

STATE OF MAINE DEPARTMENT OF TRANSPORTATION



AROOSTOOK COUNTY MADAWASKA SUBDIVISION RAILROAD BRIDGE SUBSTRUCTURE REHABILITATION PROJECT

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* Sheet Provided by MaineDOT

SPECIFICATIONS

Design: "American Railway Engineering and Maintenance of Way Association"
AREMA 2018 Manual for Railway Engineering

DESIGN LOADING

Live Load 4 Axle 286 kip vehicle at 25 mph with Tandem GP40 Locomotive

MATERIALS

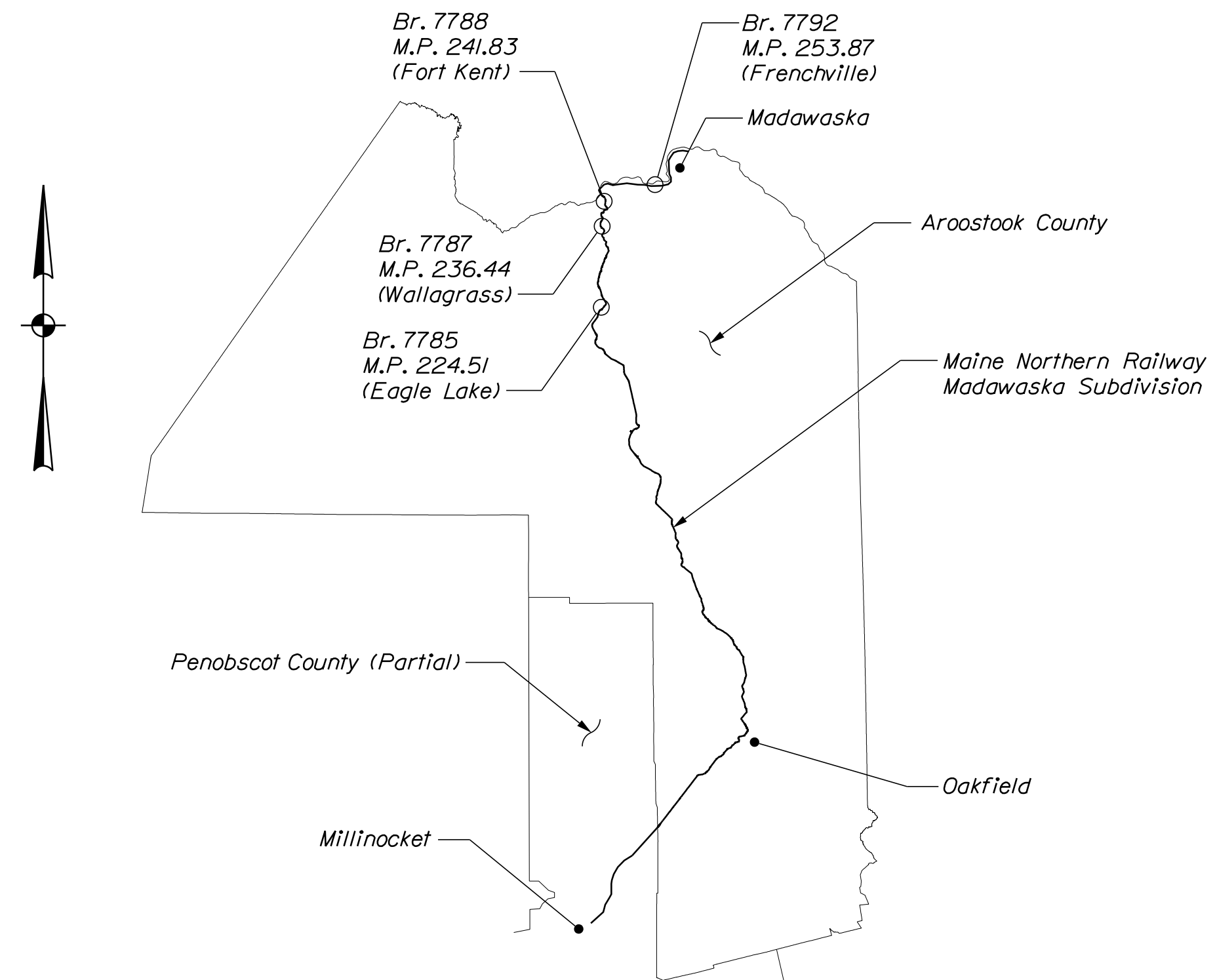
Concrete:
 Precast Class "P"
 Cast-In-Place Class "A"
 Reinforcing Steel (except as noted) ASTM A615, (Uncoated) Grade 60
 Structural Steel:
 Existing Low Carbon (Bessemer) Steel
 All Material (except as noted) ASTM A709, Grade 50W
 High Strength Bolts (except as noted) ASTM F3125, Grade A325, Type 3

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 $F_y = 30,000$ psi
 ASTM A709, Grade 50W $F_y = 50,000$ psi
 ASTM F3125, Grade A325, Type 3 $F_u = 120,000$ psi

UTILITIES

Maine Northern Railway Company
MaineDOT Railroad



LOCATION MAP

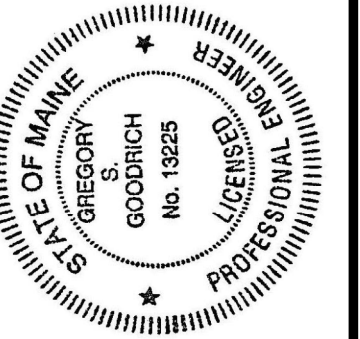
PROJECT LOCATION:	Four bridges located on the Maine Northern Railway - Madawaska Subdivision from Mile Post 224.51 to 253.87, in Aroostook County. Six bridges (repointing work only) located on the Maine Northern Railway - Madawaska Subdivision from Mile Post 151.54 to 179.34, in Aroostook County.
PROGRAM AREA:	Multimodal Program
OUTLINE OF WORK:	Bridge Construction: Substructure rehabilitations and strengthening.

PLANS PREPARED BY:

500 Southborough Drive, Suite 105B
South Portland, Maine 04106
207 889 3150 - FAX 207 253 5596

WIN 23488.00

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
APPROVED
DATE
COMMISSIONER:
CHIEF ENGINEER:



SIGNATURE
13225
P.E. NUMBER
12-7-2020
DATE

PROJECT INFORMATION
PROGRAM
PROJECT MANAGER
DESIGNER
CONSULTANT
PROJECT RESIDENT
CONTRACTOR
PROJECT COMPLETION DATE

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
TITLE SHEET

SHEET NUMBER
1
OF 36

Date: 12/7/2020

Username: BMasse

Division: MULTIMODAL

Filename: 001_title_01.dgn

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 or reduction in payment to the Contractor if the actual final quantities are different from 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 Sum 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 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 August 2019. Actual water elevation at the time of construction will vary.

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITIES				TOTAL
			BR. 7785 MP 224.51	BR. 7787 MP 236.44	BR. 7788 MP 241.83	BR. 7792 MP 253.87	
202.19	Removing Existing Bridge	LS	1/4	1/4	1/4	1/4	1
203.25	Granular Borrow	CY		6	8		14
206.082	Structural Earth Excavation - Major Structures, Plan Quantity	CY		11	70		81
503.12	Reinforcing Steel, Fabricated and Delivered	LB	62,500	6,500	21,500	1,400	91,900
503.13	Reinforcing Steel, Placing	LB	62,500	6,500	21,500	1,400	91,900
504.702	Structural Steel Fabricated and Delivered, Welded (62,250 LB)	LS	1/3	1/3	1/3		1
504.71	Structural Steel Erection (62,250 LB)	LS	1/3	1/3	1/3		1
504.909	Dowel - Existing Structural Concrete	EA		6		12	18
511.07	Cofferdam (North Abutment and Pier)	LS	1				1
515.20	Protective Coating for Concrete Surfaces	SY	940	140	340	26	1,446
518.211	Rehabilitate Structural Concrete Substructure	CY	300	25	100	5	430
523.26	Expansion Bearing - Modification (Fabric Pad w/ PTFE Sliding Surface)	EA	4		8	2	14
523.301	Refurbish & Reset Fixed Bearing	EA	4	2	2	2	10
523.311	Refurbish & Reset Expansion Bearing	EA		2			2
523.52	Bearing Installation	EA	4		8	2	14
524.30	Temporary Structural Support	EA	3	2	4	2	11
528.4903	Bridge Ties and Timbers (34 EA)	LS			1		1
534.30	Precast Structural Concrete (Backwalls) (9 CY)	LS		1			1
534.30	Precast Structural Concrete (Jump Span Bridge Seat) (18 CY)	LS			1		1
534.30	Precast Structural Concrete (Pedestals) (2 CY)	LS				1	1
536.201	Tie Back System	LS	2/3		1/3		1
648.511	Remove and Relay Existing Track	TF	80	80	150		310
656.75	Temporary Soil Erosion and Water Pollution Control	LS	1/4	1/4	1/4	1/4	1
659.10	Mobilization	LS	1/4	1/4	1/4	1/4	1

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITIES						TOTAL
			BR. 7775 MP 151.54	BR. 7777 MP 154.59	BR. 7778 MP 161.03	BR. 7779 MP 164.74	BR. 7780 MP 167.76	BR. 7781 MP 179.34	
525.261	Repointing Granite Masonry	LF	60	120	180	60	100	370	890

GENERAL RAILROAD CONSTRUCTION NOTES

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

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.

3. All work shall be done in accordance with the Maine Department of Transportation's Best Management Practices for Erosion and Sedimentation Control, February, 2008.

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.

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 railroad 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. No aerial or buried utilities are noted at the Project locations. However, 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. 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 50W, unless noted otherwise. See individual bridge sheets for additional notes.

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 3 and bolt threads shall be excluded from the shear plane of the connection.

3. All bolts shall be installed using the method and the minimum pretension specified in MaineDOT Standard Specification 504.

STRUCTURAL STEEL NOTES (CONTINUED)

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.

EARTHWORK NOTES

1. The excavation required to install the precast concrete backwalls at Bridge 7787 (M.P. 236.44) and to install the jump span and precast concrete jump span bridge seat at Bridge 7788 (M.P. 241.83) shall be paid under Item 206.082, Structural Earth Excavation - Major Structures, Plan Quantity.

2. Behind the precast concrete backwalls at Bridge 7787 (M.P. 236.44) and behind the precast concrete jump span bridge seat at Bridge 7788 (M.P. 241.83) the following shall apply:

a. As part of a future Contract the Railroad will be replacing the approach timbers and ballast at all four bridge approaches. As such, the existing ballast shall be reused provided that it has not been fouled with other material, as determined by the Resident. Existing ballast shall be reset between the approach ties and to a depth of 12 inches below the approach ties. Resetting of ballast will be considered incidental to Contract Items.

b. Item 203.25, Granular Borrow shall be used to fill between the bottom of the excavation and the bottom of the ballast to be reset. Measurement for this item will be 12 inches below the bottom of precast unit and 12 inches beyond the backface of the precast unit with a 1 vertical to 2 horizontal line up to the bottom of ballast.

3. At Bridge 7788 (M.P. 241.83), the space between the existing wingwall and between the jump span bridge seat and the existing backwall shall be filled with suitable material up to 3 inches below the proposed top of wingwalls. This work will be considered incidental to Contract Items.

4. At Bridge 7788 (M.P. 241.83), the excavation on the outside of the winwalls below and adjacent to the jump span bridge seat shall be filled with suitable material, as shown. This work will be considered incidental to Contract Items.

5. At all other locations minor regrading required to complete work shall be done with suitable material and will be considered incidental to Contract Items.

Date: 12/17/2020

Username: BMasse

Division: MUL TIMODAL

Filename: 002_Notes_Quantities.dgn

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 23488.00
WIN



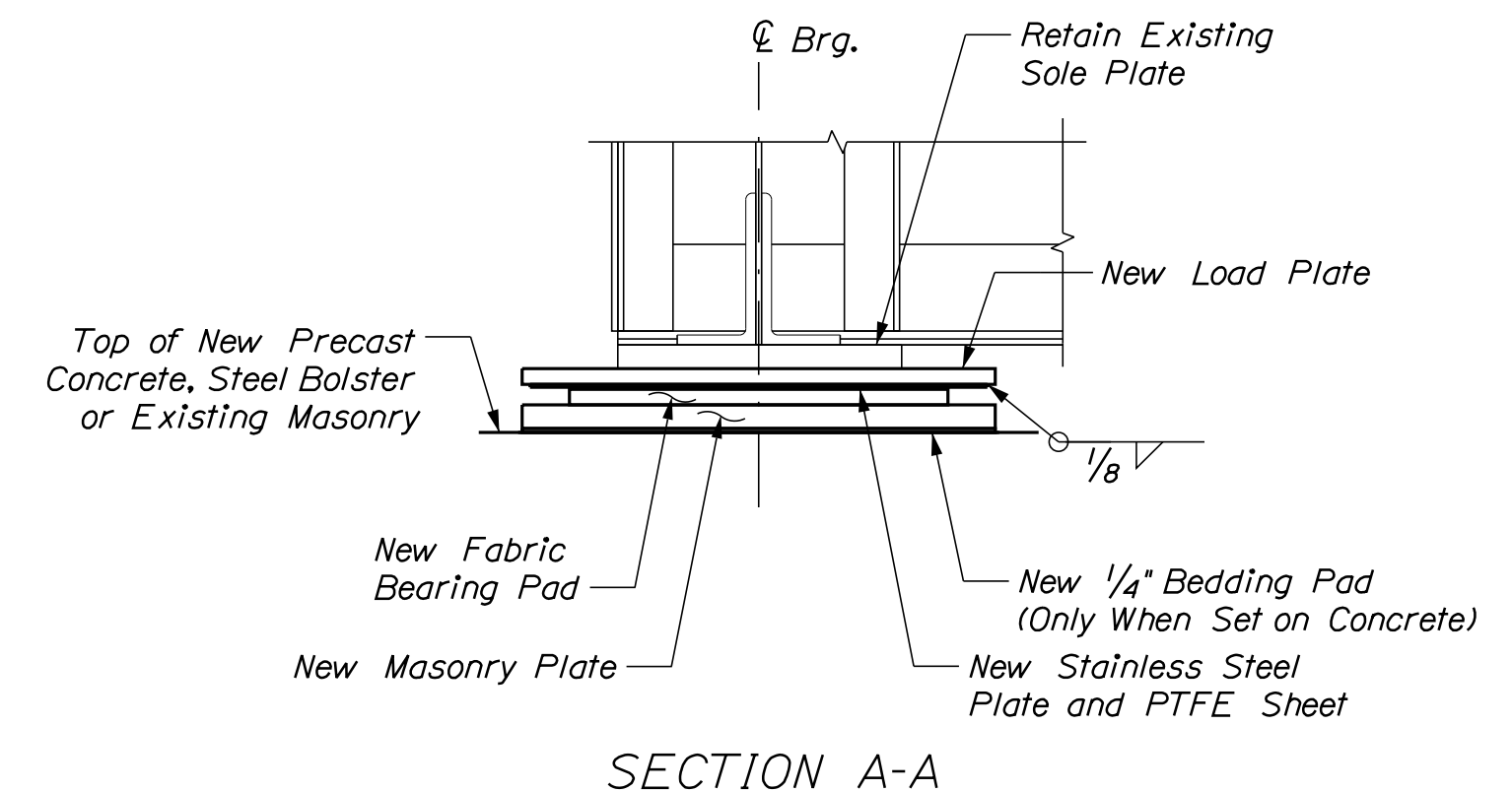
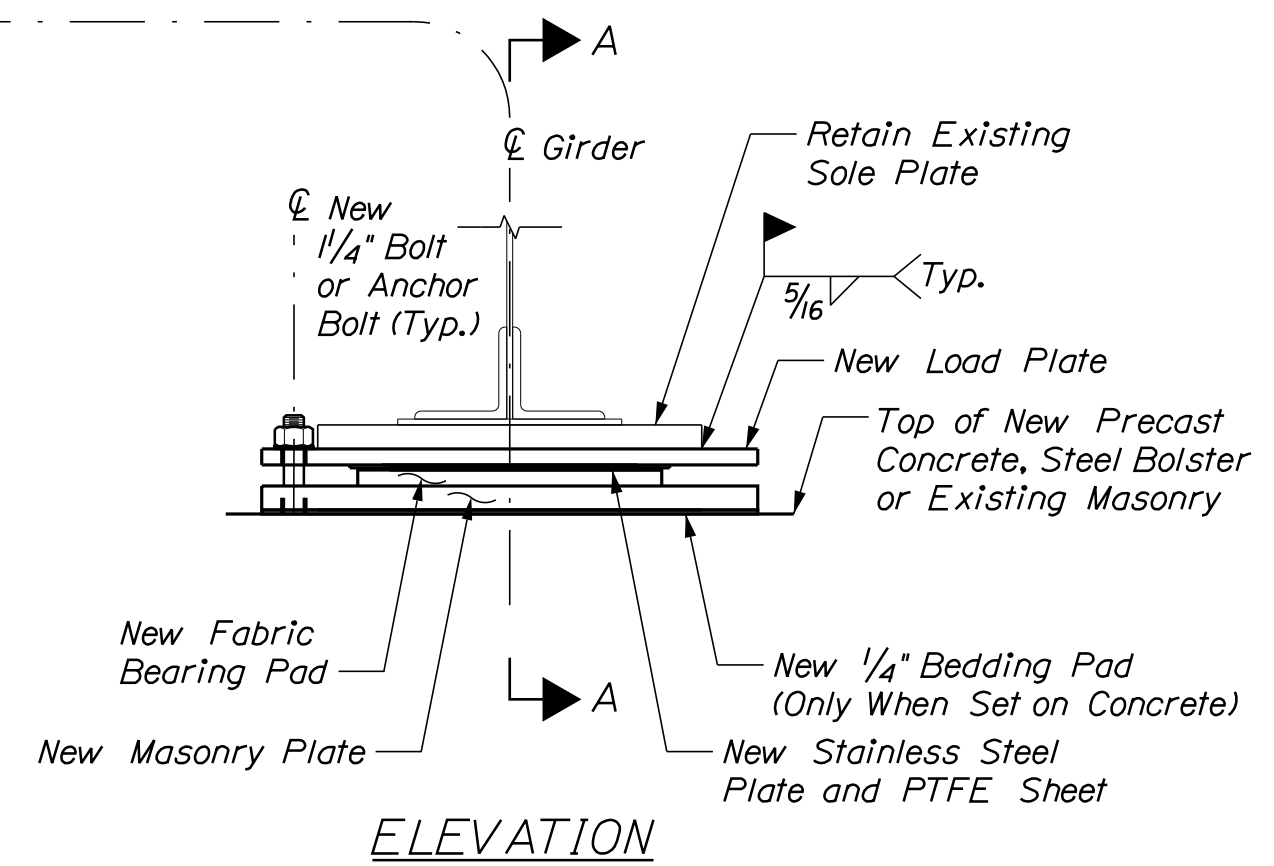
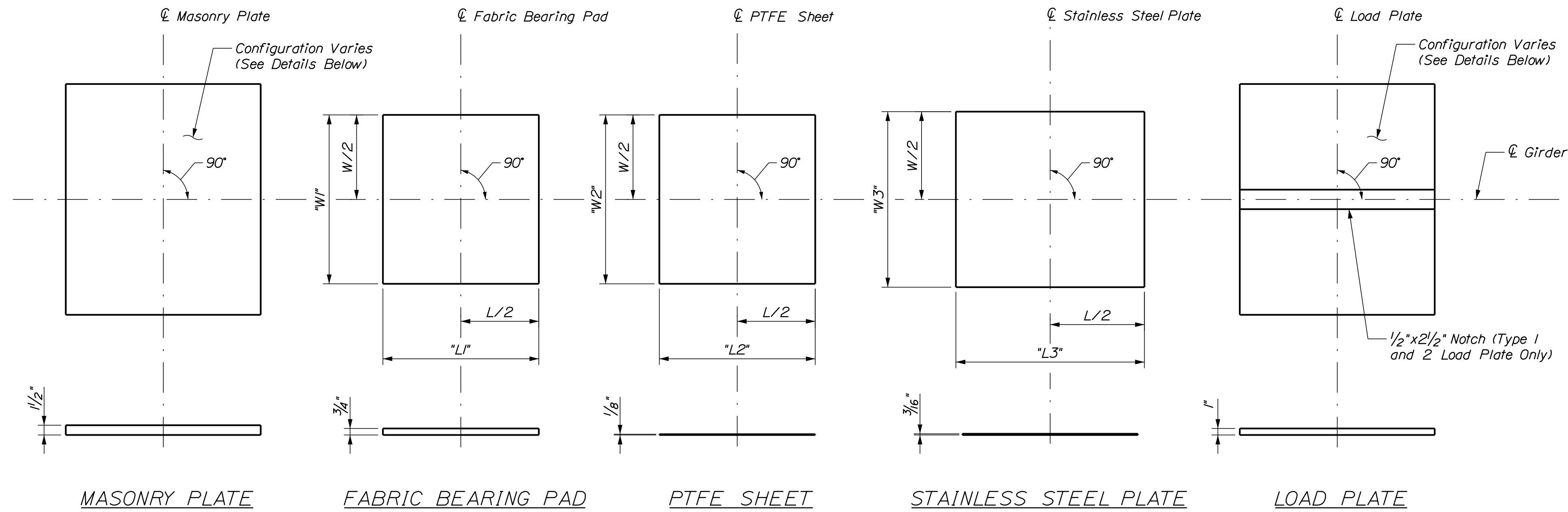
PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/20/20	BJM	12/20/20
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
GENERAL NOTES AND QUANTITIES

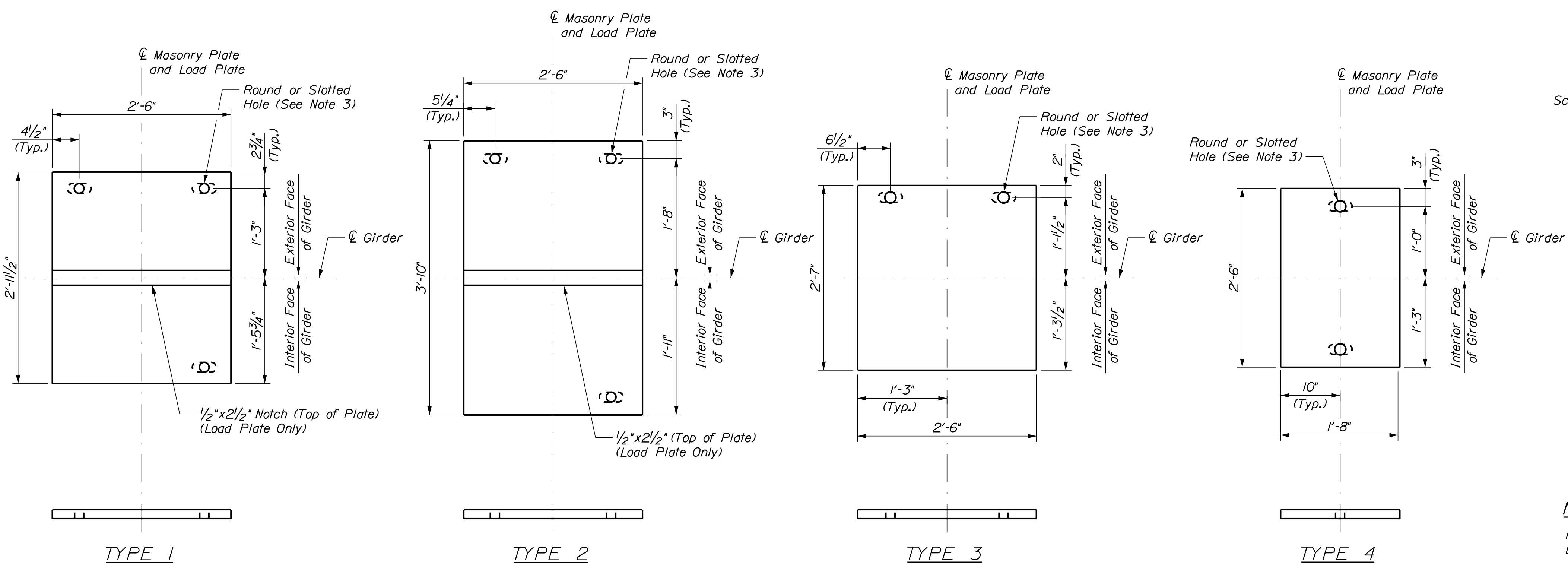
SHEET NUMBER

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OF 36



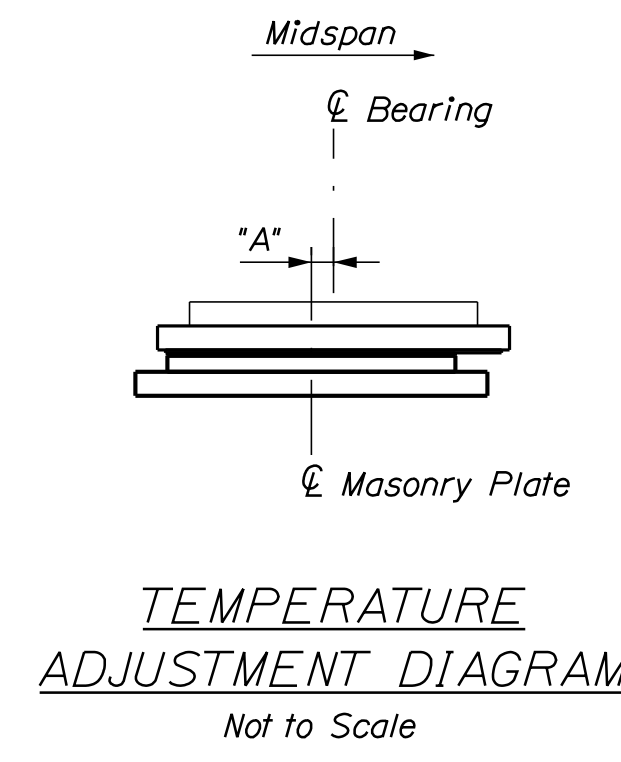
Bridge No.	M.P.	Location	Masonry Plate Type	Fabric Bearing Pad "L"	Fabric Bearing Pad "W"	PTFE Sheet "L2"	PTFE Sheet "W2"	Stainless Steel Plate "L3"	Stainless Steel Plate "W3"	Load Plate Type	Temperature Adjustment Coefficient	Quantity
7785	224.51	North Abutment	1	2'-0"	2'-2"	2'-0"	2'-2"	2'-5"	2'-3"	1	"A1"	4
		Pier										
7788	241.83	Jump Span	4	1'-2"	1'-6"	1'-2"	1'-6"	1'-7"	1'-8"	4	"A2"	2
		North Abutment	1							1	"A1"	2
		North Pier	2	2'-0"	2'-2"	2'-0"	2'-2"	2'-5"	2'-3"	2	"A1"	4
7792	253.87	South Pier										
		North Abutment	3	2'-0"	1'-4"	2'-0"	1'-4"	2'-4"	1'-6"	3	"A3"	2
		South Abutment	3								N/A	2



MASONRY PLATE AND LOAD PLATE DETAILS
Not to Scale

TYPICAL FABRIC PAD BEARING DETAIL
Schematic Only - Actual Size and Configuration of Bearing, Existing Girder, Pedestal, and Substructure Will Vary. See Details on Other Sheets.
Not to Scale

TEMP.	"A1"	"A2"	"A3"
0° F	5/16"	15/32"	1/32"
15° F	3/16"	5/16"	5/32"
30° F	1/8"	5/32"	1/16"
45° F	0"	0"	0"
60° F	-1/8"	-5/32"	-1/16"
75° F	-3/16"	-9/32"	-3/32"
90° F	-5/16"	-19/32"	-7/32"



- NOTES**
- See Bearing, Bolster, and Pedestal Details (2 of 3) sheet for steel bolster details and notes.
 - See Bearing, Bolster, and Pedestal Details (3 of 3) sheet for bearing and anchor bolt notes and steel bolster and precast concrete pedestal details.
 - All holes in masonry plates shall be 1 5/8" diameter. All holes in load plates shall be 4" x 1 5/8" slotted holes.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 23488.00
WIN

BRIDGE PLANS

DATE 12/20/20
BY GSC
B/M
DATE REWIT 12/20/20
PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BEARING, BOLSTER, AND
PEDESTAL DETAILS (1 OF 3)

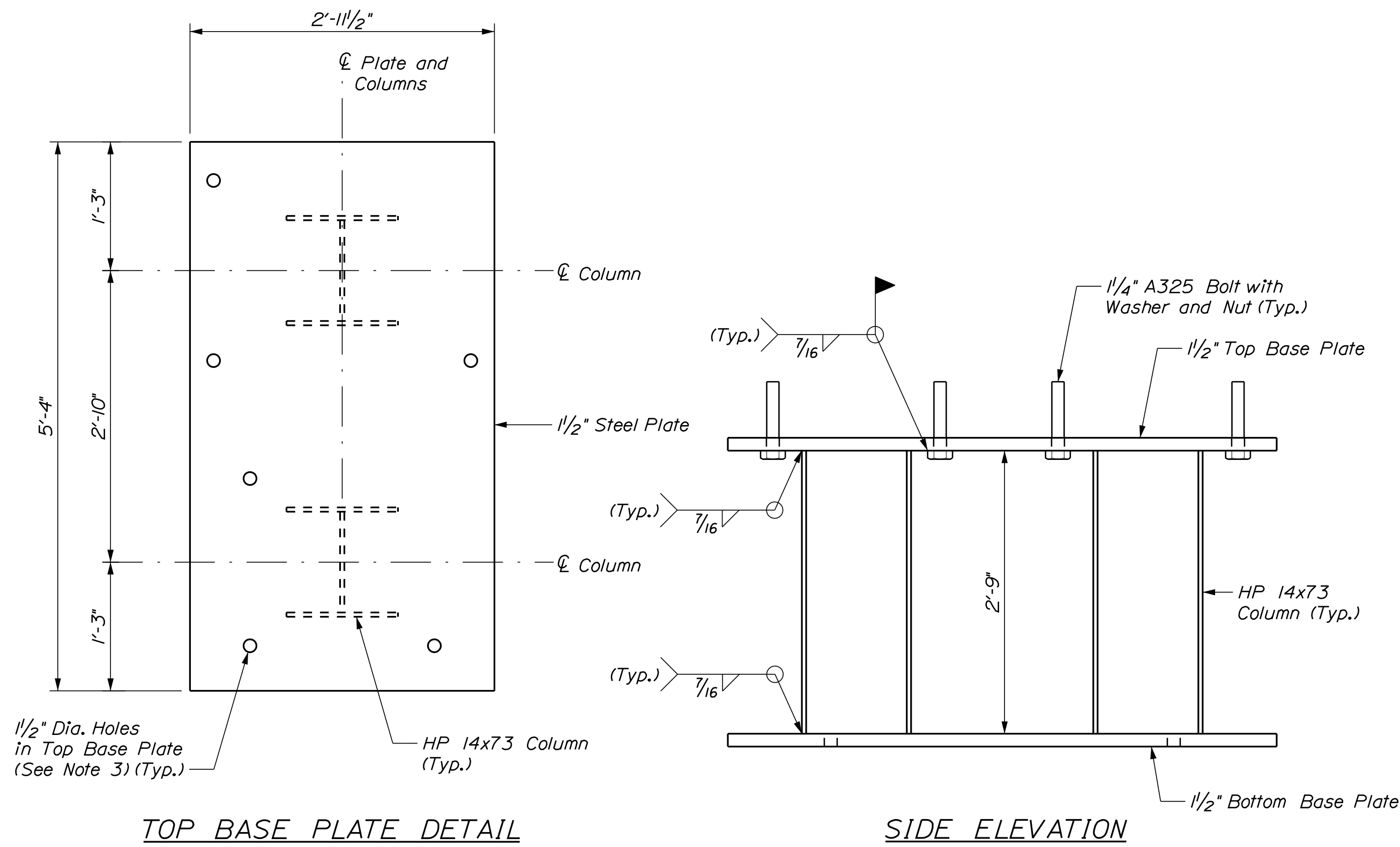
SHEET NUMBER
3
OF 36

Date: 12/17/2020

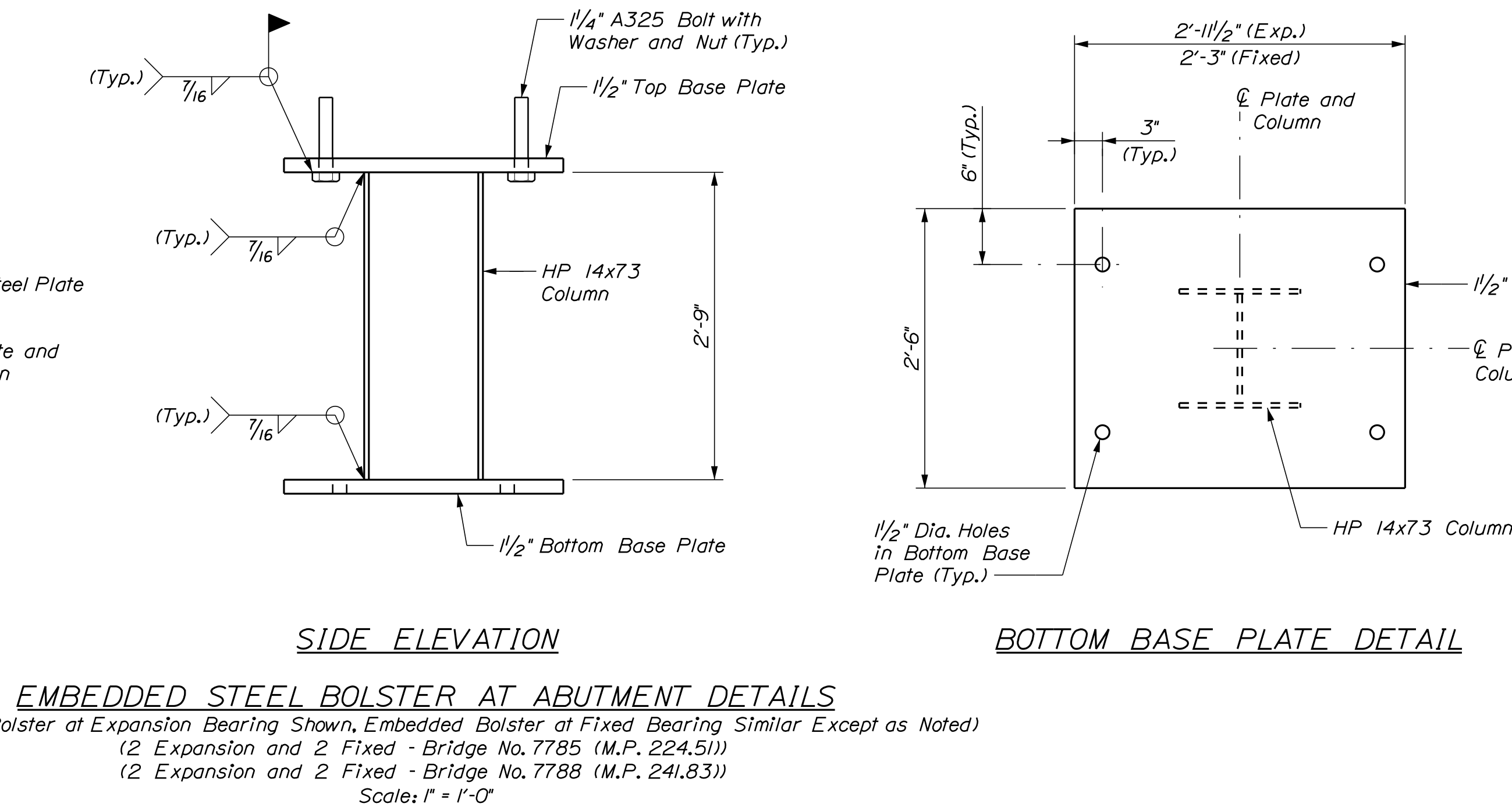
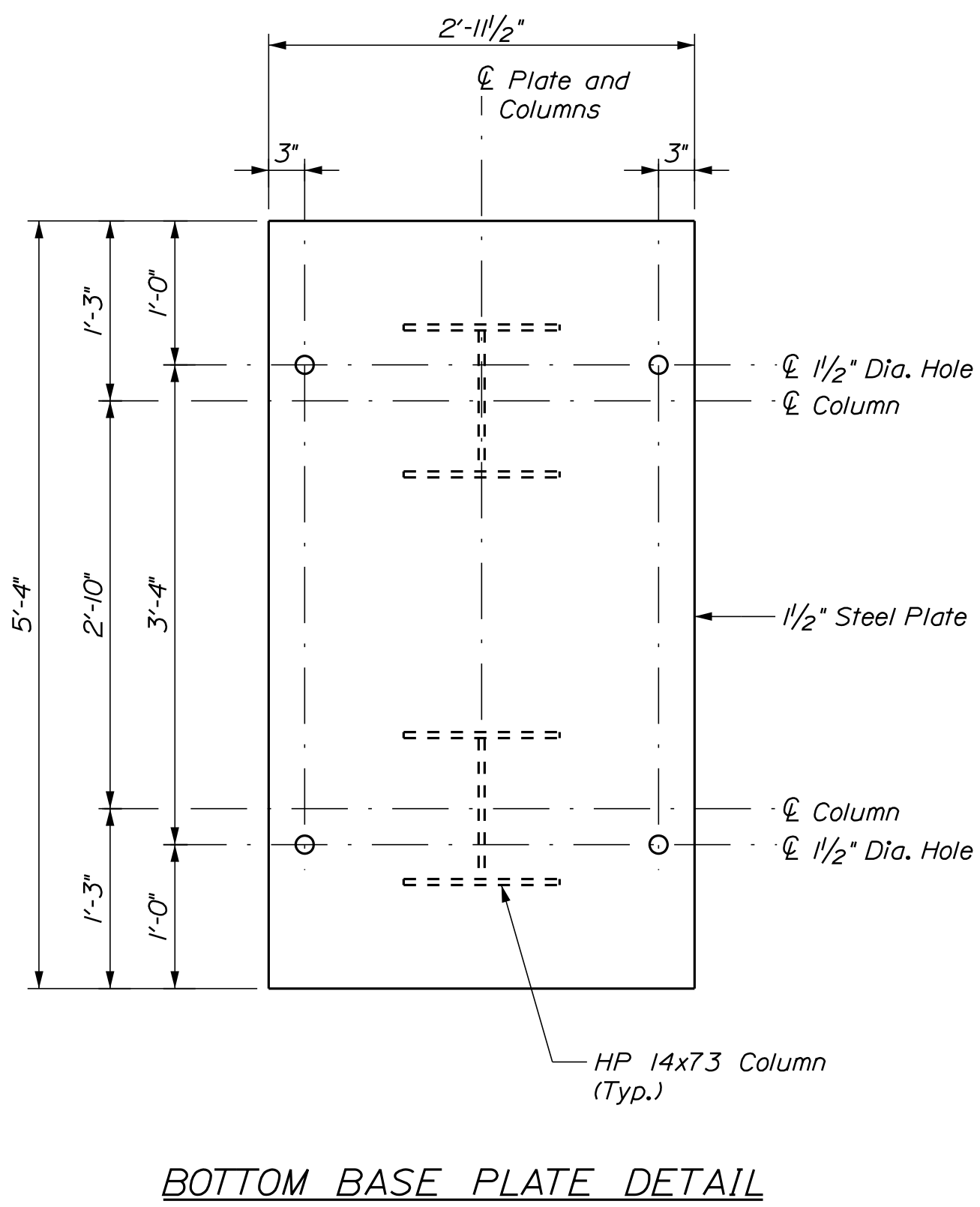
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Division: MUL TIMODAL

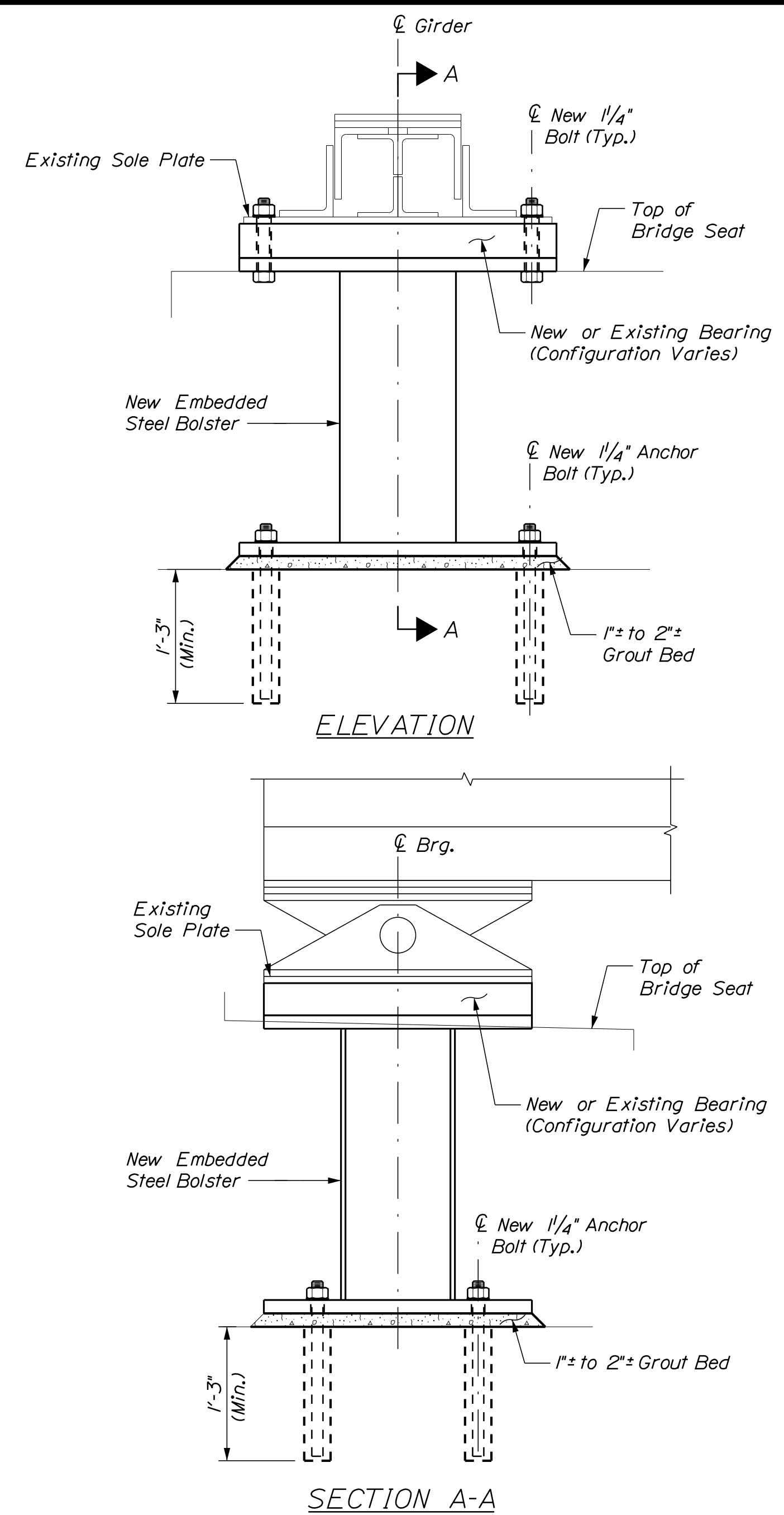
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EMBEDDED STEEL BOLSTER AT PIER DETAILS
 (2 Required - Bridge No. 7785 (M.P. 224.51))
 Scale: 1" = 1'-0"



EMBEDDED STEEL BOLSTER AT ABUTMENT DETAILS
 (Embedded Bolster at Expansion Bearing Shown, Embedded Bolster at Fixed Bearing Similar Except as Noted)
 (2 Expansion and 2 Fixed - Bridge No. 7785 (M.P. 224.51))
 (2 Expansion and 2 Fixed - Bridge No. 7788 (M.P. 241.83))
 Scale: 1" = 1'-0"



BEARING ON STEEL 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. See General Notes and Quantities Sheet for Structural Steel Notes.
2. All labor, equipment, and incidentals required to set the embedded steel bolster on the existing concrete shall be paid under Item 504.71, Structural Steel Erection. All material required to fabricate and deliver the embedded steel bolster work shall be paid under Item 504.702, Structural Steel Fabricated and Delivered, Welded.
3. The Contractor shall field-measure and place the holes 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.
4. 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.
5. 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.
6. 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.
7. Embedded steel bolsters shall be galvanized in accordance with ASTM A123 or metalized.
8. All bolts, nuts, and washers shall be galvanized in accordance with ASTM A153.

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.



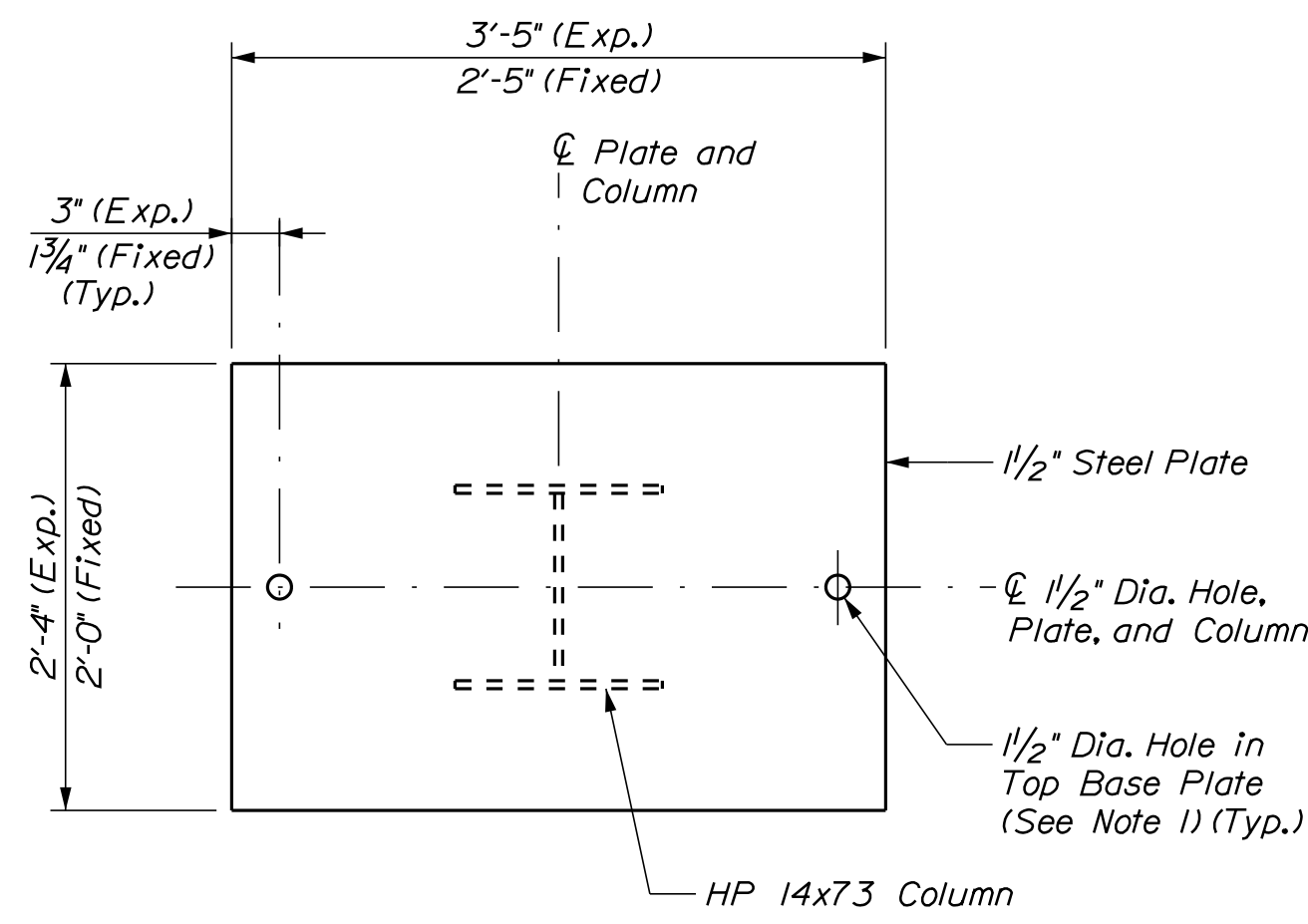
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CHECKED-REVIEWED	JCM	GSC	12/20/20
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REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 12/17/2020

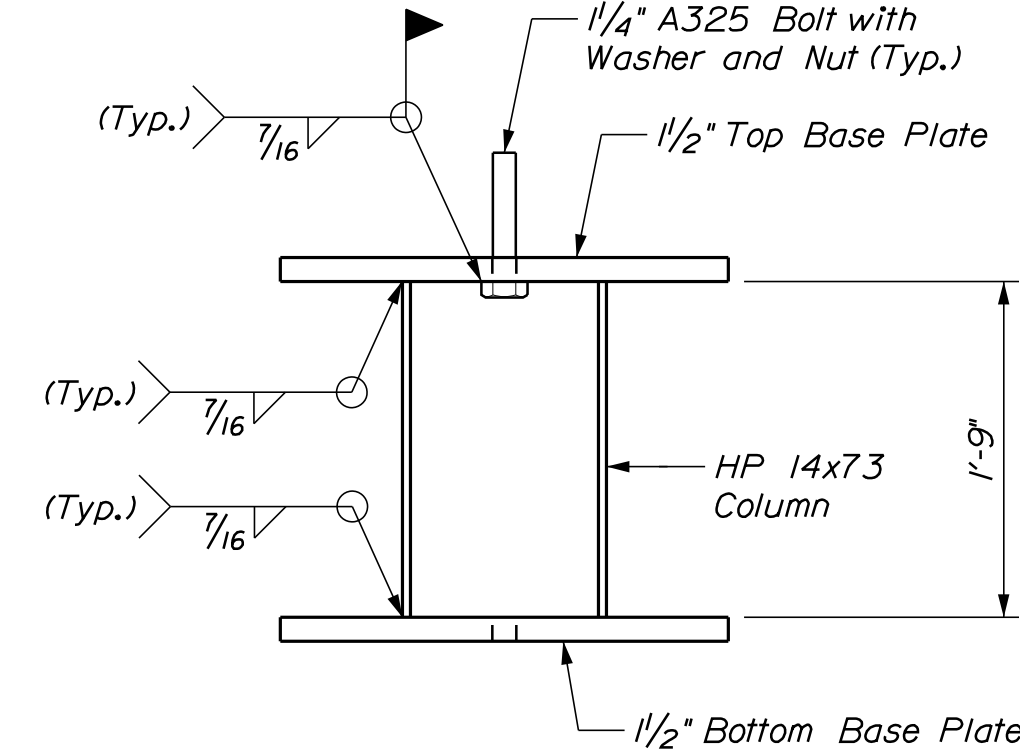
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Division: MUL TIMODAL

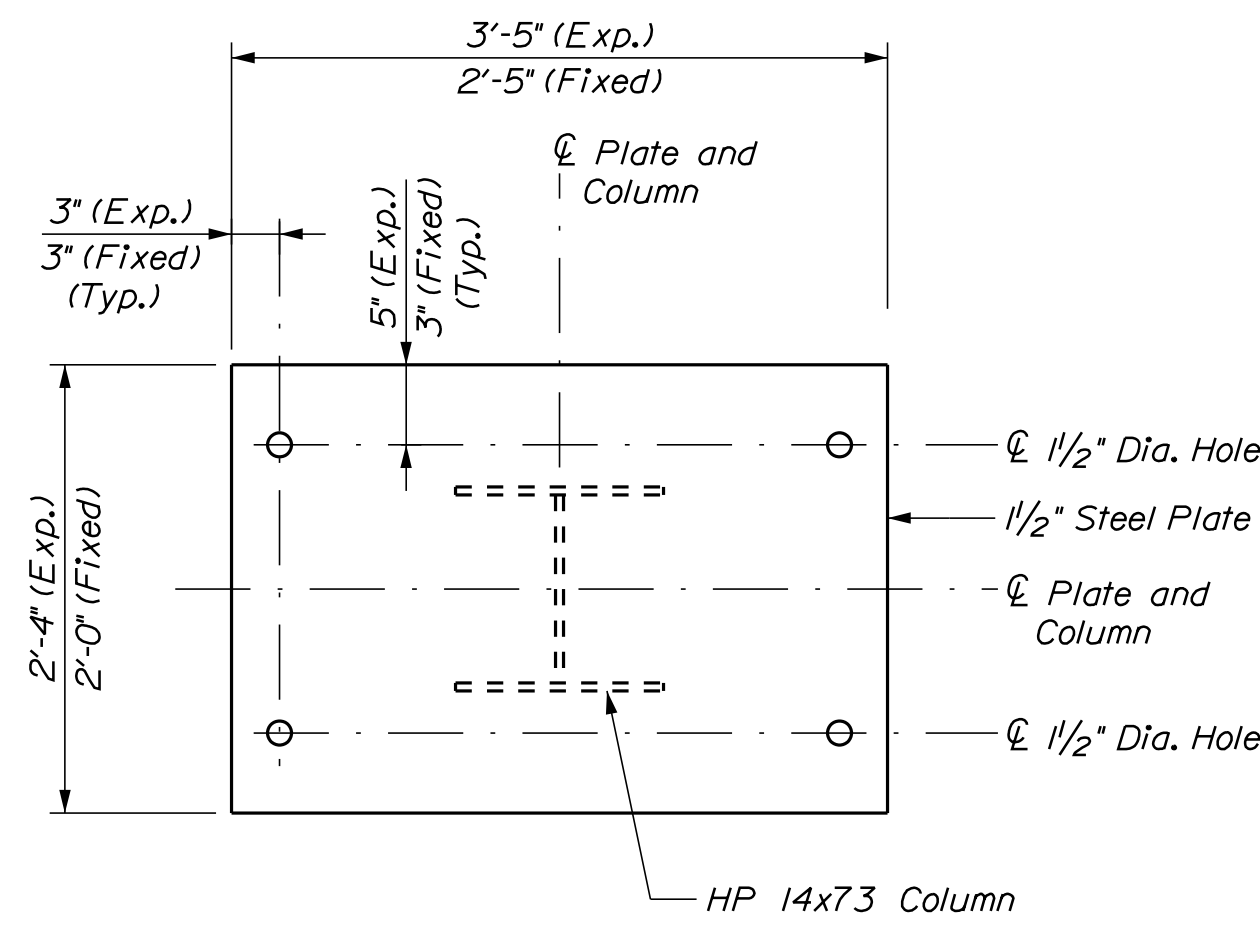
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TOP BASE PLATE DETAIL



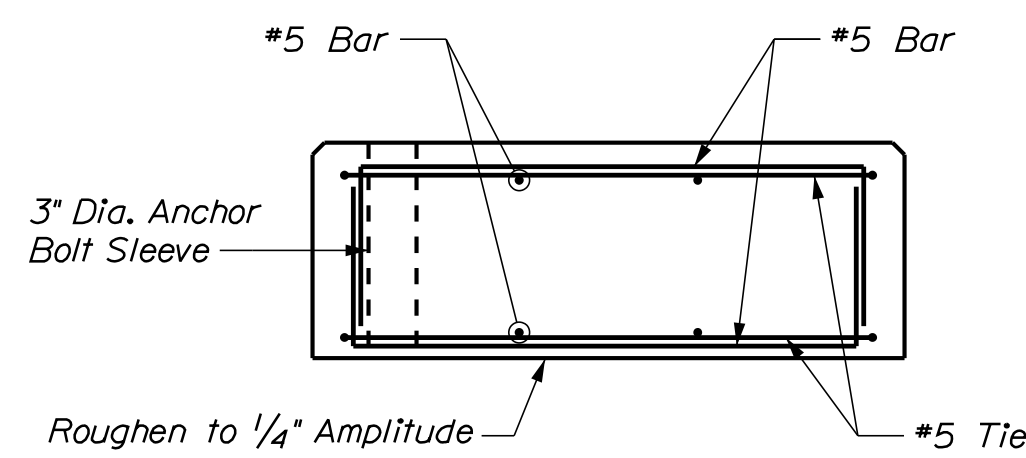
SIDE ELEVATION



BOTTOM BASE PLATE DETAIL

EMBEDDED STEEL BOLSTER AT ABUTMENT DETAILS

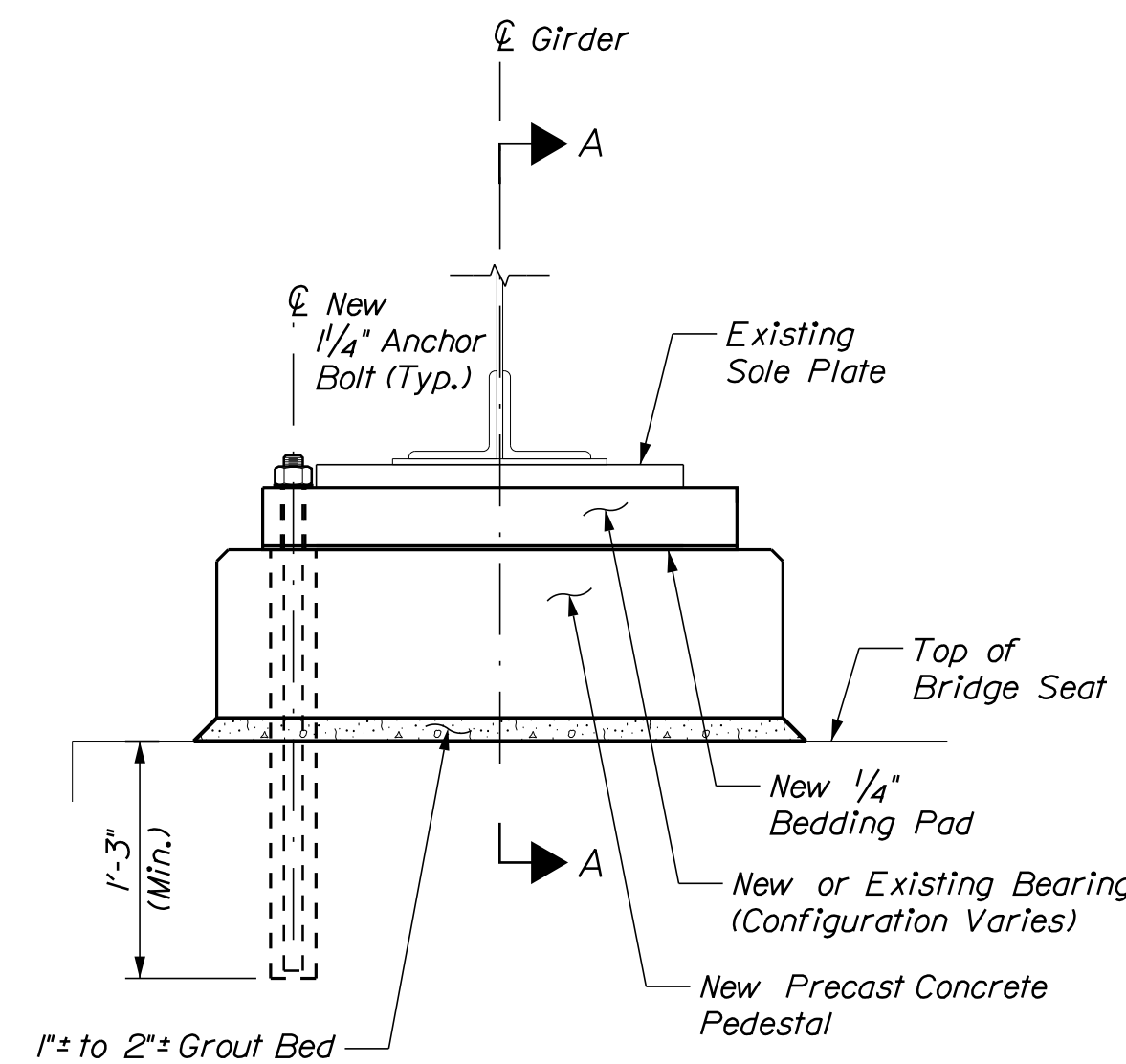
(Embedded Bolster at Expansion Bearing Shown, Embedded Bolster at Fixed Bearing Similar Except as Noted)
 (2 Expansion and 2 Fixed - Bridge No. 7787 (M.P. 236.44))
 Scale: 1" = 1'-0"



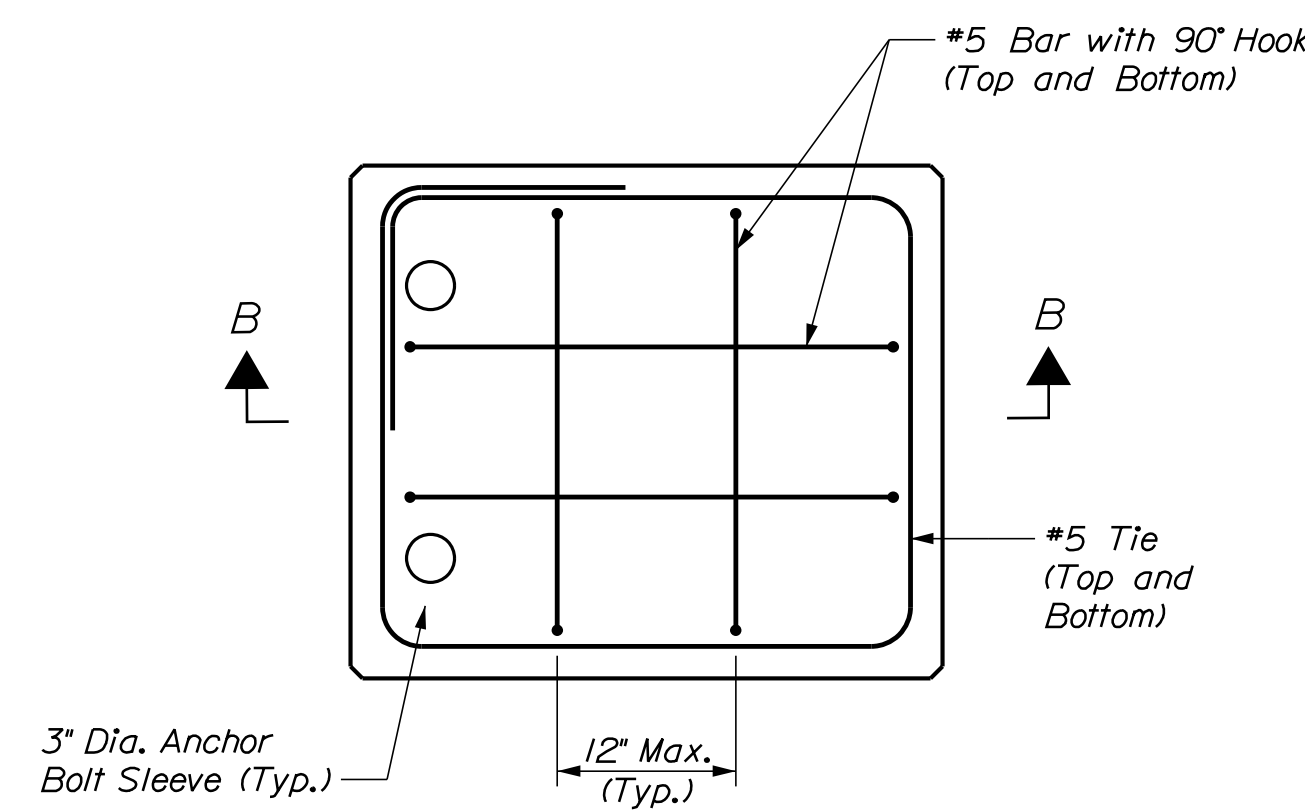
SECTION B-B

(Only One Layer of Reinforcing Required for Thickness Less Than 9")

Precast Concrete Pedestal Table			
Location		Thickness	
Bridge No.	M.P.	Abutment	Thickness
7792	253.87	Northeast	5 1/2"
		Northwest	10 3/4"
		Southeast	7 1/2"
		Southwest	13"



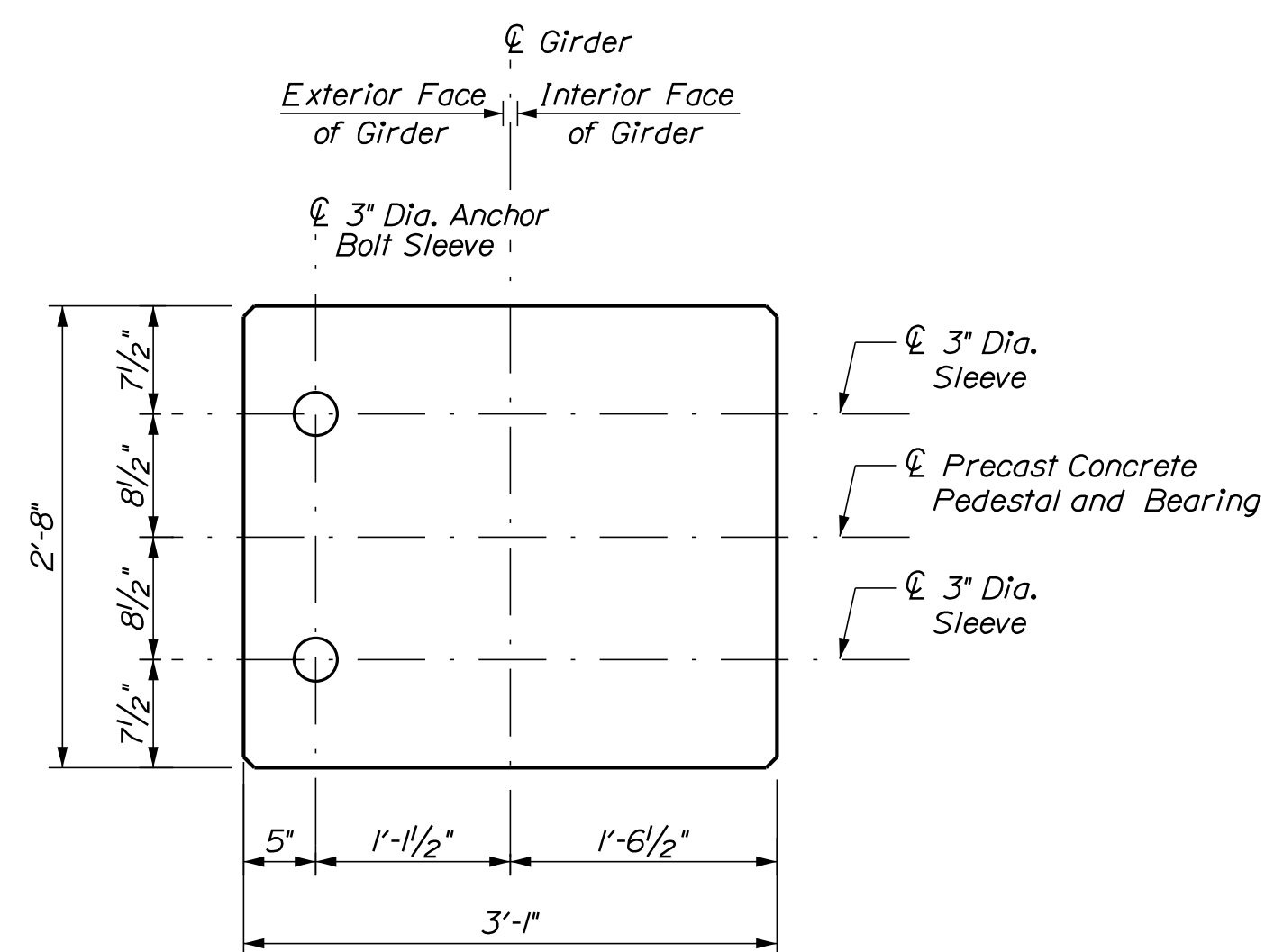
ELEVATION



PLAN

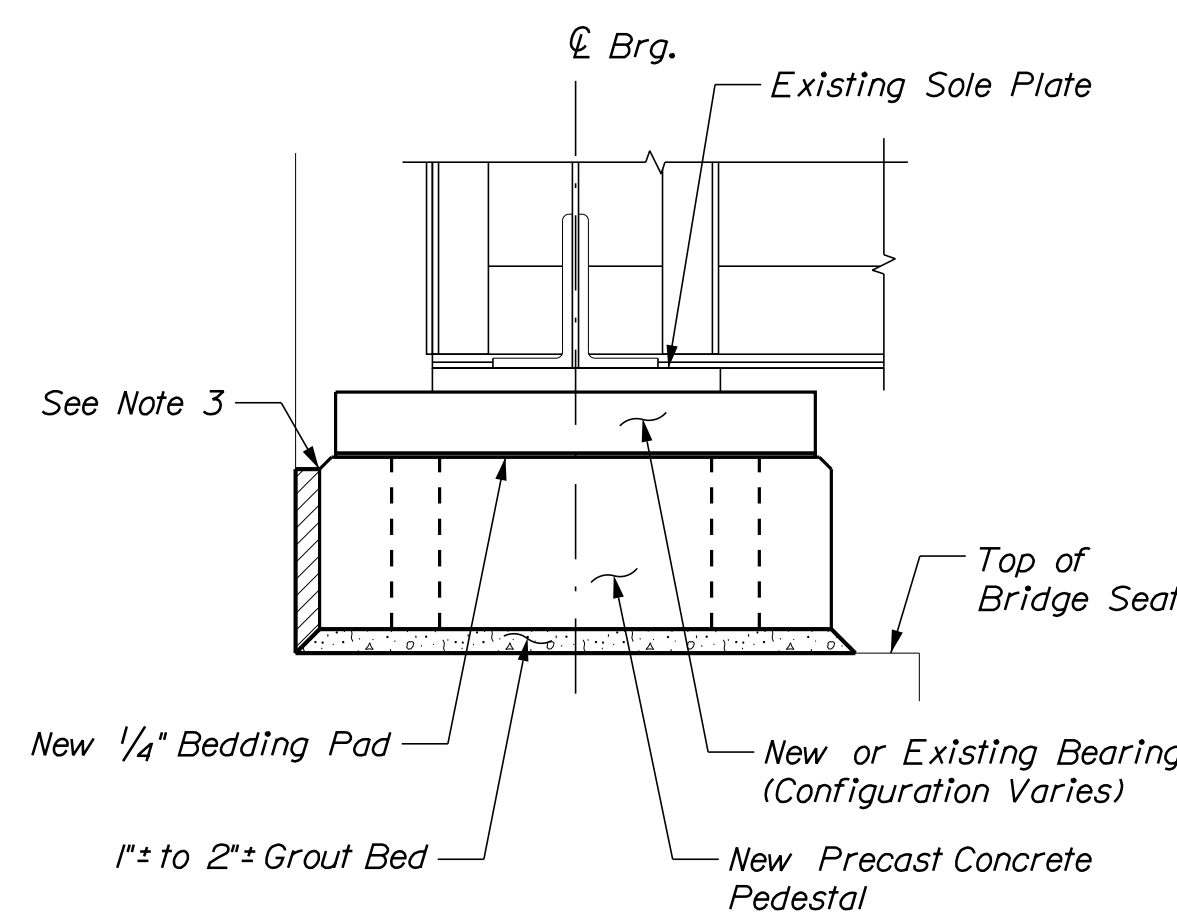
TYPICAL PRECAST CONCRETE PEDESTAL REINFORCING DETAILS

Scale: 1" = 1'-0"



PRECAST CONCRETE PEDESTAL PLAN

Scale: 1" = 1'-0"



SECTION A-A

BEARING ON PRECAST PEDESTAL DETAIL

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

BEARING NOTES

1. New expansion bearings will be paid under Item 523.26, Expansion Bearing - Modification (Fabric Pad w/PTFE Sliding Surface).
2. All bearing work shall be in accordance with AREMA Chapter 15, Part 5.
3. Fabric bearing pad shall meet the following design criteria:

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

Design Loads (per bearing):

Bridge No.	M.P.	Location		Dead Load	Live Load + Impact
		Abutment	Pier		
7785	224.51	North Abutment		47 kips	238 kips
		Pier			
7788	241.83	Jump Span		30 kips	174 kips
		North Abutment		74 kips	412 kips
		North Pier		47 kips	238 kips
		South Pier			
7792	253.87	North Abutment		33 kips	186 kips

4. 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.
5. The bottom of the fabric bearing pad shall 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.
6. All bolts, nuts and washers shall be galvanized in accordance with ASTM A153.
7. Charpy v-notch toughness tests are not required for steel used in bearing components.
8. All bearing plates shall be flat and true after welding.
9. Bearings shall be covered during transit.
10. 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.

