STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

AROOSTOOK COUNTY
PRESQUE ISLE AND HOULTON SUBDIVISIONS
RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT

SPECIFICATIONS

Design: "American Railway Engineering and Maintenance of Way Association"
AREMA 2020 Manual for Railway Engineering
Construction: 2020 Maine Department of Transportation Standard Specification with Interim Revisions thru June 2021

DESIGN LOADING

Live Load (Br. 7800 and 7801) ..... Cooper E80

Live Load (Br. 7804, 7805, and 7750) ..... 4 Axle 286 kip vehicle at 25 mph with Tandem GP40 Locomotive

MATERIALS

Concrete:
- Precast ..... Class "P"
- Cast-In-Place ..... Class "A"

Reinforcing Steel (except as noted) ..... ASTM A615, (Uncoated) Grade 60
Structural Steel:
- Existing ..... Low Carbon (Bessemer) Steel
- All Material (except as noted) ..... ASTM A709, Grade 50 (Galvanized or Metalized)
- Piles ..... ASTM A709, Grade 50W
- High Strength Bolts ..... ASTM F3125, Grade A325, Type 1 (Galvanized)

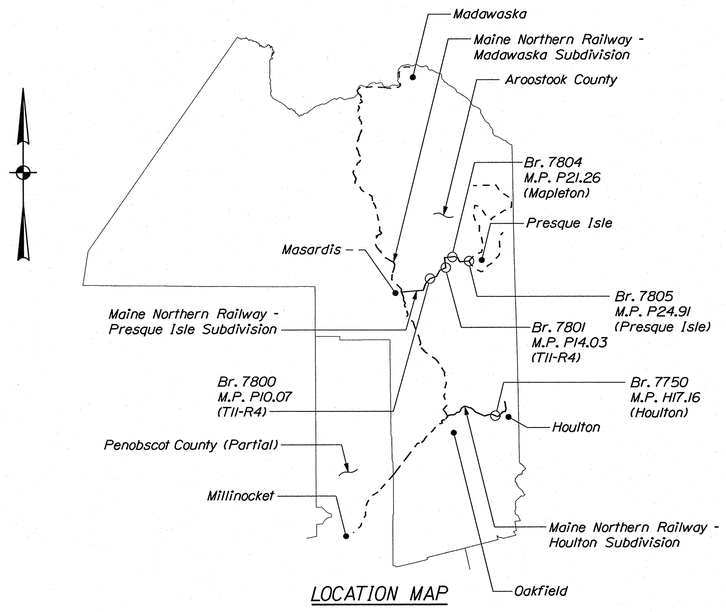
BASIC DESIGN STRESSES

Concrete:
- Precast ..... f'c = 5,000 psi
- Cast-In-Place ..... f'c = 4,000 psi

Reinforcing Steel ..... f y = 60,000 psi
Structural Steel:
- Existing ..... Fy = 30,000 psi
- ASTM A709, Grade 50/50W ..... Fy = 50,000 psi
- ASTM F3125, Grade A325, Type 3 ..... Fμ = 120,000 psi

UTILITIES

Maine Northern Railway Company
MaineDOT Railroad
Versant Power
Houlton Water District - Electrical Power



LOCATION MAP

BRIDGE IDENTIFICATION TABLE

WIN	Bridge #	Mile Post	Location	Feature Crossed
23458.00	7800	P10.07	T11-R4	West Inlet Scopan Lake
23460.00	7801	P14.03	T11-R4	Small Brook
23456.00	7804	P21.26	Mapleton	North Branch Presque Isle Stream
23454.00	7805	P24.91	Presque Isle	Presque Isle Stream
24345.00	7750	H17.16	Houlton	Meduxnekeag River

LIST OF DRAWINGS

* Sheet Provided by MaineDOT

PROJECT LOCATION:	Four bridges located on the Maine Northern Railway - Presque Isle Subdivision from Mile Post P10.07 to P24.91, in Aroostook County. One bridge located on the Maine Northern Railway - Houlton Subdivision at Mile Post H17.16, in Aroostook County.
PROGRAM AREA:	Multimodal Program
OUTLINE OF WORK:	Bridge Construction: Two full bridge replacements (Br 7800 and 7801) Three substructure, bearing, and deck rehabilitations (Br 7805, 7805, and 7750)

PLANS PREPARED BY:
vhb
500 Southborough Drive, Suite 105B
South Portland, Maine 04106
207 889 3150 - FAX 207 253 5596

WIN 23458.00, 23460.00, 23456.00, 23454.00, AND 24345.00

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

	DATE
APPROVED	
COMMISSIONER:	11-16-21
CHIEF ENGINEER:	11/18/2021

STATE OF MAINE GREGORY S GOODRICH No. 13225 LICENSED PROFESSIONAL ENGINEER

PROJECT INFORMATION	
MULTIMODAL	
PROGRAM	
NATE BENOIT	PROJECT MANAGER
GREG GOODRICH	DESIGNER
VHB	CONSULTANT
	PROJECT RESIDENT
	CONTRACTOR
	PROJECT COMPLETION DATE

SIGNATURE	
13225	P.E. NUMBER
10-7-2021	DATE

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

TITLE SHEET

SHEET NUMBER
1
OF 52

Filename: ...\BRIDGE\MSTA\001_title_01.dgn Division: MULTIMODAL Username: BMasse Date:10/7/2021

GENERAL BRIDGE CONSTRUCTION NOTES

1. All clearing will be considered incidental to the contract and no separate payment will be made. The actual lines for clearing shall be established in the field by the Contractor and approved by the Resident.

2. Project information referred to below may be accessed at the following MaineDOT web address:
http://www.maine.gov/mdot/contractors

The existing bridge plans may be accessed at the MaineDOT web address.
The plans are reproductions of the original drawings as prepared for the construction of the bridge. It is unlikely that the plans will show any construction field changes or any alterations which may have been made to the bridge during its life span.

3. Quantities included for pay items measured and paid for by Lump Sum are estimated quantities and are provided by MaineDOT for informational purposes only. Lump Sum pay items will be paid for at the Contract Bid amount, with no addition are reduction in payment to the Contractor if the actual final quantities are different room the MaineDOT provided estimated quantities, except as follows:

a. If a Lump Sum pay item is eliminated, the requirements of Standard specifications Section 109.2, Elimination of Items, will take precedence.

b. If other Contract Documents specifically allow a change in payment for a Lump Sum pay item, those requirements will be followed.

c. If a design change results in changes to estimated quantities for Lump um pay items, price adjustments will be made in accordance with Standard Specifications Section 109.7, Equitable Adjustments to Compensation and Time.

4. The Contractor shall submit a Bridge Demolition Plan to the Resident at least 10 business days prior to the start of demolition work. The plan shall outline the methods and equipment to be used to remove and dispose of all materials included in the bridge rehabilitation. No work related to the removal of the bridge shall be undertaken by the Contractor until MaineDOT has reviewed the Bridge Demolition Plan for appropriateness and completeness. Payment for all work necessary for developing, submitting and finalizing the Demolition Plan will be considered incidental to the bridge removal pay item.

5. Portions of existing bridges shall be removed by and become the property of the Contractor. Bridge removal includes structural steel and concrete not otherwise included in other items and as shown in the Plans. Steel portions of the existing bridges are coated with a lead-based paint system. The Contractor is responsible for the containment, proper management and disposal of all lead-contaminated hazardous waste generated by the process of demolishing the bridge. The Contractor is responsible for implementing appropriate OSHA mandated personal protection standards related to this process. Once portions of existing bridges are removed, the Contractor is solely responsible for the care, custody and control of the components of the existing bridges and any hazardous waste generated as a result of the storage, recycling or disposal of the bridge components, including lead-coated steel. The Contractor shall recycle or reuse the steel in accordance with the Maine Department of Environmental Protection's "Maine Hazardous Waste Management Regulations," Chapter 850. A copy of this regulation is available at MaineDOT's offices on Child Street in Augusta. Payment for all labor, materials, equipment and other costs required to remove and dispose of the existing bridge will be considered incidental to the bridge removal pay item.

6. All concrete repairs, material placement, and backfilling shall be performed in the dry, unless otherwise directed by the Resident.

7. All dimensions are horizontal or vertical and are given at 68 degrees Fahrenheit unless otherwise noted.

8. Existing dimensions or features shown on these plans have been obtained from limited field investigation and may not accurately reflect actual field conditions. The plan, elevation, and sections shown are schematic only. The Contractor is responsible for taking sufficient field measurements of existing components to verify the dimensions of the proposed components before starting the work. Any discrepancies in dimensions, character, or extent of the existing structure shall be brought to the attention of the Engineer before advancing the work or beginning fabrication of new components. Costs will be considered incidental to the Contract Items.

9. Working drawings for various items of work shall indicate the Contractor's actual field measurements and shall be so noted.

10. The Contractor shall provide safe access to all areas of work on the bridge for the Resident's inspections. Cost will be considered incidental to the Contract Items.

11. The Contractor shall submit a written description of general repair and construction procedures and sequencing of work to the Resident for approval before advancing the work.

12. The Contractor's attention is called to the fact that, at several of the bridge locations, the existing cross frames and lateral bracing members adjacent to the bridge bearings do not have the required strength to support jacking of the existing bridge. The Contractor shall submit Working Drawings and design calculations for the proposed jacking operations at each bridge, as applicable, for approval. Working Drawings shall be submitted and will be reviewed in accordance with Standard Specification Section 105.7. Payment for all work necessary for developing, submitting and finalizing the Working Drawings and design calculations will be considered incidental to the associated Contract Items.

13. Surfaces of all existing bridge seats shall be cleaned of all accumulated dirt, debris and vegetation growth, including the removal and disposal of any delaminated or loose masonry or concrete. Cleaning of bridge seats shall be completed prior to advancing bearing work. Cleaning and inspection shall be done to the satisfaction of the Resident and all costs will be considered incidental to the associated Contract Items.

14. Water elevations shown on plans are approximated based on inspections completed in October 2019. Actual water elevation at the time of construction will vary.

15. Bearing work at locations that require existing bearings to be removed and reset with new bearing plates and anchor bolts shall be paid for under Item 523.301, Refurbish and Reset Fixed Bearing or Item 523.311, Refurbish and Reset Expansion Bearing, as appropriate.

16. All costs for cofferdams, including pumping, maintenance, related soil erosion and water pollution controls and removal, will be considered incidental to related Contract Items.

GENERAL RAILROAD CONSTRUCTION NOTES

1. All work shall be performed within existing Right-of-Way or State-of-Maine (SOM) property, or within the easement shown on the Right-of-Way Map sheets.

2. Any damage caused by the Contractor's equipment, personnel, or operations shall be repaired to the satisfaction of the Resident. All work, equipment, and materials required to make repairs shall be at the Contractor's expense.

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	Br 7800 M.P. P10.07 23458.00	Br 7801 M.P. P14.03 23460.00	Br 7804 M.P. P21.26 23456.00	Br 7805 M.P. P25.91 23454.00	Br 7750 M.P. H17.16 24345.00	TOTAL
202.19	Removing Existing Bridge	LS	1/5	1/5	1/5	1/5	1/5	1
203.25	Granular Borrow	CY	50	200	35	50		335
203.33	Special Fill	CY		105				105
203.35	Crushed Stone, 3/4 inch	CY	20	115				135
206.082	Structural Earth Excavation - Major Structures, Plan Quantity	CY	370	450	35	50		905
501.231	Dynamic Loading Test	EA	2					2
501.50	Steel H-Beam Piles 89 lb/ft, Delivered	LF	850					850
501.501	Steel H-Beam Piles 89 lb/ft, In Place	LF	850					850
501.90	Pile Tips	EA	13					13
501.91	Pile Splices	EA	5					5
501.92	Pile Driving Equipment Mobilization	LS	1					1
502.2354	Structural Concrete, Pile Fill	CY	9					9
503.12	Reinforcing Steel, Fabricated and Delivered	LB			3,600	16,700	2,500	22,800
503.13	Reinforcing Steel, Placing	LB			3,600	16,700	2,500	22,800
504.702	Structural Steel Fabricated and Delivered, Welded (140,100 LB)	LS	1/4	1/4	1/4	1/4		1
504.71	Structural Steel Erection (140,100 LB)	LS	1/4	1/4	1/4	1/4		1
504.8120	Structural Steel Repair	LS					1	1
504.909	Dowel - Existing Structural Concrete	EA				20		20
506.9103	Galvanizing	LS	1/5	1/5	1/5	1/5	1/5	1
511.07	Cofferdam (Br #7801)	LS		2				2
511.07	Cofferdam (Br #7805)	LS				3		3
511.07	Cofferdam (Br #7750)	LS					1	1
515.20	Protective Coating for Concrete Surfaces	SY		50	80	380		510
518.211	Rehabilitate Structural Concrete Substructure	CY			20	130	25	175
523.26	Expansion Bearing - Modification (Fabric with PTFE Sliding Surface)	EA				2		2
523.301	Refurbish & Reset Fixed Bearing	EA			2	6		8
523.311	Refurbish & Reset Expansion Bearing	EA			2	4	2	8
523.52	Bearing Installation	EA		2		2		4
523.5304	Steel Bearings, Expansion, Rocker	EA	16					16
523.5403	Plain Elastomeric Bearings	EA		2				2
524.30	Temporary Structural Support	EA			2	4	1	7
525.261	Repointing Granite Masonry	LF					30	30
528.08	Structural Timber	LS			1/2	1/2		1
528.4903	Bridge Ties and Timbers (181 EA)	LS	1/4	1/4	1/4		1/4	1
534.30	Precast Structural Concrete (Br 7800 Backwalls) (14 CY)	LS	1					1
534.30	Precast Structural Concrete (Br 7801 Abutments and Wingwalls) (68 CY)	LS		1				1
534.30	Precast Structural Concrete (Br 7804 Backwalls) (12 CY)	LS			1			1
534.30	Precast Structural Concrete (Br 7805 Backwalls) (8 CY)	LS				1		1
601.21	Gabions, Galvanized	CY	35					35
603.1970	24" Polypropylene Pipe	LF	75					75
610.08	Plain Riprap	CY	170	250				420
610.16	Heavy Riprap	CY				160	210	370
620.58	Erosion Control Geotextile	SY	250	240		170	70	730
620.60	Separation Geotextile	SY	140	325				465
648.511	Remove and Relay Existing Track	TF	160	80	80	80		400
651.49	Track Tie Replacement	EA		10			6	16
656.75	Temporary Soil Erosion and Water Pollution Control	LS	1/5	1/5	1/5	1/5	1/5	1
659.10	Mobilization	LS	1/5	1/5	1/5	1/5	1/5	1
832.05	Survey Monitoring Point	EA				4	10	14

GENERAL RAILROAD CONSTRUCTION NOTES CONTINUED

3. All work shall be done in accordance with the Maine Erosion and Sedimentation Control Best Management Practices, 2014.

4. Track shall be removed and reset as required for performing rehabilitation work and as otherwise required by the Contractor. Payment for this work will be paid under Item 648.511, Remove and Relay Existing Track. As outlined in Special Provision 648.

5. The Contractor's attention is called to the fact that continuous coordination with the operator, Maine Northern Railway (MNR), will be required throughout construction. MNR will provide the Contractor with flaggers for protection of railroad traffic while work is being performed on the railroad Right-of-Way (R.O.W.). The Contractor shall not enter the R.O.W. at any time without MNR authorization. Railroad flagger protection will be provided by the MNR as specified in the Protection of Railroad Traffic and Structures special provision. All costs for railroad coordination will be considered incidental to Contract Items.

6. All work affecting the track or the load carrying capacity of a bridge shall be performed during a series of shutdowns of railroad traffic. During each shutdown the Contractor will be designated an amount of time as indicated by MNR to complete work, allowing time at each end of the shutdowns for the Contractor to remove and reset rails and ties, as applicable. The Contractor shall coordinate all shutdowns with MNR. See the Special Provisions for additional information regarding length of shutdowns and liquidated damages for exceeding contractual time limits.

7. The Contractor is responsible for the protection of all utilities affected by the work at each bridge site for the duration of construction, as applicable. The Contractor shall contact dig-safe, MNR, and the owner, Maine Department of Transportation (MaineDOT) to determine the presence and location of any utilities, whether in service or out of service, prior to any construction at each site. See Special Provision 104, Utilities for additional information and requirements.

8. The Contractor shall field verify existing top of rail elevations at centerline of bearing. When not shown in the Plans, the Contractor shall confirm the desired final top of rail elevations with the Resident before starting the work. Temporary changes to top of rail elevations during the work must be submitted to the Resident for approval before advancing the work. The Contractor shall confirm that the desired top of rail elevations have been established after any work is completed that requires the track to be manipulated in any way including but not limited to jacking, removing and resetting, relocating, etc. Cost for verification of the top of rail elevation will be considered incidental to the associated Contract Items.

STRUCTURAL STEEL NOTES

1. All structural steel shall conform to MaineDOT Standard Specification Section 504 and 713 and ASTM A709 Grade 50 and galvanized in accordance with ASTM A123 or metalized.

2. All new bolted connections shall be made using 7/8" diameter high strength bolts in a 15/16" hole, unless otherwise noted. Where existing rivets are replaced with high strength bolts, the bolt shall be the same size as the existing rivet. All new bolts shall be ASTM F3125, Grade A325 Type I and galvanized in accordance with ASTM A153. Bolt threads shall be excluded from the shear plane of the connection. All bolts shall be installed using the method and the minimum pretension specified in MaineDOT Standard Specification 504.

4. All existing steel surfaces in contact with new steel surfaces shall be prepared in accordance with SSPC-SP2 Hand Tool Cleaning.

5. Removal and replacement of all rivets required will be considered incidental to the associated Contract Items.

6. All dimensions relevant to the work shall be field verified by the Contractor prior to the preparation of Working Drawings to ensure the proper fit and connection of new members to the existing members. All cost for the field measurements required to prepare the Working Drawings will be incidental to Contract Items.

7. Prior to structural steel erection, the Contractor shall submit an erection sequence to the Resident for approval.

8. Welding details, procedure, and testing methods shall conform to the AASHTO/AWS D1.5 Bridge Welding Code. All welds shall be made with E70-XX electrodes.

9. Girders and other structural steel shall not have erection marks or other painted marks on the outside face.

10. All new steel to steel bolted connections are designed as Class B slip-critical connections unless noted otherwise.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS
WIN
23458.00, 23460.00, 23456.00, 23454.00, 23345.00

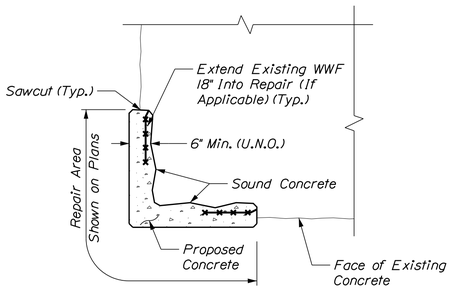
vhb

PROJ. MANAGER	MATE BENOIT		
DESIGN-DETAILED	JGM	BJM/KDW	10/2021
CHECKED-REVIEWED	CSG	CSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

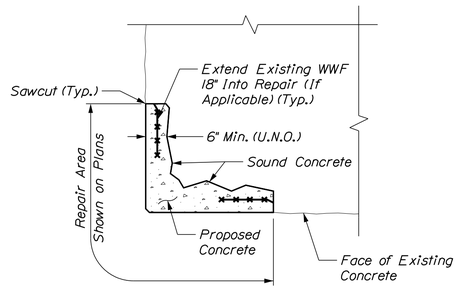
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

GENERAL NOTES AND QUANTITIES

SHEET NUMBER
2
OF 52



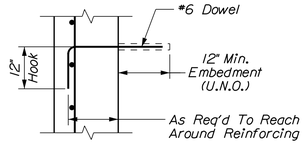
DEPTH OF UNSOUND CONCRETE <6 IN.



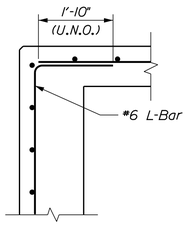
DEPTH OF UNSOUND CONCRETE ≥ 6 IN.

TYPICAL LIMITS FOR PARTIAL DEPTH REMOVAL/REPAIRS

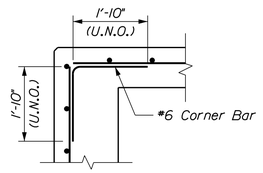
(Repairs Shown At Corners, Other Locations Similar)
(Reinforcing Not Shown For Clarity)
Not to Scale



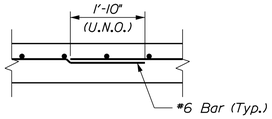
TYPICAL DOWEL DETAIL



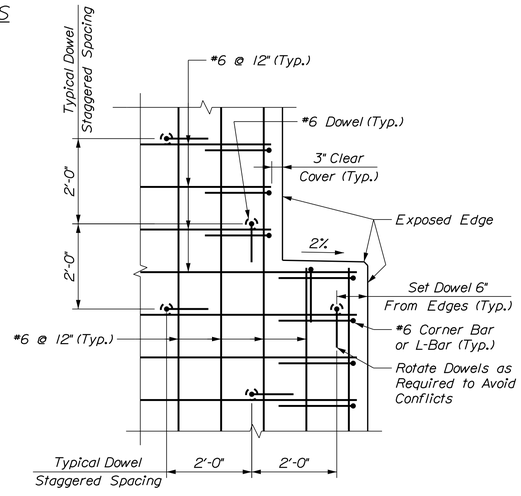
TYPICAL L BAR DETAIL



TYPICAL CORNER BAR DETAIL



TYPICAL LAP DETAIL

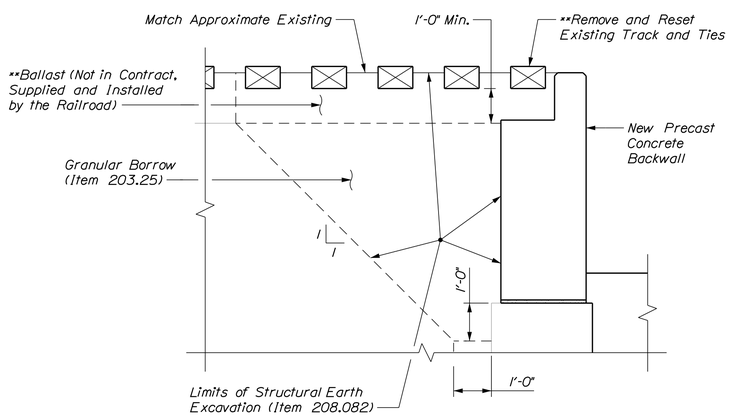


TYPICAL CONCRETE REPAIR REINFORCING AND DOWEL LAYOUT

Not to Scale

TYPICAL REINFORCING DETAILS

Not to Scale



TYPICAL SECTION AT BACKWALL REPLACEMENT

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

** The Contractor shall reset the existing track and ties on the compacted subballast (Granular Borrow). The Railroad will be responsible for placement of ballast and bringing the track up to final line and grade. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction, in accordance with Special Provision 107.

ANCHOR BOLT NOTES

1. New anchor bolts and the removal of existing anchor bolts will be considered incidental to the associated 523 Item at each bearing location.

2. Anchor bolts shall be fully threaded ASTM 1554, Grade 55. Nuts shall be ASTM A563 Grade A or ASTM A194 Grade 2H heavy hex type. Washers shall be ASTM F436. All anchor bolts, nuts, and washers shall conform to AREMA Chapter 15, Section 5.9.5.

3. All anchor bolts, nuts, and washers shall be galvanized in accordance with ASTM A153.

4. The nuts for all expansion bearing anchor bolts shall be drawn up finger tight and then backed off 1/4 turn. Burr the threads on the anchor bolts after assembly. Burred areas shall be touched up with an approved zinc rich paint.

5. Anchor bolts shall be grouted with the same grout material used for grout beds. All costs for anchor bolt grouting material will be considered incidental to the associated 523 Item at each bedding location.

GENERAL CONCRETE REPAIR NOTES

1. Large portions of the existing concrete substructures are cracked, spalled and/or delaminated, but do not require repairs. Repairs shall only be within the approximate removal and repair limits shown on the Plans or as directed by the Resident. Prior to the start of work the Resident and Contractor shall identify the locations of and agree upon the final limits of each repair.

2. For repairs shown at "Approximate Limit of Partial Depth Removal/Repair" locations:

   a. Only loose, deteriorated, delaminated, or otherwise unsound concrete shall be removed. Repairs shall extend beyond the existing face of concrete to maintain minimum depth requirements as shown in the details on this sheet.

   b. If unsound concrete is found 12 inches beyond the existing face of concrete, for an area greater than one square foot, the Contractor shall notify the Resident immediately and before continuing work. The Resident and Contractor shall agree upon the final limits before resuming work.

3. For repairs shown at "Approximate Limit of Full Depth Removal/Repair" locations:

   a. Concrete shall be removed the full depth required to the perform the work as shown.

   b. If unsound concrete is found beyond the limits of repair shown in the Plans, for an area greater that one square foot, the Contractor shall notify the Resident immediately and before continuing work. The Resident and Contractor shall agree upon the final limits before resuming work.

4. At the Contractor's option, concrete repairs shown vertically along the batter of the existing substructure may be formed plumb, at not additional cost to the Department. It is the Contractor's responsibility to ensure all reinforcing meets spacing and clear cover requirements.

5. Any reinforcing not shown in these Plans shall be detailed in accordance with the details shown on this sheet.

6. All new upward facing horizontal surfaces, except for the top of backwalls, shall be sloped to drain away from vertical surfaces. Slope shall be approximately 2%.

7. Dowels shall be grouted using a non-shrink grout selected from the MaineDOT Prequalified Products List and shall be preapproved for anchorage.

REINFORCED CONCRETE NOTES

1. Reinforcing steel shall have a minimum clear cover of 2 inches for precast concrete and 3 inches for cast-in-place concrete, unless otherwise noted.

2. Precast and cast-in-place concrete shall have all exposed edges and corners chamfered 3/4" inch.

3. Precast concrete fabrication tolerances shall be as follows:
   Length: ± 1/4"
   Width: ± 1/4"
   Depth: ± 1/4"
   Variation from Specified end squareness or skew: ± 1/2"
   Location of anchor bolts and rods sleeves: ± 1/4"

4. PVC sleeves for anchor bolts and rods shall be removed prior to grouting.

5. Precast concrete backwalls and abutments shall be placed on a bed of high-early strength, non-shrink, polymer or epoxy grout material over the existing concrete. Grout material shall be selected from the MaineDOT Qualified Products List. All costs for grout will be considered incidental to the associated 534 Items.

6. Surfaces of precast concrete backwalls and existing concrete in contact with grout beds shall be intentionally roughened. Roughening shall run perpendicular to the centerline of girder. All surfaces shall be clean and free of laitance before placing grout bed.

7. Protective Coating for Concrete Surfaces shall be applied to all new precast and cast-in-place concrete surfaces that are exposed after installation, except for pier and abutment footings.

8. Working Drawings and Reinforcing Steel Schedules for all precast and cast-in-place concrete shall be the responsibility of the Contractor. Refer to subsections 105.7 and 503.03 of the Standard Specifications and Special Provisions 518 and 534 for additional information. Payment for all work associated with developing Working Drawings and Reinforcing Steel Schedules will be considered incidental to the associated Contract Items.

BRIDGE TIE AND TIMBER NOTES

1. All bridge ties and timbers shall be solid-sawn and treated Grade No. 1 or better Douglas Fir (beams and stringers) or Southern Pine (5"x5" and larger) and shall meet the requirements of Chapter 7, Section 1.7 "Specification for Timber Bridge Ties" of the AREMA Manual for Railway Engineering. All ties and timbers shall meet or exceed the allowable unit stress values for wet conditions, visual grading shown in AREMA Table 7-2-9. See Special Provisions 528 and 651 for additional timber and preservative treatment requirements.

2. Holes for hook bolts shall be prebored during fabrication and before treatment of bridge ties. Holes for hook bolts shall be 1/16" larger than hook bolts. Face of hook bolts shank shall be tight to flange, no more that 1/8" gap.

3. Holes for lag screws shall be bored with a bit not larger than the screw at the base of the thread.

4. See Special Provision 528 for type of lag screws and hook bolt requirements.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS
WIN
23458.00, 23460.00, 23456.00, 23454.00, 24345.00

vhb

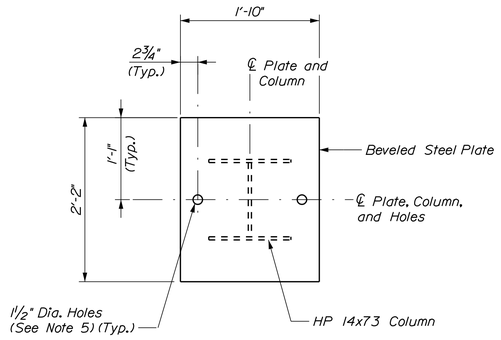
	NAME	BY	DATE
PROJ. MANAGER	NATE BENOIT		
DESIGN-DETAILED	JCM	BJM/KDW	10/2021
CHECKED-REVIEWED	CSG	CSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

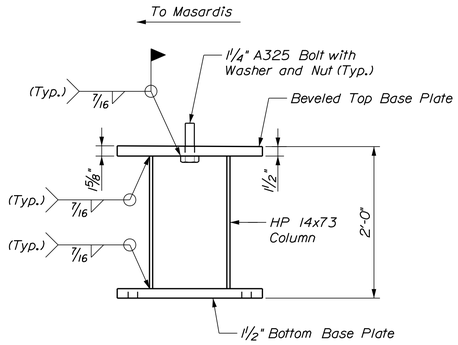
RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

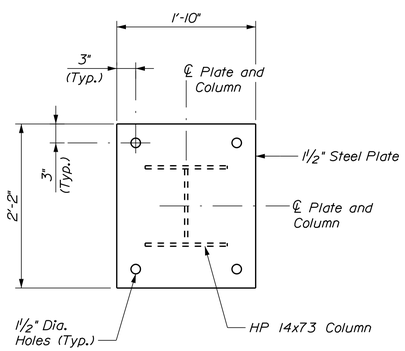
TYPICAL DETAILS (1 OF 2)

SHEET NUMBER
3
OF 52

Filename: ...\MSTA\003_Typ_Details_01.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021







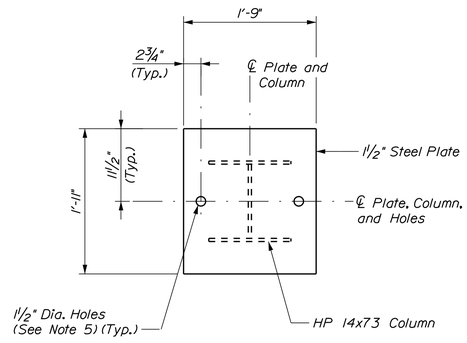
BEVELED TOP BASE PLATE DETAIL

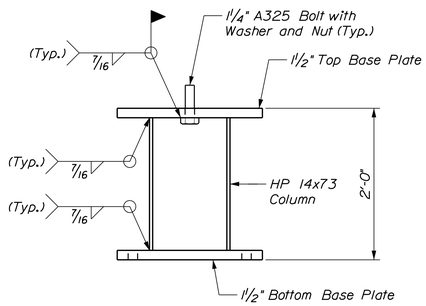
SIDE ELEVATION

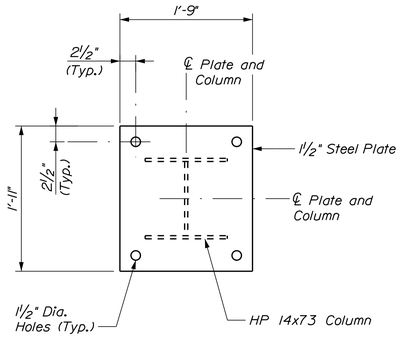
BOTTOM BASE PLATE DETAIL

EMBEDDED STEEL BOLSTER "SB1" FOR DECK GIRDER SPAN DETAILS

(4 Required - Bridge No. 7804 (M.P. P21.26))
Scale: 1" = 1'-0"







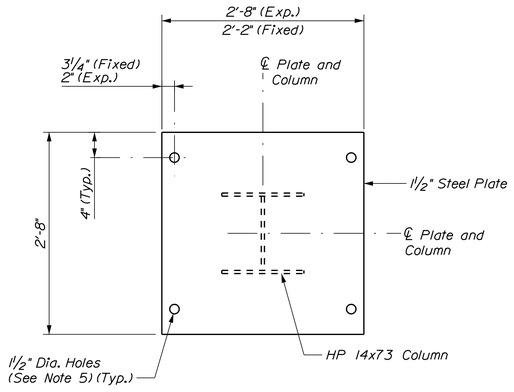
TOP BASE PLATE DETAIL

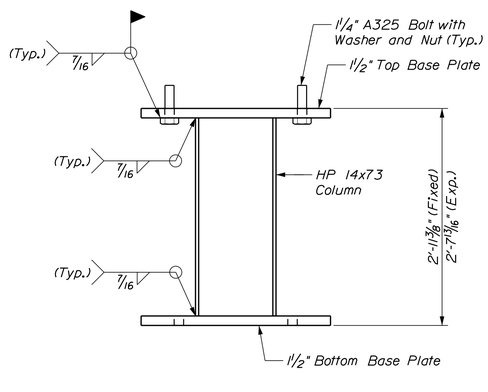
SIDE ELEVATION

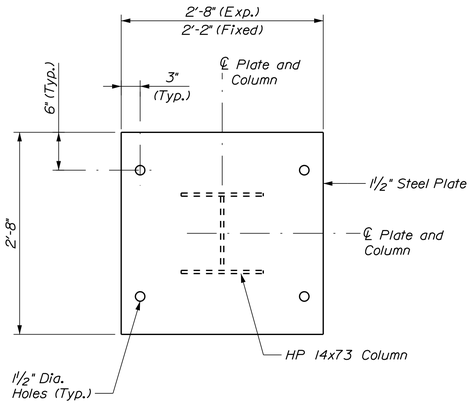
BOTTOM BASE PLATE DETAIL

EMBEDDED STEEL BOLSTER "SB2" FOR DECK GIRDER SPAN DETAILS

(8 Required - Bridge No. 7805 (M.P. P24.91))
Scale: 1" = 1'-0"







TOP BASE PLATE DETAIL

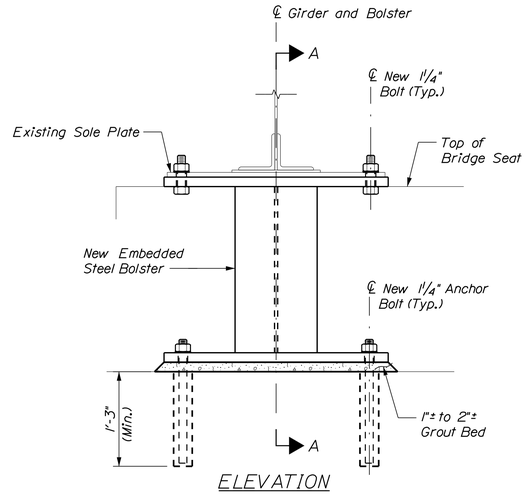
SIDE ELEVATION

BOTTOM BASE PLATE DETAIL

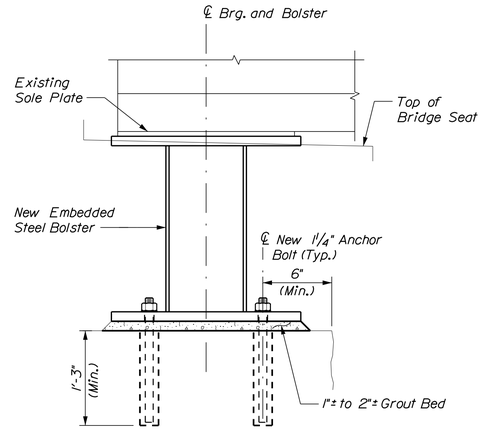
EMBEDDED STEEL BOLSTER "SB3" FOR THRU GIRDER SPAN DETAILS

(Embedded Bolster at New Fabric Pad Expansion Bearing Shown. Embedded Bolster at Fixed Bearing Similar Except as Noted)
(2 Expansion and 2 Fixed Required - Bridge No. 7805 (M.P. P24.91))
Scale: 1" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.



ELEVATION



SECTION A-A

EMBEDDED BOLSTER DETAIL

(Schematic Only - Actual Size and Configuration of Bearing, Existing Girder, Bolster, and Substructure Will Vary. See Details on Other Sheets.)
Not to Scale

STEEL BOLSTER NOTES

1. Embedded steel bolsters shall be galvanized in accordance with ASTM A123 or metalized.

2. All bolts, nuts, and washers shall be galvanized in accordance with ASTM A153.

3. See Typical Details (1 of 2) sheet for Structural Steel Notes and Anchor Bolt Notes.

4. All labor, equipment, and incidentals required to set the embedded steel bolsters on the existing concrete shall be paid under Item 504.71, Structural Steel Erection. All material and labor required to fabricate and deliver the embedded steel bolster shall be paid under Item 504.702, Structural Steel Fabricated and Delivered, Welded.

5. The Contractor shall field measure and place the holes in the top base plate to match in field conditions prior to fabrication of the embedded new steel bolster. At the Contractor's option, the holes in the top base plate may be field drilled to ensure proper fit up.

6. At the Contractor's option an alternative steel bolster configuration may be used. Cost for design and detailing will be considered incidental to Contract Items. Details shall be submitted for approval.

7. At no additional cost to the Department, HP 14x73 may be substituted with HP 14x89 or W 14x90. A325 bolts may be substituted with ASTM F1554, Grade 55 threaded rod.

8. Embedded steel bolsters shall be placed on a bed of high-early strength, non-shrink, polymer or epoxy grout material over the existing concrete. Grout material shall be selected from the MaineDOT Qualified Products List. All costs for grout will be considered incidental to the associated Contract Items. Existing concrete shall be cleaned and free of laitance before placing grout bed.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS
WIN
23458.00, 23460.00, 23456.00, 23454.00, 24345.00

vhb

PROJ. MANAGER	NATE BENOIT	BY	DATE
DESIGN-DETAILED	JCM	BJM/KDW	10/2021
CHECKED-REVIEWED	KCD	CSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

TYPICAL DETAILS (2 OF 2)

SHEET NUMBER
4
OF 52

Filename: ...\MSTA\004_Typ_Details_02.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021

Approximate Existing Right-of-Way (Typ.)

Scopan Lake

℄ Brg. South Abutment Bent (Fixed)

Existing South Abutment (Portions to be Removed)

Existing North Abutment (Portions to be Removed)

℄ Brg. North Abutment Bent (Fixed)

600

605

℄ Brg.
℄ Pier Bent (Fixed)
℄ Brg.

40'-6" Span 1

6"
6"

40'-6" Span 2

South to Masardis

North to Presque Isle

Concrete Filled Corrugated Pipe Sleeve (Pier Only) (Typ.)

WP 2
℄ Brg. and Bridge Chord

Steel Abutment Bent Cap (Typ.)

WP 1
℄ Brg. and Bridge Chord

Limits of Plain Riprap (Typ.)

WP 3
℄ Brg. and Bridge Chord

℄ Track

BB-AWI-101

BB-AWI-102

BB-AWI-103

Slope Limits (Typ.)

Precast Concrete Backwall (Typ.)

3'-0" Berm (Typ.)

Ballast Slope Break (Typ.)

Edge of Ballast (Typ.)

Steel Pier Bent Cap

Existing Superstructure to be Removed Entirely

Existing Timber Pile Cut off ±3' Above Mudline

Existing Timber Bulkhead ±3' off Mudline

Gabion Wall (Typ.)

Floating Turbidity Curtain (Typ.)

SITE PLAN

5 0 5 10
Scale of Feet

WORKING POINT TABLE		
Working Point	Northing	Easting
WP 1	1013025.1145	2204818.2834
WP 2	1013045.9231	2204853.0290
WP 3	1013066.7320	2204887.7750

LEGEND

Plain Riprap

Gabion Wall

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE PLANS

BRIDGE NO. 7800

vhb

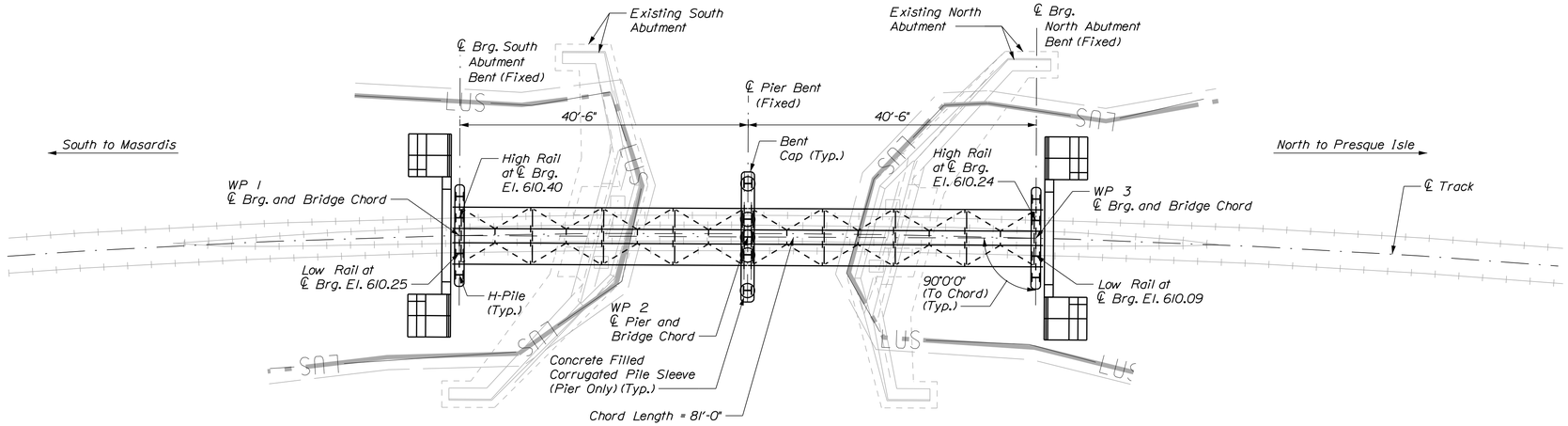
PROJ. MANAGER	MATT BENOIT
DESIGN-DETAILED	LSC
CHECKED-REVIEWED	LSC
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

	BY	DATE
REVISIONS 1	BJM	10/2021
REVISIONS 2	GSG	10/2021
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST INLET TO SCOPAN LAKE (1 OF 17)

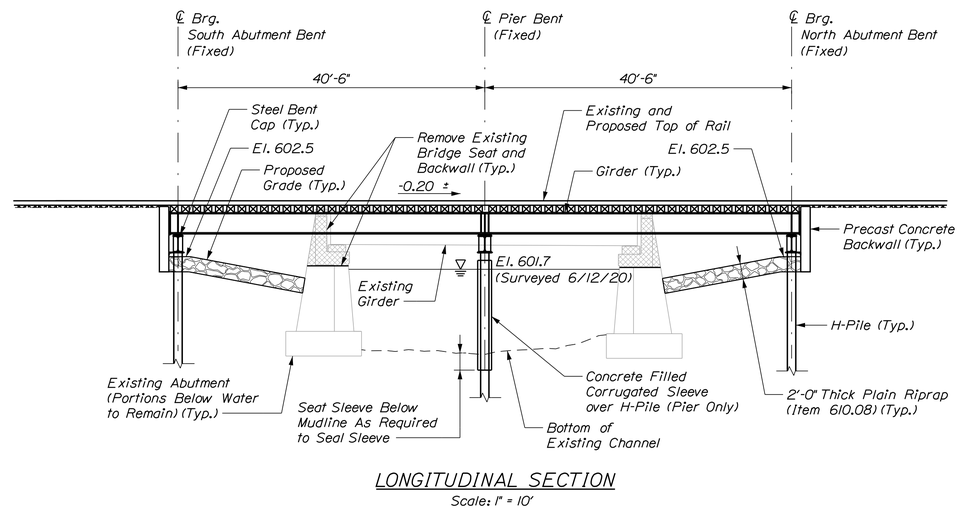
SHEET NUMBER
5
OF 52



PLAN

10 0 10 20

Scale of Feet



LONGITUDINAL SECTION

Scale: 1" = 10'

NOTES

1. See Br 7800 (M.P. 10.07) over West Inlet to Scopan Lake (1 of 17) sheet for Working Point Coordinates.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

vhb

PROJ. MANAGER	NATE BENOIT		
DESIGN-DETAILED	LSC	BJM	10/2021
CHECKED-REVIEWED	LSC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

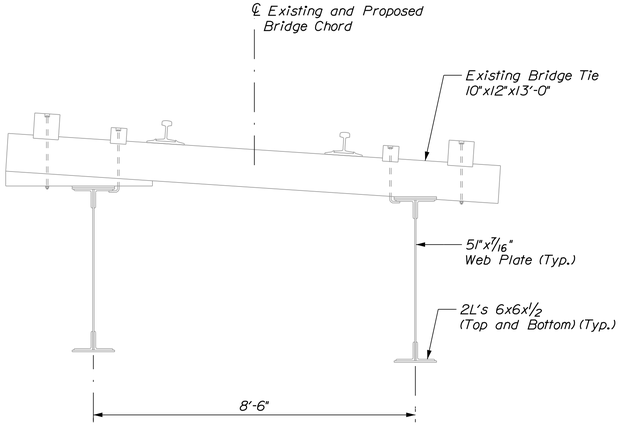
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (2 OF 17)

