State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

FILE COPY

APPLICATION FOR STATE ASSENT

To perform work regulated by the provisions of Chapter 279 of the Public Laws of 1971 Amended.

Project Location: Barrington Bridge #123 (No.) RI-114 (County Rd), Barrington, RI (Street, City/Town)	File No. (CRMC USE ONLY) 2025-02-018
Owner's Name: Rhode Island Department of Transportation	Plat: N/A Lot(s): N/A
Mailing Address: 360 Lincoln Avenue, Warwick, RI 02888 (Address, City/Town, State, Zip Code)	Owner's Contact: Alisa Richardson Number: (401) 479-1327 Email Address: Alisa.Richardson@dot.ri.gov
Contractor RI Reg. # TBD Address: TBD	Email address: TBD Tel. No. TBD
Designer: AI Engineers Address: 919 Middle Street, Middletown, CT 06457	Tel. No. (860) 635-7740
Name of Waterway: Barrington River	Estimated Project Cost (EPC): TBD Application Fee: N/A

Provide Below a Description of Work As Proposed (*required*).

Work includes underwater repairs to Bridge Pier Nos. 1-4 to address voids in the structure. Following the void repairs, grout bags will be stacked by divers around the existing tremie and to an elevation 18-inches aboves the top of the existing Tremie A. Rip rap will also be placed by divers along the river bed between piers, sloping up from the existing mudline to the elevation of the top of the grout bags. Refer to the Plans and Details for additional information.

Have you or any previous owner filed an application for and/or received an assent for any activity on this property?
(If so please provide the file and/or assent numbers): 2002-11-050

Is this site within a designated historic district? ○ YES ◉ NO

Is this application being submitted in response to a coastal violation? ○ YES ◉ NO

If YES, you must indicate NOV or C&D Number: _____

Name/mailing addresses of adjacent property owners whose property adjoins the project site. Accurate mailing addresses will insure proper notification. _____Applicant must initial to certify accuracy of adjacent property owners and accuracy of mailing addresses.

1 Mathewson Rd (Rascal LLC), 78 County Rd (Steven and Judith Holland), 81 County Rd (Stephen and Jane Mainella) and 95 County Rd (Town of Barrington)

STORMTOOLS (Http://www.beachsamp.org/resources/stormtools/) is a planning tool to help applicants evaluate the impacts of sea level rise and storm surge on their projects. The Council encourages applicants to use STORMTOOLS to help them understand the risk that may be present at their site and make appropriate adjustments to the project design.

NOTE: The applicant acknowledges by evidence of their signature that they have reviewed the Rhode Island Coastal Resources Management Program, and have, where possible, adhered to the policies and standards of the program. Where variances or special exceptions are requested by the applicant, the applicant will be prepared to meet and present testimony on the criteria and burdens of proof for each of these relief provisions. The applicant also acknowledges by evidence of their signature that to the best of their knowledge the information contained in the application is true and valid. If the information provided to the CRMC for this review is inaccurate or did not reveal all necessary information or data, then the permit granted under this application may be found to be null and void. Applicant requires that as a condition to the granting of this assent, members of the CRMC or its staff shall have access to the applicant's property to make on-site inspections to insure compliance with the assent. This application is made under oath and subject to the penalties of perjury. 08/04

Alisa Richardson
Digitally signed by Alisa Richardson
Date: 2025.02.20 15:45:59 -05'00'

Owner Name (PRINT) _____ Owner's Signature (SIGN)

RECEIVED
FEB 21 2025
COASTAL RESOURCES MANAGEMENT COUNCIL

PLEASE REVIEW REVERSE SIDE OF APPLICATION FORM

COASTAL RESOURCES MANAGEMENT COUNCIL
CATEGORY B ASSENT APPLICATION

Rehabilitation of Barrington Bridge No. 123

Bridge Group 15F

Over the Barrington River

PREPARED FOR

Rhode Island Department of Transportation
Two Capitol Hill
Providence, RI 02903

PREPARED BY

Crossman Engineering
100 Jefferson Boulevard, Suite 200
Warwick, RI 02888

January 2025

STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
2-5-25

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Chapter 1: Introduction

This application for Category B State Assent is filed by the Rhode Island Department of Transportation (RIDOT; the Applicant) to authorize the minor rehabilitation of the Barrington Bridge No. 123, which carries RI-114 over the Barrington River in Barrington, Rhode Island. RIDOT is the owner of the Barrington Bridge and proof of ownership is included in **Appendix A**. Data is provided from the Rhode Island Bridge Map posted on the RIDOT webpage.

The proposed rehabilitation work for the bridge includes the replacement of the deck expansion joint glands, minor concrete patching repairs of the substructure and concrete arch panels, restoring the contact area at select bearings, underwater repairs to the tremie seals of the bridge piers, and the installation of scour countermeasures. The most extensive aspect of this project will be repairing the existing tremies and installing the scour countermeasures.

The Applicant's Consultant, AI Engineers (AIE; the Consultant) identified void deficiencies at the footings of Piers 1-4. In 2019, similar deficiencies were observed in Piers 5-6 and were addressed through a Maintenance Certification (2019-09-078) authorized by the Coastal Resources Management Council (CRMC), which can be found in **Appendix B**. Based on the success of the 2019 repairs, a similar rehabilitation method will be utilized for this project. In addition to filling the voids, grout bags will be installed around the existing tremies and above the existing Tremie A to increase structural stability. Following a Scour Analysis completed by AIE's subconsultant, Pare Corporation, it was determined that the installation of riprap along the river bed between piers is needed to prevent the likelihood of future scour which undermines the bridge's stability. A copy of the Scour Analysis can be found in **Appendix C**.

The project is subject to the jurisdiction of CRMC and will disturb Tidal Waters. Work on the bridge deck and bridge surfaces above tidal waters is considered to be routine maintenance but the placement of grout bags for pier reinforcement and riprap for scout prevention will occur within tidal waters. No other work is proposed within the CRMC 200-ft contiguous area.

The Coastal Resource Management Program (CRMP) (650-RICR-20-00-01) designates this portion of the Barrington River as Type 3 High Intensity Boating. The project may be categorized as an "Alteration and improvement to roadways, highways, bridges, parking lots, railroad lines, and airports" (CRMP § 1.3.1.M.1.a).

According to CRMP § 1.1.5.A (Table 1), this project will require a Category B Application for work in Type 3 Tidal Waters. This narrative, supporting documents, and the accompanying plan set serve as the application package. The following sections describe the existing conditions and proposed activities.

1.1 Purpose and Need

The purpose of this project is the improve the structural stability of the Barrington Bridge and extend its useful life. The Barrington Bridge is a critical infrastructure asset that carries vehicular, bicycle, and pedestrian traffic over the Barrington River. The need for this project has been identified in the Rhode Island State Transportation Improvement Plan (STIP).

1.2 Local Regulatory Requirements

RIDOT has informed the Town of Barrington of the proposed work and the Town has expressed no objection to this critical infrastructure repair project. RIDOT is not subject to municipal jurisdiction, and no local approvals are required for this project.

1.3 State Regulatory Requirements

1.3.1 Coastal Resources Management Council

This project is located within the jurisdiction of the CRMC. This application package seeks approval from the Council as a Category B State Assent.

1.3.1.1 Coastal Resources Management Program

The following applicable sections of the CRMP are addressed as part of this application: Sections 1.1.5, 1.1.6(F), 1.1.12, 1.2.1(D), 1.3.1(A), 1.3.1(J), and 1.3.1(M). Chapter 4 of this applications addresses the policies and standards outlined in these sections of the CRMP.

1.3.1.2 Special Area Management Plan (SAMP)

This project is located in Type 3 Tidal Waters within the CRMC Narragansett Bay Special Area Management Plan (SAMP). The initial focus of the Bay SAMP is to develop policy and standards for the siting of submerged cables within state waters for offshore renewable energy development, and to guide and manage aquaculture projects within Narragansett Bay and the Seekonk River. According to the Coastal Hazard Analysis Worksheet, the rehabilitation of existing public bridges is not included in the list of projects that are required to complete this review.

1.3.2 Freshwater Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Map and the Rhode Island Department of Environment Management (RIDEM) Resource Map were used to determine that there are no wetlands within the direct vicinity of Barrington Bridge No. 123. The USFWS NWI classifies the Barrington River as an Estuarine and Marine Deepwater (E1UBL) river with the nearest wetland located 0.2 miles north up the Barrington River. That wetland is 2.84 acres and is classified as an Estuarine and Marine (E2EM1Pd) Wetland. A copy of the USFWS NWI Map can be found in **Appendix D**.

1.4 Federal Regulatory Requirements

1.4.1 National Environmental Policy Act

The RIDOT is preparing an updated Categorical Exclusion Checklist for the Federal Highway Administration (FHWA) to fulfill the requirements for a federally-funded project under the NEPA. The original Categorical Exclusion had been prepared and approved, but due to a change in the scope of work to include the installation of riprap as a scour countermeasure, the Categorical Exclusion documentation required reevaluation. This process is ongoing at the time of this Category B Assent Application submission.

1.4.2 National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966, as amended, requires that Federal agencies take into account the effects of the federally-funded project on historic properties. The RIDOT Cultural Resources Unit has completed the Section 106 review for this project and prepared a determination of No Adverse Effect to historic properties for the Rhode Island Historical Preservation and Heritage Commission (RIHPHC), of which they concurred. A copy of this correspondence can be found in **Appendix E**.

1.4.3 Endangered Species Act of 1973

1.4.3.1 U.S. Fish and Wildlife Service

The RIDOT consulted with the U.S. Fish and Wildlife Serve (USFWS), to generate a Concurrence Verification Letter for the project regarding the endangered Northern Long-eared Bat (Myotis septentrionalis) dated January 19, 2024. The letter states that "an activity or portion of your project is consistent with a not

likely to adversely affect determination therefore, the overall determination for your project is, may affect, and is not likely to adversely affect (NLAA) the endangered Indiana bat and/or the endangered northern long-eared bat." A copy of this letter can be found in **Appendix F**.

1.4.3.2 National Oceanic and Atmospheric Administration National Marine Fisheries Service

The RIDOT is consulting with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office (GARFO) to resubmit the consultation documents under the FHWA NLAA Programmatic due to the change in the scope of work. This process is ongoing at the time of this Category B Assent Application submission and is projected to be completed mid-February 2025.

1.4.4 Essential Fish Habitat

The RIDOT is consulting with the NOAA Fisheries GARFO Habitat Conservation Division (HCD) to resubmit the consultation documents under the FHWA EFH Programmatic due to the change in the scope of work. This process is ongoing at the time of this Category B Assent Application submission and is projected to be completed mid-February 2025.

1.4.5 U.S. Army Corps of Engineers

This project will involve permanent fill within the navigable waters of the United Stated and, as such, will require authorization from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA). These authorizations are being requested concurrently with this Category B Assent Application submission and it is expected that the project will be allowed under the U.S. Army Corps of Engineers General Permit Number 8, Discharge of Dredged of Fill Material Incidental to the Construction of Bridges.

1.4.6 U.S. Coast Guard

A U.S. Coast Guard (USCG) Permit is not required for this project because the scour countermeasures installed as part of the project will not alter the horizontal or vertical clearances of the bridge as indicated in the USCG 2016 Bridge Completion Report. Rather, the project is required to issue a Notice to Mariners prior to the start of construction. Coordination will occur though the local Harbormasters.

Chapter 2: Existing Conditions

2.1 Site Location

The project area consists of the Barrington Bridge No. 123, which services East/West two-lane vehicular traffic (RI-114) as well as a sidewalk for pedestrian use on the southern edge and a two-way bicycle lane on the northern edge, and spans the Barrington River.

2.2 Bridge Condition

The Barrington Bridge was last inspected by RIDOT on 5/1/2023 and was determined to be in fair condition. Underwater inspections and scanning of the piers showed deficiencies in the footings of Piers 1-4. In 2019, similar deficiencies were observed in Piers 5-6 and were addressed through a Maintenance Certification (2019-09-078) authorized by CRMC. Piers 5-6 were observed to be stable during the most recent inspection. Other minor deficiencies that will be addressed as part of this project include concrete spalling on the bridge deck and arch panels and wear and tear on the deck expansion joins and contact bearing. These deficiencies are above tidal waters and considered to be routine maintenance.

2.3 Environmental Setting

The following section has been prepared by Ecosystem Solutions Inc. and includes a description of the existing environmental conditions.

2.3.1 Physiography, Geology, and Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the soils present within the Project Area are mapped as MU-Merrimac-Urban land complex, 0 to 8 percent slopes, and Ws-Water, saline. The MU soil series is located on land on either side of the bridge, while the Ws map unit is located within the confines of the Barrington River. There are no subaqueous soils mapped under the Barrington River.

The MU soil series is a somewhat excessively-drained soil found on outwash plains, outwash terraces, moraines, eskers, and kames. The parent material consists of loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly deposits derived from granite, schist, and gneiss. MU soils are in Hydrologic Soil Group A.

The Ws map unit consists of saline (salt, brackish) water and is not a soil. Minor soil components included within this map unit include Beaches, Sandy Surface, and may take up to five (5) percent of the map unit. Beaches, Sandy Surface include beaches, barrier beaches, and back-barrier beaches.

A copy of the NRCS Custom Soil Resource Report for the Barrington Bridge can be found in **Appendix G**.

2.3.2 Groundwater

The RIDEM Groundwater Quality Rules (250-RICR-150-05-03) identify groundwater in the vicinity of the Project Area as Class GA and Class GB. Class GA groundwater is mapped on the east side of the bridge, while Class GB groundwater is mapped on the west side of the bridge. There is no groundwater classification for the Barrington River.

Groundwater classified as GA are those groundwater resources which are designated suitable for public or private drinking water use without treatment.

Groundwater classified as GB are those groundwater resources which may not be suitable for public or private drinking water use without treatment due to known or presumed degradation.

2.3.3 Coastal Waters

The Project Area is within the Barrington River, which is designated as a Type 3 Tidal Water (High Intensity Boating). Section 1.2.1 of the CRMP describes Type 3 Waters as "dominated by commercial facilities that support recreational boating. Here, marinas, boatyards, and associated businesses take priority over other uses, and dredging and shoreline alterations are to be expected."

2.3.4 Coastal Features

CRMC maintains jurisdiction over all shoreline features and all lands within 200 feet of these features. There is one designated Coastal Feature within the Project Area:

2.3.4.1 Manmade Shoreline

Manmade shorelines are defined in the CRMP as "those shorelines that are characterized by concentrations of shoreline protection structures and other

alterations, to the extent that natural shoreline features are no longer dominant. They most commonly abut Type 3, 5, and 6 waters."

East side of bridge
North of the bridge is a seawall abutting a lawn, associated with 81 County Road. The lawn is in turn associated with Atlantic Marine, a marina on the Barrington River.

South of the bridge is a stacked-stone seawall associated with 78 County Road.

West side of bridge
North of the bridge is a concrete seawall bordering a municipal water "spray" park associated with Police Cove Park & Boat Ramp.

South of the bridge is a seawall abutting Matthewson Road. There is also a small section of land with a stormwater treatment unit, at the corner of County and Matthewson Roads. A fringe of salt marsh follows the shoreline, which may be below mean low water.

2.3.5 Surface Waters

According to the most recent Integrated Water Quality Monitoring Report List (2024) by the RIDEM Office of Water Resources, this section of the Barrington River (waterbody ID RI00007021E-01B) is classified as a Class SB1. This section of the river extends from the East Bay Bike Path trestle to its confluence with the Palmer River.

The river is classified as a Category 2 Water, which includes waters "meeting some of their designated uses (fully supporting) and insufficient data or no data to evaluate other designated uses (not assessed)." This generally means that some designated uses are "fully supporting," but more data is needed for other designated uses.

Designated uses include:

Use Description	Use Attainment Status
Fish and Wildlife Habitat	Not assessed
Fish consumption	Insufficient information
Primary contact recreation	Fully supporting
Secondary contact recreation	Fully supporting

2.3.6 Freshwater Wetlands

There are no freshwater wetlands within the Project Area.

2.3.7 Coastal Buffer Zones

East side of bridge
North of the bridge, landward of the manmade shoreline is lawn and shade trees associated with a single-family house/office associated with the marina at 81 County Road.

South of the bridge, landward of the manmade shoreline is a lawn with shade trees associated with a single-family house at 78 County Road.

West side of bridge
North of the bridge, landward of the manmade shoreline is a concrete patio associated with a water "spray" park at Police Cove Park & Boat Ramp.

South of the bridge, landward of the manmade shoreline is Matthewson Road. The manmade shoreline/seawall supports Matthewson Rd. There is a narrow strip of grass between the seawall and paved portions of the street.

2.3.8 Floodplain

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) no. 44001C0007H, the Project Area is located within Flood Zone AE with a base flood elevation of 12 feet above North American Vertical Datum (NAVD 88)("Zone AE (el. 12")), and Zone AE (el. 13).

The Barrington River is labeled as Zone AE (el.13). This elevation follows the manmade shoreline features closely except for the south side of the east side of the bridge, where it climbs slightly into the lawn associated with 78 County Road. All other landward areas are labeled as Zone AE (el. 12).

A copy of the FEMA Flood Insurance Rate Map can be found in **Appendix H**.

2.3.9 RIDEM Natural Heritage Program

Based on a review of the RIDEM Natural Heritage Program, the entire Project Area is within a Natural Heritage polygon (Area 82). Based on a consultation with Paul Jordan of RIDEM on February 21, 2023, the polygon represents an occurrence of diamondback terrapin (*Malaclemys terrapin*), which is listed as State Endangered.

Diamondback terrapins are adapted to life on the edge of the sea, specifically in coves, bays, salt marshes, dunes, and other coastal features. This description fits the surrounding ecology of the Project Area but will not be affected during construction.

The Barrington Land Conservation Trust's Terrapin Conservation Project, a local citizen-scientist volunteer group, has been studying the population of diamondback terrapin in Barrington since 1990.

Chapter 3: Proposed Activities and Impacts

The proposed project includes the rehabilitation of Piers 1 – 4 of the Barrington Bridge and the installation of scour countermeasures, amongst other minor project activities. These activities will have temporary and permanent impacts to the Barrington River, which are outlined below. Permitting plans for this project are bound separately as **Appendix I**.

3.1 Alternative Analysis

This project studied alternative rehabilitation methods and a no build alternative. The proposed method of grout bag and riprap placement was determined by AI Engineers to be the sole viable construction option.

3.1.1 No Build Alternative

The no build option was rejected because it did not satisfy the project purpose to improve the structural stability and extend the useful life of the Barrington Bridge. This option would result in further deterioration to Piers 1 – 4 and scour along the river bed and would result in premature bridge failure. The need for this project has been identified in the Rhode Island State Transportation Improvement Plan (STIP).