11. Bearing work at locations that require existing bearings to be removed and reset with new anchor bolts or with new masonry plate and anchor bolts shall be paid for under Item 523.30I, Refurbish and Reset Fixed Bearing or Item 523.31I, Refurbish and Reset Expansion Bearing, as appropriate.

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. 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.
3. 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.
4. 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.

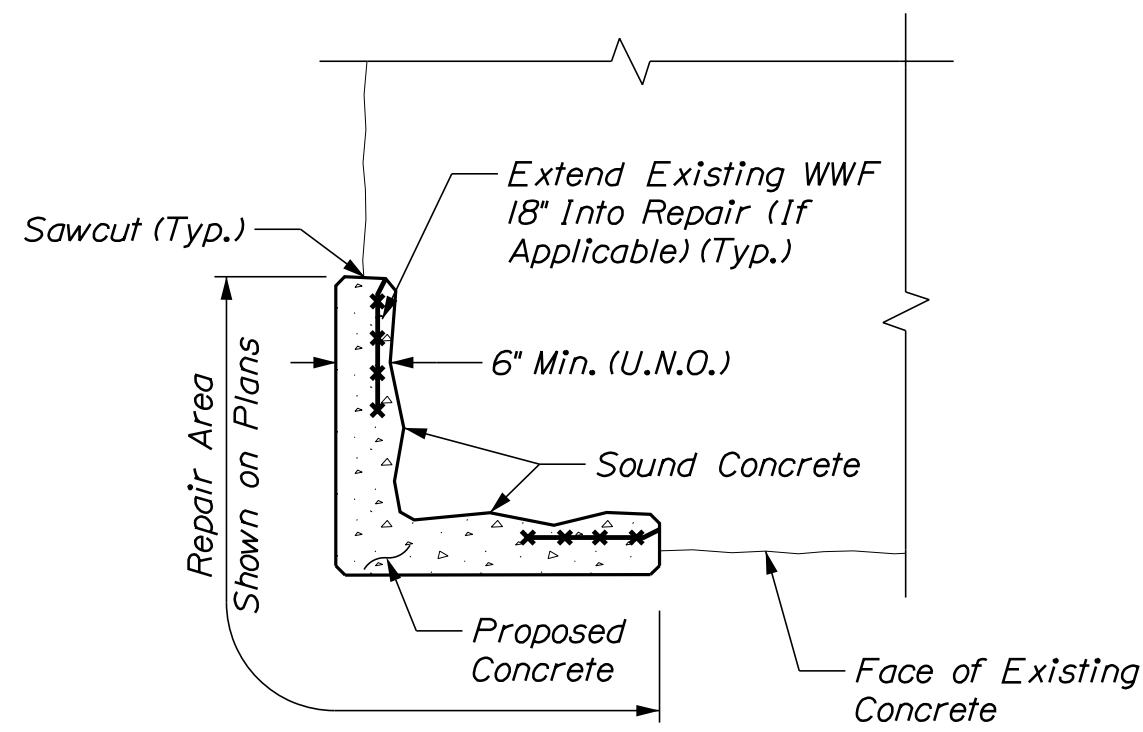
NOTES

1. See Bearing, Bolster, and Pedestal Details (1 of 3) and (2 of 3) for bearing details, steel bolster details and steel bolster notes.
2. See Typical Details Sheet for reinforced concrete notes.
3. The void between the face of the backwall and back of precast pedestal shall be filled with concrete or a grout and shall be sloped in the transverse direction to drain water away from the bearing. All costs will be considered incidental to the associated Contract Items.

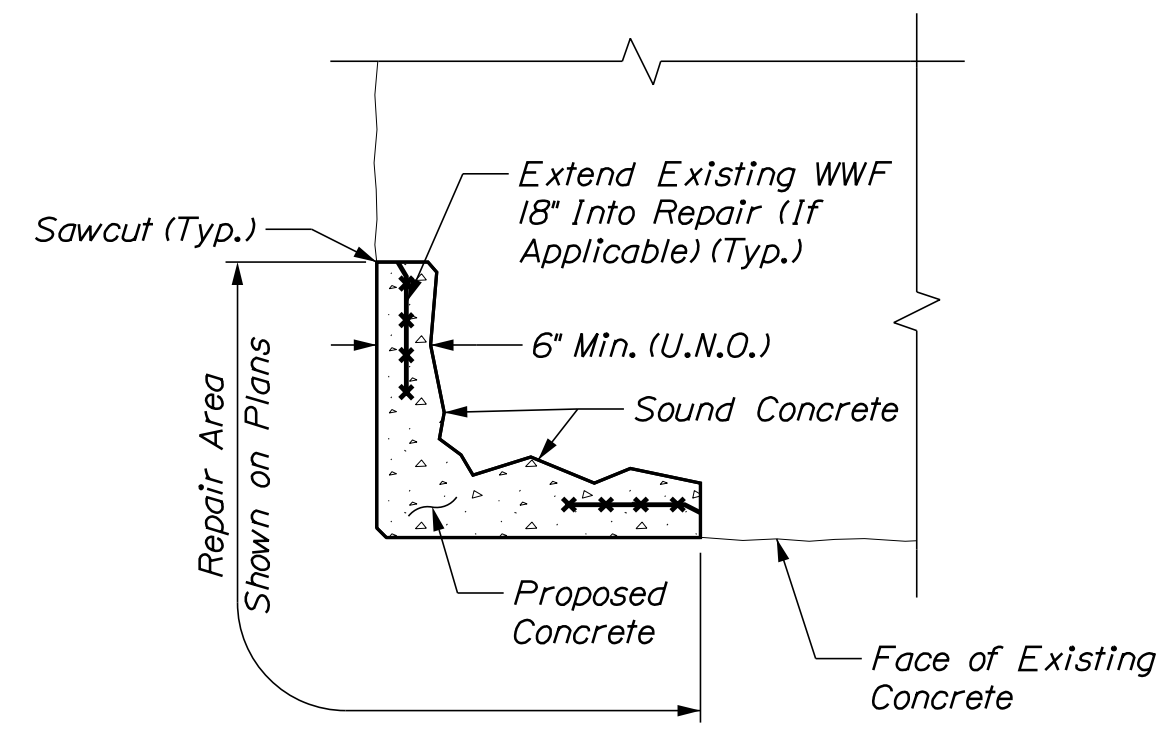
Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
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DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			



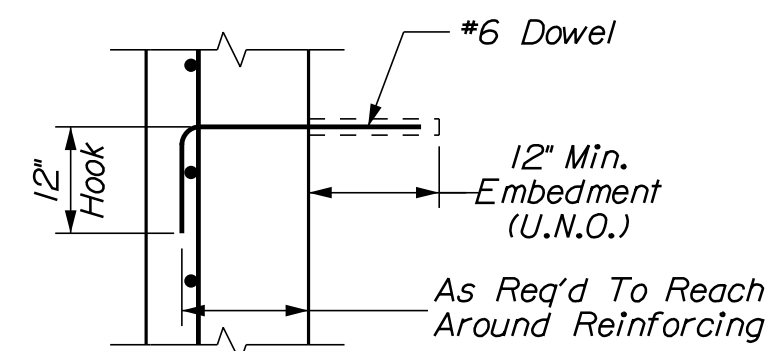
DEPTH OF UNSOUND CONCRETE < 6 IN.



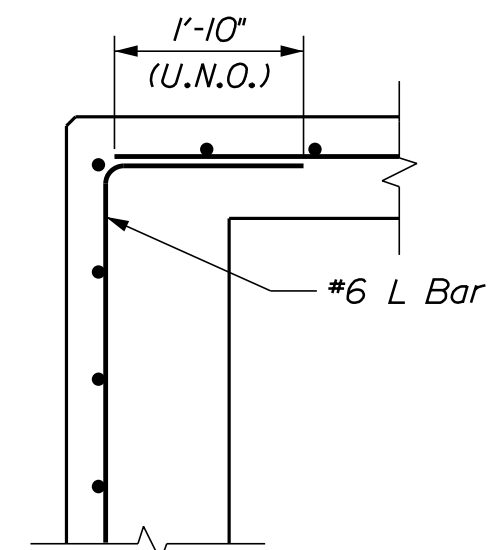
DEPTH OF UNSOUND CONCRETE ≥ 6 IN.

TYPICAL LIMITS FOR PARTIAL DEPTH REMOVAL/REPAIRS

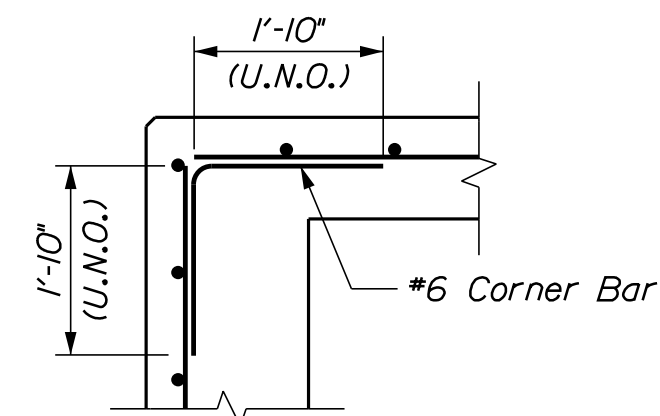
(Repairs Shown At Corners, Other Locations Similar)
(Reinforcing Not Shown For Clarity)
Not to Scale



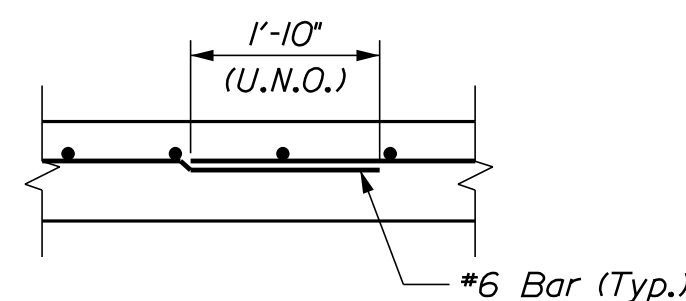
TYPICAL DOWEL DETAIL



TYPICAL L BAR DETAIL



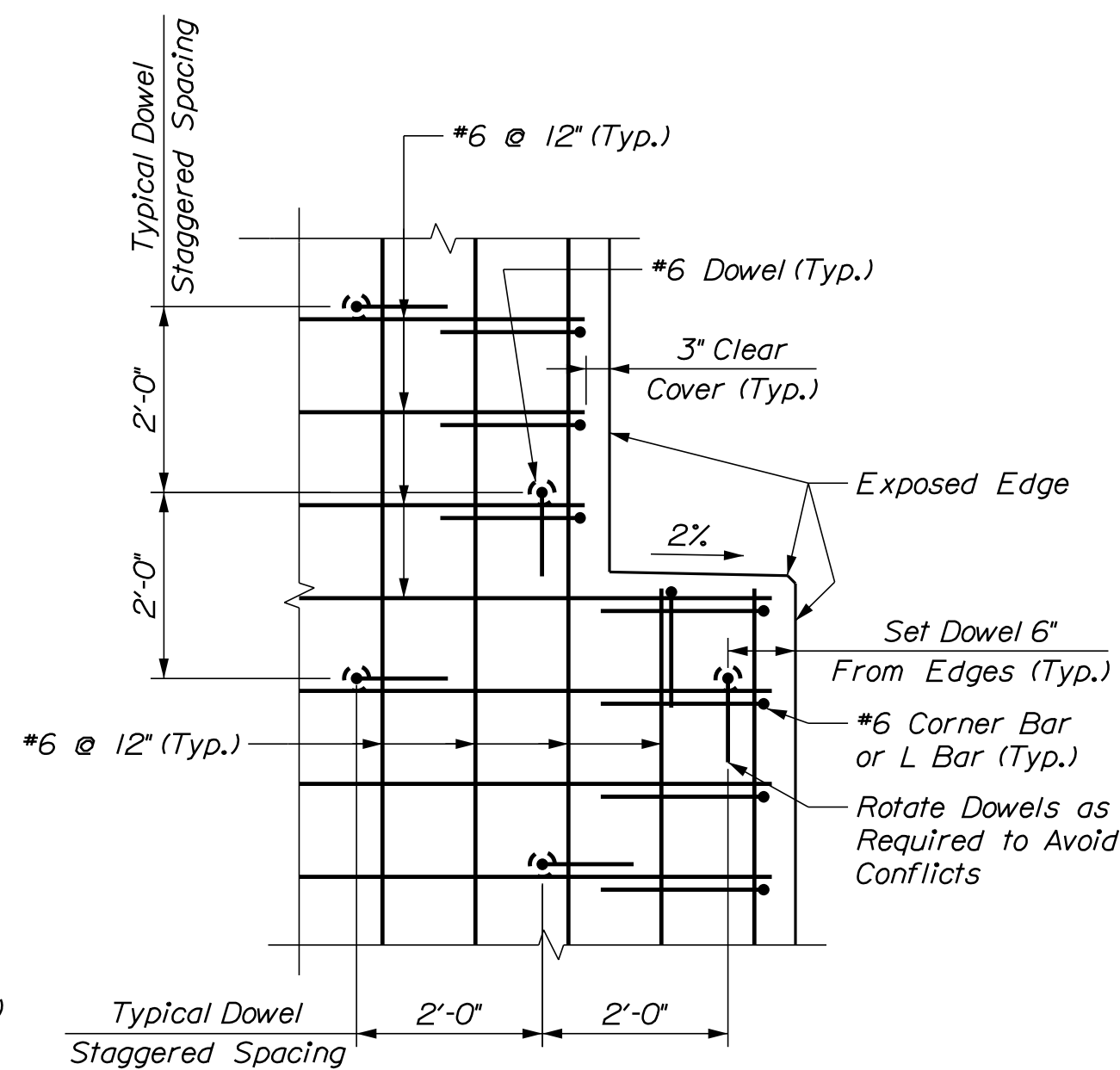
TYPICAL CORNER BAR DETAIL



TYPICAL LAP DETAIL

TYPICAL REINFORCING DETAILS

Not to Scale



TYPICAL CONCRETE REPAIR REINFORCING AND DOWEL LAYOUT

Not to Scale

GENERAL CONCRETE REPAIR NOTES

- 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.
- For repairs shown at "Approximate Limit of Partial Depth Removal/Repair" locations:
 - 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.
 - At specific locations conflicts with existing bridge features require the repair to be formed flush with the existing concrete and it is anticipated that removal beyond unsound concrete will be required to maintain minimum repair thicknesses. These locations are:
 - Bridge 7785 (M.P. 224.51) North and South Abutments:
 - Along the face of backwall behind the ends of girders.
 - Along the top of backwall under bridge timbers.
 - Bridge 7788 (M.P. 241.83) South Abutment:
 - Along the face of backwall behind the ends of girders.
 - Along the top of backwall under bridge timbers.
 - 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.
- For repairs shown at "Approximate Limit of Full Depth Removal/Repair" locations:
 - Concrete shall be removed the full depth required to the perform the work as shown in these Plans.
 - If unsound concrete is found beyond the limits of repair shown in the Plans, 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.
- At the Contractors option, concrete repairs shown vertically along the batter of the existing substructure may be formed plumb, at no additional cost to the Department. It is the Contractors responsibility to ensure all reinforcing meets spacing and clear cover requirements.
- Any reinforcing details not shown in these Plans shall be detail in accordance with the Typical Concrete Repair Reinforcing and Dowel Layout and the Typical Reinforcing Details shown on this sheet.
- 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%.

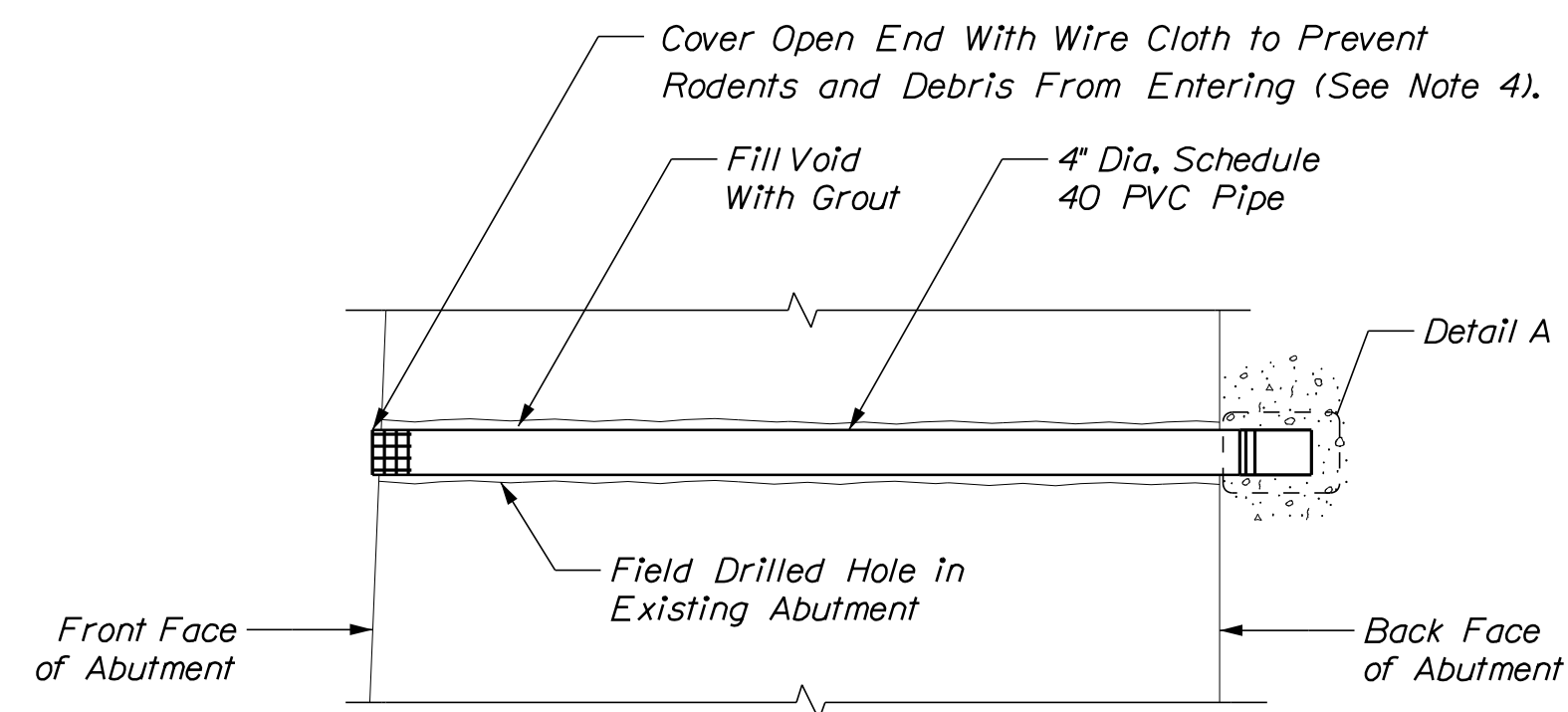
REINFORCED CONCRETE NOTES

- 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.
- Precast and cast-in-place concrete shall have all exposed edges and corners chamfered 3/4 inch.
- 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"
- PVC sleeves for anchor bolts and rods shall be removed prior to grouting.
- Precast concrete pedestals, backwalls, and bridge seats 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.
- The bottom of all precast concrete pedestals, backwalls, and bridge seat in contact with grout beds shall be intentionally roughened. All existing concrete surfaces in contact with grout beds shall be intentionally roughened. Intentional roughening shall be to an amplitude of 1/4 inch. Roughening shall run perpendicular to the centerline of girder. All surfaces shall be clean and free of laitance before placing grout bed.
- Protective Coating for Concrete Surfaces shall be applied to all new precast and cast-in-place concrete surfaces that are exposed after installation.
- 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.

WEEPER NOTES

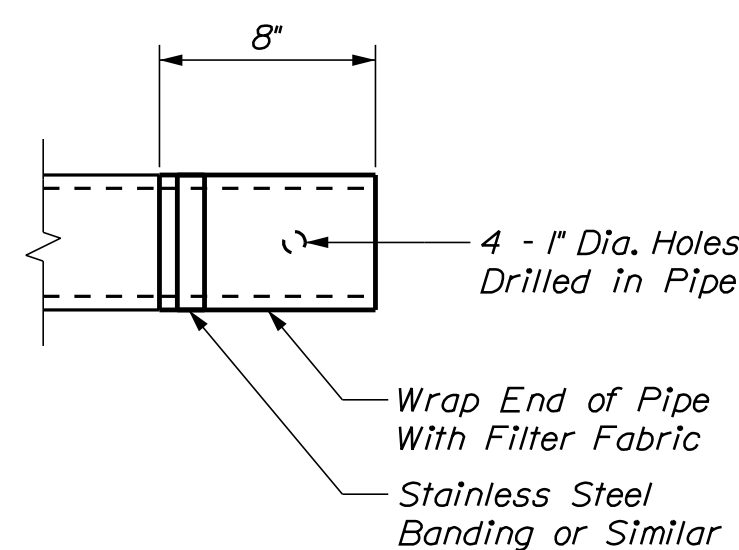
- All costs to fabricated and install the weepers will be considered incidental to Item 518.211, Rehabilitate Structural Concrete Substructure.
- Grout material shall be selected from the MaineDOT Qualified Products List.
- Filter fabric shall meet the requirements of Standard Specification 722.02, Drainage Geotextile.
- Stainless steel cloth shall have 1/4" maximum openings with minimum #16 gauge wire. Secured with a stainless steel banding.
- Holes for weepers shall be drilled perpendicular to the face of abutment. In order to ensure the weepers are approximately centered in the back face of abutment, the weepers shall be installed at the following locations on the front face of abutment:

- Bridge 7785 (M.P. 224.51) South Abutments - Approximately centered under West Girder
- Bridge 7785 (M.P. 224.51) North Abutments - Approximately centered under East Girder
- Bridge 7788 (M.P. 241.83) South Abutments - Approximately centered under East Girder
- Bridge 7788 (M.P. 241.83) North Abutments - Approximately centered under West Girder



TYPICAL WEEPER DETAIL

Not to Scale



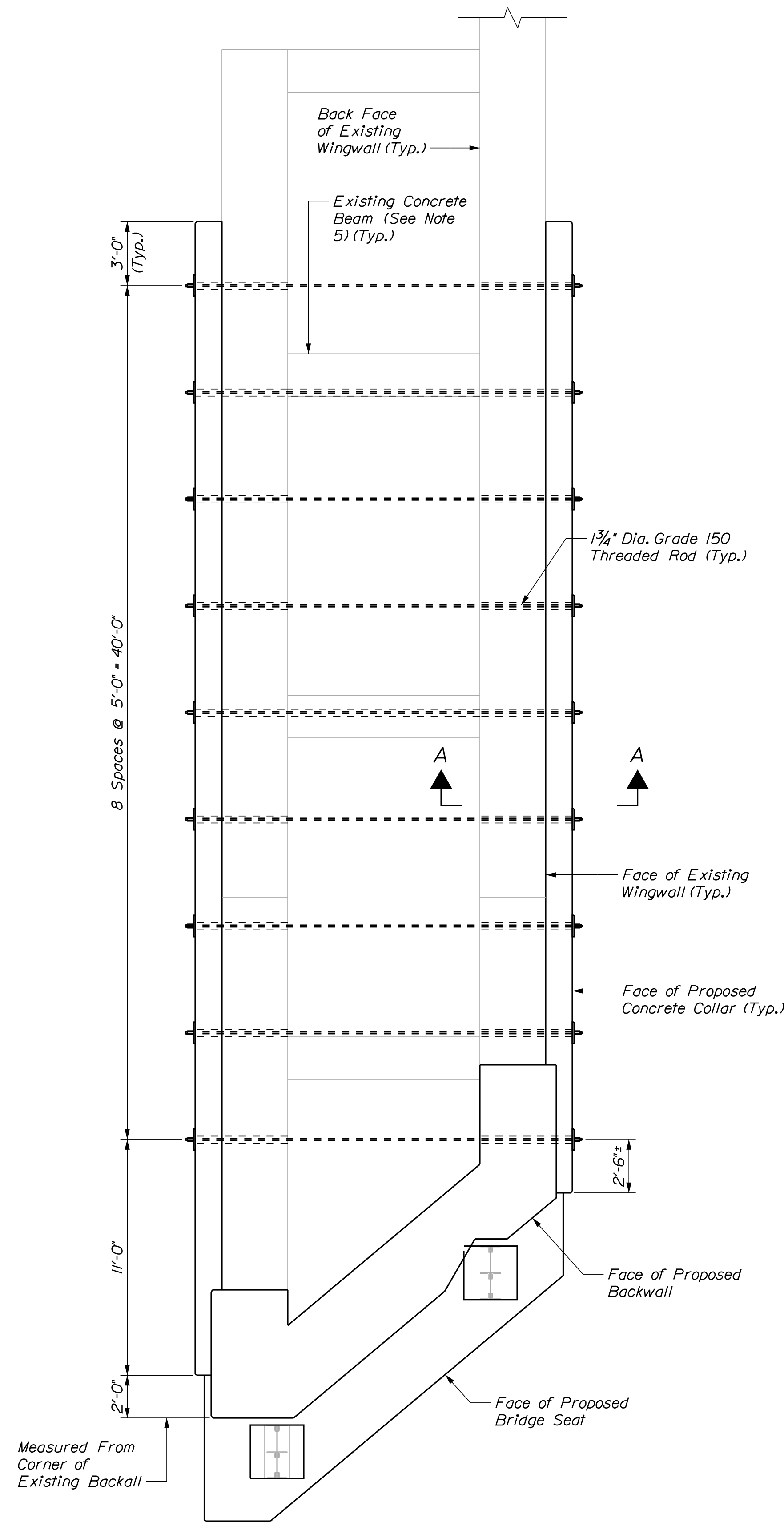
DETAIL A

Not to Scale

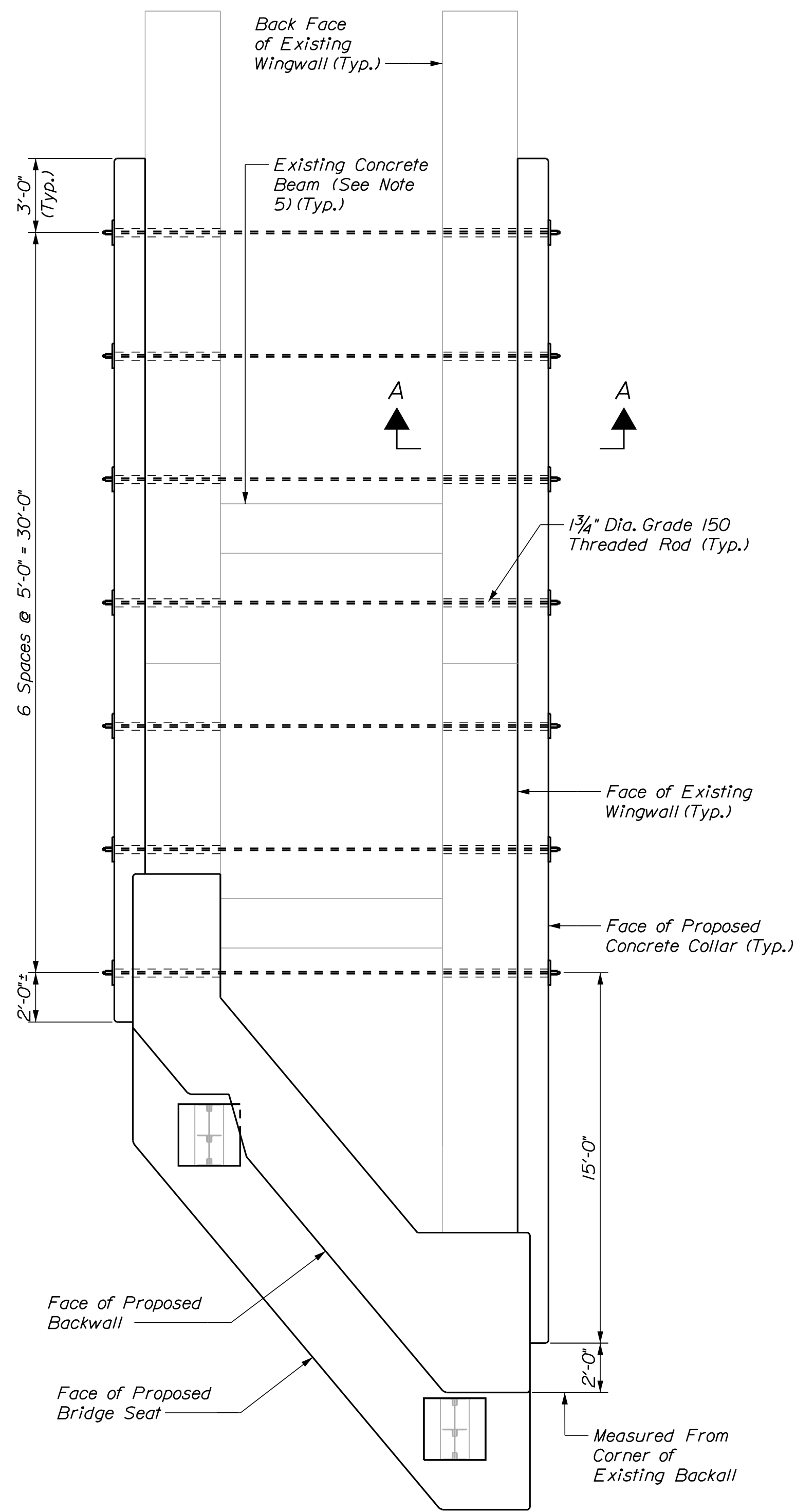


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REVISIONS 4			
FIELD CHANGES			

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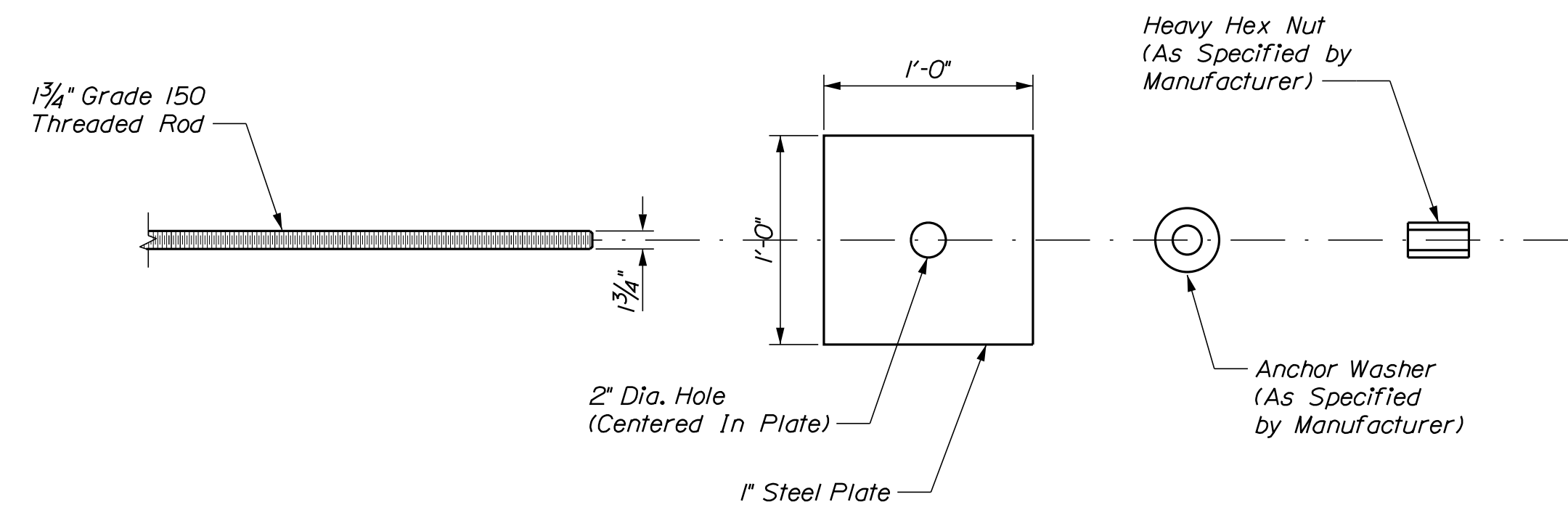


BRIDGE 7785 (M.P. 224.51)
PROPOSED WINGWALL TIE BACK LAYOUT
 (South Abutment Shown, North Abutment Similar)
 Scale: 1/4" = 1'-0"

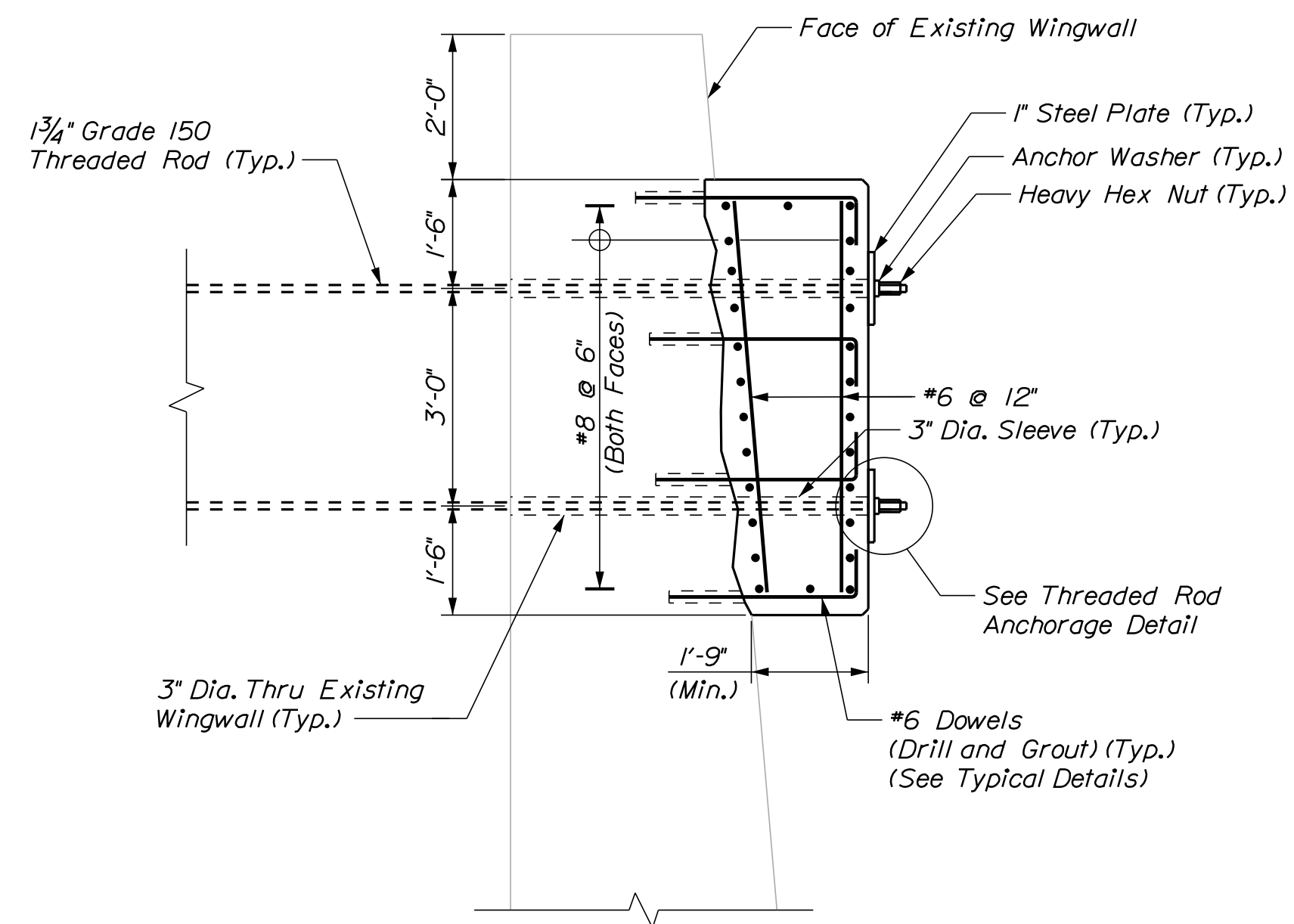


BRIDGE 7788 (M.P. 241.83)
PROPOSED WINGWALL TIE BACK LAYOUT
 (South Abutment Only)
 Scale: 1/4" = 1'-0"

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.



THREADED ROD ANCHORAGE DETAIL
 Not to Scale



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

NOTES

1. See Typical Details sheet for General Concrete Repair and Reinforced Concrete 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 manufacturer's recommendation. All steel components shall be hot-dipped galvanized.
3. Sleeves shall be grouted just prior to tightening. Grout shall be selected from the MaineDOT Qualified Products list. Expanding foam or caulking shall be used at the backface of wingwall to prevent grout from escaping.
4. Threaded rods shall have little to no tension after tightening. Nuts shall be drawn snug by hand and turned one additional rotation by wrench to prevent plates from rotating. Tack weld nut after tightening to prevent further rotation.
5. The Contractor's attention is called to the fact that the exact location of the concrete beams between the wingwalls is unknown. Drilling through the concrete beams may be required. The Contractor may adjust the spacing 12 inches in either direction to avoid concrete beams.
6. The Contractor shall take care to minimize damage to the existing wingwalls while drilling holes for threaded rods.
7. The Contractor shall submit Working Drawings and a Sequence of Work to the Resident for approval. Working Drawings shall include a layout of the proposed tie backs based on the Contractor's field measurements and Shop Drawings of the tie back system, threaded rods, plates, nuts, and all other components.
8. All labor, equipment, materials, and incidentals required to install the tie back system threaded rods shall be paid under Item 536.201, Tie Back System.
9. All labor, equipment, and materials required to install the proposed reinforced concrete collar shall be paid under Items 503.12, 503.13, and 518.211 as appropriate.

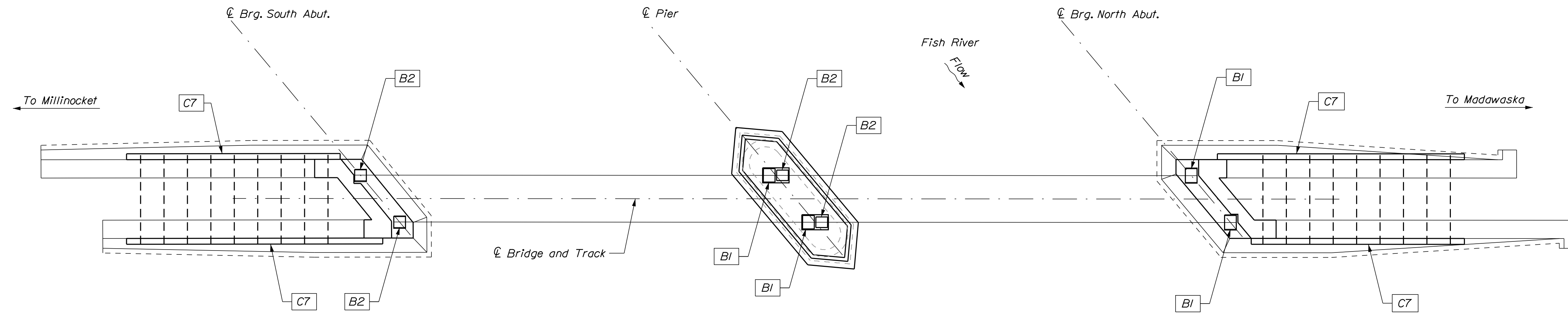


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REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

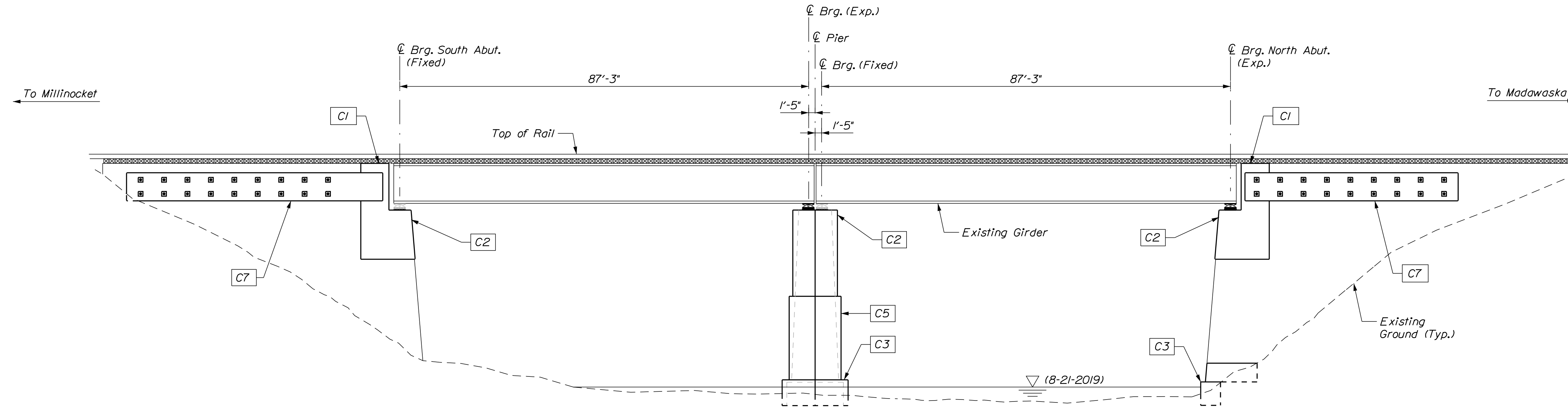
RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
WINGWALL TIE BACK SYSTEM DETAILS

SHEET NUMBER

7



REHABILITATION KEY PLAN
Not to Scale



BRIDGE ELEVATION
Not to Scale

BEARING AND PEDESTAL WORK ITEMS		
Work ID	Description	Number of Locations
B1	Remove and Replace Expansion Bearing	4
B2	Remove and Reset Fixed Bearing	4

SUBSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
C1	Rehabilitate Backwall	2
C2	Rehabilitate Bridge Seat and Install Embedded Steel Bolsters	3
C3	Rehabilitate Footing	2
C5	Encase Pier	1
C7	Install Wingwall Tie Back System	2

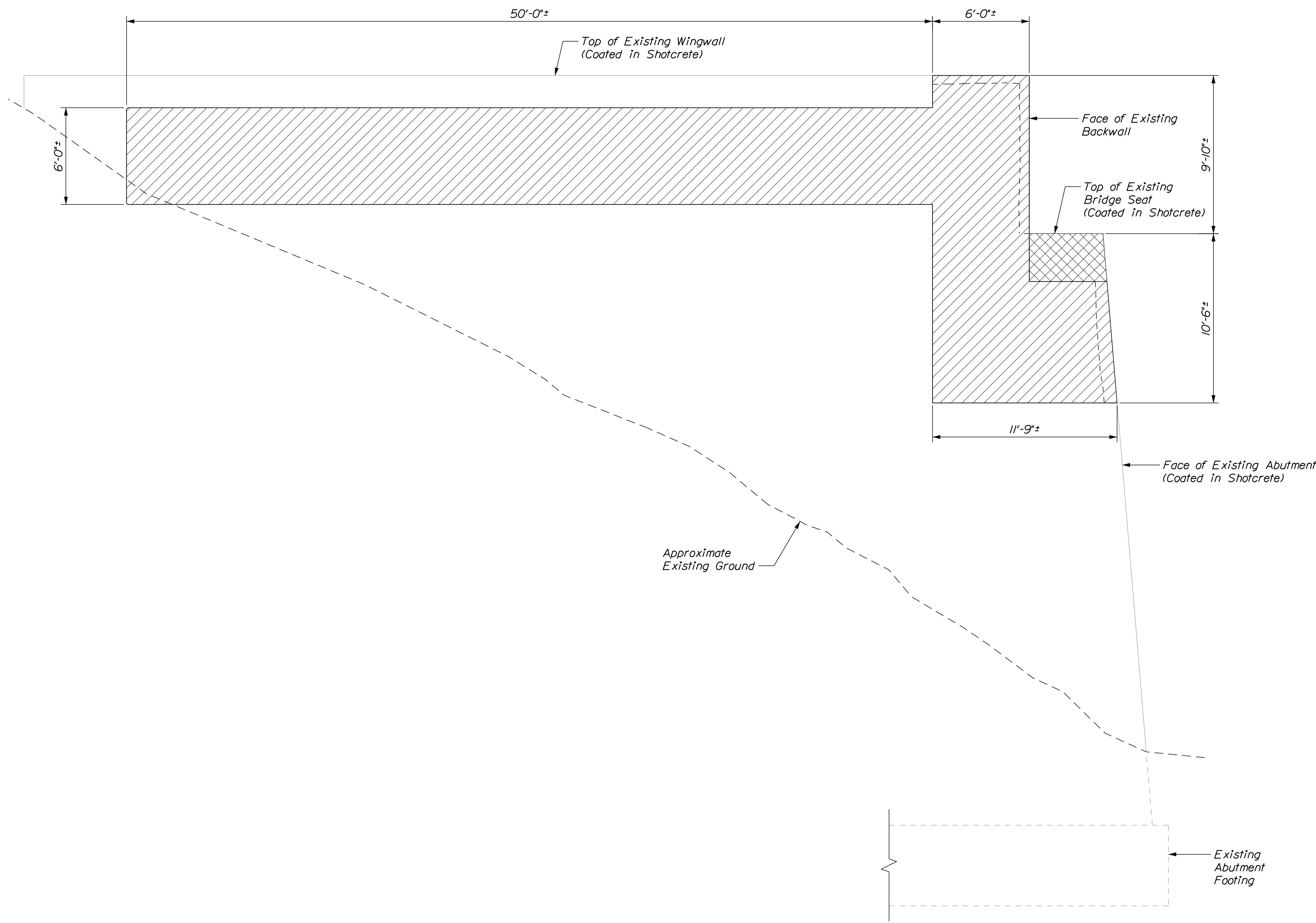
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 7785
WIN
23488.00
BRIDGE PLANS



PROJ. MANAGER	DATE	BY	DATE
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CHECKED-REVIEWED	JUN 12/2020	GSC	
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

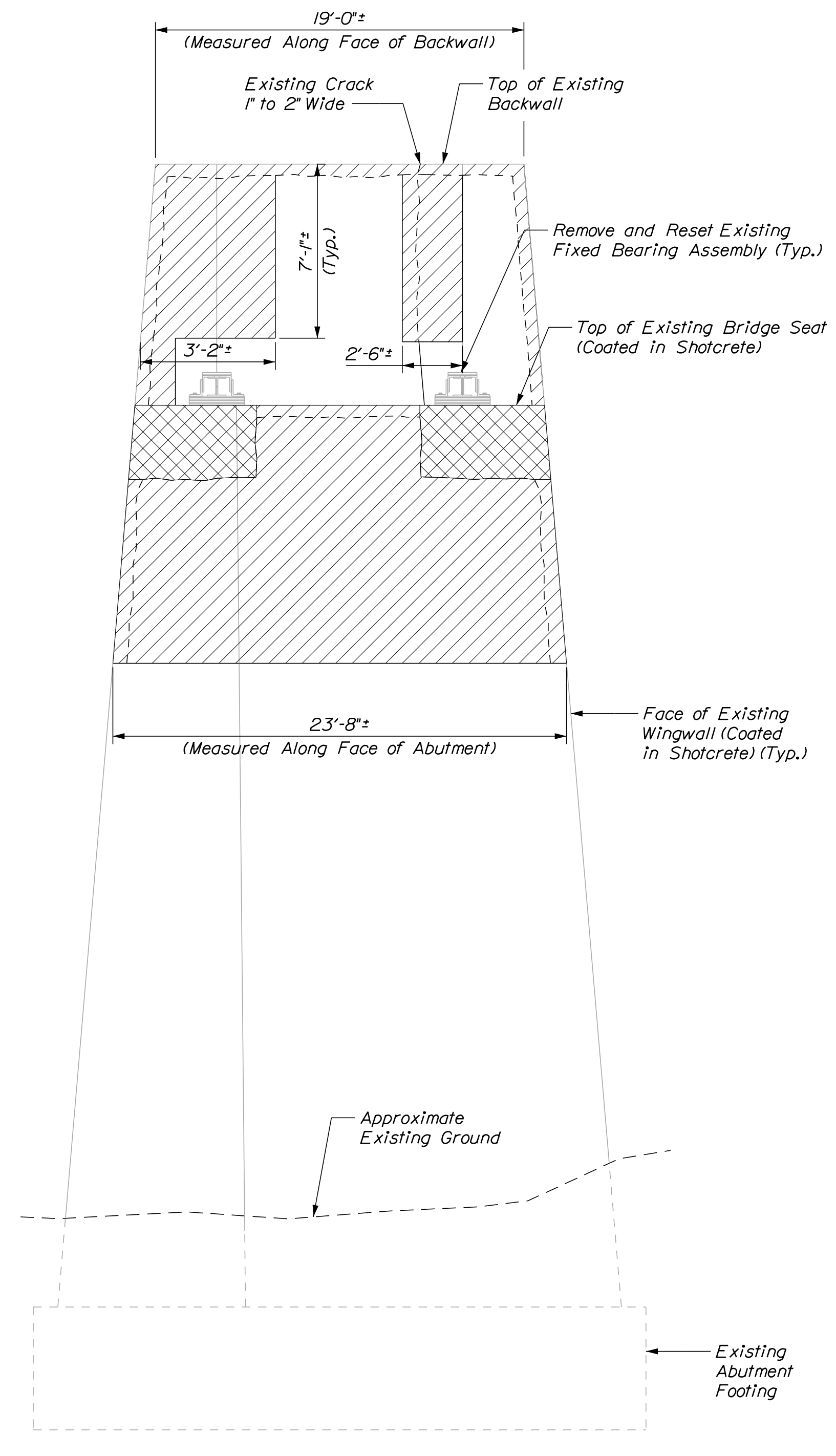
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7785 (M.P. 224.51)
OVER FISH RIVER (SOUTH) (1 OF 8)

FIGURE
8
OF 36



EXISTING SOUTHEAST WINGWALL ELEVATION - REMOVAL

(Southeast Wingwall Shown, Southwest Wingwall Similar)
Scale: 1/4" = 1'-0"



EXISTING SOUTH ABUTMENT ELEVATION - REMOVAL

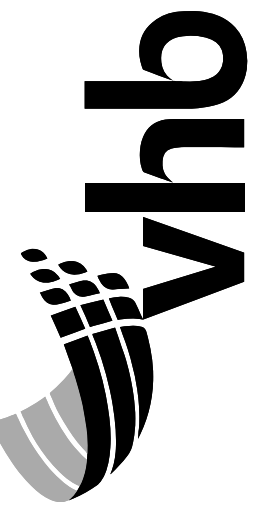
Scale: 1/4" = 1'-0"

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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See next sheet for additional repair dimensions and geometry.
4. Removal of existing material and subsequent regrading around the end of wingwall tie back system will be considered incidental to the associated Contract Items.



