

STATE OF MAINE DEPARTMENT OF TRANSPORTATION



AROOSTOOK AND PENOBSCOT COUNTY MADAWASKA SUBDIVISION MAINE RAILROAD BRIDGE CAPACITY PROJECT

SPECIFICATIONS

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

DESIGN LOADING

Live Load Cooper E-80

MATERIALS

Concrete:
Precast Class "P"
Reinforcing Steel ASTM A615, (Uncoated) Grade 60

BASIC DESIGN STRESSES

Concrete:
Precast Ballast Retainers F'c = 5,000 psi
Reinforcing Steel Fy = 60,000 psi

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Sheridan Truss Br. No. 7783 (M.P. 193.50).....	5
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**CONCRETE AND MISCELLANEOUS
PROCUREMENT PLANS
MARCH 2021**

PROJECT LOCATION:	7 Bridges located on the Maine Northern Railway - Madawaska Subdivision from Mile Post 111.14 to 253.87, in Penobscot and Aroostook County.
PROGRAM AREA:	Multimodal Program
OUTLINE OF WORK:	Bridge Construction: Precast concrete caps, precast backwalls, precast ballast retainers and geocell stabilization systems.

PLANS PREPARED BY:

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

WIN 22812.00

STATE OF MAINE DEPARTMENT OF TRANSPORTATION APPROVED: COMMISSIONER: CHIEF ENGINEER:	DATE 3-25-21 3-24-2021
	SIGNATURE P.E. NUMBER 19225 DATE 3-12-2021
PROJECT INFORMATION PROGRAM: MULTIMODAL PROJECT MANAGER: NATE BENOIT DESIGNER: GREG GODDRICH CONSULTANT: VHB PROJECT RESIDENT CONTRACTOR: _____ PROJECT COMPLETION DATE: _____	MAINE RAILROAD BRIDGE CAPACITY PROJECT - CONCRETE/MISC. PROCUREMENT MADAWASKA SUB. AROOSTOOK/PENOBSCOT TITLE SHEET
SHEET NUMBER 1 OF 8	

Filename: ... \001_title_01.dgn Division: MUL.TMODAL Username: BMosse Date: 3/12/2021

Date: 3/12/2021

Username: BMasse

Division: MUL TIMODAL

Filename: ...002_Notes_Quantities.dgn

ESTIMATED QUANTITIES - CONCRETE AND MISCELLANEOUS										
ITEM NO.	DESCRIPTION	UNIT	Br. 7763 MP 111.14	Br. 7776 MP 154.04	Br. 7783 MP 193.50	Br. 7785 MP 224.51	Br. 7787 MP 236.44	Br. 7788 MP 241.83	Br. 7792 MP 253.87	Total
515.21	Protective Coating for Concrete Surfaces (107 SY)	LS	1/3	1/3	1/3					1
*534.30	Precast Structural Concrete (45 CY)	LS	1/3	1/3	1/3					1
620.60	Separation Geotextile	SY			550	360	250	220	250	1,630
*620.604	Geocell Confinement System	SF			920	1,380	920	920	920	5,060

*See Item Breakdown in Bill of Materials List Provided

PRECAST - BILL OF MATERIAL			
ITEM 534.30 - PRECAST STRUCTURAL CONCRETE			
Bridge No. 7763 (M.P. 111.14)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Precast Concrete Cap	3	CY	2 Units
Precast Concrete Backwall	3	CY	2 Units
*IO Dowels	8	EA	Ship Loose
Bridge No. 7776 (M.P. 154.04)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Precast Concrete Cap	3	CY	2 Units
Precast Concrete Backwall	3	CY	2 Units
*IO Dowels	8	EA	Ship Loose
Bridge No. 7783 (M.P. 193.50)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Precast Concrete Ballast Retainer	33	CY	6 Units

GEOCELL - BILL OF MATERIAL			
ITEM 620.604 - GEOCELL CONFINEMENT SYSTEM			
Bridge No. 7783 (M.P. 193.50)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Geocell	920	SF	2 Segments Each Approach (4 Total)
Stake (with End Cap/Clip)	112	EA	See Geocell Confinement System Note 2
Geocell Connection Device	16	EA	See Geocell Confinement System Note 2
Bridge No. 7785 (M.P. 224.51)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Geocell	1380	SF	3 Segments Each Approach (6 Total)
Stake (with End Cap/Clip)	162	EA	See Geocell Confinement System Note 2
Geocell Connection Device	32	EA	See Geocell Confinement System Note 2
Bridge No. 7787 (M.P. 236.44)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Geocell	920	SF	2 Segments Each Approach (4 Total)
Stake (with End Cap/Clip)	112	EA	See Geocell Confinement System Note 2
Geocell Connection Device	16	EA	See Geocell Confinement System Note 2
Bridge No. 7788 (M.P. 241.83)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Geocell	902	SF	2 Segments Each Approach (4 Total)
Stake (with End Cap/Clip)	120	EA	See Geocell Confinement System Note 2
Geocell Connection Device	16	EA	See Geocell Confinement System Note 2
Bridge No. 7792 (M.P. 253.87)			
DESCRIPTION	QUANTITY	UNIT	REMARKS
Geocell	920	SF	2 Segments Each Approach (4 Total)
Stake (with End Cap/Clip)	112	EA	See Geocell Confinement System Note 2
Geocell Connection Device	16	EA	See Geocell Confinement System Note 2

GENERAL NOTES

- All materials in these Plans are to be procured, under this Contract, by the Maine Department of Transportation and installed by the Railroad, unless noted otherwise (installation not included in this Contract).
- All materials shall be clearly identified, grouped, and packaged for each bridge.

PRECAST CONCRETE NOTES

- Reinforcing steel shall have a minimum clear cover of 2 inches for precast concrete.
- Precast concrete shall have all exposed edges and corners chamfered 3/4".
- 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 rod and dowel sleeves: ± 1/4"
- PVC sleeves for anchor bolts shall be removed prior to shipping.
- The bottom of all precast concrete caps and backwalls 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.
- Protective Coating for Concrete Surfaces shall be shop applied to all surfaces of the precast concrete ballast retainers prior to delivery. All costs shall be paid under Item 515.21, Protective Coating for Concrete Surfaces.
- Protective Coating for Concrete Surfaces shall be field applied to all surfaces of the precast concrete caps and backwalls that are exposed after installation. All costs shall be paid under Item 515.21, Protective Coating for Concrete Surfaces.
- Working Drawings and Reinforcing Steel Schedules for all precast concrete shall be submitted by the Contractor, for approval and before fabrication. Refer to subsections 105.7 and 503.03 of the Standard Specifications and Special Provision 534 for additional information.
- All costs required to fabricate and deliver the precast structural concrete units and dowels shown in the Precast Bill of Materials shall be paid under Item 534.30, Precast Structural Concrete.

GEOCELL CONFINEMENT SYSTEM NOTES

- The Geocell Confinement System shall be expanded to the dimensions shown in these Plans and held in position using straight steel stakes inside outer cells in preparation for infilling. Enough stakes shall be provided to place one stake in each cell along the short edges and in at least every third cell along the long edges as shown. Straight steel stakes shall be a minimum of 18" long and shall be 1/2" diameter rod or #4 reinforcing. Steel stakes shall have an end cap/clip provided by the manufacturer. Adjacent sections of geocell shall be fastened using the manufacturer's recommended connector. See the Special Provision 620 for additional requirements.
- If greater, the manufacturer's recommendation takes precedent over the quantity shown for geocell stakes and connection devices.
- All costs required to fabricate and deliver the geocell, stakes, and connection devices shown in the Geocell Bill of Materials shall be paid under Item 620.604, Geocell Confinement System.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	3/2021	BJM	3/2021
CHECKED-REVIEWED		GSC	
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

