State of Rhode Island
Department of Administration / Division of Purchases
One Capitol Hill, Providence, Rhode Island 02908-5855
Tel: (401) 574-8100 Fax: (401) 574-8387

ADDENDUM #4

RFP #7670815 **TITLE: Design Build Services for East Bay Bike Path Bridge Replacement**
SUBMISSION DEADLINE: Friday April 1, 2022 at 11:00 AM

Please see the attached.

Marisa DelFarno

Marisa DelFarno
Buyer II

STATE OF RHODE ISLAND

RIDOT Addendum Notification

RFP #7670815 – DESIGN BUILD SERVICES FOR EAST BAY BIKE PATH BRIDGE REPLACEMENT

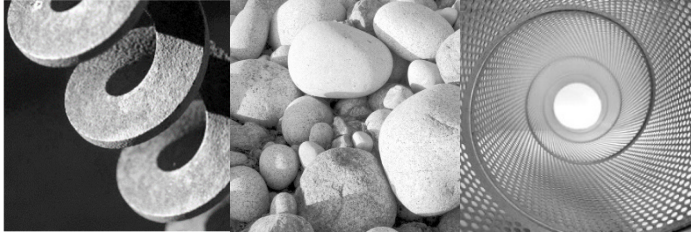
(REQUEST FOR PROPOSALS)
ADDENDUM #4
SUBMISSION DUE DATE: April 1, 2022 at 11:00 am

Per issuance of **ADDENDUM #4** the following revisions are noted:

1. BTC Plans — Additional callout added to Sheet No. 6 – General Plan.
2. Appendix B.06 — Added GIRs
3. Appendix B.11 — Added Pictures of Historically Significant Signs

APPROVED: Lori Fisette 2-10-22

Lori Fisette **DATE**
Acting Administrator, Project Management



GEI Consultants

Consulting
Engineers and
Scientists

Geotechnical Interpretive Report

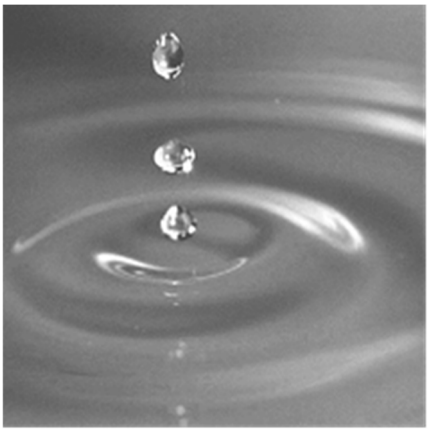
Bridge No. 083751

East Bay Bike Path over Barrington River
Barrington, Rhode Island

Submitted to:
BL Companies
2346 Post Road, Suite 100
Warwick, RI 02886

Submitted by:
GEI Consultants, Inc.
455 Winding Brook Drive, Suite 201
Glastonbury, CT 06033

February 4, 2022
GEI Project No. 2001845



Anna M. Hernberg, P.E. (CT)
Geotechnical Engineer

Matthew Glunt, P.E.
Senior Geotechnical Engineer

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Appendices

1. Introduction

1.1 Project Summary

This report addresses geotechnical considerations for the replacement of Bridge No. 083751, which carries the East Bay Bike Path over the Barrington River in Barrington, Rhode Island.

GEI Consultants, Inc. (GEI) was retained by BL Companies to prepare this Geotechnical Investigative Report (GIR) in support of the Base Technical Concept (BTC) design efforts. This report presents the results of subsurface explorations conducted to date by others, our evaluation of the existing subsurface conditions, and geotechnical recommendations for design and construction.

1.2 Scope of Services

GEI's scope of work for this project included the following:

1. Reviewed available published geologic data, existing bridge plans, and conceptual bridge design information provided to us.
2. Reviewed the results of previous geotechnical explorations and developed soil properties for analyses.
3. Evaluated foundation types for the replacement bridge and provided foundation recommendations.
4. Presented the results of the explorations, our analyses, and our recommendations in this Report.

1.3 Location/Elevation Reference and Datum

The elevations presented in this report are in reference to the project vertical datum presented on the Base Technical Concept (BTC) plans provided by BL Companies, which is 1.3 feet higher than NAVD 88. Pertinent elevations from the historical drawings and previous investigations have been converted to the project vertical datum.

Northing/easting coordinates referenced in this report are in Rhode Island State Plane, NAD 83.

2. Site and Project Description

2.1 Existing Conditions

Bridge No. 083751, originally constructed as a railroad bridge, was converted to a bike path structure in 1987. The 275-foot long bridge carries the 10-foot-wide bicycle path and two 4-foot wide sidewalks across the Barrington River.

The east abutment is a stone block abutment with flared wingwalls, and the west abutment is a timber crib wall with flared wingwalls. The easternmost pier is constructed of stone blocks. The remainder of the substructure is comprised of timber bents with 5 to 6 timber piles installed to bedrock. Modifications performed in 1987 included adding two rock anchors to most bents. The rock anchors consist of 5-inch diameter steel pipe casing with post-tensioned strands and a minimum 10-foot pressure-grouted rock socket. Rock anchors were designed to resist an axial tensile load of 30 kips. The lengths of the timber piles and rock anchors are not known.

The west approach to the bridge is along a causeway that extends into the Barrington River; this causeway was constructed prior to 1939, based on historical aerials. The Barrington River is tidal, with a mean high water of El. 2.23 and mean low water of El. -1.94. Evidence of scour has been noted during previous inspections along the upstream and downstream sections of the abutments and, potentially, in the form of scour holes around piers.

Overhead electric and communication lines span the south side of the bridge.

2.2 Proposed Construction

GEI has reviewed the Base Technical Concept (BTC) plans prepared by BL Companies, dated December 2021. We understand the BTC design is a full replacement of Bridge 083751. The replacement bridge shown would consist of three spans and be 300 feet in length. The vertical profile of the bridge would be raised to El. 16.53 at the center, and by approximately 3 to 4 feet above current grade at the abutments. To accommodate the grade-raise fills behind the abutments, short retaining walls would be required along the approach sections. The out-to-out width will be 17’-4”. A minimum navigable width of 40 feet must be maintained within the channel.

The BTC plans show the steel rolled beam superstructure supported by conventional pile-supported abutments and two pile-supported piers. Wingwalls are shown as supported on spread footings. The pile caps for the piers will be raised to directly support the bearings, which will result in an unsupported length of pile from the bottom of the pile cap to the mud

line. To provide additional lateral support though the unsupported length, a grouted outer casing is shown.

We understand the overhead wires on the south side of the bridge are to be left in place and protected during construction, unless the Design-Build team is able to secure arrangements for relocation. We have assumed the wires will be maintained in their current position, which would present a constraint for bridge pile installations.

3. Geotechnical Explorations

3.1 Existing Geotechnical Information

Boring and laboratory data from previous geotechnical investigations by others was reviewed as part of this evaluation. These boring locations have been incorporated into Figure 1 and are attached for reference in Appendix A in original form. GEI assumes no responsibility for the completeness or accuracy of this subsurface data collected by others.

3.1.1 1978 Borings

Six historical borings (P-1 through P-6) conducted by others in 1978 are included on the 1987 drawings. These borings were advanced to drilling refusal to depths of 2.3 to 19.25 feet. Soils samples were not collected during this investigation; blow counts of a steel rod driven by a 300-pound hammer falling 30 inches were recorded. Refusal was considered to be 120 blows per 12 inches.

3.1.2 2020 Borings

Five (5) borings (BB-1 through BB-5/5A) with SPT sampling were conducted by others in 2020 in support of the concept/preliminary design effort. Geotechnical laboratory testing was also conducted in conjunction with this geotechnical investigation.

4. Subsurface Conditions

4.1 Geologic Setting

The bridge alignment includes a causeway on the west side extending approximately 275 feet into the natural channel and a shorter causeway on the east side extending approximately 45 feet into the channel. Local surficial geology maps indicate glacial kame terrace deposits (stratified sand, gravel, and silt) on the west shoreline, and outwash plain deposits (well-sorted and stratified sand with gravel) at the east shoreline.

Local geology maps indicate that bedrock underlying the site consists of sedimentary rocks of the Rhode Island Formation (Quinn, 1954). The formation is generally described as sandstone and shale, also containing conglomerate, anthracite coal, and metasedimentary rock. Crossbedding and irregular discontinuous bedding are common to this formation.

4.2 Subsurface Conditions

Based on our review of the available geotechnical information, the general soil strata are as follows, beginning at the ground surface. The subsurface conditions are known only at the exploration locations. Conditions between explorations may differ significantly from those described below. The subsurface conditions described below are based on data from previous investigations.

I. Existing Fill – Causeway embankment fill was encountered in borings BB-1 and BB-5/BB-5A, extending to approximately El. -10.0 feet and El. -4.5 feet, respectively. The granular fill was generally described as brown well-graded sand to sand with gravel (SW), with trace amounts of silt fines. Boring BB-5 notes the presence of organics in trace amount within the fill, as well as timber between depths of approx. 2.5 and 6.5 feet. Boring BB-5 also encountered an obstruction at approximately El. -4.5 feet that resulted in bent steel casing.

SPT N-values ranged from 2 to 37 blows per foot (bpf), with an average of 16 bpf, indicating medium dense conditions with occasional loose and dense zones.

II. Organic Soils – Organic-laden soils were observed in most borings conducted at the site, as noted below. These soils were generally described as gray sandy organic soil, sandy organic soil with gravel, and gravelly organic soil with sand (OL). Other than in boring BB-3, organic soils directly overlaid weathered rock.

SPT N-values in the organic soils ranged from 2 to 26 blows per foot (bpf), with an average of 13 bpf, indicating very soft to very stiff consistency.

Table 1 – Summary of Organic Soils

Boring ID	Depth to Top (ft)	Depth to Bottom (ft)	Bottom Elevation (ft – NAVD88 + 1.3)	Location	Description
2020 Borings (by others)					
BB-1	23.0	29.5	-16.5	West abutment	Sandy organic soil; gray, very loose.
BB-2	0.0 (mudline)	8.0	-17.0	Between west abutment and Pier 1	Sandy organic soil with gravel; gray, loose to medium dense.
BB-3	0.0 (mudline)	8.0	-15.4	Between Pier 1 and Pier 2	Sandy organic soil with gravel; gray to brown, loose to medium dense, trace shells at mudline.
BB-4	0.0 (mudline)	3.5	-20.4	Between Pier 2 and east	Gravelly organic soil with sand; gray, medium dense
BB-5A	-	-	-	East abutment	None observed

III. Sand and Gravel – A 4 to 7-foot thick stratum of sand and gravel was encountered in BB-3 and BB-5A below the organic soils and existing fill strata, respectively. These soils were described as brown to gray well graded gravel with sand (GW) and well graded sand with gravel (SW). SPT N-values ranged from 20 to 21 bpf, indicating medium dense conditions.

IV. Weathered Rock – A thick stratum of highly weathered to decomposed shale is present below the bridge, and was sampled in all borings during the 2020 investigation. Recovered samples were gray to dark gray. The weathered rock was generally not of sufficient consistency to allow rock core sampling. In BB-5A, multiple cores were attempted through the weathered rock (44-49 feet deep, 64-69 feet deep) with no core recovery. Where split-spoon samples were attempted, SPT N-values ranged from 18 bpf to refusal, generally increasing with depth. The top of weathered rock was highest at the west and east abutments (El. -15.5 and -10.2, respectively), and lower within the channel. Weathered rock conditions are summarized in Table 3.

Shale Bedrock – Higher consistency shale rock was cored in borings BB-1 and BB-5A. The top of this rock varied widely from El. -21.0 (BB-1) to -66.2 (BB-5A). Recovered samples were described as gray or dark gray, very soft to medium hard, highly to moderately weathered shale. Rock Quality Designations (RQDs) ranges from 7 to 58 percent. The

unconfined compressive strength from El. -30.2 to El. -30.6 in BB-1 was measured at 1,740 psi. Bedrock conditions are summarized in Table 3.

Table 2 – Interpreted Weathered Rock/Bedrock Conditions

Boring ID	Depth to Top (ft)	Depth to Bottom (ft)	Top Elevation (ft – NAVD88 + 1.3 ft)	Location	Description
2020 Borings (by others)					
BB-1	28.5	34.0	-15.5	West abutment	Highly weathered bedrock, N = 21
	34.0	44.0	-21.0		Highly to moderately weathered SHALE, RQD = 7 to 58%
BB-2	8.0	15.0	-17.0	Between west abutment and Pier 1	Highly weathered bedrock, N = 19
	15.0	30.4	-24.0		Highly weathered bedrock, N = 77 to Refusal
BB-3	12.0	30.0	-19.4	Between Pier 1 and Pier 2	Highly weathered bedrock, N = 18 to 29
	30.0	32.0	-37.4		Highly weathered bedrock, N = 85
BB-4	3.5	30.3	-21.7	Between Pier 2 and east abutment	Highly weathered bedrock, N = 100+ to Refusal
BB-5A	23.0	79.0	-10.2	East abutment	Highly weathered bedrock, N = 36 to Refusal
	79.0	84.0	-66.2		Moderately weathered SHALE, RQD = 40%

4.3 Groundwater Conditions

Groundwater was noted near the abutments in borings BB-1 and BB-5A at El. 1.5 and El. -0.2, respectively, which is generally in line with the surface water in the Barrington River.

Groundwater level measurements and observations represent conditions at the times and locations indicated. Significantly different groundwater levels may occur at other times and locations. Groundwater at this site is expected to be tidally influenced.

5. Design Recommendations

This project will be implemented using the Design-Build delivery method. This report addresses geotechnical considerations associated with the Base Technical Concept (BTC), as understood by GEI at the time of this report. The design criteria presented herein should be reviewed by GEI for continued applicability if and when revisions from the BTC are made by the design-build team concerning bridge configuration, design loads, etc.

5.1 Code Reference

Project design parameters and computations generally follow those described in the relevant sections of the *AASHTO LRFD Bridge Design Specifications* (AASHTO 9th Ed., 2020), supplemented by the most recent edition of the RIDOT LRFD Bridge Design Manual.

5.2 Soil Properties

Recommended soil properties for design are presented below. We selected these values based on published correlations to SPT N-values, soil descriptions, and our engineering judgement.

Table 3 – Soil Properties for Design

STRATUM	Angle of Internal Friction, ϕ (deg.)	Cohesion, c (lb/ft^2)	Moist Unit Weight (γ_t) (lb/ft^3)
New Structural Fill (Gravel Borrow or Pervious Fill)	34	0	125
I. Exiting Embankment Fill	32	0	120
II. Organic Soils	28	0	110
III. Sand and Gravel	34	0	120
IV. Weathered Rock	38	0	135

5.3 Bridge Foundation Design

5.3.1 General

Drilled micropiles socketed into weathered rock were assumed for support of the bridge elements shown on the BTC plans. Driven piles would generally not be preferred due to the presence of in-service overhead wires. Wingwalls and retaining walls were assumed to be supported on conventional shallow foundations.

5.3.2 Micropile Axial Capacity

BTC plans show the bridge piers and abutments being supported on a combination of plumb and battered micropiles.

Micropiles should be designed by a Rhode Island-registered professional engineer. The piles must provide sufficient compressive and lateral capacity and should be designed in accordance with the structural requirements in Article 10.9.3.10 of the AASHTO LRFD Bridge Design Specifications. Bending capacity at the joints is significantly less than the capacity of the intact casing; we recommend that this be analyzed during final design with the chosen casing size.

The final micropile design should be checked with a pre-production verification pile load test on a sacrificial pile in accordance with Article 10.9.3.5.4 of the AASHTO Specifications. We recommend that the load test be located near the east abutment, and the load test can be conducted using either compression or tension. Assuming a load test is conducted, the bond zone may be designed based on a resistance factor of 0.70 (Strength Limit) per Table 10.5.5.2.5-1 of the AASHTO Specifications. A resistance factor of 1.0 should be used for the Extreme Event limit state.

Micropile spacing should be at least three times the pile diameter or 2.5 ft, whichever is greater, to limit group interaction effects. The piles should extend at least 12 inches into the pile cap.

We estimated the capacity of two common micropile sizes bonded into weathered rock similar to that encountered at the site, as shown below. Structural capacity must also be verified by the micropile designer. The final micropile design will incorporate the actual diameter of the casing and bond socket to be used.

Table 4 – Estimated Micropile Geotechnical Resistance –Bridge No 083751

Pile Type & Size	Bond Length (ft)	Nominal Axial Resistance (kips)	Factored Axial Resistance (kips)
9.625-inch O.D.; 0.5-inch wall thickness; 9.625-inch bond zone in weathered rock	35	220	154
11.875-inch O.D., 0.5-inch wall thickness; 11.875-inch bond zone in weathered rock	30	233	163

Highly variable conditions within the weathered rock bond zone should be expected. Where installed through the causeway fill, large obstructions may be encountered. Appropriate measures for constructing the micropiles under the conditions described on the boring logs should be incorporated into the micropile design. We recommend that a detailed Micropile Special Provision be developed which is tailored to this project.

Placement of grade-raise fill behind the proposed abutments will induce settlements within the causeway fill and underlying native soils. If these settlements are estimated to be greater than 0.4 inches within soils surrounding the micropiles, the final foundation design should incorporate downdrag loads.

5.3.3 Pile Lateral Response

We performed lateral capacity analysis of the pile foundations using the software LPILE, assuming free-head conditions. This analysis considers capacity developed from soil-pile interaction and does not include the horizontal component of the axial capacity for battered piles. Lateral capacity was evaluated in this manner at displacements of ½-inch and 1-inch. A corrosion allowance of 1/16-inch on the exterior surface of the casing was assumed. Additional inputs included 80 ksi (API N80) permanent casing seated 17 feet into the weathered rock bond zone and a single No. 18 Grade 75 center reinforcing bar. We also modeled the condition shown on the BTC plans, where an outer sleeve is installed to the mudline and grouted.

Table 5 – Micropile Lateral Resistance –Bridge No 083751

Pile Type & Size	Deflection	Max. Shear[1] (kips)	Depth to Fixity (feet)
45-foot, 9.625-inch O.D.; 0.545-inch wall thickness; 9.625-inch bond zone in weathered rock	½-inch	0.6	39.2
	1-inch	1.2	39.2
45-foot, 9.625-inch O.D., 0.545-inch wall thickness; 9.625-inch bond zone in weathered rock; 11.875-inch O.D., 0.582-inch wall outer casing	½-inch	1.1	39.2
	1-inch	2.1	40.0
45-foot, 11.875-inch O.D., 0.582-inch wall thickness; 11.875-inch bond zone in weathered rock	½-inch	1.2	41.3
	1-inch	2.3	42.0
45-foot, 11.875-inch O.D., 0.582-inch wall thickness; 11.875-inch bond zone in weathered rock; 13.375-inch O.D., 0.48-inch wall thickness outer casing	½-inch	1.6	42.0
	1-inch	3.0	42.8

[1]As developed from soil-pile interaction. For battered piles, this would be separate from the horizontal component of the axial capacity.

This evaluation does not consider the scoured condition. This case should be checked for final pile design.

5.4 Wall Bearing

Wingwalls and approach retaining walls will bear within loose to dense historic causeway fills. Variable conditions with potential for unsuitable materials should be expected during foundation excavations and at subgrade elevation. Given the potential for variability within the fill and the presence of soft natural soils at depth, consideration should be given to wall types that can accommodate higher levels of differential movement. Wingwalls should be structurally isolated from the pile-supported abutments.

Wingwalls and approach retaining walls should be evaluated for bearing at the strength and service limit states according to site grades and wall heights determined during final design.

5.5 Lateral Earth Pressures

New abutments, wingwalls, and retaining walls should be designed to withstand active lateral earth pressures. Assuming the abutments, wingwalls, and retaining wall will be backfilled

per RIDOT procedures, a unit weight of 125 pcf and an internal friction angle (ϕ) of 34 degrees may be assumed.

Table 6 – Lateral Earth Pressure Coefficients for Wingwalls and Abutments

Support Condition	Lateral Coefficient
Active Condition	0.28
At-rest Condition	0.44
Passive Condition	3.54

Earth pressures should be applied as shown on Fig. 3.11.5.3-1 of the AASHTO LRFD manual. Design of abutments and walls should also include a live load surcharge, in accordance with AASHTO 3.11.6.4.

For calculating nominal sliding resistance for footings, we recommend the following:

Table 7 – Sliding Resistance

Footing Type	Coefficient of Friction (Table 3.11.5.3-1)	Resistance Factor (Table 10.5.5.2.2-1)
Cast-in-place Concrete	0.55	0.80
Precast Concrete	0.45	0.90

The passive resistance provided by any soils in front of the constructed abutments, wingwalls, and retaining walls should be ignored.

5.6 Approach Embankments

Vertical profile adjustments will result in approximately 3 to 4 feet of fill placed behind the bridge abutments. This load will induce some settlement, both in soils below the fill and within the fill itself. We estimate these settlements will be on the order of 1.0 to 1.5 inches, with most occurring quickly (within 2 weeks of placement) and be built out during construction. Consideration should be given to raising the embankments during the early stages of construction, in order to allow settlements to occur and reduce the potential for differential grades between the abutment and backfill.

Finish embankment slopes should be constructed at grades no steeper than 2H:1V. Where embankments will be widened and new fill placed, the new fill should be stepped or keyed

into the existing fill to help prevent a slip surface from forming at the contact between new and existing fill.

5.7 Seismic Design

Based on Standard Penetration Test N-values from the 2020 borings performed by others, and in accordance with Article 3.10.3.1 of the AASHTO Bridge Specifications, we recommend that the project be classified as Site Class D.

6. Construction Considerations

6.1 Excavation and Dewatering

At a minimum, all excavations should be made in accordance with Occupational Safety and Health Administration (OSHA) standards.

Where required, excavation is expected to proceed through historic causeway fills of variable consistency. Obstructions requiring removal may be encountered. The maximum cut slope rates to determine the need for excavation support systems should be 1.5H:1V. Any necessary excavation support systems should be designed by a Rhode Island-registered professional engineer experienced in excavation support design. The design should be submitted for review before installation. Appropriate measures for constructing excavation support under the conditions described on the boring logs should be incorporated into the design.

Excavation for the abutments as shown on the BTC plans would likely extend below groundwater. All new foundation work should be conducted in the dry. If encountered, water can be pumped from excavations using a shallow sump and discharged elsewhere on site. Discharging into waterways or storm sewers may require permits. Surface water should also be diverted away from the excavations.

Any necessary excavation support systems should be designed by a Rhode Island-registered professional engineer experienced in design of such elements. The engineer should be engaged by the contractor and should submit the designs for review before installation.

6.2 Subgrade Preparation

Loose or disturbed soil should be removed from the bottom of the footing/pile cap excavations, and the subgrade should be prepared in accordance with RIDOT specifications. Bearing surfaces should be free of standing water, frost, and loose soil. Areas of the subgrade disturbed by traffic or surface water should be re-compacted. It may be desirable to place a 12-inch working platform of Gravel Borrow underlain by geotextile fabric to protect the subgrades, improve accessibility, and facilitate dewatering (as required).

Zones within the foundation soils may be frost susceptible. Therefore, if construction is performed during freezing weather, special precautions will be required to prevent the subgrade soils from freezing. Freezing of the soil beneath the foundation during construction may result in subsequent settlement of the structure. All subgrades should be free of frost.

Frost-susceptible subgrade soils that have frozen should be removed and replaced in accordance with RIDOT standard specifications.

6.3 Backfilling

In general, fill materials should be placed and compacted in accordance with RIDOT Standard Specifications. However, we recommend that compaction in areas too small for a smooth wheel vibratory compactor, within 5 feet of walls less than 15 feet high, or within 10 feet of walls greater than 15 feet high, should be performed using a vibratory walk-behind roller or plate compactor (weighing at least 200 lbs. imparting an impact load of at least 2.5 tons), with soil placed in maximum 6-inch-thick-loose lifts.

7. Limitations

Our recommendations are based on the project information provided to us at the time of this report and may require modification if there are any changes in the nature, design, or location of the proposed construction. We recommend that GEI be engaged to review the final plans and specifications to judge whether changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

The recommendations in this report are based in part on the data obtained from the borings. The nature and extent of variations between borings may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. Therefore, we recommend that GEI be engaged to make site visits during construction to: a) check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and b) ascertain that, in general, the geotechnical aspects of the work are being performed in compliance with the contract documents.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

Figures

COMMONWEALTH ENGINEERS & CONSULTANTS, INC.