SHEET NUMBER

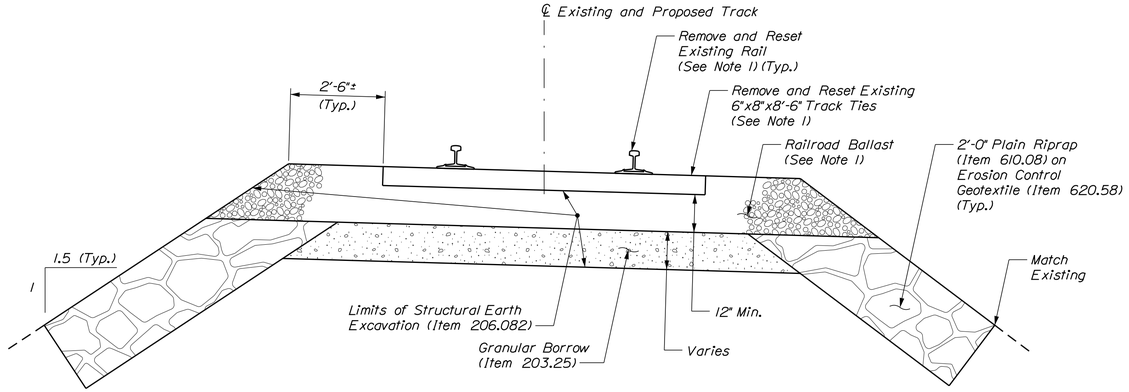
6

OF 52



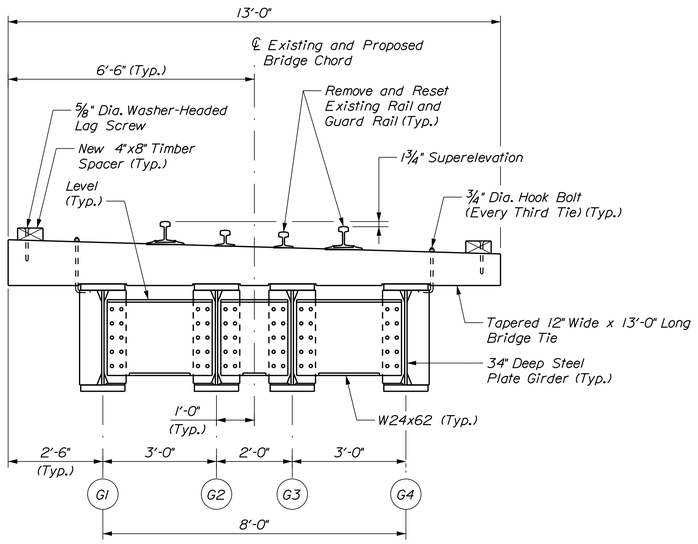
EXISTING TYPICAL SECTION

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



TYPICAL APPROACH SECTION

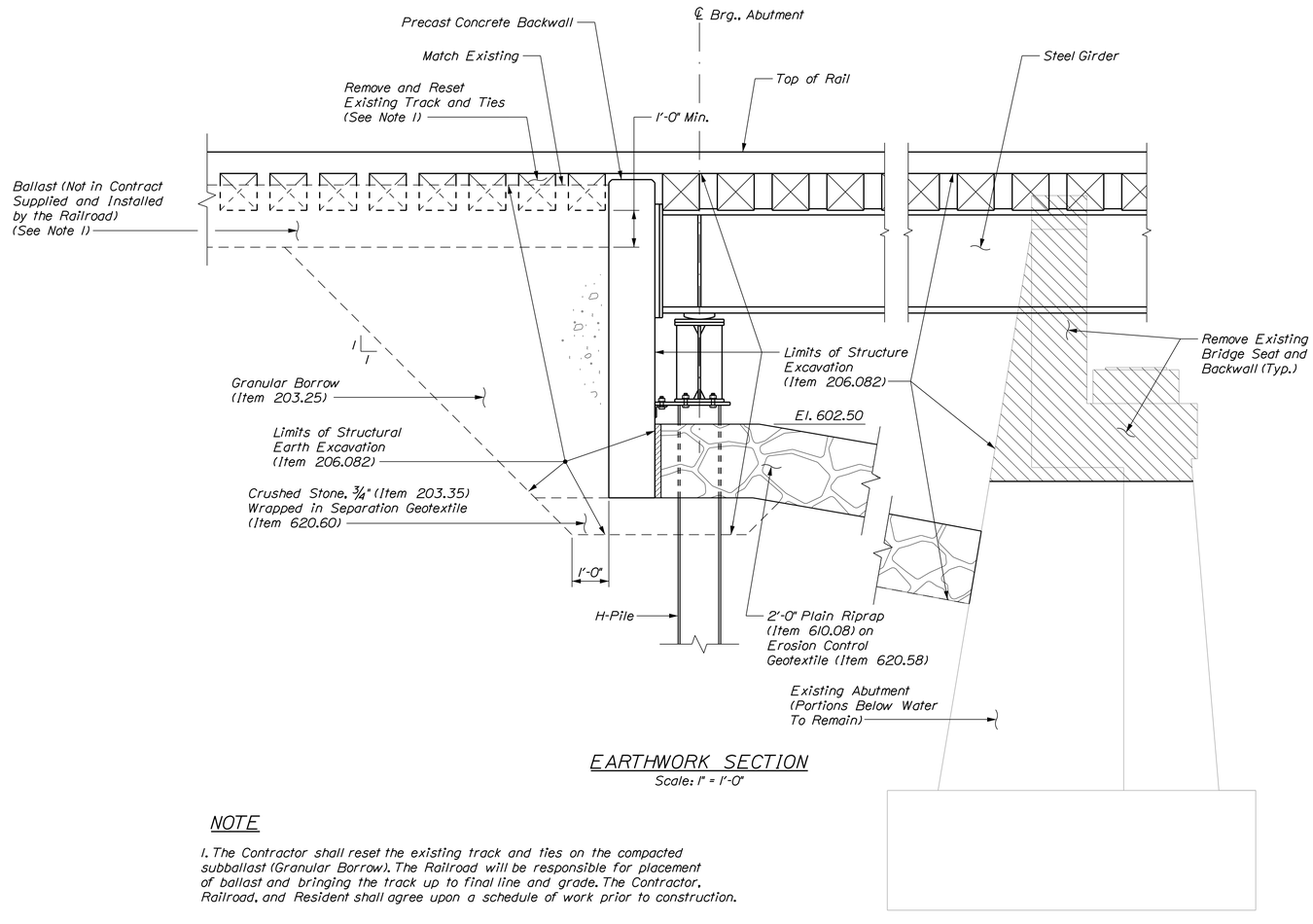
Scale: 1/2" = 1'-0"



PROPOSED TYPICAL SECTION

(Looking North)

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



EARTHWORK SECTION

Scale: 1" = 1'-0"

NOTE

1. The Contractor shall reset the existing track and ties on the compacted subballast (Granular Borrow). The Railroad will be responsible for placement of ballast and bringing the track up to final line and grade. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

vhb

	NAME	BY	DATE
PROJ. MANAGER	NATE BENOIT		
DESIGN-DETAILED	LSC	BJM	10/2021
CHECKED-REVIEWED	LSC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

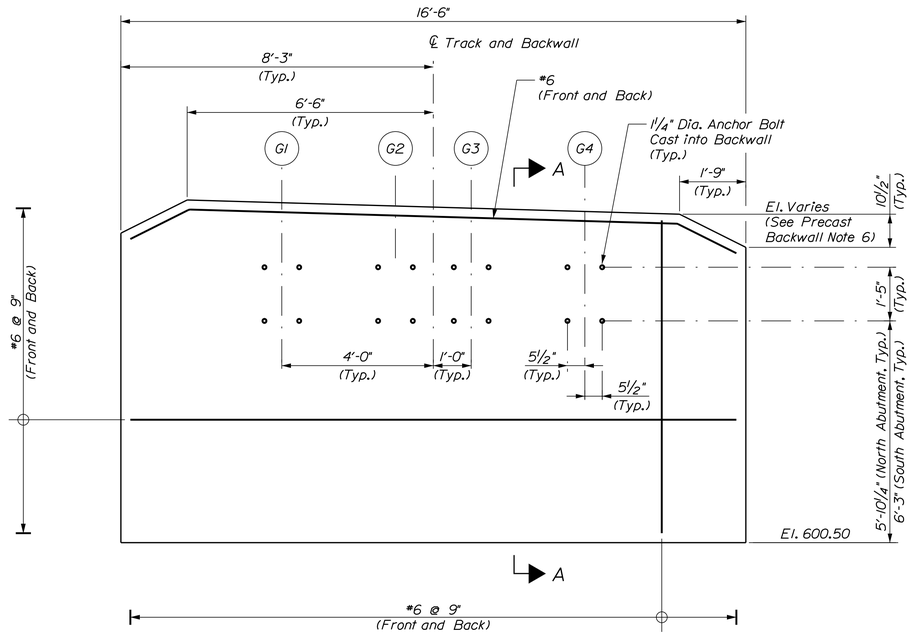
BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (3 OF 17)

SHEET NUMBER

7

OF 52

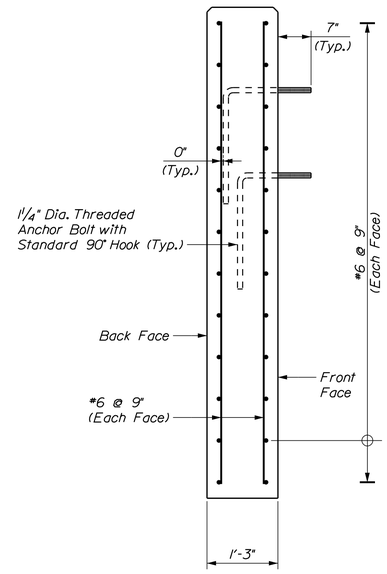
Filename: ...\MSTA\Br 7800\007_7800_typ.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



PRECAST BACKWALL ELEVATION

(North Abutment Shown, South Abutment Similar Opposite Hand)

Scale: ½" = 1'-0"



SECTION A-A

Scale: ¾"= 1'-0"

PRECAST BACKWALL NOTES

1. Concrete compressive strength shall be f'c = 5,000 psi.

2. Reinforcing steel shall be ASTM A615, Grade 60 uncoated.

3. Anchor bolts shall be galvanized ASTM F1554, Grade 55.

4. Anchor nuts and washers shall be galvanized ASTM A563 and ASTM F436 respectively.

5. All anchor nuts shall be snug tight and receive a second jamb nut, or the threads specified to be burred to prevent the nut from backing off.

6. For precast backwall elevations, see Br 7800 (M.P. 10.07) Over West Inlet to Scopan Lake (7 OF 17) sheet.

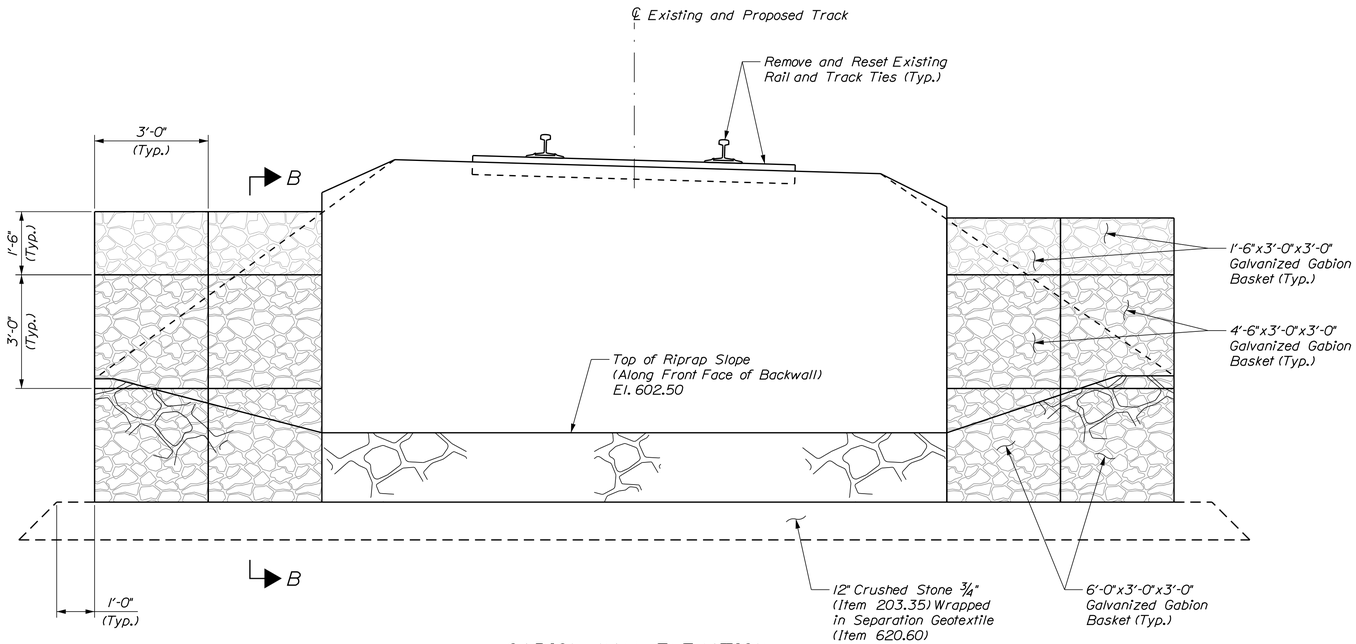
GABION WALL NOTES

1. Gabion baskets shall be galvanized and conform to MaineDOT standard specification 601.

2. Size of baskets may be adjusted at the Contractor's option while maintaining the overall dimensions shown as a minimum.

3. Baskets shall be placed right up against the edge of the precast backwall. Place Separation Geotextile behind to overlap the joint.

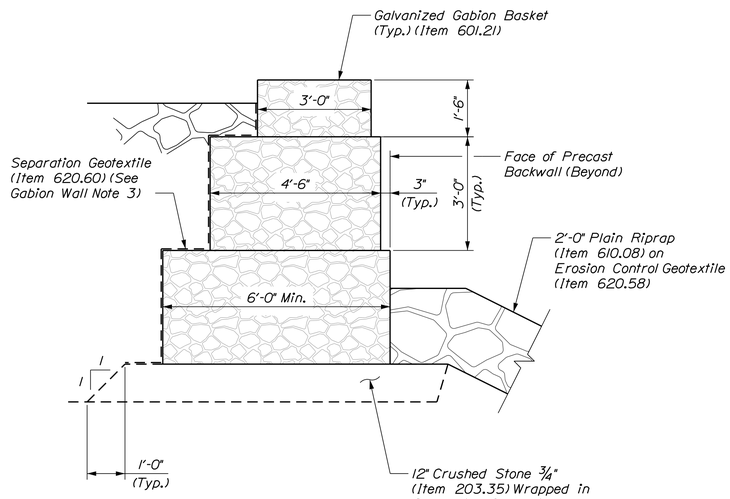
4. The bottom basket shall be placed flush with the face of the precast backwall. Each level above shall be set back 3".



GABION WALL ELEVATION

(North Abutment Shown, South Abutment Similar)

Scale: ½" = 1'-0"



SECTION B-B

Scale: ½" = 1'-0"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

vhb

	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	MAC	10/2021
CHECKED-REVIEWED	MAC	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

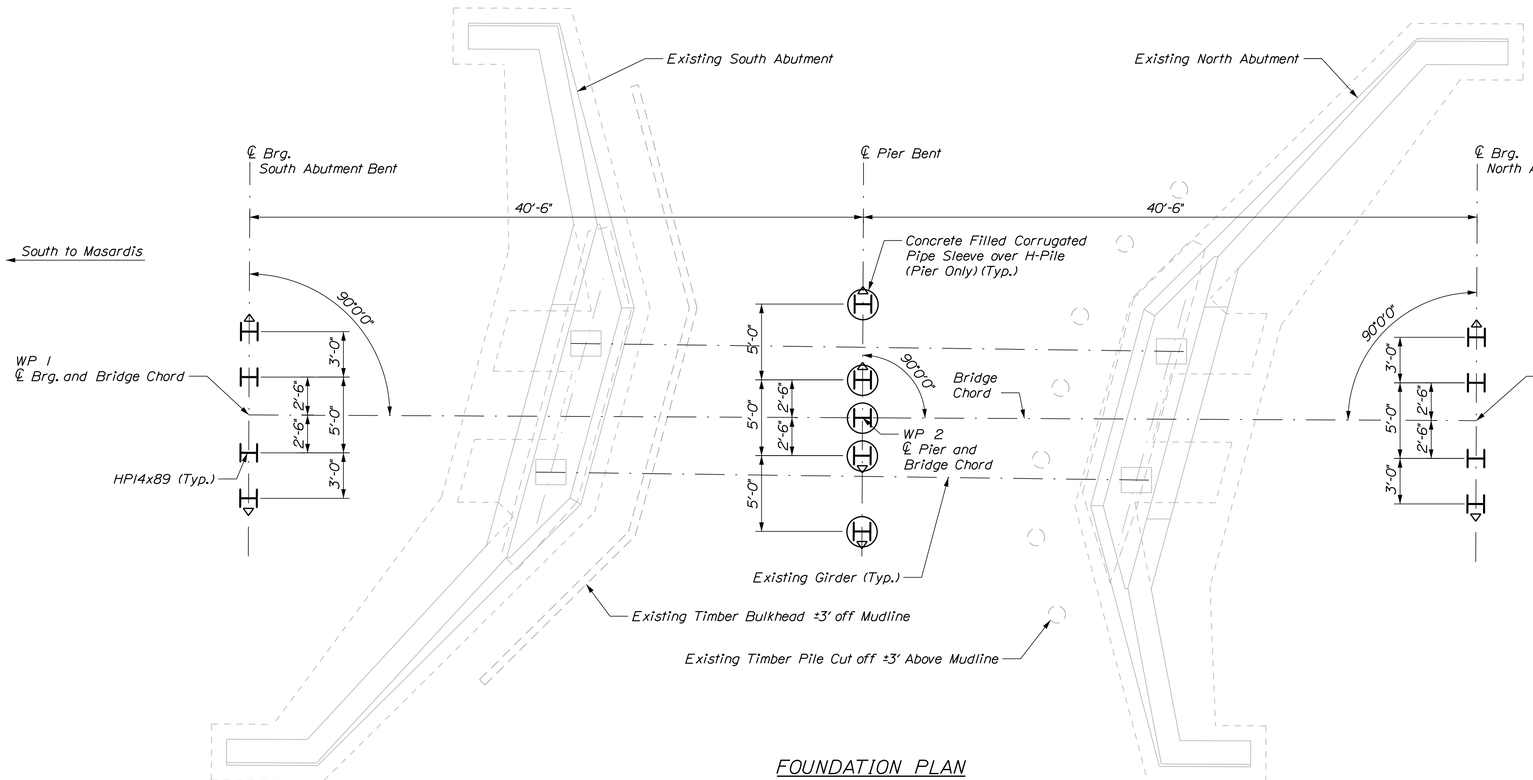
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (4 OF 17)

SHEET NUMBER

8

OF 52



FOUNDATION PLAN

20 0 20 40

Scale of Feet

Note: See Working Point Table on Br 7800 (M.P. 10.07) over West Inlet to Scopan Lake (1 OF 17) sheet for northings and eastings.

PILE NOTES

1. See Structural General Notes sheet for additional notes.

2. The design axial load per abutment HP14x89 is 175 kips and the design axial load per pier HP14x89 is 220 kips (AREMA Service Load Group 1) (ASD). The allowable structural capacity of the pile is 330 kips where the allowable axial stress for driven steel piles is 12.6 ksi for 50 ksi piles. The allowable stress for combined compression and bending is taken as 27.5 ksi for 50 ksi piles in accordance with AREMA criteria.

3. Estimate of piles required: (lengths shown are for plumb H-piles, battered H-piles are longer).
   Abutment No. 1: 4 ~ HP 14x89 @ 54 feet ±
   Center Pier: 5 ~ HP 14x89 @ 81 feet ±
   Abutment No. 2 4 ~ HP 14x89 @ 54 feet ±

4. The order lengths of the piles shall include an additional 5 feet of length for each test pile to accommodate dynamic pile testing equipment.

5. All piles shall be equipped with cast steel tips in accordance with Standard Specification Section 501.048, Prefabricated Pile Tips.

6. Driven piles to achieve ultimate capacity as follows based on a factor of safety of 2.25:
   Abutment No. 1 and 2: 394 kips
   Center Pier: 495 kips

7. Piles shall be driven to the required ultimate resistance in accordance with Standard Specification Section 501.

8. Piles shall not be out of position shown by more than 2 inches in any direction.

9. The Contractor shall submit to the Department, for review and acceptance, their proposed pile driving equipment with a completed "Pile and Driving Equipment Form", Figure 1, of Standard Specifications Section 501 - Foundation Piles. Approval of the proposed pile driving equipment by the Department will be based on Department-conducted wave equation analyses and the criteria specified in Section 501 and Subsection 501.042, Equipment for Driving Piles. If the Department-conducted wave equation analyses show that the proposed pile driving equipment system(s) is not acceptable, the Contractor shall modify or replace the proposed driving equipment in an amendment to QCP, at their own expense, until subsequent wave equation analyses by the Department indicate the pile can be driven to the required resistance, without damage or excessive blows.

10. The Contractor shall provide access for the agents of the Department to perform 2 dynamic load tests, one at either Abutment 1 or Abutment 2 and one at the center pier, with signal matching and 24 hour (typ.) restrike tests to confirm the ultimate capacity of the piles. The dynamic test shall be performed on the first production pile driven at each foundation location. The required ultimate resistance for the piles are specified in note 6.

11. Pile splices will not be permitted at the abutments. One splice per pile at the pier is permitted. Pile splices shall be made with full penetration groove welds that conform with MaineDOT standard detail 501(03) and MaineDOT Standard Specification Section 501. All costs shall be paid for under Item 501.91, Pile Splices.

12. Structural Steel for all H-piles and cap plates shall conform to ASTM A709, Grade 50 as well as the MaineDOT Standard Specification Section 501 and 713. The upper 15 feet of the installed piles shall be galvanized in accordance with ASTM A123 or metalized. Locations where piles are cut, welded, or otherwise damaged shall be touched up with an approved zinc-rich paint.

13. Pier piles have been located around the existing girders to allow for pile driving prior to the removal of the existing bridge superstructure (adjustments to top lateral bracing may be required.)

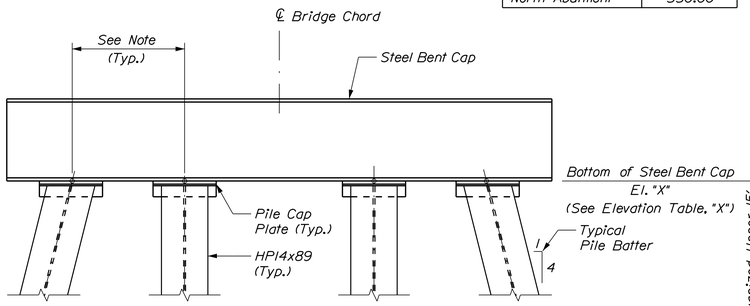
14. The Contractor shall note that boulders and cobbles were observed in the geotechnical boring logs. These elements may cause the piles to achieve refusal at an elevation above the estimated pile tip elevations shown.

ESTIMATED PILE TIP ELEVATION (ft)	
South Abutment	550.00
Pier	523.00
North Abutment	550.00

LEGEND

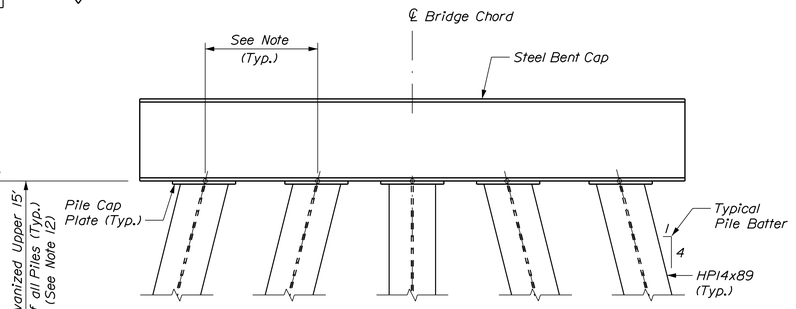
H Plumb HP14x89 Pile

H Battered HP14x89 Pile



ABUTMENT LAYOUT DETAIL

Not to Scale



PIER LAYOUT DETAIL

(Pile Sleeves not Shown)
Not to Scale

ELEVATION TABLE, "X" (ft)	
South Abutment	603.53
Pier	603.45
North Abutment	603.37

Note: Pile horizontal spacing is referenced at the bottom of steel bent cap / top of pile cap plate elevation as shown.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	MAC	BJM	10/2021
CHECKED-REVIEWED	MAC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (5 OF 17)

SHEET NUMBER

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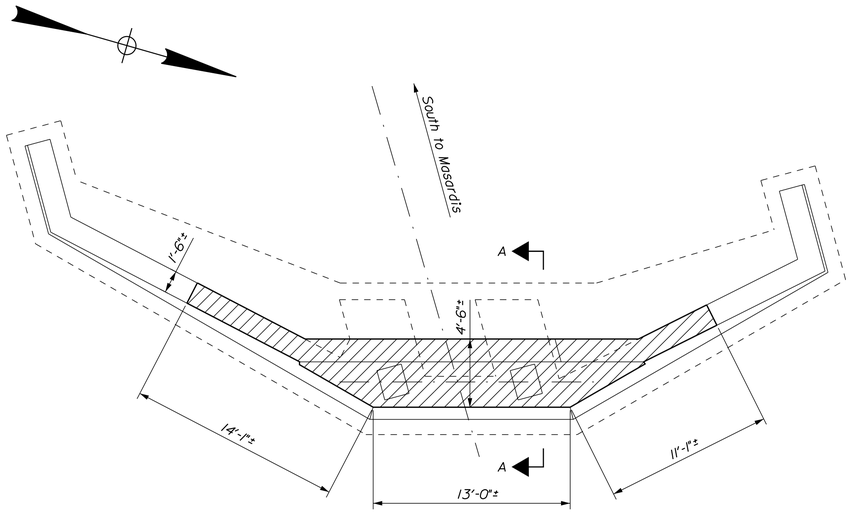
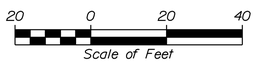
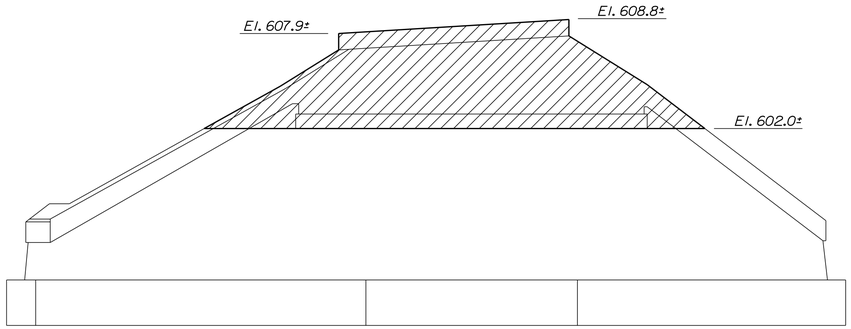
OF 52

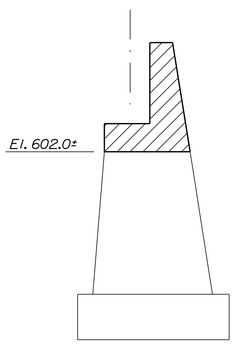


EXISTING SOUTH ABUTMENT PLAN

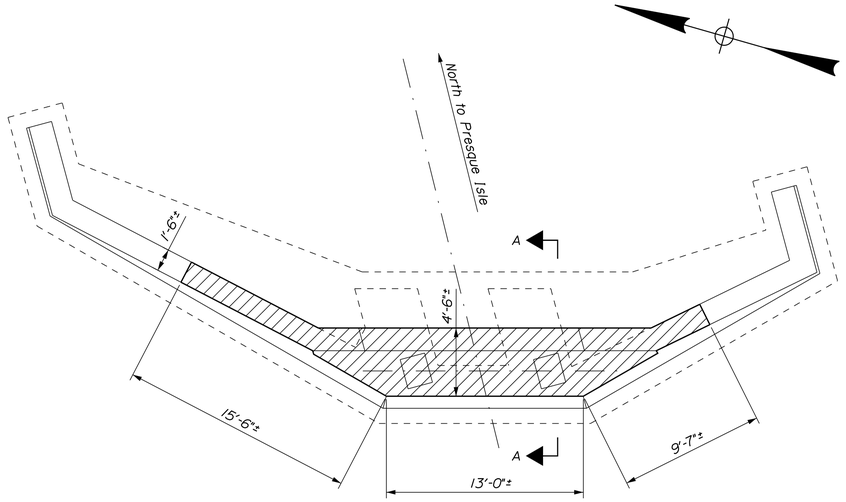




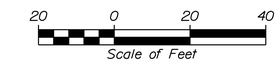
EXISTING SOUTH ABUTMENT ELEVATION

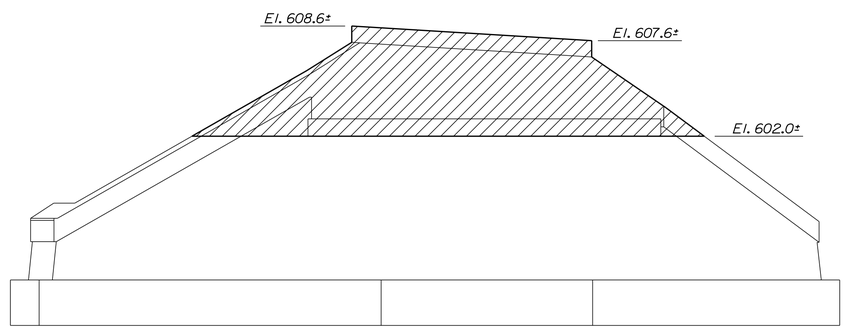


SECTION A-A



EXISTING NORTH ABUTMENT PLAN





EXISTING NORTH ABUTMENT ELEVATION

LEGEND

Approximate Limits of Removal

NOTES

1. Existing abutment geometry is based on existing plans with limited field measurements and survey. All dimensions shown on the contract documents are approximate and shall be verified by the contractor in the field.

2. Care shall be taken not to damage portions of the existing substructure to remain. Any damage to existing structure resulting from demolition or construction operations shall be repaired as directed, at no additional expense to MaineDOT.

3. The existing steel deck plate girder superstructure appears to have remnants of an existing (steel) coating. See general notes and quantities sheet for notes about removal.

4. See Br 7800 (M.P. 10.07) over West Inlet to Scopan Lake (3 of 17) for existing superstructure typical section.

5. Cost for superstructure removal and partial substructure removal shall be included under Item 202.19, Removing Existing Bridge.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

vhb

PROJ. MANAGER	MATE BENOIT	BY	DATE
DESIGN-DETAILED	LSC	BJM	10/2021
CHECKED-REVIEWED	LSC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

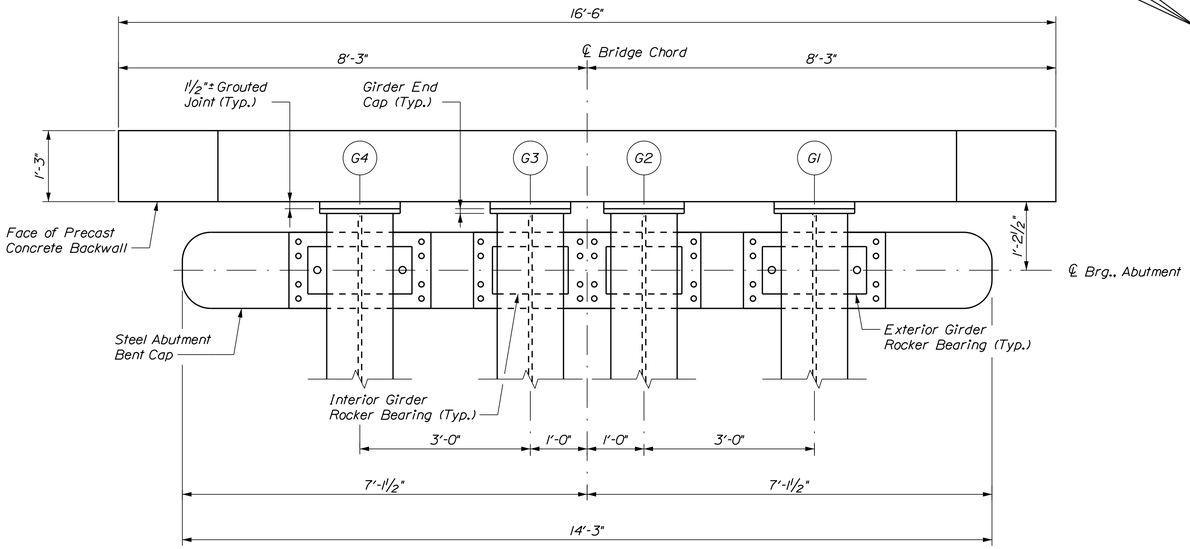
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (6 OF 17)

SHEET NUMBER

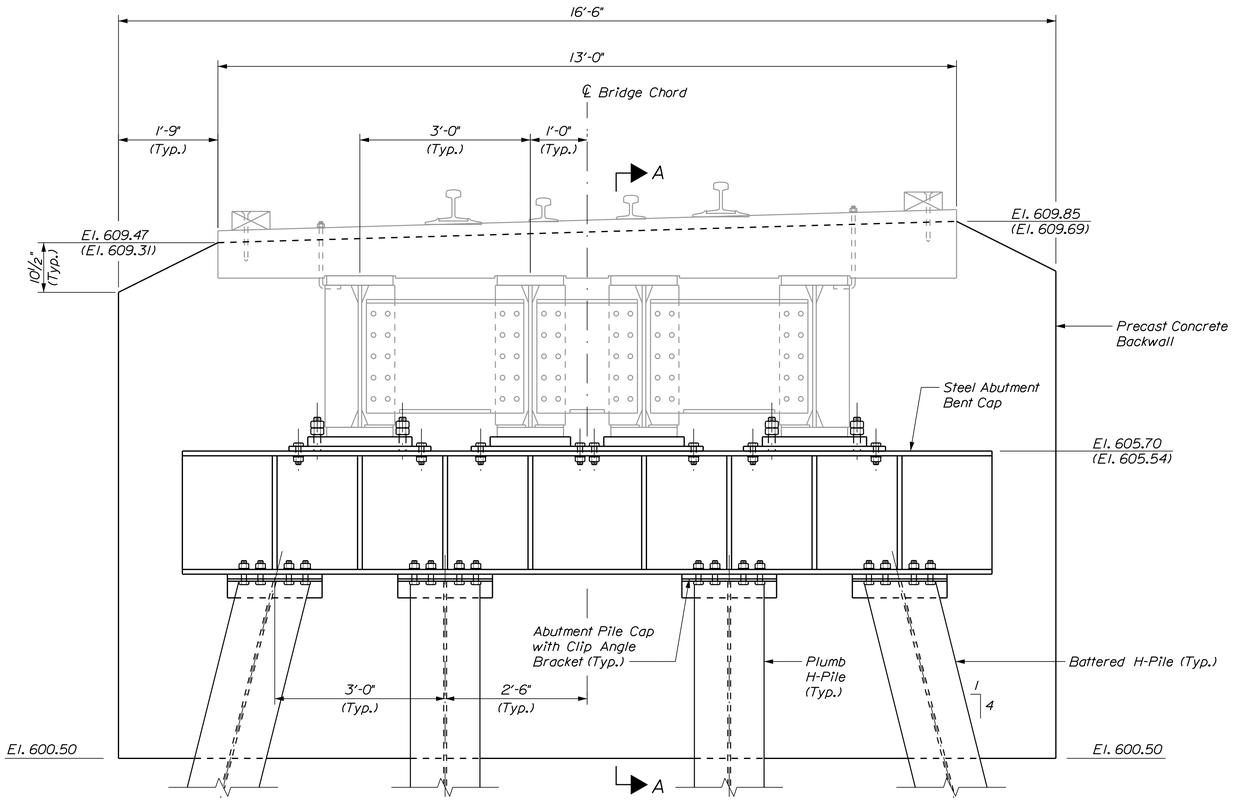
10

OF 52



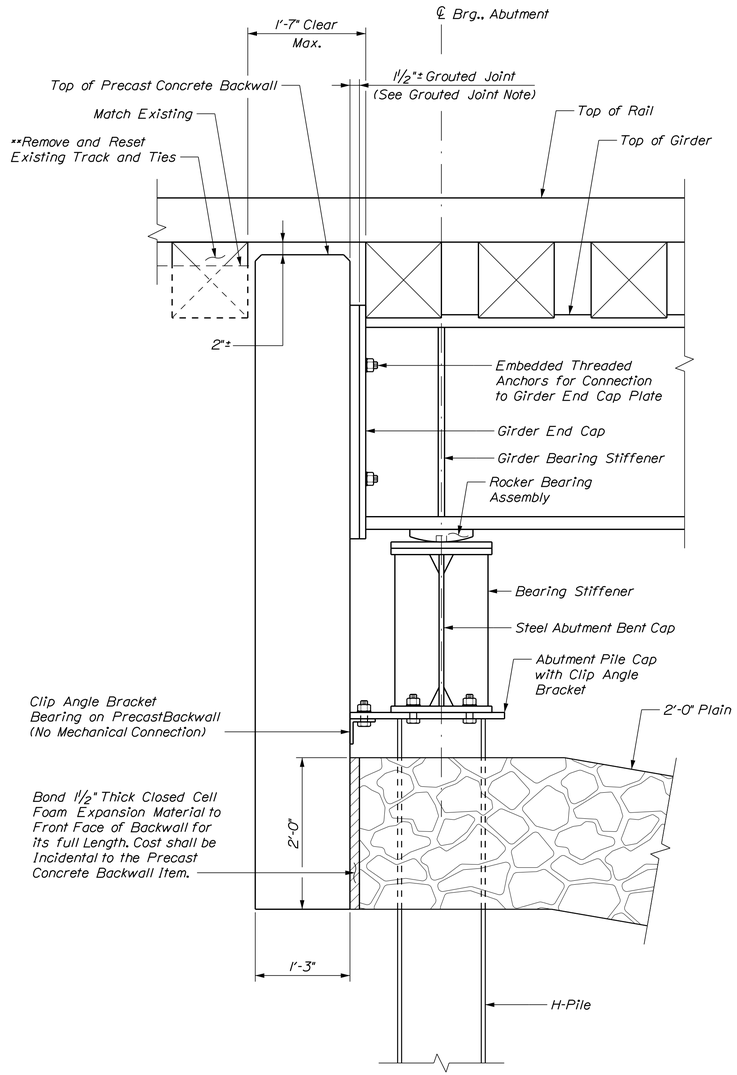
ABUTMENT PLAN

(South Abutment Shown. North Abutment Similar. Opposite Hand)
Scale: ¾" = 1'-0"



ABUTMENT ELEVATION

(South Abutment Shown. North Abutment Similar. Opposite Hand)
(Elevations for North Abutment Shown in Parenthesis where Different)
Scale: ¾" = 1'-0"



SECTION A-A

Scale: 1" = 1'-0"

** The Contractor shall reset the existing track and ties on the compacted subballast (Granular Borrow). The Railroad will be responsible for placement of ballast and bringing the track up to final line and grade. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction.

GROUTED JOINT NOTE

1. After setting the bridge girders and precast backwall as shown, grout the space between the precast backwall and girder end cap plate. After the grout has achieved a minimum of 50% of its compressive strength, set the anchor nuts snug tight and set an additional jamb nut to prevent nut removal. HDPE shims may be used between the precast backwall and girder end plate as required. Cost shall be incidental to Precast Concrete Backwall item.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

vhb

	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	MAC	BJM 10/2021
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DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
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FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

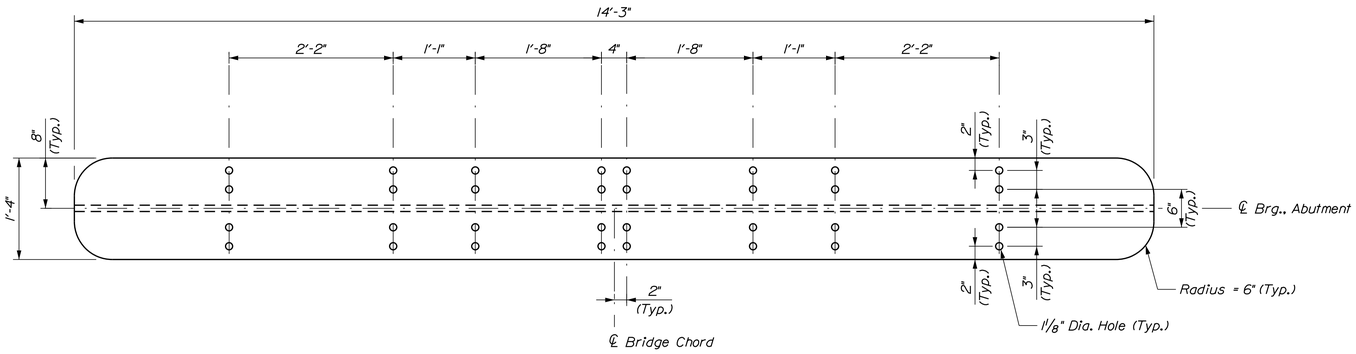
BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (7 OF 17)

SHEET NUMBER

11

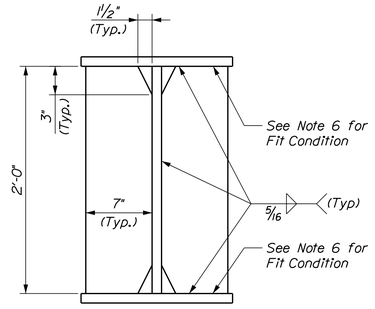
OF 52

Filename: ...\Br 7800\011_7800_Abut_01.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



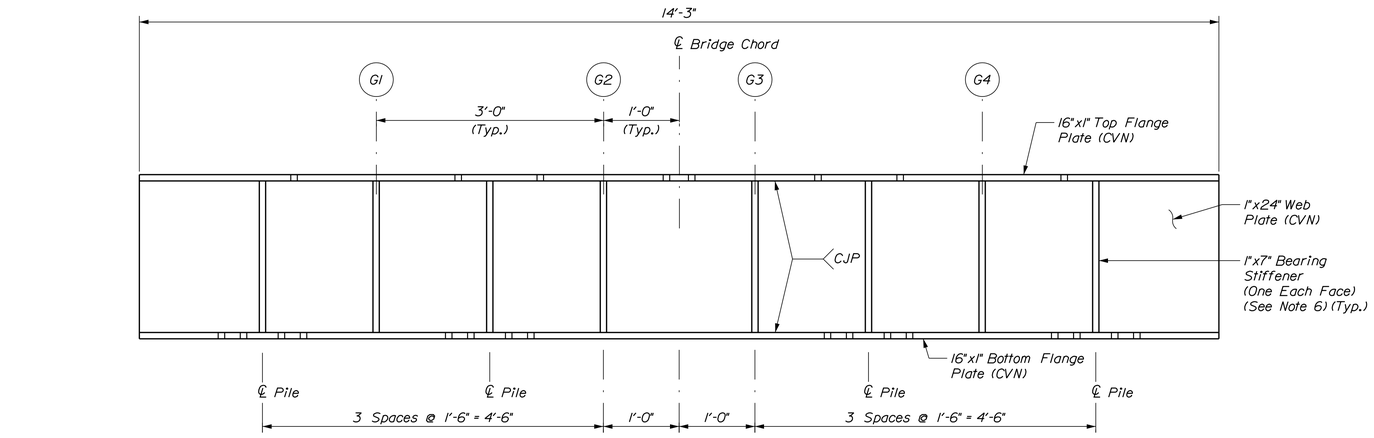
TOP FLANGE PLAN

Scale: 1" = 1'-0"



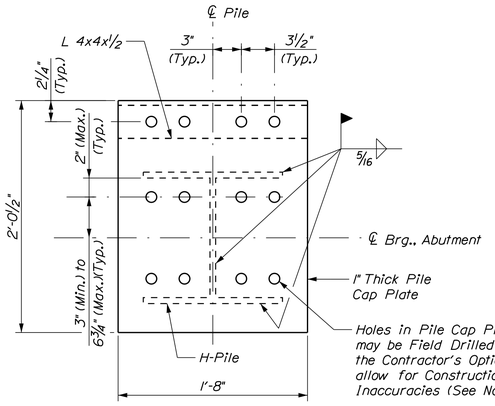
BEARING STIFFENER DETAIL

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



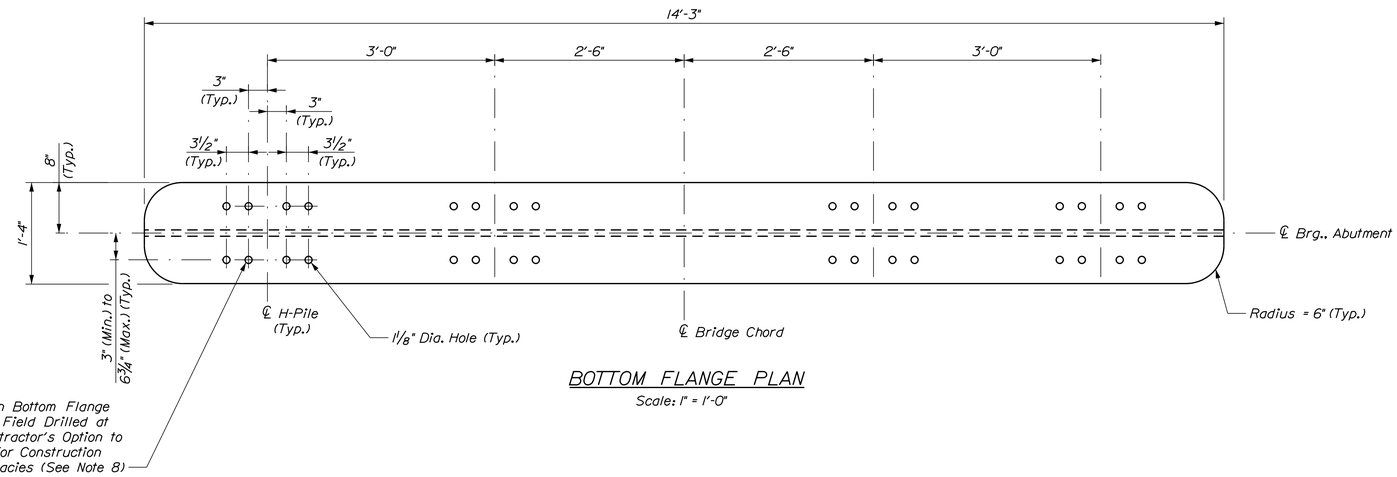
TYPICAL ABUTMENT BENT CAP ELEVATION

Scale: 1" = 1'-0"



ABUTMENT PILE CAP DETAIL

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



BOTTOM FLANGE PLAN

Scale: 1" = 1'-0"

NOTES

1. See the general notes and quantities sheet for structural steel material, welding and galvanizing requirements and additional notes.

2. All bolted connections between the rocker bearing assembly and pile cap plate to bent cap connections shall be made with galvanized 1" diameter ASTM F3125, Grade A325 Type 1 high strength bolts in standard 1-1/8" diameter holes. Nuts and washers shall be galvanized ASTM A563 and ASTM F436 respectively.

3. All Webs and flanges in tension areas shall conform to notch toughness requirements, for non-fracture critical members, as specified in MaineDOT Standard Specification Section 713.01. These members have been labeled (CVN) for clarity.

4. Flange and web plates shall be fabricated in one piece. No transverse butt welds are permitted.

5. Bearing stiffeners shall be plumb at erection.

6. At girder bearing locations, bearing stiffeners shall be set mill to bear against the top flange and tight fit to the bottom flange. At pile support locations, bearing stiffeners shall be set mill to bear against the bottom flange and tight fit to the top flange.

7. After fabrication is complete, the abutment bent caps and stiffeners shall be galvanized in accordance with the project standard notes. The abutment pile cap plate and clip angle shall be ASTM A709 Grade 50 (not shop galvanized). After welding, all exposed surfaces of the abutment pile cap plate shall be coated with and approved zinc-rich paint, all cost will be considered incidental to Contract Items.