MAINE RAILROAD BRIDGE CAPACITY
PROJECT - CONCRETE/MISC. PROCUREMENT
MADAWASKA SUB. AROOSTOOK/PENOBSCOT

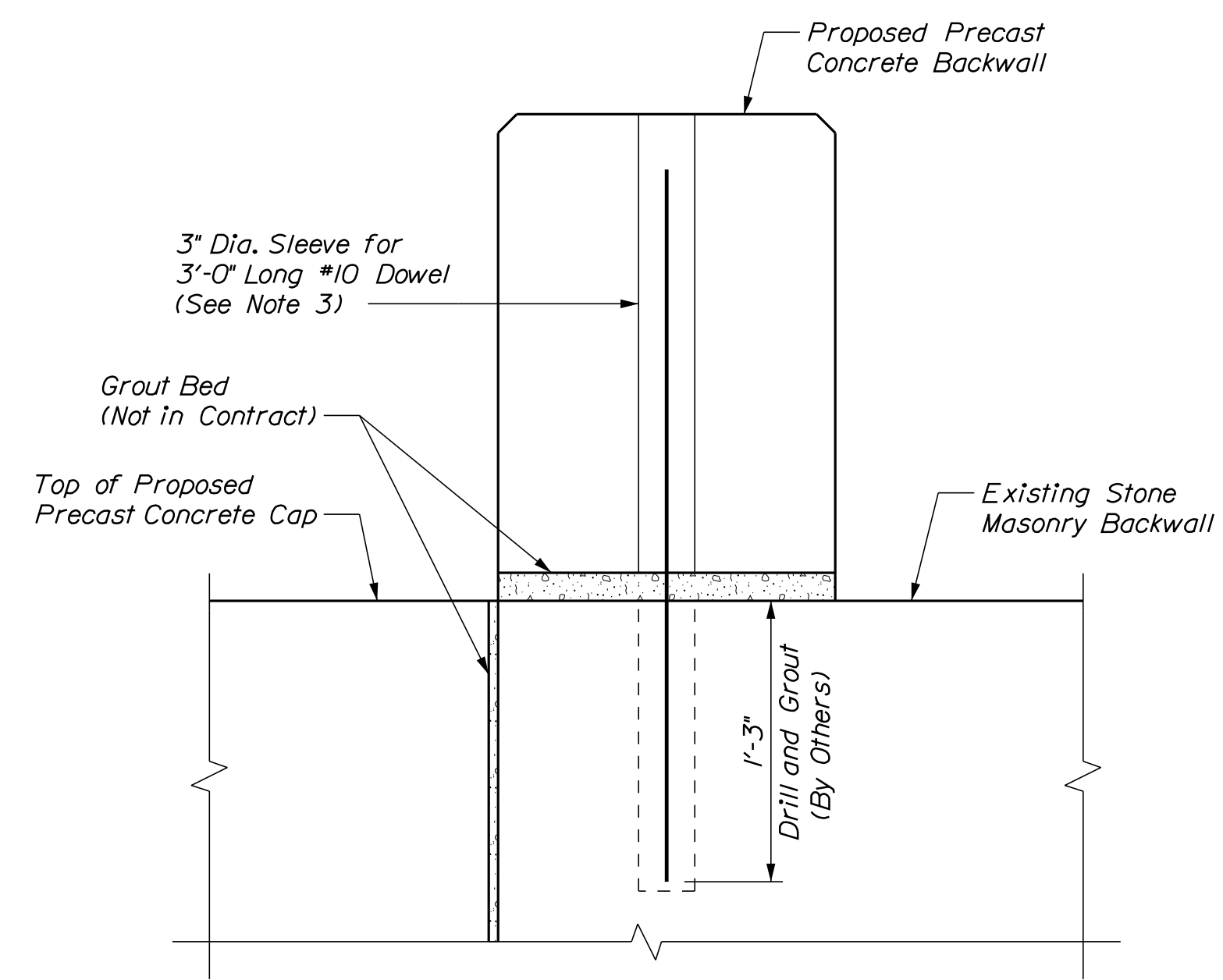
NOTES AND QUANTITIES

SHEET NUMBER

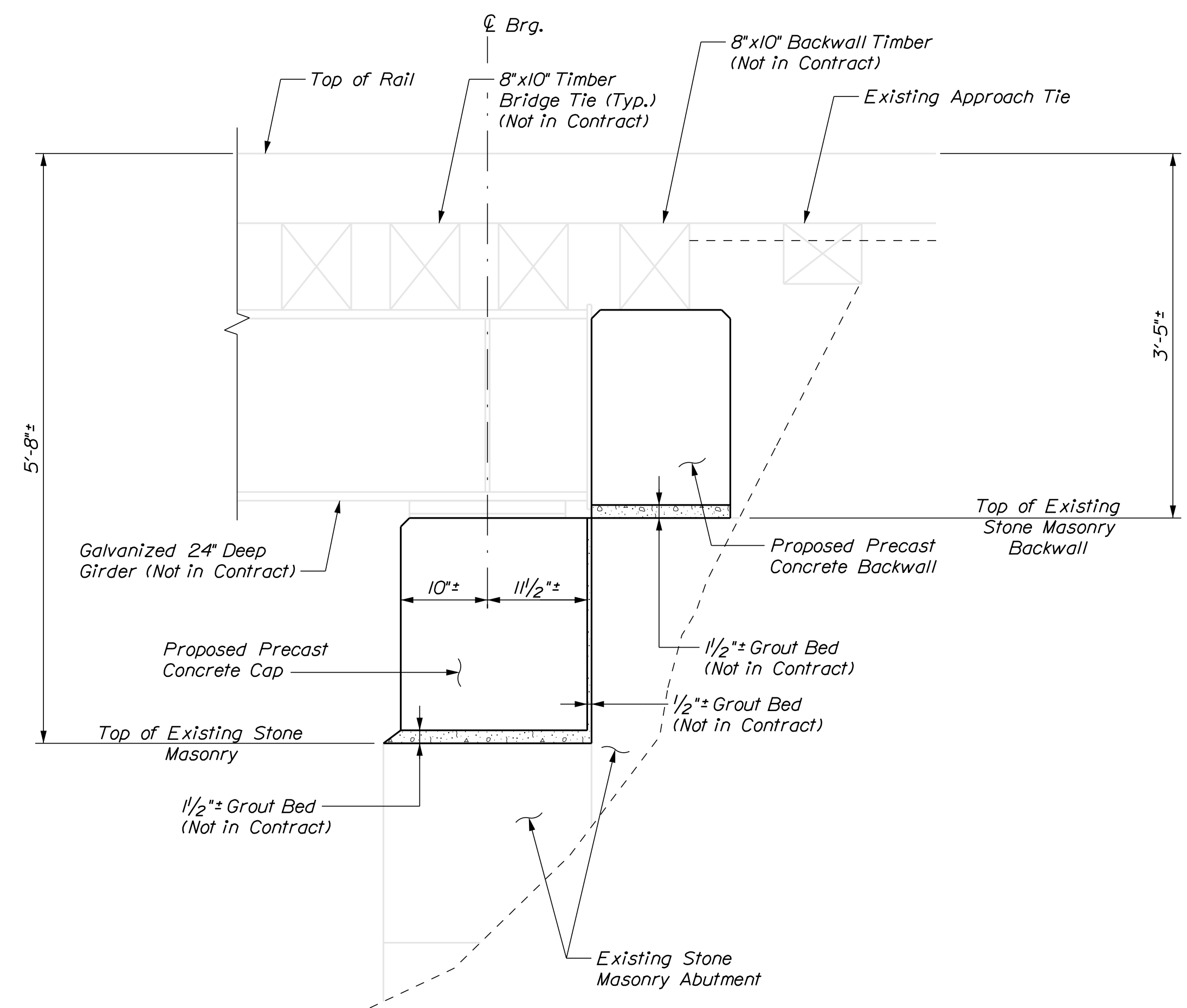
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OF 8

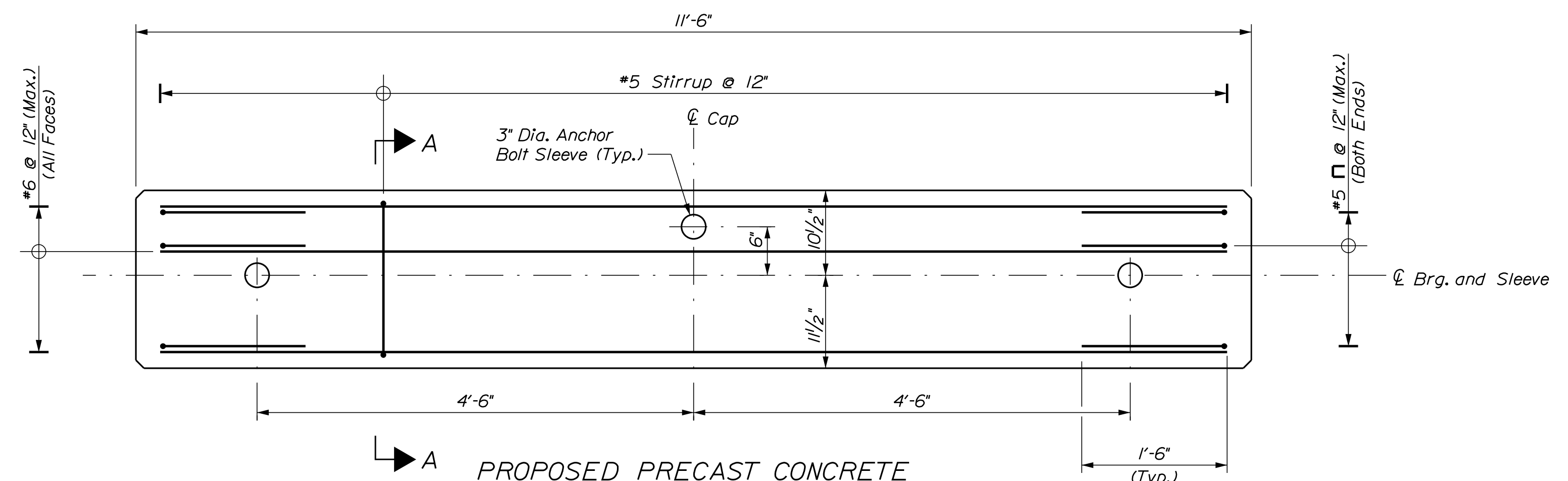
BRIDGE NO. WIN 22812.00 BRIDGE PLANS



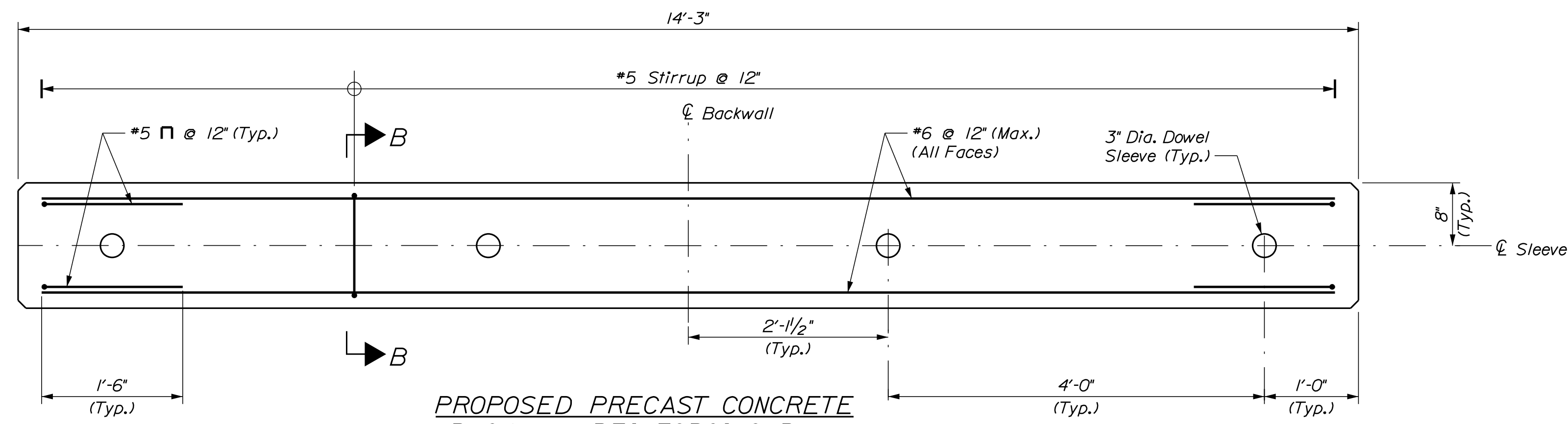
BACKWALL DOWEL DETAIL
(Superstructure Not Shown)
Scale: 1/2" = 1'-0"



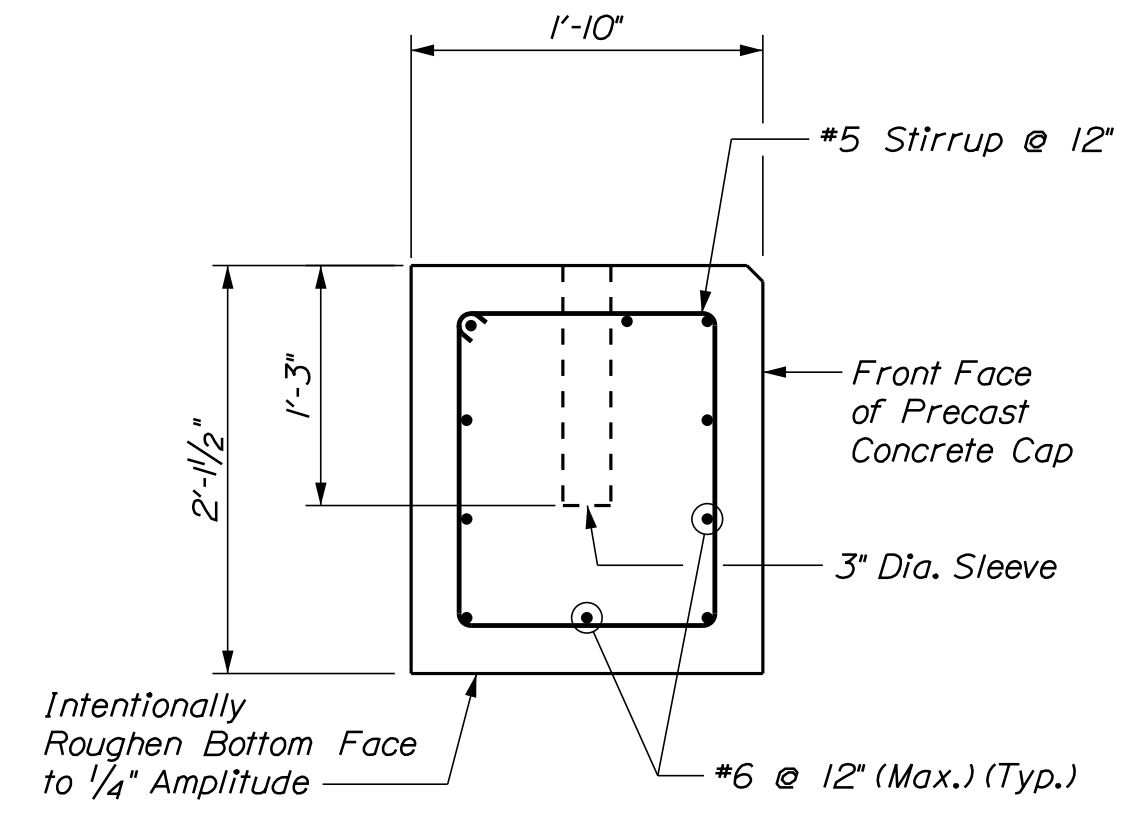
PROPOSED ABUTMENT SECTION
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Scale: 1" = 1'-0"