3.1.2 Construction Alternative

One build alternative was to install sheet piles around the existing tremie at all six piers and encapsulate the area with tremie concrete as the scour countermeasure. The sheet piles would be installed from a pinned spud barge(s) at a distance of approximately 2 feet outside the as-built perimeter of the existing tremie and to a depth of approximately 10 feet below the historic mudline. The area within the sheet piles would be encapsulated with concrete through a new tremie, resulting in a permanent impact of approximately 1,800 square feet. Following several consultations with experienced Marine Contractors by AI Engineers, it was determined that the installation of underwater sheet piles was not a viable option due to site physical limitations.

3.2 Proposed Project Activities

3.2.1 Pier Void Repairs

The bridge is supported by six concrete piers, each sitting on two footings (referred to as Existing Tremie A and Existing Tremie B in the plans), the bottom of which is buried in the existing mudline. Refer to the permitting plans in **Appendix I**. Prior to patching the voids in the Existing Tremie A, Existing Tremie B and Existing Concrete Pier Stem, the area will be prepared by divers to remove all foreign debris. Tremie concrete will be used to fill the voids and restore the structure to as-built conditions. There are no proposed water control methods that dewater the area. Turbidity barriers are also not proposed since they are typically not effective in a high velocity tidal environment.

3.2.2 Scour Countermeasures

This project includes two scour countermeasure methods; installing grout bags and installing riprap. The grout bags will be placed by divers around all six piers of the bridge and will extending approximately 6 feet outside of the perimeter of the Existing Tremie A and 18 inches above the elevation of Existing Tremie A. The grout bags will function as the scour countermeasure for the existing tremies. The rip rap will also be placed by divers and will extend the full length of the bridge, around the piers and grout bags from the west abutment to the east abutment. Two feet of R-4 rip rap, sloped at a 1:1.5 ratio to the top elevation of the grout bags. The rip rap will function as the scour countermeasure for the river bed.

3.2.3 Minor Project Activities

In addition to the rehabilitation of the bridge piers and the installation of scour countermeasures at the piers and along the river bottom, this project will only include minor above tidal water activities during construction. These activities include replacing the deck expansion joint glands, restoring the contact area at select bearings, and minor concrete patching repairs of the superstructure and arch panels. The delivery of concrete for the patch repairs will be from a truck located on the bridge with a single lane closure so that traffic can continue to use the bridge during construction.

3.3 Proposed Project Impacts

3.3.1 Temporary Project Impacts

The nature of construction for this project, specifically the use of a spud barge(s), will have a temporary impact to the river bottom. The spud barge(s) will be used for the divers to access the water and to store the materials the divers will be placing. The spud barge(s) will be approximately 30 feet wide by 40 feet long and 5 feet deep and will be anchored with four steel piles (pointed or pipe) that are lowered and raised using a hydraulic power pack into the river bottom at minimal embedment. It is assumed that each steel pile will have a footprint of approximately 1 square foot. It is also assumed that the barge(s) will be positioned on both sides of all six piers for a total of 12 locations. This will result in 48 square feet of temporary impact. The estimated duration of temporary disturbance will depend upon river conditions at the time of work, but it is estimated to be completed within one construction season.

3.3.2 Permanent Project Impacts

The installation of grout bags and rip rap will result in a permanent impact to the river bottom. The grout bags and rip rap will be installed as scour countermeasures, which the Scour Analysis in **Appendix C** determined needed to be a part of this project. The scour countermeasures will be placed by divers around and above the Existing Tremie A at all six piers and spanning the full width of the bridge. The total area of permanent impact will be 0.84 acres with a volume of 4,500 cubic yards. No excavation is proposed for the project.

3.4 Stormwater Management

This project does not involve pavement rehabilitation or the installation of any new impervious surfaces and will not alter the existing volume or concentration of stormwater runoff, therefore does not require a Stormwater Management Plan. Proper debris protection will be used under the bridge deck during the replacement of the expansion joints.

3.5 Property Abutter Notification

A list of project property abutters has been prepared and is included in **Appendix J.**

Chapter 4: CRMC Regulatory Issues

The CRMP requires that the applicant provide sufficient information on the project for CRMC to render a decision. This project is subject to the CRMP and the following applicable sections are addressed as part of this application: Sections 1.1.5, 1.1.6(F),

4.1 CRMP Section 1.1.5 – Review Categories and Prohibited Activities in Tidal Waters and on Adjacent Shoreline Features

According to Table 1 in CRMP § 1.1.5(A), Filling in Tidal Waters for scour countermeasures and Construction of Public Roads, Bridges, Parking Lots, Railroad Lines and Airports in Type 3 Waters require a Category B application.

4.2 CRMP Section 1.1.6(F) – Category B Applications

The Applicant intends to demonstrate through the responses to the applicable CRMP sections that this project will conform to the goals, policies, prerequisites, informational requirements and standards of the Program.

4.3 CRMP Section 1.1.12 – Fees

CRMC does not charge application fees to RIDOT, therefore there is no fee associated with this project.

4.4 CRMP Section 1.2.1(D) – Type 3 High Intensity Boating

This project aligns with the Council's goal to preserve, protect, and, where possible, enhance Type 3 areas for high intensity boating and does not significantly interfere with recreational boating activities or values. Without the proposed pier protection measures and riprap placement, conditions of the bridge will further deteriorate which can create negative impacts on boating activities that pass under or adjacent to the bridge. Therefore, the proposed improvements are considered to offer improvements which will allow for future high intensity boating to continue safely.

4.5 CRMP Section 1.3.1(A) – Category B Requirements

The requirements herein for a Category B Assent are necessary data and information for the purpose of federal consistency reviews. All persons applying for a Category B Assent are required to:

a. Demonstrate the need for the proposed activity or alteration;

The need for this project has been demonstrated with recent underwater inspections which has found degraded bridge piers. Similar findings were evident in 2019, and repairs to Piers 5 and 6 at that time have been found to be intact and stable. The recent underwater inspections and scanning showed the same deficiencies that were identified in 2019, therefore similar rehabilitation methods are proposed for the repairs to Piers 1 – 4, in addition to the riprap scour measures. The scour measures are proposed based upon the Scour Analysis by Pare Corporation which concluded that there were no other viable options to stabilize the riverbed from further erosion which will eventually undermine the bridge piers. The no build option was studied and rejected because it did not satisfy the project purpose to improve the structural stability and extend the useful life of the Barrington Bridge. The need for this project has also been identified in the Rhode Island State Transportation Improvement Plan (STIP).

b. Demonstrate that all applicable local zoning ordinances, building codes, flood hazard standards, and all safety codes, fire codes, and environmental requirements have or will be met; local approvals are required for activities as specifically prescribed for nontidal portions of a project in §§ 1.3.1(B), (C), (F), (H), (I), (K), (M), (O) and (Q) of this Part; for projects on state land, the state building official, for the purposes of this Section, is the building official;

The project proponent is the RIDOT. RIDOT State Licensed Engineers and their consultants designed the bridge rehabilitation in accordance with all applicable state and federal standards. Local zoning ordinances are not applicable. This application is being submitted concurrently to the USACE for review and approval as a Pre-Construction Notification (PCN) under General Permit 8, Discharges of Dredged or Fill Materials Incidental to the Construction of Bridges.

c. Describe the boundaries of the coastal waters and land area that is anticipated to be affected;

The project area is the Barrington Bridge No. 123 over the Barrington River, which is within Type 3 High Intensity Boating tidal waters as designated by the CRMP. This portion of the Barrington River edge is lined with manmade shorelines including seawalls, docks and piers. The riverbed itself is predominately sands and silts. See Section 3.3 "Proposed Project Impacts" of this application for a description and quantification of the temporary and permanent project impacts.

d. Demonstrate that the alteration or activity will not result in significant impacts on erosion and/or deposition processes along the shore and in tidal waters;

This project will only have an impact in tidal waters due to the installation of grout bags and rip rap as a scour countermeasure. The installation of these scour countermeasures is necessary to mitigate or avoid future erosion of the riverbed and bridge structure. The measures are intended to create a stable river bed which will increase the life of the bridge structure and allow for future high intensity boating activities to continue.

e. Demonstrate that the alteration or activity will not result in significant impacts on the abundance and diversity of plant and animal life;

The area of impact to plant and animal life is where the rip rap will be placed. According to the Project Biologist, there is no submerged aquatic vegetation or spawn beds within the rip rap limits. This passage is used by diadromous fish to spawn upstream but that passage will not be impacted by this project.

f. Demonstrate that the alteration will not unreasonably interfere with, impair, or significantly impact existing public access to, or use of, tidal waters and/or the shore;

The project will not interfere with the public use and enjoyment of the shoreline along the Barrington River. These shoreline features will not be altered or impacted by the proposed improvements. Other than the existing docks, piers and boat ramp at Police Cove Park, there is no public access to the river from the shoreline. The bridge will remain open and accessible to vehicle, bicycle and pedestrian traffic during construction. The only anticipated interference will be a single lane closure for vehicles on the bridge to accommodate the concrete truck during minor patch work to the superstructure and arch panels.

g. Demonstrate that the alteration will not result in significant impacts to water circulation, flushing, turbidity, and sedimentation;

The installation methods which involve manual placement of grout bags and riprap will be performed in a manner to minimize temporary turbulence. The project will not impact water circulation, flushing or turbidity and in the long term, will reduce the river bottom erosion with the proposed scour countermeasures. The installation of scour countermeasures, riprap, will not alter the mean high or low water elevations, therefore will not affect the existing horizontal or vertical clearances under the bridge.

h. Demonstrate that there will be no significant deterioration in the quality of the water in the immediate vicinity as defined by DEM;

The proposed riprap scour measures will be specified to be hosed with clean water prior to installation to eliminate the transport of silty materials into tidal waters. The riprap themselves is solid and not susceptible to degradation in flowing waters. Overall, the existing water quality in the Barrington River will be maintained during construction and not altered upon the completion of this project. The underwater repairs will be completed using water-tight tremies, which eliminates the risk of washing cement to the waterbody, and the proper debris protection will be used under the bridge deck during the expansion joint replacements.

i. Demonstrate that the alteration or activity will not result in significant impacts to areas of historic and archaeological significance;

The RIDOT submitted a Notification of No Adverse Effect Determination to RIHPHC on March 7, 2024 stating that their review of the project determined that there will be no adverse effect on historic properties in accordance with 36 CFR § 800.5(b)(c), of which RIHPHC signed in concurrence on March 26, 2024. See Section 1.4.2 "National Historic Preservation Act" of this application for a description of RIDOT's consultation with RIHPHC.

j. Demonstrate that the alteration or activity will not result in significant conflicts with water dependent uses and activities such as recreational boating, fishing, swimming, navigation, and commerce, and;

The presence of spud barges during construction will only result in temporary interruptions to water dependent uses. This project will not result in significant conflicts with existing water dependent uses and activities. The majority of work will be conducted by divers placing materials from a stationary barge to the river bottom. Boating will not be permitted in the immediate vicinity of the spud barges and divers for safety purposes but other traversable paths under the bridge will remain accessible during that time. The purpose of the project is to ensure long-term viability of the bridge which will allow for a long-term continuation of existing water dependent activities.

k. Demonstrate that measures have been taken to minimize any adverse scenic impacts (see § 1.3.5 of this Part).

This project will not impact or obstruct the existing scenic values at this location. The majority of the work will take place below the mean low water elevation, therefore will not have any scenic impact. The work to take place above the mean low water elevation is limited to routine on the bridge joint replacement and maintenance repairs intended to restore the bridge

structure to its original structural conditions. No activity has the potential to impact scenic conditions.

4.6 CRMP Section 1.3.1(J) – Filling in Tidal Waters

It is recognized that CRMC's policy is to discourage and minimize the filling of coastal waters, but the public health, safety and welfare necessitates the placement of the proposed scour and pier protection measures, which are deemed necessary and the only viable option for ensuring the long-term stability of the existing bridge. As previously noted, the only project activity involving filling in tidal water will be the installation of grout bags for pier protection and riprap as scour countermeasures. The proposed activity was designed in accordance with CRMP § 1.3.1(J)(1)(d), which state that filling may be permitted where necessary for an approved but only when it has been demonstrated that the amount of filling has been minimized. A copy of the Scour Analysis which demonstrates the need for the rip rap installation be found in **Appendix C**.

4.7 CRMP Section 1.3.1(M) – Public Roadways, Bridges, Parking Lots, Railroad Lines and Airports

The proposed project would be categorized as an improvement to an existing bridge with no new or altered stormwater discharges. The improvements are to restore the bridge structure to its original structural condition and to install scour countermeasures along the river bed to avoid or mitigate future erosion.

In accordance with 1.3.1 (M)(1)(b), the project has been designed to:

- The work avoids any water quality alterations and creates a more stable, non-erodible river bottom for the long-term stability of the bridge.
- The project does not involve any land clearing or land-based soil disturbance.
- The work limits disturbance to the river bed to the minimum necessary to address the channel scour and potential pier undermining.
- The project does not increase or alter impervious surfaces.

Work in tidal waters will be performed with spud barges and will be completed with divers placing the underwater materials (grout bags and rip rap) on the existing mudline. Riprap will not be dumped from barges to minimize turbulence during the installation. Riprap will be placed on the river's bed without the need for excavation. The placement of turbidity curtains during the installation was considered as an additional temporary protection measure but river velocities prevent the viability of using temporary curtains. Also, no alterations to the existing shorelines on either side of the bridge are proposed as part of this project.

Chapter 5: Summary

The RIDOT seeks approval from CRMC to complete a minor rehabilitation of the Barrington Bridge. The work will primarily consist of filling voids identified in Piers 1 – 4 and installing scour countermeasures for future mitigation. Other minor, preventative maintenance activities will occur too, such as replacing the deck expansion joints, restoring the contact bearings, and patching spalling concrete on the substructure and arch panels.

In 2019, similar deficiencies in Piers 5 and 6 were identified and repaired using the same rehabilitation method, without the installation of scour countermeasures. The need for the scour countermeasures was identified in a hydraulic analysis completed in preparation for this project. This determination is what warranted an Assent application rather than the Maintenance application that was approved in 2019.

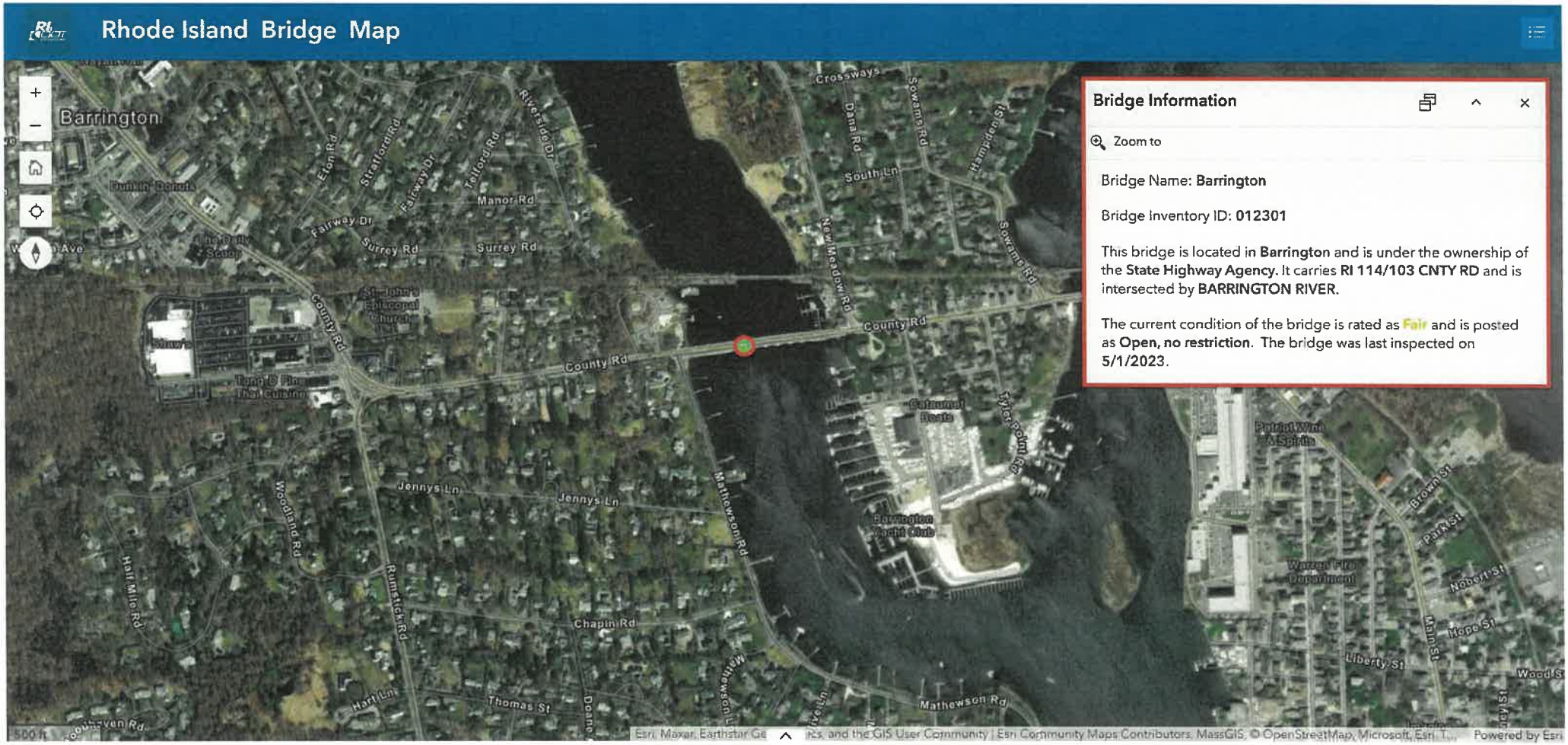
Much of the proposed work will occur within Type 3 Tidal Waters, the Barrington River. Coastal features abut the project area, primarily manmade shorelines, but will not be altered as a result of this project. Construction methods have been required to minimize impacts to the river, including utilizing divers to place the materials within the waterway rather than dumping them. Temporary impacts are unavoidable to ensure safety during construction and have been minimized. The permanent impacts are a result of the installation of scour countermeasures, which is designed to improve erosion along the river bed during the lifespan of these repairs.

The project has been designed to comply with all applicable CRMC goals and policies as described in this application. All other state and federal approvals have been filed prior to or concurrently with this application and are currently under review. As such, the Applicant is requesting that the project be approved as a Category B Assent.

CROSSMAN ENGINEERING

Appendix A

Proof of Ownership



CROSSMAN ENGINEERING

Appendix B

2019 CRMC Maintenance Certification
(2019-09-078)

State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

Certificate of Maintenance

September 27, 2019

RI Department of Transportation
Attn: Brian Moore
2 Capitol Hill
Providence, RI 02903

RE: CRMC Assent No. M2019-09-078: Conduct underwater repairs to the bridge piers as per the approved plans titled "Barrington Bridge No.123 Underwater Repairs..." by Collins Engineers. Project Location: Route 114 - Barrington Bridge, Barrington; Plat , Lot

Dear Applicant:

The Coastal Resources Management Council has reviewed your project proposal and has determined that it conforms to RICRMP Section 1.3.1(N) and applicable standards. Construction authorized by this approval shall be limited to replacement, reconstruction, or rebuilding to approved, pre-existing conditions and dimensions of the above noted structure. This project must be completed within three (3) years of the date of this approval. If this project involves excess construction materials or debris, these materials shall be removed from the site and disposed of at a suitable legal upland location. No equipment access or storage of equipment, construction material or debris shall occur on coastal features. If the project involves earthwork, appropriate erosion controls shall be utilized. All applicable conditions of original CRMC Assents that pertain to this property shall be upheld unless otherwise modified by the CRMC. All applicable policies, prohibitions, and standards of the RICRMP shall be upheld.