8. Bolted connection between the pile cap plate and bent cap bottom flange may be field drilled at the Contractor's option. Bolts shall be placed within the limits shown such that they are adjacent to the inside or outside face of flange.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00
BRIDGE NO. 7800
BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	MAC	BJM	10/2021
CHECKED-REVIEWED	MAC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
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REVISIONS 3			
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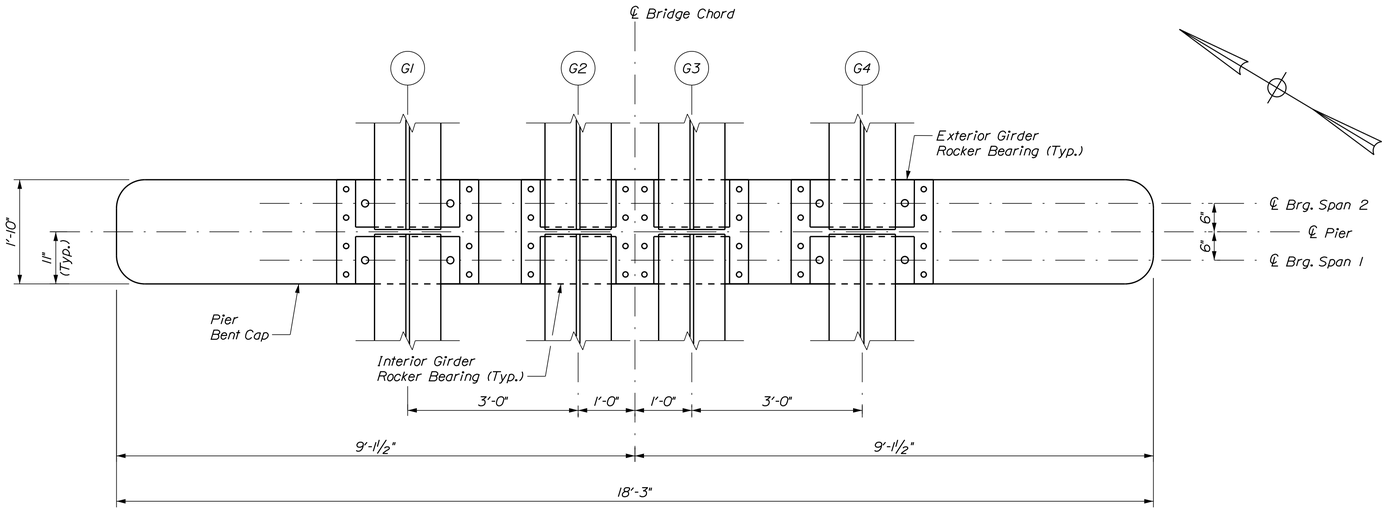
FIELD CHANGES			

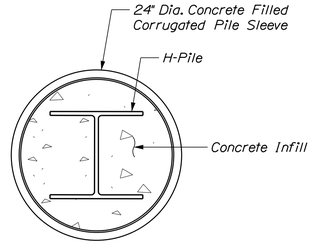
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (8 OF 17)

SHEET NUMBER
12
OF 52



PIER PLAN
Scale: 3/4" = 1'-0"



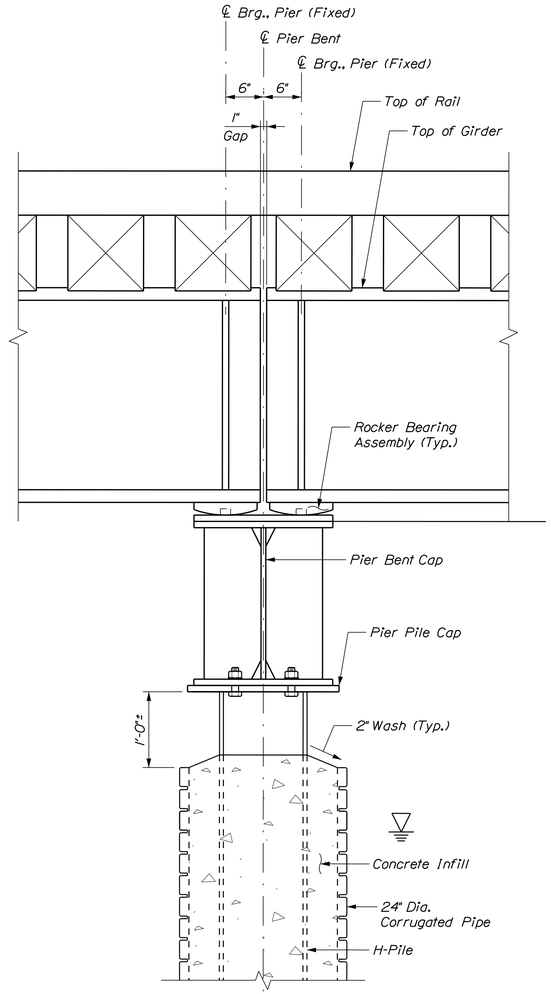
SECTION A-A
Scale: 1" = 1'-0"

NOTES

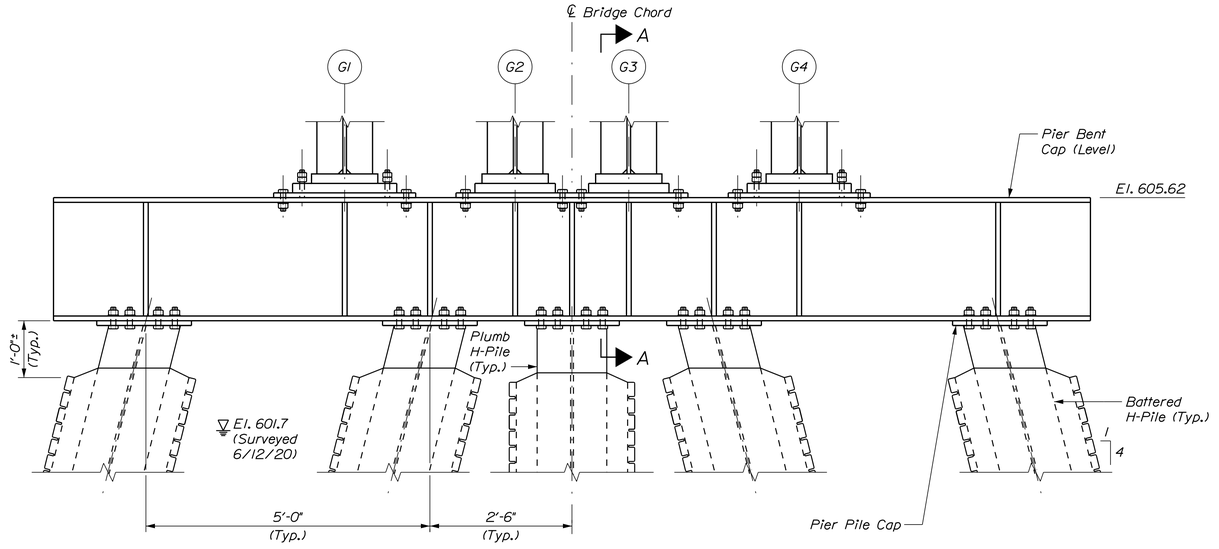
1. Pile sleeves shall be 24" diameter corrugated pipe material conforming to AASHTO M 330 Type S. All costs shall be paid for under Item 603.1970, 24" Polypropylene Pipe.

2. Sleeves shall be installed to the elevations shown on the plans.

3. Infill concrete shall be concrete class fill with minimum compressive strength of 3,000 psi. All costs shall be paid for under Item 502.2354, Structural Concrete, Pile Fill.



SECTION A-A
Scale: 1" = 1'-0"



PIER ELEVATION
Scale: 3/4" = 1'-0"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

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PROJ. MANAGER	MATE BENOIT		
DESIGN-DETAILED	MAC	BJM	10/2021
CHECKED-REVIEWED	MAC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
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FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

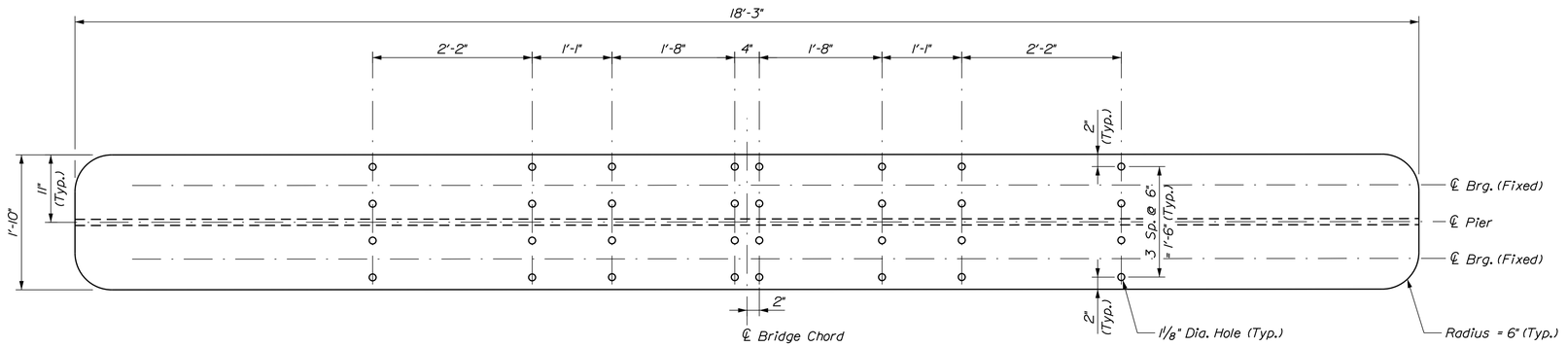
BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (9 OF 17)

SHEET NUMBER

13

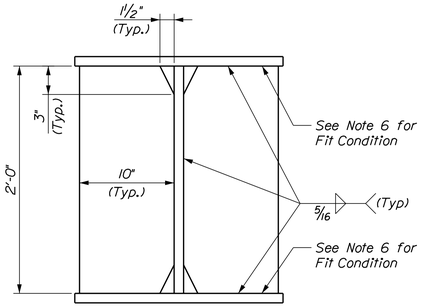
OF 52

Filename: ...\Br 7800\013_7800_Pier_01.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



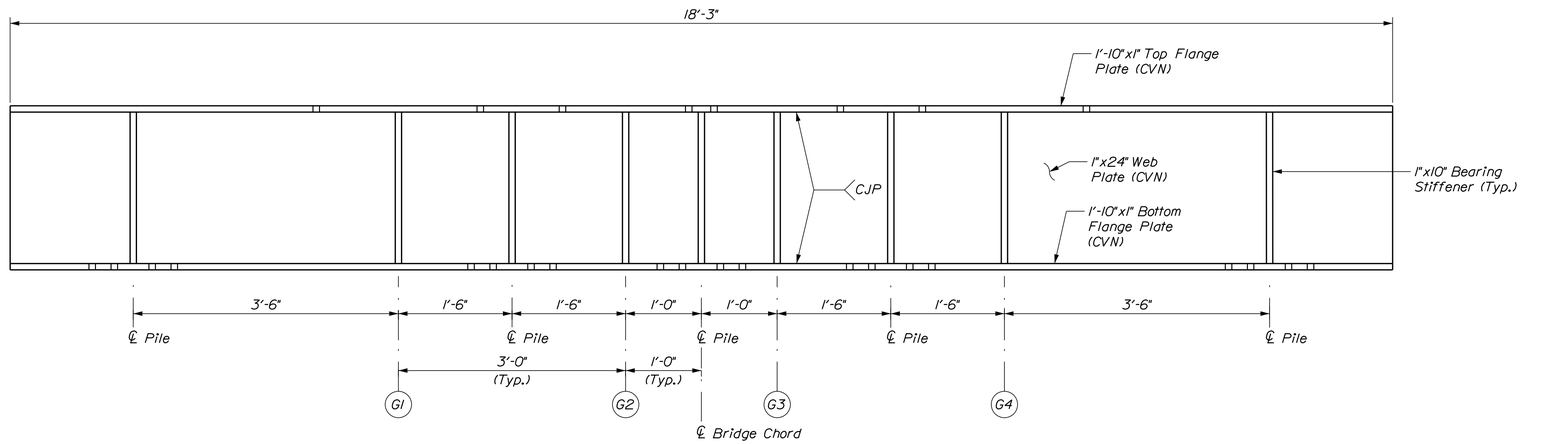
TOP FLANGE PLAN

Scale: 1" = 1'-0"



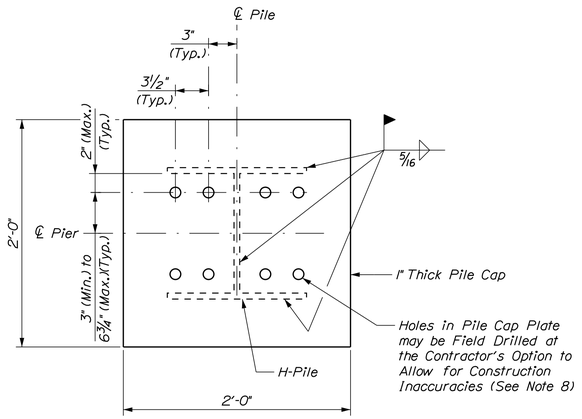
BEARING STIFFENER DETAIL

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



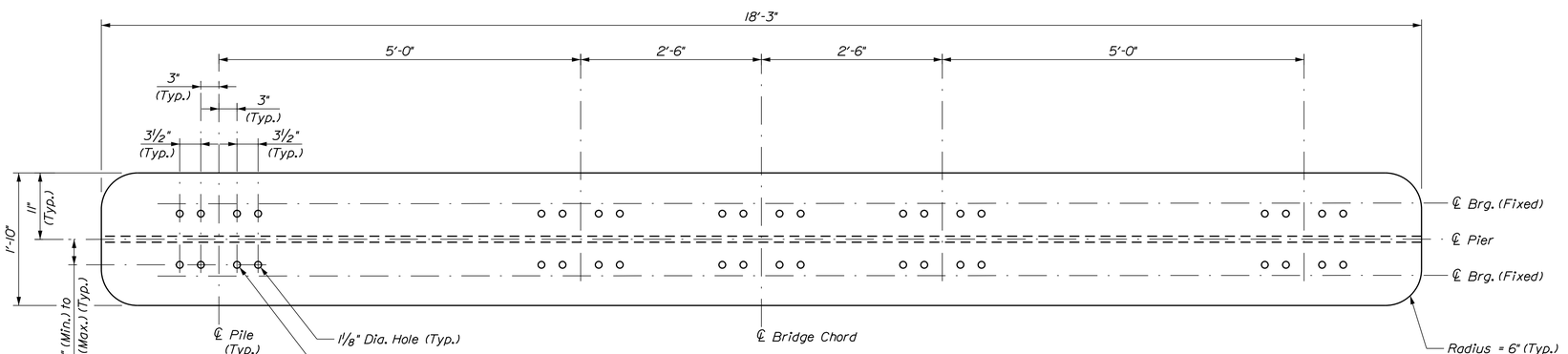
PIER BENT CAP ELEVATION

Scale: 1" = 1'-0"



PIER PILE CAP DETAIL

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



BOTTOM FLANGE PLAN

Scale: 1" = 1'-0"

NOTES

1. See the general notes and quantities sheet for structural steel material, welding and galvanizing requirements and additional notes.

2. All bolted connections between the rocker bearing assembly and pile cap plate to bent cap connections shall be made with galvanized 1" diameter ASTM F3125, Grade A325 Type 1 high strength bolts in standard 1 1/8" diameter holes. Nuts and washers shall be galvanized ASTM A563 and ASTM F436 respectively.

3. All webs and flanges in tension areas shall conform to notch toughness requirements, for non-fracture critical members, as specified in MaineDOT standard specification section 713.01. These members have been labeled (CVN) for clarity.

4. Flange and web plates shall be fabricated in one piece. No transverse butt welds are permitted.

5. Bearing stiffeners shall be plumb at erection.

6. At girder bearing locations, bearing stiffeners shall be set mill to bear against the top flange and tight fit to the bottom flange. At pile support locations, bearing stiffeners shall be set mill to bear against the bottom flange and tight fit to the top flange.

7. After fabrication is complete, the pier bent cap and stiffeners shall be galvanized in accordance with the project standard notes. the pier pile cap plate shall be ASTM A709 Grade 50 (not shop galvanized). After welding, all exposed surfaces of the pier pile cap plate shall be coated with and approved zinc-rich paint. all cost will be considered incidental to Contract Items.

8. Bolted connection between the pile cap plate and bent cap bottom flange may be field drilled at the Contractor's option, as shown. Bolts shall be placed within the limits shown such that they are adjacent to the inside or outside face of flange.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

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	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	MAC	BJM	10/2021
CHECKED-REVIEWED	MAC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
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REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (10 OF 17)

SHEET NUMBER

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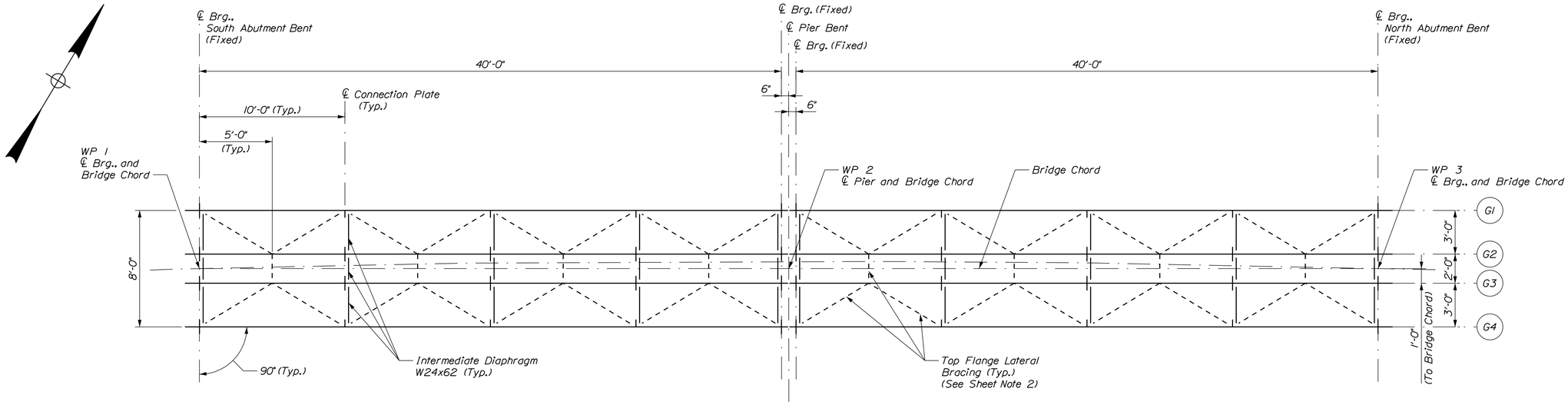
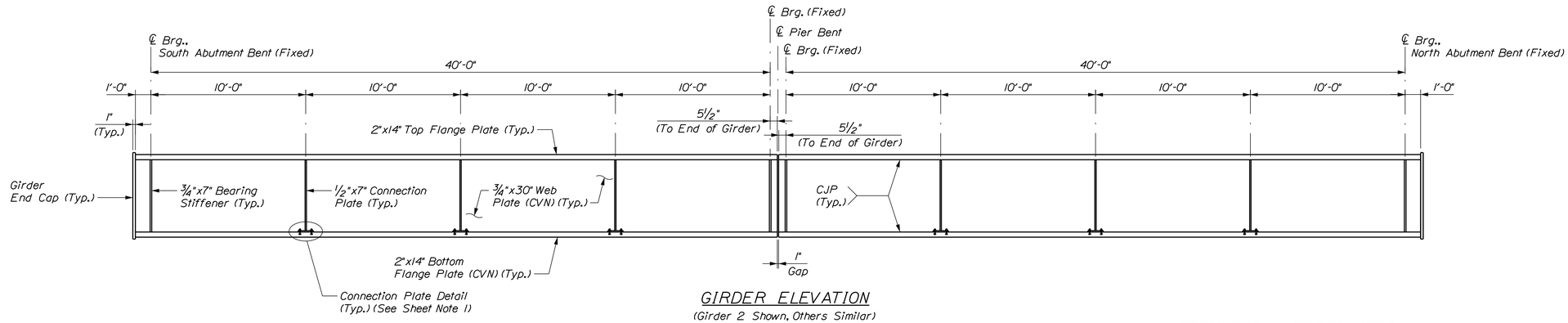


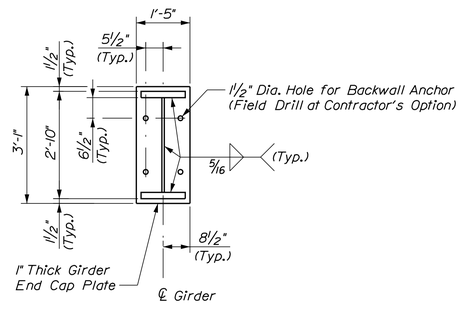
FRAMING PLAN

Scale: 1/4" = 1'-0"



GIRDER ELEVATION

(Girder 2 Shown, Others Similar)
Not to Scale



GIRDER END CAP PLATE

(End Cap Plate Required at Abutment Ends Only)
Scale: 1/2" = 1'-0"

STRUCTURAL STEEL NOTES

1. See the General Notes and Quantities Sheet for Structural Steel Notes.

2. All webs, and flanges in tension areas shall conform to notch toughness requirements, for non-fracture critical members, as specified in MaineDOT Standard Specification Section 713.01. These members have been labeled (CVN) for clarity.

3. Structural steel plate girders, diaphragms, connection plates, and bearing stiffeners shall be galvanized in accordance with ASTM A123 or metalized.

4. Flange and web plates shall be fabricated in one piece. No transverse butt welds are allowed.

5. Bearing stiffeners shall be plumb after erection and full dead load is applied to the structure.

6. Diaphragm connection plates may be either plumb or normal to the top flange.

7. Girders shall be fabricated to zero camber plus tolerance.

8. Top flange lateral bracing gravity axis are shown and shall intersect at centerline of connection plates.

SHEET NOTES

1. See Br 7800 (M.P. 10.07) Over West Inlet to Scopan Lake (12 OF 17) for Stiffener Connection Details.

2. See Br 7800 (M.P. 10.07) Over West Inlet to Scopan Lake (13 OF 17) for Lateral Bracing Details.

STATE OF MAINE
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WIN 23458.00

BRIDGE PLANS

BRIDGE NO. 7800

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	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	LSC	BJM 10/2021
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DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
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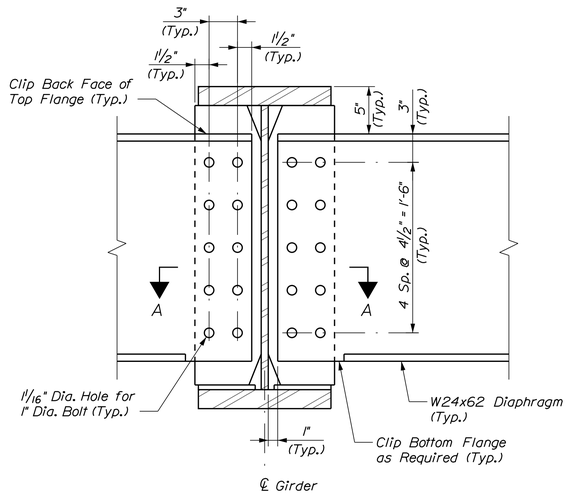
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (11 OF 17)

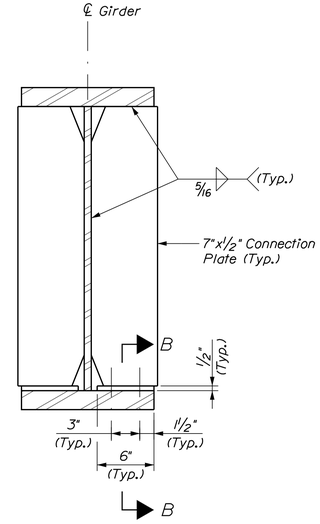
SHEET NUMBER
15
OF 52

Filename: ...\Br 7800\015_7800_Frame.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



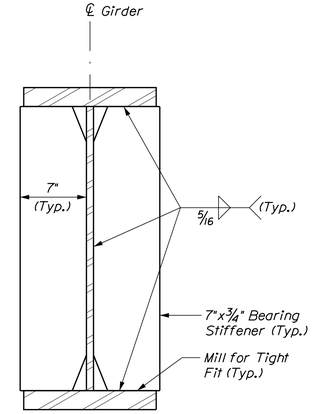
INTERMEDIATE DIAPHRAGM CONNECTION DETAIL

Scale: 1½" = 1'-0"



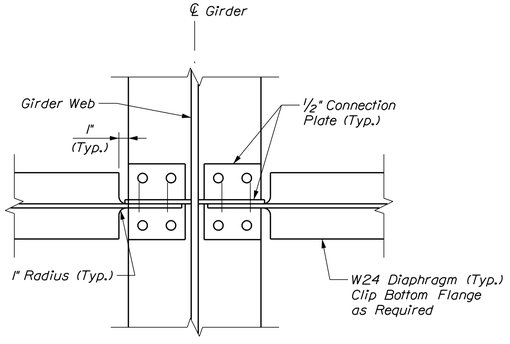
CONNECTION PLATE DETAIL

Scale: 1½" = 1'-0"



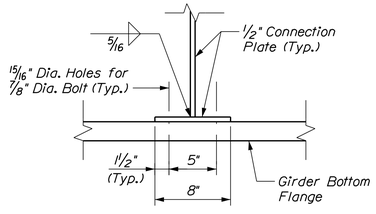
BEARING STIFFENER DETAIL

Scale: 1½" = 1'-0"



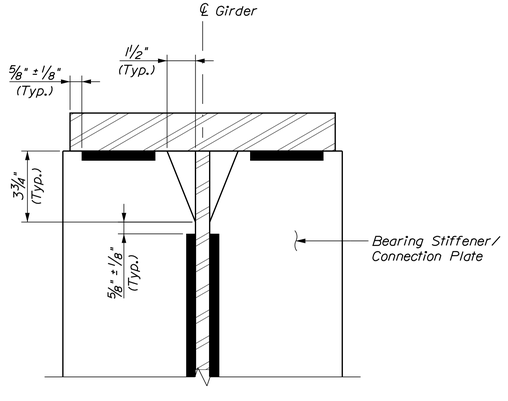
SECTION A-A

Scale: 1½" = 1'-0"



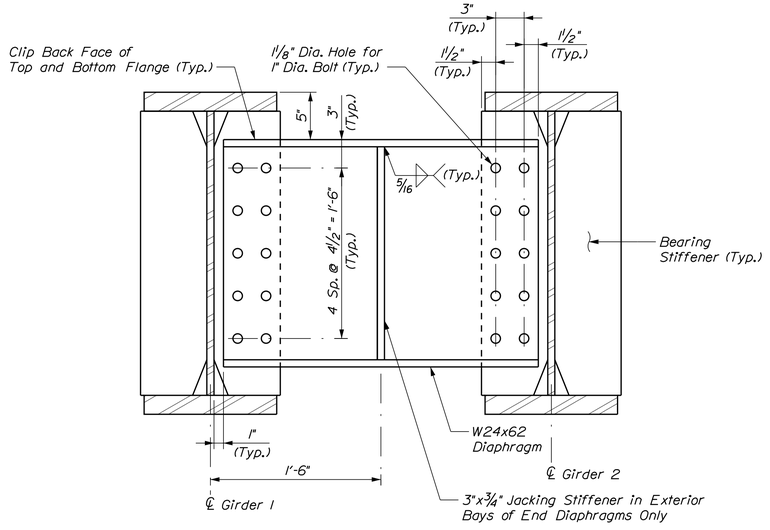
SECTION B-B

Scale: 1½" = 1'-0"



GIRDER CLIP DETAIL

Scale: 3" = 1'-0"



END DIAPHRAGM DETAIL

(Exterior Bay Shown. Interior Bay Similar Without Jacking Stiffener)
Scale: 1½" = 1'-0"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

vhb

PROJ. MANAGER	MATE BENOIT
DESIGN-DETAILED	LSC
CHECKED-REVIEWED	LSC
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

NO.	BY	DATE
REVISIONS 1	BJM	10/2021
REVISIONS 2	GSG	10/2021
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

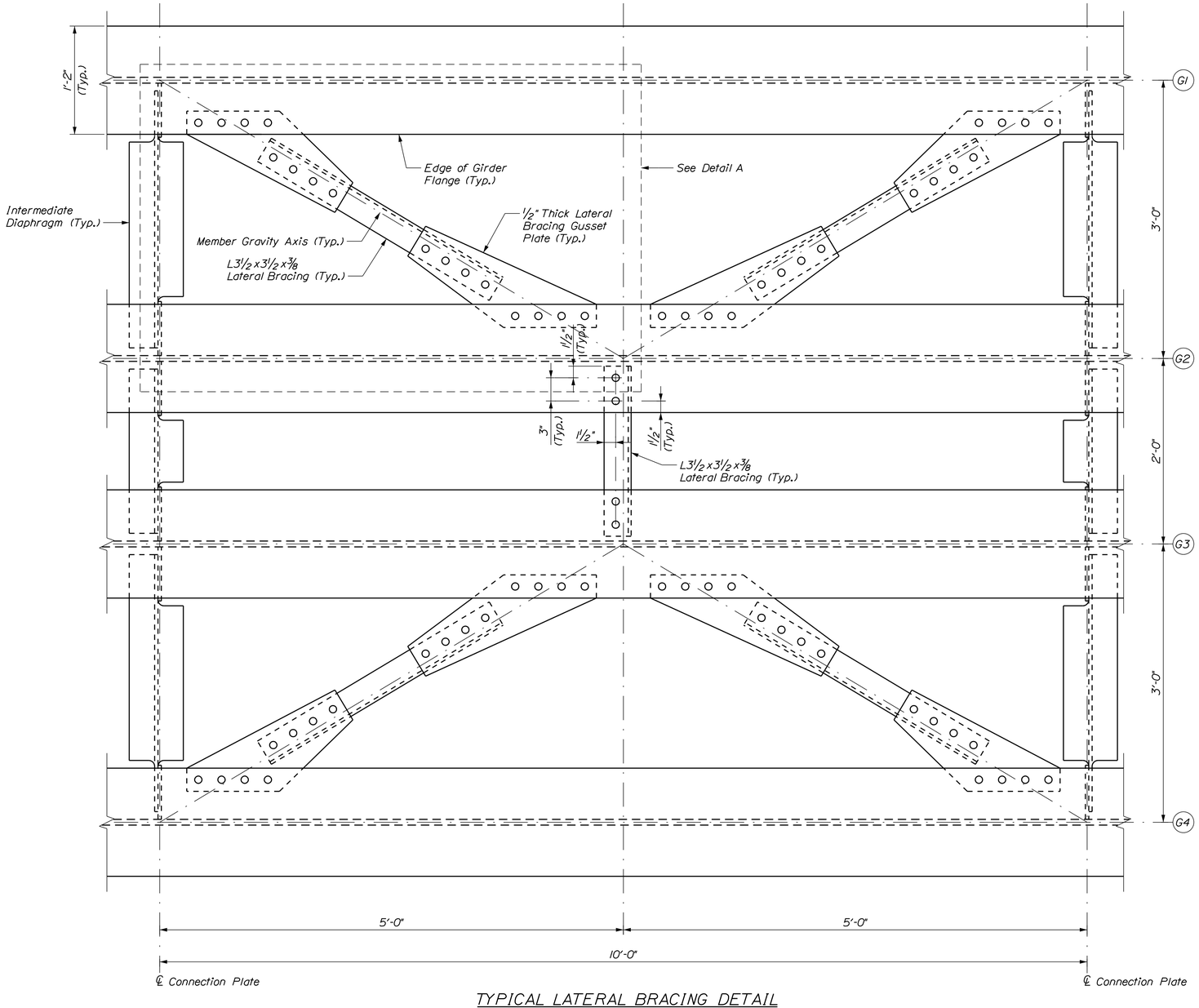
BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (12 OF 17)

SHEET NUMBER

16

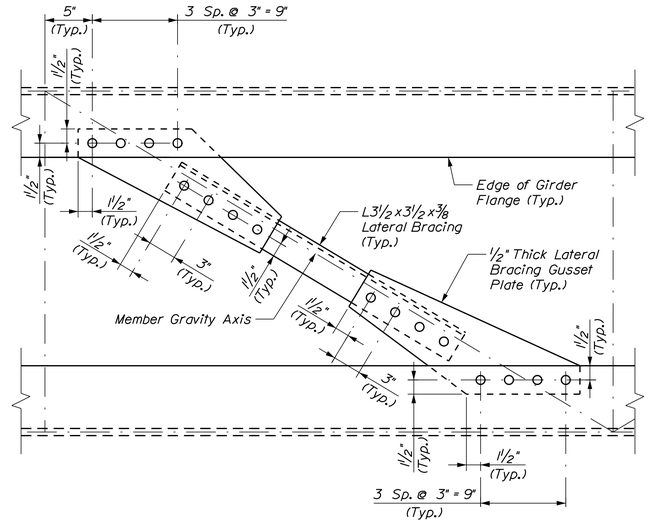
OF 52

Filename: ...\Br 7800\016_7800_Steeldt.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



TYPICAL LATERAL BRACING DETAIL

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



DETAIL A

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

NOTES

1. See the General Notes and Quantities sheet for structural steel material, bolting and galvanizing requirements and additional notes.

2. Lateral bracing member lines shown are member cross-section gravity axes and shall intersect at points shown.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00

BRIDGE NO. 7800

BRIDGE PLANS

vhb

	BY	DATE
DESIGN-DETAILED	BJM	10/2021
CHECKED-REVIEWED	GSG	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

PROJ. MANAGER: NATE BENOIT
DESIGN-DETAILED: MAC
CHECKED-REVIEWED: MAC

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

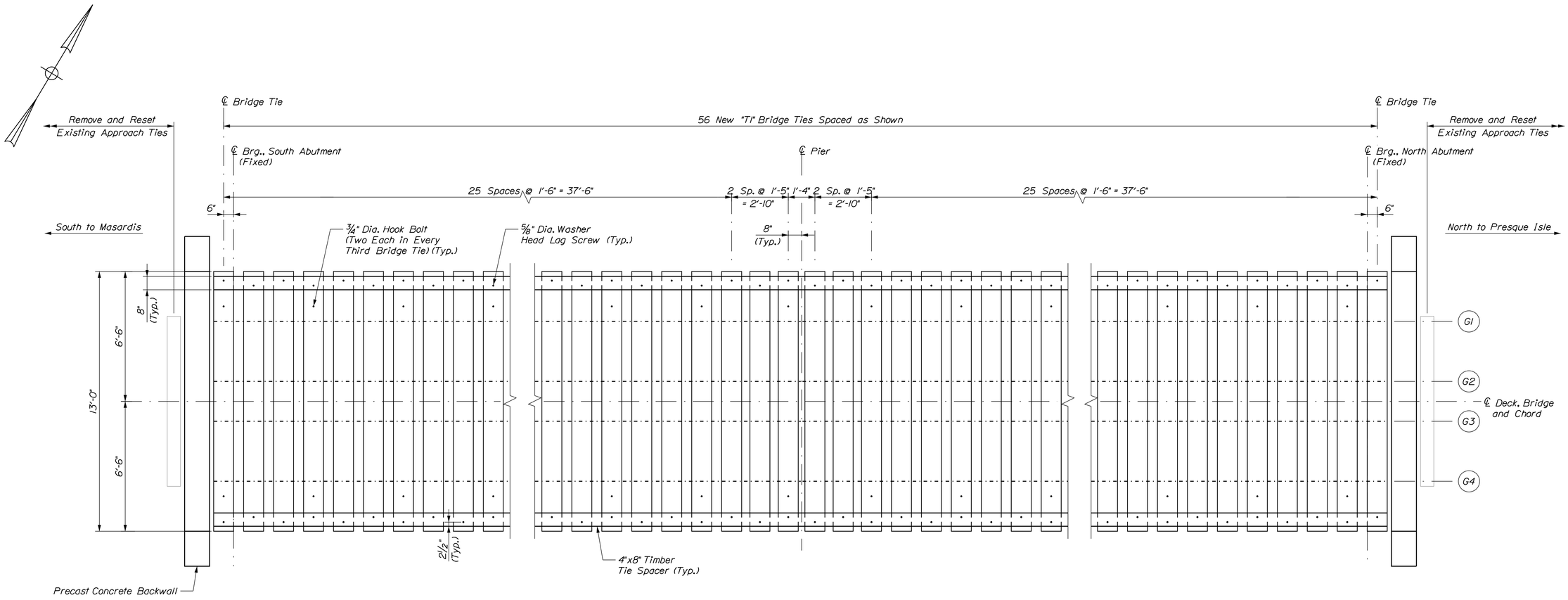
BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (13 OF 17)

SHEET NUMBER

17

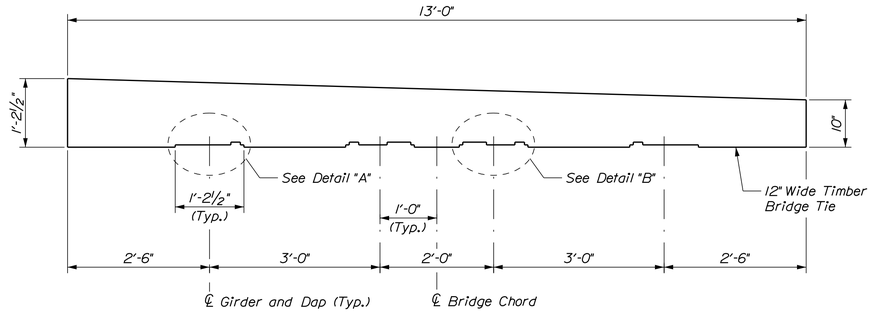
OF 52

Filename: ...\Br 7800\017_7800_Bracing.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



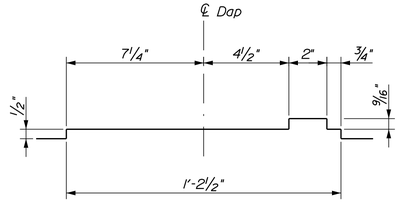
DECK PLAN

(Track not Shown)
Scale: ⅜" = 1'-0"



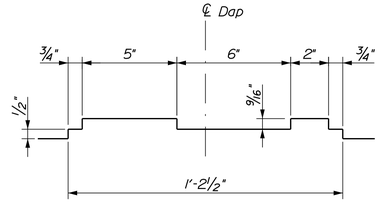
"TI" BRIDGE TIE DETAIL

Scale: ¾" = 1'-0"



DETAIL "A"

(Notch for Top Flange Lateral Bracing Bolt)
Not to Scale



DETAIL "B"

(Notch for Top Flange Lateral Bracing Bolt)
Not to Scale

NOTE

1. See Typical Details sheet (1 of 2) for Bridge Tie and Timber Notes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00
BRIDGE NO. 7800
BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	LSC	BJM	10/2021
CHECKED-REVIEWED	LSC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
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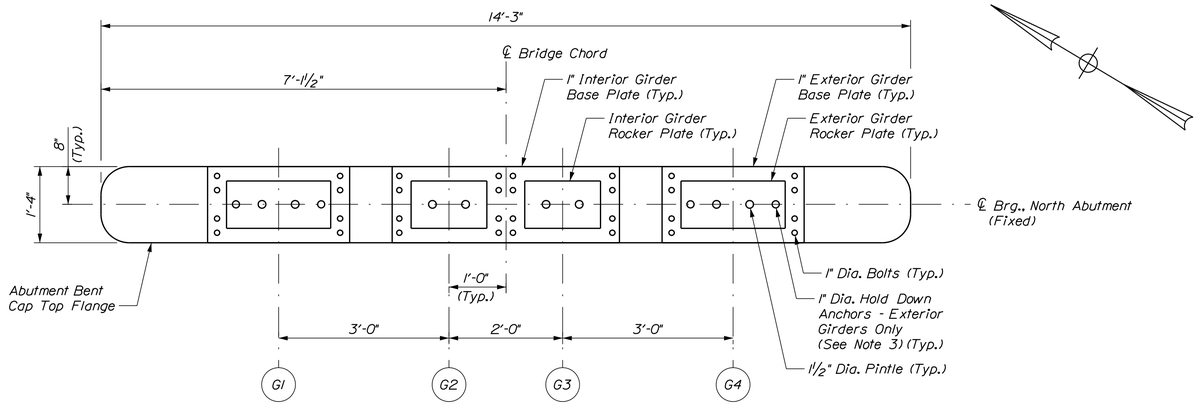
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

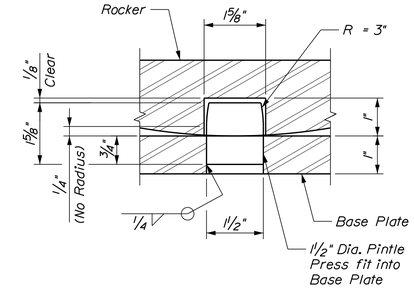
BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (14 OF 17)

SHEET NUMBER
18
OF 52



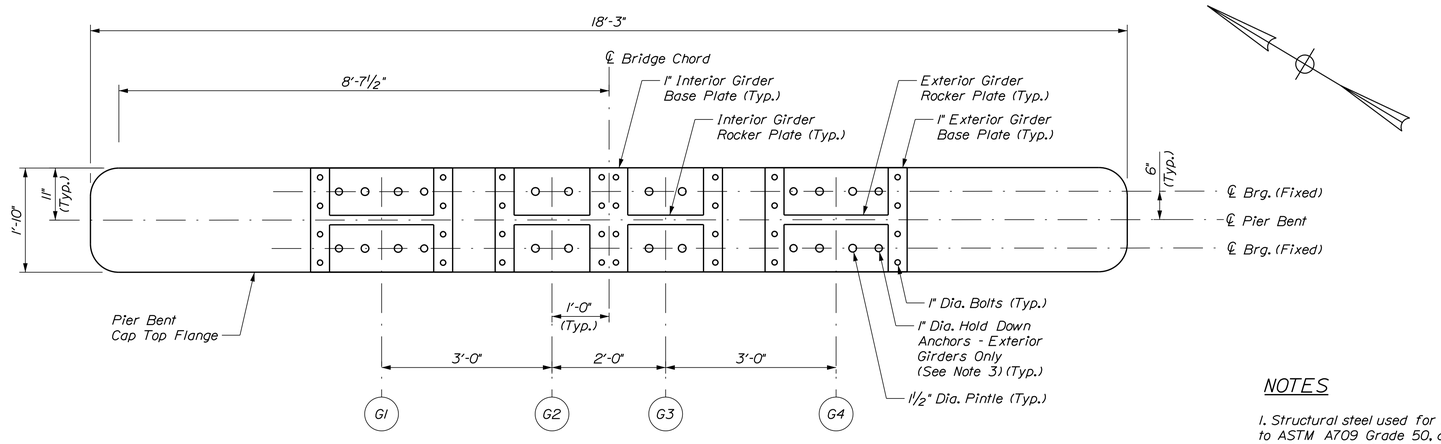
ABUTMENT BEARING LAYOUT PLAN

(North Abutment Shown, South Abutment Similar)
Scale: ¾" = 1'-0"



PINTLE DETAIL

(All Bearings)
Scale: 6" = 1'-0"



PIER BEARING LAYOUT PLAN

Scale: ¾" = 1'-0"

NOTES

1. Structural steel used for rocker bearing base plates, rocker plates and pintles shall conform to ASTM A709 Grade 50, and the MaineDOT Standard Specification Section 504 and 713. Bearing assemblies shall be galvanized in accordance with ASTM A123 after fabrication.

2. All bolted connections shall be made with galvanized 1" diameter ASTM F3125, grade A325 Type 1 high strength bolts in standard 1-1/8" diameter holes. Nuts and washers shall be galvanized ASTM A563 and ASTM F436 respectively.

3. Hold down anchors shall be galvanized ASTM F1554 Grade 105 all thread rod set in drilled and tapped holes in the base plates. After installation into the base plate, the rod shall be sufficiently tack welded to the bottom of base plate to prevent it from backing out. The bottom of base plate shall be smooth and true after fabrication to allow secure bolting to the pier/abutment bent caps.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

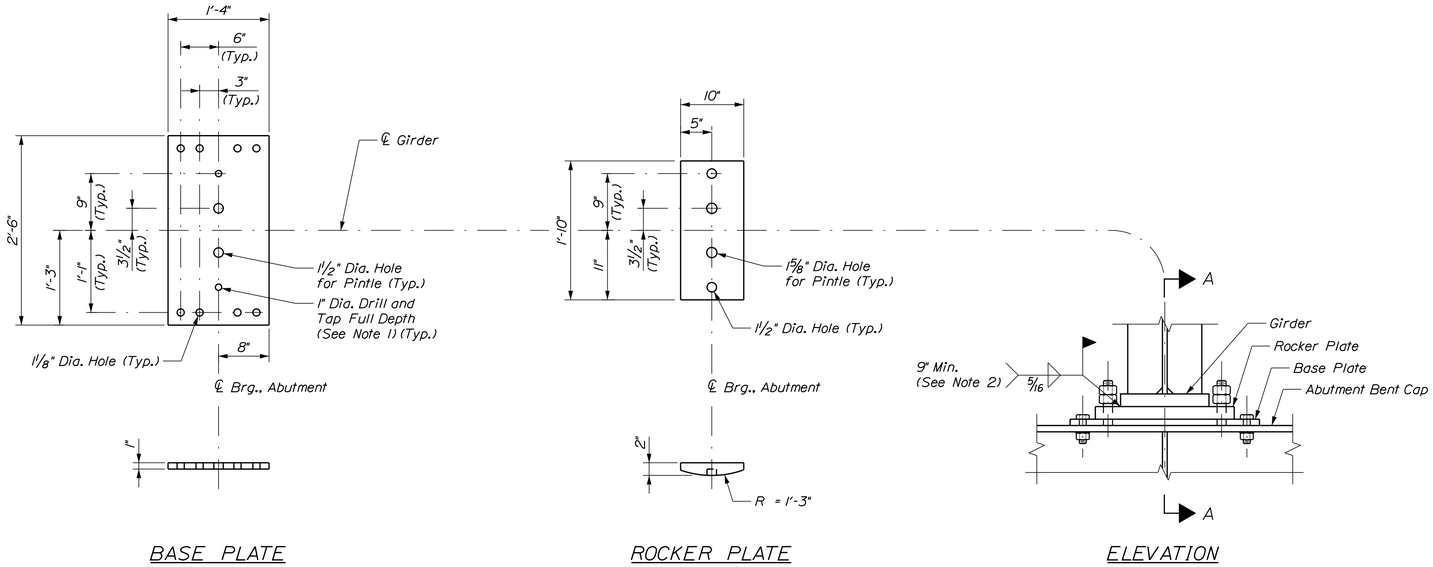
vhb

	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	MAC	10/2021
CHECKED-REVIEWED	MAC	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (15 OF 17)

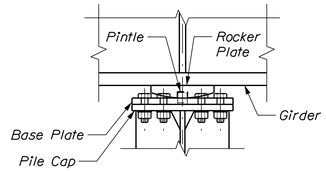
SHEET NUMBER
19
OF 52



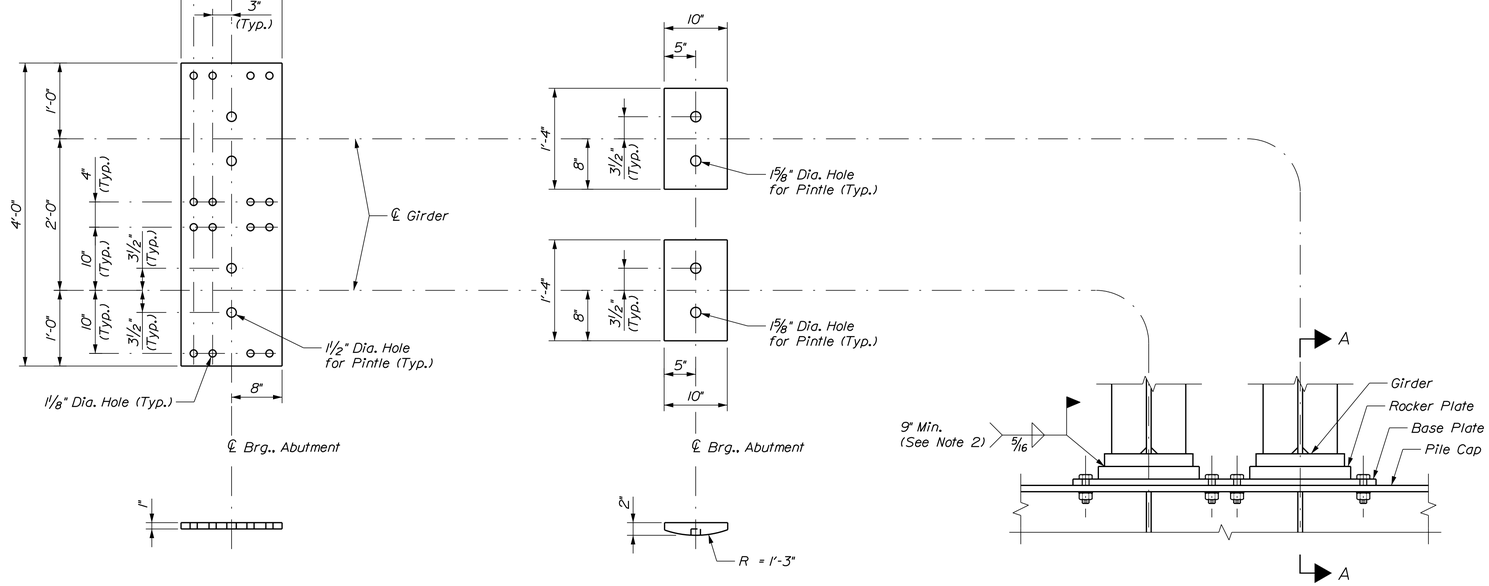
BASE PLATE ROCKER PLATE ELEVATION

EXTERIOR GIRDER BEARING - ABUTMENT

(4 Assemblies Required - 2 Per Abutment)
Scale: 1" = 1'-0"



SECTION A-A



BASE PLATE ROCKER PLATE ELEVATION

INTERIOR GIRDER BEARINGS - ABUTMENT

(2 Assemblies Required - 1 Per Abutment)
Scale: 1" = 1'-0"

NOTES

1. Refer to notes on Br 7800 (M.P. 10.07) Over West Inlet to Scopan Lake (15 of 17) for drill and tap anchor rod requirements and bolted connection requirements.