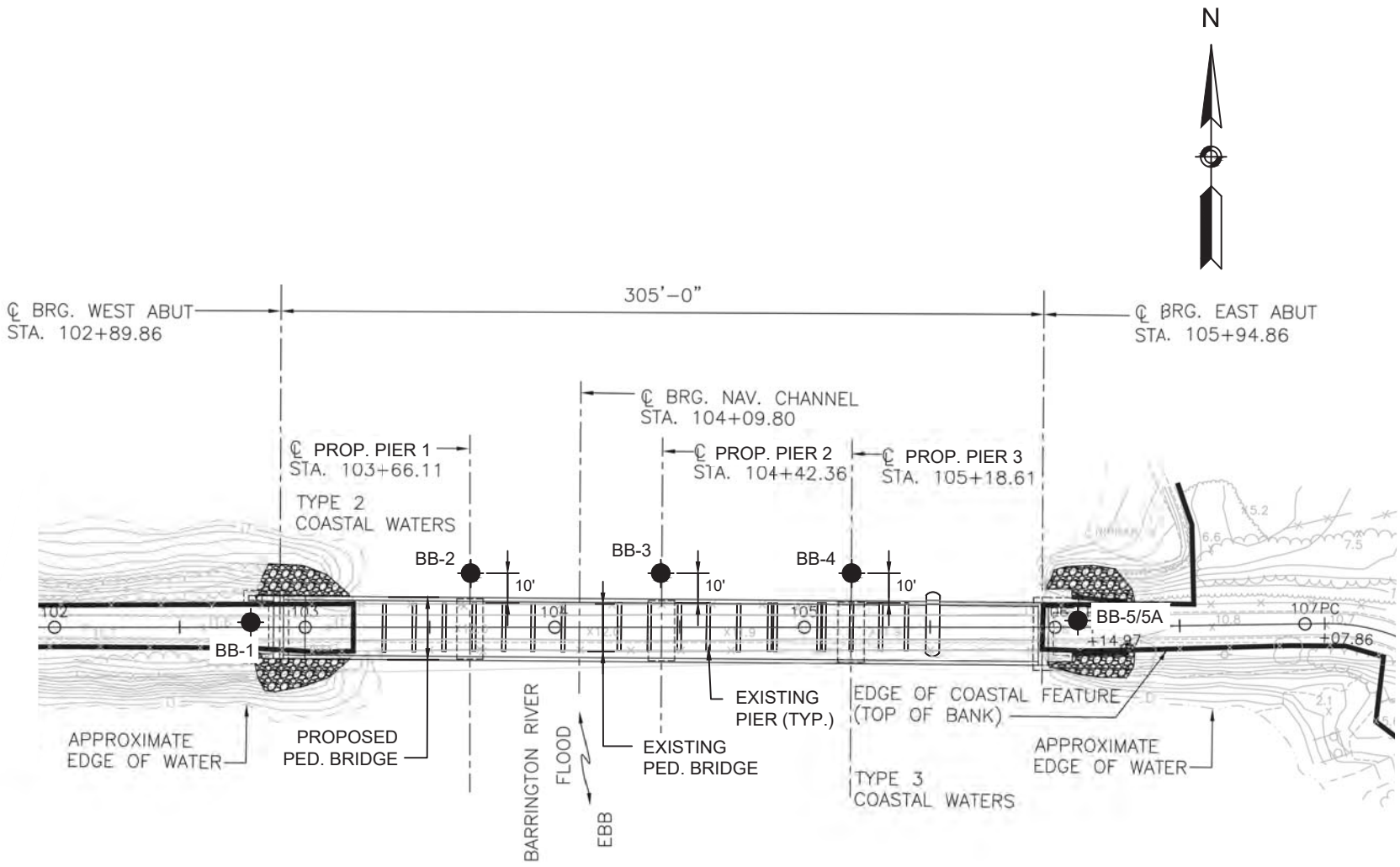
BRIDGE NO. 837
EAST BAY BIKE PATH OVER BARRINGTON RIVER
BARRINGTON, RHODE ISLAND

PREPARED BY
LAMSON ENGINEERING CORP.
NEWTON, MASS.

AS-DRILLED 2020 BORING LOCATION PLAN

SCALE: 3/64" = 1'-0"

Fig. 2



AS-DRILLED 2020 BORING LOCATION PLAN

LEGEND:

AS-DRILLED 2020 BORING

Appendix A

Boring Logs

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-1

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 837, Barrington RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Barrington River
DATE STARTED 3/5/20 **COMPLETED** 3/5/20
GROUND ELEVATION 11.7 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING ---
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING 11.50 ft / Elev 0.20 ft
NOTES ATV Land Boring
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0	ASPHALT 8"			
	WELL GRADED SAND WITH GRAVEL, (SW) brown, dry, medium dense, trace silt	SS 1	54	5-9-11-12 (20)
5		SS 2	42	10-6-7-6 (13)
10	WELL GRADED SAND WITH GRAVEL, (SW) brown, wet, medium dense, trace silt	SS 3	38	13-10-2-3 (12)
15		SS 4	0	5-6-4-5 (10)
20		SS 5	8	8-11-12-9 (23)
	SANDY ORGANIC SOIL, (OL) gray, wet, very loose			
25		SS 6	83	2-1-1-1 (2)
	Dark gray, wet, medium dense, highly weathered bedrock (unable to core)			
30		SS 7	67	7-9-12-15 (21)
35				

▲ SPT N VALUE ▲
20 40 60 80 100

GEOTECH BH PLOTS - TESTING.GDT - 5/22/20 15:42 - C:\USERS\CHARLIE\DESKTOP\GINT PROJECTS\BARRINGTON RI.GPJ

(Continued Next Page)

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-1

CLIENT Rhode Island Department of Transportation **PROJECT NAME** Bridge No. 837, Barrington RI

PROJECT NUMBER 2011-EB-006 **PROJECT LOCATION** East Bay Bike Path over Barrington River

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80 100
35		SHALE, highly weathered, dark gray, very soft, Layer RQD = 7% Recovery: 18/60 = 30%, Core Run #1 *(continued)*				
40		SHALE, moderately weathered, dark gray, medium hard, Layer RQD = 58% Recovery: 54/60 = 90%, Core Run #2				

Bottom of borehole at 44.0 feet.

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-2

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 837, Barrington RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Barrington River
DATE STARTED 4/9/20 **COMPLETED** 4/9/20
GROUND ELEVATION -10.3 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING --- 12.6' water to mudline
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING ---
NOTES Barge In-water Boring, top of barge deck to water = 2.3'
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0		SANDY ORGANIC SOIL WITH GRAVEL, (OL) gray, wet, loose, trace shells	SS 1	25	8-4-2-4 (6)
		SANDY ORGANIC SOIL WITH GRAVEL, (OL) gray, wet, medium dense			
5			SS 2	46	7-10-13-21 (23)
		Gray, wet, medium dense, highly weathered bedrock (unable to core)			
10			SS 3	54	20-9-10-25 (19)
15		Gray, wet, very dense, highly weathered bedrock (unable to core)	SS 4	50	31-40-37-56 (77)
20			SS 5	50	37-36-51-52 (87)
25			SS 6	100	120
30		Bottom of borehole at 30.4 feet.	SS 7	100	120/5"

▲ SPT N VALUE ▲
20 40 60 80 100

GEOTECH BH PLOTS - TESTING.GDT - 5/22/20 15:42 - C:\USERS\CHARLIE\DESKTOP\GINT PROJECTS\BARRINGTON RI.GPJ

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-3

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 837, Barrington RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Barrington River
DATE STARTED 4/15/20 **COMPLETED** 4/15/20
GROUND ELEVATION -8.7 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING --- 8.7' water to mudline
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING ---
NOTES Barge In-water Boring, top of barge deck to water = 2.3'
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0	SANDY ORGANIC SOIL WITH GRAVEL, (OL) gray, wet, medium dense, trace shells	SS 1	13	9-7-7-10 (14)
	SANDY ORGANIC SOIL WITH GRAVEL, (OL) brown, wet, loose			
5		SS 2	21	6-4-3-2 (7)
	WELL GRADED SAND WITH GRAVEL, (SW) brown, wet, medium dense			
10		SS 3	29	14-12-9-13 (21)
	Dark gray, wet, medium dense, highly weathered bedrock (unable to core)			
15		SS 4	29	8-9-9-11 (18)
20		SS 5	46	5-7-11-16 (18)
25		SS 6	33	10-11-18-24 (29)
30	Dark gray, wet, very dense, highly weathered bedrock (unable to core)	SS 7	58	29-35-50-86 (85)

▲ SPT N VALUE ▲
20 40 60 80 100

Bottom of borehole at 32.0 feet.

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Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-4

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 837, Barrington RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Barrington River
DATE STARTED 4/10/20 **COMPLETED** 4/10/20
GROUND ELEVATION -18.2 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING --- 20.8' water to mudline
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING ---
NOTES Barge In-water Boring, top of barge deck to water = 2.3'
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0		GRAVELLY ORGANIC SOIL WITH SAND, (OL) gray, wet, medium dense	SS 1	8	2-11-15-5 (26)
5		Dark gray, wet, very dense, highly weathered bedrock (unable to core)	SS 2	25	37-51-68-62 (119)
10			SS 3	41	50-43-80/5"
15			SS 4	100	95-30/1"
20			SS 5	100	69-55/2"
25			SS 6	67	65-70
30			SS 7	100	120/4"

▲ SPT N VALUE ▲
20 40 60 80 100

Bottom of borehole at 30.3 feet.

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-5

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 837, Barrington RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Barrington River
DATE STARTED 3/9/20 **COMPLETED** 3/9/20
GROUND ELEVATION 11.5 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING ---
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING ---
NOTES ATV Land Boring
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0	ASPHALT			
	WELL GRADED SAND WITH GRAVEL, (SW) brown, dry, loose, trace silt	SS 1	46	6-3-5-18 (8)
	WOOD			
5		SS 2	67	4-25-12-5 (37)
	WELL GRADED SAND, (SW) brown, wet, very loose, trace fine gravel, trace organics			
10		SS 3	42	2-1-1-2 (2)
15	WELL GRADED SAND WITH GRAVEL, (SW) gray, wet, medium dense, trace organics, Terminated at 16' deep due to lead casing bent. Move 2' South and create BB-5A	SS 4	25	10-9-9-9 (18)

▲ SPT N VALUE ▲
20 40 60 80 100

Bottom of borehole at 16.0 feet.

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-5A

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 837, Barrington RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Barrington River
DATE STARTED 3/9/20 **COMPLETED** 3/10/20
GROUND ELEVATION 11.5 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING ---
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING 13.00 ft / Elev -1.50 ft
NOTES Located 2' South of As-Drilled BB-5
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0		0'-16' See Boring BB-5 for Soil Descriptions.			
15		WELL GRADED GRAVEL WITH SAND, (GW) gray, wet, medium dense, trace silt			
20			SS 5	8	10-12-8-8 (20)
25		Gray, wet, very dense, highly weathered bedrock (unable to core)	SS 6	71	32-41-53-47 (94)
30			SS 7	100	33-68-87 (155)
35			SS		14-22-36-65

▲ SPT N VALUE ▲
20 40 60 80 100
>>

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(Continued Next Page)

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-5A

CLIENT Rhode Island Department of Transportation **PROJECT NAME** Bridge No. 837, Barrington RI

PROJECT NUMBER 2011-EB-006 **PROJECT LOCATION** East Bay Bike Path over Barrington River

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
35		Gray, wet, very dense, highly weathered bedrock (unable to core) *(continued)*	8	100	(58)
40			SS 9	100	55-90
45		Attempted core boring but with no recovery			
50		Gray, wet, dense to very dense, highly weathered bedrock (unable to core)	SS 10	100	18-32-35-45 (67)
55			SS 11	75	7-11-25-29 (36)
60			SS 12	100	59-61/3"
65		Attempted core boring but with no recovery			
70		Gray, wet, very dense, highly weathered bedrock (unable to core)			
75			SS	100	76-50/2"

▲ SPT N VALUE ▲

20 40 60 80 100

(Continued Next Page)

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-5A

CLIENT Rhode Island Department of Transportation **PROJECT NAME** Bridge No. 837, Barrington RI

PROJECT NUMBER 2011-EB-006 **PROJECT LOCATION** East Bay Bike Path over Barrington River

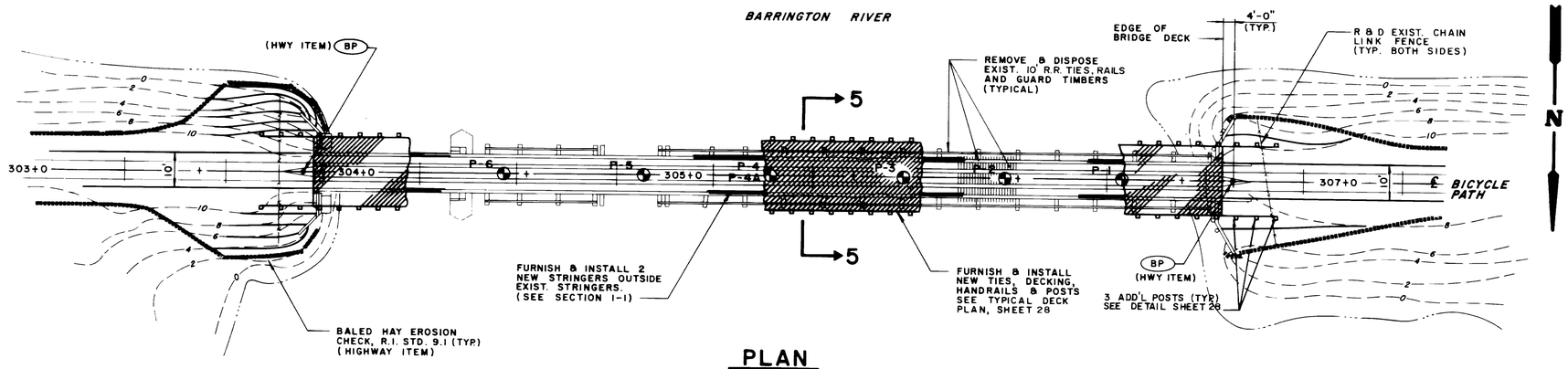
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80 100
75		Gray, wet, very dense, highly weathered bedrock (unable to core) *(continued)*	13			
80		SHALE, moderately weathered, gray, medium hard, Layer RQD = 40% Recovery: 54/60 = 90%, Core Run #3				

Bottom of borehole at 84.0 feet.

Appendix B

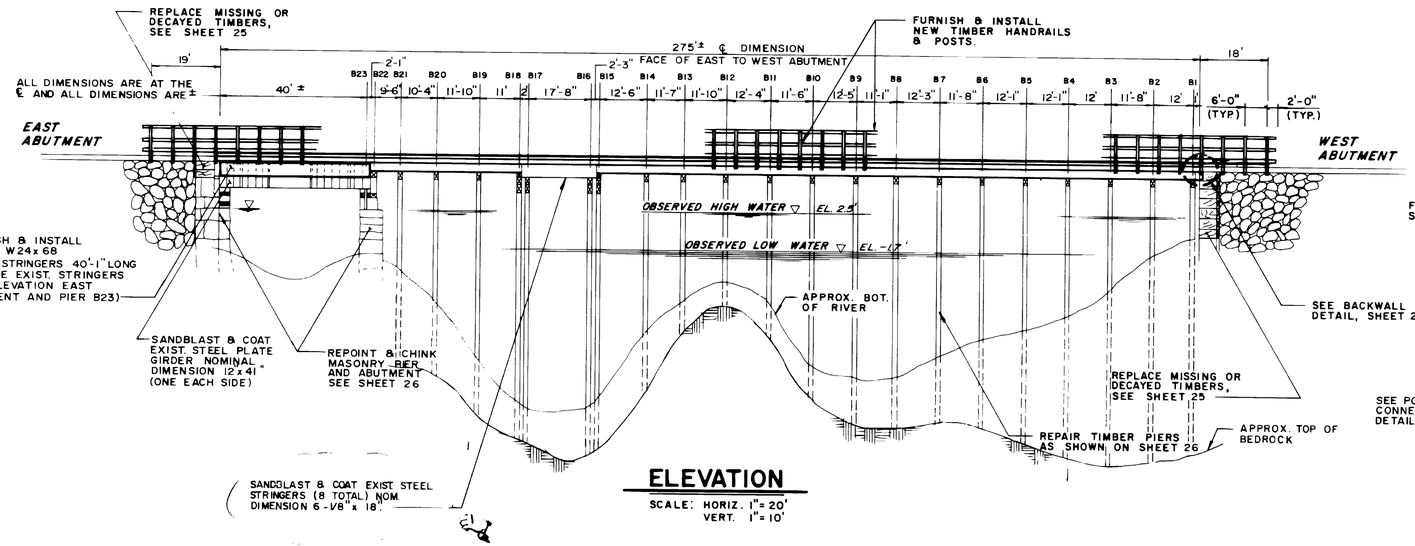
Historic Boring Logs

FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			24	84



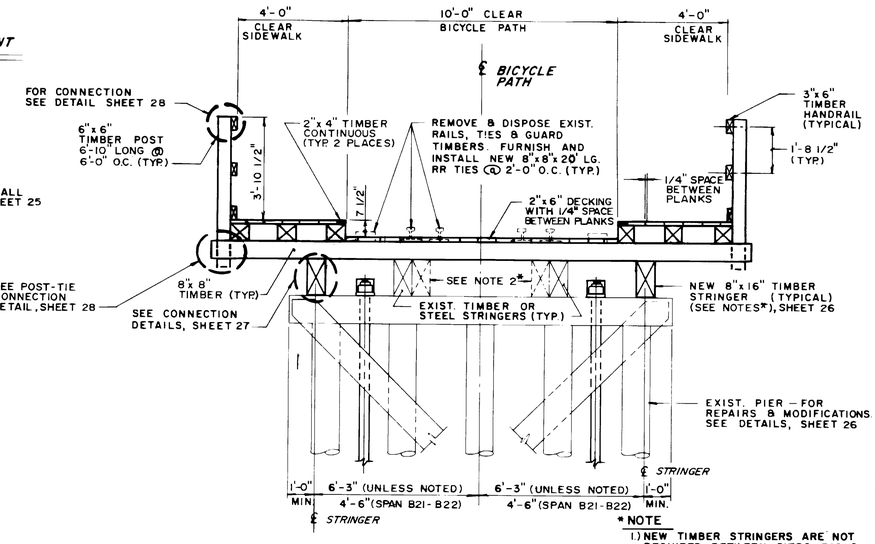
PLAN

SCALE: 1"=20'



ELEVATION

SCALE: HORIZ. 1"=20'
VERT. 1"=10'



SECTION 5-5

SCALE: 3/8"=1'-0"

***NOTE**

1. NEW TIMBER STRINGERS ARE NOT REQUIRED BETWEEN PIERS B16 & B17 AND BETWEEN PIER B23 AND THE EAST ABUTMENT.
2. WHERE EXISTING STRINGERS ARE TIMBER, INTERIOR STRINGERS SHALL BE REMOVED AND UTILIZED FOR NEW 8"x16" TIMBER STRINGERS.

BARRINGTON RIVER BRIDGE

LUMP SUM BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
FURNISH & INSTALL 3" X 6" TIMBER HANDRAIL WITH 6 X 6 TIMBER POSTS	LF	632
FURNISH & INSTALL TIMBER SIDEWALK	LF	550
FURNISH & INSTALL 2" X 6" TIMBER DECKING	SF	2750
FURNISH & INSTALL 8 X 8 X 20' TIMBER TIES	EA	140
REMOVE & RESET EXISTING 8" X 16" TIMBER STRINGERS	LF	430
FURNISH & INSTALL 4" X 12" TIMBER BRACING	EA	14
FURNISH & INSTALL NEW 12" X 12" TIMBER PILE CAP	EA	2
REMOVE & RESET EXISTING PILE CAP	EA	4
UNREINFORCED CONCRETE CLASS D SUBFOOTINGS	CY	3
PREFORMED POLYETHYLENE FOAM JOINT FILLER 1"	SF	27
POLYURETHANE JOINT SEALANT	CI	120
DRILL & GROUT THREADED ROD	EA	20
FURNISH & INSTALL STEEL STRINGERS & COLUMNS (A36)	LBS	5800
PAINT & SANDBLAST STEEL	SF	3900

BARRINGTON RIVER BRIDGE

UNIT BID BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL EXCAVATION EARTH	CY	16
PERVIOUS FILL	CY	14
REPAIRS TO WEST ABUTMENT - BARRINGTON RIVER BRIDGE	LS	1
REPAIRS TO EAST ABUTMENT - BARRINGTON RIVER BRIDGE	LS	1
FURNISH & INSTALL CONNECTION HARDWARE	LS	1
1" DIAMETER A307 GALVANIZED BOLTS	EA	45
REMOVE & DISPOSE PORTIONS OF EXISTING BRIDGE ITEMS - BARRINGTON RIVER BRIDGE	LS	1
MOVING EQUIPMENT ON & OFF JOB	LS	1
FURNISH 12" DIAMETER TIMBER PILES	LF	461
DRIVE 12" DIAMETER TIMBER PILES	LF	94
PILE CUTOFF 12" DIAMETER TIMBER PILES	EA	14
PILE SHOES 12" DIAMETER TIMBER PILES	EA	14
POINTING & GROUTING MASONRY	LF	400
CHINKING	SF	17
ROCK ANCHORS	EA	28

BARRINGTON RIVER BRIDGE

LUMP SUM DEMOLITION QUANTITIES

ITEM	UNIT	QUANTITY
REMOVE & DISPOSE EXISTING RAILS	LF	275
REMOVE & DISPOSE EXISTING RAILROAD TIES	LS	1
REMOVE & DISPOSE EXISTING GUARD TIMBERS	LF	275
REMOVE & DISPOSE EXISTING PIER MEMBERS	LS	1
REMOVE & DISPOSE EXISTING STEEL & CONCRETE	LS	1
REMOVE & DISPOSE TIMBERS (WEST ABUTMENT)	LF	39
RESET EXISTING TIMBERS (EAST ABUTMENT)	LF	70
REMOVE & DISPOSE EXISTING CHAIN LINK FENCE	LF	90

NOTE: QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR, RIDOT ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY.

NOTES:

1. FOR DESIGN DATA AND NOTES, SEE SHEET 22
2. FOR STRUCTURAL STEEL AND TIMBER NOTES, SEE SHEET 23
3. DURING BRIDGE CONSTRUCTION, FOUR (4) R.I. STD. 40.5 PRECAST MEDIAN BARRIERS SHALL BE PROVIDED ON EACH BRIDGE APPROACH FOR PROTECTION OF TRAFFIC. (HIGHWAY ITEM)

Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

REVISIONS		
NO.	DATE	BY
1	6/1/11	JJL

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

BARRINGTON RIVER BRIDGE PLAN, ELEVATION and SECTION

CHECKED BY K.D. DATE _____ SCALE AS SHOWN

STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
			31 84

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 1 | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ hours
At ____ after ____ hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR		
SOILS ENGR		

LOCATION OF BORING: 19' Top of Bridge to Bottom of Water

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	3									
	4									
	8									
	13									
	10									
	28									
	23									
	12									
	9									
	37									
	45									
	38									
	51									
	33									
	36									
	34									
	48									
	85									
	174					19'3"				
	111/3"						Refusal at 19'3" 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	Med Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 19'3" | Rock Coring ___ | Samples ___ | HOLE NO 1

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 2 | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ hours
At ____ after ____ hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR		
SOILS ENGR		

LOCATION OF BORING: 28' Top of Bridge to Bottom of Water

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	4									
	12									
	16									
	24									
	29									
	31									
	46									
	78									
	111					9'				
							Refusal at 9' 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	M.d Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 9' | Rock Coring ___ | Samples ___ | HOLE NO 2

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 3 | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ hours
At ____ after ____ hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR		
SOILS ENGR		

LOCATION OF BORING

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	3									
	14									
	21									
	25									
	26									
	48									
	79/9"					6'9"				
							Refusal at 6'9" 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	Med Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 6'9" | Rock Coring ___ | Samples ___ | HOLE NO 3

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 4 | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ hours
At ____ after ____ hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR		

LOCATION OF BORING: 18'6" Top of Bridge to Bottom of Water

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	4									
	28									
	79/4"					2'4"				
							Refusal at 2'4" 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	Med Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 2'4" | Rock Coring ___ | Samples ___ | HOLE NO 4

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 4A | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ hours
At ____ after ____ hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR		

LOCATION OF BORING: 18'5" Top of Bridge to Bottom of Water

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	4									
	16									
	38									
	140/8"					3'8"				
							Refusal at 3'8" 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	Med Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 3'8" | Rock Coring ___ | Samples ___ | HOLE NO 4A

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 5 | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ hours
At ____ after ____ hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR		

LOCATION OF BORING: 33'2" Top of Bridge to Bottom of Water

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	4									
	16									
	35									
	55									
	68									
	114					6'3"				
							Refusal at 6'3" 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	Med Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 6'3" | Rock Coring ___ | Samples ___ | HOLE NO 5

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

TO Lee Pare & Associates ADDRESS Providence, R.I.
PROJECT NAME Barrington River RR Bridge LOCATION Barrington, R.I.
REPORT SENT TO above PROJ NO
SAMPLES SENT TO - OUR JOB NO 79-38

SHEET 1 OF 1 | DATE | HOLE NO 6 | LINE & STA. | OFFSET | SURF. ELEV.

GROUND WATER OBSERVATIONS
At ____ after ____ Hours
At ____ after ____ Hours

CASING: Type | Size D | Hammer Wt | Hammer Fal
SAMPLER: O.E. Rod; 300# | 30"
CORE BAR: BIT

	Date	Time
START	6/23/78	AM PM
COMPLETE	6/23/78	AM PM
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR		
SOILS ENGR		

LOCATION OF BORING

DEPTH	Quality: Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sample: From-To 0-6 / 6-12 / 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE: No	Pen	Rec
	8									
	13									
	20									
	24									
	27									
	34									
	39									
	46									
	100/6"					8'6"				
							Refusal at 8'6" 120 Blows - No Pen.			

