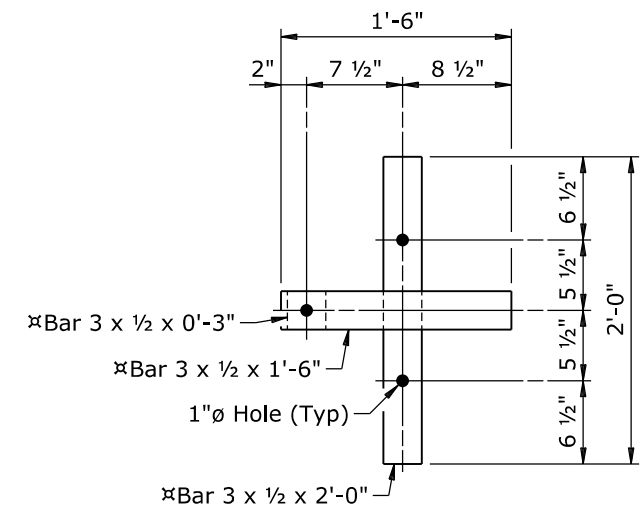
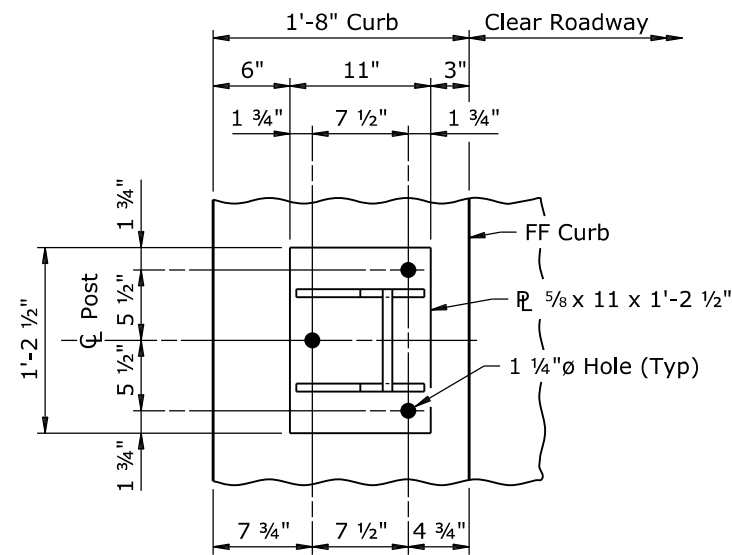


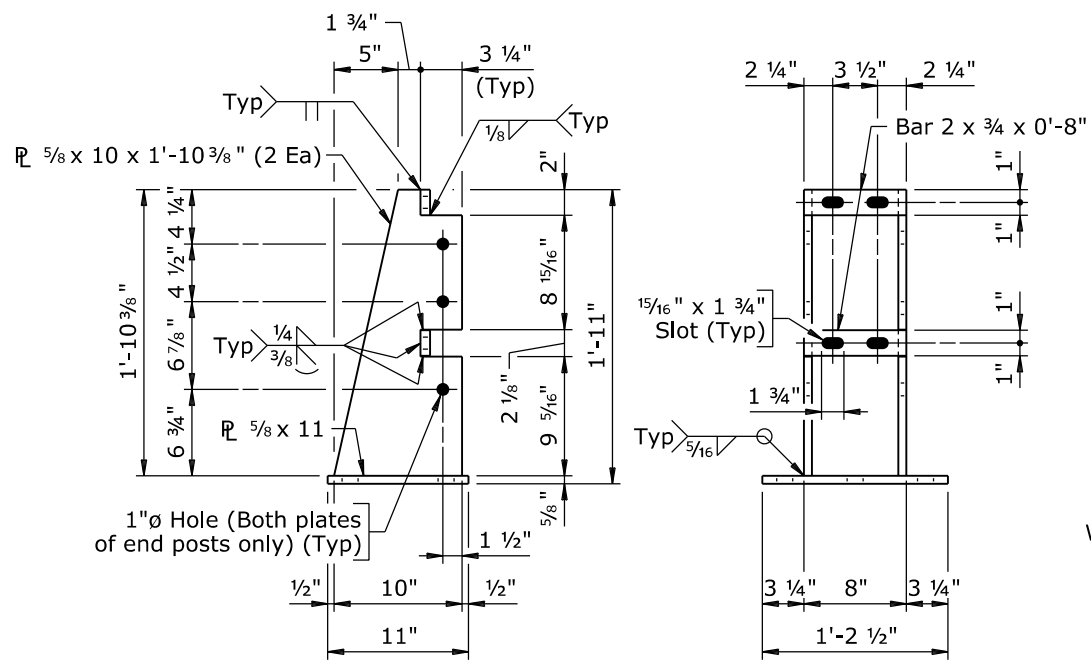
RAIL BOLT DETAIL



SECTION B-B  
(Not galvanized)  
(Anchor bolts and slab not shown)



VIEW A-A  
(Anchor bolts, rails, and  
rail bolts not shown)

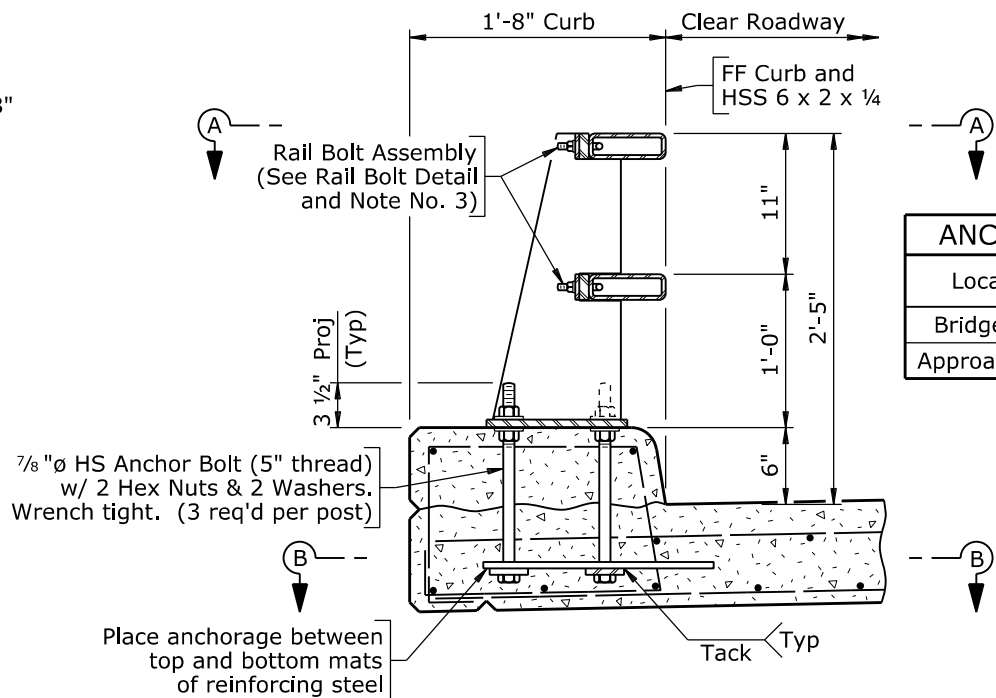


SIDE VIEW

FRONT VIEW

POST DETAILS

(See View A-A for anchor bolt hole spacing)



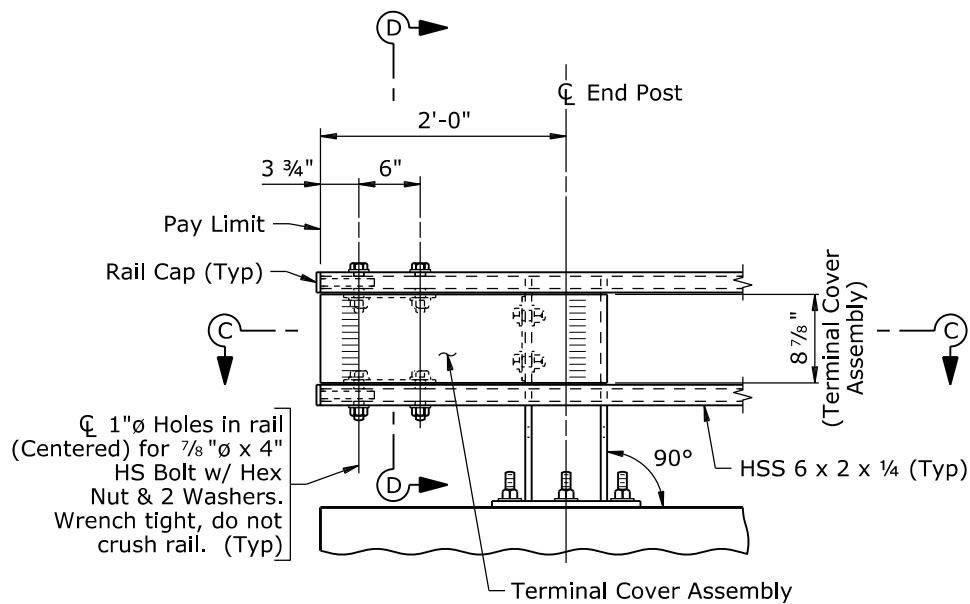
ASSEMBLY DETAIL

(Shown near C Post)  
(Bridge slab shown, approach slab similar)

ANCHOR BOLT TABLE	
Location	Anchor Bolt
Bridge Slab	7/8"Ø x 1'-3"
Approach Slab	7/8"Ø x 1'-5"

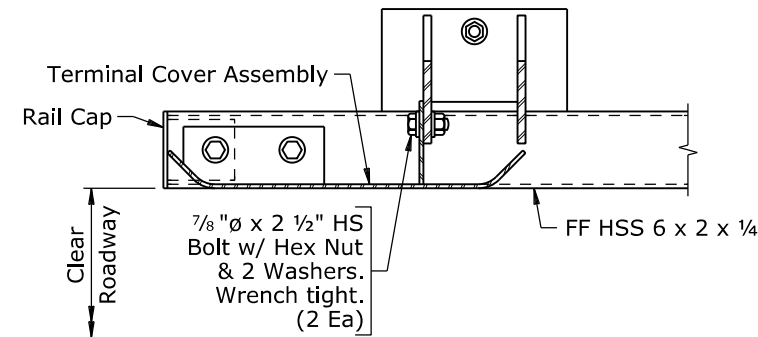
- Note:
- 1) Ensure the expansion splice is located in the railing panel which passes over the bridge expansion joint as indicated on the plan.
  - 2) Anchor bolts may be tack welded to anchorage (Shop or field).
  - 3) At post locations, drill two 1 1/16"Ø holes in each rail to receive rail bolts (Shop or field). See Post Details for hole spacing.
  - 4) Paint surfaces of the railing components that have been cut, drilled, or otherwise damaged with two coats of zinc-rich paint conforming to ASTM A 780.
  - 5) After installing rails, paint exposed bolt threads with two coats of zinc-rich paint conforming to ASTM A 780.