2. At the Contractor's option, the girder may be shop welded to the rocker plate and the base plate may be field drilled with the approximate pattern and spacing detailed here.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00
BRIDGE NO. 7800
BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	MAC	BJM	10/2021
CHECKED-REVIEWED	MAC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
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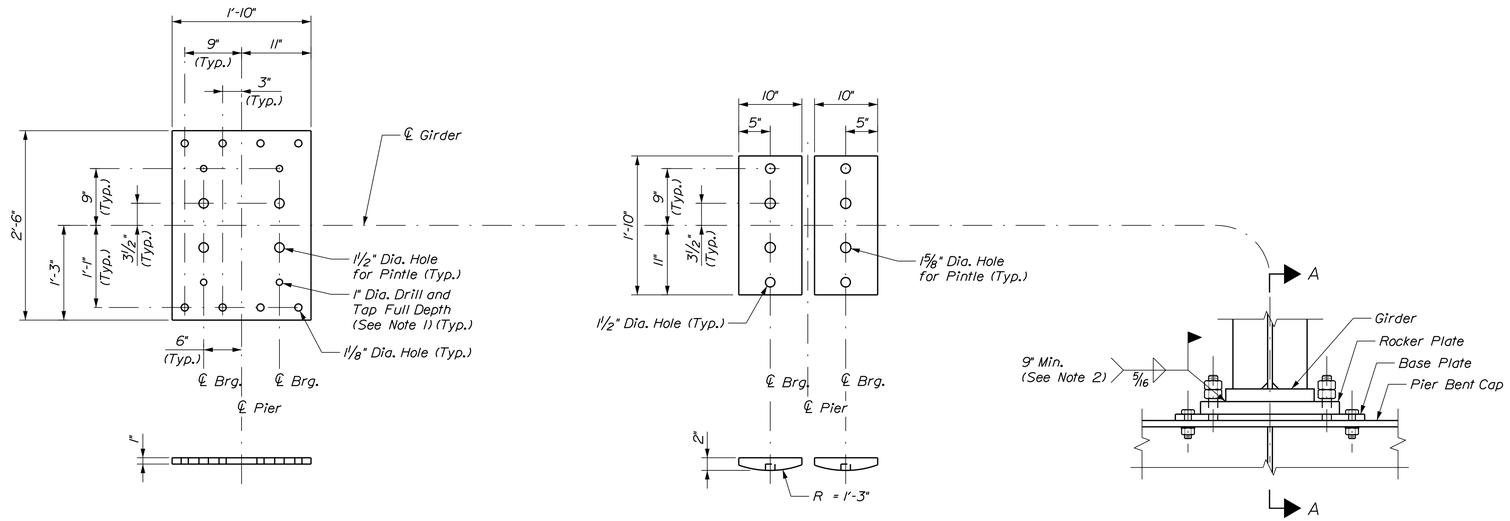
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (16 OF 17)

SHEET NUMBER
20
OF 52



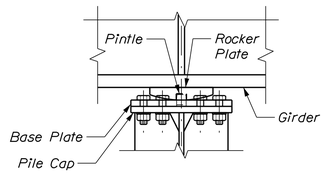
BASE PLATE

ROCKER PLATE

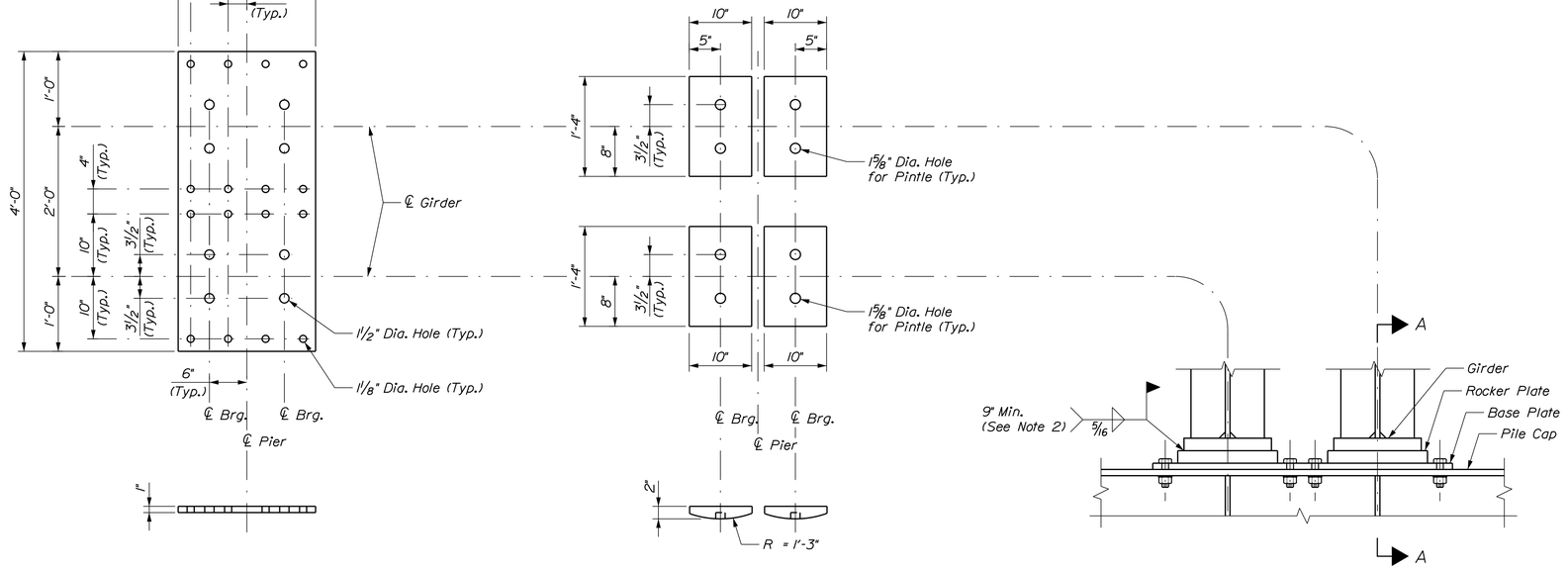
ELEVATION

EXTERIOR GIRDER BEARINGS - PIER

(2 Assemblies Required)
Scale: 1" = 1'-0"



SECTION A-A



BASE PLATE

ROCKER PLATE

ELEVATION

INTERIOR GIRDER BEARINGS - PIER

(1 Assembly Required)
Scale: 1" = 1'-0"

NOTES

1. Refer to notes on Br 7800 (M.P. 10.07) Over West Inlet to Scopan Lake (15 of 17) for drill and tap anchor rod requirements and bolted connection requirements.

2. At the Contractor's option, the girder may be shop welded to the rocker plate and the base plate may be field drilled with the approximate pattern and spacing detailed here.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00
BRIDGE NO. 7800
BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	MAC	BJM	10/2021
CHECKED-REVIEWED	MAC	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
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FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.07) OVER WEST
INLET TO SCOPAN LAKE (17 OF 17)

SHEET NUMBER
21
OF 52

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-101
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)** 609	**Auger ID/OD:**
Operator:	Brad Enos	**Datum:** NAVD 88	**Sampler:** Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:** Rail-Mounted Mobile Drill	**Hammer Wt./Fall:** 140#/30"
Date Start/Finish:	6/1/21 - 6/2/21	**Drilling Method:** Drive & Wash	**Core Barrel:**
Boring Location: *See General Plan for Location*		**Casing ID/OD:** 4"/4.5"	**Water Level[a]:** 8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:** Automatic ☐ Hydraulic ☐ Rope & Cathead ☒	

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SPIN			0'-2.0': Ballast.	
								607.0		2.0'	
	1D	24/20	2.0 - 4.0	7-5-6-5	11	11				Dark brown, dry, medium dense, fine to coarse SAND, little gravel, little silt, (Fill).	
	2D	24/14	4.0 - 6.0	7-6-6-5	12	12				Brown, dry, medium dense, fine to coarse SAND, some gravel, some silt, (Fill).	G# 21-S-2272 A-1-b, SM WC=9.5
5	3D	24/10	6.0 - 8.0	5-6-5-6	11	11				Top 5": Dark brown, wet, medium dense, fine to coarse SAND, some gravel, trace silt, (Fill). Bottom 5": Brown/grey, wet, medium dense, Silty fine to coarse SAND, little gravel, (Glacial Till, reworked).	
	4D	24/10	9.0 - 11.0	4-4-6-12	10	10				Grey, wet, loose, Silty fine to coarse SAND, some gravel, with organics, (Glacial Till, reworked).	
10											
	5D	24/16	14.0 - 16.0	6-6-8-10	14	14	RC			No recovery. Change in roller cone resistance at 16.6' indicates possible strata change (increased gravel content).	
								592.4		16.6'	
15											
	6D	24/8	19.0 - 21.0	14-9-8-23	17	17				Grey, wet, very stiff, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	G# 21-S-2273 A-4(0), ML WC=10.7
20											
	7D	19.2/11	24.0 - 25.6	11-11-25-50/2"	36	36				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
25											

Remarks:

1. Fine Grained Soil Descriptions on this log are based on plasticity estimated using visual manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Water level measured from top of bridge ties.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
[a] Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-101
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)** 609	**Auger ID/OD:**
Operator:	Brad Enos	**Datum:** NAVD 88	**Sampler:** Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:** Rail-Mounted Mobile Drill	**Hammer Wt./Fall:** 140#/30"
Date Start/Finish:	6/1/21 - 6/2/21	**Drilling Method:** Drive & Wash	**Core Barrel:**
Boring Location: *See General Plan for Location*		**Casing ID/OD:** 4"/4.5"	**Water Level[a]:** 8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:** Automatic ☐ Hydraulic ☐ Rope & Cathead ☒	

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25											
	8D	.3/.3	29.0 - 29.0	50/3"	R					Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
30											
	9D	24/16	34.0 - 36.0	20-18-23-32	41	41				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
35											
	10D	24/14	39.0 - 41.0	15-27-25-30	52	52				Grey, wet, hard, Sandy SILT, some gravel, (Glacial Till).	G# 21-S-2274 A-4(0), ML WC=10.9
40											
	11D	24/8	44.0 - 46.0	11-20-28-31	48	48				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
45											
	12D	24/13	49.0 - 51.0	15-45-66-72	111	111				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
50											

Estimated Pile Tip El. 550.00

Remarks:

1. Fine Grained Soil Descriptions on this log are based on plasticity estimated using visual manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Water level measured from top of bridge ties.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
[a] Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-101
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)** 609	**Auger ID/OD:**
Operator:	Brad Enos	**Datum:** NAVD 88	**Sampler:** Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:** Rail-Mounted Mobile Drill	**Hammer Wt./Fall:** 140#/30"
Date Start/Finish:	6/1/21 - 6/2/21	**Drilling Method:** Drive & Wash	**Core Barrel:**
Boring Location: *See General Plan for Location*		**Casing ID/OD:** 4"/4.5"	**Water Level[a]:** 8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:** Automatic ☐ Hydraulic ☐ Rope & Cathead ☒	

Definitions:
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SSA = Solid Stem Auger
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RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
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N-uncorrected = Raw Field SPT N-value
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N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
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G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
50											
	13D	24/12	54.0 - 56.0	19-31-41-55	72	72				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
55											
	14D	24/12	59.0 - 61.0	10-28-37-43	65	65				Grey, wet, hard, Gravelly Clayey SILT, some fine to coarse sand, (Glacial Till).	
60								548.0		61.0'	
										Bottom of Exploration at 61.0 feet below ground surface.	
65											
70											
75											

Remarks:

1. Fine Grained Soil Descriptions on this log are based on plasticity estimated using visual manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Water level measured from top of bridge ties.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
[a] Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

vhb

PROJ. MANAGER	MATE BENOIT		
DESIGN-DETAILED	GZA	REVISIONS 1	
CHECKED-REVIEWED	GZA	REVISIONS 2	
DESIGN2-DETAILED2		REVISIONS 3	
DESIGN3-DETAILED3		REVISIONS 4	
FIELD CHANGES			

BY	DATE
GZA	10/2021
GZA	10/2021

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.05)
BORING LOGS (1 OF 3)

SHEET NUMBER
22
OF 52

Filename: ...\Br 7800\022_7800_bor_01.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-102
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)**	589.8	**Auger ID/OD:**	
Operator:	Brad Enos	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:**	Rail-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/3/21 - 6/3/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	
Boring Location: *See General Plan for Location*		**Casing ID/OD:**	4"/4.5", 3"/3.5"	**Water Level*:**	8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:**	Automatic ☐ Hydraulic ☐	Rope & Cathead ☒	

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt

R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected

T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SPIN			Increased casing resistance at approximately 3.0' bgs, (Lake Bottom Deposit).	
								586.8		~3.0'	
5	1D	24/13	5.0 - 7.0	16-12-12-14	24	24	RC			Grey, wet, very stiff, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	
10	2D	24/16	10.0 - 12.0	15-18-22-25	40	40				Grey, wet, hard, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	
15	3D	24/12	15.0 - 17.0	15-21-29-33	50	50				Grey, wet, hard, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	
20	4D	24/14	20.0 - 22.0	15-16-20-29	36	36				Grey, wet, hard, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	G# 21-S-2275 A-4(0), ML WC=11.5
25											

Remarks:

1. Fine Grained Soil Descriptions on this log are based on plasticity estimated using visual manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Mudline 19.2' below top of bridge ties.
4. Water level measured from top of bridge ties.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-102
WIN: 23458

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Operator:	Brad Enos	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:**	Rail-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/3/21 - 6/3/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	
Boring Location: *See General Plan for Location*		**Casing ID/OD:**	4"/4.5", 3"/3.5"	**Water Level*:**	8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:**	Automatic ☐ Hydraulic ☐	Rope & Cathead ☒	

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$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
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N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected

T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
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G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25	5D	24/17	25.0 - 27.0	9-20-20-25	40	40				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
30	6D	17/15	30.0 - 31.4	27-23-50/5"	R					Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	
35	7D	24/12	35.0 - 37.0	16-37-46-30	83	83				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, (Glacial Till).	G#21-S-2276 A-4(0), ML WC=9.1
40	8D	24/3	40.0 - 42.0	20-23-38-50	61	61				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, fractured rock in spoon tip, (Glacial Till).	
45	9D	4/3	45.0 - 45.3	39-60/1"	R					Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, with fractured rock, (Glacial Till).	
							NQ	541.5		48.3'-52.0': Apparent boulder.	
50										48.3'	

Estimated Pile Tip El. 523.00

Remarks:

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2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Mudline 19.2' below top of bridge ties.
4. Water level measured from top of bridge ties.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-102
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)**	589.8	**Auger ID/OD:**	
Operator:	Brad Enos	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:**	Rail-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/3/21 - 6/3/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	
Boring Location: *See General Plan for Location*		**Casing ID/OD:**	4"/4.5", 3"/3.5"	**Water Level*:**	8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:**	Automatic ☐ Hydraulic ☐	Rope & Cathead ☒	

Definitions:
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MD = Unsuccessful Split Spoon Sample Attempt
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V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt

R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected

T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
50	10D	0/0	52.0 - 52.0	50/0"	R		RC	537.8		No recovery.	
										52.0'	
55	11D	21.6/12	55.0 - 56.8	23-104-57-61/4"	164	164				Tan, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, trace conglomerate sandstone at 55.0', (Glacial Till). Roller cone to 60.0'; sand blew into hole; terminated boring.	
60								529.8		60.0'	
65										**Bottom of Exploration at 60.0 feet below ground surface.**	
70											
75											

Remarks:

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2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Mudline 19.2' below top of bridge ties.
4. Water level measured from top of bridge ties.

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

vhb

	MATE BENOIT	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	GZA	GZA	10/2021
CHECKED-REVIEWED	GZA	GZA	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.05)
BORING LOGS (2 OF 3)

SHEET NUMBER
23
OF 52

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-103
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)** 609	**Auger ID/OD:**
Operator:	Brad Enos	**Datum:** NAVD 88	**Sampler:** Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:** Rail-Mounted Mobile Drill	**Hammer Wt./Fall:** 140#/30"
Date Start/Finish:	6/2/21 - 6/2/21	**Drilling Method:** Drive & Wash	**Core Barrel:**
Boring Location:	*See General Plan for Location*	**Casing ID/OD:** 4"/4.5"	**Water Level*:** 3.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:** Automatic ☐ Hydraulic ☐ Rope & Cathead ☒	

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
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V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt

R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WOT/P = Weight of One Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60)*N-uncorrected

T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
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G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (#6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SPIN	608.0		0'-1.0': Ballast. — 1.0'	
	1D	24/14	2.0 - 4.0	10-8-7-7	15	15				Brown, dry, medium dense, fine to coarse SAND, little gravel, little silt. (Fill).	G#21-S-2277 A-1-b, SM WC=9.5
5	2D	24/20	4.0 - 6.0	7-8-7-8	15	15	RC			Top 12": Dark brown, dry, medium dense, fine to coarse SAND, little gravel, little silt, (Fill). Bottom 7": Olive-brown, dry, medium dense, fine to coarse SAND, some silt, some gravel, (Reworked Glacial Till Fill).	
	3D	24/20	6.0 - 8.0	6-4-5-6	9	9				Brown, wet, loose, fine to coarse SAND, some gravel, little silt, (Fill).	
10	4D	24/0	9.0 - 11.0	7-6-4-4	10	10				No recovery.	
								596.0		— 13.0	
15	5D	24/11	15.0 - 17.0	3-1-1-2	2	2				Grey, wet, soft, Clayey SILT, some fine to medium sand, some gravel, (Reworked Glacial Till).	
								591.0		— 18.0	
20	6D	24/12	19.0 - 21.0	2-3-9-7	12	12				Dark brown, wet, stiff, Clayey SILT, some fine to medium sand, little gravel, with wood fragments, (Lakebed Deposit)	G#21-S-2278 A-4(0), ML WC=34.2
								587.0		— 22.0	
25	7D	24/13	24.0 - 26.0	10-11-7-8	18	18				Grey, wet, very stiff, Clayey SILT, some fine to medium sand, little gravel, (Glacial Till).	

Remarks:

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2. Hammer NEBC#D23 Energy transfer ratio = 0.6.
3. Mudline 19.2' below top of bridge ties.
4. Water level measured from top of bridge ties.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge #7800
Location: Mapleton, Maine

Boring No.: BB-AW1-103
WIN: 23458

Driller:	New England Boring Contractors	**Elevation (ft.)** 609	**Auger ID/OD:**
Operator:	Brad Enos	**Datum:** NAVD 88	**Sampler:** Standard Splitspoon
Logged By:	Erin Tome	**Rig Type:** Rail-Mounted Mobile Drill	**Hammer Wt./Fall:** 140#/30"
Date Start/Finish:	6/2/21 - 6/2/21	**Drilling Method:** Drive & Wash	**Core Barrel:**
Boring Location:	*See General Plan for Location*	**Casing ID/OD:** 4"/4.5"	**Water Level*:** 3.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:** Automatic ☐ Hydraulic ☐ Rope & Cathead ☒	

Definitions:
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$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
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N-uncorrected = Raw Field SPT N-value
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N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
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T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (#6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
30	8D	24/14	29.0 - 31.0	7-11-16-13	24	24				Grey, wet, very stiff, Clayey SILT, some fine to medium sand, little gravel, (Glacial Till).	
35	9D	24/7	34.0 - 36.0	14-24-29-42	53	53				Grey, wet, hard, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	
40	10D	24/15	39.0 - 41.0	22-46-30-34	76	76				Grey, wet, hard, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	G#21-S-2279 A-4(0), ML WC=11.2
45	11D	24/20	44.0 - 46.0	6-12-17-22	29	29				Grey, wet, very stiff, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	
50	12D	24/16	49.0 - 51.0	20-31-38-45	69	69				Grey, wet, hard, Sandy Clayey SILT, little gravel, (Glacial Till).	G#21-S-2280 A-4(0), ML

Estimated Pile Tip El. 550.00

Remarks:

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US CUSTOMARY UNITS

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Location: Mapleton, Maine

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WIN: 23458

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Logged By:	Erin Tome	**Rig Type:** Rail-Mounted Mobile Drill	**Hammer Wt./Fall:** 140#/30"
Date Start/Finish:	6/2/21 - 6/2/21	**Drilling Method:** Drive & Wash	**Core Barrel:**
Boring Location:	*See General Plan for Location*	**Casing ID/OD:** 4"/4.5"	**Water Level*:** 3.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:** Automatic ☐ Hydraulic ☐ Rope & Cathead ☒	

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N_{60} = (Hammer Efficiency Factor/60)*N-uncorrected

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Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (#6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
											WC=10.0
55	13D	24/12	54.0 - 56.0	15-24-42-50	71	71				Grey, wet, hard, Clayey SILT, some fine to coarse sand, some gravel, some fractured rock, (Glacial Till).	
60	14D	24/0	59.0 - 61.0	27-26-36-43	62	62				No recovery.	
								548.0		— 61.0'	
65										**Bottom of Exploration at 61.0 feet below ground surface.**	
70											
75											

Remarks:

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23458.00 BRIDGE PLANS

BRIDGE NO. 7800

vhb

	NATE BENOIT	BY	DATE
PROJ. MANAGER			
DESIGN- DETAILED	GZA	GZA	10/2021
CHECKED- REVIEWED	GZA	GZA	10/2021
DESIGN2- DETAILED2			
DESIGN3- DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7800 (M.P. 10.05)
BORING LOGS (3 OF 3)

SHEET NUMBER
24
OF 52

Filename: ...\Br 7800\024_7800_bor_03.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021

Filename: ...\025_7801_Grading Plan.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021

Approximate Existing Right-of-Way (Typ.)

Temporary Cofferdam

Small Brook Flow

Plain Riprap Limits (Typ.)

Limits of Special Fill (Typ.)

Proposed Structure (Typ.)

Existing Structure (To be Removed) (Typ.)

Slope Limits (Typ.)

49'-6"

Edge of Ballast (Typ.)

Ballast Slope Break (Typ.)

WP 1
℄ Brg. and Bridge Chord

WP 2
℄ Brg. and Bridge Chord

℄ Existing and Proposed Track

BB-CSB-102

BB-CSB-101

56'±

42'±

To Masardis

To Presque Isle

Edge of Ballast (Typ.)

Ballast Slope Break (Typ.)

49'-6"

Slope Limits (Typ.)

Plain Riprap Limits (Typ.)

Limits of Special Fill (Typ.)

Tie In Proposed Edge of Existing Stream With Existing (Typ.)

Temporary Cofferdam

575

SITE PLAN

5 0 5 10

Scale of Feet

WORKING POINT TABLE		
Working Point	Northing	Easting
WP 1	1023607.0218	2218938.0676
WP 2	1023616.1540	2218952.9959

LEGEND

Special Fill

Plain Riprap

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00

BRIDGE PLANS

BRIDGE NO. 7801

vhb

	NATE BENOIT	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	AMM	KDW	10/2021
CHECKED-REVIEWED	JAW	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

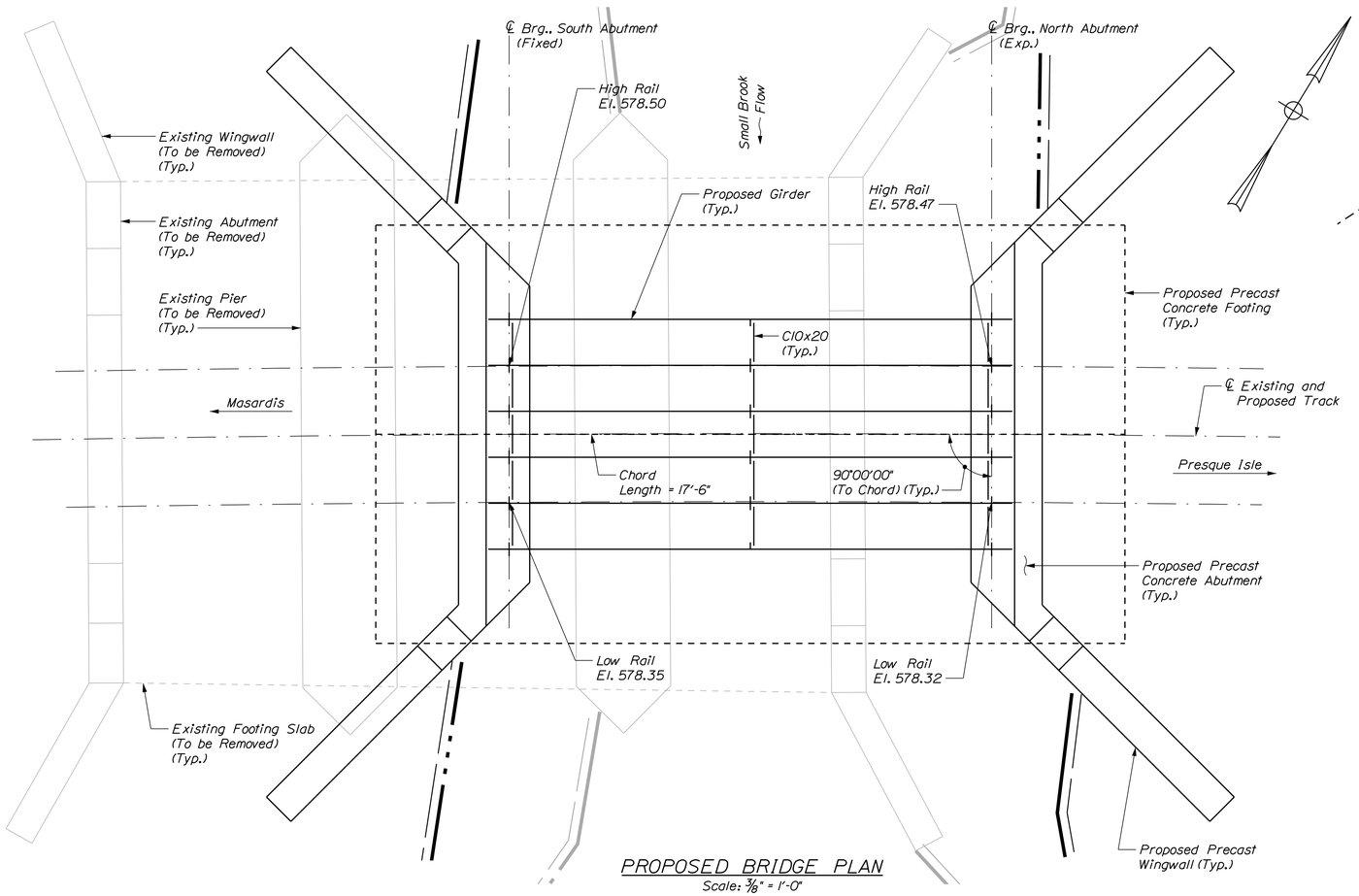
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
OVER SMALL BROOK (1 OF 8)

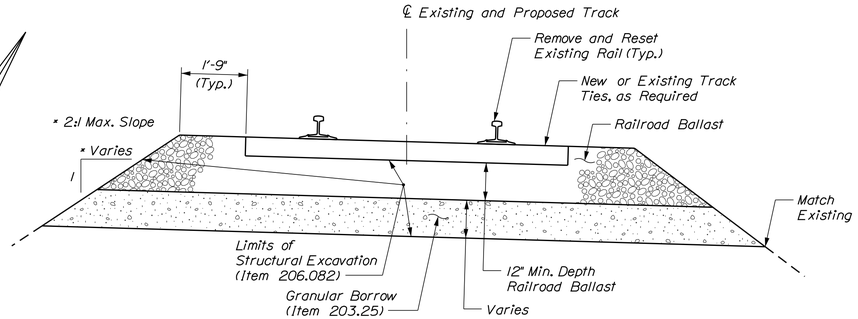
SHEET NUMBER

25

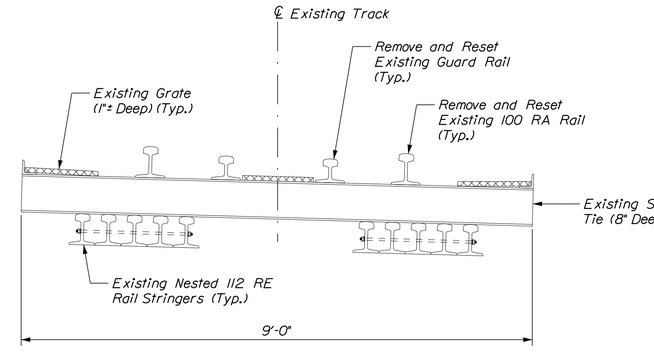
OF 52



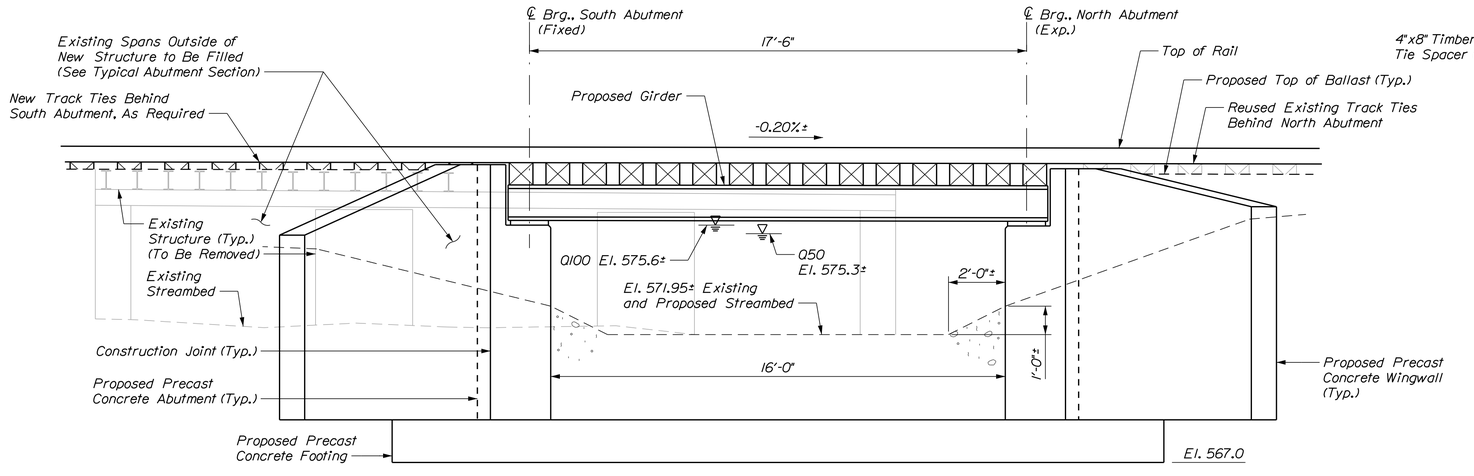
PROPOSED BRIDGE PLAN
Scale: 3/8" = 1'-0"



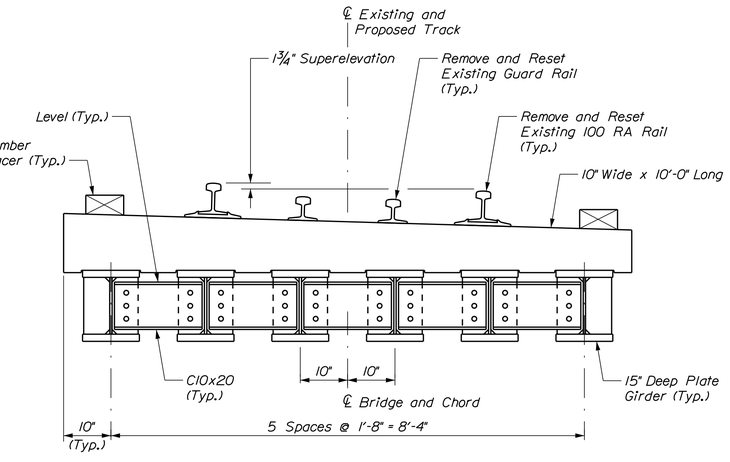
TYPICAL APPROACH SECTION
(Looking North)
Scale: 3/4" = 1'-0"



EXISTING BRIDGE SUPERSTRUCTURE TO BE REMOVED
(Looking North)
Scale: 3/4" = 1'-0"



PROPOSED BRIDGE ELEVATION
(Shown at Low Rail)
Scale: 3/8" = 1'-0"



TYPICAL SECTION
(Looking North)
Scale: 3/4" = 1'-0"

NOTES

1. See General Notes and Quantities Sheet for General Bridge Construction and General Railroad Notes.

2. Rail elevations shown are based on an assumed combined height of 6 3/4" for rail, tie plate, and tie pad. The actual rail elevations may vary slightly based on the actual height.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00
BRIDGE PLANS
BRIDGE NO. 7801

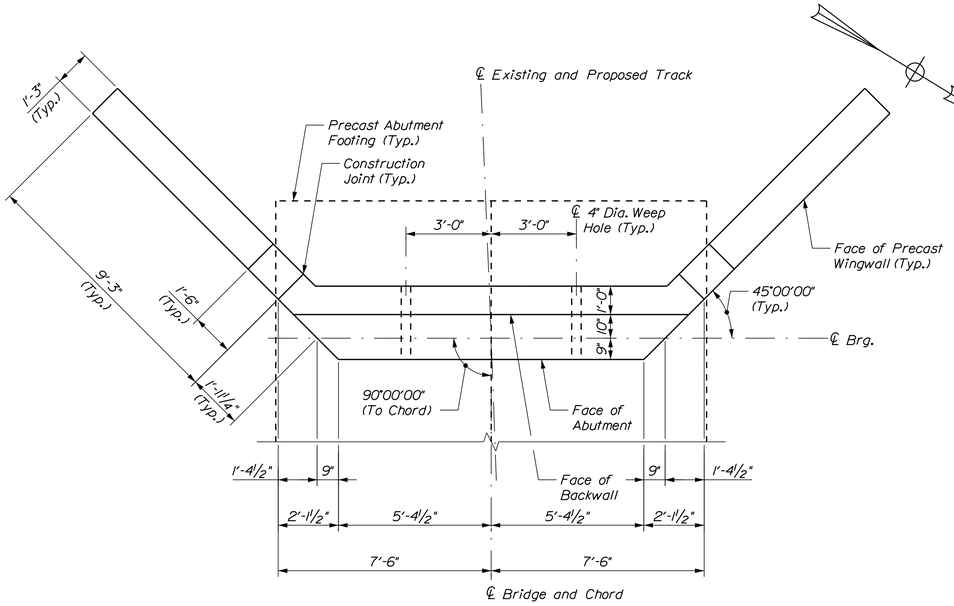
vhb

	MATE BENOIT	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JDM	KDW	10/2021
CHECKED-REVIEWED	ANM	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

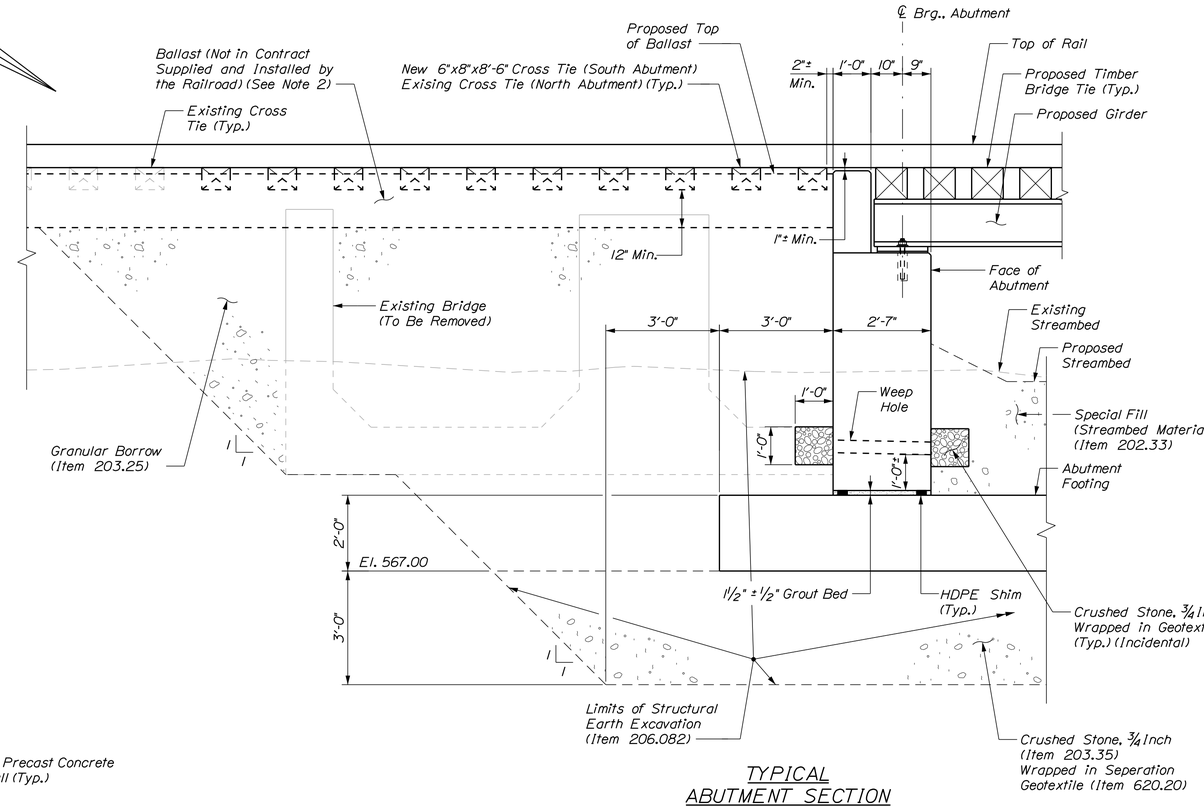
BR 7801 (M.P. P14.03)
OVER SMALL BROOK (2 OF 8)

SHEET NUMBER
26
OF 52



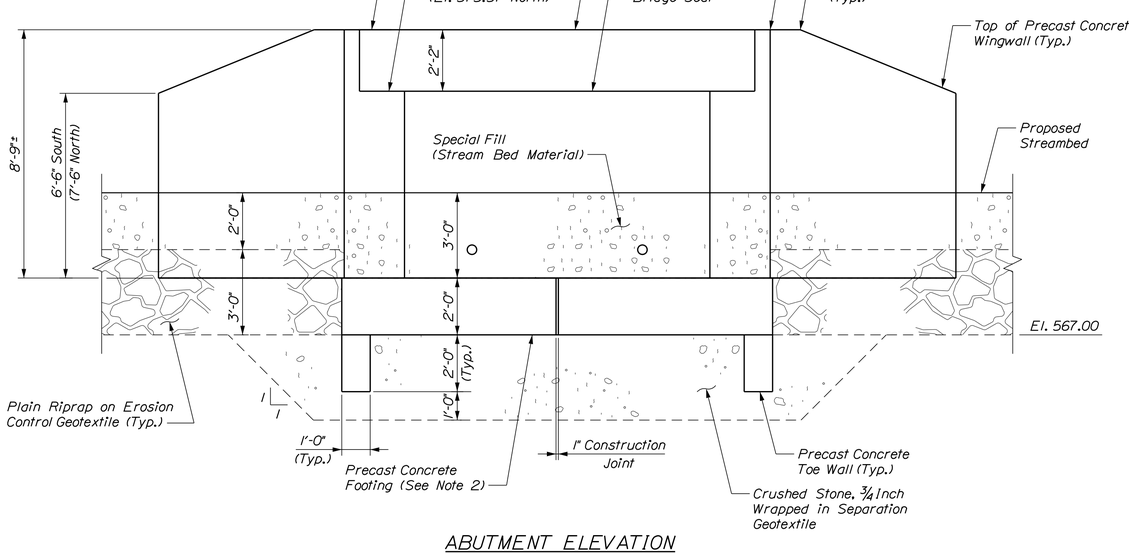
ABUTMENT PLAN

(South Abutment Shown, North Abutment Similar)
Scale: ⅜" = 1'-0"



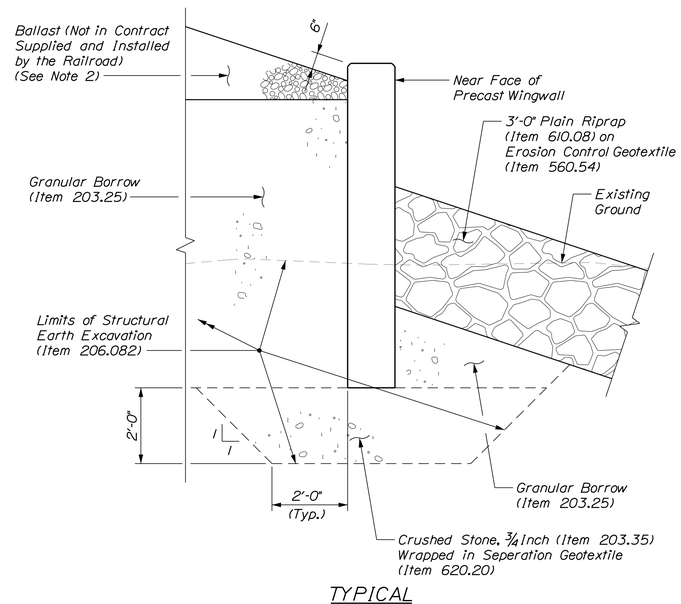
TYPICAL ABUTMENT SECTION

(South Abutment Shown, North Similar)
Scale: ½" = 1'-0"



ABUTMENT ELEVATION

(South Abutment Shown, North Abutment in Parentheses)
Scale: ⅜" = 1'-0"



TYPICAL WINGWALL SECTION

Scale: ½" = 1'-0"

NOTES

1. See Typical Details (1 of 2) sheet for Reinforced Concrete Notes.

2. The Contractor shall reset the existing track and ties on the compacted subballast (Granular Borrow). The Railroad will be responsible for placement of ballast and bringing the track up to final line and grade. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction in accordance with Special Provision 107.