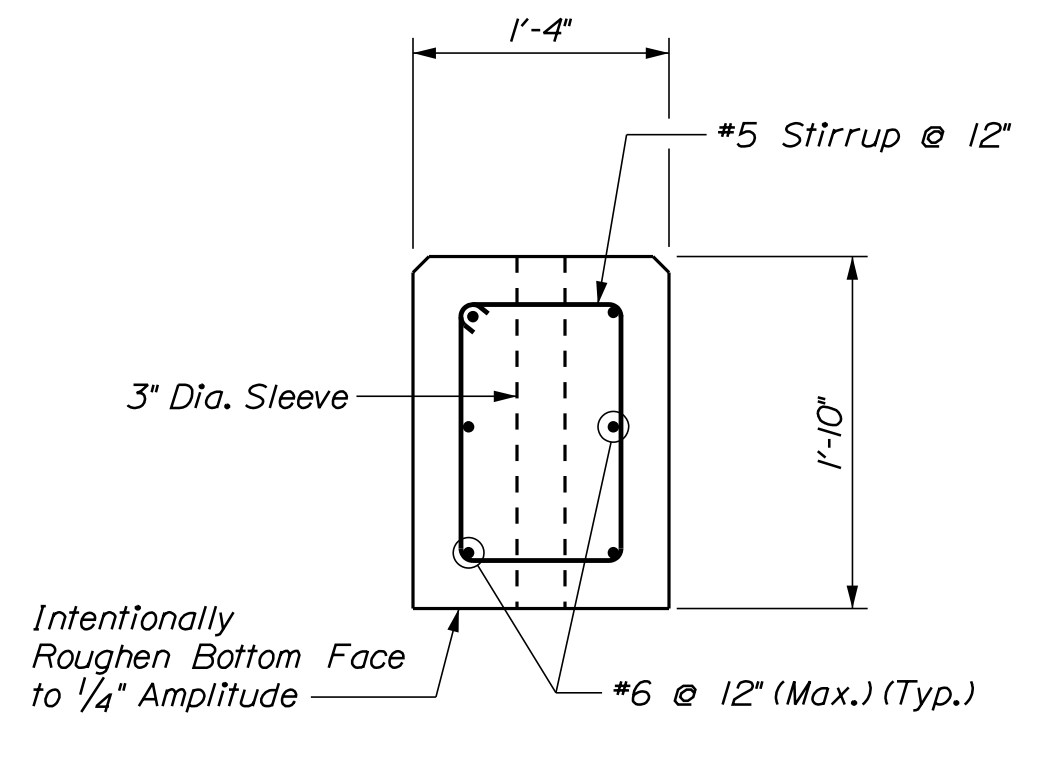
PROPOSED PRECAST CONCRETE CAP REINFORCING PLAN
(2 Total Required)
Scale: 1" = 1'-0"



PROPOSED PRECAST CONCRETE BACKWALL REINFORCING PLAN
(2 Total Required)
Scale: 1" = 1'-0"



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



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

NOTES

1. See Notes and Quantities sheet for precast concrete notes and quantities.
2. Adjust reinforcing to avoid anchor bolt sleeves.
3. #10 Dowels shall be shipped with and are considered incidental to Item 534.30 Precast Structural Concrete.



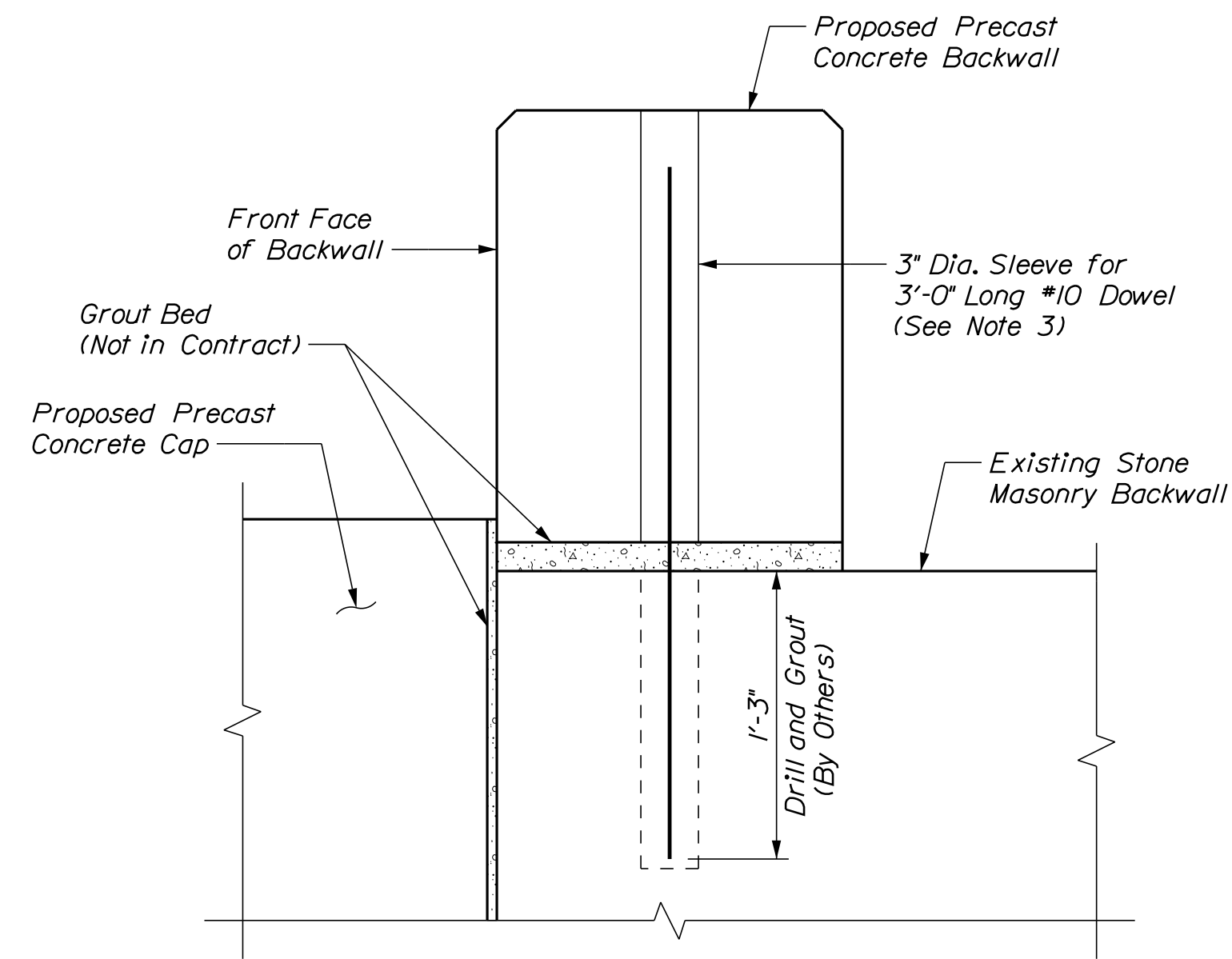
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CHECKED-REVIEWED	JUN 2021	GSC	3/2021
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 3/12/2021

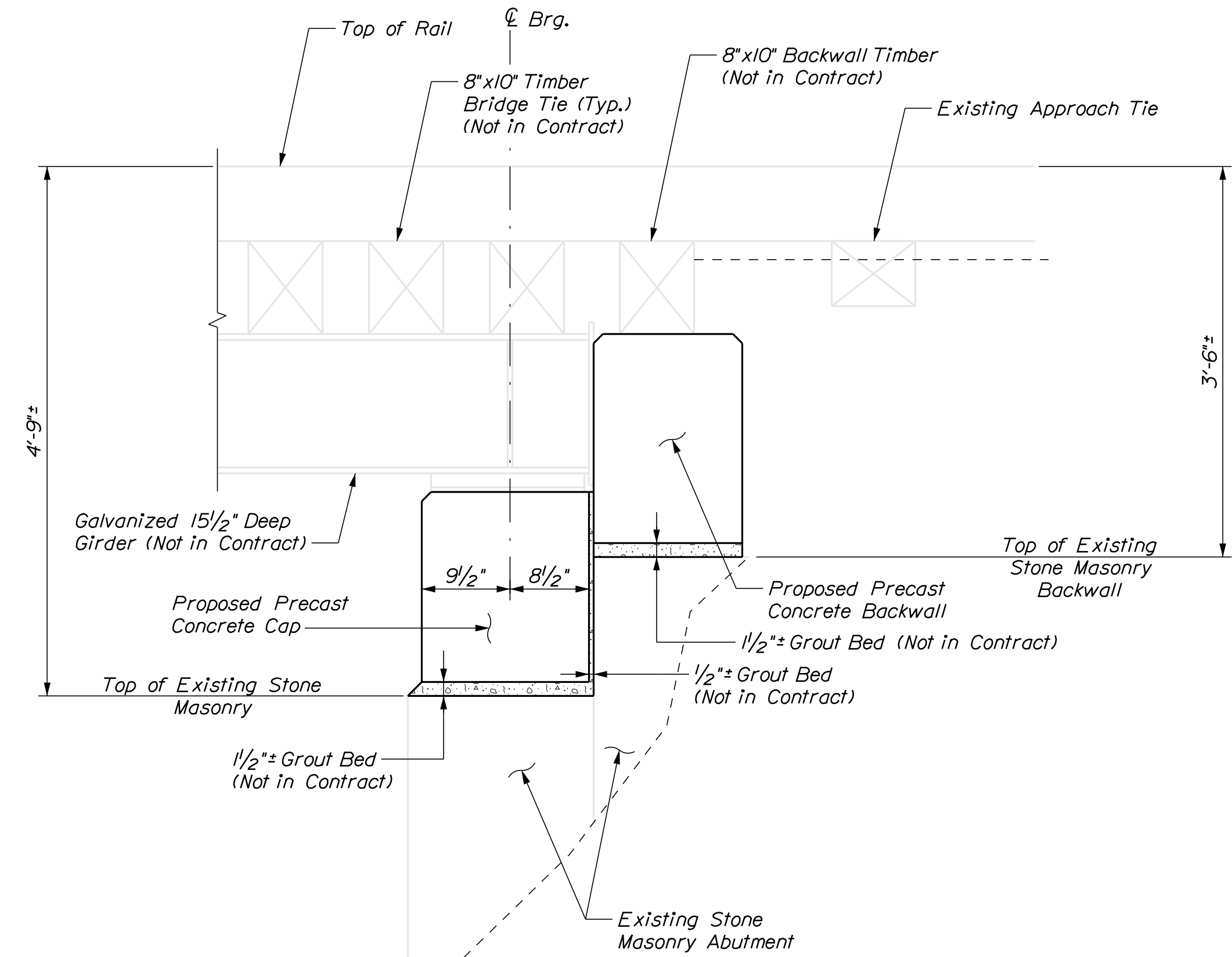
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Division: MUL TIMODAL