A copy of this maintenance authorization to perform maintenance work shall be kept on site and available for inspection. The maintenance (blue) card must be posted on site during the duration of the project.

Sincerely,

Gregory Baribault, Engineering Tech IV
Coastal Resources Management Council

/bms

State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

FINDING OF NO SIGNIFICANT IMPACT
COMBINATION BIOLOGIST, ENGINEER REPORT

PROJECT TYPE 32

_____ **FONSI CERTIFICATE** _____ **MAINTENANCE CERTIFICATE**

NAME: R.I.D.O.T File Number: 2019-09-078

ADDRESS: 2 Capitol Hill Prov. 02903

PROJECT LOCATION: Barrington Bridge # 123

Plat # Lot#

PROPOSED PROJECT: Conduct underwater repairs to the bridge piers as per the approved plans titled "Barrington Bridge No. 123 Underwater Repairs..." by Collins Engineers.

Based on review of this proposed project, the CRMC staff has determined that the project will have minimal impact on the coastal resources and is consistent with applicable RICRMP standards, polices and prohibitions.

Greg Baribault

Gregory Baribault, Permitting Staff
Coastal Resources Management Council

William Mosunic, Permitting Staff
Coastal Resources Management Council

09/2019
/lat

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FEB 21 2025
COASTAL RESOURCES MANAGEMENT COUNCIL

CRMC Application Review Sheet

File Number: 2019-09-078

Owner Name: RI Department of Transportation

Site Address: Route 114 - Barrington Bridge, Barrington

Plat: ; Lot:

Administrative Review

Reviewer: WJM
Completed on 9/26/19

- ☑ Application Complete
- ☐ Application Deficient
- ☐ FONSI
- ☐ Enforcement compliance _____

☐ **EXTENSION** (Enforcement review)

_____

Missing

_____ Application
_____ Fee
_____ ISDS
_____ Proof of Ownership
_____ Building Permit
_____ Site Plans

Notes _____

Team Review for Acceptance

Application Deficient

☐ Deficiency Letter Required
☐ Notified Via Phone Call – waiting for _____

( ) Application Accepted

Date 9/27/19

Assigned To:		Date Completed	Denial Recommendation	Management Sign-off
Engineer	GB	9/27/19		
Biologist				
Geologist				
Aqua				
Dredge				
Other				

Category:

Project Type: _____

Water Type: _____

Water Area: _____

PGP Category: 1 2 IP ☐ **Public Access 355** ☐ **Public Access Easement**

Short Project Description:

State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

MAINTENANCE CERTIFICATION APPLICATION

Project Location: Barrington Bridge (Rt. 114) (Bridge No. 123), Barrington (No. Street City/Town)	File No. (CRMC USE ONLY): 2019-09-078
Owner's Name: State of Rhode Island Dept. of Transportation	Plat: Lot(s):
Mailing Address: 2 Capitol Hill City/Town: Providence State: RI Zip Code: 02903	Contact No.: Brian M. Moore (401) 465-2204
Contractor RI Reg. #: Address:	
Name of Waterway: Barrington River	Estimated Project Cost: $ Fee (chart based on EPC): $

Description of facility to be maintained (type of facility and present conditions)

Piers No. 5 and 6 of Barrington Bridge. Presently, undermining and deterioration of piers.

Describe accurately the maintenance work proposed. (Use additional sheets of paper if necessary and attach this form.)

See page 2 of attached plans for details of proposed work. In summary, the overall project consists of underwater repairs to the bridge at Pier 5 and 6. Work involves encapsulating the sides and top of the lower underwater tremie seals at Piers 5 and 6. Formwork, vent pipes and grout pipes will be installed at the void locations to fill voids. Either flexible forms will be installed and/or grout will be pumped in to fill the voids. A concrete cover layer consisting of tremie concrete or flexible forms on top of tremie will be provided after the void repairs.

Describe equipment to be used, construction methods, access routes, etc.

See page 2 of attached plans for details of void filling and tremie encapsulation. All work will be staged from a barge, skiff, or boat. In summary, obstructions will be removed from the river bottom. Jetting may occur to ensure the repairs are constructed on a firm surface. Install sip forms and seal joints. Install PVC pipe for grout pumping and venting.

Have you or any previous owner filed an application for and/or received an assent for any activity on this property?
(If so please provide the file and/or assent numbers): 2012-06-048 (see attached Appendix B)

Is this site within a designated historic district? ☐ **YES** ■ **NO**

Is this application being submitted in response to a coastal violation? ☐ **YES** ■ **NO**

If YES, you must indicate NOV or C&D Number: _____

NOTE: The applicant acknowledges by evidence of their signature that they have reviewed the Rhode Island Coastal Resources Management Program, and have, where possible adhered to the policies and standards of the program. The applicant also acknowledges by evidence of their signature that to the best of their knowledge the information contained in the application is true and valid. The filing of false information can result in the Coastal Resources Management Council revoking state assent.

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SEP 26 2019
COASTAL RESOURCES MANAGEMENT COUNCIL

Owner's Signature Brian M. Moore, PE
Administrator

SEE REVERSE SIDE →

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FEB 21 2025
COASTAL RESOURCES MANAGEMENT COUNCIL

/ajt 03/2019

... to preserve, protect, develop, and restore coastal resources for all Rhode Islanders
RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL

Application 2012-06-048 Details

Back to List (/PADS/CrmcApp/IndexApp?searchTown=38664&searchLocation=bRIDGE)

Actions:

Action Date	Action Description
Jun 13, 2012	Maintenance Certification Request
Jun 13, 2012	Administrative Review for Completeness
Jun 26, 2012	Team Review for Completeness
Jun 26, 2012	Application Accepted
Jul 11, 2012	HPHC Historical Preservation No Effect
Jul 13, 2012	Permit Issued
Jul 13, 2012	Engineering Report

Details:

File No
2012-06-048
Town
Barrington
First Name
Department of Transportation
Last Name
Street
Barrington Bridge
Location
Barrington Bridge
Plat/Map
Lot/Block

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FEB 21 2025
COASTAL RESOURCES MANAGEMENT COUNCIL

RECEIVED
SEP 26 2019
COASTAL RESOURCES MANAGEMENT COUNCIL

Decision Date
Jul 13, 2012
Dock Reg.No
Project
Remove & replace damaged section of concrete wall. RFemove section of RCP. Replace rip-rap at the to
Description
Shoreline Protection Facilities/Repair
Water Area
Easement
0
Acceptance Date
Jun 26, 2012

Back to List (/PADS/CrmcApp/IndexApp?searchTown=38664&searchLocation=bRIDGE)

APPENDIX A

Draft Design Plans Prepared by Collins Engineers, Inc. dated September 25, 2019

FED. ROAD SEC. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2019	1	10

INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES I
3	GENERAL NOTES II
4	PIER 5 EXISTING CONDITIONS PLAN AND SECTION
5	PIER 6 EXISTING CONDITIONS PLAN AND SECTION
6	GENERAL REPAIR PLAN
7	REPAIR DETAILS I
8	REPAIR DETAILS II
9	MAINTENANCE AND PROTECTION OF TRAFFIC PLAN-1
10	MAINTENANCE AND PROTECTION OF TRAFFIC PLAN-2

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

PLAN, PROFILE AND SECTIONS OF PROPOSED

STATE HIGHWAY

BARRINGTON BRIDGE NO. 123
UNDERWATER REPAIRS

TOWN OF BARRINGTON
COUNTY OF BRISTOL

R.I. CONTRACT NO. 2019-CB-107 F.A. PROJECT NO. 405-421-991

LOCATION MAP
1"=400'

DESIGN DESIGNATION

2013 A.D.T.	18,476 V.P.D
2013 A.D.T.	18,316 V.P.D
D.H.V.	52%
T.	2%
DESIGN SPEED	35 M.P.H.

HYDRAULIC DATA*

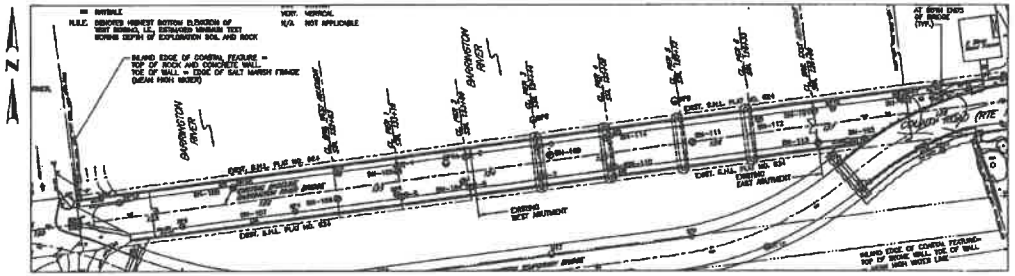
	BARRINGTON RIVER
DRAINAGE AREA	15 SQ. MILES
DESIGN CRITERIA	100 YEAR
PEAK VELOCITY	7.1 F.P.S.
PEAK FLOW	21,000 C.F.S.
DESIGN FLOOD ELEVATION	EL. 18.00

ROUTE 114 FUNCTIONAL CLASSIFICATION
"PRINCIPAL ARTERIAL"

* FROM ARCHIVE PLANS

R.I. STANDARD SPECIFICATIONS AND STANDARD DETAILS

SPECIFICATIONS TO GOVERN THIS PROJECT ARE THE R.I. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED MARCH 2019, WITH ALL REVISIONS AND THE STATE AND FEDERAL SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS. STANDARD DETAILS FOR THIS PROJECT ARE R.I. STANDARD DETAILS, 1998 EDITION, WITH ALL REVISIONS.



LAYOUT PLAN
1"=50'

BASE OF LEVELS
Barrington Mean High Water

Rhode Island State Plane Coordinate System, NAD83

COLLINS ENGINEERS

Contract Number 2019-CB-107
Number of Sheet 1
Total Sheets 10

R.I. DEPARTMENT OF TRANSPORTATION

APPROVED

DEPUTY CHIEF ENGINEER — DATE
APPROVED

CHIEF ENGINEER — DATE
APPROVED

DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR — DATE

RECEIVED SEP 26 2019 COASTAL RESOURCES MANAGEMENT COUNCIL

RECEIVED FEB 21 2025 COASTAL RESOURCES MANAGEMENT COUNCIL

0163M_V1_001_COVER

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2019	2	10

SCOPE OF WORK

1. WORK INVOLVES ENCAPSULATING THE SIDES AND TOP OF THE LOWER UNDERWATER TREMIE SEALS AT PIERS 5 AND 6, CONSTRUCTED IN THE 2009 PROJECT. THE TREMIES ARE SIGNIFICANTLY ERODED WITH UNDERMINING AT DISCRETE LOCATIONS ALONG THE CHANNEL BOTTOM, AND EXPOSED VOIDS WITHIN THE TREMIES AND AT DISCRETE LOCATIONS ALONG THE UPPER AND LOWER TREMIE INTERFACE. THE FOOTPRINT OF THE LOWER TREMIE SEAL IS HIGHLY IRREGULAR AND NON-UNIFORM, AND THE TREMIE CONCRETE IS LIKELY FRIABLE AND WEAK. WORK WILL BE PERFORMED UNDERWATER AND WILL INCLUDE THE USE OF DIVERS. CONTRACTOR IS ENCOURAGED TO PROVIDE ALTERNATIVE SOLUTIONS TO FILL THE VOIDS AND ENCASE THE TREMIES THAT RESULT IN A DURABLE REPAIR. SUGGESTED SEQUENCE OF CONSTRUCTION WORK IS SUMMARIZED AS FOLLOWS.
2. ALL WORK INCLUDING DIVE OPERATIONS SHALL BE STAGED FROM A BARGE, SKIFF OR BOAT AND COORDINATED WITH RIDOT, USCG, AND THE HARBOR MASTER AS WORK WILL BE COMPLETED IN THE NAVIGATION CHANNEL. STAGING FROM THE BRIDGE IS PERMITTED IN ACCORDANCE WITH THE TRAFFIC MANAGEMENT PLAN.
3. CONDUCT A PRE-CONSTRUCTION UNDERWATER INSPECTION TO VERIFY EXISTING CONDITIONS AT PIERS 5 AND 6.
4. FILL VOIDS AND CHANNEL BOTTOM SCOUR AT PIERS 5 AND 6 ALONG/UNDER THE ORIGINAL CONSTRUCTIONS' COFFERDAM SEAL (TREMIE A) AND FILL VOIDS AT INTERFACE BETWEEN TREMIE A AND THE UPPER TREMIE (TREMIE B).
5. PROVIDE MATERIALS FOR THE WORK INCLUDING TEMPORARY SUPPORTS, SAND BAGS, FABRIC FORMS, STAY-IN-PLACE FORMS (SIP FORMS), ANCHORS, GROUT AND CONCRETE. ENSURE QUANTITIES ON HAND ARE SUFFICIENT FOR THE INTENDED REPAIRS.
6. REMOVE RIPRAP AND MISCELLANEOUS DEBRIS AS NEEDED TO ENABLE COMPLETING THE REPAIRS, AND CLEAN/PREPARE VOIDS TO ENABLE INSTALLING REPAIR MATERIALS.
7. FOR GROUT PUMPING OPERATIONS, INSTALL FORMWORK, VENT PIPES AND GROUT PIPES AT VOID LOCATIONS TO FILL VOIDS. ALTERNATIVELY, INSTALL FABRIC FORMS AND PUMP GROUT TO COMPLETELY FILL THE VOIDS.
8. PROVIDE A CONCRETE COVER LAYER CONSISTING OF TREMIE CONCRETE OR FABRIC FORMS ON TOP OF TREMIE A AFTER VOID REPAIRS HAVE BEEN COMPLETED.
9. CONDUCT A POST-CONSTRUCTION UNDERWATER QUALITY CONTROL INSPECTION TO CONFIRM CONSTRUCTION IS IN SUBSTANTIAL CONFORMANCE WITH THE CONTRACT DOCUMENTS AND COMPLETE ADDITIONAL WORK IF REQUIRED.

REFERENCES

1. THE 2004 EDITION AMENDED MARCH 2018 AND SUPPLEMENTS TO THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (RI STANDARD SPECIFICATIONS).
2. THE SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS.

GENERAL

1. WORK MUST BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS INCLUDING THE SPECIFICATIONS, SPECIAL PROVISIONS, DRAWINGS, AND THE ASSOCIATED REFERENCES. KEEP AT LEAST ONE COPY OF THE CONTRACT DOCUMENTS ON SITE FOR THE DURATION OF WORK.
2. ADHERE TO ALL OF THE PROVISIONS, CONDITIONS, AND STIPULATIONS STATED IN THE ENVIRONMENTAL APPROVALS ISSUED FOR THE PROJECT FROM THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM) AND/OR THE ARMY CORPS OF ENGINEERS (ACOE). AND/OR THE COASTAL RESOURCES MANAGEMENT COUNCIL (CRMC). COPIES OF EACH OF THESE PERMITS ARE INCLUDED IN THE CS PAGES OF THE CONTRACT DOCUMENTS. ALL COSTS ASSOCIATED WITH THESE CONDITIONS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID ITEM(S). IN-WATER WORK SHALL COMPLY WITH THE PERMITS.
3. EXISTING DIMENSIONS, ELEVATIONS, AND CONDITIONS RELATING TO THE WORK ARE BASED ON ARCHIVE PLANS AND INFORMATION OBTAINED DURING AN UNDERWATER INSPECTION CONDUCTED AUGUST 1, 2019 AND ARE APPROXIMATE. VERIFY AS NEEDED TO COMPLETE THE WORK.
4. SELECTED DRAWINGS FROM THE ARCHIVE PLANS ARE PROVIDED AS A REFERENCE, HOWEVER CONTRACTOR IS ENCOURAGED TO REVIEW THE FULL ARCHIVE PLAN SET.
5. DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE SAFE CONSTRUCTION. PROVIDE TEMPORARY SHORING, BRACING, GUYS OR TIEDOWNS. SUCH MATERIAL SHALL REMAIN THE PROPERTY OF THE CONTRACTOR, SHALL BE COMPLETELY REMOVED AFTER THE COMPLETION OF THE PROJECT, AND SHALL BE CONSIDERED INCIDENTAL TO THE WORK. SEE THE MATERIALS REQUIREMENTS FOR THE PERMANENT FORMWORK AND APPURTENANCES INCORPORATED INTO THE WORK.
6. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE DONE TO ADJACENT STRUCTURES AND VESSELS OR INJURIES TO THE PUBLIC AND RIDOT'S REPRESENTATIVES AS A RESULT OF PERFORMING THE WORK. DAMAGE MUST BE REPAIRED WITH NO ADDITIONAL COST TO THE STATE.
7. PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE ENVIRONMENTAL SENSITIVITY OF THE WATERWAY. ENSURE THAT DEBRIS OR FOREIGN MATERIAL THAT FALLS INTO THE WATERWAY IS IMMEDIATELY REMOVED. MATERIAL UNSUITABLE FOR RE-USE SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED.
8. FOLLOW APPLICABLE FEDERAL, STATE AND MUNICIPAL REGULATIONS, INCLUDING THE FEDERAL DEPARTMENT OF LABOR, SAFETY, HEALTH ACT, U.S. ARMY CORPS OF ENGINEERS, STATE/LOCAL WETLANDS CONTROL, AND PERMITS.
9. STORAGE, FUELING AND LUBRICATION OF EQUIPMENT AND MOTOR VEHICLES MUST BE CONDUCTED IN A MANNER THAT AFFORDS THE MAXIMUM PROTECTION AGAINST SPILL AND EVAPORATION. FUEL, LUBRICANTS AND OIL MUST BE MANAGED AND STORED IN ACCORDANCE WITH ALL FEDERAL, STATE, REGIONAL, AND LOCAL LAWS AND REGULATIONS. EQUIPMENT OPERATION, ACTIVITIES, OR PROCESSES PERFORMED BY THE CONTRACTOR MUST BE IN ACCORDANCE WITH ALL FEDERAL AND STATE AIR EMISSION AND PERFORMANCE LAWS AND STANDARDS.
10. CONTRACTOR IS ADVISED THERE MAY BE UNDETECTED CONSTRUCTION DEBRIS OR OTHER DEBRIS WITHIN AND AROUND THE WORK AREA.
11. THE PUBLIC BOAT RAMP TO THE NORTHWEST OF THE PROJECT IS OWNED AND OPERATED BY THE TOWN OF BARRINGTON. OBTAIN WRITTEN APPROVAL FOR CONTRACTOR USE FROM THE TOWN AND SUBMIT TO THE ENGINEER A MINIMUM OF ONE WEEK BEFORE STARTING THE WORK.
12. COORDINATE VESSEL OPERATIONS AND MATERIALS STAGING WITH RIDOT, THE TOWN OF BARRINGTON'S HARBORMASTER, AND THE UNTIED STATES COAST GUARD

CONTACT: BRIAN HUNT, CHAIRMAN, BARRINGTON HARBOR COMMISSION AND HARBORMASTER
PHONE: (401) 437-3930
EMAIL: bhunt@barrington.ri.gov

CONTACT: USCG SECTOR SOUTHEASTERN NEW ENGLAND
1 LITTLE HARBOR RD. WOODS HOLE, MA 02543
PHONE: (508) 538-2300
WEBSITE: www.atlanticarea.uscg.mil/our-organization/district-1/district-units/sector-southeastern-new-england

SURVEY

1. ELEVATIONS AND SOUNDINGS ARE IN FEET AND ARE REFERENCED TO MEAN SEA LEVEL (MSL) BASED ON NATIONAL OCEAN SERVICE (NOS), STATION 8452154, BRISTOL HIGHLANDS, RHODE ISLAND. SEE EXISTING PLANS FOR BATHYMETRIC INFORMATION, SOUNDINGS ARE APPROXIMATE BASED ON LEAD LINES AND ESTIMATED WATER ELEVATION AT THE TIME THEY WERE TAKEN.
2. NORTH ARROWS ARE NAD83 GRID NORTH.