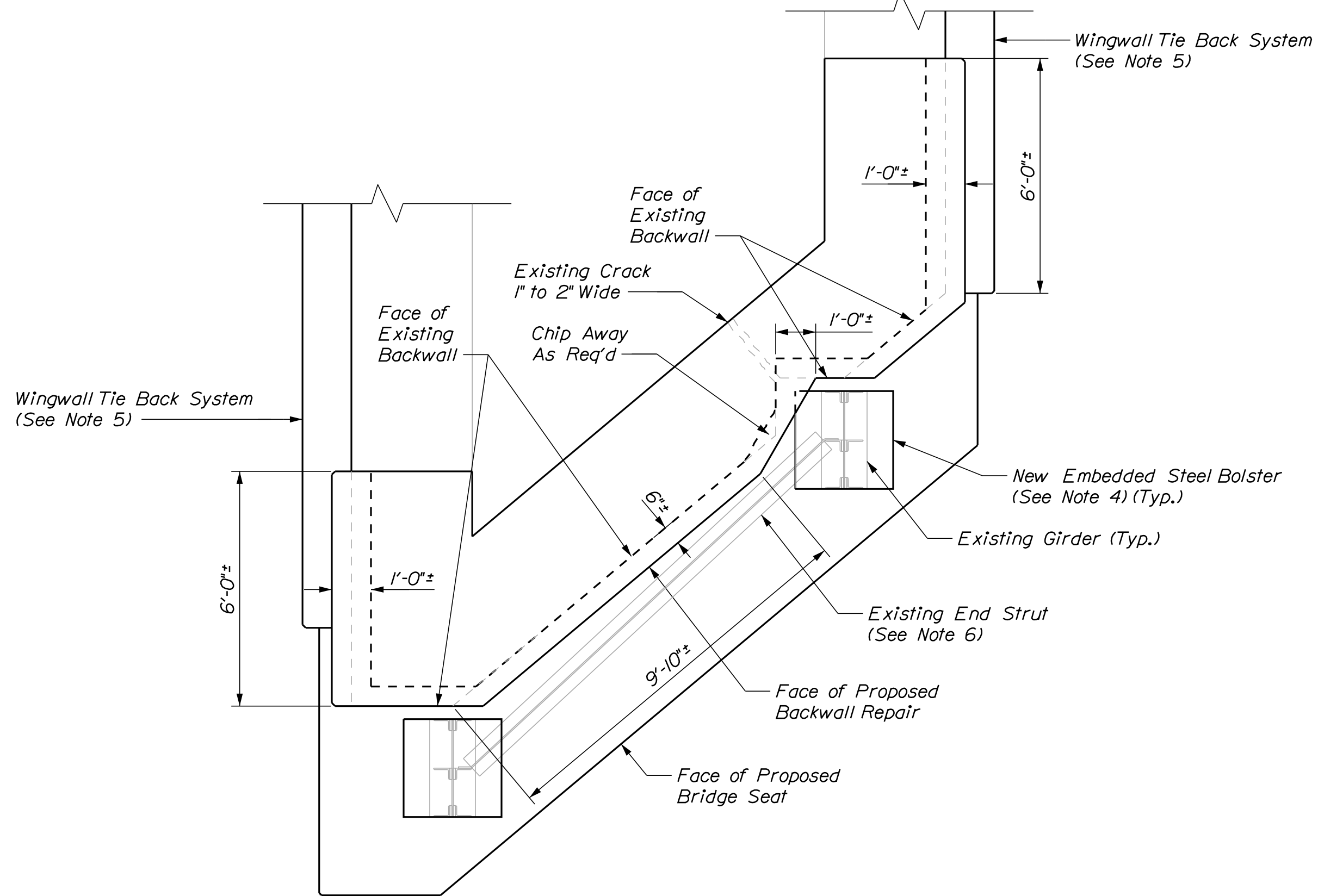
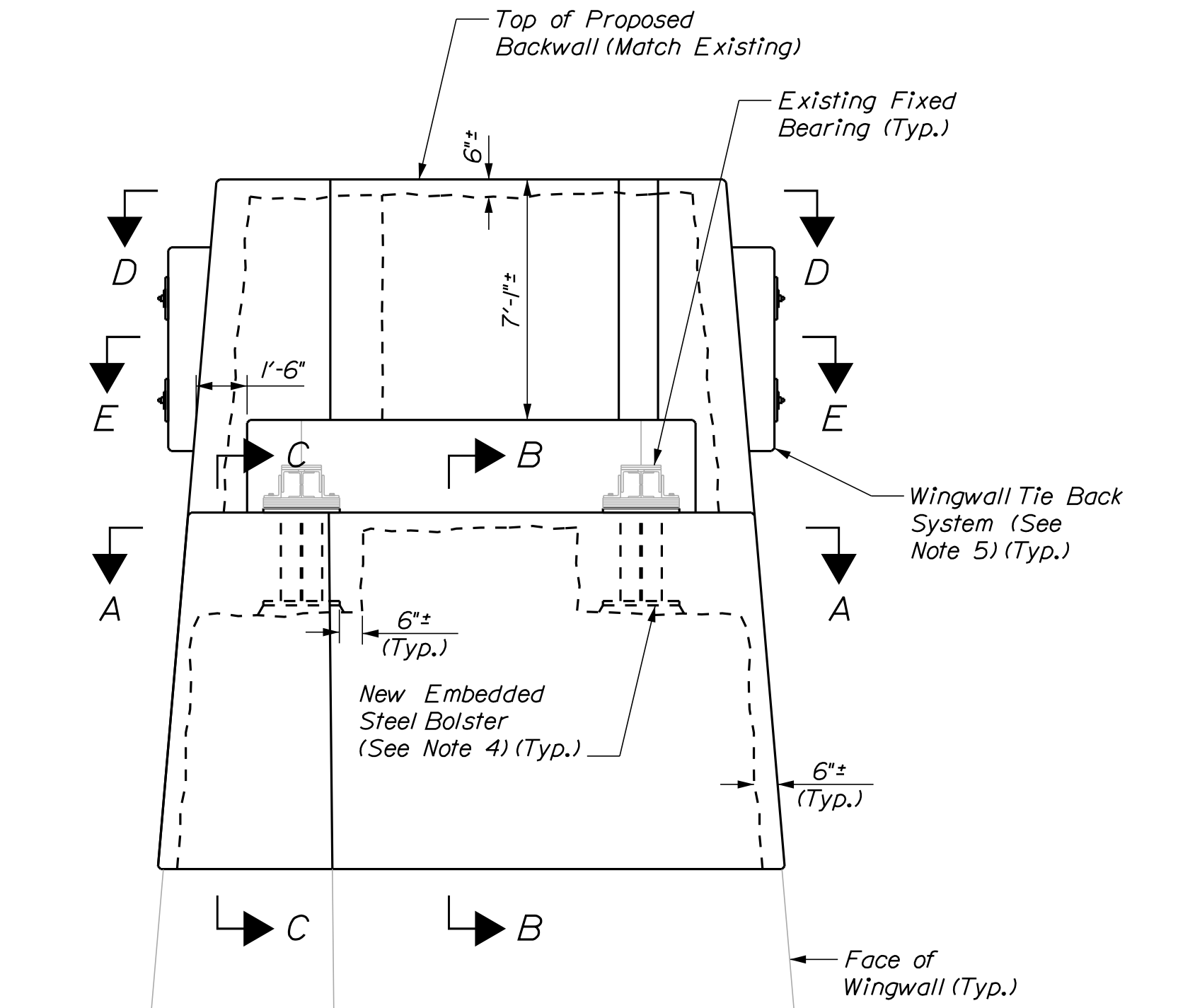
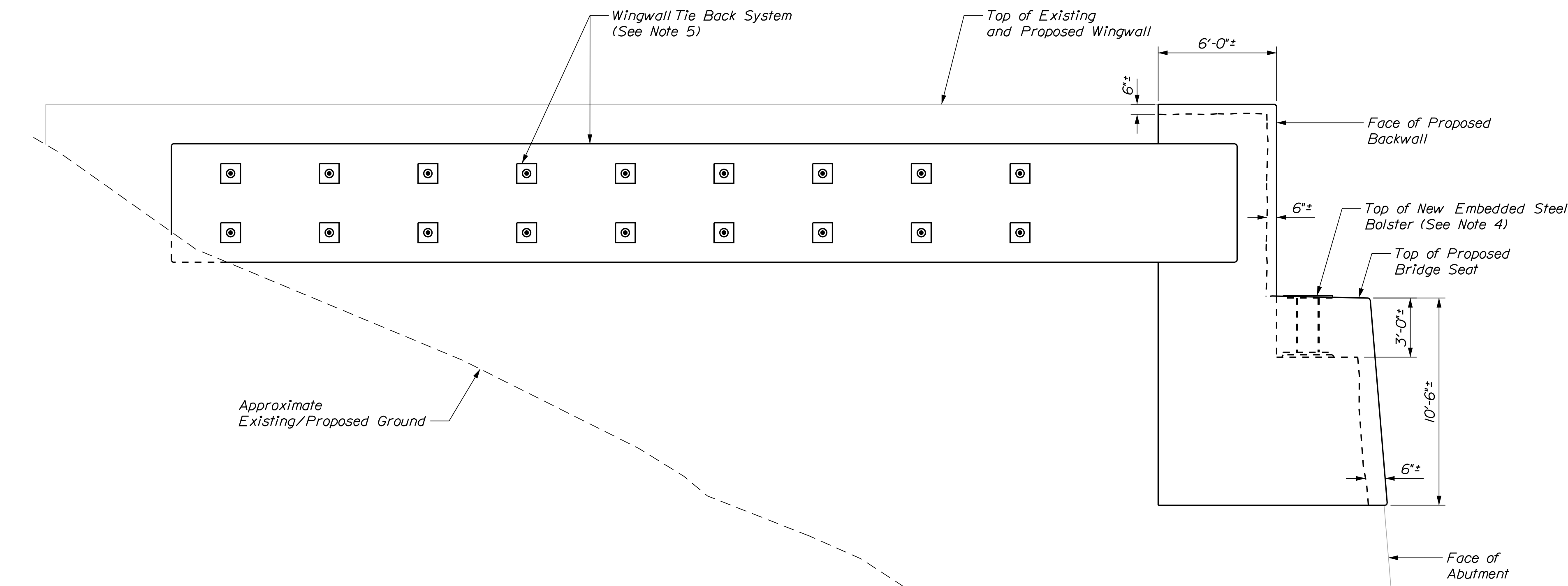
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DESIGN-DETAILED	JOM	BJM	12/2020
CHECKED-REVIEWED	GSC	GSC	12/2020
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7785 (M.P. 224.51)
OVER FISH RIVER (SOUTH) (2 OF 8)

FIGURE

9

OF 36



PROPOSED SOUTHEAST WINGWALL ELEVATION
 (Southeast Wingwall Shown, Southwest Wingwall Similar)
 Scale: 1/4" = 1'-0"

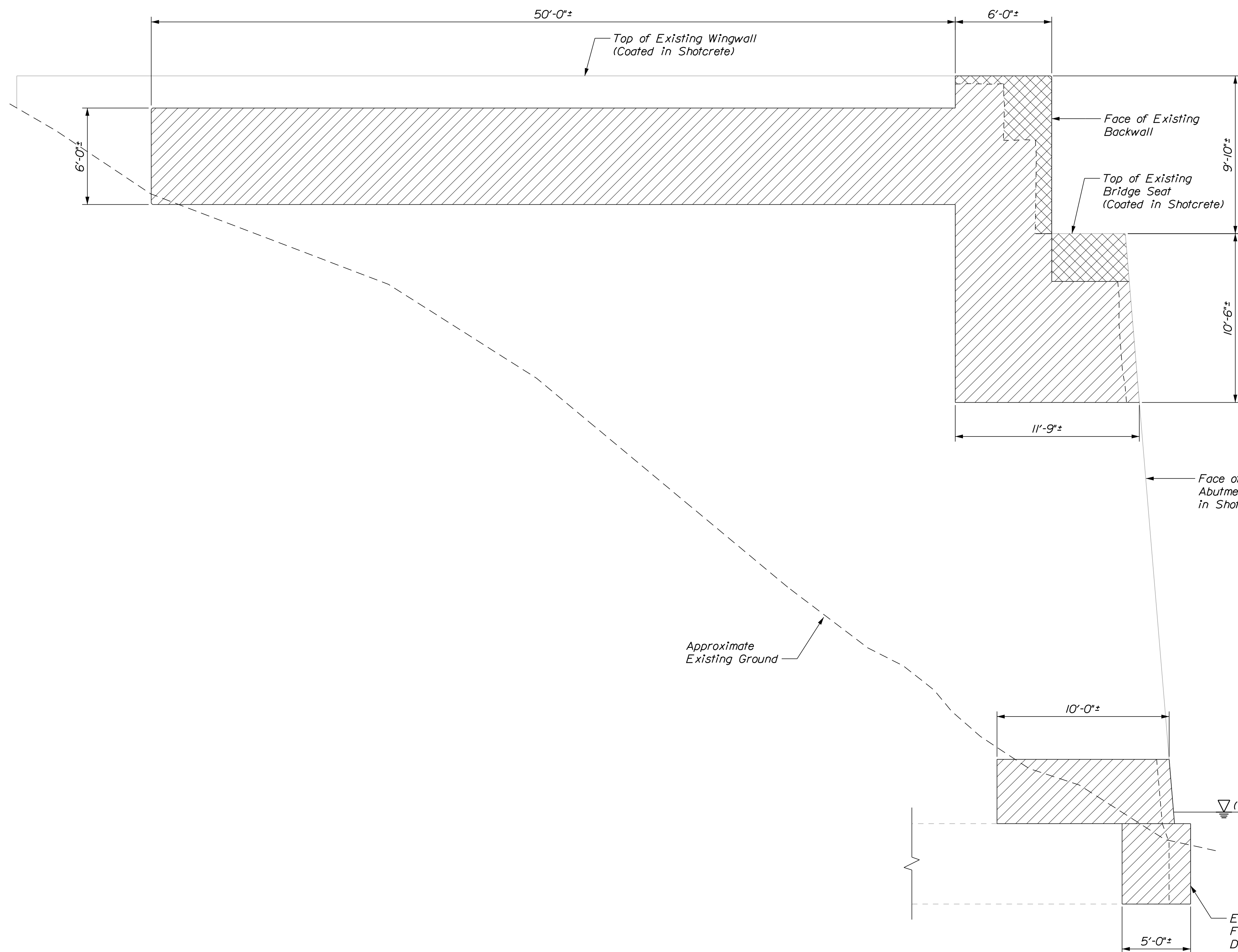
PROPOSED SOUTH ABUTMENT ELEVATION
 Scale: 1/4" = 1'-0"

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

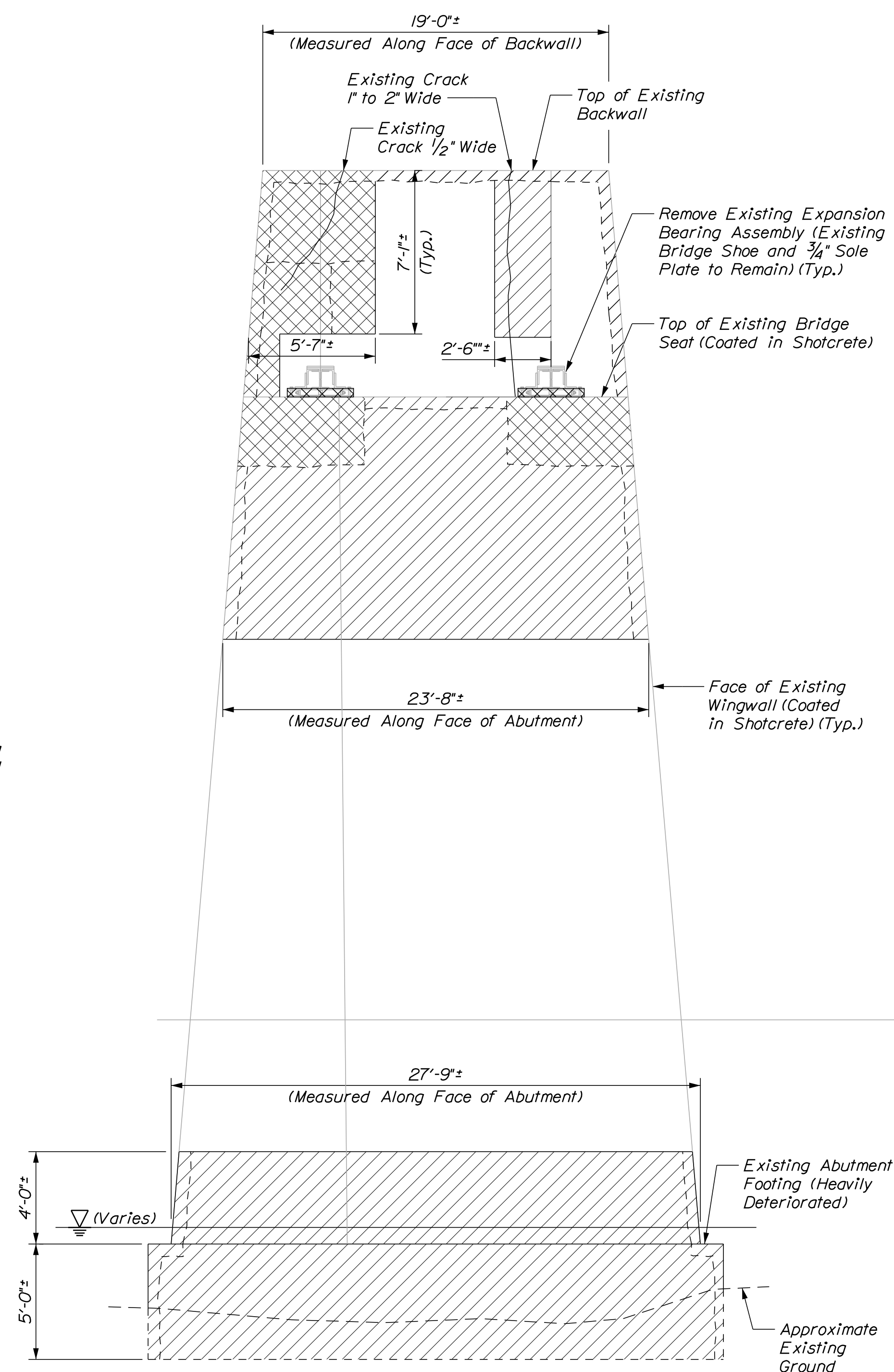
NOTES

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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See Bridge No. 7785 (M.P. 224.51) Over Fish River (7 of 8) sheet for concrete repair sections and reinforcing details.
4. See Bearing, Bolster, and Pedestal Details (2 of 3) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.
5. See Wingwall Tie Back System Details sheet for wingwall tie back system layout and details.
6. The existing upper end strut shall be removed prior to and reset after completing backwall repairs. All costs associated with removal and resetting of the existing upper end strut will be considered incidental to the associated Contract Items. The lower end strut shall be left in place.
7. At the Contractor's option, high-early strength concrete may be used in the backwall or the upper portion of the backwall, to reduce the required closure window. The Contractor may use a horizontal construction joint as required to suit his or her means and methods of installing the backwall repair.

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
v h b		BRIDGE NO. 7785	
RAILROAD BRIDGE		BRIDGE PLANS	
SUBSTRUCTURE REHABILITATION PROJECT		WIN 23488.00	
MADAWASKA SUB. AROOSTOOK COUNTY		BRIDGE NO. 7785 (M.P. 224.51)	
OVER FISH RIVER (SOUTH) (3 OF 8)		REVISIONS 3	
FIGURE		REVISIONS 4	
10		FIELD CHANGES	
OF 36			



EXISTING NORTHWEST WINGWALL ELEVATION - REMOVAL
 (Northwest Wingwall Shown, Northeast Wingwall Similar)
 Scale: 1/4" = 1'-0"



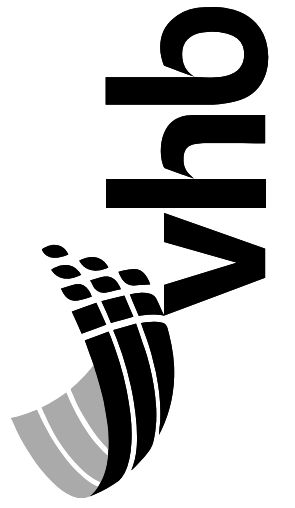
EXISTING NORTH ABUTMENT ELEVATION - REMOVAL
 Scale: 1/4" = 1'-0"

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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See next sheet for additional repair dimensions and geometry.
4. Removal of existing concrete, timber cribbing and any material and subsequent regrading around the base of footing and end of wingwall tie back system will be considered incidental to the associated Contract Items. Any large cobbles that are moved during footing rehabilitation shall be reset to their approximate original locations after work is complete.



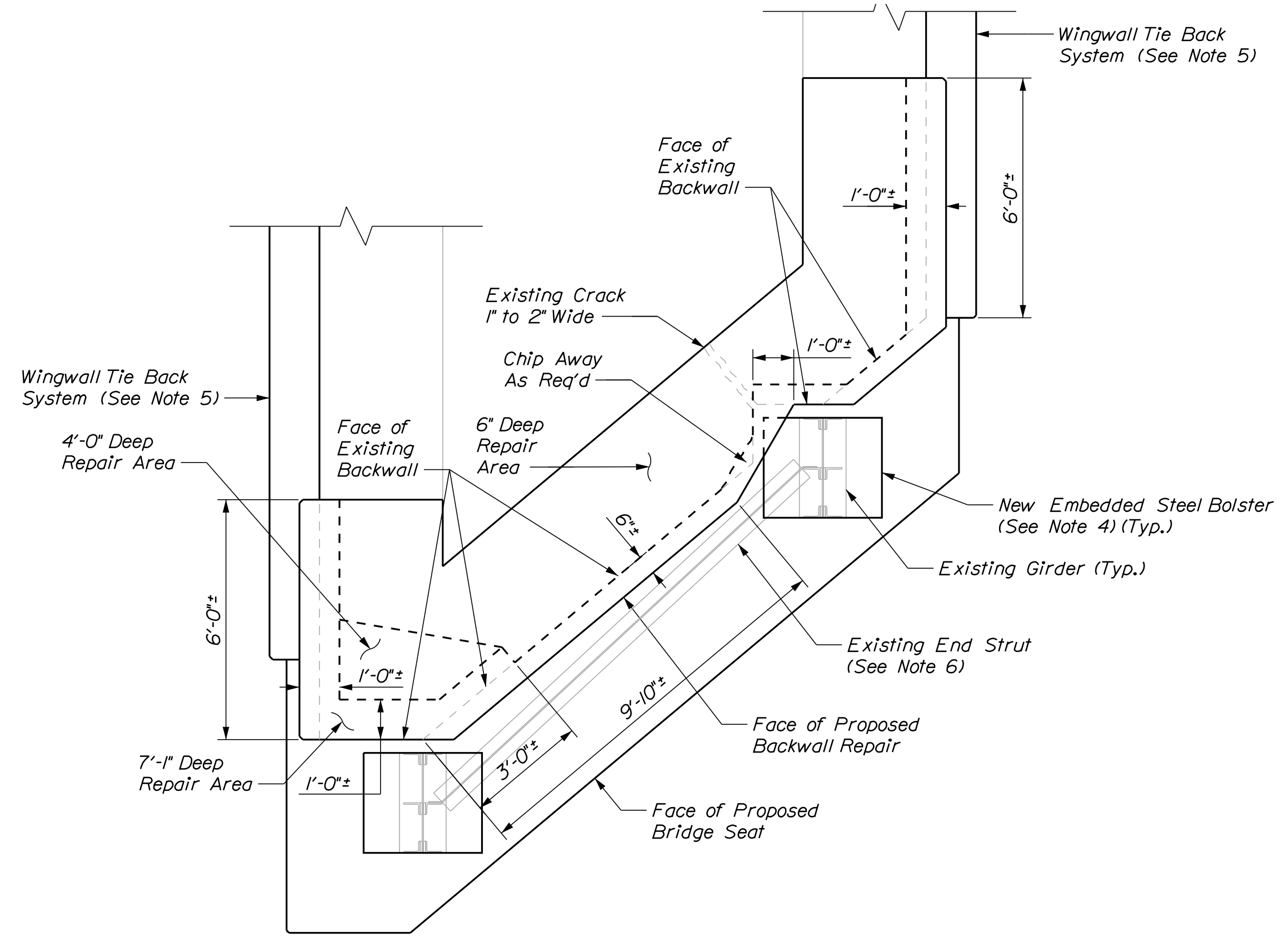
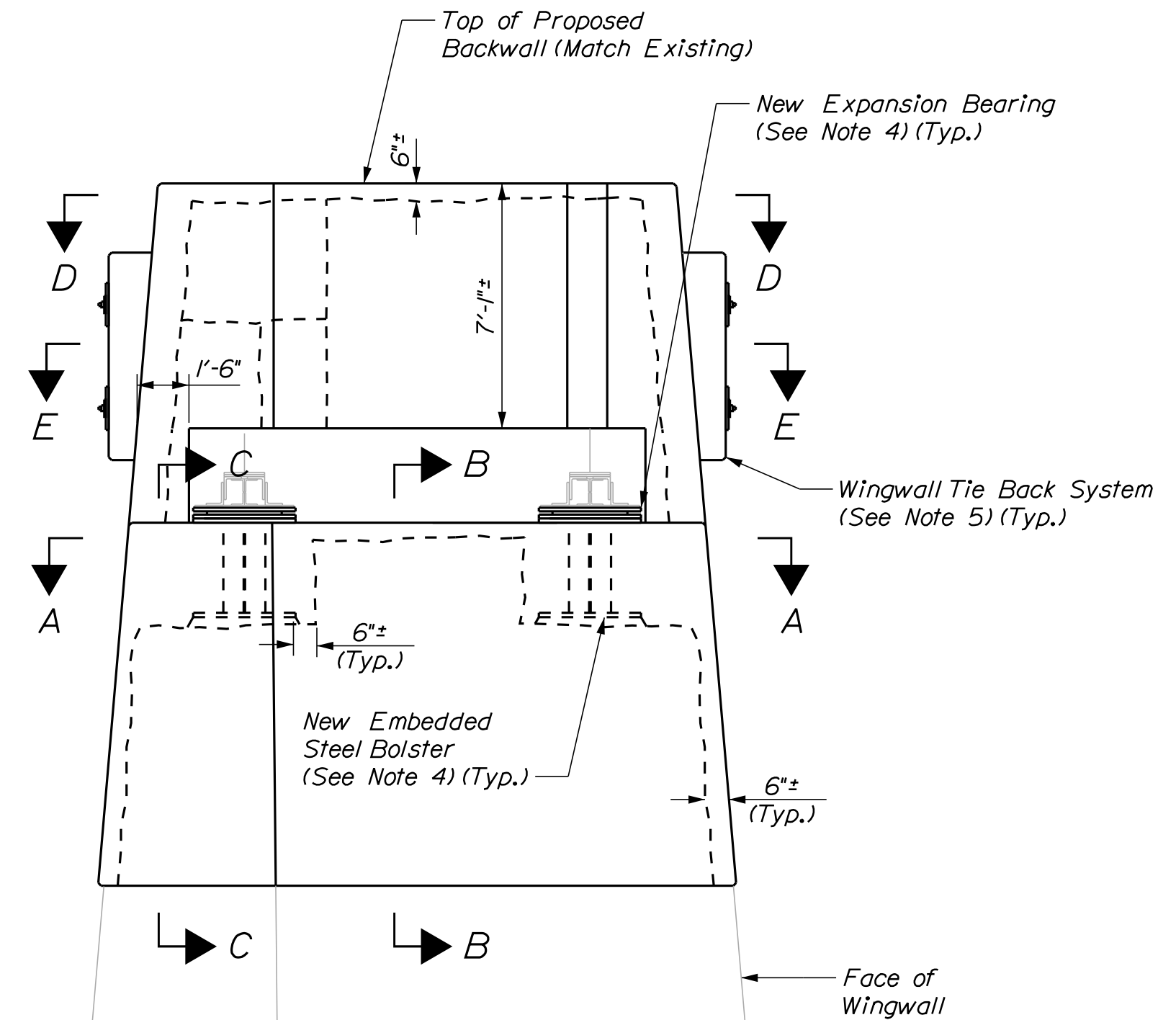
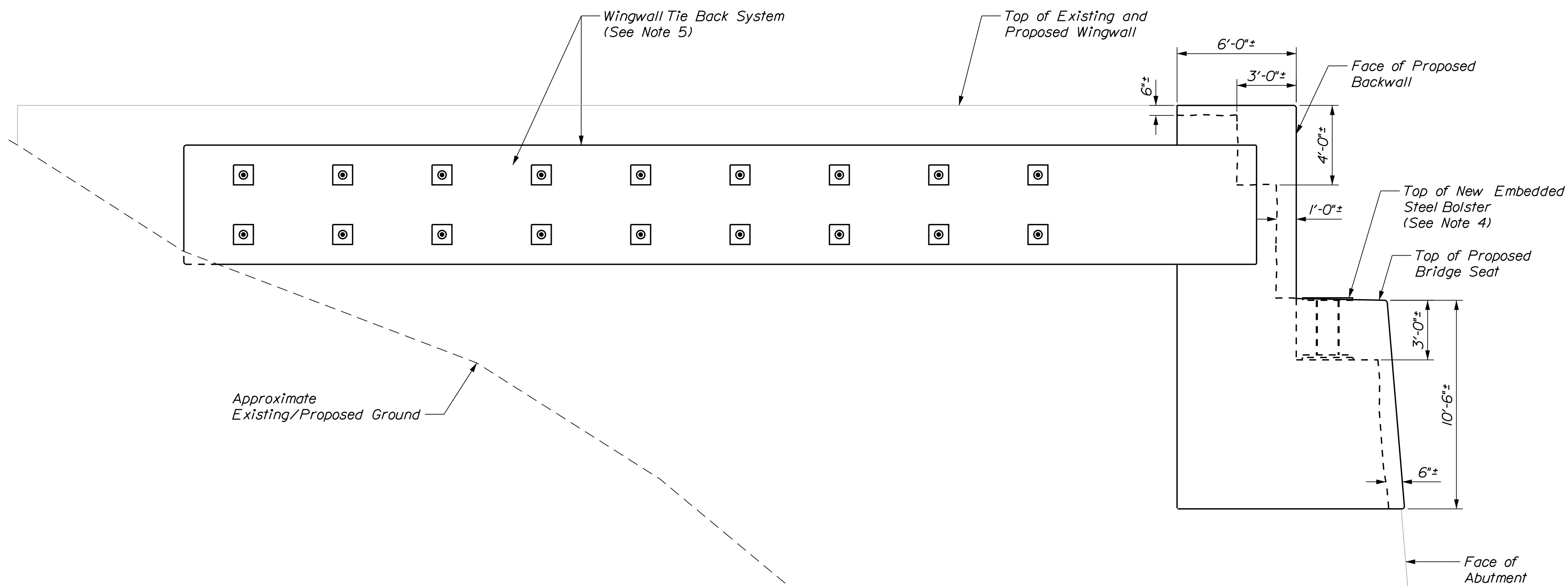
PROJ. MANAGER	DATE	BY	DATE
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DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
 BRIDGE NO. 7785 (M.P. 224.51)
 OVER FISH RIVER (SOUTH) (4 OF 8)

FIGURE

11

OF 36



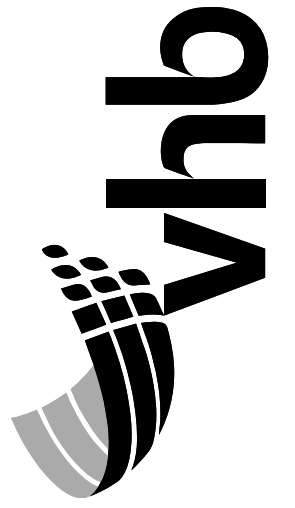
PROPOSED NORTHWEST WINGWALL ELEVATION
(Northwest Wingwall Shown, Northeast Wingwall Similar)
Scale: 1/4" = 1'-0"

PROPOSED NORTH ABUTMENT ELEVATION
Scale: 1/4" = 1'-0"

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

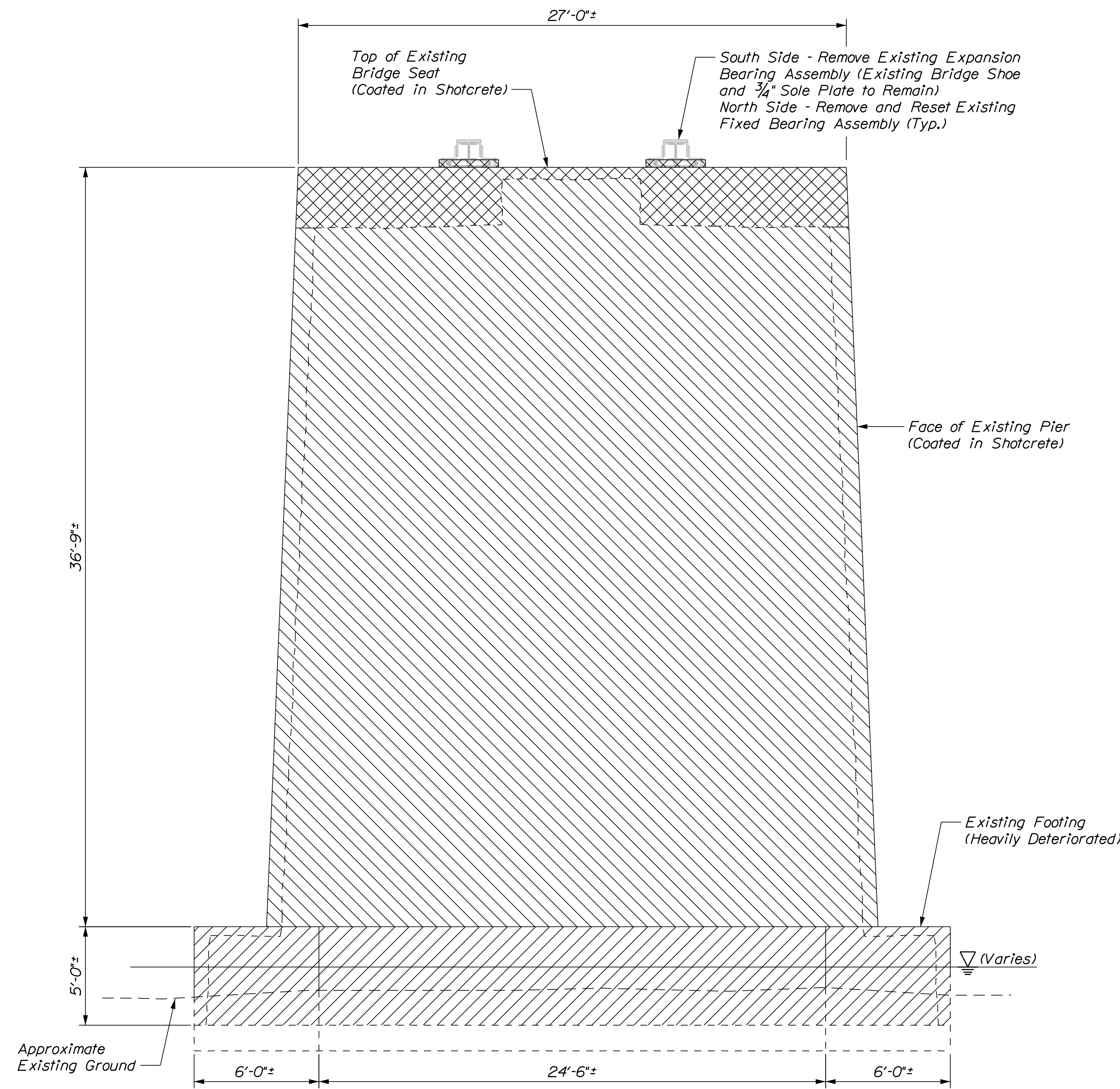
NOTES

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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See Bridge No. 7785 (M.P. 224.51) Over Fish River (7 of 8) and (8 of 8) sheets for concrete repair sections and reinforcing details.
4. See Bearing, Bolster, and Pedestal Details (1 of 3) and (2 of 3) sheets for bearing and steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.
5. See Wingwall Tie-Back System Details sheet for wingwall tie-back system layout and details.
6. The existing upper end strut shall be removed prior to and reset after completing backwall repairs. All costs associated with removal and resetting of the existing upper end strut will be considered incidental to the associated Contract Items. The lower end strut shall be left in place.
7. At the Contractor's option, high-early strength concrete may be used in the backwall or the upper portion of the backwall, to reduce the required closure window. The Contractor may use a horizontal construction joint as required to suit his or her means and methods of installing the backwall repair.
8. Removal of existing concrete, timber cribbing, and any material around the base of the footing will be considered incidental to the associated Contract Items. Any large cobbles that are moved during footing rehabilitation shall be reset to their original locations after work is complete.

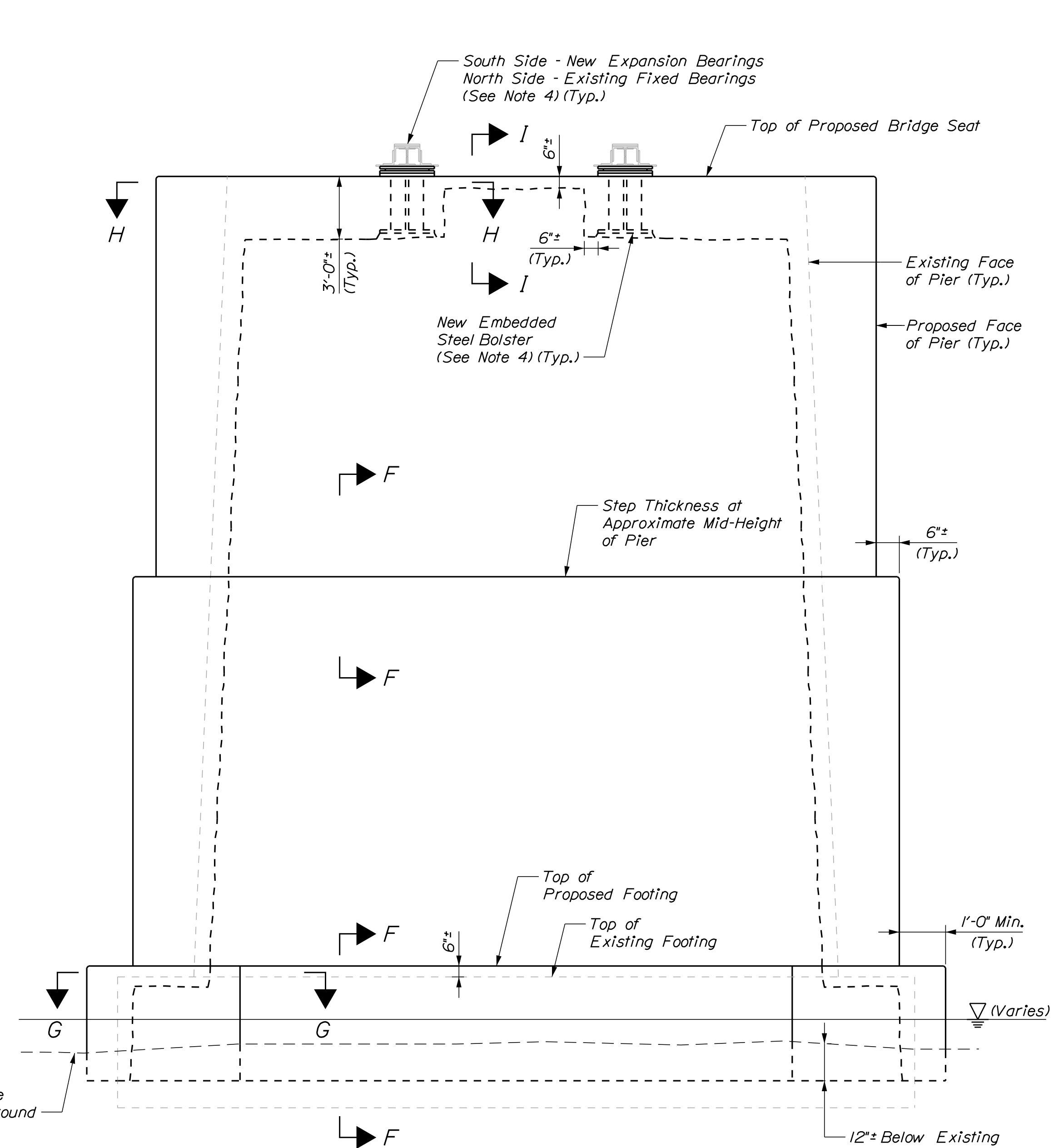


PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

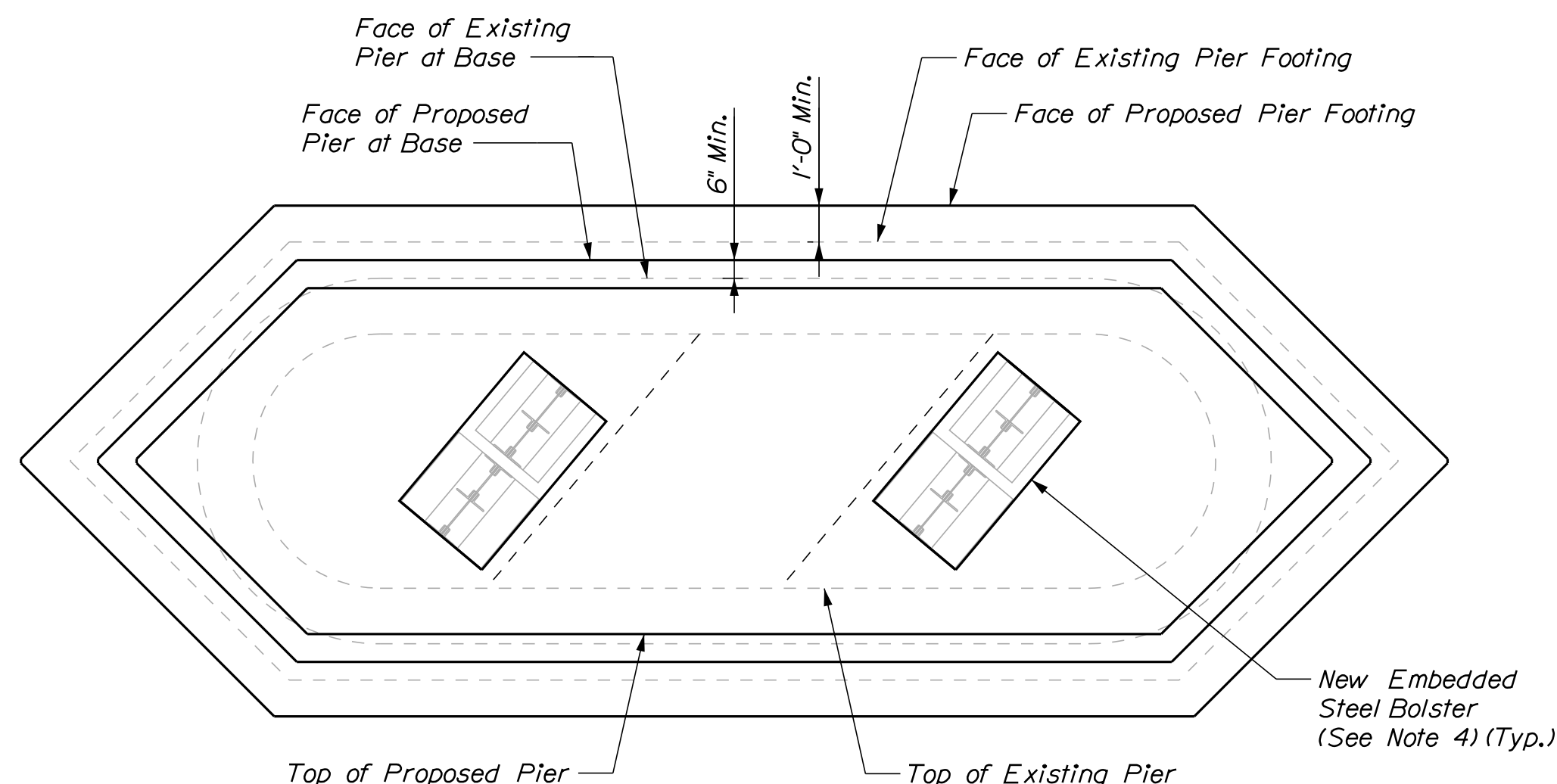
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7785 (M.P. 224.51)
OVER FISH RIVER (SOUTH) (5 OF 8)



EXISTING PIER ELEVATION - REMOVAL
(All Faces Similar)
Scale: 1/4" = 1'-0"



PROPOSED PIER ELEVATION
(All Faces Similar)
Scale: 1/4" = 1'-0"



PROPOSED PIER PLAN
(All Faces Similar)
Scale: 1/4" = 1'-0"

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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See Bridge No. 7785 (M.P. 224.51) Over Fish River (8 of 8) sheet for concrete repair sections and reinforcing details.
4. See Bearing, Bolster, and Pedestal Details (1 of 3) and (2 of 3) sheet for bearing and steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.
5. Removal of existing concrete, timber cribbing and any material and subsequent regrading around the base of footing will be considered incidental to the associated Contract Items. Any large cobbles that are moved during footing rehabilitation shall be reset to their approximate original locations after work is complete.



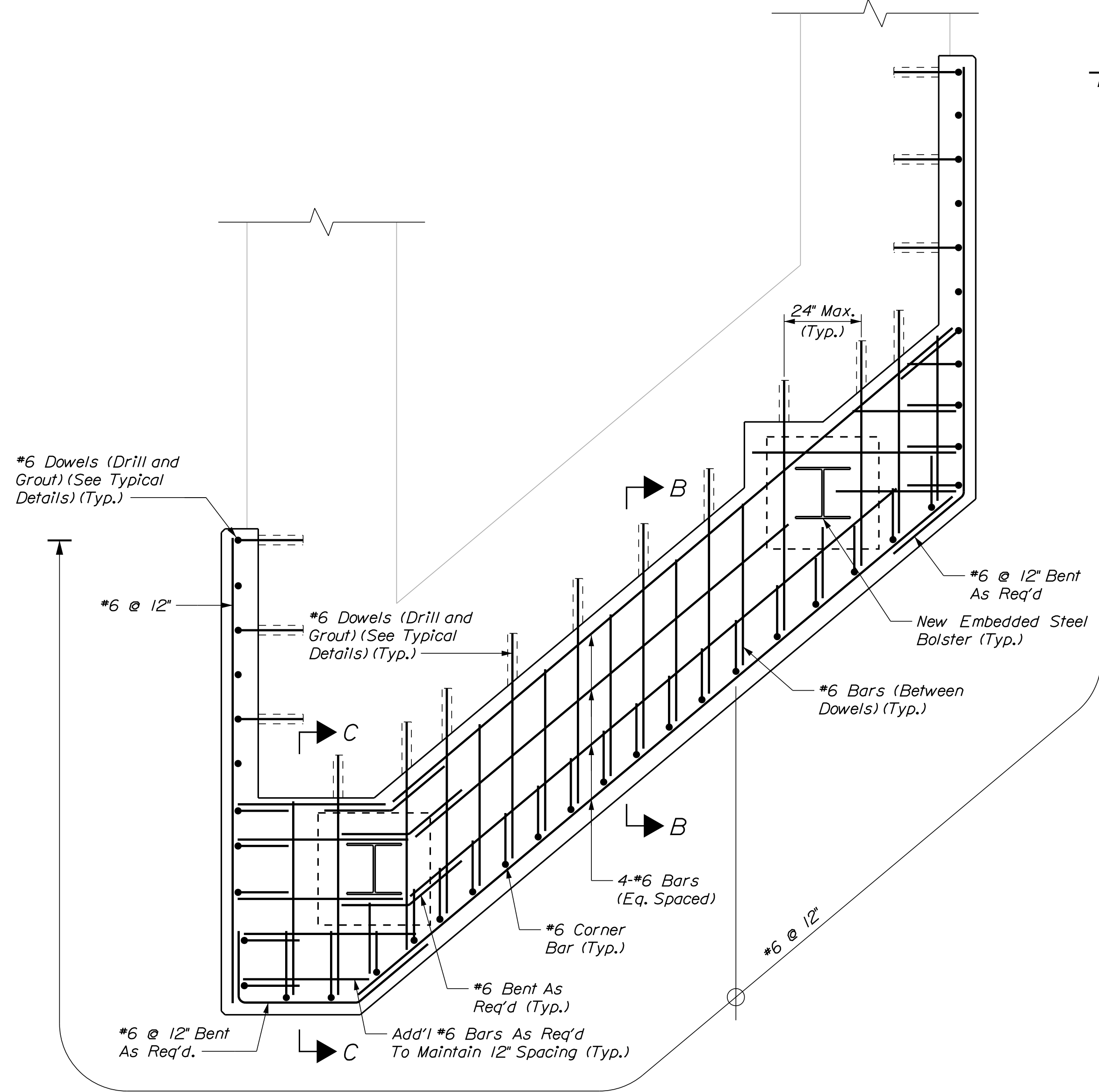
PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 12/17/2020

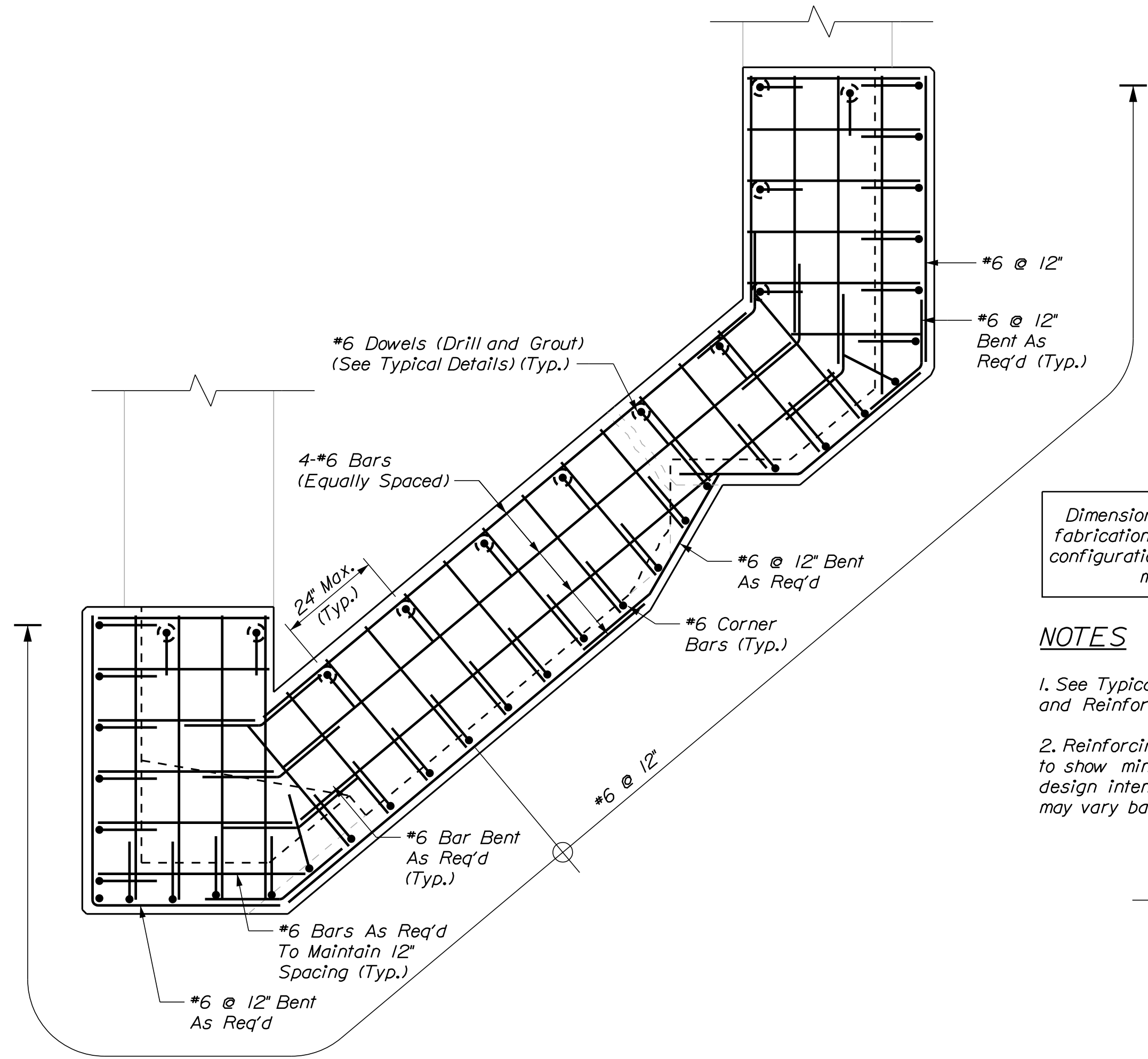
Username: BMasse

Division: MUL TIMODAL

Filename: 014_Subdt_7785.dgn



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

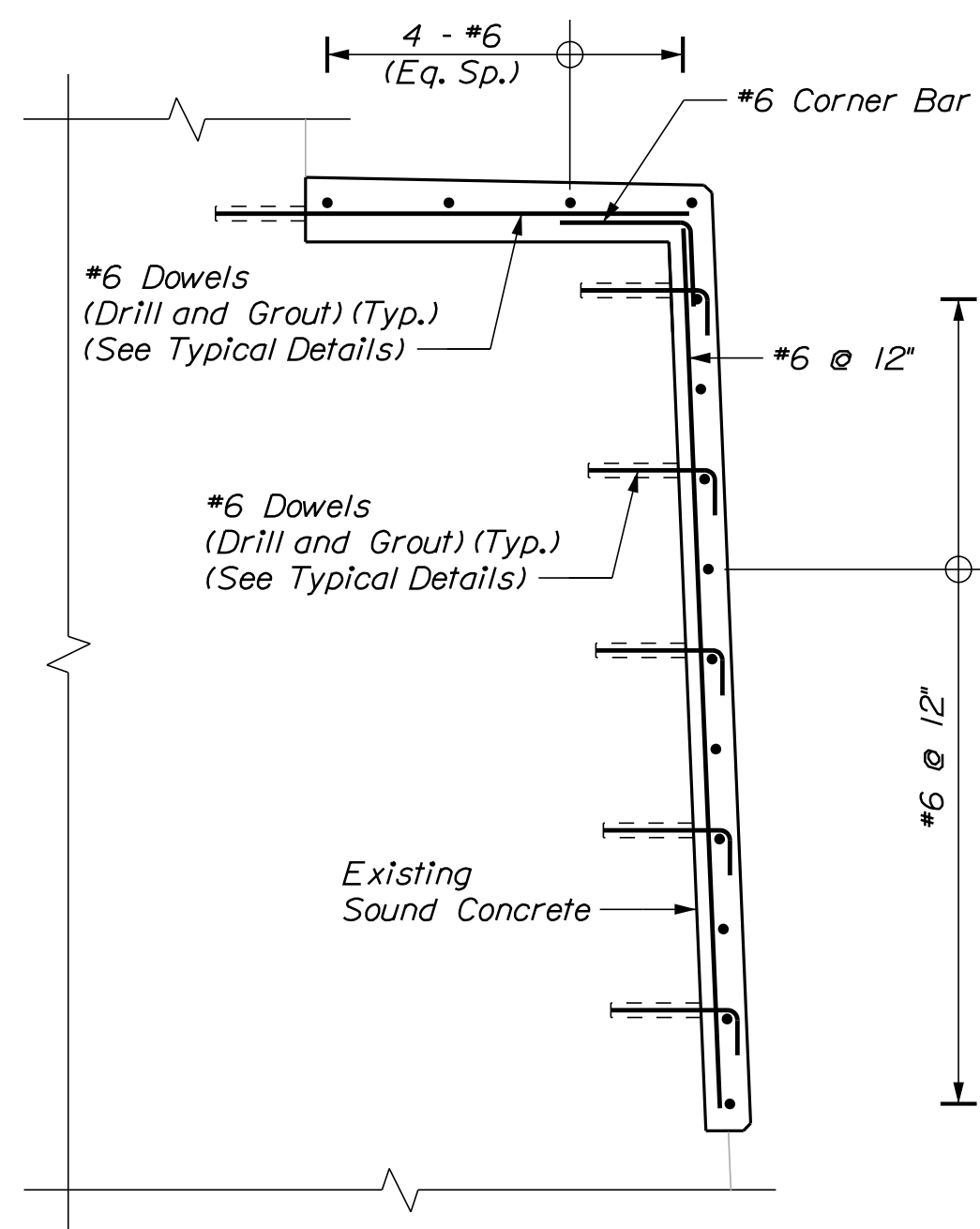


SECTION D-D
REINFORCING AT BACKWALL REPAIR
 Scale: 1/2" = 1'-0"

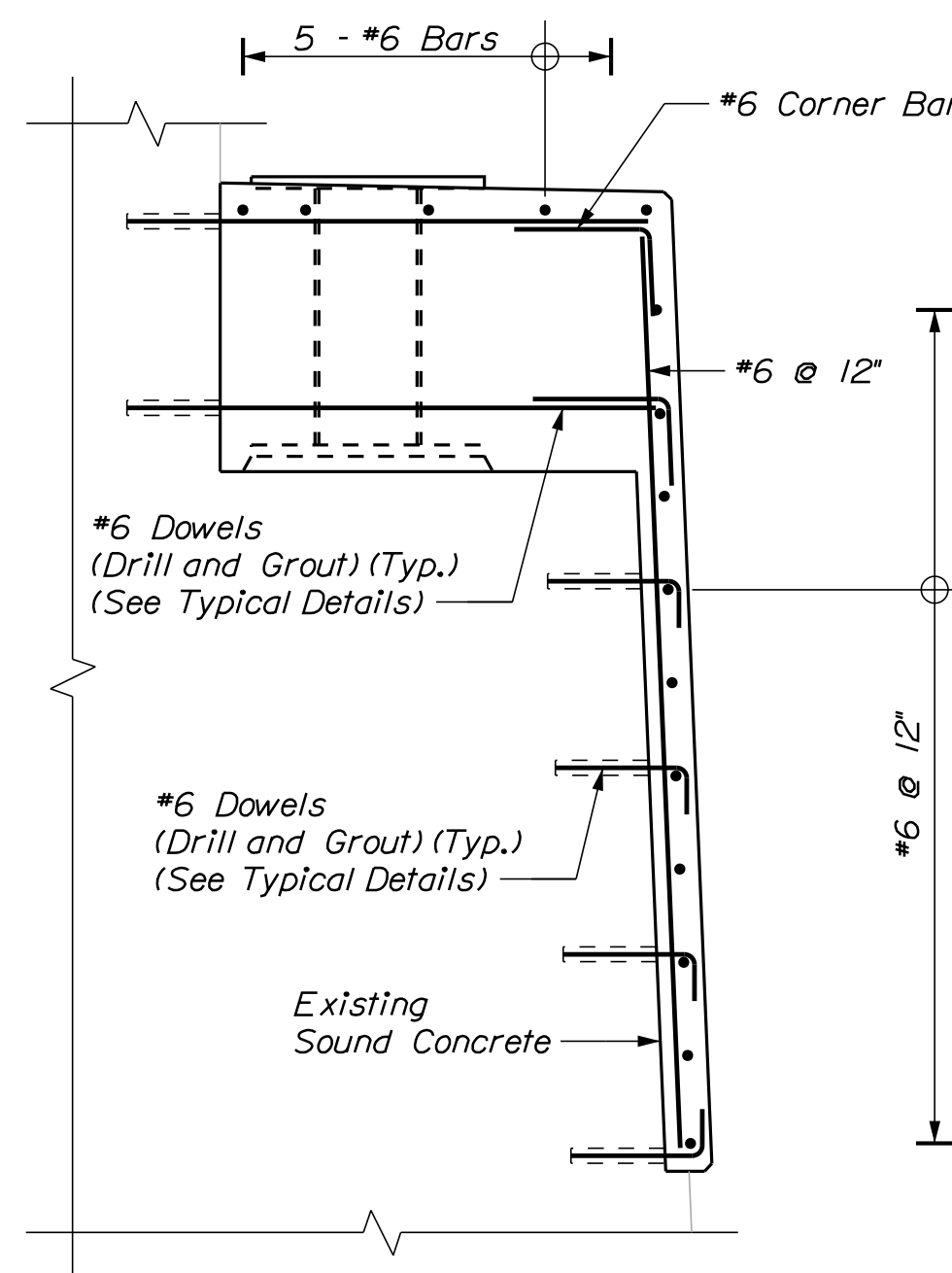
Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

NOTES

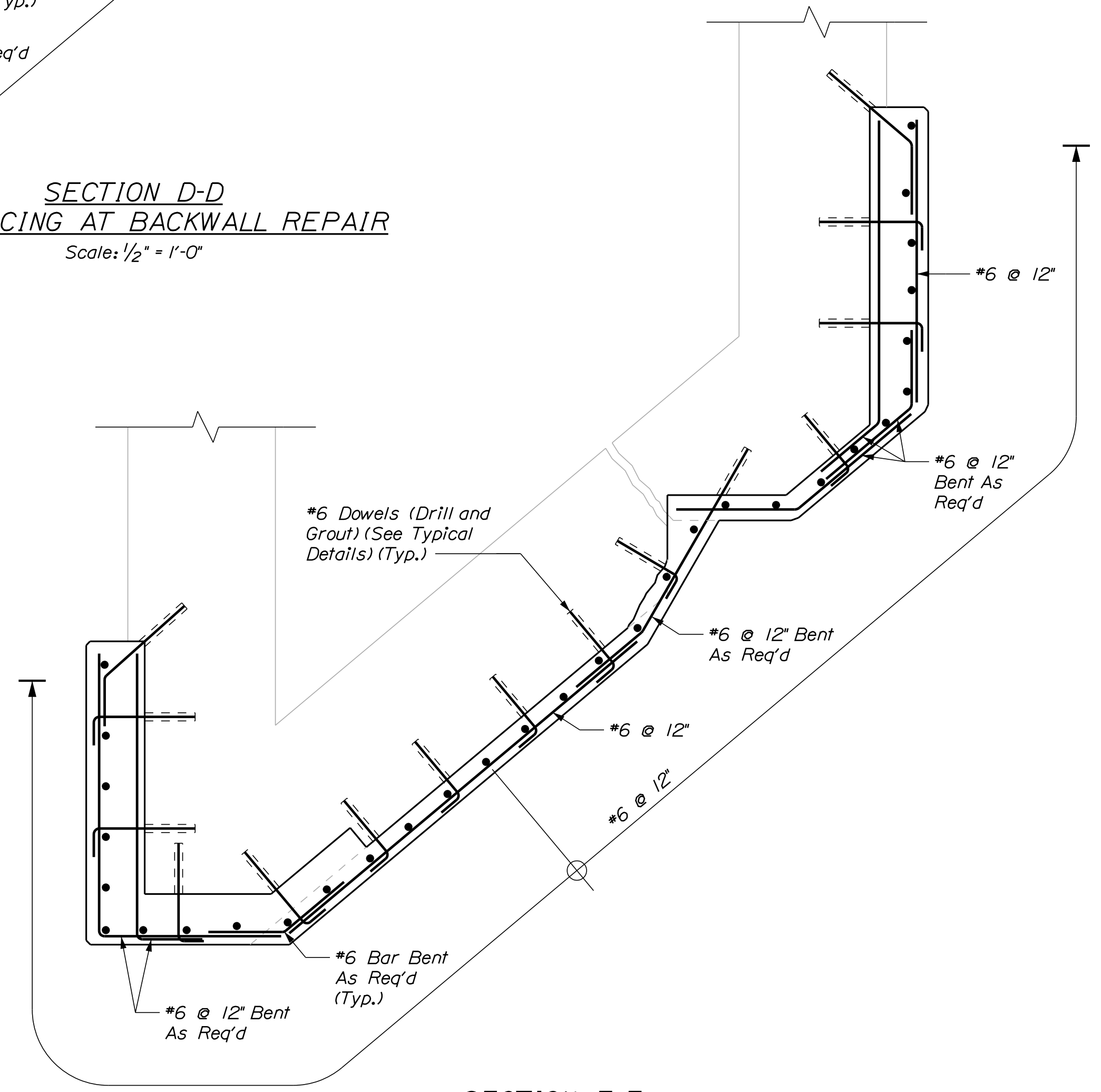
1. See Typical Details sheet for General Concrete Repair and Reinforced Concrete notes and details.
2. Reinforcing details shown in these Plans are drawn to show minimum reinforcing requirements and general design intent. Final layout and configuration of reinforcing may vary based on actual existing features.



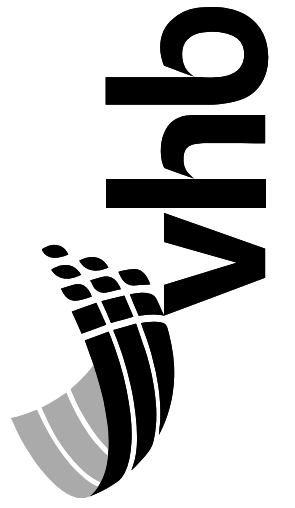
SECTION B-B
REINFORCING AT BRIDGE SEAT
 Scale: 1/2" = 1'-0"



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

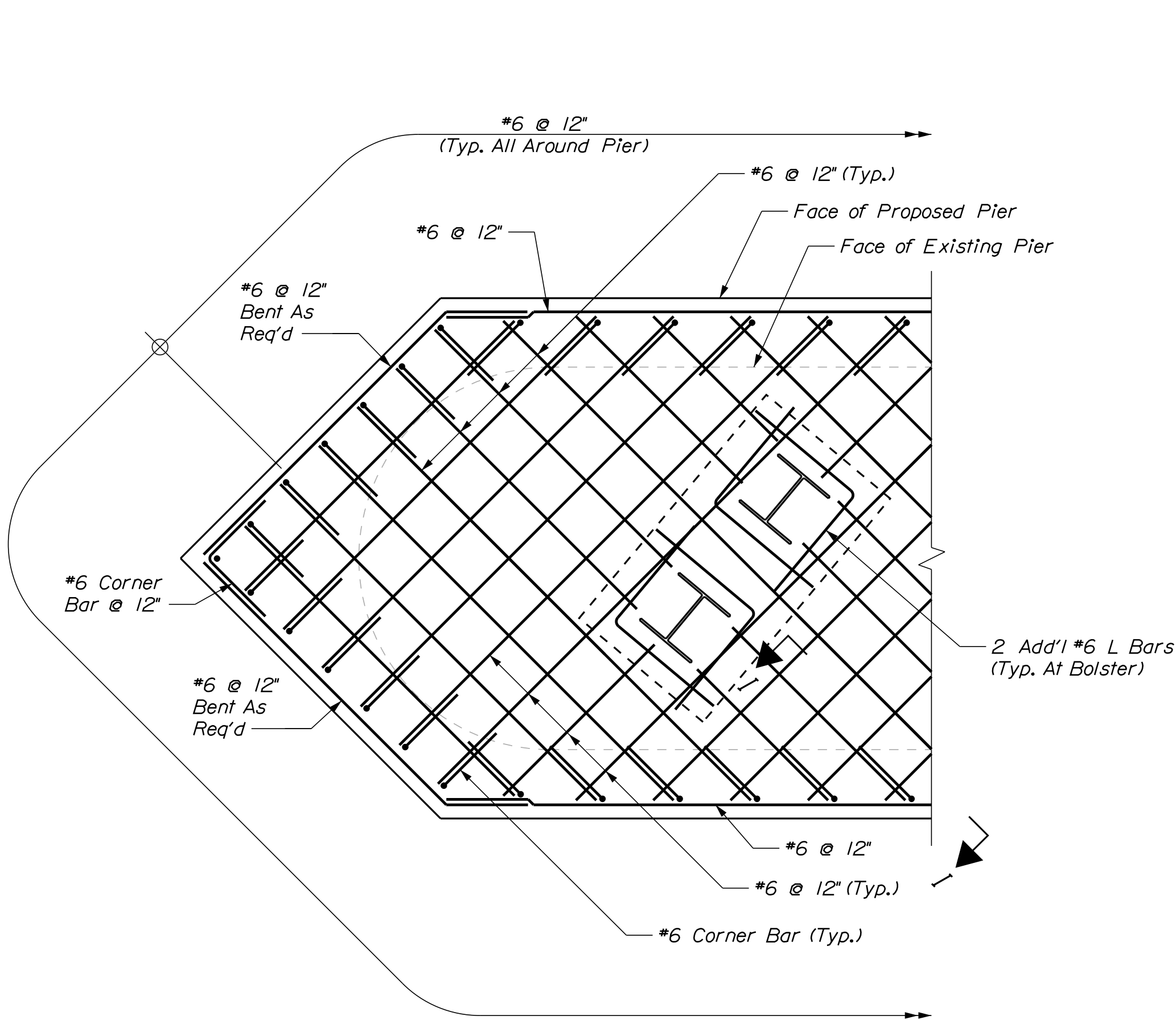


SECTION E-E
REINFORCING AT BACKWALL REPAIR
 (Wingwall Tie Back System Not Show For Clarity, Tie Into Backwall Reinforcing As Appropriate)
 Scale: 1/2" = 1'-0"

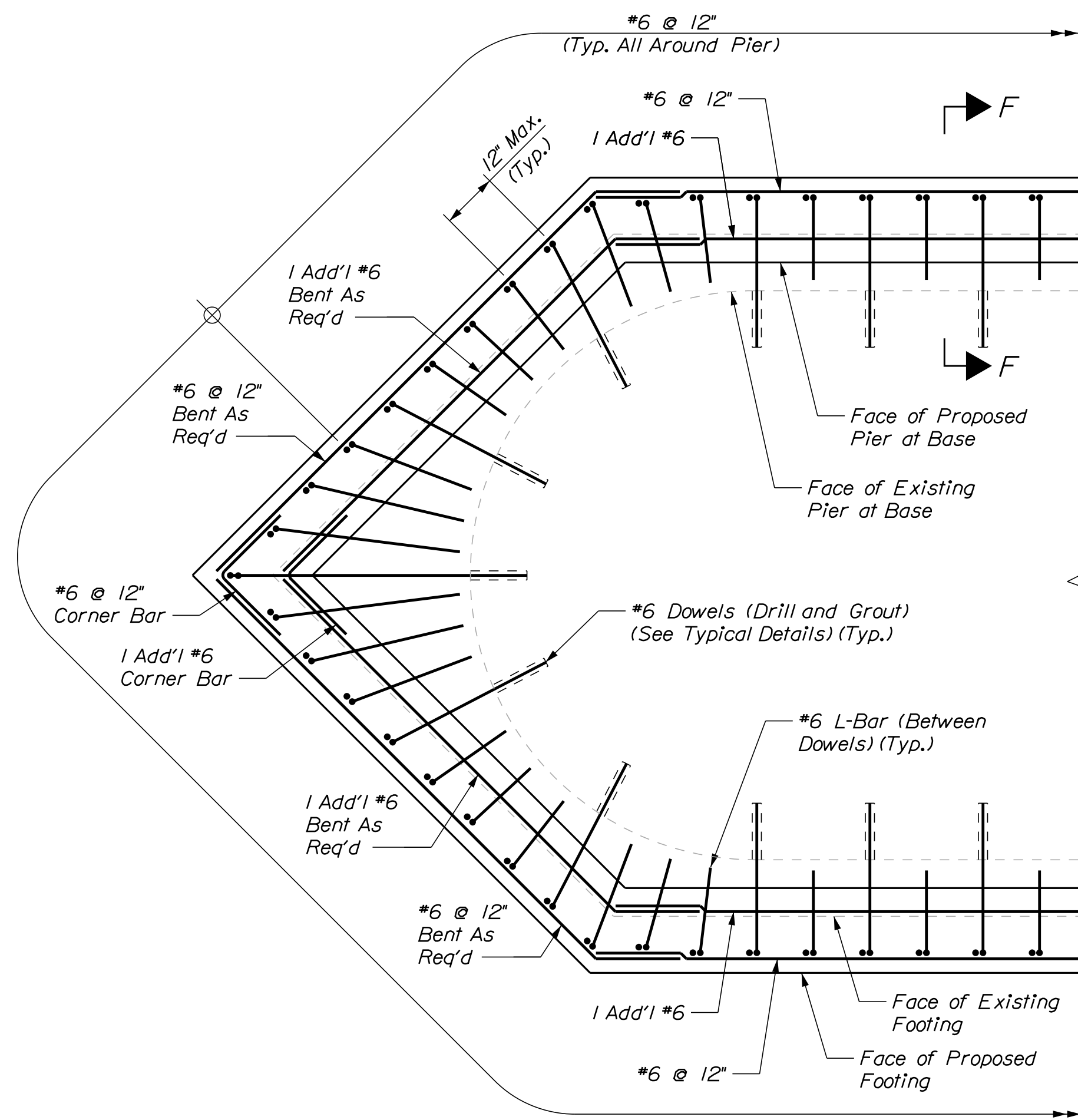


PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/20/20	BJM	12/20/20
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

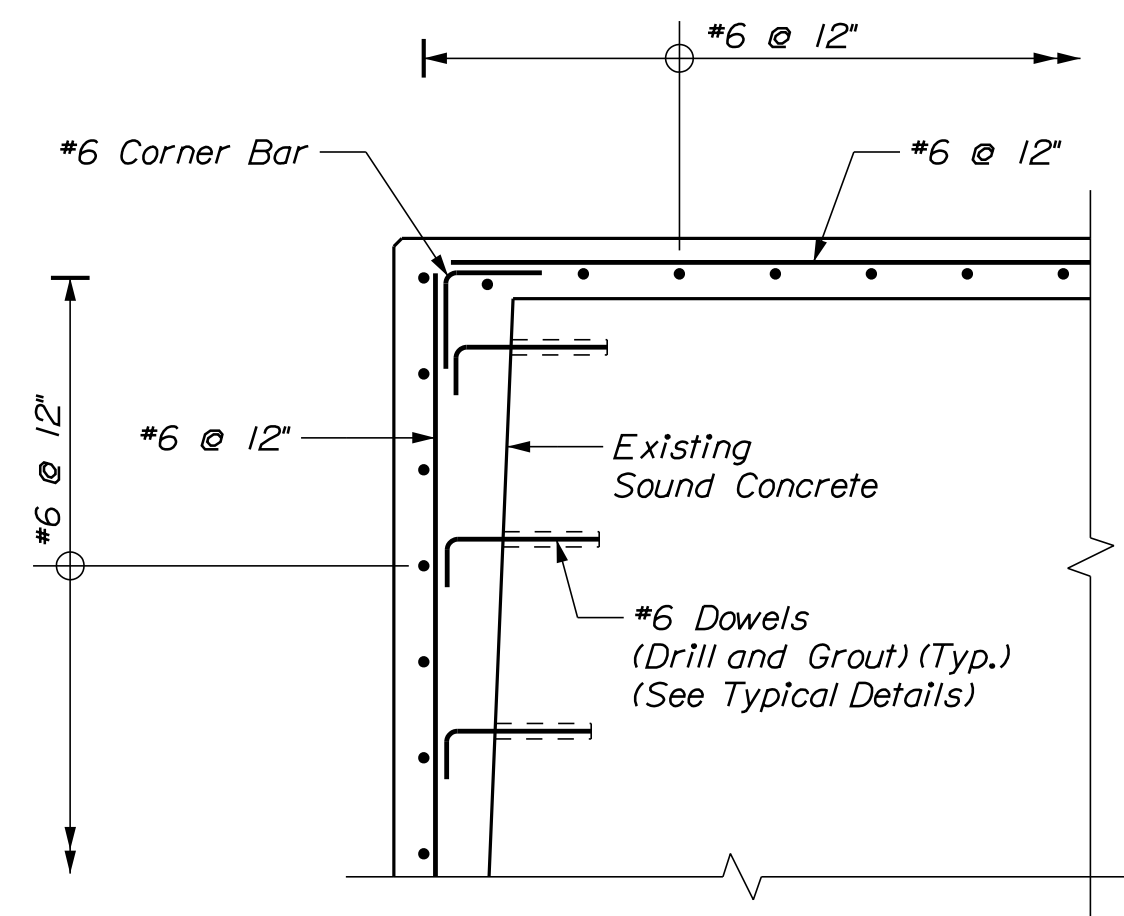
RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
 BRIDGE NO. 7785 (M.P. 224.51)
 OVER FISH RIVER (SOUTH) (7 OF 8)



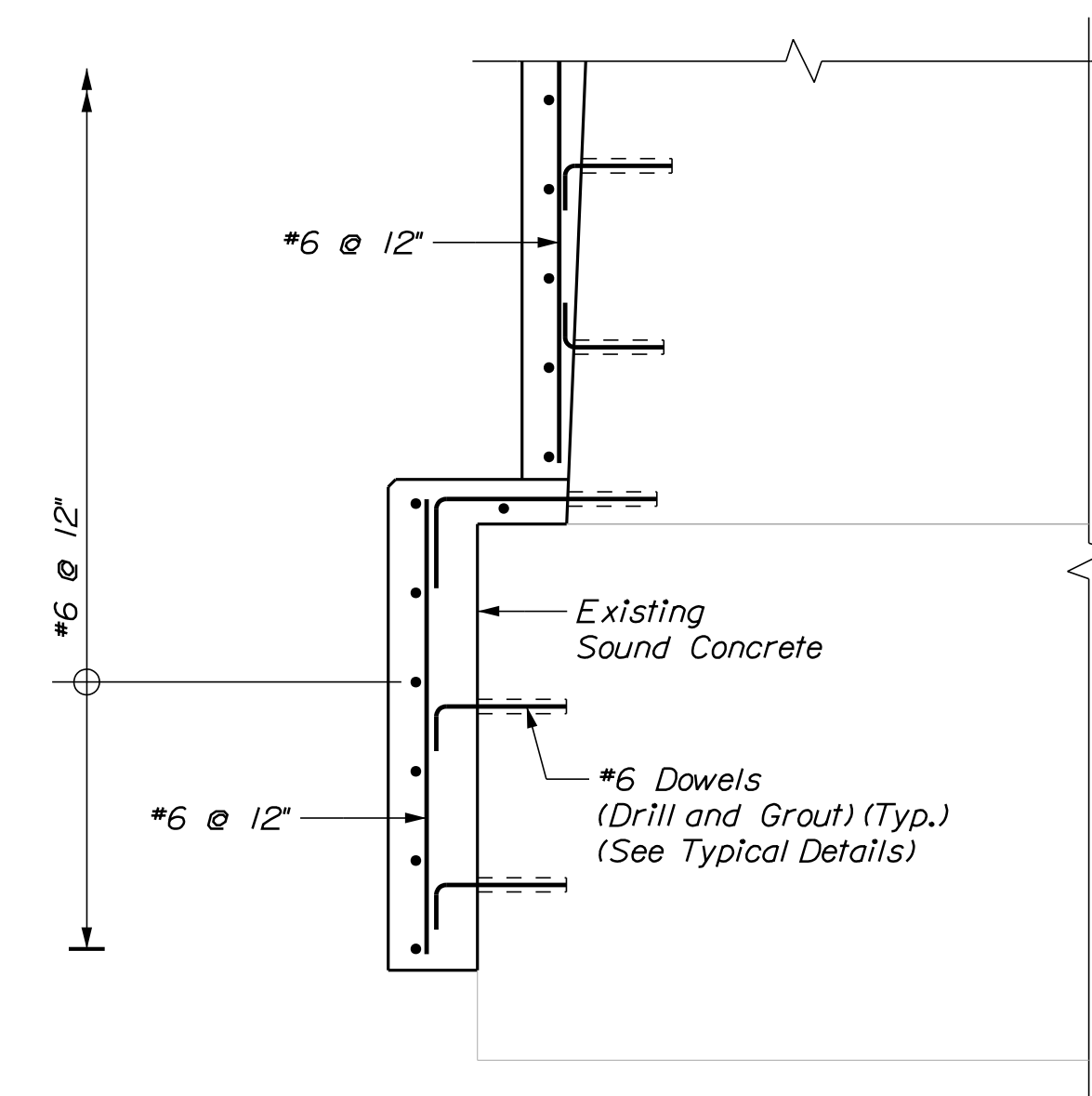
SECTION H-H
REINFORCING AT TOP OF PIER
 Scale: 1/2" = 1'-0"



SECTION G-G
REINFORCING AT BASE OF PIER AND FOOTING
 Scale: 1/2" = 1'-0"



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



SECTION F-F
SECTION AT THICKNESS STEP
 (Step at Pier Footing Shown, Pier Mid-Height, and Abutment Footing Similar)
 Scale: 1/2" = 1'-0"

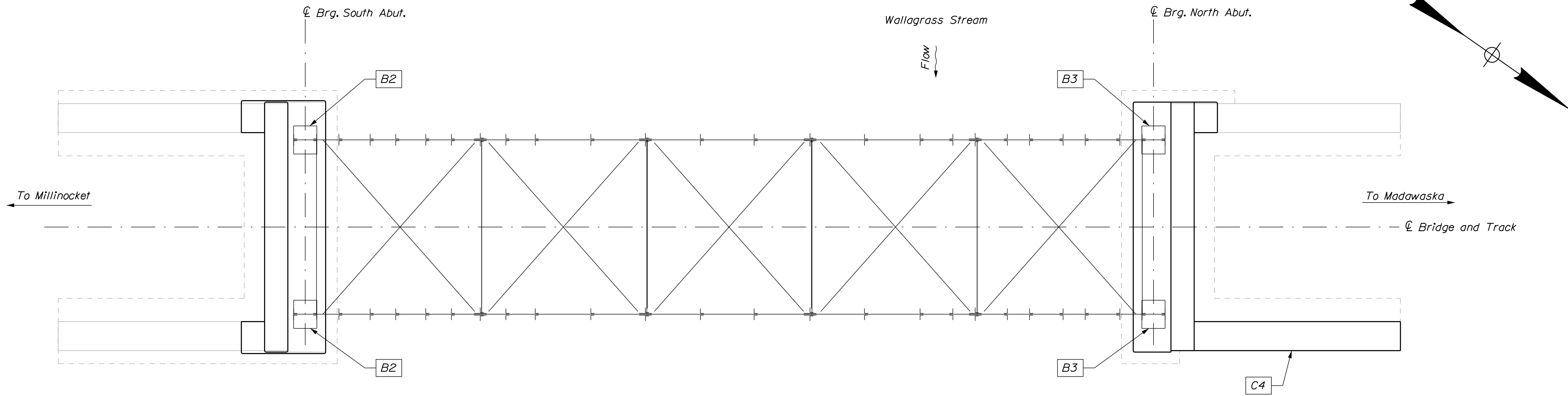
Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

- NOTES**
1. See Typical Details 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.



