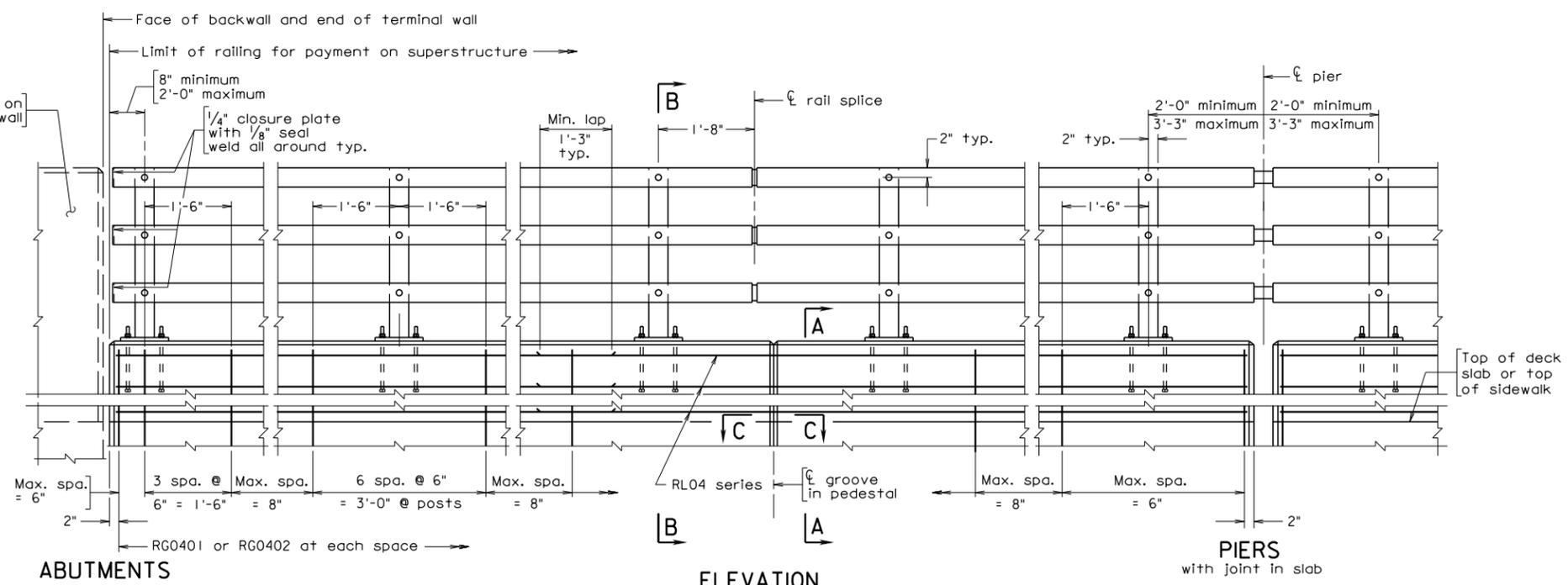


STATE	FEDERAL AID	STATE	SHEET
ROUTE	PROJECT	ROUTE	NO.
VA.			

Notes:

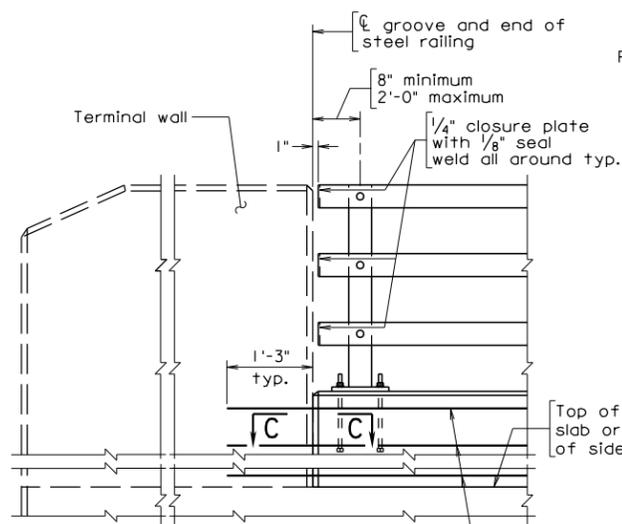
- All reinforcing bars shall be Corrosion Resistant Reinforcing Steel, Class ...
- All concrete shall be Class A4.
- All bevels for concrete on this sheet shall be 3/4". Rounded edges with 1" radius may be used in lieu of bevels along top or railing.
- Plates shall be ASTM A36 steel.
- Posts and rail members shall be ASTM A500 Grade B steel. Steel pipe sleeves shall be ASTM A53. Round head bolts shall be ASTM449. All other bolts shall be ASTM A 325. Nuts shall be ASTM A563, Grade DH or ASTM A194, Grade 2H and washers shall be ASTM F436. All steel shall be hot dip galvanized.
- Posts shall be seated on neoprene pads 1/8" minimum thickness, having a nominal durometer hardness of 60. Pads shall conform to post base dimensions.
- Bolts for attaching rails to posts are 3/4" diameter round head (with slot in head) with hex nut and washer. Holes in post and railing tubing shall be 1/8" diameter. Bolt extensions beyond the nut shall be limited to the smaller of one and a half finishing turns or 1/4 inch. If the extension is longer, the excess will be cut off, the edges of the bolt end ground so that no sharp edges remain and cold galvanizing applied to damaged galvanized areas.
- Cut bottom of posts to match cross slope before welding so that posts will be vertical. Steel shims may be used for adjusting post alignment, maximum thickness of shim build-up not to exceed 1/8". Where more tilting of the post is required, the concrete shall be ground down.
- Anchor bolts may be set normal to profile grade.
- Barrier delineator size, color, and spacing to be in accordance with the Specifications. Cost of delineator to be included in the price bid for railing. Reflective surface of barrier delineator, in all instances, to be facing oncoming traffic.
- 1/2" diameter drain holes shall be provided in both top and bottom rails approximately half-way between posts except at open joints near piers. Drain holes shall be provided at each low end of rail.
- Spacing of grooves for U-back wings to be approximately 8'-0". Maximum spacing of grooves in pedestal shall be limited to 3 x post spacing, shall be centered between posts and shall be no closer than 10'-0" to joints.
- Plan dimensions shown are measured in the respective horizontal and vertical planes. The reinforcing steel shown has been detailed based on a standard 1/4" per foot cross slope. The Contractor shall adjust the reinforcing steel as required for other cross slopes.
- For details and reinforcing steel schedule of terminal wall, see sheet ...
- For details of rail connections and additional notes, see sheet...