EXISTING CONDITIONS

1. THE EXISTING INFORMATION PROVIDED IN THESE DRAWINGS IS BASED ON THE ARCHIVE DRAWINGS, LIMITED UNDERWATER FIELD MEASUREMENTS AND LEAD LINES AND IS NOT GUARANTEED.
2. THE LOWER AND UPPER CONSTRUCTION ELEVATIONS OF TREMIE A APPEAR TO HAVE BEEN MODIFIED FROM THOSE SHOWN ON THE ARCHIVE PLANS, AS LEAD LINE ELEVATIONS INDICATE THE TREMIE MAY BE FOUNDED ON THE WEATHERED ROCK OR COARSE SAND.
3. PORTIONS OF TREMIE A EXHIBIT VOIDS WHICH MAY BE DUE TO POOR CONSOLIDATION, WEAK/FRIABLE CONCRETE, HIGH VELOCITY CURRENT, OR A COMBINATION THEREOF. BASED ON THE ARCHIVE PLANS TREMIE A WAS FORMED DURING CONSTRUCTION USING PZ22 SHEET PILING, WHICH WAS REMOVED AFTER CONSTRUCTION. ACCORDINGLY, THE EXPOSED PORTIONS OF TREMIE A ARE ROUGH, THE FOOTPRINT IS NON-UNIFORM AND IRREGULAR, AND THE REMAINING TREMIE CONCRETE MAY BE SUSCEPTIBLE TO DAMAGE DURING THE WORK.
4. PORTIONS OF THE WORK REQUIRE LOCALIZED REMOVAL OF TREMIE A WHICH SHOULD BE COMPLETED USING THE LEAST AGGRESSIVE METHOD FOR EFFECTIVE REMOVAL AND SURFACE PREPARATION. CAREFULLY MONITOR PROGRESS DURING THE WORK AND CHANGE MEANS AND METHODS AS NEEDED TO LIMIT REMOVALS TO THE EXTENT REQUIRED TO COMPLETE THE REPAIR.
5. TREMIE B IS GENERALLY CONSISTENT WITH THE EXPECTED QUALITY OF SUBSTRUCTURE CONCRETE PLACED IN THE DRY.
6. THE LOCATION OF TREMIE A WITH RESPECT TO TREMIE B AT PIER 5 IS IN GENERAL CONFORMANCE WITH THE ARCHIVE PLANS, HOWEVER THE LOCATION OF TREMIE A WITH RESPECT TO TREMIE B AT PIER 6 APPEARS TO HAVE BEEN MODIFIED FROM THAT SHOWN IN THE ARCHIVE PLANS. EXPECT SIGNIFICANT VARIATIONS IN THE OFFSET OF TREMIE A FROM TREMIE B AROUND THE PERIMETER OF THE CONSTRUCTION AT BOTH PIERS.
7. VISIBILITY AT THE TIME OF UNDERWATER INSPECTION WAS APPROXIMATELY TWO TO FIVE FEET.
8. RIPRAP AND CONCRETE/MISCELLANEOUS DEBRIS ARE LOCATED ALONG THE CHANNEL BOTTOM. DEBRIS WITHIN THE REPAIR AREAS SHALL BE REMOVED FROM THE WATER AND PROPERLY DISPOSED OF AT A LICENSED FACILITY. DEBRIS MAY BE STORED AT AN APPROVED LOCATION THAT INCLUDES A PERIMETER FILTER IN ACCORDANCE WITH THE SWPP. COSTS FOR REMOVAL, STORAGE AND DISPOSAL SHALL BE PAID UNDER ITEM CODE 210.03.11 "REMOVAL OF MISCELLANEOUS OBJECTS". RIPRAP WITHIN THE REPAIR AREAS MAY BE RELOCATED JUST OUTSIDE OF THE PROPOSED SIP FORM LIMITS. COSTS FOR RIPRAP RELOCATION ARE INCIDENTAL TO THE WORK.
9. AFTER THE REPAIR AREAS HAVE BEEN CLEARED OF DEBRIS, COMPLETE AN UNDERWATER SURVEY OF EACH PIER TO VERIFY TREMIE A ELEVATIONS, LIMITS, VOID VOLUMES AND VOID LOCATIONS. SURVEY MAY BE COMPLETED BY ACOUSTIC IMAGING OR BY HAND. IF BY HAND, TAKE MEASUREMENTS FROM THE FACE OF TREMIE B TO THE FACE OF TREMIE A AT 5 FOOT INTERVALS ALONG TREMIE B AND AT LOCATIONS WITH SIGNIFICANT VARIATIONS BETWEEN THE INTERVALS. THE MEASUREMENTS SHOULD ACCURATELY LOCATE TREMIE A IN PLAN WITH RESPECT TO TREMIE B. USE THE INFORMATION TO COMPUTE THE EXISTING VOLUME OF TREMIE A. ACCEPTED VOLUMES FROM EITHER METHOD WILL BE USED AS THE BENCHMARK FOR ESTIMATING MATERIAL USAGE AND COMPUTING THE PAY QUANTITIES. IT IS UNDERSTOOD THAT THE METHODS USED TO DETERMINE THE VOLUME OF TREMIE A ARE ESTIMATES AND THAT THE EXACT FINAL MATERIAL USAGE WILL VARY. JUSTIFY MATERIAL QUANTITIES USED THAT DIFFER FROM THE PRELIMINARY ESTIMATE BY 15% TO THE SATISFACTION OF THE ENGINEER. COST OF UNDERWATER SURVEY WILL BE CONSIDERED INCIDENTAL TO THE WORK. SEPARATE PAYMENT WILL NOT BE MADE.

MATERIALS

1. SIP FORMS

   PERMANENT STAY-IN-PLACE (SIP) PERMANENT TIMBER MATERIALS INCLUDING BUT NOT LIMITED TO FORMS, WALES, ANCHORS AND CONNECTIONS MUST BE NON-CORRODIBLE AND DURABLE IN AN AGGRESSIVE MARINE ENVIRONMENT THAT INCLUDES HIGH CURRENTS AND BRACKISH WATER. SUGGESTED MATERIALS INCLUDE FIBER REINFORCED POLYMERS, VINYL, PLASTIC, PVC OR OTHER APPROVED EQUIVALENT. 316 STAINLESS STEEL IS ALLOWED FOR STEEL HARDWARE AND CONNECTIONS. TIMBER/WOOD IS NOT ALLOWED

   SIP FORMS MUST BE IMPACT AND ABRASION RESISTANT. PROVIDE FORMS WITH THE STRENGTH AND RIGIDITY TO PREVENT MOVEMENT, MINIMIZE DEFLECTION AND TO ACCOMMODATE HANDLING, LIFTING, PLACING, CONSTRUCTION, AND ENVIRONMENTAL LOADS DURING ALL PHASES OF THE WORK. USE TEMPORARY OR PERMANENT SUPPORTS, ANCHORS AND CONNECTIONS AS NEEDED.

2. SIP FORM SUPPORTS

   PROVIDE WALES, CONNECTIONS, ANCHORS, SAND BAGS, FABRIC FORMS OR OTHER APPROVED EQUIVALENT IN SUFFICIENT QUANTITIES SUCH THAT THE ARRANGEMENT, SPACING, SIZE AND GEOMETRY DEVELOP THE STRENGTH AND RIGIDITY REQUIRED.

3. FABRIC FORMS FOR CONCRETE

   MANUFACTURED SPECIFICALLY FOR UNDERWATER INSTALLATION IN AN AGGRESSIVE MARINE ENVIRONMENT THAT INCLUDES HIGH CURRENTS AND BRACKISH WATER. CAPABLE OF FORMING TO UNEVEN SURFACES, RESISTING PUNCTURE AND ABRASION, AND MUST NOT LEAK OR BURST DURING FILLING OPERATIONS. PROVIDE FABRIC FORMS WITH A MINIMUM FILLED HEIGHT OF 1'. LENGTH AND WIDTH ARE AT THE CONTRACTOR'S DISCRETION OR AS OTHERWISE RECOMMENDED BY THE MANUFACTURER. FILL AND VENT PORTS SHALL BE VISIBLE AND UNOBSTRUCTED DURING GROUTING OPERATIONS.

4. GROUT/VENT PIPES

   4 INCH DIAMETER (MINIMUM FOR VENT PIPES) PVC SCHEDULE 40 OR OTHER APPROVED EQUIVALENT.

5. GROUT

   TYPE II PORTLAND CEMENT, SAND, ADMIXTURES, FLY ASH, HIGH REACTIVITY POZZOLAN; F'C=3000PSI

6. CONCRETE

   CLASS A IN ACCORDANCE WITH SPECIFICATION SECTION 601.03.1, ¾ INCH MAXIMUM COARSE AGGREGATE

SUMMARY OF ESTIMATED QUANTITIES FOR BIDDING

ITEM CODE	DESCRIPTION	UNIT	REPAIR					
			N/A	R1	R2	R3	R4	R5
201.9901	REMOVAL OF MISCELLANEOUS ITEMS	TON	45					
817.9901	GROUT	CF		2035				4560
601.9902	CONCRETE	CF			100	6985		
601.9904	STAY-IN-PLACE FORMS	SF				3110		
804.9901	PILE PROTECTION	LS					1	

REPAIR TYPE R1 – PRESSURE GROUT VOIDS
REPAIR TYPE R2 – TREMIE CONCRETE MINOR VOIDS
REPAIR TYPE R3 – TREMIE CONCRETE FOR EXISTING FOUNDATION ENCAPSULATION
REPAIR TYPE R4 – PILE REPAIR USING EPOXY GROUT
REPAIR TYPE R5 – PRESSURE GROUT FABRIC BAGS

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BARRINGTON BRIDGE NO. 123
BARRINGTON RHODE ISLAND

GENERAL NOTES I

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FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2018	3	10

CONCRETE AND GROUT PLACEMENT

1. IN ACCORDANCE WITH SPECIFICATION SECTIONS 808.03.5, 808.03.8, PROJECT PERMITS AND THE SPECIAL PROVISIONS. TEMPORARY AND PERMANENT CONSTRUCTION SHALL BE COMPLETED WITHIN THE LIMITS AS IDENTIFIED IN THE PERMITS AND ON THE PLANS.
2. REMOVE OBSTRUCTIONS AS NEEDED AND ENSURE EXISTING CONTACT SURFACES WILL NOT DAMAGE THE PROPOSED CONSTRUCTION OR PUNCTURE SAND BAGS AND FABRIC FORMS. CHIP OR GRIND ROUGH/JAGGED SURFACES AS NEEDED. TO THE EXTENT POSSIBLE, REMOVE LOOSE MATERIAL AND CLEAN MARINE GROWTH FROM ALL CONTACT SURFACES, USING HIGH PRESSURE WATER OR MECHANICAL METHODS AS APPROVED. CLEANING SHOULD BE PERFORMED JUST PRIOR TO FORM INSTALLATION. ENSURE RESULTING DEBRIS IS REMOVED FROM THE VOIDS.
3. EXISTING GEOTECHNICAL INFORMATION INDICATES CHANNEL BOTTOM MAY BE WEATHERED ROCK OVERLAIN WITH DENSE COARSE SAND. VERIFY THERE ARE NO LOOSE OR SOFT DEPOSITS WITHIN THE REPAIR FOOTPRINT AND REMOVE AS NEEDED BY JETTING OR OTHER APPROVED METHODS TO ENSURE REPAIRS ARE CONSTRUCTED ON A FIRM SURFACE. THE INTENT IS TO MINIMIZE POTENTIAL SCOUR UNDER THE REPAIR. NOTIFY THE ENGINEER IF LOOSE DEPOSITS ARE MORE THAN 2 FEET DEEP.
4. STABILIZE PARTIAL AND ONGOING CONSTRUCTION AS NEEDED TO PREVENT MOVEMENT, DAMAGE OR DETERIORATION DURING THE WORK. DAMAGED CONSTRUCTION MUST BE REPAIRED OR REPLACED AS DETERMINED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE STATE.
5. INSTALL SIP FORMS AND SEAL JOINTS TO ENSURE THAT THE FORMS WILL NOT LEAK OR ALLOW THE INTRUSION OF SILT OR OTHER FINES BEFORE AND DURING PLACEMENT OPERATIONS. INSTALL PVC PIPES FOR PUMPING AND VENTING. MAXIMUM VENT PIPE SPACING IS 4 FEET. SEAL AROUND PIPES TO PREVENT LEAKING DURING PUMPING OPERATIONS AS NEEDED.
6. PUMP NOZZLE/TREMIE PIPE MUST BE CONTINUOUSLY EMBEDDED IN THE CONCRETE/GROUT DURING PUMPING OPERATIONS TO LIMIT INTRODUCING ADDITIONAL WATER INTO THE CONCRETE/GROUT. COMPLETE PIPE INSTALLATION AND SEALING AT ONE VOID BEFORE STARTING WORK AT ANOTHER LOCATION.
   - 6.1. ENSURE THAT FRESHLY PLACED CONCRETE/GROUT EXPOSED TO THE CURRENT IS NOT WASHED AWAY (SCOURED), SUCH AS MIGHT OCCUR AT THE TOP OF AN OPEN FORM. PLAN PLACEMENT TO PREVENT SCOURING.
7. IT IS ASSUMED THAT THE TOPS OF SIP FORMS AT LOCATIONS OF COMPLETE TREMIE COLLAPSE WILL BE OPEN AND THAT THESE LOCATIONS WILL REQUIRE SPECIAL ATTENTION AND PROTECTION BASED ON THE EXTENTS OF THE EXPOSED AREA.
8. REPAIR WORK MAY BE PERFORMED UNDERWATER OR IN DEWATERED CONDITIONS IN ACCORDANCE WITH THE CONTRACTOR'S MEANS AND METHODS. LIMIT SILT-PRODUCING ACTIVITIES TO THE EXTENT PRACTICAL.

QUALITY CONTROL

1. PROVIDE INDEPENDENT UNDERWATER QUALITY CONTROL INSPECTION SERVICES (QC INSPECTIONS) TO VERIFY THAT THE WORK IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. PROVIDE QC INSPECTIONS DURING EACH SIGNIFICANT PHASE IDENTIFIED BELOW OR AS OTHERWISE DIRECTED BY THE ENGINEER.
   - 1.1. AT THE COMPLETION OF THE UNDERWATER SURVEY TO VERIFY ACCURACY
   - 1.2. AFTER CONCRETE CLEANING AND JUST BEFORE FORM INSTALLATION
   - 1.3. AFTER FORM INSTALLATION JUST BEFORE GROUT INSTALLATION
   - 1.4. DURING GROUT AND CONCRETE INSTALLATION AND PROTECTION WORK
   - 1.5. AFTER FINAL REPAIRS ARE COMPLETED
2. REPAIR, REPLACE AND ADDRESS DEFICIENCIES OBSERVED DURING THE QC INSPECTION TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE STATE, BEFORE ADVANCING THE WORK.
3. COSTS FOR QUALITY CONTROL ARE INCIDENTAL TO THE WORK.
4. CONTRACTOR IS ADVISED THAT RIDOT WILL BE INDEPENDENTLY CONDUCTING PERIODIC UNDERWATER INSPECTIONS. PROVIDE SUITABLE ACCESS TO THE WORK AS DIRECTED.

SUBMITTALS

1. PROVIDE THE FOLLOWING PRECONSTRUCTION SUBMITTALS AT LEAST 14 DAYS IN ADVANCE OF STARTING THE ASSOCIATED WORK FOR REVIEW AND APPROVAL.
   - 1.1. CONSTRUCTION PLAN PROVIDING SEQUENCE OF CONSTRUCTION AND DETAILED INFORMATION INCLUDING METHOD, MATERIALS AND EQUIPMENT FOR:
     - 1.1.1. BARGE AND VESSEL STAGING.
     - 1.1.2. BRIDGE STAGING.
     - 1.1.3. MAXIMUM BARGE-STAGED CRANE PICK AND BARGE STABILITY CALCULATIONS, STAMPED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND.
     - 1.1.4. REMOVING DEBRIS AND RELOCATING RIPRAP, INCLUDING PROPOSED RIPRAP LOCATION.
     - 1.1.5. CLEANING CONCRETE CONTACT AREAS, DEBRIS CONTAINMENT, MEANS AND METHODS, .
     - 1.1.6. INSTALLATION OF TEMPORARY AND PERMANENT SUPPORTS, FORMS, ANCHORS, WALES AND SIMILAR APPURTENANCES, INCLUDE SHOP DRAWINGS OF FABRICATED COMPONENTS. PROVIDE FORMWORK CALCULATIONS IDENTIFYING THE STRUCTURAL LOADS AND SUBSEQUENT FACTORS OF SAFETY FOR ALL FORMWORK, CONNECTIONS, WALES, STIFFENERS AND THE LIKE, DURING ALL PHASES OF THE WORK INCLUDING BUT NOT LIMITED TO LIFTING AND PLACEMENT. CONSTRUCTION LOADS INCLUDING LOADS IMPOSED BY CONCRETE/GROUT PLACEMENT AND LOADS DUE TO ENVIRONMENTAL FACTORS INCLUDING CURRENT. CALCULATIONS MUST BE STAMPED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND..
     - 1.1.7. GROUT AND CONCRETE INSTALLATION INCLUDING PUMPING AND TREMIE PLACEMENT
     - 1.1.8. PROTECTION OF GROUT AND CONCRETE FROM SCOUR DURING OR AFTER PLACEMENT.
     - 1.1.9. FABRIC FORMS INCLUDING SIZES, PLACEMENT AND FILLING.
     - 1.1.10. STEEL PILE REPAIR, INCLUDING HAND PACKED GROUT.
   - 1.2. SUPPLIERS PRODUCT INFORMATION, INSTRUCTIONS, AND CERTIFICATES OR SIGNED STATEMENTS ON SUPPLIERS LETTERHEAD, THAT THE MATERIALS PROVIDED MEET OR EXCEED THE REQUIREMENTS IDENTIFIED IN THE CONTRACT DOCUMENTS.
2. PROVIDE A PRE-CONSTRUCTION UNDERWATER SURVEY VERIFIED BY QC INSPECTION.
3. PROVIDE A POST-CONSTRUCTION UNDERWATER SURVEY VERIFIED BY QC INSPECTION.