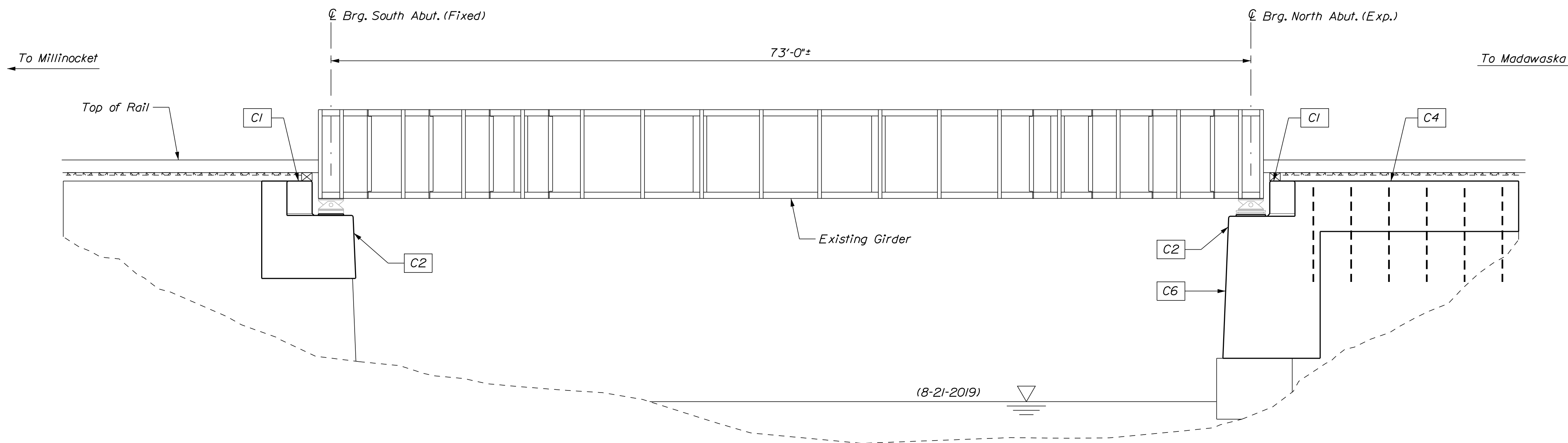
PROJ. MANAGER	DATE
DESIGN-DETAILED	12/2020
CHECKED-REVIEWED	12/2020
DESIGN-DETAILED	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
 BRIDGE NO. 7785 (M.P. 224.51)
 OVER FISH RIVER (SOUTH) (8 OF 8)



REHABILITATION KEY PLAN
Not To Scale

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	Rehabilitate Backwall	2
C2	Rehabilitate Bridge Seat and Install Embedded Steel Bolsters	2
C4	Rehabilitate Wingwall	1
C6	Encase Face of Abutment	1



BRIDGE ELEVATION
Not To Scale



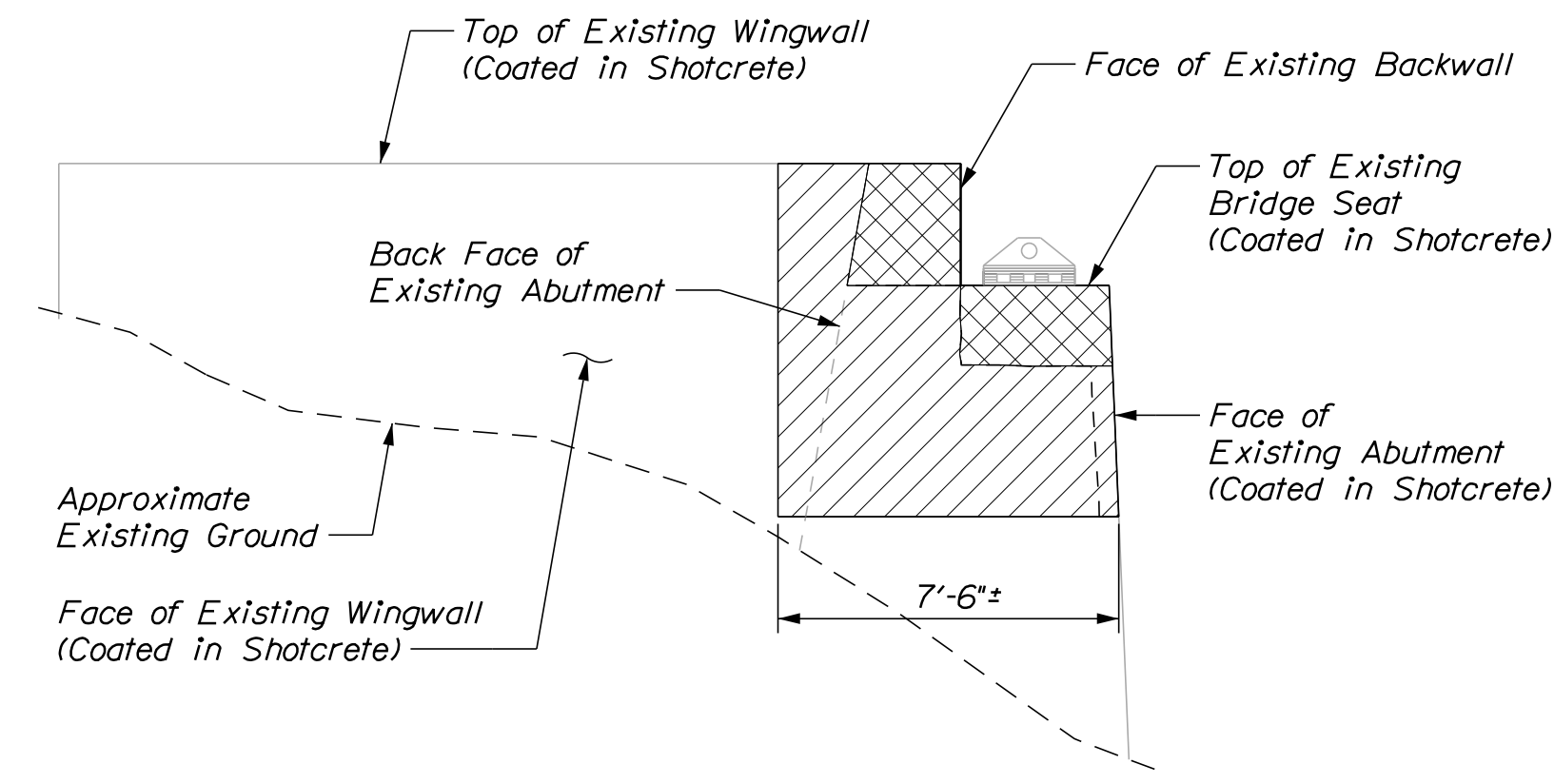
PROJ. MANAGER	DATE	BY
DESIGN-DETAILED	12/2020	BJM
CHECKED-REVIEWED	12/2020	GSC
DESIGN-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

Date: 12/7/2020

Username: BMasse

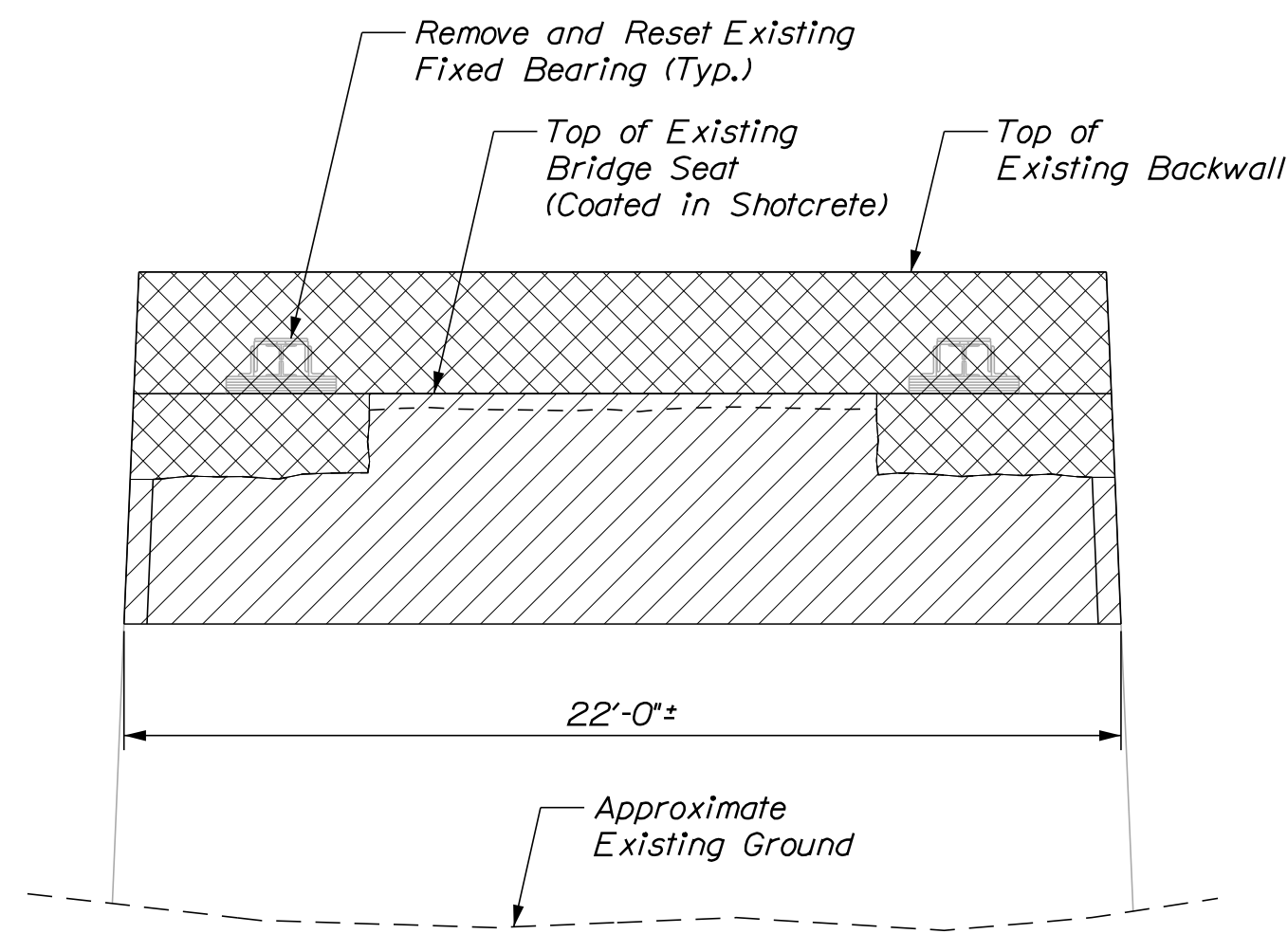
Division: MUL TIMODAL

Filename: 017_Sub1_7787.dgn



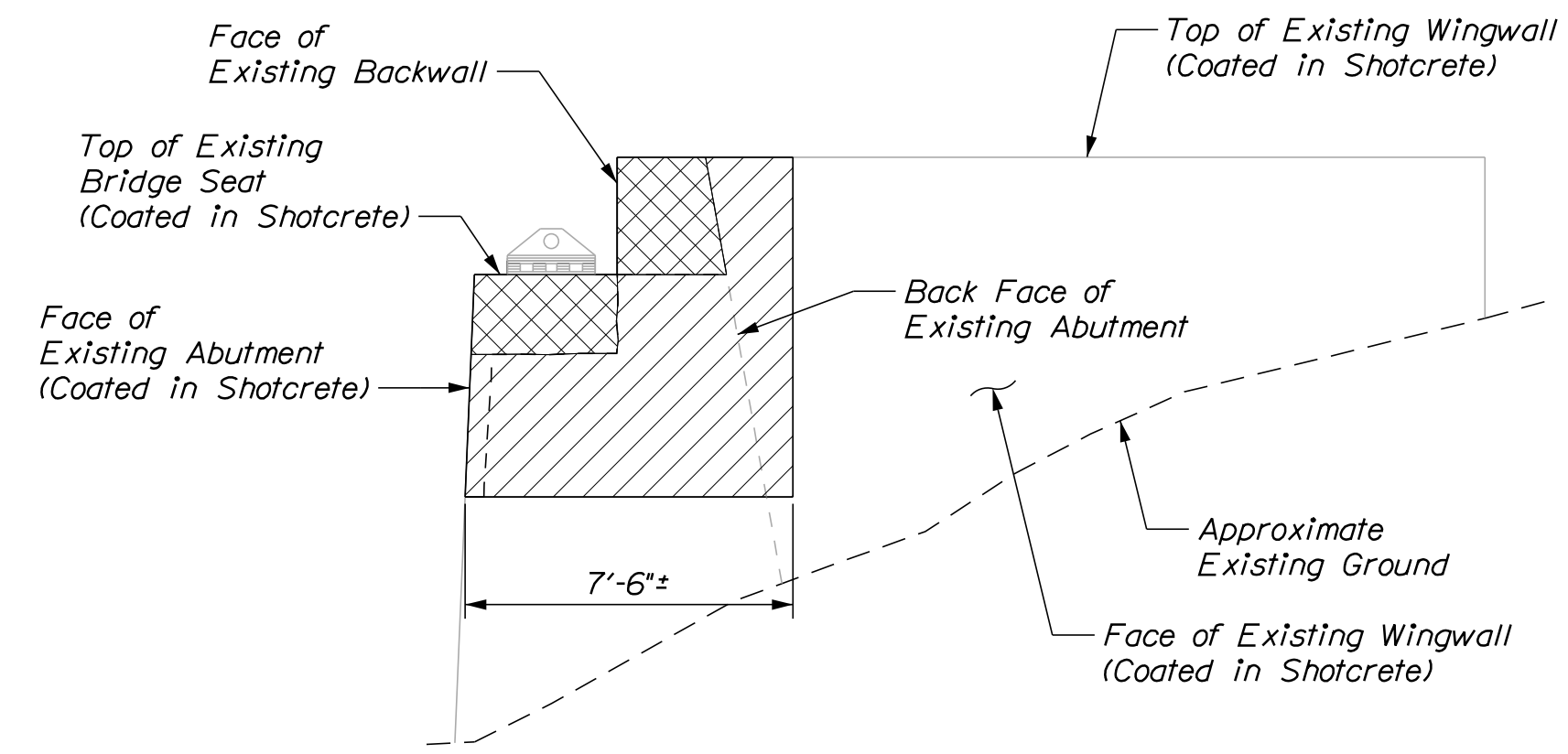
EXISTING SOUTHEAST WINGWALL ELEVATION - REMOVAL

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



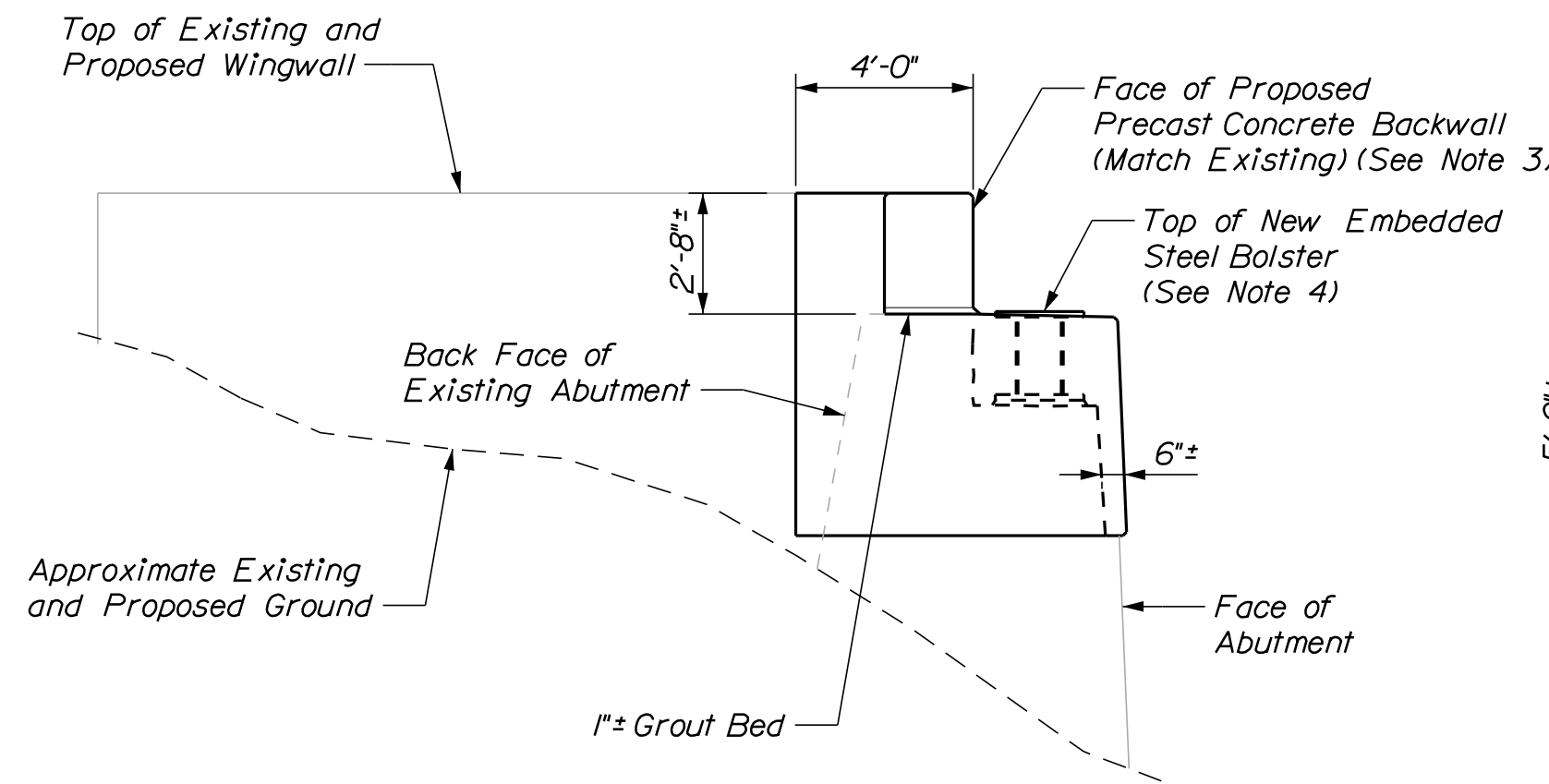
EXISTING SOUTH ABUTMENT ELEVATION - REMOVAL

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



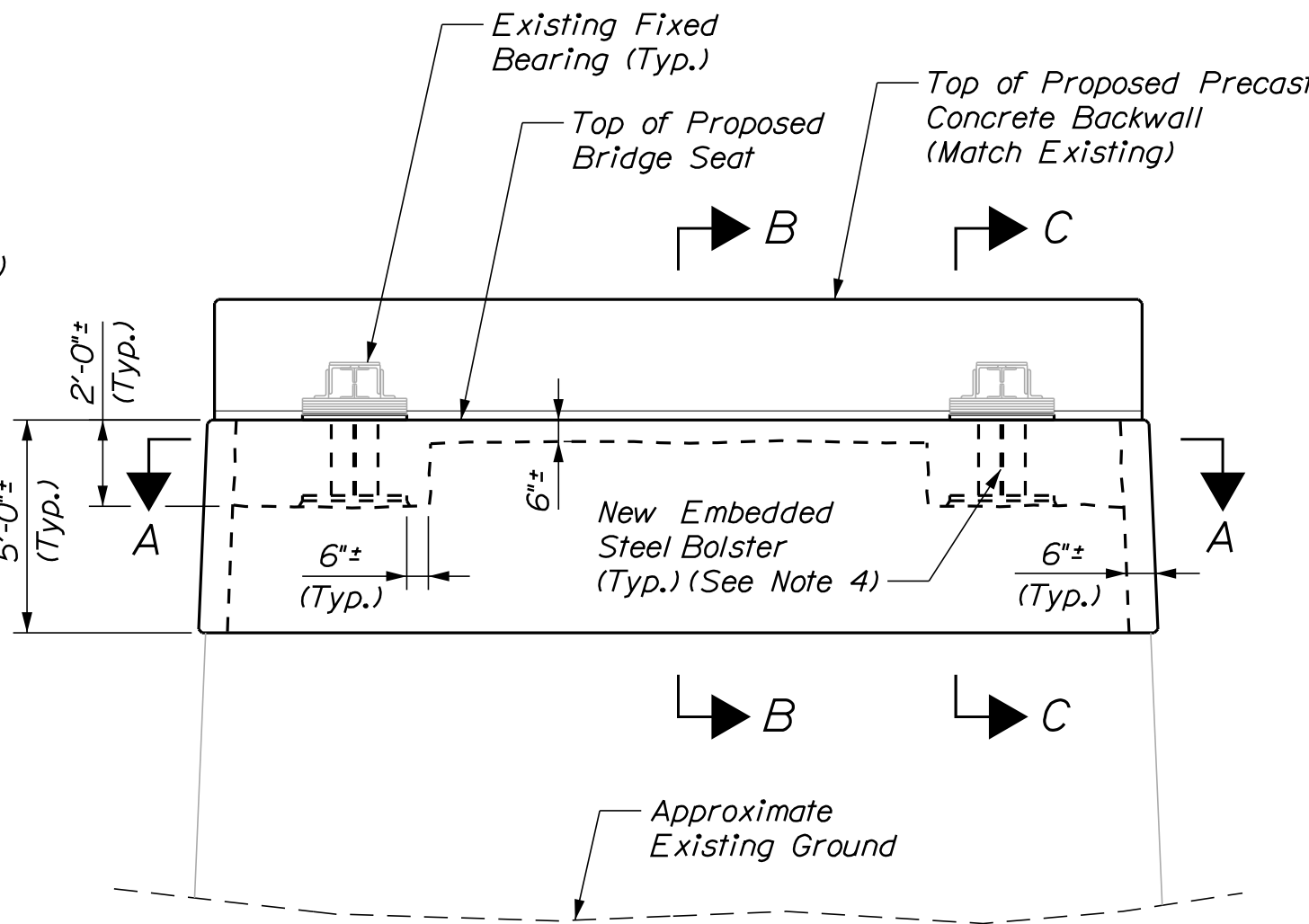
EXISTING SOUTHWEST WINGWALL ELEVATION - REMOVAL

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



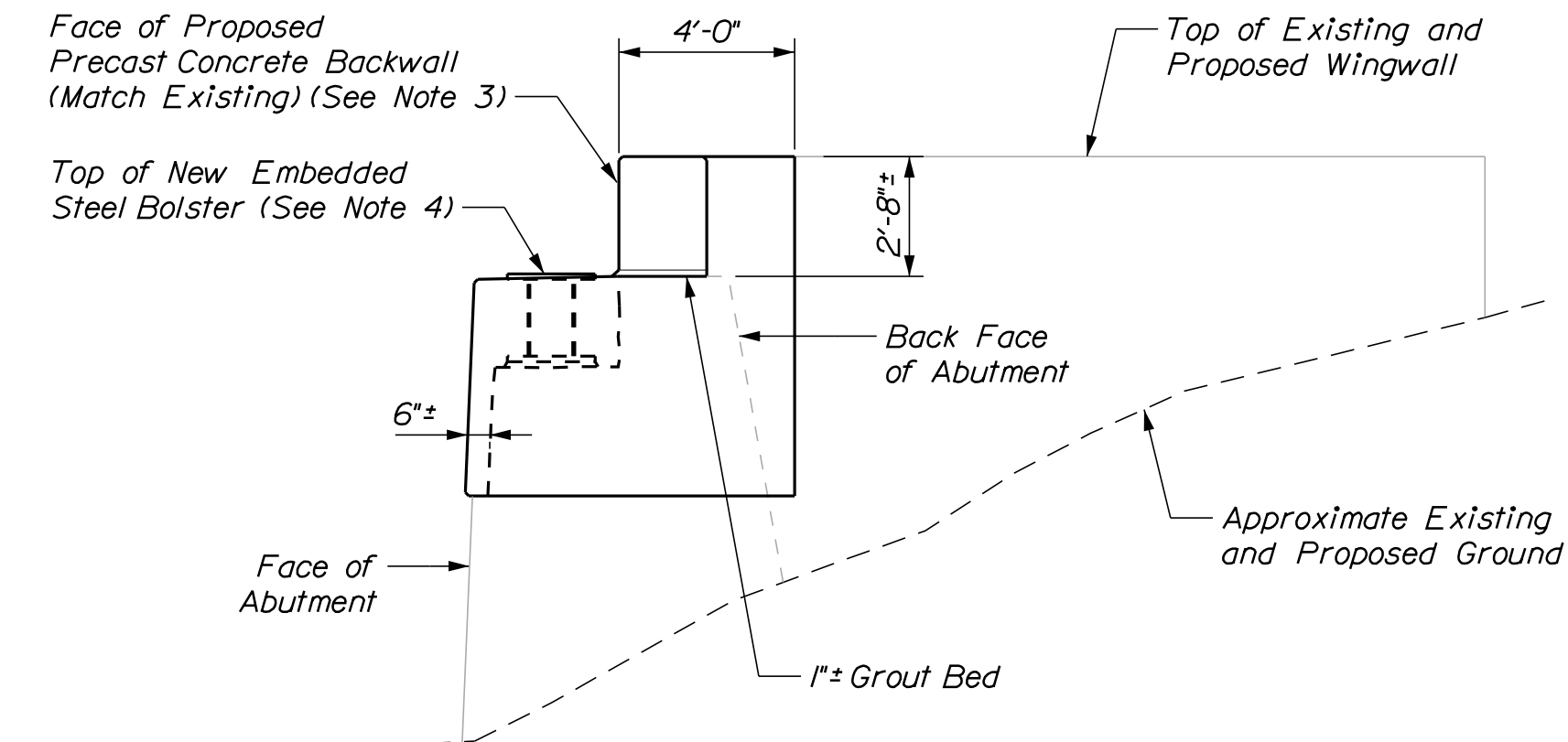
PROPOSED SOUTHEAST WINGWALL ELEVATION

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



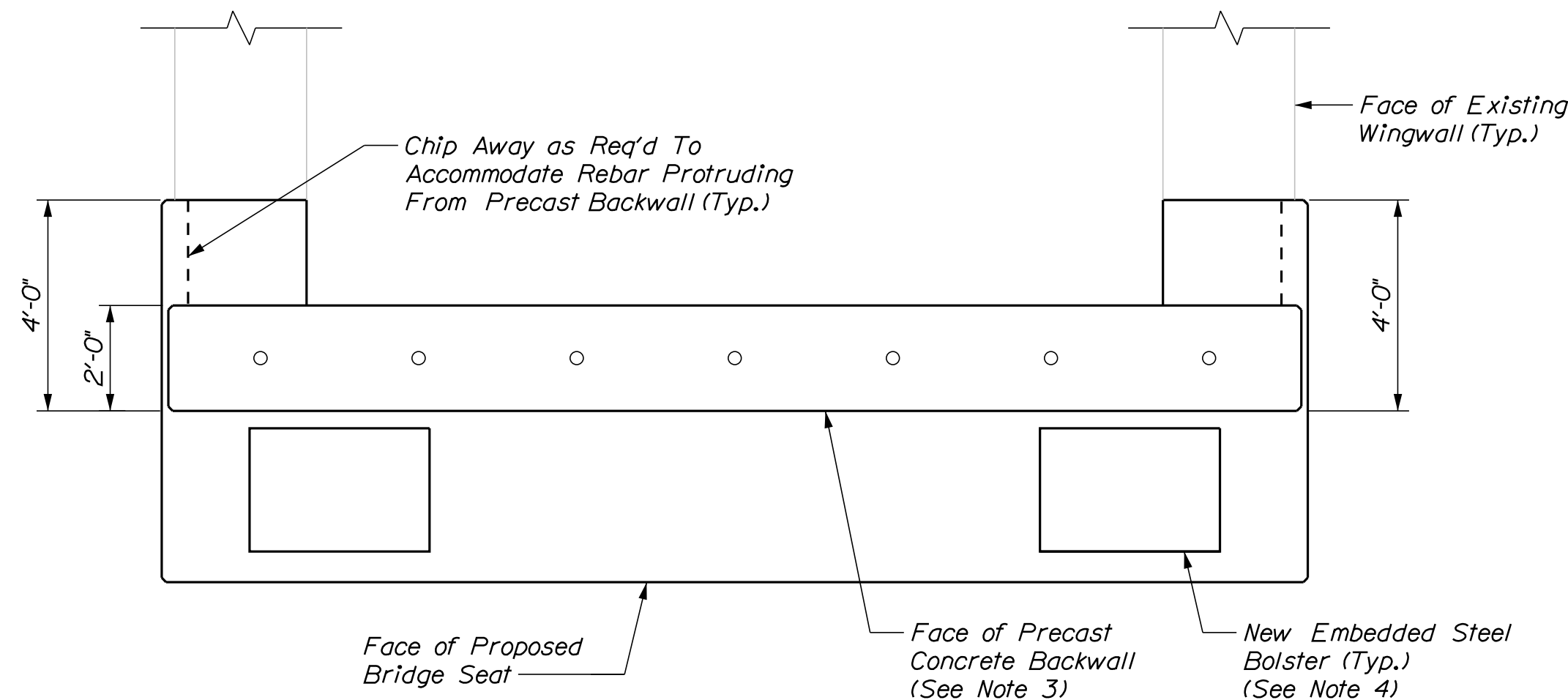
PROPOSED SOUTH ABUTMENT ELEVATION

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



PROPOSED SOUTHWEST WINGWALL ELEVATION

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



PROPOSED BRIDGE SEAT AND BACKWALL PLAN

(South Abutment Shown, North Similar Except Northeast Wingwall)

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

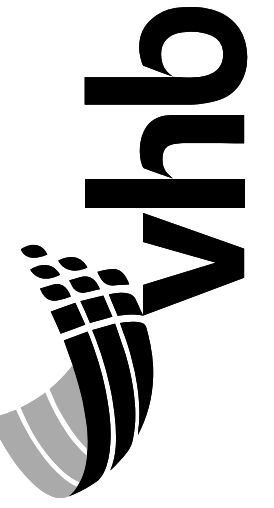
Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

LEGEND

- Approximate Limits of Full Depth Removal/Repair
- Approximate Limits of Partial Depth Removal/Repair

NOTES

- 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 sheet for more information.
- See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
- See Bridge No. 7787 (M.P. 236.44) Over Fish River (4 of 4) sheet for precast concrete backwall details, concrete repair sections, and reinforcing details.
- See Bearing, Bolster, and Pedestal Details (3 of 3) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 7787
WIN
23488.00
BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7787 (M.P. 236.44)
OVER WALLGRASS STREAM (2 OF 4)

FIGURE

17

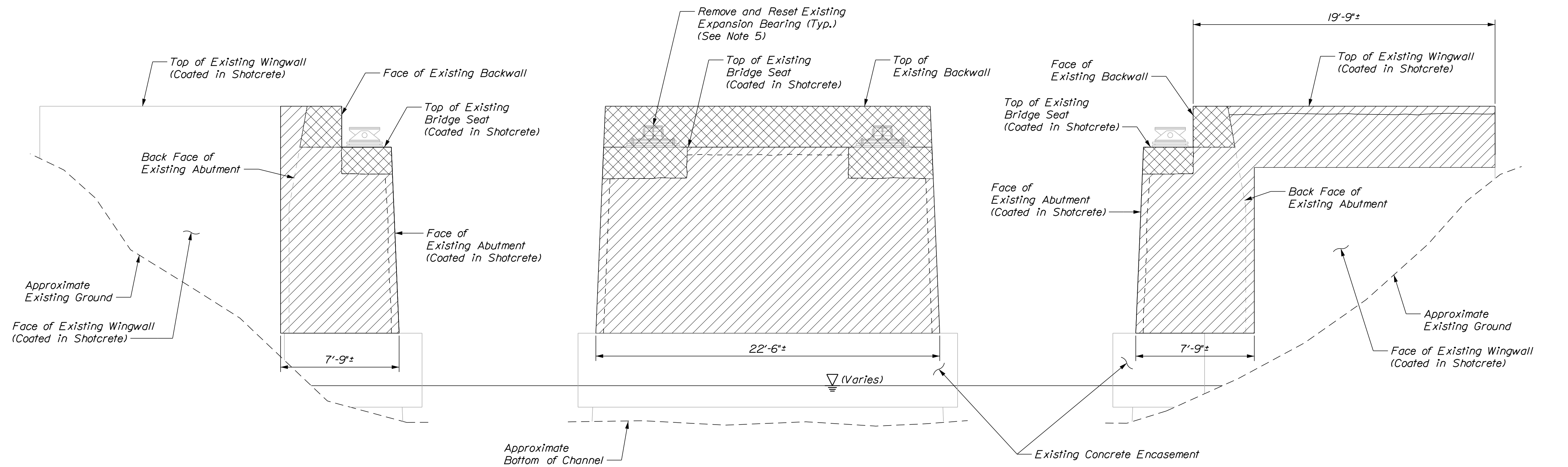
OF 36

Date: 12/17/2020

Username: BMasse

Division: MUL TIMODAL

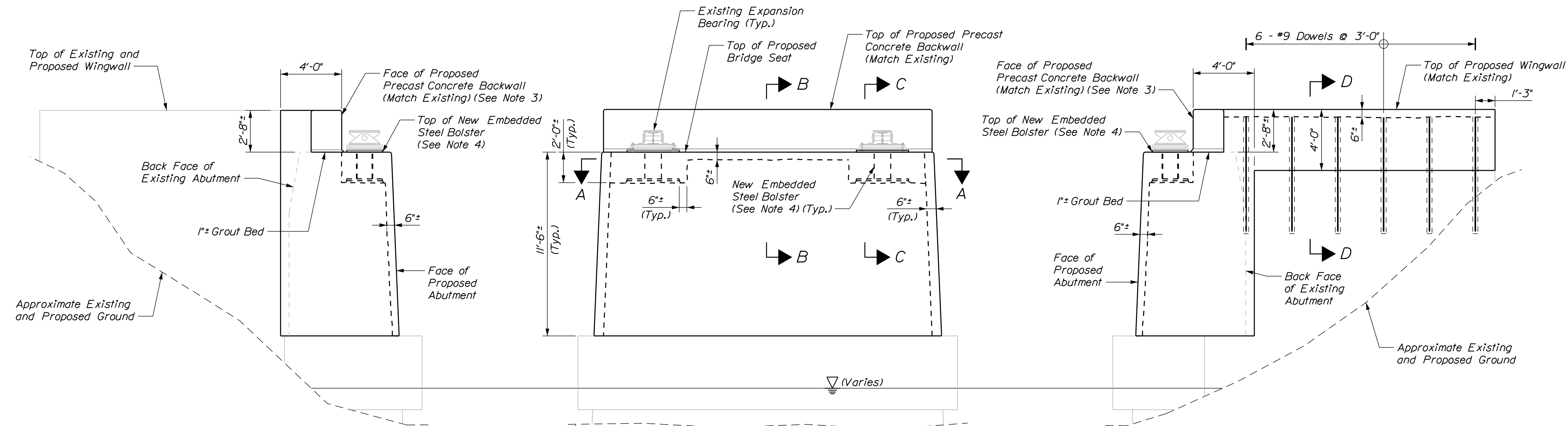
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EXISTING NORTHWEST WINGWALL ELEVATION - REMOVAL
Scale: 1/4" = 1'-0"

EXISTING NORTH ABUTMENT ELEVATION - REMOVAL
Scale: 1/4" = 1'-0"

EXISTING NORTHEAST WINGWALL ELEVATION - REMOVAL
Scale: 1/4" = 1'-0"



PROPOSED NORTHWEST WINGWALL ELEVATION
Scale: 1/4" = 1'-0"

PROPOSED NORTH ABUTMENT ELEVATION
Scale: 1/4" = 1'-0"

PROPOSED NORTHEAST WINGWALL ELEVATION
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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See Bridge No. 7787 (M.P. 236.44) Over Fish River (4 of 4) sheet for precast concrete backwall details, concrete repair sections, and reinforcing details.
4. See Bearing, Bolster, and Pedestal Details (3 of 3) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.
5. Existing expansion bearings have been replaced as part of a previous Contract (2020).
6. See Bridge No. 7787 (M.P. 236.44) Over Wallgrass Stream (2 of 4) for Proposed Bridge Seat and Backwall Plan.

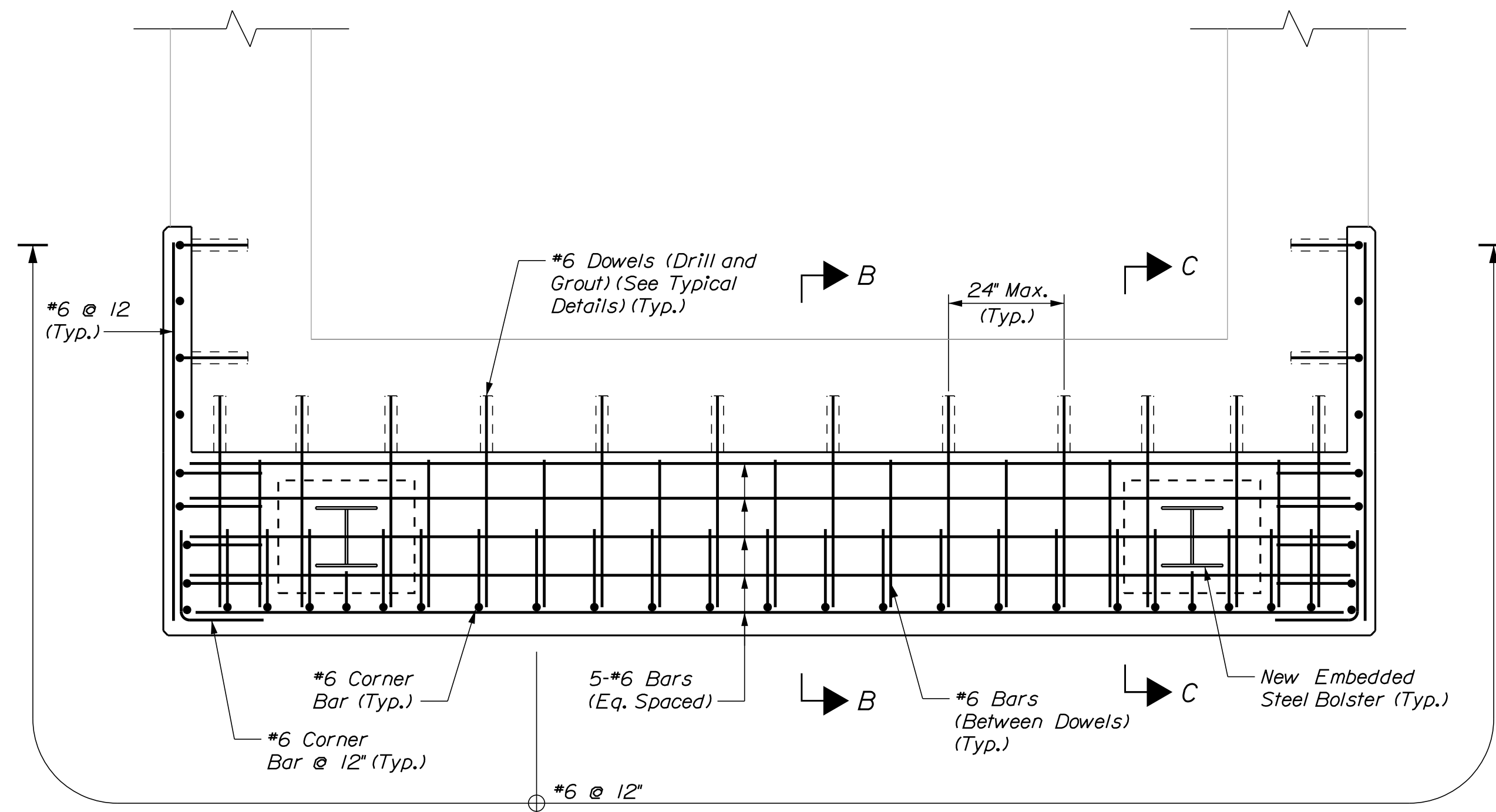


PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

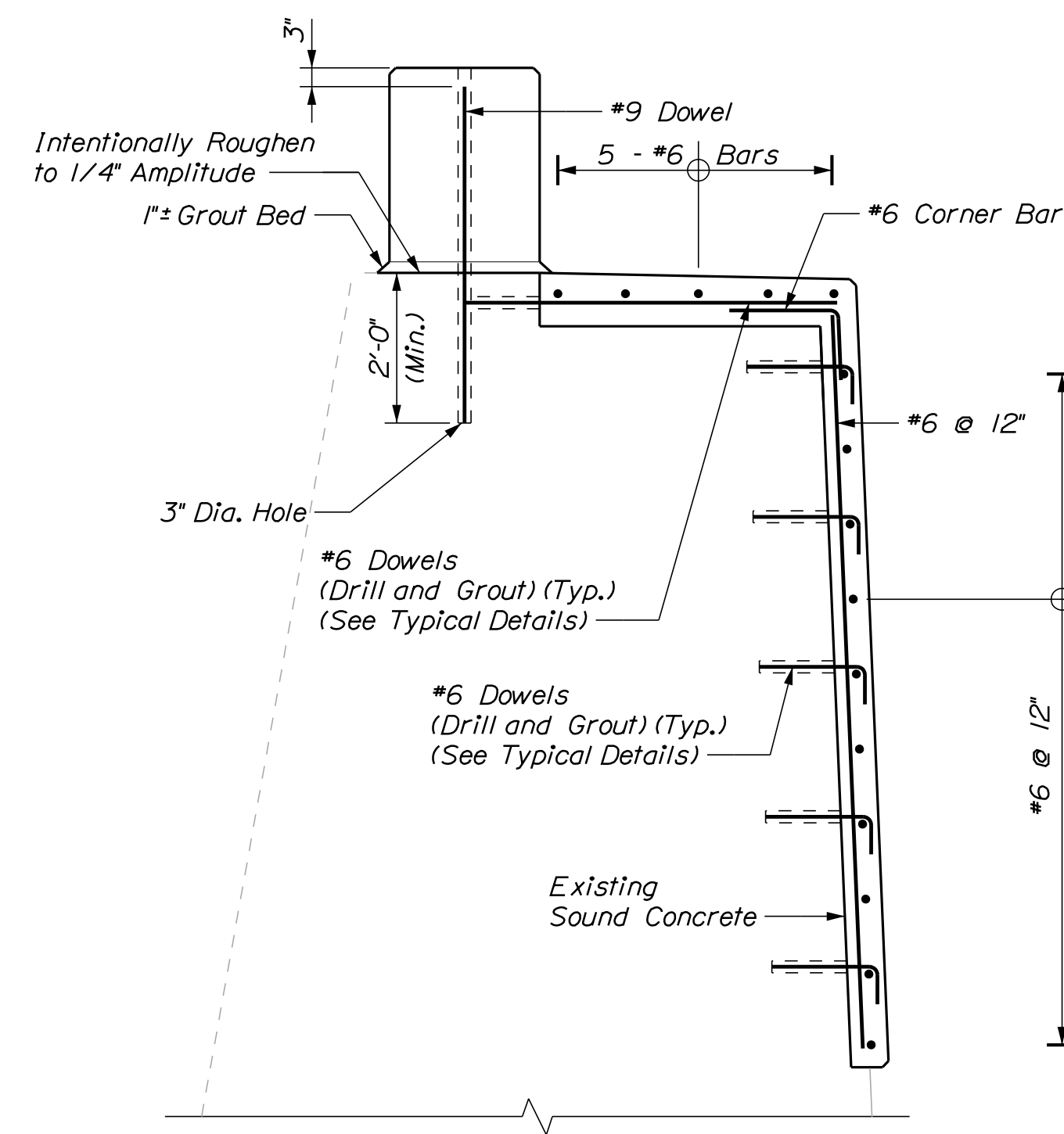
FIGURE

18

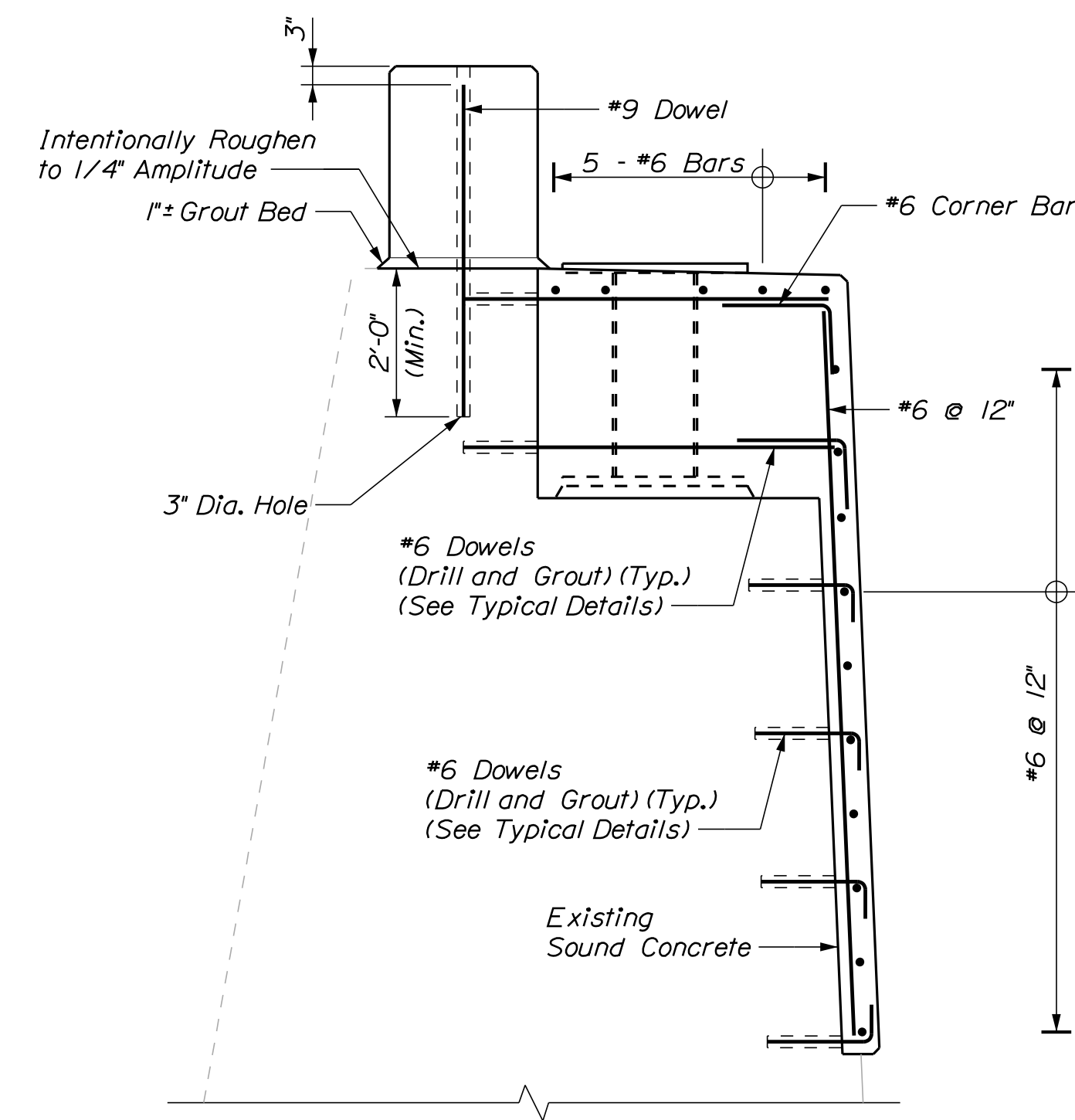
OF 36



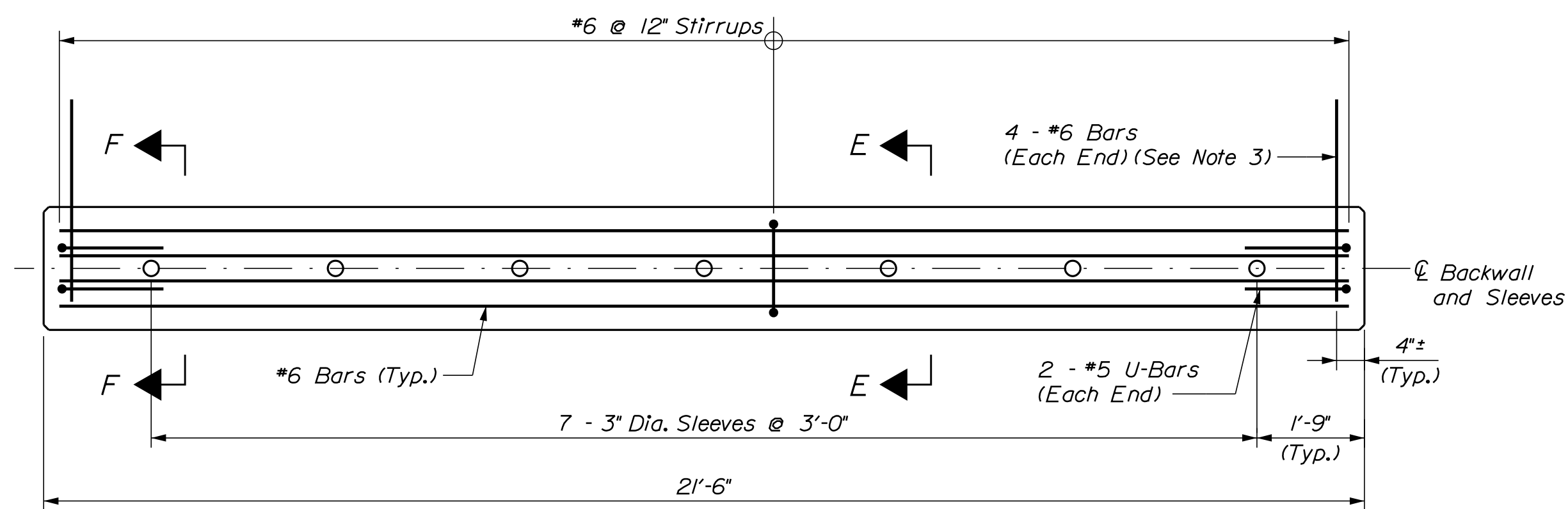
SECTION A-A
BRIDGE SEAT REINFORCING PLAN
Scale: 1/2" = 1'-0"



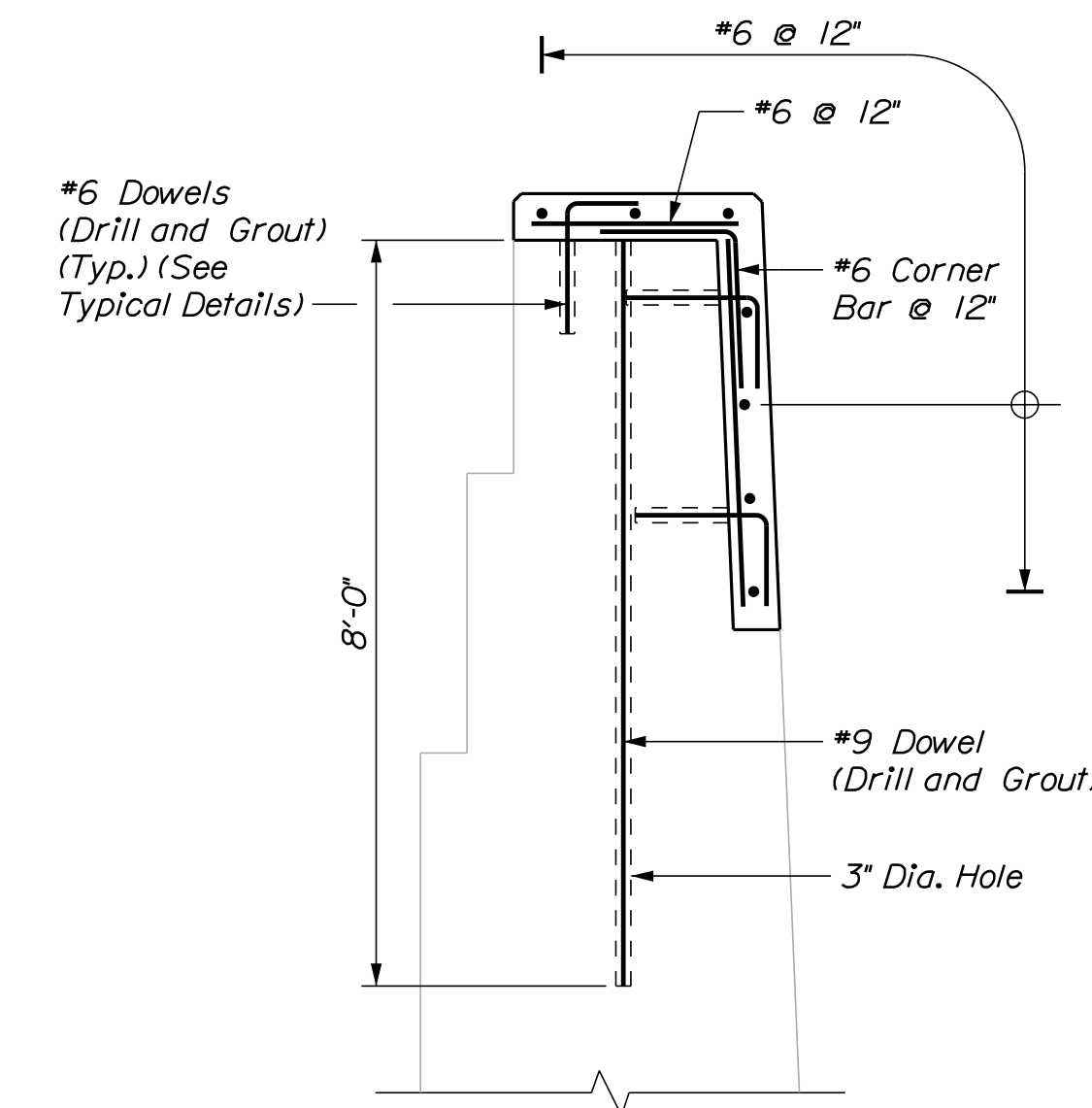
SECTION B-B
REINFORCING AT BRIDGE SEAT
Scale: 1/2" = 1'-0"



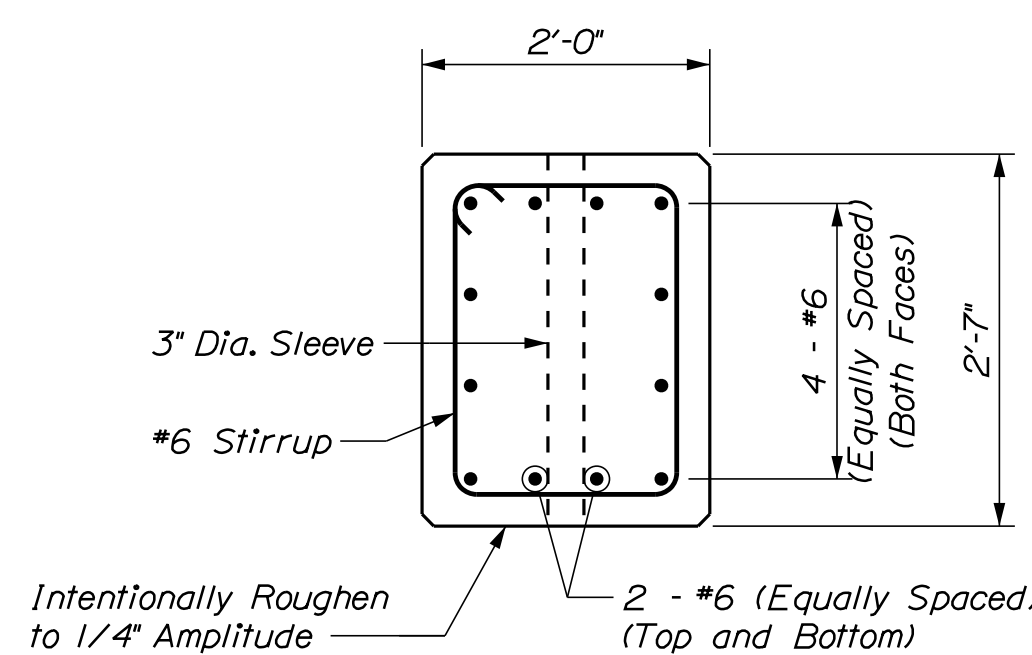
SECTION C-C
REINFORCING AT BRIDGE SEAT
Scale: 1/2" = 1'-0"



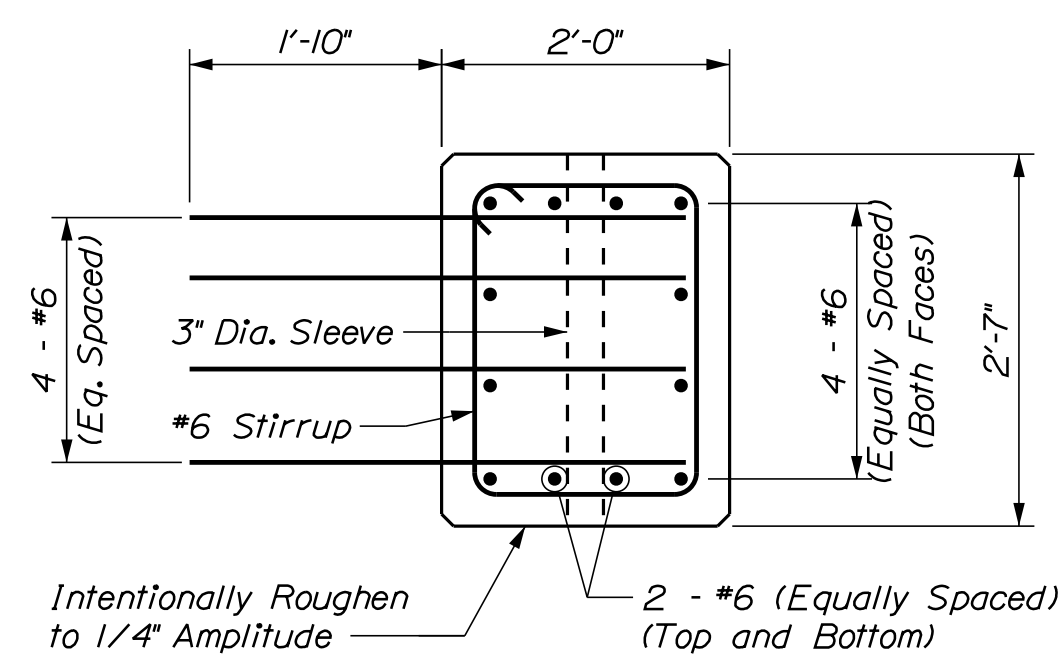
PROPOSED PRECAST CONCRETE BACKWALL
REINFORCING PLAN
Scale: 1/2" = 1'-0"



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



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

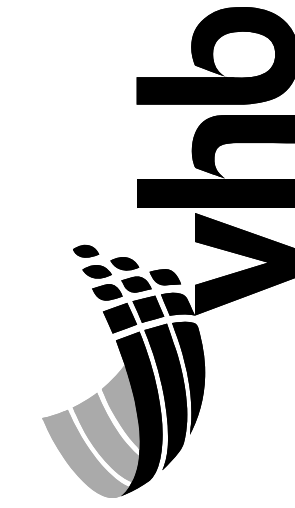


SECTION F-F
Scale: 3/4" = 1'-0"

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 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 #9 dowels in backwall shall be incidental to Item 534.30 Precast Structural Concrete (Backwalls).