GROUND SURFACE TO ____ USED ____ CASING THEN ____

Sample Type: D:Dry C:Cored W:Washed; UP:Undisturbed Fixter; TP:Test Pit A:Auger V:Vane Test; UT:Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30+ Hard
10-30	Med Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50+	Very Dense	15-30	V-Stiff	

SUMMARY: Earth Boring 8'6" | Rock Coring ___ | Samples ___ | HOLE NO 6

TOWN PRESS - EAST PROV

REVISIONS		
NO	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

BARRINGTON RIVER BRIDGE BORING LOGS

SHEET 3 of 3

CHECKED BY K.D. DATE ____ SCALE NONE

Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
150 Main Street - Pawtucket - RI 02860
161 Water Street - Norwich - CT 06360

Appendix C

Selected Historical Drawings

FED.ROAD DIV.NO.	STATE	FED. AID PROJ.No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	R.I.	IXAMBW 6666(008)	1987	1	84

INDEX of DRAWINGS

R.I. STANDARD SPECIFICATIONS

SPECIFICATIONS TO GOVERN THIS PROJECT ARE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, REVISIONS OF 1971, WITH THE LATEST REVISIONS THROUGH JUNE 1, 1984, AND THE STATE AND FEDERAL SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS. STANDARD DETAILS FOR THIS PROJECT ARE THE RHODE ISLAND STANDARD DETAILS INCLUDED IN THIS PLAN SET. THE FOLLOWING STANDARD DETAILS ARE INCLUDED IN THIS PROJECT:

STANDARD NUMBER	DESCRIPTION
2.6	PRECAST CONCRETE END SECTION
2.8	METAL END SECTION
4.3	CATCH BASIN TYPE "F" ROUND
5.17	SQUARE FRAME AND GRATE
7.11	PRECAST CONCRETE CURB
7.15	PRECAST CONCRETE APRON STONE
7.16	PRECAST CEMENT CONCRETE CURB 2' OR 3' RADIUS CORNER
7.17	PRECAST CONCRETE TRANSITION CURB
8.2	BITUMINOUS CONCRETE DITCH
9.1	BALED HAY EROSION CHECK
9.2	BALED HAY DITCH EROSION CHECK
14.2	GRANITE HIGHWAY BOUND
18.9	PRECAST HANDHOLE TYPE "A"
19.2	STEEL MAST ARM
24.0	GENERAL NOTES - REGULATORY AND WARNING SIGN MOUNTINGS
24.1	REGULATORY AND WARNING SIGN MOUNTINGS
24.11	REGULATORY SIGN MOUNTING
24.12	WARNING SIGN MOUNTING
24.14	PARKING SIGN MOUNTING
25.0	GENERAL NOTES - CONSTRUCTION & TEMPORARY SIGNS & MOUNTINGS
25.5	CONSTRUCTION AND TEMPORARY SIGN MOUNTINGS
26.0	GENERAL NOTES - BARRICADES
26.5	POLYETHYLENE DRUM WITH MARKINGS
26.6	FLUORESCENT TRAFFIC CONE
26.15	(PVC) PLASTIC PIPE BARRICADE
27.0	REGULATORY SIGNS
28.0	WARNING SIGNS
29.0	GUIDE SIGNS AND CONSTRUCTION SIGNS
34.32 & 34.33	STEEL BEAM GUARD RAIL
34.34	STEEL BEAM GUARD RAIL FIXTURES
34.35	BACK-UP PLATE - STEEL BEAM GUARD RAIL FIXTURE
34.5	GUARD RAIL - ANCHORAGE APPROACH SECTION
40.5	PRECAST MEDIAN BARRIER FOR TEMPORARY TRAFFIC CONTROL
43.1	CEMENT CONCRETE SIDEWALK

STATE OF RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

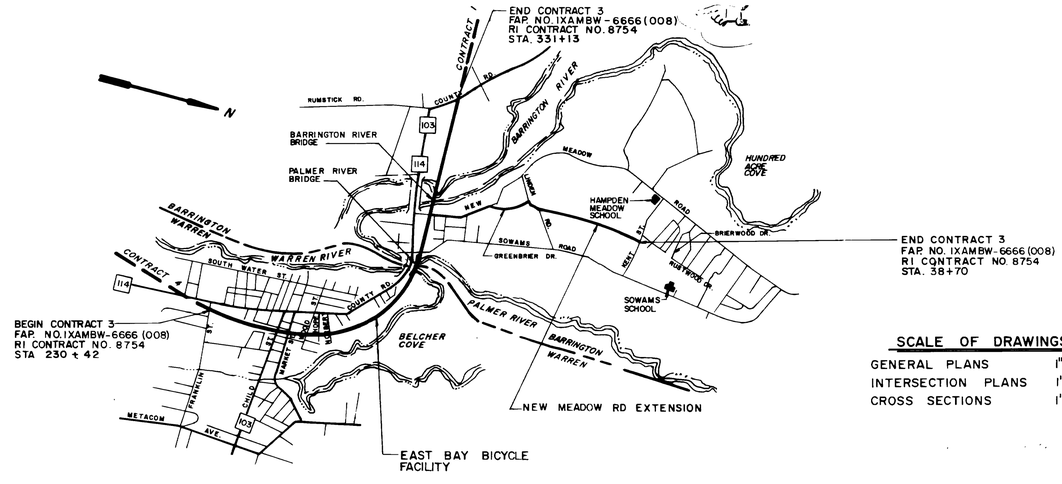
PLAN, PROFILE AND SECTIONS OF PROPOSED
STATE HIGHWAY
EAST BAY BICYCLE FACILITY
CONTRACT 3
FROM FRANKLIN STREET to COUNTY ROAD
TOWNS OF WARREN AND BARRINGTON
BRISTOL COUNTY

R. I. CONTRACT No. 8754
R.I.F.A. PROJECT No. IXAMBW-6666(008)
LENGTH = 3.343 MILES

LOCATION MAP
SCALE: 1"= 7 MILES

PAVEMENT COMPOSITION
1 1/2" BIT. SURFACE COURSE, TYPE I-1
1 1/2" MODIFIED BIT. BINDER COURSE
12" GRAVEL BORROW BASE COURSE
(APPLY ASPHALT EMULSION TACK COAT BETWEEN BINDER AND SURFACE COURSE)

DESIGN DESIGNATION
AADT (1985)=300 BICYCLES PER DAY
AADT (2005)=320 BICYCLES PER DAY
DHV (2005)= 32 BICYCLES PER HOUR
D = 50% - 50%
V = 20 MPH



PLAN
SCALE: 1"=1760'±

BASE OF LEVELS
NGVD OF 1929

SCALE OF DRAWINGS

GENERAL PLANS	1"= 40'
INTERSECTION PLANS	1"= 20'
CROSS SECTIONS	1"= 4'

KENNETH DECOSTA
No. 4520
REGISTERED PROFESSIONAL ENGINEER

R.I. DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

APPROVED
CHIEF OF DESIGN — DATE 7/22/87

APPROVED
CHIEF ENGINEER — DATE

APPROVED
DIRECTOR — DATE 6-1-88

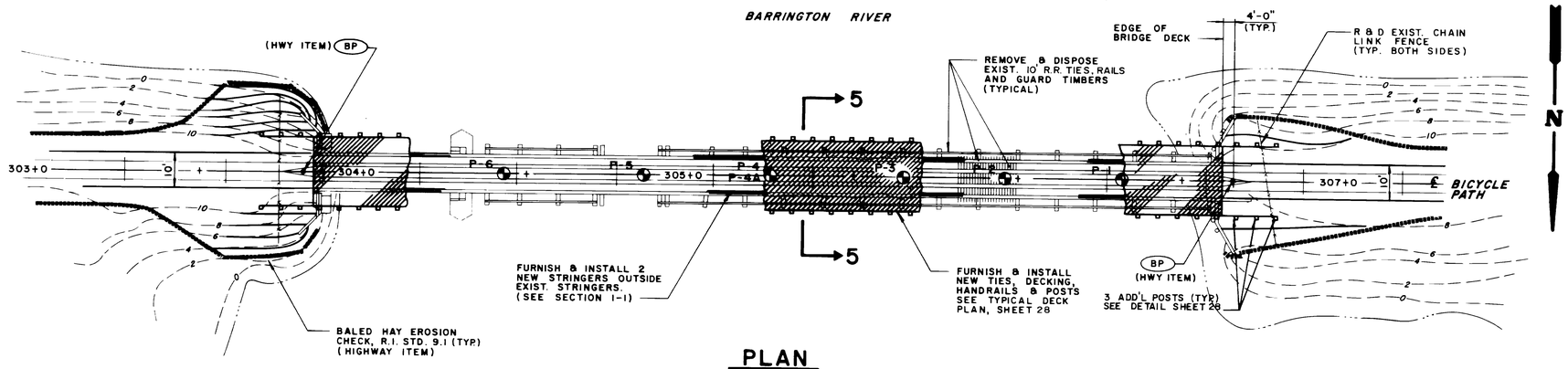
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR — DATE

Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
150 Main Street - Pawtucket - RI 02860
161 Water Street - Norwich - CT 06360

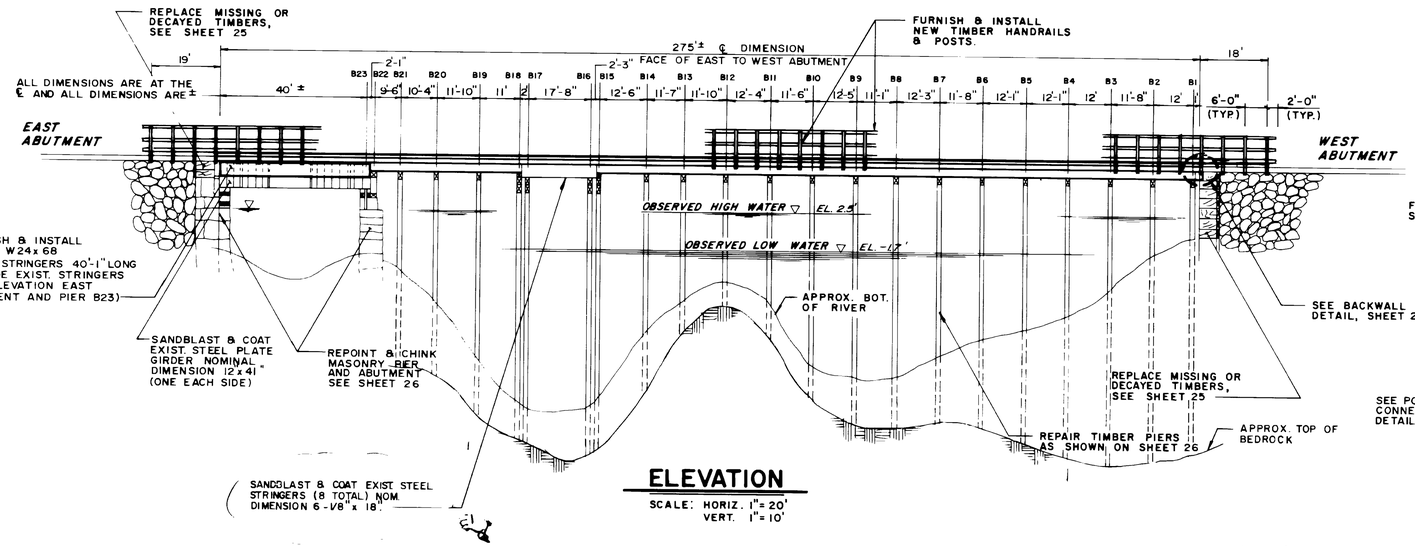
Contract Number 8754
Number of Sheet 1
Total Sheets 84

FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			24	84



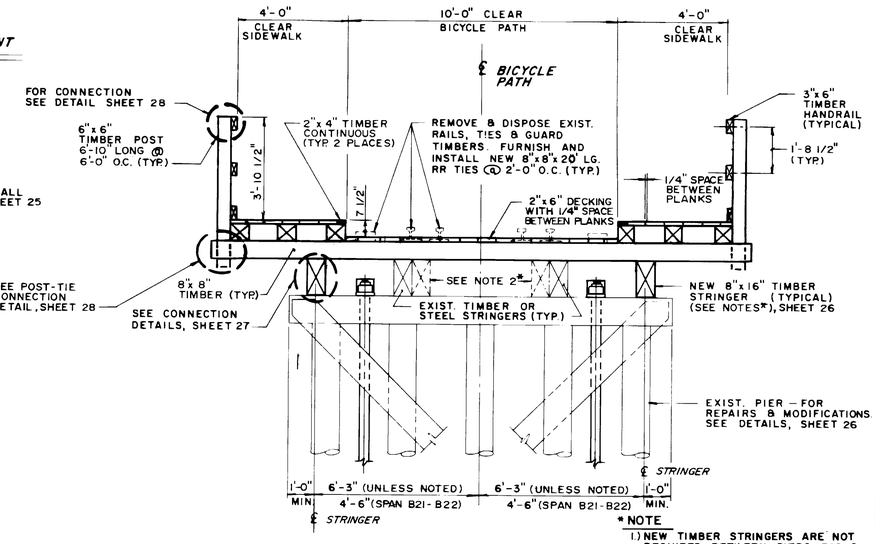
PLAN

SCALE: 1"=20'



ELEVATION

SCALE: HORIZ. 1"=20'
VERT. 1"=10'



SECTION 5-5

SCALE: 3/8"=1'-0"

***NOTE**

1. NEW TIMBER STRINGERS ARE NOT REQUIRED BETWEEN PIERS B16 & B17 AND BETWEEN PIER B23 AND THE EAST ABUTMENT.
2. WHERE EXISTING STRINGERS ARE TIMBER, INTERIOR STRINGERS SHALL BE REMOVED AND UTILIZED FOR NEW 8"x16" TIMBER STRINGERS.

BARRINGTON RIVER BRIDGE

LUMP SUM BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
FURNISH & INSTALL 3" X 6" TIMBER HANDRAIL WITH 6 X 6 TIMBER POSTS	LF	632
FURNISH & INSTALL TIMBER SIDEWALK	LF	550
FURNISH & INSTALL 2" X 6" TIMBER DECKING	SF	2750
FURNISH & INSTALL 8 X 8 X 20' TIMBER TIES	EA	140
REMOVE & RESET EXISTING 8" X 16" TIMBER STRINGERS	LF	430
FURNISH & INSTALL 4" X 12" TIMBER BRACING	EA	14
FURNISH & INSTALL NEW 12" X 12" TIMBER PILE CAP	EA	2
REMOVE & RESET EXISTING PILE CAP	EA	4
UNREINFORCED CONCRETE CLASS D SUBFOOTINGS	CY	3
PREFORMED POLYETHYLENE FOAM JOINT FILLER 1"	SF	27
POLYURETHANE JOINT SEALANT	CI	120
DRILL & GROUT THREADED ROD	EA	20
FURNISH & INSTALL STEEL STRINGERS & COLUMNS (A36)	LBS	5800
PAINT & SANDBLAST STEEL	SF	3900

BARRINGTON RIVER BRIDGE

UNIT BID BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL EXCAVATION EARTH	CY	16
PERVIOUS FILL	CY	14
REPAIRS TO WEST ABUTMENT - BARRINGTON RIVER BRIDGE	LS	1
REPAIRS TO EAST ABUTMENT - BARRINGTON RIVER BRIDGE	LS	1
FURNISH & INSTALL CONNECTION HARDWARE	LS	1
1" DIAMETER A307 GALVANIZED BOLTS	EA	45
REMOVE & DISPOSE PORTIONS OF EXISTING BRIDGE ITEMS - BARRINGTON RIVER BRIDGE	LS	1
MOVING EQUIPMENT ON & OFF JOB	LS	1
FURNISH 12" DIAMETER TIMBER PILES	LF	461
DRIVE 12" DIAMETER TIMBER PILES	LF	94
PILE CUTOFF 12" DIAMETER TIMBER PILES	EA	14
PILE SHOES 12" DIAMETER TIMBER PILES	EA	14
POINTING & GROUTING MASONRY	LF	400
CHINKING	SF	17
ROCK ANCHORS	EA	28

BARRINGTON RIVER BRIDGE

LUMP SUM DEMOLITION QUANTITIES

ITEM	UNIT	QUANTITY
REMOVE & DISPOSE EXISTING RAILS	LF	275
REMOVE & DISPOSE EXISTING RAILROAD TIES	LS	1
REMOVE & DISPOSE EXISTING GUARD TIMBERS	LF	275
REMOVE & DISPOSE EXISTING PIER MEMBERS	LS	1
REMOVE & DISPOSE EXISTING STEEL & CONCRETE	LS	1
REMOVE & DISPOSE TIMBERS (WEST ABUTMENT)	LF	39
RESET EXISTING TIMBERS (EAST ABUTMENT)	LF	70
REMOVE & DISPOSE EXISTING CHAIN LINK FENCE	LF	90

NOTE: QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR, RIDOT ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY.

NOTES:

1. FOR DESIGN DATA AND NOTES, SEE SHEET 22
2. FOR STRUCTURAL STEEL AND TIMBER NOTES, SEE SHEET 23
3. DURING BRIDGE CONSTRUCTION, FOUR (4) R.I. STD. 40.5 PRECAST MEDIAN BARRIERS SHALL BE PROVIDED ON EACH BRIDGE APPROACH FOR PROTECTION OF TRAFFIC. (HIGHWAY ITEM)

Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

REVISIONS		
NO.	DATE	BY
1	6/1/11	JJL

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

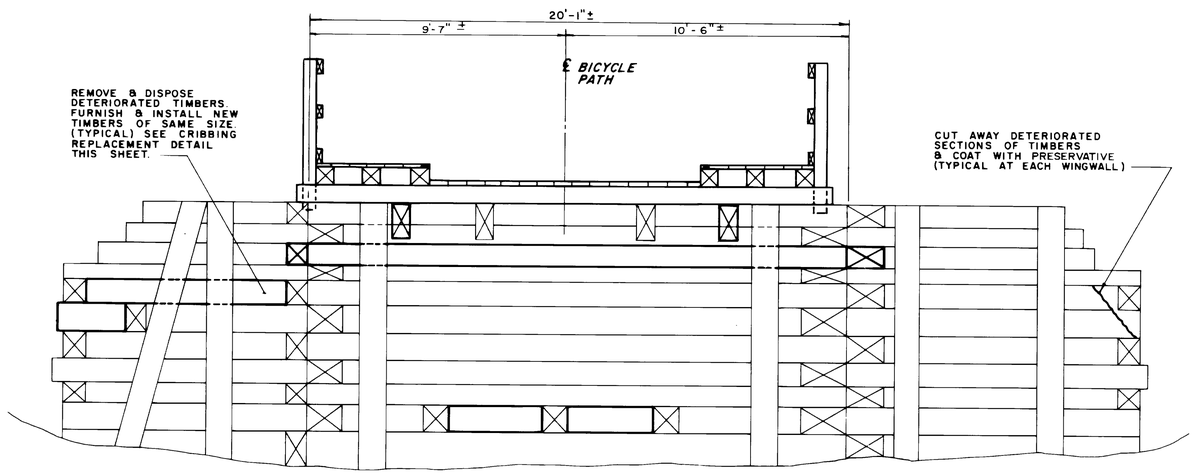
EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

BARRINGTON RIVER BRIDGE PLAN, ELEVATION and SECTION

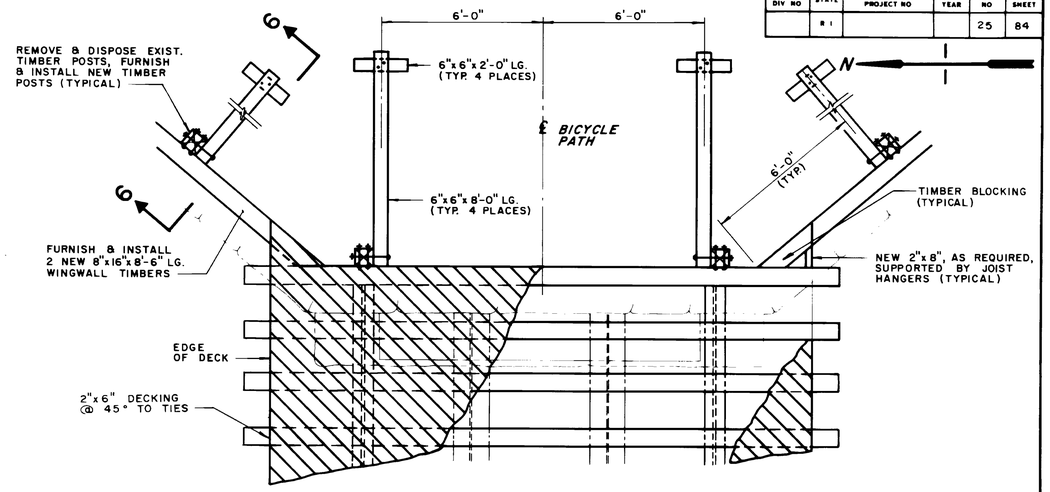
CHECKED BY K.D. DATE _____ SCALE AS SHOWN

FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			25	84



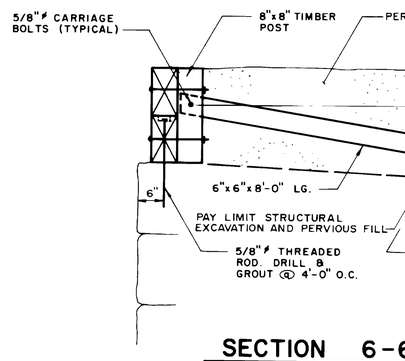
ELEVATION – WEST ABUTMENT

SCALE: 3/8"=1'-0"



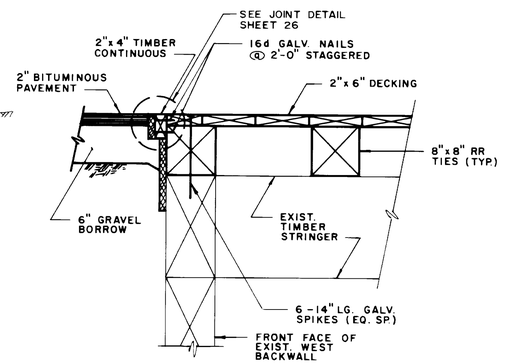
PARTIAL PLAN – EAST ABUTMENT

SCALE: 3/8"=1'-0"



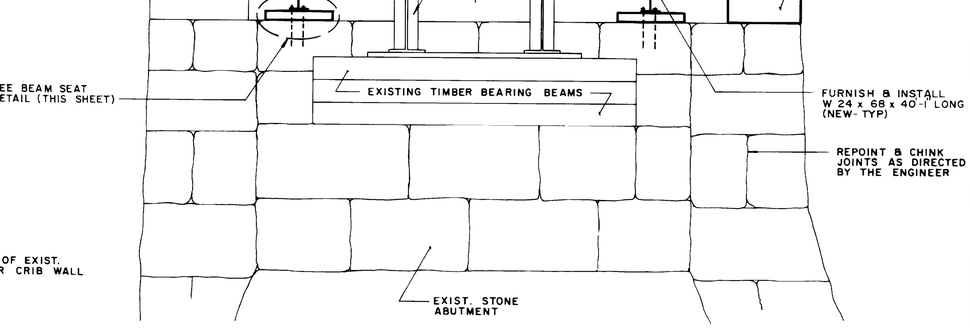
SECTION 6-6

SCALE: 1/2"=1'-0"



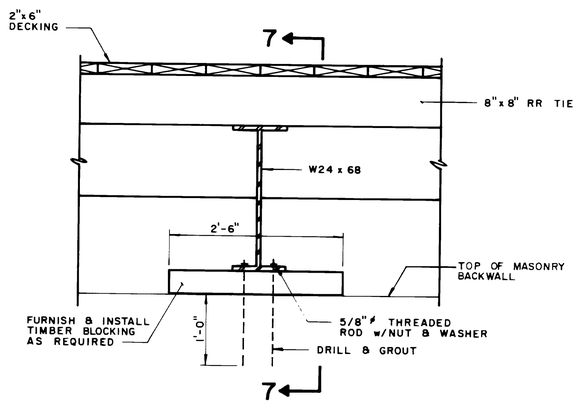
WEST BACKWALL DETAIL

SCALE: 1"=1'-0"



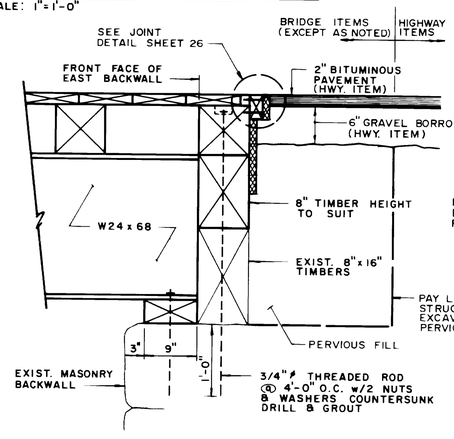
ELEVATION – EAST ABUTMENT

SCALE: 3/8"=1'-0"



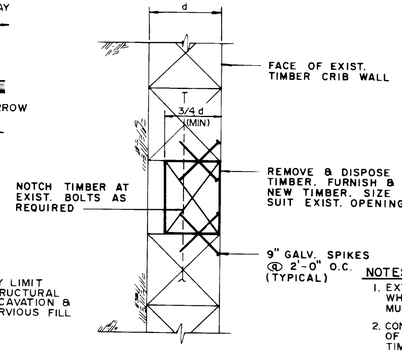
BEAM SEAT DETAIL

SCALE: 1"=1'-0"



SECTION 7-7

SCALE: 1"=1'-0"



CRIBBING REPLACEMENT DETAIL

SCALE: 1"=1'-0"

NOTES:

1. EXTREME CARE MUST BE TAKEN NOT TO DISTURB BACKFILL WHILE REMOVING EXISTING TIMBER (ANY DISTURBED BACKFILL MUST BE REPLACED WITH HAND TAMPED BACKFILL.)
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THE STRUCTURE WHILE REMOVING AND REPLACING EXISTING TIMBER.