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BARRINGTON BRIDGE NO. 123
BARRINGTON RHODE ISLAND

GENERAL NOTES II

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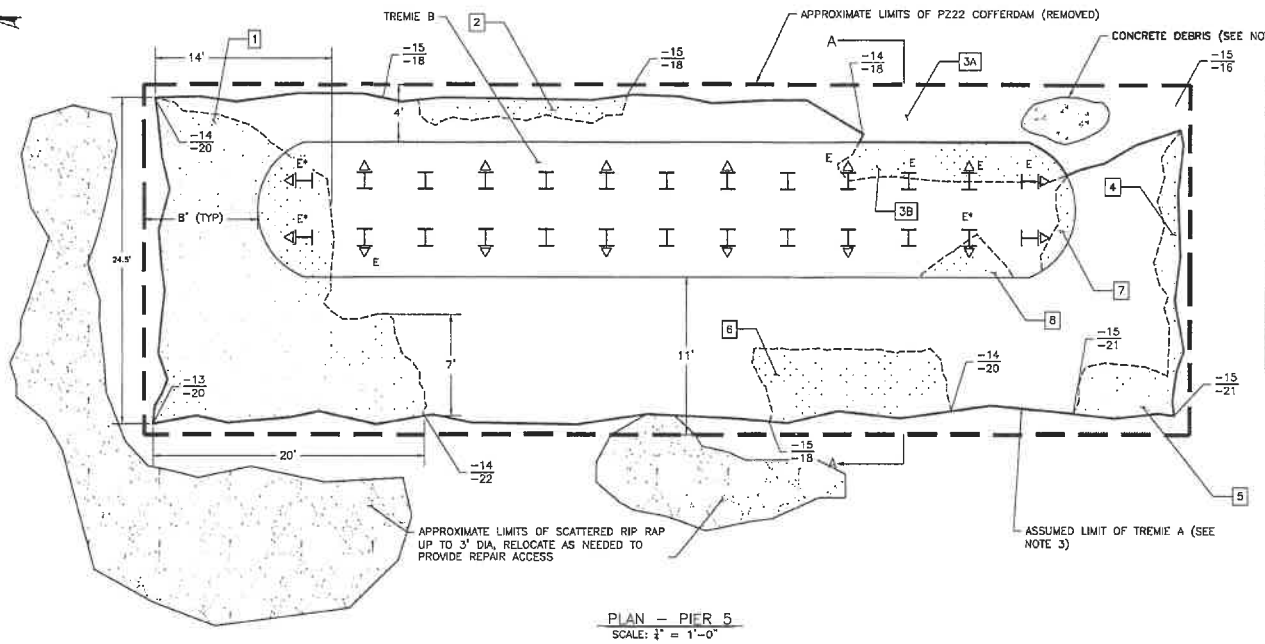
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2019	4	10



PLAN – PIER 5
SCALE: 1/4" = 1'-0"

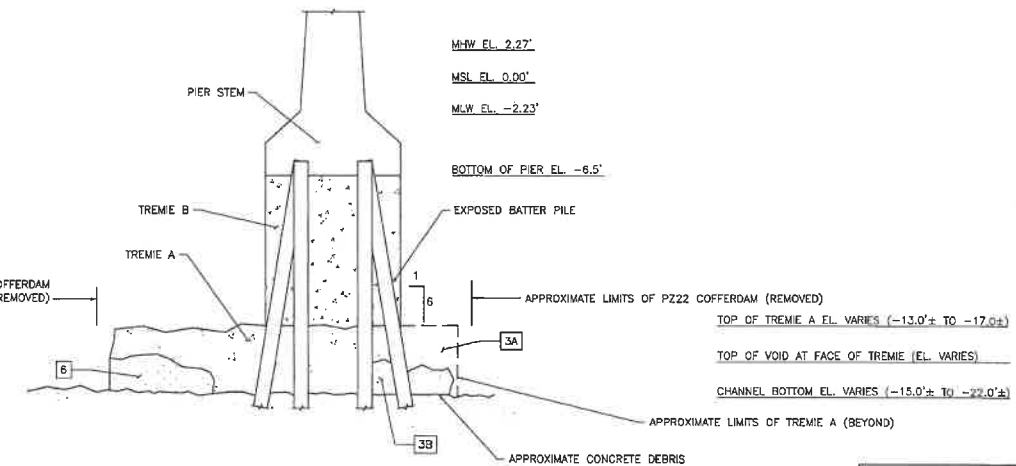
VOID SUMMARY		
VOID	APPROX. DIMENSIONS (FT)	COMMENTS
1	AS SHOWN, 2'H	VOID/UNDERMINE
2	15'L X 1.6'H X 2'D	VOID/UNDERMINE
3A	21'L X 4'H X 3'D	TREMIE A COLLAPSED
3B (SEE NOTE 2)	14'L X 2.2'H X 2.8'D	TREMIE B UNDERMINED WITH (4) EXPOSED PILES UP TO 1.3' HIGH W/ INTACT COATING
4	20'L X 2'H X 2'D	INTERMITTENT VOIDS/UNDERMINING
5	8'L X 1.5'H X 5'D	VOID/UNDERMINE
6	14'L X 2'H X 5'D	VOID/UNDERMINE
7	FULL WIDTH X 1.1'H X 1'D	TREMIE A VOID UNDER TREMIE B
8	6'L X UP TO 0.7'H X 3'D	

NOTES

1. VOID LIMITS AND LOCATIONS ARE APPROXIMATE AND ARE SHOWN SCHEMATICALLY. THE HEIGHT OF VOID IS MEASURED FROM CHANNEL BOTTOM UNLESS OTHERWISE NOTED.
2. AT THE TIME OF INSPECTION THERE WERE LARGE PIECES OF TREMIE A CONCRETE REMAINING WITHIN THE COLLAPSE LOCATION AT VOID 3A. ASSUME 35 TON OF CONCRETE DEBRIS TO BE REMOVED FOR BIDDING PURPOSES.
3. INSPECTION OBSERVATIONS INDICATED SIGNIFICANT VARIATIONS IN OFFSET DISTANCES OF TREMIE A FROM TREMIE B, AND LIMITS SHOWN ARE SCHEMATIC. VOID DEPTHS IN THE SUMMARY TABLE WERE MEASURED FROM THE EXISTING REMAINING FACE OF TREMIE A.

LEGEND:

- 9 — VOID
- APPROX. VOID LIMITS
- HP12X74 PILE
- BATTERED PILE
- TREMIE B CONCRETE
- TREMIE A CONCRETE
- E* — PILE LIKELY TO BE EXPOSED
- E — EXPOSED PILE
- -13/-20 — MSL ELEVATION APPROX. TOP OF TREMIE A / MSL ELEVATION APPROX. CHANNEL BOTTOM



SECTION A–A – PIER 5
SCALE: 1/4" = 1'-0"

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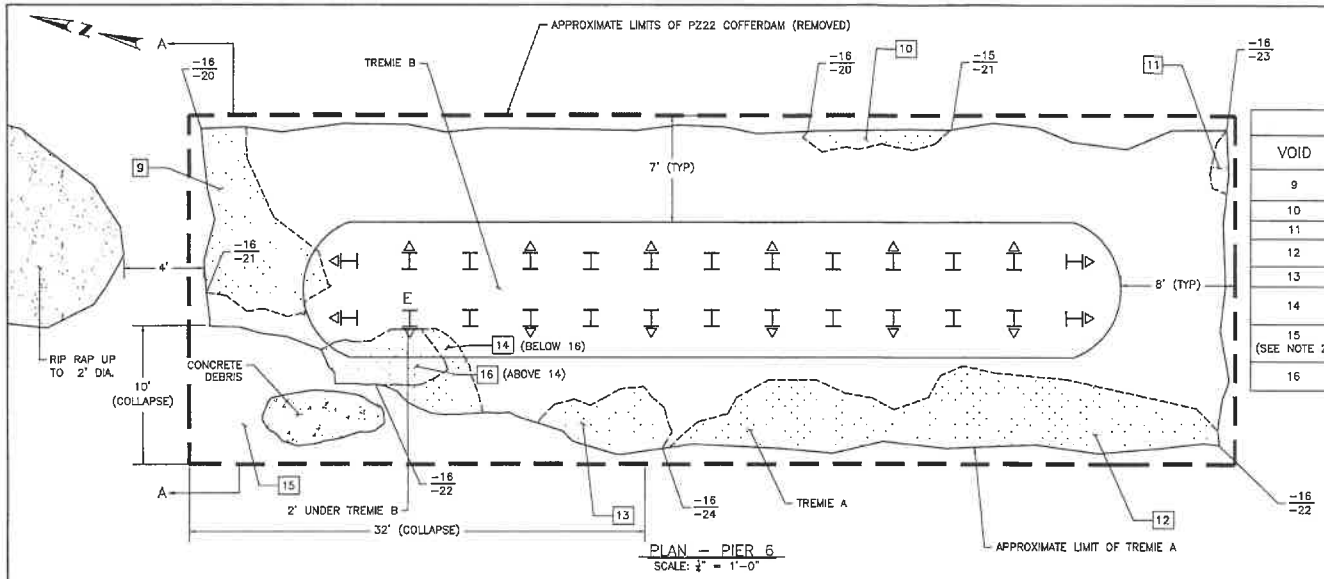
PIER 5 EXISTING CONDITIONS PLAN AND SECTION

COLLINS ENGINEERS

CHECKED BY JMK DATE 08/29/19 SCALE AS SHOWN

163_V1_004_PIER 5 EC_SECT

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2019	5	10



PLAN – PIER 6
SCALE: 1" = 1'-0"

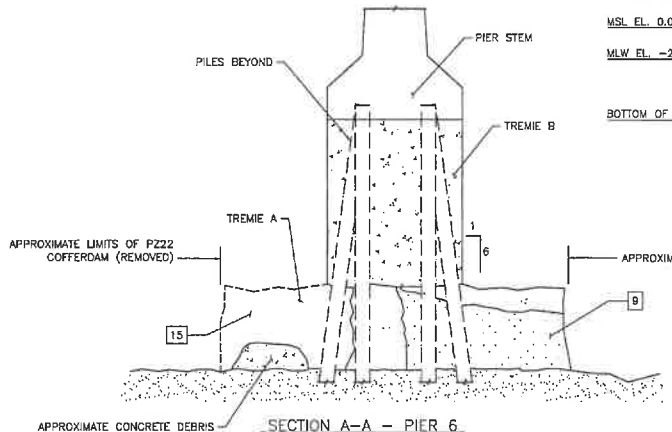
VOID SUMMARY		
VOID	APPROX. DIMENSIONS (FT)	COMMENTS
9	12'L X 2.9'H (E) X 4'D (E) X 5'H (W) X 10' D (W)	VOID/UNDERMINE
10	10'L X 1'H X 1.5'D	VOID/UNDERMINE
11	4'L X 0.5'H X 0.5'D	VOID/UNDERMINE
12	39'L X 1.5'H X UP TO 6'D	TREMIE A VOID/UNDERMINE (INTERMITTENT), NO PILES VISIBLE
13	10'L X 2'H X UP TO 4.5'D	TREMIE A VOID @ MID-HEIGHT
14	10'L X UP TO 2'H X 4.5'D	TREMIE A VOID/UNDERMINE AT CHANNEL BOTTOM W/ (1) EXPOSED PILE 1.6'H WITH ADVANCED SECTION LOSS
15 (SEE NOTE 2)	AS SHOWN, FULL HEIGHT	TREMIE A COLLAPSE
16	7'L X 1.5'H X 2'D	TREMIE A VOID UNDER TREMIE B W/ (1) EXPOSED PILE 0.3'H WITH COATING INTACT

NOTES

1. VOID LIMITS AND LOCATIONS ARE APPROXIMATE AND ARE SHOWN SCHEMATICALLY. THE HEIGHT OF VOID IS MEASURED FROM CHANNEL BOTTOM UNLESS OTHERWISE NOTED.
2. AT THE TIME OF INSPECTION THE COLLAPSE AREA AT VOID 15 WAS RELATIVELY FREE OF TREMIE A DEBRIS. ASSUME 10 TON OF DEBRIS TO BE REMOVED FOR BIDDING PURPOSES.
3. INSPECTION OBSERVATIONS INDICATED SIGNIFICANT VARIATIONS IN OFFSET DISTANCES OF TREMIE A FROM TREMIE B, AND LIMITS SHOWN ARE SCHEMATIC. VOID DEPTHS IN THE SUMMARY TABLE WERE MEASURED FROM THE EXISTING REMAINING FACE OF TREMIE A.

LEGEND:

- 9 — VOID
- APPROX. VOID LIMITS
- HP12X74 PILE
- BATTERED PILE
- TREMIE B CONCRETE
- TREMIE A CONCRETE
- PILE LIKELY TO BE EXPOSED
- E — EXPOSED PILE
- -13/-20 — MSL ELEVATION APPROX. TOP OF TREMIE A / MSL ELEVATION APPROX. CHANNEL BOTTOM



SECTION A–A – PIER 6
SCALE: 1" = 1'-0"

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PIER 6 EXISTING CONDITIONS PLAN AND SECTION

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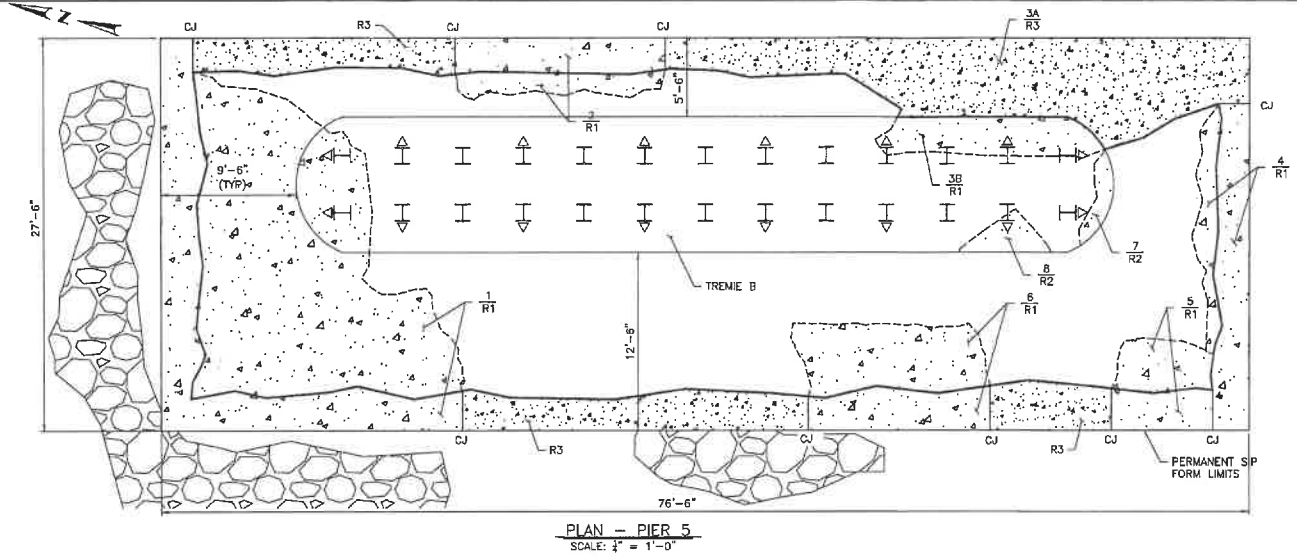
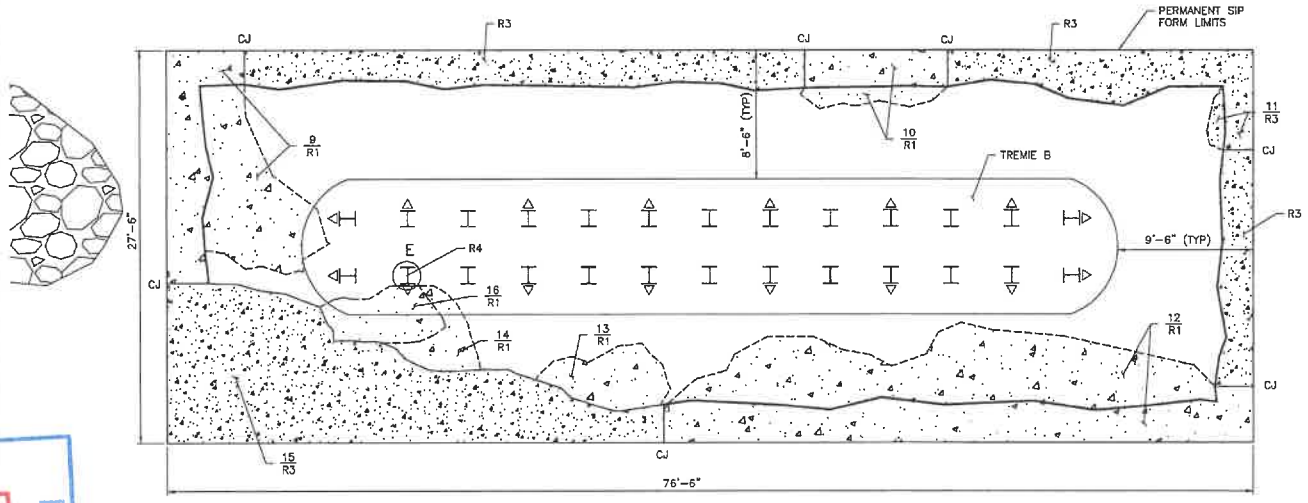
183_V1_005_PIER6 EC_SECT

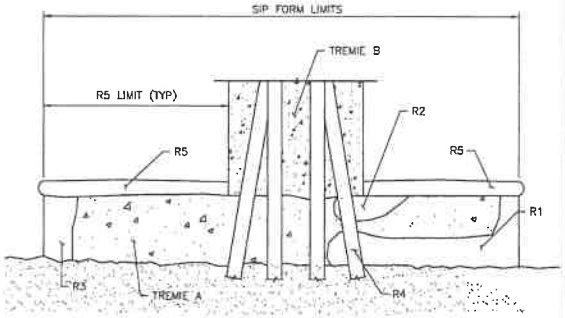
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-881	2019	6	10



PLAN – PIER 5
SCALE: 1/4" = 1'-0"



PLAN – PIER 6
SCALE: 1/4" = 1'-0"



TYPICAL SECTION
SCALE: 1/4" = 1'-0"

NOTES

1. SEE SHEETS 7 AND 8 FOR REPAIR DETAILS.
2. PERMANENT FORMS FOR CONSTRUCTION JOINTS SHALL BE APPROVED MATERIALS. INSTALL AND SECURE TO ENSURE THEY ARE FULLY SEALED AGAINST LEAKAGE DURING GROUT AND CONCRETE INSTALLATION.
3. REPAIRS R1 AND R2 SHALL BE COMPLETED TO FILL EXISTING VOIDS AND REPAIR R2 SHALL EXTEND TO THE LIMITS OF THE PERMANENT FORMS. REPAIR R3 SHALL ENCLOSE THE REMAINING EXISTING TREMIE CONCRETE TO THE LIMITS OF THE PERMANENT FORMS.