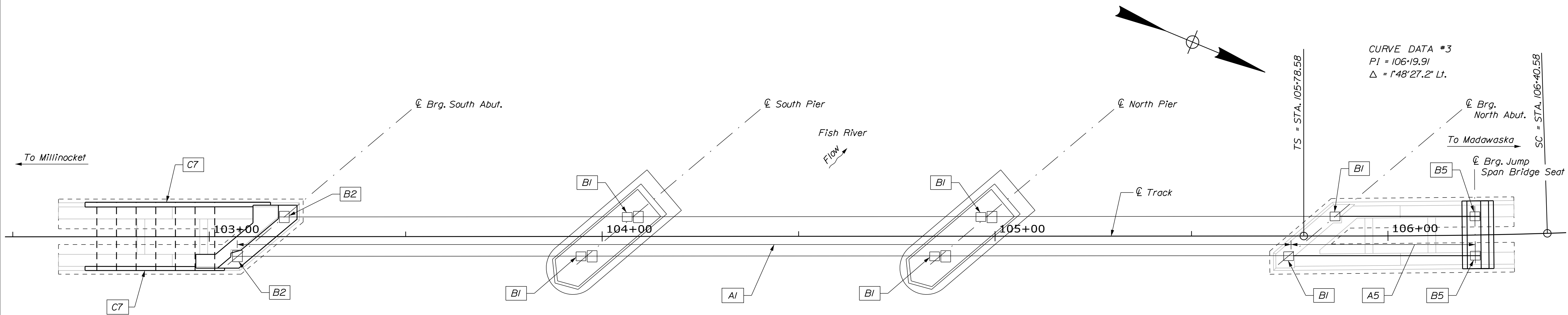
PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	12/2020
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 12/7/2020

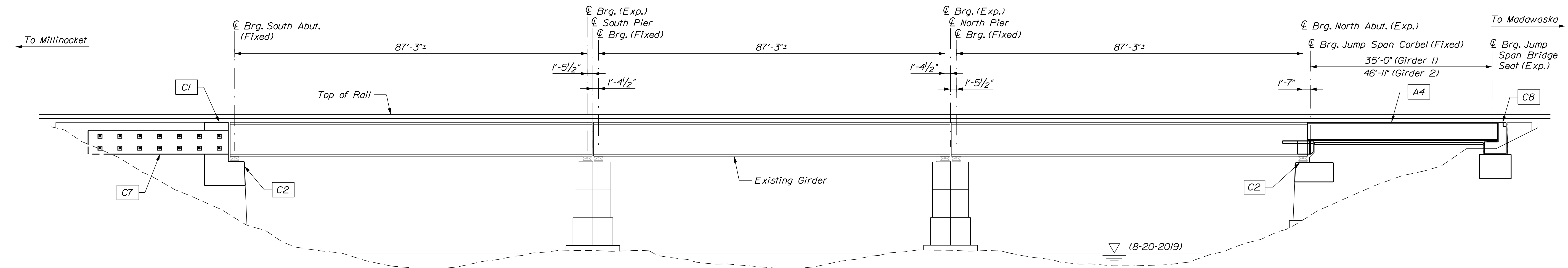
Username: BMasse

Division: MUL TIMODAL

Filename: 020_Key_7788.dgn



REHABILITATION KEY PLAN
Not to Scale



BRIDGE ELEVATION
Not to Scale

DECK AND SUPERSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
A1	Replace Existing Steel Strap Tie Spacers with Timber Tie Spacers	1
A4	Install New Jump Span	1
A5	Install New Bridge Timbers On Jump Span	1

BEARING AND PEDESTAL WORK ITEMS		
Work ID	Description	Number of Locations
B1	Remove and Replace Expansion Bearing	6
B2	Remove and Reset Fixed Bearing	2
B5	Install New Expansion Bearing	2
SUBSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
C1	Rehabilitate Backwall	1
C2	Rehabilitate Bridge Seat and Install Embedded Steel Bolsters	2
C7	Install Wingwall Tie Back System	1
C8	Install Precast Bridge Seat	1

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 7788
WIN
23488.00
BRIDGE PLANS



PROJ. MANAGER	DATE	BY
DESIGN-DETAILED	12/2020	BJM
CHECKED-REVIEWED	12/2020	GSC
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (1 OF 13)

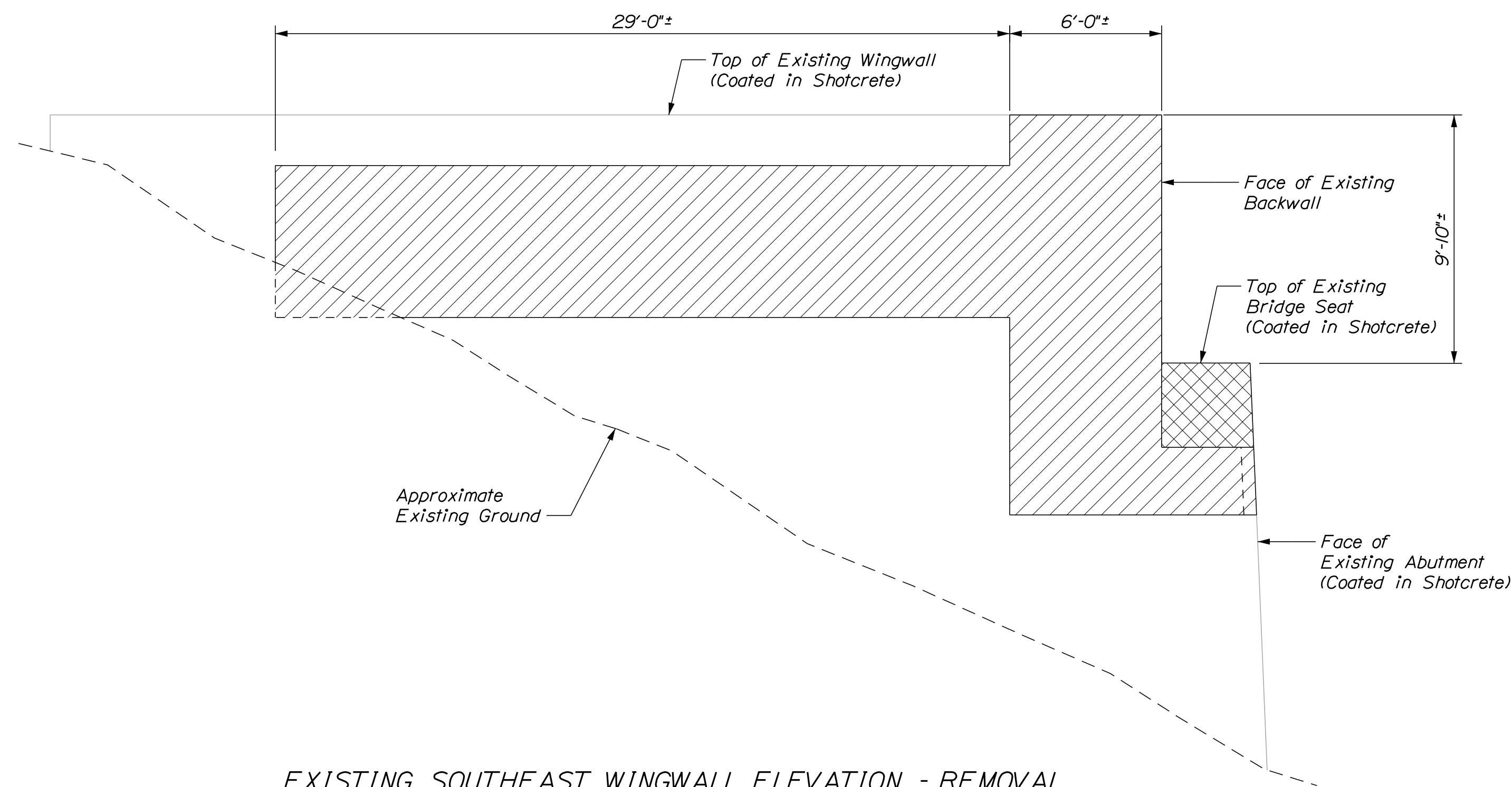
FIGURE
20
OF 36

Date: 12/7/2020

Username: BMasse

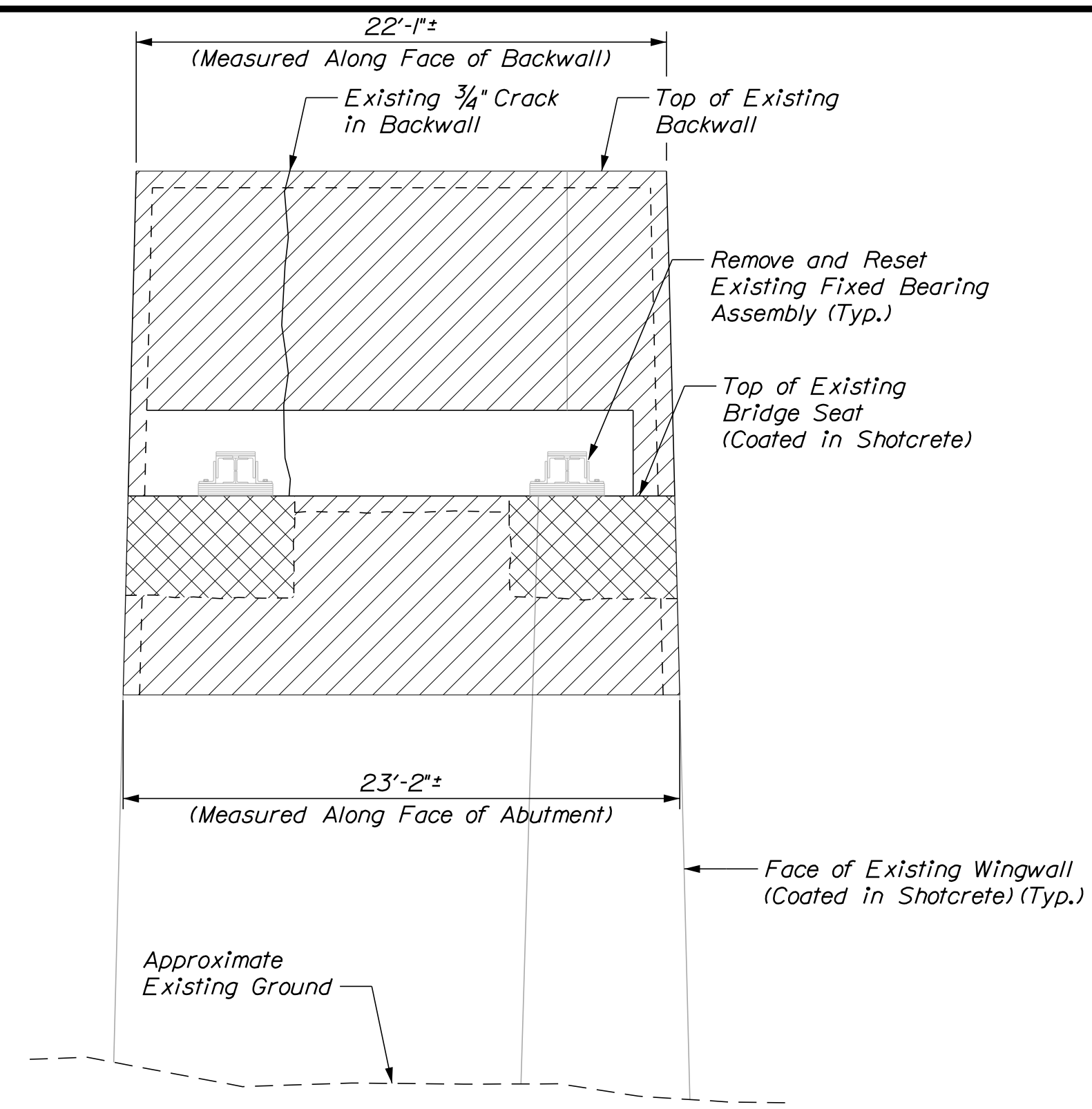
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Filename: 021_Sub1_7788.dgn



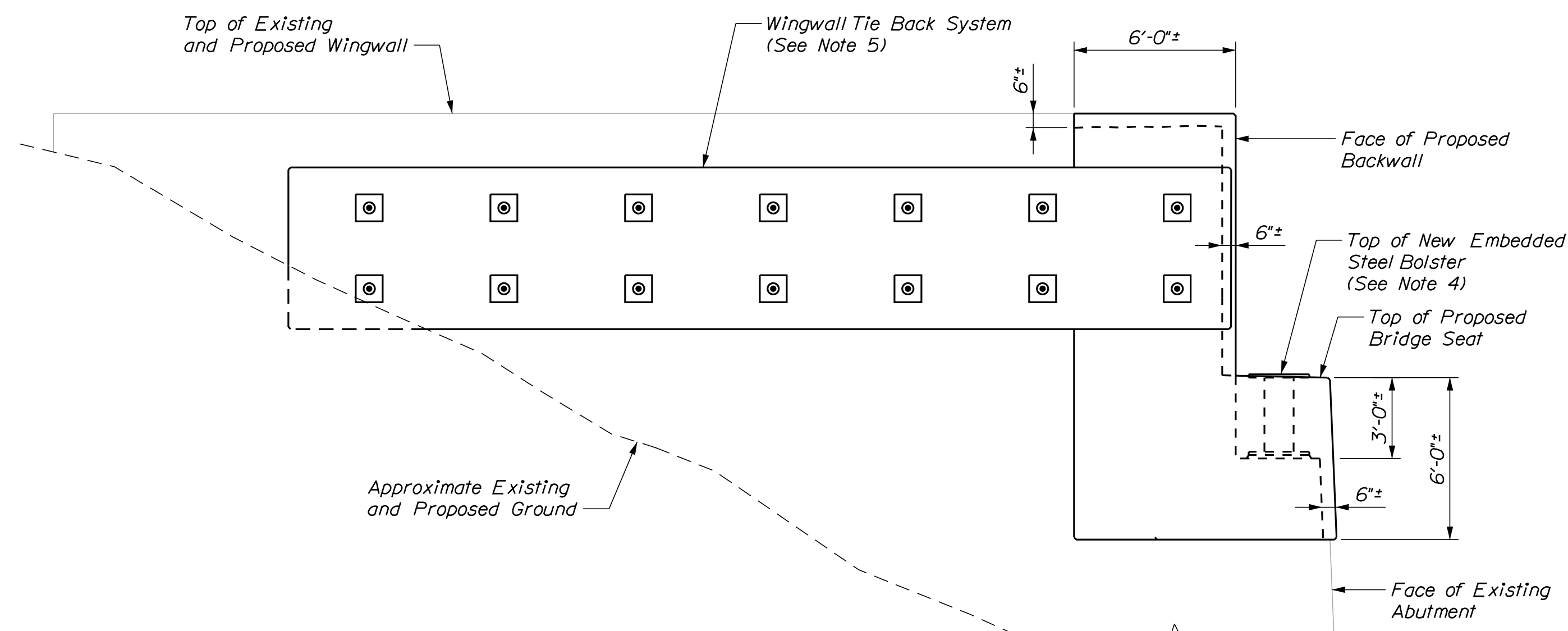
EXISTING SOUTHEAST WINGWALL ELEVATION - REMOVAL

(Southeast Wingwall Shown, Southwest Wingwall Similar)
Scale: 1/4" = 1'-0"



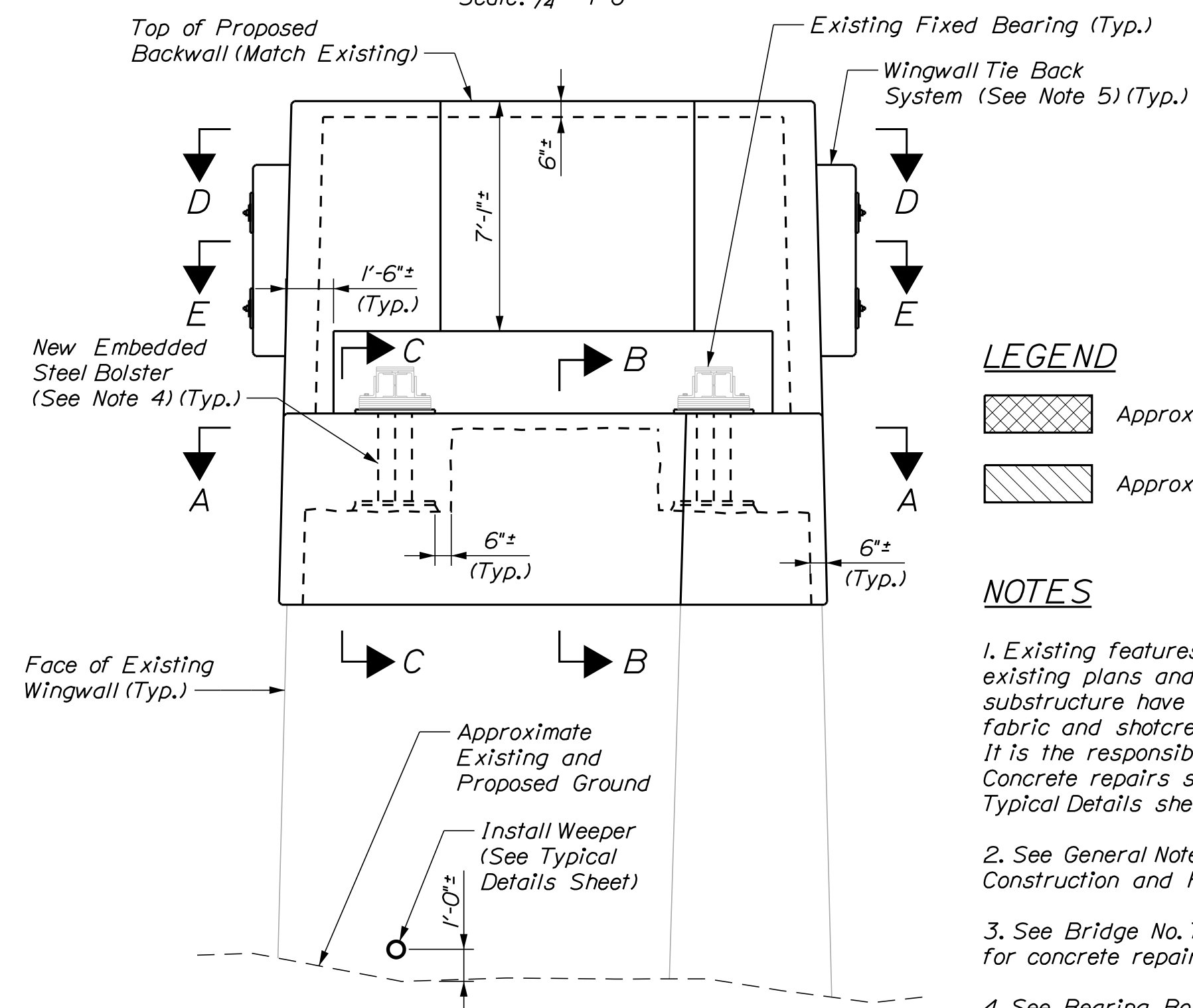
EXISTING SOUTH ABUTMENT ELEVATION - REMOVAL

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



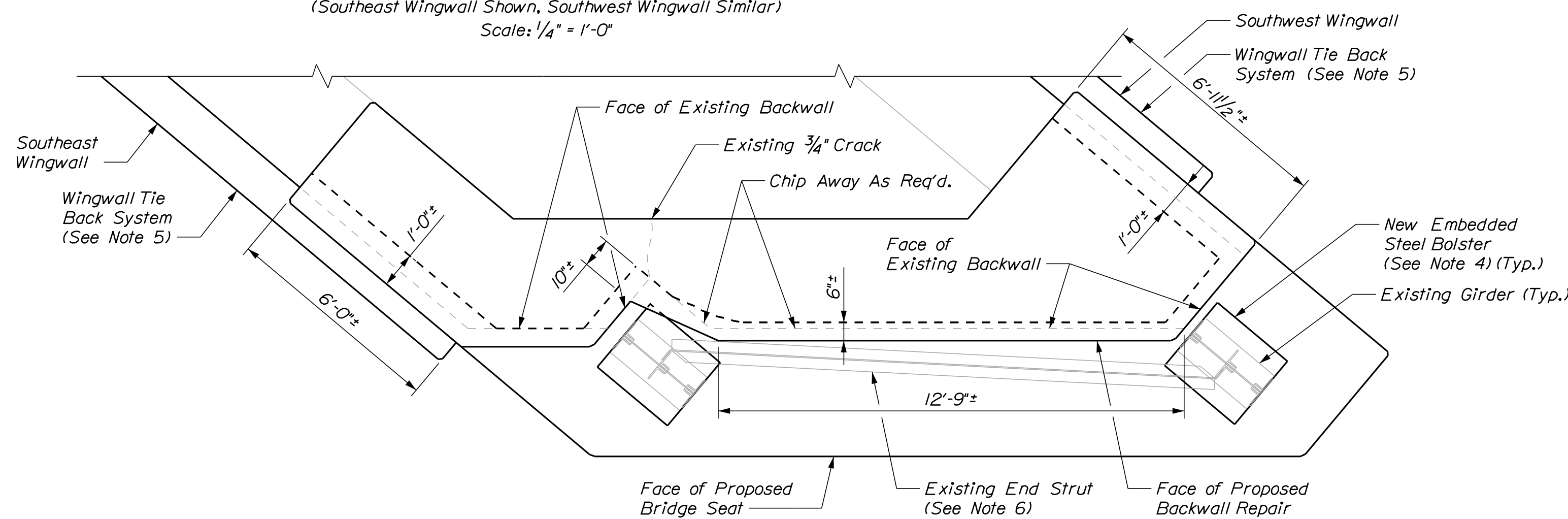
PROPOSED SOUTHEAST WINGWALL ELEVATION

(Southeast Wingwall Shown, Southwest Wingwall Similar)
Scale: 1/4" = 1'-0"



PROPOSED SOUTH ABUTMENT ELEVATION

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



PROPOSED BRIDGE SEAT AND BACKWALL DETAIL

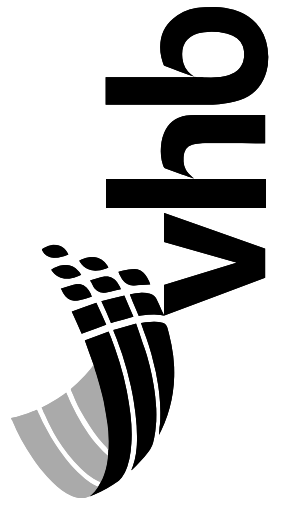
Scale: 3/8" = 1'-0"

LEGEND

- Approximate Limits of Full Depth Removal/Repair
- Approximate Limits of Partial Depth Removal/Repair

NOTES

- 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 sheet for more information.
- See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
- See Bridge No. 7788 (M.P. 241.83) Over Fish River (4 of 13) sheet for concrete repair sections and reinforcing details.
- See Bearing, Bolster, and Pedestal Details (2 of 3) sheet for steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.
- See Wingwall Tie Back System Details sheet for wingwall tie back system layout and details.
- The existing upper end strut shall be removed prior to and reset after completing backwall repairs. All costs associated with removal and resetting of the existing upper end strut will be considered incidental to the associated Contract Items. The lower end strut shall be left in place.
- At the Contractor's option, high-early strength concrete may be used in the backwall or the upper portion of the backwall, to reduce the required closure window. The Contractor may use a horizontal construction joint as required to suit his or her means and methods of installing the backwall repair.
- Removal of existing material and subsequent regrading around the end of wingwall tie back system will be considered incidental to the associated Contract Items.



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

FIGURE

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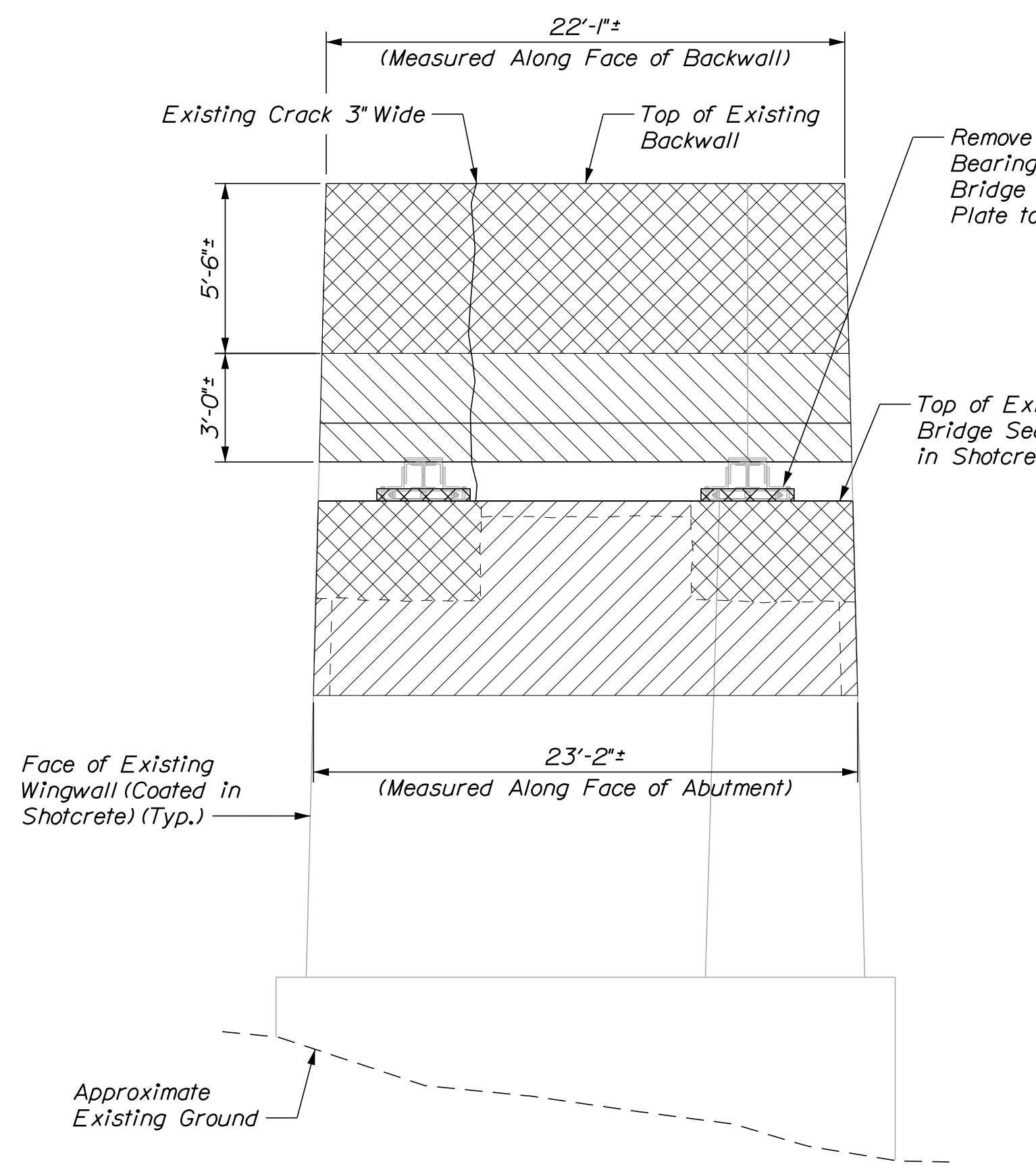
OF 36

Date: 12/17/2020

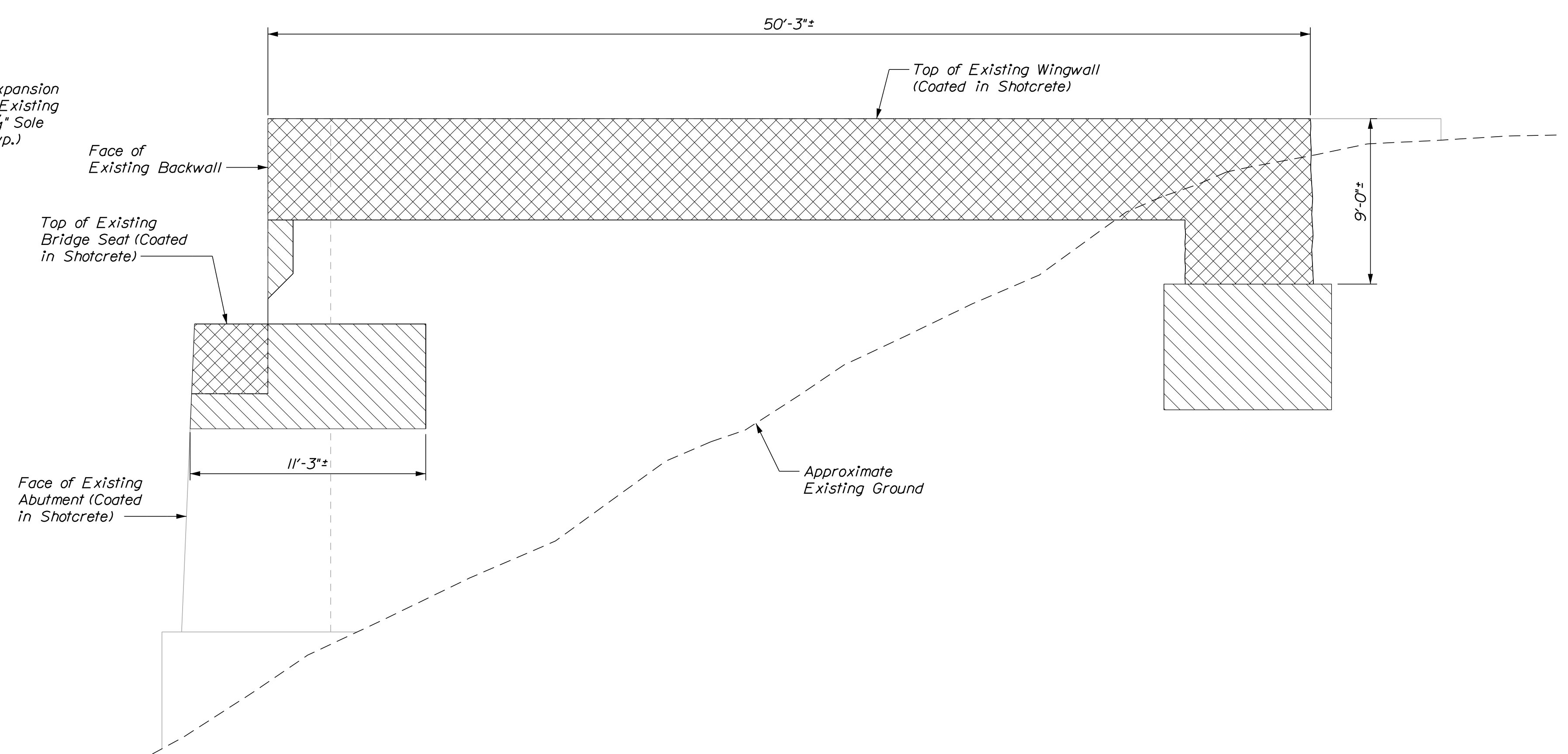
Username: BMasse

Division: MUL TIMODAL

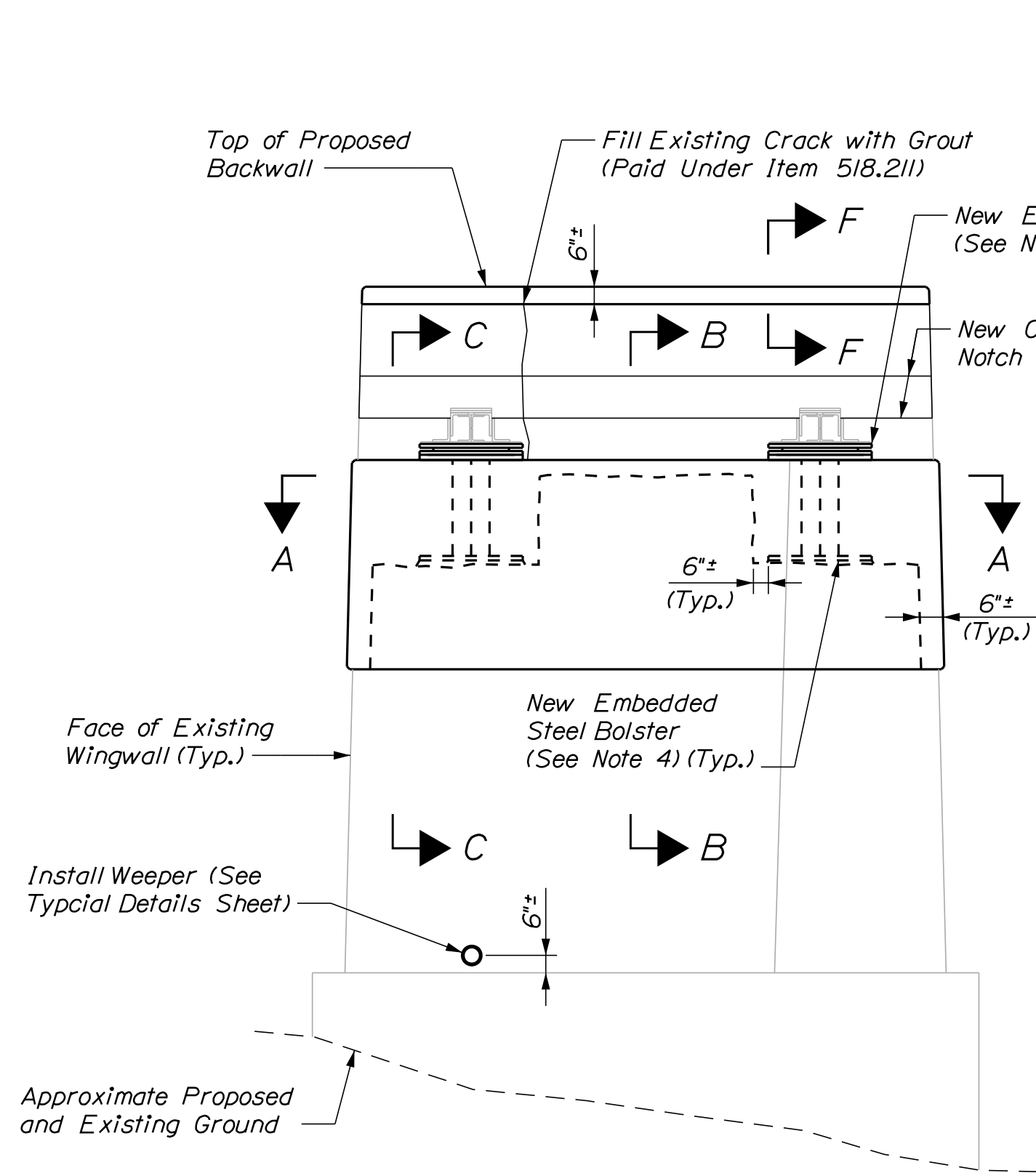
Filename: 022_Sub2_7788.dgn



EXISTING NORTH ABUTMENT ELEVATION - REMOVAL
Scale: 1/4" = 1'-0"

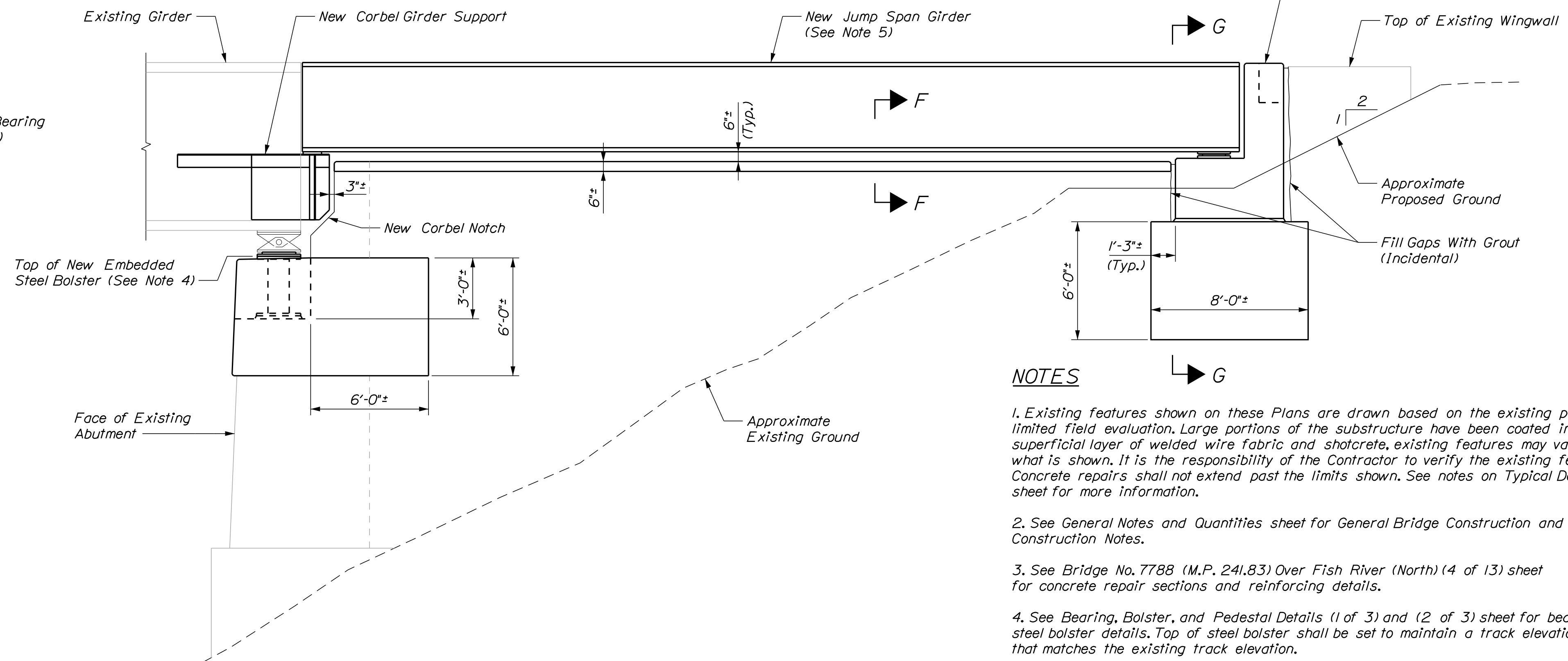


EXISTING NORTHEAST WINGWALL ELEVATION - REMOVAL
(Northeast Wingwall Shown, Northwest Wingwall Similar)
Scale: 1/4" = 1'-0"



PROPOSED NORTH ABUTMENT ELEVATION
Scale: 1/4" = 1'-0"

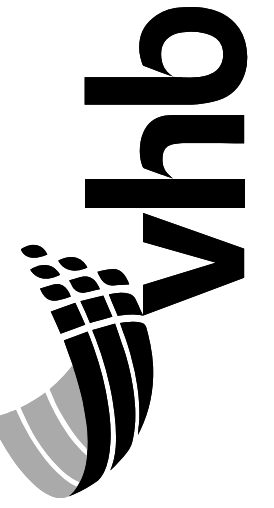
LEGEND
 Approximate Limits of Full Depth Removal/Repair
 Approximate Limits of Partial Depth Removal/Repair



PROPOSED NORTHEAST WINGWALL ELEVATION
(Northeast Wingwall Shown, Northwest Wingwall Similar)

NOTES

- 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 sheet for more information.
- See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
- See Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (4 of 13) sheet for concrete repair sections and reinforcing details.
- See Bearing, Bolster, and Pedestal Details (1 of 3) and (2 of 3) sheet for bearing and steel bolster details. Top of steel bolster shall be set to maintain a track elevation that matches the existing track elevation.
- See Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (6 of 13) thru (13 of 13) sheet for Jump Span Details.
- See Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (5 of 13) for Precast Jump Span Bridge Seat Details and Section G-G. Precast abutment shall be set to maintain a level track elevation that matches the existing track elevation.



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 7788
WIN
23488.00
BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED		GSC	12/2020
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (3 OF 13)

FIGURE

22

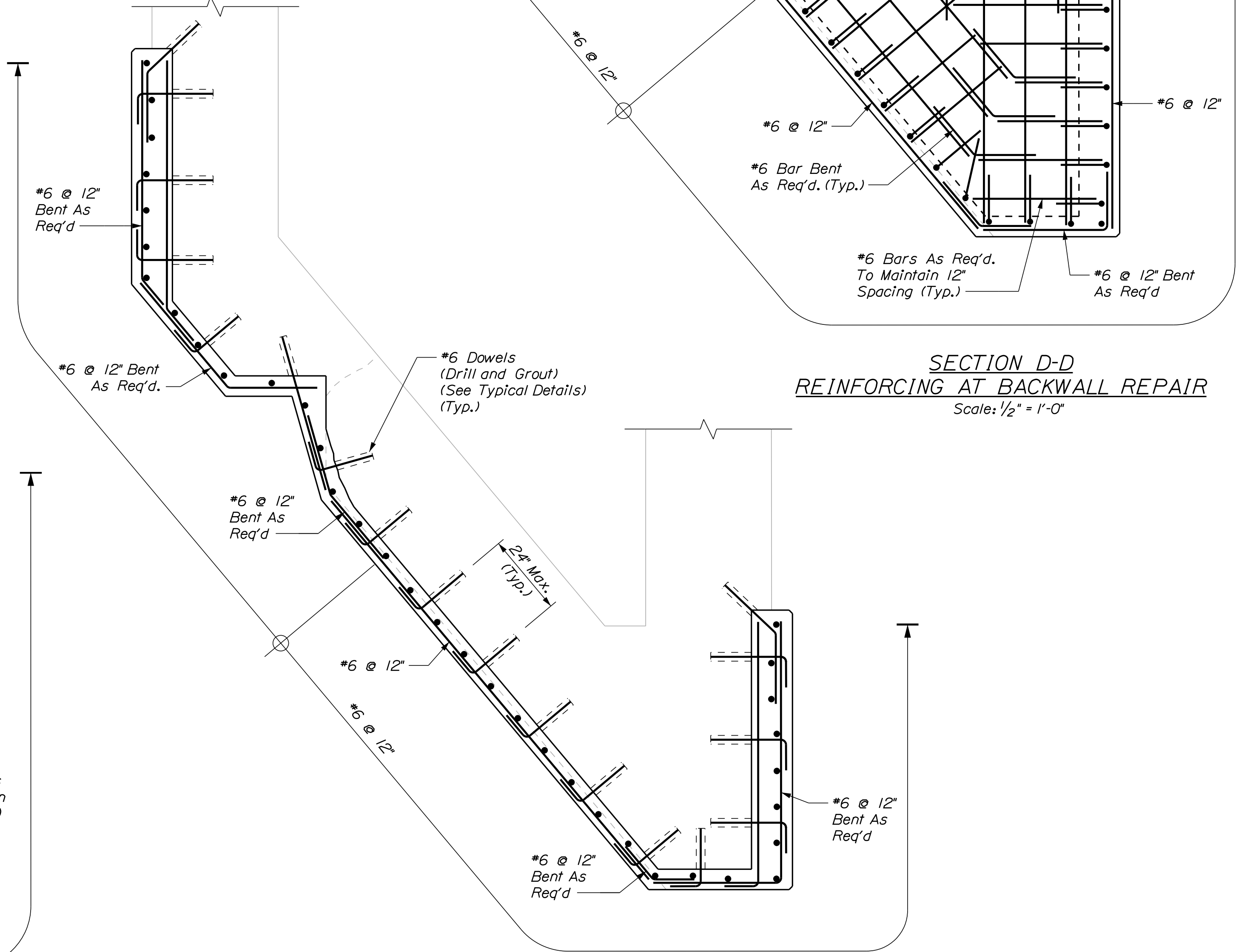
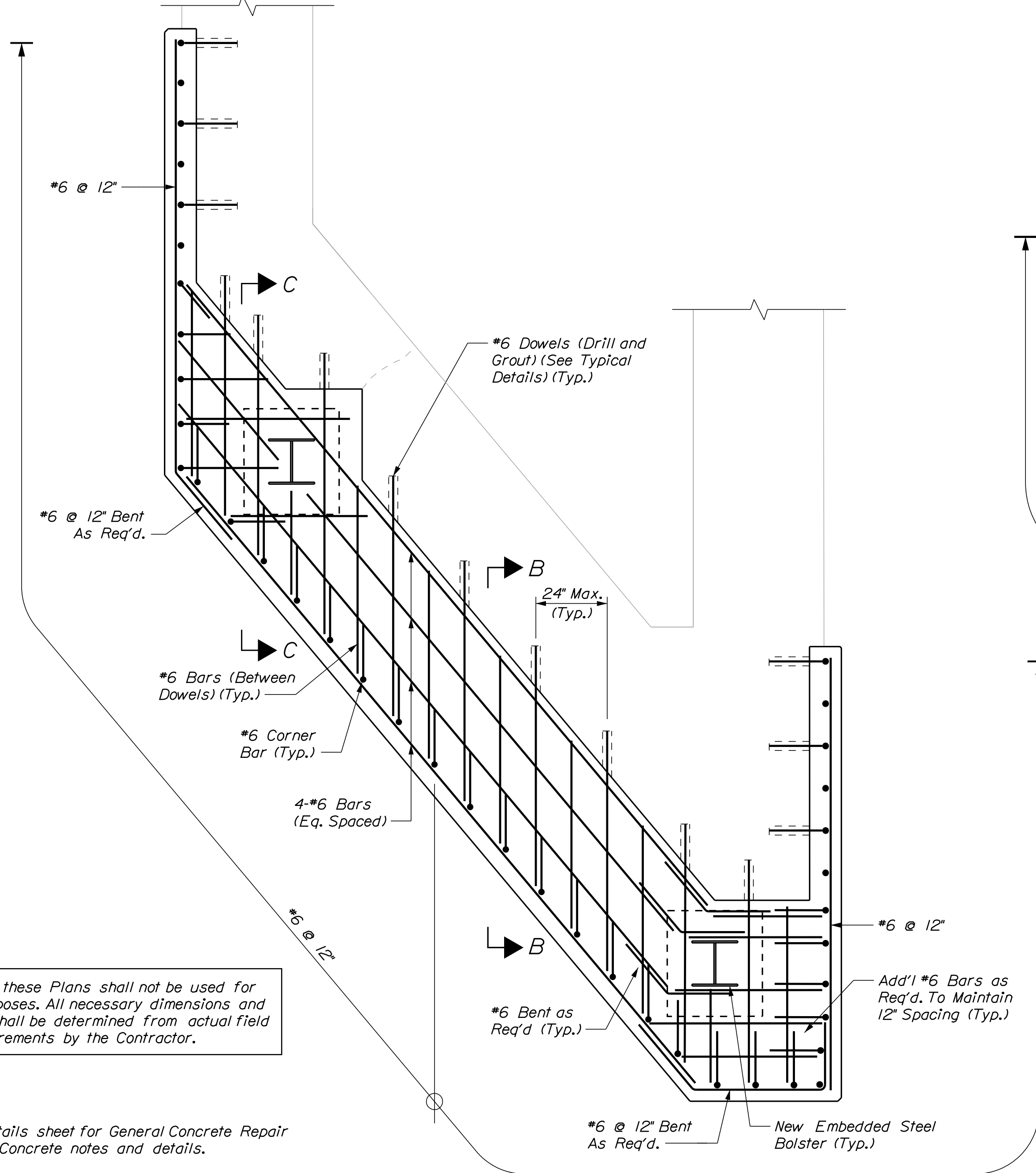
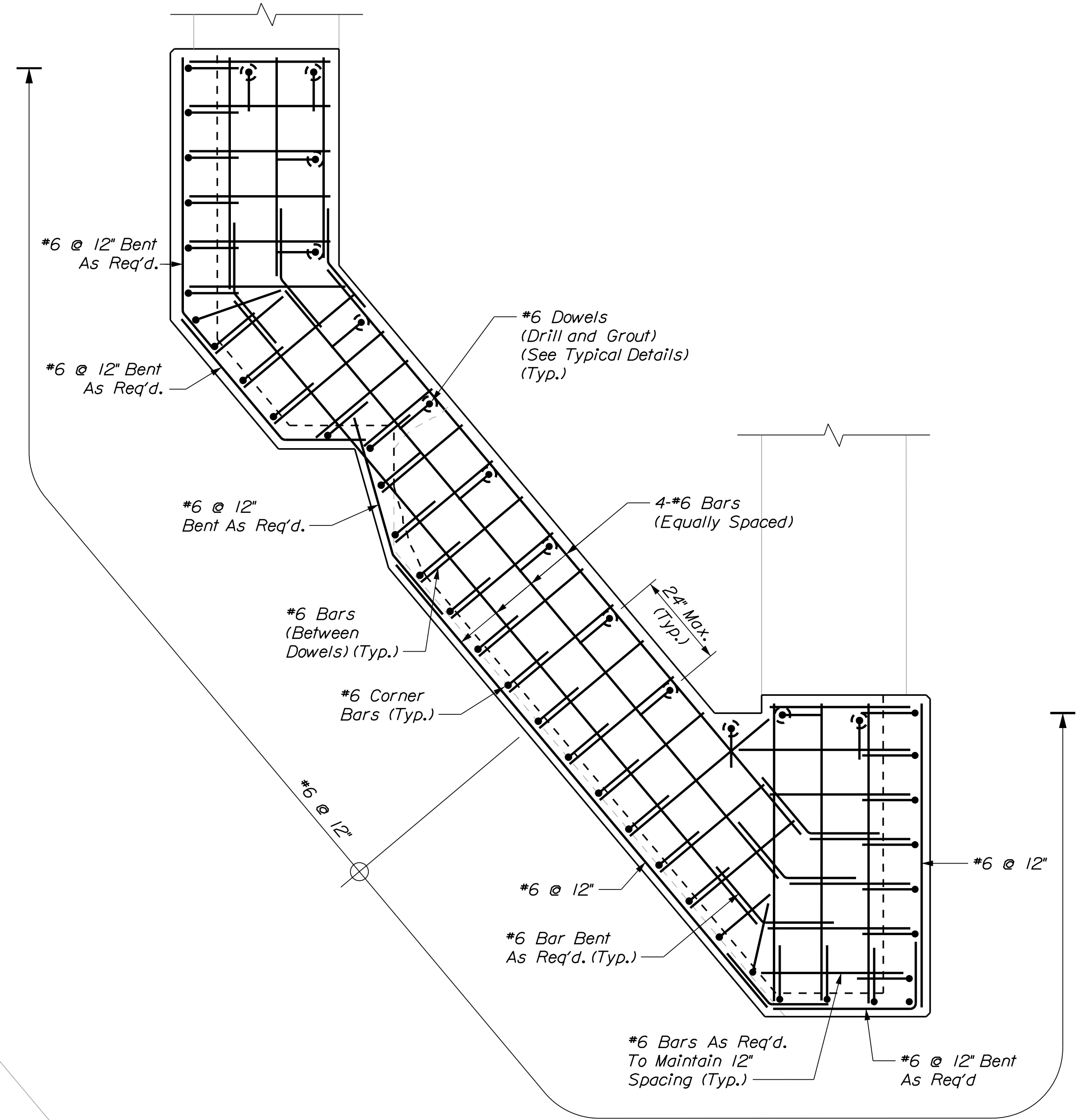
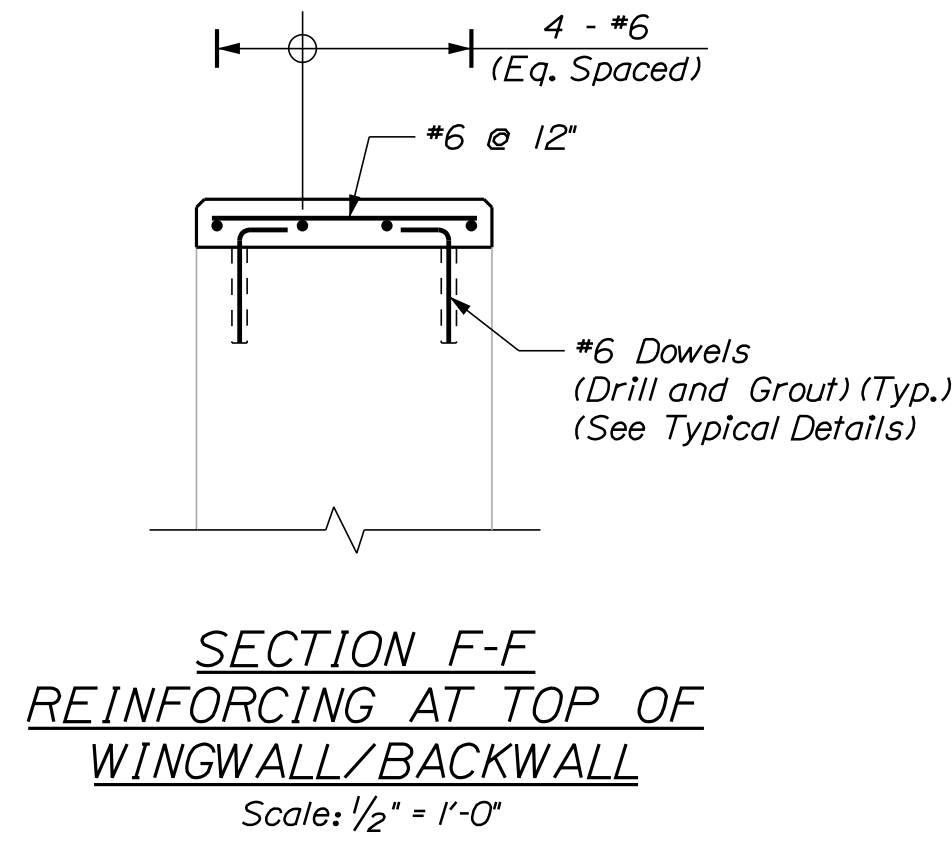
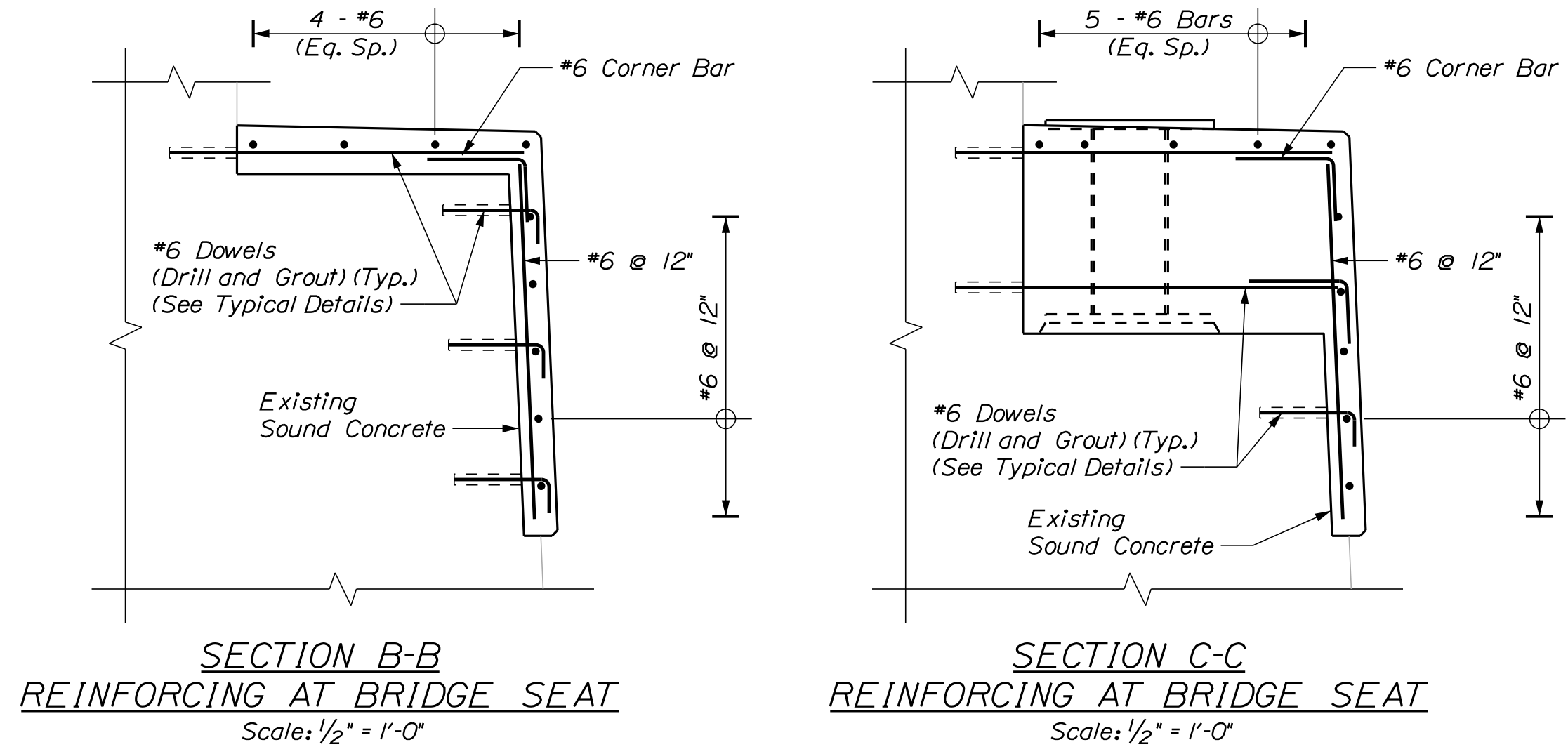
OF 36

Date: 12/17/2020

Username: BMasse

Division: MUL TIMODAL

Filename: 023_Sub3_7788.dgn

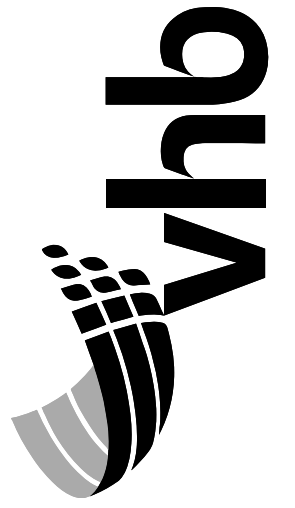


Dimensions in these Plans shall not be used for fabrication purposes. All necessary dimensions and configurations shall be determined from actual field measurements by the Contractor.

NOTES

- See Typical Details sheet for General Concrete Repair and Reinforced Concrete notes and details.
- 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.