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON — RHODE ISLAND

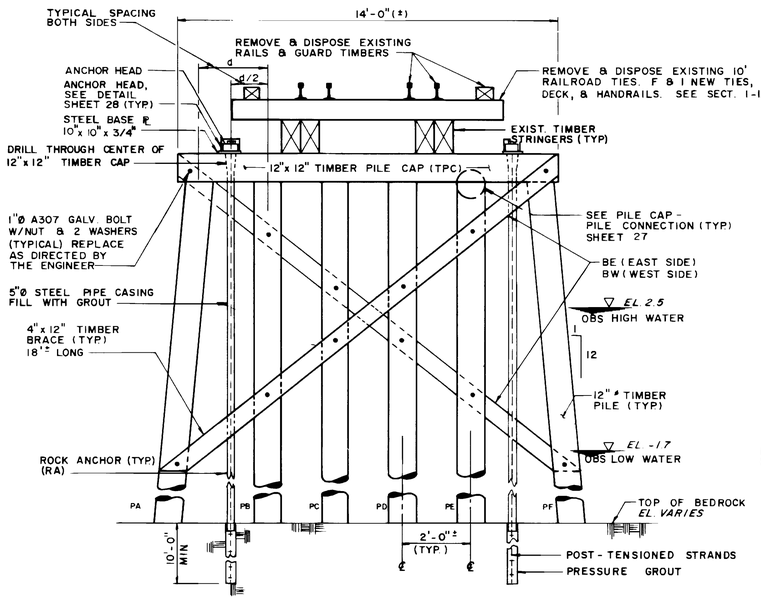
BARRINGTON RIVER BRIDGE ABUTMENT REPAIRS

Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

CHECKED BY K.D. DATE _____ SCALE AS SHOWN

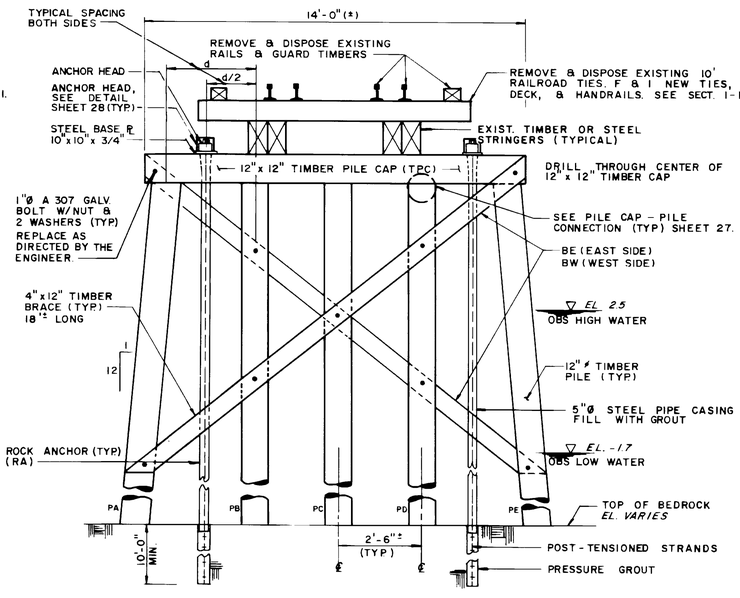
FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			26	84



(ELEVATION LOOKING WEST)

TYPICAL 6-PILE TIMBER PIER

SCALE: 3/8" = 1'-0"



(ELEVATION LOOKING WEST)

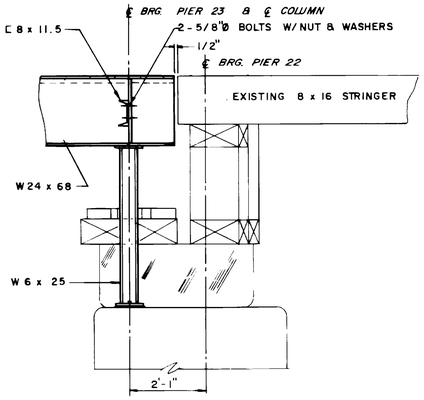
TYPICAL 5-PILE TIMBER PIER

SCALE: 3/8" = 1'-0"

TIMBER PIER REPAIR SCHEDULE
(FOR NOTES SEE SH. 23)

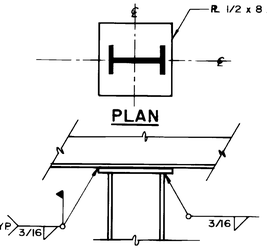
PIER NO.	ITEM A	B	C	D	E	F	E	W	TPC	NO PILE	RA
B1										5	
B2										5	
B3								X		5	
B4										5	
B5								X		5	2
B6							X			5	2
B7										5	2
B8	X	X	X	X	X		X	X	X	5	2
B9	X	X	X	X	X		X	X	X	5	2
B10							X	X		5	2
B11					X		X	*		5	2
B12						X	X		*	5	2
B13										5	2
B14										5	2
B15							X			5	2
B16							X			5	
B17					X		X		*	5	
B18	X								*	5	2
B19										5	2
B20										5	2
B21										5	

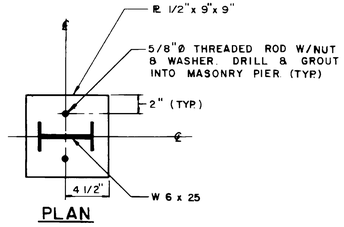
* = REMOVE AND RESET TIMBER PILE CAP



SECTION 8-8

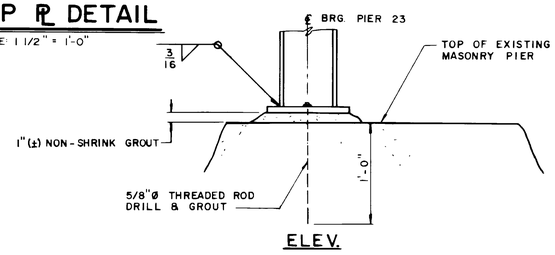
SCALE: 1/2 = 1'-0"





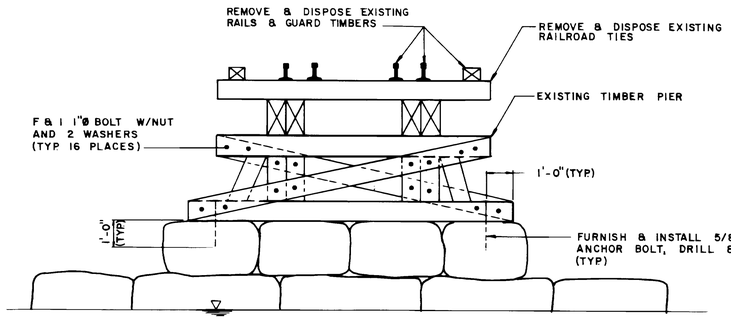
TOP PL DETAIL

SCALE: 1 1/2" = 1'-0"



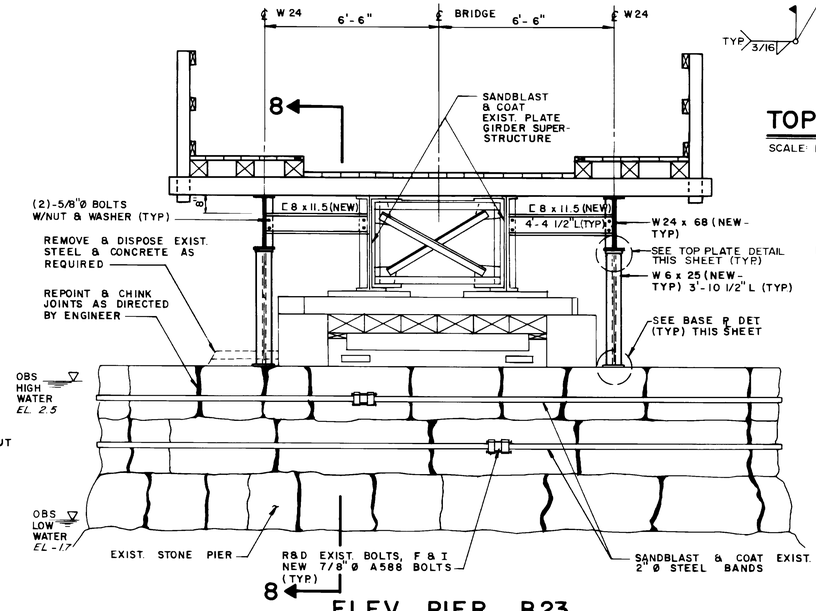
BASE PL DETAIL

SCALE: 1 1/2" = 1'-0"



ELEV. PIER B22

SCALE: 3/8" = 1'-0"



ELEV. PIER B23

SCALE: 3/8" = 1'-0"

Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

REVISIONS		
NO.	DATE	BY

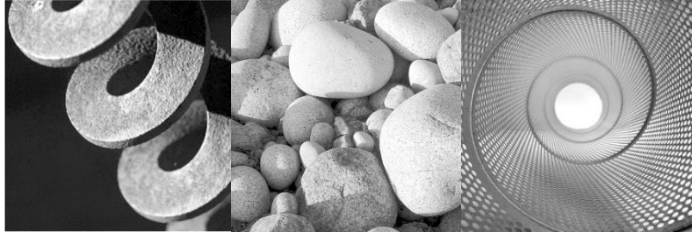
RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

BARRINGTON RIVER BRIDGE PIER REPAIRS

CHECKED BY K.D. DATE _____ SCALE 3/8"= 1'-0"



GEI Consultants

Consulting
Engineers and
Scientists

Geotechnical Interpretive Report

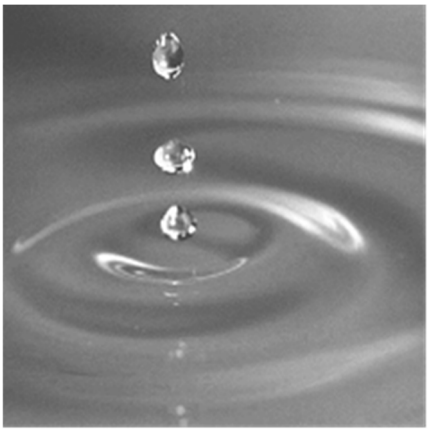
Bridge No. 083851

East Bay Bike Path over Palmer River
Warren and Barrington, Rhode Island

Submitted to:
BL Companies
2346 Post Road, Suite 100
Warwick, RI 02886

Submitted by:
GEI Consultants, Inc.
455 Winding Brook Drive, Suite 201
Glastonbury, CT 06033

February 4, 2022
GEI Project No. 2001845



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Geotechnical Engineer

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Senior Geotechnical Engineer

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1. Introduction

1.1 Project Summary

This report addresses geotechnical considerations for the replacement of Bridge No. 083851, which carries the East Bay Bike Path over the Palmer River in Warren and Barrington, Rhode Island.

GEI Consultants, Inc. (GEI) was retained by BL Companies to prepare this Geotechnical Investigative Report (GIR) in support of the Base Technical Concept (BTC) design efforts. This report presents the results of subsurface explorations conducted to date by others, our evaluation of the existing subsurface conditions, and geotechnical recommendations for design and construction.

1.2 Scope of Services

GEI's scope of work for this project included the following:

1. Reviewed available published geologic data, existing bridge plans, and proposed bridge design information provided to us.
2. Reviewed the results of previous geotechnical explorations and developed soil properties for analyses.
3. Evaluated foundation types for the replacement bridge and provided foundation recommendations.
4. Presented the results of the explorations, our analyses, and our recommendations in this report.

1.3 Location/Elevation Reference and Datum

The elevations presented in this report are in reference to the project vertical datum presented on the Base Technical Concept (BTC) plans provided by BL Companies, which is 1.3 feet higher than NAVD 88. Pertinent elevations from the historical drawings and previous investigations have been converted to the project vertical datum.

Northing/easting coordinates referenced in this report are in Rhode Island State Plane, NAD 83.

2. Site and Project Description

2.1 Existing Conditions

Bridge No. 083851, originally constructed as a railroad bridge, was converted to a bike path structure in 1987. The 290-feet long curved bridge carries the 10-feet-wide bicycle path and two 4-feet wide sidewalks across the Palmer River.

The east and west abutments are timber crib walls with flared wingwalls, fronted with riprap protection. The remainder of the substructure is comprised of bents with 5 to 6 timber piles or two 15-inch diameter steel piles installed to bedrock. Modifications performed in 1987 included adding two rock anchors to 6 of the timber bents and all 6 steel pile bents. The rock anchors consist of 5-inch diameter steel pipe casing with post-tensioned strands and a minimum 10-foot pressure-grouted rock socket. Rock anchors were designed to resist an axial tensile load of 30 kips. The lengths of the timber piles, steel piles, and rock anchors are not known.

The west approach to the bridge is along a short causeway that extends into the Palmer River. The Palmer River is tidal, with a mean high water of El. 2.23 and mean low water of El. -1.90. Evidence of scour has been noted during previous inspections along the upstream and downstream sections of the abutments and, potentially, in the form of scour holes around piers.

Overhead electric and communication lines span the south side of the bridge.

2.2 Proposed Construction

GEI has reviewed the Base Technical Concept (BTC) plans prepared by BL Companies, dated December 2021. We understand the BTC design is a full replacement of Bridge 083851. The replacement bridge shown would consist of three spans and be 300 feet in length. The vertical profile of the bridge would be raised to a maximum elevation of 14.64 feet at the center, and by up to 2 feet above current grade at the abutments. To accommodate the grade-raise fills behind the abutments, retaining walls would be required along the approach sections. The out-to-out width will be 17’-4”. A minimum navigable width of 40 feet must be maintained within the channel.

The BTC plans show the steel rolled beam superstructure supported by conventional pile-supported abutments and two pile-supported piers. Wingwalls are shown as supported on spread footings. The pile caps for the piers will be raised to directly support the bearings, which will result in an unsupported length of pile from the bottom of the pile cap to the mud

line. To provide additional lateral support though the unsupported length, a grouted outer casing is shown.

We understand the overhead wires on the south side of the bridge are to be left in place and protected during construction, unless the Design-Build team is able to secure arrangements for relocation. We have assumed the wires will be maintained in their current position, which would present a constraint for bridge pile installations.

3. Geotechnical Explorations

3.1 Existing Geotechnical Information

Historical boring and laboratory data from previous geotechnical investigations was reviewed during the course of this work. These borings are attached for reference in Appendix A in original form. GEI assumes no responsibility for the completeness or accuracy of this subsurface data collected by others.

3.1.1 1978 Borings

Twelve historical borings (B1 through B12) conducted by others in 1978 are included on the 1987 drawings. These borings were advanced to drilling refusal to depths of 9.5 to 37.1 feet. The borings included Standard Penetration Testing (SPT) and sampling.

3.1.2 2020 Borings

Four (4) borings (BB-1 through BB-4) with SPT sampling were conducted by others in 2020 in support of the concept/preliminary design effort. Geotechnical laboratory testing was also conducted in conjunction with this geotechnical investigation.

4. Subsurface Conditions

4.1 Geologic Setting

Local surficial geology maps indicate that the bridge alignment is underlain by glacial kame terrace deposits (stratified sand, gravel, and silt) at the east side of the bridge, and outwash plain deposits (well-sorted and stratified sand with gravel) at the west side of the bridge.

Local geology maps indicate that bedrock underlying the site consists of sedimentary rocks of the Rhode Island Formation (Quinn, 1954). The formation is generally described as sandstone and shale, also containing conglomerate, anthracite coal, and metasedimentary rock. Crossbedding and irregular discontinuous bedding are common to this formation.

4.2 Subsurface Conditions

Based on our review of the available geotechnical information, the general soil strata are as follows, beginning at the ground surface. The subsurface conditions are known only at the exploration locations. Conditions between explorations may differ significantly from those described below. The subsurface conditions described below are based on data from previous investigations.

I. Existing Fill – Embankment fill was encountered in behind the abutments in BB-1 and BB-4 to 13.5 feet deep. This material was generally described as brown well graded sand with gravel (SW), with trace amounts of silty fines. B1 noted the presence of wood in the fill to 7 feet below 1978 grade.

SPT N-values ranged from 9 to 26 blows per foot (bpf), with an average of 15 bpf, indicating medium dense conditions with occasional loose zones.

II. Organic Soils – Organic-laden soils were observed in BB-2 and BB-3, as noted below. These soils were generally described as gray sandy organic soil with gravel (OL) and contained shells. Organic soils overlaid sand and gravel or weathered rock.

SPT N-values ranged from 10 to 45 blows per foot (bpf), medium dense to dense consistency.

Table 1 – Summary of Organic Soils

Boring ID	Depth to Top (ft)	Depth to Bottom (ft)	Bottom Elevation (ft – NAVD88 + 1.3)	Location	Description
2020 Borings (by others)					
BB-2	0.0	2.5	-11.6	Near Pier 1	Sandy organic soil with gravel, gray, loose, some shells
BB-3	0.0	4.0	-14.0	Near Pier 2	Sandy organic soil with gravel, gray, dense, some shells

III. Sand and Gravel – A 3.5 to 5-foot thick layer of sand and gravel was encountered in 2020 borings BB-1, BB-2, and BB-4 below the fill and organic soils. Soils in this stratum were described as dark gray to gray well graded sand with gravel (SW) to well graded sand with silt and gravel (SW-SM). This layer overlaid the silt stratum in BB-1 and weathered rock elsewhere. SPT N-values ranged from 15 to 217bpf, indicating medium dense conditions.

IV. Silt – An approximately 9-foot thick layer of silt was encountered in BB-1 below the sand and gravel. This layer of silt was also noted in several of the 1978 borings along the western half of the alignment: B1 through B5, and B7. The silt generally decreased in thickness to the east. The silt (ML) was described as dark gray to gray, containing some fine sand and occasionally containing gravel or rock/shale fragments. SPT N-values were 19 bpf, indicating very stiff consistency.

V. Weathered Rock – A thick stratum of highly weathered to decomposed shale is present below the bridge, and was sampled in all borings during the 2020 investigation. Recovered samples were gray. The weathered rock was generally not of sufficient consistency to allow rock core sampling. SPT N-values ranged from 31 bpf to refusal, generally increasing with depth. Weathered rock was encountered the shallowest at the east abutment (El. -10.5), and was encountered deeper to the west (El. -18.5 at the west abutment). Weathered rock conditions are summarized in Table 3.

Shale Bedrock – Bedrock was of sufficient quality for rock core sampling in three of the 2020 borings. The top of bedrock varied widely from El. -16.5 near the east abutment to -74.5 near the west abutment. Recovered core samples were described as gray or dark gray, very soft to medium hard, highly to moderately weathered shale. The bedrock cored in BB-4 was described as slightly weathered. Rock Quality Designations (RQDs) ranged from 7 to

67 percent. The unconfined compressive strength from El. -25.9 to El. -26.36 in BB-3 was measured at 415 psi.

Bedrock cores were also attempted in two of the 1987 borings (B6A, B8). The core recoveries were 7 percent and 60 percent of the 5-foot penetrations, and recovered samples were described as yellow brown weathered rock or boulders to weathered rock or boulders with quartz pebbles. As noted in Section 4.1, crossbedding and irregular discontinuous bedding are common to the Rhode Island Formation.

Bedrock conditions are summarized in Table 2.

Table 2 – Summary of Weathered Rock and Bedrock Conditions

Boring ID	Depth to Top (ft)	Depth to Bottom (ft)	Top Elevation (ft – NAVD88 + 1.3 ft)	Location	Description
2020 Borings (by others)					
BB-1	28.0	84.0	-18.5	Behind west abutment	Highly weathered bedrock, N = 85 to Refusal
	84.0	94.0	-74.5		Highly to slightly weathered SHALE, RQD = 7 to 67%
BB-2	7.5	13.5	-16.6	Near Pier 1	Highly weathered bedrock, N = 31
	13.5	31.0	-22.6		Highly weathered bedrock, N = 100+ to Refusal
BB-3	4.0	8.0	-14.0	Near Pier 2	Highly weathered bedrock, N = Refusal
	8.0	18.0	-18.0		Highly to moderately weathered SHALE, RQD = 12%
BB-4	18.0	24.0	-10.5	Behind east abutment	Highly weathered bedrock, N = 36
	24.0	34.0	-16.5		Slightly weathered SHALE, RQD = 37%
1978 Borings (by others) [a]					
B1	24.0	37.1	-	Behind west abutment	Weathered SHALE with pyrite seams, N = 29 to Refusal
B2	10.0	22.0	-	Near west abutment	Weathered SHALE, N = 40 to 100+

B3	8.0	14.0	-	Between west abutment and Pier 1	Weathered SHALE, N = 52 (with 300-pound hammer) to Refusal
B4	8.0	15.5	-	Near Pier 1	Weathered SHALE, N = 100+
B5	7.0	10.0	-	Near Pier 1	Weathered SHALE, N = Refusal
B6/6A	11.0	16.0	-	Between Piers 1 and 2	Weathered Rock or Boulders with Quartz Pebbles, Core recovery = 7%
	16.0	17.0	-		Weathered rock or boulder fragments, N = Refusal
B7	23.5	25.0	-	Between Piers 1 and 2	Weathered rock or boulder fragments, N = Refusal (with 300-pound hammer)
B8	6.0	9.0	-	Near Pier 2	Weathered SHALE, N = 72 (with 300-pound hammer)
	9.0	14.0	-		Yellow brown weathered rock or boulders, Core recovery = 60%
B9	3	4	-	Near Pier 2	SHALE, N = Refusal
B10/ 10A	8	9.5	-	Between Pier 2 and east abutment	Weathered rock or boulder fragments, N = Refusal
B11	17.5	20	-	Near east abutment	Weathered rock or boulder fragments, N = Refusal
B12	19	19.5	-	Behind east abutment	Weathered rock or boulders, N = Refusal

a Depths noted for 1978 borings are depth below top of previous bridge.

4.3 Groundwater Conditions

Groundwater in borings BB-1 and BB-54 was recorded at El. 1.3 and El. 3.4, respectively, which is generally in line with the surface water in the Palmer River.

Groundwater level measurements and observations represent conditions at the times and locations indicated. Significantly different groundwater levels may occur at other times and locations. Groundwater at this site is expected to be tidally influenced.

5. Design Recommendations

This project will be implemented using the Design-Build delivery method. This report addresses geotechnical considerations associated with the Base Technical Concept (BTC), as understood by GEI at the time of this report. The design criteria presented herein should be reviewed by GEI for continued applicability if and when revisions from the BTC are made by the design-build team concerning bridge configuration, design loads, etc.

5.1 Code Reference

Project design parameters and computations generally follow those described in the relevant sections of the *AASHTO LRFD Bridge Design Specifications* (AASHTO 9th Ed., 2020), supplemented by the most recent edition of the RIDOT LRFD Bridge Design Manual.

5.2 Soil Properties

Recommended soil properties for design are presented below. We selected these values based on published correlations to SPT N-values, soil descriptions, and our engineering judgement. Recommended soil properties for design are presented below. We selected these values based on published correlations to SPT N-values, soil descriptions, and our engineering judgement.

Table 3 – Soil Properties for Design

STRATUM	Angle of Internal Friction, ϕ (deg.)	Cohesion, c (lb/ft^2)	Moist Unit Weight (γ_t) (lb/ft^3)
New Structural Fill (Gravel Borrow or Pervious Fill)	34	0	125
I. Exiting Embankment Fill	32	0	120
II. Organic Soils	28	0	110
III. Sand and Gravel	34	0	120
IV. Silt	28	200	115
V. Weathered Rock	38	0	135

5.3 Foundation Design

5.3.1 General

Drilled micropiles socketed into weathered rock were assumed for support of the bridge elements shown on the BTC plans. Driven piles would generally not be preferred due to the presence of in-service overhead wires. Wingwalls and retaining walls were assumed to be supported on conventional shallow foundations.

5.3.2 Micropile Axial Capacity

BTC plans show the bridge piers and abutments being supported on a combination of plumb and battered micropiles.

Micropiles should be designed by a Rhode Island-registered professional engineer. The piles must provide sufficient compressive and lateral capacity and should be designed in accordance with the structural requirements in Article 10.9.3.10 of the AASHTO LRFD Bridge Design Specifications. Bending capacity at the joints is significantly less than the capacity of the intact casing; we recommend that this be analyzed during final design with the chosen casing size.

The final micropile design should be checked with a pre-production verification pile load test on a sacrificial pile in accordance with Article 10.9.3.5.4 of the AASHTO Specifications. We recommend that the load test be located near the east abutment, and the load test can be conducted using either compression or tension. Assuming a load test is conducted, the bond zone may be designed based on a resistance factor of 0.70 (Strength Limit) per Table 10.5.5.2.5-1 of the AASHTO Specifications. A resistance factor of 1.0 should be used for the Extreme Event limit state.

Micropile spacing should be at least three times the pile diameter or 2.5 ft, whichever is greater, to limit group interaction effects. The piles should extend at least 12 inches into the pile cap.

We estimated the capacity of two common micropile sizes bonded into weathered rock similar to that encountered at the site, as shown below. Structural capacity must also be verified by the micropile designer. The final micropile design will incorporate the actual diameter of the casing and bond socket to be used.

Table 4 – Estimated Micropile Geotechnical Resistance –Bridge No 083851

Pile Type & Size	Bond Length (ft)	Nominal Axial Resistance (kips)	Factored Axial Resistance (kips)
9.625-inch O.D.; 0.5-inch wall thickness; 35-foot, 9.625-inch bond zone in weathered rock	35	220	154
11.875-inch O.D., 0.5-inch wall thickness; 30-foot, 11.875-inch bond zone in weathered rock	30	233	163

Highly variable conditions within the weathered rock bond zone should be expected. Sound bedrock was only encountered in two of the 2020 boring locations at the site, with the top elevation varying significantly. Sound bedrock may be encountered in the micropiles installed for the west abutment. Where installed through the causeway fill, large obstructions may be encountered. Appropriate measures for constructing the micropiles under the conditions described on the boring logs should be incorporated into the micropile design. We recommend that a detailed Micropile Special Provision be developed which is tailored to this project.

Placement of grade-raise fill behind the proposed abutments will induce settlements within the causeway fill and underlying native soils. If these settlements are estimated to be greater than 0.4 inches within soils surrounding the micropiles, the final foundation design should incorporate downdrag loads.