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
TL3BRGRAIL_NCHRP350_br1.dgn			
REVIEW	DESIGN	Design Section	X
DETAIL	X	Drwg No. X	Sheet X of X
APPROVAL	QTY'S		

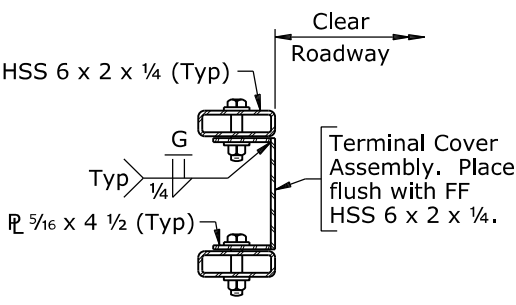


ELEVATION AT TERMINAL

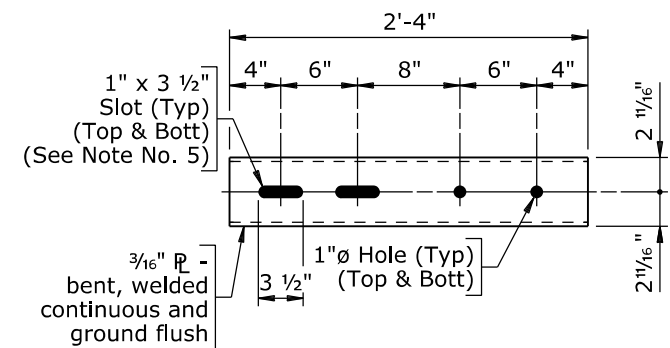
TERMINAL COMPONENT REQUIREMENTS		
Approach Guardrail Connection	Rail Caps Required	Terminal Cover Assembly Required
MGs Approach Guardrail	Yes (Without bolts)	±No
Box Beam w/ Rubrail Approach Guardrail	No	No
No Approach Guardrail	Yes (With bolts)	Yes



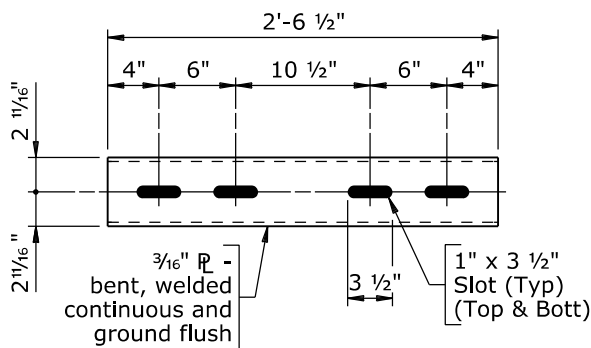
SECTION C-C



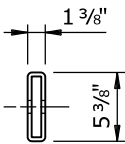
SECTION D-D



STANDARD SLEEVE

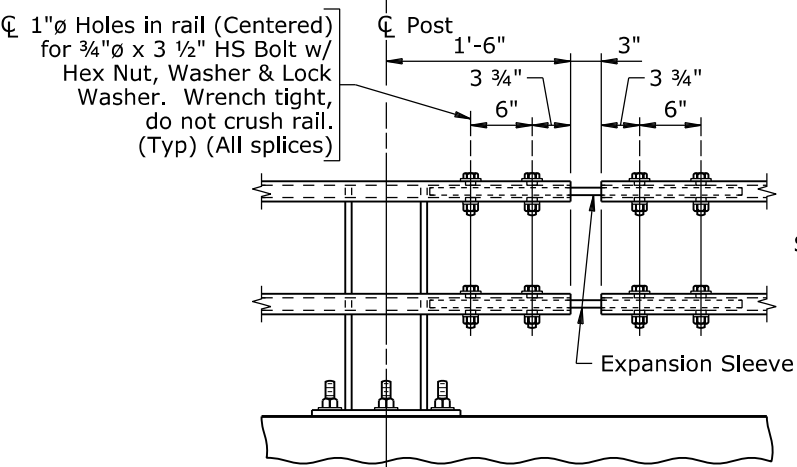


EXPANSION SLEEVE

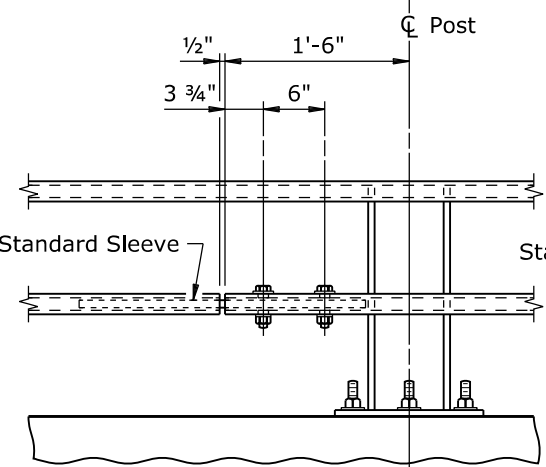


END VIEW

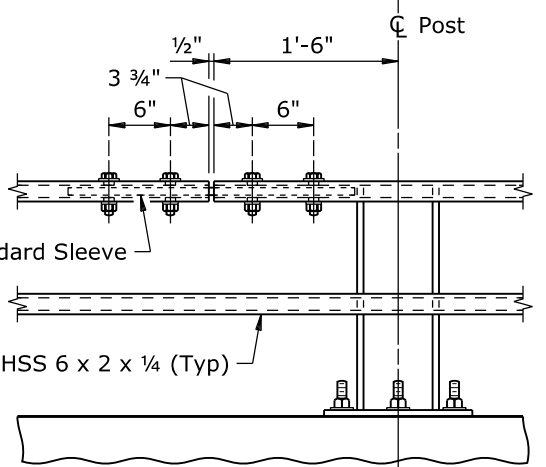
SLEEVE DETAILS



EXPANSION SPLICE  
(Top and bottom rail)

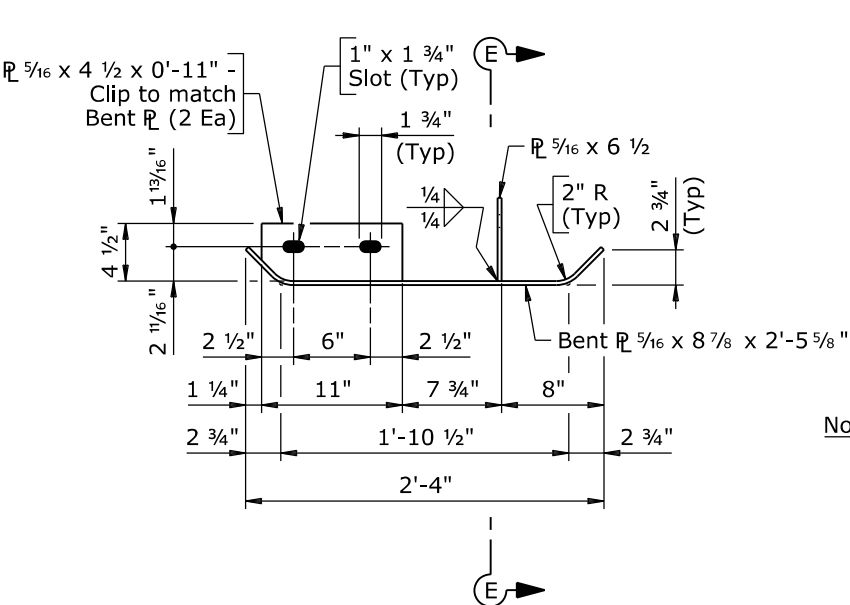


STANDARD SPLICE  
(Top or bottom rail)

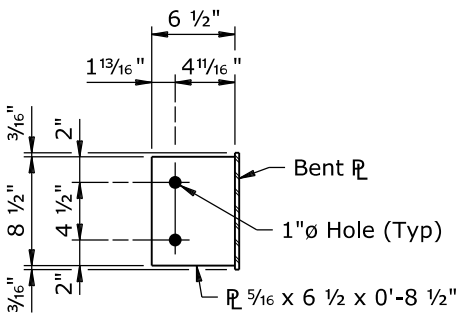


DOUBLE-BOLTED SPLICE  
(Top or bottom rail)

SPLICE DETAILS

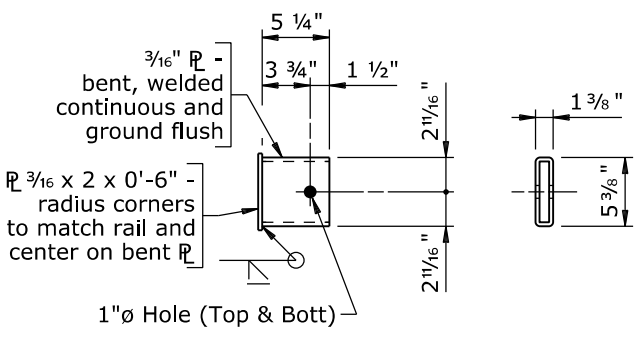


TERMINAL COVER ASSEMBLY DETAIL



SECTION E-E

- Note: 1) Ensure each rail length is continuous over a minimum of two posts.  
2) In rehabilitation work, ensure railing that cannot feasibly be made continuous over a minimum of two posts has a double-bolted splice.  
3) Splices may be located on either side of post.  
4) Not more than one splice is permitted per side of post, except at expansion splices.  
5) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.  
6) Do not shop splice rails.  
7) Terminal components removed during rehabilitation work will remain the property of the department.  
±8) Installation of MGs approach guardrail will require other fabricated assemblies to be connected to end post. See road plans for details and pay item.