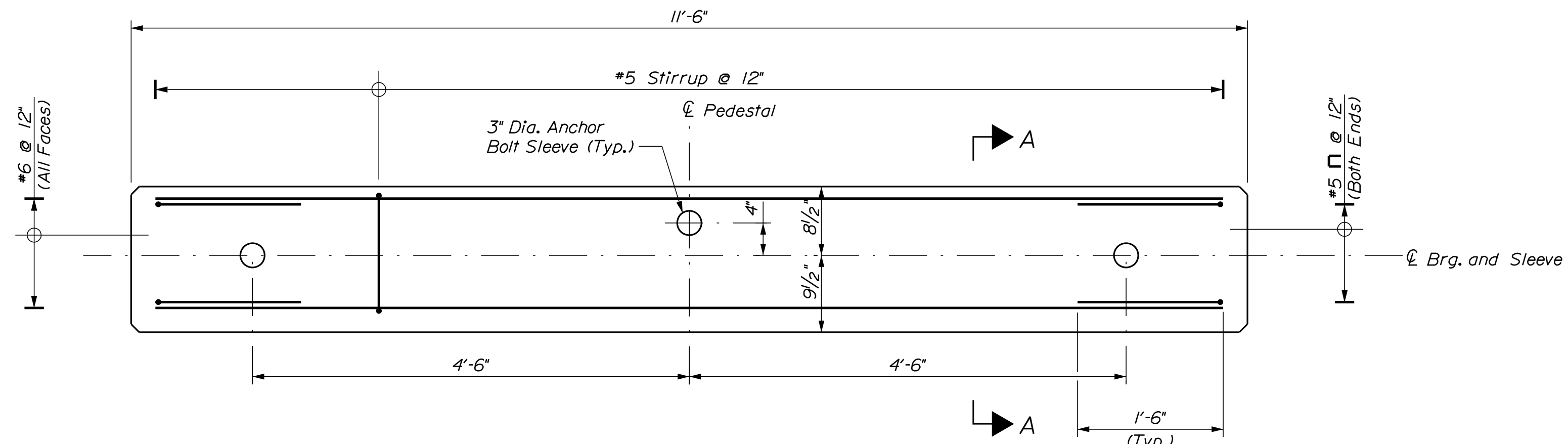
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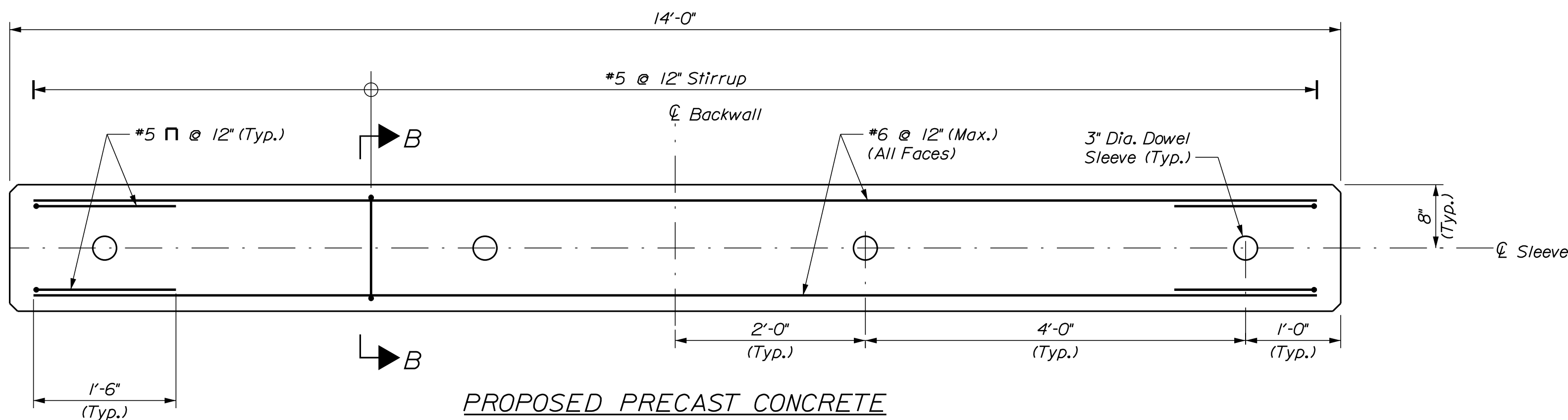
BACKWALL DOWEL DETAIL
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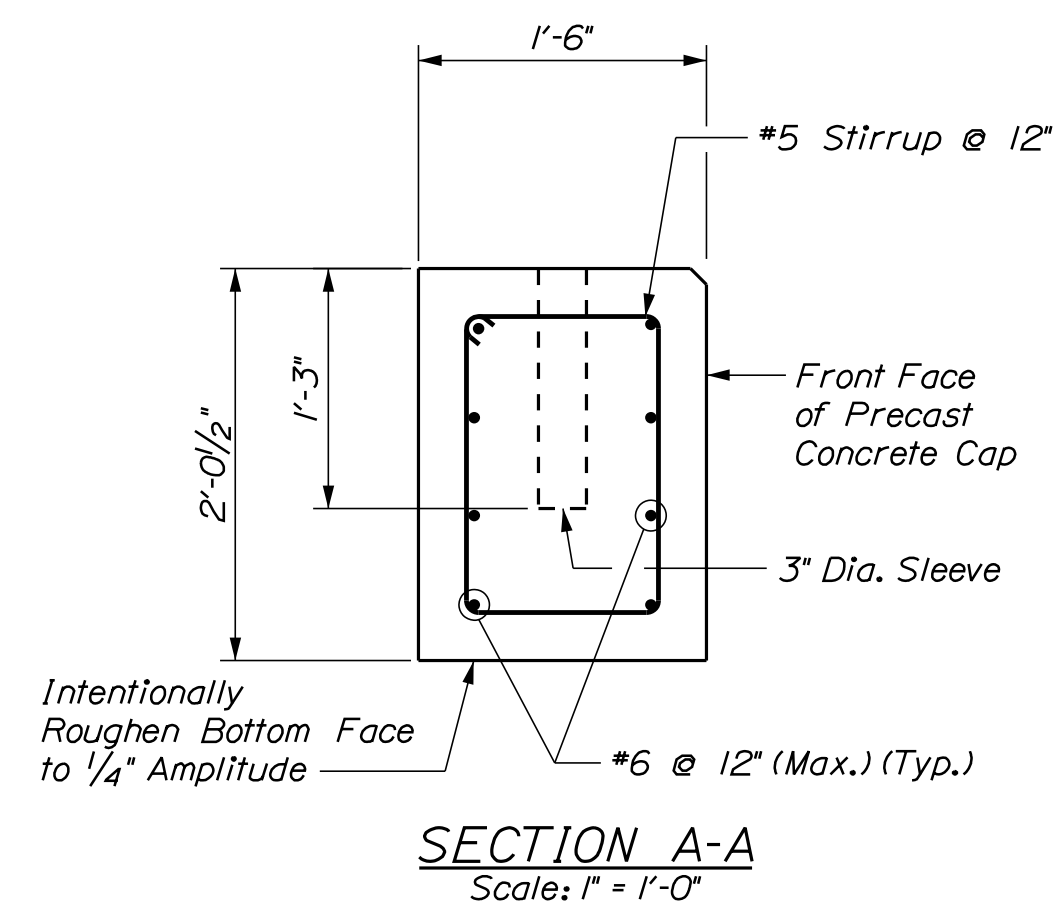
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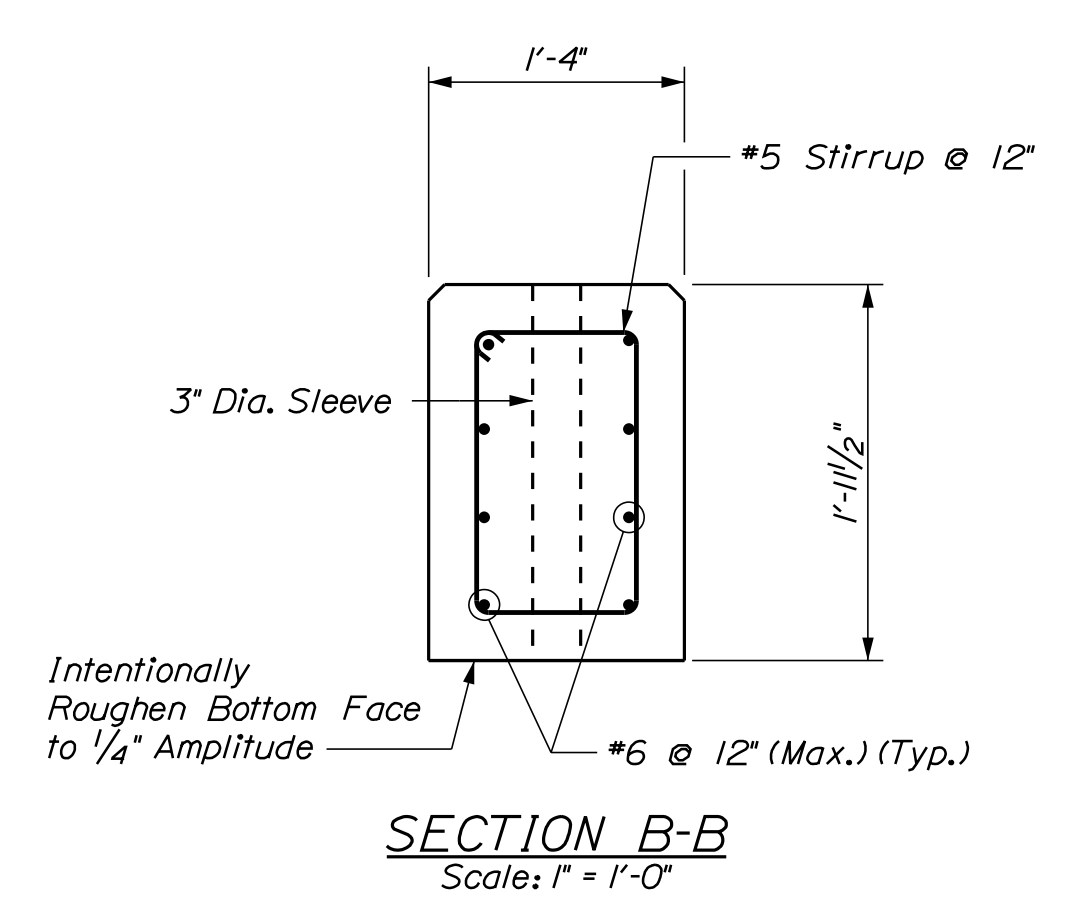
PROPOSED PRECAST CONCRETE CAP REINFORCING PLAN
 (2 Total Required)
 Scale: 1" = 1'-0"



PROPOSED PRECAST CONCRETE BACKWALL REINFORCING PLAN
 (2 Total Required)
 Scale: 1" = 1'-0"



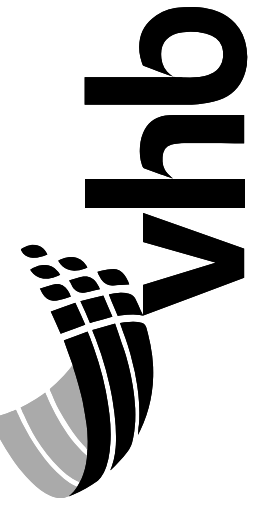
SECTION A-A
 Scale: 1" = 1'-0"



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

NOTES

1. See Notes and Quantities sheet for precast concrete notes and quantities.
2. Adjust reinforcing to avoid anchor bolt sleeves.
3. #10 Dowels shall be shipped with and are considered incidental to Item 534.30 Precast Structural Concrete.



