTHERWISE NOTED, SEEDING METHOD NO. 1 SHALL BE UTILIZED ON ALL LAWNS AND DEVELOPED AREAS; SEEDING METHOD NO. 2 SHALL BE UTILIZED ON ALL NON-GUARDRAIL FORESLOPES, FROM THE EDGE OF FORESLOPE TO THE DITCH LINE OR TOE OF FILL; SEEDING METHOD NO. 3 SHALL BE UTILIZED ON ALL BACKSLOPES AND ON ALL GUARDRAIL FORESLOPES.

4. MULCH SHALL BE APPLIED IN AREAS SEEDED BY SEEDING METHODS NO. 1, 2, AND 3 EXCEPT WHERE EROSION CONTROL BLANKET IS SPECIFIED.

5. ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MAINE DEPARTMENT OF TRANSPORTATION BEST MANAGEMENT PRACTICES.

6. TEMPORARY BERMS AND TEMPORARY SLOPE DRAINS ARE ANTICIPATED AT ALL STONE DOWNSPOUT LOCATIONS WHILE GROWTH IS BEING ESTABLISHED ON SIDE SLOPES.

7. TEMPORARY EROSION CONTROL BLANKET. ITEM 613.319 SHALL BE INSTALLED IN ALL DITCHES AND 2:1 SLOPES FROM TOP TO TOE OF SLOPE. LOAM AND SEED SHALL BE PLACED PRIOR TO THE INSTALLATION OF THE EROSION CONTROL BLANKET. LIMITS OF THE EROSION CONTROL BLANKET IN DITCHES SHALL BE 6' WIDE OR AS DESIGNATED BY THE RESIDENT.

8. PLACE A TWO FOOT WIDE STRIP OF TEMPORARY EROSION CONTROL BLANKET ON THE SIDE SLOPES ALONG THE TOP OF THE RIPRAP AND BEHIND THE WINGWALLS.

## EARTHWORK SUMMARY

| COMMON EXCAVATION FOR ESTIMATE | Northbound | Southbound | Median | |
|---|---|---|---|---|
| COMMON EXCAVATION (FROM CROSS SECTIONS) | 12,677 | 7,098 | 495 | |
| GRUBBING IN FILL | 428 | 465 | 0 | |
| TOTAL COMMON EXCAVATION for estimate) | 13,105 | 7,563 | 495 | 21,163 |
| **FILL FOR BORROW CALCULATIONS** | | | | |
| COMMON FILL (FROM CROSS SECTIONS) | 4,339 | 3,277 | 0 | |
| GRUBBING IN FILL | 428 | 465 | 0 | |
| TOTAL FILL | 4,767 | 3,742 | 0 | 8,509 |
| **AVAILABLE COMMON EXCAVATION FOR BORROW CALCULATIONS** | | | | |
| (1) TOTAL COMMON EXCAVATION | 13,105 | 7,563 | 495 | 21,163 |
| DEDUCTIONS: | | | | |
| GRUBBING IN CUT | 1,834 | 1,269 | 119 | |
| GRUBBING IN FILL | 428 | 465 | 0 | |
| PAVEMENT SALVAGE (CUT & FILL) | 817 | 800 | 0 | |
| (2) TOTAL DEDUCTIONS | 2,879 | 2,534 | 119 | 5,532 |
| TOTAL AVAILABLE COMMON EXCAVATION (1) MINUS (2) | 10,226 | 5,029 | 376 | 15,631 |
| TOTAL AVAILABLE STRUCT. EXCAVATIONS | 1,300 | 1,030 | 37 | 2,367 |
| RIPRAP EXCAVATION | 0 | 0 | 0 | |
| TOTAL AVAILABLE NON-ROCK EXCAVATION | 11,526 | 6,059 | 376 | 17,961 |
| **COMPUTATION FOR COMMON BORROW FOR ESTIMATE** | | | | |
| (3) TOTAL FILL | 4,767 | 3,742 | 0 | 8,509 |
| TOTAL AVAIL. NON-ROCK EXCAV. 11,526 x 0.90 = 10,373 | | | | |
| (4) TOTAL AVAILABLE EXCAVATION = | 10,373 | 5,453 | 338 | 16,165 |
| BORROW NEEDED = TOTAL FILL MINUS TOTAL AVAILABLE EXCAVATION | -5,606 | -1,711 | -338 | -7,656 |
| IF NO BORROW IS NEEDED, SURPLUS MATERIAL = AVAILABLE EXCAVATION MINUS TOTAL FILL, PLUS TOTAL WASTE MATERIAL TO BE WASTED | 5,606 | 1,711 | 338 | 7,656 |

## LIST OF ABBREVIATIONS

ABUT. - ABUTMENT
ADDL. - ADDITIONAL
ALT. - ALTERNATE
APPROX. - APPROXIMATELY
BOT. - BOTTOM
BRG. - BEARING
CL. - CLEAR
℄ - CENTERLINE
CONC. - CONCRETE
CONSTR. - CONSTRUCTION
C.Y. - CUBIC YARD
DEMO. - DEMOLITION
DIA. - DIAMETER
EA. - EACH
EB - EASTBOUND
E.F. - EACH FACE
EL. - ELEVATION
EQ. - EQUAL
EXIST. - EXISTING
EXP. - EXPANSION
F.F. - FAR FACE
JT. - JOINT
MAX. - MAXIMUM
MEDOT - MAINE DEPARTMENT OF TRANSPORTATION
MIN. - MINIMUM
MTA - MAINE TURNPIKE AUTHORITY
NB - NORTHBOUND
N.F. - NEAR FACE
N.T.S. - NOT TO SCALE
PED. - PEDESTAL
PGL - PROFILE GRADE LINE
℄ - PLATE
PROP. - PROPOSED
P.S.I. - POUNDS per SQUARE INCH
RDWY. - ROADWAY
SHLDR. - SHOULDER
SB - SOUTHBOUND
SF - SQUARE FEET
SP. - SPACES
STA. - STATION
T.&B. - TOP & BOTTOM
TPKE. - TURNPIKE
TYP. - TYPICAL
U.O.N. - UNLESS OTHERWISE NOTED
VERT. - VERTICAL
WB - WESTBOUND
W.P. - WORKING POINT
WW - WINGWALL

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 003_General Notes.dgn

Scale: NOT TO SCALE

Designed by: HNTB

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | BRG | 08\18 | Checked | TJP | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

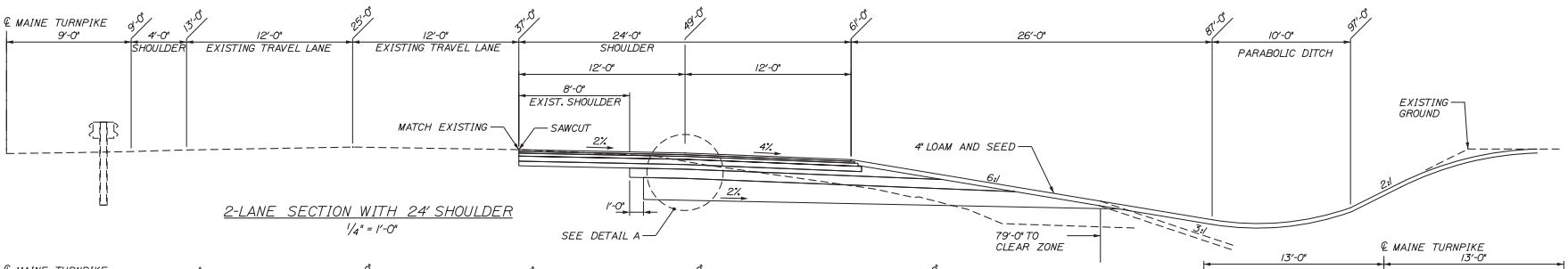
THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
GENERAL NOTES AND EARTHWORK SUMMARY

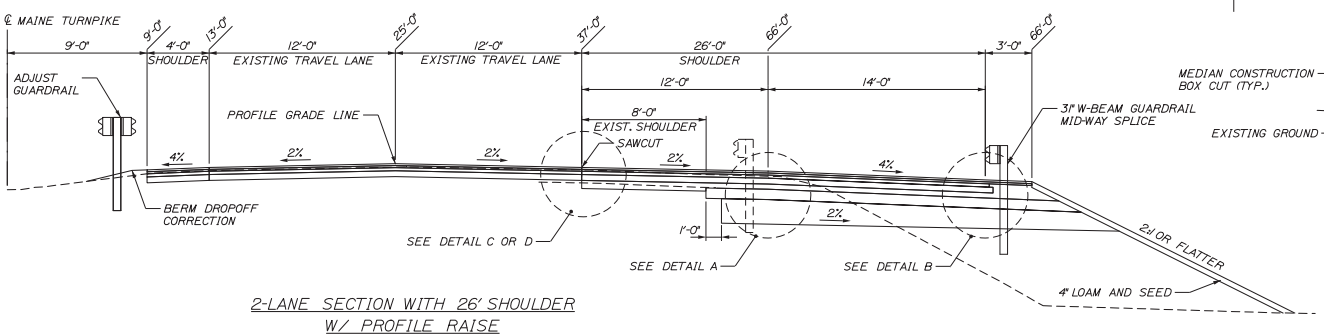
SHEET NUMBER: GN-01

CONTRACT: 2019.16



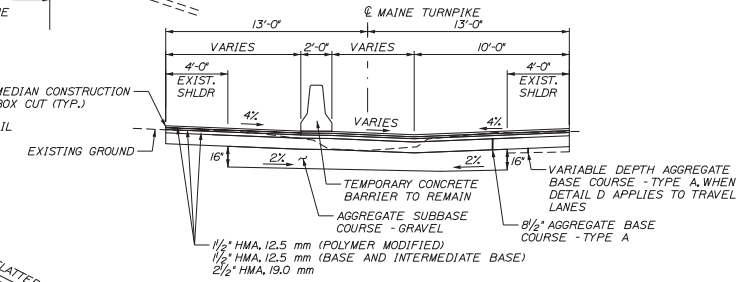

2-LANE SECTION WITH 24' SHOULDER

1/4" = 1'-0"



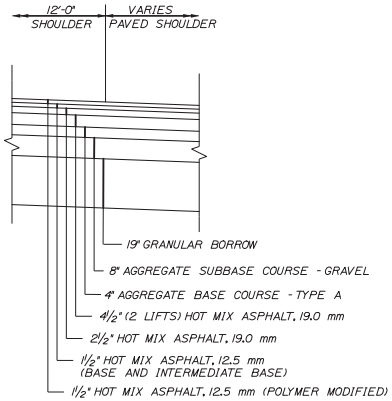

2-LANE SECTION WITH 26' SHOULDER W/ PROFILE RAISE

1/4" = 1'-0"



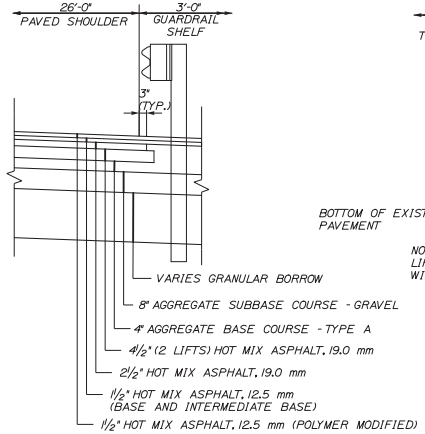

PAVED MEDIAN (FULL DEPTH CONSTRUCTION)

STA. 2319+89 TO STA. 2323+25



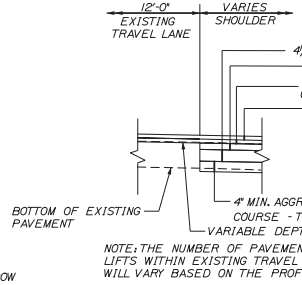

DETAIL A

1/2" = 1'-0"



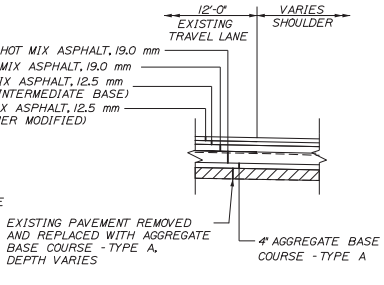

DETAIL B

1/2" = 1'-0"




DETAIL C

1/2" = 1'-0"




DETAIL D

1/2" = 1'-0"

## TYPICAL SECTION NOTES:

1. A COATING OF HOT RUBBERIZED ASPHALT (ASTM D6690 TYPE IV) SHALL BE APPLIED TO ALL TRANSVERSE BUTT JOINTS AND ALL LONGITUDINAL JOINTS EXCEPT WHERE THE NOTCH WEDGE IS USED.
2. BITUMINOUS TACK COAT IS REQUIRED BETWEEN ALL LAYERS OF PAVEMENT.

98% SUBMISSION
August 31, 2018

Filename: 004_Typical Section.dgn

Scale: AS NOTED

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, PE

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

HNTB CORPORATION
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FAX (207) 228-0909

MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS STROUDWATER RIVER OVERPASS

## TYPICAL SECTIONS

SHEET NUMBER: TYP-01

CONTRACT: 2019.16

98% SUBMISSION
August 31, 2018

## PHASE IA QUANTITIES

LEGEND
BWLL - BROKEN WHITE LANE LINE
SWEL - SOLID WHITE EDGE LINE
SYEL - SOLID YELLOW EDGE LINE
TSSW - TEMPORARY SINGLE SOLID WHITE LINE
TSSY - TEMPORARY SINGLE SOLID YELLOW LINE

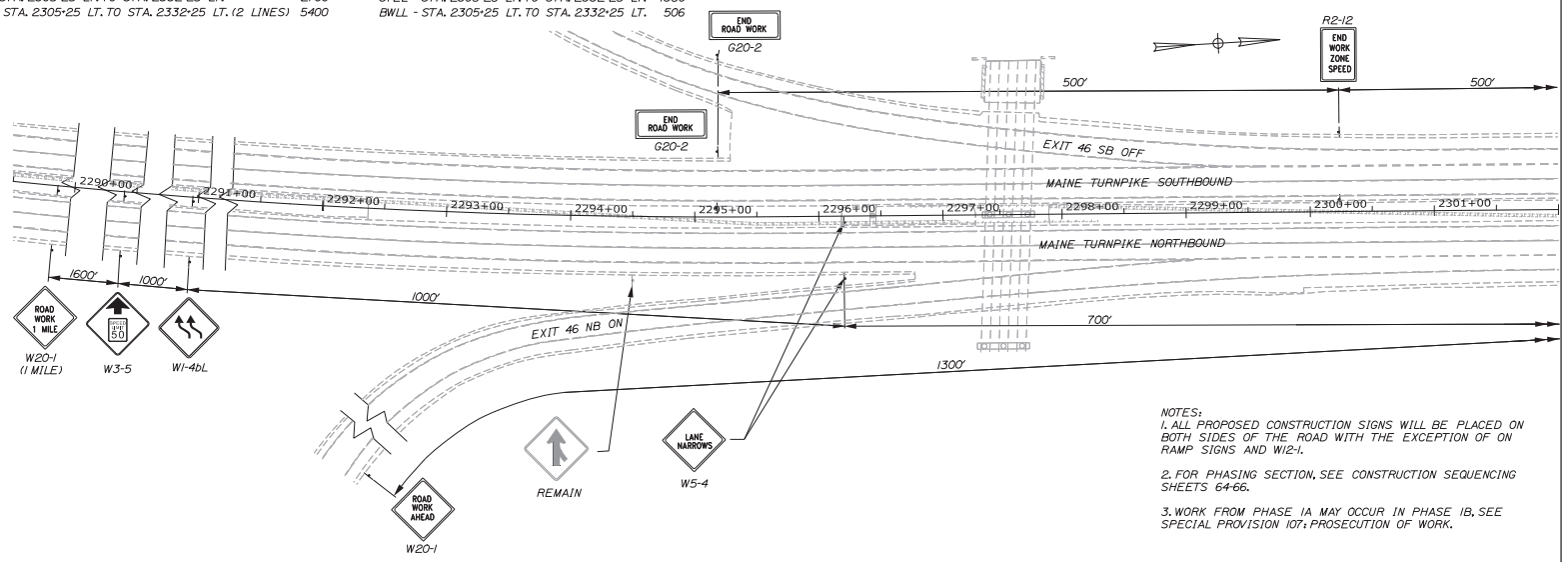
ITEM 526.304 SINGLE FACE TEMPORARY CONCRETE BARRIER - BRIDGE — LS
STA. 2316+74 RT. TO STA. 2319+74 RT.
STA. 2316+74 LT. TO STA. 2319+74 LT.

ITEM 526.306 TEMPORARY CONCRETE BARRIER, TYPE 1 - SUPPLIED BY AUTHORITY — LS
STA. 2310+91 RT. TO STA. 2316+74 RT.
STA. 2319+74 RT. TO STA. 2330+60 RT.
STA. 2306+50 LT. TO STA. 2316+74 LT.
STA. 2319+74 LT. TO STA. 2331+14 LT.

ITEM 527.341 WORK ZONE CRASH CUSHIONS TL-3 — UNIT
STA. 2310+91 RT. — 1
STA. 2331+14 LT. — 1

ITEM 627.78 TEMPORARY PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW — LF
NORTHBOUND
TSSY - STA. 2310+60 RT. TO STA. 2332+50 RT. — 2190
TSSW - STA. 2310+60 RT. TO STA. 2332+50 RT. (2 LINES) — 4380
SOUTHBOUND
TSSY - STA. 2305+25 LT. TO STA. 2332+25 LT. — 2700
TSSW - STA. 2305+25 LT. TO STA. 2332+25 LT. (2 LINES) — 5400

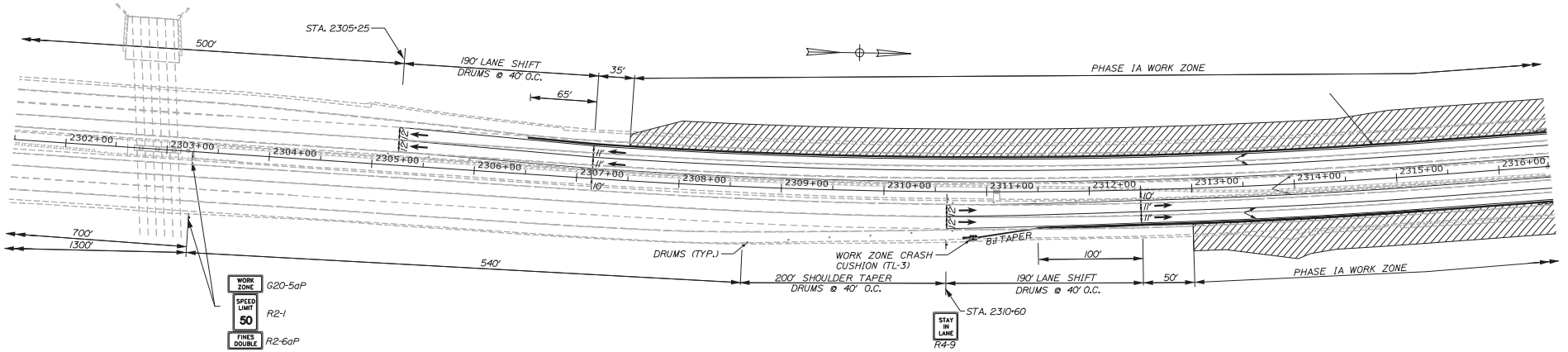
ITEM 627.77 REMOVING EXISTING PAVEMENT MARKINGS — SF
NORTHBOUND
SYEL - STA. 2310+60 RT. TO STA. 2332+50 RT. — 1095
BWLL - STA. 2310+60 RT. TO STA. 2332+50 RT. — 411
SOUTHBOUND
SYEL - STA. 2305+25 LT. TO STA. 2332+25 LT. — 1350
BWLL - STA. 2305+25 LT. TO STA. 2332+25 LT. — 506




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND W12-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.

3. WORK FROM PHASE IA MAY OCCUR IN PHASE IB, SEE SPECIAL PROVISION 107: PROSECUTION OF WORK.




Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

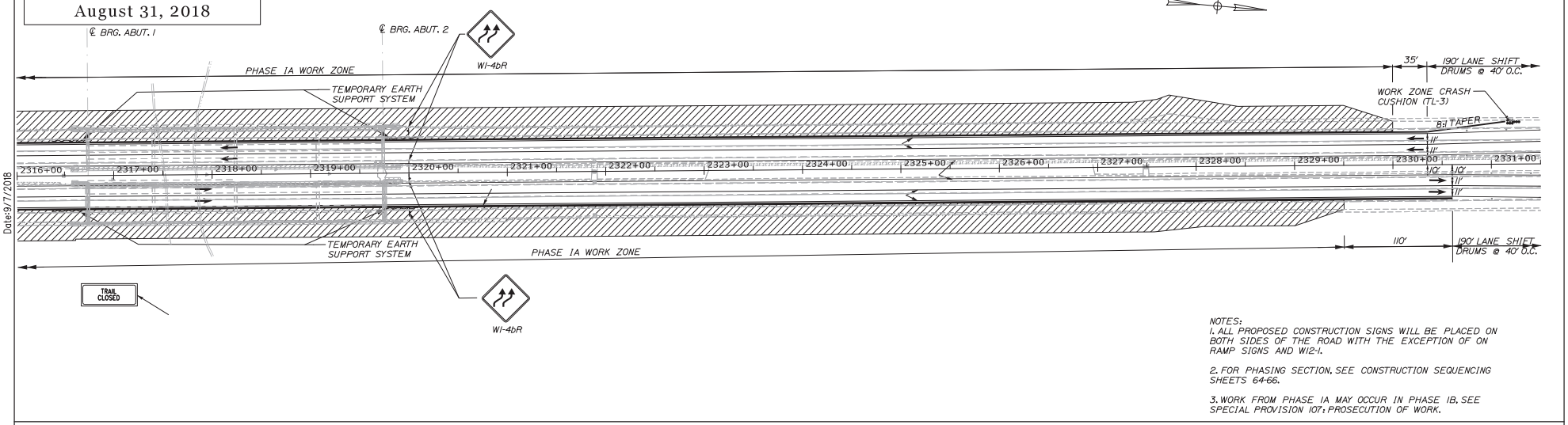
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE IA

SHEET NUMBER: MOT-01
CONTRACT: 2019.16
5 OF 121

Date: 9/7/2018
Filename: 005_MOTPhase 1A 1.dgn

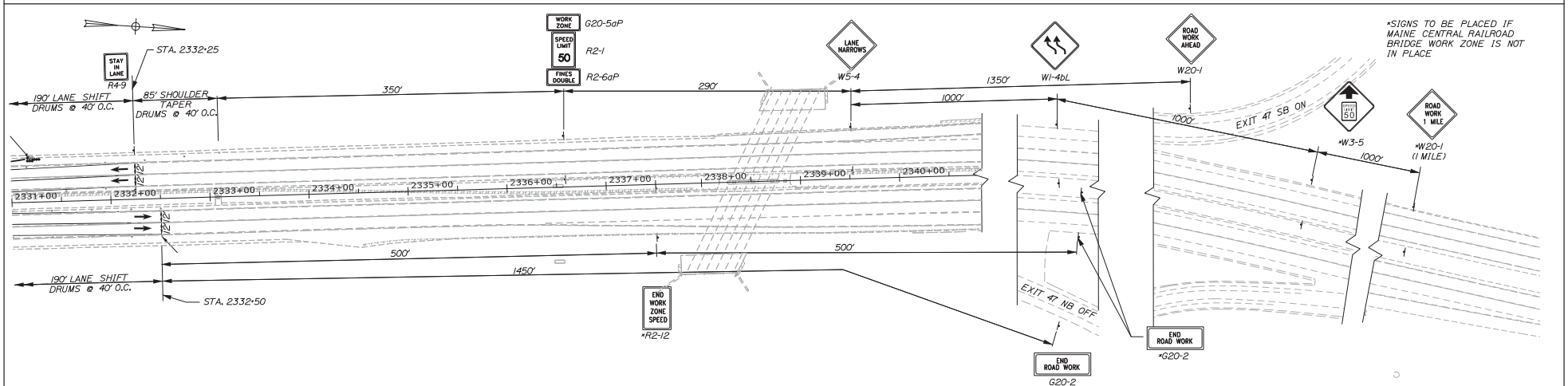
98% SUBMISSION
August 31, 2018




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND W12-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.