5.3.3 Pile Lateral Response

We performed lateral capacity analysis of the pile foundations using the software LPILE, assuming free-head conditions. This analysis considers capacity developed from soil-pile interaction and does not include the horizontal component of the axial capacity for battered piles. Lateral capacity was evaluated in this manner at displacements of ½-inch and 1-inch. A corrosion allowance of 1/16-inch on the exterior surface of the casing was assumed. Additional inputs included 80 ksi (API N80) permanent casing seated 15 feet into the weathered rock bond zone and a single No. 18 Grade 75 center reinforcing bar. We also modeled the condition shown on the BTC plans, where an outer sleeve is installed to the mudline and grouted.

Table 5 – Micropile Lateral Resistance –Bridge No 083851

Pile Type & Size	Deflection	Max. Shear[1] (kips)	Depth to Fixity (feet)
40-foot, 9.625-inch O.D.; 0.545-inch wall thickness; 9.625-inch bond zone in weathered rock	½-inch	1.0	33.6
	1-inch	1.8	34.3
40-foot, 9.625-inch O.D., 0.545-inch wall thickness; 9.625-inch bond zone in weathered rock; 11.875-inch O.D., 0.582-inch wall outer casing	½-inch	1.4	34.3
	1-inch	2.7	35.0
40-foot, 11.875-inch O.D., 0.582-inch wall thickness; 11.875-inch bond zone in weathered rock	½-inch	1.7	36.4
	1-inch	3.2	37.1
40-foot, 11.875-inch O.D., 0.582-inch wall thickness; 11.875-inch bond zone in weathered rock; 13.375-inch O.D., 0.48-inch wall thickness outer casing	½-inch	2.1	37.1
	1-inch	4.0	37.8

[1]As developed from soil-pile interaction. For battered piles, this would be separate from the horizontal component of the axial capacity.

This evaluation does not consider the scoured condition. This case should be checked for final pile design.

5.4 Wall Bearing

Wingwalls and approach retaining walls will bear within loose to dense historic causeway fills. Variable conditions with potential for unsuitable materials should be expected during foundation excavations and at subgrade elevation. Given the potential for variability within the fill, consideration should be given to wall types that can accommodate higher levels of differential movement. Wingwalls should be structurally isolated from the pile-supported abutments.

Wingwalls and approach retaining walls should be evaluated for bearing at the strength and service limit states according to site grades and wall heights determined during final design.

5.5 Lateral Earth Pressures

New abutments, wingwalls, and retaining walls should be designed to withstand active lateral earth pressures. Assuming the abutments, wingwalls, and retaining wall will be backfilled

per RIDOT procedures, a unit weight of 125 pcf and an internal friction angle (ϕ) of 34 degrees may be assumed.

Table 6 – Lateral Earth Pressure Coefficients for Wingwalls, Abutments, and Retaining Walls

Support Condition	Lateral Coefficient
Active Condition	0.28
At-rest Condition	0.44
Passive Condition	3.54

Earth pressures should be applied as shown on Fig. 3.11.5.3-1 of the AASHTO LRFD manual. Design of abutments and walls should also include a live load surcharge, in accordance with AASHTO 3.11.6.4.

For calculating nominal sliding resistance for footings, we recommend the following:

Table 7 – Sliding Resistance

Footing Type	Coefficient of Friction (Table 3.11.5.3-1)	Resistance Factor (Table 10.5.5.2.2-1)
Cast-in-place Concrete	0.55	0.80
Precast Concrete	0.45	0.90

The passive resistance provided by any soils in front of the constructed abutments, wingwalls, and retaining walls should be ignored.

5.6 Approach Embankments

Vertical profile adjustments will result in up to 2 feet of fill placed behind the bridge abutments. This load will induce some settlement, both in soils below the fill and within the fill itself. We estimate these settlements will be on the order of 1.0 inch, with most occurring quickly (within 2 weeks of placement) and be built out during construction. Consideration should be given to raising the embankments during the early stages of construction, in order to allow settlements to occur and reduce the potential for differential grades between the abutment and backfill.

Finish embankment slopes should be constructed at grades no steeper than 2H:1V. Where embankments will be widened and new fill placed, the new fill should be stepped or keyed into the existing fill to help prevent a slip surface from forming at the contact between new and existing fill.

5.7 Seismic Design

Based on Standard Penetration Test N-values from the 2020 borings performed by others, and in accordance with Article 3.10.3.1 of the AASHTO Bridge Specifications, we recommend that the project be classified as Site Class D.

6. Construction Considerations

6.1 Excavation and Dewatering

At a minimum, all excavations should be made in accordance with Occupational Safety and Health Administration (OSHA) standards.

Where required, excavation is expected to proceed through historic causeway fills of variable consistency. Obstructions requiring removal may be encountered. The maximum cut slope rates to determine the need for excavation support systems should be 1.5H:1V. Any necessary excavation support systems should be designed by a Rhode Island-registered professional engineer experienced in excavation support design. The design should be submitted for review before installation. Appropriate measures for constructing excavation support under the conditions described on the boring logs should be incorporated into the design.

Excavation for the abutments as shown on the BTC plans would likely extend below groundwater. All new foundation work should be conducted in the dry. If encountered, water can be pumped from excavations using a shallow sump and discharged elsewhere on site. Discharging into waterways or storm sewers may require permits. Surface water should also be diverted away from the excavations.

Any necessary excavation support systems should be designed by a Rhode Island-registered professional engineer experienced in design of such elements. The engineer should be engaged by the contractor and should submit the designs for review before installation.

6.2 Subgrade Preparation

Loose or disturbed soil should be removed from the bottom of the footing/pile cap excavations, and the subgrade should be prepared in accordance with RIDOT specifications. Bearing surfaces should be free of standing water, frost, and loose soil. Areas of the subgrade disturbed by traffic or surface water should be re-compacted. It may be desirable to place a 12-inch working platform of Gravel Borrow underlain by geotextile fabric to protect the subgrades, improve accessibility, and facilitate dewatering (as required).

Zones within the foundation soils may be frost susceptible. Therefore, if construction is performed during freezing weather, special precautions will be required to prevent the subgrade soils from freezing. Freezing of the soil beneath the foundation during construction may result in subsequent settlement of the structure. All subgrades should be free of frost.

Frost-susceptible subgrade soils that have frozen should be removed and replaced in accordance with RIDOT standard specifications.

6.3 Backfilling

In general, fill materials should be placed and compacted in accordance with RIDOT Standard Specifications. However, we recommend that compaction in areas too small for a smooth wheel vibratory compactor, within 5 feet of walls less than 15 feet high, or within 10 feet of walls greater than 15 feet high, should be performed using a vibratory walk-behind roller or plate compactor (weighing at least 200 lbs. imparting an impact load of at least 2.5 tons), with soil placed in maximum 6-inch-thick-loose lifts.

7. Limitations

Our recommendations are based on the project information provided to us at the time of this report and may require modification if there are any changes in the nature, design, or location of the proposed construction. We recommend that GEI be engaged to review the final plans and specifications to judge whether changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

The recommendations in this report are based in part on the data obtained from the borings. The nature and extent of variations between borings may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. Therefore, we recommend that GEI be engaged to make site visits during construction to: a) check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and b) ascertain that, in general, the geotechnical aspects of the work are being performed in compliance with the contract documents.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

Figures

RI DOT

COMMONWEALTH ENGINEERS & CONSULTANTS, INC.

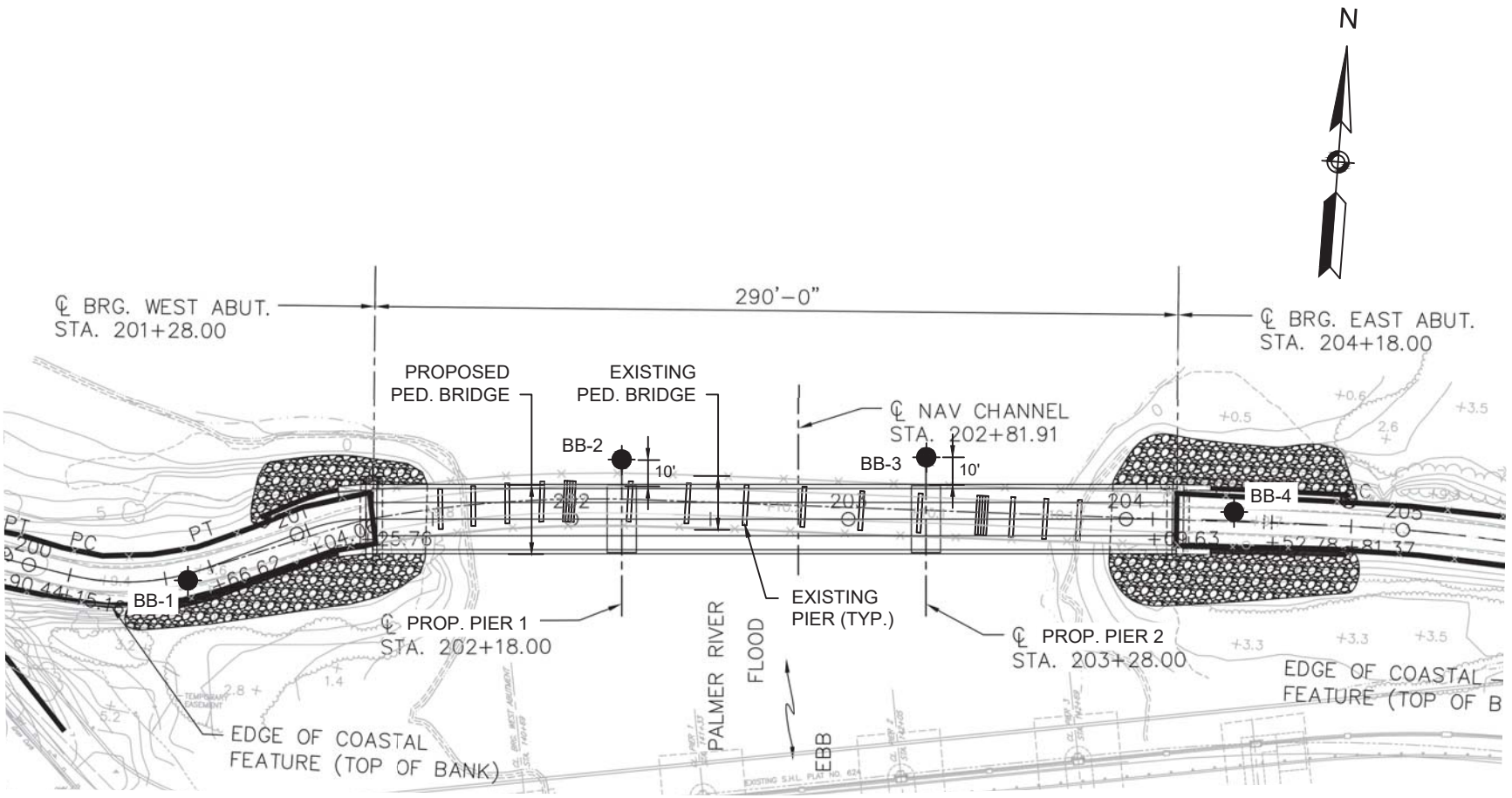
BRIDGE NO. 838
EAST BAY BIKE PATH OVER PALMER RIVER
WARREN, RHODE ISLAND

PREPARED BY
LAMSON ENGINEERING CORP.
NEWTON, MASS.

AS-DRILLED 2020 BORING LOCATION PLAN

NOT TO SCALE

Fig. 2



AS-DRILLED 2020 BORING LOCATION PLAN

LEGEND:

AS-DRILLED 2020 BORING

Appendix A

Boring Logs

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-1

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 838, Warren RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Palmer River
DATE STARTED 3/11/20 **COMPLETED** 3/12/20
GROUND ELEVATION 9.5 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING ---
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING 9.50 ft / Elev 0.00 ft
NOTES ATV Land Boring
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0	ASPHALT 4"			
	WELL GRADED SAND WITH GRAVEL, (SW) brown, dry, loose to medium dense, trace silt	SS 1	38	1-5-6-6 (11)
		SS 2	29	7-5-4-6 (9)
5				
10	WELL GRADED SAND WITH GRAVEL, (SW) brown, wet, medium dense, trace silt	SS 3	25	14-12-14-3 (26)
15	WELL GRADED SAND WITH SILT AND GRAVEL, (SW-SM) gray, wet, medium dense	SS 4	67	7-8-12-9 (20)
	SILT, (ML) gray, wet, very stiff, some rock fragments, trace silt			
20		SS 5	50	8-8-11-6 (19)
25		SS 6	67	6-8-11-21 (19)
	Gray, wet, very dense, highly weathered bedrock (unable to core)			
30		SS 7	92	25-35-54-85 (89)
35		SS		31-30-40-61

▲ SPT N VALUE ▲
20 40 60 80 100

GEOTECH BH PLOTS - TESTING.GDT - 5/25/20 08:40 - C:\USERS\CHARLIE\DESKTOP\GINT PROJECTS\WARREN RI.GPJ

(Continued Next Page)

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-1

CLIENT Rhode Island Department of Transportation **PROJECT NAME** Bridge No. 838, Warren RI

PROJECT NUMBER 2011-EB-006 **PROJECT LOCATION** East Bay Bike Path over Palmer River

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
35		Gray, wet, very dense, highly weathered bedrock (unable to core) *(continued)*	8	92	(70)
40			SS 9	100	25-37-54-63 (91)
45			SS 10	100	38-53-87 (140)
50			SS 11	92	21-31-54-65 (85)
55			SS 12	88	21-37-56-48 (93)
60			SS 13	79	32-48-75-81 (123)
65			SS 14	100	66-60/3"
70			SS 15	100	79-100/2"
75			SS	100	53-80/3"

▲ SPT N VALUE ▲

20 40 60 80 100

>>

>>

GEOTECH BH PLOTS - TESTING.GDT - 5/25/20 08:40 - C:\USERS\CHARLIE\DESKTOP\GINT PROJECTS\WARREN RI.GPJ

(Continued Next Page)

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-1

CLIENT Rhode Island Department of Transportation **PROJECT NAME** Bridge No. 838, Warren RI

PROJECT NUMBER 2011-EB-006 **PROJECT LOCATION** East Bay Bike Path over Palmer River

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80 100
75		Gray, wet, very dense, highly weathered bedrock (unable to core) *(continued)*	16			
80			SS 17	100	60-80	
85		SHALE, highly weathered, dark gray, very soft, Layer RQD = 7% Recovery: 42/60 = 70%, Core Run #1				
90		SHALE, slightly weathered, dark gray, medium hard, Layer RQD = 67% Recovery: 60/60 = 100%, Core Run #2				

Bottom of borehole at 94.0 feet.

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-2

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 838, Warren RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Palmer River
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION -9.1 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING --- 9.4' water to mudline
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING ---
NOTES Barge In-water Boring, top of barge deck to water = 2.3'
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0		SANDY ORGANIC SOIL WITH GRAVEL, (OL) gray, wet, loose, some shells	SS 1	29	4-5-5-4 (10)
		WELL GRADED SAND WITH GRAVEL, (SW) dark gray, wet, medium dense, trace silt			
5			SS 2	25	2-4-11-11 (15)
		Gray, wet, dense to very dense, highly weathered bedrock (unable to core)			
10			SS 3	54	10-15-16-36 (31)
15			SS 4	78	36-56-78 (134)
20			SS 5	56	37-44-100/4"
25			SS 6	100	120
30			SS 7	75	64-82

▲ SPT N VALUE ▲
20 40 60 80 100
>>▲

Bottom of borehole at 31.0 feet.

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-3

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 838, Warren RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Palmer River
DATE STARTED 4/29/20 **COMPLETED** 4/29/20
GROUND ELEVATION -10 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING --- 11.0' water to mudline
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING ---
NOTES Barge In-water Boring, top of barge deck to water = 2.3'
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0		SANDY ORGANIC SOIL WITH GRAVEL, (OL) gray, wet, dense, some shells	SS 1	29	7-13-32-14 (45)
5		Gray, wet, very dense, highly weathered bedrock	SS 2	100	120/5"
10		SHALE, highly weathered, dark gray, soft to medium hard, Layer RQD = 12% Recovery: 45/60 = 75%			
15		SHALE, moderately weathered, dark gray, soft to medium hard, Layer RQD = 12% Recovery: 46/60 = 77%			

▲ SPT N VALUE ▲
20 40 60 80 100

Bottom of borehole at 18.0 feet.

Lamson Engineering Corporation
437 Cherry Street #109
Newton, MA 02465
Telephone: (617) 558-0101

BORING NUMBER BB-4

CLIENT Rhode Island Department of Transportation
PROJECT NAME Bridge No. 838, Warren RI
PROJECT NUMBER 2011-EB-006
PROJECT LOCATION East Bay Bike Path over Palmer River
DATE STARTED 3/13/20 **COMPLETED** 3/13/20
GROUND ELEVATION 9.6 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR New England Boring Contractors
GROUND WATER LEVELS:
DRILLING METHOD Drive Sample Boring
AT TIME OF DRILLING ---
LOGGED BY W.Dong **CHECKED BY** J.J.Li
AT END OF DRILLING 7.50 ft / Elev 2.10 ft
NOTES ATV Land Boring
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)
0	ASPHALT 4"			
	WELL GRADED SAND WITH GRAVEL, (SW) brown, dry, medium dense, trace silt	SS 1	75	8-9-9-10 (18)
		SS 2	42	5-4-12-6 (16)
5				
10	WELL GRADED SAND WITH GRAVEL, (SW) brown, wet, medium dense, trace silt	SS 3	33	9-7-6-7 (13)
15	WELL GRADED SAND WITH SILT AND GRAVEL, (SW-SM) gray, wet, medium dense	SS 4	54	13-14-13-14 (27)
	Gray, wet, dense, highly weathered bedrock	SS 5	58	20-23-13-28 (36)
20				
25	SHALE, slightly weathered, gray, medium hard, Layer RQD = 37% Recovery: 52/60 = 87%, Core Run #1	SS 6		100/0"
30	SHALE, slightly weathered, gray, medium hard, Layer RQD = 37% Recovery: 60/60 = 100%, Core Run #2			

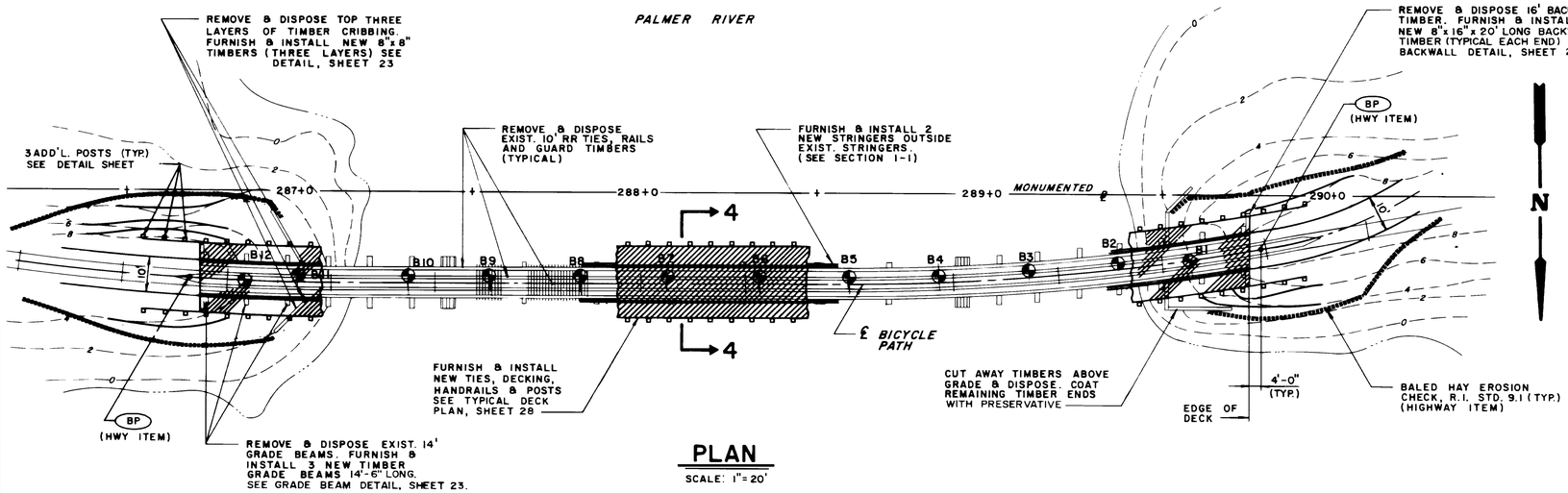
▲ SPT N VALUE ▲
20 40 60 80 100

Bottom of borehole at 34.0 feet.

Appendix B

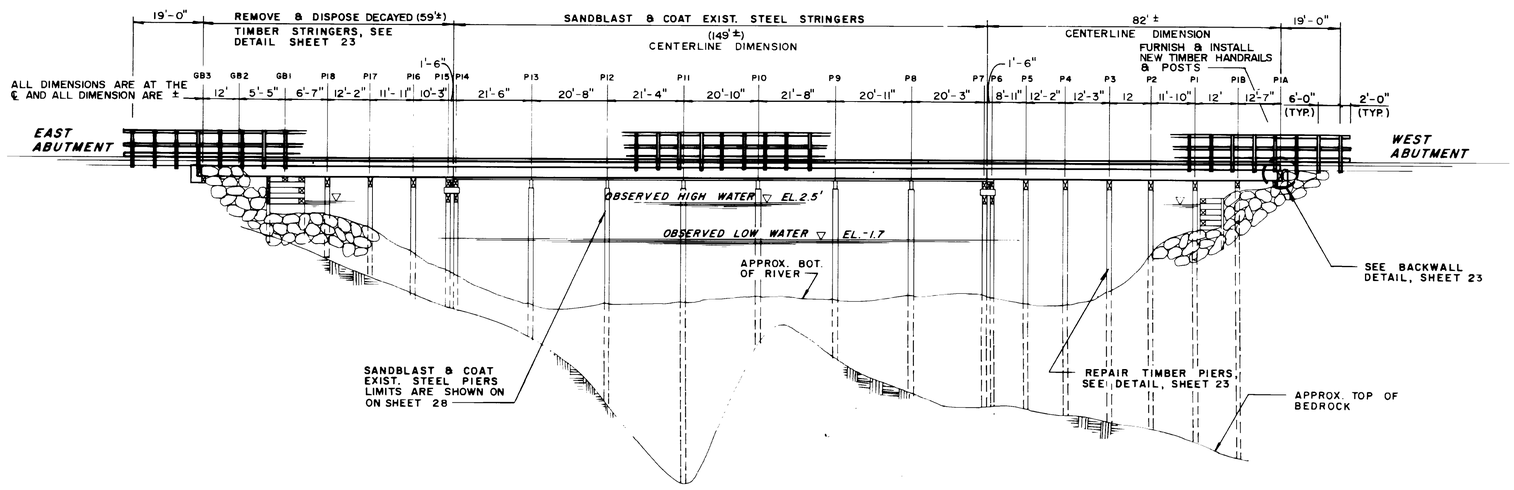
Historic Boring Logs

FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			22	84



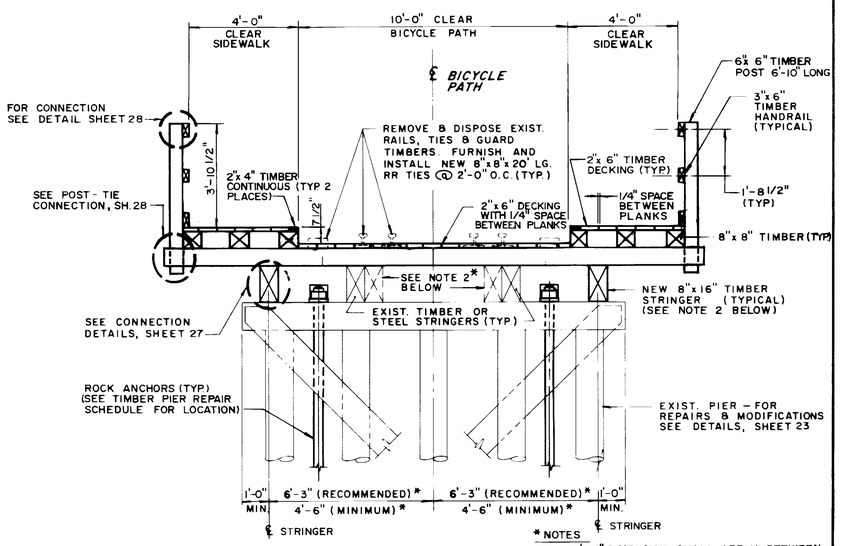
PLAN

SCALE: 1"=20'



ELEVATION

SCALE: HORIZ. 1"=20'
VERT. 1"=10'



SECTION 4-4

SCALE: 3/8"=1'-0"

*NOTES
1. 4'-6" DIMENSION SHALL APPLY BETWEEN PIERS P5-P16. 6'-3" DIMENSION SHALL APPLY BETWEEN PIERS P1A-P5 & P16-GB3.
2. WHERE EXISTING STRINGERS ARE TIMBER, INTERIOR STRINGERS SHALL BE REMOVED AND UTILIZED FOR NEW 8"x16" STRINGER.