LEGEND

6/R1	VOID DESIGNATION / REPAIR DESIGNATION
CJ	CONSTRUCTION JOINT

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BRIDGE REHABILITATION
BARRINGTON BRIDGE NO. 123
BARRINGTON RHODE ISLAND

GENERAL REPAIR PLAN

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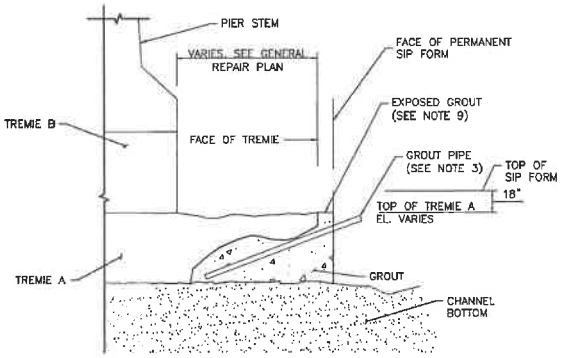
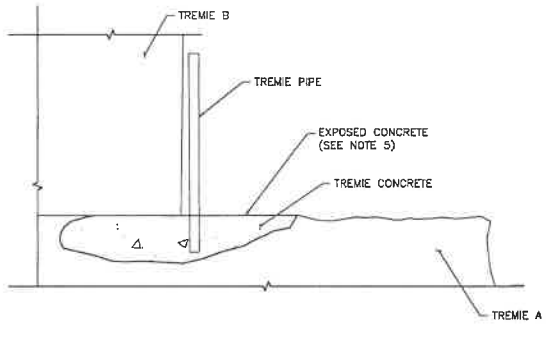
163_V1_008_REPAIR PLAN

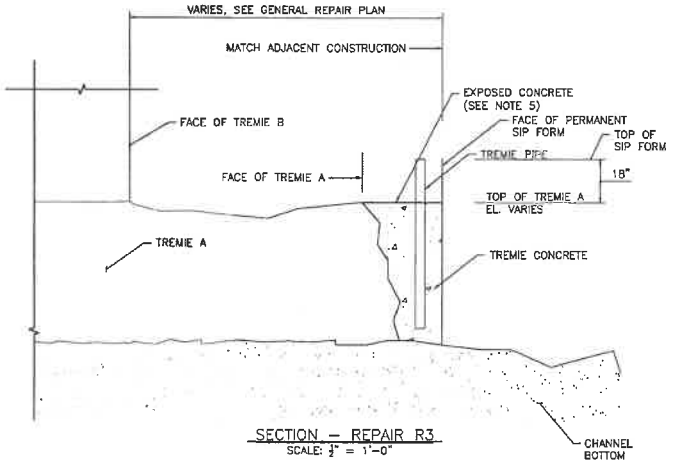
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2019	7	10



SECTION – REPAIR R1
SCALE: $\frac{1}{4}$" = 1'–0"



SECTION – REPAIR R2
SCALE: $\frac{1}{2}$" = 1'–0"



SECTION – REPAIR R3
SCALE: $\frac{1}{2}$" = 1'–0"

REPAIR SUMMARY		
PIER	VOID	REPAIR
5	1	R1
	2	R1
	3A	R3
	3B	R1
	4	R1
	5	R1
	6	R1
	7	R2
	8	R2
6	9	R1
	10	R1
	11	R3
	12	R1
	13	R1
	14	R1
	15	R3
	16	R4/R1

LEGEND:

GROUT

REPAIR R1 NOTES:

1. COMPLETE REPAIR R4 AT PIER 6 BEFORE INSTALLING GROUT AT VOID 16 (SEE REPAIR DETAILS II).
2. INSTALL FORMS AND FORM SUPPORTS/SEALS AS NEEDED.
3. POSITION GROUT PIPE TO THE BACK OF THE VOID TO ENSURE COMPLETE VOID FILLING FROM BACK TO FRONT.
4. ENSURE THE VOIDS ARE VENTED FOR THE LENGTH OF THE REPAIR, PROVIDE VENT PIPES IF NEEDED, SPACED AT 4 FEET MAXIMUM.
5. CAREFULLY PUMP GROUT INTO THE VOID UNTIL GROUT IS OBSERVED AT THE TOP OF THE FORM, OR AT THE TOP OF THE VOID.
6. IF FABRIC FORMS ARE USED TO FILL THE VOIDS, INSTALL A SINGLE FORM OR STACK FORMS TO A PRACTICAL DEPTH WITHIN THE VOID. IF FORMS ARE STACKED, STAGGER JOINTS 1' MINIMUM. FABRIC FORMS SHALL EXTEND OUTBOARD OF THE VOIDS TO ENSURE FULL CONTACT BETWEEN THE FABRIC FORM AT THE TOP OF VOID, ALL ALONG THE VOID. FILL EACH FABRIC FORM IN ONE OPERATION AND ENSURE FULL CONTACT BETWEEN FABRIC FORMS AND THE SIDES OF THE VOIDS. ALLOW THE GROUT TO SET IN THE LOWER SUPPORTING FORMS BEFORE FILLING UPPER FORMS. PROVIDE SUPPLEMENTAL PUMPED GROUT IN ACCORDANCE WITH NOTES 2–4, TO FILL REMAINING VOIDS AND TO DISPLACE REMAINING WATER.
7. REMOVE TEMPORARY CONSTRUCTION AFTER THE WORK IS COMPLETED AND APPROVED.
8. CUT OFF VENT/GROUT PIPES FLUSH WITH FORM, AND CUT OFF FORM AT TOP OF TREMIE A.
9. PROTECT FRESHLY PLACED EXPOSED GROUT FROM SCOUR.

REPAIR R2 AND R3 NOTES:

1. REPAIR R3 FOLLOWS ADJACENT REPAIRS.
2. INSTALL FORMS AND FORM SUPPORTS/SEALS AS NEEDED.
3. PLACE TREMIE CONCRETE ENSURING THAT THE TREMIE PIPE IS CONTINUOUSLY EMBEDDED IN THE CONCRETE. ADVANCE TREMIE PIPE VERTICALLY AS NEEDED TO AVOID CONCRETE SEGREGATION AND COLD JOINTS IN THE TREMIE PLACEMENT, AND TO ENSURE THE REPAIR VOLUME IS COMPLETELY FILLED.
4. REMOVE TEMPORARY CONSTRUCTION AFTER THE WORK IS COMPLETED AND APPROVED.
5. PROTECT FRESHLY PLACED EXPOSED GROUT/CONCRETE FROM SCOUR.

SHEET NOTES:

1. REPAIR NOTES PROVIDE A SUGGESTED SEQUENCE OF CONSTRUCTION. OTHER MEANS AND METHODS THAT COMPLETELY FILL THE VOIDS AND PROVIDE LONG TERM DURABLE PROTECTION OF THE ENCASED TREMIE MAY BE SUBMITTED FOR EVALUATION.
2. SEE THE GENERAL NOTES SHEET FOR ADDITIONAL INFORMATION.

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
BRIDGE REHABILITATION
BARRINGTON BRIDGE NO. 123
BARRINGTON RHODE ISLAND

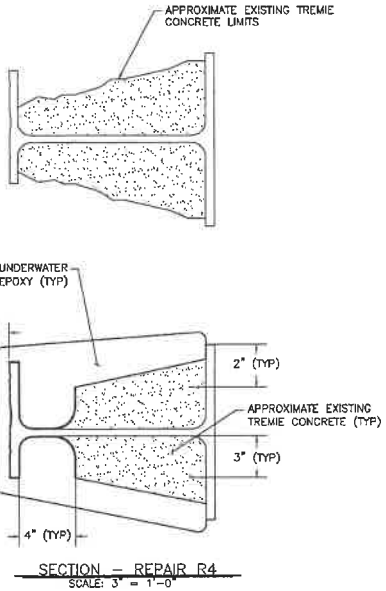
REPAIR DETAILS I

CHECKED BY JMK DATE 05/12/19 SCALE AS SHOWN

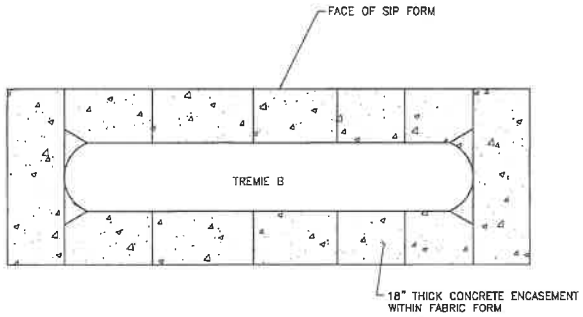
COLLINS ENGINEERS INC
1445 SOUTH COUNTY TRAIL, SUITE 110
EAST GREENWICH, RI 02818
MAIN 401.732.3724
FAX 401.732.7134
WWW.COLLINSENGR.COM

163_V1_007_008_REPAIR DETAILS

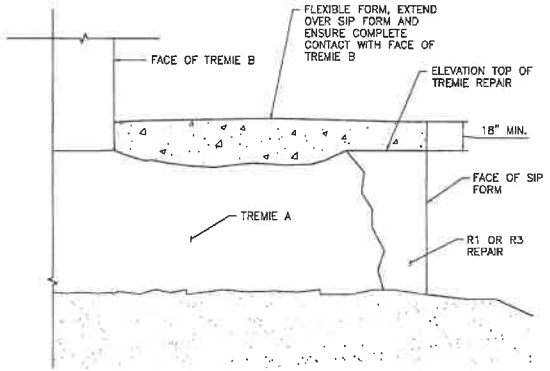
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
–	RI	405-421-991	2019	8	10



SECTION – REPAIR R4
SCALE: 3" = 1'-0"



PLAN – REPAIR R5
SCALE: $\frac{1}{8}$" = 1'-0"



SECTION – REPAIR R5
SCALE: $\frac{1}{2}$" = 1'-0"

PILE PROTECTION R4 NOTES:

1. REMOVE MARINE GROWTH, LOOSE CONCRETE AND LOOSE/CORRODED STEEL FROM THE REPAIR AREA.
2. GRIND CONCRETE SURFACE SMOOTH WITHIN THE LIMITS SHOWN TO ENSURE REPAIR MATERIALS CAN ADEQUATELY ADHERE TO THE CONTACT SURFACE.
3. GRIND SHARP STEEL EDGES AND PROTRUSIONS SMOOTH AND CLEAN STEEL TO REMOVE SURFACE CORROSION AND CORROSION WITH PITTED/SCALLOPED SECTIONS.
4. PROVIDE EPOXY PUTTY OR APPROVED EQUIVALENT TO FILL STEEL PITS AND SCALLOPS.
5. ENSURE FULL COVERAGE TO A MINIMUM IN 2" THICKNESS OVER THE EXPOSED STEEL AND LIMITS OF CONCRETE WORK SHOWN.

REPAIR R5 NOTES:

1. REPAIR TYPE 5 FOLLOWS REPAIRS 1–4.
2. REMOVE MARINE GROWTH AND DEBRIS FROM THE TOP OF TREMIE A.
3. PROVIDE FLEXIBLE FORMS SIZED AND ALIGNED IN GENERAL ACCORDANCE WITH THE PLAN. MINIMIZE THE NUMBER OF FORMS USED AND SUBSEQUENT JOINTS BETWEEN THE FORMS.
4. ALIGN AND SIZE FORMS INSTALLED NORTH AND SOUTH OF THE PIER STEM TO MINIMIZE JOINTS PARALLEL TO THE PIER'S LONGITUDINAL AXIS AND ALIGN AND SIZE FORMS INSTALLED EAST AND WEST OF THE PIER STEM TO MINIMIZE JOINTS PERPENDICULAR TO THE PIER'S LONGITUDINAL AXIS.
5. FILL EACH FLEXIBLE FORM WITH PUMPED CONCRETE TO DEVELOP A MINIMUM 18 INCH FILL HEIGHT AND TO DEVELOP FULL CONTACT WITH TREMIE B AND ADJACENT FORMS.

SHEET NOTES:

1. REPAIR NOTES PROVIDE A SUGGESTED SEQUENCE OF CONSTRUCTION. OTHER MEANS AND METHODS THAT COMPLETELY FILL THE VOIDS AND PROVIDE LONG TERM DURABLE PROTECTION OF THE ENCASED TREMIE MAY BE SUBMITTED FOR EVALUATION.
2. SEE THE GENERAL NOTES SHEET FOR ADDITIONAL INFORMATION.

RECEIVED
SEP 26 2019
COASTAL RESOURCES MANAGEMENT COUNCIL

LEGEND:

GROUT

RECEIVED
FEB 21 2025

REVISIONS		
NO.	DATE	BY

COLLINS ENGINEERS, INC.
1426 SOUTH COUNTY TRAIL, SUITE 103
EAST GREENWICH, RI 02818
MAIN 401.312.7114
FAX 401.732.7760
WWW.COLLINSENGR.COM

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

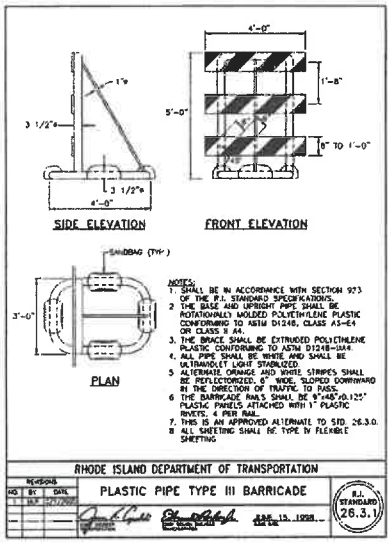
BRIDGE REHABILITATION
BARRINGTON BRIDGE NO. 123
BARRINGTON RHODE ISLAND

REPAIR
DETAILS II

CHECKED BY JMK DATE 09/25/19 SCALE AS SHOWN

163_V1_007_008_REPAIR DETAILS

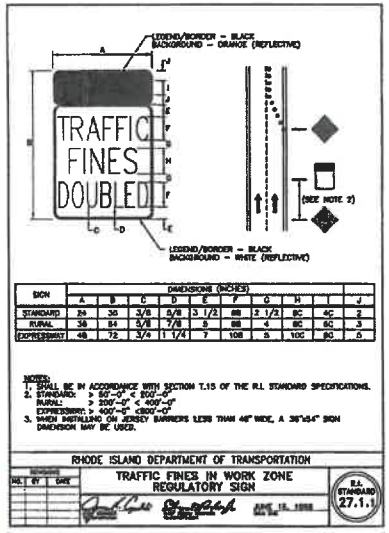
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BR-BRDG-04	2019	9	10



RHODE ISLAND DEPARTMENT OF TRANSPORTATION

PLASTIC PIPE TYPE III BARRICADE

R.I. STANDARD 26.3.1



SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	I	J
STANDARD	24	36	3/8	5/8	3 1/2	6B	2 1/2	8C	4C	2
RURAL	36	54	3/8	7/8	5	6B	4	8C	6C	3
EXPRESSWAY	48	72	3/4	1 1/4	7	10B	5	10C	8C	5

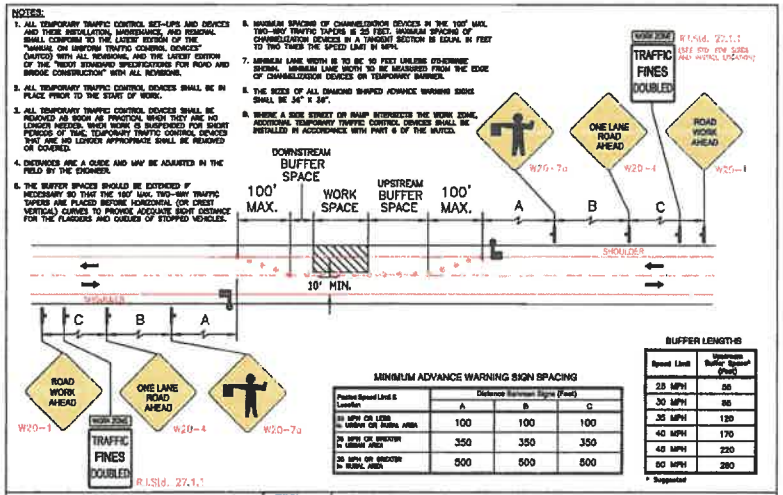
NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION T.15 OF THE R.I. STANDARD SPECIFICATIONS.
2. STANDARD: > 50'-0" < 200'-0"
   RURAL: > 200'-0" < 400'-0"
   EXPRESSWAY > 400'-0" <800'-0"
3. WHEN INSTALLING ON JERSEY BARRIERS LESS THAN 48" WIDE, A 36"x54" SIGN DIMENSION MAY BE USED.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

TRAFFIC FINES IN WORK ZONE REGULATORY SIGN

R.I. STANDARD 27.1.1

NOTES:
1. ALL TEMPORARY TRAFFIC CONTROL SET-UPS AND DEVICES AND THEIR INSTALLATION, MAINTENANCE, AND REMOVAL SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) WITH ALL REVISIONS, AND THE LATEST EDITION OF THE "RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" WITH ALL REVISIONS.
2. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK.
3. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
4. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
5. THE BUFFER SPACES SHOULD BE EXTENDED IF NECESSARY SO THAT THE 100' MAX. TWO-WAY TRAFFIC TAPERS ARE PLACED BEFORE HORIZONTAL OR CREST VERTICAL CURVES TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGERS AND QUEUES OF STOPPED VEHICLES.
6. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN THE 100' MAX. TWO-WAY TRAFFIC TAPERS IS 20 FEET. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN A TANGENT SECTION IS EQUAL IN FEET TO TWO TIMES THE SPEED LIMIT IN MPH.
7. MINIMUM LANE WIDTH IS TO BE 10 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF CHANNELIZATION DEVICES OR TEMPORARY BARRIER.
8. THE SIZES OF ALL DIAMOND SHAPED ADVANCE WARNING SIGNS SHALL BE 36" X 36".
9. WHERE A SIDE STREET OR RAMP INTERSECTS THE WORK ZONE, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH PART 6 OF THE MUTCD.