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 7776
 WIN 22812.00
 BRIDGE PLANS

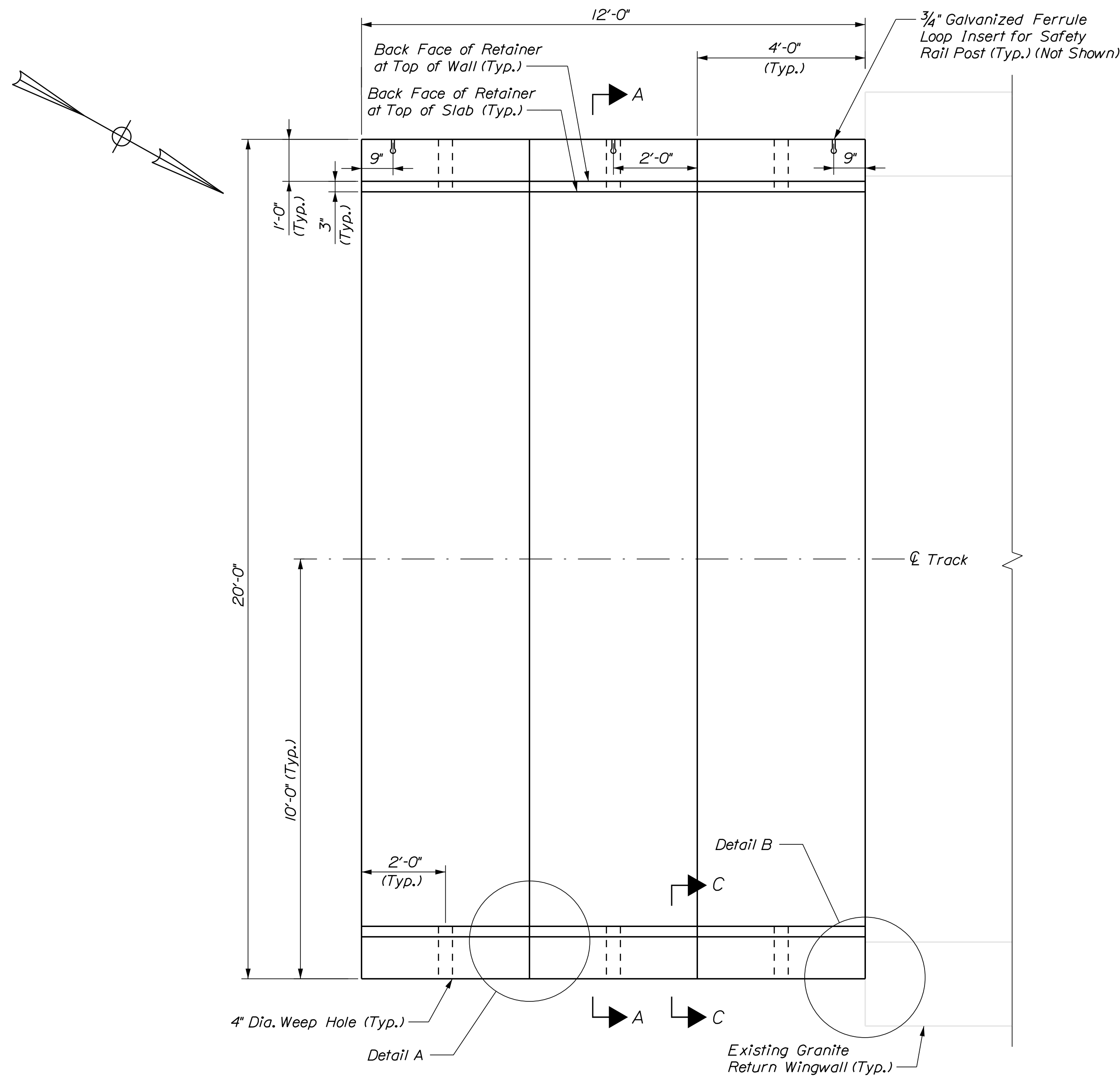
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CHECKED-REVIEWED	3/2021	GSC
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

MAINE RAILROAD BRIDGE CAPACITY
 PROJECT - CONCRETE/MISC. PROCUREMENT
 MADAWASKA SUB. AROOSTOOK/PENOBSCOT
 BR. NO. 7776 (M.P. 154.04)
 OVER SOULE BROOK

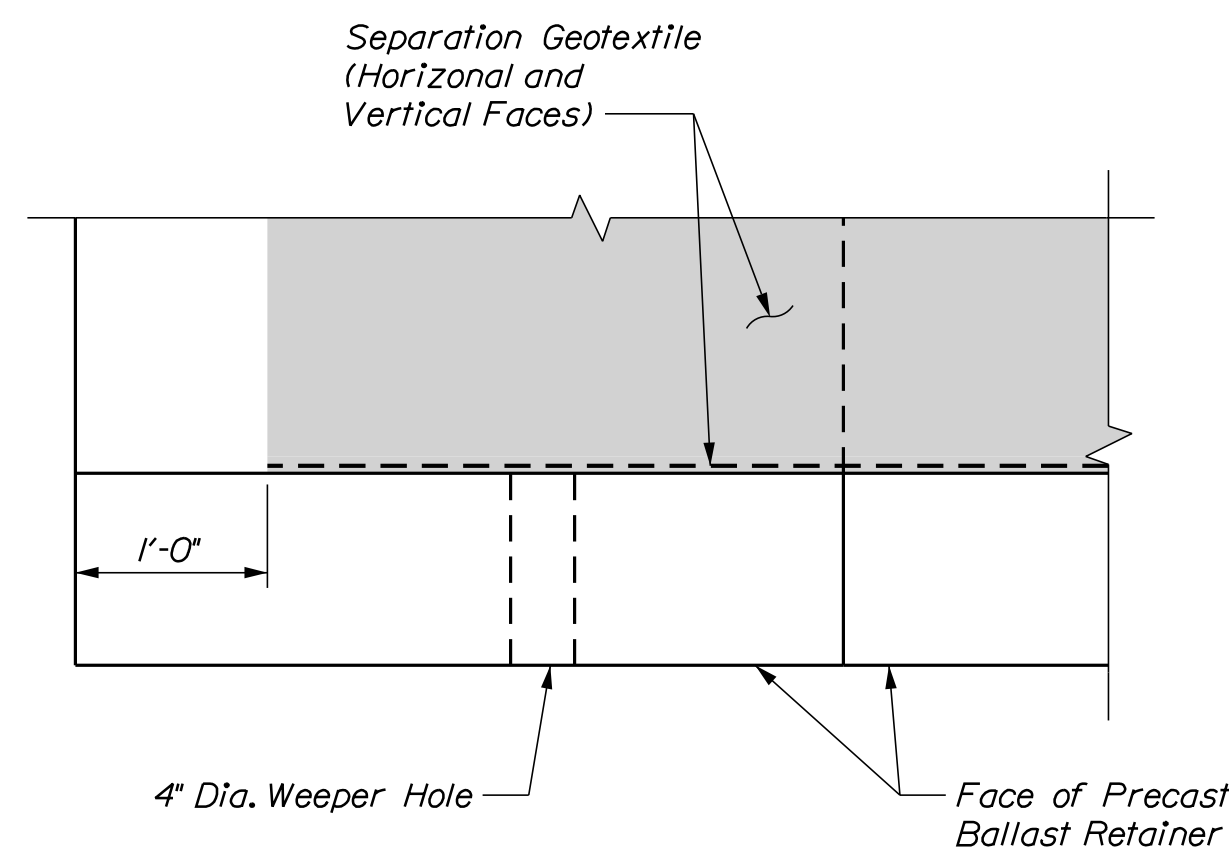
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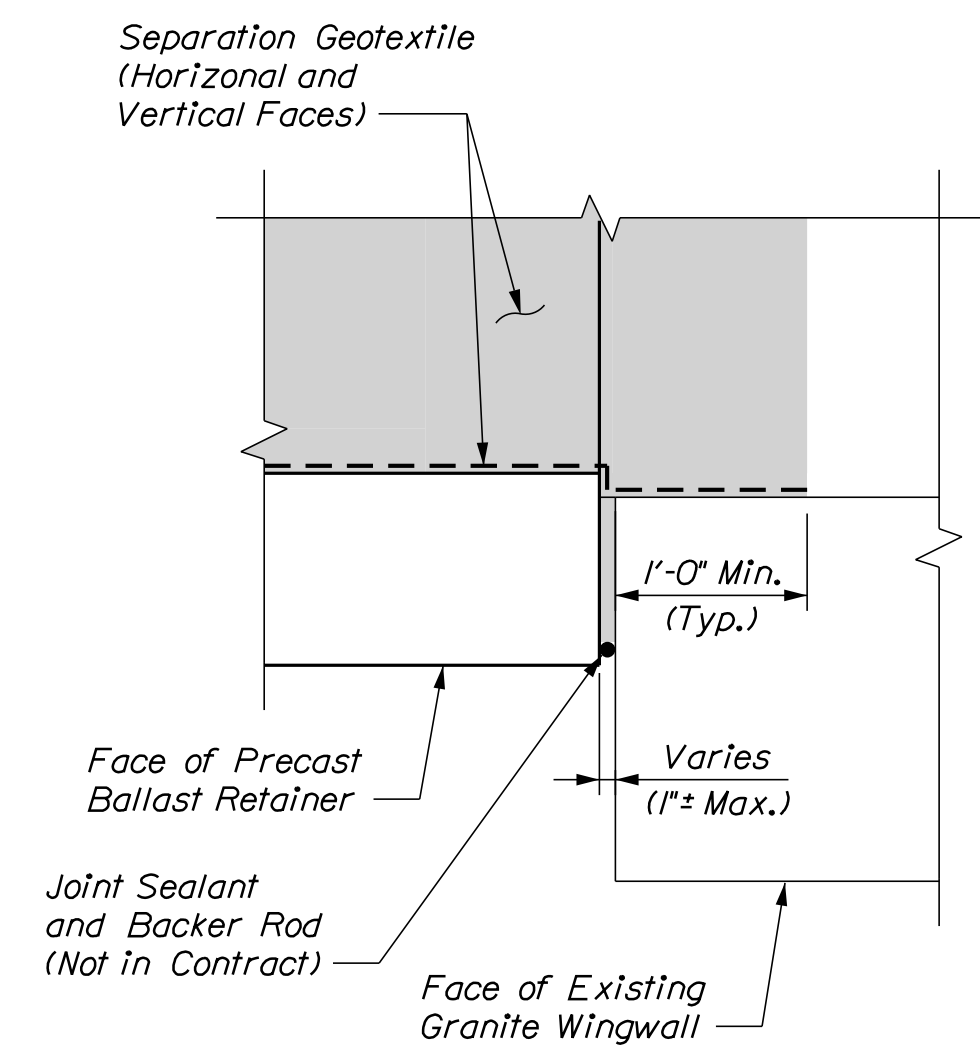
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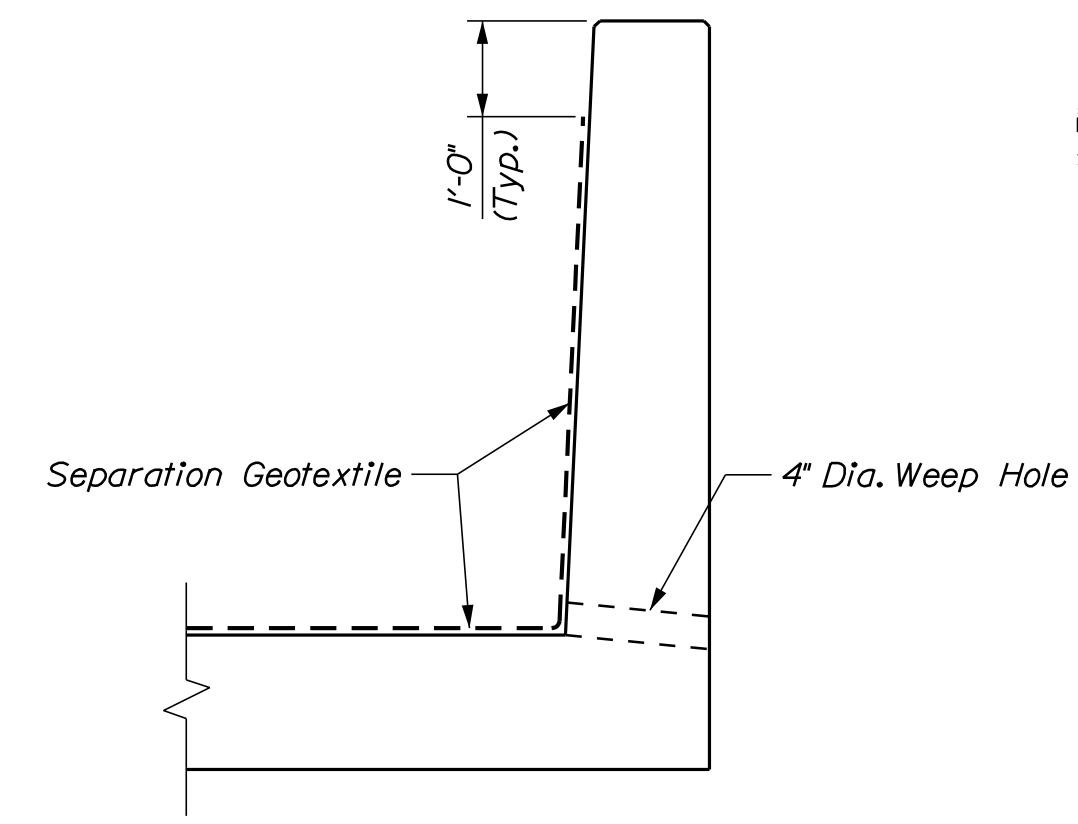
PRECAST BALLAST RETAINER PLAN
 (Abutment No. 1 Shown, Abutment No. 2 Similar but Opposite Hand)
 (3 Units Per Approach, 6 Total)
 Scale: 1/2" = 1'-0"