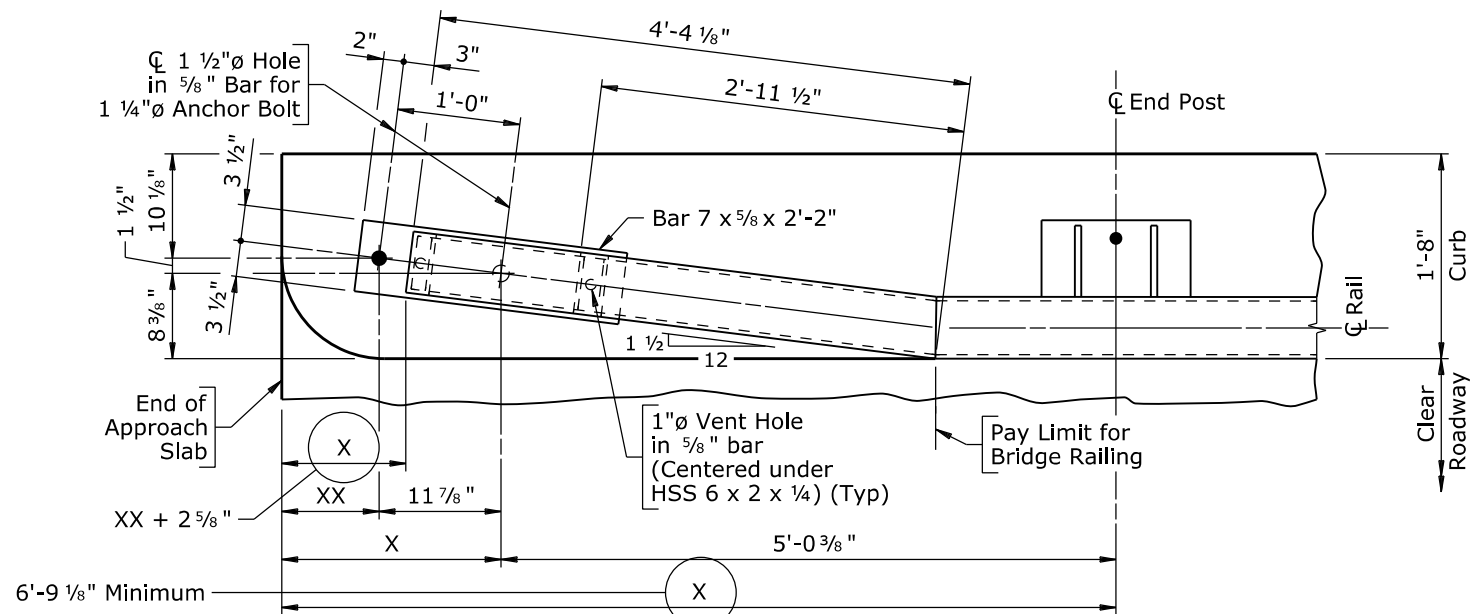


PLAN

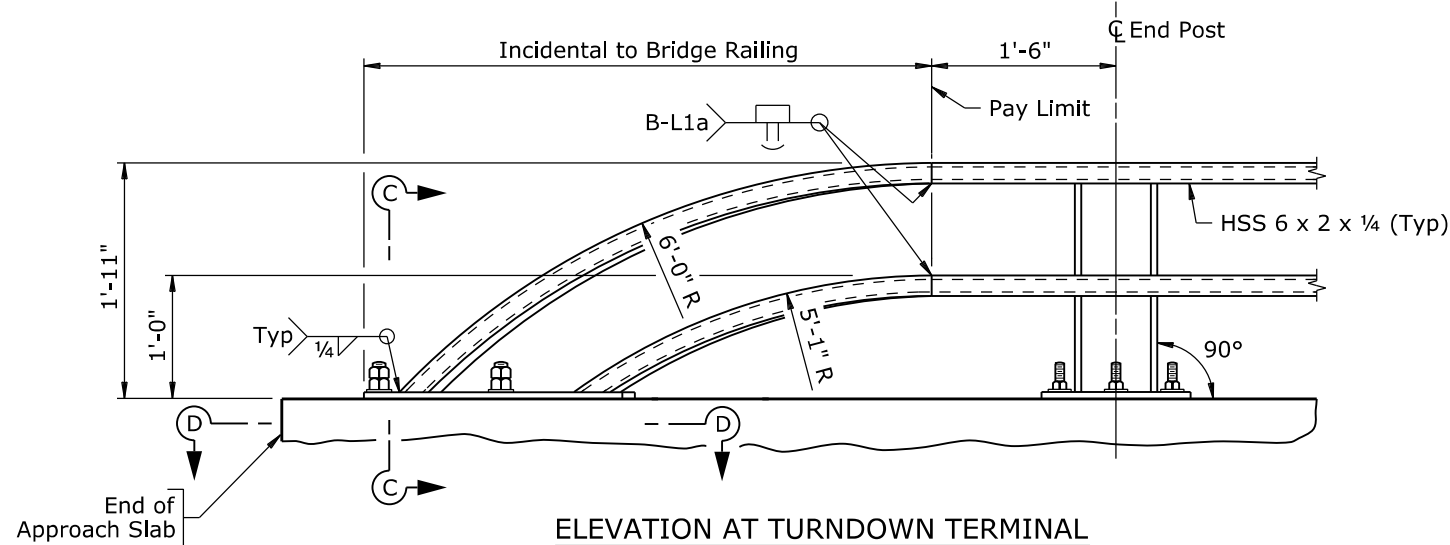
END VIEW  
(R 3/16 x 2 not shown)

RAIL CAP DETAILS

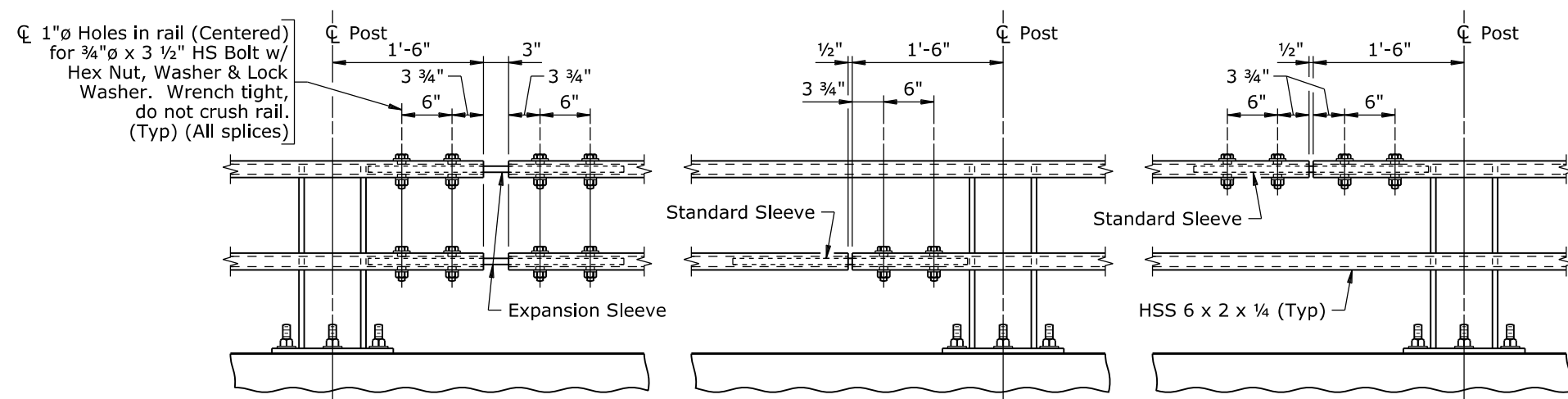
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
TL3BRGRail_NCHRP350_br2.dgn			
REVISIONS	DESIGN	DETAIL	QTY'S
REVIEW	DESIGN	DETAIL	QTY'S
APPROVAL	DESIGN	DETAIL	QTY'S
Design Section X		Drwg No. X Sheet X of X	



PLAN AT TURNDOWN TERMINAL  
(Bolts not shown)



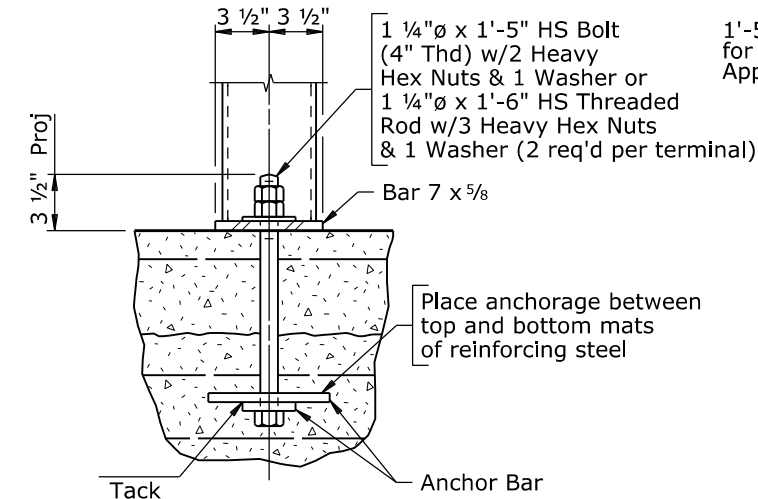
ELEVATION AT TURNDOWN TERMINAL



EXPANSION SPLICE  
(Top and bottom rail)

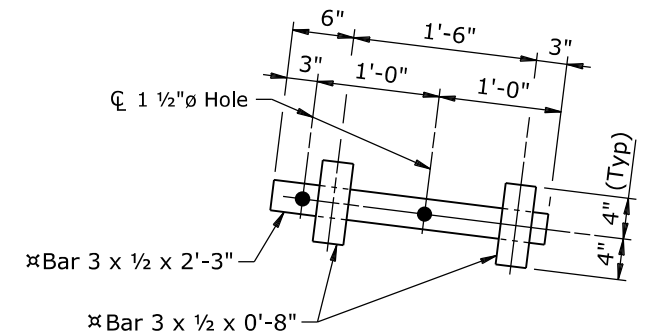
STANDARD SPLICE  
(Top or bottom rail)

DOUBLE-BOLTED SPLICE  
(Top or bottom rail)

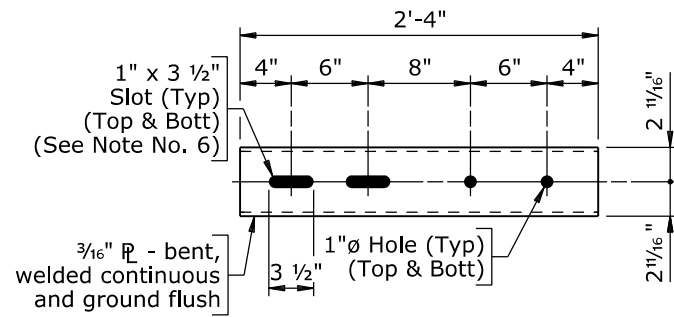


SECTION C-C

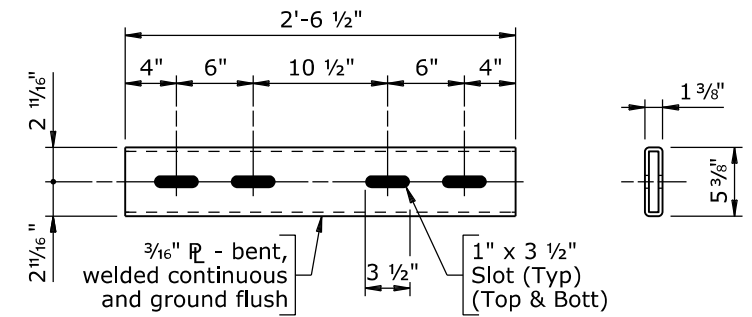
1'-5" Bolt  
for 1'-0" thick  
Approach Slabs



SECTION D-D  
(Showing anchor bars)  
(Not galvanized)