BRIDGE DESIGN DATA AND NOTES

1. ALL CONSTRUCTION INDICATED ON THESE PLANS SHALL BE IN ACCORDANCE WITH THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 1971, THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS DATED 1983 (INCLUDING ALL LATER REVISIONS), AND THE SPECIFICATIONS ACCOMPANYING THESE PLANS. IN CASE OF CONFLICT, THE SPECIAL PROVISIONS OF THE SPECIFICATIONS ACCOMPANYING THESE PLANS SHALL GOVERN.
2. LOADING IS IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (1983 EDITION) FOR BICYCLE LOADING (85 PSF).
3. DESIGN SPECIFICATION: AASHTO 1983 EDITION WITH LATEST REVISIONS AND THE RI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
4. AS-BUILT DIMENSIONS AND QUANTITIES ARE PROVIDED FOR CONTRACTOR'S INFORMATION ONLY. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND QUANTITIES.
5. PILES SHALL BE DRIVEN TO REFUSAL (4 BLOWS PER INCH OR 25 BLOWS PER FOOT, WHICHEVER OCCURS FIRST) WITH A HAMMER ENERGY OF 10,000 FT.-LB.

STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL SHALL BE ASTM A-36. BASIC ALLOWABLE STRESS IN TENSION = 20,000 PSI.
2. BOLTS SHALL BE GALVANIZED ASTM A-307.
3. ALL EXISTING STEEL SHALL BE CLEANED TO MEET THE STANDARDS OF THE STEEL STRUCTURE PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS FOR NO. 3 POWER TOOL CLEANING IN ACCORDANCE WITH SPECIAL PROVISION 809.9902.
4. ALL NEW STEEL SHALL BE CLEANED TO NEAR WHITE FINISH IN ACCORDANCE WITH SSPC-SP-10 AND PAINTED IN ACCORDANCE WITH SPECIAL PROVISION 809.9902. THIS DOES NOT INCLUDE THE GALVANIZED STEEL HARDWARE FOR TIMBER CONNECTIONS (SEE TIMBER NOTE 5) OR STEEL PIPE CASINGS. NEW STEEL GALVANIZED PIPE CASINGS SHALL BE SOLVENT CLEANED PER SSPC-SP-1 AND PAINTED FOR THEIR ENTIRE LENGTH IN ACCORDANCE WITH SPECIAL PROVISON 809.9902.
5. WELD ELECTRODES SHALL BE E6010.
6. NON-SHRINK GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI.

PALMER RIVER BRIDGE

LUMP SUM BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
FURNISH & INSTALL 3" X 6" TIMBER HANDRAIL WITH 6 X 6 TIMBER POSTS	LF	660
FURNISH & INSTALL TIMBER SIDEWALK	LF	590
FURNISH & INSTALL 2" X 6" TIMBER DECKING	SF	2940
FURNISH & INSTALL 8 X 8 X 20' TIMBER TIES	EA	148
REMOVE & RESET EXISTING 8" X 16" TIMBER STRINGER	LF	245
FURNISH & INSTALL 12" X 12" TIMBER GRADE BEAMS	LF	44
FURNISH & INSTALL 4" X 12" TIMBER BRACING	EA	6
FURNISH & INSTALL NEW 12" X 12" TIMBER PILE CAP	EA	2
REMOVE & RESET EXISTING PILE CAP	EA	3
UNREINFORCED CONCRETE CLASS D SUBFOOTINGS	CY	3
PREFORMED POLYETHYLENE FOAM JOINT FILLER 1"	SF	27
POLYURETHANE JOINT SEALANT	CI	120
PAINT & SANDBLAST STEEL	SF	6500

PALMER RIVER BRIDGE

UNIT BID BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL EXCAVATION EARTH	CY	16
COMPACTED CRUSHED STONE	TNS	21
REPAIRS TO WEST ABUTMENT - PALMER RIVER BRIDGE	LS	1
REPAIRS TO EAST ABUTMENT - PALMER RIVER BRIDGE	LS	1
REPAIRS TO RETAINING WALL - PALMER RIVER BRIDGE	LS	1
FURNISH & INSTALL CONNECTION HARDWARE	LS	1
1" DIAMETER A307 GALVANIZED BOLTS	EA	32
REMOVE & DISPOSE PORTIONS OF EXISTING BRIDGE ITEMS - PALMER RIVER BRIDGE	LS	1
MOVING EQUIPMENT ON & OFF JOB	LS	1
FURNISH 12" DIAMETER TIMBER PILES	LF	85
DRIVE 12" DIAMETER TIMBER PILES	LF	29
PILE CUTOFF 12" DIAMETER TIMBER PILES	EA	4
PILE SHOES 12" DIAMETER TIMBER PILES	EA	3
ROCK ANCHORS	EA	24

PALMER RIVER BRIDGE

LUMP SUM DEMOLITION QUANTITIES

ITEM	UNIT	QUANTITY
REMOVE & DISPOSE EXISTING RAILS	LF	294
REMOVE & DISPOSE EXISTING RAILROAD TIES	LS	1
REMOVE & DISPOSE EXISTING GUARD TIMBERS	LF	294
REMOVE & DISPOSE EXISTING PIER MEMBERS	LS	1
REMOVE & DISPOSE TIMBER STRINGERS	LS	1
REMOVE & DISPOSE TIMBERS (WEST BACKWALL)	LF	18
REMOVE & DISPOSE TIMBERS (EAST RETAINING WALL)	LF	123
REMOVE & DISPOSE EXISTING GRADE BEAMS	LF	44

NOTE: QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR, RIDOT ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY.

NOTES:

1. FOR STRUCTURAL STEEL AND TIMBER NOTES, SEE SHEET 22
2. DURING BRIDGE CONSTRUCTION, FOUR (4) R I STD. 40.5 PRECAST MEDIAN BARRIERS SHALL BE PROVIDED ON EACH BRIDGE APPROACH FOR PROTECTION OF TRAFFIC. (HIGHWAY ITEM)

Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

REVISIONS		
NO.	DATE	BY
1	10/93	MJL

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON . RHODE ISLAND

PALMER RIVER BRIDGE PLAN, ELEVATION and SECTION

CHECKED BY K.D. DATE _____ SCALE AS SHOWN

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
	R.I.			29	84

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 1 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS: At 6' @ Comp. after ____ Hours; At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2¾"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fal.	24"	30"	

Date / Time: START 6/14/78 ____ ; COMPLETE 6/14/78 ____ ; TOTAL HRS ____ ; BORING FOREMAN T. Paquette ; INSPECTOR R. Kershaw ; SOILS ENGR. ____

LOCATION OF BORING 3'6" from Top of Bridge to Ground Surface

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 6-12	12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE No	Pen	Rec
									0'	Crushed Stone			
										FILL - Wood, Gravel & ecc.			
	14	4'-5'6"	D	14	19		21	Moist dense			1	18"	4"
	27								7'				
	61									Gray Black fine to medium SAND, some fine to medium gravel, oil soaked			
	60												
	64												
	20	9'-10'6"	D	21	22		24	Wet dense			2	18"	13"
	29												
	36												
	40								13'6"				
	34									Dark Gray SILT, some fine sand & fine to coarse gravel (creosote odor)			

	22	15'-16'6"	D	13	17		17	Moist Hard			3	18"	18"
	28								19'				
	63									Dark Gray SILT, some shale fragments, little fine sand			
	61												
	17	19'-20'6"	D	10	13		11	Moist very stiff			4	18"	16"
	35								24'				
	55									Dark Gray weathered SHALE (Pyrite seams)			
	137												
	101												
	64	24'-25'6"	D	27	24		27	Moi very dense			5	18"	16"
	92												
	73												
	77												
	112												
	105	29'-30'6"	D	11	13		16	Moist medium dens			6	18"	12"
	87												
	115												
	127												
	161							Moist very dense			7	18"	18"
	137	34'-35'6"	D	17	21		40						
	185												
	214								37'1"				
		37'-37'1"	DXX	120						Refusal - Bottom of Boring 37'1"			

Dry open end AW rod 300# hammer

GROUND SURFACE TO 37' | USED BW CASING THEN O.E. Rod to 37'1"

Sample Type: D-Dry C-Cored W-Washed; UP-Undisturbed Piston; TP-Test Pit A-Auger V-Vane Test; UT-Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2 O.D Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft 30 + Hard
10-30	Med Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff

SUMMARY: Earth Boring 37'1" ; Rock Coring ____ ; Samples 7

HOLE NO 1

TOWN PRESS - EAST PROV.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 2 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS: 3'1" Water @ 9:02 AM after ____ Hours; At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2¾"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fal.	24"	30"	

Date / Time: START 6/15/78 ____ ; COMPLETE 6/15/78 ____ ; TOTAL HRS ____ ; BORING FOREMAN T. Paquette ; INSPECTOR R. Nolan ; SOILS ENGR. ____

LOCATION OF BORING 13'4" Top of RR Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 6-12	12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No	Pen	Rec
	4	0'-1'6"	D	3	12		16	Wet medium dense			1	18"	13"
	16								3'	Gray fine to medium silty SAND, some fine to medium gravel			
	7												
	12												
	16												
	19							Wet very stiff					
	14	6'-7'6"	D	13	14		11			Gray SILT, some fine sand & shale fragments	2	18"	10"
	16												
	20								10'				
	23												
	26									Dark Gray weathered SHALE			
	0	11'-12'6"	D	17	25		15	Moist dense			3	18"	12"
	P												
	F												
	N												
	H	16'-17'6"	D	28	53		71	Moist very dense			4	18"	18"
	O												
	I												
	F								22'	Refusal - Bottom of Boring 22'			
		20'6"-22'	DXX	20	33		100	"			5	18"	12"

DXX open end AW rod 300# ham

GROUND SURFACE TO 11' | USED BW CASING THEN Open Hole to 22'

Sample Type: D-Dry C-Cored W-Washed; UP-Undisturbed Piston; TP-Test Pit A-Auger V-Vane Test; UT-Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2 O.D Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft 30 + Hard
10-30	Med Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff

SUMMARY: Earth Boring 22' ; Rock Coring ____ ; Samples 5

HOLE NO 2

TOWN PRESS - EAST PROV.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 3 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS: 11'2" Water @ 1:10 PM after ____ Hours; At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2¾"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fal.	24"	30"	

Date / Time: START 6/15/78 ____ ; COMPLETE 6/15/78 ____ ; TOTAL HRS ____ ; BORING FOREMAN T. Paquette ; INSPECTOR R. Nolan ; SOILS ENGR. ____

LOCATION OF BORING 20'3" Top of Bridge to Bottom of Water 9'1" to Top of Water

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 6-12	12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE No	Pen	Rec
	1	0'-1'6"	D	4	9		12	Wet/m dense		Gray fine to medium SAND & Gravel, trace silt - Fill	1	18"	4"
	4								3'				
	14									Gray SILT, little fine sand & shale fragments, trace of brick - Fill			
	19							Wet stiff	5'6"				
	24	5'-5'6"	D	9						Dark Gray SILT & Shale Fragments, little fine sand	2A	6"	6"
	16	5'6"-6'6"	D			12	12	Wet/v stiff	8'		2B	12"	12"
	20									Dark Gray weathered SHALE			
	27												
	113												
	155												
		10'-11'6"	D	76	25		27	Moist very dense	14'		3	18"	18"
					(300# Wt.)								
		13'6"-14'	DXX	100				"			4	6"	6"
										Refusal - Bottom of Boring 14'			

DXX open end AW rod 300# hammer

GROUND SURFACE TO 10' | USED BW CASING THEN Open to 14'

Sample Type: D-Dry C-Cored W-Washed; UP-Undisturbed Piston; TP-Test Pit A-Auger V-Vane Test; UT-Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2 O.D Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft 30 + Hard
10-30	Med Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff

SUMMARY: Earth Boring 14' ; Rock Coring ____ ; Samples 4

HOLE NO 3

TOWN PRESS - EAST PROV.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 4 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS: 8'6" Water @ 8:27 AM after ____ Hours; At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2¾"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fal.	24"	30"	

Date / Time: START 6/16/78 ____ ; COMPLETE 6/16/78 ____ ; TOTAL HRS ____ ; BORING FOREMAN T. Paquette ; INSPECTOR R. Nolan ; SOILS ENGR. ____

LOCATION OF BORING 19'6" Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 6-12	12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE No	Pen	Rec
	4	0'-1'6"	D	4	7		12	Wet/m dense		Black SILT & fine to medium Sand, some fine to coarse gravel, trace of shells	1	18"	-
	7								3'				
	19												
	22												
	27									Dark Gray SILT & Shale Fragments, little fine sand			
	27	5'-6'6"	D	11	16		20	Wet Hard	8'		2	18"	18"
	29												
	40												
	62									Dark Gray weathered SHALE			
	84												
		10'-11'6"	D	71	92		97	Moist very dense			3	18"	18"
	Washed Ahead												
		15'-15'6"	D	187				"	15'6"		4	6"	6"
										Refusal - Bottom of Boring 15'6"			

GROUND SURFACE TO 15' | USED BW CASING THEN S/S to 15'6"

Sample Type: D-Dry C-Cored W-Washed; UP-Undisturbed Piston; TP-Test Pit A-Auger V-Vane Test; UT-Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2 O.D Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft 30 + Hard
10-30	Med Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff

SUMMARY: Earth Boring 15'6" ; Rock Coring ____ ; Samples 4

HOLE NO 4

TOWN PRESS - EAST PROV.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 5 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS: 7'4" Water @ 11:32 AM after ____ Hours; At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2¾"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fal.	24"	30"	

Date / Time: START 6/16/78 ____ ; COMPLETE 6/16/78 ____ ; TOTAL HRS ____ ; BORING FOREMAN T. Paquette ; INSPECTOR R. Nolan ; SOILS ENGR. ____

LOCATION OF BORING 17'5" from Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 6-12	12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE No	Pen	Rec
	19	0'-1'6"	D	22	7		7	Wet/m dense		Brown fine to medium silty SAND & fine to coarse Gravel, trace of shells & brick-Fill	1	18"	10"
	11								3'				
	17												
	24												
	29									Dark Gray SILT & Shale Fragments, little fine sand			
	14	5'-6'6"	D	18	10		22	Wet Hard	7'		2	18"	18"
	26												
	73									Dark Gray weathered SHALE			
	176								10'				
	254/6"	9'6"-10'	DXX	130				Moist/v dense			3	6"	6"
										Refusal - Bottom of Boring 10'			

DXX open end AW rod 300# ham

GROUND SURFACE TO 9'6" | USED BW CASING THEN O.E. Rod to 10'

Sample Type: D-Dry C-Cored W-Washed; UP-Undisturbed Piston; TP-Test Pit A-Auger V-Vane Test; UT-Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2 O.D Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft 30 + Hard
10-30	Med Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff

SUMMARY: Earth Boring 10' ; Rock Coring ____ ; Samples 3

HOLE NO 5

TOWN PRESS - EAST PROV.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 6A | BORINGS (6) | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS: At High Tide after ____ Hours; At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	AXD3
Size D	2¾"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fal.	24"	30"	Dia.

Date / Time: START 6/19/78 ____ ; COMPLETE 6/19/78 ____ ; TOTAL HRS ____ ; BORING FOREMAN T. Paquette ; INSPECTOR R. Nolan ; SOILS ENGR. ____

LOCATION OF BORING 17' Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 6-12	12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc	SAMPLE No	Pen	Rec
	3	0'-1'6"	D	4	7		12	Wet medium dense		Gray fine to medium silty SAND, some fine to coarse gravel	1	18"	18"
	8												
	34												
	23												
	22								7'				
	9	5'-6'6"	D	7	9		14	"			2	18"	10"
	62									Brown Yellow fine SAND & Silt with Quartz Fragments (compact)			
	210							Moist very dense	11'				
	260												
	278												
		10'-11'	D	57	100						3	12"	12"
					(300# Wt)								
		11'-16'	C							Cored weathered Rock or Boulders with Quartz Pebbles	C1	60"	4"
											(1¾ Jar)		
		16'-17'	DXX	84	120			Dry/v dense	16'		4	12"	5"
									17'	Light Gray weathered Rock or Boulder Fragments			
										Refusal - Bottom of Boring 17'			
										Boring #6 went to refusal at 4'			

GROUND SURFACE TO ____ | USED ____ CASING THEN ____

Sample Type: D-Dry C-Cored W-Washed; UP-Undisturbed Piston; TP-Test Pit A-Auger V-Vane Test; UT-Undisturbed Thinwall

Proportions Used: trace 0 to 10%; little 10 to 20%; some 20 to 35%; and 35 to 50%

140 lb Wt x 30" fall on 2 O.D Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft 30 + Hard
10-30	Med Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff

SUMMARY: Earth Boring 17' ; Rock Coring 5' ; Samples 4

HOLE NO 6A

TOWN PRESS - EAST PROV.

REVISIONS		
NO	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON — RHODE ISLAND

PALMER RIVER BRIDGE BORING LOGS

SHEET 1 of 3

CHECKED BY K.D. DATE ____ SCALE NONE

Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
150 Main Street - Pawtucket - RI 02860
161 Water Street - Norwich - CT 06360

FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	RI			30	84

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 7 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS
At Tidal after ____ Hours
At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2½"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fall	24"	30"	

	Date	Time
START	6/19/78	a.m. p.m.
COMPLETE	6/20/78	a.m. p.m.
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR.		

LOCATION OF BORING 18' Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sampler: From 0-6	6-12	To 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc Rock-color, type, condition, hardness, Driving time, seams and etc	SAMPLE No	Pen	Rec
	4	0'-1'6"	D	37	14	9	Wet medium dense		Gray fine to coarse SAND, some silt & fine to coarse gravel, trace of silt	1	18"	17"
	15							4'				
	17											
	35											
	103											
		5'-6'6"	D	39	54	82	Moist Hard		Yellow Brown SILT & fine to medium Sand, some fine to coarse gravel (compact)	2	18"	18"
	W											
	A											
	S											
	H	10'-11'	D	37	45		"	11'		3	12"	11"
	E	11'-12'6"	D	7	8	10	Moist very stiff		Gray SILT & fine Sand (compact)	4	18"	18"
	D											
	A											
	H											
	E	16'-17'6"	D	14	24	28	Moist Hard			5	18"	18"
	A											
	D											
		21'-22'6"	D	25	27	31	"			6	18"	10"
							Dry/v	23'6"				
		24'-25'	D	63	100		dense	25'	Gray weathered Rock or Boulder Fragments	7	12"	12"
				(300# Wt.)					Refusal - Bottom of Boring 25'			

GROUND SURFACE TO 10' | USED BW | CASING THEN Open to 24' then S/S to 25'

Sample Type: D:Dry C:Cored W: Washed | UP: Undisturbed Piston | TP: Test Pit A: Auger V: Vane Test | UT: Undisturbed Thinwall

Proportions Used: trace 0 to 10% | little 10 to 20% | some 20 to 35% | and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler
Cohesionless Density: 0-10 Loose | 10-30 Med Dense | 30-50 Dense | 50+ Very Dense
Cohesive Consistency: 0-4 Soft | 4-8 M/Stiff | 8-15 Stiff | 15-30 V-Stiff | 30+ Hard

SUMMARY: Earth Borng 25' | Rock Coring — | Samples 7 | HOLE NO 7

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 8 | LINE & STA. | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS
At ____ after ____ Hours
At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	AXD3
Size D	2½"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fall	24"	30"	Dia.

	Date	Time
START	6/20/78	a.m. p.m.
COMPLETE	6/20/78	a.m. p.m.
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR.		

LOCATION OF BORING 17' Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sampler: From 0-6	6-12	To 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc Rock-color, type, condition, hardness, Driving time, seams and etc	SAMPLE No	Pen	Rec
	-	0'-1'6"	D	49	34	16	Wet dense		Gray Brown fine to medium SAND & fine to coarse Gravel some silt	1	18"	13"
	6							3'				
	14								Dark Gray fine to medium SAND & Silt with Shale Fragments			
	23											
	17											
		5'-6'	D	14	19		"	6'		2A	12"	12"
		6'-6'6"	D			72 (300#)	Moist very dense		Dark Gray weathered SHALE	2B	6"	6"
		8'-9'	DXX	89	211			9'		3	12"	4"
		9'-13'6"	C						Yellow Brown weathered Rock or Boulders	C	54"	0"
		13'6"-14'	DXX	100			D/v/d	14'	Refusal - Bottom of Boring 14'	4	6"	5"

GROUND SURFACE TO ____ | USED ____ | CASING THEN ____

Sample Type: D:Dry C:Cored W: Washed | UP: Undisturbed Piston | TP: Test Pit A: Auger V: Vane Test | UT: Undisturbed Thinwall

Proportions Used: trace 0 to 10% | little 10 to 20% | some 20 to 35% | and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler
Cohesionless Density: 0-10 Loose | 10-30 Med Dense | 30-50 Dense | 50+ Very Dense
Cohesive Consistency: 0-4 Soft | 4-8 M/Stiff | 8-15 Stiff | 15-30 V-Stiff | 30+ Hard

SUMMARY: Earth Borng 17'6" | Rock Coring 4'6" | Samples 4 | HOLE NO 8

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 9 | LINE & STA. (9A & 9B) | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS
At ____ after ____ Hours
At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2½"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fall	24"	30"	

	Date	Time
START	6/20/78	a.m. p.m.
COMPLETE	6/21/78	a.m. p.m.
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR.		

LOCATION OF BORING 20' Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sampler: From 0-6	6-12	To 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc Rock-color, type, condition, hardness, Driving time, seams and etc	SAMPLE No	Pen	Rec
		0'-1'6"	D	40	16	9	Medium dense		Gray coarse to fine SAND, some gravel	-	18"	0"
								3'				
								4'	Gray SHALE			
		@ 4'	DXX	100	0"				Refusal - Bottom of Boring 4'			
									Holes #9A and #9B went to refusal at 4'			
									DXX open end AW rod 300# 30"			

GROUND SURFACE TO ____ | USED ____ | CASING THEN ____

Sample Type: D:Dry C:Cored W: Washed | UP: Undisturbed Piston | TP: Test Pit A: Auger V: Vane Test | UT: Undisturbed Thinwall

Proportions Used: trace 0 to 10% | little 10 to 20% | some 20 to 35% | and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler
Cohesionless Density: 0-10 Loose | 10-30 Med Dense | 30-50 Dense | 50+ Very Dense
Cohesive Consistency: 0-4 Soft | 4-8 M/Stiff | 8-15 Stiff | 15-30 V-Stiff | 30+ Hard

SUMMARY: Earth Borng 4' | Rock Coring — | Samples — | HOLE NO 9

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 10A | LINE & STA. (10) | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS
At ____ after ____ Hours
At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2½"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fall	24"	30"	

	Date	Time
START	6/21/78	a.m. p.m.
COMPLETE	6/21/78	a.m. p.m.
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR.		

LOCATION OF BORING 13'2" Top of Bridge to Bottom of Water

DEPTH	Casing Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sampler: From 0-6	6-12	To 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc Rock-color, type, condition, hard ness, Driving time, seams and etc	SAMPLE No	Pen	Rec
	20	0'-1'6"	D	29	34	9	Wet dense		Gray Black F-C SAND, some F-C gravel, trace of shells & silt (organic odor noted)	1	18"	11"
	26							3'				
	30											
	44											
	26						Wet very dense		Gray fine to medium SAND & Silt, some fine to medium gravel & shale fragments			
		5'-6'6"	D	24	31	36				2	18"	18"
	46							8'				
	60											
	212						Dry/v dense	9'6"	Gray Brown weathered Rock or Boulder Fragments			
		9'-9.5'	DXX	125						3	6"	5"
									Refusal - Bottom of Boring 9'6"			
									Hole #10 went to refusal at 5'			
									DXX open end AW rod 300# 30"			

GROUND SURFACE TO ____ | USED ____ | CASING THEN ____

Sample Type: D:Dry C:Cored W: Washed | UP: Undisturbed Piston | TP: Test Pit A: Auger V: Vane Test | UT: Undisturbed Thinwall

Proportions Used: trace 0 to 10% | little 10 to 20% | some 20 to 35% | and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler
Cohesionless Density: 0-10 Loose | 10-30 Med Dense | 30-50 Dense | 50+ Very Dense
Cohesive Consistency: 0-4 Soft | 4-8 M/Stiff | 8-15 Stiff | 15-30 V-Stiff | 30+ Hard

SUMMARY: Earth Borng 9'6" | Rock Coring — | Samples 3 | HOLE NO 10A

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 11A | LINE & STA. (11) | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS
At 8.3' after @ 2:34 PM Hours
At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2½"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fall	24"	30"	

	Date	Time
START	6/21/78	a.m. p.m.
COMPLETE	6/21/78	a.m. p.m.
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR.		

LOCATION OF BORING 2' Top of Bridge to Ground Surface

DEPTH	Casing Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sampler: From 0-6	6-12	To 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc Rock-color, type, condition, hard ness, Driving time, seams and etc	SAMPLE No	Pen	Rec
	3	0'-1'6"	D	4	3	4	Dry loose		Crushed Stone Fragments	1	18"	5"
	7							3'				
	11								Brown fine to medium SAND, some fine to coarse gravel, little silt			
	9											
	11						Wet medium dense					
	8	5'-6'6"	D	12	8	14		8'		2	18"	11"
	13								Brown fine to coarse SAND, some silt, little fine to medium gravel, trace of shells			
	18											
	18											
	24											
	10	10'-11'6"	D	11	4	9	"	14'6"		3	18"	12"
	5											
	16											
	60											
	94								Brown Gray SHALE Fragments, Silt & fine Sand			
		15'-16'6"	D	54 (300# Wt.)	40	41	Wet very dense	17'6"		4	18"	18"
									Gray weathered Rock or Boulder Fragments			
		19'6"-20'	DXX	84			"	20'		5	6"	6"
		@ 20'	DXX	125/0"					Refusal - Bottom of Boring 20'			
									Hole #11 went to refusal at 4'			

GROUND SURFACE TO ____ | USED ____ | CASING THEN ____

Sample Type: D:Dry C:Cored W: Washed | UP: Undisturbed Piston | TP: Test Pit A: Auger V: Vane Test | UT: Undisturbed Thinwall

Proportions Used: trace 0 to 10% | little 10 to 20% | some 20 to 35% | and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler
Cohesionless Density: 0-10 Loose | 10-30 Med Dense | 30-50 Dense | 50+ Very Dense
Cohesive Consistency: 0-4 Soft | 4-8 M/Stiff | 8-15 Stiff | 15-30 V-Stiff | 30+ Hard

SUMMARY: Earth Borng 20' | Rock Coring — | Samples 5 | HOLE NO 11A

TOWN PRESS - EAST PROV

GUILD DRILLING CO., INC

100 WATER STREET EAST PROVIDENCE R I

SHEET 1 OF 1 | DATE | HOLE NO 12A | LINE & STA. (12) | OFFSET | SURF. ELEV.