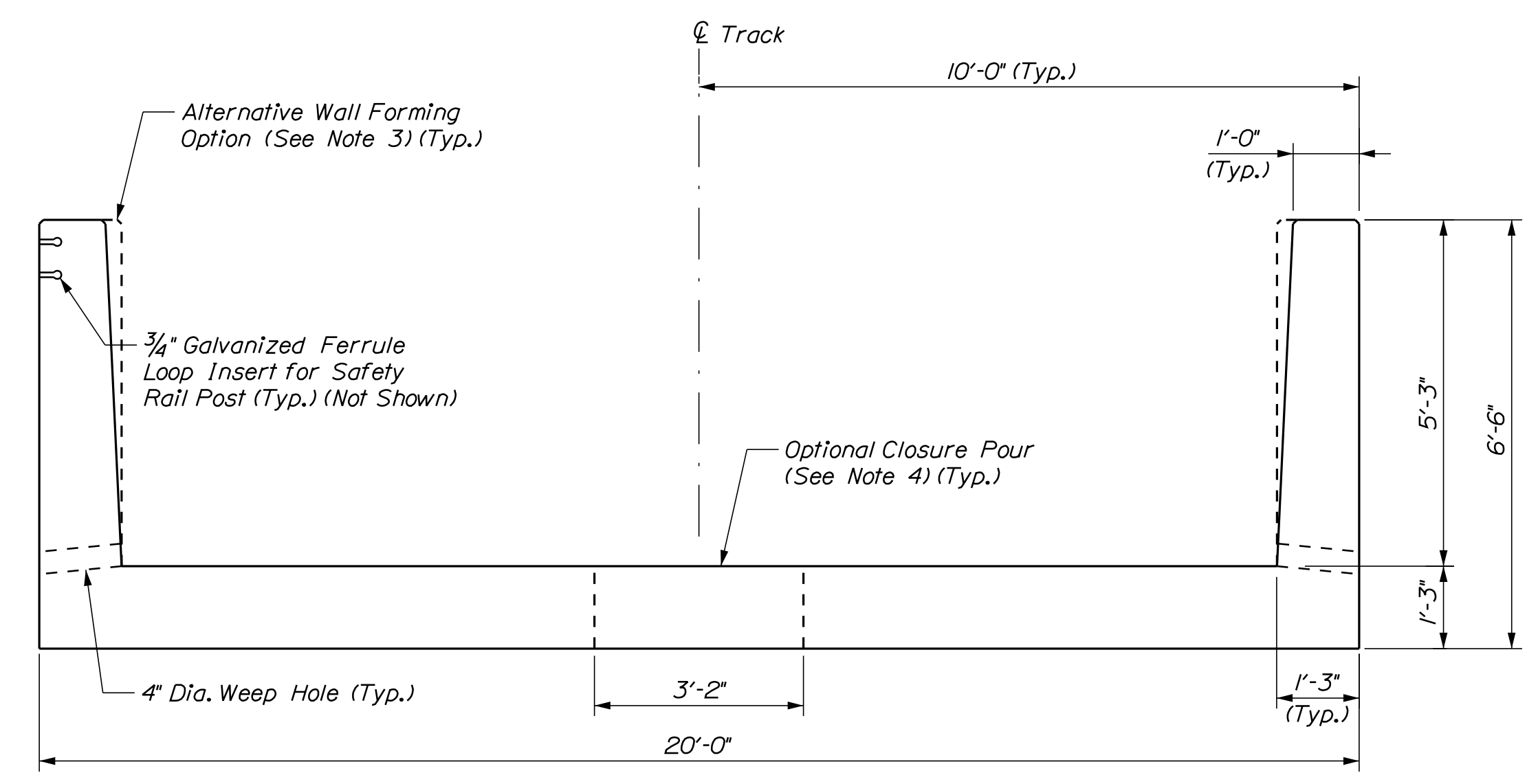
DETAIL A
 Scale: 1" = 1'-0"



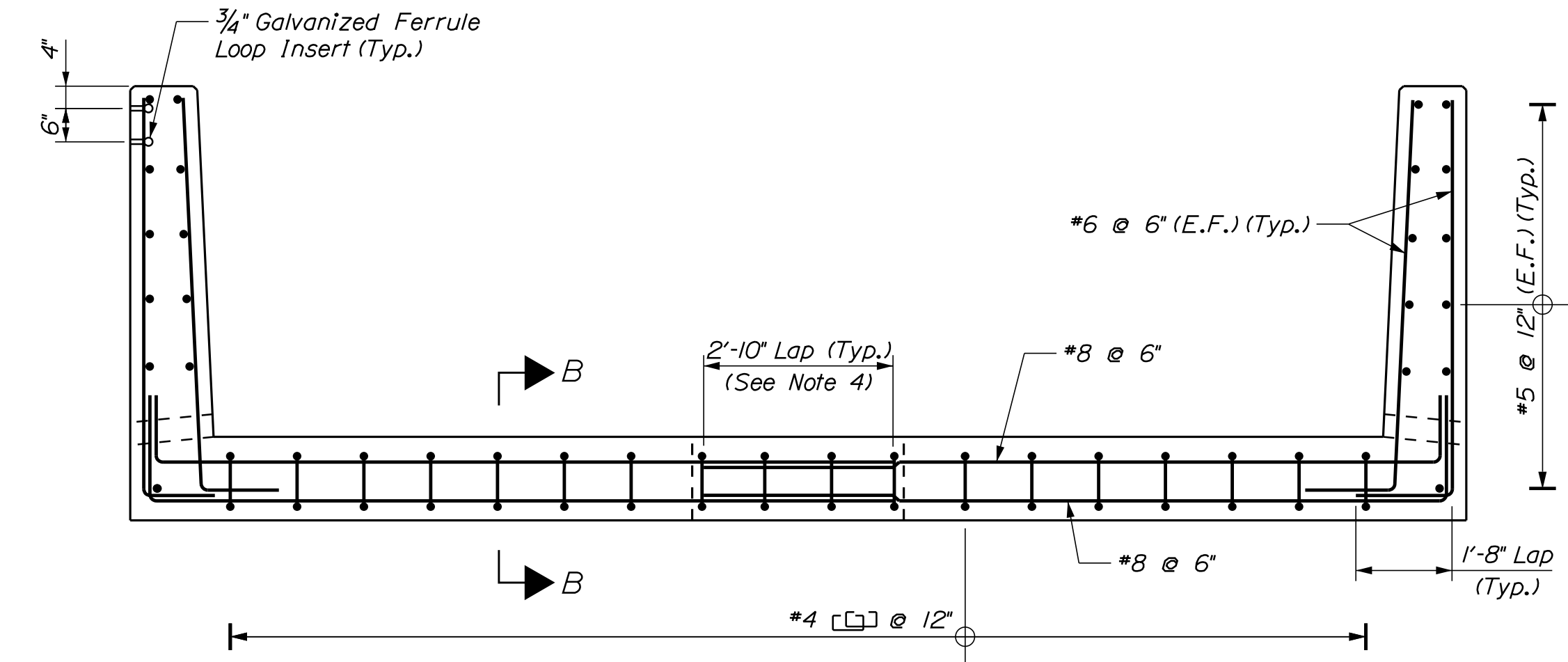
DETAIL B
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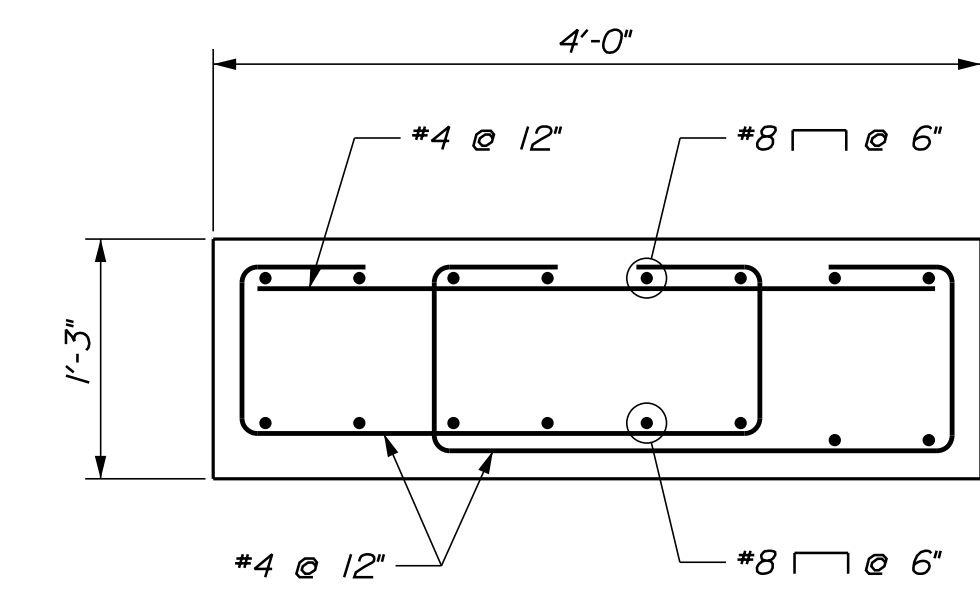
SECTION C-C
 Scale: 1/2" = 1'-0"



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



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



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

NOTES

1. See Notes and Quantities sheet for precast concrete notes and quantities.
2. Adjust reinforcing to avoid weep holes.
3. At the Contractor's option, the ballast retainer walls may be formed plumb. If formed plumb, the walls shall have a thickness of 1'-3".
4. At the Contractor's option, the ballast retainers may be fabricated as two units and connected using a closure pour as shown. The closure pour shall be cast at the precast plant and prior to shipping in accordance with Section 534.19. No lap is required if the closure pour is not used.