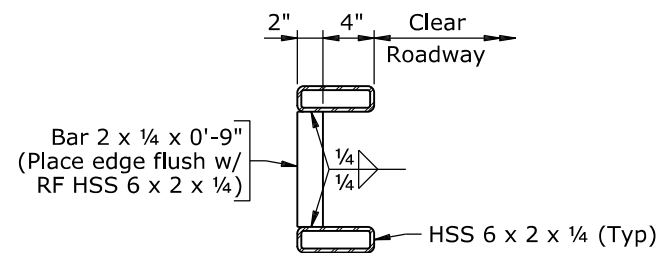
STANDARD SLEEVE



EXPANSION SLEEVE

END VIEW

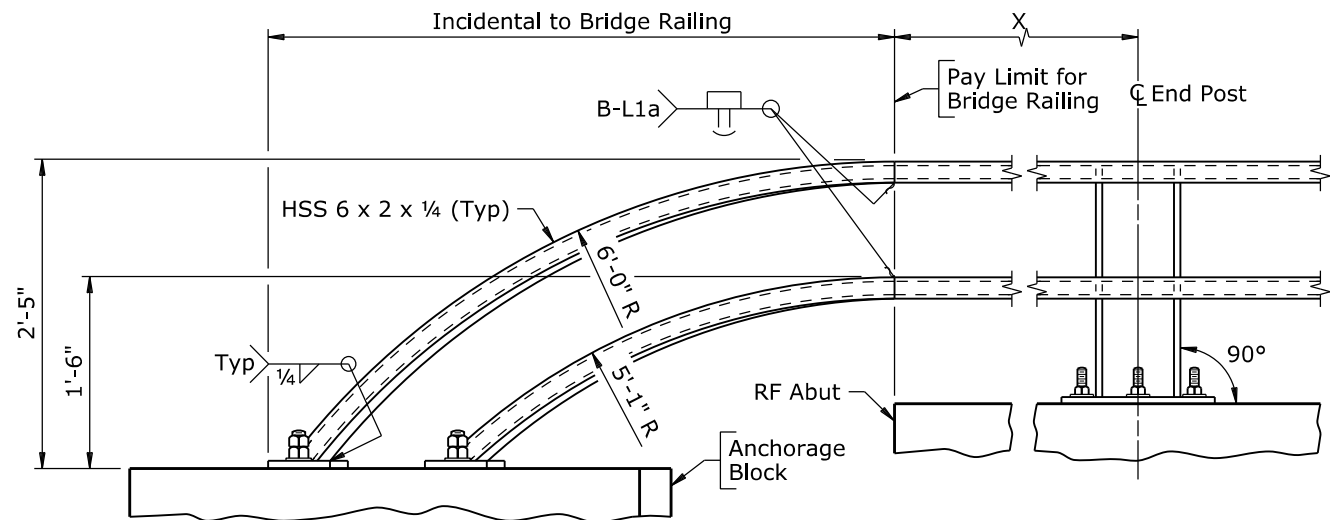
SLEEVE DETAILS



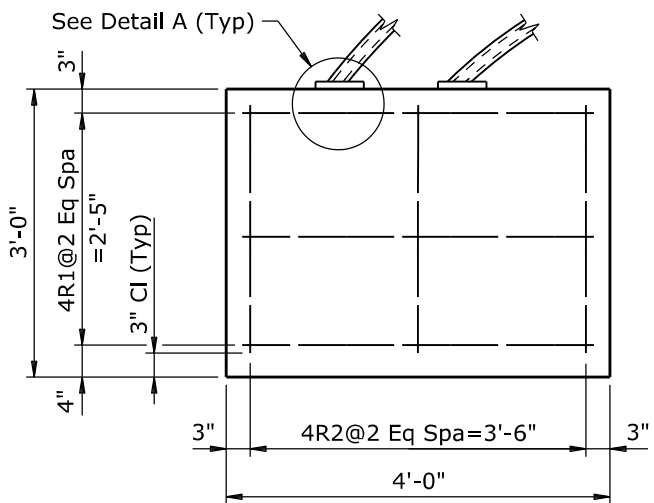
BRACE BAR DETAIL  
(See Note No. 8)

- Note:
- 1) Either top or bottom rail in terminal section may be the longer rail.
  - 2) Ensure each rail length is continuous over a minimum of two posts. Railing that is part of a turndown terminal is continuous if either the top or bottom rail in the terminal is continuous over a minimum of two posts.
  - 3) In rehabilitation work, ensure railing that cannot feasibly be made continuous over a minimum of two posts has a double-bolted splice.
  - 4) Splices may be located on either side of post.
  - 5) Not more than one splice is permitted per side of post, except at expansion splices.
  - 6) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.
  - 7) Do not shop splice rails.
  - 8) Ensure a brace bar is placed 2'-0" from the splice end of the shorter tube at turndown terminals.

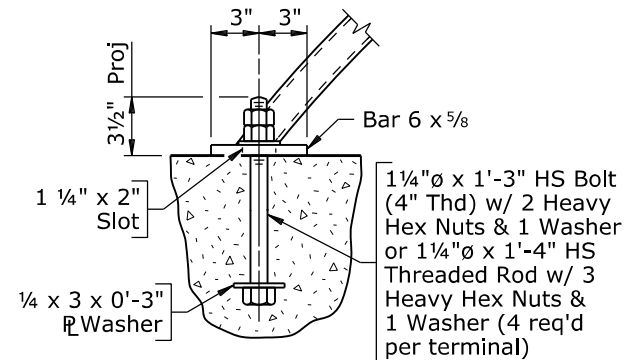
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
TL3BRGRail_NCHRP350_br3.dgn			
REVISIONS	DESIGN	DETAIL	QTY'S
REVIEW	DESIGN	DETAIL	QTY'S
APPROVAL	DESIGN	DETAIL	QTY'S
Design Section X		Drwg No. X Sheet X of X	