3. WORK FROM PHASE IA MAY OCCUR IN PHASE IB. SEE SPECIAL PROVISION 107: PROSECUTION OF WORK.




Date:9/7/2018

Filename: 006_MOTPhase IA 2.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE IA

SHEET NUMBER: MOT-02

CONTRACT:2019.16

## PHASE IB QUANTITIES

**98% SUBMISSION**
**August 31, 2018**

LEGEND
BWLL - BROKEN WHITE LANE LINE
SWEL - SOLID WHITE EDGE LINE
SYEL - SOLID YELLOW EDGE LINE
TSSW - TEMPORARY SINGLE SOLID WHITE LINE
TSSY - TEMPORARY SINGLE SOLID YELLOW LINE

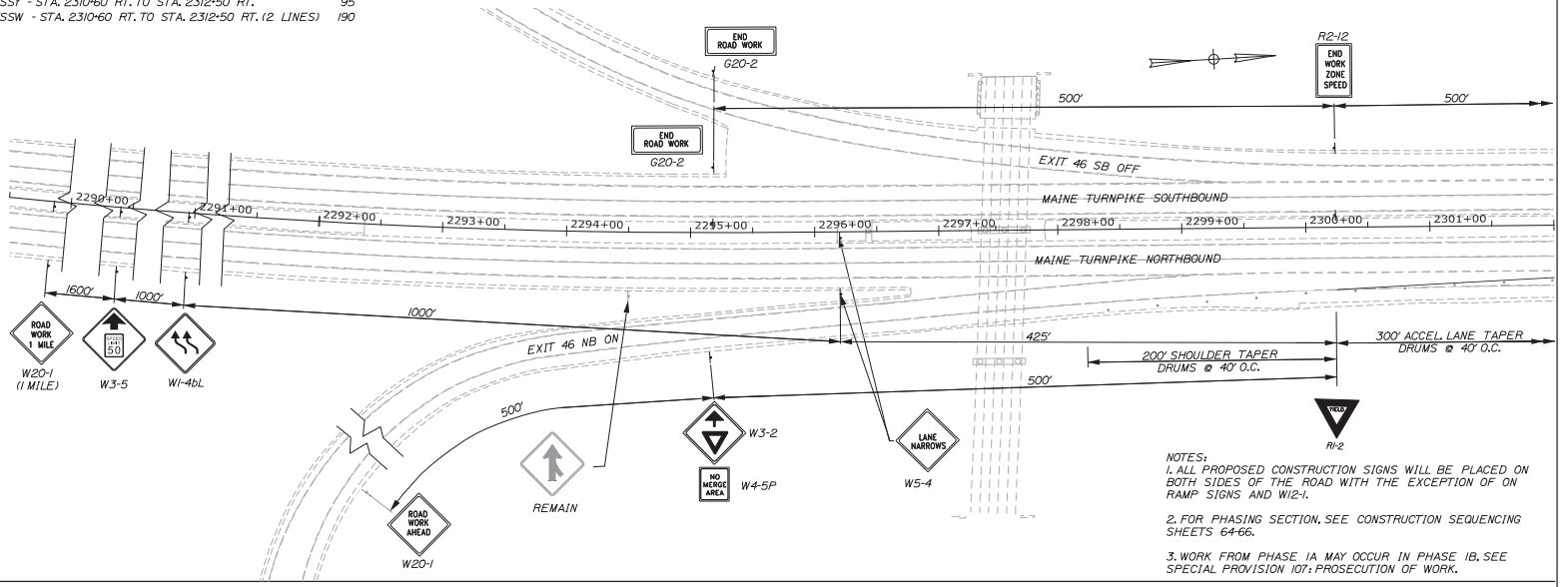
ITEM 526.304 SINGLE FACE TEMPORARY CONCRETE BARRIER - BRIDGE LS
STA. 2316+74 RT. TO STA. 2319+74 RT.
STA. 2316+74 LT. TO STA. 2319+74 LT.

ITEM 526.306 TEMPORARY CONCRETE BARRIER, TYPE I - SUPPLIED BY AUTHORITY LS
STA. 2307+63 RT. TO STA. 2316+74 RT.
STA. 2319+74 RT. TO STA. 2330+60 RT.
STA. 2306+50 LT. TO STA. 2316+74 LT.
STA. 2319+74 LT. TO STA. 2331+14 LT.

ITEM 527.341 WORK ZONE CRASH CUSHIONS TL-3 UNIT
STA. 2307+63 RT. 1
STA. 2331+14 LT. 1

ITEM 627.78 TEMPORARY PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW LF
NORTHBOUND
TSSW - STA. 2300+25 RT. TO STA. 2312+50 RT. 1225
TSSY - STA. 2307+10 RT. TO STA. 2312+50 RT. 540
TSSW - STA. 2307+10 RT. TO STA. 2312+50 RT. 540

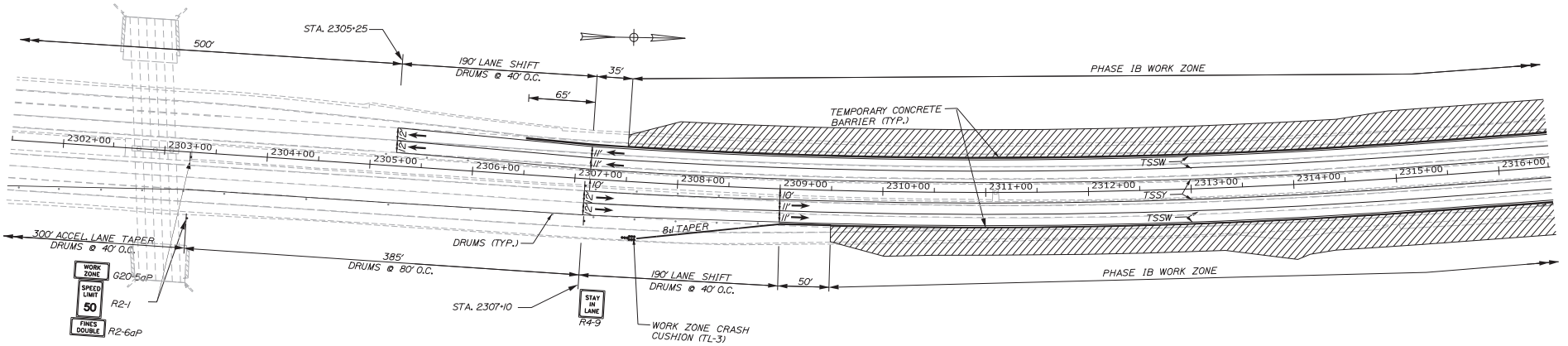
ITEM 627.77 REMOVING EXISTING PAVEMENT MARKINGS SF
NORTHBOUND
BWLL - STA. 2300+25 RT. TO STA. 2304+25 RT. 75
BWLL - STA. 2307+10 RT. TO STA. 2310+60 RT. 66
SYEL - STA. 2307+10 RT. TO STA. 2310+60 RT. 175
TSSY - STA. 2310+60 RT. TO STA. 2312+50 RT. 95
TSSW - STA. 2310+60 RT. TO STA. 2312+50 RT. (2 LINES) 190




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND W12-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.

3. WORK FROM PHASE IA MAY OCCUR IN PHASE IB, SEE SPECIAL PROVISION 107: PROSECUTION OF WORK.




Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

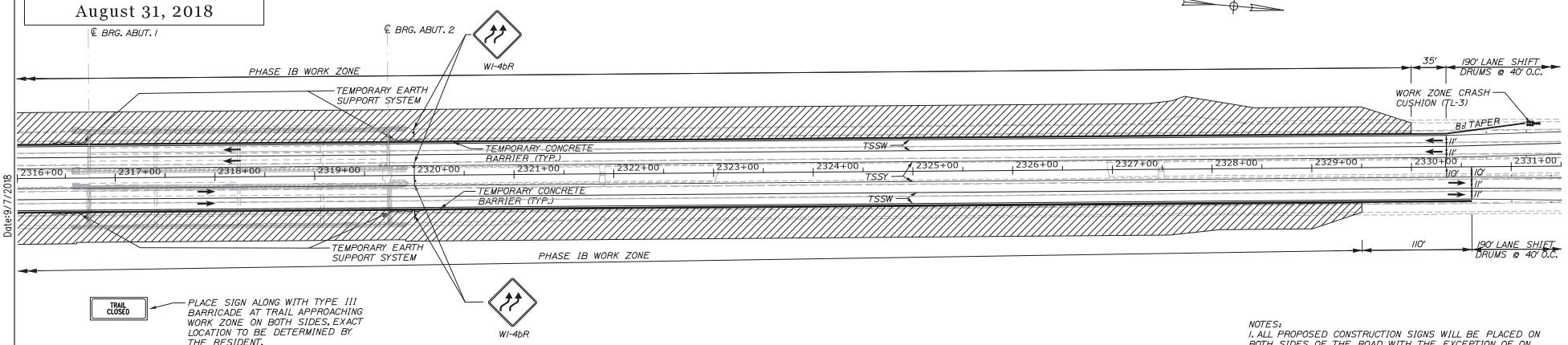
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE IB

SHEET NUMBER: MOT-03
CONTRACT: 2019.16
7 OF 121

Date: 9/7/2018
Filename: 007_MOTPhase IB 1.dgn

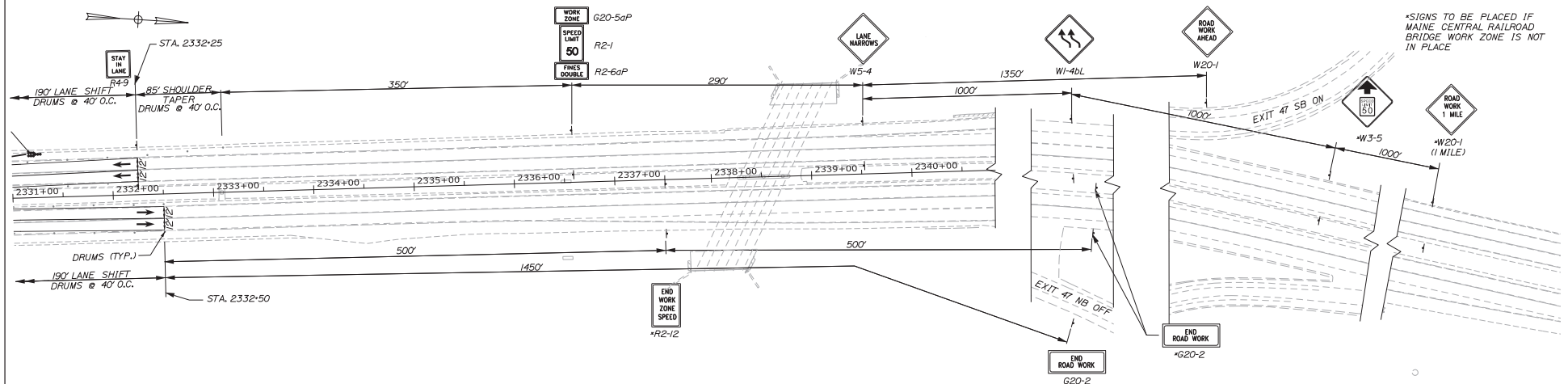
98% SUBMISSION
August 31, 2018




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND W12-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.

3. WORK FROM PHASE 1A MAY OCCUR IN PHASE 1B, SEE SPECIAL PROVISION 107: PROSECUTION OF WORK.

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Scale of Feet

| No. | Revision | By | Date |
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| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS STROUDWATER RIVER OVERPASS

## MAINTENANCE OF TRAFFIC PHASE 1B

SHEET NUMBER: MOT-04

CONTRACT: 2019.16



Date: 9/7/2018

Filename: 008_MOTPhase 1B 2.dgn

98% SUBMISSION
August 31, 2018

## PHASE II QUANTITIES

BWLL - BROKEN WHITE LANE LINE
SWEL - SOLID WHITE EDGE LINE
SYEL - SOLID YELLOW EDGE LINE
TSSW - TEMPORARY SINGLE SOLID WHITE LINE
TSSY - TEMPORARY SINGLE SOLID YELLOW LINE

ITEM 627.78 TEMPORARY PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW — LF

| | |
|---|---|
| NORTHBOUND | |
| TSSW - STA. 2305+25 RT. TO STA. 2316+74 RT. | 1149 |
| TSSY - STA. 2305+25 RT. TO STA. 2316+74 RT. | 1150 |
| TSSW - STA. 2305+25 RT. TO STA. 2316+74 RT. | 1150 |
| TSSY - STA. 2319+74 RT. TO STA. 2332+50 RT. | 1275 |
| TSSW - STA. 2319+74 RT. TO STA. 2332+50 RT. (2 LINES) | 2550 |
| SOUTHBOUND | |
| TSSY - STA. 2305+25 LT. TO STA. 2316+74 LT. | 1150 |
| TSSW - STA. 2305+25 LT. TO STA. 2316+74 LT. (2 LINES) | 2300 |
| TSSY - STA. 2319+74 LT. TO STA. 2332+25 LT. | 1250 |
| TSSW - STA. 2319+74 LT. TO STA. 2332+25 LT. (2 LINES) | 2500 |

ITEM 627.73 TEMPORARY 6 INCH PAVEMENT MARKING TAPE — LF

| | |
|---|---|
| NORTHBOUND | |
| TSSY - STA. 2316+74 RT. TO STA. 2319+74 RT. | 300 |
| TSSW - STA. 2316+74 RT. TO STA. 2319+74 RT. (2 LINES) | 600 |
| SOUTHBOUND | |
| TSSY - STA. 2316+74 LT. TO STA. 2319+74 LT. | 300 |
| TSSW - STA. 2316+74 LT. TO STA. 2319+74 LT. | 600 |

ITEM 627.77 REMOVING EXISTING PAVEMENT MARKINGS — SF

| | |
|---|---|
| NORTHBOUND | |
| SWEL - STA. 2307+50 RT. TO STA. 2309+50 RT. | 100 |
| SWEL - STA. 2329+50 RT. TO STA. 2332+50 RT. | 150 |
| TSSW - STA. 2305+25 RT. TO STA. 2315+00 RT. | 488 |
| TSSY - STA. 2307+10 RT. TO STA. 2315+00 RT. | 395 |
| TSSW - STA. 2307+10 RT. TO STA. 2315+00 RT. | 395 |
| TSSY - STA. 2322+75 RT. TO STA. 2332+50 RT. | 488 |
| TSSW - STA. 2322+75 RT. TO STA. 2332+50 RT. (2 LINES) | 975 |
| SOUTHBOUND | |
| SWEL - STA. 2305+25 LT. TO STA. 2307+50 LT. | 113 |
| SWEL - STA. 2330+00 LT. TO STA. 2332+25 LT. | 113 |
| TSSY - STA. 2305+25 LT. TO STA. 2315+00 LT. | 488 |
| TSSW - STA. 2305+25 LT. TO STA. 2315+00 LT. (2 LINES) | 975 |
| TSSY - STA. 2322+50 LT. TO STA. 2332+25 LT. | 488 |
| TSSW - STA. 2332+50 LT. TO STA. 2332+25 LT. (2 LINES) | 975 |

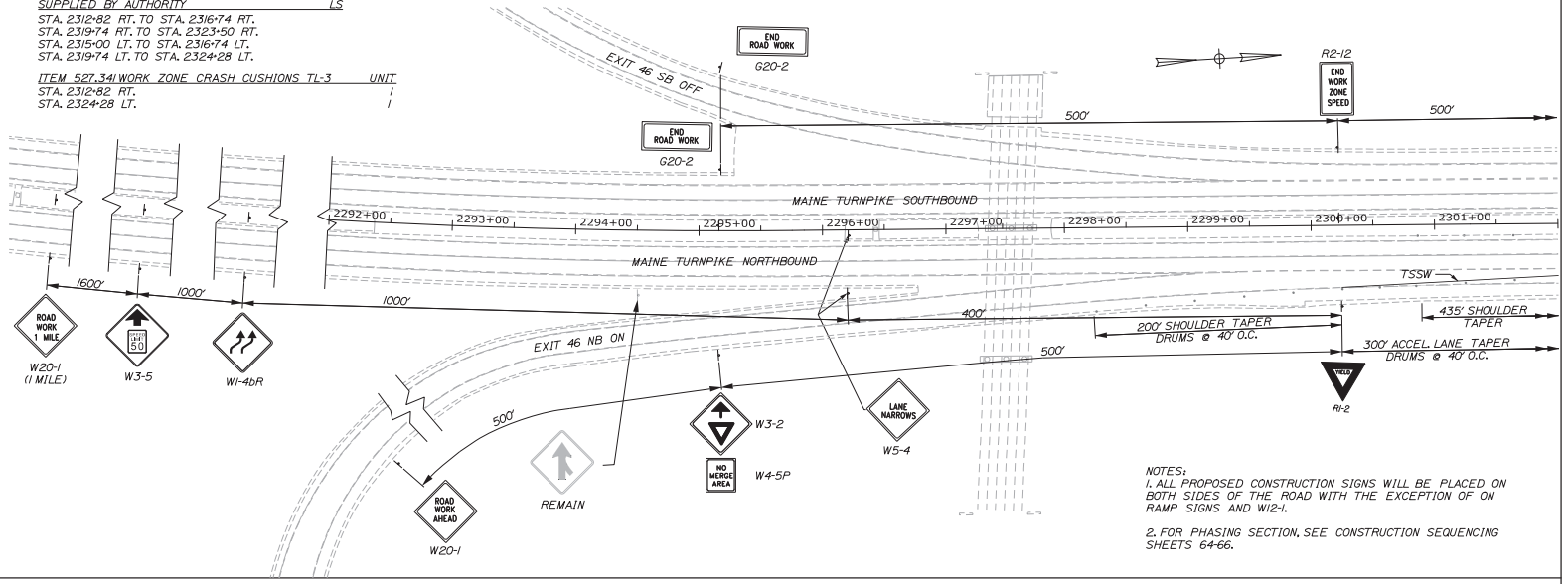
ITEM 526.304 SINGLE FACE TEMPORARY CONCRETE BARRIER - BRIDGE — LS
STA. 2316+74 RT. TO STA. 2319+74 RT.
STA. 2316+74 LT. TO STA. 2319+74 LT.

ITEM 526.306 TEMPORARY CONCRETE BARRIER, TYPE I - SUPPLIED BY AUTHORITY — LS
STA. 2312+82 RT. TO STA. 2316+74 RT.
STA. 2319+74 RT. TO STA. 2323+50 RT.
STA. 2315+00 LT. TO STA. 2316+74 LT.
STA. 2319+74 LT. TO STA. 2324+28 LT.

ITEM 527.341 WORK ZONE CRASH CUSHIONS TL-3 — UNIT
STA. 2312+82 RT. — 1
STA. 2324+28 LT. — 1

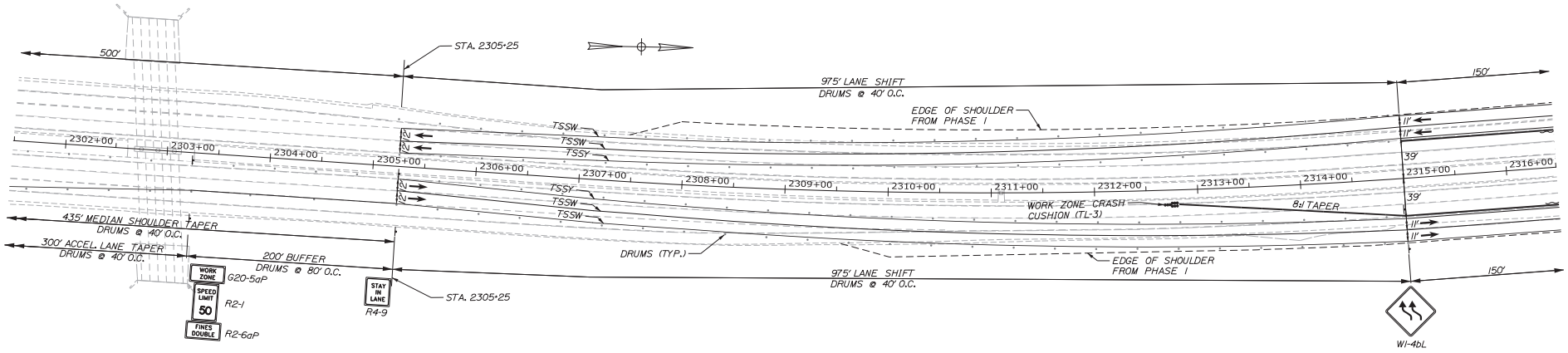
ITEM 202.206 REMOVING RUMBLE STRIPS — LF

| | |
|---|---|
| NORTHBOUND | |
| STA. 2329+50 RT. TO STA. 2332+50 RT. | 300 |
| SOUTHBOUND | |
| STA. 2306+50 LT. TO STA. 2307+50 LT. | 100 |
| STA. 2330+00 LT. TO STA. 2332+25 LT. | 225 |




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND W12-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.