SECTION E-E
REINFORCING AT BACKWALL REPAIR
Scale: 1/2" = 1'-0"
(Wingwall Tie Back System Not Show For Clarity, Tie Into Backwall Reinforcing As Appropri)



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	JUN 12/2020	BJM	
CHECKED-REVIEWED	JUN 12/2020	GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

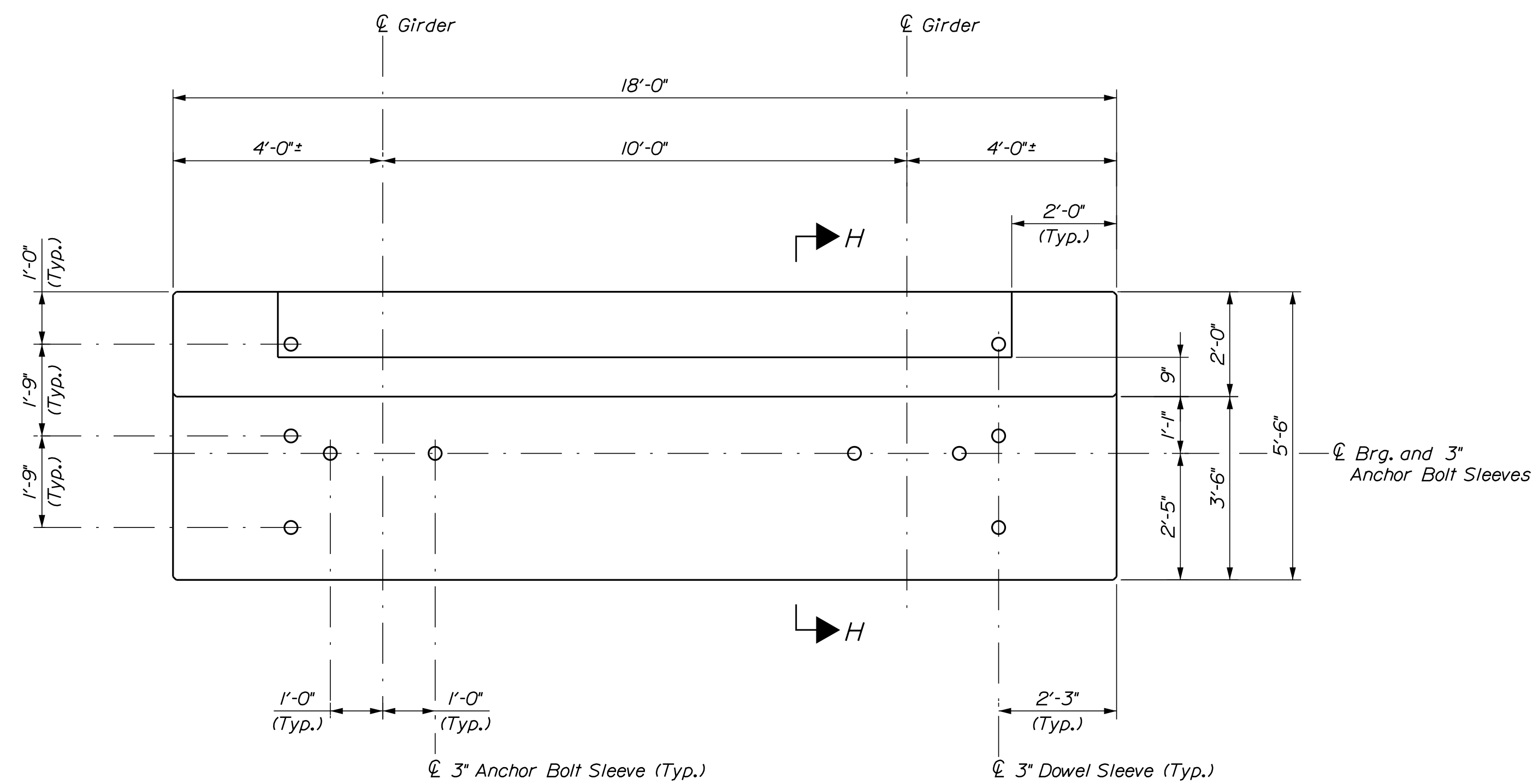
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (4 OF 13)

Date: 12/17/2020

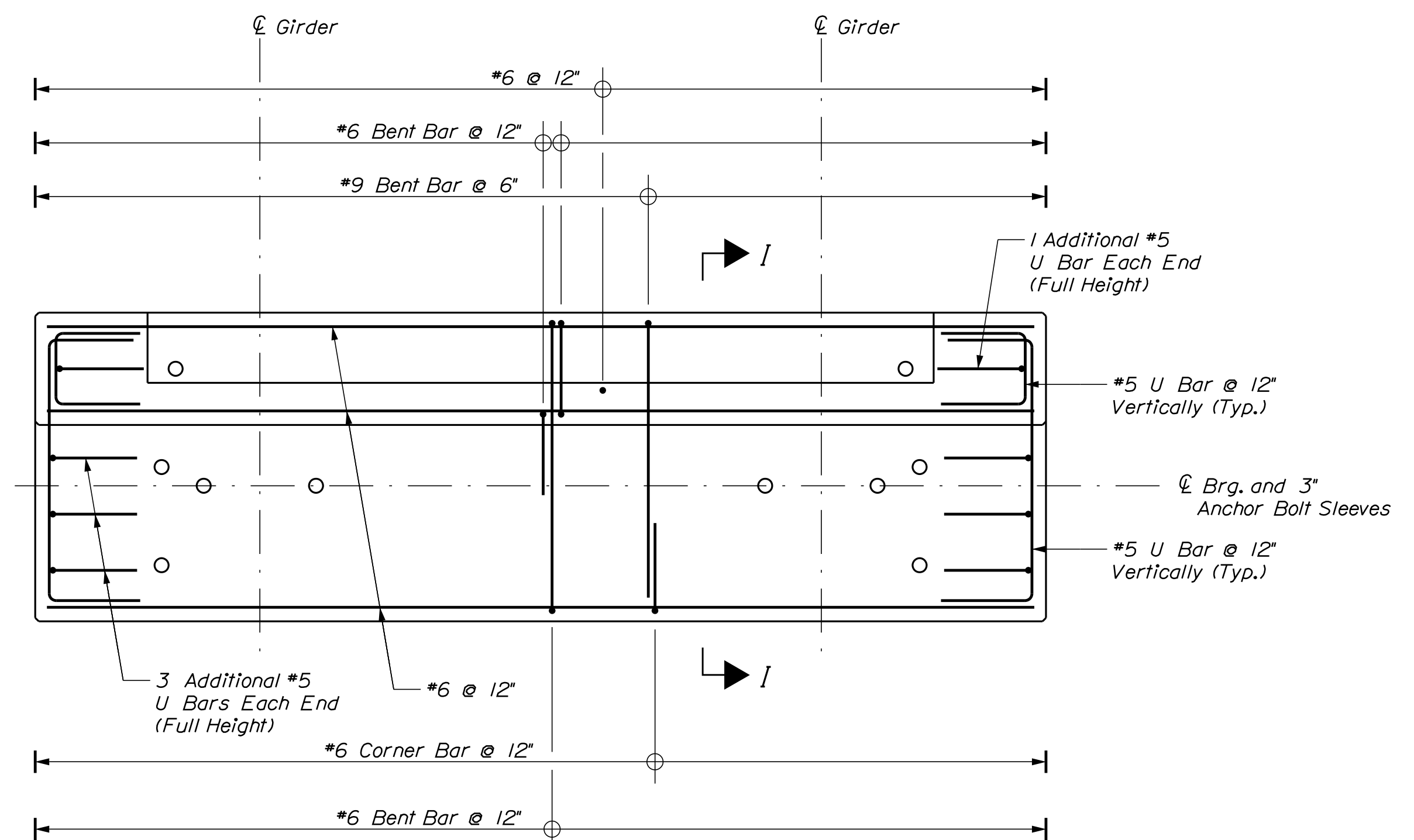
Username: BMasse

Division: MUL TIMODAL

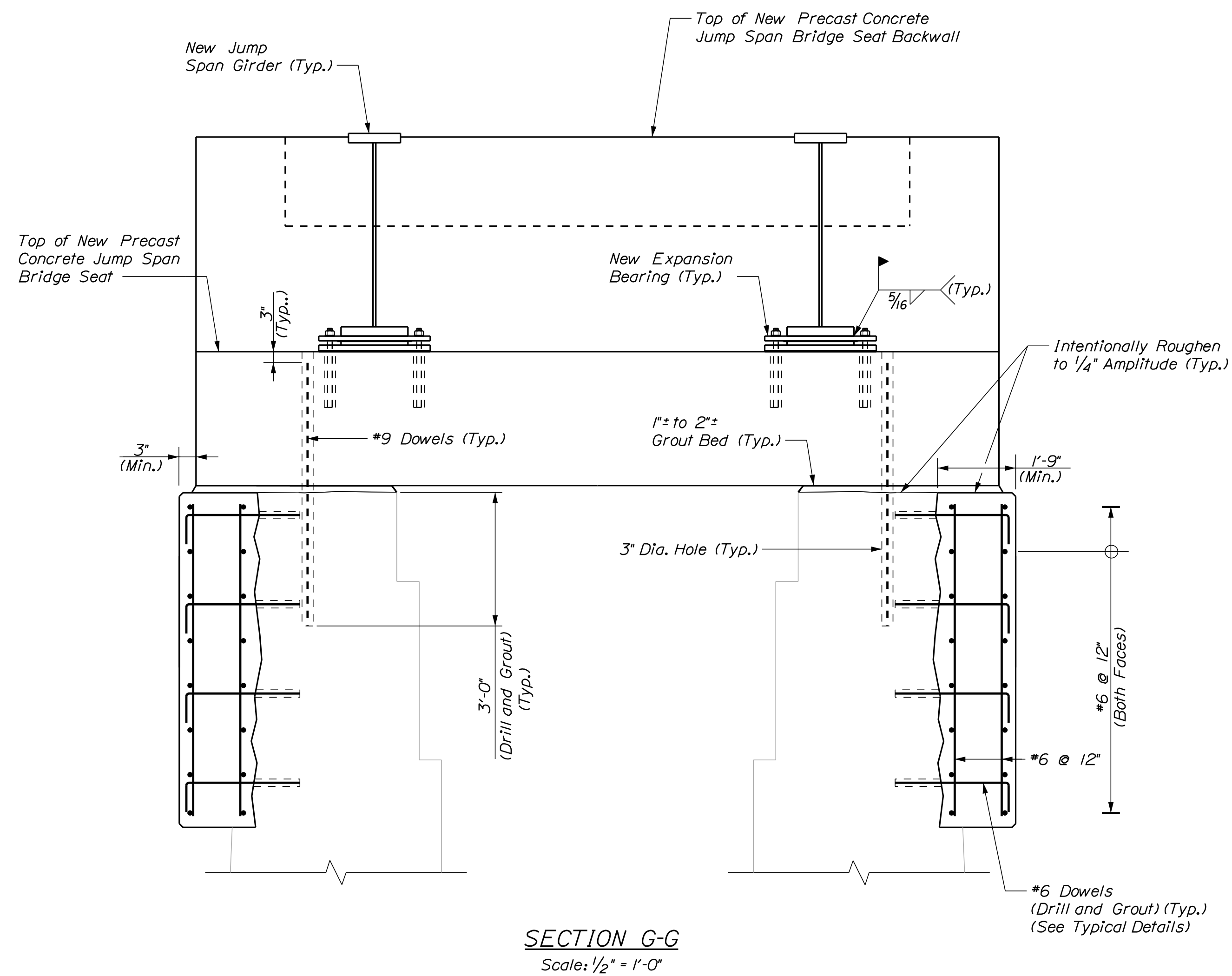
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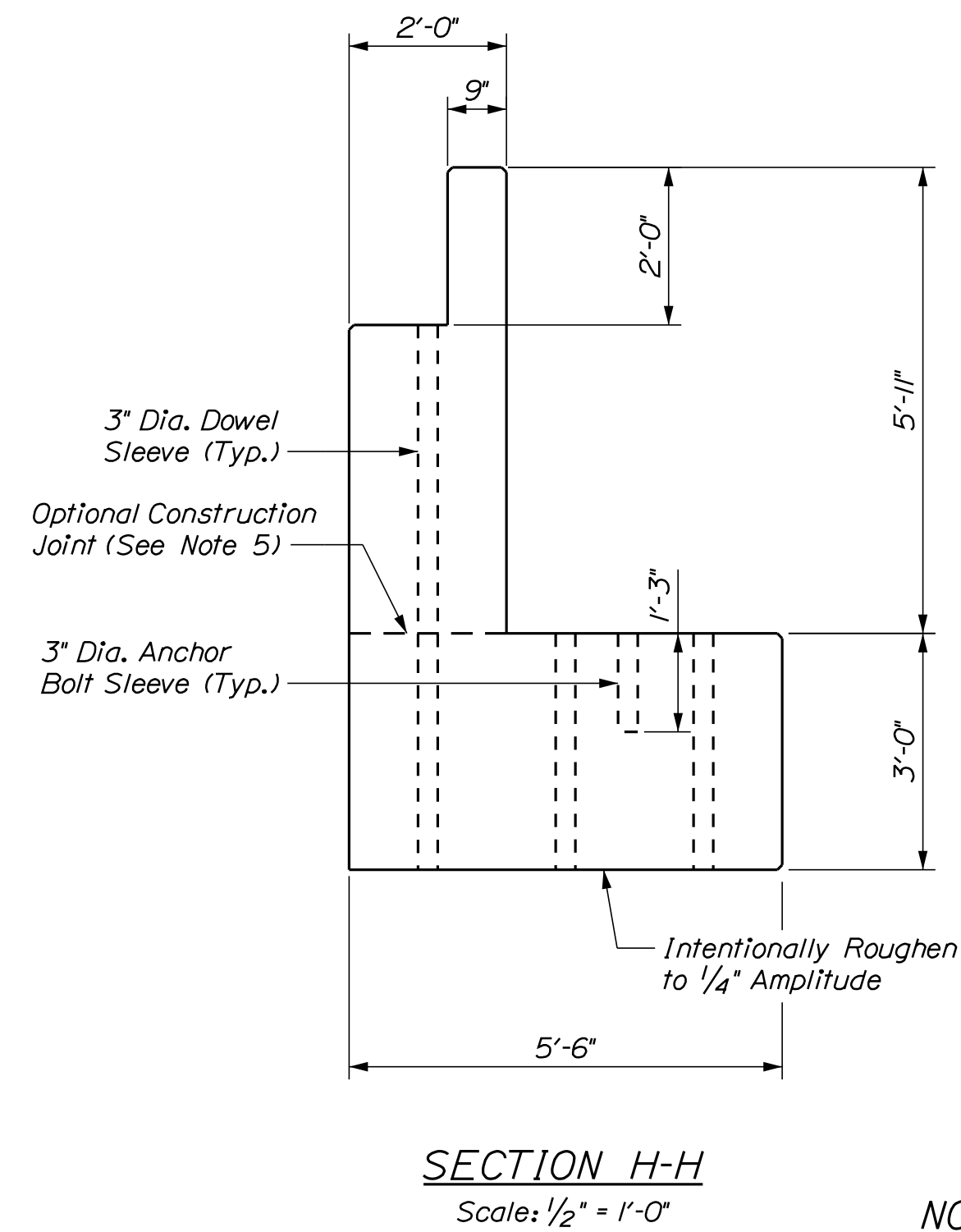
PROPOSED PRECAST CONCRETE JUMP SPAN BRIDGE SEAT MASONRY PLAN
Scale: 1/2" = 1'-0"



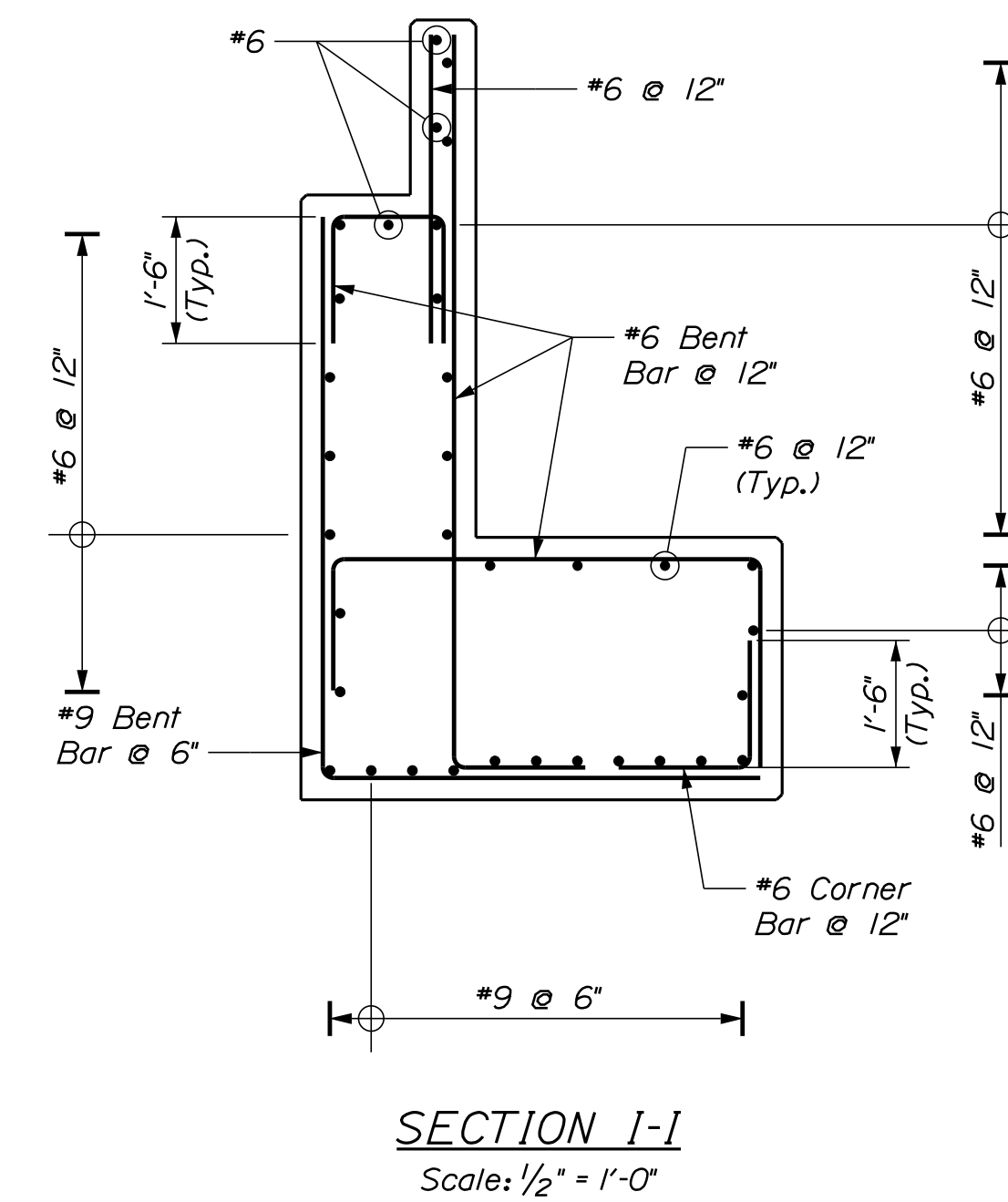
PROPOSED PRECAST CONCRETE JUMP SPAN BRIDGE SEAT REINFORCING PLAN
Scale: 1/2" = 1'-0"



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



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

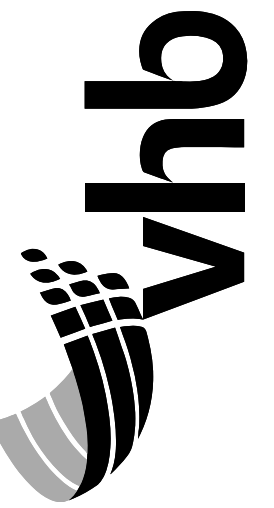


SECTION I-I
Scale: 1/2" = 1'-0"

NOTES

1. See Typical Details 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. See Bearing, Bolster, and Pedestal Details (1 of 3) and (3 of 3) sheets for bearing and anchor bolt details and notes.
4. Furnishing and installing of the #9 dowels attaching the jump span bridge seat to the existing wingwalls will be considered incidental to Item 534.30 Precast Structural Concrete (Jump Span Bridge Seat).
5. At no additional cost to the department, a construction joint may be used to suit the Contractor's means and methods of bridge seat installation. The Contractor shall submit details for approval.

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

PROJ. MANAGER	DATE
DESIGN-DETAILED	12/20/20
CHECKED-REVIEWED	12/20/20
DESIGN-DETAILED	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (5 OF 13)

FIGURE
24
OF 36

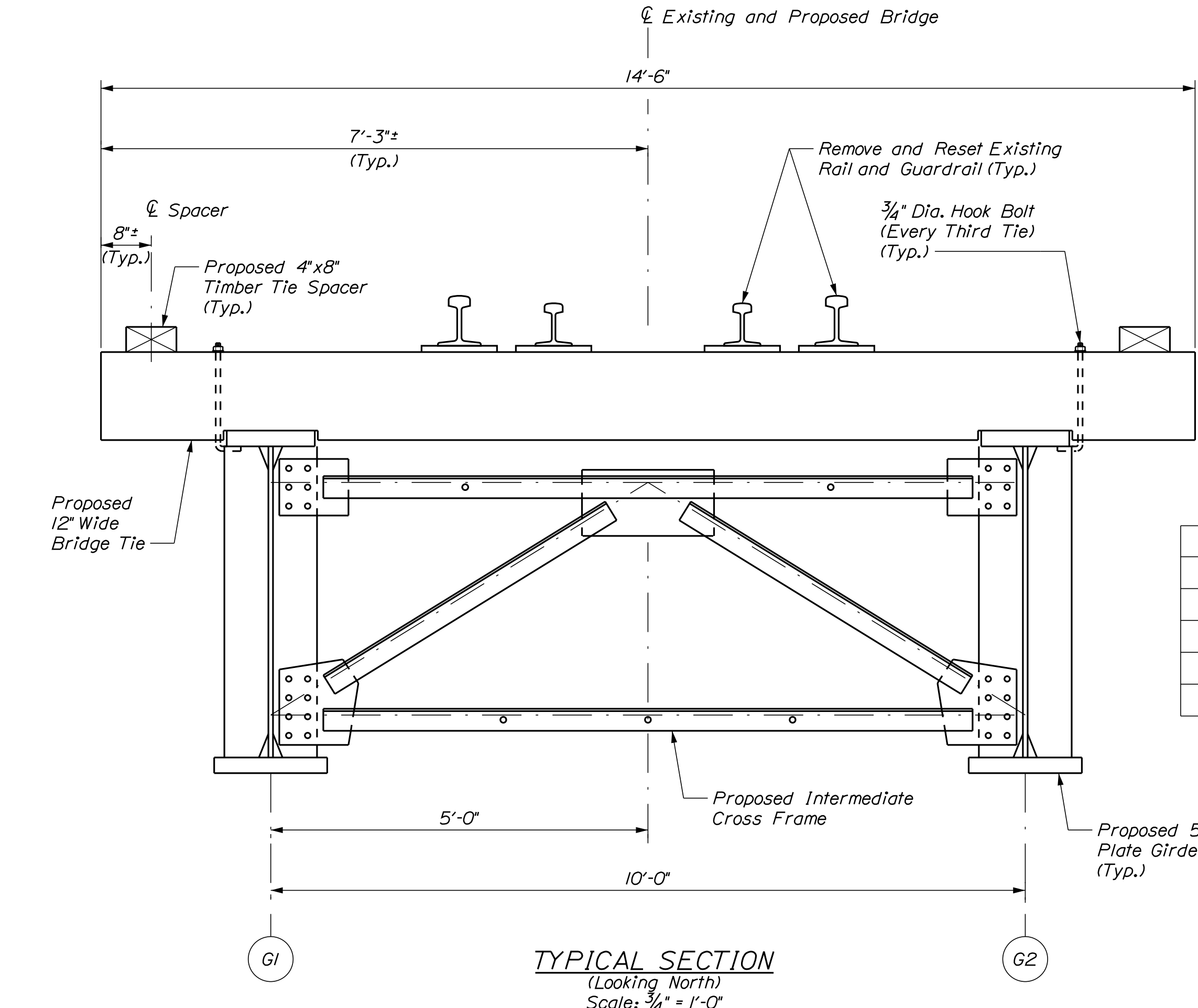
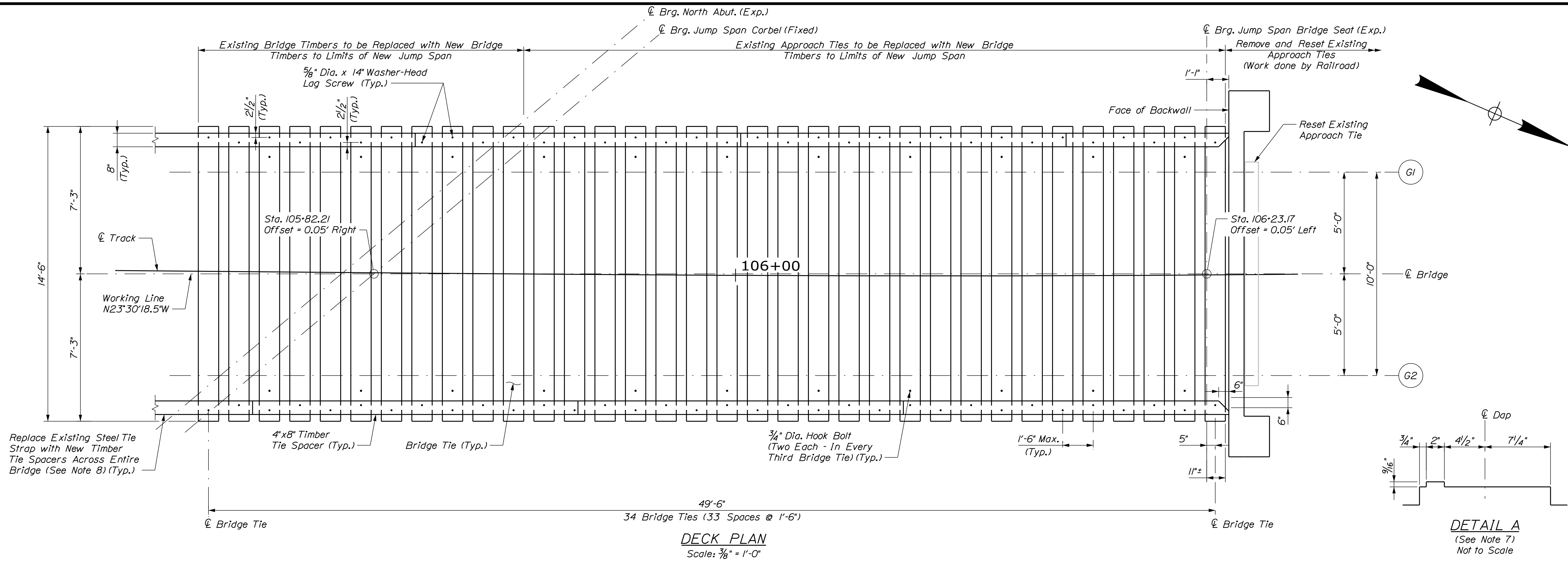
BRIDGE NO. 7788
WIN
23488.00
BRIDGE PLANS

Date: 12/17/2020

Username: BMasse

Division: MUL TIMODAL

Filename: 025_JS02_7788.dgn



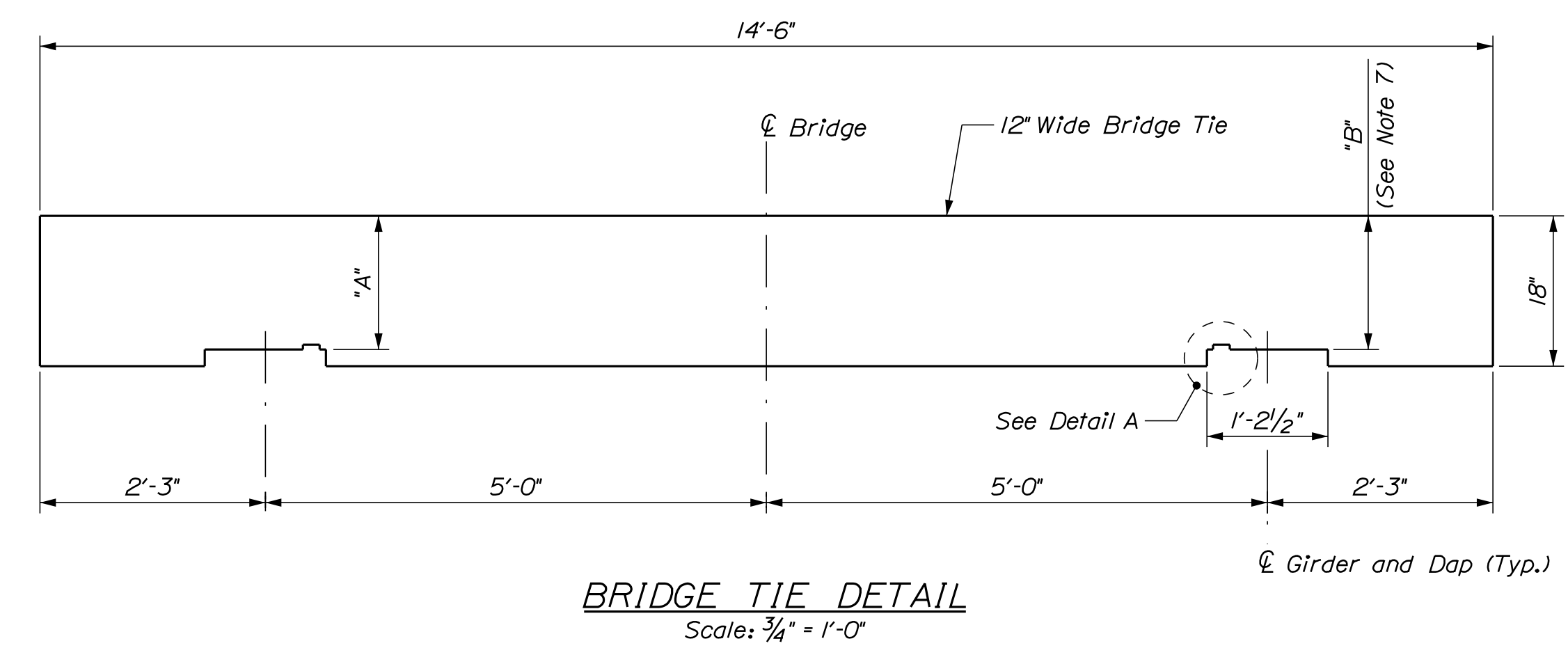
FOR BIDDING ONLY
NOT FOR CONSTRUCTION
DECEMBER 2020

DAPPING TABLE

Mark	"A"	"B"	Quantity	Mark	"A"	"B"	Quantity
TIXX				TIXX			
TIXX				TIXX			
TIXX				TIXX			
TIXX				TIXX			

Dapping Table to be Finalized and Submitted Prior to Fabrication of Bridge Ties

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.



BRIDGE TIE AND TIMBER NOTES

- 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 "Specifications 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 Provision 528 for additional timber and preservative treatment requirements.
- Holes for hook bolts shall be pre-bored during fabrication and before treatment of bridge ties. Holes for hook bolts shall be 1/16" larger than hook bolts. Face of hook bolt shank shall be tight to flange, no more than 1/8" gap.
- Holes for lag screws shall be bored with a bit not larger than the screw at the base of the thread.
- See Special Provision 528 for lag screws and hook bolt requirements.
- Contractor shall survey the existing top of rail prior to starting removal work so that the existing superelevation (if any) can be recovered upon reconstruction. The spiral curve indicates a potential for the superelevation to vary over the length of the span.
- Top of proposed bridge ties must match top of existing bridge ties. Dap may be increased in the field by a maximum of 1". If shimming is required in order to achieve the correct elevation, it shall be done by shimming the corbel support at the bottom of proposed girder.
- Timber tie dimensions and dapping shown are for bidding purposes only. A finalized dapping table and details will be provided prior to construction.
- Tie spacer shall be positioned so the edge of the spacer is flush with edge of ties on existing bridge.

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BRIDGE NO. 7788
WIN 23488.00
BRIDGE PLANS

vhb

PROJ. MANAGER	DATE	BY	REVISIONS
DESIGN-DETAILED	12/2020	BJM	1
CHECKED-REVIEWED	12/2020	GSC	2
DESIGN-DETAILED			3
REVISIONS 1			4
REVISIONS 2			5
REVISIONS 3			6
REVISIONS 4			7
FIELD CHANGES			8

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY

BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (6 OF 13)

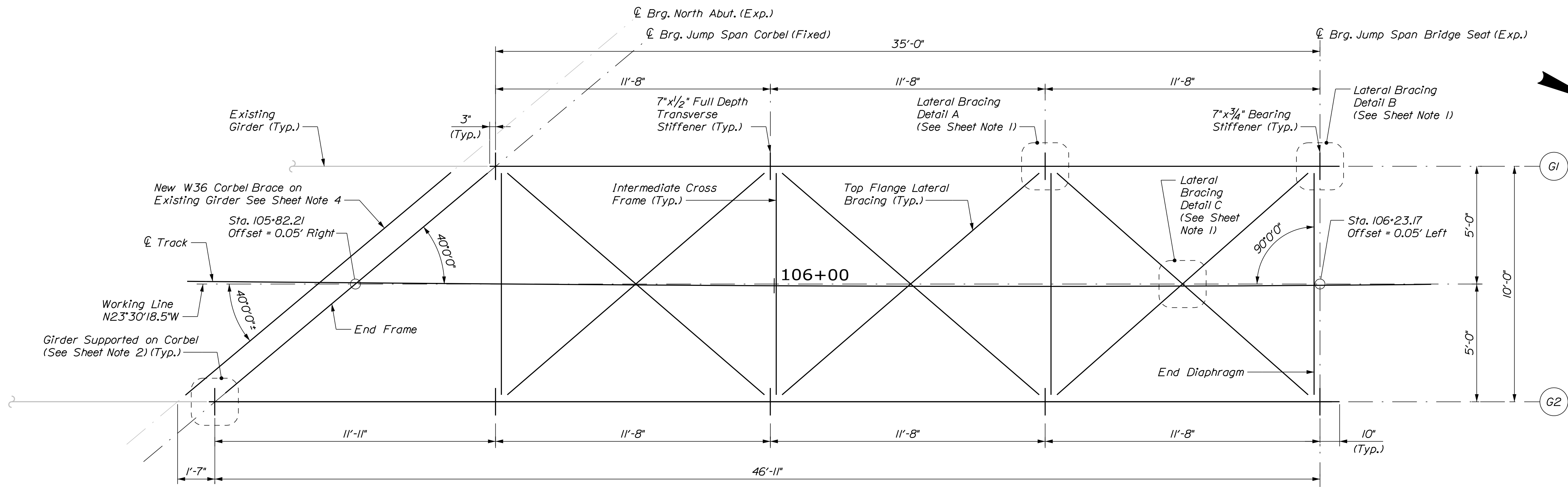
FIGURE
25
OF 36

Date: 12/17/2020

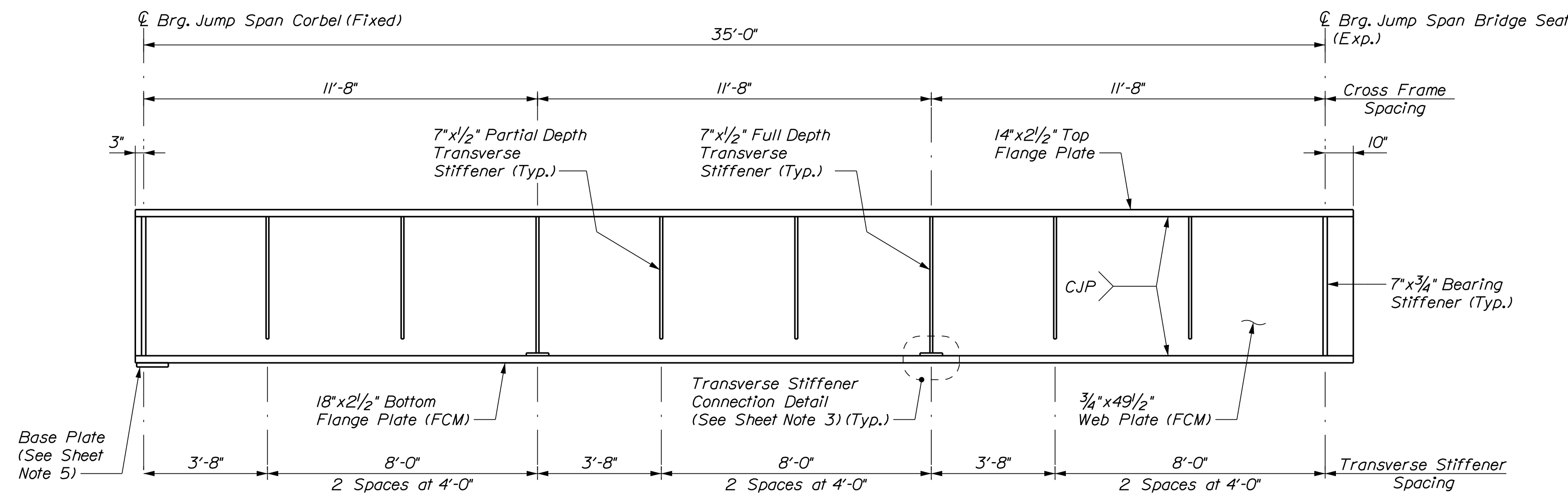
Username: BMasse

Division: MUL TIMODAL

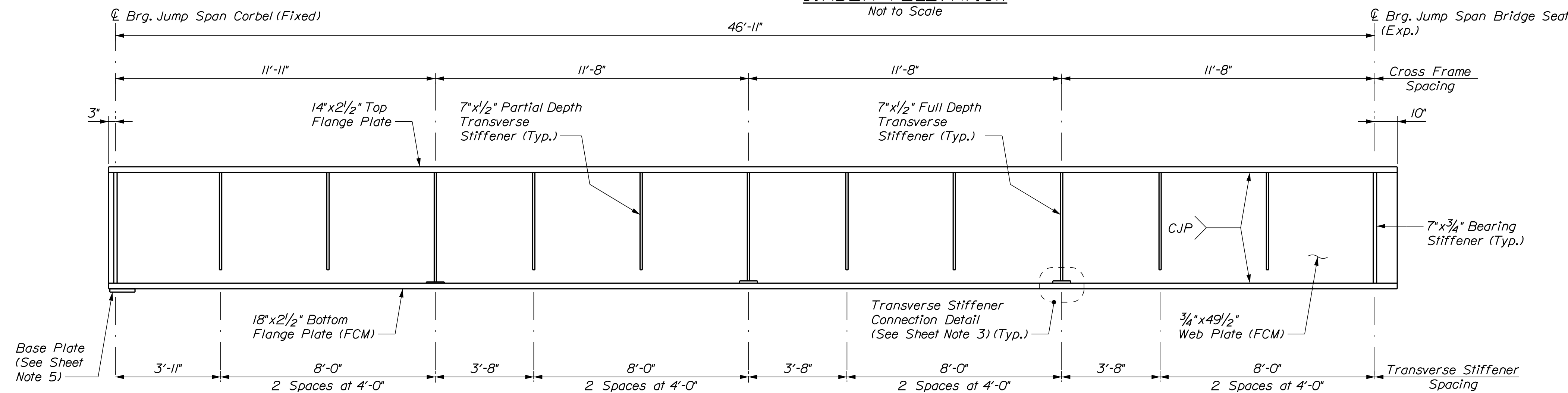
Filename: 026_JSO3_7788.dgn



FRAMING PLAN
 (Partial Depth Transverse Stiffeners Not Shown for Clarity)
 Scale: 3/8" = 1'-0"



GIRDER 1 ELEVATION
 Not to Scale



GIRDER 2 ELEVATION
 Not to Scale

STRUCTURAL STEEL NOTES

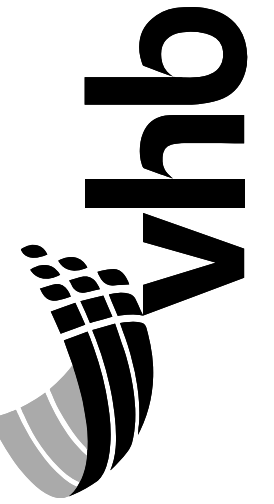
- See general notes and quantities sheet for additional steel notes.
- Bottom flanges and webs of girders shall conform to the Zone 2 Charpy V-Notch impact test requirements of ASTM A709. These members have been labeled as Fracture Critical Members (FCM) for clarity.
- Bearing stiffeners shall be plumb after erection and full dead load is applied to the structure.
- Transverse stiffeners may be either plumb or normal to the top flange.
- Girders shall be fabricated to zero camber plus tolerance.
- Flanges and web plates shall be fabricated in one piece. No transverse butt welds are allowed.
- Cross frame spacings are measured to the centerline of stiffeners.
- Top flange lateral bracing gravity axes are shown and shall intersect at centerline of transverse stiffeners as shown in Details A, B and C.

SHEET NOTES

- See Bridge No. 7788 (M.P. 241.83) over Fish River (North) (10 of 13) sheet for Top Flange Lateral Bracing Detail A, B and C.
- See Bridge No. 7788 (M.P. 241.83) over Fish River (North) (12 and 13 of 13) sheet for Jump Span Corbel.
- See Bridge No. 7788 (M.P. 241.83) over Fish River (North) (11 of 13) sheet for Transverse Stiffener Connection Details.
- See Bridge No. 7788 (M.P. 241.83) over Fish River (North) (12 of 13) sheet for new W36 Corbel Brace.
- See Bridge No. 7788 (M.P. 241.83) over Fish River (North) (13 of 13) sheets for Base Plate Details.

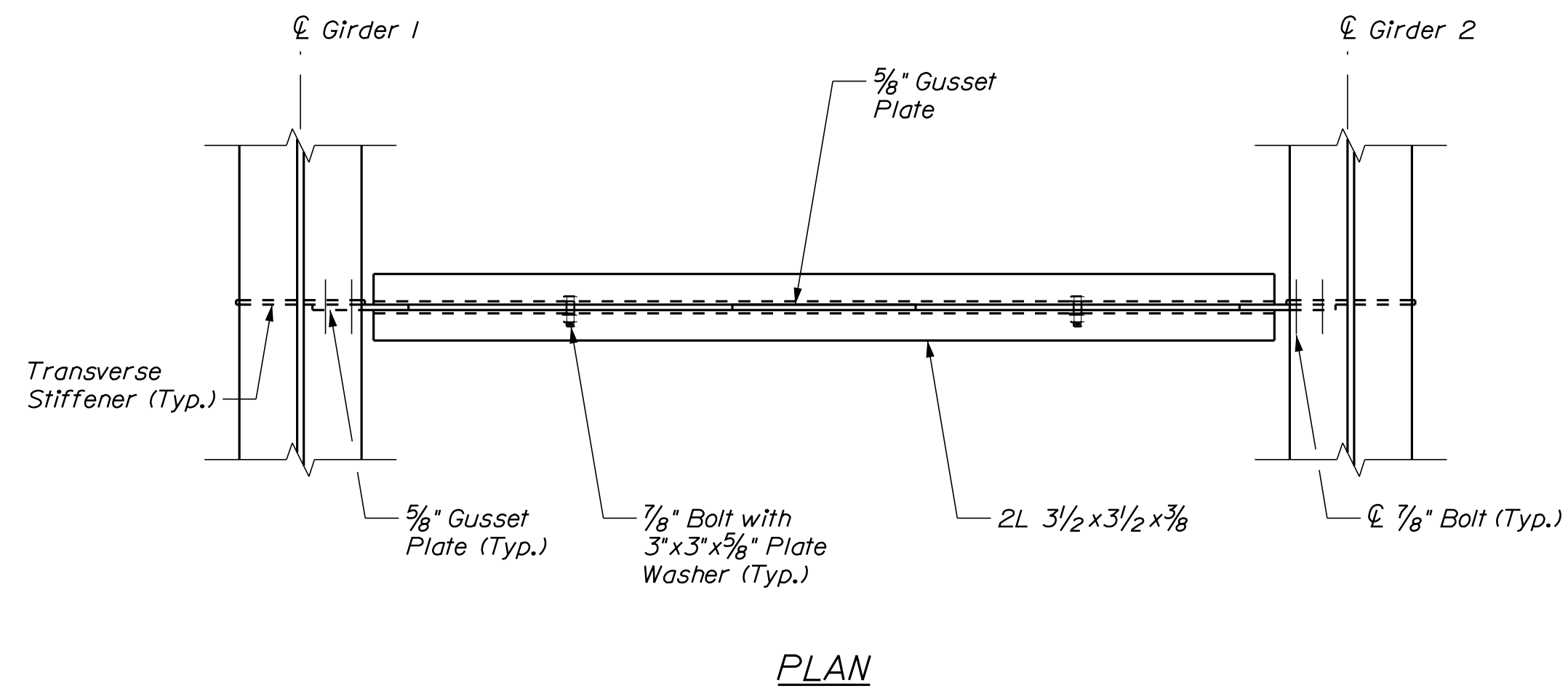
LEGEND

FCM = Fracture Critical Member

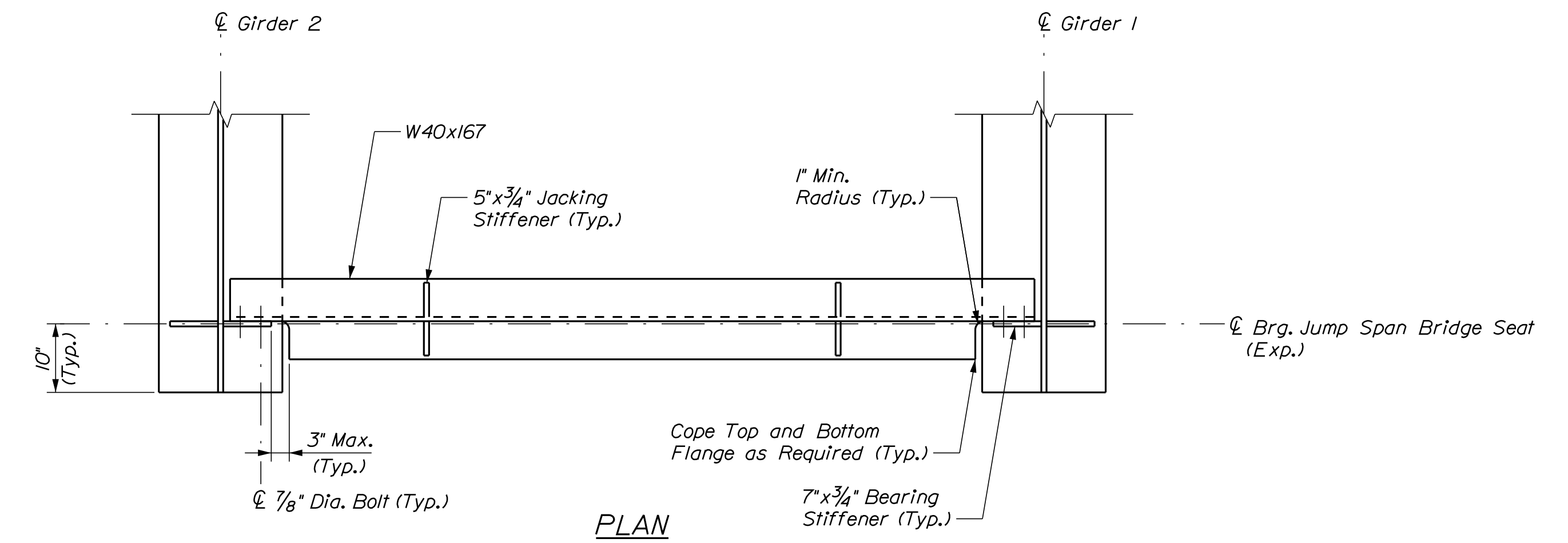


PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/2020	BJM	12/2020
CHECKED-REVIEWED	JSM	GSC	12/2020
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

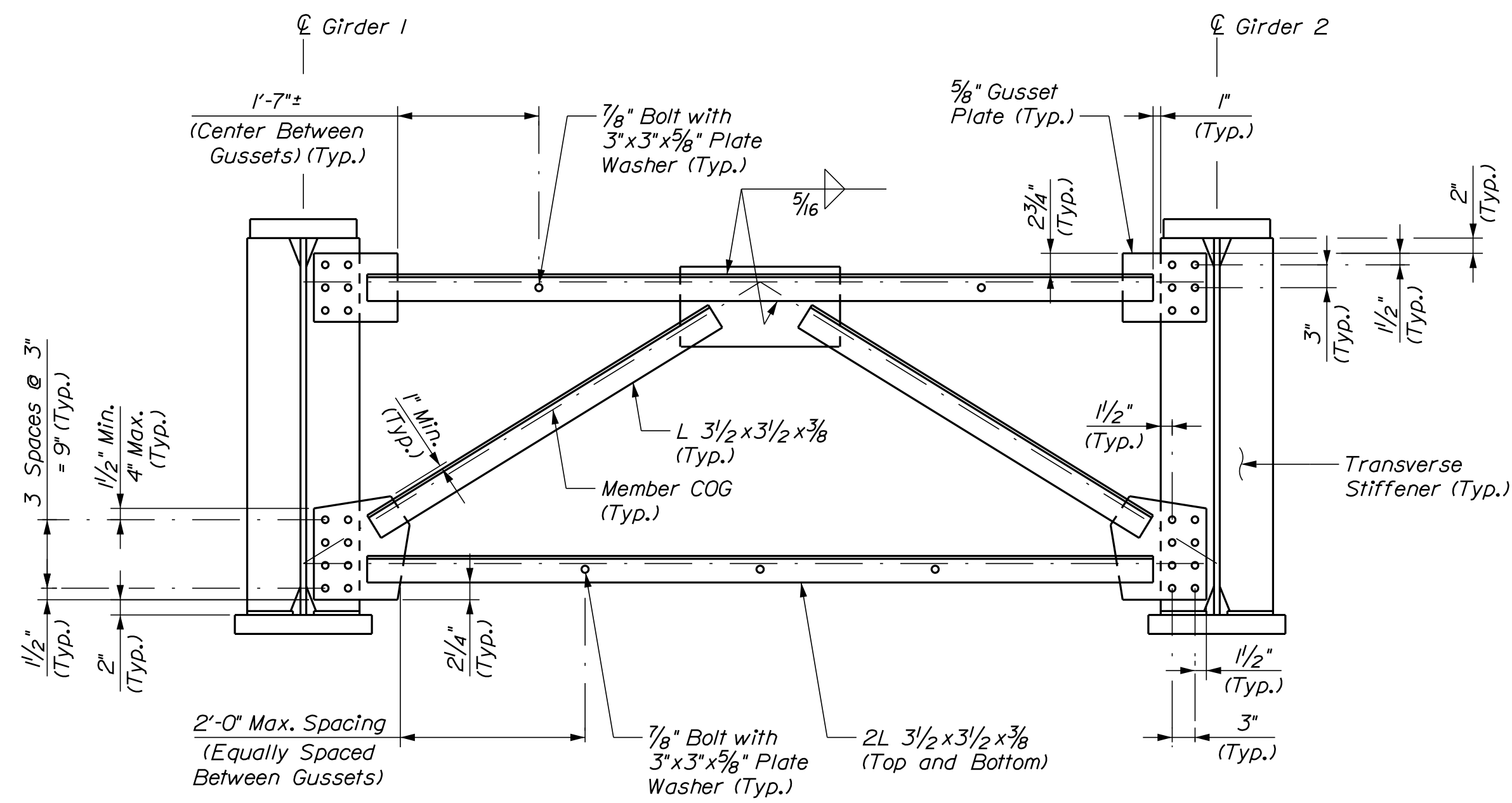
RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
 BRIDGE NO. 7788 (M.P. 241.83)
 OVER FISH RIVER (NORTH) (7 OF 13)



PLAN



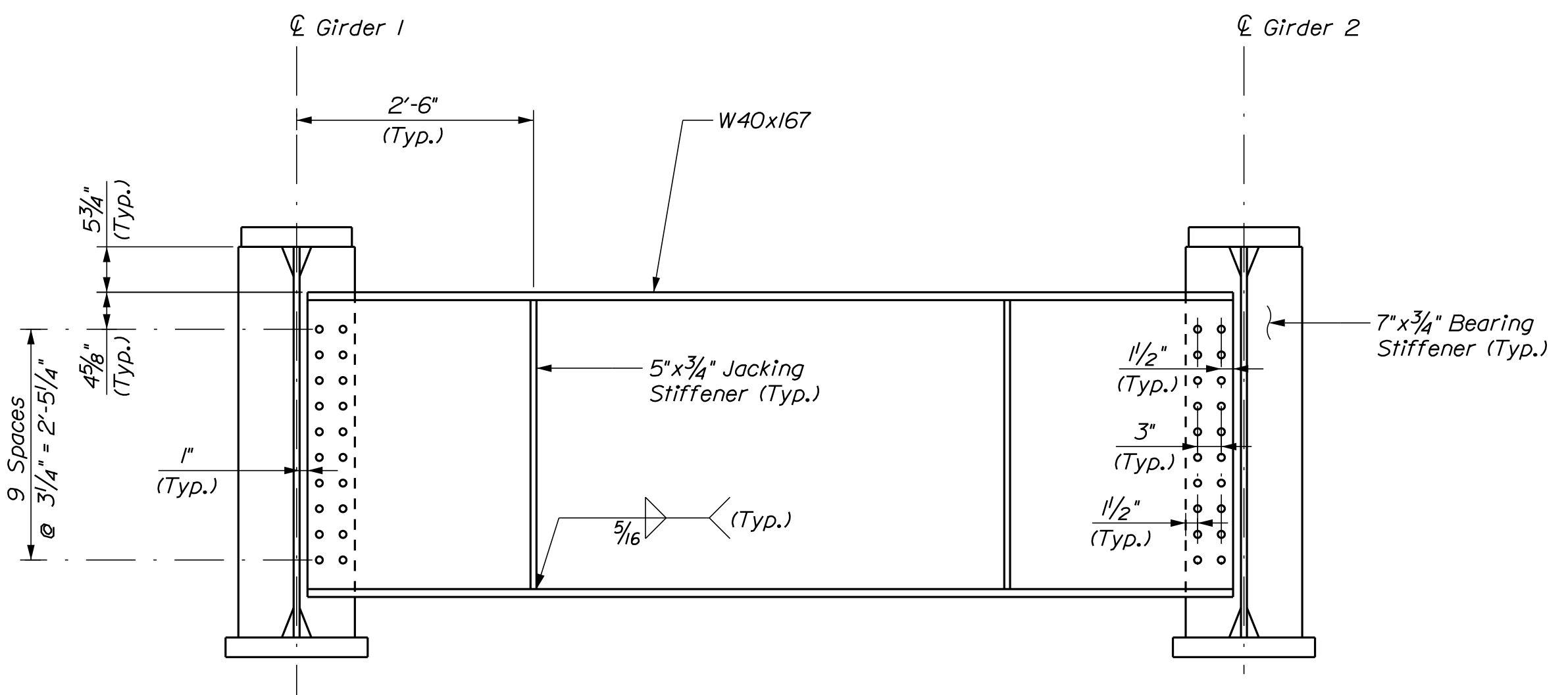
PLAN



ELEVATION

INTERMEDIATE CROSS FRAME

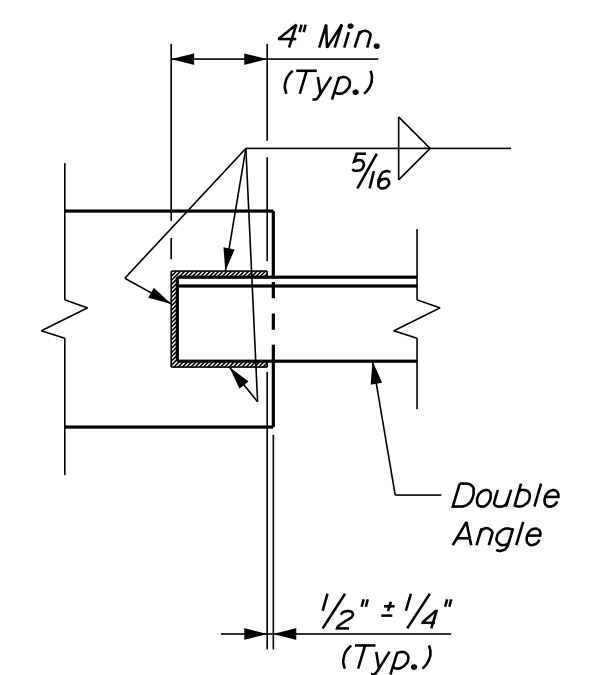
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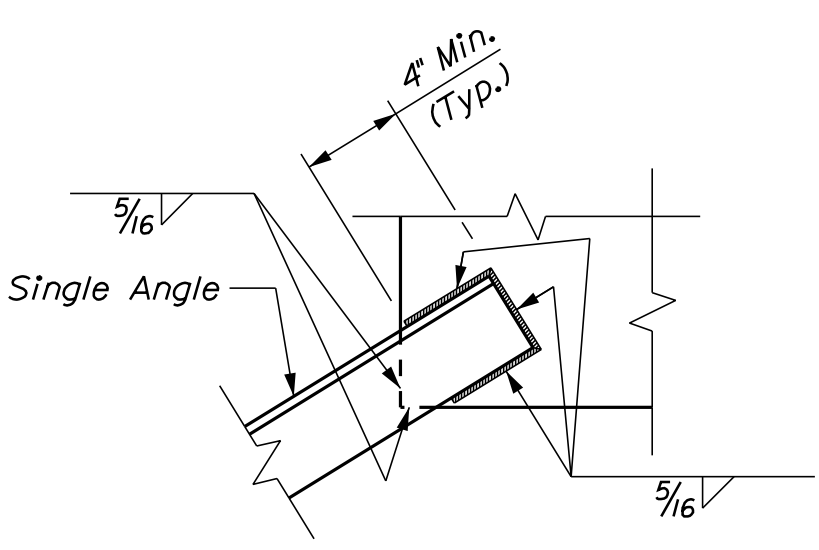
ELEVATION

END DIAPHRAGM

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



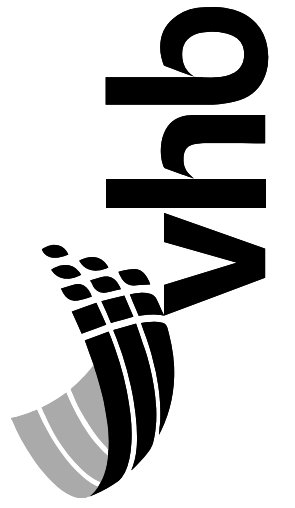
TOP AND BOTTOM STRUT



DIAGONAL

TYPICAL WELD TERMINATION
DETAIL FOR CROSS FRAMES

(These Detail Areas are also Applicable for the Skewed End Top and Bottom Struts and Center Gusset)
Scale: 1/2" = 1'-0"



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/20/20	BM	12/20/20
CHECKED-REVIEWED		GSC	12/20/20
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

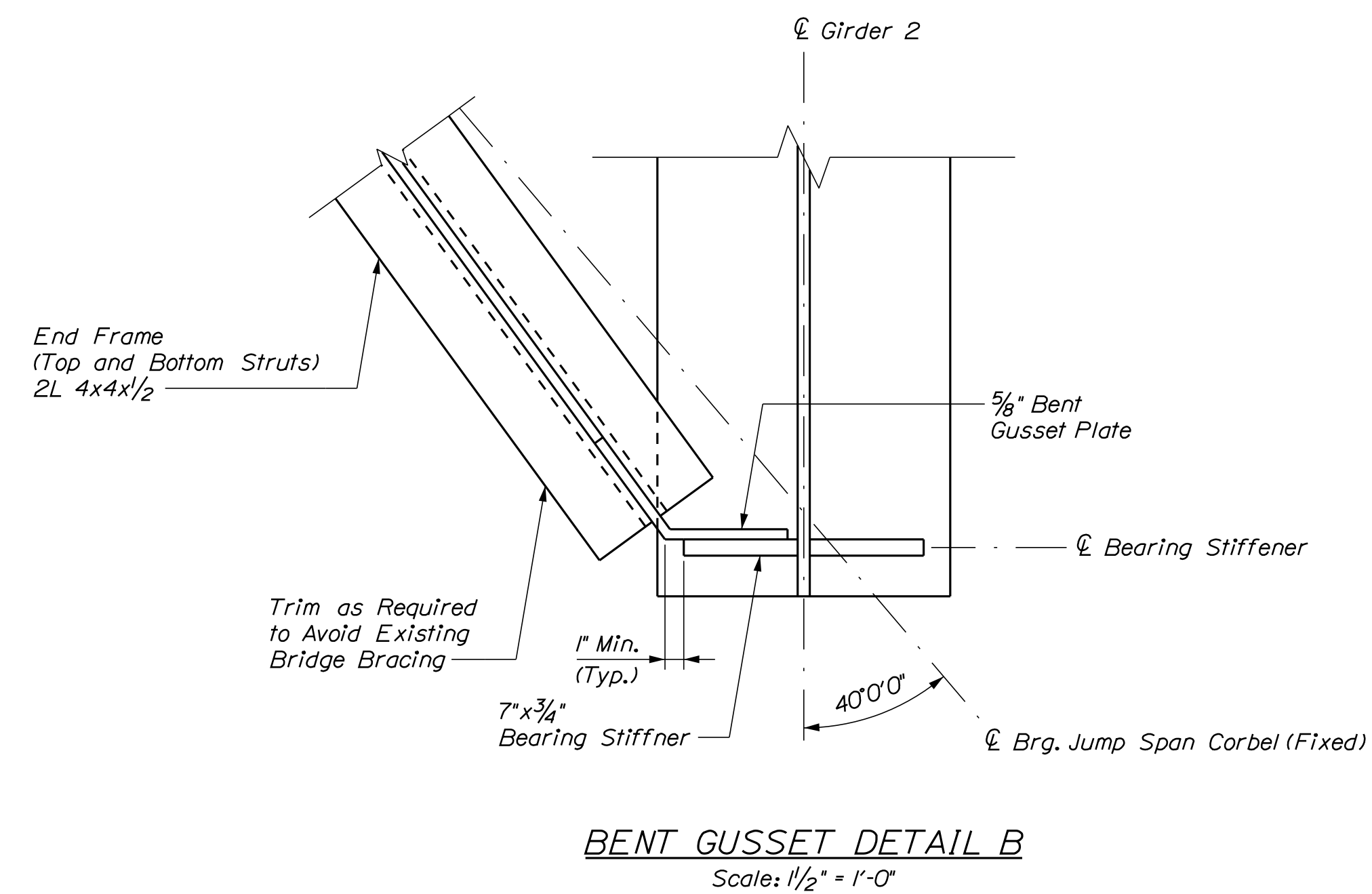
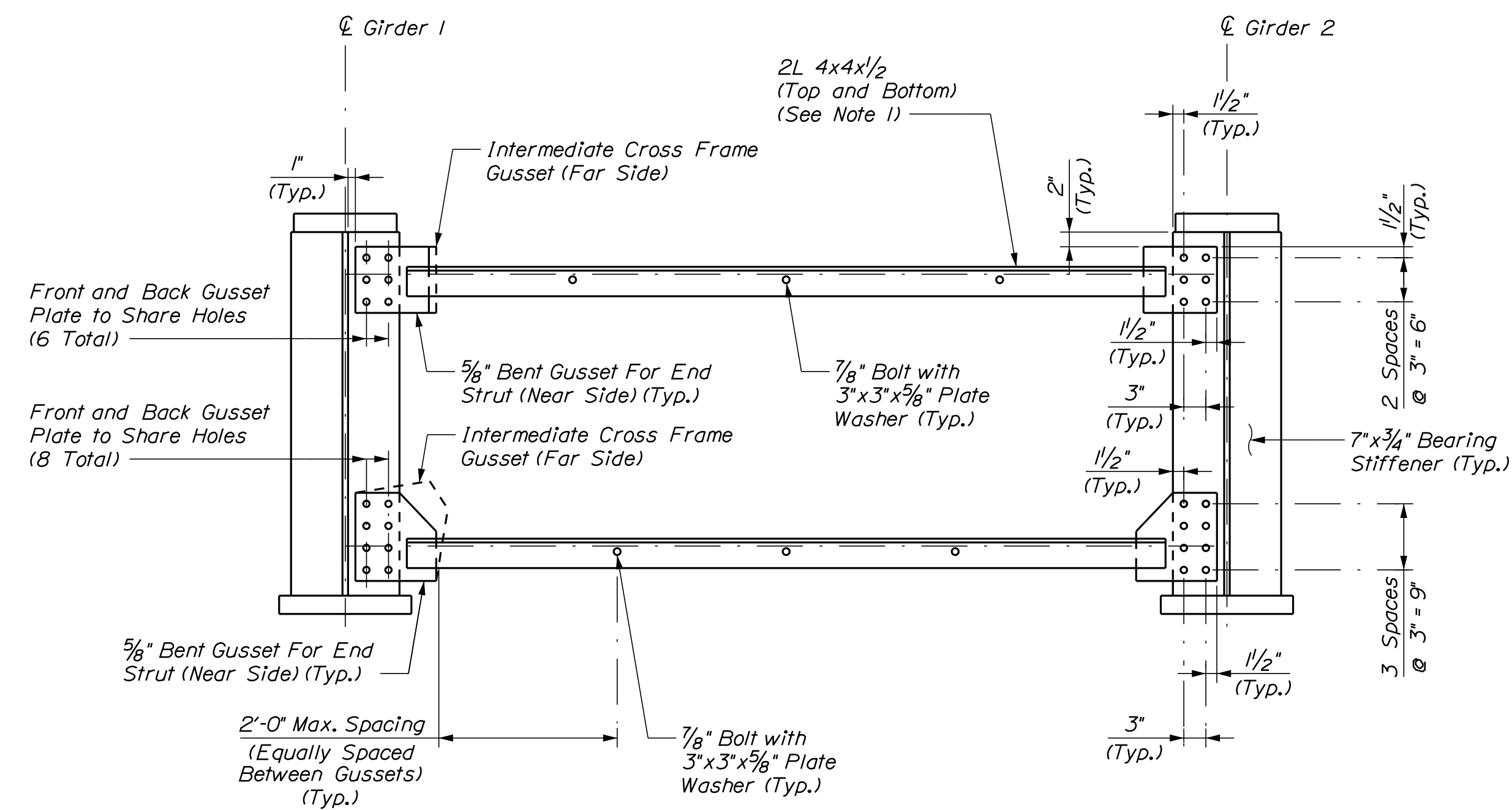
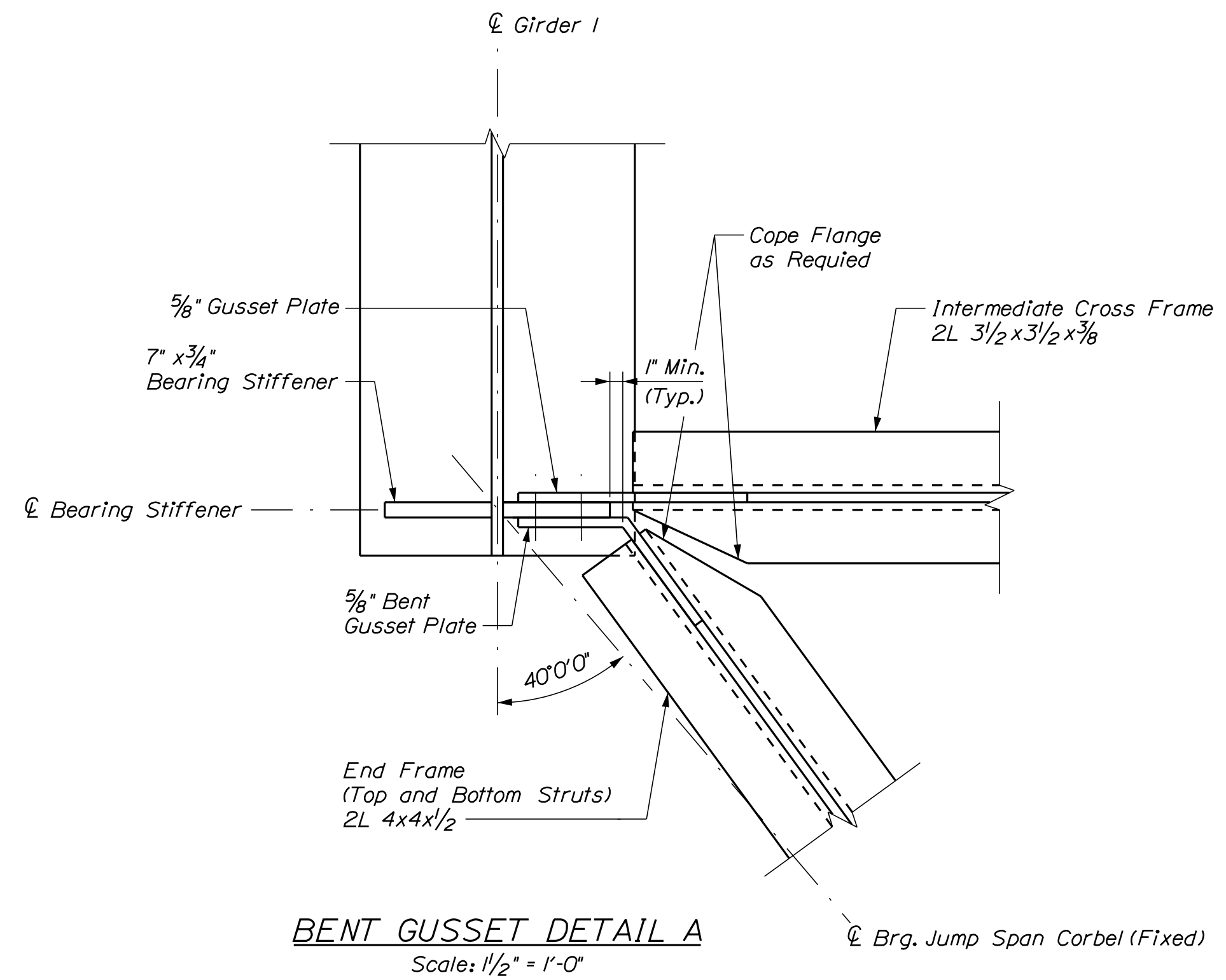
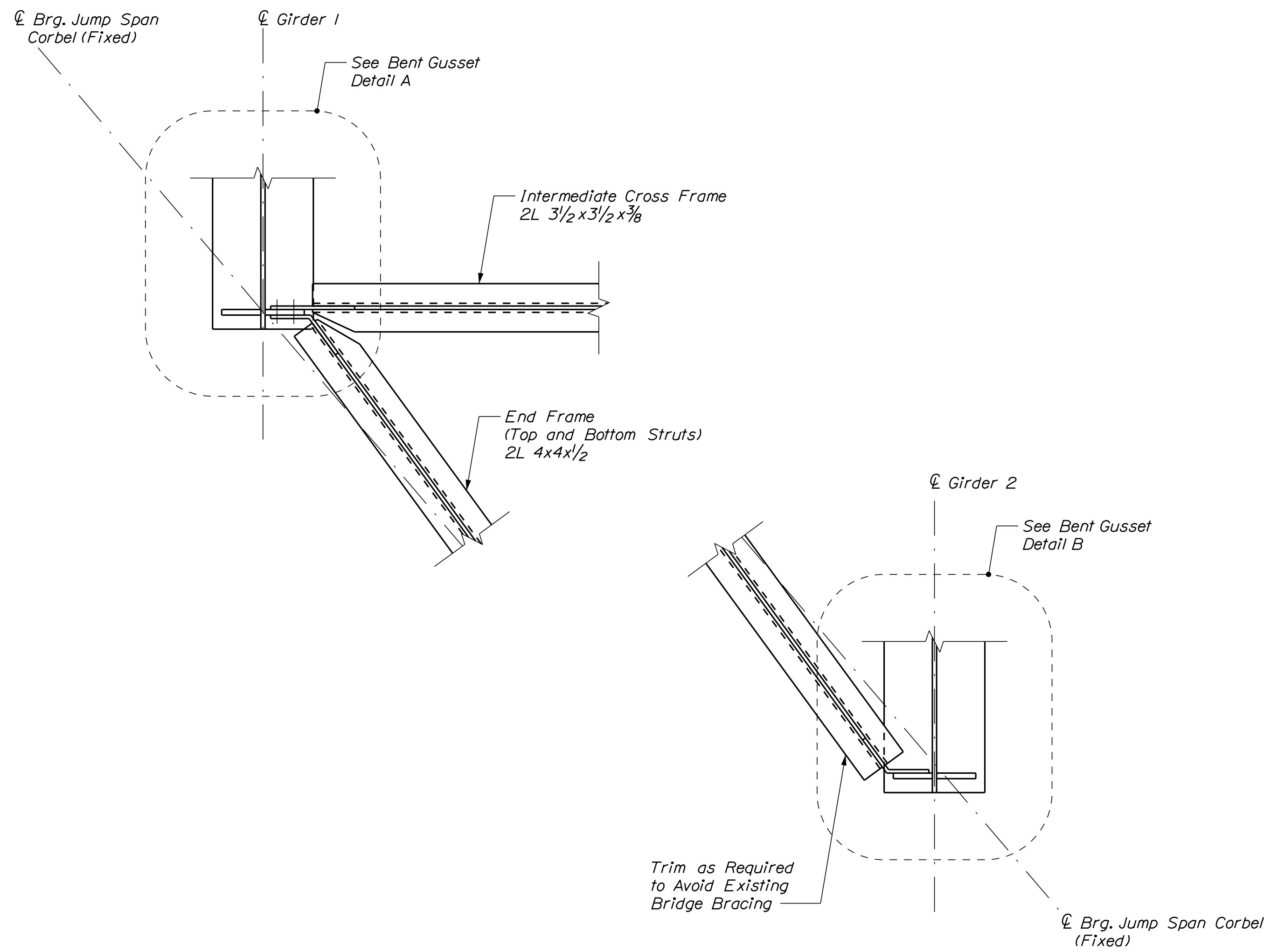
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (8 OF 13)