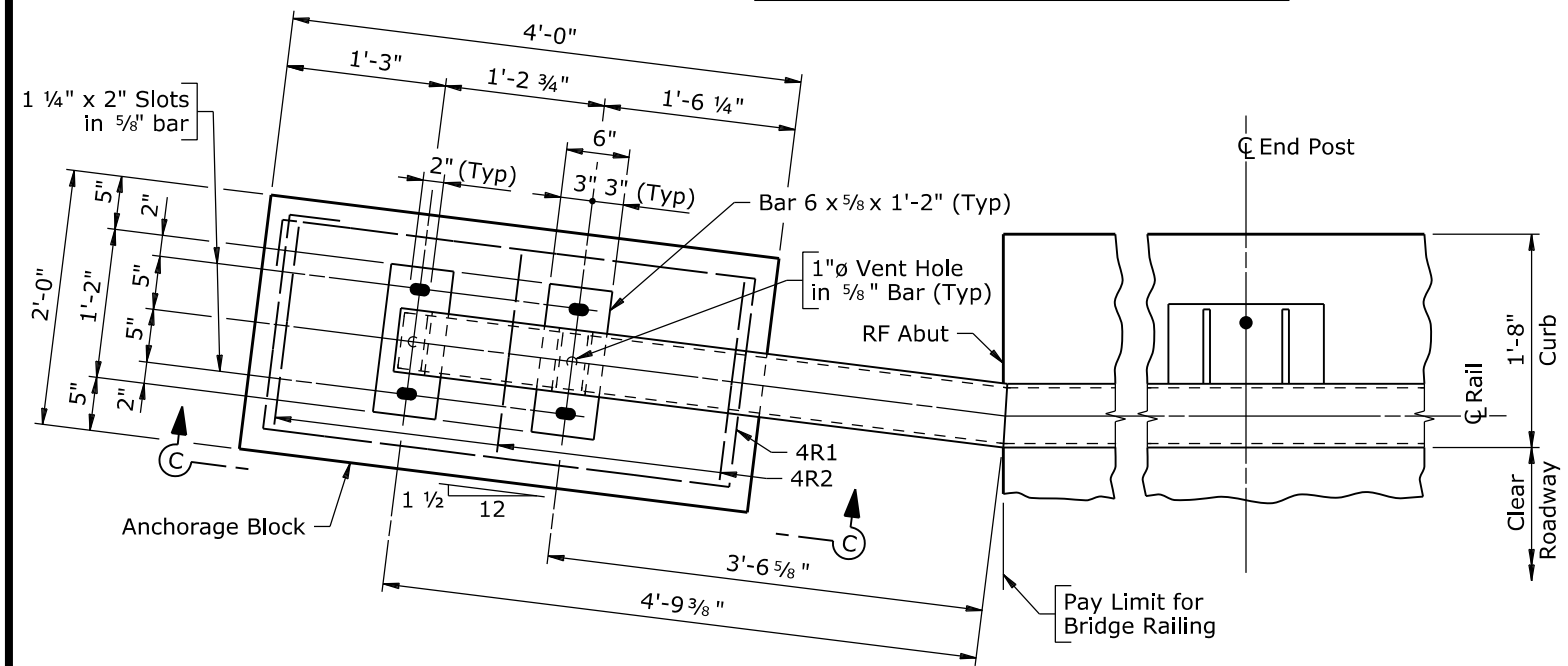
ELEVATION AT TURNDOWN TERMINAL



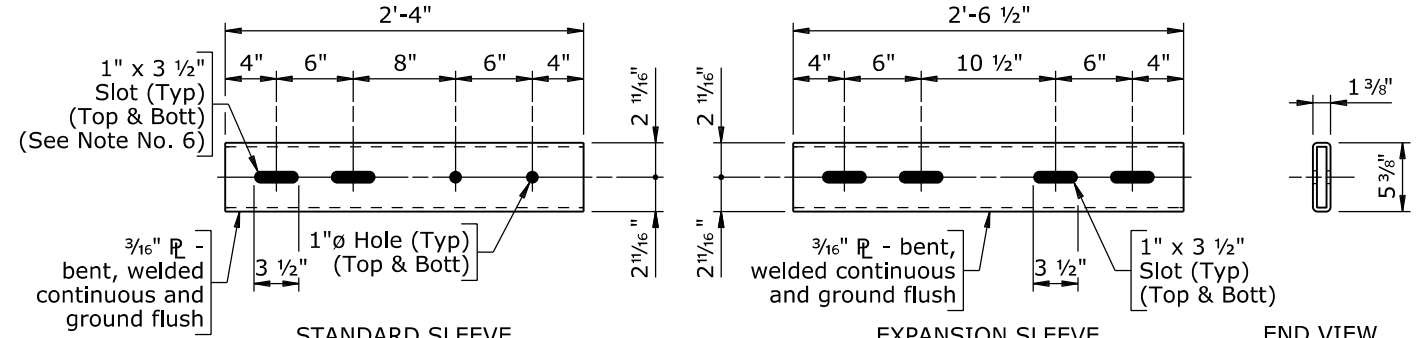
VIEW C-C



DETAIL A



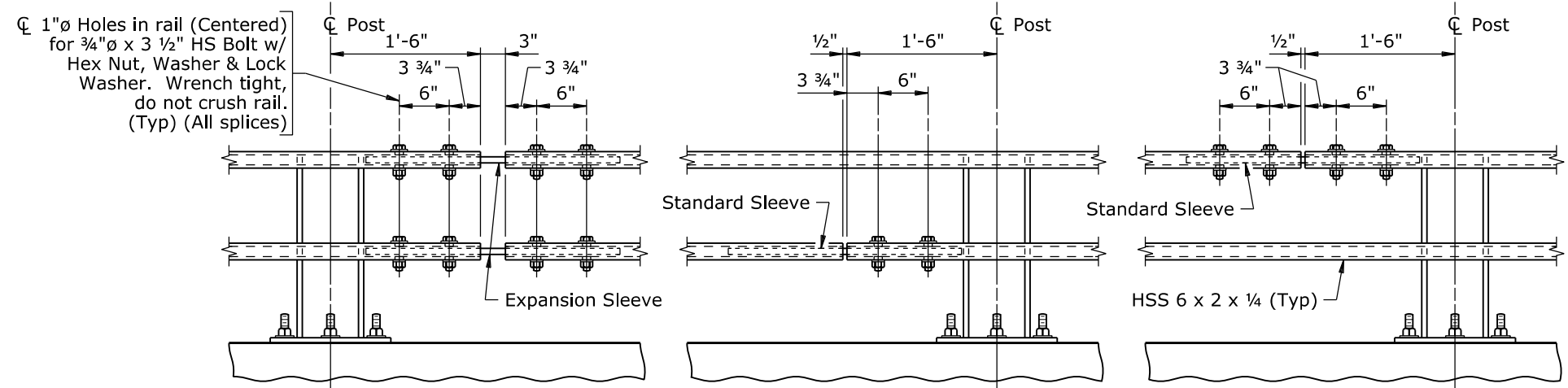
PLAN AT TURNDOWN TERMINAL  
(Bolts not shown)



SLEEVE DETAILS

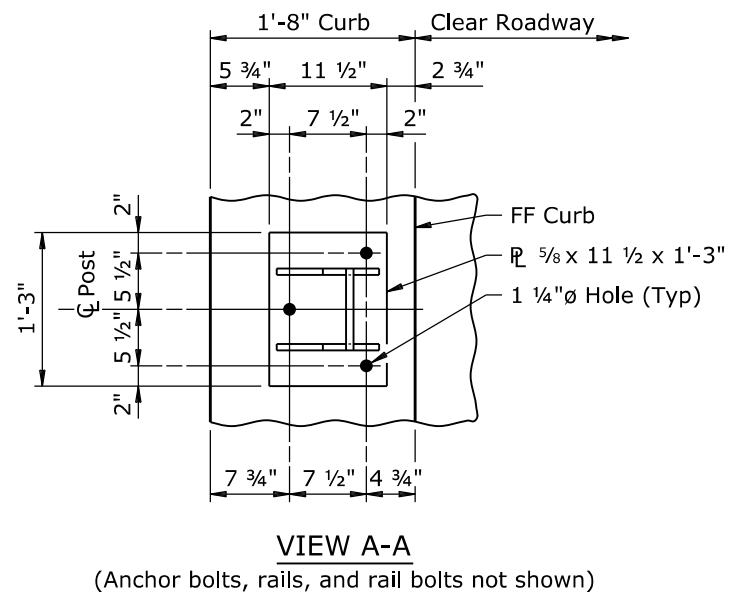
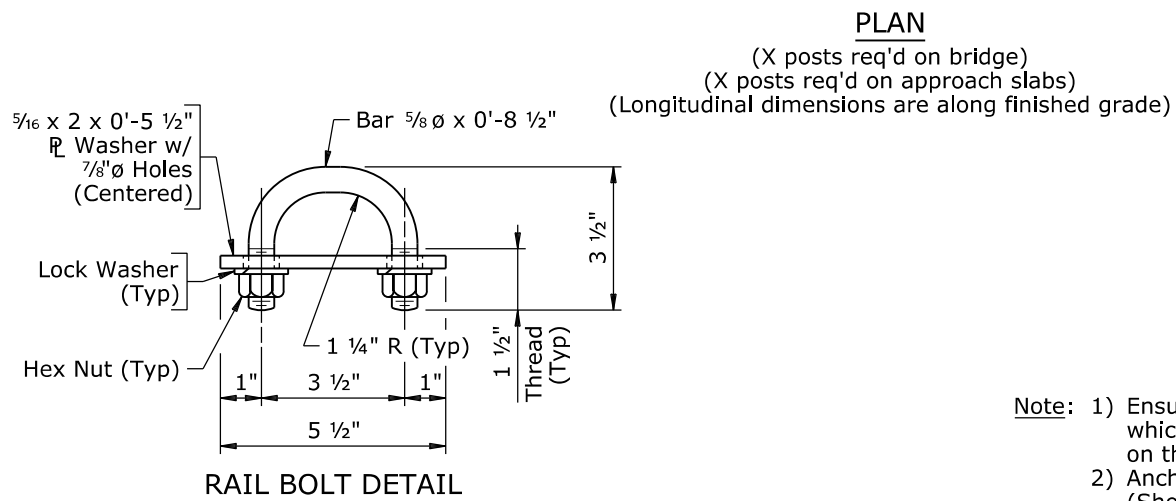
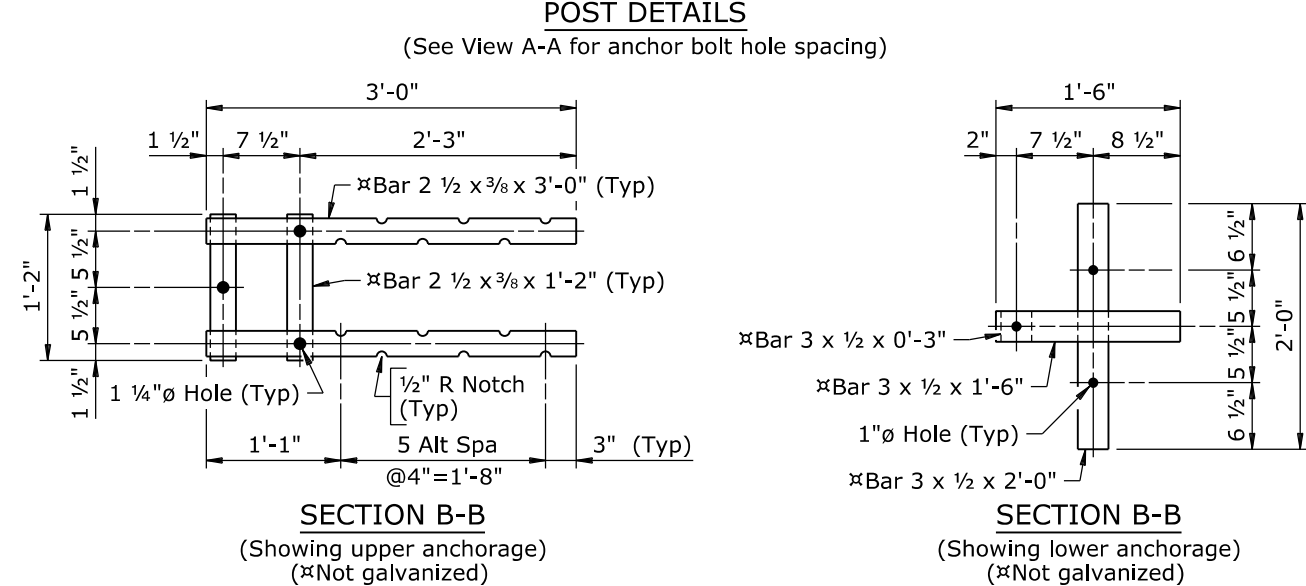
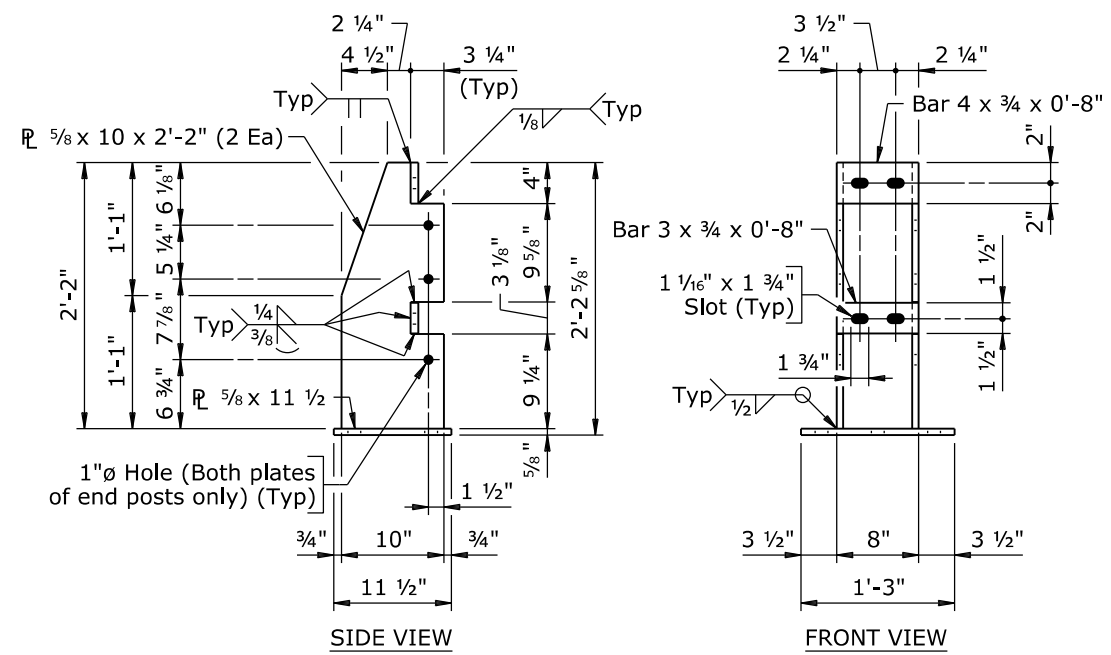
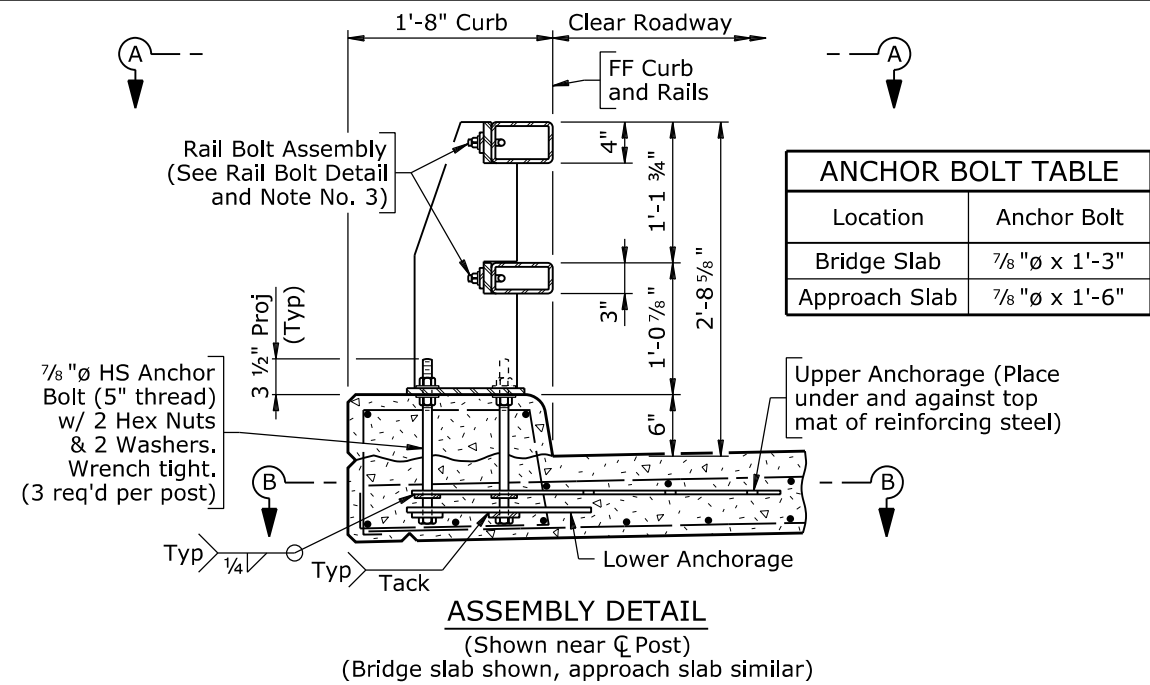
BILL OF REINFORCEMENT			
Location	Mark	Number Req'd Per Anchorage Block	Bending Diagrams
Anchorage Block	4R1	3	
	4R2	3	
	Weight	41 LB	
			4R1 (Tie) (11'-5")
			4R2 (Tie) (9'-1")