3. If determined suitable by the Resident, Common Borrow may be used to fill behind the abutment and along the approach slopes in lieu of Granular Borrow. Common Borrow may not be substituted within 3 feet of the back of footing, substitution of material shall be at no additional cost to the Department.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00 BRIDGE PLANS

BRIDGE NO. 7801

vhb

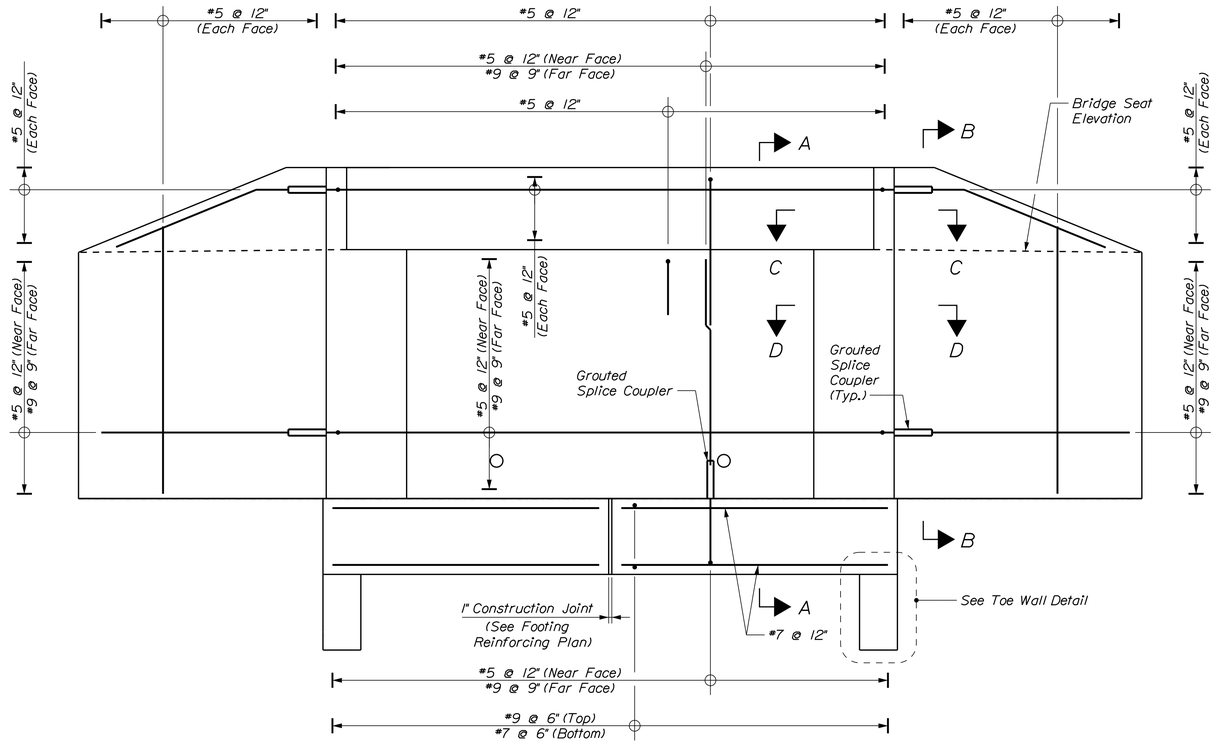
BY	DATE
KDW	10/2021
GSG	10/2021

PROJ. MANAGER	MATE BENOIT
DESIGN-DETAILED	MAC
CHECKED-REVIEWED	JGM
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

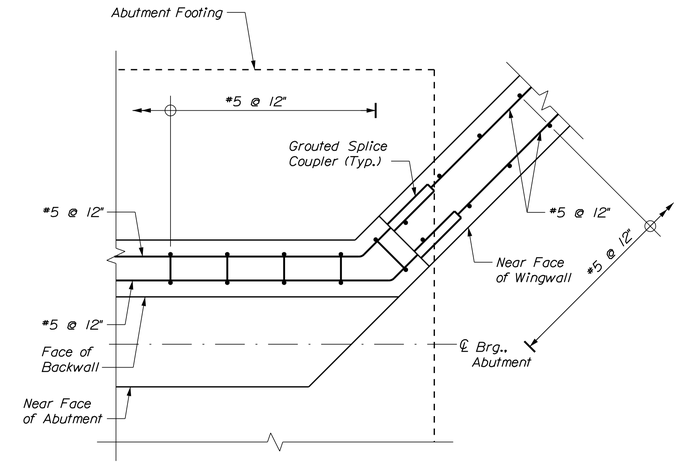
RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
OVER SMALL BROOK (3 OF 8)

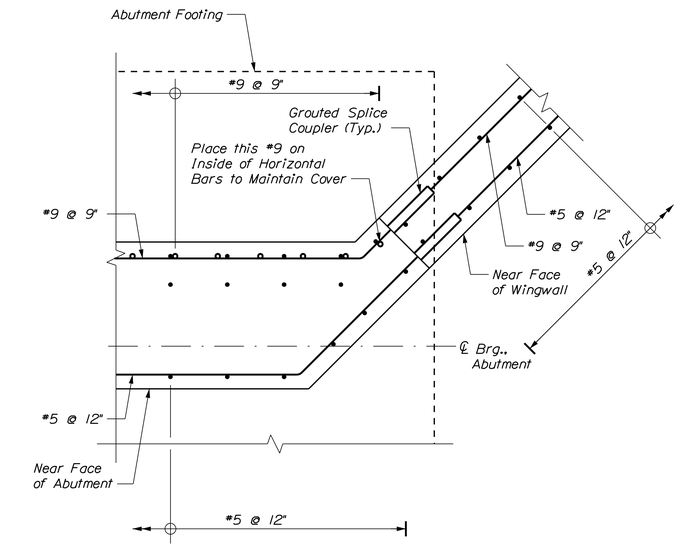
SHEET NUMBER
27
OF 52



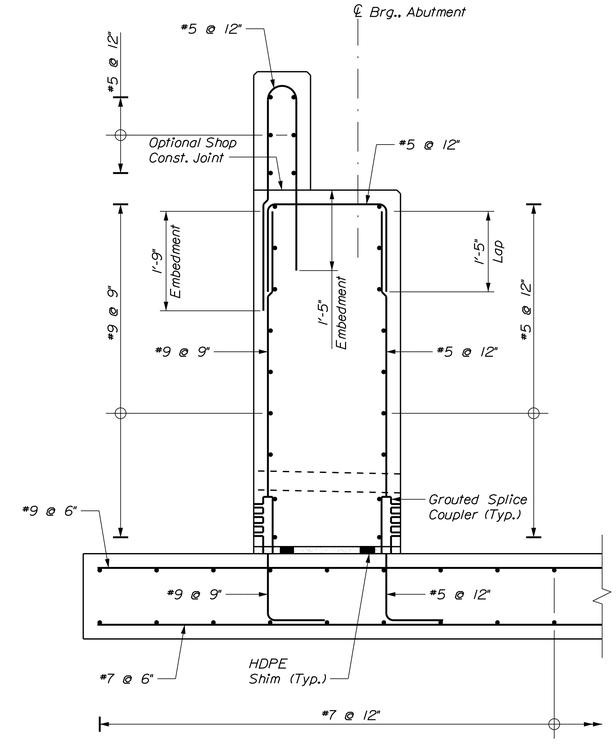
ABUTMENT REINFORCING
Scale: 1/2" = 1'-0"



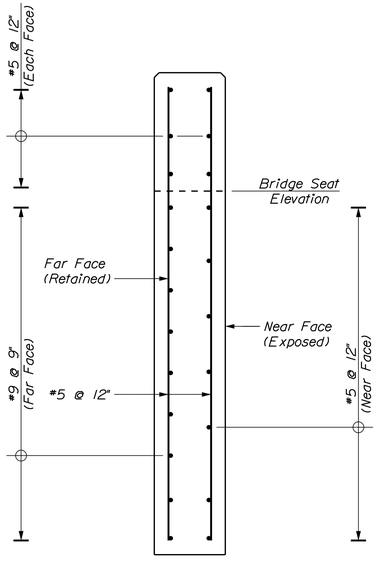
SECTION C-C
Scale: 3/4" = 1'-0"



SECTION D-D
Scale: 3/4" = 1'-0"



SECTION A-A
Scale: 3/4" = 1'-0"



SECTION B-B
Scale: 3/4" = 1'-0"

NOTES

1. See Typical Details (1 of 2) sheet for Reinforced Concrete Notes.

2. All substructure elements for Br. 7801 to be precast, except for the footing which may precast or cast-in-place, at the Contractor's option. If cast-in-place option is selected, then the starter dowels extending into the abutment shall be set by template.

3. Reinforcing steel for precast concrete shall have a minimum clear cover of 2 inches, unless noted otherwise. If the cast-in-place footing option is selected, the bottom mat and side reinforcing shall have a minimum clear cover of 3 inches.

4. Grouted splice couplers, grout material, and all other hardware shall be submitted for approval, prior to fabrication.

5. All grouted splice couplers shall have 2 inch clear from face of concrete to the outside face of coupler.

6. Grouted splice couplers shall be installed per the manufacturer's recommendations using the manufacturer's recommended grout material.

7. Abutments shall be pre-bedded on a non-shrink grout pad with a thickness slightly more that the HDPE shim stack.

8. Non-shrink grout between the footing and abutment and in footing construction joint shall be a material selected from the MaineDOT Qualified Products List.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00 BRIDGE PLANS

BRIDGE NO. 7801

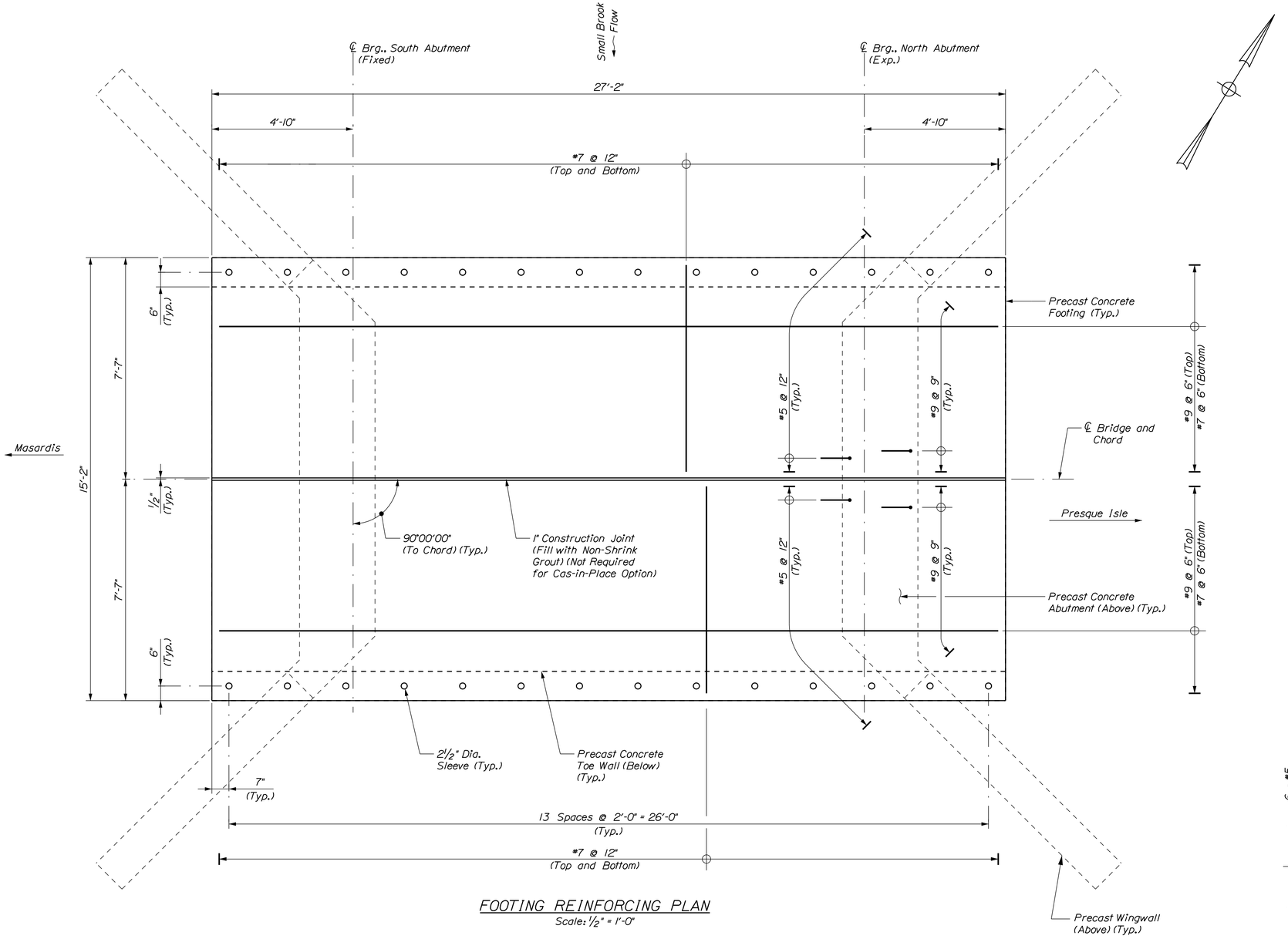
vhb

	NATE BENOIT	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	MAC	KDW	10/2021
CHECKED-REVIEWED	JGM	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

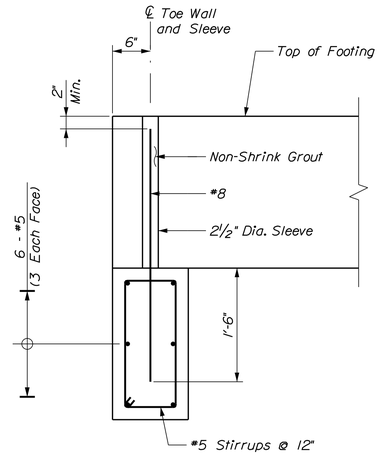
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
OVER SMALL BROOK (4 OF 8)

SHEET NUMBER
28
OF 52



FOOTING REINFORCING PLAN
Scale: ½" = 1'-0"



TOE WALL
REINFORCING DETAIL
Scale: 1" = 1'-0"

NOTES

1. See Notes on Br. 7801 (M.P. P14.03) over Small Brook (4 of 8) sheet.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00
BRIDGE NO. 7801
BRIDGE PLANS

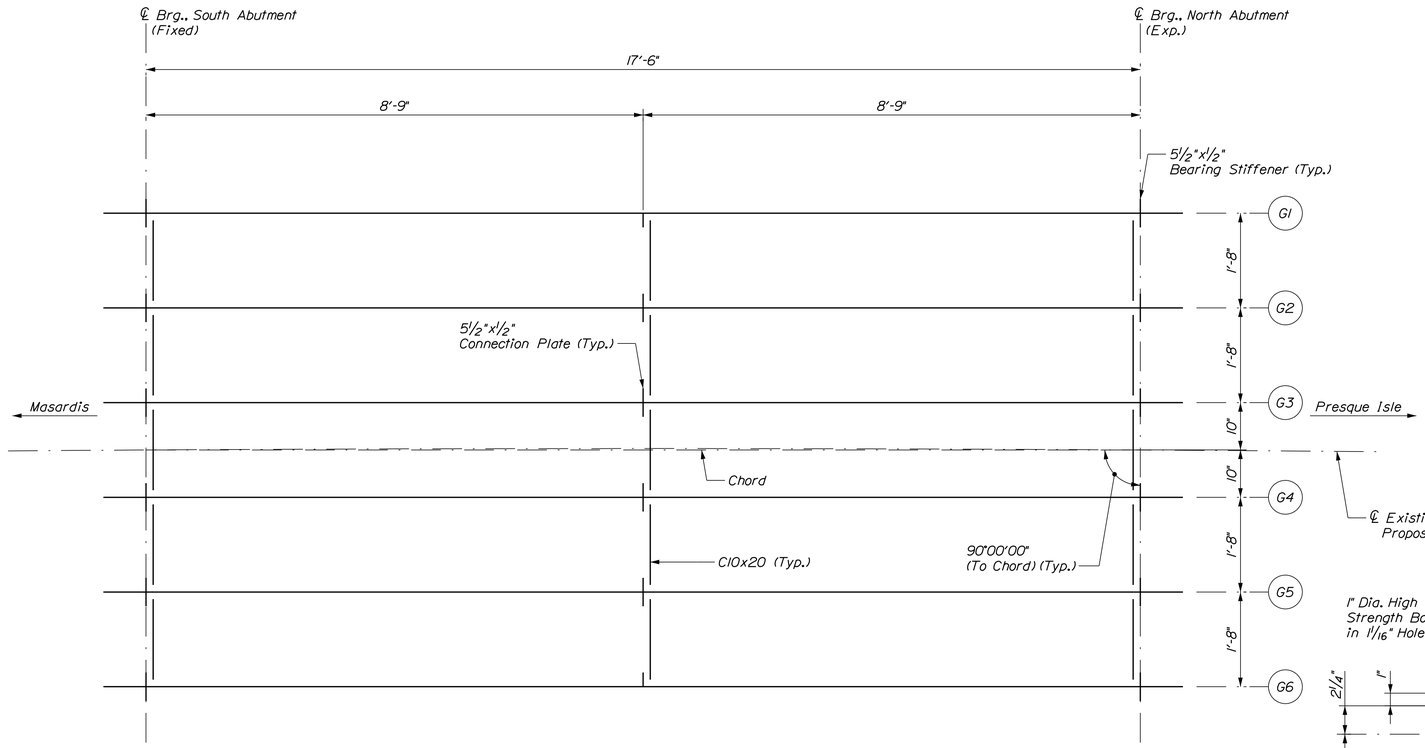
vhb

PROJ. MANAGER	NATE BENOIT	BY	DATE
DESIGN-DETAILED	MAC	KDW	10/2021
CHECKED-REVIEWED	JCM	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
OVER SMALL BROOK (5 OF 8)

SHEET NUMBER
29
OF 52



FRAMING PLAN
Scale: ¾" = 1'-0"

NOTES

1. See the General Notes and Quantities Sheet for Structural Steel Notes.

2. At the Contractor's option, a rolled W-shape of similar size may be used. W-shape shall be approximately the same height, with section properties greater than or equal to the proposed girders. Cost for design and detailing of rolled beam and adjustment to all associated details will be considered incidental to contract items and shall be submitted for approval.

3. All webs, and flanges in tension areas shall conform to notch touchness requirements, for non-fracture critical members, as specified in MaineDOT Standard Specification Section 713.01. These members have been labeled (CVN) for clarity.

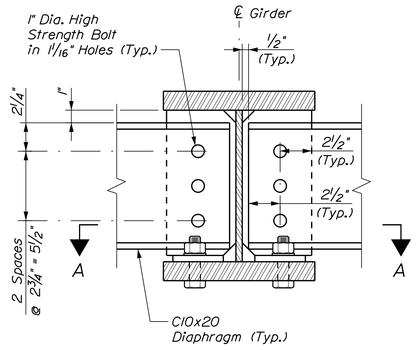
4. Structural steel plate girders, diaphragms, connection plates, and bearing stiffeners shall be galvanized in accordance with ASTM A123 or metalized.

5. Flange and web plates shall be fabricated in one piece. No transverse butt welds are allowed.

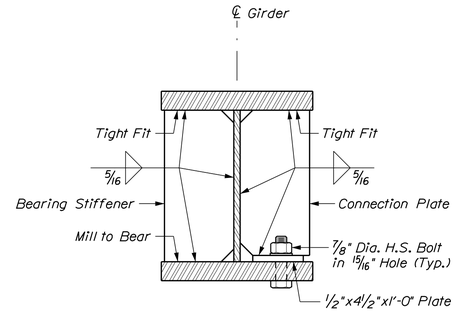
6. Bearing stiffeners shall be plumb after erection and full dead load is applied to the structure.

7. Diaphragm connection plates may be either plumb or normal to the top flange.

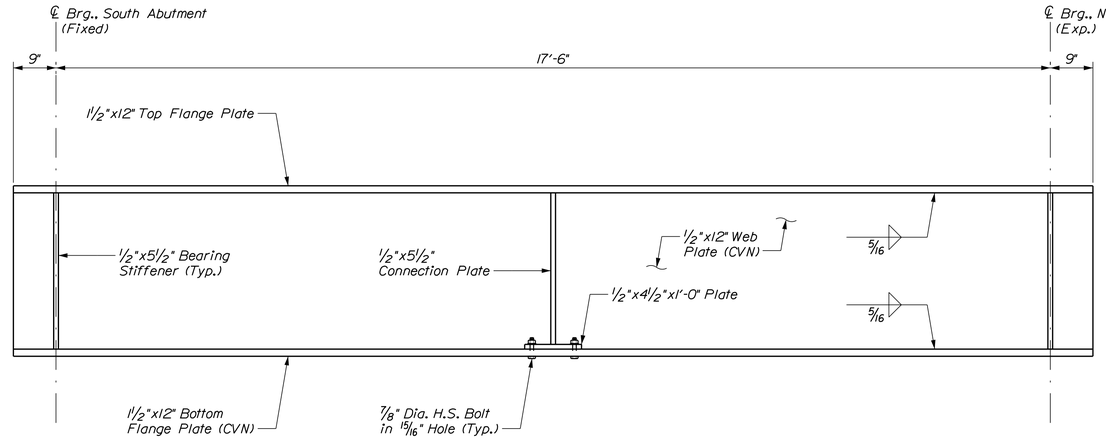
8. Girders shall be fabricated to zero camber plus tolerance.



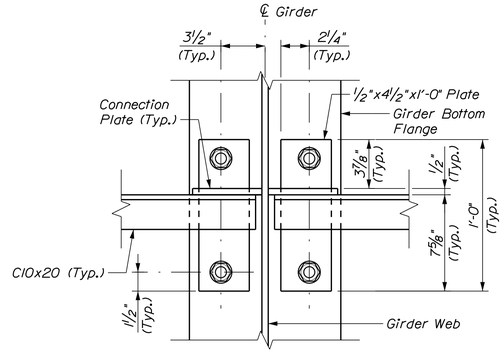
DIAPHRAGM CONNECTION DETAIL
Not to Scale



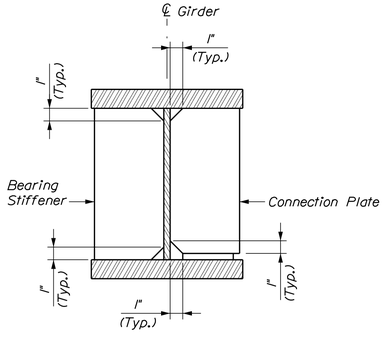
BEARING STIFFENER AND CONNECTION PLATE DETAIL
Not to Scale



GIRDER ELEVATION
Scale: ¾" = 1'-0"



SECTION A-A
Not to Scale



COPING DETAIL
Not to Scale

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00

BRIDGE NO. 7801

BRIDGE PLANS

vhb

PROJ. MANAGER	NATE BENOIT	BY	DATE
DESIGN-DETAILED	JCM	KDW	10/2021
CHECKED-REVIEWED	AMM	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
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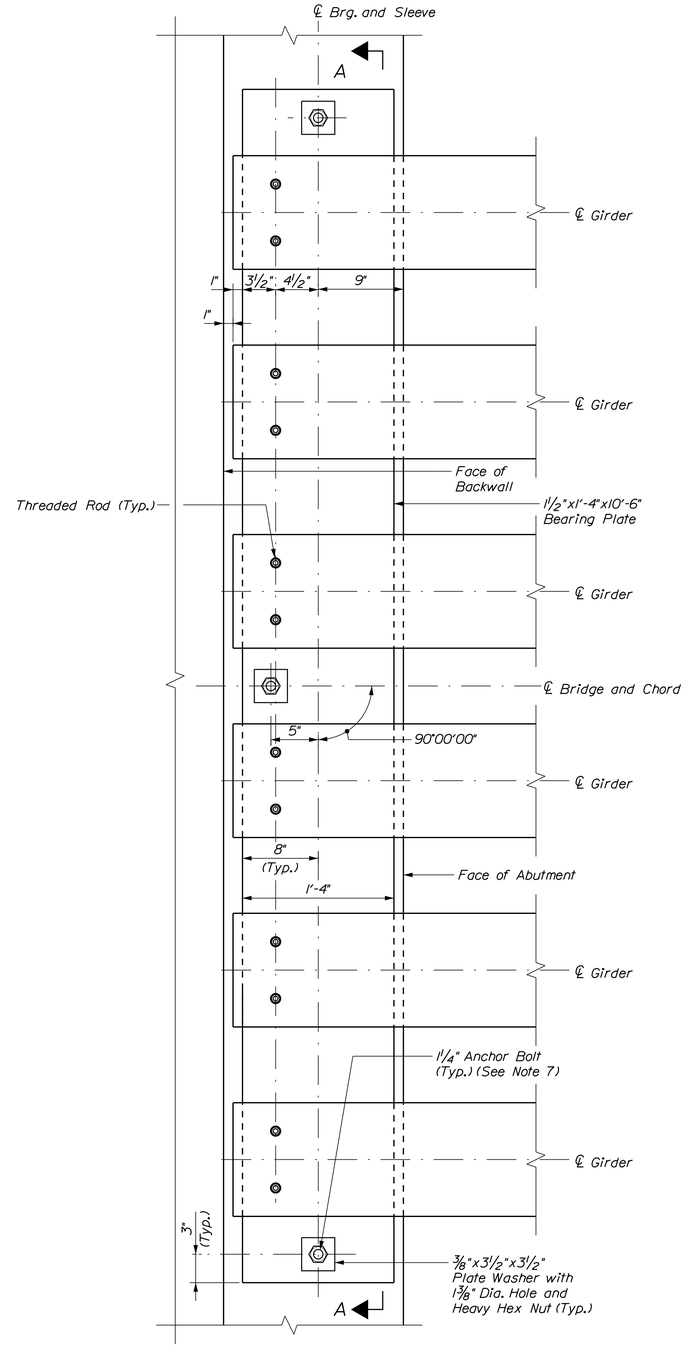
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

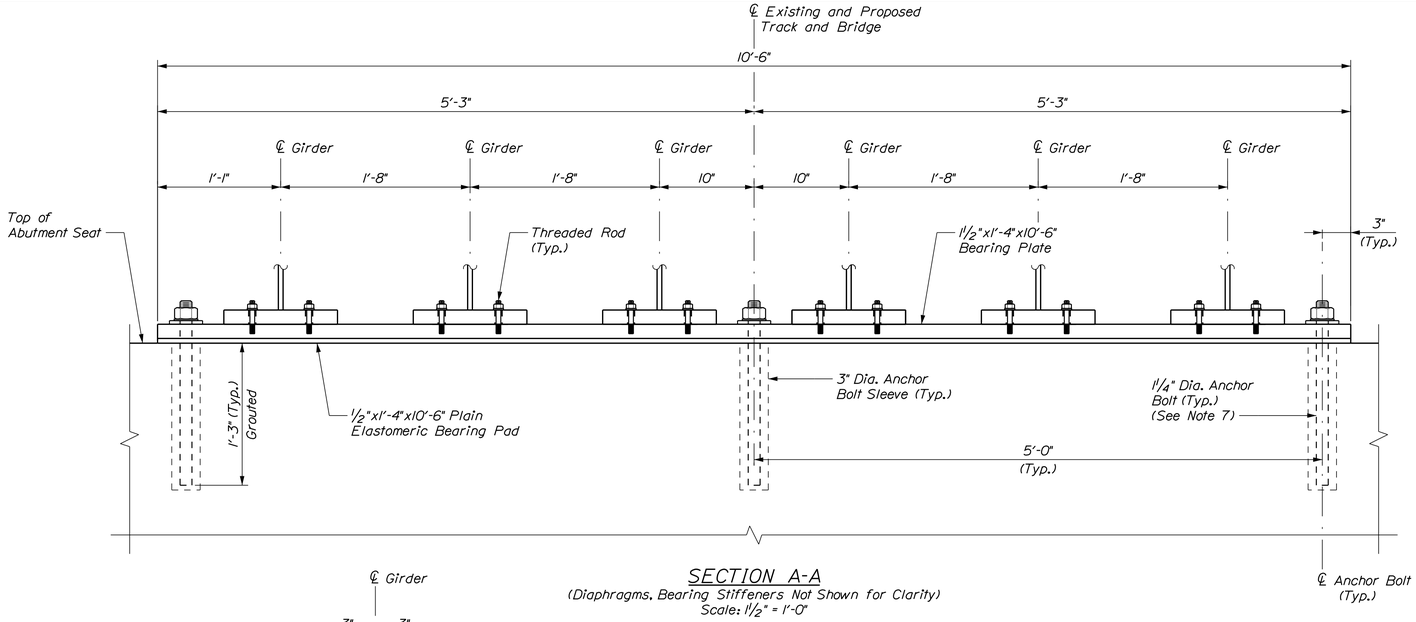
BR 7801 (M.P. P14.03)
OVER SMALL BROOK (6 OF 8)

SHEET NUMBER
30
OF 52

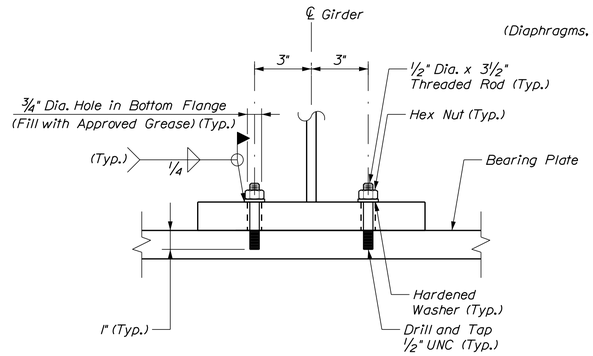
Filename: ...\Br 7801\030_7801_Frame.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



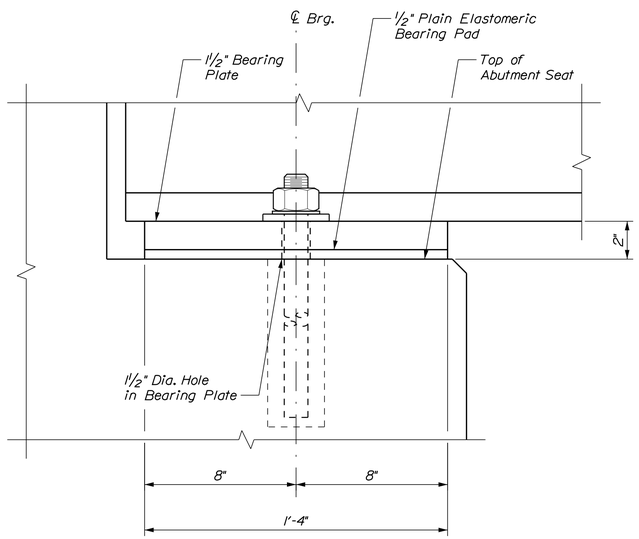
BEARING PLAN
(Typical Both Abutments)
Scale: 1½" = 1'-0"



SECTION A-A
(Diaphragms, Bearing Stiffeners Not Shown for Clarity)
Scale: 1½" = 1'-0"



THREADED ROD DETAIL
Scale: 3" = 1'-0"



BEARING ELEVATION
Scale: 3" = 1'-0"

BEARING NOTES

1. Plain Elastomeric Bearing Pads shall be made from a 60 durometer natural virgin rubber or neoprene elastomer.

2. Bearing plates shall meet the requirements of ASTM A709/A709M, Grade 50 and shall be galvanized in accordance with ASTM A123 or metalized.

3. Bearings shall be covered during transit.

4. All necessary precautions shall be taken to protect bearing components from field weld flash and spatter. Heat from welding operations shall be controlled such that steel adjacent to the elastomer does not exceed 200°F. The temperature shall be verified by the use of temperature indicating crayons or other suitable means.

5. Upset the threads on the anchor bolts after assembly of the bearings.

6. Nuts for bearing anchor bolts at expansion end of bridge (north abutment) shall be drawn up finger tight and backed off a ¼ turn before upsetting threads.

7. See Typical Details (1 of 2) sheet for Anchor Bolt Notes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00
BRIDGE PLANS
BRIDGE NO. 7801

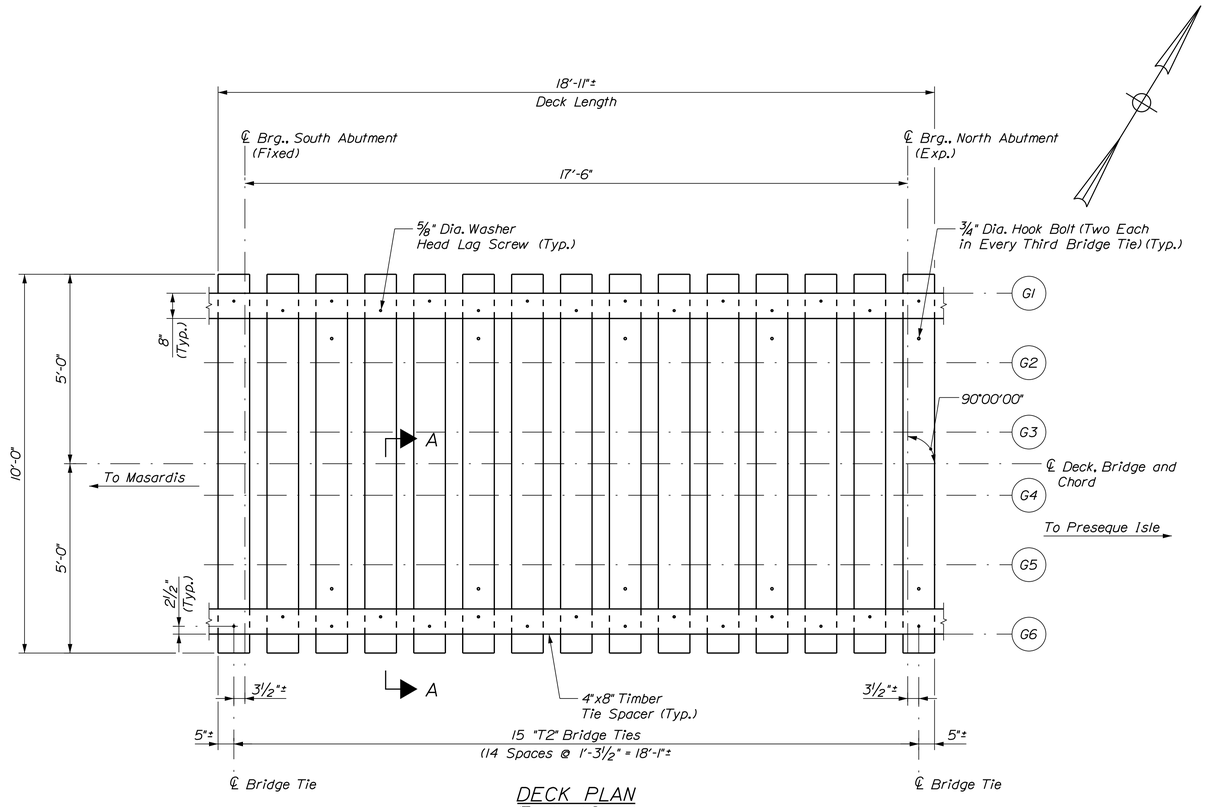
vhb

PROJ. MANAGER	NATE BENOIT		
DESIGN-DETAILED	JCM	KDW	10/2021
CHECKED-REVIEWED	AMM	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

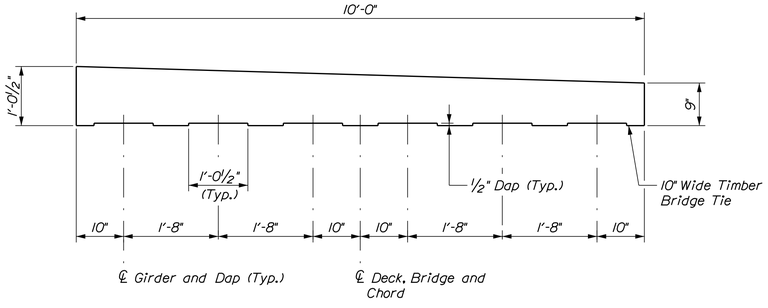
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
OVER SMALL BROOK (7 OF 8)

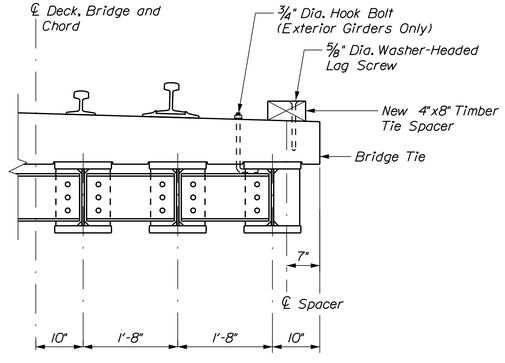
SHEET NUMBER
31
OF 52



DECK PLAN
(Track not Shown)
Scale: 1/2" = 1'-0"



DAPPED "T2" BRIDGE TIE
(Looking North)
Scale: 3/4" = 1'-0"



SECTION A-A
Scale: 3/4" = 1'-0"

NOTES

1. See Typical Details (1 of 2) sheet for Bridge Tie and Timber Notes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00
BRIDGE NO. 7801
BRIDGE PLANS

vhb

	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	JCM	10/2021
CHECKED-REVIEWED	AMM	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	KDW	
REVISIONS 2	GSG	
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
OVER SMALL BROOK (8 OF 8)

SHEET NUMBER
32
OF 52

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge No. 7801
Location: Chapman, Maine

Boring No.: BB-CSB-101
WIN:

Driller:	New England Boring Contractors	**Elevation (ft.)**	577.8	**Auger ID/OD:**	--
Operator:	Mike Porter	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	L. Navarrete	**Rig Type:**	Mobile Drill B-53 Hi-Rail-Mounted Rig	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	02/04/2020-02/05/2020	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	*See General Plan for Location*	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	8.5'
Hammer Efficiency Factor:	0.6	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_V = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Bottom of Footing El: 567.00

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SPIN	577.6		0'-0.2': Ballast. (0.2)	
	GR1		1.0 - 3.0							Grey, moist, fine to coarse SAND, some silt, trace gravel, (Fill).	
5	1D	24/12	5.0 - 7.0	10-12-17-18	29	29	RC			Grey, moist, medium dense, fine to coarse SAND, some gravel, some silt, (Fill).	
	2D	24/12	7.0 - 9.0	18-14-17-17	31	31				Grey, wet, dense, fine to coarse SAND, some gravel, some silt, (Fill).	G#1 A-1-b, SM WC=17.1
	3D	24/7	9.0 - 11.0	19-15-15-30	30	30				Grey, wet, dense, fine to coarse SAND, some silt, some gravel, (Fill).	
10	4D	24/15	11.0 - 13.0	19-27-27-11	54	54		566.8		(11.0) Grey, wet, very dense, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	G#2 A-4(1), ML WC=12.6
15	5D	24/15	15.0 - 17.0	22-44-38-38	82	82				Grey, wet, very dense, fine to coarse SAND, some gravel, some silt.	
	R1	59/21	18.0 - 22.9				NQ			Increase in resistance during roller cone advancement at 17.8'. Consistent, dark grey rock fragments observed in wash return. Advanced roller cone to 18.0'. Set up to core at 18.0'. R1: Grey boulders/cobbles 1"-6" long, pieces recovered. Rate of core barrel advancement changed intermittently indicating boulders/cobbles.	
20							RC				
25											

Remarks:

1. Ground surface generally flush with top of railroad tie.
2. Reported water level was measured after casing removal.
3. "GR" indicates grab sample collected from test boring.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge No. 7801
Location: Chapman, Maine

Boring No.: BB-CSB-101
WIN:

Driller:	New England Boring Contractors	**Elevation (ft.)**	577.8	**Auger ID/OD:**	--
Operator:	Mike Porter	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	L. Navarrete	**Rig Type:**	Mobile Drill B-53 Hi-Rail-Mounted Rig	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	02/04/2020-02/05/2020	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	*See General Plan for Location*	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	8.5'
Hammer Efficiency Factor:	0.6	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_V = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25	MD	5/0	25.0 - 25.4	135/5"	--					No recovery.	
30	6D	24/11	30.0 - 32.0	31-21-23-33	44	44				Grey, wet, dense, GRAVEL, some fine to coarse sand, trace silt, (Glacial Till).	
35	7D	22/7	35.0 - 36.8	35-24-28-98/4"	52	52		541.0		(36.8) Grey, wet, very dense, GRAVEL, some fine to coarse sand, trace silt, (Glacial Till).	
40										**Bottom of Exploration at 36.8 feet below ground surface. No Refusal.**	
45											
50											

Remarks:

1. Ground surface generally flush with top of railroad tie.
2. Reported water level was measured after casing removal.
3. "GR" indicates grab sample collected from test boring.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00
BRIDGE NO. 7801
BRIDGE PLANS

vhb

	NAME	DATE
PROJ. MANAGER		
DESIGN-DETAILED	GZA	10/2021
CHECKED-REVIEWED	GZA	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
BORING LOGS (1 OF 2)

SHEET NUMBER
33
OF 52

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge No. 7801
Location: Chapman, Maine

Boring No.: BB-CSB-102
WIN:

Driller:	New England Boring Contractors	**Elevation (ft.)**	577.6	**Auger ID/OD:**	--
Operator:	Mike Porter	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	L. Navarrete	**Rig Type:**	Mobile Drill B-53 Hi-Rail-Mounted Rig	**Hammer Wt./Fall:**	--
Date Start/Finish:	02/05/2020-02/05/2020	**Drilling Method:**	Drive & Wash	**Core Barrel:**	--
Boring Location: *See General Plan for Location*		**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_V = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SPIN	576.6		0'-1.0': Ballast.	
	GR1		1.0 - 3.0					575.6		Grey, wet, fine to coarse SAND, little silt, trace gravel, (Fill).	
5	1D	24/9	5.0 - 7.0	9-12-20-18	32	32	40			Grey, wet, dense, fine to coarse SAND, some silt, little gravel, (Fill).	
							37				
	2D	24/12	7.0 - 9.0	7-17-16-16	33	33	35			Top 4": Grey, wet, dense, fine to coarse SAND, some silt, trace gravel, (Fill). Bottom 8": Grey, wet, dense, fine to coarse SAND, little gravel, trace silt, (Fill).	
							35				
							38			Running sands encountered within casing during sampling attempts at 9.0'. Washed ahead and advanced casing to 11.0'.	
10							34	567.6		10.0'	
	3D	24/5	11.0 - 13.0	8-10-43-30	53	53	28			Grey, wet, very dense, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till).	
							16				
							46				
							90				
15	4D	5/5	15.0 - 15.4	37/5"	--		143 RC			Grey, wet, very dense, Clayey SILT, some fine to coarse sand, little gravel, (Glacial Till). Increase in resistance during roller cone advancement at 15.4' indicates probable cobbles.	
20	5D	24/14	20.0 - 22.0	43-59-53-80	112	112				Grey, wet, very dense, fine to coarse SAND, some silt, some gravel, (Glacial Till).	
25											

Bottom of Footing El. 567.00

Remarks:

1. Ground surface generally flush with top of railroad tie.
2. Reported water level was measured after casing removal.
3. "GR" indicates grab sample collected from test boring.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

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Page 1 of 2

Boring No.: BB-CSB-102

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: MNR Bridge No. 7801
Location: Chapman, Maine

Boring No.: BB-CSB-102
WIN:

Driller:	New England Boring Contractors	**Elevation (ft.)**	577.6	**Auger ID/OD:**	--
Operator:	Mike Porter	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	L. Navarrete	**Rig Type:**	Mobile Drill B-53 Hi-Rail-Mounted Rig	**Hammer Wt./Fall:**	--
Date Start/Finish:	02/05/2020-02/05/2020	**Drilling Method:**	Drive & Wash	**Core Barrel:**	--
Boring Location: *See General Plan for Location*		**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	8.0'
Hammer Efficiency Factor: 0.6		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
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SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_V = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25	6D	6/4	25.0 - 25.5	100/6"	--					Grey, wet, very dense, fine to coarse SAND, some gravel, trace silt, (Glacial Till).	
30	7D	12/10	30.0 - 31.0	74-102/6"	--					Grey, wet, very dense, fine to coarse SAND, some gravel, some silt, (Glacial Till).	
35	8D	24/13	35.0 - 37.0	55-43-46-57	89	89				Grey, wet, very dense, fine to coarse SAND, some gravel, some silt, (Glacial Till).	
								540.6		37.0'	
										Bottom of Exploration at 37.0 feet below ground surface. No Refusal.	
40											
45											
50											

Remarks:

1. Ground surface generally flush with top of railroad tie.
2. Reported water level was measured after casing removal.
3. "GR" indicates grab sample collected from test boring.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the

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Page 2 of 2

Boring No.: BB-CSB-102

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23460.00
BRIDGE NO. 7801
BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	GZA	GZA	10/2021
CHECKED-REVIEWED	GZA	GZA	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7801 (M.P. P14.03)
BORING LOGS (2 OF 2)

SHEET NUMBER
34
OF 52

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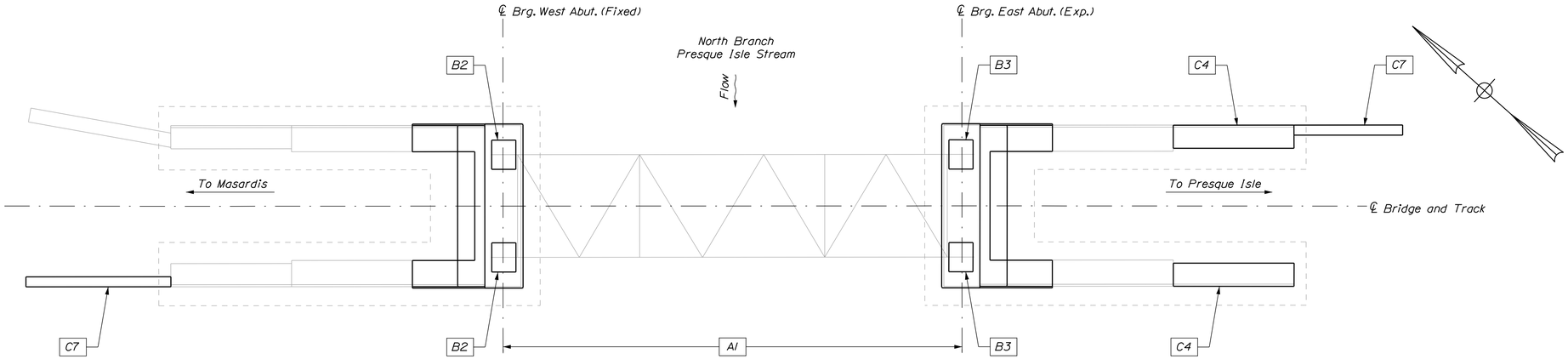
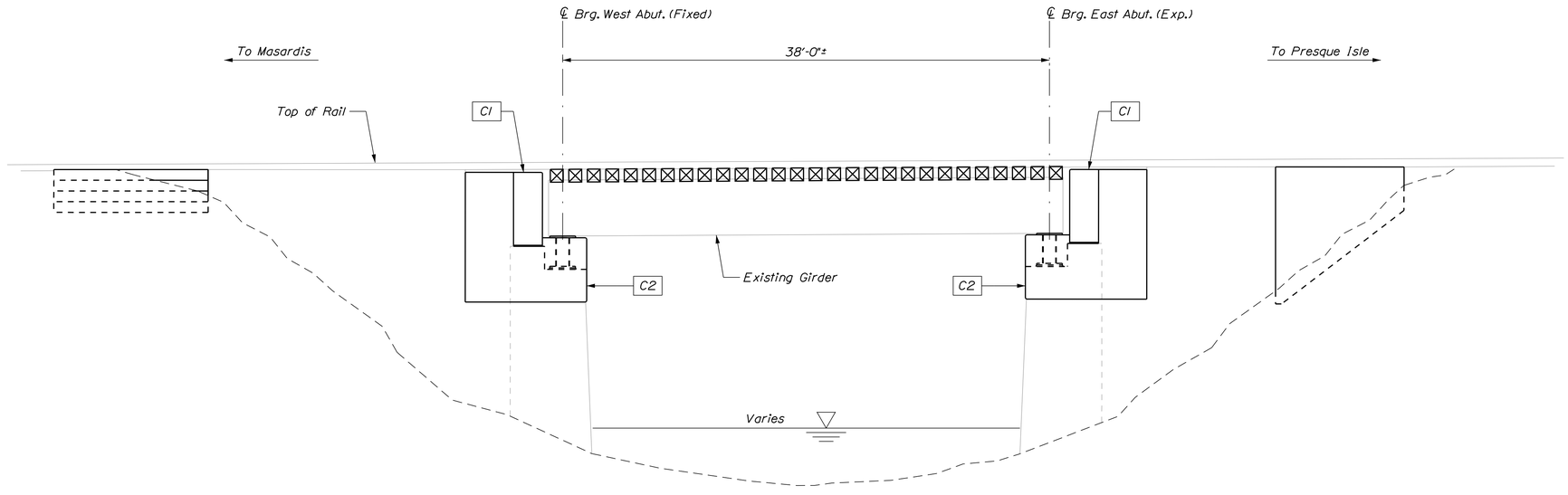


REHABILITATION KEY PLAN

Not To Scale

SUPERSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
A1	Remove and Replace All Bridge Ties	1
BEARING AND PEDESTAL WORK ITEMS		
Work ID	Description	Number of Locations
B2	Remove and Reset Fixed Bearing	2
B3	Remove and Reset Expansion Bearing	2
SUBSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
C1	Remove Existing Backwall and Install New Precast Backwall	2
C2	Rehabilitate Bridge Seat and Install Embedded Steel Bolsters	2
C4	Rehabilitate Wingwall	2
C7	Remove and Replace Timber Ballast Retainer	2



BRIDGE ELEVATION

Not To Scale

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23456.00

BRIDGE NO. 7804

BRIDGE PLANS

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JGM	KDW	10/2021
CHECKED-REVIEWED	GSG	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

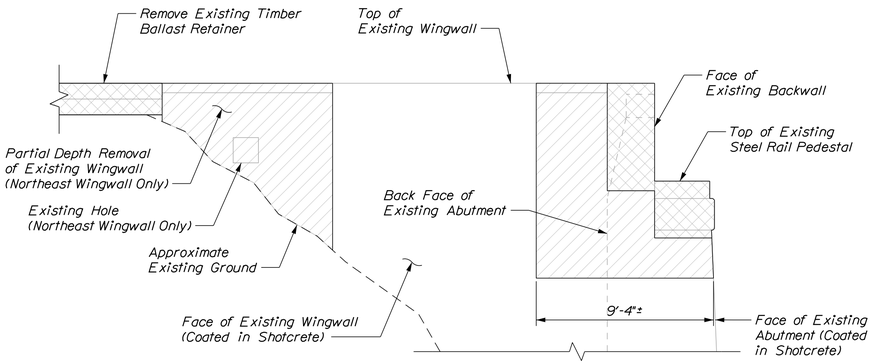
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7804 (M.P. P21.26) OVER NORTH
BRANCH PRESQUE ISLE STREAM (1 OF 4)