ABUTMENTS

ELEVATION

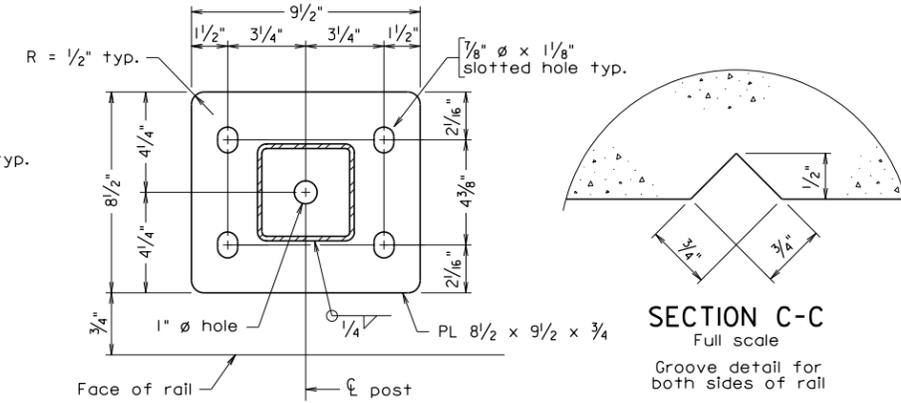
PIERS
with joint in slab



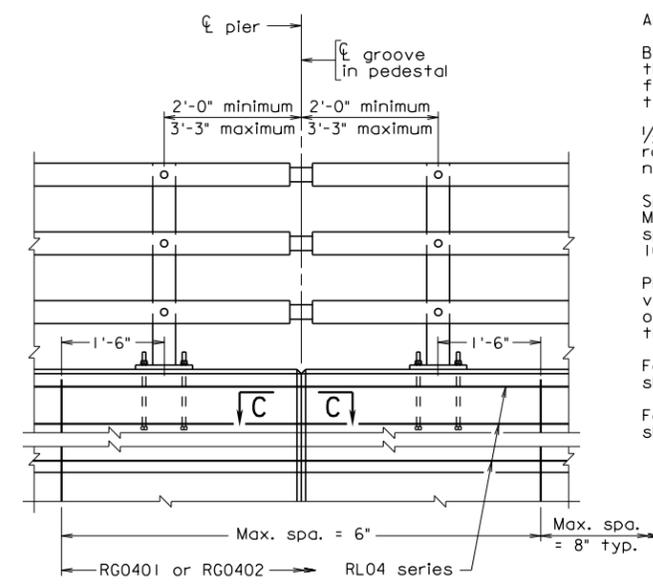
ABUTMENT

PART ELEVATION

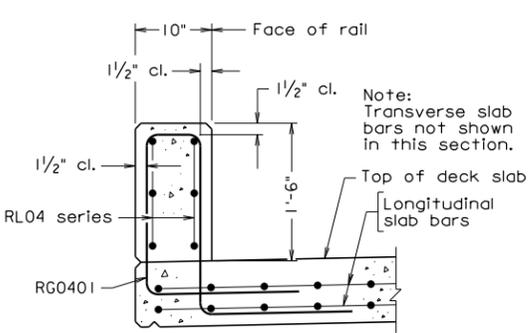
Terminal Wall on Superstructure



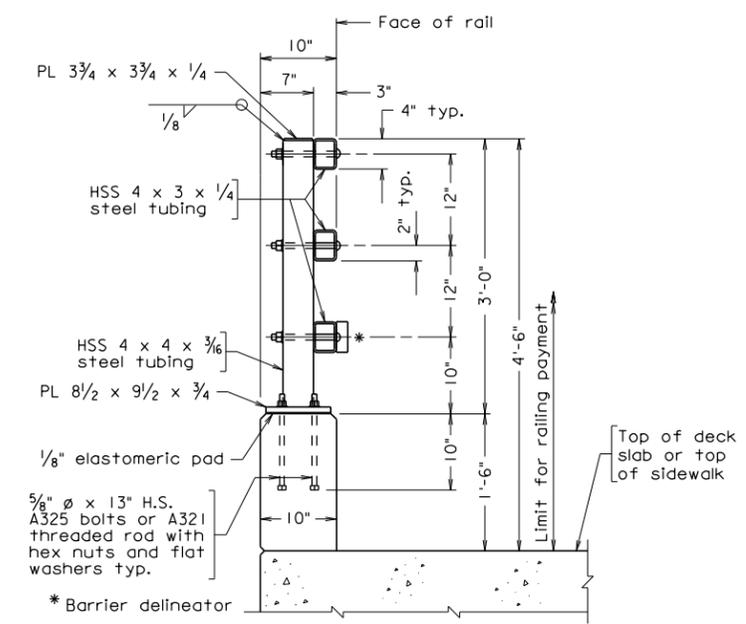
BASE PLATE DETAIL
Not to scale



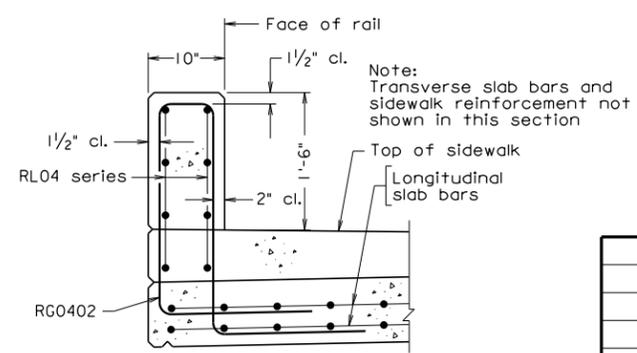
PIERS
Continuous - without joint in slab



SECTION A-A
(Without sidewalk)
Scale: 1" = 1'-0"



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



SECTION A-A
(With sidewalk)
Scale: 1" = 1'-0"

REINFORCING STEEL SCHEDULE					
Mark	Size	No.	Length	Pin ø	Location
RG0401	#4			3"	Parapet
RG0402	#4			3"	Parapet
RL04	#4				Parapet

Dimensions in bending diagram are out-to-out of bars.