TO Lee Pare & Associates | ADDRESS Providence, R.I.
PROJECT NAME Warren River RR Bridge | LOCATION Barrington-Warren, R.I.
REPORT SENT TO above | PROJ NO
SAMPLES SENT TO " | OUR JOB NO 79-22

GROUND WATER OBSERVATIONS
At 5'7" @ Comp. after ____ Hours
At ____ after ____ Hours

Rods-"AW"	CASING	SAMPLER	CORE BAR
Type	BW	S/S	
Size D	2½"	1 3/8"	
Hammer Wt	300#	140#	BIT
Hammer Fall	24"	30"	

	Date	Time
START	6/22/78	a.m. p.m.
COMPLETE	6/22/78	a.m. p.m.
TOTAL HRS		
BORING FOREMAN	T. Paquette	
INSPECTOR	R. Nolan	
SOILS ENGR.		

LOCATION OF BORING 1' Top of Bridge to Ground Surface

DEPTH	Casing Blows per foot	Sample Depths From-To	Type of Sample	Blows per 6" on Sampler: From 0-6	6-12	To 12-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc Rock-color, type, condition, hardness, Driving time seams and etc	SAMPLE No	Pen	Rec
	2	0'-1'6"	D	9	11	11	Medium dense	6"	Crushed Stone	-	18"	0"
	4								Brown Gray fine to medium SAND, some fine to medium gravel, little silt			
	4											
	10											
	14						Moist medium dense					
	20	5'-6'6"	D	24	16	12				1	18"	11"
	16											
	49											
	220							10'				
	116								Brown fine to medium SAND, some silt & fine to coarse gravel, trace of shells			
	11	10'-11'6"	D	14	16	9	Wet medium dense	13'6"		2	18"	11"
	13											
	19											
	44											
	27											
	20	15'-16'6"	D	19	24	22	Wet dense		Gray Brown fine to coarse SAND, Silt & fine to coarse Gravel	3	18"	13"
	44											
	46							19'				
	70							19'6"	Weathered Rock of Boulders			
	123/6"	@ 19'6"	DXX	120/0"					Refusal - Bottom of Boring 19'6"			
									Hole #12 went to refusal at 8'			

GROUND SURFACE TO ____ | USED ____ | CASING THEN ____

Sample Type: D:Dry C:Cored W: Washed | UP: Undisturbed Piston | TP: Test Pit A: Auger V: Vane Test | UT: Undisturbed Thinwall

Proportions Used: trace 0 to 10% | little 10 to 20% | some 20 to 35% | and 35 to 50%

140 lb Wt x 30" fall on 2" O.D Sampler
Cohesionless Density: 0-10 Loose | 10-30 Med Dense | 30-50 Dense | 50+ Very Dense
Cohesive Consistency: 0-4 Soft | 4-8 M/Stiff | 8-15 Stiff | 15-30 V-Stiff | 30+ Hard

SUMMARY: Earth Borng 12'6" | Rock Coring — | Samples 3 | HOLE NO 12A

TOWN PRESS - EAST PROV

REVISIONS		
NO	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

PALMER RIVER BRIDGE BORING LOGS

SHEET 2 of 3

CHECKED BY K.D. DATE ____ SCALE NONE

Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
150 Main Street - Pawtucket - RI 02860
161 Water Street - Norwich - CT 06360

Appendix C

Selected Historical Drawings

FED.ROAD DIV.NO.	STATE	FED. AID PROJ.No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	R.I.	IXAMBW 6666(008)	1987	1	84

INDEX of DRAWINGS

R.I. STANDARD SPECIFICATIONS

SPECIFICATIONS TO GOVERN THIS PROJECT ARE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, REVISIONS OF 1971, WITH THE LATEST REVISIONS THROUGH JUNE 1, 1984, AND THE STATE AND FEDERAL SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS. STANDARD DETAILS FOR THIS PROJECT ARE THE RHODE ISLAND STANDARD DETAILS INCLUDED IN THIS PLAN SET. THE FOLLOWING STANDARD DETAILS ARE INCLUDED IN THIS PROJECT:

STANDARD NUMBER	DESCRIPTION
2.6	PRECAST CONCRETE END SECTION
2.8	METAL END SECTION
4.3	CATCH BASIN TYPE "F" ROUND
5.17	SQUARE FRAME AND GRATE
7.11	PRECAST CONCRETE CURB
7.15	PRECAST CONCRETE APRON STONE
7.16	PRECAST CEMENT CONCRETE CURB 2' OR 3' RADIUS CORNER
7.17	PRECAST CONCRETE TRANSITION CURB
8.2	BITUMINOUS CONCRETE DITCH
9.1	BALED HAY EROSION CHECK
9.2	BALED HAY DITCH EROSION CHECK
14.2	GRANITE HIGHWAY BOUND
18.9	PRECAST HANDHOLE TYPE "A"
19.2	STEEL MAST ARM
24.0	GENERAL NOTES - REGULATORY AND WARNING SIGN MOUNTINGS
24.1	REGULATORY AND WARNING SIGN MOUNTINGS
24.11	REGULATORY SIGN MOUNTING
24.12	WARNING SIGN MOUNTING
24.14	PARKING SIGN MOUNTING
25.0	GENERAL NOTES - CONSTRUCTION & TEMPORARY SIGNS & MOUNTINGS
25.5	CONSTRUCTION AND TEMPORARY SIGN MOUNTINGS
26.0	GENERAL NOTES - BARRICADES
26.5	POLYETHYLENE DRUM WITH MARKINGS
26.6	FLUORESCENT TRAFFIC CONE
26.15	(PVC) PLASTIC PIPE BARRICADE
27.0	REGULATORY SIGNS
28.0	WARNING SIGNS
29.0	GUIDE SIGNS AND CONSTRUCTION SIGNS
34.32 & 34.33	STEEL BEAM GUARD RAIL
34.34	STEEL BEAM GUARD RAIL FIXTURES
34.35	BACK-UP PLATE - STEEL BEAM GUARD RAIL FIXTURE
34.5	GUARD RAIL - ANCHORAGE APPROACH SECTION
40.5	PRECAST MEDIAN BARRIER FOR TEMPORARY TRAFFIC CONTROL
43.1	CEMENT CONCRETE SIDEWALK

STATE OF RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

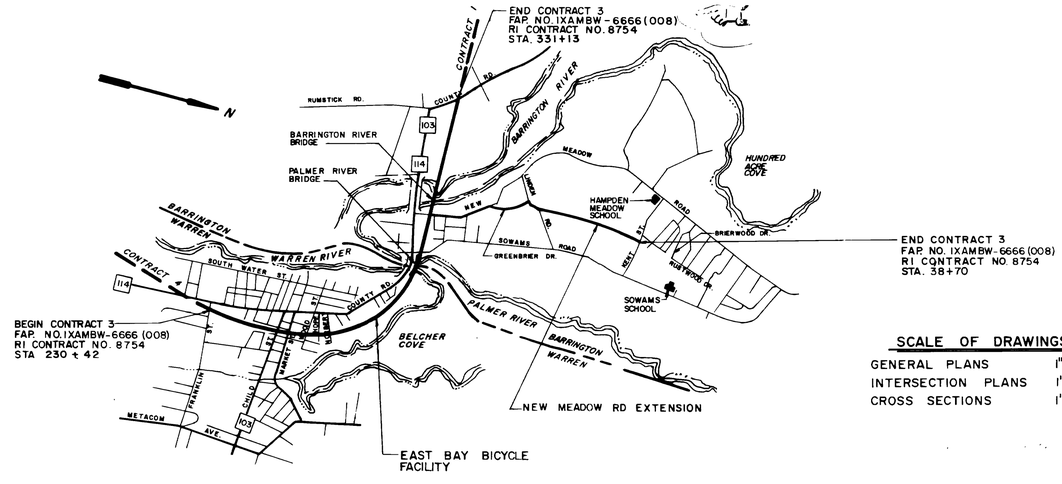
PLAN, PROFILE AND SECTIONS OF PROPOSED
STATE HIGHWAY
EAST BAY BICYCLE FACILITY
CONTRACT 3
FROM FRANKLIN STREET to COUNTY ROAD
TOWNS OF WARREN AND BARRINGTON
BRISTOL COUNTY

R. I. CONTRACT No. 8754
R.I.F.A. PROJECT No. IXAMBW-6666(008)
LENGTH = 3.343 MILES

LOCATION MAP
SCALE: 1"= 7 MILES

PAVEMENT COMPOSITION
1 1/2" BIT. SURFACE COURSE, TYPE I-1
1 1/2" MODIFIED BIT. BINDER COURSE
12" GRAVEL BORROW BASE COURSE
(APPLY ASPHALT EMULSION TACK COAT BETWEEN BINDER AND SURFACE COURSE)

DESIGN DESIGNATION
AADT (1985)=300 BICYCLES PER DAY
AADT (2005)=320 BICYCLES PER DAY
DHV (2005)= 32 BICYCLES PER HOUR
D = 50% - 50%
V = 20 MPH



PLAN
SCALE: 1"=1760'±

BASE OF LEVELS
NGVD OF 1929

SCALE OF DRAWINGS

GENERAL PLANS	1"= 40'
INTERSECTION PLANS	1"= 20'
CROSS SECTIONS	1"= 4'

KENNETH DECOSTA
No. 4520
REGISTERED PROFESSIONAL ENGINEER

R.I. DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

APPROVED
CHIEF OF DESIGN — DATE 7/22/87

APPROVED
CHIEF ENGINEER — DATE

APPROVED
DIRECTOR — DATE 6-1-88

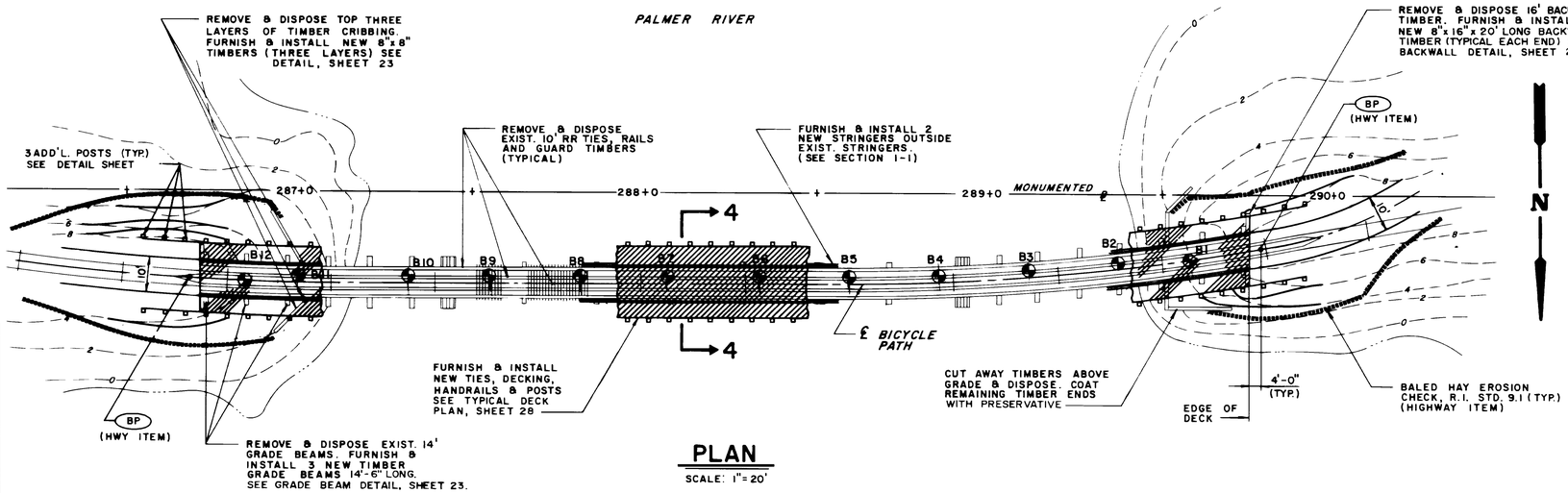
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR — DATE

Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
150 Main Street - Pawtucket - RI 02860
161 Water Street - Norwich - CT 06360

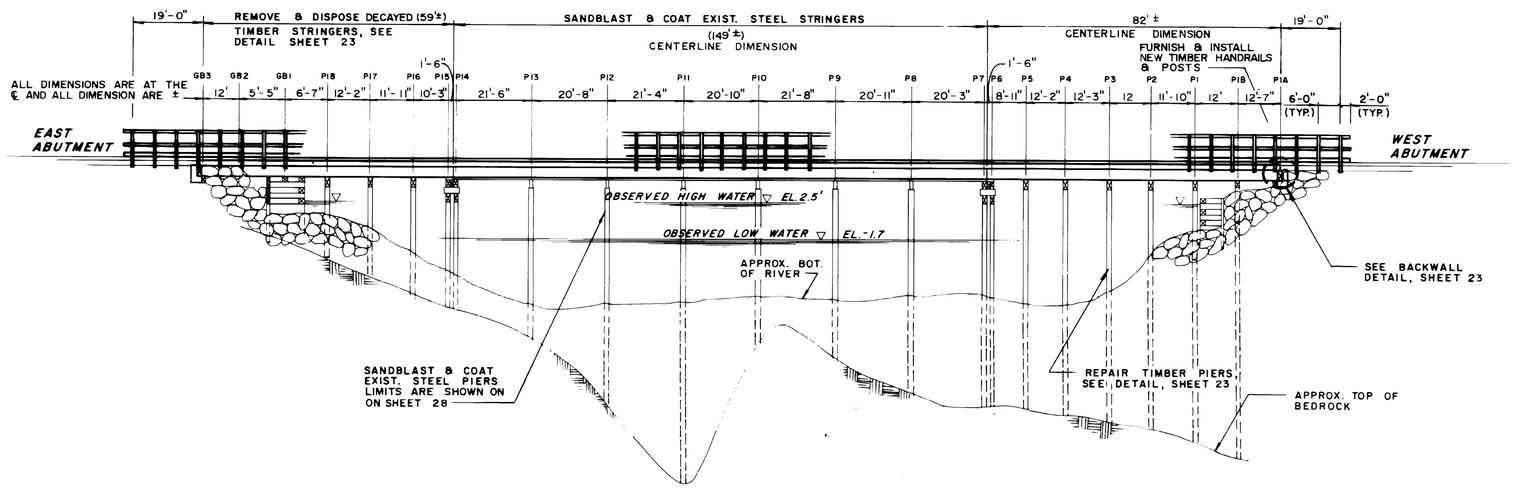
Contract Number 8754
Number of Sheet 1
Total Sheets 84

FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			22	84



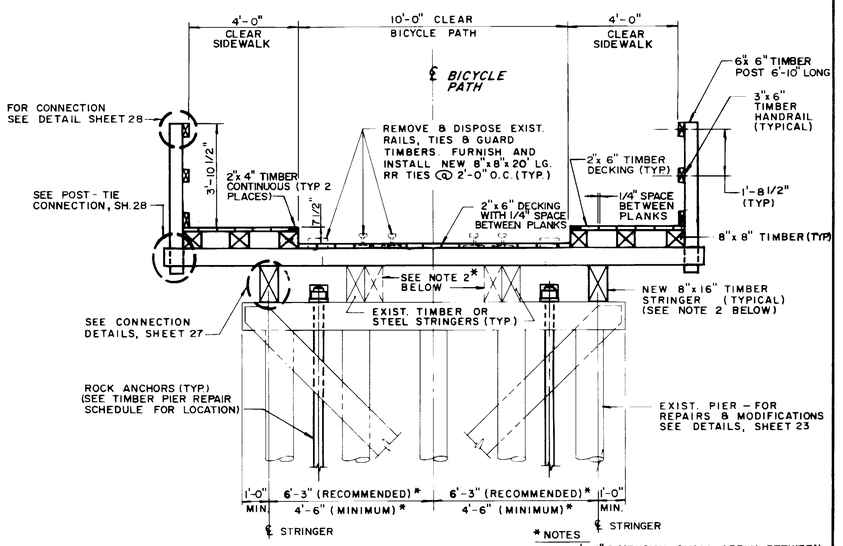
PLAN

SCALE: 1"=20'



ELEVATION

SCALE: HORIZ. 1"=20'
VERT. 1"=10'



SECTION 4-4

SCALE: 3/8"=1'-0"

*NOTES
1. 4'-6" DIMENSION SHALL APPLY BETWEEN PIERS P5-P16. 6'-3" DIMENSION SHALL APPLY BETWEEN PIERS P1A-P5 & P16-GB3.
2. WHERE EXISTING STRINGERS ARE TIMBER, INTERIOR STRINGERS SHALL BE REMOVED AND UTILIZED FOR NEW 8"x16" STRINGER.

BRIDGE DESIGN DATA AND NOTES

1. ALL CONSTRUCTION INDICATED ON THESE PLANS SHALL BE IN ACCORDANCE WITH THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 1971, THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS DATED 1983 (INCLUDING ALL LATER REVISIONS), AND THE SPECIFICATIONS ACCOMPANYING THESE PLANS. IN CASE OF CONFLICT, THE SPECIAL PROVISIONS OF THE SPECIFICATIONS ACCOMPANYING THESE PLANS SHALL GOVERN.
2. LOADING IS IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (1983 EDITION) FOR BICYCLE LOADING (85 PSF).
3. DESIGN SPECIFICATION: AASHTO 1983 EDITION WITH LATEST REVISIONS AND THE RI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
4. AS-BUILT DIMENSIONS AND QUANTITIES ARE PROVIDED FOR CONTRACTOR'S INFORMATION ONLY. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND QUANTITIES.
5. PILES SHALL BE DRIVEN TO REFUSAL (4 BLOWS PER INCH OR 25 BLOWS PER FOOT, WHICHEVER OCCURS FIRST) WITH A HAMMER ENERGY OF 10,000 FT.-LB.

STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL SHALL BE ASTM A-36. BASIC ALLOWABLE STRESS IN TENSION = 20,000 PSI.
2. BOLTS SHALL BE GALVANIZED ASTM A-307.
3. ALL EXISTING STEEL SHALL BE CLEANED TO MEET THE STANDARDS OF THE STEEL STRUCTURE PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS FOR NO. 3 POWER TOOL CLEANING IN ACCORDANCE WITH SPECIAL PROVISION 809.9902.
4. ALL NEW STEEL SHALL BE CLEANED TO NEAR WHITE FINISH IN ACCORDANCE WITH SSPC-SP-10 AND PAINTED IN ACCORDANCE WITH SPECIAL PROVISION 809.9902. THIS DOES NOT INCLUDE THE GALVANIZED STEEL HARDWARE FOR TIMBER CONNECTIONS (SEE TIMBER NOTE 5) OR STEEL PIPE CASINGS. NEW STEEL GALVANIZED PIPE CASINGS SHALL BE SOLVENT CLEANED PER SSPC-SP-1 AND PAINTED FOR THEIR ENTIRE LENGTH IN ACCORDANCE WITH SPECIAL PROVISON 809.9902.
5. WELD ELECTRODES SHALL BE E6010.
6. NON-SHRINK GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI.

PALMER RIVER BRIDGE

LUMP SUM BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
FURNISH & INSTALL 3" X 6" TIMBER HANDRAIL WITH 6 X 6 TIMBER POSTS	LF	660
FURNISH & INSTALL TIMBER SIDEWALK	LF	590
FURNISH & INSTALL 2" X 6" TIMBER DECKING	SF	2940
FURNISH & INSTALL 8 X 8 X 20' TIMBER TIES	EA	148
REMOVE & RESET EXISTING 8" X 16" TIMBER STRINGER	LF	245
FURNISH & INSTALL 12" X 12" TIMBER GRADE BEAMS	LF	44
FURNISH & INSTALL 4" X 12" TIMBER BRACING	EA	6
FURNISH & INSTALL NEW 12" X 12" TIMBER PILE CAP	EA	2
REMOVE & RESET EXISTING PILE CAP	EA	3
UNREINFORCED CONCRETE CLASS D SUBFOOTINGS	CY	3
PREFORMED POLYETHYLENE FOAM JOINT FILLER 1"	SF	27
POLYURETHANE JOINT SEALANT	CI	120
PAINT & SANDBLAST STEEL	SF	6500

PALMER RIVER BRIDGE

UNIT BID BRIDGE QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL EXCAVATION EARTH	CY	16
COMPACTED CRUSHED STONE	TNS	21
REPAIRS TO WEST ABUTMENT - PALMER RIVER BRIDGE	LS	1
REPAIRS TO EAST ABUTMENT - PALMER RIVER BRIDGE	LS	1
REPAIRS TO RETAINING WALL - PALMER RIVER BRIDGE	LS	1
FURNISH & INSTALL CONNECTION HARDWARE	LS	1
1" DIAMETER A307 GALVANIZED BOLTS	EA	32
REMOVE & DISPOSE PORTIONS OF EXISTING BRIDGE ITEMS - PALMER RIVER BRIDGE	LS	1
MOVING EQUIPMENT ON & OFF JOB	LS	1
FURNISH 12" DIAMETER TIMBER PILES	LF	85
DRIVE 12" DIAMETER TIMBER PILES	LF	29
PILE CUTOFF 12" DIAMETER TIMBER PILES	EA	4
PILE SHOES 12" DIAMETER TIMBER PILES	EA	3
ROCK ANCHORS	EA	24

PALMER RIVER BRIDGE

LUMP SUM DEMOLITION QUANTITIES

ITEM	UNIT	QUANTITY
REMOVE & DISPOSE EXISTING RAILS	LF	294
REMOVE & DISPOSE EXISTING RAILROAD TIES	LS	1
REMOVE & DISPOSE EXISTING GUARD TIMBERS	LF	294
REMOVE & DISPOSE EXISTING PIER MEMBERS	LS	1
REMOVE & DISPOSE TIMBER STRINGERS	LS	1
REMOVE & DISPOSE TIMBERS (WEST BACKWALL)	LF	18
REMOVE & DISPOSE TIMBERS (EAST RETAINING WALL)	LF	123
REMOVE & DISPOSE EXISTING GRADE BEAMS	LF	44

NOTE: QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR, RIDOT ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY.