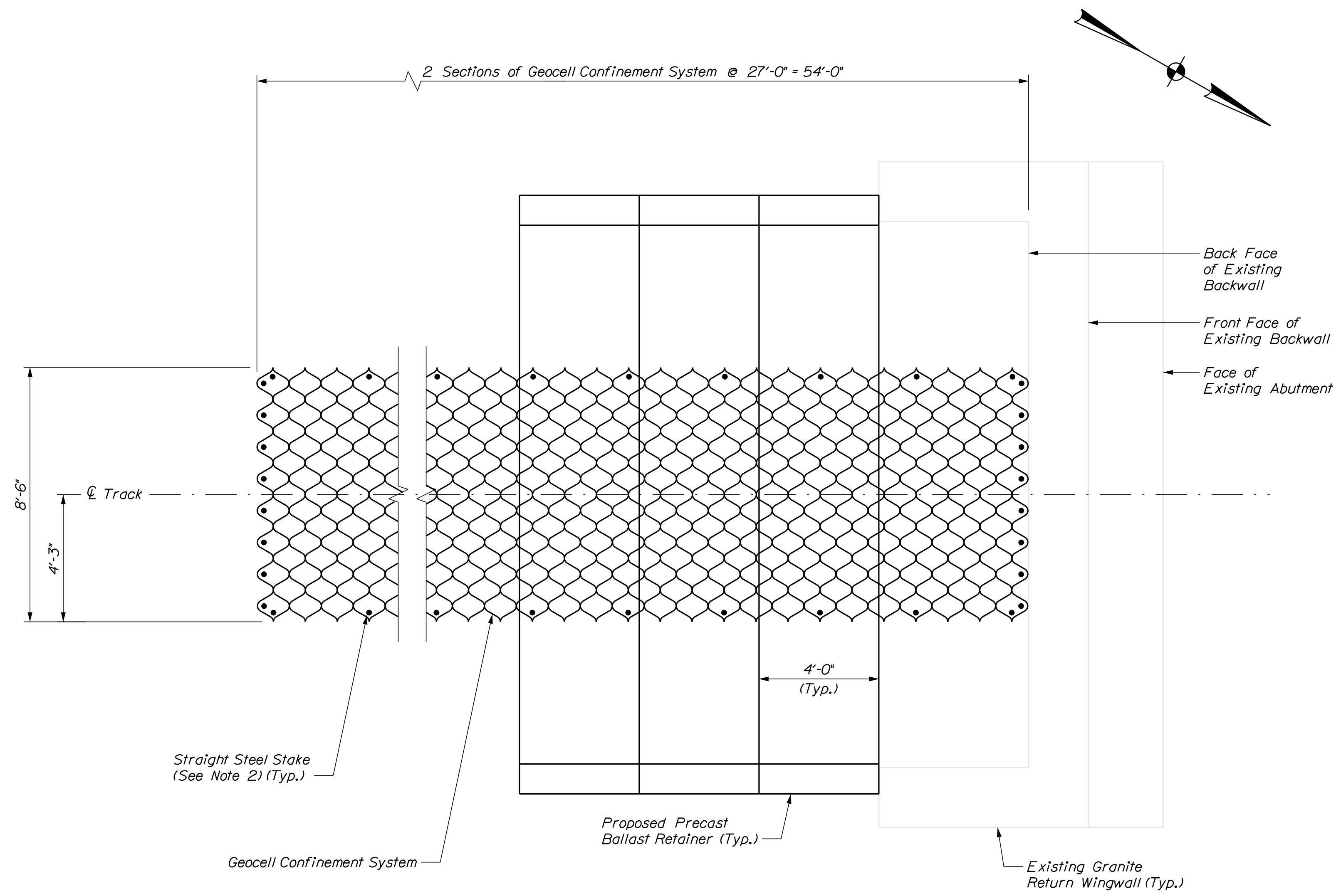


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CHECKED-REVIEWED EFL	3/2021	GSC	3/2021
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

MAINE RAILROAD BRIDGE CAPACITY
 PROJECT - CONCRETE/MISC. PROCUREMENT
 MADAWASKA SUB. AROOSTOOK/PENOBSCOT
 SHERIDAN TRUSS
 BR. NO. 7783 (M.P. 193.50)

SHEET NUMBER

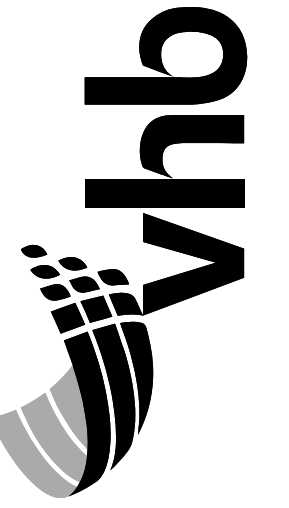
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BRIDGE 7783 (M.P. 193.50) GEOCELL CONFINEMENT SYSTEM PLAN
 (Abutment No. 1 Shown Abutment No. 2 Similar)
 Not to Scale

NOTES

1. See Notes and Quantities sheet for Geocell Confinement System notes and quantities.
2. Steel stakes and geocell connection devices shall be shipped with and are considered incidental to Item 620.604, Geocell Confinement System.



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 7783

WIN
 22812.00
 BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	3/2021	BJM	3/2021
CHECKED-REVIEWED	3/2021	CSG	3/2021
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

MAINE RAILROAD BRIDGE CAPACITY
 PROJECT - CONCRETE/MISC. PROCUREMENT
 MADAWASKA SUB. AROOSTOOK/PENOBSCOT

GEOCELL DETAILS (1 OF 3)

SHEET NUMBER

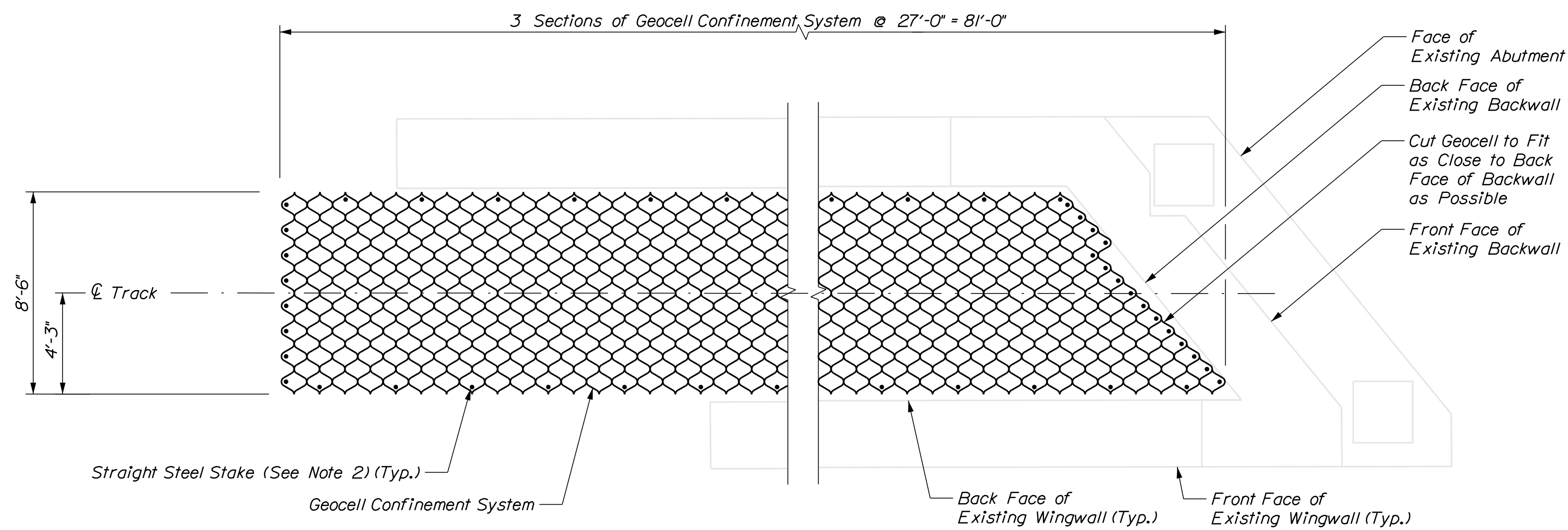
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OF 8

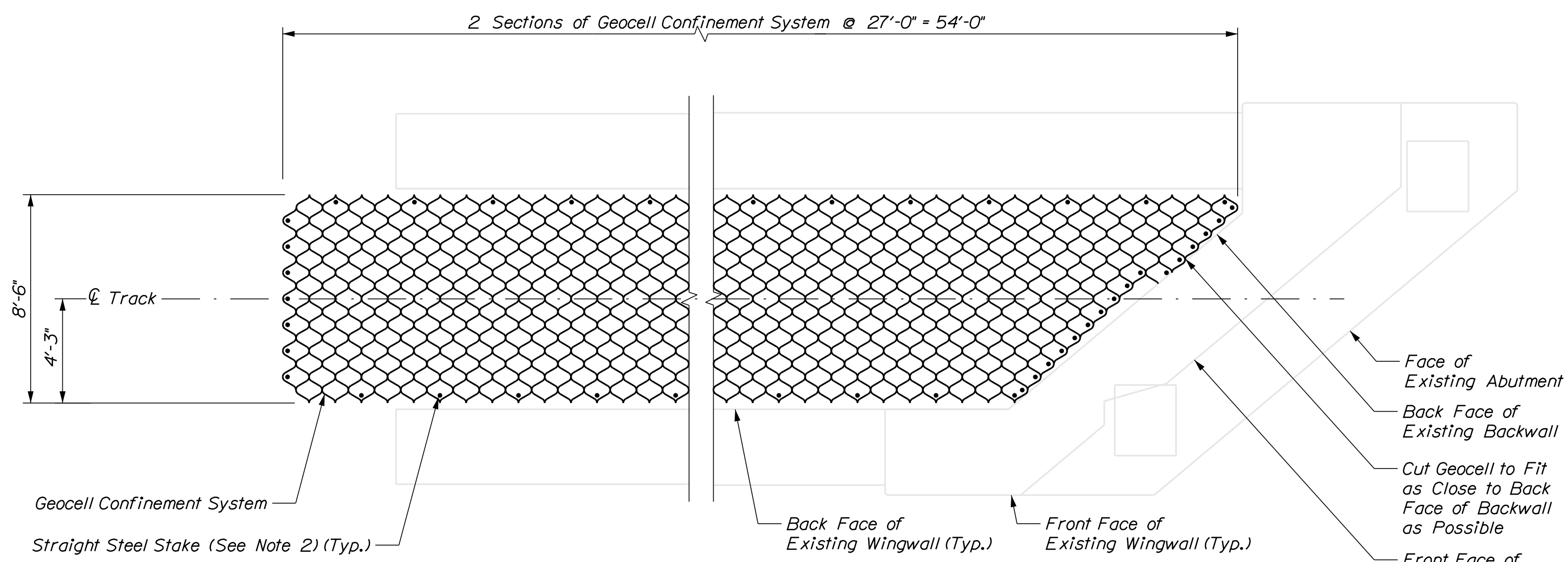
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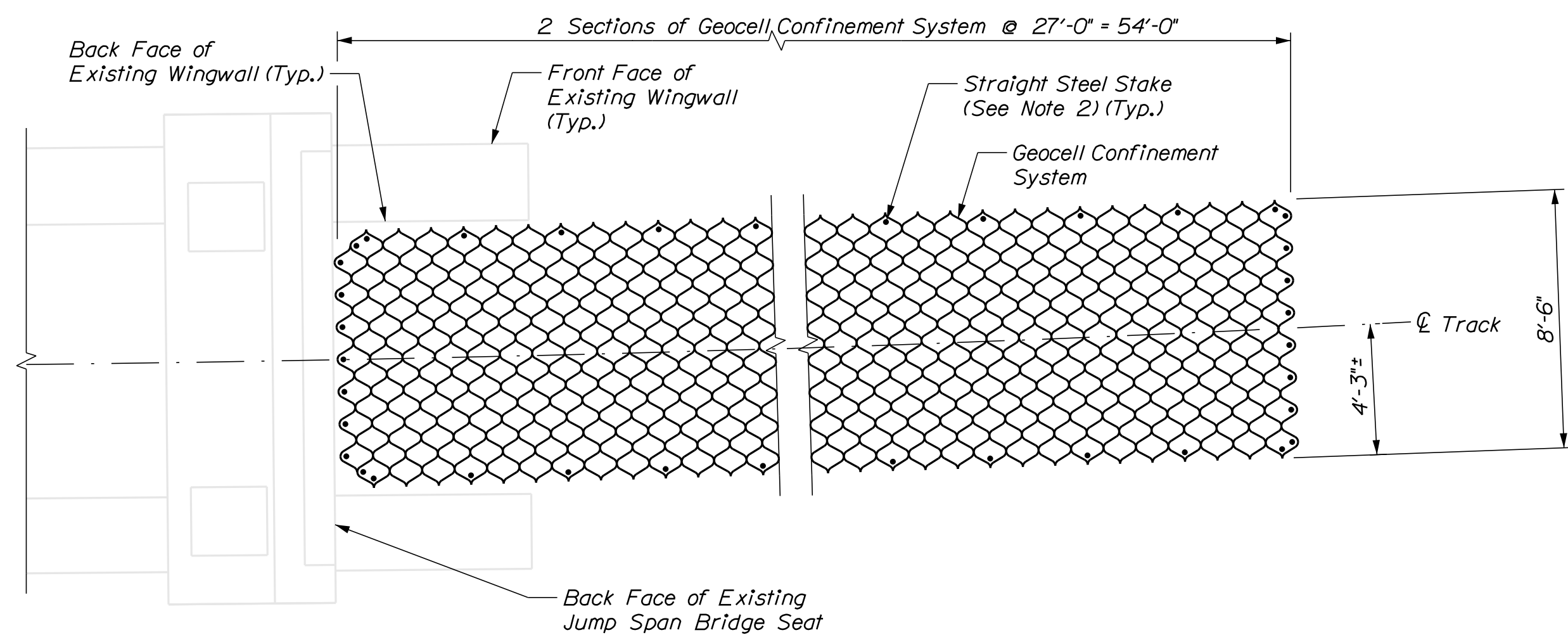
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BRIDGE 7785 (M.P. 224.5) GEOCELL CONFINEMENT SYSTEM PLAN
 (South Abutment Shown, North Abutment Similar)
 Not to Scale