Date:9/7/2018
Filename: 009_MOTPhase II.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

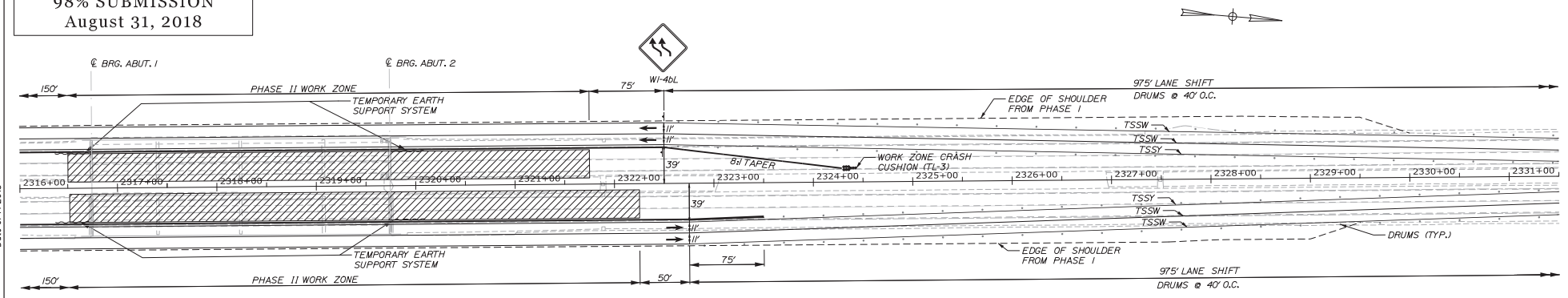
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE II

SHEET NUMBER: MOT-05

CONTRACT:2019.16

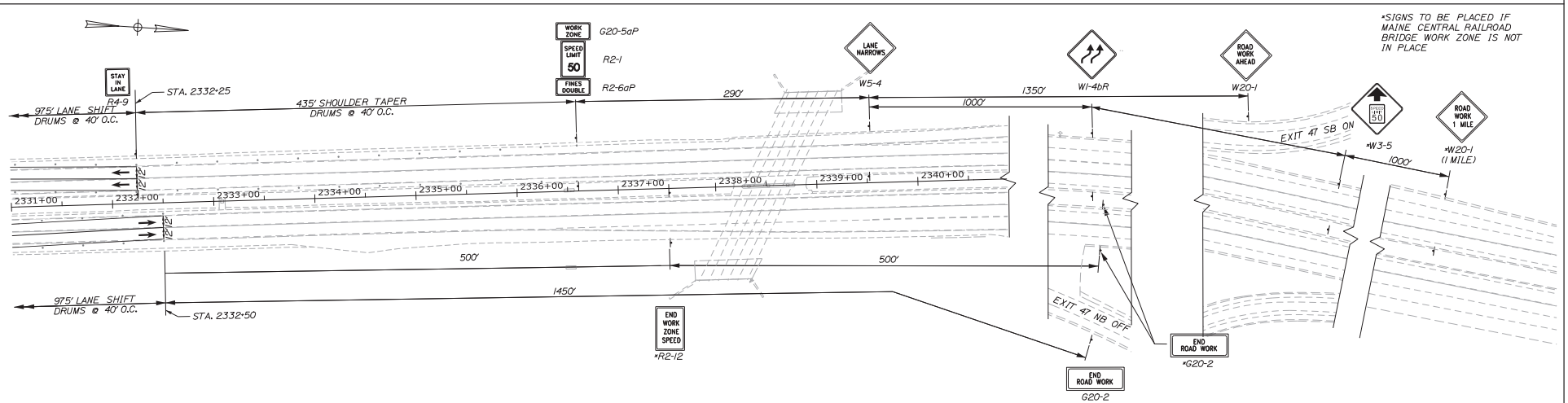
98% SUBMISSION
August 31, 2018




TRAIL CLOSED — PLACE SIGN ALONG WITH TYPE III BARRICADE AT TRAIL APPROACHING WORK ZONE ON BOTH SIDES, EXACT LOCATION TO BE DETERMINED BY THE RESIDENT.

NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND WI2-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.




Date:9/7/2018

Filename: 010_MOTPhase II 2.dgn

Scale: 50 0 50 100
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE II

SHEET NUMBER: MOT-06

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018

## PHASE III QUANTITIES

BWLL - BROKEN WHITE LANE LINE
SWEL - SOLID WHITE EDGE LINE
SYEL - SOLID YELLOW EDGE LINE
TSSW - TEMPORARY SINGLE SOLID WHITE LINE
TSSY - TEMPORARY SINGLE SOLID YELLOW LINE

ITEM 627.78 TEMPORARY PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW — LF

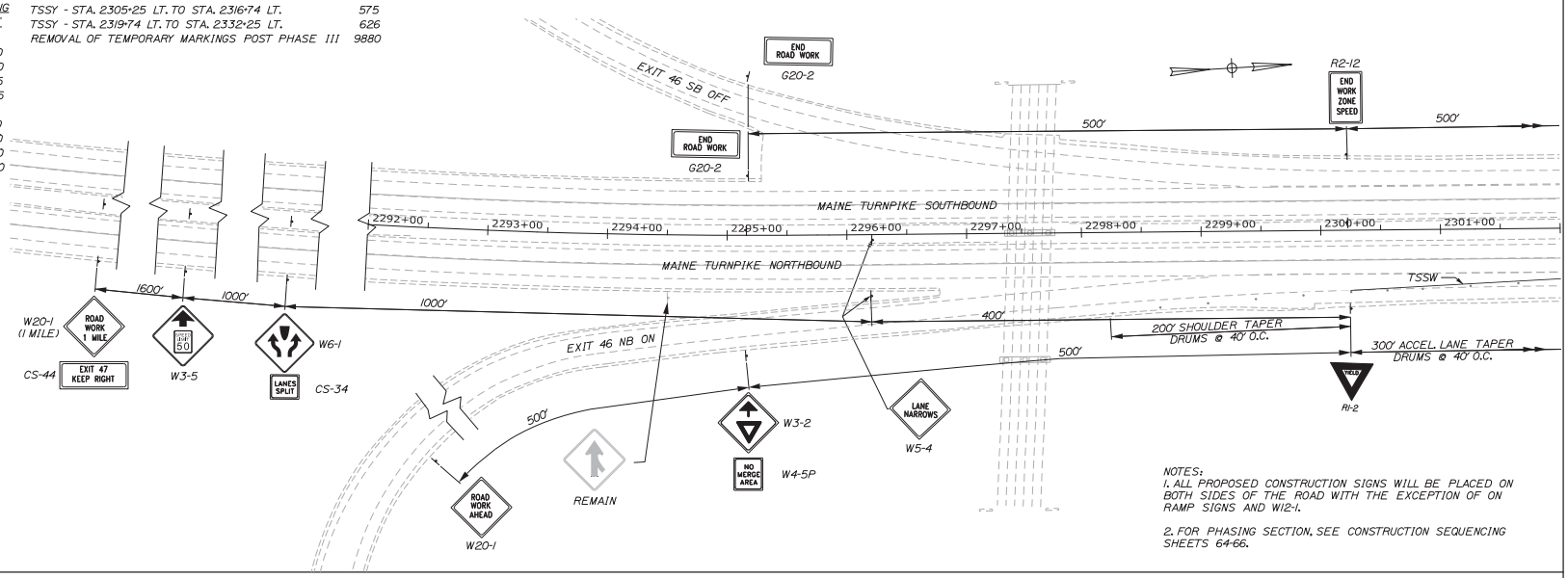
| | |
|---|---|
| NORTHBOUND | |
| TSSY - STA. 2305+25 RT. TO STA. 2316+74 RT. | 1150 |
| TSSW - STA. 2305+25 RT. TO STA. 2316+74 RT. | 1150 |
| TSSY - STA. 2319+74 RT. TO STA. 2332+50 RT. | 1275 |
| TSSW - STA. 2319+74 RT. TO STA. 2332+50 RT. | 1275 |
| SOUTHBOUND | |
| TSSY - STA. 2305+25 LT. TO STA. 2316+74 LT. | 1150 |
| TSSW - STA. 2305+25 LT. TO STA. 2316+74 LT. | 1150 |
| TSSY - STA. 2319+74 LT. TO STA. 2332+25 LT. | 1250 |
| TSSW - STA. 2319+74 LT. TO STA. 2332+25 LT. | 1250 |

ITEM 627.73 TEMPORARY 6 INCH PAVEMENT MARKING TAPE — LF

| | |
|---|---|
| NORTHBOUND | |
| TSSY - STA. 2316+74 RT. TO STA. 2319+74 RT. | 300 |
| TSSW - STA. 2316+74 RT. TO STA. 2319+74 RT. | 300 |
| SOUTHBOUND | |
| TSSY - STA. 2316+74 LT. TO STA. 2319+74 LT. | 300 |
| TSSW - STA. 2316+74 LT. TO STA. 2319+74 LT. | 300 |

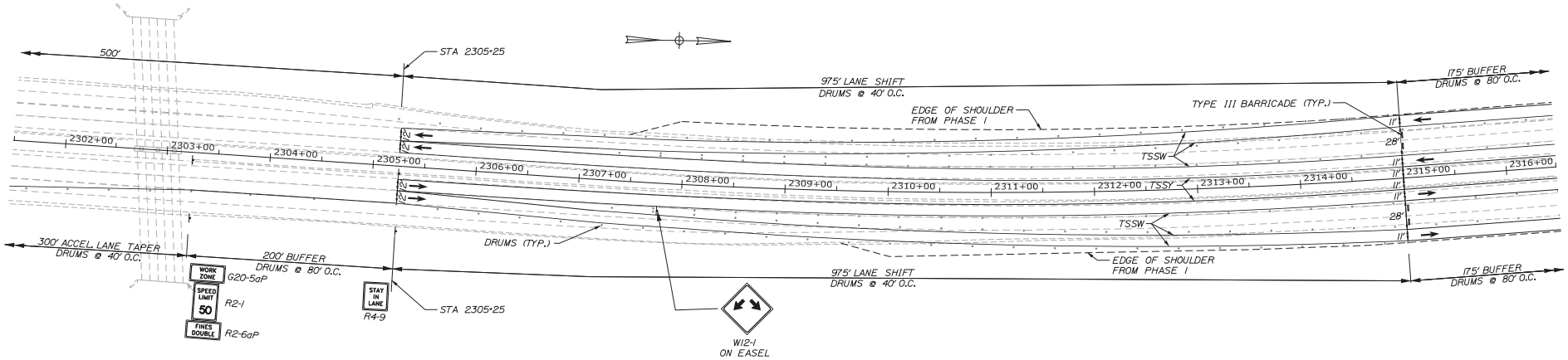
ITEM 627.77 REMOVING EXISTING PAVEMENT MARKINGS — SF

| | |
|---|---|
| NORTHBOUND | |
| TSSY - STA. 2305+25 RT. TO STA. 2316+74 RT. | 575 |
| TSSY - STA. 2319+74 RT. TO STA. 2332+50 RT. | 638 |
| SOUTHBOUND | |
| TSSW - STA. 2305+25 LT. TO STA. 2316+74 LT. | 575 |
| TSSY - STA. 2319+74 LT. TO STA. 2332+25 LT. | 626 |
| REMOVAL OF TEMPORARY MARKINGS POST PHASE III | 9880 |




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND WI2-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.




Date:9/7/2018

Filename: 011_MOTPhase III 1.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


HNTB CORPORATION
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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

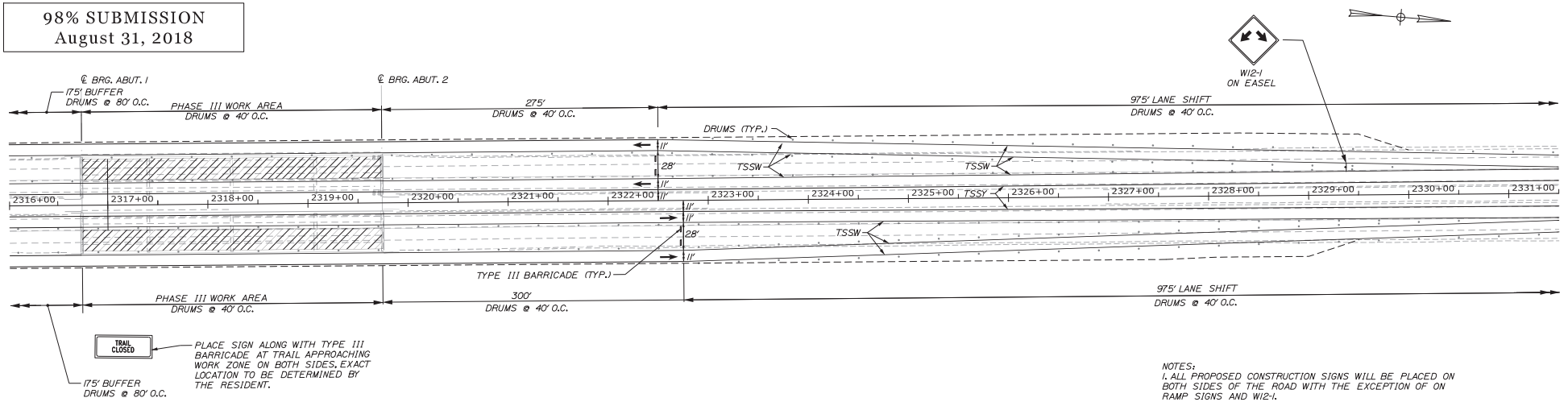
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE III

SHEET NUMBER: MOT-07

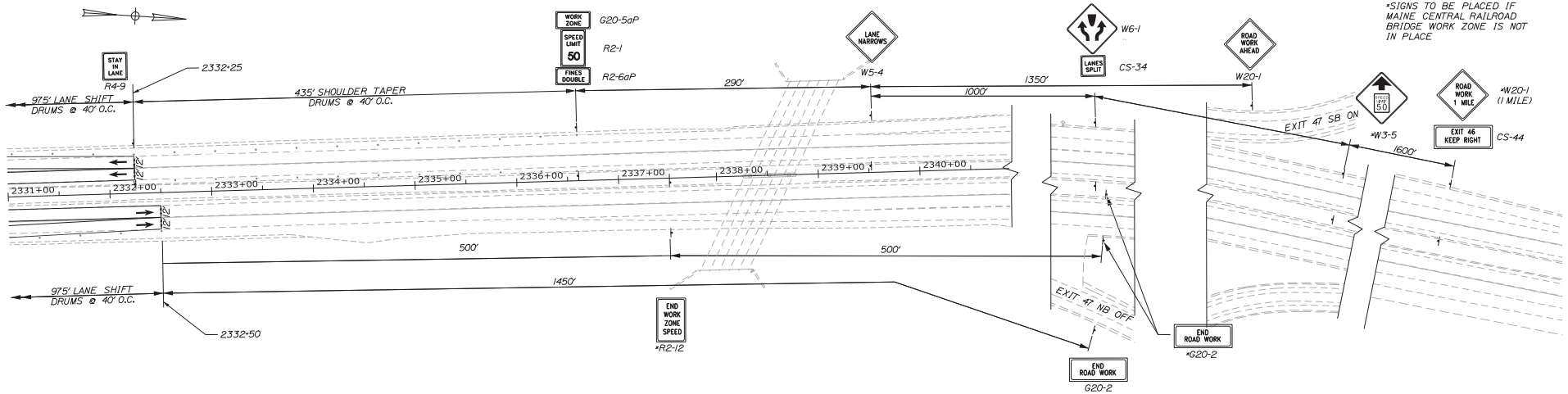
CONTRACT:2019.16

98% SUBMISSION
August 31, 2018




NOTES:
1. ALL PROPOSED CONSTRUCTION SIGNS WILL BE PLACED ON BOTH SIDES OF THE ROAD WITH THE EXCEPTION OF ON RAMP SIGNS AND W12-1.

2. FOR PHASING SECTION, SEE CONSTRUCTION SEQUENCING SHEETS 64-66.




Date:9/7/2018

Filename: 012_MOTPhase III2.dgn

Scale: 50 0 50 100
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS
## MAINTENANCE OF TRAFFIC
## PHASE III

SHEET NUMBER: MOT-08

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018

## DIMENSIONS FOR SLOPE OF 2:1

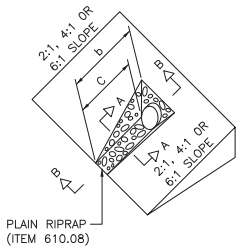
| D | a (FT) | b (FT) | c (FT) | e (FT) | f (FT) | g (FT) | STONE DEPTH (FT) | STONE (CY) |
|---|---|---|---|---|---|---|---|---|
| 12" | 1.00 | 4.00 | 3.00 | 2.00 | 6.00 | 1.00 | 1.50 | 1.30 |
| 15" | 1.00 | 4.50 | 3.37 | 2.25 | 6.75 | 1.63 | 1.50 | 1.70 |
| 18" | 1.00 | 5.00 | 3.75 | 2.50 | 7.50 | 2.25 | 1.50 | 2.09 |
| 21" | 1.00 | 5.50 | 4.13 | 2.75 | 8.25 | 2.88 | 1.50 | 2.58 |
| 24" | 1.00 | 6.00 | 4.50 | 3.00 | 9.00 | 3.50 | 1.50 | 3.12 |
| 30" | 1.00 | 7.00 | 5.25 | 3.50 | 10.50 | 4.75 | 1.50 | 4.33 |
| 36" | 1.00 | 8.00 | 6.00 | 4.00 | 12.00 | 6.00 | 1.50 | 5.75 |
| 42" | 1.00 | 9.00 | 6.75 | 4.50 | 13.50 | 7.25 | 1.50 | 7.37 |
| 48" | 1.00 | 10.00 | 7.50 | 5.00 | 15.00 | 8.50 | 1.50 | 9.18 |
| 54" | 1.00 | 11.00 | 8.25 | 5.50 | 16.50 | 9.75 | 1.50 | 11.19 |
| 60" | 1.00 | 12.00 | 9.00 | 6.00 | 18.00 | 11.00 | 1.50 | 13.40 |
| 66" | 1.00 | 13.00 | 9.75 | 6.50 | 19.50 | 12.25 | 1.50 | 15.81 |
| 72" | 1.00 | 14.00 | 10.50 | 7.00 | 21.00 | 13.50 | 1.50 | 18.41 |
| 84" | 1.00 | 16.00 | 12.00 | 8.00 | 24.00 | 16.00 | 1.50 | 24.22 |

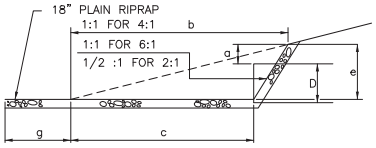
## DIMENSIONS FOR SLOPE OF 4:1

| D | a (FT) | b (FT) | c (FT) | e (FT) | f (FT) | g (FT) | STONE DEPTH (FT) | STONE (CY) |
|---|---|---|---|---|---|---|---|---|
| 12" | 1.00 | 8.00 | 6.00 | 2.00 | 6.00 | 0.00 | 1.50 | 2.20 |
| 15" | 1.00 | 9.00 | 6.75 | 2.25 | 6.75 | 0.00 | 1.50 | 2.80 |
| 18" | 1.00 | 10.00 | 7.50 | 2.50 | 7.50 | 0.00 | 1.50 | 3.40 |
| 21" | 1.00 | 11.00 | 8.25 | 2.75 | 8.25 | 0.00 | 1.50 | 4.10 |
| 24" | 1.00 | 12.00 | 9.00 | 3.00 | 9.00 | 0.00 | 1.50 | 4.86 |
| 30" | 1.00 | 14.00 | 10.50 | 3.50 | 10.50 | 0.00 | 1.50 | 6.58 |
| 36" | 1.00 | 16.00 | 12.00 | 4.00 | 12.00 | 0.00 | 1.50 | 8.56 |
| 42" | 1.00 | 18.00 | 13.50 | 4.50 | 13.50 | 0.50 | 1.50 | 10.92 |
| 48" | 1.00 | 20.00 | 15.00 | 5.00 | 15.00 | 1.00 | 1.50 | 13.57 |
| 54" | 1.00 | 22.00 | 16.50 | 5.50 | 16.50 | 1.50 | 1.50 | 16.50 |
| 60" | 1.00 | 24.00 | 18.00 | 6.00 | 18.00 | 2.00 | 1.50 | 19.72 |
| 66" | 1.00 | 26.00 | 19.50 | 6.50 | 19.50 | 2.50 | 1.50 | 23.22 |
| 72" | 1.00 | 28.00 | 21.00 | 7.00 | 21.00 | 3.00 | 1.50 | 27.01 |
| 84" | 1.00 | 32.00 | 24.00 | 8.00 | 24.00 | 4.00 | 1.50 | 35.45 |

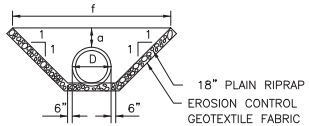
## DIMENSIONS FOR SLOPE OF 6:1

| D | a (FT) | b (FT) | c (FT) | e (FT) | f (FT) | g (FT) | STONE DEPTH (FT) | STONE (CY) |
|---|---|---|---|---|---|---|---|---|
| 12" | 0.50 | 9.00 | 7.50 | 1.50 | 4.50 | 0.00 | 1.50 | 2.30 |
| 15" | 0.50 | 10.50 | 8.75 | 1.75 | 5.50 | 0.00 | 1.50 | 2.93 |
| 18" | 0.50 | 12.00 | 10.00 | 2.00 | 6.50 | 0.00 | 1.50 | 3.57 |
| 21" | 0.50 | 13.50 | 11.25 | 2.25 | 7.25 | 0.00 | 1.50 | 4.46 |
| 24" | 0.50 | 15.00 | 12.50 | 2.50 | 8.00 | 0.00 | 1.50 | 5.44 |
| 30" | 0.50 | 18.00 | 15.00 | 3.00 | 9.50 | 0.00 | 1.50 | 7.71 |
| 36" | 0.50 | 21.00 | 17.50 | 3.50 | 11.00 | 0.00 | 1.50 | 10.37 |
| 42" | 0.50 | 24.00 | 20.00 | 4.00 | 12.50 | 0.00 | 1.50 | 13.42 |
| 48" | 0.50 | 27.00 | 22.50 | 4.50 | 14.00 | 0.00 | 1.50 | 16.87 |
| 54" | 0.50 | 30.00 | 25.00 | 5.00 | 15.50 | 0.00 | 1.50 | 20.70 |
| 60" | 0.50 | 33.00 | 27.50 | 5.50 | 17.00 | 0.00 | 1.50 | 24.93 |
| 66" | 0.50 | 36.00 | 30.00 | 6.00 | 18.50 | 0.00 | 1.50 | 29.55 |
| 72" | 0.50 | 39.00 | 32.50 | 6.50 | 20.00 | 0.00 | 1.50 | 34.56 |
| 84" | 0.50 | 45.00 | 37.50 | 7.50 | 23.00 | 0.00 | 1.50 | 45.76 |




SECTION B-B

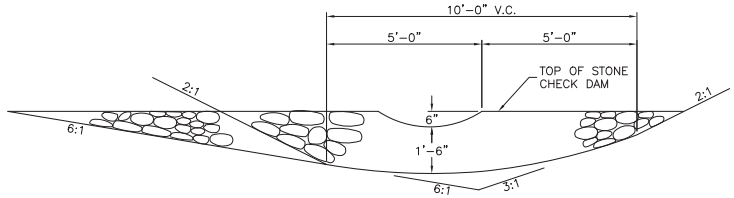



SECTION A-A

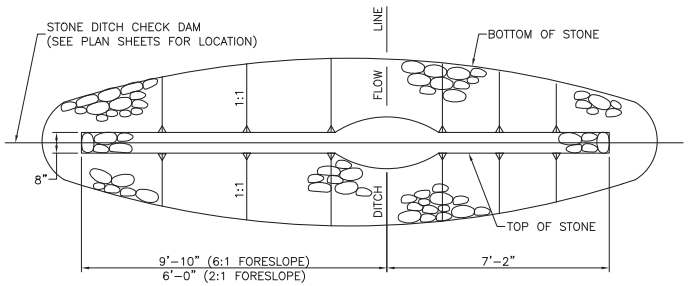
## ROADWAY CULVERT END SLOPE TREATMENT

NOTES:

1. THE DIMENSIONS SHOWN ARE APPROXIMATE AND MAY BE MODIFIED BY THE RESIDENT.
2. STONE QUANTITIES ARE FOR ONE END OF THE PIPE.