SHEET NUMBER

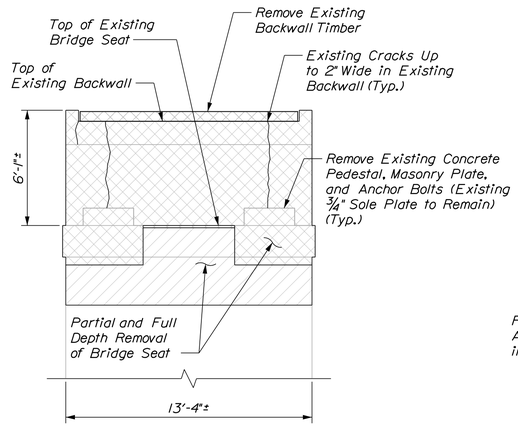
35

OF 52



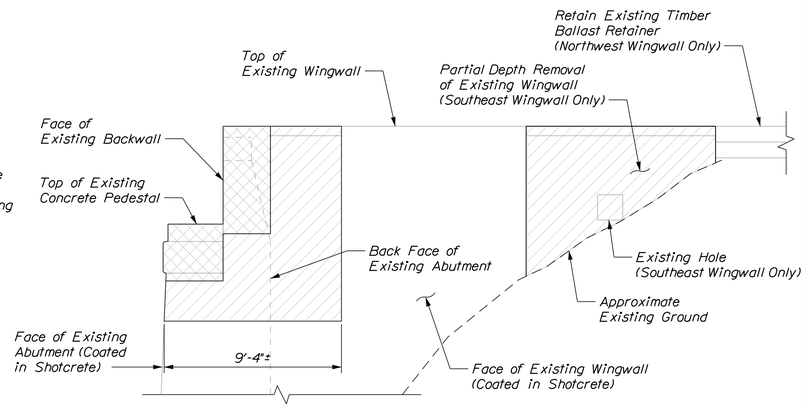
EXISTING WINGWALL ELEVATION - REMOVAL

(Northeast Wingwall Shown, Southwest Similar Except as Noted)
Scale: 1/4" = 1'-0"



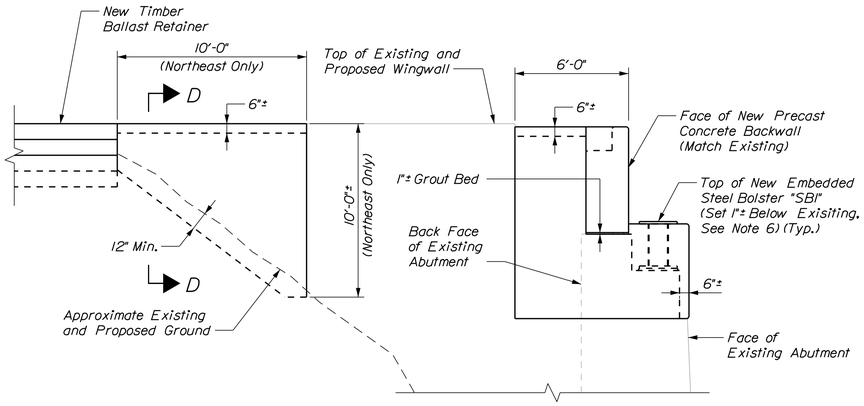
EXISTING ABUTMENT ELEVATION - REMOVAL

(East Abutment Shown, West Abutment Similar)
Scale: 1/4" = 1'-0"



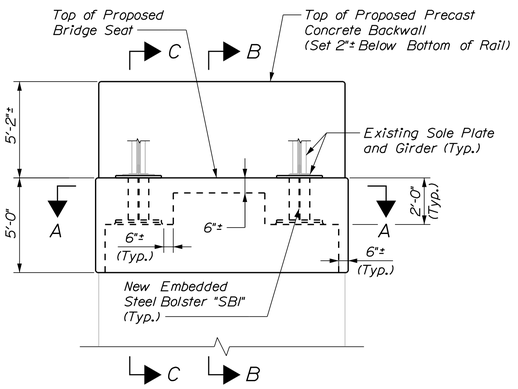
EXISTING WINGWALL ELEVATION - REMOVAL

(Southeast Wingwall Shown, Northwest Similar Except as Noted)
Scale: 1/4" = 1'-0"



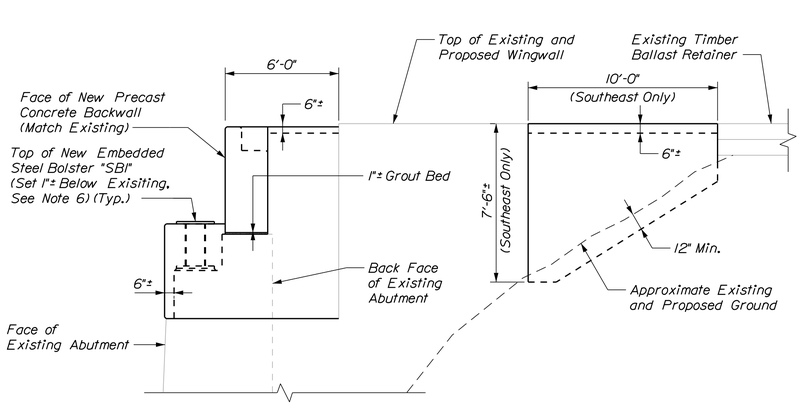
PROPOSED WINGWALL ELEVATION

(Northeast Wingwall Shown, Southwest Similar Except as Noted)
Scale: 1/4" = 1'-0"



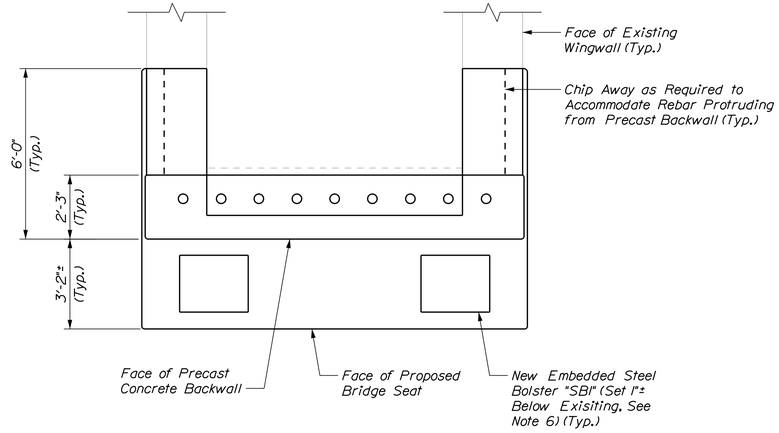
PROPOSED ABUTMENT ELEVATION

(East Abutment Shown, West Abutment Similar)
Scale: 1/4" = 1'-0"



PROPOSED WINGWALL ELEVATION

(Southeast Wingwall Shown, Northwest Similar Except as Noted)
Scale: 1/4" = 1'-0"



PROPOSED BRIDGE SEAT AND BACKWALL PLAN

(East Abutment Shown, West Similar)
Scale: 3/8" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

LEGEND

Approximate Limits of Full Depth Removal/Repair

Approximate Limits of Partial Depth Removal/Repair

NOTES

1. Existing features shown on these Plans are drawn based on the existing plans and limited field evaluation. Large portions of the substructure have been coated in a superficial layer of welded wire fabric and shotcrete, existing features may vary from what is shown. It is the responsibility of the Contractor to verify the existing features. Concrete repairs shall not extend past the limits shown. See notes on Typical Details (1 of 2) sheet for more information.

2. See Bridge No. 7804 (M.P. P21.26) Over North Branch Presque Isle Stream (3 of 4) sheet for Section A-A, B-B, C-C, D-D, precast concrete backwall details, concrete repair sections, and reinforcing details.

3. See Bridge No. 7804 (M.P. P21.26) Over North Branch Presque Isle Stream (4 of 4) sheet for timber ballast retainer details and notes.

4. See Typical Details (1 of 2) sheet for Typical Section At Backwall.

5. See Typical Details (2 of 2) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.

6. Top of new embedded steel bolsters shall be set approximately 1 inch below top of existing masonry plate to accomodate deeper bridge ties. Embedded steel bolsters shall be set to maintain existing top of rail elevation with new bridge ties. Embedded steel bolsters shall be set so the bevel on the top plate matches the slope of the existing bridge.

7. The Contractor shall reset the existing track and ties on the compacted subballast (Granular Borrow). The Railroad will be responsible for placement of ballast and bringing the track up to final line and grade. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction in accordance with Special Provision 107.

8. Any excavation and any subsequent regrading around wingwall repairs will be considered incidental to Item 518.211, Rehabilitate Structural Concrete Substructure.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23456.00

BRIDGE PLANS

BRIDGE NO. 7804

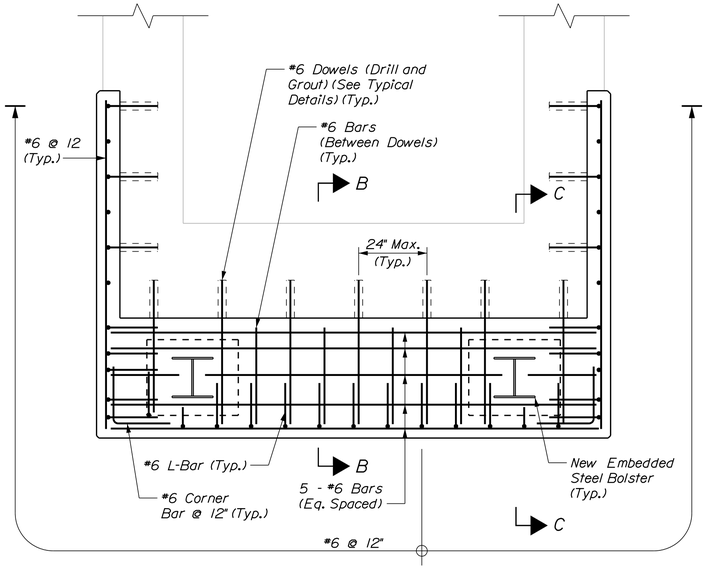
vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JQM	KDW	10/2021
CHECKED-REVIEWED	KCD	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

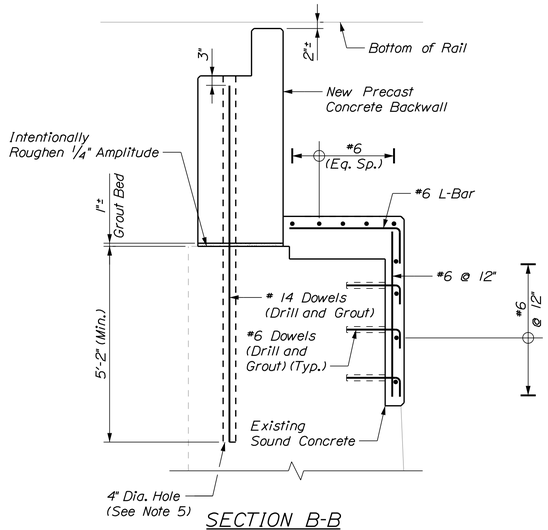
RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7804 (M.P. P21.26) OVER NORTH BRANCH PRESQUE ISLE STREAM (2 OF 4)

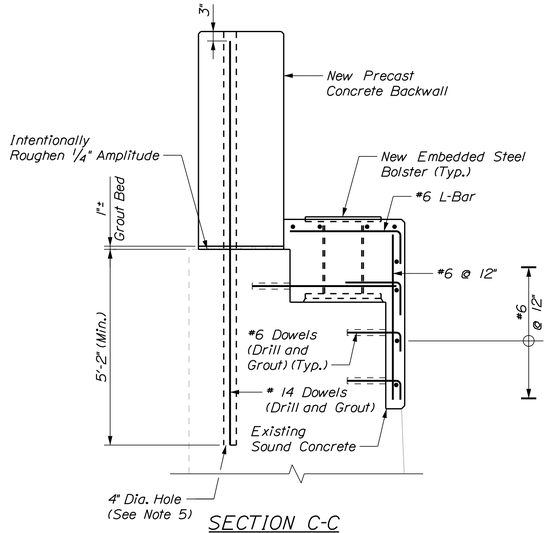
SHEET NUMBER
36
OF 52



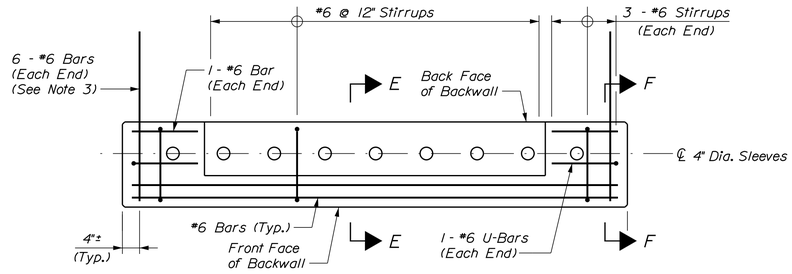
SECTION A-A
BRIDGE SEAT REINFORCING PLAN
Scale: 1/2" = 1'-0"



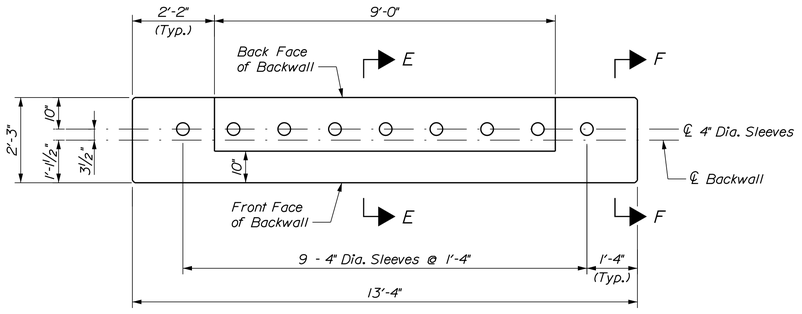
SECTION B-B
REINFORCING AT BRIDGE SEAT
Scale: 1/2" = 1'-0"



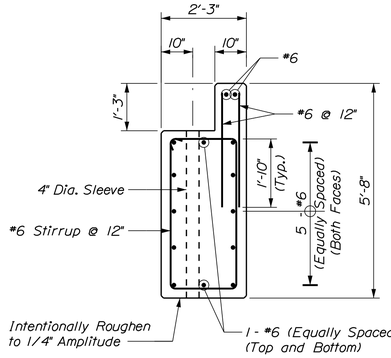
SECTION C-C
REINFORCING AT BRIDGE SEAT
Scale: 1/2" = 1'-0"



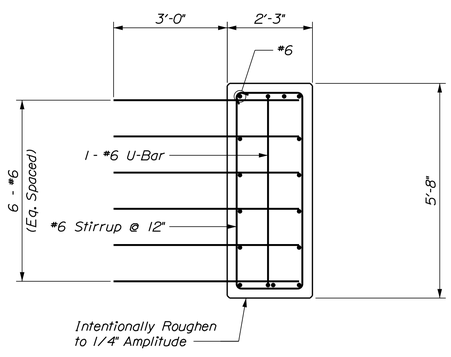
PROPOSED PRECAST CONCRETE BACKWALL
REINFORCING PLAN
Scale: 1/2" = 1'-0"



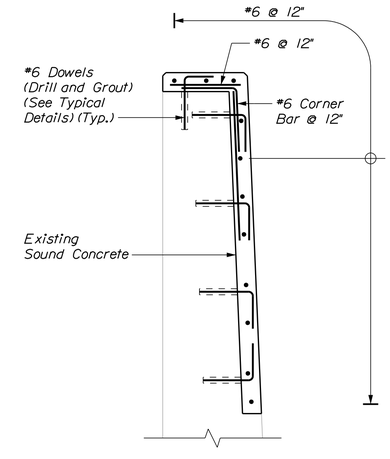
PROPOSED PRECAST CONCRETE BACKWALL
MASONRY PLAN
Scale: 1/2" = 1'-0"



SECTION E-E
Scale: 3/4" = 1'-0"



SECTION F-F
Scale: 3/4" = 1'-0"



SECTION D-D
REINFORCING AT WINGWALL REPAIR
Scale: 1/2" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

NOTES

1. *See Typical Details (1 of 2) sheet for General Concrete Repair and Reinforced Concrete notes and details.*
2. *Reinforcing details shown in these Plans are drawn to show minimum reinforcing requirements and general design intent. Final layout and configuration of reinforcing may vary based on actual existing features.*
3. *Reinforcing protruding from precast concrete backwall shall be lapped with reinforcing steel in adjacent cast-in-place concrete repair on wingwalls.*
4. *Fabrication and installation of the #14 dowels in backwall shall be incidental to Item 534.30 Precast Structural Concrete (Backwalls).*
5. *Dowels in backwalls shall be grouted using and non-shrink polymer or epoxy grout material selected from the MaineDOT Qualified Products List. Dowels in backwalls shall be grouted into the existing abutment prior to setting the precast concrete backwall.*

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23456.00 BRIDGE PLANS
BRIDGE NO. 7804

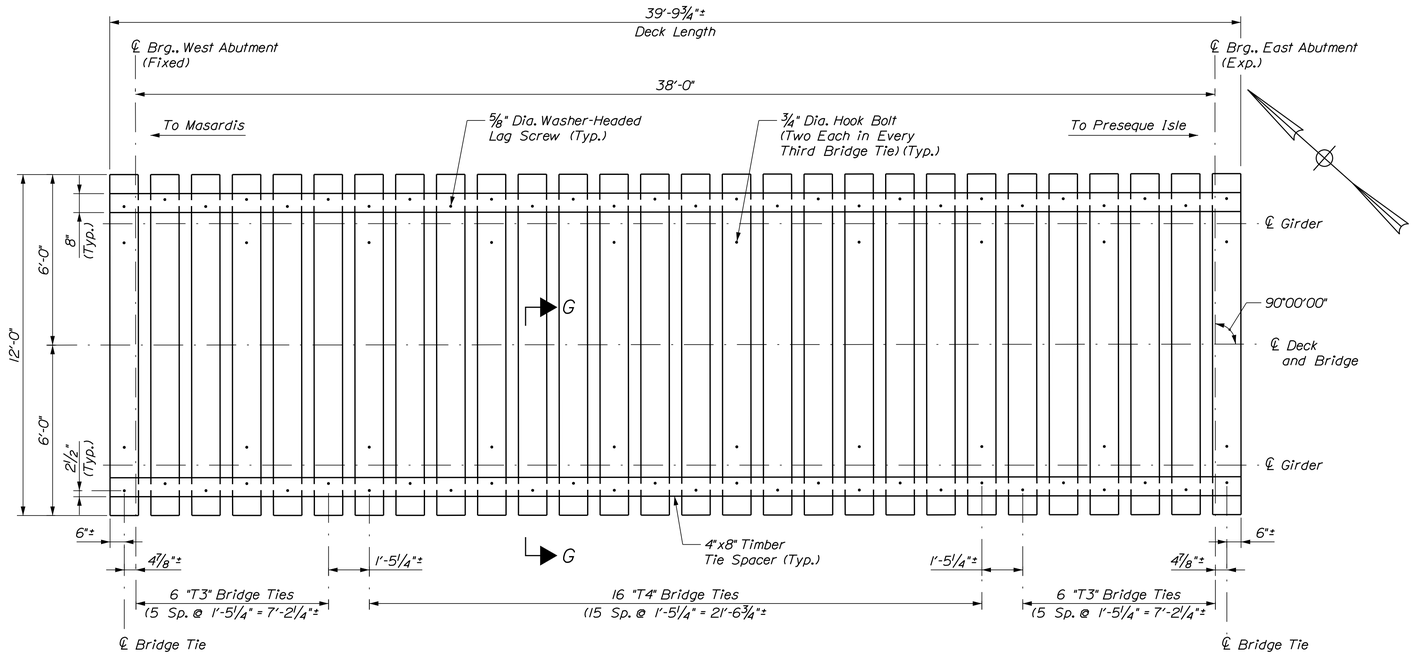
vhb

	NAME	BY	DATE
PROJ. MANAGER	BENOIT	KDW	10/2021
DESIGN-DETAILED	JQM	GSG	10/2021
CHECKED-REVIEWED	KCD		
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

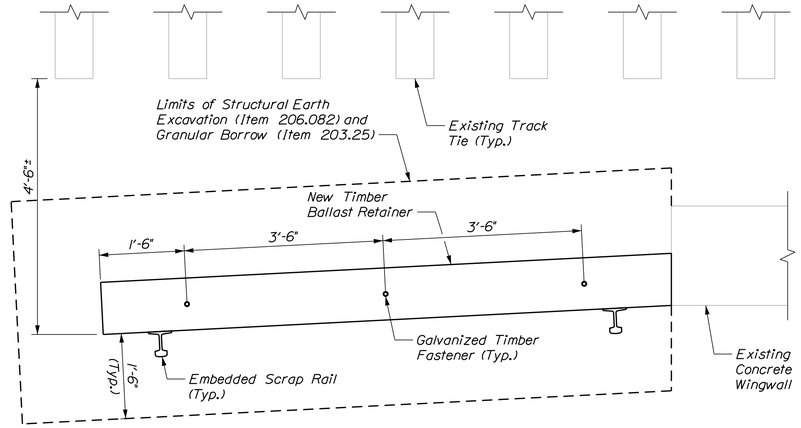
BR 7804 (M.P. P21.26) OVER NORTH
BRANCH PRESQUE ISLE STREAM (3 OF 4)

SHEET NUMBER
37
OF 52



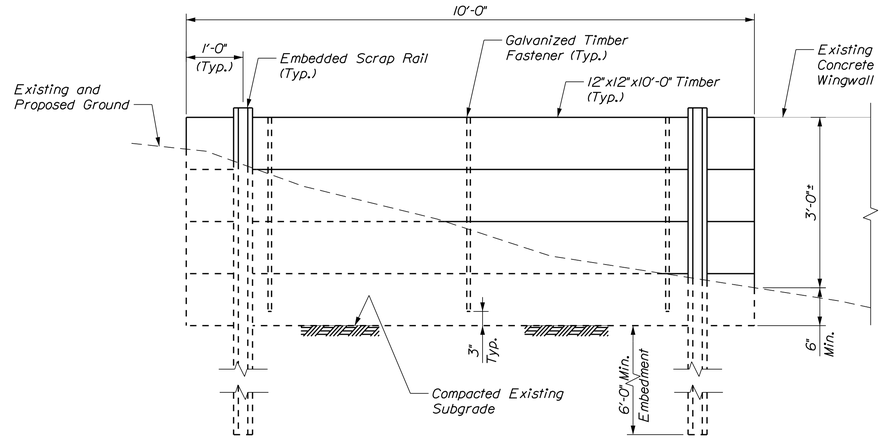
DECK PLAN

(Track not Shown)
Scale: ⅜" = 1'-0"



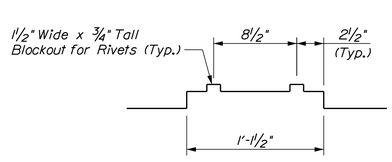
PROPOSED BALLAST RETAINER PLAN

Scale: ¾" = 1'-0"



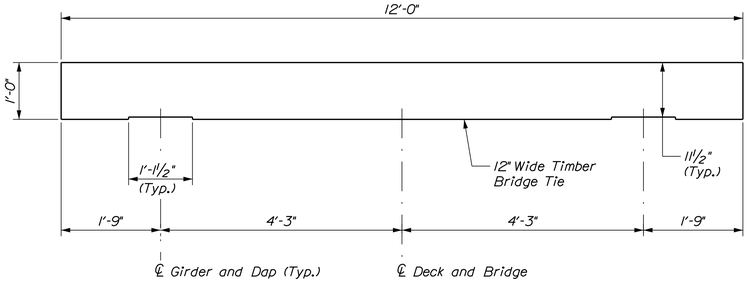
PROPOSED BALLAST RETAINER ELEVATION

Scale: ¾" = 1'-0"



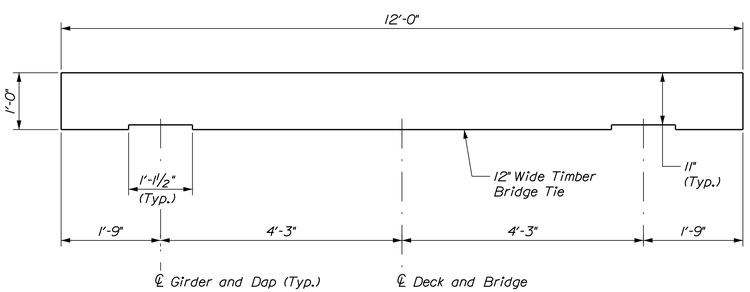
DAPPING DETAIL

Not to Scale



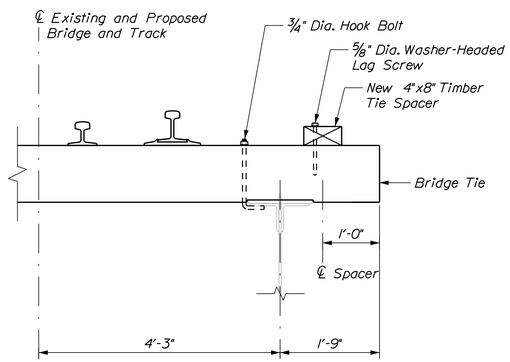
DAPPED "T3" BRIDGE TIE AT GIRDER ENDS (1 TOP FLANGE COVER PLATE)

Scale: ¾" = 1'-0"



DAPPED "T4" BRIDGE TIE MIDDLE OF GIRDER (2 TOP FLANGE COVER PLATES)

Scale: ¾" = 1'-0"



SECTION G-G

Scale: ¾" = 1'-0"

NOTES

1. See Typical Details (1 of 2) sheet for Bridge Tie and Timber Notes.

2. Ballast retainer timbers shall be fastened with ¾" diameter ASTM A307 drift bolts, timber spikes, or threaded rods. Fasteners shall be galvanized in accordance with ASTM A123 and set in 13/16" predrilled holes.

3. Ballast retainer timbers shall be trimmed flush with the end of wingwall. All cuts and holes in timbers made after treatment shall be field treated with a preservative in accordance with Special Provision 528.

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23456.00
BRIDGE NO. 7804
BRIDGE PLANS

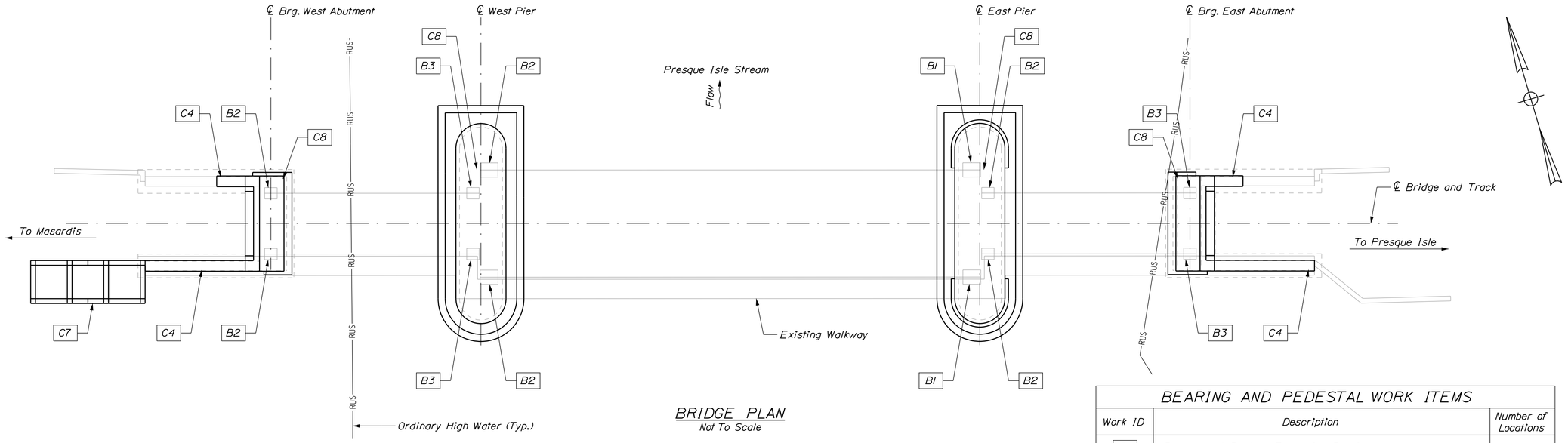
vhb

	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	JCM	10/2021
CHECKED-REVIEWED	TAM	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	KDW	
REVISIONS 2	GSG	
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7804 (M.P. P21.26) OVER NORTH
BRANCH PRESQUE ISLE STREAM (4 OF 4)

SHEET NUMBER
38
OF 52



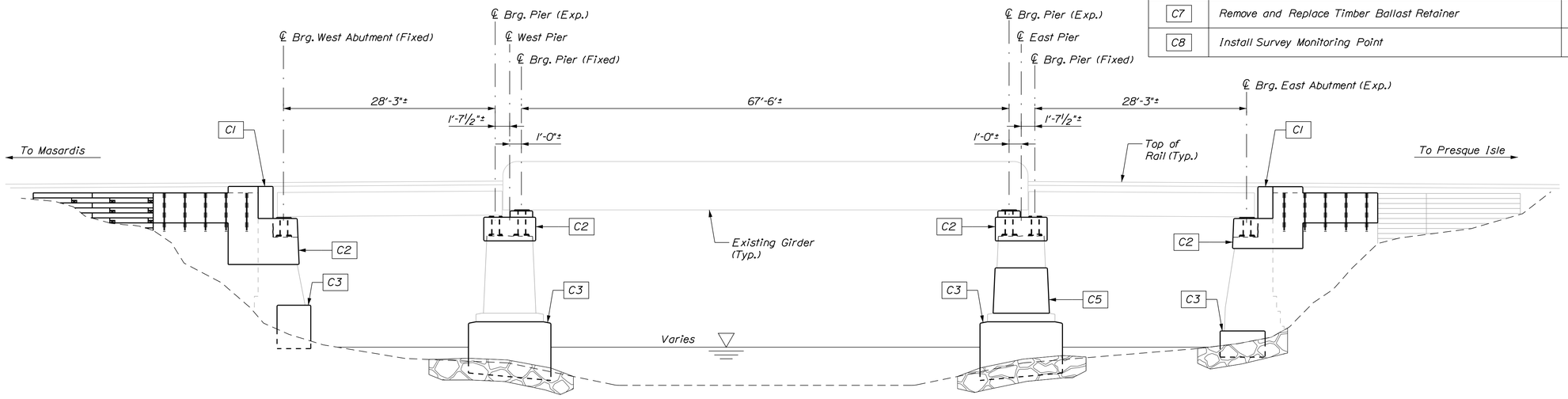
BRIDGE PLAN
Not To Scale

BEARING AND PEDESTAL WORK ITEMS

Work ID	Description	Number of Locations
B1	Remove and Replace Expansion Bearing	2
B2	Remove and Reset Fixed Bearing	6
B3	Remove and Reset Expansion Bearing	4

SUBSTRUCTURE WORK ITEMS

Work ID	Description	Number of Locations
C1	Remove Existing Backwall and Install New Precast Backwall	2
C2	Rehabilitate Bridge Seat and Install Embedded Steel Bolsters	4
C3	Rehabilitate Footing	4
C4	Rehabilitate Wingwall	4
C5	Partial Pier Encasement	1
C7	Remove and Replace Timber Ballast Retainer	1
C8	Install Survey Monitoring Point	4



BRIDGE ELEVATION
Not To Scale

NOTE

1. Aerial utility lines run parallel to bridge approximately 30' to 40' off the south fascia. See Special Provision 104.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00 BRIDGE PLANS

BRIDGE NO. 7805

vhb

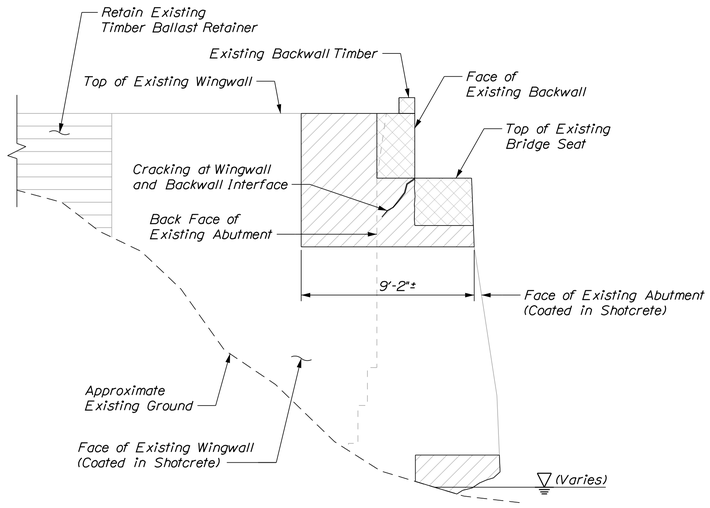
	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	JGM	10/2021
CHECKED-REVIEWED	GSG	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7805 (M.P. P24.91) OVER
PRESQUE ISLE STREAM (1 OF 7)

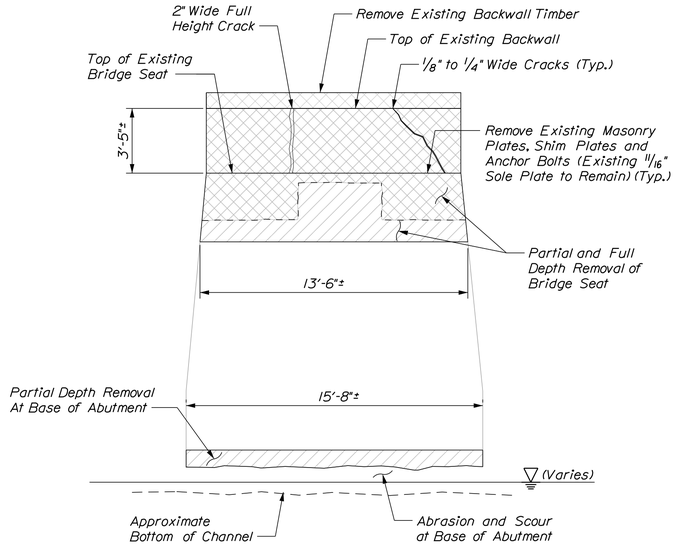
SHEET NUMBER
39
OF 52

Filename: ...\039_7805_Plan and El.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



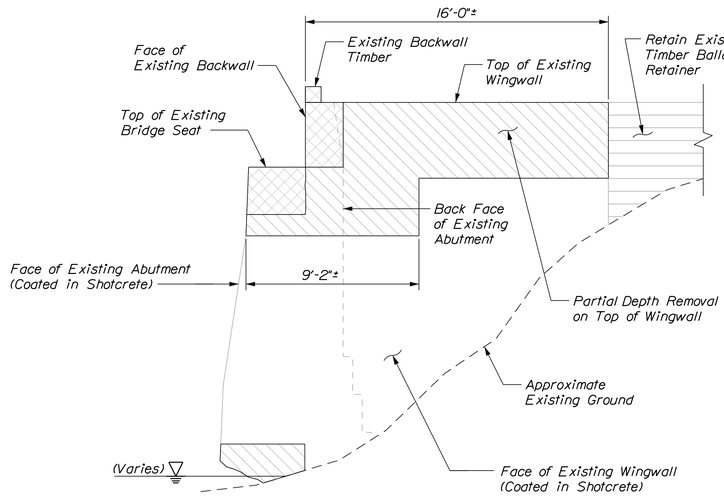
EXISTING NORTHEAST WINGWALL ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



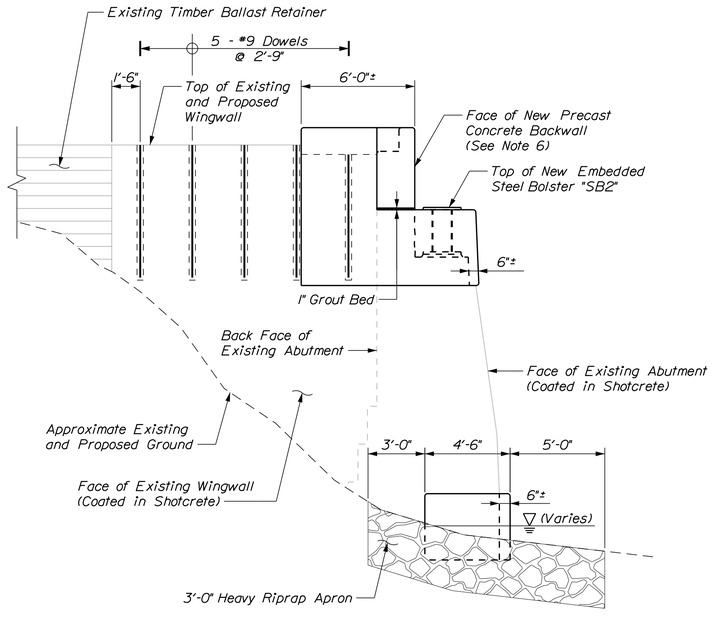
EXISTING EAST ABUTMENT ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



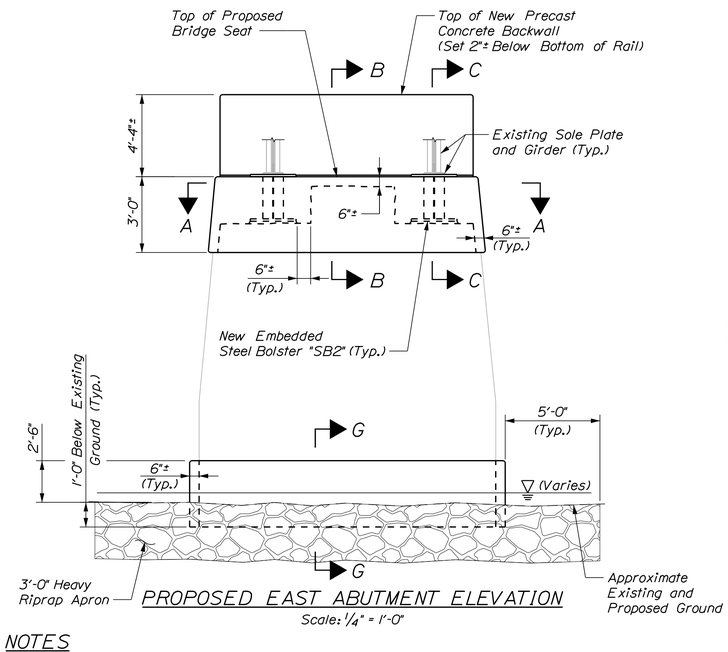
EXISTING SOUTHEAST WINGWALL ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



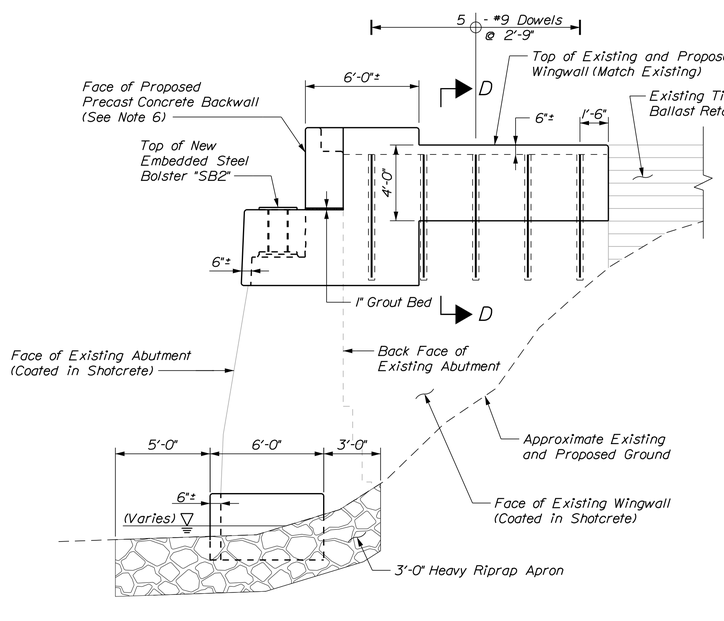
PROPOSED NORTHEAST WINGWALL ELEVATION

Scale: 1/4" = 1'-0"



PROPOSED EAST ABUTMENT ELEVATION

Scale: 1/4" = 1'-0"



PROPOSED SOUTHEAST WINGWALL ELEVATION

Scale: 1/4" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

LEGEND

Approximate Limits of Full Depth Removal/Repair

Approximate Limits of Partial Depth Removal/Repair

NOTES

1. Existing features shown on these Plans are drawn based on the existing plans and limited field evaluation. Large portions of the substructure have been coated in a superficial layer of welded wire fabric and shotcrete, existing features may vary from what is shown. It is the responsibility of the Contractor to verify the existing features. Concrete repairs shall not extend past the limits shown. See notes on Typical Details (1 of 2) sheet for more information.

2. See Bridge No. 7805 (M.P. P24.91) Over Branch Presque Isle Stream (4 of 7) sheet for Proposed Bridge Seat and Backwall Plan, Section A-A, B-B, C-C, D-D, G-G, precast concrete backwall details, concrete repair sections, and reinforcing details.

3. See Typical Details (1 of 2) sheet for Typical Section At Backwall.

4. See Typical Details (2 of 2) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.

5. The Contractor shall reset the existing track and ties on the compacted subballast (Granular Borrow). The Railroad will be responsible for placement of ballast and bringing the track up to final line and grade. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction in accordance with Special Provision 107.

6. Front of new precast concrete backwall shall be shifted backwards slightly to maintain a 1 to 2 inch gap between backwall and end of girder.

7. Any excavation and subsequent regrading required to repair the base of abutment will be considered incidental to Item 518.211, Rehabilitate Structural Concrete.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00 BRIDGE PLANS

BRIDGE NO. 7805

vhb

PROJ. MANAGER	NATE BENOIT	DATE
DESIGN-DETAILED	JGM	10/2021
CHECKED-REVIEWED	KCD	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		BY
REVISIONS 2		BJM
REVISIONS 3		CSG
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

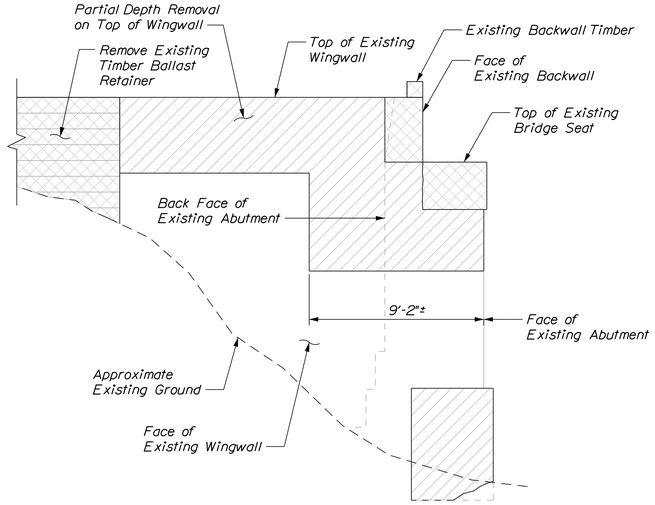
BR 7805 (M.P. P24.91) OVER
PRESQUE ISLE STREAM (2 OF 7)

SHEET NUMBER

40

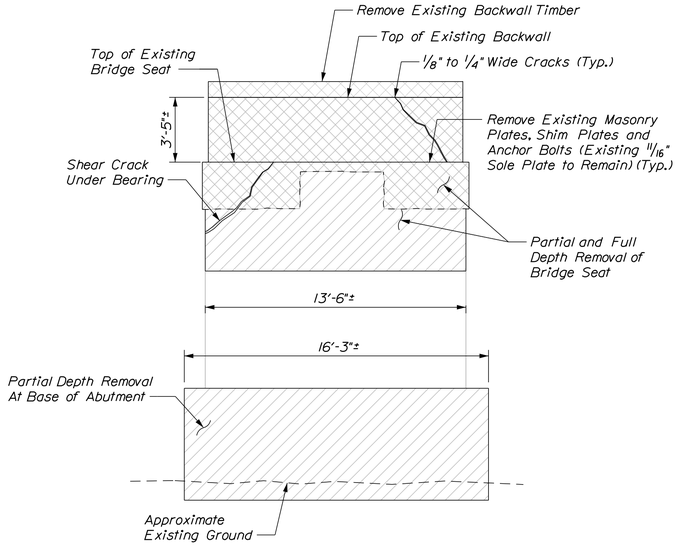
OF 52

Filename: ...\Br 7805\040_7805_Abut_01.dgn Division: MULTIMODAL Username: BMasse Date:11/2/2021



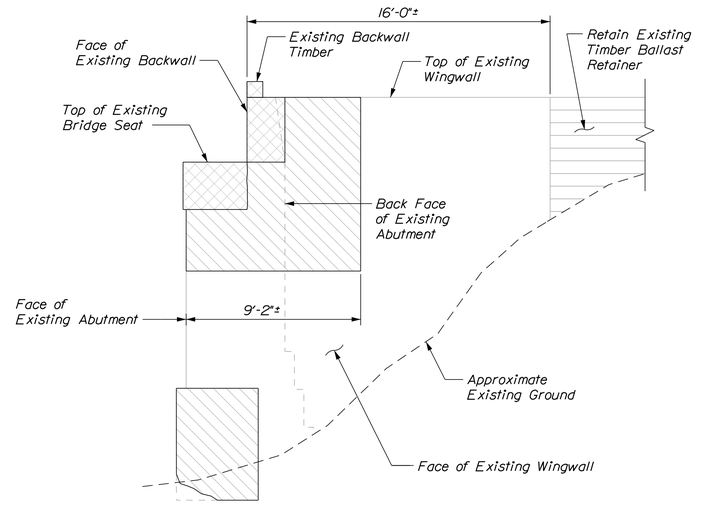
EXISTING SOUTHWEST WINGWALL ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



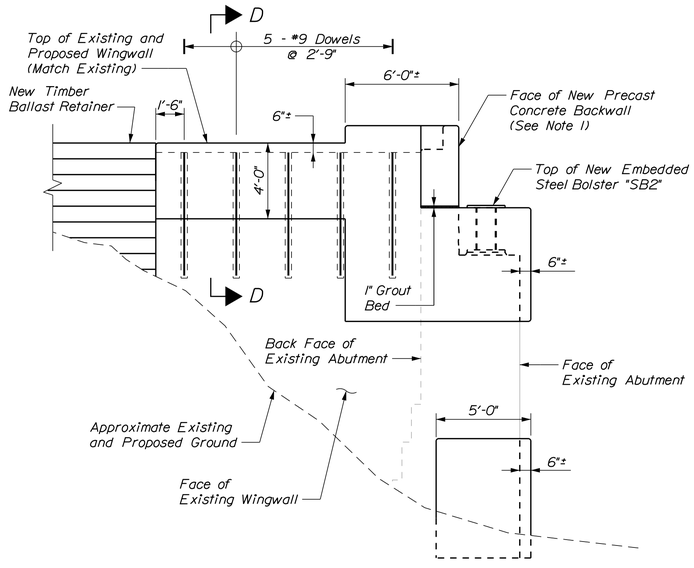
EXISTING WEST ABUTMENT ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



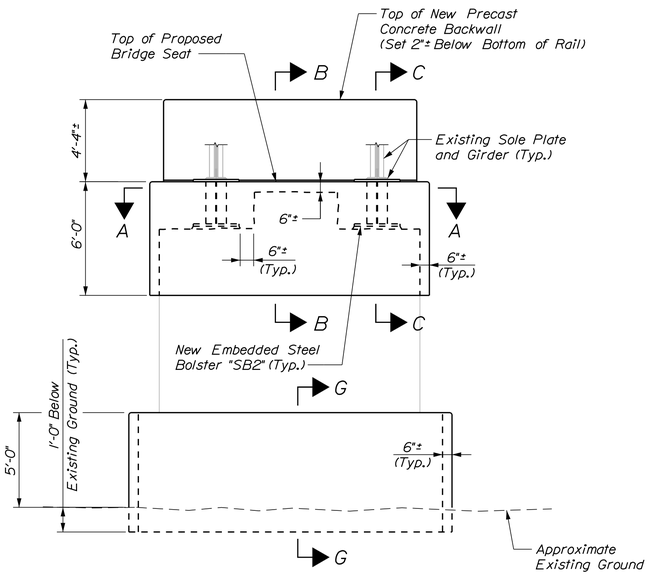
EXISTING NORTHWEST WINGWALL ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



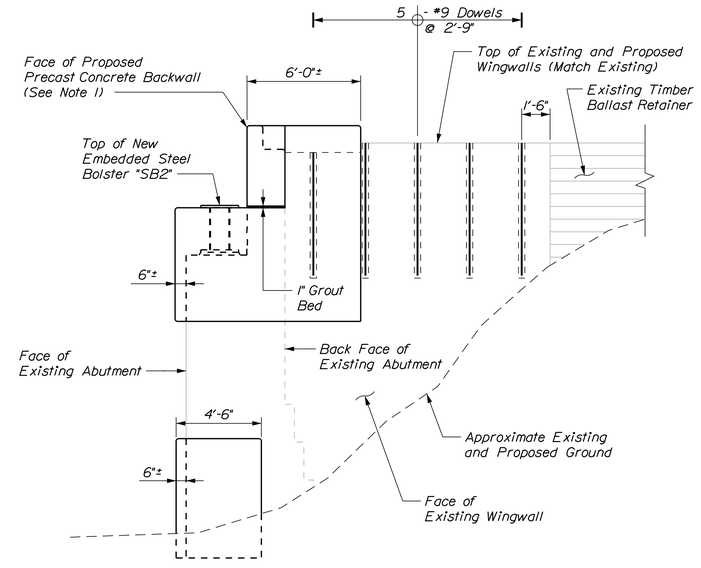
PROPOSED SOUTHWEST WINGWALL ELEVATION

Scale: 1/4" = 1'-0"



PROPOSED WEST ABUTMENT ELEVATION

Scale: 1/4" = 1'-0"



PROPOSED NORTHWEST WINGWALL ELEVATION

Scale: 1/4" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

LEGEND

Approximate Limits of Full Depth Removal/Repair

Approximate Limits of Partial Depth Removal/Repair

NOTES

1. See Notes on Br 7805 (M.P. P24.91) Over Presque Isle Stream (2 of 7) sheet.

2. See Bridge No. 7805 (M.P. P24.91) Over Branch Presque Isle Stream (4 of 7) sheet for Proposed Bridge Seat and Backwall Plan, Section A-A, B-B, C-C, D-D, G-G, precast concrete backwall details, concrete repair sections, and reinforcing details.