NOTES:

1. FOR STRUCTURAL STEEL AND TIMBER NOTES, SEE SHEET 22
2. DURING BRIDGE CONSTRUCTION, FOUR (4) R I STD. 40.5 PRECAST MEDIAN BARRIERS SHALL BE PROVIDED ON EACH BRIDGE APPROACH FOR PROTECTION OF TRAFFIC. (HIGHWAY ITEM)

Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

REVISIONS		
NO.	DATE	BY
1	10/93	MJL

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

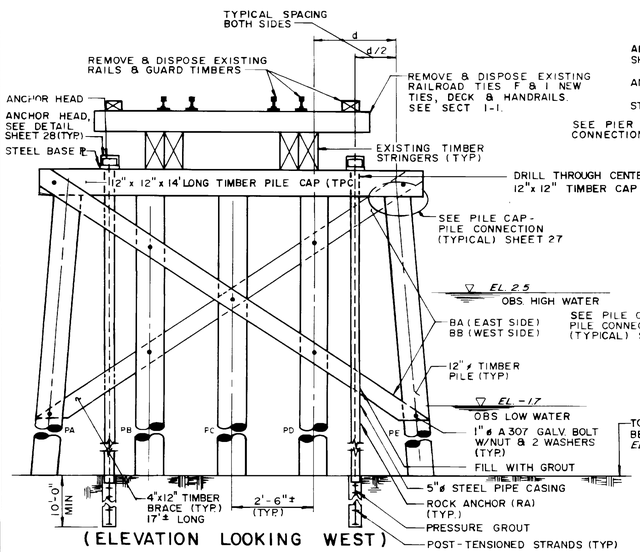
EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON . RHODE ISLAND

PALMER RIVER BRIDGE PLAN, ELEVATION and SECTION

CHECKED BY K.D. DATE _____ SCALE AS SHOWN

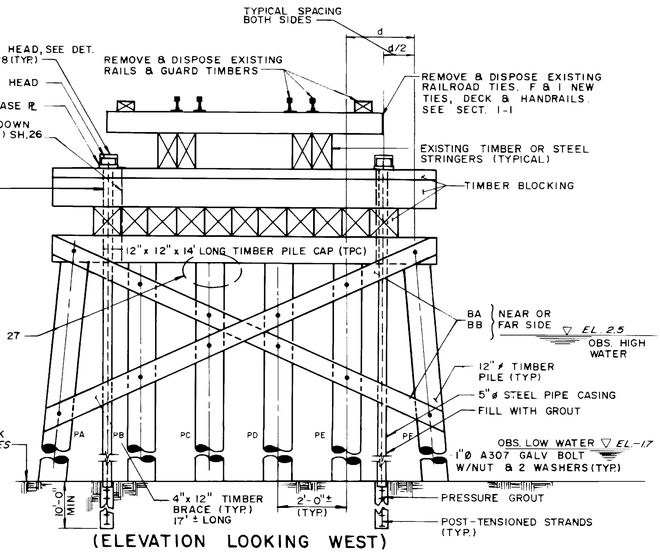
FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			23	84



(ELEVATION LOOKING WEST)

TYPICAL 5-PILE TIMBER PIER

SCALE: 3/8" = 1'-0" (P18-P16 & P5-P1)



(ELEVATION LOOKING WEST)

TYPICAL 6-PILE TIMBER PIER

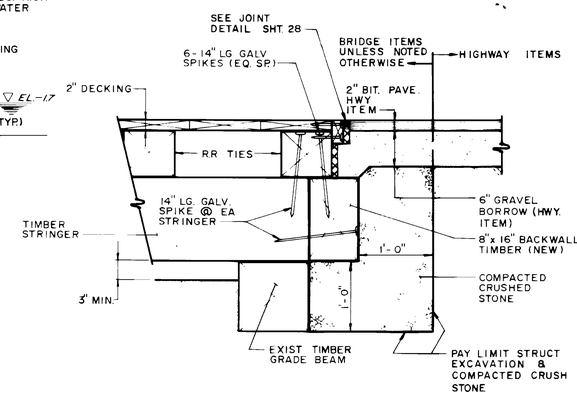
SCALE: 3/8" = 1'-0" (P15-P14 & P7-P6)

TIMBER PIER REPAIR SCHEDULE

PIER NO.	ITEM P_A	P_B	P_C	P_D	P_E	P_F	B_A	B_B	TPC	No. of PILES	RA
P1								X		5	
P2										5	
P3							X	X		5	2
P4					X(see note below)				*	5	2
P5									X	5	2
P6							X			6	2
P7							X			6	
P14	X	X						X	*	6	
P15										6	2
P16										5	2
P17	X								*	5	2
P18									X	5	

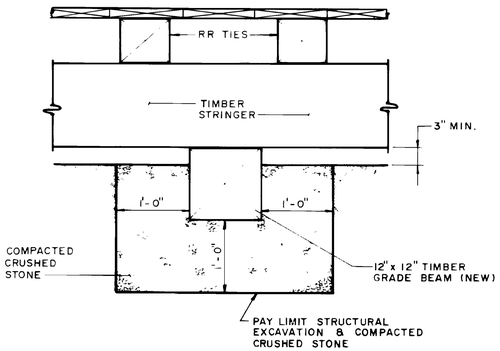
NOTE: At P4 replace square pile section only (Top 5'±)

* = REMOVE AND RESET TIMBER PILE CAP



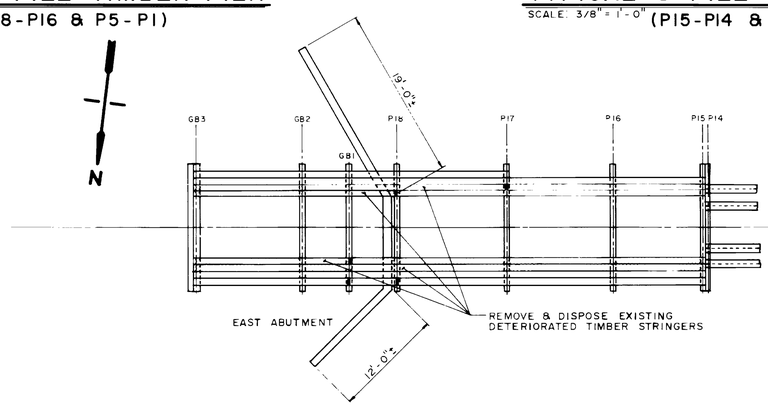
BACKWALL DETAIL

SCALE: 1" = 1'-0"



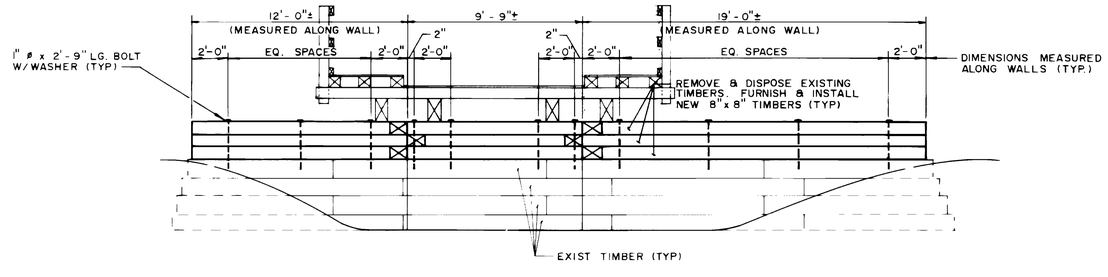
GRADE BEAM DETAIL

SCALE: 1" = 1'-0"



STRINGER LAYOUT AT EAST ABUTMENT

SCALE 1/8" = 1'-0"



ELEVATION EAST RETAINING WALL

SCALE 1/4" = 1'-0"

TIMBER NOTES

1. NEW LUMBER SHALL BE SOUTHERN YELLOW PINE OF THE FOLLOWING GRADES AND ALLOWABLE UNIT STRESSES IN BENDING (Fb):

   DECKING: DENSE SELECT DECKING, Fb = 1,350 PSI

   HANDRAILS: GRADE NO. 1, Fb = 1,200 PSI

   POST, TIES, STRINGERS, GRADE BEAMS & BACK WALL TIMBERS: NO. 1 SR, Fb = 1,350 PSI

   PILES: SOUTHERN PINE, Fb = 2,400 PSI

2. ALL NEW TIMBER BRIDGE ITEMS (EXCEPT PILES) SHALL BE PRESSURE TREATED TO A MINIMUM NET RETENTION OF 0.60 POUNDS PER CUBIC FOOT OF CHROMATED COPPER ARSENATE PRESERVATIVE CONFORMING TO THE REQUIREMENTS OF THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) STANDARDS.

3. ALL EXISTING TIMBER MEMBERS OR PORTIONS THEREOF EXPOSED AT MLW ARE TO BE CLEANED OF DEBRIS AND RECOATED CREOSOTE. CREOSOTE SHALL BE APPLIED BY AN APPLICATOR CERTIFIED BY THE REQURIEMENTS OF RI LAW.

4. HOLES SHALL BE PREDRILLED FOR ALL EXTRA LONG SPIKES (9" OR LONGER) IN ACCORDANCE WITH AITC RECOMMENDATIONS.

5. ALL STEEL HARDWARE FOR TIMBER CONNECTIONS SHALL CONFORM TO ASTM A36 AND SHALL BE GALVANIZED. BOLTS SHALL CONFORM TO ASTM A307 AND SHALL BE GALVANIZED.

TIMBER PIER REPAIR NOTES

1. REPLACE CONNECTION BOLTS WITH 1" DIAMETER A307 GALVANIZED BOLTS WITH NUT AND 2 WASHERS AS DIRECTED BY ENGINEER.
2. REPLACE ALL SPACER BLOCKS BETWEEN BRACES AND PILES.
3. REPLACE ALL ITEMS MARKED WITH AN "X" ON ACCOMPANYING REPAIR SCHEDULES (THIS SHEET AND SHEET 26).
4. ALL EXISTING TIMBER MEMBERS ARE TO BE CLEANED AND RECOATED AS NOTED ABOVE.
5. ANY EXISTING TIMBER PILES THAT HAVE BEEN SPLICED SHALL BE MODIFIED AS SHOWN ON THE PILE SPLICE DETAIL (SHEET 27).
6. ALL NEW TIMBER PILES SHALL BE PRESSURE TREATED TO A MINIMUM NET RETENTION OF 2.5 POUNDS PER CUBIC FOOT OF CHROMATED COPPER ARSENATE PRESERVATIVE CONFORMING TO THE REQUIREMENTS OF THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) STANDARDS.
7. PILE SPLICES ARE NOT PERMITTED (EXCEPT AT P4 PALMER RIVER BRIDGE).

ROCK ANCHOR NOTES

1. ROCK ANCHORS AND HARDWARE SHALL BE DESIGNED TO RESIST AN AXIAL TENSILE LOAD OF 30,000 LBS.
2. EACH ANCHOR SHALL BE TESTED ACCORDING TO THE SPECIFICATIONS PRIOR TO STRESSING ANCHOR TO FINAL POST-TENSIONING FORCE.
3. ANCHORS SHALL BE POST-TENSIONED TO 30,000 LBS.
4. ANCHORS SHALL BE POST-TENSIONED SIMULTANEOUSLY AT EACH PIER.
5. POST-TENSIONING STEEL SHALL BE EPOXY COATED AND GROUT ENCASED; ANCHOR HEAD SHALL BE CORROSION PROTECTED BY WELDING A STEEL PIPE ONTO THE PLATE AND FILLING THE PIPE WITH GROUT (SEE ANCHOR HEAD DETAIL SHEET 28).
6. REFER TO THE SPECIAL PROVISIONS OF THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR ROCK ANCHORS.

REVISIONS		
NO.	DATE	BY
1	10/7/...	...IL

RHODE ISLAND DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

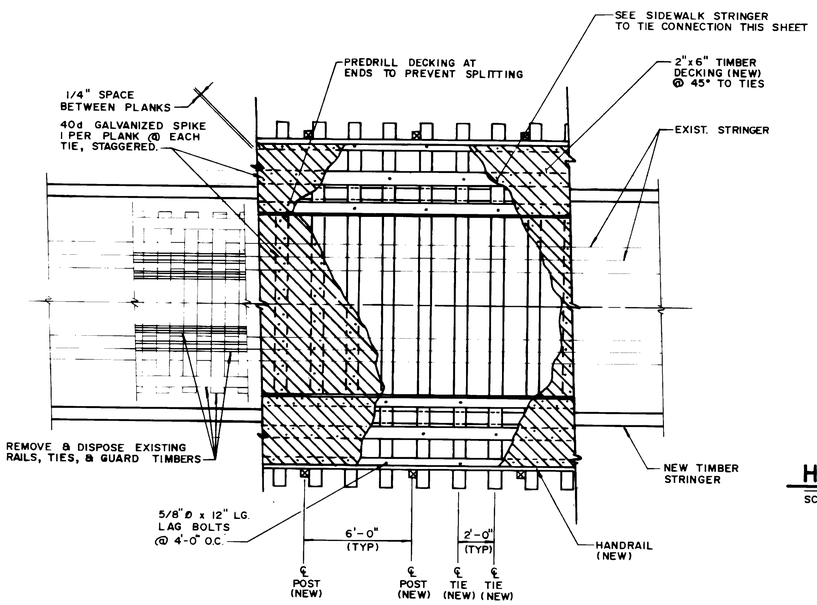
PALMER RIVER BRIDGE REPAIR DETAILS

CHECKED BY K.D. DATE _____ SCALE AS SHOWN

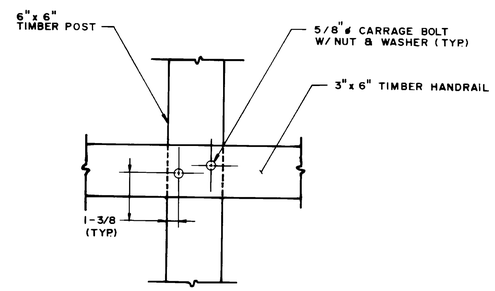
Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

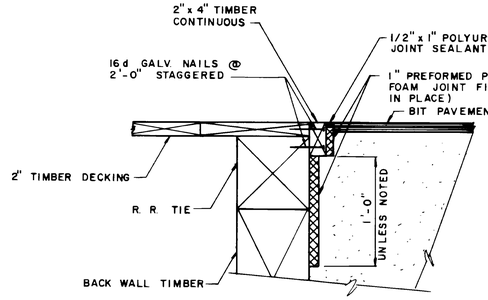
FED ROAD DIV NO	STATE	FEDERAL AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
	R I			28	84



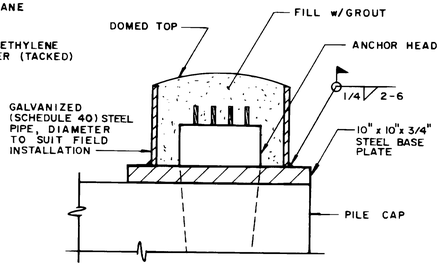
TYPICAL DECK PLAN
SCALE: 1/4" = 1'-0"



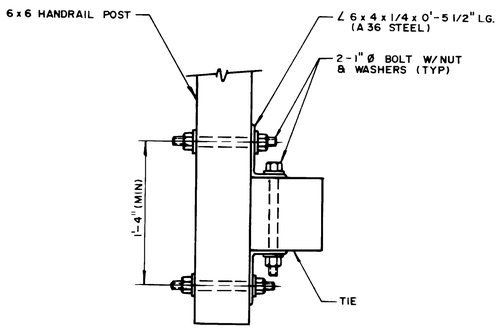
HANDRAIL - POST CONNECTION DETAIL
SCALE: 1-1/2" = 1'-0"



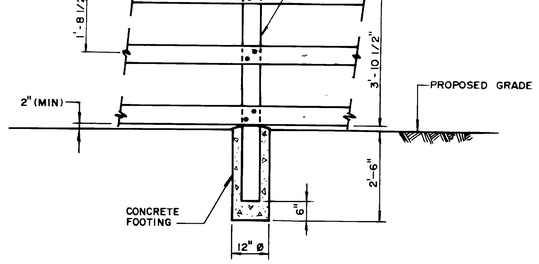
JOINT DETAIL
SCALE: 1 1/2" = 1'-0"



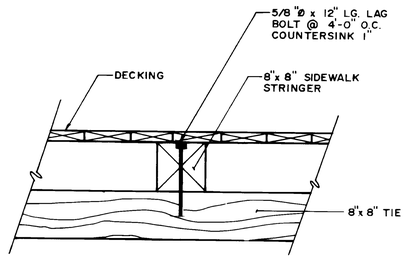
ANCHOR HEAD DETAIL
NOT TO SCALE



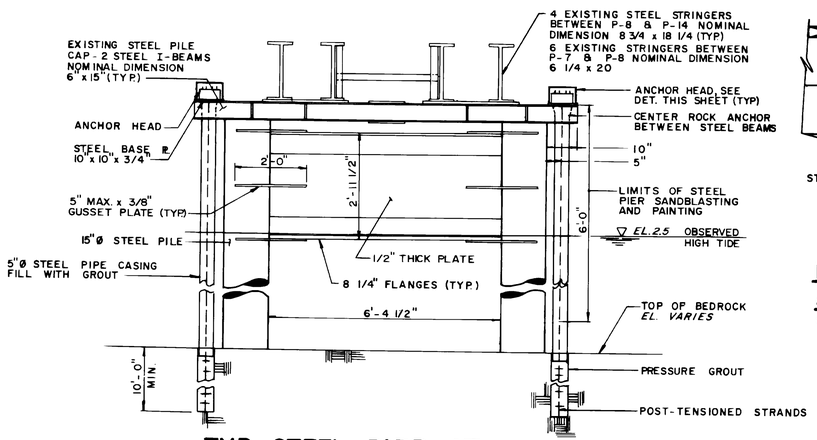
POST - TIE CONNECTION
SCALE: 1 1/2" = 1'-0"



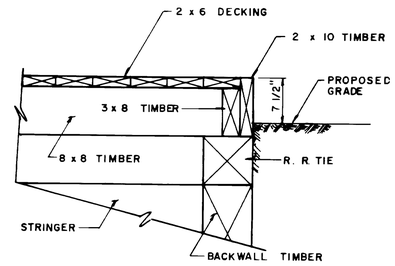
HANDRAIL POST DETAIL
SCALE: 1/2" = 1'-0"



SIDEWALK STRINGER TO TIE CONNECTION
SCALE: 1" = 1'-0"



TYP. STEEL PIER AT PALMER RIVER BRIDGE
SCALE: 1/2" = 1'-0"



BACKWALL DETAIL AT SIDEWALK
SCALE: 1"=1'-0"

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
DIVISION OF PUBLIC WORKS

EAST BAY BICYCLE FACILITY

WARREN / BARRINGTON RHODE ISLAND

PALMER RIVER BRIDGE & BARRINGTON RIVER BRIDGE MISCELLANEOUS DETAILS

CHECKED BY K.D. DATE SCALE AS SHOWN

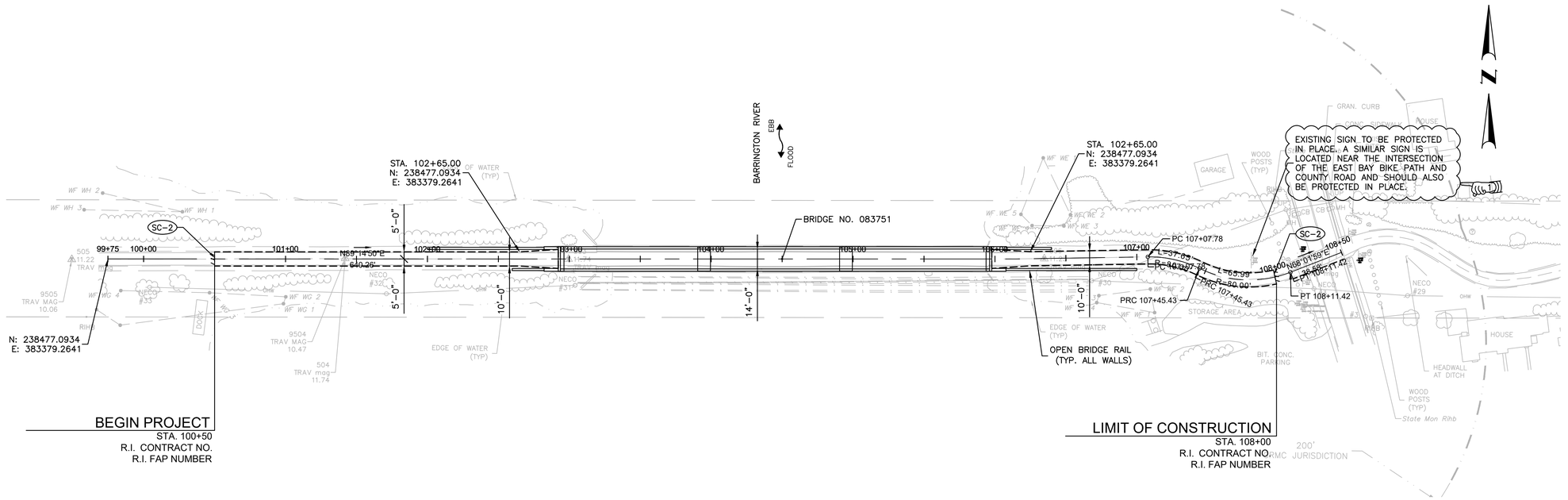
Contract 3

PREPARED BY:
Lee Pare & Associates, Inc.
CONSULTING ENGINEERS
Pawtucket · RI Norwich · CT

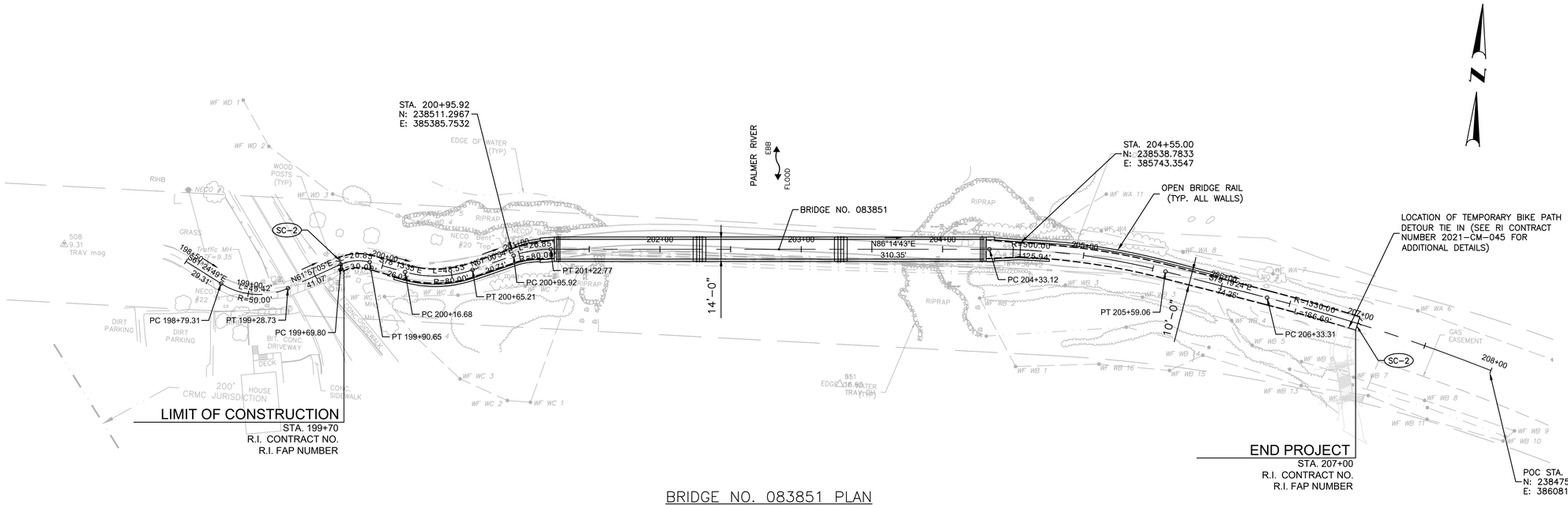
RHODE ISLAND BUREAU OF NAVIGATION 142624

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BRO-0838(002)		6	25

R-1



BRIDGE NO. 083751 PLAN
SCALE: 1" = 40'-0"



BRIDGE NO. 083851 PLAN
SCALE: 1" = 40'-0"

ADDENDUM NO. 4

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING
BL Companies

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

DESIGNED BY: TMB
CHECKED BY: MFW
DATE: DECEMBER 2021
SHEET: 6
OF: 25

SCALE AS NOTED

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	2/8/22	TMB			

EAST BAY BIKE PATH
HIGHWAY

BARRINGTON/WARREN RHODE ISLAND

GENERAL PLAN

Barrington Center

The Commercial Hub

The Wampanoag Indians lived and traveled in a large area they called Sowams, which included the land that became Barrington. They traveled on established trails that ran along the Barrington and Warren Rivers to Rumstick Point. One of these paths is today's Wampanoag Trail and County Road.

Barrington was incorporated as Barrington, Massachusetts in 1717. It became part of Warren, Rhode Island in 1747. On June 16, 1770, Barrington became an independent Rhode Island town. At that time, "Barrington Village" was about one mile north of here along County Road. There, docks and activities on the Barrington River pushed the Congregational Meeting House (today's "White Church") previous landings for waterborne traffic. Across from New Meadow Neck on down river, Kendrick Tavern, now a private residence, was the site of Barrington's first post office and also served as a stagecoach depot and a public stable.

A new intra-nation emerged after the Providence, Warren, and Bristol Railroad came to Barrington in 1855. Barrington Center, with its railroad station, prospered to become and remains the town's commercial and civic nucleus. St. John's Church, built in 1858-1859, was an important addition. Businesses such as Bosworth's General Store, a post office, a grain store, and Chaffee's Market were located here. Town Hall is a short distance north. Just to the south is the Jenny's Lane-Mathewson Road National Register Historic District, a neighborhood with early Victorian, Barbarian, and Queen Anne style homes dating primarily from the 1850s to the 1920s.

In the 1830s, the Nereth Rubber Company was built next to the railroad tracks; residents remember the strong smell of rubber in this area which lingered until the factory closed in the 1870s. Construction of the Barrington Shopping Center began next to the factory in 1948.

www.barrpreserve.org

Barrington Preservation Society

Early Plymouth colonists called Barrington "The Garden of the Colony" for its beautiful location on Narragansett Bay and the Providence River, its numerous streams and meadows, and its fertile soil.

– from Bicknell, A History of Barrington Rhode Island, 1898

Barrington Center

The Commercial Hub

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Barrington was incorporated as Barrington, Massachusetts in 1717; it became part of Warren, Rhode Island in 1747. On June 16, 1770, Barrington became an independent Rhode Island town. At that time, "Barrington Village" was about one mile north of here along County Road. There, docks and wharves on the Barrington River behind the Congregational Meeting House (today's "White Church") provided landings for waterborne traffic ferried from New Meadow Neck or down river. Kinnicutt Tavern, now a private residence, was the site of Barrington's first post office and also served as a stagecoach depot and a public stable.

A new town center emerged after the Providence, Warren, and Bristol Railroad came to Barrington in 1855. Barrington Center, with its railroad station, prospered to become and remain the town's commercial and civic nucleus. St. John's Church, built in 1858-1859, was an important addition. Businesses such as Bosworth's General Store, a post office, a grain store, and Chellel's Market were located here; Town Hall is a short distance north. Just to the south is the Jennys Lane/ Mathewson Road National Register Historic District, a neighborhood with early Victorian, Craftsman, and Queen Anne-style homes dating primarily from the 1850s to the 1920s.

In the 1930s, the Newth Rubber Company was built next to the railroad tracks; residents remember the strong smell of rubber in this area which lingered until the factory closed in the 1970s. Construction of the Barrington Shopping Center began next to the factory in 1948.

Barrington Preservation Society Archives

Fire Department Headquarters (built circa 1931) at 3 Rumstick Road, just south of the Barrington Shopping Center. This building has been a private residence since 2000.

Barrington Preservation Society Archives

Blacksmith Chester Allen (1858-1937) made horseshoes and wagon wheels. He walked daily to his shop (shown here), formerly located on the northwest corner of Waseca Avenue and County Road, from his house on Tyler Point. Early 1920s photo.

Barrington Preservation Society Archives

The Barrington Center train depot is shown in this postcard. The crossing tender, on the right, lowered and raised a gate across County Road, in the foreground, when a train was en route.

BARRINGTON Preservation Society

www.barrpreservation.org

Supported by the Rhode Island Historical Preservation & Heritage Commission with Preserve America funds from the National Park Service

RI Historical Preservation & Heritage Commission


BIKE PATH
CLOSED