Date: 12/17/2020

Username: BMasse

Division: MUL TIMODAL

Filename: 028_JS04_7788.dgn



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

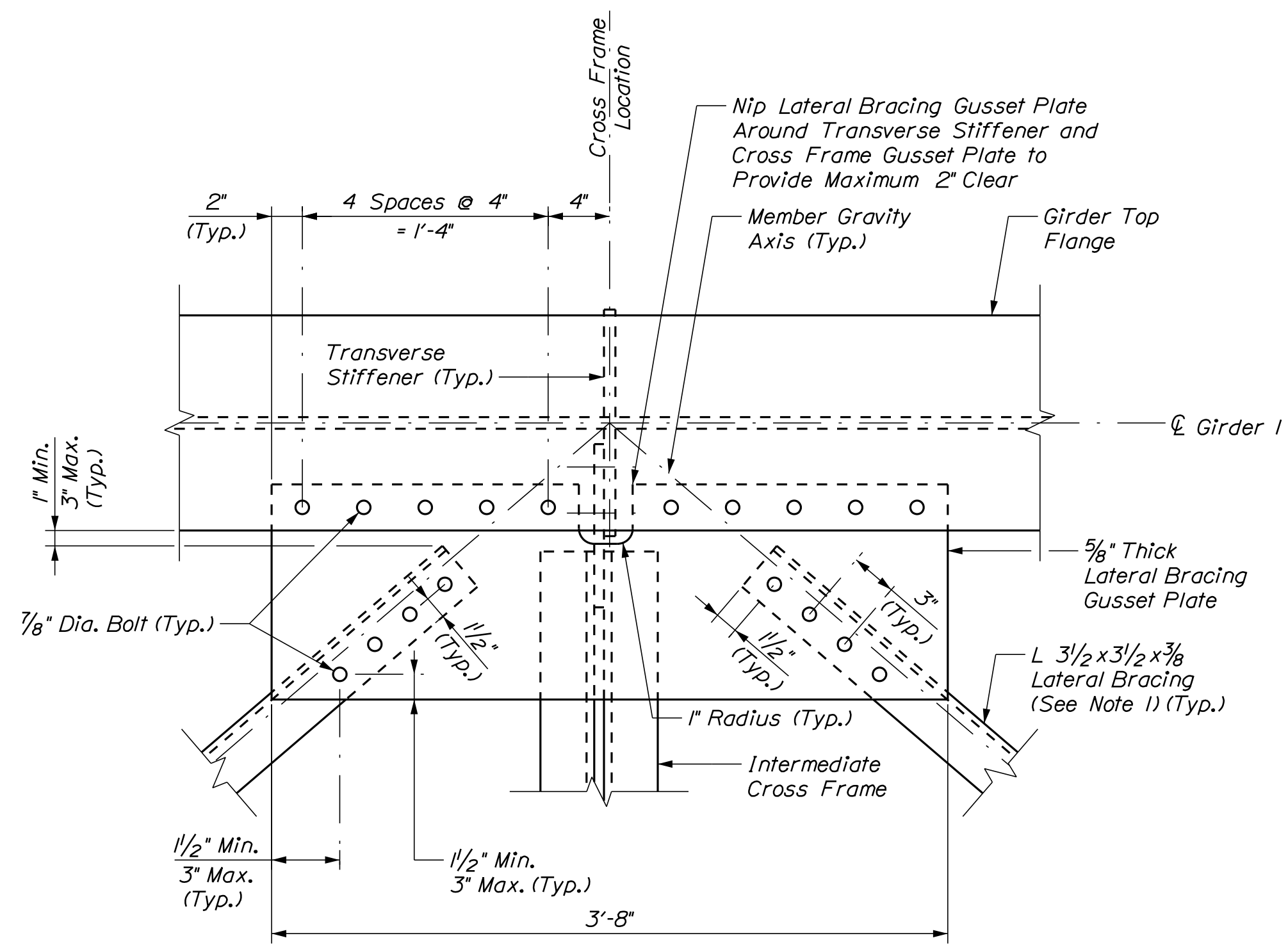
NOTE
1. Set top surface of end frame struts flush with top surface of respective intermediate cross frame top and bottom struts.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
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WIN
23488.00
BRIDGE PLANS

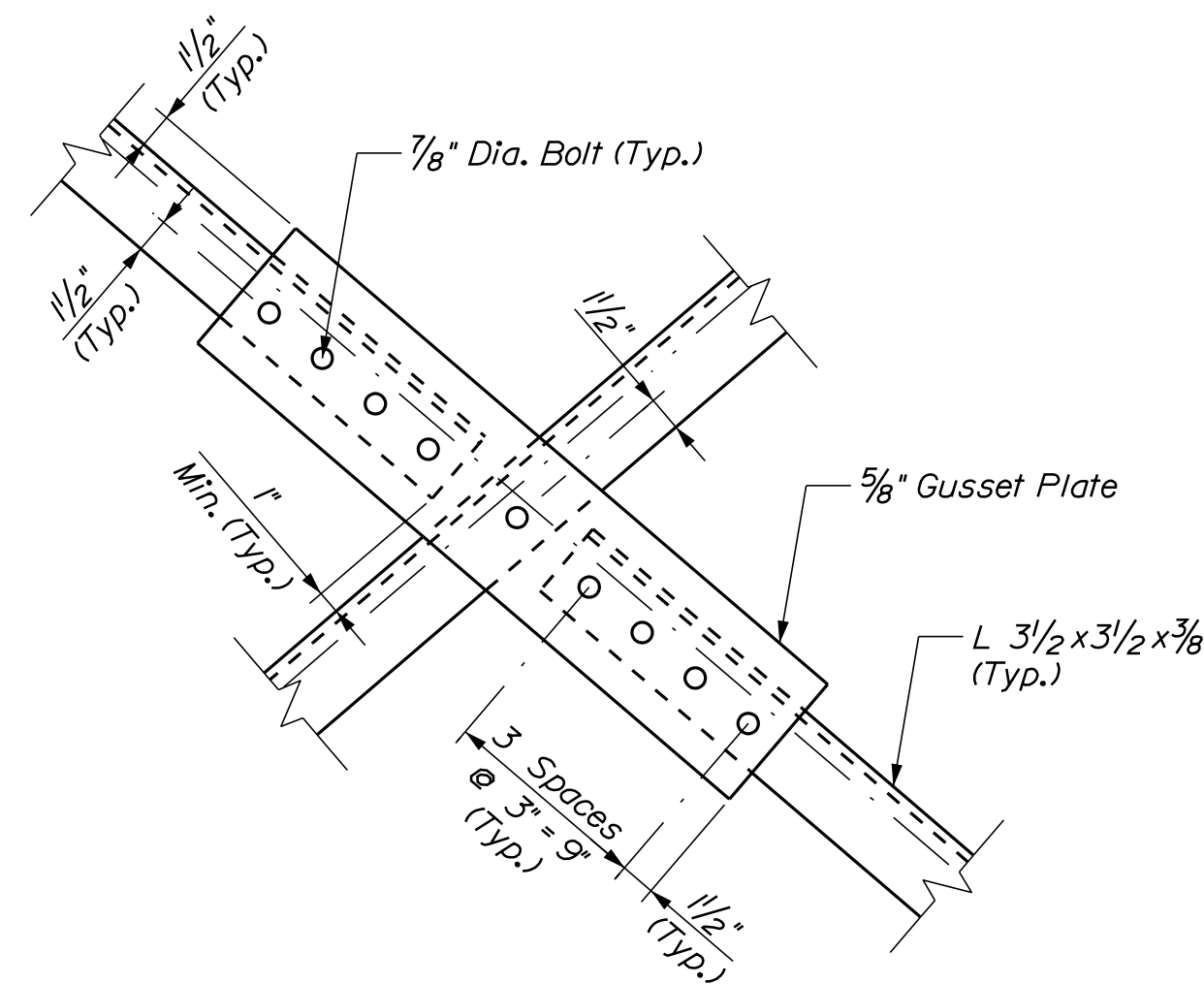


PROJ. MANAGER	DATE
DESIGN-DETAILED	12/2020
CHECKED-REVIEWED	12/2020
DESIGN-DETAILED	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

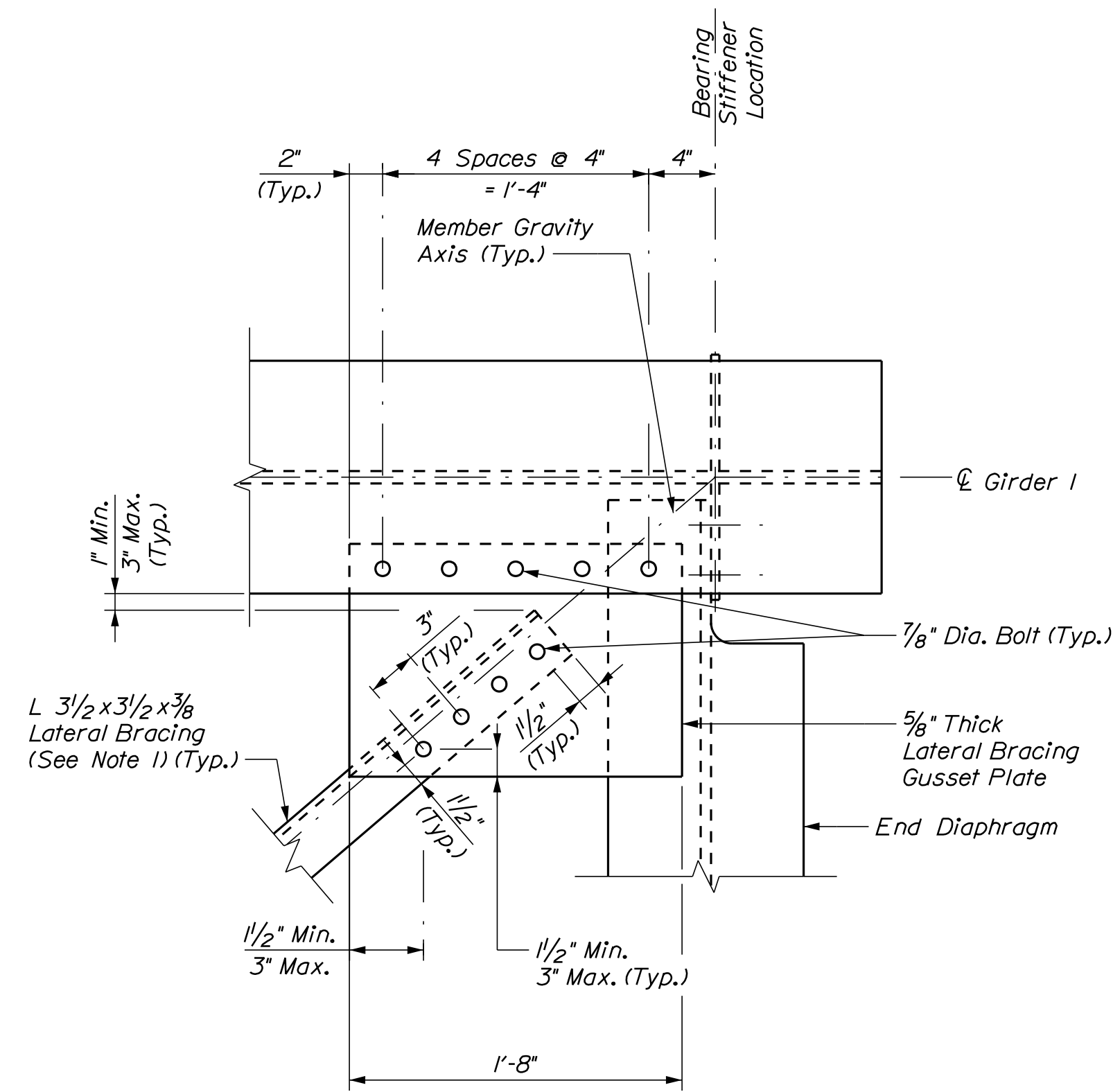
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (9 OF 13)



LATERAL BRACING - DETAIL A
 (Girder 1 Shown, Girder 2 Opposite Hand)
 Scale: 1/2" = 1'-0"



LATERAL BRACING - DETAIL C
 Scale: 1/2" = 1'-0"



LATERAL BRACING - DETAIL B
 (Girder 1 Shown, Girder 2 Opposite Hand)
 Scale: 1/2" = 1'-0"

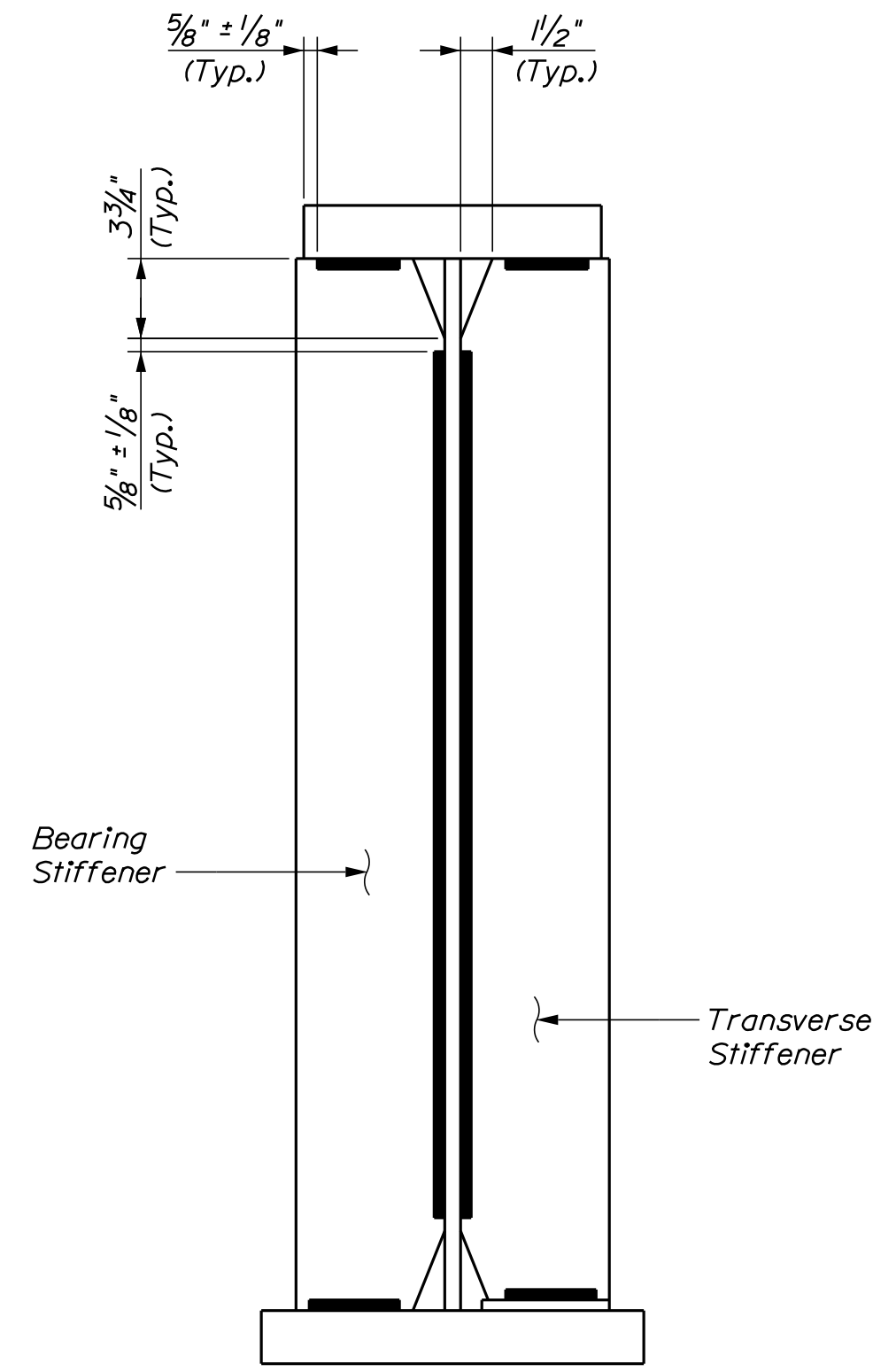
LATERAL BRACING NOTES

1. Lateral bracing connections are shown for Girder 1; lateral bracing connections for Girder 2 are opposite hand. Gusset plate layout shown was developed to accommodate the opposite angle orientation in each girder.
2. Holes in gusset plate may be 1/16" oversized holes to facilitate field fit-up. Holes in angle members and girder flanges shall be standard 15/16" diameter.
3. Lateral bracing member lines shown are member cross-section gravity axis's and shall intersect at points shown.
4. See framing plan for detail location

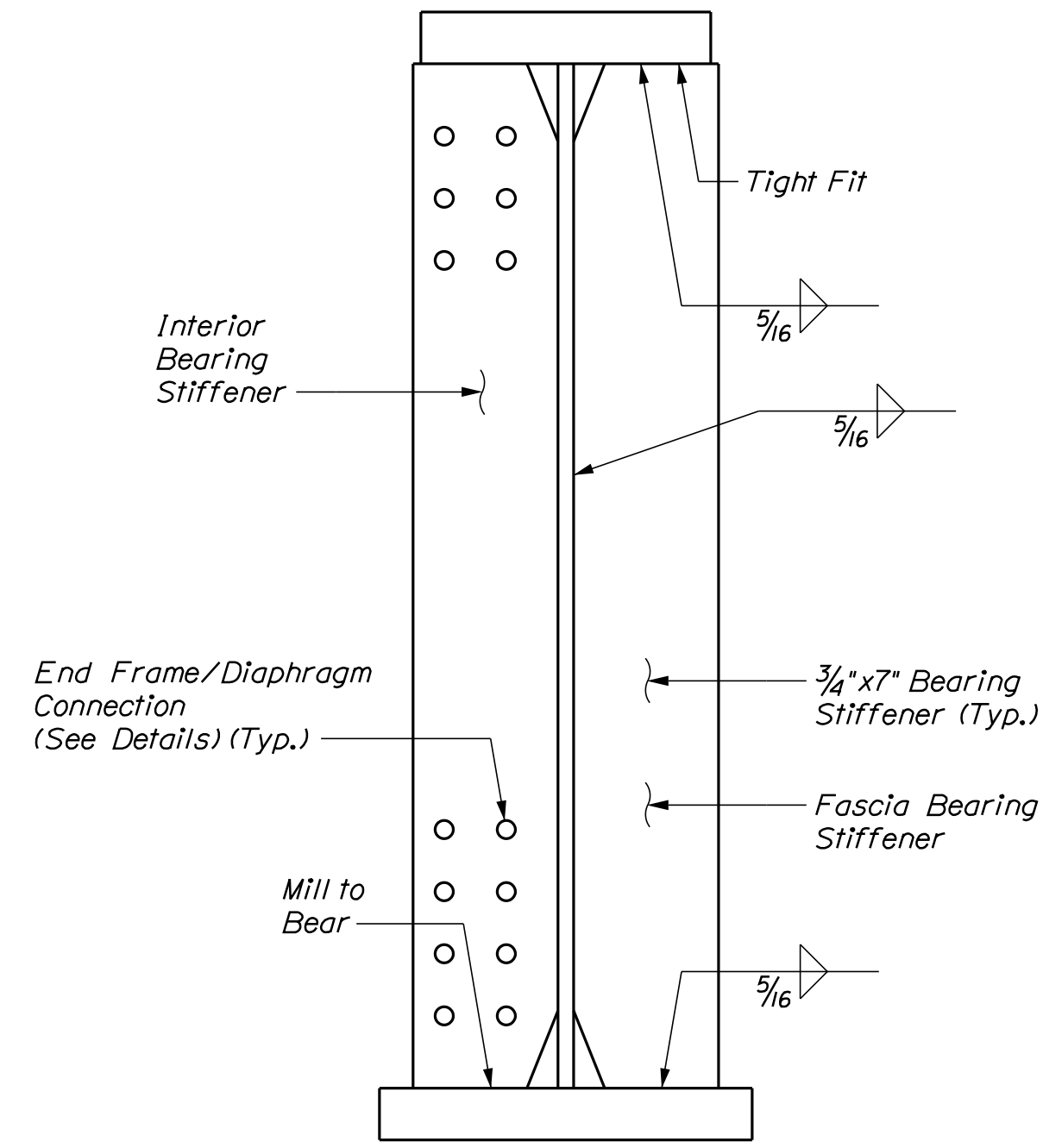


PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/20/20	BJM	12/20/20
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

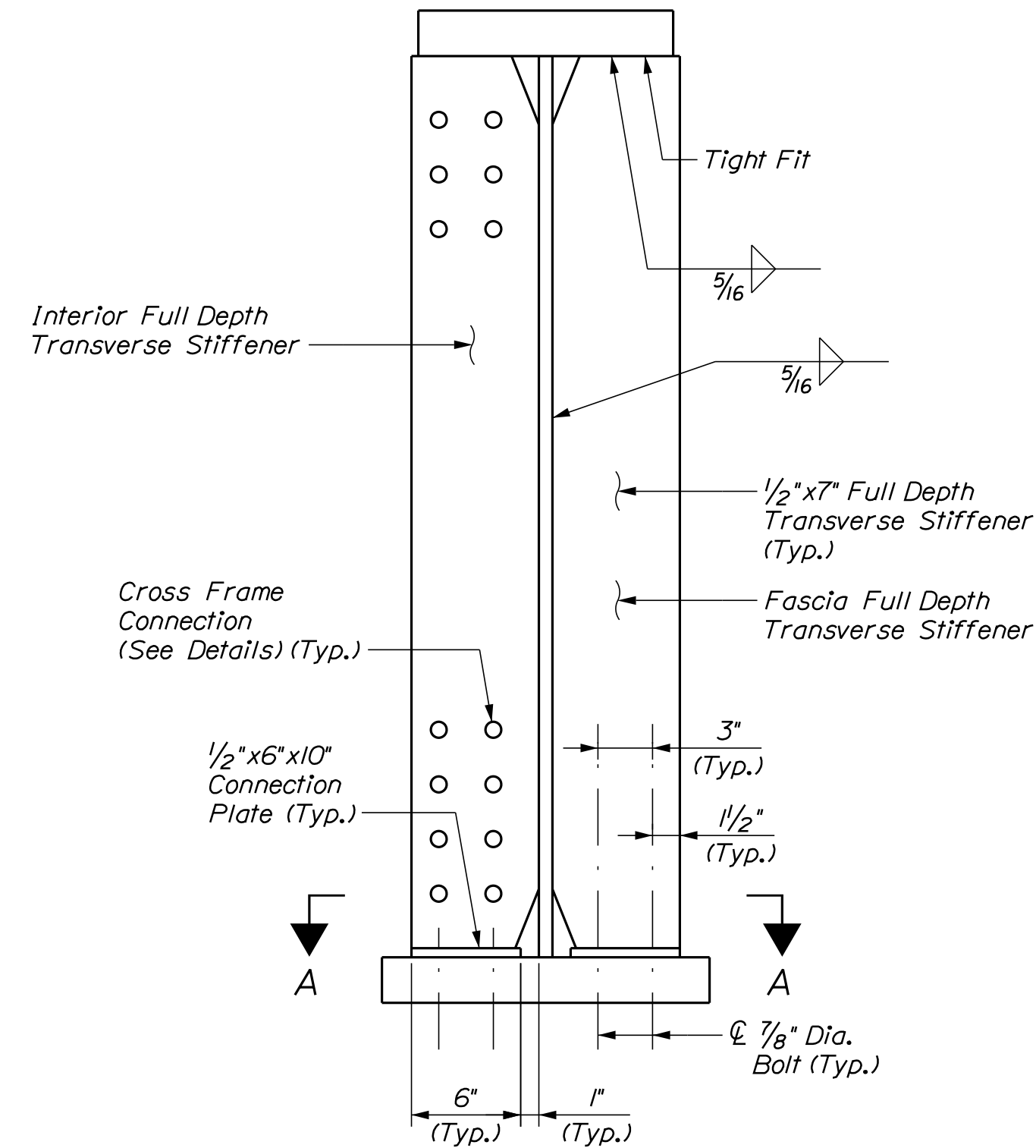
RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
 BRIDGE NO. 7788 (M.P. 241.83)
 OVER FISH RIVER (NORTH) (10 OF 13)



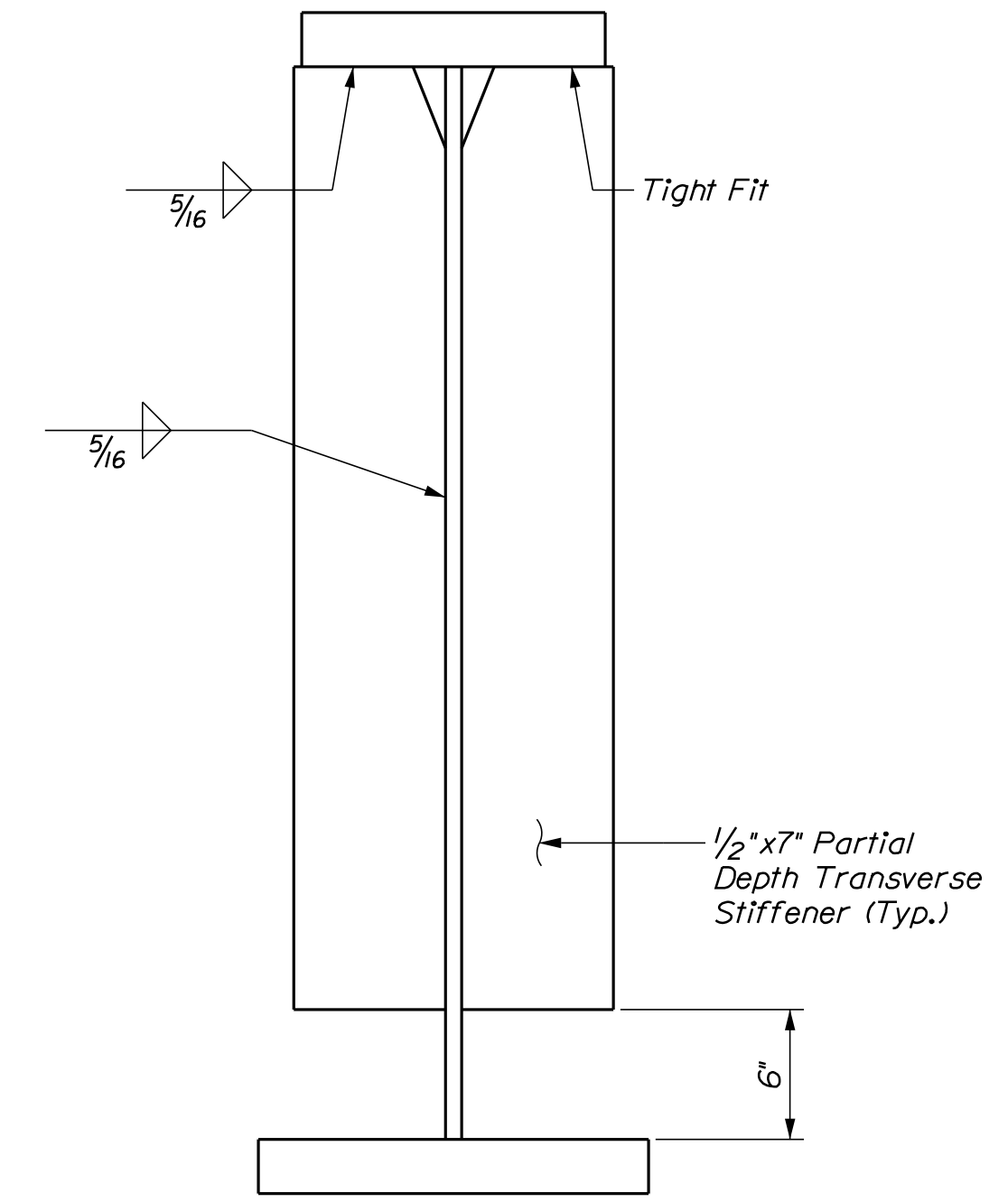
**WELD TERMINATION
DETAIL**
Not to Scale



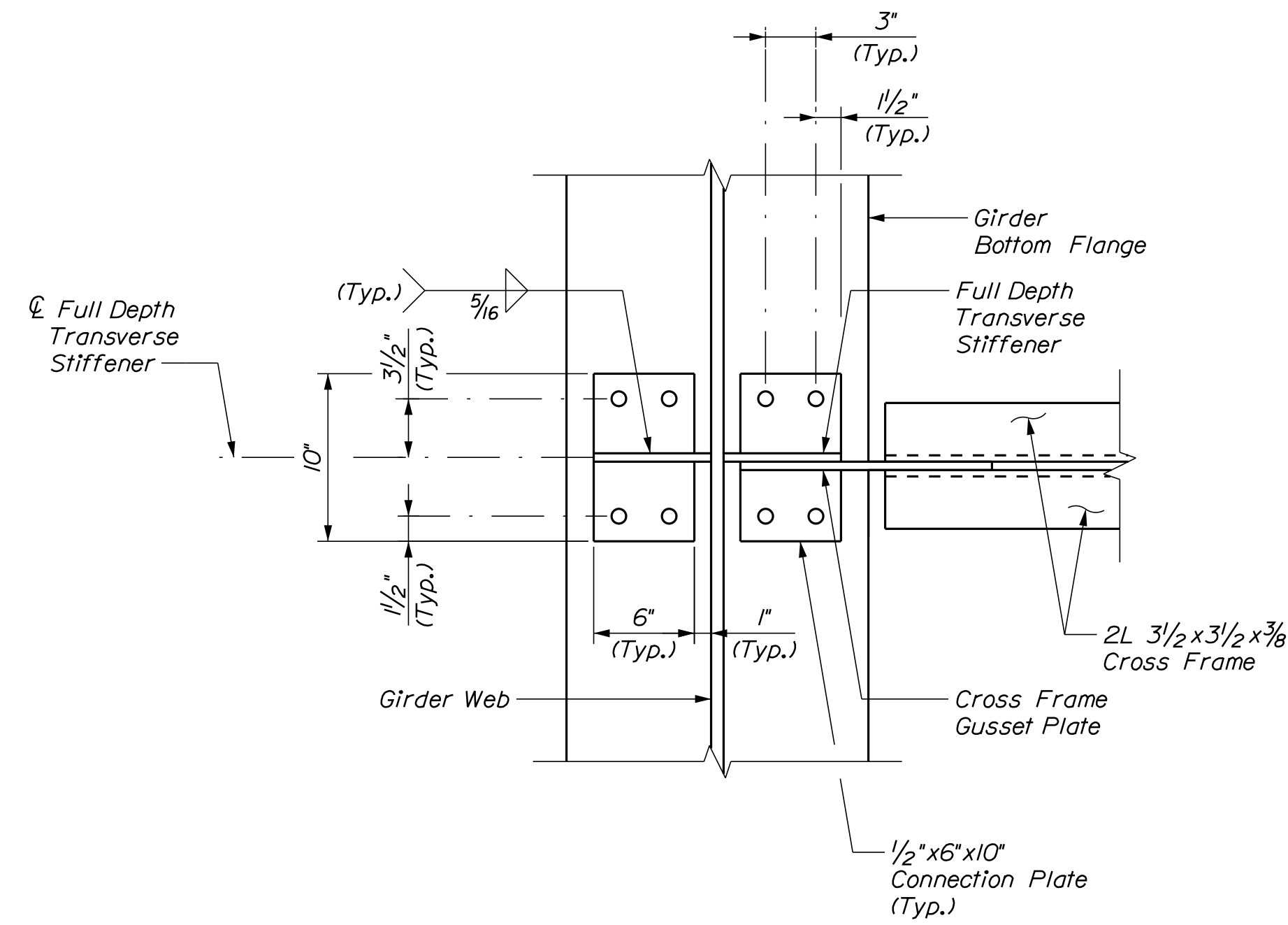
**BEARING STIFFENER
DETAIL**
(End Frame Connection Shown,
End Diaphragm Holes Differ)
Not to Scale



**FULL DEPTH
TRANSVERSE STIFFENER
DETAIL**
Not to Scale



**PARTIAL DEPTH
TRANSVERSE STIFFENER
DETAIL**
Not to Scale



SECTION A-A
Not to Scale



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	JUN 12/2020	BJM	
CHECKED-REVIEWED	JUN 12/2020	GSC	
DESIGN-DETAILED			
DESIGN-REVIEWED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

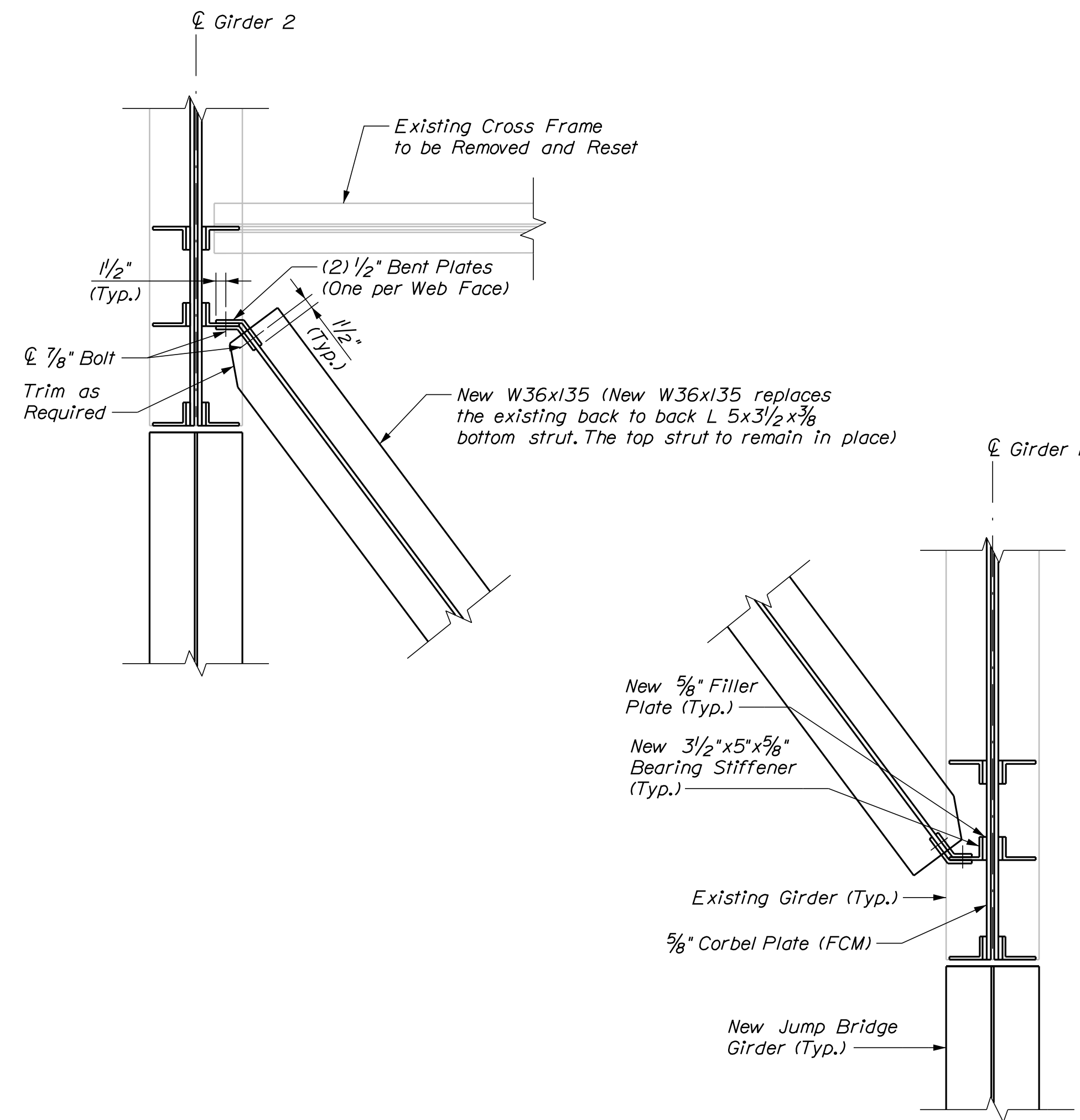
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (11 OF 13)

Date: 12/17/2020

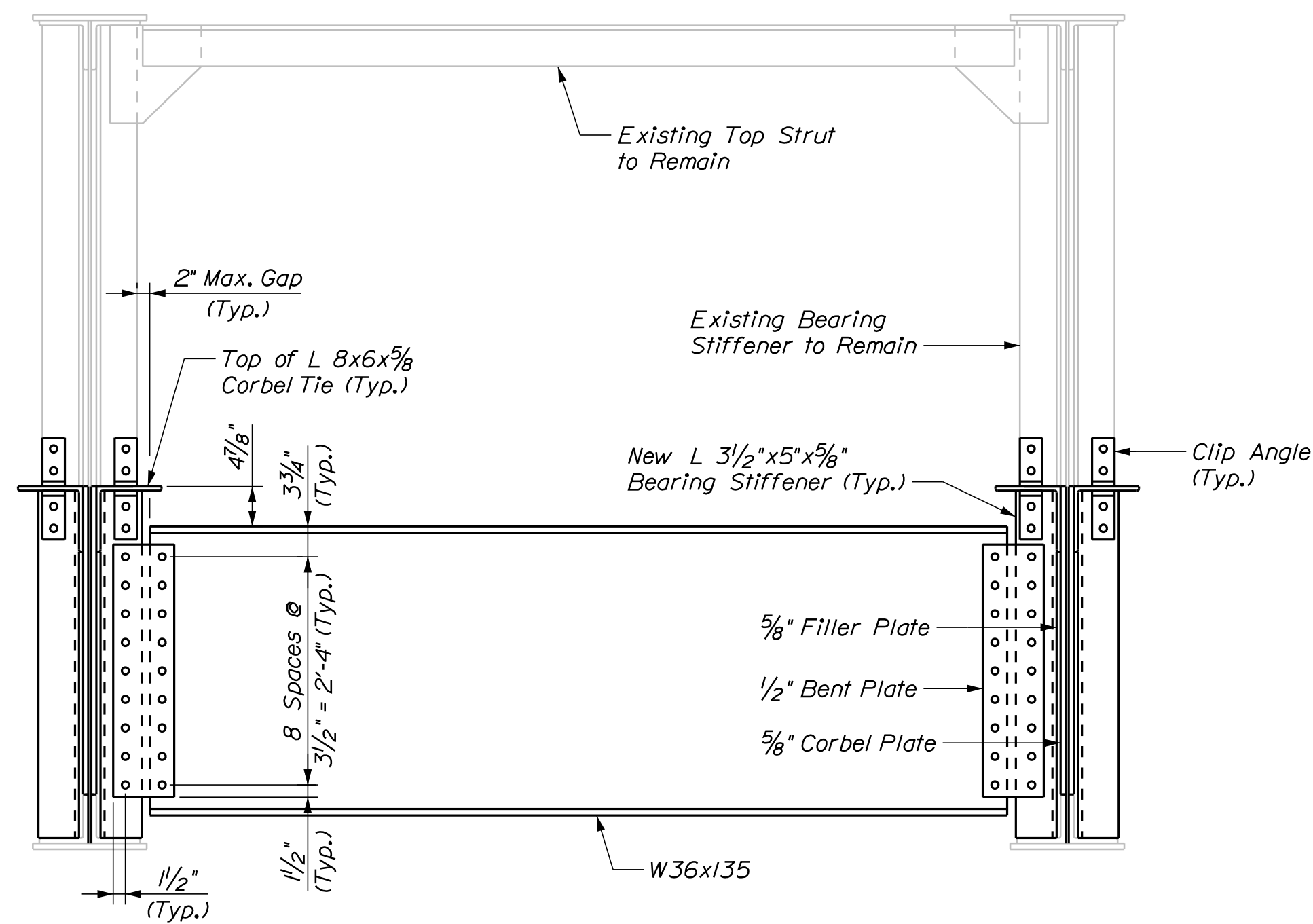
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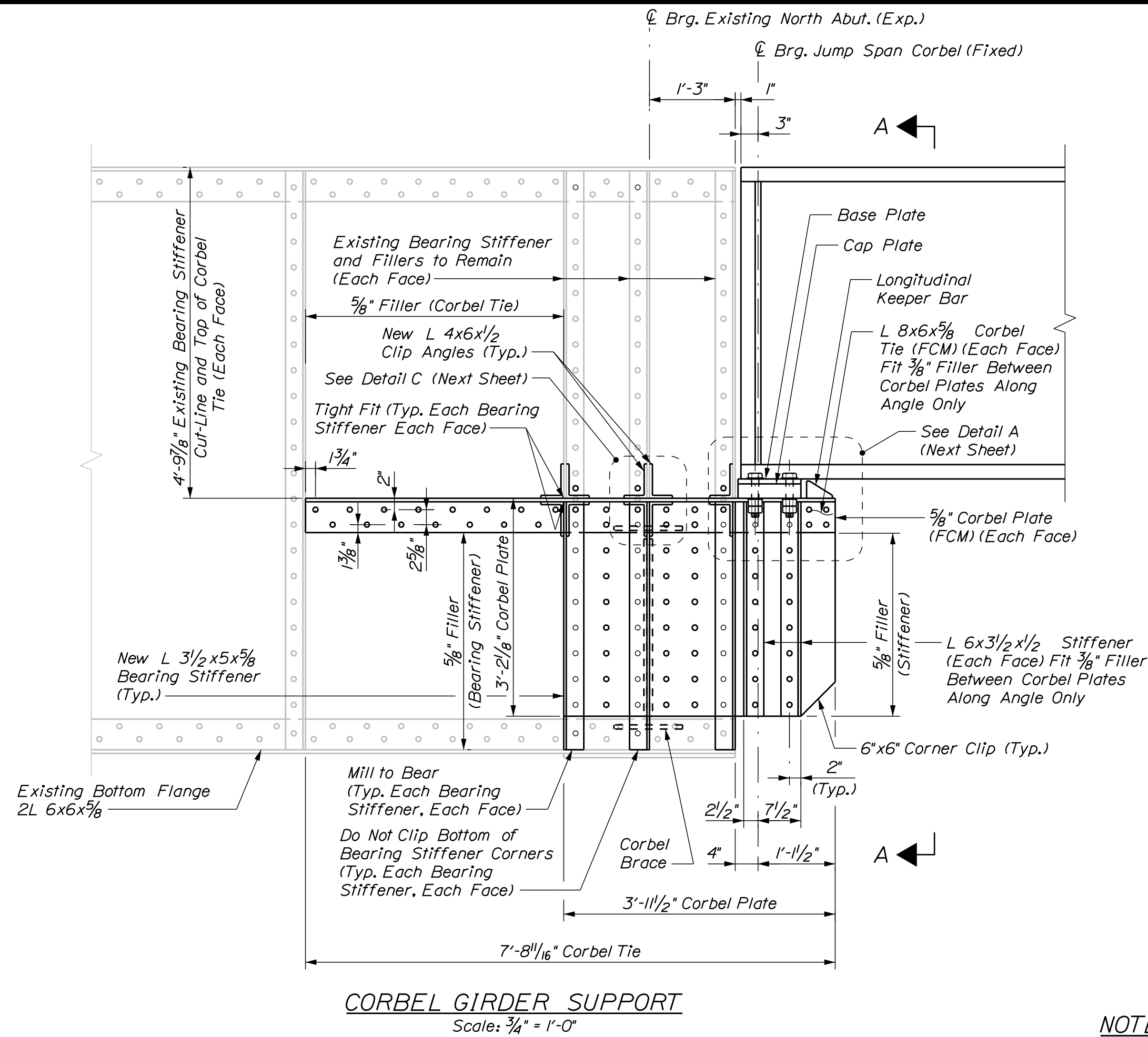
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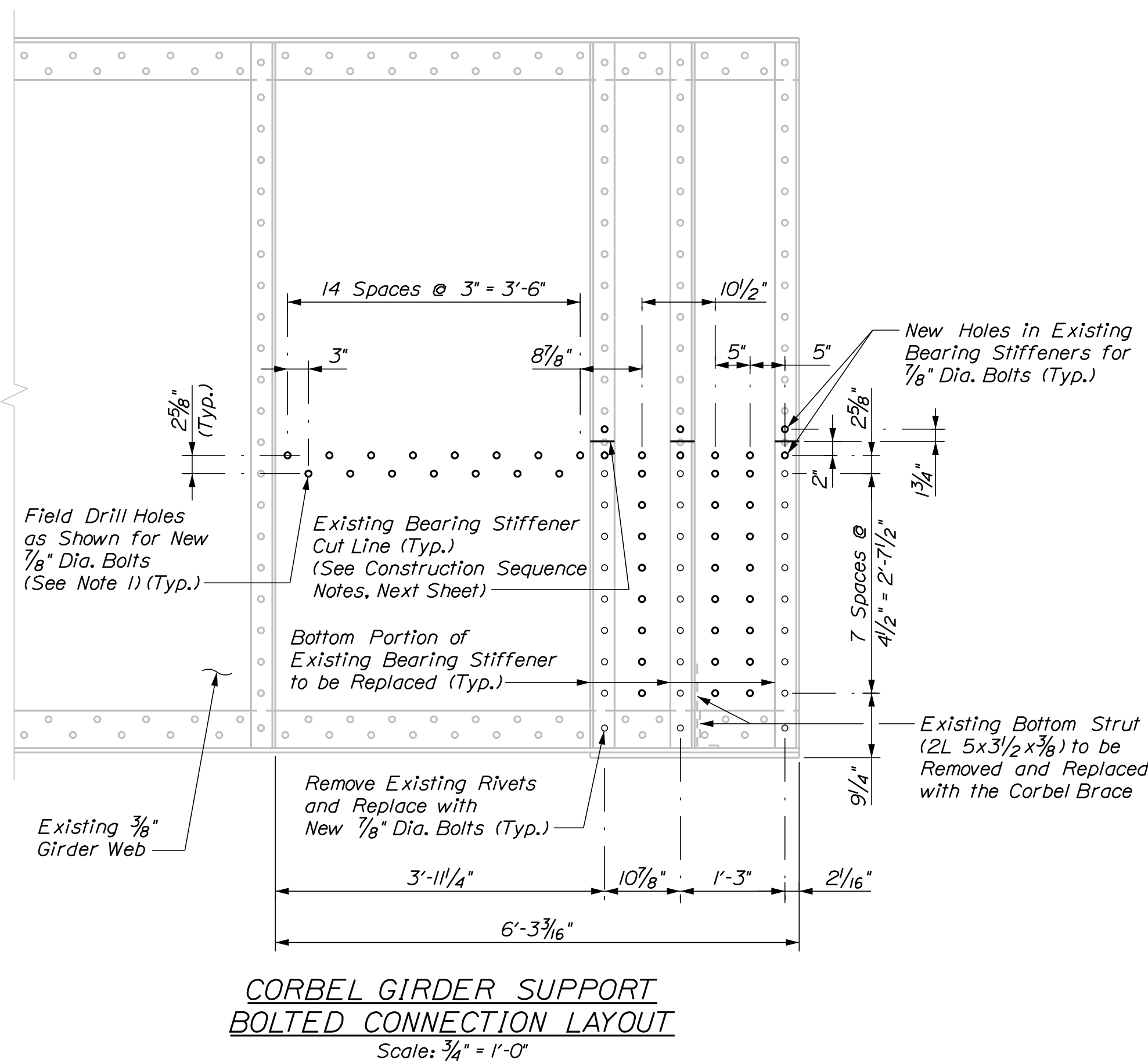
CORBEL BRACE PLAN
Scale: 3/4" = 1'-0"



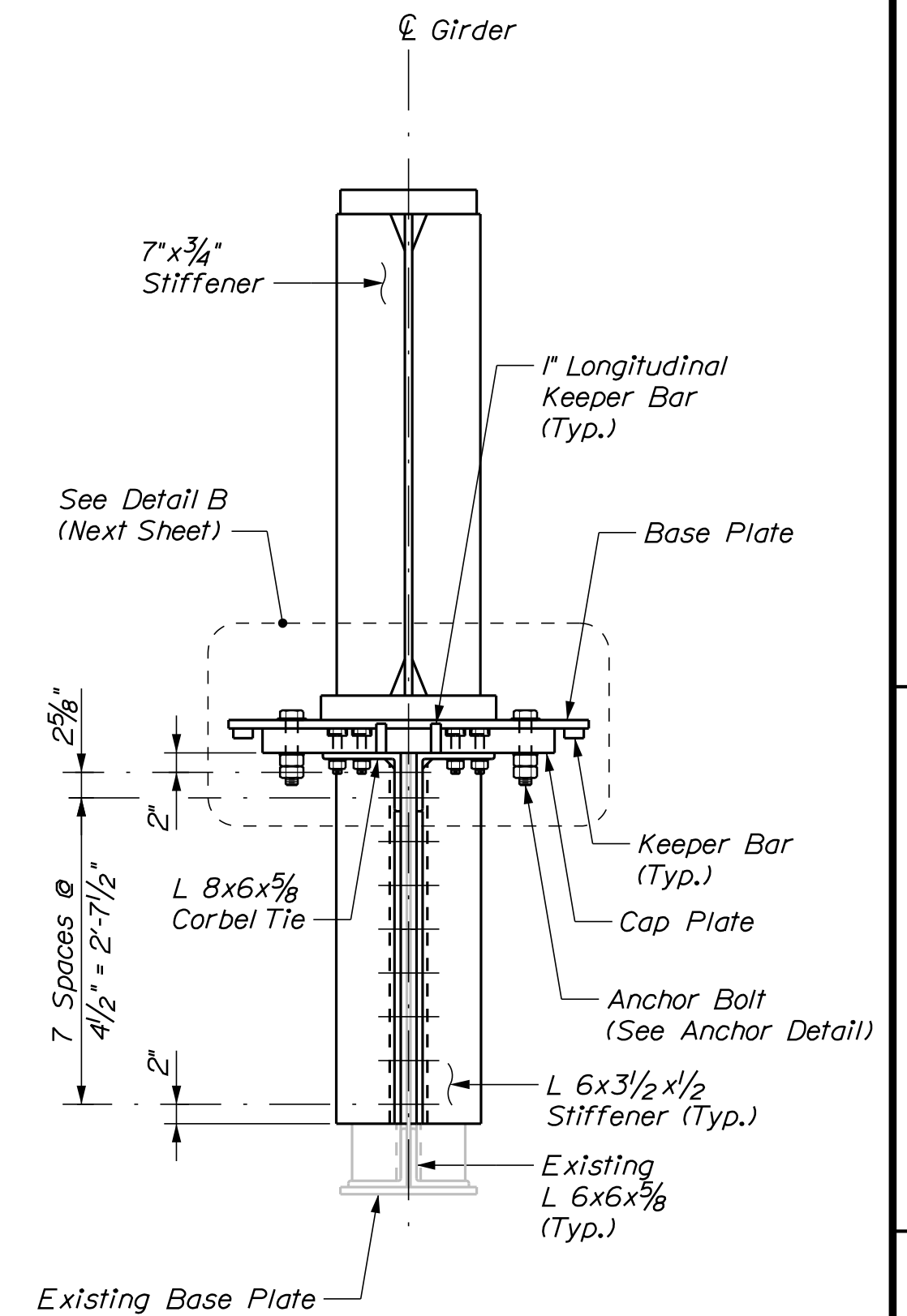
CORBEL BRACE ELEVATION
Scale: 3/4" = 1'-0"



CORBEL GIRDER SUPPORT
Scale: 3/4" = 1'-0"



CORBEL GIRDER SUPPORT BOLTED CONNECTION LAYOUT
Scale: 3/4" = 1'-0"

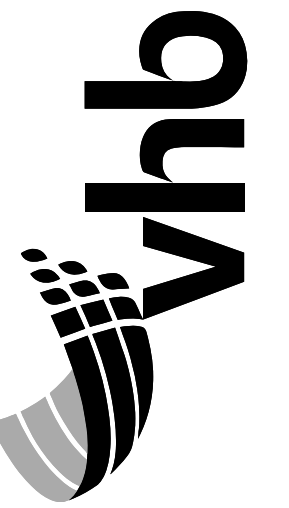


VIEW A-A
Scale: 3/4" = 1'-0"

NOTES

1. At the contractor's option, holes in the girder web for the corbel plate may be drilled oversize to maximum 1" diameter for field fit up. Holes in the corbel plates, corbel ties and stiffeners shall be standard 15/16" holes.
2. See Bridge No. 7788 (M.P. 241.83) over Fish River (13 of 13) sheet for Anchor Detail, Detail A, Detail B and Detail C.
3. Prior to fabrication, the contractor shall field verify all dimensions to ensure proper fit of the corbel support. Rivet heads shall not be considered accurate for measurement purposes.
4. All bolted connections and associated hardware, including anchor bolts, shall be comprised of ASTM F3125, Grade A325, Type 3.
5. The new steel corbel bolted to the existing girder web is designed as a Class A slip-critical connection. All contact surfaces within the connection shall be blast cleaned and free of oil, paint, lacquer, or other coatings and loose oxide.
6. Plain elastomeric bearing pads used between corbel cap and girder base plates shall be natural virgin rubber with minimum shear modulus, G = 160 PSI @ 73 degrees F. 1-3/8" holes for anchor bolts shall be cut from the solid sheet of elastomer, see next sheet for details. All costs for elastomeric pads and installation shall be incidental to items 504.702, Structural Steel Fabricated and Delivered, Welded and 504.71, Structural Steel Erection.

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

BRIDGE NO. 7788
WIN 23488.00
BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/20/20	BJM	12/20/20
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7788 (M.P. 241.83)
OVER FISH RIVER (NORTH) (12 OF 13)

SEQUENCE OF CONSTRUCTION

1. Construction sequencing outlined below is conceptual. Final sequencing to be determined by the Contractor and approved by the Engineer prior to commencement of any construction activities.

2. Contractor is responsible for maintaining the stability of the existing superstructure and substructure elements during construction.

3. Contractor is responsible for design and detailing of any required temporary rail supports for train passage outside of shutdowns.

4. The Contractor will be granted one extended continuous weekend closure to complete the jump span construction. Refer to Special Provisions for details.

Abutment Seat Repair (Done with no live load traffic):

1. Remove existing south and north abutment seat concrete as required to allow for new bolster and bearing installation (see Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (2 of 14) thru (4 of 13) sheet for details). Jack the superstructure as required to complete the work (Contractor detailed).

2. Install new bearings and bolsters at the existing south and north abutments.

3. Perform south abutment backwall repairs.

4. Install new bearings at the existing piers. Jack the superstructure as required to complete the work (Contractor detailed).

Abutment Seat Concrete Casing (Done under live traffic):

1. Cast new south and north abutment seat concrete to complete the seat repair and encase the new bolsters.

Existing Steel Girder and New Bridge Tie Preparation (Done under live traffic):

1. Field drill holes in web to receive new corbel components.

2. Replace bearing stiffener rivets, one at a time, with new bolts where shown.

3. Replace cross frame gusset to bearing stiffener connection rivets, one at a time, with new bolts where required to allow for new corbel installation. Note that bottom lateral strut is to be replaced with new corbel brace, done during shutdown

4. The top of the new jump span girders have been detailed to align with the top of existing girders. Verify the tie dap shown on Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (6 of 13) sheet will provide a level surface next to the existing bridge timbers to remain. Modify depth of dap as required.

Install Jump Span Bridge (Done during extended continuous weekend closure):

1. Remove rail and ties as required to complete the work. Excavate and remove wingwalls to the limits shown on the abutment detail sheets.

2. Remove and repair required sections of wingwall to accept new precast bridge seat (see Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (3 of 13) sheet for bridge seat details).

3. Install new precast bridge seat

4. Install one temporary X-brace within 1' of existing end cross frame at the existing north abutment (Contractor detailed).