3. See Bridge No. 7805 (M.P. P24.91) Over Branch Presque Isle Stream (7 of 7) sheet for Timber Ballast Retainer Details and Notes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00 BRIDGE PLANS

BRIDGE NO. 7805

vhb

	NAME	BY	DATE
PROJ. MANAGER	BENOIT	BJM	10/2021
DESIGN-DETAILED	JOM	GSG	10/2021
CHECKED-REVIEWED	KCD		
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

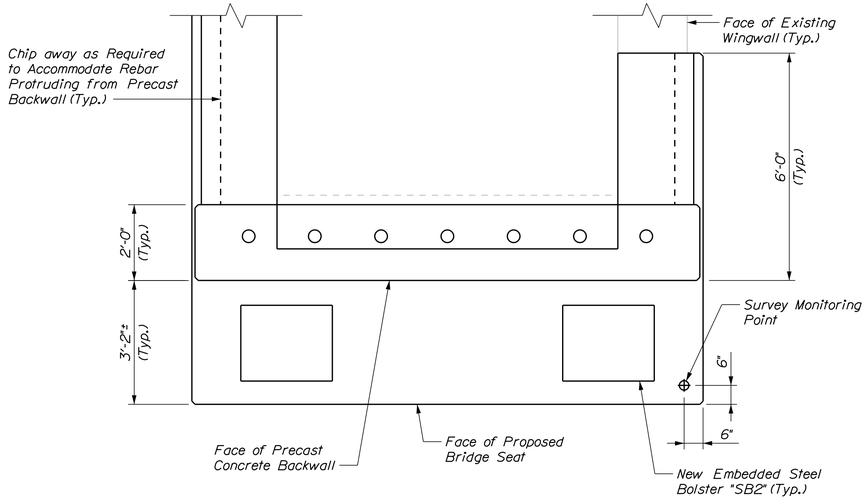
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7805 (M.P. P24.91) OVER
PRESQUE ISLE STREAM (3 OF 7)

SHEET NUMBER

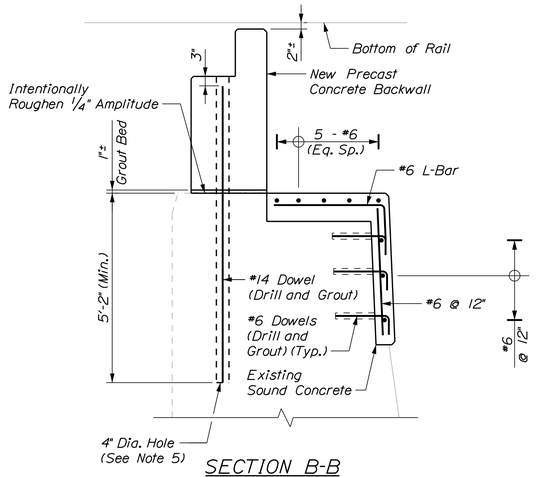
41

OF 52



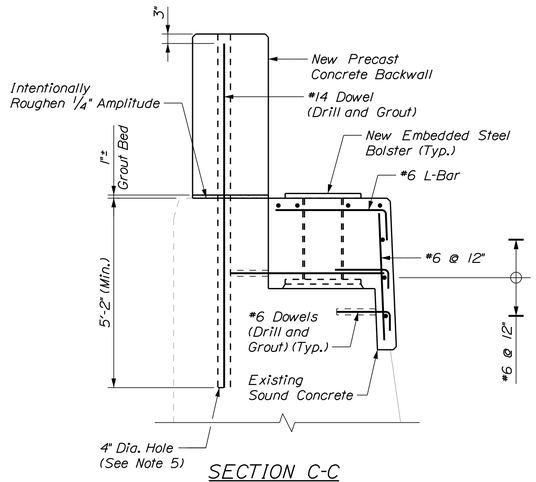
PROPOSED BRIDGE SEAT AND BACKWALL PLAN

(West Abutment Shown, East Similar)
Scale: 1/2" = 1'-0"



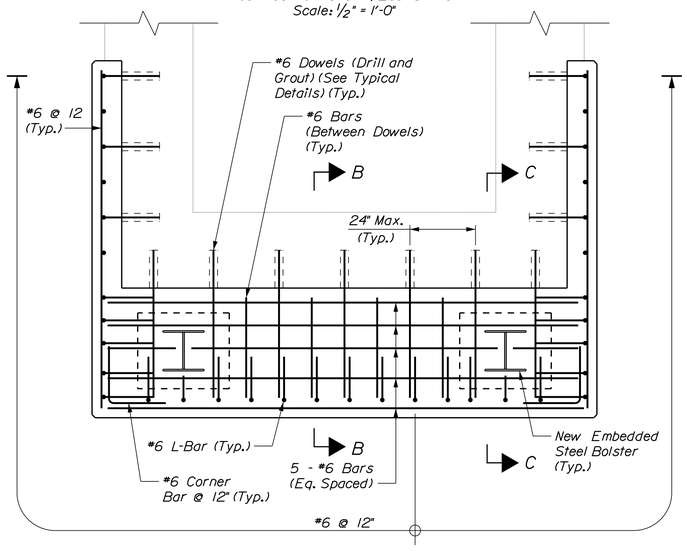
SECTION B-B
REINFORCING AT BRIDGE SEAT

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



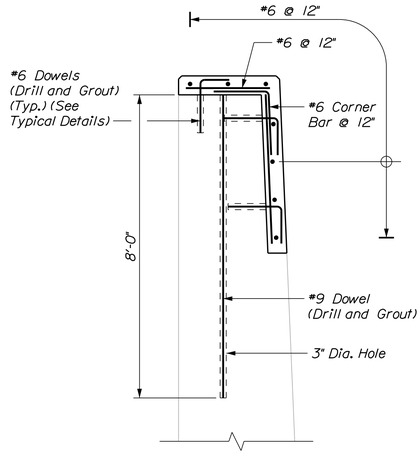
SECTION C-C
REINFORCING AT BRIDGE SEAT

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



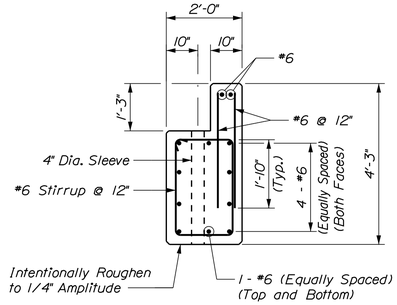
SECTION A-A
BRIDGE SEAT REINFORCING PLAN

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



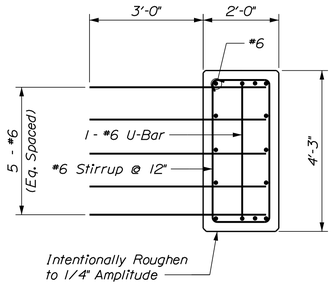
SECTION D-D
REINFORCING AT WINGWALL REPAIR

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



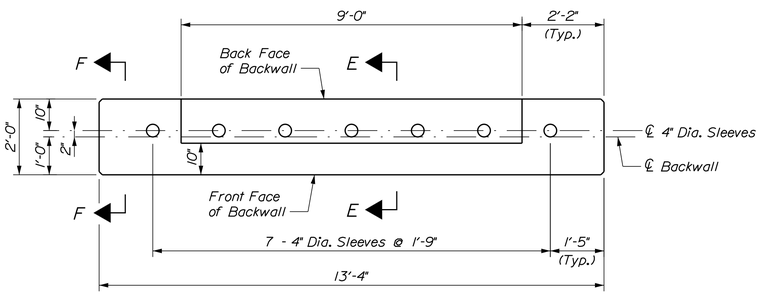
SECTION E-E

Scale: 3/4" = 1'-0"



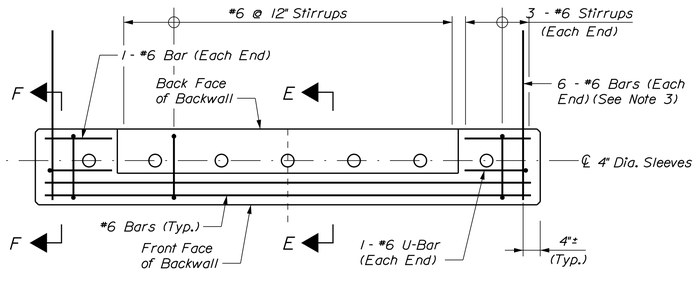
SECTION F-F

Scale: 3/4" = 1'-0"



PROPOSED PRECAST CONCRETE BACKWALL
MASONRY PLAN

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



PROPOSED PRECAST CONCRETE BACKWALL
REINFORCING PLAN

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

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

NOTES

1. *See Typical Details (1 of 2) sheet for General Concrete Repair and Reinforced Concrete notes and details.*

2. *Reinforcing details shown in these Plans are drawn to show minimum reinforcing requirements and general design intent. Final layout and configuration of reinforcing may vary based on actual existing features.*

3. *Reinforcing protruding from precast concrete backwall shall be lapped with reinforcing steel in adjacent cast-in-place concrete repair on wingwalls.*

4. *Fabrication and installation of the #14 dowels in backwall shall be incidental to Item 534.30 Precast Structural Concrete (Backwalls).*

5. *Dowels in backwalls and wingwalls shall be grouted using and non-shrink polymer or epoxy grout material selected from the MaineDOT Qualified Products List. Dowels in backwalls shall be grouted into the existing abutment prior to setting the precast concrete backwall.*

6. *See Br 7805 (M.P. P24.91) Over Presque Isle Stream (5 of 7) for survey monitoring point detail and notes.*

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00
BRIDGE NO. 7805
BRIDGE PLANS

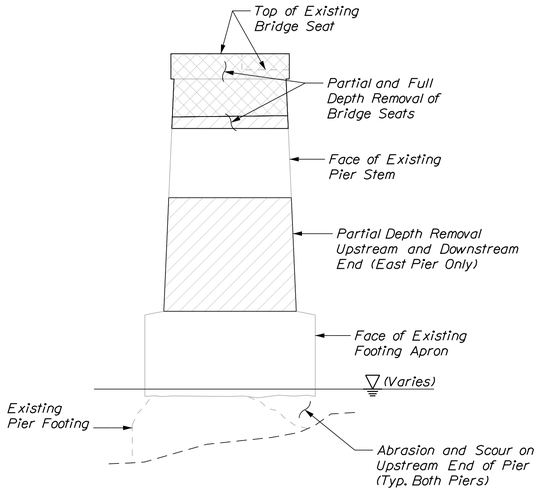
vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JGM	BJM	10/2021
CHECKED-REVIEWED	KCD	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

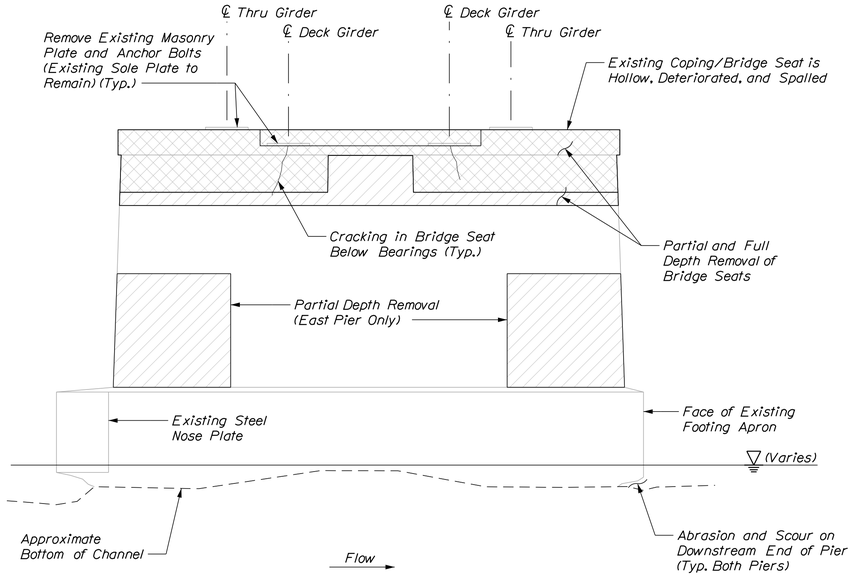
BR 7805 (M.P. P24.91) OVER PRESQUE ISLE STREAM (4 OF 7)

SHEET NUMBER
42
OF 52



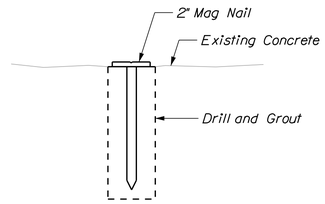
EXISTING PIER END ELEVATION - REMOVAL

(East Pier Shown, West Pier Similar Except as Noted)
(Looking Downstream)
Scale: 1/4" = 1'-0"



EXISTING PIER ELEVATION - REMOVAL

(East Pier Shown, West Pier Similar Except as Noted)
Scale: 1/4" = 1'-0"



SURVEY MONITORING POINT DETAIL

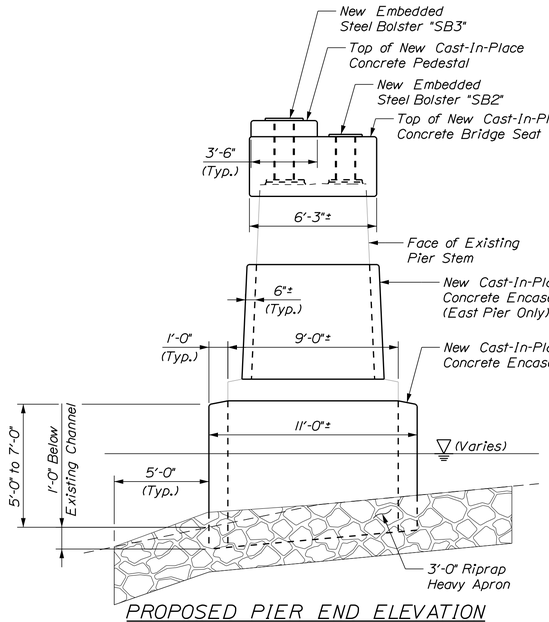
Not to Scale

SURVEY MONITORING POINT NOTES

1. One survey monitoring point shall be placed on each pier as shown on Br 7805 (M.P. P24.91) Over Presque Isle Stream (4 of 7) sheet. One survey monitoring point shall be placed on each pier as shown on this sheet.

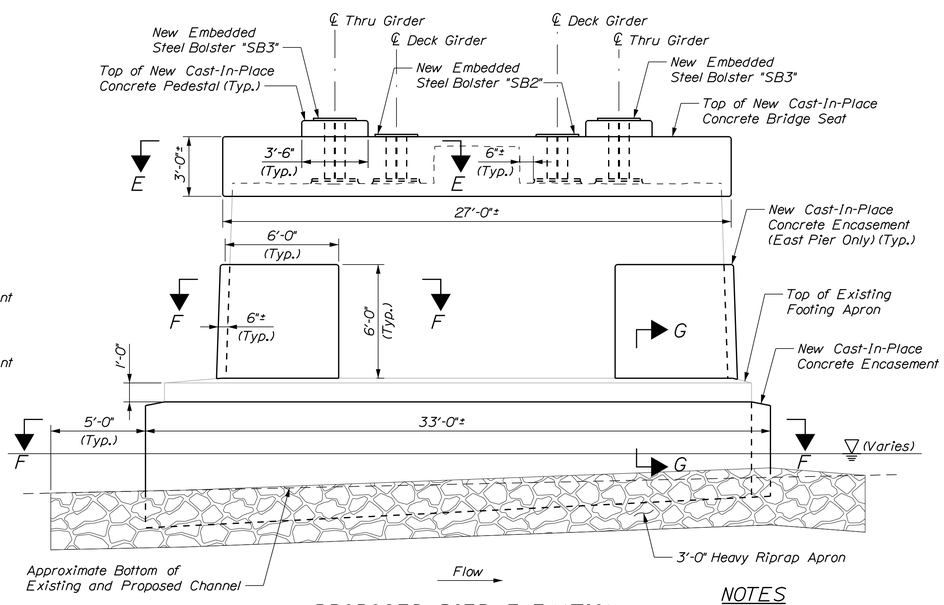
2. Survey monitoring points shall be placed so they can be easily surveyed from the top of deck.

3. After completing all work, the Contractor shall survey and record the elevation, northing, and easting for each point. Survey monitoring point data shall be submitted to the Resident upon completion of work.



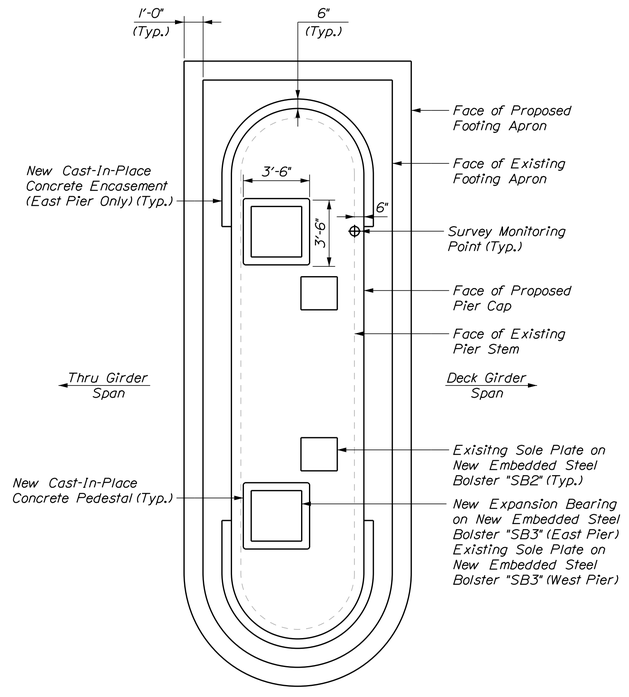
PROPOSED PIER END ELEVATION

(East Pier Shown, West Pier Similar Except as Noted)
(Looking Downstream)
Scale: 1/4" = 1'-0"



PROPOSED PIER ELEVATION

(East Pier Shown, West Pier Similar Except as Noted)
Scale: 1/4" = 1'-0"



PROPOSED PIER PLAN

(East Pier Shown, West Pier Similar Except as Noted)
Scale: 1/4" = 1'-0"

LEGEND

Approximate Limits of Full Depth Removal/Repair

Approximate Limits of Partial Depth Removal/Repair

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

NOTES

1. Existing features shown on these Plans are drawn based on the existing plans and limited field evaluation. Large portions of the substructure have been coated in a superficial layer of welded wire fabric and shotcrete, existing features may vary from what is shown. It is the responsibility of the Contractor to verify the existing features. Concrete repairs shall not extend past the limits shown. See notes on Typical Details (1 of 2) sheet for more information.

2. See Bridge No. 7805 (M.P. P24.91) Over Presque Isle Stream (6 of 7) Section E-E, F-F, G-G, and reinforcing details.

3. See Typical Details (2 of 2) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.

4. See Bridge No. 7805 (M.P. P24.91) Over Presque Isle Stream (7 of 7) sheet for bearing details at East Pier of thru girder span.

5. All material excavated from the channel shall be reset in the channel either around the piers/abutment and under the riprap.

6. Any excavation and subsequent regrading required to repair the base of pier will be considered incidental to Item 518.211, Rehabilitate Structural Concrete.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00 BRIDGE PLANS

BRIDGE NO. 7805

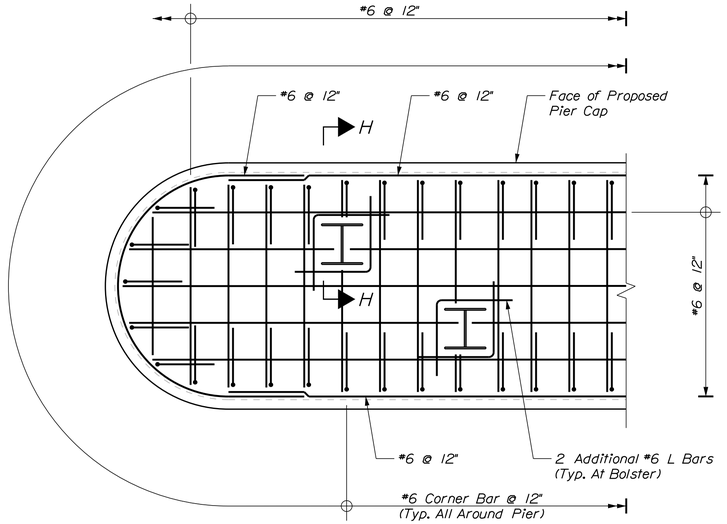
vhb

	NAME	BY	DATE
PROJ. MANAGER	BENOIT	BJM	10/2021
DESIGN-DETAILED	JOM	GSG	10/2021
CHECKED-REVIEWED	KCD		
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

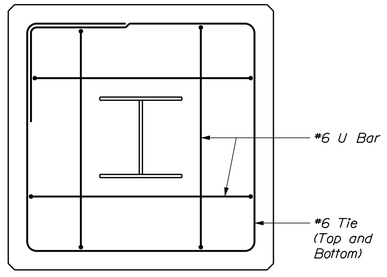
RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7805 (M.P. P24.91) OVER PRESQUE ISLE STREAM (5 OF 7)

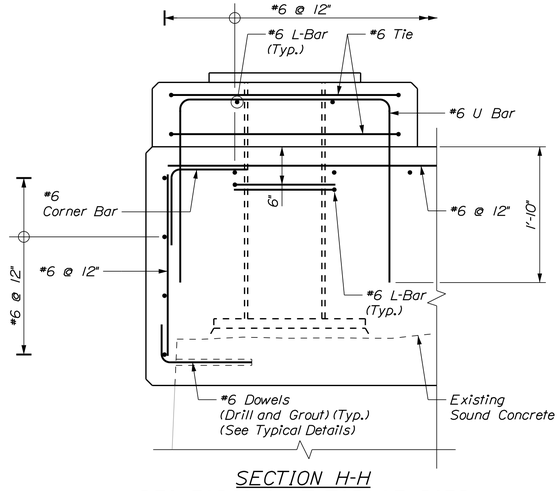
SHEET NUMBER
43
OF 52



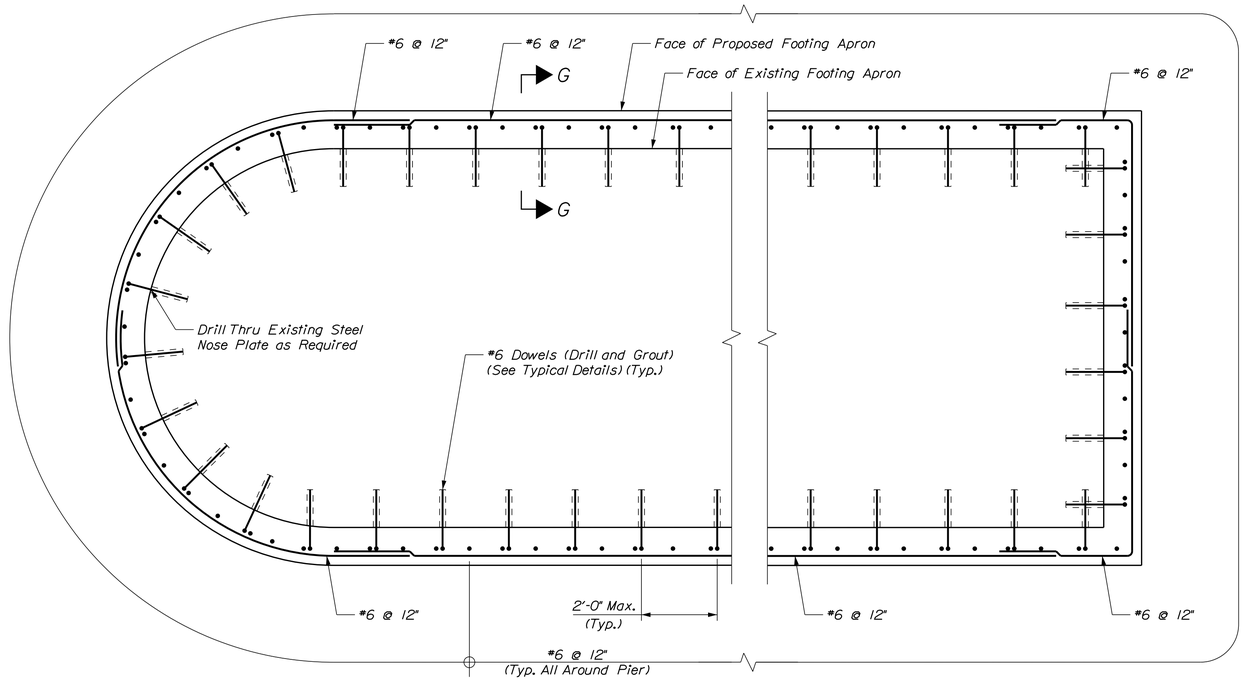
SECTION E-E
REINFORCING AT TOP OF PIER
Scale: 1/2" = 1'-0"



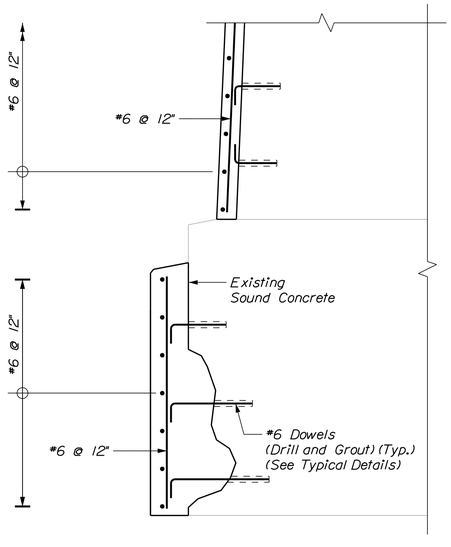
TYPICAL REINFORCING AT
CONCRETE PEDESTAL
Scale: 1" = 1'-0"



SECTION H-H
REINFORCING AT TOP OF PIER
Scale: 1" = 1'-0"



SECTION F-F
REINFORCING AT PIER FOOTING APRON AND PIER STEM
(Reinforcing Shown at Footing Apron, Reinforcing at Stem Encasement Similar)
Scale: 1/2" = 1'-0"



SECTION G-G
REINFORCING AT FOOTING AND STEM
(Step at Pier Footing Shown, Pier Mid-Height, and Abutment Footing Similar)
Scale: 1/2" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

NOTES

1. See Typical Details (1 of 2) sheet for General Concrete Repair and Reinforced Concrete notes and details.

2. Reinforcing details shown in these Plans are drawn to show minimum reinforcing requirements and general design intent. Final layout and configuration of reinforcing may vary based on actual existing features.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00
BRIDGE NO. 7805
BRIDGE PLANS

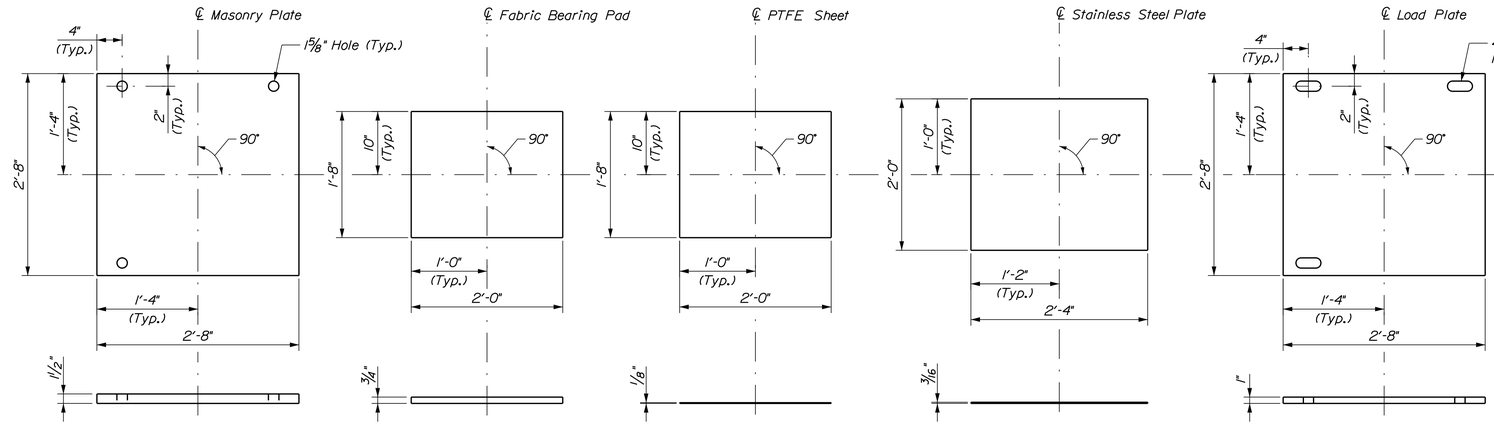
vhb

PROJ. MANAGER	MATE BENOIT	BY	DATE
DESIGN-DETAILED	JQM	BJM	10/2021
CHECKED-REVIEWED	CSG	CSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

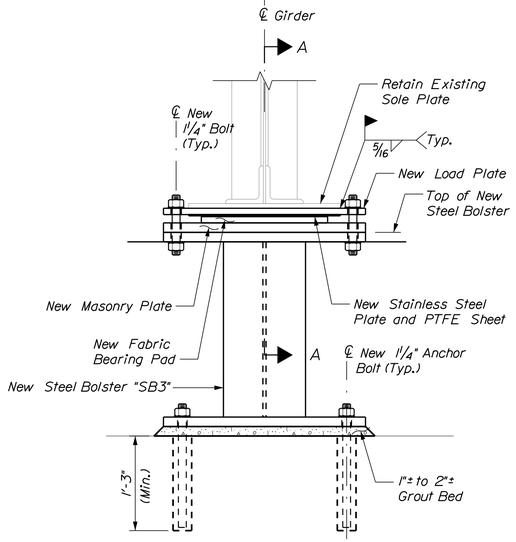
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR 7805 (M.P. P24.91) OVER
PRESQUE ISLE STREAM (6 OF 7)

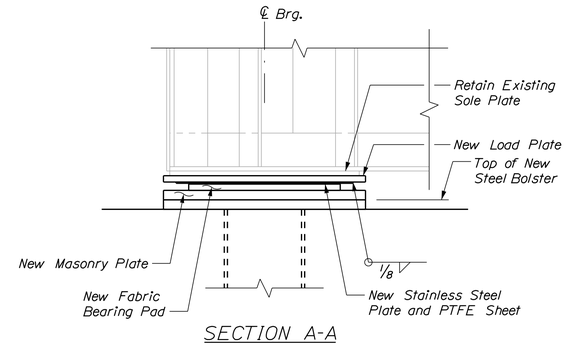
SHEET NUMBER
44
OF 52



MASONRY PLATE | FABRIC BEARING PAD | PTFE SHEET | STAINLESS STEEL PLATE | LOAD PLATE

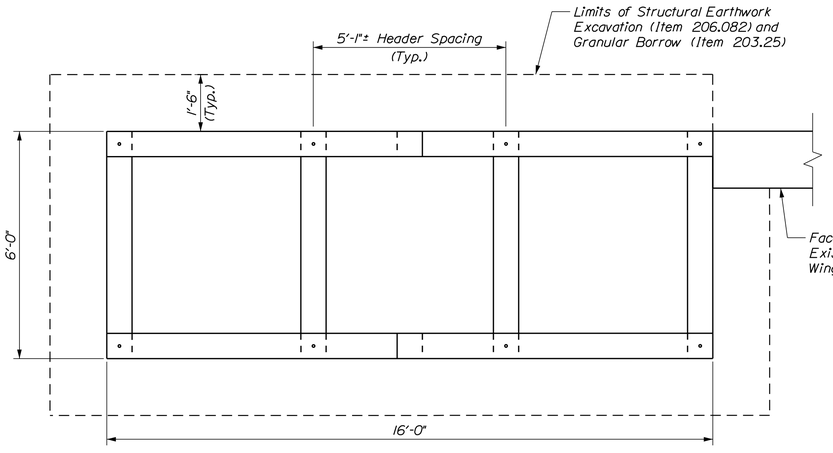


ELEVATION

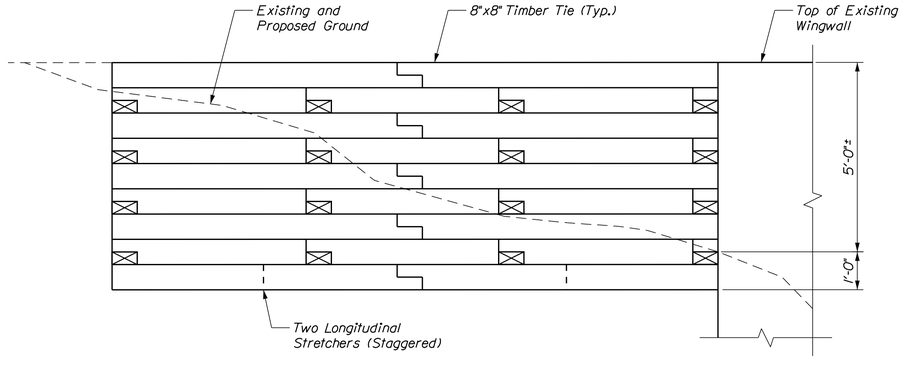


SECTION A-A

TYPICAL FABRIC PAD BEARING
Not to Scale



PROPOSED BALLAST RETAINER PLAN
Scale: ½" = 1'-0"



PROPOSED BALLAST RETAINER ELEVATION
Scale: ½" = 1'-0"

BEARING NOTES

1. New fabric pad with PTFE sliding surface bearings shall be installed on the thru girder span at the East Pier only. At all other locations, the existing sole plate shall be reset directly on the new steel bolster.

2. New expansion bearings will be paid under Item 523.26, Expansion Bearing - Modification (Fabric Pad w/PTFE Sliding Surface).

3. All bearing work shall be in accordance with AREMA Chapter 15, Part 5.

4. Fabric bearing pad shall meet the following design criteria:

   Hardness (Shore A) = 90 ±5 Durometer
   Shear Modulus (G) = 450 psi

   Design Loads (per bearing):

Location		Dead Load	Live Load + Impact
Bridge No.	M.P.		
7805	P24.91	39 kips	206 kips

5. All steel in bearing devices (except stainless) shall be ASTM A709, Grade 36, metallized or galvanized in accordance with ASTM A123. Touch up any damaged galvanizing with a zinc-rich paint, to the satisfaction of the Resident.

6. The bottom of the fabric bearing pad shal be bonded directly to the masonry plate during fabrication. The top of the fabric pad shall be bonded directly to the PTFE sheet during fabrication.

7. All bolts, nuts and washers shall be galvanized in accordance with ASTM A153.

8. Charpy v-notch toughness tests are not required for steel used in bearing components.

9. All bearing plates shall be flat and true after welding.

10. Bearings shall be covered during transit.

11. All necessary precautions shall be taken to protect bearing components from field weld flash and splatter. Heat from welding operations shall be controlled such that steel adjacent to the fabric pad does not exceed 200 degrees F. The temperature shall be verified by the use of temperature indicating crayons or other suitable means.

12. See Typical Details (2 of 2) sheet for Steel Bolster Details.

TIMBER BALLAST RETAINER NOTES

1. Timber ballast retainer behind the southwest wingwall shall be a closed-face timber crib wall with "ties in line" built in accordance with the requirements and details shown in AREMA Chapter 8 Section 6.5.

2. See Typical Details (1 of 2) for Bridge Tie and Timber Notes.

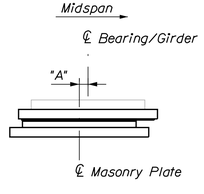
3. Timber ballast retainder shall be built to the approximate dimensions shown in these Plans with an approximate 5"batter.

4. Timbers shall be fastened with ¾" diameter ASTM A307 drift bolts or timber spikes, galvanized in accordance with ASTM A123. The center of fasteners shall be set a minimum of 4" from the edge of timber and in predrilled holes.

5. Removal and resetting of existing walkway as required to install the ballast will be considered incidental to Item 528.05, Structural Timber.

Temperature Adjustment Coefficient	
TEMP.	"A"
0° F	7/32"
15° F	5/32"
30° F	1/16"
45° F	0"
60° F	-1/16"
75° F	-5/32"
90° F	-7/32"

TEMPERATURE ADJUSTMENT TABLE



TEMPERATURE ADJUSTMENT DIAGRAM
Not to Scale

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 23454.00
BRIDGE PLANS
BRIDGE NO. 7805

vhb

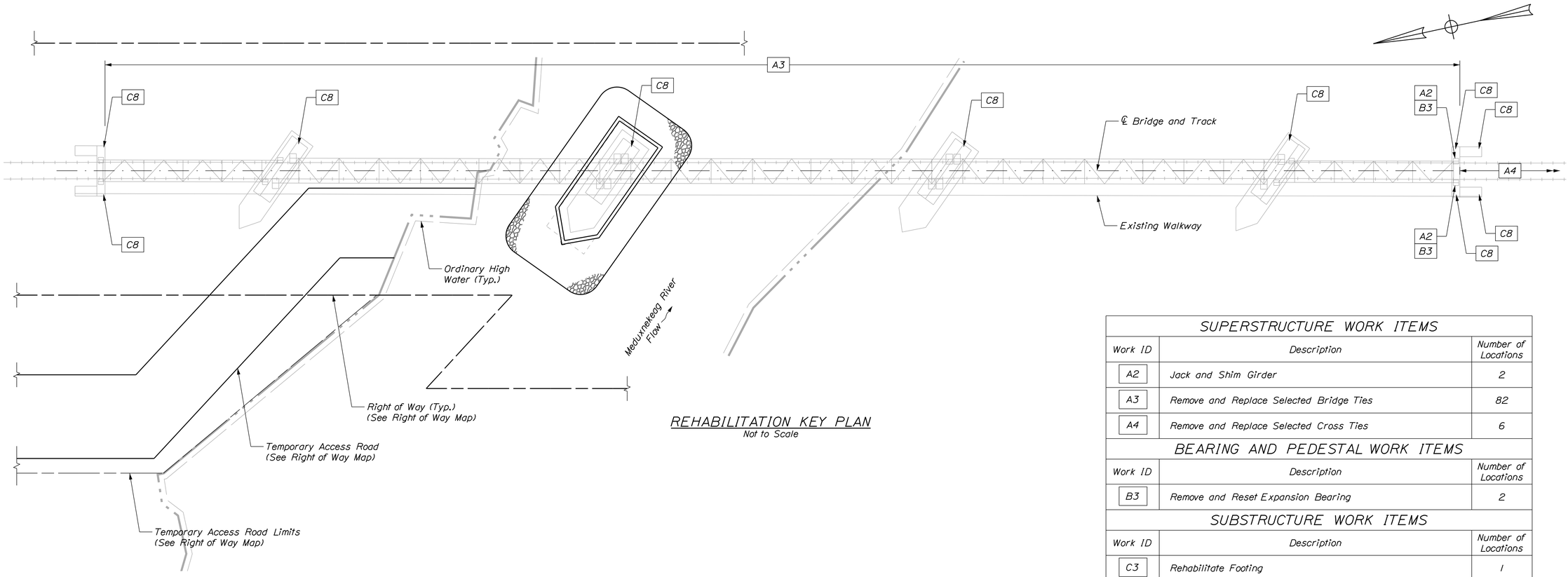
PROJ. MANAGER	MATT BENOIT
DESIGN-DETAILED	AMM
CHECKED-REVIEWED	KCD
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

BY	DATE
BJM	10/2021
GSG	10/2021

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

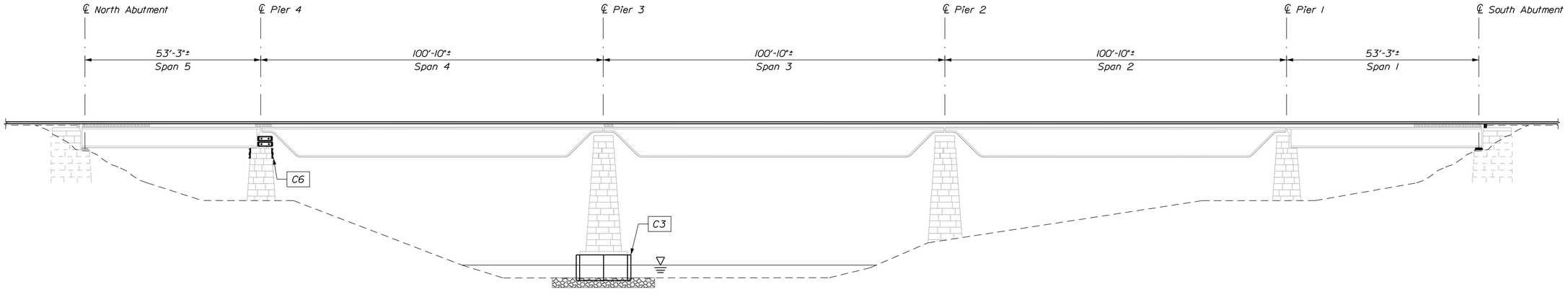
BR 7805 (M.P. P24.91) OVER
PRESQUE ISLE STREAM (7 OF 7)

SHEET NUMBER
45
OF 52



REHABILITATION KEY PLAN
Not to Scale

SUPERSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
A2	Jack and Shim Girder	2
A3	Remove and Replace Selected Bridge Ties	82
A4	Remove and Replace Selected Cross Ties	6
BEARING AND PEDESTAL WORK ITEMS		
Work ID	Description	Number of Locations
B3	Remove and Reset Expansion Bearing	2
SUBSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
C3	Rehabilitate Footing	1
C6	Stabilize Top of Pier	1
C8	Install Survey Monitoring Point	10



BRIDGE ELEVATION
Not to Scale

NOTE

1. Aerial utility lines run parallel to bridge approximately 50' to 60' off the west fascia. See Special Provision 104.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 24345.00 BRIDGE PLANS

BRIDGE NO. 7750

vhb

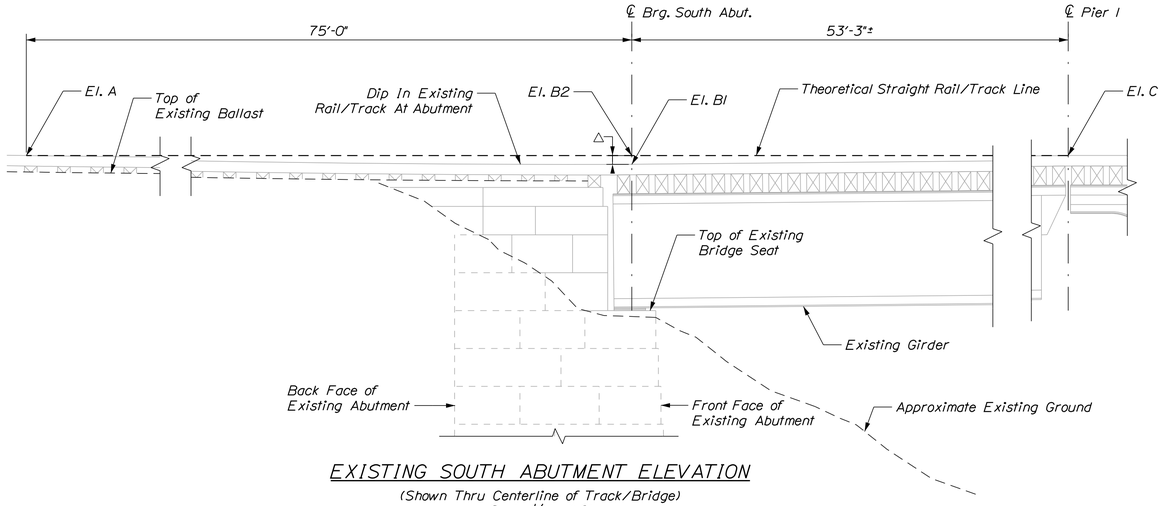
	MATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	JQM	10/2021
CHECKED-REVIEWED	CSG	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

BY
BJM
GSG

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

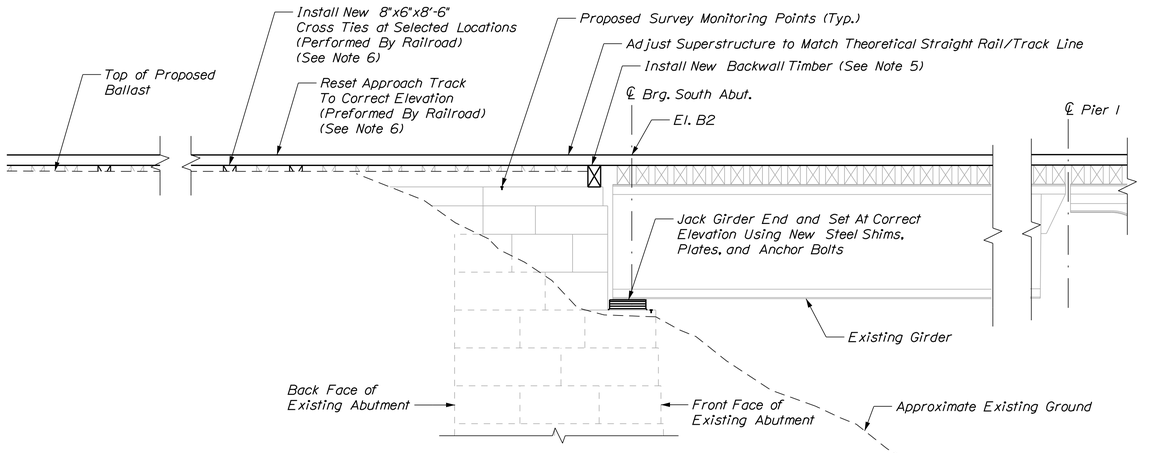
BR NO 7750 (M.P. H17.16) OVER
MEDUXNEKEAG RIVER (1 OF 6)

SHEET NUMBER
46
OF 52



EXISTING SOUTH ABUTMENT ELEVATION

(Shown Thru Centerline of Track/Bridge)
Scale: 1/4" = 1'-0"



PROPOSED SOUTH ABUTMENT ELEVATION

(Shown Thru Centerline of Track/Bridge)
Scale: 1/4" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

SOUTH ABUTMENT REHABILITATION SEQUENCE

1. Survey existing Elevations "A", "B1", and "C" for both the east and west rail.

2. Determine the proposed rail Elevation "B2" using a straight line between Elevations "A" and "C".

   - If Elevation "A" or "C" is different between the east and west rail then the average shall be used.
   - Elevation "B2" shall be equal for both the west and east rail.