- Note:
- 1) Either top or bottom rail in terminal section may be the longer rail.
  - 2) Ensure each rail length is continuous over a minimum of two posts.
  - 3) In rehabilitation work, ensure railing that cannot feasibly be made continuous over a minimum of two posts has a double-bolted splice.
  - 4) Splices may be located on either side of post.
  - 5) Not more than one splice is permitted per side of post, except at expansion splices.
  - 6) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.
  - 7) Do not shop splice rails.
  - 8) Ensure rail terminal section is in place and in proper alignment prior to placement of concrete in end anchorage block.



SPICE DETAILS

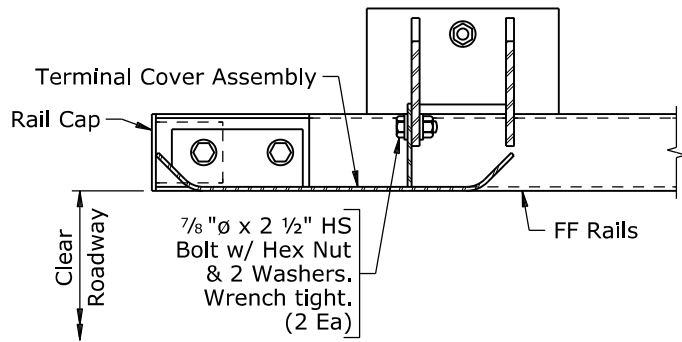
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS		BRIDGE RAILING DETAILS	
		TL3BRGRail_NCHRP350_br4.dgn	
REVIEW	DESIGN	Design Section	X
DETAIL	X	Drwg No. X	Sheet X of X
APPROVAL	QTY'S		



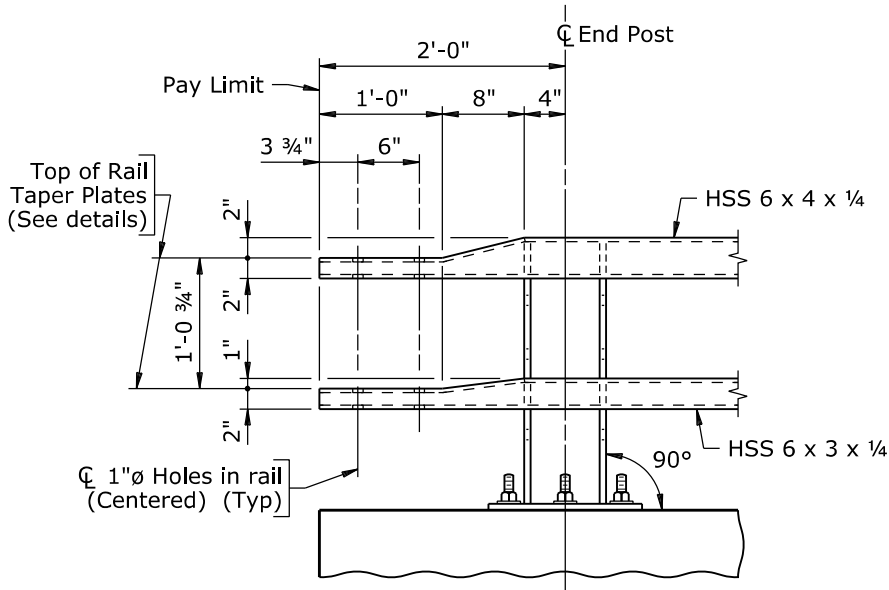
- Note:**
- 1) Ensure the expansion splice is located in the railing panel which passes over the bridge expansion joint as indicated on the plan.
  - 2) Anchor bolts may be tack welded to lower anchorage (Shop or field).
  - 3) At post locations, drill two  $1\frac{1}{16}$ "  $\varnothing$  holes in each rail to receive rail bolts (Shop or field). See Post Details for hole spacing.
  - 4) Paint surfaces of the railing components that have been cut, drilled, or otherwise damaged with two coats of zinc-rich paint conforming to ASTM A 780.
  - 5) After installing rails, paint all exposed bolt threads with two coats of zinc-rich paint conforming to ASTM A 780.

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
TL4BRGRail_NCHRP350_br1.dgn			
REVIEW _____	DESIGN _____	Design Section X	
DETAIL _____	QTY'S _____	Drwg No. X	Sheet X of X
APPROVAL _____			

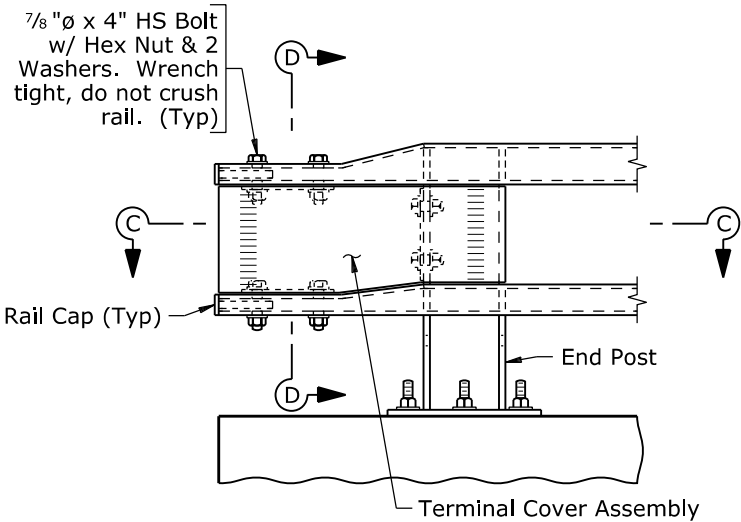
Terminal Component Requirements		
Approach Guardrail Connection	Rail Caps Required	Terminal Cover Assembly Required
MGS Approach Guardrail	Yes (Without bolts)	±No
Box Beam w/ Rubrail Approach Guardrail	No	No
No Approach Guardrail	Yes (With bolts)	Yes