SECTION




PLAN

## STONE CHECK DAM

1" = 2'-0"

| FORESLOPE | BACKSLOPE | QUANTITY C.Y. STONE |
|---|---|---|
| 6:1 | 3:1 | 2.5 |
| 4:1 | 3:1 | 2.5 |
| 3:1 | 3:1 | 2.0 |
| 2:1 | 3:1 | 2.0 |

NOTES:

1. STONE FOR TEMPORARY AND PERMANENT STONE CHECK DAMS SHALL MEET THE REQUIREMENTS OF MDOT SPECIFICATION 703.29, STONE DITCH PROTECTION.
2. TEMPORARY STONE CHECK DAMS WILL BE PAID FOR UNDER ITEM 610.181.

Date:9/7/2018
Date:9/7/2018
Filename: 017_Erosion ControlDetails.dgn

Scale: NOT TO SCALE

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

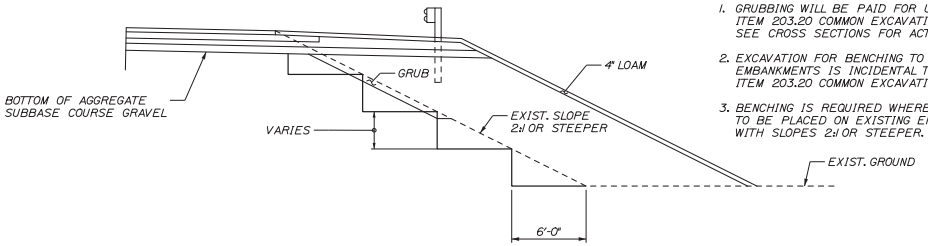
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS

EROSION CONTROL DETAILS I

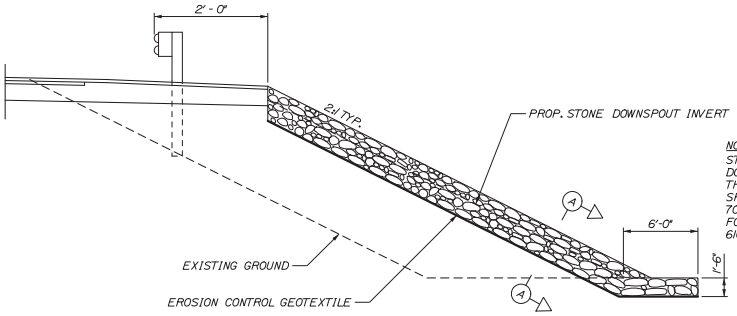
SHEET NUMBER: CD-01

CONTRACT:2019.16



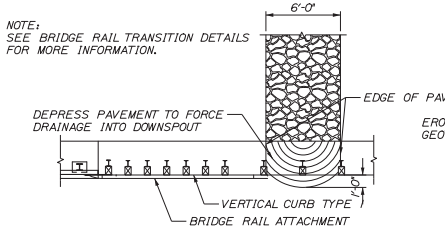

BENCH DETAIL

NOTES:
1. GRUBBING WILL BE PAID FOR UNDER ITEM 203.20 COMMON EXCAVATION. SEE CROSS SECTIONS FOR ACTUAL LIMITS.
2. EXCAVATION FOR BENCHING TO RECEIVE EMBANKMENTS IS INCIDENTAL TO ITEM 203.20 COMMON EXCAVATION.
3. BENCHING IS REQUIRED WHERE FILL IS TO BE PLACED ON EXISTING EMBANKMENTS WITH SLOPES 2:1 OR STEEPER.

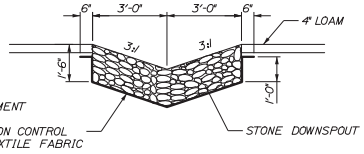



SECTION

NOTE:
STONE FOR STONE DOWNSPOUTS SHALL MEET THE REQUIREMENTS OF MDOT SPECIFICATION 703.29, AND WILL BE PAID FOR UNDER ITEM 610.08, PLAIN RIPRAP.



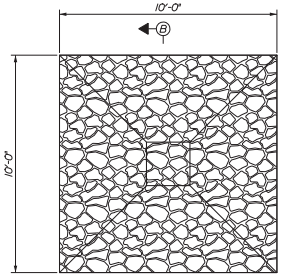

PLAN VIEW



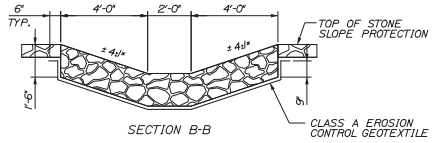

SECTION A-A

1 LF of Downspout = .33 CY of Plain Riprap
1 LF of Downspout = 1.04 SY of Erosion Control Geotextile Fabric

DOWNSPOUT DETAILS



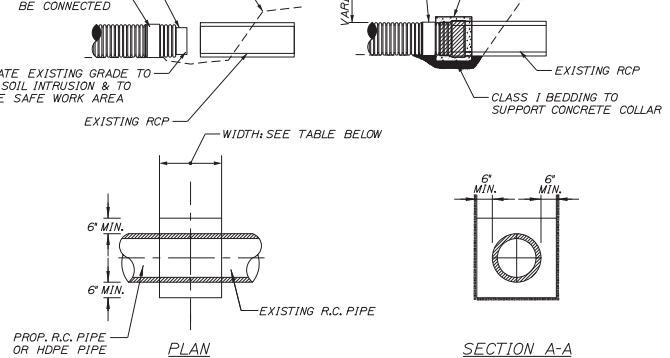

PLAN




SECTION B-B

NOTES:
1. STONE FOR STONE DOWNSPOUTS, APRONS, AND STONE SPLASH PADS SHALL MEET THE REQUIREMENTS OF MDOT SPECIFICATION 703.29 AND WILL BE PAID FOR UNDER ITEM 610.08, PLAIN RIPRAP.
2. EROSION CONTROL GEOTEXTILE FABRIC WILL BE PAID UNDER ITEM 620.58.

STONE SPLASH PAD AND DOWNSPOUT DETAIL
3/8" = 1'-0"







PLAN




SECTION A-A
N.T.S.

NOTES:
1. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321 (CRUSHED STONE).
2. CONCRETE SHALL BE CLASS A FIBER REINFORCED.
3. SEE CONCRETE COLLAR WIDTH SCHEDULE FOR DIMENSIONS.

| CONCRETE COLLAR WIDTH SCHEDULE | |
|---|---|
| PIPE DIA. (INCHES) | WIDTH OF CONC. (INCHES) |
| 12 | 24 |
| 15 | 24 |
| 18 | 24 |
| 24 | 24 |
| 30 | 30 |
| 36 | 36 |
| 42 | 48 |
| 48 | 48 |
| 54 | 60 |

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 018_Erosion Control Details 2.dgn

Scale: NOT TO SCALE

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

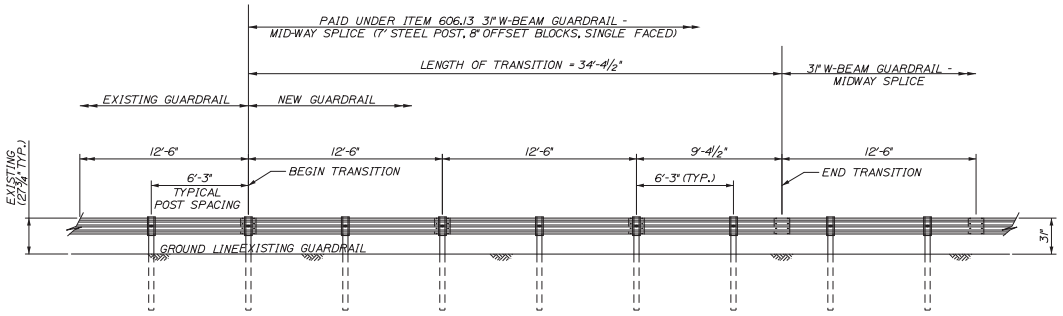
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS

EROSION CONTROL DETAILS II

SHEET NUMBER: CD-02

CONTRACT:2019.16

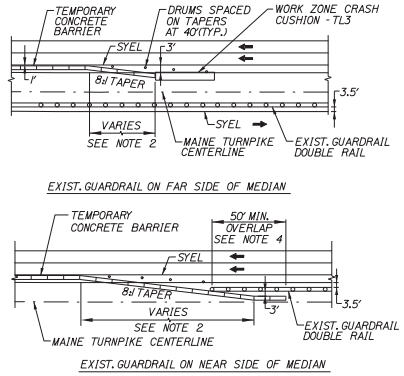



TRANSITION FROM EXISTING GUARDRAIL TO 31" MID-WAY SPLICED GUARDRAIL
NOT TO SCALE

TRANSITION FROM EXISTING GUARDRAIL NOTES
1. MAINTAIN STANDARD 1' CLEARANCE OF POST ABOVE PANEL THROUGHOUT THE ENTIRE LENGTH OF TRANSITION.

2. A MINIMUM OF ONE (1) 12'-6" PANEL SHALL BE PLACED BETWEEN THIS TRANSITION AND THE START OF ANY END TREATMENT OR ANCHORAGE.

3. ALL NEW POSTS SHALL BE 84" IN LENGTH UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.




CONCRETE BARRIER / GUARDRAIL OVERLAP DETAIL
NOT TO SCALE

CONCRETE BARRIER/GUARDRAIL OVERLAP NOTES:
1. BARRIER ENDS SHALL BE PROTECTED BY A WORK ZONE CRASH CUSHION (TL-3), OR LAPPED BEHIND GUARDRAIL. SEE DETAILS THIS SHEET.

2. 8d TAPERED BARRIER LENGTH DEPENDENT ON LOCATION OF BARRIER RELATIVE TO MAINE TURNPIKE SHOULDERS OR LANES.

3. IF A WORK ZONE CRASH CUSHION - TL3 IS USED FOR A MEDIAN SHOULDER CLOSURE, THE CRASH CUSHION SYSTEM MUST BE FOUNDED ON A LEVEL SURFACE. ANY WORK NECESSARY TO PROVIDE A LEVEL SURFACE WILL BE INCIDENTAL TO THE CRASH CUSHION ITEM.

4. IF THE 50' MIN. LENGTH OF OVERLAP CANNOT BE MET, THEN THE EXISTING GUARDRAIL END MUST BE ANCHORED IN ACCORDANCE WITH DRAWING SEW02a IN THE AASHTO-AGC-ARBTA JOINT COMMITTEE TASK FORCE 13 REPORT, DRAFTED MAY 1995.

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 019_GuardrailDetails 1.dgn

Scale: NOT TO SCALE

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

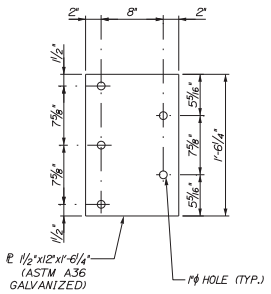
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS

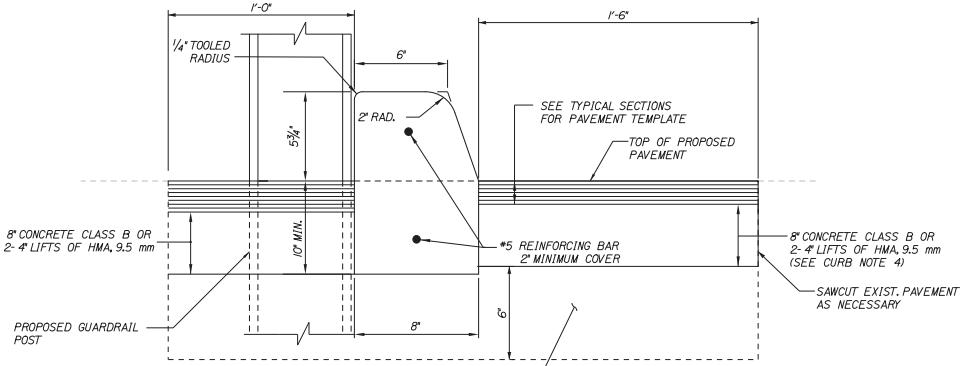
GUARDRAIL DETAILS

SHEET NUMBER: CD-03

CONTRACT:2019.16

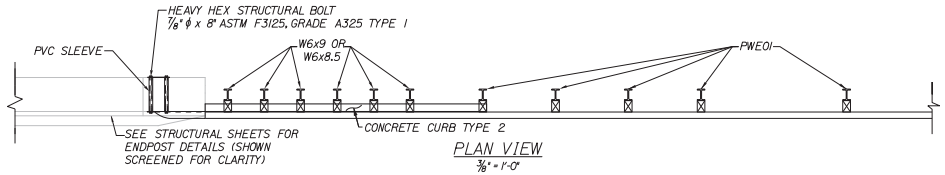



OFFSET PLATE
1½" = 1'-0"

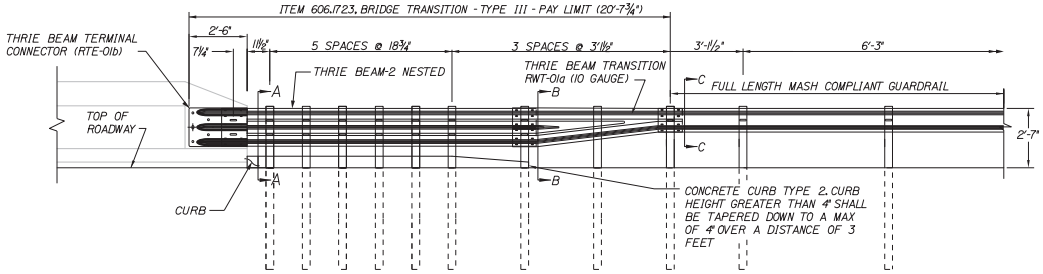



CONCRETE CURB
TYPE 2
3"=1'-0"

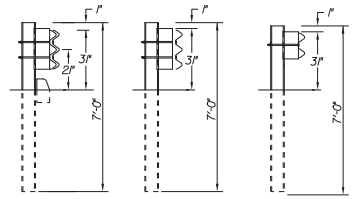
COMMON EXCAVATION AND AGGREGATE SUBBASE COURSE GRAVEL TO LIMITS SHOWN SHALL BE INCIDENTAL TO THE BRIDGE TRANSITION PAY ITEM




PLAN VIEW
⅜" = 1'-0"




BRIDGE TRANSITION - TYPE III
⅜" = 1'-0"




SECTION A-A SECTION B-B SECTION C-C

## CURB NOTES:

1. CURBING SHALL BE EITHER PRECAST CONCRETE, CAST-IN-PLACE CONCRETE OR GRANITE TO MEET DIMENSIONS SHOWN ON THE PLANS.
2. CONCRETE CURBS USED IN CONJUNCTION WITH THRIE-BEAM BRIDGE TRANSITION SHALL BE TYPE 2, SEE DETAILS THIS SHEET. CONCRETE CURBS SHALL BE SET TO FORM A CONTINUOUS GUTTERLINE WITHOUT ANY DRAINAGE OPENINGS.
3. CURB TRANSITION SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCIDENTAL TO THE BRIDGE TRANSITION PAY ITEM.
4. SAWCUTTING EXISTING PAVEMENT, CONCRETE FILL, AND PAVEMENT TO LIMITS SHOWN SHALL BE INCIDENTAL TO THE BRIDGE TRANSITION PAY ITEM.

## GUARDRAIL NOTES:

1. ADDITIONAL HOLES MAY BE MADE IN THE THRIE-BEAM PANELS BY DRILLING, PUNCHING, OR OTHER MEANS THAT PRODUCE A NEAT, CLEAN HOLE. BURNING HOLES WILL NOT BE ALLOWED.
2. THRIE BEAM SHALL BE PLACED WITH THE COMPOSITE BLOCKOUT FACE IN FRONT OF OR DIRECTLY ABOVE THE CURB FACE.
3. RAIL ELEMENT SHALL MEET ALL REQUIREMENTS OF AASHTO M-180 EXCEPT AS MODIFIED ON THE PLANS. THE THRIE BEAM TRANSITION TO W-BEAM SHALL BE OF THE SAME MATERIAL, BUT SHALL NOT BE LESS THAN 10 GAUGE.
4. AFTER INSTALLATION IS COMPLETE, UPSET THE THREAD ON THE ANCHOR BOLTS IN THREE PLACES AROUND EACH BOLT, AT THE JUNCTION OF THE NUT AND THE EXPOSED THREAD, WITH A CENTER PUNCH OR SIMILAR TOOL.
5. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THESE GUARDRAIL ATTACHMENTS. DESIGNATIONS PROVIDED IN PARENTHESIS RELATE TO STANDARD ELEMENTS DETAILED IN "A GUIDE TO STANDARDIZED BARRIER RAIL HARDWARE," 1979. AASHTO-AGC-ARTBA JOINT COOPERATE COMMITTEE.
6. 1" HOLE IN CONCRETE SHALL BE FORMED BY A 1" I.D. PVC SLEEVE AS APPROVED BY THE ENGINEER.
7. GUARDRAIL HEIGHT SHALL BE ADJUSTED UNIFORMLY BETWEEN SECTION CALLOUTS.

98% SUBMISSION
August 31, 2018

Scale: NOT TO SCALE

Designed by: HNTB

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
GUARDRAIL DETAILS
BRIDGE TRANSITION

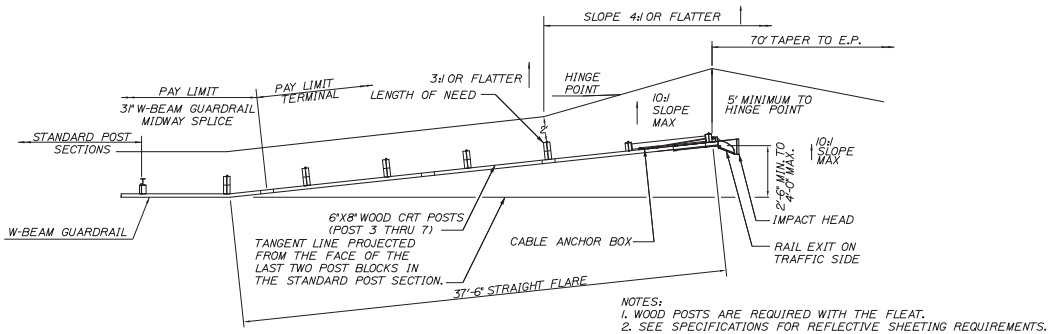
SHEET NUMBER: CD-04

CONTRACT: 2019.16



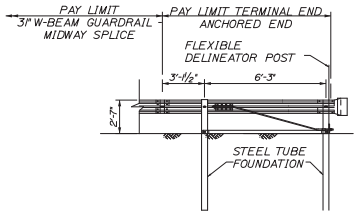
Date: 9/7/2018

Filename: 020_Guardrail Details II.dgn



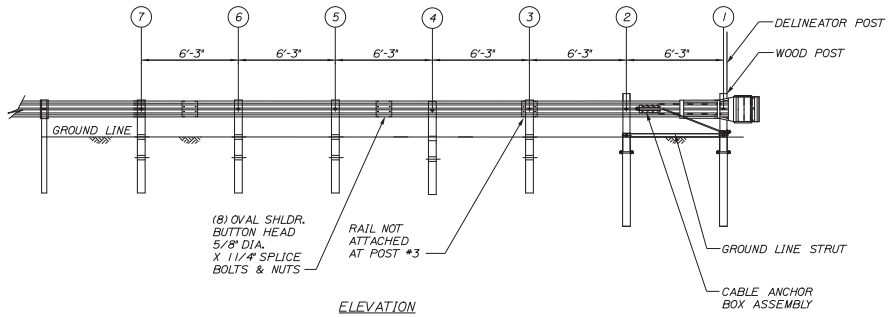

NOTES:
1. WOOD POSTS ARE REQUIRED WITH THE FLEAT.
2. SEE SPECIFICATIONS FOR REFLECTIVE SHEETING REQUIREMENTS.