5. Disconnect existing end cross frame and struts. Cut existing bearing stiffeners as shown.

6. In the area of new corbel plates, blast clean the existing web as per plan notes.

7. Install corbel brackets and associated steel ties, fillers and stiffeners as shown. Fully pretension all bolts.

8. Install clip angles to fasten existing and new bearing stiffeners to each other through the corbel tie.

9. Re-fasten existing end cross frame and install corbel brace. Remove temporary X-brace.

10. Fully erect jump span superstructure as shown and anchor to the corbel and new bridge seat as detailed.

11. Remove all temporary shoring of excavation from project site.

12. Install bridge timbers as shown on deck plan sheet.

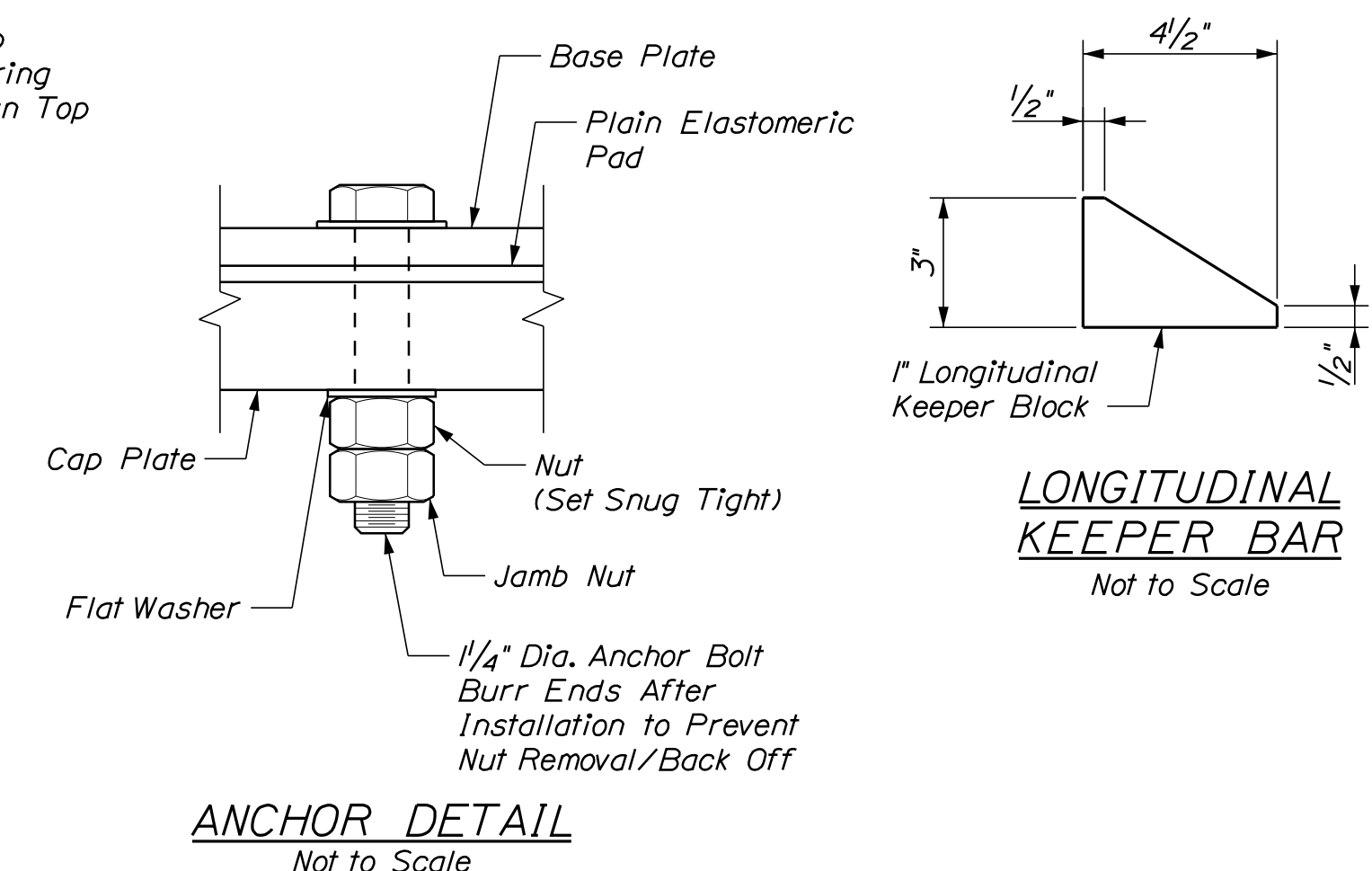
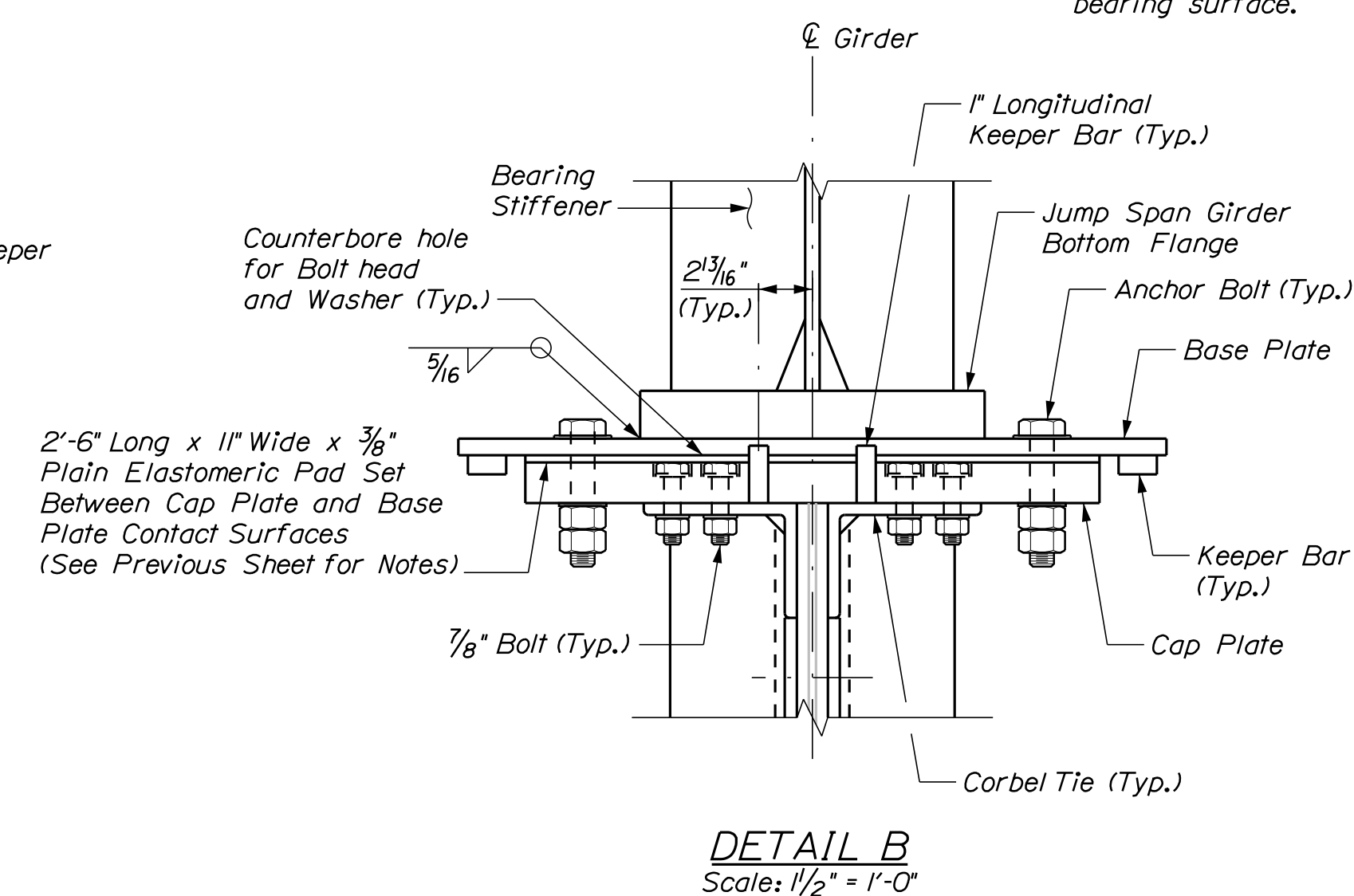
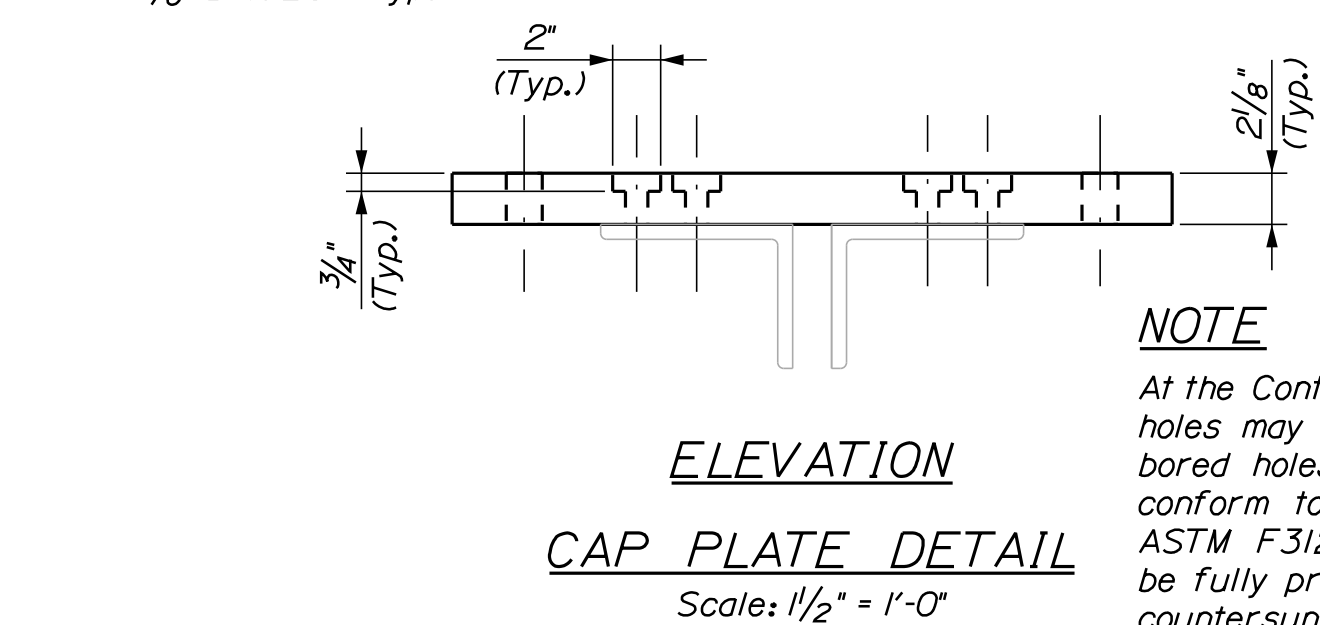
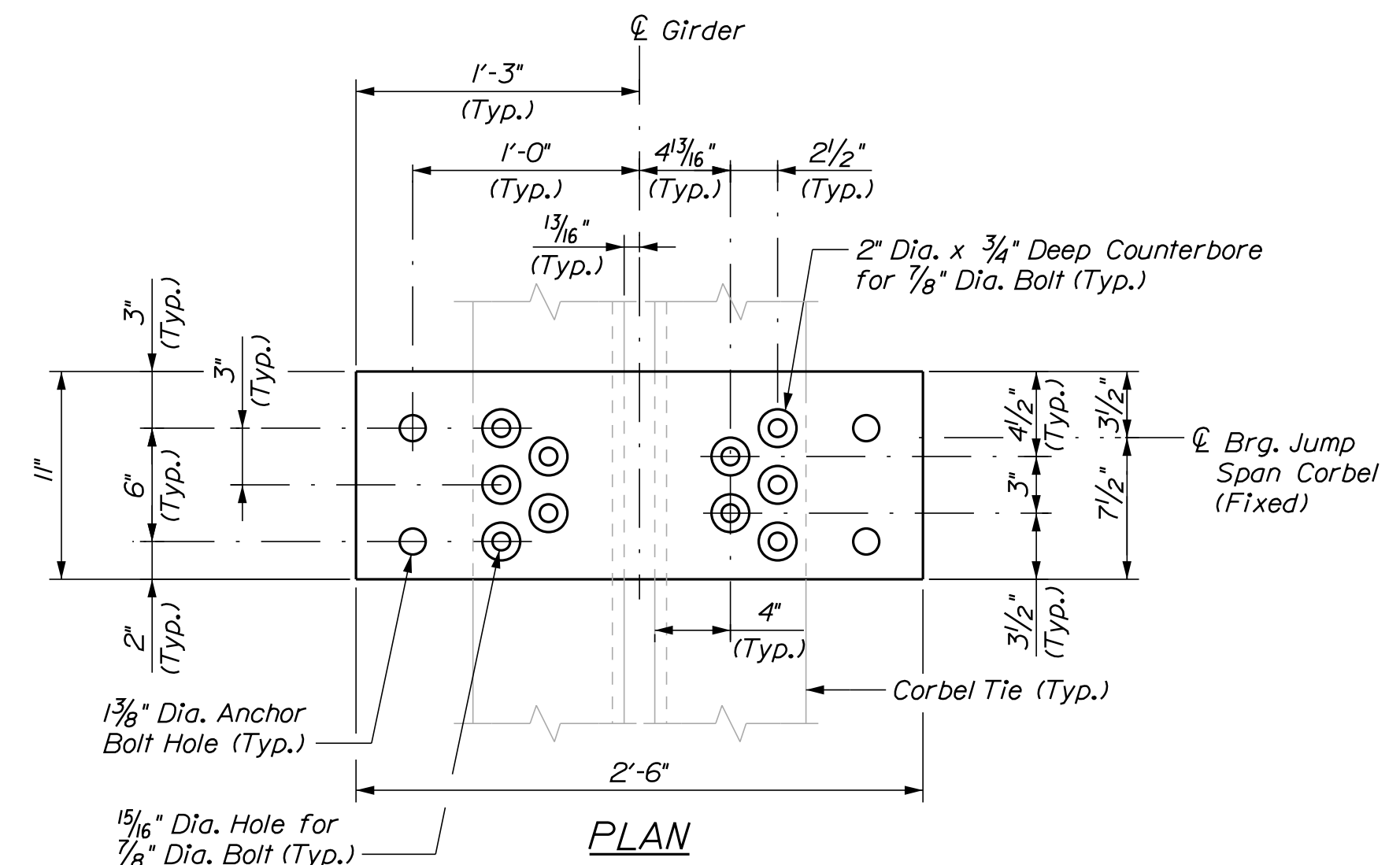
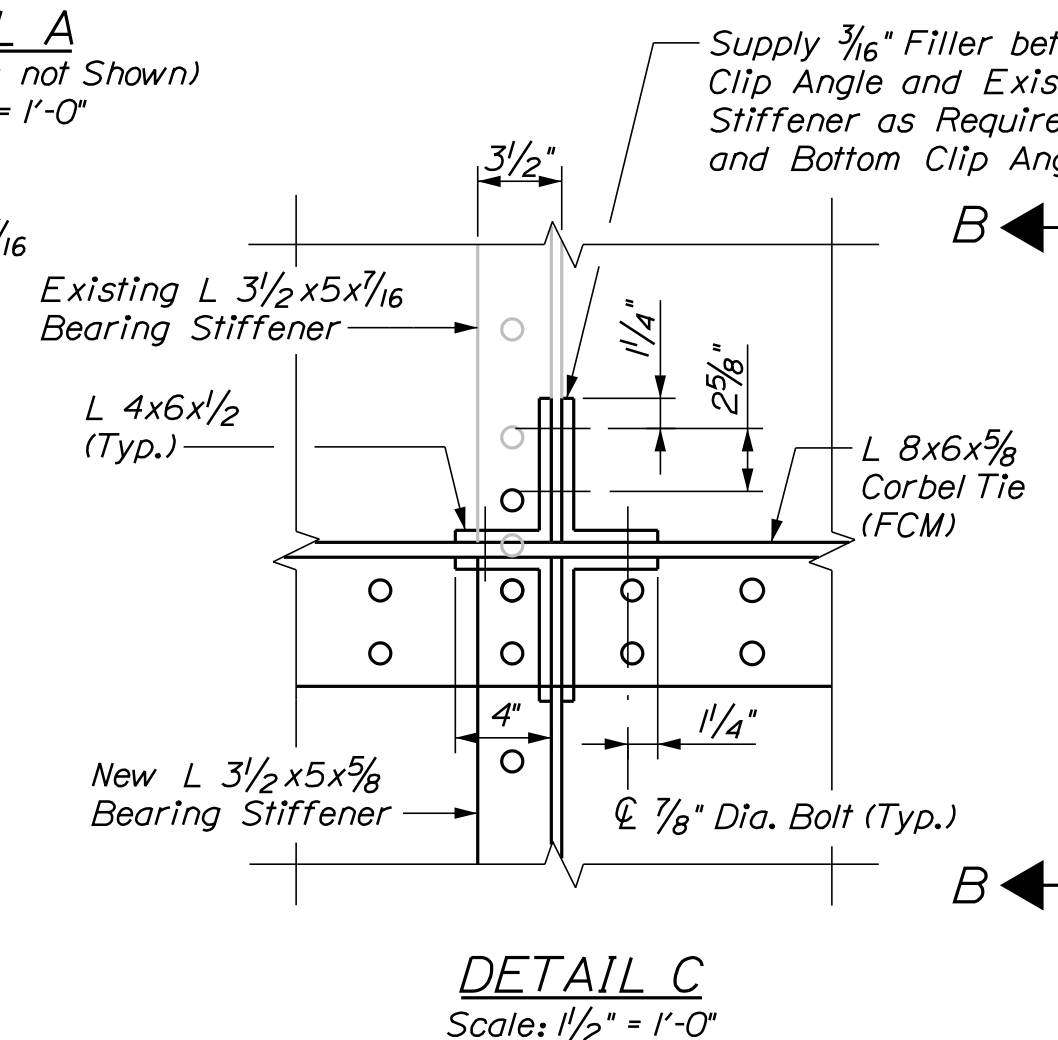
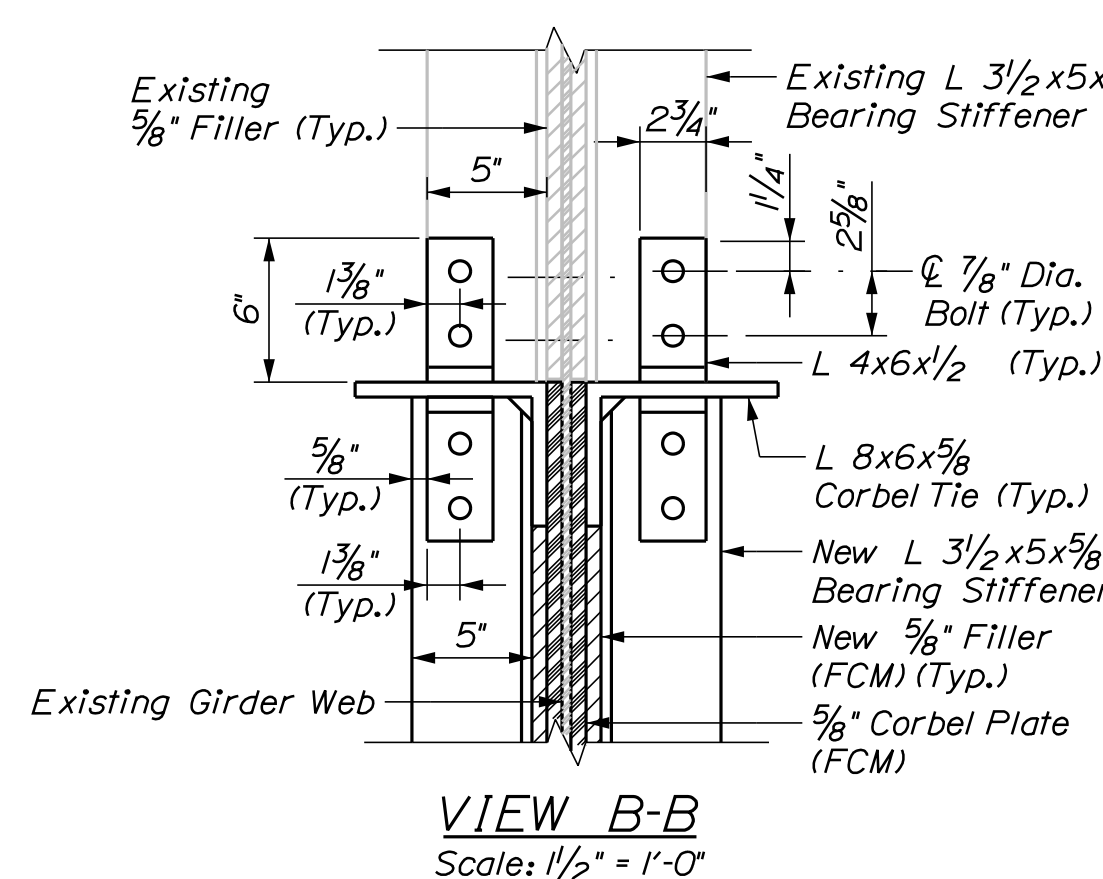
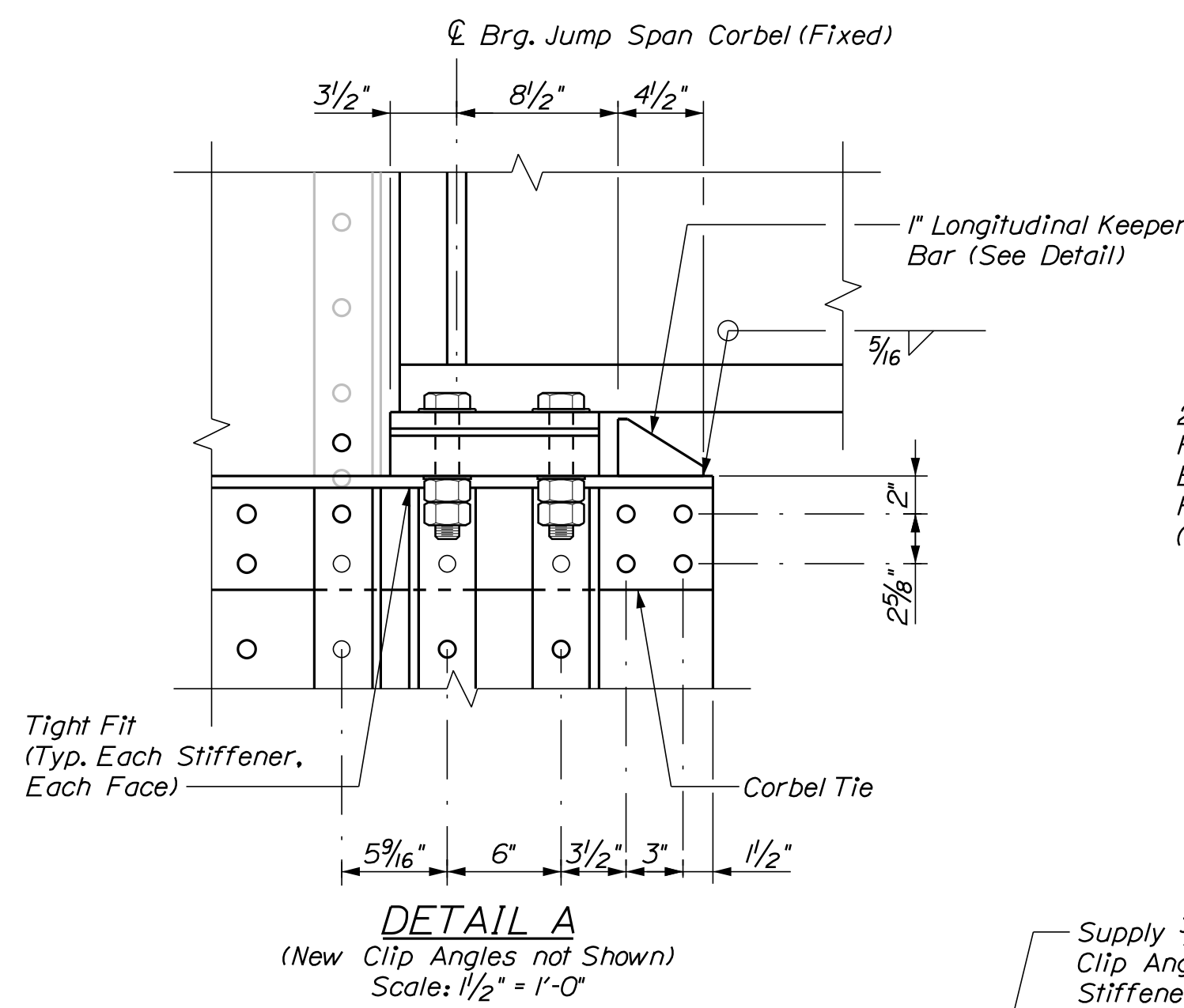
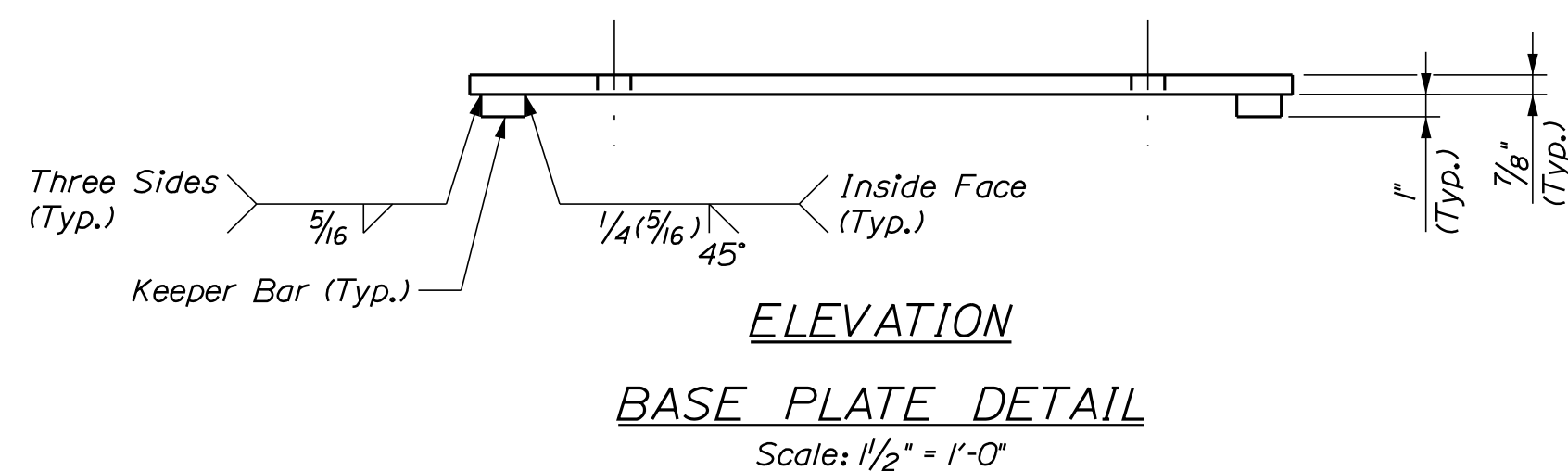
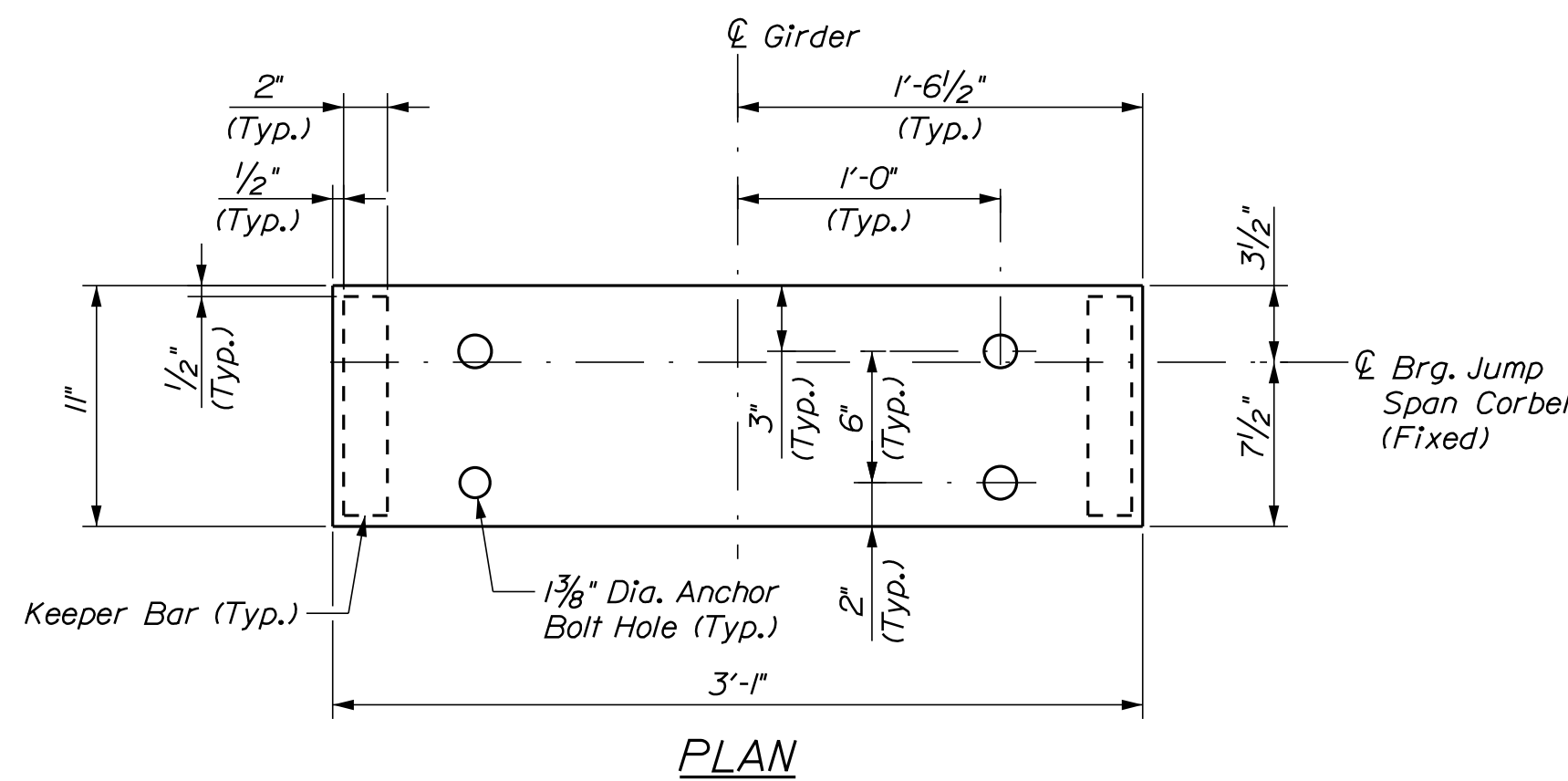
13. Reset rail.

14. Open bridge to traffic.

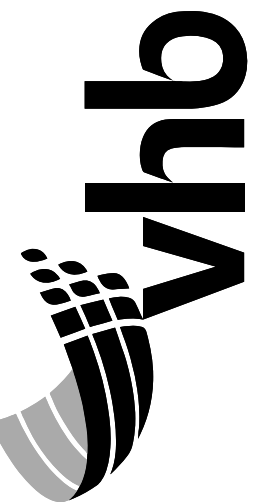
Final Wingwall Repairs (Done under live traffic):

1. Remove and replace south and north abutment wingwall concrete as required to complete the wingwall repairs (see Bridge No. 7788 (M.P. 241.83) Over Fish River (North) (2 of 13) and (3 of 13) sheets for details).

2. Perform any remaining repair and touch-up work.



NOTE
At the Contractor's option, countersunk holes may be substituted for counter bored holes. Bolts for this option shall conform to the material requirements of ASTM F3125 Grade A325 Type 3, shall be fully pretensioned and shall have countersunk heads to allow for a smooth bearing surface.



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	12/20/20	BJM	12/20/20
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Town, County, State _____
 Approx. Property Lines _____
 Existing Right of Way _____
 Limits of Wrought Portion _____
 Control Of Access _____
 New Right of Way _____
 New Easement _____
 New Temporary Rights _____
 New R/W Within Existing R/W _____

New R/W Along Existing R/W _____
 Building _____
 Trees Conifer _____
 Tree Line _____
 Water Edge _____
 Ledge _____
 Fence CHAIN LINK _____
 Sign _____

Clearing Limit Line _____
 Bush Line _____
 Rock/Boulder _____
 Flag Pole _____
 BARB WIRE _____
 STOCKADE _____
 WELL _____
 Mailbox _____

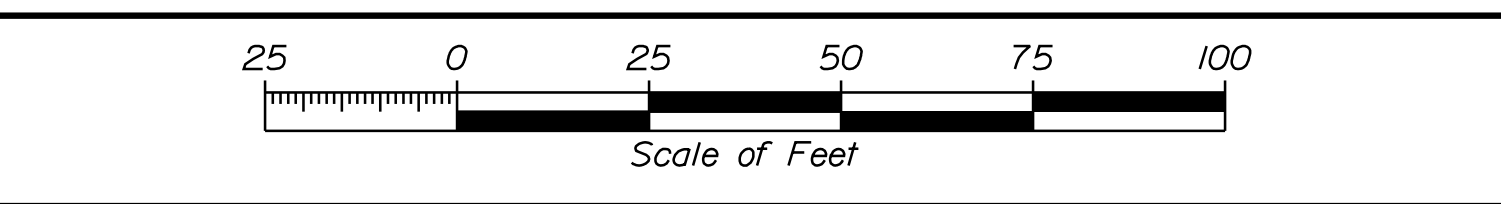
Sanitary Sewer _____
 Telephone Line _____
 Electric Line _____
 Water Line _____
 Underdrain Line _____
 Gas Line _____
 Guardrail _____
 Culvert _____

Traveled Way _____
 Ditch _____
 Catch Basin _____
 Manhole _____
 Sewer Manhole _____
 Utility Pole _____
 Fire Hydrant _____
 Curbing _____

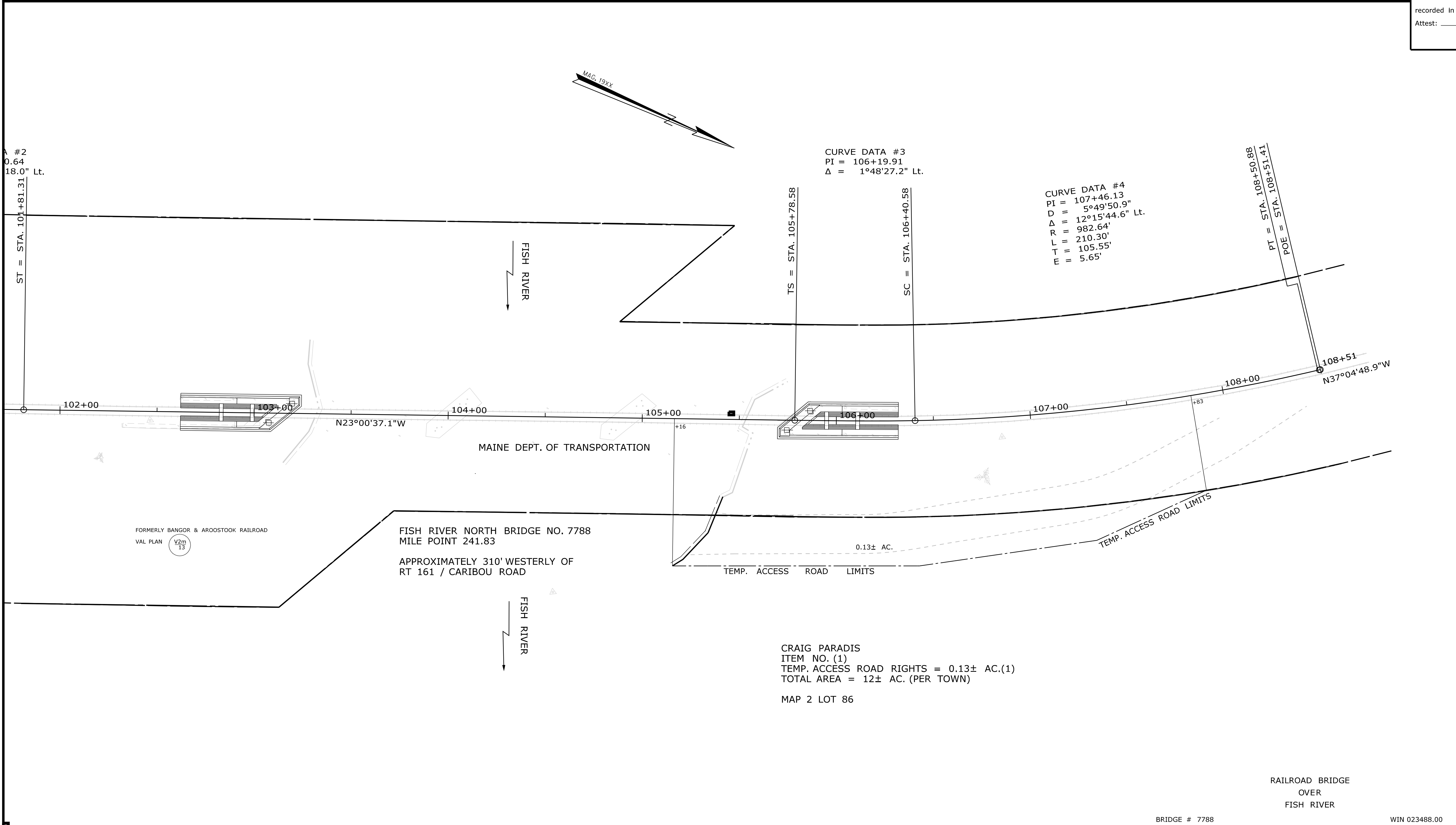
Cut Line _____
 Stonewall _____
 Baseline _____
 Monument _____
 Iron Rod Found _____
 Replacement Pin Set _____

Fill Line _____
 Retaining Wall _____
 Traverse Point _____
 Pipe Found _____

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.



STATE OF MAINE
 REGISTRY OF DEEDS
 COUNTY _____
 RECEIVED _____,
 at _____ h _____ m _____ M and
 recorded in Plan Bk _____, Pg. _____
 Attest: _____
 REGISTER



ITEM	TECH	CHECKED
EXISTING CONDITION PLAN	T.L.B.	
FINAL RIGHT OF WAY	T.L.B.	
AREAS	T.L.B.	

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

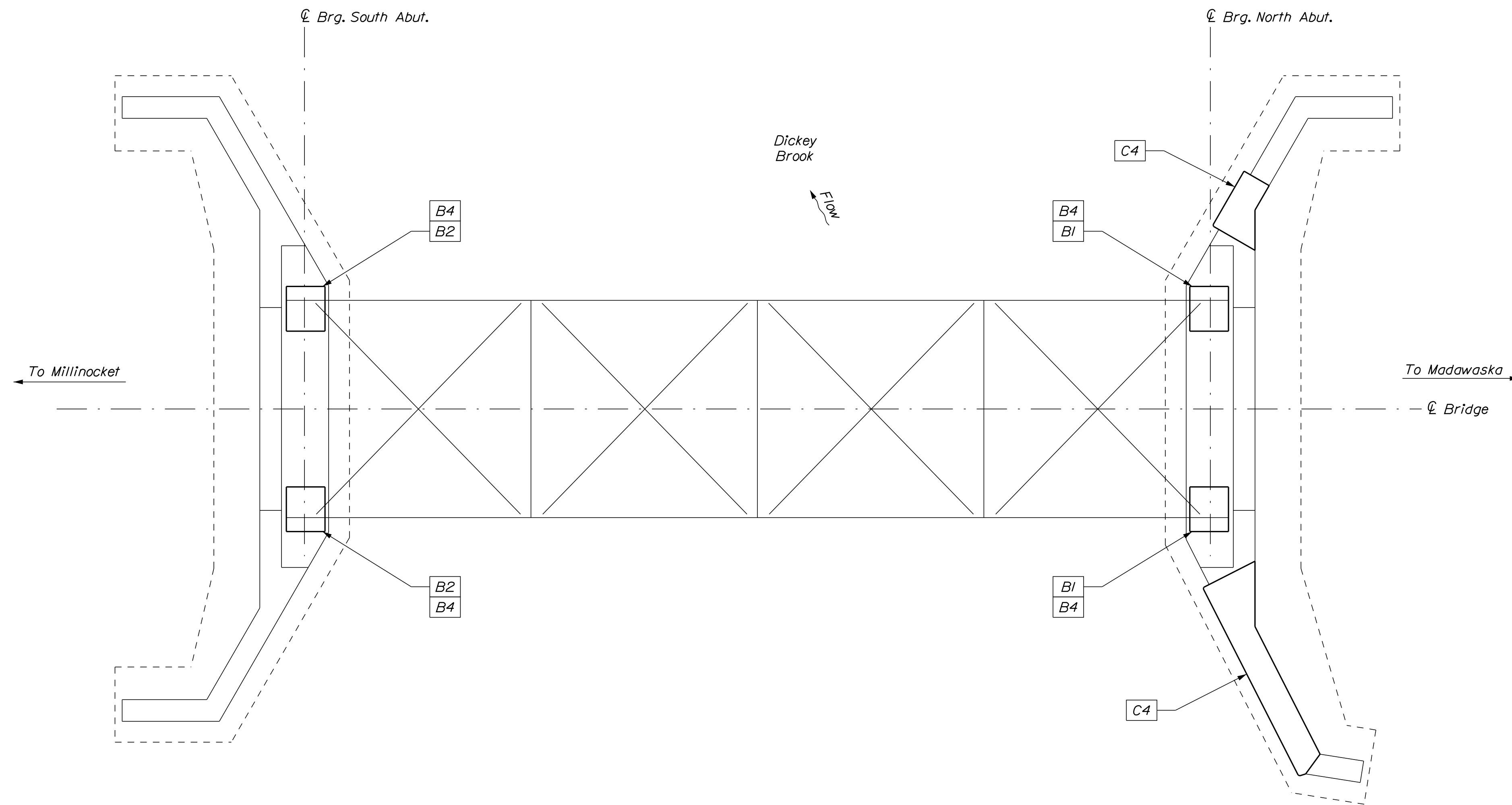
REVISIONS			PLAN FILED IN PLAN BOOK				PAGE COUNTY RECORD						
NO.	DATE	DESCRIPTION	BY	NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE				

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

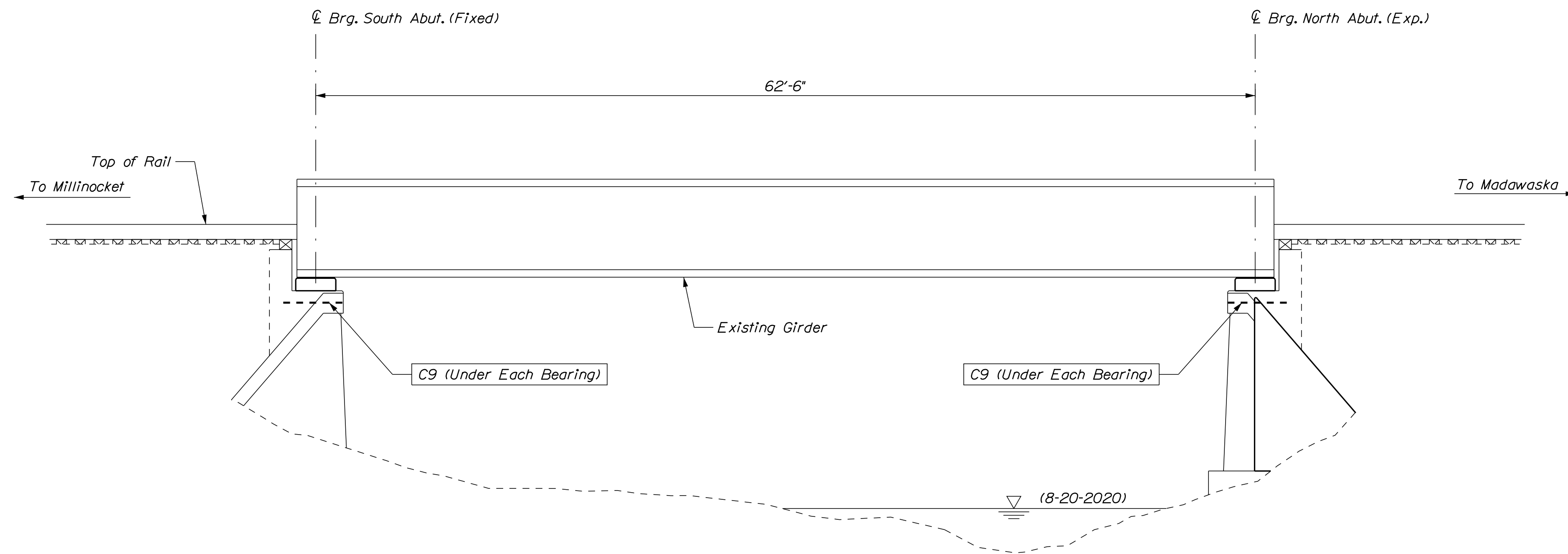
FISH RIVER RAILROAD BRIDGE
 FORT KENT AROOSTOOK COUNTY
 STATE PROJECT 23488.00
 NOVEMBER 2020
 SCALE 1" = 25'
 RIGHT-OF-WAY MAP
 SHEET 1 OF 1

SHEET NUMBER
 33
 OF 36

Filename: ... \00\ROW\MSTA\001_RWPLAN1.dgn
 Division: ROW
 Username: Terri.L.Blair
 Date: 11/16/2020

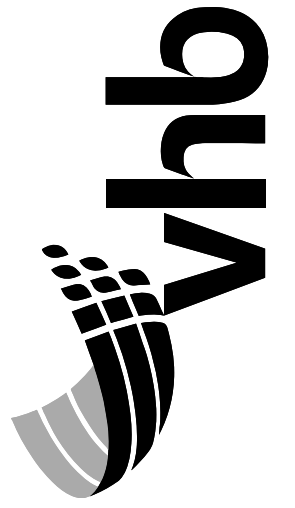


REHABILITATION KEY PLAN
Not to Scale



BRIDGE ELEVATION
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	2
B4	Remove and Replace Concrete Bearing Pedestal	4
SUBSTRUCTURE WORK ITEMS		
Work ID	Description	Number of Locations
C4	Rehabilitate Wingwall	2
C9	Install Dowels In Bridge Seat	4



PROJ. MANAGER	DATE	BY
DESIGN-DETAILED	12/2020	BJM
CHECKED-REVIEWED	12/2020	GSC
DESIGN-DETAILED		
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

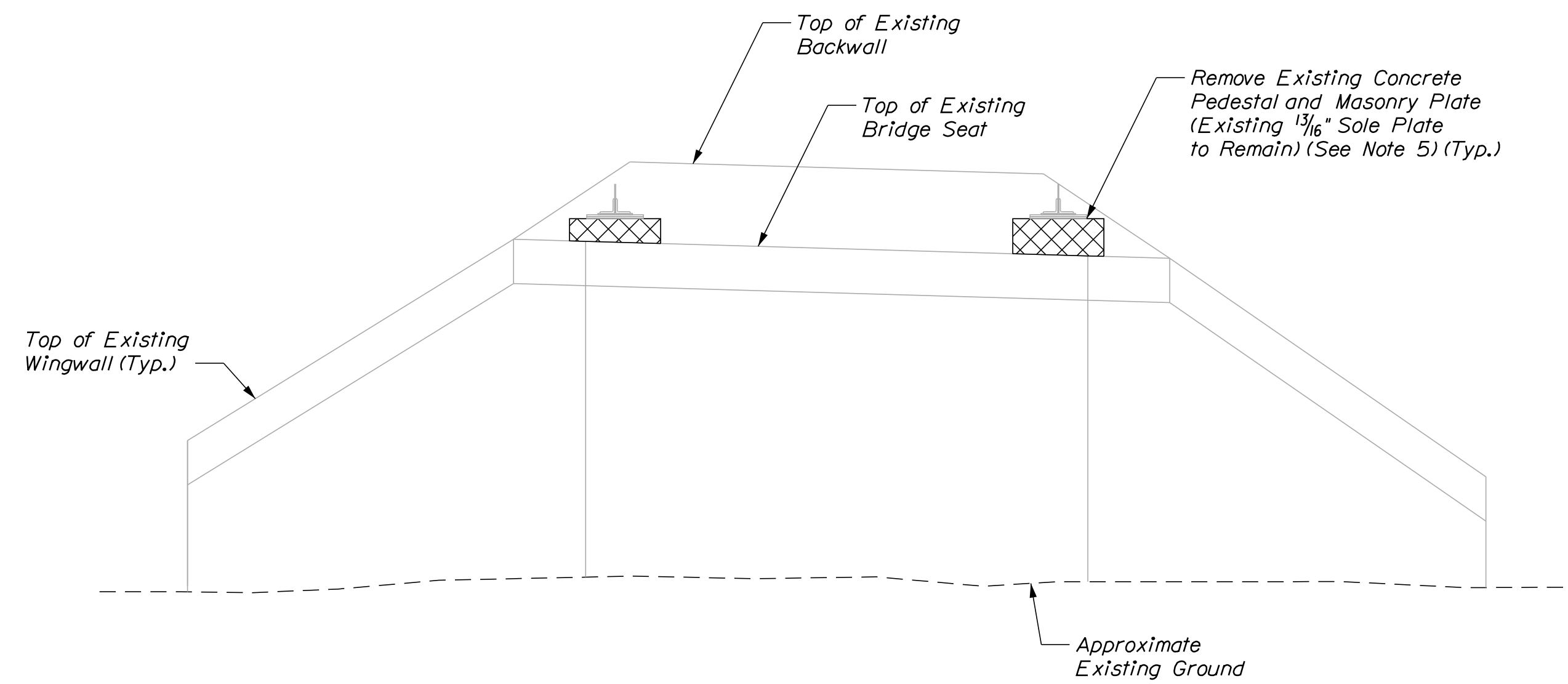
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7792 (M.P. 253.87)
OVER DICKEY BROOK (1 OF 3)

Date: 12/7/2020

Username: BMasse

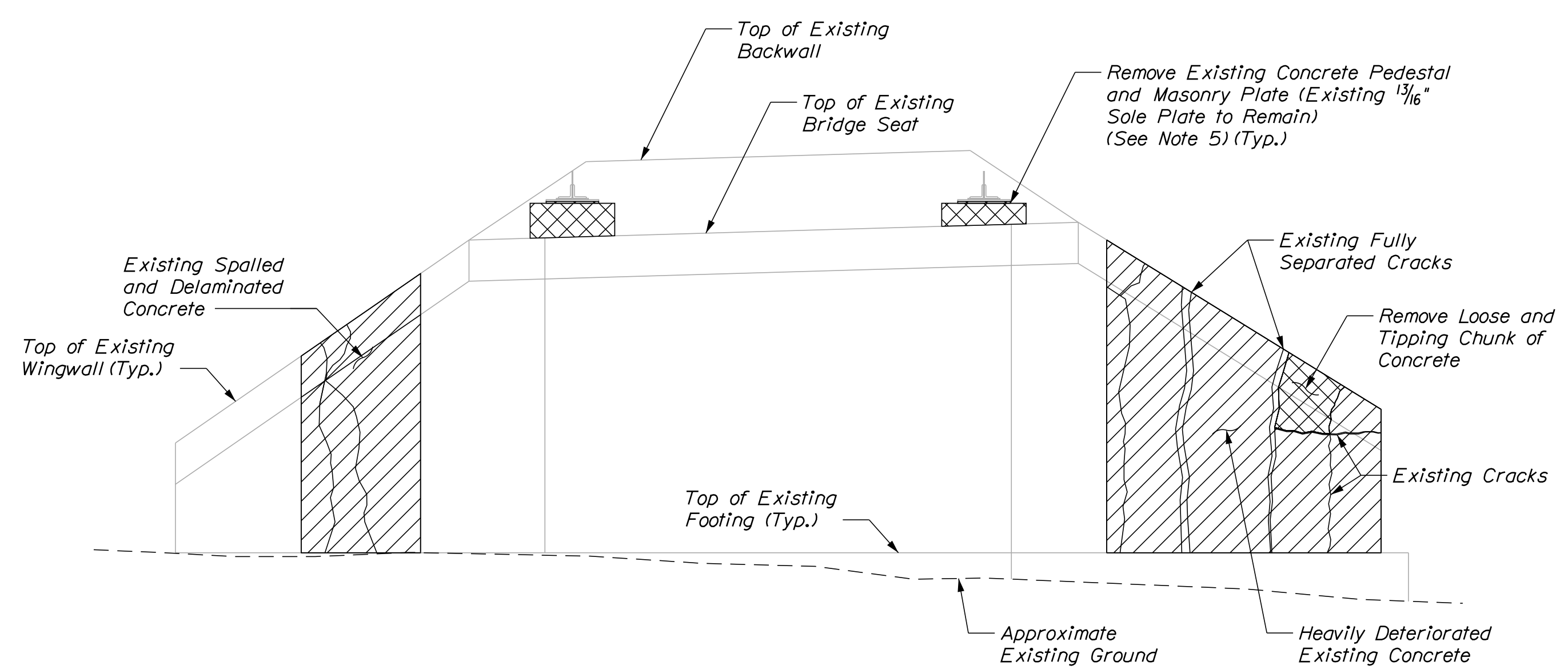
Division: MUL TIMODAL

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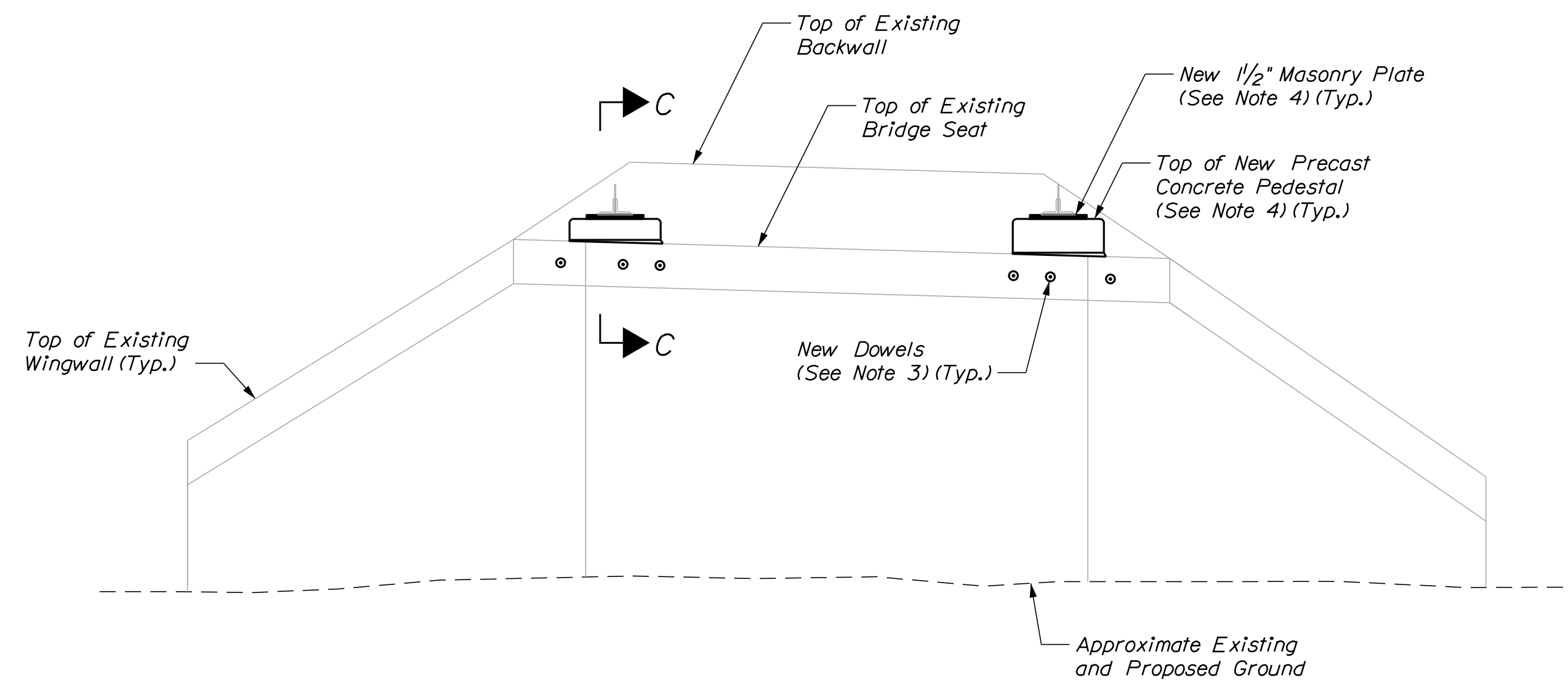
EXISTING SOUTH ABUTMENT ELEVATION - REMOVAL

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



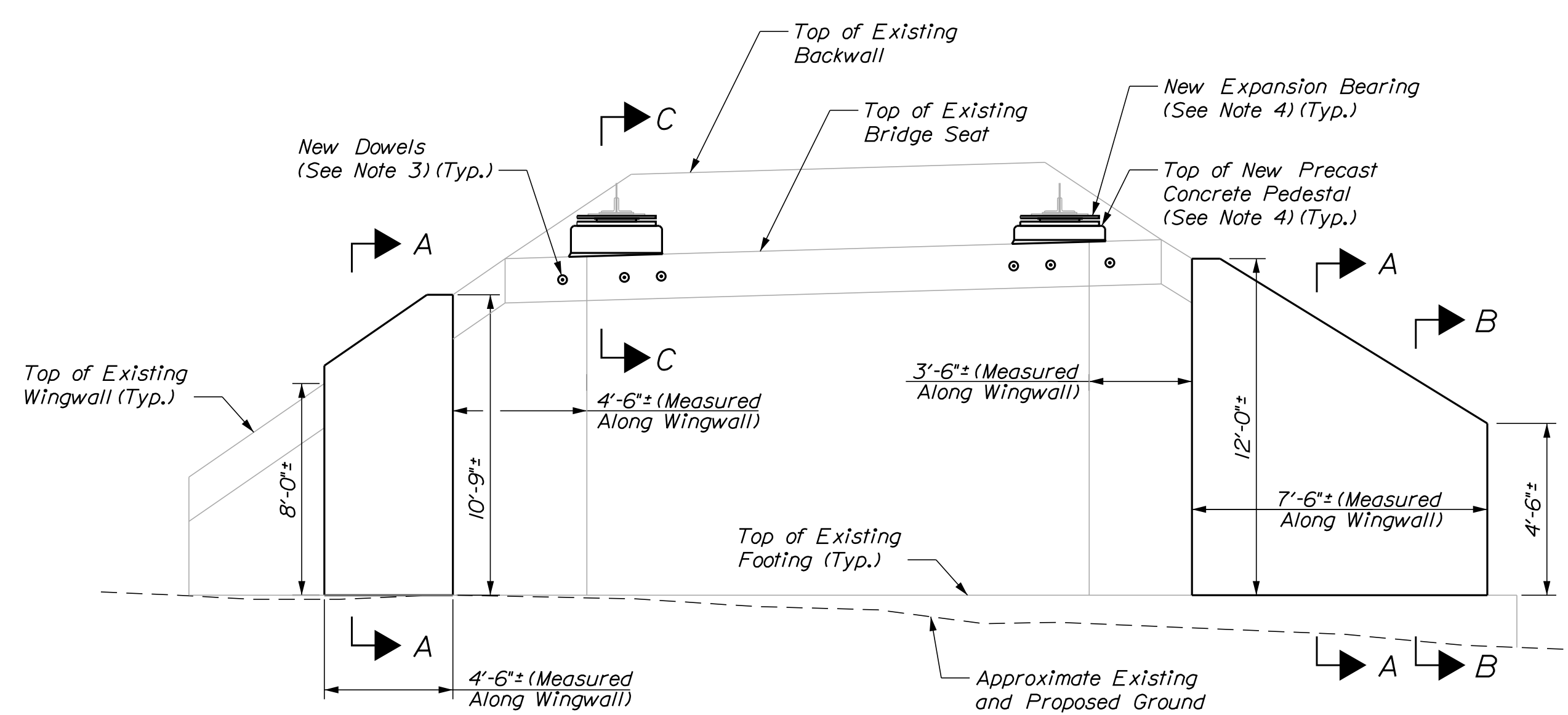
EXISTING NORTH ABUTMENT ELEVATION - REMOVAL

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



PROPOSED SOUTH ABUTMENT ELEVATION



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



PROPOSED NORTH ABUTMENT ELEVATION

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

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 sheet for more information.
2. See General Notes and Quantities sheet for General Bridge Construction and Railroad Construction Notes.
3. See Bridge No. 7792 (M.P. 241.83) Over Dickey Brook (3 of 3) sheet for concrete repair sections, reinforcing details and dowel details.
4. See Bearing, Bolster, and Pedestal Details (1 of 3) and (3 of 3) sheet for bearing and precast concrete pedestal details. Top of precast concrete pedestal shall be set to maintain a track elevation that matches the existing track elevation.
5. At isolated locations, the existing sole plate has been tack welded to the existing masonry plate. After removal of the existing masonry plate, the Contractor shall grind the existing sole plate smooth at the welded locations. All costs will be considered incidental to associated the Contract Items.
6. The existing abutments are lightly reinforced along the faces, see existing plans.



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	JUN 12/2020	BJM	
CHECKED-REVIEWED	JUN 12/2020	GSC	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

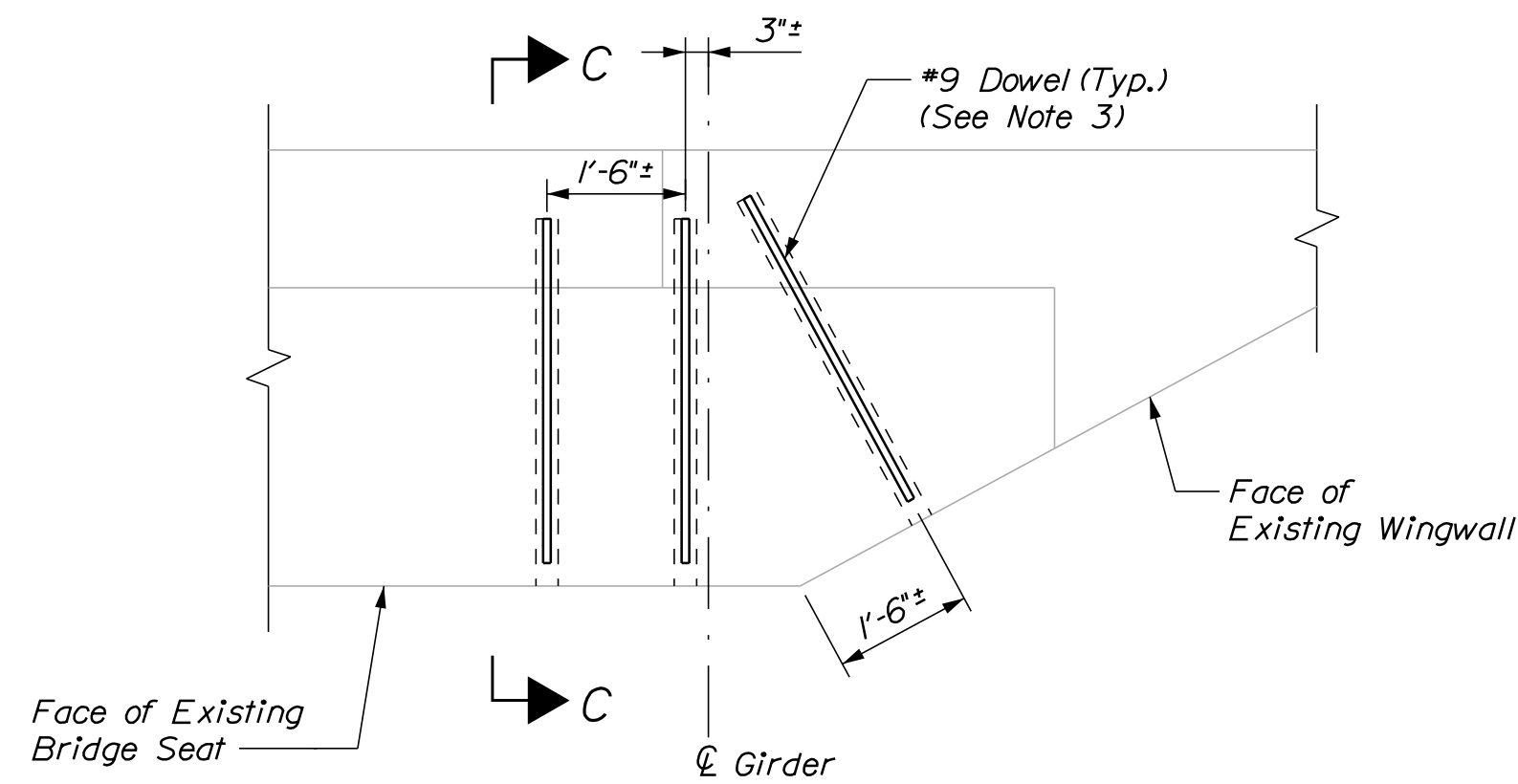
RAILROAD BRIDGE
SUBSTRUCTURE REHABILITATION PROJECT
MADAWASKA SUB. AROOSTOOK COUNTY
BRIDGE NO. 7792 (M.P. 253.87)
OVER DICKEY BROOK (2 OF 3)

Date: 12/7/2020

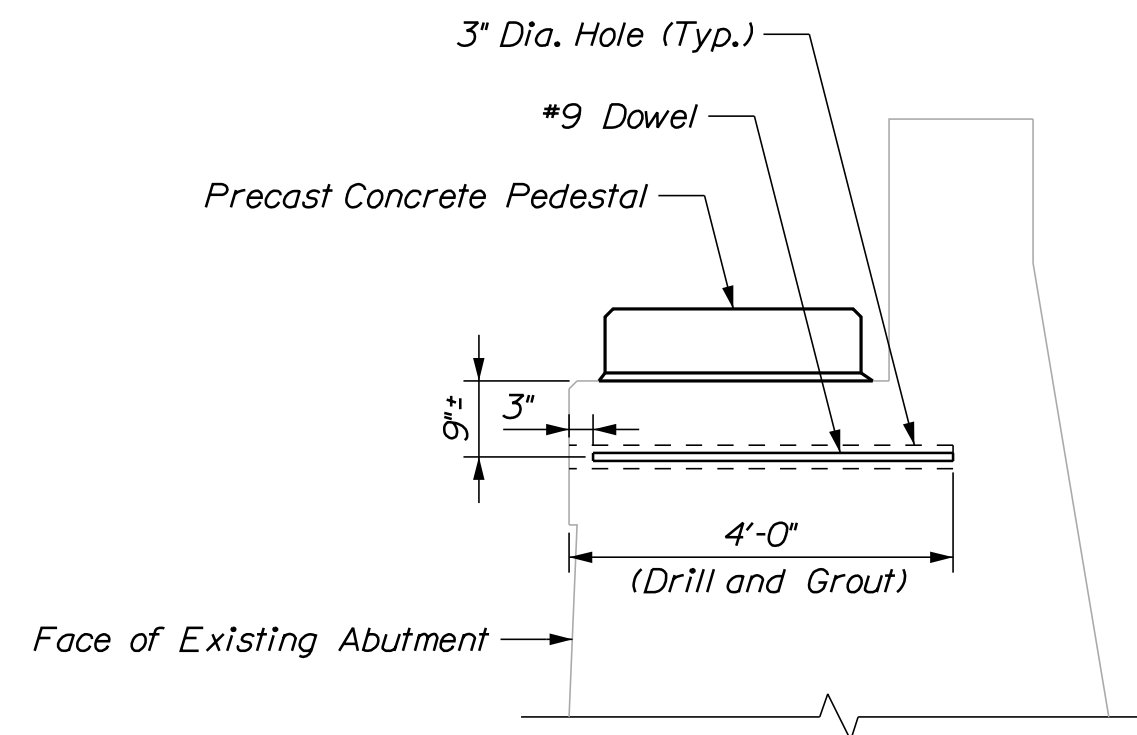
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Division: MUL TIMODAL

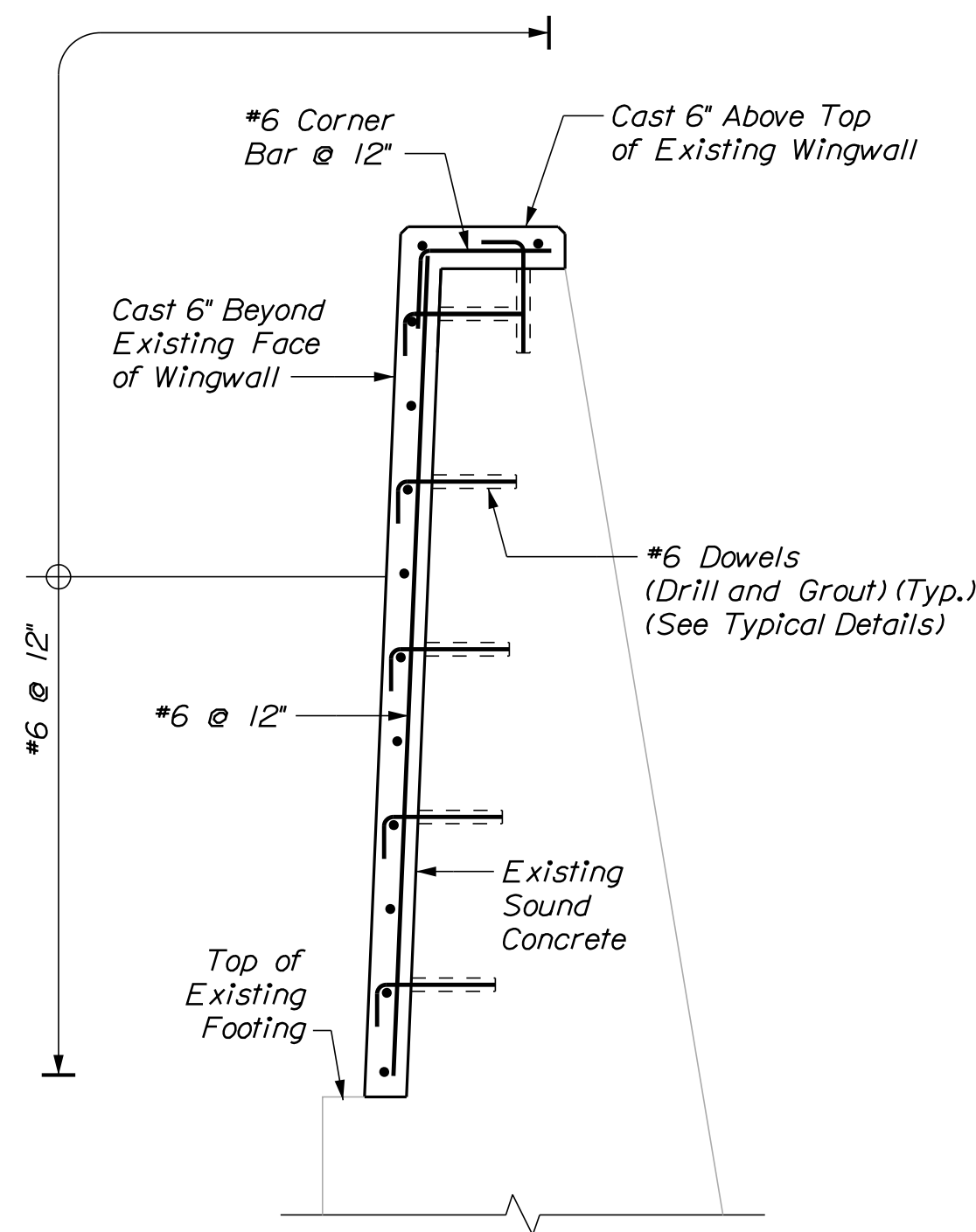
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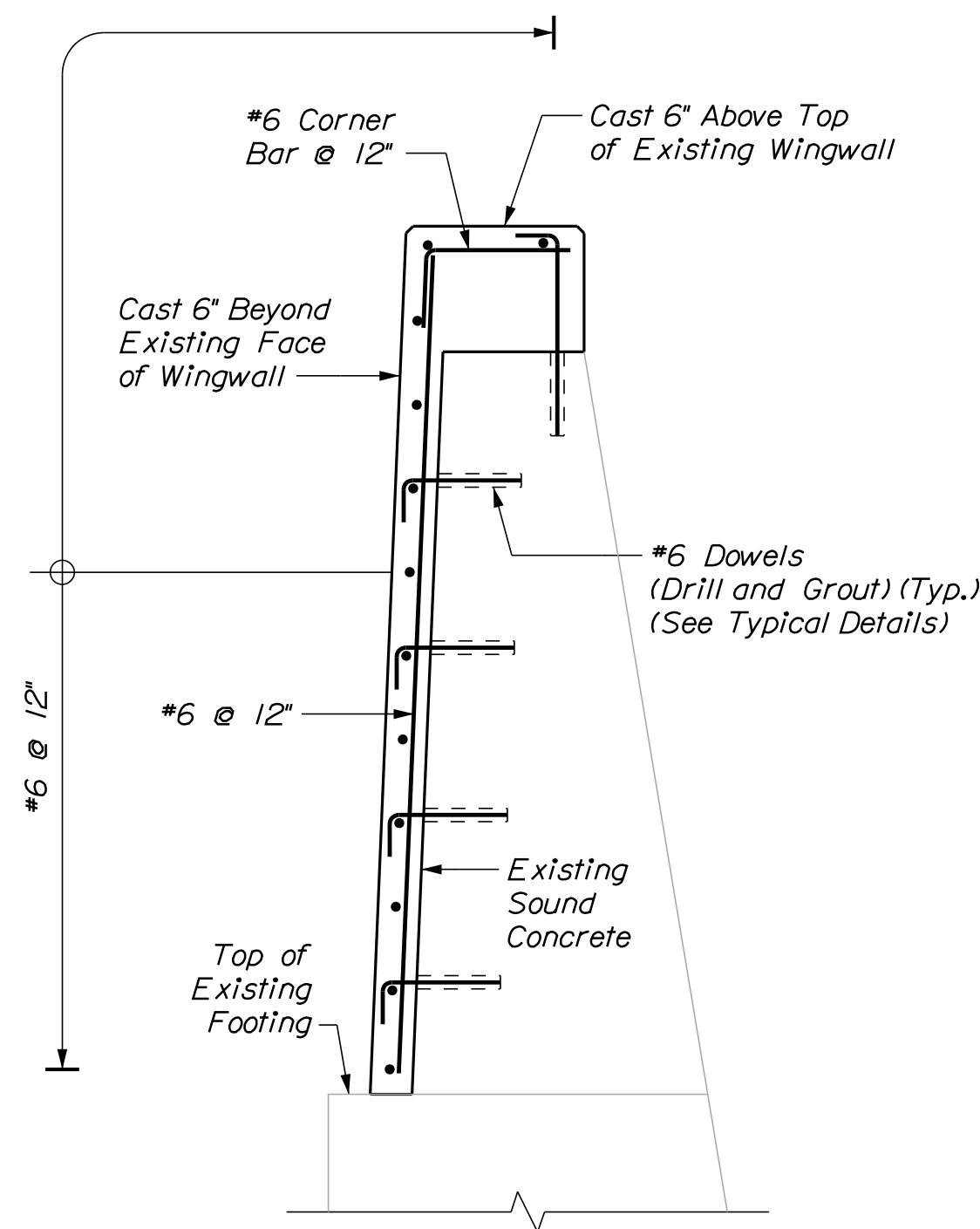
BRIDGE SEAT DOWEL PLAN
 (Pedestal not Shown)
 Scale: 1/2" = 1'-0"



**SECTION C-C
 BRIDGE SEAT DOWEL DETAIL**
 (Bearings and Girders not Shown)
 Scale: 1/2" = 1'-0"



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

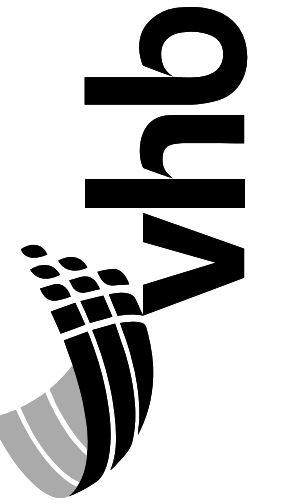


**SECTION B-B
 REINFORCING AT WINGWALL REPAIR**
 Scale: 1/2" = 1'-0"

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 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. #6 Dowels in concrete repairs shall be set around existing cracks and set in sound concrete, spacing of dowels in northeast wingwall will vary due to the condition of the wingwall.
3. #9 Dowels in bridge seat shall be placed to avoid proposed anchor bolts and shall be grouted using a grout material selected from the MaineDOT Qualified Products List.



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 7792
 WIN
 23488.00
 BRIDGE PLANS

PROJ. MANAGER	DATE	BY
DESIGN-DETAILED	12/2020	BJM
CHECKED-REVIEWED	12/2020	GSC
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

RAILROAD BRIDGE
 SUBSTRUCTURE REHABILITATION PROJECT
 MADAWASKA SUB. AROOSTOOK COUNTY
 BRIDGE NO. 7792 (M.P. 253.87)
 OVER DICKEY BROOK (3 OF 3)

FIGURE
36
 OF 36