SECTION C-C

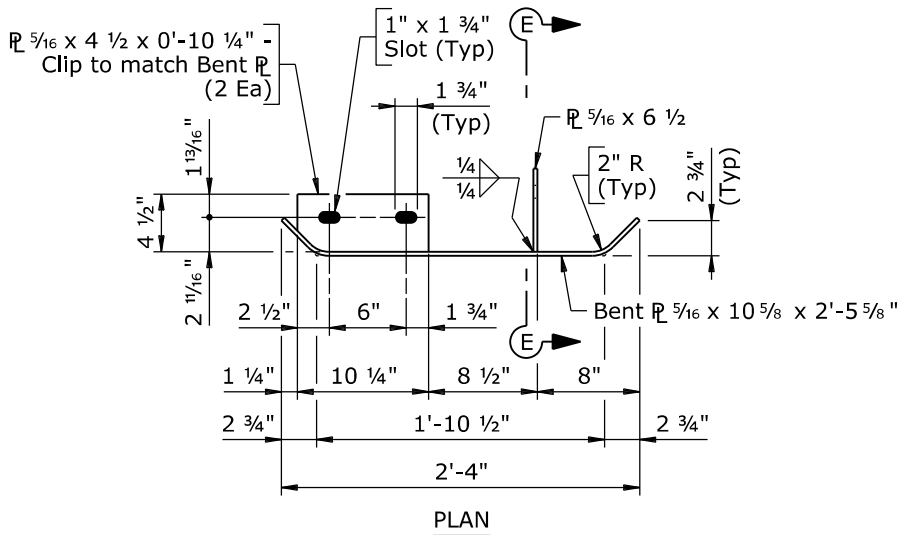


SHOWING RAILS

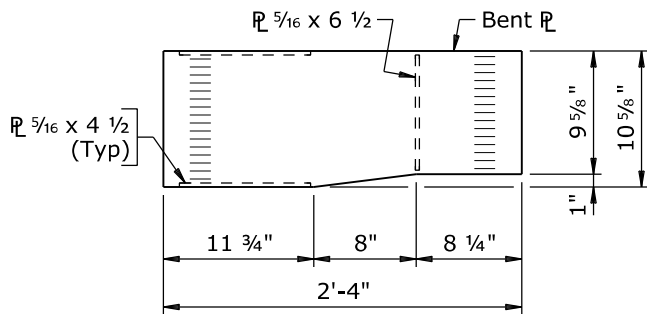


SHOWING RAIL CAPS AND TERMINAL COVER ASSEMBLY

ELEVATIONS AT TERMINAL

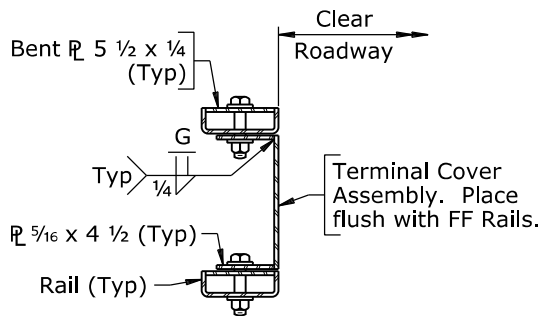


PLAN

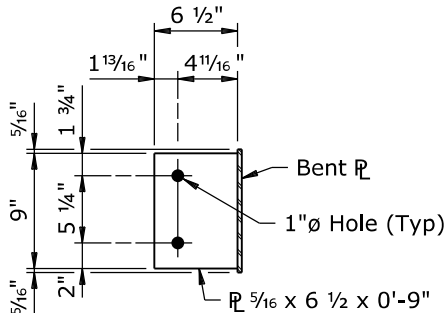


ELEVATION

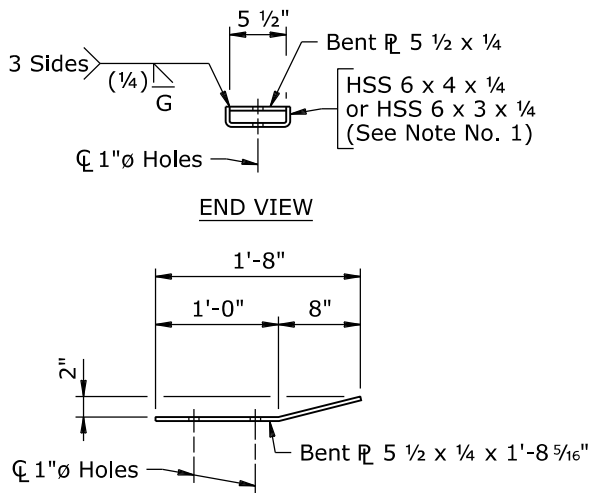
TERMINAL COVER ASSEMBLY DETAILS



SECTION D-D

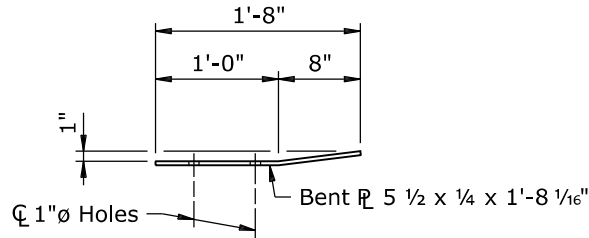


SECTION E-E



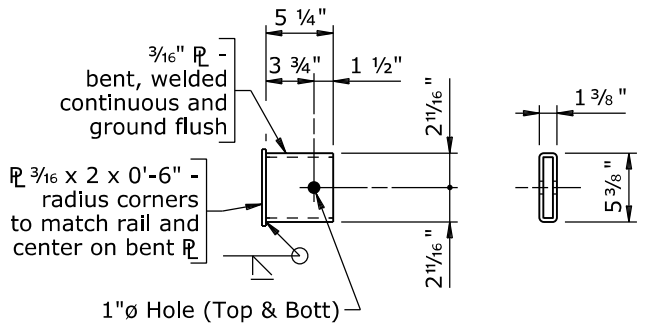
END VIEW

ELEVATION OF BENT PLATE FOR TOP RAIL  
(HSS 6 x 4 x 1/4 not shown)



ELEVATION OF BENT PLATE FOR BOTTOM RAIL  
(HSS 6 x 3 x 1/4 not shown)

RAIL TAPER PLATE DETAILS



PLAN

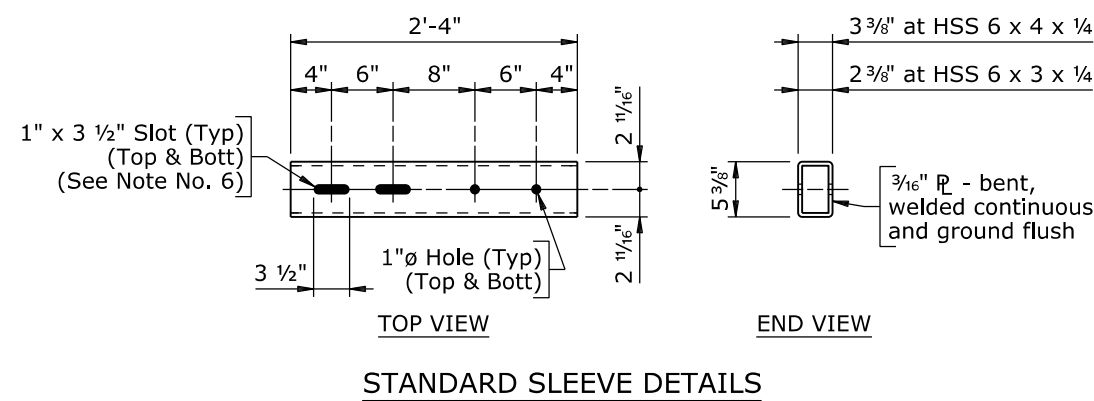
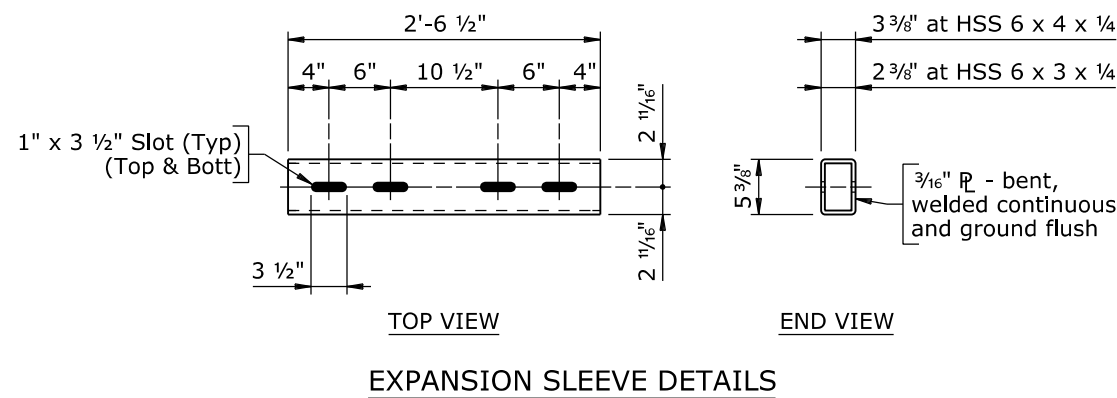
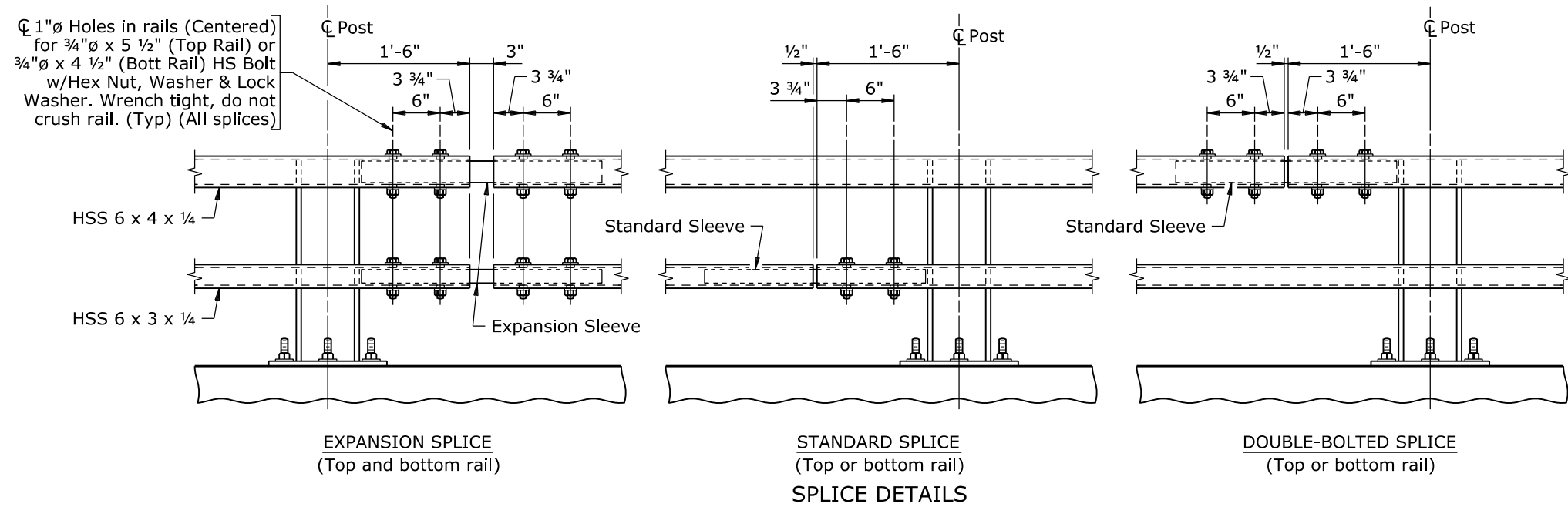
END VIEW

(R 3/16 x 2 not shown)

RAIL CAP DETAILS

- Note: 1) Cut top and bottom rails as required for fabrication of tapered end sections.  
±2) Installation of MGS approach guardrail will require other fabricated assemblies to be connected to end post. See road plans for details and pay item.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
REVISIONS		TL4BRGRail_NCHRP350_br2.dgn	
DESIGN	✓	Design Section	X
DETAIL	X	Drwg No. X	Sheet X of X
QTY'S	X		



- Note: 1) Ensure each rail length is continuous over a minimum of two posts.
- 2) In rehabilitation work, ensure railing that cannot feasibly be made continuous over a minimum of two posts has a double-bolted splice.
- 3) Splices may be located on either side of post.
- 4) Not more than one splice is permitted per side of post, except at expansion splices.
- 5) Do not shop splice rails.
- 6) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.