PLAN



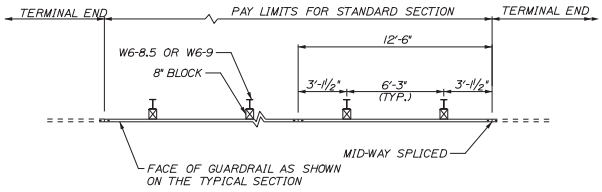

NOTES:
1. THIS DETAIL MODIFIES THE SEW31 DRAWING SUCH THAT W-BEAM DOES NOT EXTEND BEYOND THE LAST GUARDRAIL POST. THE RWM14a W-BEAM PANEL SHALL HAVE A LENGTH OF 9'-4½" MEASURED FROM THE CENTER OF THE MIDWAY SPLICE TO THE CENTER OF THE LAST GUARDRAIL POST.

TERMINAL END - ANCHORED END - 31" W-BEAM GUARDRAIL
(ITEM 606.1351)
NOT TO SCALE

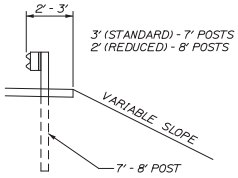



ELEVATION

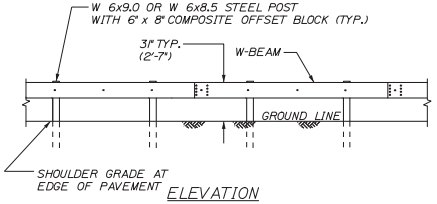
GUARDRAIL 350 FLARED TERMINAL - 31" W-BEAM GUARDRAIL
NOT TO SCALE




PLAN - SINGLE FACED




CROSS-SECTION




ELEVATION

31" W-BEAM GUARDRAIL - MID-WAY SPLICE (8" OFFSET BLOCKS)
(ITEMS 606.1301)
NOT TO SCALE

GENERAL GUARDRAIL INSTALLATION NOTE:

1. THE CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR THE INSTALLATION OF ALL GUARDRAIL COMPONENTS TO BE INSTALLED. THE CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER OF ANY CONFLICTS OR IRREGULARITIES BETWEEN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR IS REQUIRED TO HAVE AN APPROVED CRASH END TREATMENT ON ALL GUARDRAIL ENDS PRIOR TO THE REMOVAL OF ANY MOT FEATURES.
3. GUARDRAIL HEIGHT SHALL BE 31", -½". GUARDRAIL HEIGHT SHALL BE MEASURED FROM AT GROUND ELEVATION ADJACENT TO EACH POST.
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL CUT BOLTS, DISCARD PARTS, TRASH, PAVEMENT DEBRIS, ETC., AFTER COMPLETING THE GUARDRAIL INSTALLATION.
5. CONNECTION FOR PROPOSED RAIL TO EXISTING RAIL SHALL BE INCIDENTAL TO THE PROPOSED GUARDRAIL ITEMS.

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 021_GuardrailDetails III.dgn

Scale: NOT TO SCALE

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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MAINE TURNPIKE

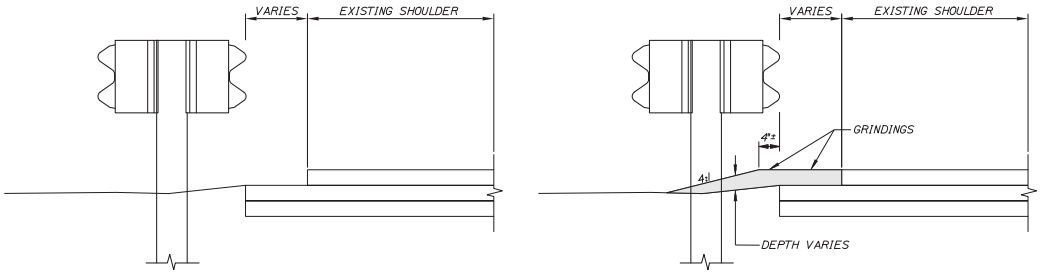
THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

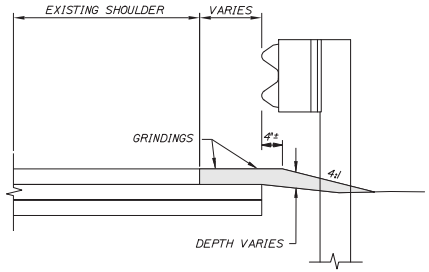
BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
GUARDRAIL DETAILS
MIDWAY SPLICE

SHEET NUMBER: CD-05

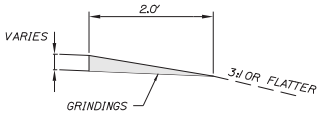
CONTRACT:2019.16



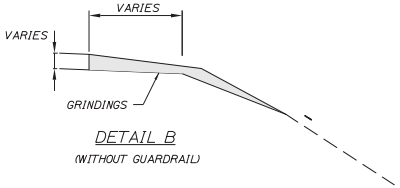

BERM DROPOFF CORRECTION WITH GUARDRAIL
MEDIAN GUARDRAIL
N.T.S.




BERM DROPOFF CORRECTION WITH GUARDRAIL
RIGHT OUTSIDE SHOULDER
N.T.S.




DETAIL A
(WITHOUT GUARDRAIL)




DETAIL B
(WITHOUT GUARDRAIL)

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August 31, 2018

Date:9/7/2018

Filename: 022_Berm Details.dgn

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|---|---|---|---|---|

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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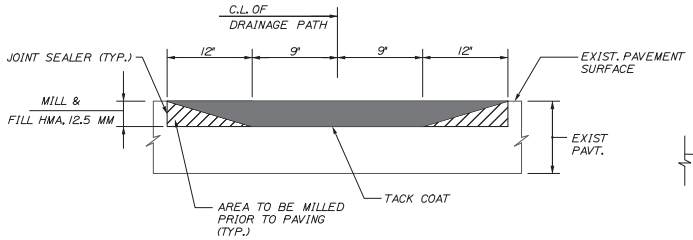
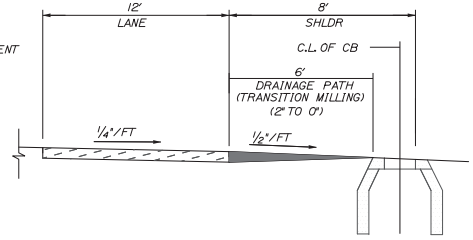
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

SHEET NUMBER: CD-06
CONTRACT:2019.16
22 OF 121



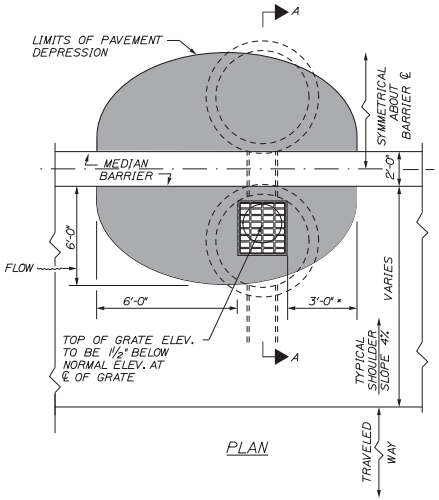

SECTION A-A



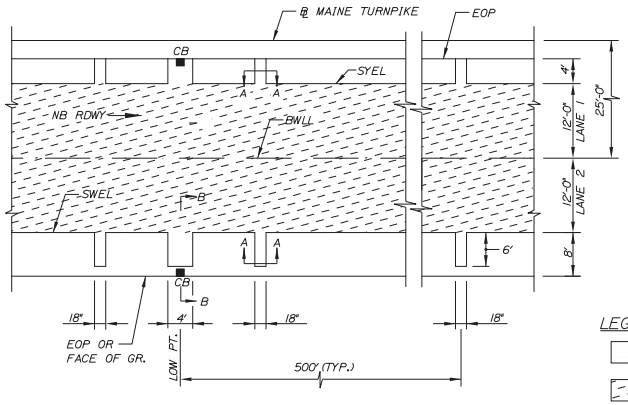

SECTION B-B

LEGEND

= DRAINAGE PATH MILLING




PLAN

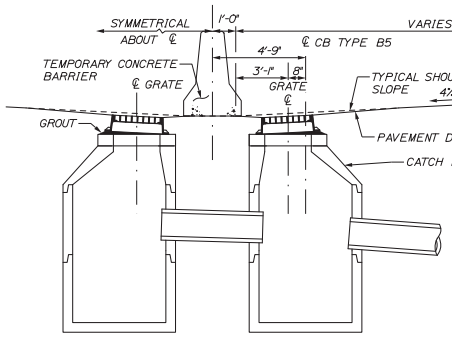



PLAN VIEW

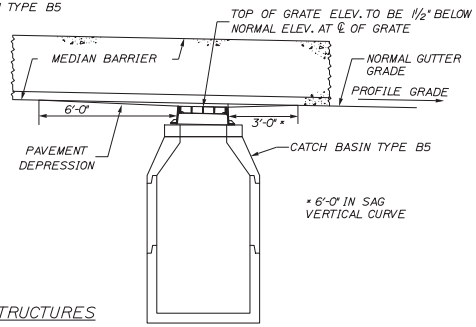
LEGEND

= DRAINAGE PATH MILLING

= TRAVEL LANE MILLING

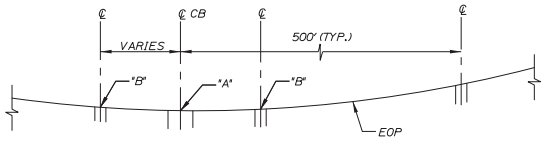



SECTION A-A




ELEVATION

PLACEMENT OF DRAINAGE STRUCTURES ALONG BARRIER




PROFILE

NOTES:

1. RESIDENT TO DETERMINE LOCATIONS.
2. DRAINAGE PATH REQUIRED AT ALL LOW POINTS.
3. DRAINAGE PATHTS SHALL BE PAVED BACK IN FLUSH WITH EXISTING PAVEMENT.

DRAINAGE PATH DETAILS

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 023_Drainage Details.dgn

| Scale: NOT TO SCALE | Designed by: HNTB | HNTB CORPORATION 340 County Road, Suite 6-C Westbrook, ME 04092 TEL (207) 774-5155 FAX (207) 228-0909 | MAINE TURNPIKE THE GOLD STAR MEMORIAL HIGHWAY | BRIDGE IMPROVEMENTS STROUDWATER RIVER OVERPASS DRAINAGE DETAILS |
|---|---|---|---|---|

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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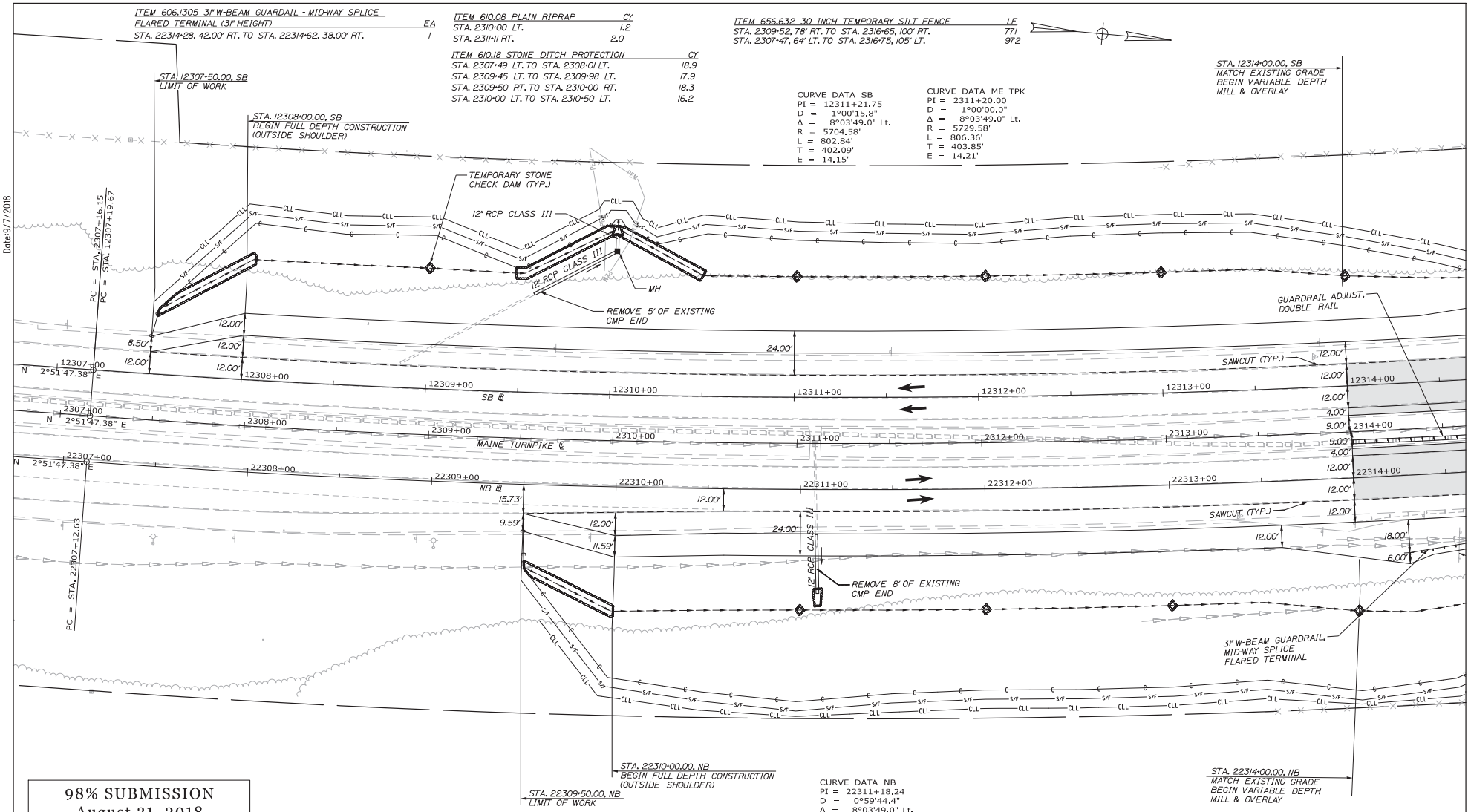
| Designed | CDH | 08\18 | Checked | JRH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

SHEET NUMBER: CD-07

CONTRACT:2019.16




98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 026_BDPlan_01.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

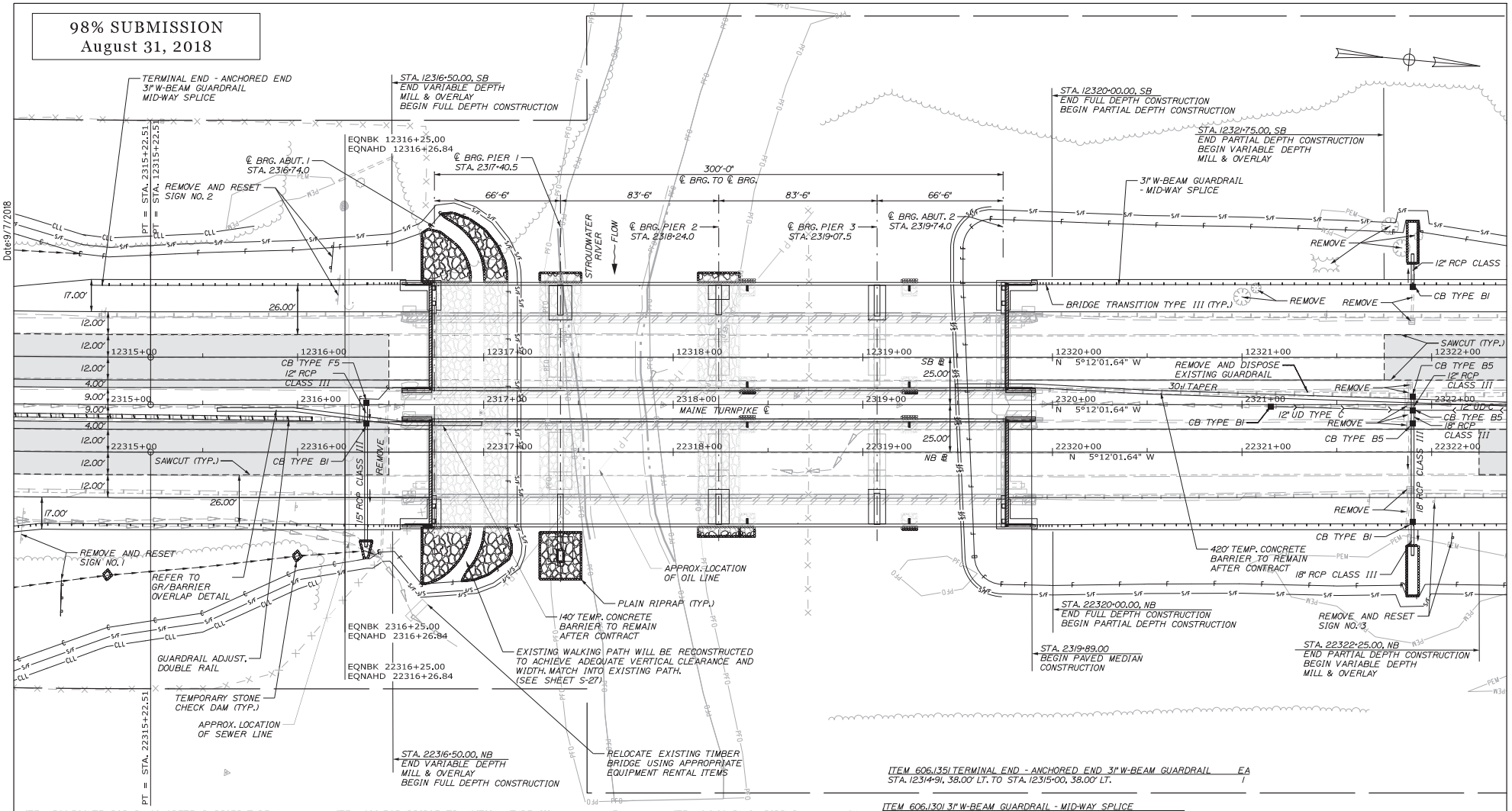
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## GENERAL PLAN 1

SHEET NUMBER: GP-01

CONTRACT:2019.16

98% SUBMISSION
August 31, 2018




ITEM 606.135 TERMINAL END - ANCHORED END 31" W-BEAM GUARDRAIL — EA
STA. 12314+91, 38.00' LT. TO STA. 12315+00, 38.00' LT. — 1

ITEM 526.306 TEMPORARY CONCRETE BARRIER, TYPE I SUPPLIED BY AUTHORITY; TO REMAIN — LS
STA. 2315+58, 2.56' RT. TO STA. 2316+99, 10.00' RT.
STA. 2319+49, 10' LT. TO STA. 2323+69, 0.00' LT.