MINIMUM ADVANCE WARNING SIGN SPACING

Posted Speed Limit / Location	Distance Between Signs (Feet)		
	A	B	C
35 MPH OR LESS in URBAN OR RURAL AREA	100	100	100
36 MPH OR GREATER in URBAN AREA	350	350	350
36 MPH OR GREATER in RURAL AREA	500	500	500

BUFFER LENGTHS

Speed Limit	Minimum Buffer Space* (Feet)
25 MPH	55
30 MPH	85
35 MPH	120
40 MPH	170
45 MPH	220
50 MPH	280

* Suggested

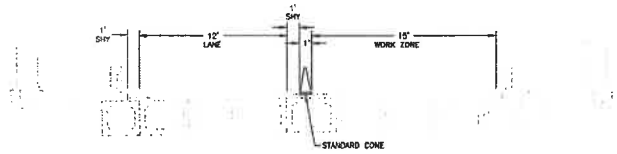
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

TEMPORARY TRAFFIC CONTROL PLAN

TYPICAL LANE CLOSURE ON TWO-LANE ROADWAY

NOT TO SCALE DATE: 12-23-08

TYPICAL LANE CLOSURE ON TWO-LANE ROADWAY
NOT TO SCALE



TYPICAL ONE-WAY STAGING
NOT TO SCALE

NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL SET-UPS AND DEVICES AND THEIR INSTALLATION, MAINTENANCE, AND REMOVAL SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D. WITH ALL REVISIONS AND THE LATEST EDITION OF THE RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WITH ALL REVISIONS.
2. SEE RHODE ISLAND DETAIL 27.1.1 FOR SIGN DIMENSIONS AND PLACEMENT OF WORK ZONE TRAFFIC FINES DOUBLED SIGN.
3. WHERE A SIDE STREET INTERSECTS THE WORK ZONE, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH PART 6 OF THE M.U.T.C.D.
4. ALL TEMPORARY SIGNS SHALL HAVE BLACK COPY ON ORANGE BACKGROUND UNLESS OTHERWISE NOTED BY THE ENGINEER, AND SHALL BE INSTALLED ACCORDING TO THE RHODE ISLAND STANDARD DETAILS 24.3.0 AND 29.1.0.
5. ALL CONES SHALL CONFORM TO RHODE ISLAND STANDARD DETAIL 26.1.0.
6. ALL TEMPORARY TRAFFIC CONTROL SET-UPS SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
7. THE CONTRACTOR SHALL SECURE WORK AREAS TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
8. SYMBOLS SHOWN FOR SIGNS AND TYPE III BARRICADES ARE GRAPHICAL ONLY. WHERE SIDEWALKS ARE TO REMAIN OPEN, SIGNS, AND BARRICADES SHALL BE LOCATED TO PROVIDE A MINIMUM CLEAR PEDESTRIAN PATH OF 36" (EXCLUDING CURB). ALL PEDESTRIAN AREAS TO REMAIN OPEN SHALL BE KEPT CLEAN AND FREE OF DEBRIS AT ALL TIMES.
9. THE CONTRACTOR SHALL COVER ALL EXISTING AND/OR TEMPORARY SIGNS THAT ARE NOT RELEVANT TO THE TRAFFIC CONTROL REQUIRED DURING ANY PARTICULAR STAGE OF THE CONTRACT.
10. POLYETHYLENE DRUMS SHALL BE UTILIZED AS A CHANNELIZING DEVICE WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN BEYOND WORKING HOURS WHEN NO WORKERS ARE PRESENT. CONES SHALL BE UTILIZED WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN ONLY DURING WORKING HOURS AND IS SUBSEQUENTLY BROKEN DOWN AT THE END OF THE WORKDAY.
11. THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS SHALL NOT BE PARKED ON THE TRAVEL LANES OR SHOULDERS. THEY MAY BE PARKED WITHIN THE STATE RIGHT-OF-WAY ONLY IN AREAS 30' BEYOND THE OUTSIDE EDGE OF THE TRAVEL LANES AND/OR IN AREAS APPROVED BY THE ENGINEER.
12. TEMPORARY CONSTRUCTION SIGNS AND OTHER TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC, AND SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER APPROPRIATE.
13. THE INTENDED VEHICLE PATHS THROUGH EACH WORK ZONE SHALL BE CLEARLY MARKED AT ALL TIMES. WATERBORNE PAVEMENT MARKINGS SHALL BE INSTALLED BEFORE THE END OF THE WORK SHIFT ON ALL COLD-PLANED AND NEW ROADWAY SURFACES THAT WILL BE OPENED TO TRAFFIC AT THE END OF THE SHIFT.

REVISIONS NO.	DATE	BY

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

BRIDGE REHABILITATION

BARRINGTON BRIDGE NO. 123

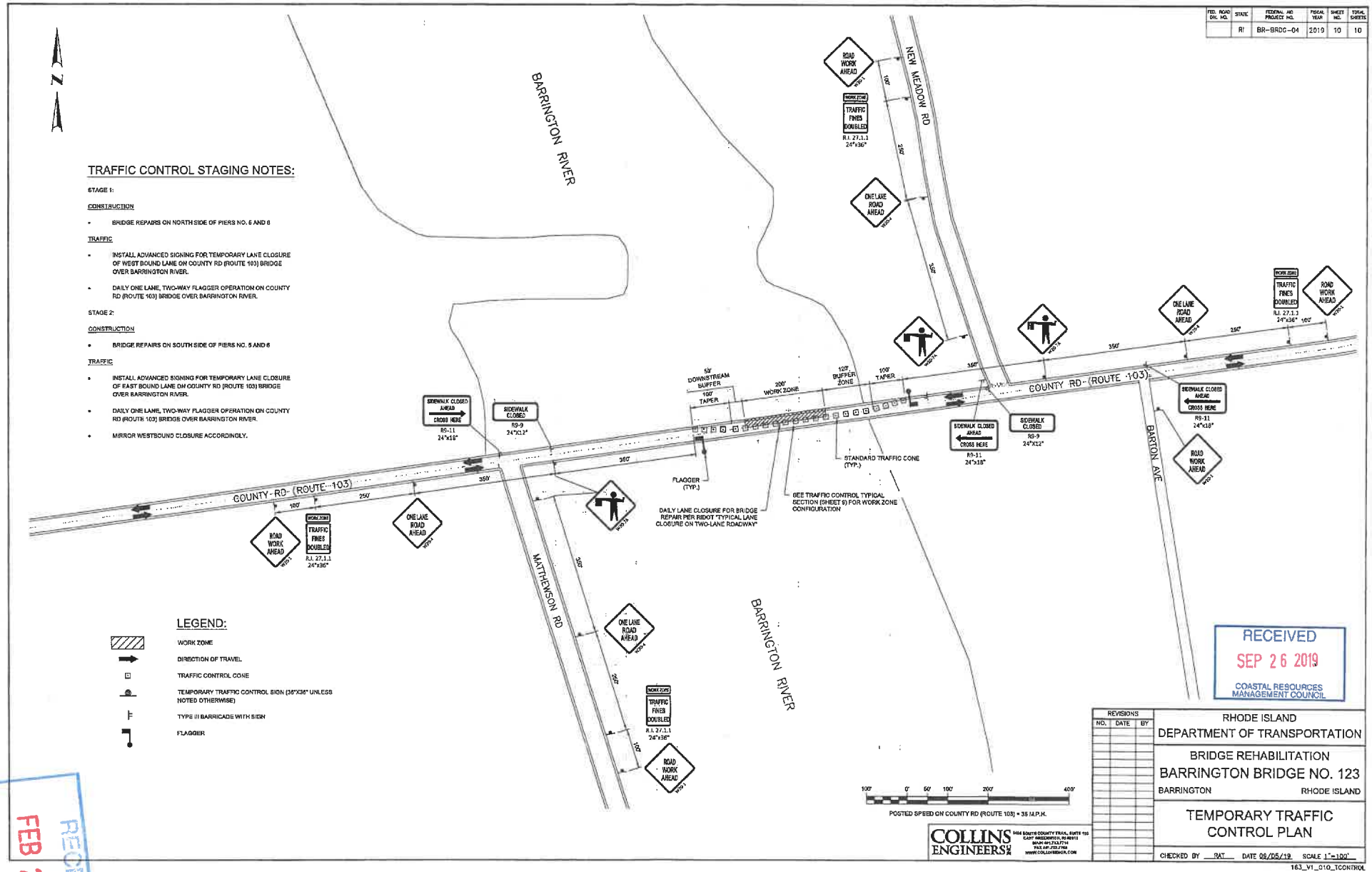
BARRINGTON RHODE ISLAND

TEMPORARY TRAFFIC CONTROL PLAN

CHECKED BY RAT DATE 08/05/19 SCALE NO SCALE

COLLINS ENGINEERS

163_V1_010_TCONTROL



TRAFFIC CONTROL STAGING NOTES:

STAGE 1:

CONSTRUCTION

- BRIDGE REPAIRS ON NORTH SIDE OF PIERS NO. 5 AND 6

TRAFFIC

- INSTALL ADVANCED SIGNING FOR TEMPORARY LANE CLOSURE OF WEST BOUND LANE ON COUNTY RD (ROUTE 103) BRIDGE OVER BARRINGTON RIVER.
- DAILY ONE LANE, TWO-WAY FLAGGER OPERATION ON COUNTY RD (ROUTE 103) BRIDGE OVER BARRINGTON RIVER.

STAGE 2:

CONSTRUCTION

- BRIDGE REPAIRS ON SOUTH SIDE OF PIERS NO. 5 AND 6

TRAFFIC

- INSTALL ADVANCED SIGNING FOR TEMPORARY LANE CLOSURE OF EAST BOUND LANE ON COUNTY RD (ROUTE 103) BRIDGE OVER BARRINGTON RIVER.
- DAILY ONE LANE, TWO-WAY FLAGGER OPERATION ON COUNTY RD (ROUTE 103) BRIDGE OVER BARRINGTON RIVER.
- MIRROR WESTBOUND CLOSURE ACCORDINGLY.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BR-BRDG-04	2019	10	10

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SEP 26 2019
COASTAL RESOURCES MANAGEMENT COUNCIL

RECEIVED
FEB 21 2025
COASTAL RESOURCES MANAGEMENT COUNCIL

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE REHABILITATION
BARRINGTON BRIDGE NO. 123
BARRINGTON RHODE ISLAND

TEMPORARY TRAFFIC CONTROL PLAN

CHECKED BY RAT DATE 08/05/19 SCALE 1"=100'

COLLINS ENGINEERS

163_V1_010_TCONTROL

CROSSMAN ENGINEERING

Appendix C

Scour Analysis

Prepared by Pare Corporation

Engineers Scientists Planners
parecorp.com

PARE CORPORATION

October 17, 2024

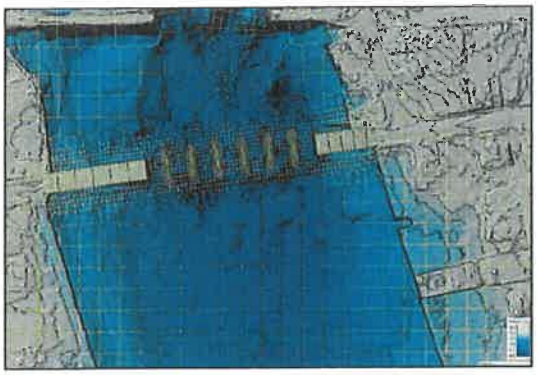
Re: **Hydraulic Report**
Barrington Bridge
Barrington, Rhode Island
(Pare Project No. 24157.00)

Pare has completed a hydraulic analysis for the "Barrington Bridge", the bridge that carries Route 114 (County Road) over the Barrington River located in Barrington, RI. The analysis was performed to determine the hydraulic conditions that are expected to occur at the bridge during different tidal conditions to inform the extent and type of scour countermeasures to be installed along the streambed in the vicinity of the bridge. The sections below provide an overview of the hydraulic model development, the results of the hydraulic model, scour countermeasure design calculations based upon the model results, as well as discussion on comparison of previous analyses and reports.

Hydraulic Model Development

The watershed for the Barrington Bridge was determined to be 16.0 mi^2 (square miles) per USGS Stream Stats, as depicted in the graphic to the right. The peak flows expected within the Barrington River from rainfall-runoff per statewide regression equations returned from the USGS StreamStats Program were relatively insignificant compared to the peak flows that occur as the result of the tidal cycles; both normal and storm surge conditions. For example, the peak flow generated from the normal cycle was determined to be 2,700 CFS (cubic feet per second) per the current hydraulic model, while the peak flow expected as a result of rainfall-runoff during the 100-year storm event was less than 1,000 CFS. As such, it was determined that the rainfall-runoff flow conditions of the Palmer River could be neglected during this analysis and the focus of the analysis could be placed upon the tidal conditions that develop at the bridge.

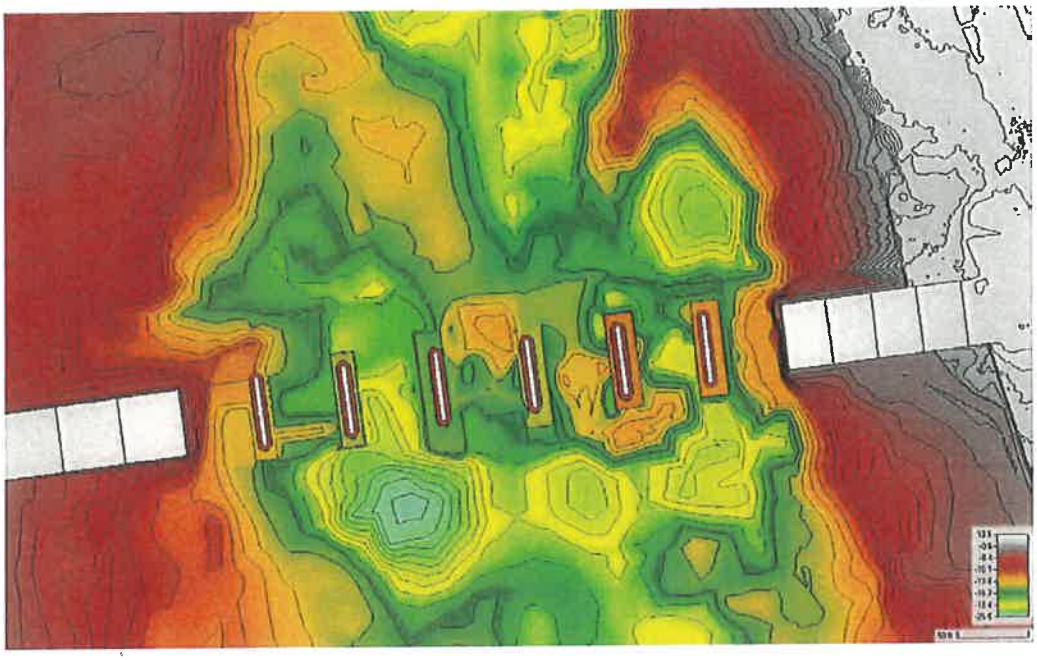
The hydraulic model was developed using HEC-RAS 6.5. The terrain for the model was developed from a combination of LiDAR terrain data, bathymetric survey of the Palmer River upstream and downstream of the bridge provided within the February 2024 Hydraulic and Scour Analysis Report developed by WSP, bathymetric survey in the vicinity of the bridge as well as geometric information for the bridge and bridge piers provided within the September 2023 Scour Assessment Report developed by Collins Engineers. The graphic to the right depicts the computational mesh of the HEC-RAS model overlain on the model terrain while the graphic on the following page depicts the model terrain.



10 Lincoln Road, Suite 210
Foxborough, MA 02035
508-543-1755

8 Blackstone Valley Place
Lincoln, RI 02865
401-334-4100

14 Bobala Road, Suite 2B
Holyoke, MA 01040
413-507-3448



Tidal information from Tidal Station 8454000 was used to develop stage hydrographs for normal tide (MHHW = El. 2.3 to MLLW = El. -2.4), highest astronomical tide (HAT = El. 3.6), 10-year surge (El. 6.8), as well as 100-year surge (El. 11.4) conditions.

Model Results

The results of the model computations revealed that highest flow velocities occurred during the two surge events; 10-year storm surge event and 100-year surge event. The peak velocites during both events were generally the same while the peak depths during the 100-year event were noteably larger. The graphic to the right depicts the velocity profile that develops across the bridge during the 10-year storm surge event. During both surge events, peak flow velocites were variable across the bridge ranging from 1.5 to 4 fps (feet per second); flow velocites were higher between piers 3 and 6 with the highest velocites occuring between piers 4 and 5.

The table to the right provides the peak flow velocities and depths across the bridge during the most hydraulically critical (highest velocity) time step of the 100-year storm surge event.

100-Year Surge Results		
Location	V_{max} (FPS)	Depth (FT)
Right Abut to Pier 3	2	25
Pier 3 to Pier 6	4	25
Pier 6 to Left Abut	2	25

Scour Countermeasure Design Calculations

The flow conditions (depth and velocities) of the 100-year surge event provided in the table above were utilized within with riprap channel lining design calculator provided within FHWA's Hydraulic Toolbox to determine the size of the material that could be installed along the bottom of the streambed to resist scour. To take into account pier effects, the scour counter measure design guidelines of HEC-23 Design Guide 11 were also utilized. The table below provides the results of these calculations:

100-Year Surge Results			Channel Lining Design Calcultor		HEC-23 Design Guide 11	
Location	V_{max} (FPS)	Depth (FT)	D_{50} (IN)	Calculated Factor of Safety	V_{des} (FPS)	D_{50} (IN)
Right Abut to Pier 3	2	25	1"	3.0	3	3/4"
Pier 3 to Pier 6	4	25	3"	2.5	6	3"
Pier 6 to Left Abut	2	25	1"	2.5	3	3/4"

As indicated within the table above, per the calculations installation of a D_{50}=3" riprap to line the channel from piers 3 to 6 and a D_{50}=1" riprap to line the channel from the right abutment to pier 3 and the left abutment to pier 6 appears to be an adequate scour countermeasure for this bridge.

Note, that the material types provided are the minimum size that is required based upon the results of this analyses; certain variability may exist between the model results and actual conditions that develop during a storm surge event. Should the project team decide to specify a larger material and/or a simpler approach of a single material type, that would be an acceptable approach of higher conservatism than the minimum approach outlined herein.

As the installation of the scour counter measures will result in the raising of the streambed elevation, the hydraulic model was used to determine if this raising of the streambed elevation would have any negative implications. A hypothetical condition was developed and modeled that established a minimum streambed elevation of El. -12, correlating to between a 1-foot to 8-foot raise in the existing streambed elevation that varies from El. -13 at its highest point to El. -20 at its lowest. The hydraulic model results of this hypothetical condition revealed that there were no notable changes to the hydraulic conditions that occur within the vicinity of the bridge during any of the four modeled tidal conditions. Therefore, the installation of the scour counter measures is not expected to result in any notable impacts to the hydraulic conditions within the vicinity of the bridge or elsewhere within the river.