3. Use the existing Elevation "B1" to determine the required raise in elevation "Δ" at centerline of abutment bearing.

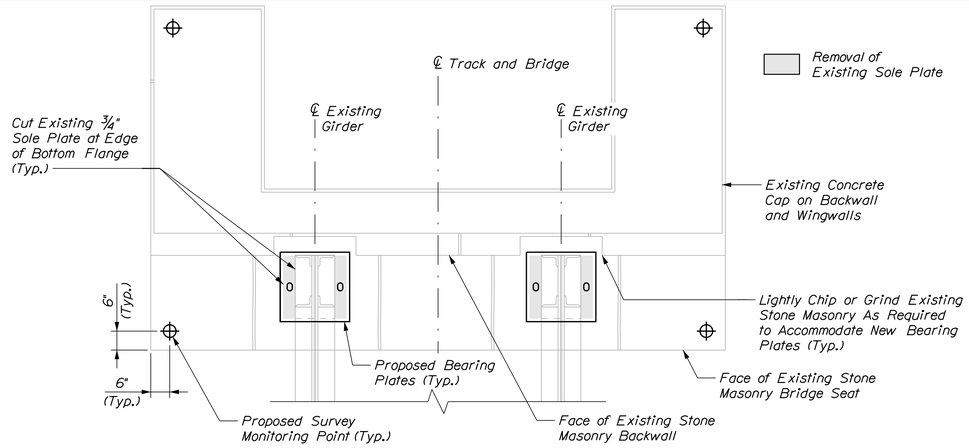
   - The required raise in elevation "Δ" may be different for each rail/girder, to achieve an equal Elevation "B2".
   - The required raise in elevation "Δ" is anticipated to be between 4" to 5". The Contractor shall have enough shim plates on hand to reach the required Elevation "B2", as surveyed.

4. Disconnect rail joints on approach track adjacent to abutment, jack girders, and temporarily shore girders. Tie spikes on adjacent approach ties may need to be removed to prevent approach track from lifting during jacking.

5. Install new bearing plates as shown. Use 1/4" shim plates and the grout bed to meet required raise in elevation at each girder.

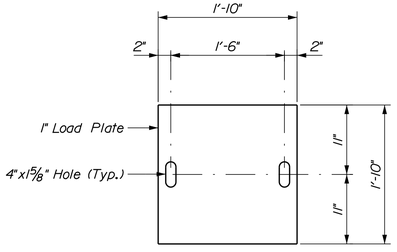
6. Reset girders, install new backwall timber, and verify the rail Elevation "B2" for both the east and west rails. Existing elevations and final elevations shall be submitted to the Resident upon completion of work.

7. Install survey monitoring points, survey, and record the elevation, northing, and easting for each point.



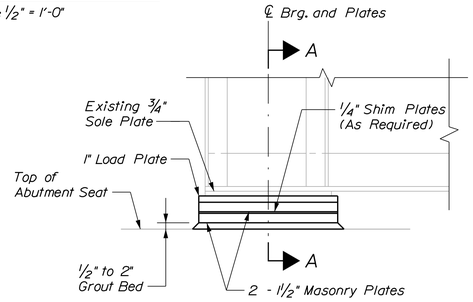
PROPOSED ABUTMENT PLAN

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



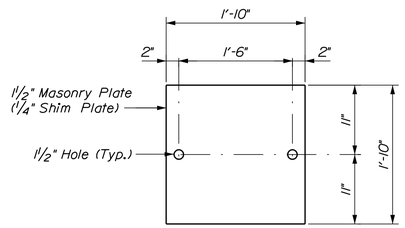
LOAD PLATE

Scale: 1" = 1'-0"



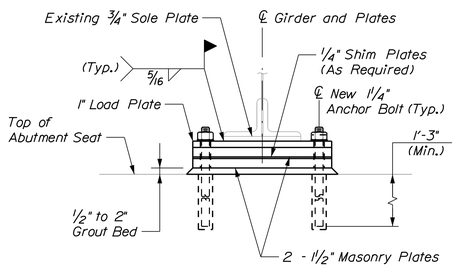
ELEVATION

Scale: 1" = 1'-0"



MASONRY PLATE/SHIM PLATE

(Masonry Plate Shown, Shim Plate Similar Except As Noted)
Scale: 1" = 1'-0"



SECTION A-A

Scale: 1" = 1'-0"

NOTES

1. All bearing plates shall meet the requirements of ASTM A709, Grade 36 and shall be galvanized in accordance with ASTM A123 or metalized. Any damage shall be touched up with an approved zinc-rich paint to the satisfaction of the Resident.

2. New masonry plates shall be placed on a bed of high-early strength, non-shrink grout, polymer or epoxy grout over the existing stone masonry. Grout material shall be selected from the MaineDOT Qualified Products List. All cost for grout will be considered incidental to the associated 523 items.

3. Existing sole plate shall be cut with a diamond blade saw or similar, flame cutting will not be permitted. Existing anchor bolts shall be cut flush with the existing bridge seat. Sharp and rough edges shall be ground smooth after cutting. The Contractor shall take care to avoid damaging the existing abutment and girder to remain.

4. See Typical Details (1 of 2) sheet for Anchor Bolt Notes.

5. Height of backwall timber shall be determined by the Contractor based on the track survey. The bottom of the backwall timber maybe dapped in-field as required. See Br 7750 (M.P. H17.16) over Meduxnekeag River (6 of 6) sheet.

6. The Railroad will be responsible for tamping the approach track to final line and grade, including the placement of cross ties and addition ballast. After installing the new backwall timber the Contractor shall leave rail in place with the joints disconnected. The Contractor, Railroad, and Resident shall agree upon a schedule of work prior to construction, in accordance with Special Provision 107.

7. All costs required to survey the existing rail, calculate the required raise in elevation, disconnect the existing rail joints and tie spikes, jack girders, temporarily shore girders, install new bearings and shim plates, reset girders, and verify final rail elevations shall be paid under Items 524.30, Temporary Structural Support and 523.311, Refurbish & Reset Expansion Bearing, as applicable.

8. See Br 7750 (M.P. H17.16) over Meduxnekeag River (4 of 6) sheet for Survey Monitoring Point Details and Notes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 24345.00 BRIDGE PLANS

BRIDGE NO. 7750

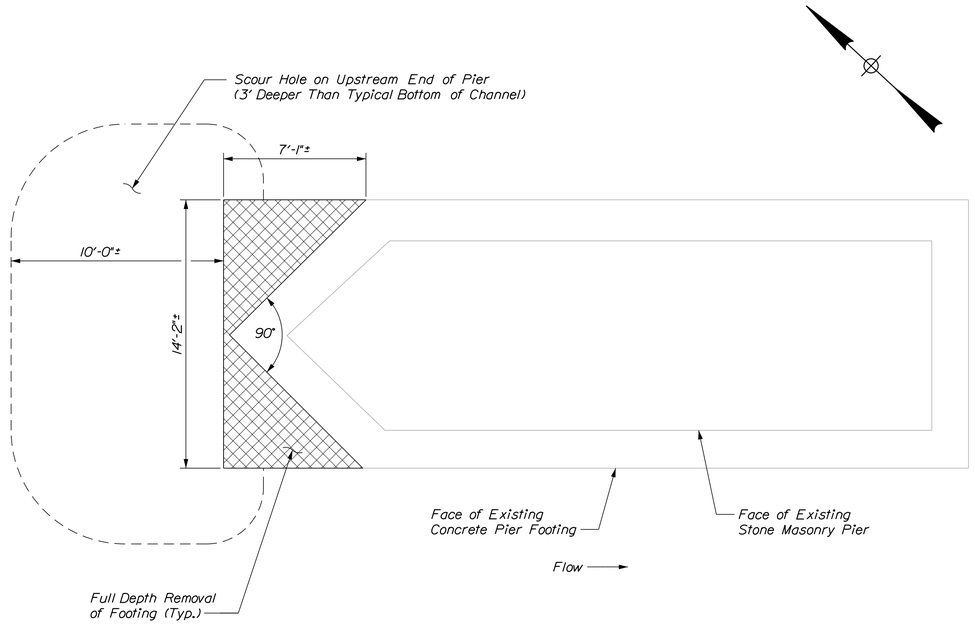
vhb

PROJ. MANAGER	NATE BENOIT	DATE
DESIGN-DETAILED	JGM	BJM 10/2021
CHECKED-REVIEWED	CSG	CSG 10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

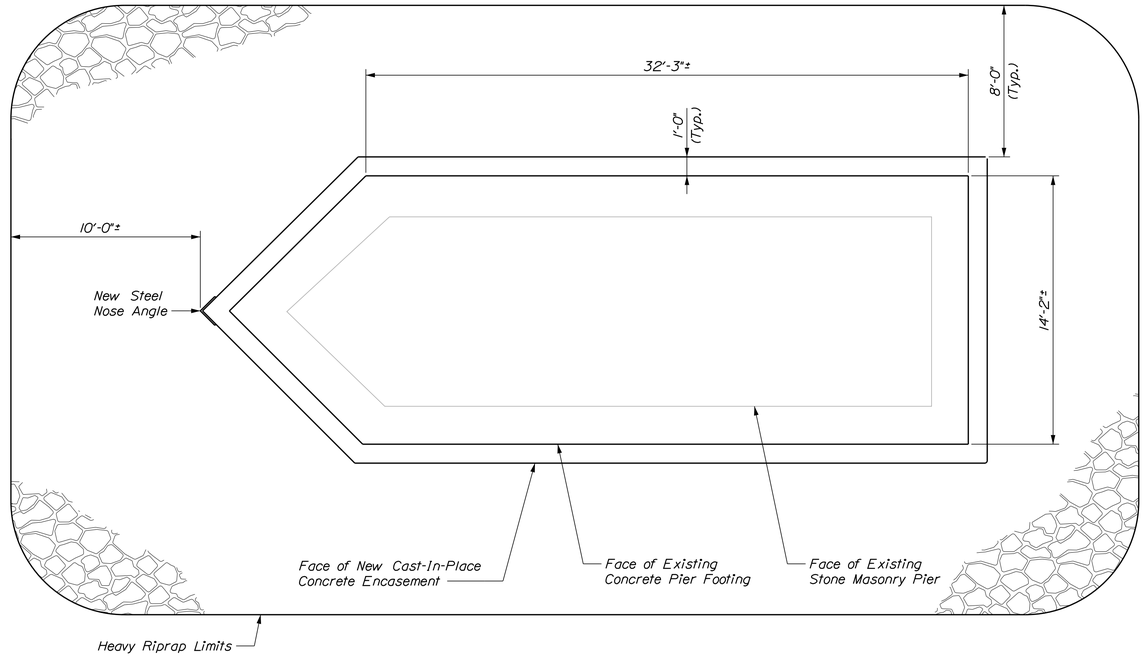
BR NO 7750 (M.P. H17.16) OVER MEDUXNEKEAG RIVER (2 OF 6)

SHEET NUMBER
47
OF 52



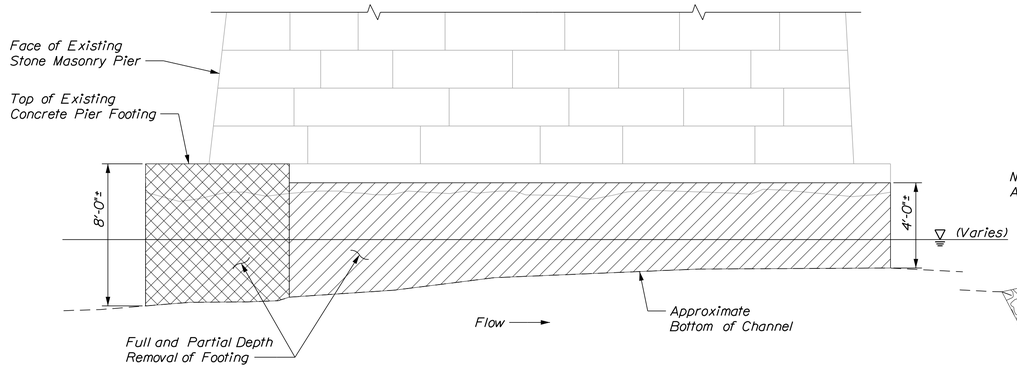
EXISTING PIER 3 FOOTING PLAN - REMOVAL

Scale: 1/4" = 1'-0"



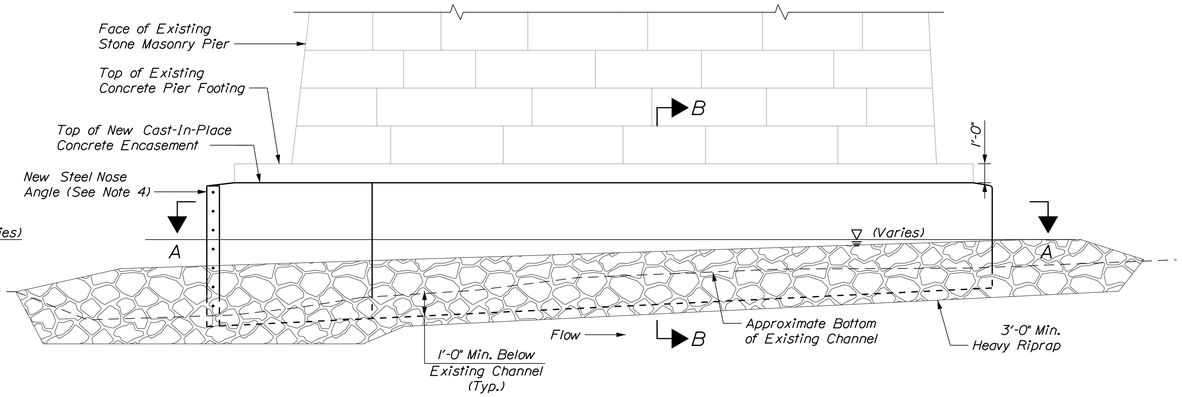
PROPOSED PIER 3 FOOTING PLAN

Scale: 1/4" = 1'-0"



EXISTING PIER 3 FOOTING ELEVATION - REMOVAL

Scale: 1/4" = 1'-0"



PROPOSED PIER 3 FOOTING ELEVATION

Scale: 1/4" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

LEGEND

Approximate Limits of Full Depth Removal/Repair

Approximate Limits of Partial Depth Removal/Repair

NOTES

1. Existing features shown on these Plans are drawn based on the existing plans and limited field evaluation, existing features may vary from what is shown. It is the responsibility of the Contractor to verify the existing features. Concrete repairs shall not extend past the limits shown. See notes on Typical Details (1 of 2) sheet for more information.

2. See Bridge No. 7750 over Meduxnekeag River (4 of 6) sheets for Section A-A, B-B, and reinforcing details.

3. Removal of existing timber cribbing, excavation, and subsequent regrading around the base of footing will be considered incidental to the associated Contract Items.

4. All costs to fabricate and install the steel nose angle will be considered incidental to Item 518.211, Rehabilitate Structural Concrete Substructure.

5. All material excavated from the channel shall be reset in the channel either around the pier and under the riprap.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 24345.00

BRIDGE PLANS

BRIDGE NO. 7750

vhb

PROJ. MANAGER	NATE BENOIT	
DESIGN-DETAILED	JGM	BJM 10/2021
CHECKED-REVIEWED	GSG	GSG 10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

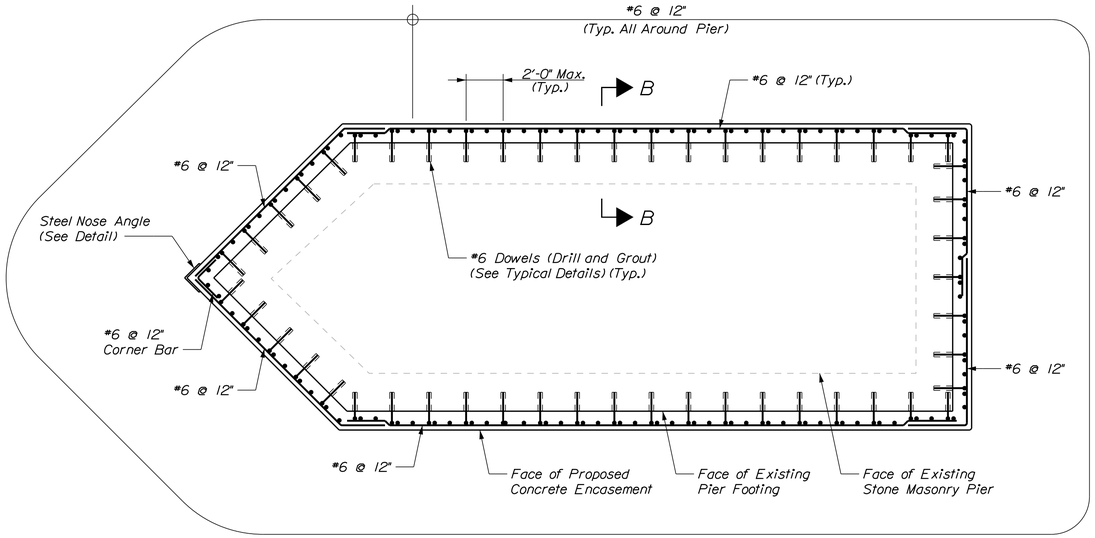
RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR NO 7750 (M.P. H17.16) OVER
MEDUXNEKEAG RIVER (3 OF 6)

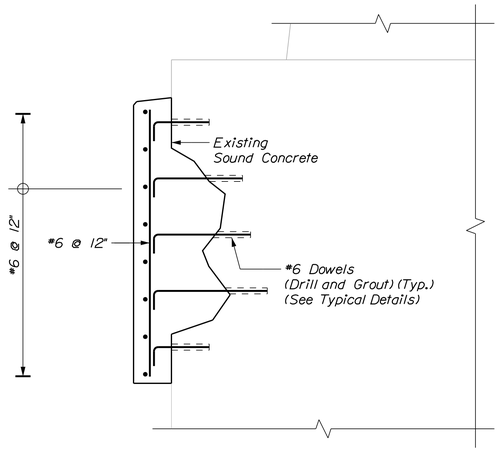
SHEET NUMBER

48

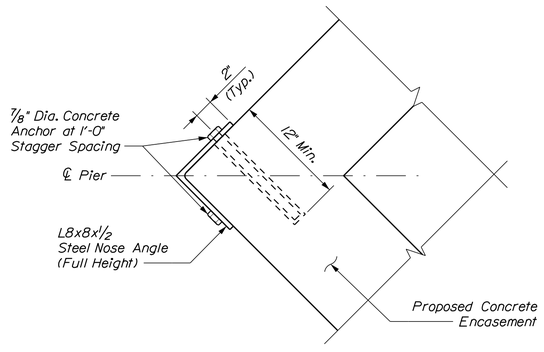
OF 52



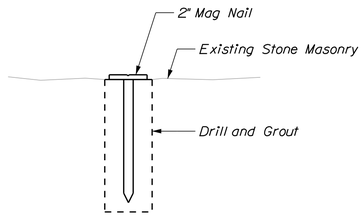
SECTION A-A
REINFORCING AT PIER FOOTING
Scale: 1/4" = 1'-0"



SECTION B-B
Scale: 1/2" = 1'-0"



STEEL NOSE ANGLE DETAIL
Scale: 1 1/2" = 1'-0"



SURVEY MONITORING POINT DETAIL
Not to Scale

NOTES

1. See Typical Details (1 of 2) sheet for General Concrete Repair and Reinforced Concrete notes and details.

2. See General Notes and Quantities sheet for Structural Steel Notes.

3. Reinforcing shown in these Plans are drawn to show minimum reinforcing requirements and general design intent. Final layout and configuration of reinforcing may vary based on actual existing features.

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

SURVEY MONITORING POINT NOTES

1. The four survey monitoring points on South Abutment shall be placed as shown on Br 7750 (M.P. HI7.16) Over Meduxnekeag River (2 of 6) sheet. The two survey points monitoring on the North Abutment shall be placed on the bridge seat similar to the South Abutment. One survey monitoring point shall be placed on each pier as shown on for Pier 4 on Br 7750 (M.P. HI7.16) Over Meduxnekeag River (5 of 6) sheet.

2. Survey monitoring points on piers shall be placed so they can be easily surveyed from the top of deck.

3. After completing all work, the Contractor shall survey and record the elevation, northing, and easting for each point. Survey monitoring point data shall be submitted to the Resident upon completion of work.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 24345.00
BRIDGE NO. 7750
BRIDGE PLANS

vhb

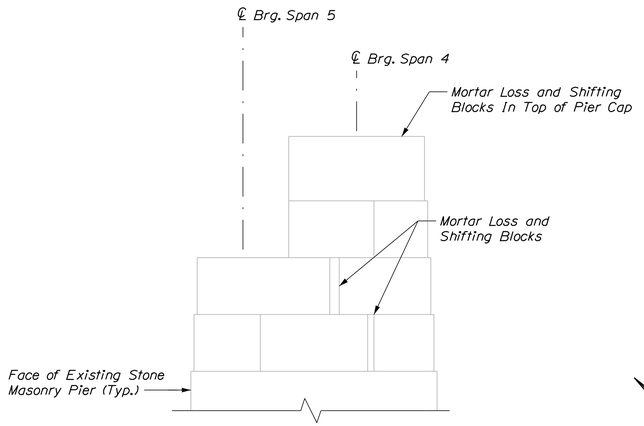
	NATE BENOIT	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JGM	BJM	10/2021
CHECKED-REVIEWED	CSG	CSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR NO 7750 (M.P. HI7.16) OVER
MEDUXNEKEAG RIVER (4 OF 6)

SHEET NUMBER
49
OF 52

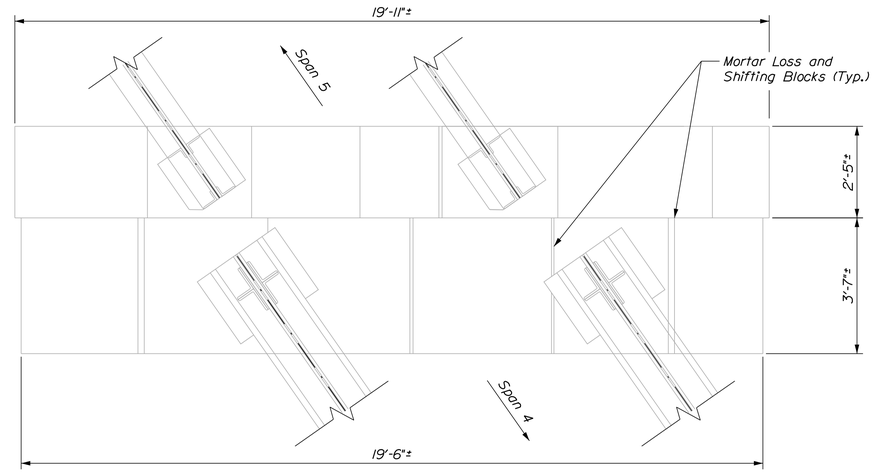
Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.



EXISTING PIER 4 WEST ELEVATION

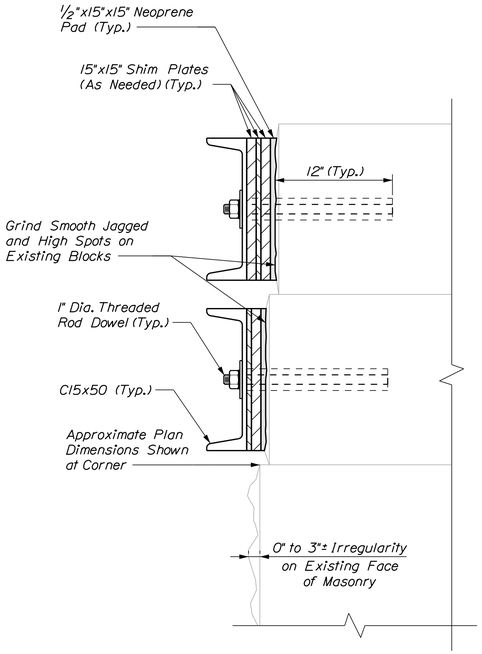
(East End Similar)

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



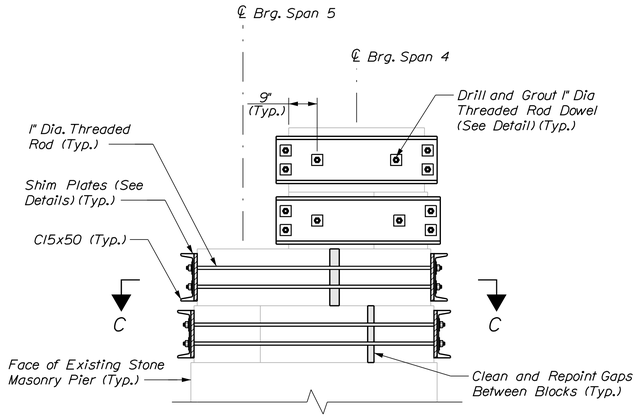
EXISTING PIER 4 PLAN

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



DOWEL DETAIL

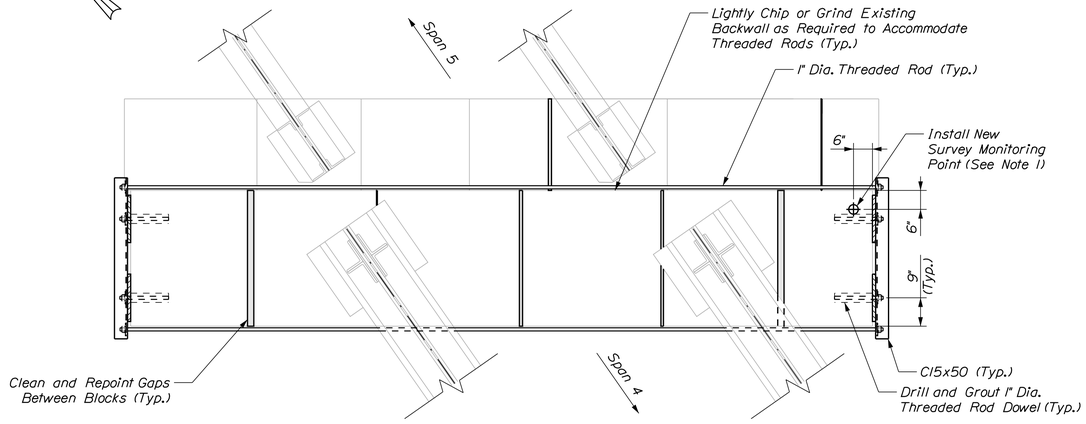
Scale: 1 1/2" = 1'-0"



PROPOSED PIER 4 WEST ELEVATION

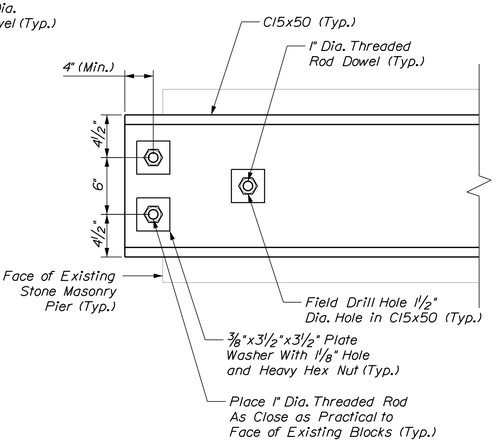
(East End Similar)

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



PROPOSED PIER 4 PLAN

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



C15x20 CONNECTION DETAIL

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

NOTES

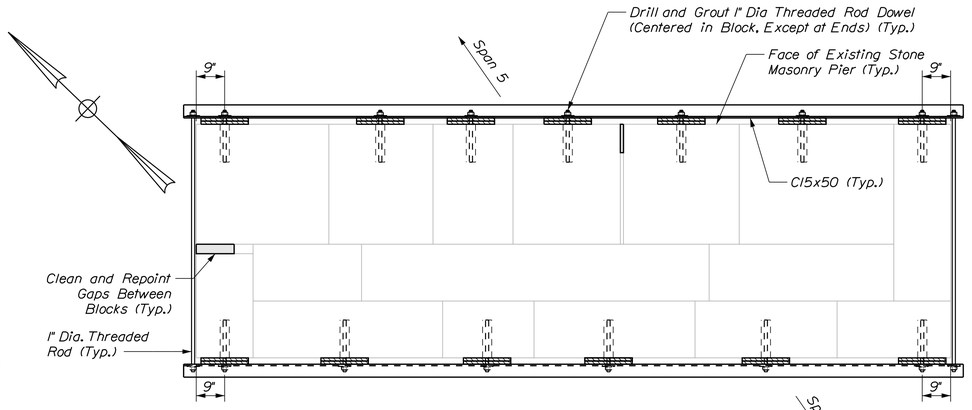
1. See Br 7750 (M.P. H17.16) over Meduxnekeag River (4 of 6) sheet for Survey Monitoring Point Details and Notes.

2. Threaded rods shall be ASTM A722, Grade 150. Steel plates shall be ASTM A709, Grade 50. Heavy hex nuts and anchor washers shall be per the manufacture's recommendation. All steel components shall be hot-dipped galvanized or metalized. All field drilled holes and cuts shall be touch up with an approved zinc-rich paint.

3. Threaded rods shall have only slight tension after tightening. Nuts shall be drawn snug by hand and turned one additional rotation by wrench. Threads shall be burred after tightening to prevent further rotation.

4. All labor, equipment, materials, and incidentals required to install the steel channels, steel plates, neoprene pads, threaded rod, dowels and associated hardware shall be paid under Item 504.8120, Structural Steel Repair.

5. Prior to construction, Contractor and Resident shall jointly inspect the upper four courses of Pier 4 and agree upon the limits for repointing work. the all labor, equipment, materials, required to repoint the gaps between blocks will be paid under Item 525.261, Repointing Granite Masonry.



SECTION C-C THRU THIRD COURSE

(Fourth Course Similar)

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

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 24345.00

BRIDGE PLANS

BRIDGE NO. 7750

vhb

	NATE BENOIT	DATE
PROJ. MANAGER		
DESIGN-DETAILED	JGM	10/2021
CHECKED-REVIEWED	GSG	10/2021
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

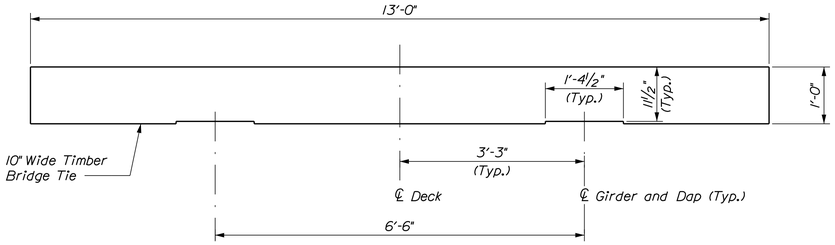
RAILROAD BRIDGE REPLACEMENT AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR NO 7750 (M.P. H17.16) OVER MEDUXNEKEAG RIVER (5 OF 6)

SHEET NUMBER

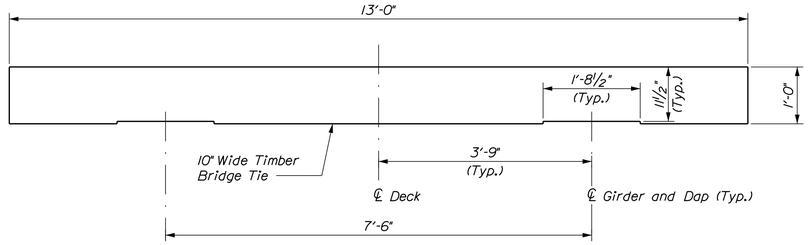
50

OF 52



DAPPED "T5" BRIDGE TIE
ONE COVER PLATE BOTH GIRDERS

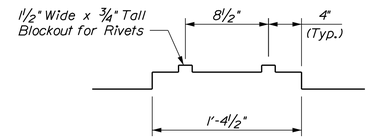
(Spans 1 and 5)
Scale: 3/4" = 1'-0"



DAPPED "T8" BRIDGE TIE
ONE COVER PLATE BOTH GIRDERS

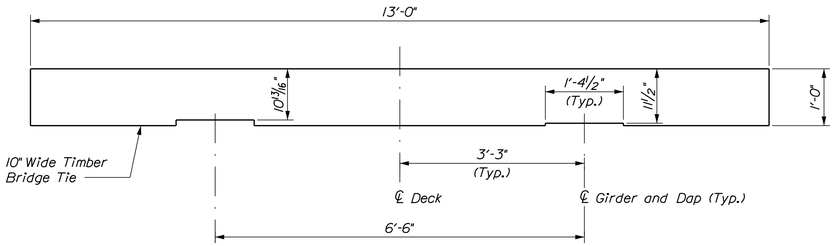
(Spans 2, 3, and 4)
Scale: 3/4" = 1'-0"

Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.



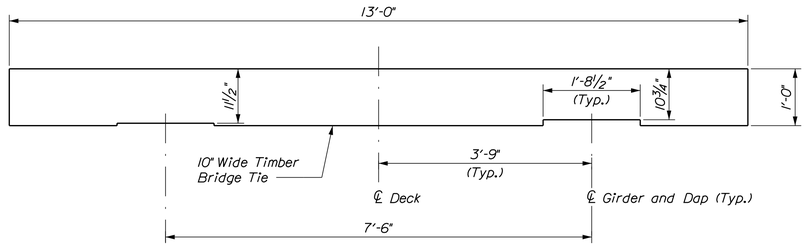
DAPPING DETAIL TYPE 1

Not to Scale



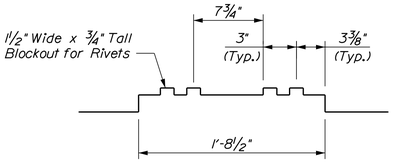
DAPPED "T6" BRIDGE TIE
ONE COVER PLATE ONE GIRDER AND TWO COVER PLATES OTHER GIRDER

(Spans 1 and 5)
Scale: 3/4" = 1'-0"



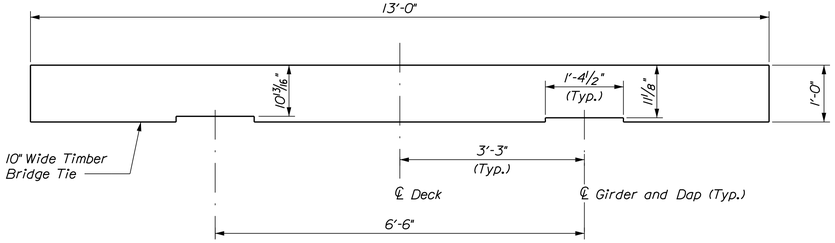
DAPPED "T9" BRIDGE TIE
ONE COVER PLATE ONE GIRDER AND TWO COVER PLATES OTHER GIRDER

(Spans 2, 3, and 4)
Scale: 3/4" = 1'-0"



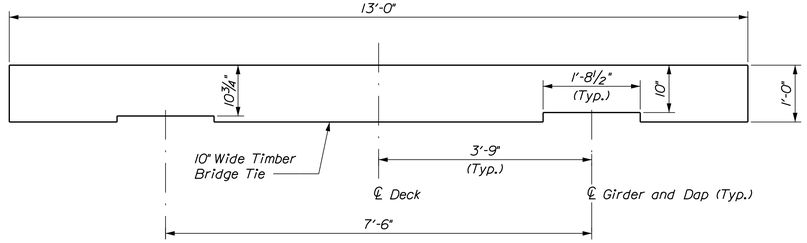
DAPPING DETAIL TYPE 2

Not to Scale



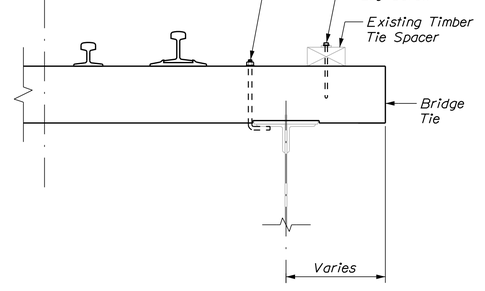
DAPPED "T7" BRIDGE TIE
TWO COVER PLATES BOTH GIRDERS

(Spans 1 and 5)
Scale: 3/4" = 1'-0"



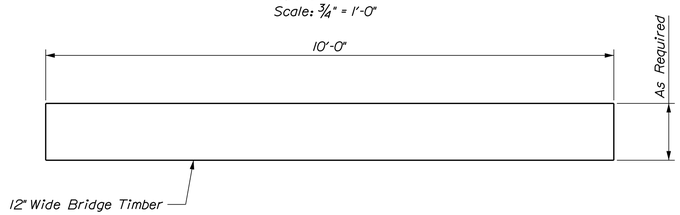
DAPPED "T10" BRIDGE TIE
TWO COVER PLATES ONE GIRDER THREE COVER PLATES OTHER GIRDER

(Spans 2, 3, and 4)
Scale: 3/4" = 1'-0"



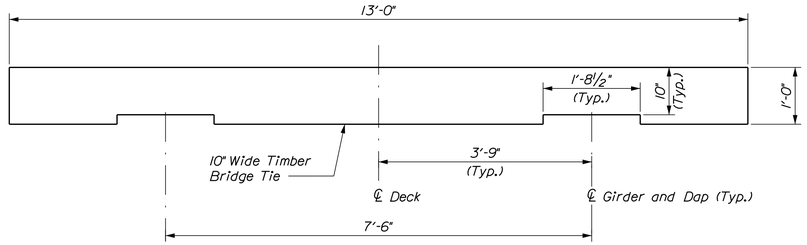
BRIDGE TIE CONNECTION DETAIL

Scale: 3/4" = 1'-0"



BACKWALL TIMBER

(1 Required)
Scale: 3/4" = 1'-0"



DAPPED "T11" BRIDGE TIE
THREE COVER PLATES BOTH GIRDERS

(Spans 2, 3, and 4)
Scale: 3/4" = 1'-0"

NOTES

1. See Typical Details (1 of 2) sheet for Bridge Tie and Timber Notes.

2. A list of the approximate number of ties to be replaced at each location is shown below. Prior to construction, the Resident and Contractor shall identify the final number and location of existing ties in the worst condition, to be replaced. Bridge ties shall be dapped based on their location on the existing girders. Bridge tie may either be predapped during fabrication or dapped in the field by the Contractor and treated in accordance with Special Provision 528.

Span 1 - 18 Ties	Span 5 - 1 Tie
Span 2 - 30 Ties	South Abut. - 1 Backwall Timber
Span 3 - 20 Ties	South Approach - 6 Cross Ties
Span 4 - 12 Ties	

3. Bridge Ties are labeled "TX" for information purposes only.

4. The bottom of the backwall timber shall be trimmed in the field to maintain the appropriate top of rail elevation and to provide a uniform bearing on backwall. All in cuts made in-field shall be treated in accordance with Special Provision 528.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 24345.00 BRIDGE PLANS

BRIDGE NO. 7750

vhb

	NAME	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JGM	BJM	10/2021
CHECKED-REVIEWED	KCD	GSG	10/2021
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE REPLACEMENT
AND REHABILITATION PROJECT
PRESQUE ISLE-HOULTON SUB. AROOSTOOK

BR NO 7750 (M.P. H17.16) OVER
MEDUXNEKEAG RIVER (6 OF 6)

SHEET NUMBER

51

OF 52

PLAN LEGEND

Town, County, State	New R/W Along Existing R/W		Existing	Proposed		Existing	Proposed
Approx. Property Lines P.L.	Building	Clearing Limit Line	Sanitary Sewer		Traveled Way		
Existing Right of Way	Trees Conifer	Deciduous	Telephone Line		Ditch		
Limits of Wrought Portion L.O.W.P.	Tree Line	Bush Line	Electric Line	E	Catch Basin		
Control Of Access C.O.A.	Water Edge		Water Line	W	Manhole		
New Right of Way	Ledge	Rock/Boulder Flag Pole	Underdrain Line		Sewer Manhole		
New Easement	Fence CHAIN LINK	BARB WIRE STOCKADE	Gas Line		Utility Pole		
New Temporary Rights	Sign	Well WELL Mailbox	Guardrail		Fire Hydrant		
New R/W Within Existing R/W			Culvert		Curbing		

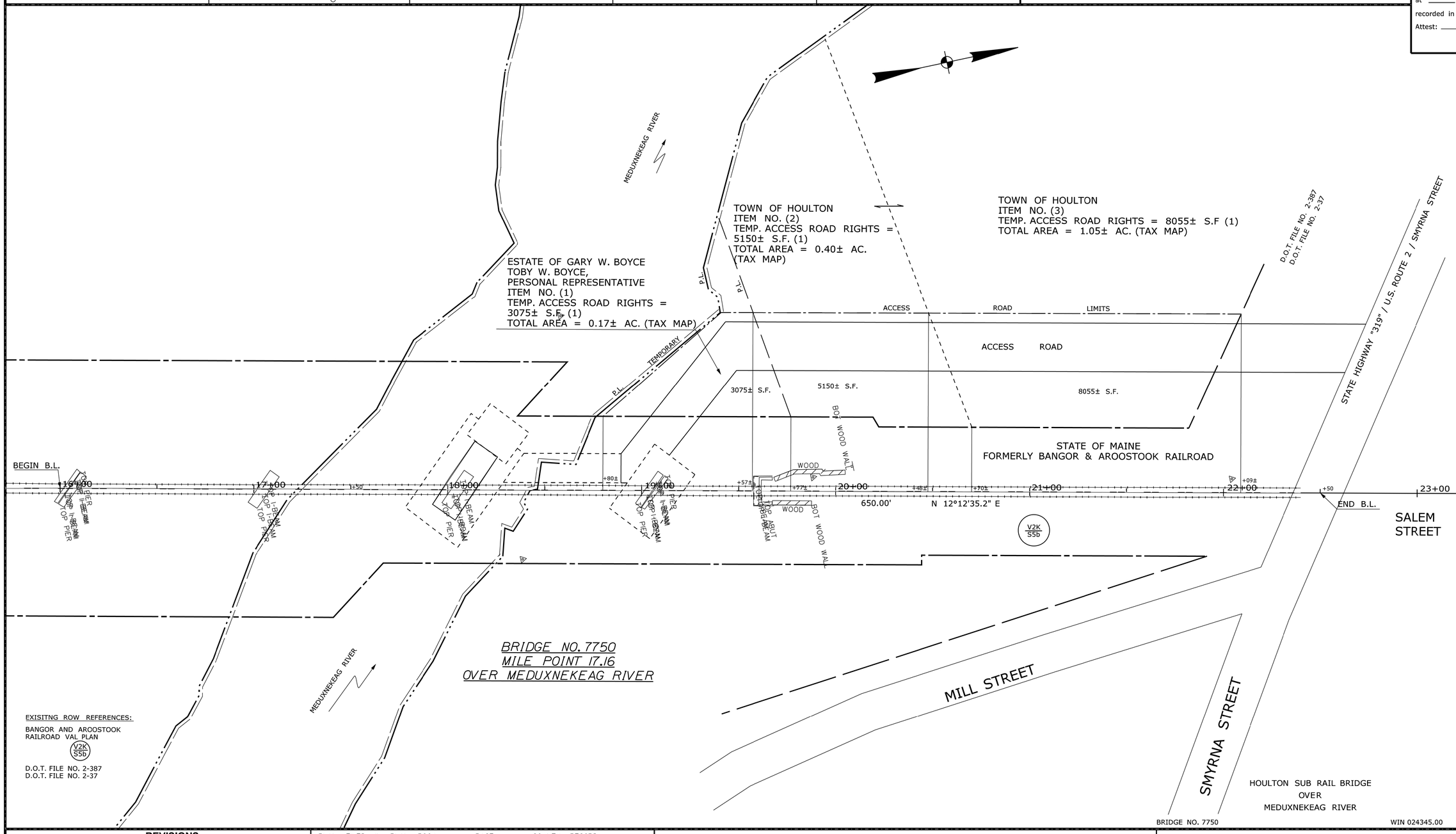
Cut Line C—C—C	Fill Line F—F—F
Stonewall	Retaining Wall
Baseline 10+00 11+00 12+00	
Monument	Traverse Point
Iron Rod Found ● IRF	Pipe Found ● IPF
Replacement Pin Set	

THIS PLAN WAS PREPARED IN CONNECTION WITH THE DEPARTMENT'S ACQUISITION OF REAL PROPERTY FOR TRANSPORTATION PURPOSES. IT CANNOT BE USED TO ESTABLISH LEGAL BOUNDARIES BETWEEN ABUTTING PROPERTY OWNERS.

25 0 25 50 75 100
Scale of Feet

STATE OF MAINE REGISTRY OF DEEDS

COUNTY _____
RECEIVED _____, _____
at _____h _____m _____M and
recorded in Plan Bk _____, Pg. _____
Attest: _____
REGISTER



EXISITNG ROW REFERENCES:

BANGOR AND AROOSTOOK RAILROAD VAL PLAN
V2K
S5b

D.O.T. FILE NO. 2-387
D.O.T. FILE NO. 2-37

TECH	CHECKED
T.L.B.	
T.L.B.	
T.L.B.	

ITEM	
EXISTING CONDITION PLAN	
FINAL RIGHT OF WAY	
AREAS	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016 - 207-624-3460
HOULTON
RIGHT OF WAY MAP

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PLAN FILED IN PLAN BOOK PAGE COUNTY RECORD

NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE

BRUCE A. VAN NOTE
COMMISSIONER
JOYCE NOEL TAYLOR
CHIEF ENGINEER
DATE

HOULTON SUB RAIL LINE

HOULTON AROOSTOOK COUNTY
STATE PROJECT NO. 24345.00

JUNE 2021	RIGHT-OF-WAY MAP	D.O.T. FILE NO. 2-624
SCALE 1" = 25'	SHEET 1 OF 1	

SHEET NUMBER
52
OF 52

Filename: $file$ Division: $wkgroup$ Username: $user$ Date:$date$