ITEM 606.1723 BRIDGE TRANSITION - TYPE III — EA
STA. 12316+39, 38.33' LT. TO STA. 12316+59, 38.33' LT. — 1
STA. 22316+39, 38.33' RT. TO STA. 22316+59, 38.33' RT. — 1
STA. 12319+89, 38.33' LT. TO STA. 12320+09, 38.33' LT. — 1
STA. 22319+89, 38.33' RT. TO STA. 22320+09, 38.33' RT. — 1

ITEM 610.08 PLAIN RIPRAP — CY
STA. 2316+38 RT. — 2.3
STA. 2321+90 RT. — 8.8
STA. 2321+90 LT. — 7.4

ITEM 606.1301 31" W-BEAM GUARDRAIL - MID-WAY SPLICE (7' STEEL POSTS, 8" OFFSET BLOCKS, SINGLE FACED) — LF
STA. 22314+62, 38.00' RT. TO STA. 22316+39, 38.33' RT. — 175
STA. 12315+00, 38.00' LT. TO STA. 12316+39, 38.33' LT. — 137.5
STA. 12320+09, 38.33' LT. TO STA. 12328+34, 38.00' LT. — 825
STA. 22320+09, 38.33' RT. TO STA. 22327+47, 38.00' RT. — 737.5

ITEM 656.632 30 INCH TEMPORARY SILT FENCE — LF
STA. 2316+65, 100' RT. TO STA. 2307+47, 64' LT — 548
STA. 2329+50, 74' RT. TO STA. 2319+68, 103' LT. — 448
STA. 2319+73, 100' RT. TO STA. 2329+50, 74' RT. — 1020
STA. 2319+68, 103' LT. TO STA. 2330+05, 45' LT. — 1111

Date:9/7/2018
Filename: 027_BDPlan_02.dgn

Scale: 25 0 25 50 Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

# THE GOLD STAR MEMORIAL HIGHWAY

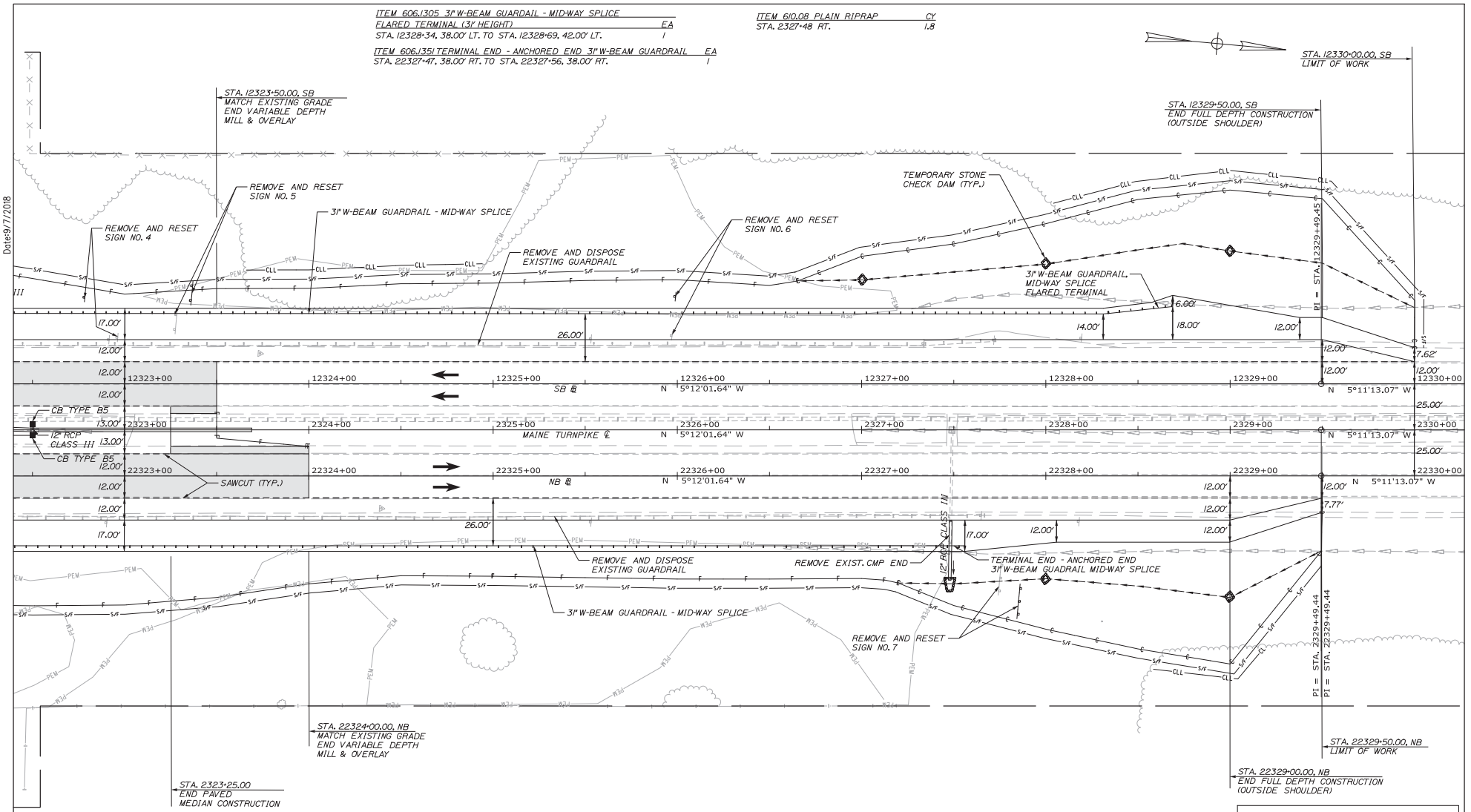
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS STROUDWATER RIVER OVERPASS

## GENERAL PLAN 2

SHEET NUMBER: GP-02

CONTRACT:2019.16




98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 028_BDPlan_03.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

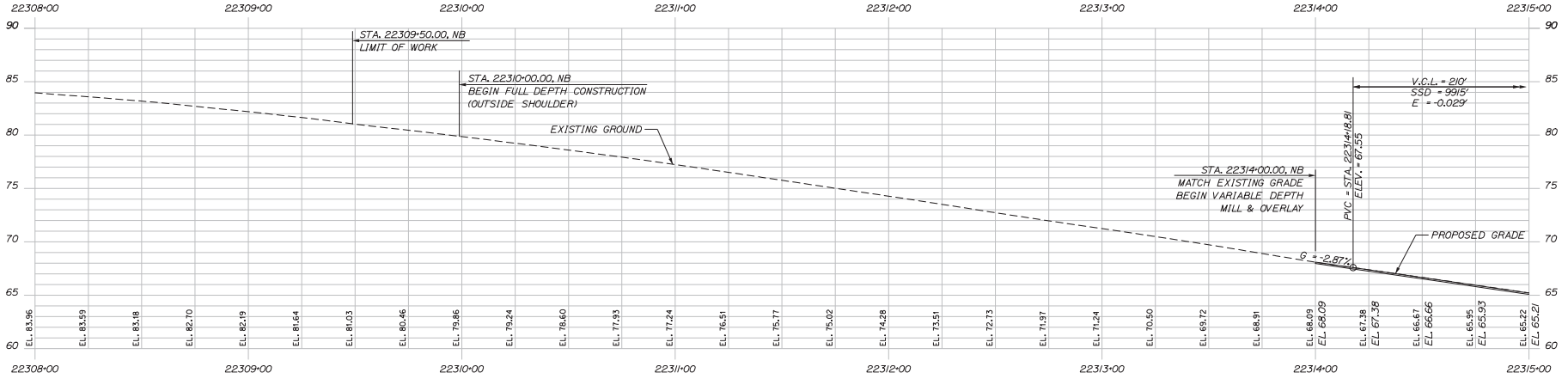
## GENERAL PLAN 3

SHEET NUMBER: GP-03

CONTRACT:2019.16

Date:9/7/2018

NOTE: EXISTING GROUND SHOWN WAS SURVEYED PRIOR TO A ¾" OVERLAY AND MAY NOT REPRESENT EXACT GROUND ELEVATIONS ENCOUNTERED DURING THIS CONTRACT.




98% SUBMISSION
August 31, 2018

Filename: 029_NBProfile_01.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

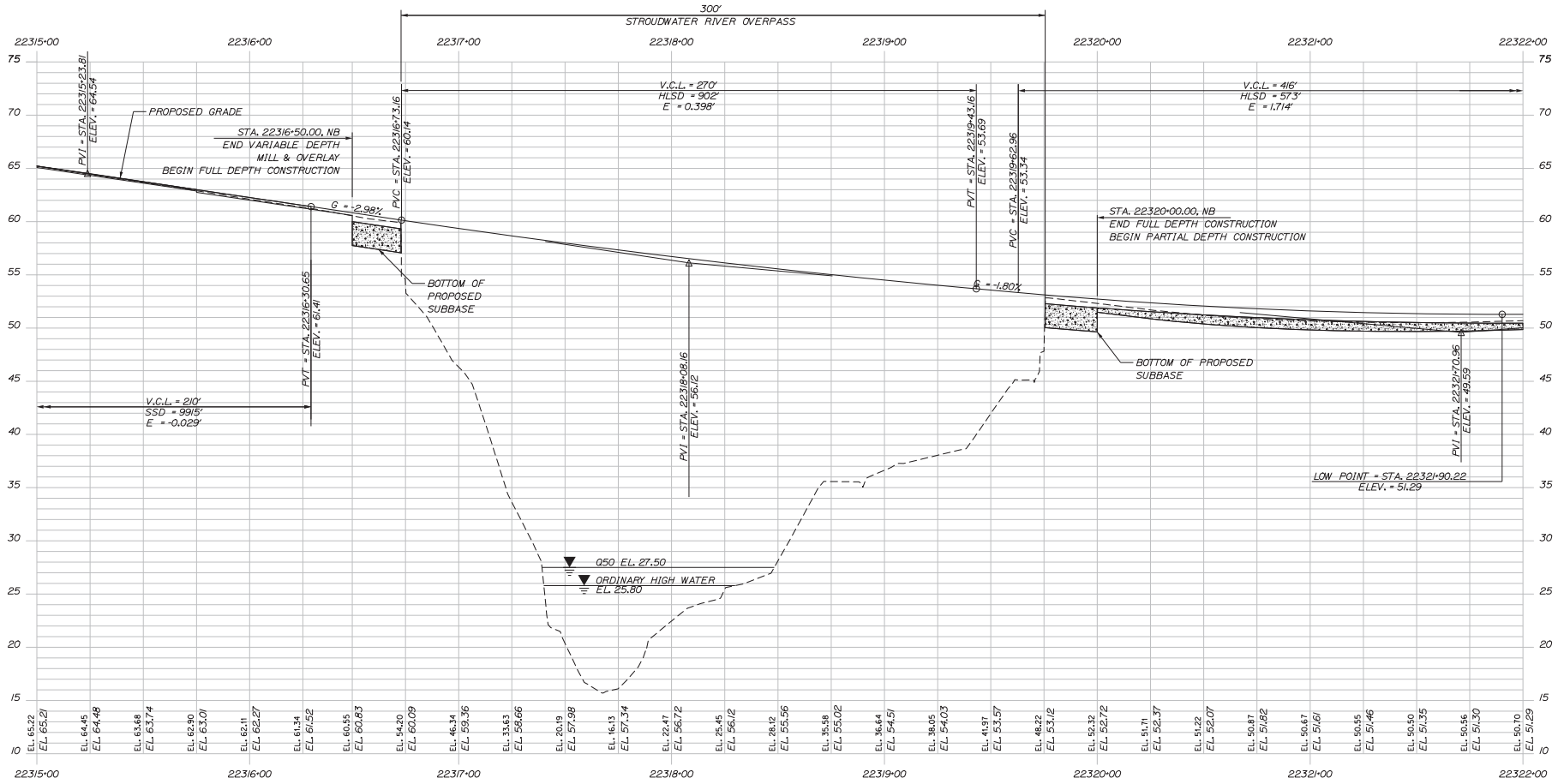
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## PROFILE - NORTHBOUND 1

SHEET NUMBER: PRO-01

CONTRACT:2019.16




98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 030_NBProfile_02.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

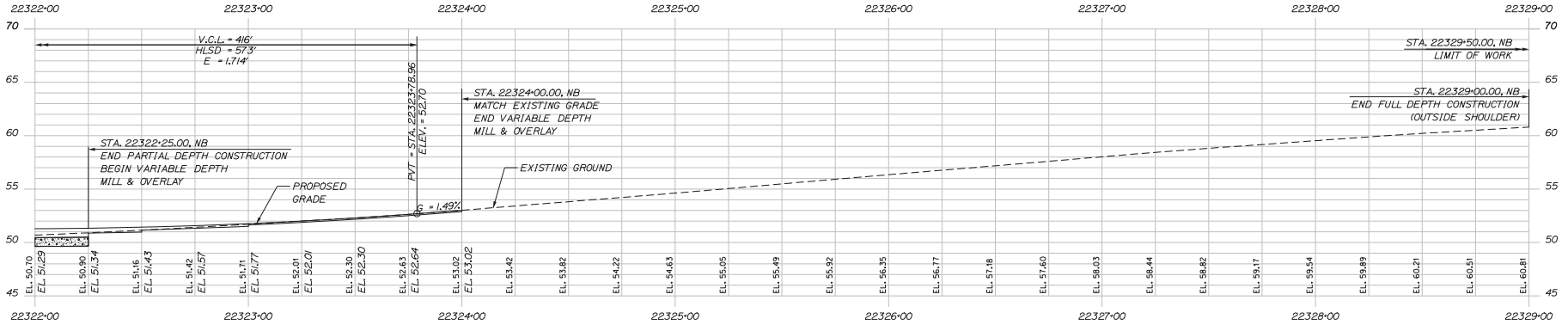
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## PROFILE - NORTHBOUND 2

SHEET NUMBER: PRO-02

CONTRACT:2019.16




98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 031_NBProfile_03.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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340 County Road, Suite 6-C
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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

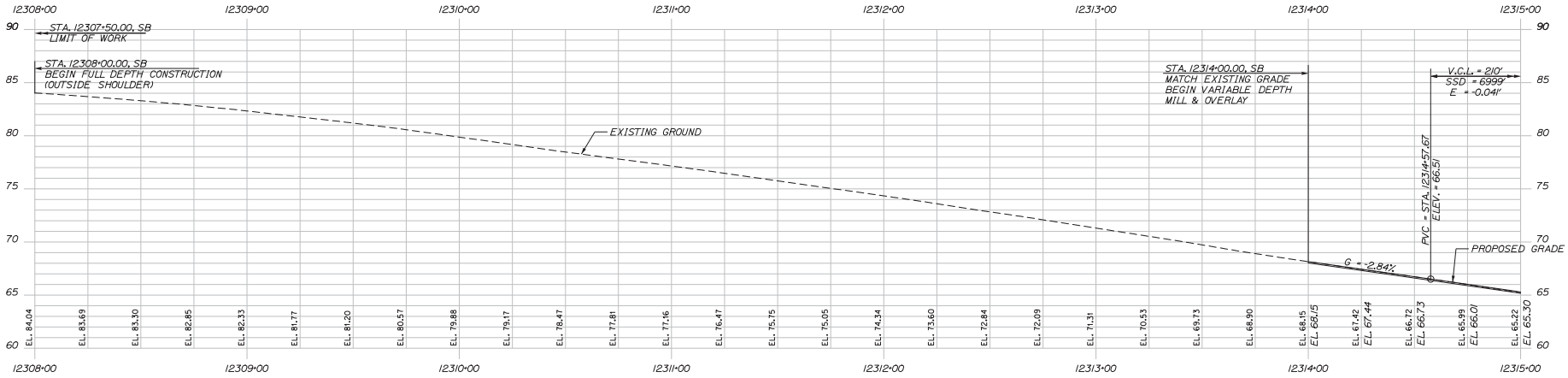
## PROFILE - NORTHBOUND 3

SHEET NUMBER: PR0-03

CONTRACT:2019.16

Date:9/7/2018

NOTE: EXISTING GROUND SHOWN WAS SURVEYED PRIOR TO A ¾" OVERLAY AND MAY NOT REPRESENT EXACT GROUND ELEVATIONS ENCOUNTERED DURING THIS CONTRACT.




98% SUBMISSION
August 31, 2018

Filename: 032_SBProfile_01.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

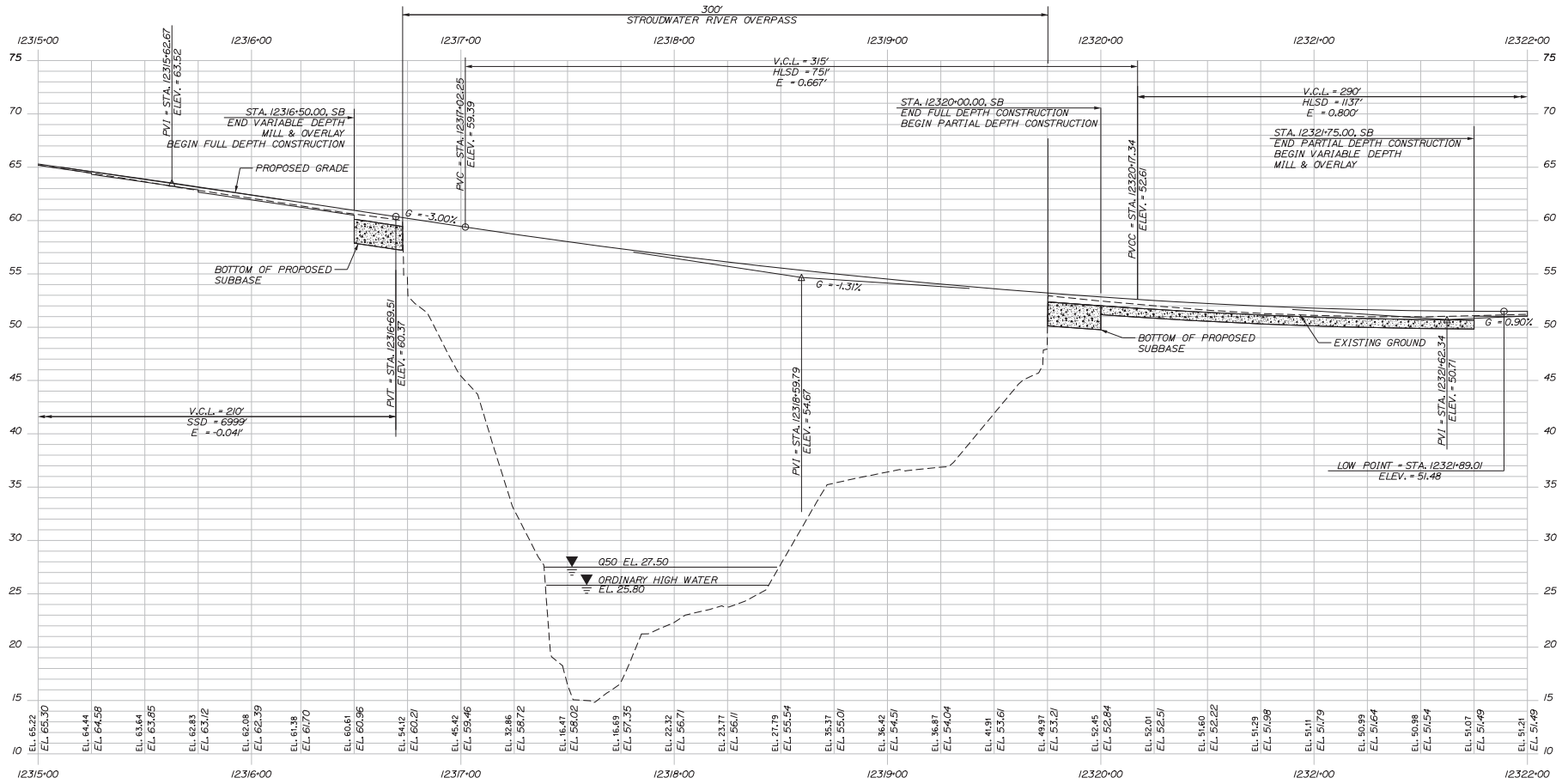
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## PROFILE - SOUTHBOUND 1

SHEET NUMBER: PRO-04

CONTRACT:2019.16




98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 033_SBProfile_02.dgn

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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THE GOLD STAR MEMORIAL HIGHWAY

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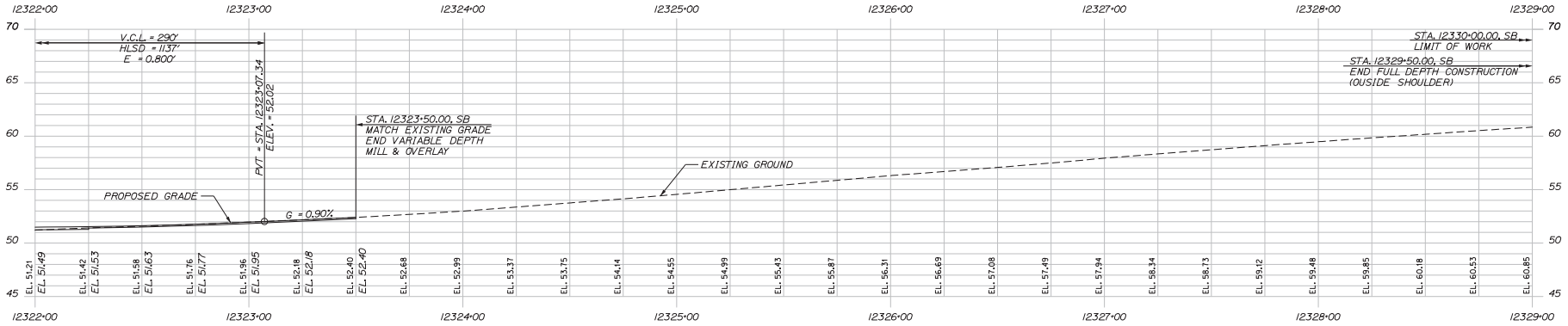
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## PROFILE - SOUTHBOUND 2

SHEET NUMBER: PRO-05

CONTRACT:2019.16




98% SUBMISSION
August 31, 2018

Scale: 25 0 25 50
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
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Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | CDH | 08\18 | Checked | RWH | 08\18 |
| Drawn | SLS | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## PROFILE - SOUTHBOUND 3

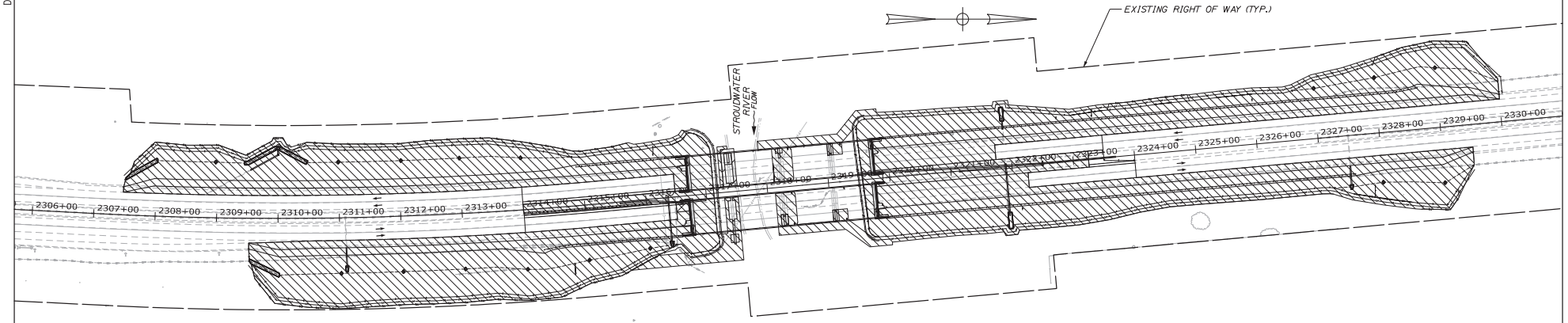
SHEET NUMBER: PRO-06

CONTRACT: 2019.16



Date: 9/7/2018

Filename: 034_SBProfile_03.dgn




## NOTES

1. EROSION AND SEDIMENTATION CONTROL DEVICES REQUIRED FOR THE CONTRACTOR'S ACCESS LOCATIONS AND STORAGE AREAS WILL NOT BE MEASURED FOR PAYMENT.

2. SEE SPECIFICATIONS FOR CONTRACTOR'S SUBMITTAL REQUIREMENTS IF ADDING ADDITIONAL LIMITS OF DISTURBANCE TO THE PROJECT ESTIMATED QUANTITIES.

3. AN ADDITIONAL 0.5 ACRE HAS BEEN ESTIMATED FOR THE CONTRACTORS ACCESS LOCATIONS AND STORAGE AREAS

LIMIT OF DISTURBANCE
341483.7 SF (7.84 ACRES)

98% SUBMISSION
August 31, 2018

Scale: 80 0 80 160
Scale of Feet

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS

LIMITS OF DISTURBANCE

SHEET NUMBER: LOD-01

CONTRACT:2019.16

35 OF 121

Date:9/7/2018

Filename: 035_Limits of Disturbance.dgn

## SPECIFICATIONS

### DESIGN

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION.