Comparison to Past Analyses

The scour counter measure design presented herein consists of material types much smaller than previous analyses/reports that recommended the use of an R-6 riprap (D_{50}=13"). These calculations were based upon an average flow velocity of 7 fps, much higher than the results of the current analysis summarized herein as well as what has been historically observed at the site. This higher velocity appears to be the result of two unrealistic conditions that were developed and combined together to create an unrealistic flow condition that was used as the basis for the scour counter measure design.

1. The first unrealistic condition was the overestimation of the size of the drainage area and the corresponding predicted peak flow generated from that drainage area as a result of rainfall-runoff. The drainage area for the Barrington Bridge was reported as 133 mi^2; an order of magnitude

greater than what it actually is, 16 mi^2. This discrepancy resulted in the use of 55,000 CFS as the peak flow generated by a 100-year storm event; close to two orders of magnitude larger than the actual prediction of 1,000 CFS.

2. The second unrealistic condition was a steady tidal condition set at El. -5.5. As indicated herein, the MLLW at this site is El. -2.4.

Combining an unrealistic peak flow with an unrealistic tidal condition resulted in unrealistic peak flow velocity of 7 fps which in turn yielded the R-6 riprap material for the scour continuer measure design.

As such, it is not surprising (nor concerning) that the current analyses yielded a significantly different scour counter measure design than previous analyses/reports.

~ ~ ~

Should you have any questions, please feel free to contact us at 508.543.1755 or by email at mdunn@parecorp.com.

Sincerely,

PARE CORPORATION

Matthew Dunn, PE, CFM
Managing Engineer

Information Available Upon Request
HEC-RAS Hydraulic Model
Hydraulic Toolbox Calculations

MATTHEW E. DUNN
STATE OF RHODE ISLAND
No. 12347
HOPE
REGISTERED
PROFESSIONAL ENGINEER
(CIVIL)

CROSSMAN ENGINEERING

Appendix D

USFWS National Wetlands Inventory Map

U.S. Fish and Wildlife Service

National Wetlands Inventory

RIDOT-Barrington

December 4, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

CROSSMAN ENGINEERING

Appendix E

RIHPHC No Adverse Effect Concurrence Form

Department of Transportation
Two Capitol Hill
Providence, RI 02903

Office 401-222-2450
Fax 401-222-3905

NO ADVERSE EFFECT FORM

To: Mr. Jeffrey Emidy, Executive Director
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903

Attn: Ms. Michaela Jergensen

From: Bridgid Byrne
Senior Historic Preservation Specialist
Cultural Resources Unit, RIDOT

Date: March 7, 2024

Re: **Notification of *No Adverse Effect* Determination**

Dear Mr. Emidy:

Based on our review, we have concluded that the following project will have a minimal impact on historic properties. We are therefore notifying your office of our determination of *no adverse effect* on historic properties in accordance with 36 CFR § 800.5(b),(c). The following is a summary of our review and assessment activities upon which we made our determination.

Your concurrence or non-concurrence can be registered with our office by signing and returning this determination within 30 days of your receipt of this form. Failure of your office to provide a written response within 30 days from receipt of this determination shall be considered a concurrence and RIDOT will proceed with the project.

1. **PROJECT NAME**

   2607P-Bridge Group 15F Barrington
   RIC No. 2023-EH-008C

2. **PROJECT LOCATION**

   Bridge No. 01231 which carries RI-114/103 (County Road) over the Barrington River in Barrington, Rhode Island.

3. **PROJECT DESCRIPTION**

   Bridge Group 15F consists of the minor rehabilitation of Bridge No. 012301. The proposed rehabilitation work for the bridge includes replacement of the deck expansion joint glands,

minor concrete repairs (patching of the substructure and concrete arch panels), restoring contact area at select bearings, and underwater repairs to the tremie seals of the bridge piers.

The most extensive rehabilitation work will consist of repairing the existing tremies and installing permanent scour countermeasures. The scour countermeasures will consist of installing sheet pile walls (or similar level of protection such as king pile or other combination wall) outside the as built perimeter of Tremie A and encapsulating the area with tremie concrete. All voids along the Tremie A to Tremie B interface shall be filled and the entire perimeter of the interface shall be protected with fabric forms pumped with grout. The existing bridge deck strip seal joint glands shall be removed and replaced. It is possible that joint hardware may also need to be replaced if damage is found during the design phase. At the time this scope was prepared, the condition of the hardware does not warrant replacement. Deteriorated areas of the concrete piers, abutments, return walls, and architectural arch panels shall be repaired. There are three (3) curbed catch basins on the east approach roadway that require minor repairs. Catch Basin #20,037 is located on New Meadow Road at the intersection of RI-114. This catch basin requires mortar and sealing around the pipe inverts. Catch Basin #2210 is located along the curb line of the eastbound side of RI-114 . This catch basin requires adjustment of the frame and grate. Catch Basin #2,211 is located along the curb line of the eastbound side of RI-114, just east of the Bridge 012301 deck joint (i.e. on the east causeway leading up to the bridge). The catch basin requires repointing of the corbel cone brick. The catch basins can be identified by their ID number using the RIDOT Stormwater GIS database. The consultant shall determine a threshold where loss of bearing area will overstress the bearing (based on the original design loading and design standards) as means of isolating which bearings require contact area restoration. The Consultant is notified that jacking of individual beams is not recommended since the box beams are made integral through shear keys, transverse post-tensioning, and longitudinal closure pours. It is recommended that bearing contact area be restored by means of injecting material (i.e. a suitable grout or resin) within gaps, which has previously been performed at Pier 1 bearing at Girder J.

4. AREA OF POTENTIAL EFFECT

The *area of potential effect* (APE) is confined to the construction impact areas including the bridge and associated roadway approaches and any abutting properties.

5. RIDOT FIELD INSPECTION REVIEW

Conducted by Bridgid Byrne
Senior Historic Preservation Specialist
Cultural Resources Unit, RIDOT

Date: February 27, 2024

6. SOURCES CONSULTED BY RIDOT

- RIHPHC's U.S.G.S. archaeological site and historic property location maps
- RIHPHC's inventory of National Register listed historic resources
- Rhode Island Historical Cemetery Commission (RIHCC)'s inventory of historic cemeteries
- The RIDOT Historic Bridge Inventory
- The Cultural Resources Database
- The RIHPHC's preliminary survey report: *Historic and Architectural Resources of Barrington, Rhode Island. Rhode Island Historical Preservation Commission* (1993).

7. NAME & DESCRIPTION OF NATIONAL REGISTER LISTED, ELIGIBLE & POTENTIALLY ELIGIBLE HISTORIC PROPERTIES WITHIN APE

- Evelyn M. Harrington House-66 County Road (Potentially National Register-Eligible): 20th century house originally constructed as Medieval Revival type dwelling with an irregular roof line.
- Halle Bowen-Charles Barton House-78 County Road (Potentially National Register-Eligible): 19th century clapboard Federal dwelling with elaborate detailing including Greek Revival detailed entrance and balustraded widow's walk.
- Annie M. Winsor House-17 Mathewson Road (Potentially National Register-Eligible): 19th century brick and shingle Queen Anne house.
- Mathewson Wharf/Swan Boathouse-38 Mathewson Road (Potentially National Register-Eligible): 19th century cottage with small area for docking.

8. DESCRIPTION OF PROJECT'S EFFECT ON HISTORIC PROPERTIES

The proposed project will not result in the obstruction of or alterations to the identified historic property. Effects are primarily visual and consist of minor rehabilitation activities to existing bridge and roadways.

No THPOs have been notified due to the minor ground disturbance activities comprised within the proposed project, which will not impact archaeologically sensitive soils.

9. CONCLUSION

As a result of the field inspection and historic property inventory search, four (4) Potential National Register-Eligible properties have been identified within the APE. As the proposed work may have a minimal impact on said historic property, it is RIDOT's determination that the project as described above and depicted in the enclosed *30% Design Submission Plans* (dated February 14, 2024) will have no adverse effect as defined in 36 CFR § 800.5(b),(c).

10. RIDOT CULTURAL RESOURCES UNIT STAFF REVIEWER

Bridgid Byrne
Senior Historic Preservation Specialist
Cultural Resources Unit, RIDOT

11. REVIEW COMPLETION DATE March 7, 2024

Attached documentation/map/plan: ☒ yes ☐ no

RIHPHC CONCURRENCE

Michaela A. Ferguson — 3/26/24

For Jeffrey Emidy
Executive Director, RIHPHC — Date

CONCURRENCE COMMENT

This project will have no adverse effect on historic resources.

RIHPHC NON-CONCURRENCE

Jeffrey Emidy
Executive Director, RIHPHC — Date

NON-CONCURRENCE COMMENT

Enclosures
cc by email: Begin, Byrne, Correia, Fahey, Ferguson, Gagnon, Morris, Palumbo, Primeau, Rodas, Soderlund; all w/o enclosures

CROSSMAN ENGINEERING

Appendix F

USFWS Concurrence Verification Form

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

January 29, 2024

In Reply Refer To:
Project code: 2024-0022187
Project Name: PTSID 2607P - BG 15F Barrington Bridge Repairs

Subject: Concurrence verification letter for the 'PTSID 2607P - BG 15F Barrington Bridge Repairs' project under the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB).

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated January 29, 2024 to verify that the **PTSID 2607P - BG 15F Barrington Bridge Repairs** (Proposed Action) may rely on the concurrence provided in the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures. **At least one of the qualification interview questions indicated an activity or portion of your project is consistent with a not likely to adversely affect determination therefore, the overall determination for your project is, may affect, and is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the endangered northern long-eared bat (*Myotis septentrionalis*).** Consultation with the Service pursuant to section 7(a)(2) of ESA (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may identify a small subset of actions having impacts that were unanticipated. In such instances,

Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessment documented signs of bat use or occupancy, or an assessment failed to detect Indiana bats and/or NLEBs, yet are later detected prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office within 2 working days of any potential take. In these instances, potential incidental take of Indiana bats and/or NLEBs is covered under the Incidental Take Statement in the 2018 FHWA, FRA, FTA PBO (provided that the take is reported to the Service).

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities:
If your initial bridge/culvert or structure assessments failed to detect Indiana bats and/or NLEB use or occupancy, yet bats are later detected prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office within 2 working days of the incident. In these instances, potential incidental take of Indiana bats and/or NLEBs may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

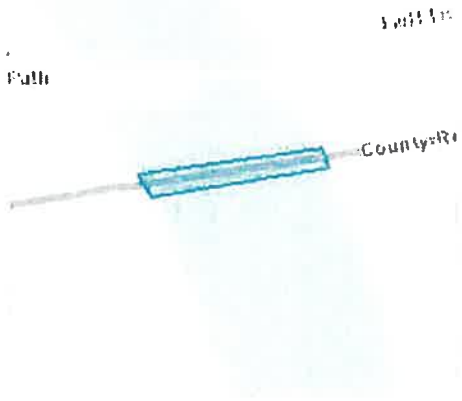
NAME

PTSID 2607P - BG 15F Barrington Bridge Repairs

DESCRIPTION

Minor rehabilitation of the Barrington bridge, including structural repairs to one or more deck or superstructure components.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.73673115,-71.29591737460673,14z



DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the endangered northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered

   No

2. Is the project within the range of the northern long-eared bat[1]?

   [1] See northern long-eared bat species profile

   Automatically answered

   Yes

3. Which Federal Agency is the lead for the action?

   A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

   [1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

   No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces[1]?

   [1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

   No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum[1]?

   [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

   No

7. Is the project located **within** a karst area?

   No

8. Is there *any* suitable[1] summer habitat for Indiana Bat or NLEB **within** the project action area[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   [2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat.

   Yes

9. Will the project remove *any* suitable summer habitat[1] and/or remove/trim any existing trees **within** suitable summer habitat?

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   No

10. Have presence/probable absence (P/A) summer surveys[1][2] been conducted[3][4] **within** the suitable habitat located within your project action area?

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    [2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    [3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

    [4] Negative presence/probable absence survey results obtained using the summer survey guidance are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

    No

11. Does the project include activities **within documented NLEB habitat**[1][2]?

    [1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

    [2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

    No

12. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

    No

13. Does the project include slash pile burning?

    No

14. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

    Yes

15. Is there *any* suitable habitat[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

    [1] See the Service's current summer survey guidance for our current definitions of suitable habitat.

    Yes

16. Has a bridge assessment[1] been conducted **within** the last 24 months[2] to determine if the bridge is being used by bats?

    [1] See User Guide Appendix D for bridge/structure assessment guidance

    [2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

    Yes

SUBMITTED DOCUMENTS

- *Barrington Bridge Survey 2.pdf https://ipac.ecosphere.fws.gov/project/3VEH4U44KJBYRFVGSJ5J37XACI/projectDocuments/137747767*

17. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)[1]?

    [1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

    Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

    No

18. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

    No

19. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    No

20. Will the project involve the use of **temporary** lighting *during* the active season?

    No

21. Will the project install new or replace existing **permanent** lighting?

    No

22. Does the project include percussives or other activities **(not including tree removal/ trimming or bridge/structure work)** that will increase noise levels above existing traffic/ background levels?

    Yes

23. Will the activities that use percussives **(not including tree removal/trimming or bridge/ structure work)** and/or increase noise levels above existing traffic/background levels be conducted *during* the active season[1]?

    [1] Coordinate with the local Service Field Office for appropriate dates.

    Yes

24. Will *any* activities that use percussives **(not including tree removal/trimming or bridge/ structure work)** and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season[1]?

    [1] Coordinate with the local Service Field Office for appropriate dates.

    Yes

25. Are *all* project activities that are **not associated with** habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

    Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

    No

26. Will the project raise the road profile **above the tree canopy**?

    No

27. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

    Automatically answered
    Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

28. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

    Automatically answered
    Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

29. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

    Automatically answered
    Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

30. **General AMM 1**
    Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

    Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

   N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

   N/A

3. Please describe the proposed bridge work:

   This project involves the minor rehabilitation of the Barrington Bridge (Bridge No. 012301) which carries RI-114 over the Barrington River in Barrington, Rhode Island. The project is being undertaken as part of the Rhode Island State Transportation Improvement Program (STIP). Proposed rehabilitation work for the bridge includes replacement of the deck expansion joint glands, minor concrete repairs (patching of the substructure and concrete arch panels), restoring contact area at select bearings, and underwater repairs to the tremie seals of the bridge piers.

   The most extensive rehabilitation work will consist of repairing the existing tremies and installing scour countermeasures. The repairs to the tremies will consist of filling voids and restoring to the as-built condition. Scour countermeasures will be installed at all six bridge piers and consist of installing sheet pile walls (or similar level of protection such as king pile or other combination wall) at a distance of approximately 2 feet outside the as-built perimeter of the tremie to a depth of approximately 10 feet below the historic mudline and encapsulating the area with tremie concrete to the height of the existing tremie. Total permanent area of the new encapsulation will be approximately 1,700 square feet (sf). The scour countermeasures will not extend above the historic mudline and therefore will not alter the horizontal or vertical clearances of the navigable waterway as depicted in the 2016 USCG Bridge Completion Report.

   It is assumed that all work within the Barrington River will be conducted from spud barges that will be anchored with four steel piles (pointed or pipe) and lowered and raised using a hydraulic power back into the bottom at minimal embedment. It is assumed that each steel pile would have a footprint of approximately 1 sf. The steel piles would penetrate into the river bottom to anchor the barge at each work location before being raised and the barge being moved to a different location. It assumed that the barge(s) will be used in 12 different locations (each side of all 6 piers) for a sub-total of temporary construction impact of 48 sf on the river bottom. It is assumed the spud barges would be launched from a location south of the project location in the upper reaches of the Warren River, north of the town beach or in the Barrington River.

   It is assumed that delivery of concrete for patching the substructure and concrete arch panels, as well as for installing the scour countermeasures would be from a truck located on the bridge itself with a single lane traffic closure so that traffic can continue to use the bridge during construction activities.

4. Please state the timing of all proposed bridge work:

   Start of Construction 2026/2027 - in-water work will take place October - January.

5. Please enter the date of the bridge assessment:

   10/24/23

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the committment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on October 30, 2023. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Rhode Island Department of Transportation
Name: Nicole Leporacci
Address: 2 Capitol Hill
City: Providence
State: RI
Zip: 02903
Email nicole.leporacci@dot.ri.gov
Phone: 4015634927

CROSSMAN ENGINEERING

Appendix G

NRCS Custom Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

Barrington Bridge

January 17, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties
Survey Area Data: Version 24, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MmB	Merrimac fine sandy loam, 3 to 8 percent slopes	1.8	4.7%
MU	Merrimac-Urban land complex, 0 to 8 percent slopes	18.8	48.7%
UrS	Urban land, 0 to 3 percent slopes, sandy substratum	2.2	5.7%
Ws	Water, saline	15.7	40.8%
Totals for Area of Interest		**38.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

MmB—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A

Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Sudbury
Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley
Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor
Percent of map unit: 3 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Walpole
Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

MU—Merrimac-Urban land complex, 0 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2tyr9
Elevation: 0 to 820 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Merrimac and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Kames, eskers, outwash plains, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, head slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash terraces, dunes, outwash plains, deltas
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

UrS—Urban land, 0 to 3 percent slopes, sandy substratum

Map Unit Setting

National map unit symbol: 2mgh3
Elevation: 0 to 20 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 36 to 60 degrees F
Frost-free period: 115 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land, sand substratum: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land, Sand Substratum

Typical profile

H1 - 0 to 15 inches: material
2H2 - 15 to 72 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Minor Components

Fortress

Percent of map unit: 5 percent
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Sandyhook

Percent of map unit: 3 percent
Landform: Back-barrier beaches, back-barrier flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Bigapple

Percent of map unit: 2 percent
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Ws—Water, saline

Map Unit Setting

National map unit symbol: bqv1
Elevation: 0 to 20 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Water, saline: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Beaches, sandy surface

Percent of map unit: 5 percent
Landform: Shores, beaches, barrier beaches, back-barrier beaches
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: Unranked

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CROSSMAN ENGINEERING

Appendix H

FEMA Flood Insurance Rate Map

National Flood Hazard Layer FIRMette

71°17'58"W 41°44'27"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/24/2025 at 9:08 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

CROSSMAN ENGINEERING

Appendix I

Permitting Plans
(Bound Separately)

CROSSMAN ENGINEERING

Appendix J

Property Abutters List

Rhode Island Department of Transportation

Rehabilitation of Bridge Group 15F – Barrington Bridge No. 123

Property Abutters List

Plat 25 Lot 003 95 County Lane Barrington, RI 02806
Owned By: Town of Barrington

Plat 25 Lot 280 1 Mathewson Road Barrington, RI 02806
Owned By: Rascal LLC

Plat 27 Lot 046 81 County Road Barrington, RI 02806
Owned By: Stephen L. Mainella and Jane A. Mainella

Plat 27 Lot 099 78 County Road Barrington, RI 02806
Owned By: Steven M. Holland and Judith Kim Holland