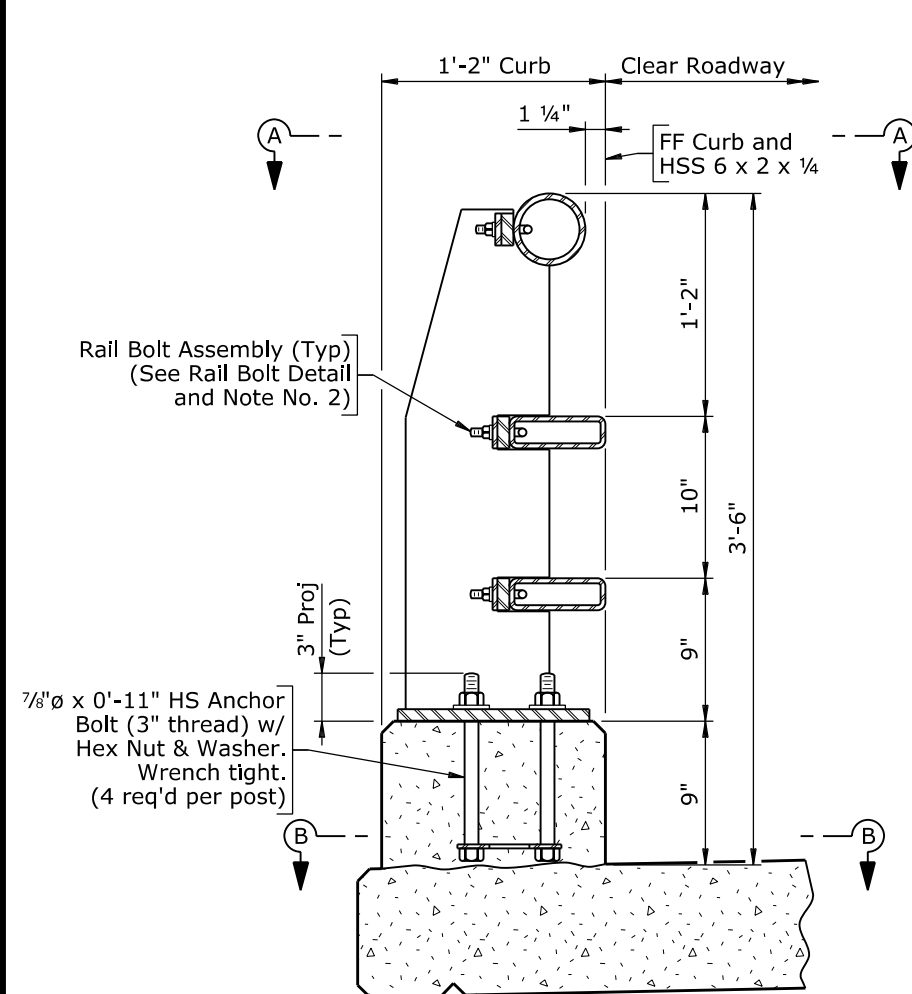
WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	BRIDGE RAILING DETAILS		
	TL4BRGRAIL_NCHRP350_br3.dgn		
REVIEW _____	DESIGN _____	Design Section X	
APPROVAL _____	DETAIL X ✓ X	Drwg No. X	Sheet X of X
	QTY'S X ✓ X		

PLAN  
(X posts req'd on bridge)  
(X posts req'd on approach slabs)  
(Longitudinal dimensions are along finished grade)

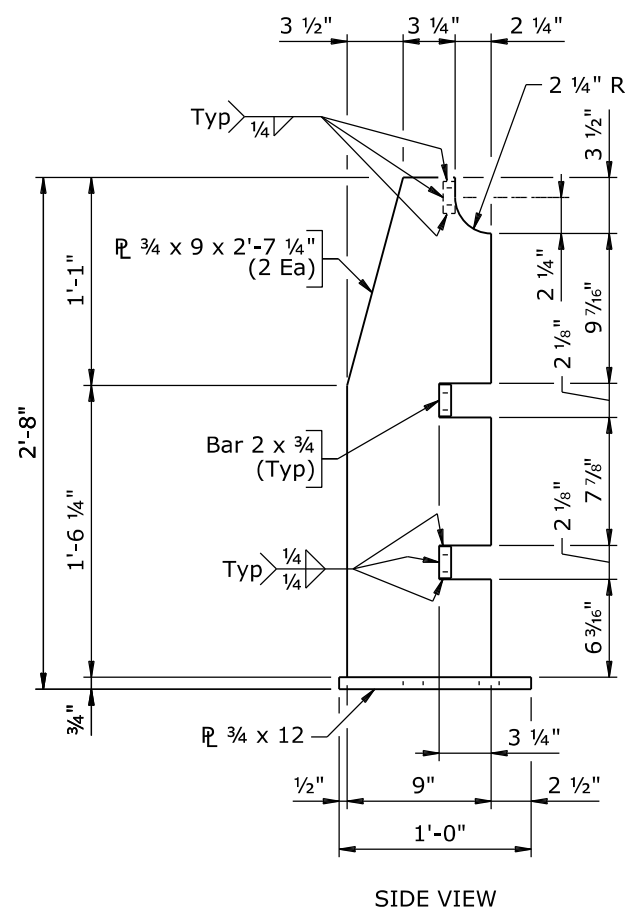
Note: Ensure a splice is located in the railing panel which passes over rear face abutment as indicated on the plan.

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	BRIDGE RAILING DETAILS		
	TL4BRGRAIL_MASH_br1.dgn		
REVIEW _____ ↓	DESIGN _____ ✓ _____	Design Section X	
APPROVAL _____ ↓	DETAIL X ✓ X	Drwg No. X	Sheet X of X
	QTY'S X ✓ X		

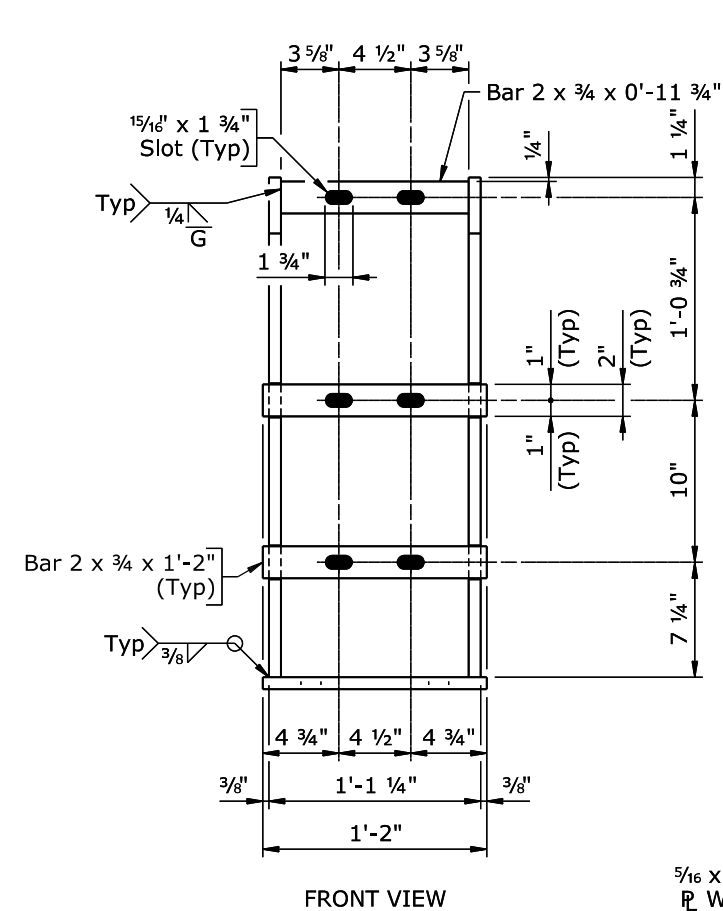




ASSEMBLY DETAIL  
(Shown near  $\text{C}$  Post)  
(Reinforcing steel not shown)



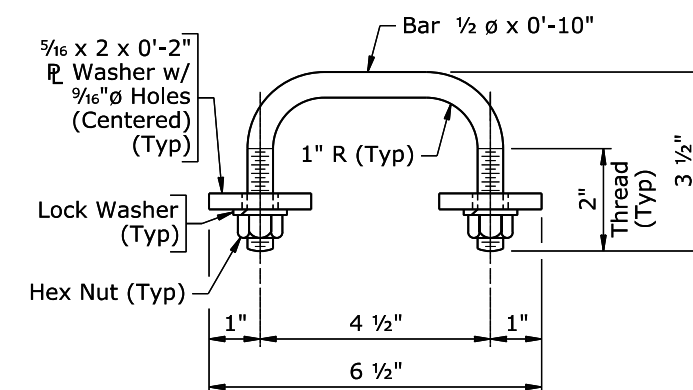
SIDE VIEW



FRONT VIEW

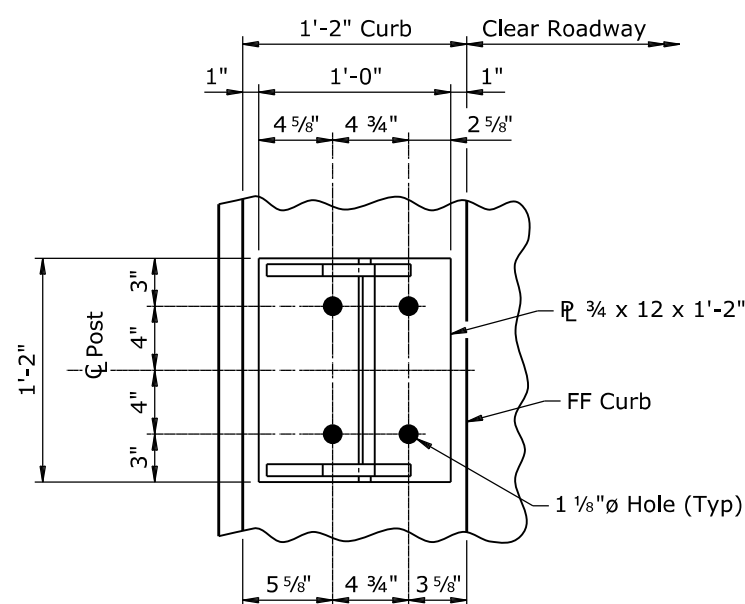
## POST DETAILS

(See View A-A for anchor bolt hole spacing)



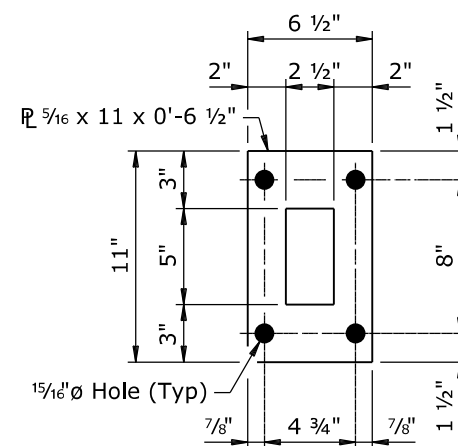
### RAIL BOLT DETAIL

- Note:
- 1) Anchor bolts may be tack welded to lower anchorage (Shop or field).
  - 2) At post locations, drill two 1 1/8"Ø holes in each rail to receive rail bolts (Shop or field). See Post Details for hole spacing.
  - 3) Paint surfaces of the railing components that have been cut, drilled, or otherwise damaged with two coats of zinc-rich paint conforming to ASTM A 780.
  - 4) After installing rails, paint all exposed bolt threads with two coats of zinc-rich paint conforming to ASTM A 780.



VIEW A-A

(Anchor bolts, rails, and rail bolts not shown)



SECTION B-B

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	BRIDGE RAILING DETAILS		
	TL4BRGRAIL_MASH_br2.dgn		
REVIEW _____	DESIGN _____	Design Section    X	
	DETAIL _____		
APPROVAL _____	QTY'S _____	Drwg No.    X	Sheet    X    of    X