### CONSTRUCTION

STATE OF MAINE, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, HIGHWAYS AND BRIDGES, REVISION OF NOVEMBER 2014.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION STANDARD DETAILS FOR HIGHWAYS AND BRIDGES, NOVEMBER 2014 WITH LATEST REVISIONS.

AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, 4TH EDITION.

## DESIGN LOADING

LIVE LOAD - HL-93

## MATERIALS

### CONCRETE

DECK CONCRETE - CLASS AAA - DECK
STRUCTURAL CONCRETE PLACED UNDER WATER - CLASS S
ALL OTHER CONCRETE SHALL BE CLASS AAA.

### REINFORCING STEEL

AASHTO M31, GRADE 60 EPOXY COATED

ANCHOR RODS SHALL MEET THE REQUIREMENTS OF ASTM F1554, GRADE 55 AND SHALL BE SWEDGED OR THREADED ON THE EMBEDDED PORTION OF THE ROD.

### STRUCTURAL STEEL

GIRDERS: FLANGES, WEBS, SPLICE PLATES, FILLER PLATES, DIAPHRAGMS, CONNECTION PLATES, AND BEARING STIFFENERS SHALL BE AASHTO M270, GRADE 50.

STEEL H-PILES SHALL BE ASTM A572, GRADE 50.

ALL OTHER STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 36, OR APPROVED EQUAL.

HIGH STRENGTH BOLTS SHALL BE AASHTO M164 (ASTM F3125, GRADE A325, TYPE 1). BOLTS SHALL BE HOT DIPPED GALVANIZED TYPE 1.

### PROTECTIVE COATING

ALL NEW STRUCTURAL STEEL EXCEPT DIAPHRAGMS SHALL BE SHOP COATED WITH NEPCOAT QUALIFIED PRODUCT FROM LIST A. PAINT COLOR SHALL BE SELECTED TO MATCH EXISTING GIRDERS. DIAPHRAGMS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.

## BASIC DESIGN STRESSES

CONCRETE - CLASS AAA - DECK f'c = 4,500 P.S.I.
- CLASS S, f'c = 3,500 P.S.I.
- CLASS AAA, f'c = 4,500 P.S.I.

REINFORCING STEEL - fy = 60,000 P.S.I.

STRUCTURAL STEEL AASHTO M270 (ASTM A709) GRADE 36, Fy = 36,000 P.S.I.
AASHTO M270 (ASTM A709) GRADE 50, Fy = 50,000 P.S.I.
AASHTO M270 (ASTM A572) GRADE 50, Fy = 50,000 P.S.I.

## GENERAL NOTES:

1. THE PROPOSED ELEVATIONS ARE BASED ON THE NAVD 88 DATUM. THE AS-BUILT PLANS ARE BASED ON NGVD 29 DATUM.

2. FOR ADDITIONAL DETAILS REFERENCED OR NOT SHOWN IN THESE DRAWINGS, SEE THE STATE OF MAINE, DEPARTMENT OF TRANSPORTATION STANDARD DETAILS, HIGHWAYS AND BRIDGES, NOVEMBER 2014 WITH UPDATES.

3. COPIES OF THE AS-BUILT PLANS ARE ON FILE AT THE MAINE TURNPIKE AUTHORITY. ACCURACY OF THESE PLANS IS NOT GUARANTEED.

4. REINFORCING STEEL SHALL HAVE A CLEAR COVER OF 2", UNLESS OTHERWISE NOTED.

5. CHAMFER ALL EXPOSED CONCRETE EDGES ¾" UNLESS OTHERWISE NOTED.

6. ALL BRIDGE PARAPET, BARRIER, WINGWALL AND ENDPOST CONCRETE, INSIDE FACE AND TOP FACE, SHALL HAVE A RUBBED FINISH PRIOR TO THE APPLICATION OF THE PROTECTIVE COATING FOR CONCRETE SURFACE.

7. THE STEEL PORTIONS OF THE EXISTING BRIDGE ARE ASSUMED TO BE COATED WITH A LEAD-BASED PAINT SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR THE CONTAINMENT, PROPER MANAGEMENT, AND DISPOSAL OF ALL LEAD-CONTAMINATED HAZARDOUS WASTE GENERATED BY THE PROCESS OF THE BRIDGE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING APPROPRIATE OSHA MANDATED PERSONAL PROTECTION STANDARDS RELATED TO THIS PROCESS.

8. CLEAR PROTECTIVE COATING FOR CONCRETE SURFACES SHALL BE APPLIED TO THE FOLLOWING AREAS:
- EXPOSED SURFACES OF THE PARAPETS, AND ENDPOSTS;
- VERTICAL FACES OF THE DECK FASCIA EXTENDING BENEATH THE DECK TO THE GIRDER TOP FLANGE;
- EXPOSED SURFACES OF THE ABUTMENTS, WINGWALLS, AND PIERS.

9. PIGMENTED PROTECTIVE COATING FOR CONCRETE SURFACES SHALL BE APPLIED TO EXPOSED SURFACES OF THE ABUTMENTS, WINGWALLS, AND PIERS.

10. WHERE DRILLING AND ANCHORING OF REINFORCING STEEL IS SPECIFIED, THE CONTRACTOR SHALL USE A MATERIAL LISTED ON THE MAINEDOT PREQUALIFIED LIST OF CHEMICAL ANCHORING MATERIALS. THE DEPTH OF EMBEDMENT SHALL BE SUFFICIENT TO DEVELOP 125% OF THE YIELD STRENGTH OF THE BAR, BUT SHALL BE NO LESS THAN THE MINIMUM DEPTH OF EMBEDMENT WHEN SPECIFIED.

11. THE EXISTING GIRDERS SHALL BE JACKED IN-PLACE TO FACILITATE PEDESTAL RECONSTRUCTION, AND BEARING RESETTING.

12. DIMENSIONS WITH RESPECT TO THE EXISTING BRIDGE ARE APPROXIMATE AND PROVIDED FOR REFERENCE. IF FIELD CONDITIONS VARY BY MORE THAN 1" FROM DIMENSIONS SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED.

| ITEM NO. | ITEM DESCRIPTION | REFERENCE QUANTITY | UNIT | BRIDGE QUANTITY |
|---|---|---|---|---|
| 202.10 | Removing Existing Superstructure Property of Contractor | 630 CY | LS | 1 |
| 202.12 | Removing Existing Structural Concrete | | CY | 120 |
| 202.13 | Removing Existing Railings Retained by Authority | | LF | 1272 |
| 203.35 | Crushed Stone 3/4 - inch | | CY | 30 |
| 206.082 | Structural Earth Excavation - Major Structures, Plan Quantity | | CY | 170 |
| 206.10 | Structural Earth Excavation - Piers | | CY | 1200 |
| 403.208 | Hot Mix Asphalt, 12.5 mm (Polymer Modified) - RAP | | Ton | 290 |
| 403.212 | Hot Mix Asphalt, 4.75 mm | | Ton | |
| 403.213 | Hot Mix Asphalt, 12.5 mm (base and intermediate course) | | Ton | 290 |
| 409.15 | Bituminous Tack Coat, Applied | | GAL | 220 |
| 501.231 | Dynamic Loading Test | | EA | 8 |
| 501.42 | Steel H-beam Piles 57 lb/ft, delivered | | LF | 2500 |
| 501.421 | Steel H-beam Piles 57 lb/ft, in place | | LF | 2500 |
| 501.44 | Steel H-beam Piles 63 lb/ft, delivered | | LF | 1560 |
| 501.441 | Steel H-beam Piles 63 lb/ft, in place | | LF | 1560 |
| 501.54 | Steel H-beam Piles 117 lb/ft, delivered | | LF | 170 |
| 501.541 | Steel H-beam Piles 117 lb/ft, in place | | LF | 170 |
| 501.90 | Pile Tips | | EA | 71 |
| 501.91 | Pile Splices | | EA | 44 |
| 501.92 | Pile Driving Equipment Mobilization | | LS | 1 |
| 502.219 | Structural Concrete, Abutments and Retaining Walls | 250 CY | LS | 1 |
| 502.239 | Structural Concrete Piers | 430 CY | LS | 1 |
| 502.249 | Structural Concrete Piers (Placed Under Water) | | CY | 640 |
| 502.26 | Structural Concrete Roadway and Sidewalk Slab on Steel Bridges | 920 CY | LS | 1 |
| 502.264 | Structural Concrete Parapets | 30 CY | LS | 1 |
| 503.14 | Epoxy-Coated Reinforcing Steel, Fabricated and Delivered | | LB | 465000 |
| 503.15 | Epoxy-Coated Reinforcing Steel, Placing | | LB | 465000 |
| 503.17 | Mechanical Welded Splice | | EA | 2472 |
| 504.702 | Structural steel, fabricated and delivered, welded | 312600 LB | LS | 1 |
| 504.71 | Structural steel erection | 312600 LB | LS | 1 |
| 505.08 | Shear Connectors | 11592 EA | LS | 1 |
| 506.9102 | Zinc Rich Coating System (Shop Applied) | 312600 LB | LS | 1 |
| 506.9105 | Field Touch-Up of Existing Steel | 61900 LB | LS | 1 |
| 507.091 | Aluminum Bridge Railing, 1 Bar | 1220 LF | LS | 1 |
| 508.14 | High Performance Waterproofing Membrane | 3650 SY | LS | 1 |
| 511.071 | Cofferdam Pier 1 - NB | | LS | 1 |
| 511.072 | Cofferdam Pier 1 - SB | | LS | 1 |
| 511.073 | Cofferdam Pier 2 - NB | | LS | 1 |
| 511.074 | Cofferdam Pier 2 - SB | | LS | 1 |
| 511.603 | Temporary Earth Support Systems | | LS | 1 |
| 514.06 | Curing Box for Concrete Cylinders | | EA | 1 |
| 515.202 | Clear Protective Coating for Concrete Surfaces | | SY | 1500 |
| 515.23 | Anti-Graffiti Coating | | SY | 2050 |
| 518.40 | Epoxy Injection Crack Repair | | LF | 40 |
| 518.51 | Repair of Upward Facing Surfaces - below Reinforcing Steel < 8 inches | | SF | 89 |
| 518.60 | Repair of Vertical Surfaces < 8 inches | | SF | 131 |
| 520.221 | Expansion Device - Locking Compression Seal with Steel Edge Beams | | EA | 4 |
| 523.5303 | Steel Bearings, Fixed, Rocker | | EA | 4 |
| 523.5304 | Steel Bearings, Expansion, Rocker | | EA | 16 |
| 523.52 | Bearing Installation | | EA | 20 |
| 523.56 | Clean and Paint Bearing | | EA | 10 |
| 523.561 | Clean, Paint, and Reset Bearing | | EA | 12 |
| 523.562 | Clean, Paint, and Repair Bearing | | EA | 2 |
| 524.301 | Temporary Structural Support - Jacking | | LS | 1 |
| 524.302 | Temporary Structural Support - Girders | | LS | 1 |
| 524.303 | Temporary Structural Support - Braces | | LS | 1 |
| 524.40 | Protective Shielding - Steel Girders | | SY | 7400 |
| 526.304 | Temporary Concrete Barrier, Anchored | 300 LF | LS | 1 |
| 606.1723 | Bridge Transition - Type III | | EA | 4 |
| 609.15 | Sloped Curb Type I | | LF | 1350 |
| 607.17 | Chain Link Fence - 6 foot | | LF | 220 |
| 610.08 | Plain Riprap | | CY | 920 |
| 610.18 | Stone Ditch Protection | | CY | 45 |
| 619.1401 | Erosion Control Mix | | CY | 70 |
| 620.58 | Erosion Control Geotextile | | SY | 710 |
| 652.361 | Maintenance of Traffic Control Devices | | LS | 0.50 |
| 659.10 | Mobilization | | LS | 0.5 |

INDEX OF DRAWINGS



98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 059_General Notes, Index, and Quantities.dgn

Scale: NOT TO SCALE

| No. | Revision | By | Date |
|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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| Designed | BRG | 08\18 | Checked | TJP | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

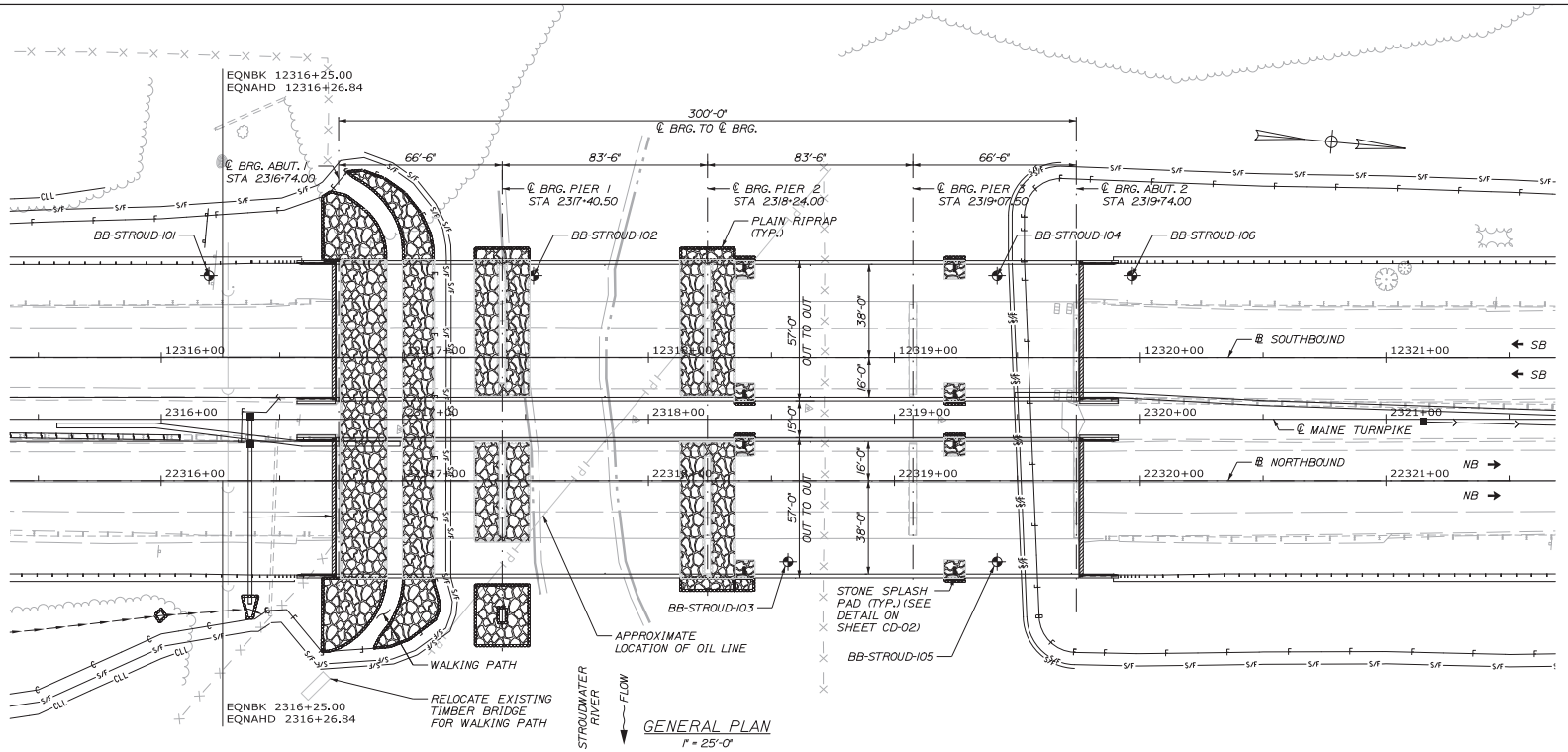
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS

GENERAL NOTES, INDEX, AND QUANTITIES

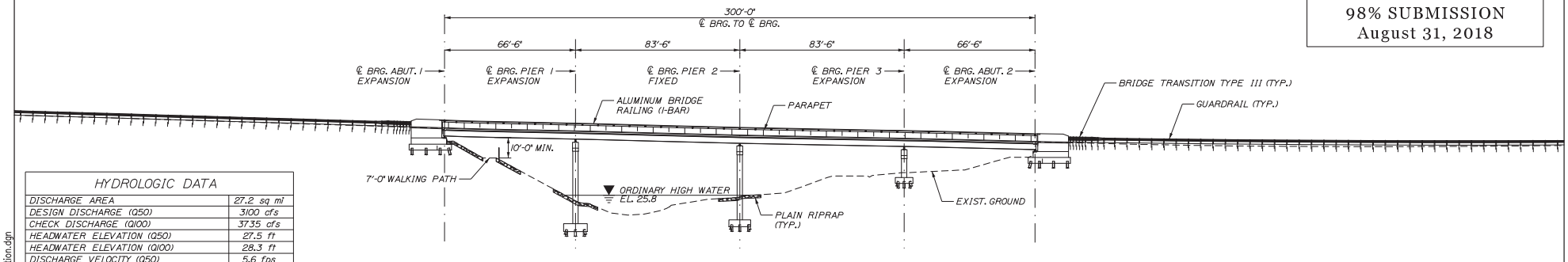
SHEET NUMBER: S-01

CONTRACT:2019.16




GENERAL PLAN
1" = 25'-0"

98% SUBMISSION
August 31, 2018




ELEVATION
1" = 25'-0"

| HYDROLOGIC DATA | |
|---|---|
| DISCHARGE AREA | 27.2 sq mi |
| DESIGN DISCHARGE (Q50) | 3100 cfs |
| CHECK DISCHARGE (Q100) | 3735 cfs |
| HEADWATER ELEVATION (Q50) | 27.5 ft |
| HEADWATER ELEVATION (Q100) | 28.3 ft |
| DISCHARGE VELOCITY (Q50) | 5.6 fps |
| DISCHARGE VELOCITY (Q100) | 6.1 fps |
| ORDINARY HIGH WATER ELEVATION (QIO) | 25.8 ft |

Scale:

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

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THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## GENERAL PLAN AND ELEVATION

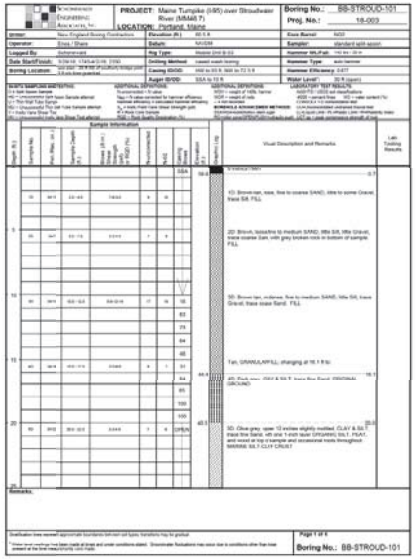
SHEET NUMBER: S-02

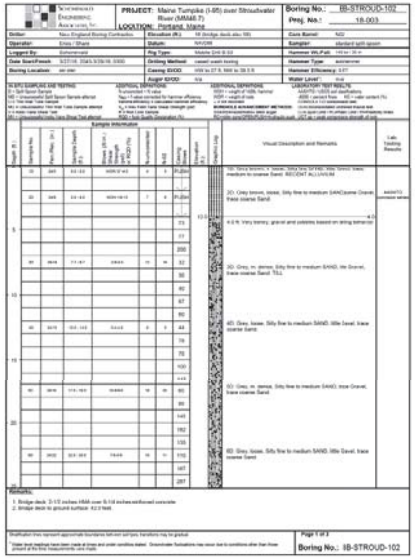
CONTRACT: 2019.16

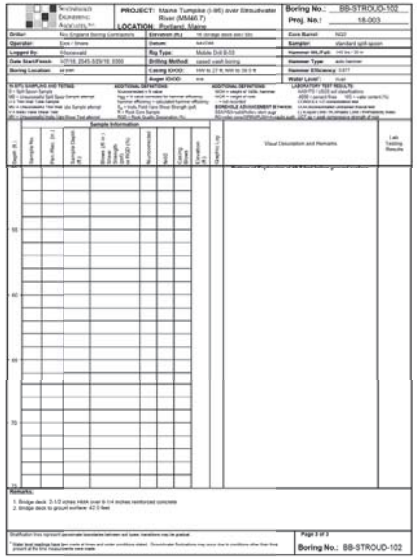


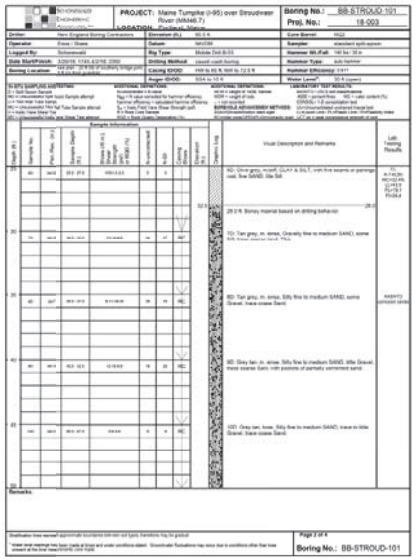
Date: 9/7/2018

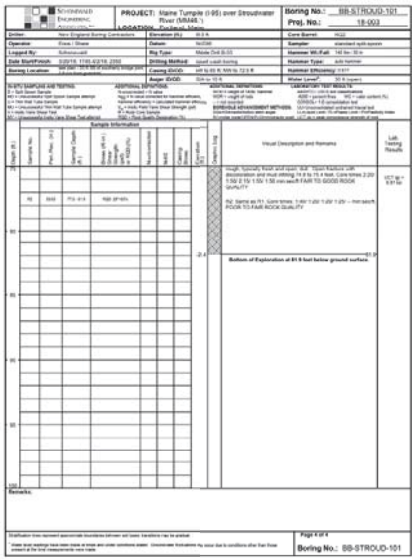
Filename: 060_General Plan and Elevation.dgn