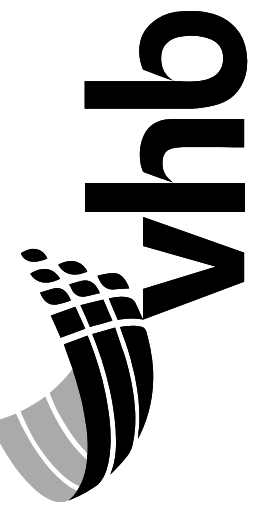
BRIDGE 7788 (M.P. 241.83) - SOUTH ABUTMENT GEOCELL CONFINEMENT SYSTEM PLAN
 Not to Scale



BRIDGE 7788 (M.P. 241.83) - NORTH ABUTMENT GEOCELL CONFINEMENT SYSTEM PLAN
 Not to Scale

NOTES

- See Notes and Quantities sheet for Geocell Confinement System notes and quantities.
- Steel stakes and geocell connection devices shall be shipped with and are considered incidental to Item 620.604, Geocell Confinement System.



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 7785 AND 7788
 WIN
 22812.00
 BRIDGE PLANS

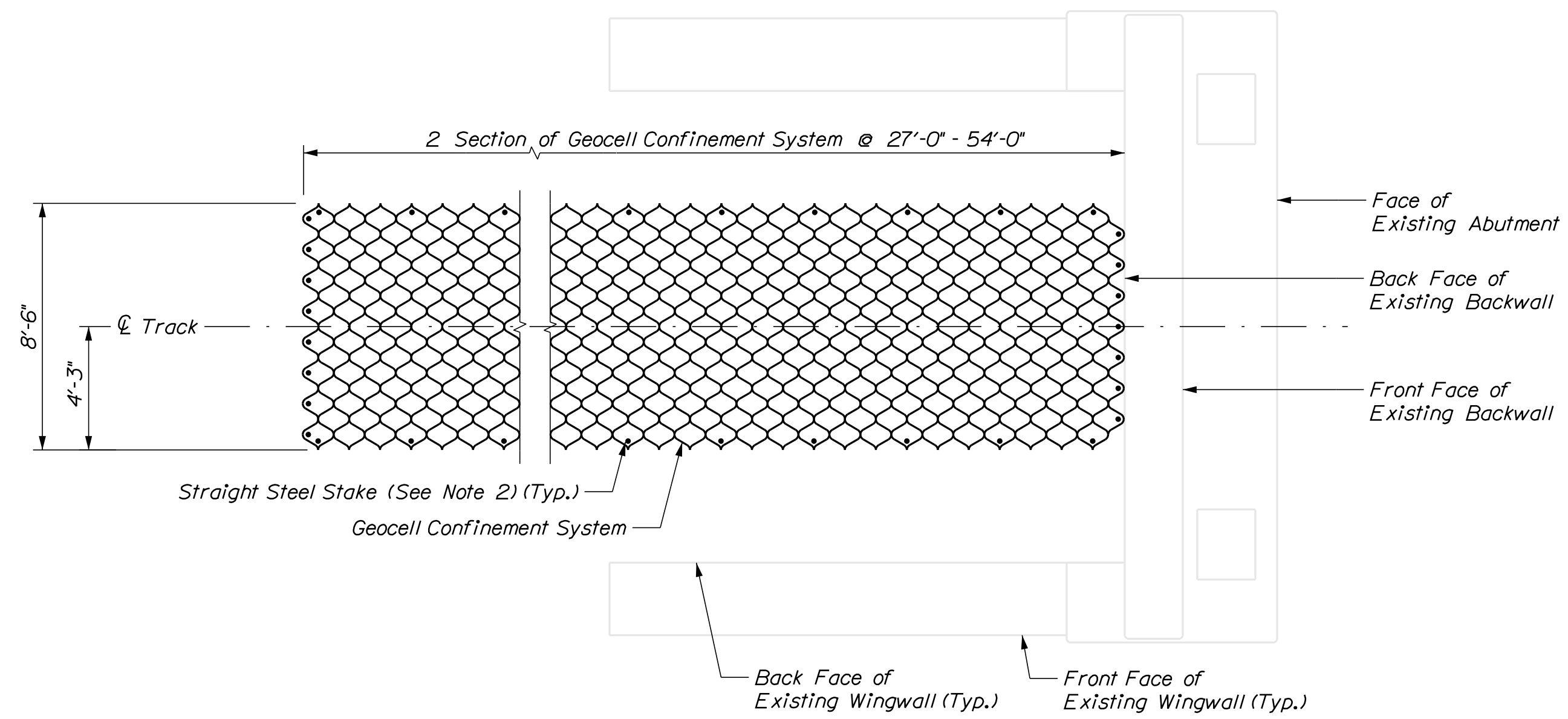
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DESIGN-DETAILED	JOM	3/2021	
CHECKED-REVIEWED	GSC	3/2021	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

MAINE RAILROAD BRIDGE CAPACITY
 PROJECT - CONCRETE/MISC. PROCUREMENT
 MADAWASKA SUB. AROOSTOOK/PENOBSCOT
GEOCELL DETAILS (2 OF 3)

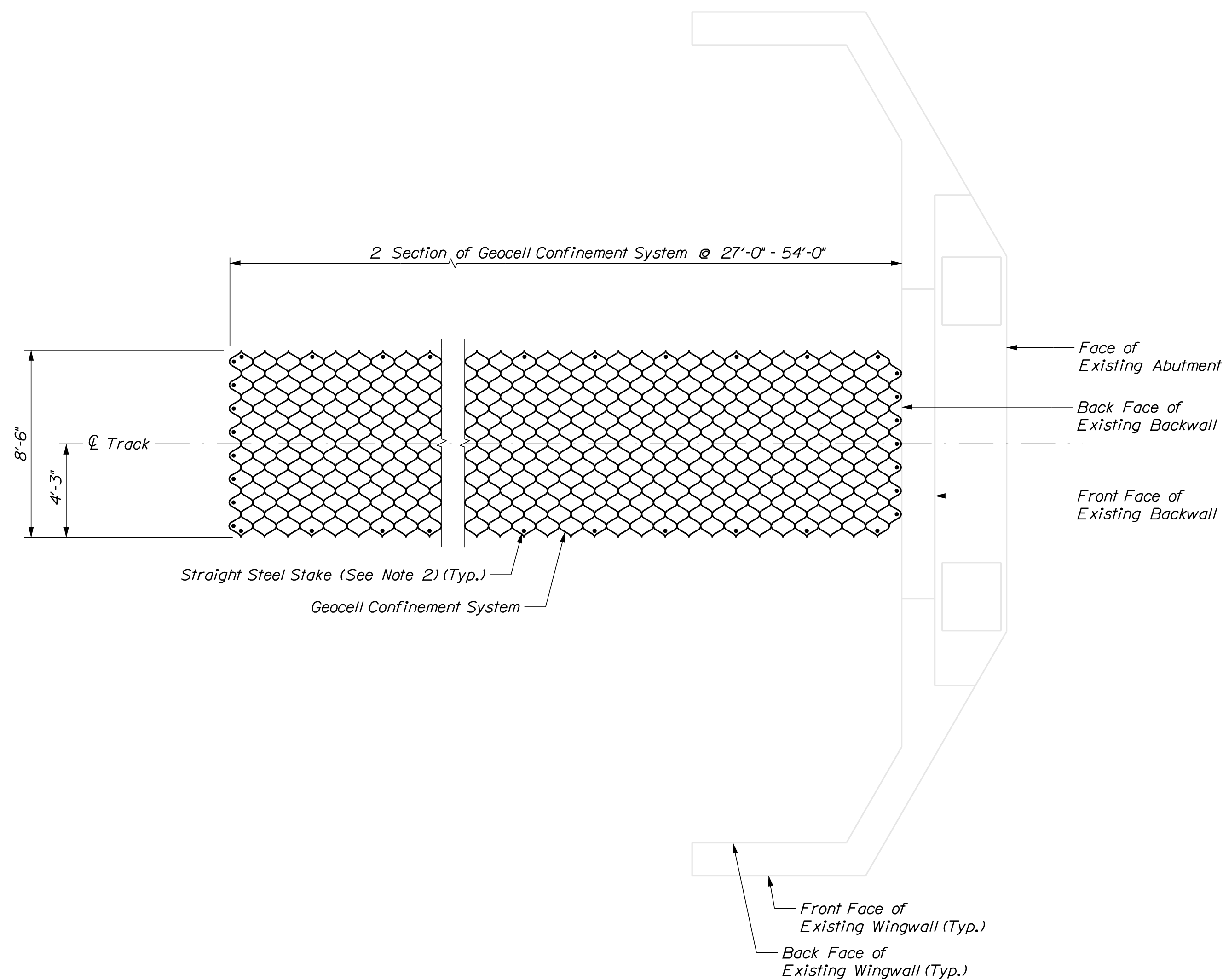
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7

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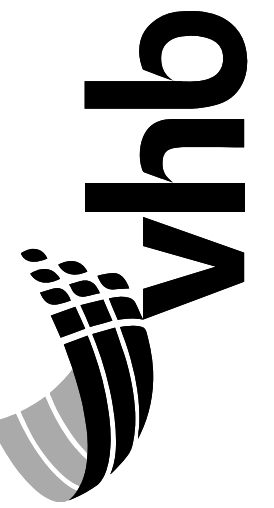
BRIDGE 7787 (M.P. 236.44) GEOCELL CONFINEMENT SYSTEM PLAN
 (South Abutment Shown, North Abutment Similar)
 Not to Scale



BRIDGE 7792 (M.P. 253.87) GEOCELL CONFINEMENT SYSTEM PLAN
 (South Abutment Shown, North Abutment Similar)
 Not to Scale

NOTES

1. See Notes and Quantities sheet for Geocell Confinement System notes and quantities.
2. Steel stakes and geocell connection devices shall be shipped with and are considered incidental to Item 620.604, Geocell Confinement System.



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 7787 AND 7792
 WIN
 22812.00
 BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED JSM	3/2021	BJM	3/2021
CHECKED-REVIEWED GSC	3/2021	GSC	3/2021
DESIGN-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

MAINE RAILROAD BRIDGE CAPACITY
 PROJECT - CONCRETE/MISC. PROCUREMENT
 MADAWASKA SUB. AROOSTOOK/PENOBSCOT
GEOCELL DETAILS (3 OF 3)

SHEET NUMBER

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