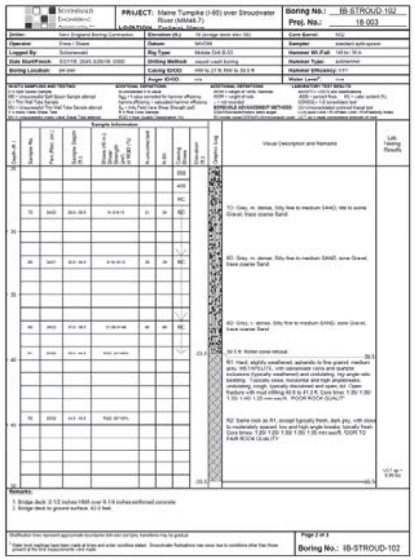


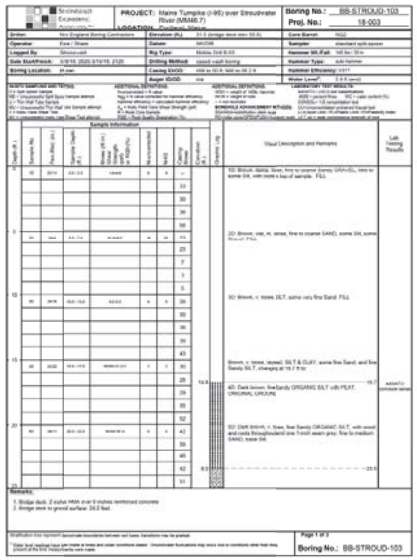












Date:9/7/2018

Filename: 061_Boring Logs 1.dgn

Scale:

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HNTB

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|---|---|---|---|
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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

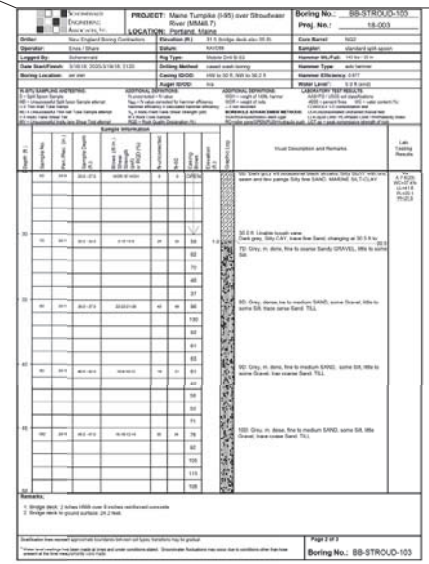
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

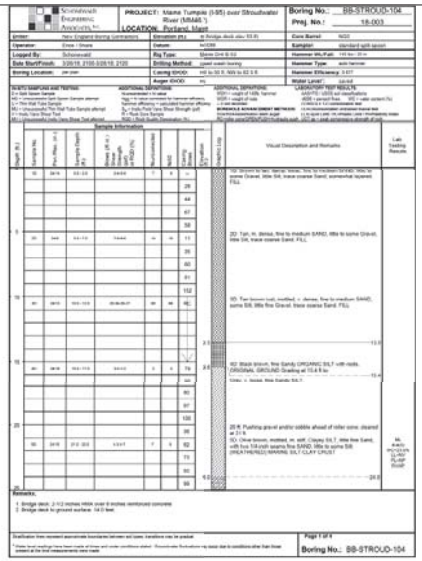
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

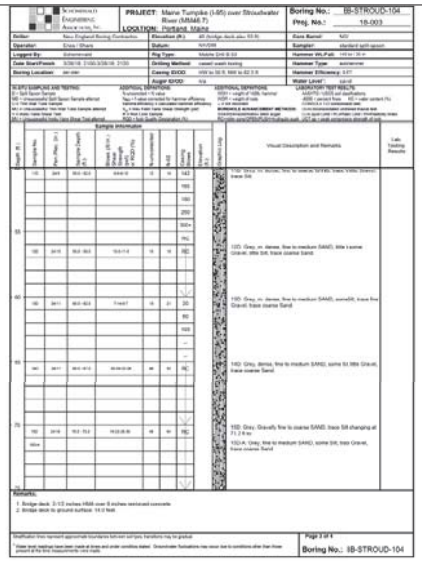
## BORING LOGS I

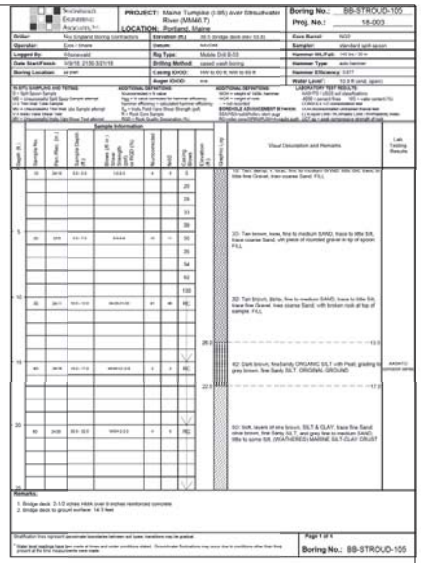
SHEET NUMBER: S-03

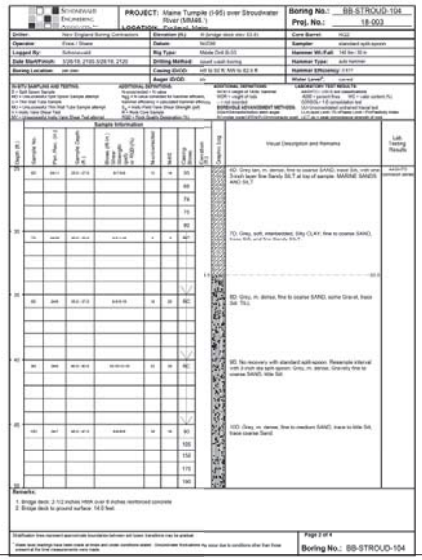
CONTRACT:2019.16

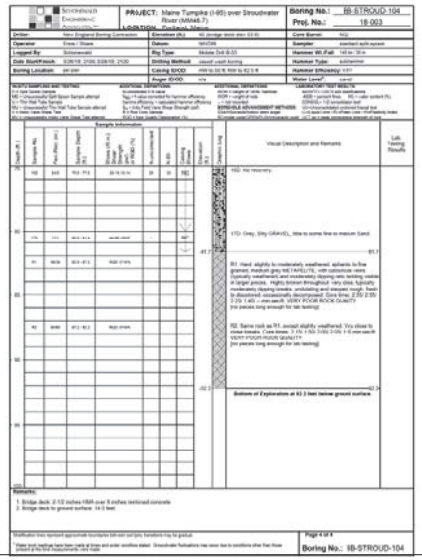


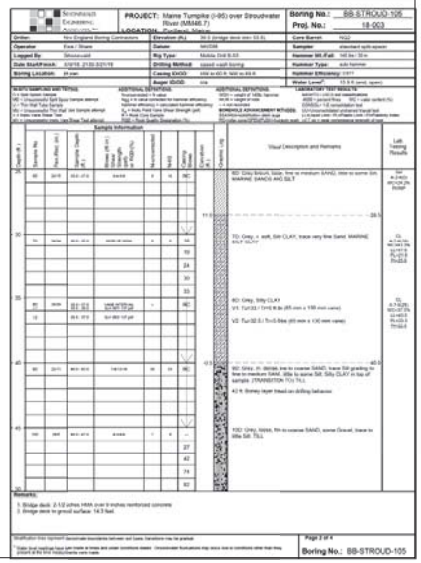












Date:9/7/2018

Filename: 062_Boring Logs II.dgn

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Scale:

Designed by:

HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
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| Designed | BRG | 08\18 | Checked | TJP | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

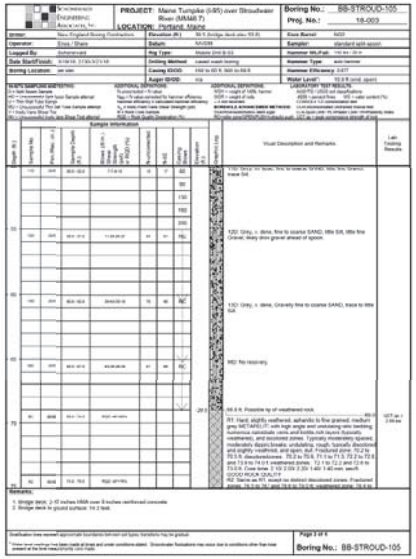
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

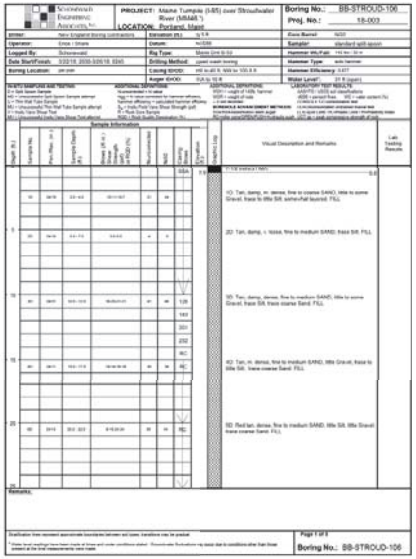
# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

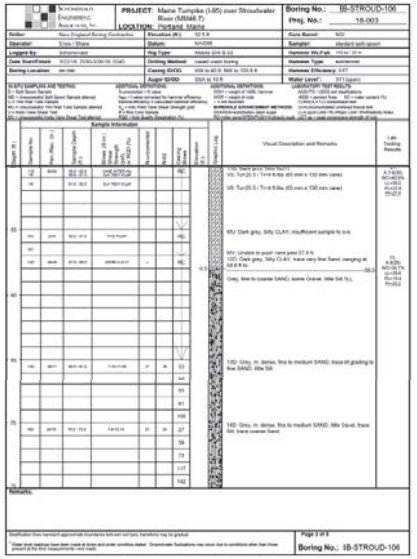
## BORING LOGS II

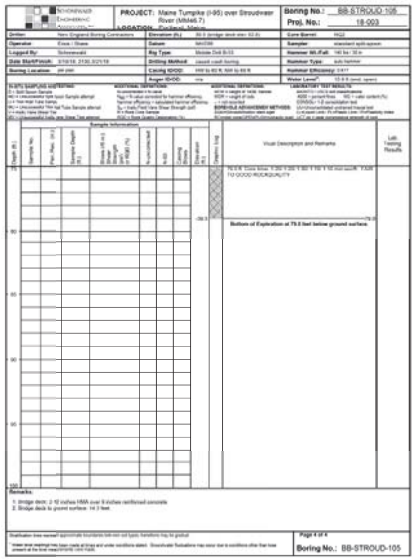
SHEET NUMBER: S-04

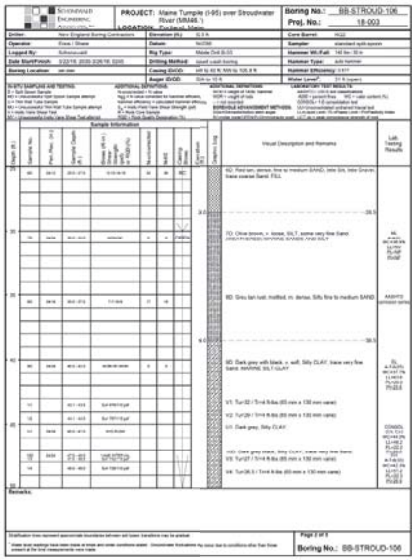
CONTRACT:2019.16

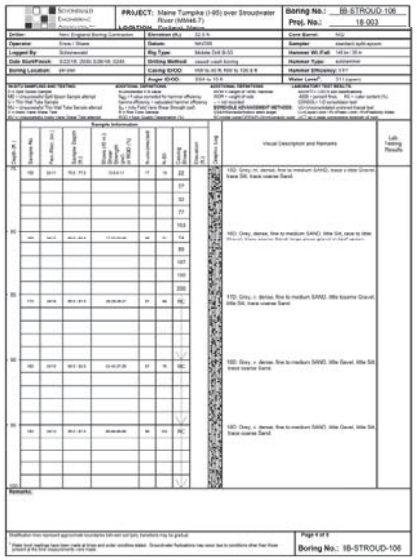












Date:9/7/2018

Filename: 063_Boring Logs III.dgn

| Scale: | Designed by: | HNTB | HNTB CORPORATION<br>340 County Road, Suite 6-C<br>Westbrook, ME 04092<br>TEL (207) 774-5155<br>FAX (207) 228-0909 | MAINE TURNPIKE | THE GOLD STAR MEMORIAL HIGHWAY | BRIDGE IMPROVEMENTS<br>STROUDWATER RIVER OVERPASS<br>BORING LOGS III |
|---|---|---|---|---|---|---|

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

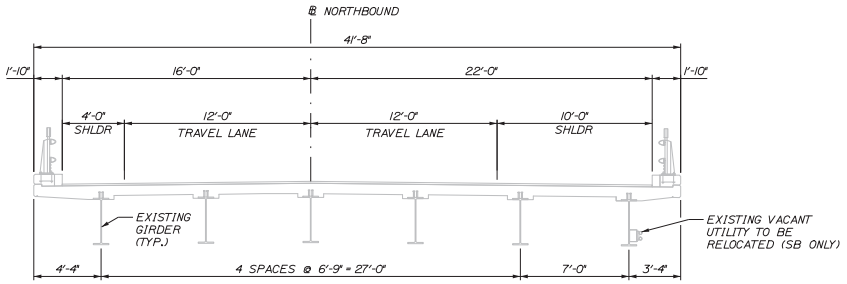
CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | BRG | 08\18 | Checked | TJP | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

SHEET NUMBER: S-05

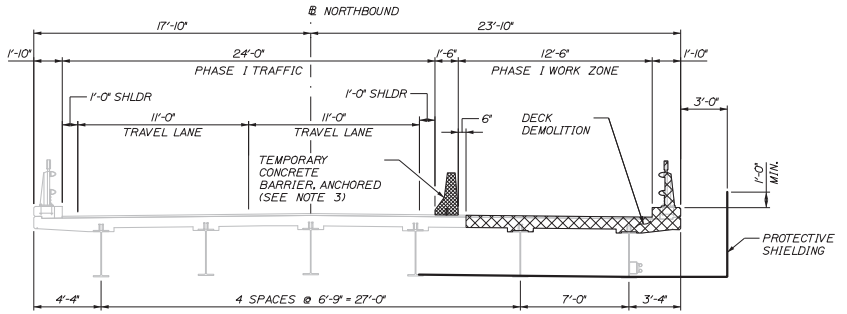
CONTRACT:2019.16




EXISTING CONDTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

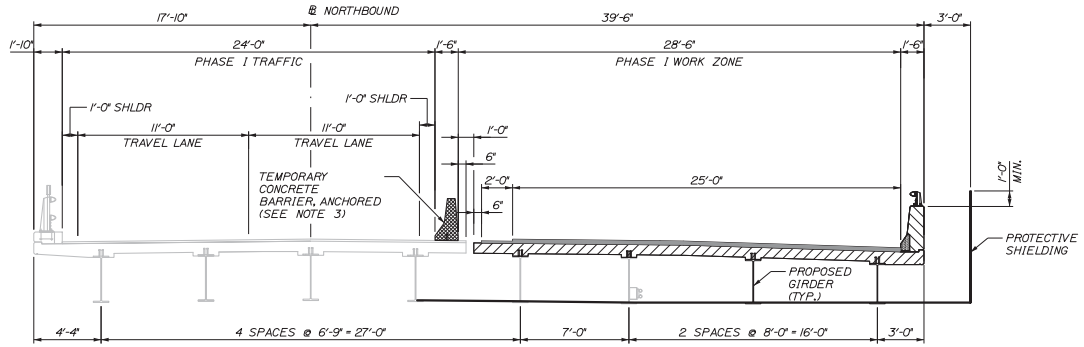
1/4" = 1'-0"




PHASE I DEMOLITION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

1/4" = 1'-0"




PHASE I CONSTRUCTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

1/4" = 1'-0"

NOTES:

1. PROTECTIVE SHIELDING SHALL EXTEND LONGITUDINALLY FOR THE FULL LENGTH OF THE STRUCTURE. THE WIDTH OF THIS SHIELDING SHALL BE EQUAL TO THE TOTAL WIDTH OF THE NEW STRUCTURE PLUS THREE FEET BEYOND THE FASCIA LINES ON EACH SIDE OF THE STRUCTURE.

2. THE APPROXIMATE SHIELDING QUANTITIES REPRESENT THE TOTAL QUANTITY OF SHIELDING REQUIRED TO COMPLETE THE WORK, INCLUDING INITIAL INSTALLATION, REMOVAL, AND RESETTING OF SHIELDING.

3. USE OF THRU-BOLTING WILL NOT BE PERMITTED.

APPROXIMATE SHIELDING QUANTITIES*

| | DEMOLITION | CONSTRUCTION | TOTAL |
|---|---|---|---|
| APPROX. WIDTH OF NEW SHIELDING INSTALLED (FT) | 48 FT | 63 FT | 111 FT |
| APPROX. AREA OF SHIELDING INSTALLED (SY) | 3200 SY | 4200 SY | 7400 SY |

* SEE NOTES 1 AND 2

98% SUBMISSION
August 31, 2018

Scale:

Designed by:

HNTB

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | BRG | 08\18 | Checked | KEB | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS

CONSTRUCTION SEQUENCE I

SHEET NUMBER: S-06

CONTRACT:2019.16

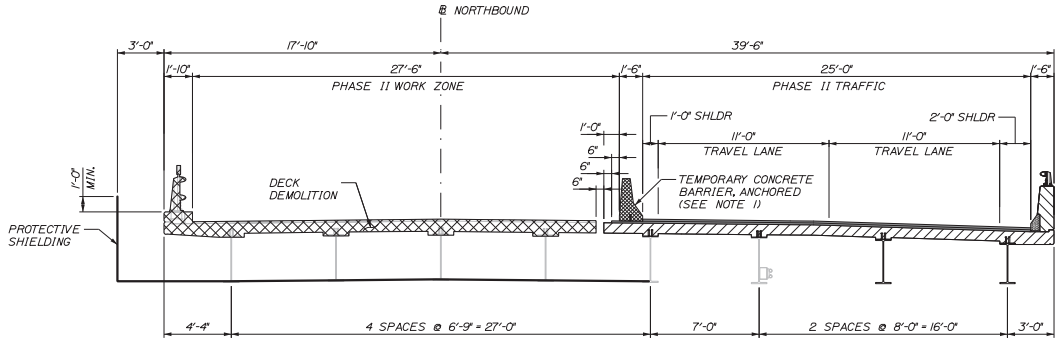


Date:9/7/2018

Filename: 064_Construction Sequencing 1.dgn

NOTES:

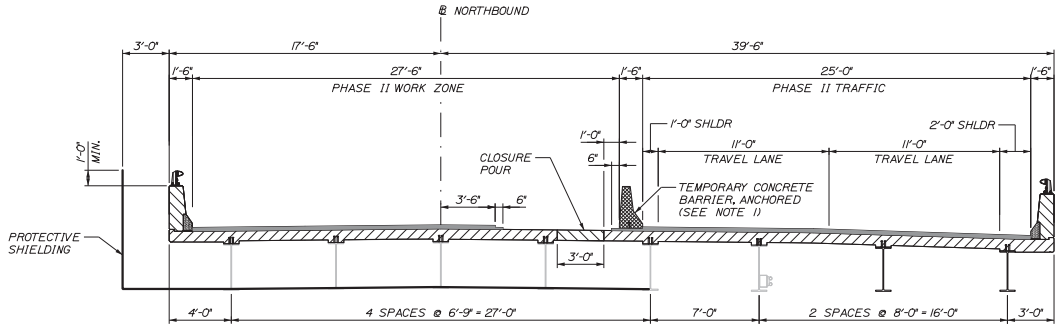
1. USE OF THRU-BOLTING WILL NOT BE PERMITTED.




PHASE II DEMOLITION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

1/4" = 1'-0"




PHASE II CONSTRUCTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

1/4" = 1'-0"

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 065_Construction Sequencing II.dgn

Scale:

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

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CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | BRG | 08\18 | Checked | KEB | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |


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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

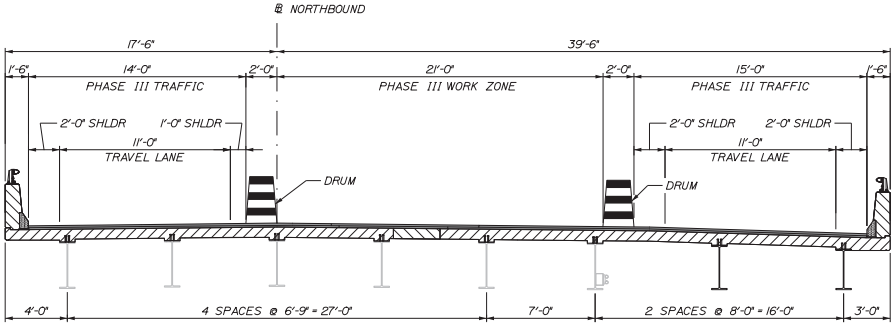
MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## CONSTRUCTION SEQUENCE II

SHEET NUMBER: S-07

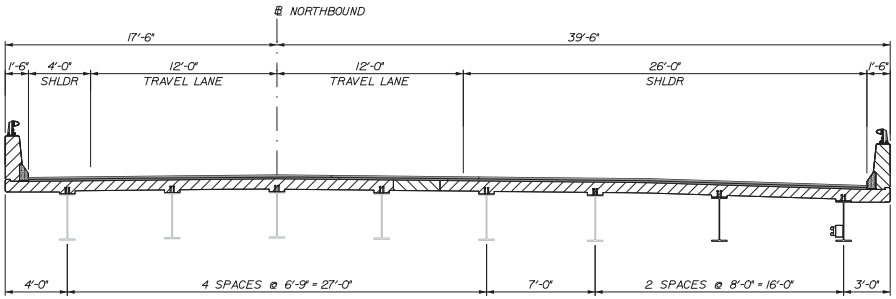
CONTRACT:2019.16




PHASE III CONSTRUCTION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

1/4" = 1'-0"




FINAL PROPOSED CONDITION

(NB BRIDGE SHOWN, SB BRIDGE OPPOSITE HAND)

1/4" = 1'-0"

98% SUBMISSION
August 31, 2018

Date:9/7/2018

Filename: 066_Construction Sequencing III.dgn

Scale:

| No. | Revision | By | Date |
|---|---|---|---|
| | | | |

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Timothy R. Cote, P.E.

| | By | Date | | By | Date |
|---|---|---|---|---|---|
| Designed | BRG | 08\18 | Checked | KEB | 08\18 |
| Drawn | ERB | 08\18 | In Charge of | RAL | 08\18 |

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Kristi Van Ooyen, P.E.

# BRIDGE IMPROVEMENTS
# STROUDWATER RIVER OVERPASS

## CONSTRUCTION SEQUENCE III

SHEET NUMBER: S-08

CONTRACT:2019.16