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION					
STRUCTURE AND BRIDGE DIVISION					
54"-BR27D STEEL RAILING					
No.	Description	Date	Designed: S&B...DIV	Date	Plan No.
			Drawn: ...S&B...DIV		BR27D-10
			Checked: S&B...DIV		
Revisions					

BR27D-10
12-14-2012
br27d10.dgn

Sealed and Signed by:
Julius F.J. Volgyi Jr.
Lic. No. 010487
On the date of
December 14, 2012

A copy of the original
sealed and signed
standard drawing
is on file in the
Central Office.

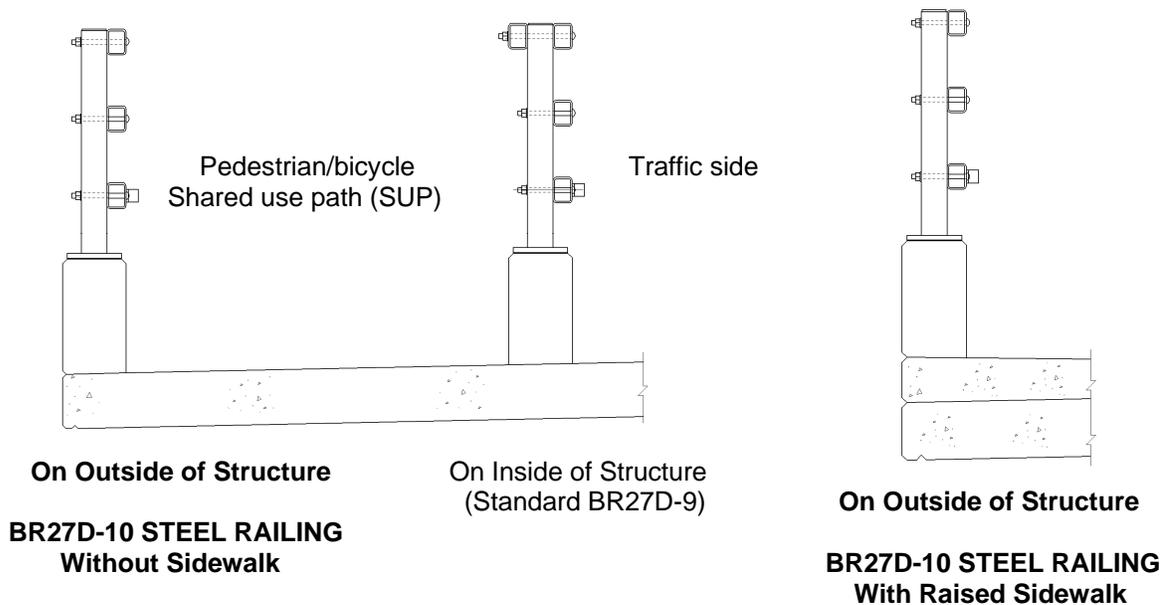
VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

54"-BR27_ STEEL RAILING

BR27D-SERIES

NOTES TO DESIGNER:

This railing is detailed for use on the outside of a structure either when a traffic barrier separates a pedestrian/bicycle shared use path (SUP) from traffic or as a traffic barrier mounted on a sidewalk. The steel railing has a height of 4'-6" and has been crash tested for TL-2 (TL = test level). The crash tested rail has been modified from that which was crash tested. The railing does not meet the rail opening requirements in the AASHTO *Standard Specification for Highway Bridges* as well as the AASHTO *LRFD Bridge Design Specifications*. A design exception has been approved by FHWA. The standard may be used when an open railing is required.



SUP: For geometrics of shared used path, see Office Practice, Vol V – Part 2, Chapter 6, sheets 4-10 to 4-16.

Bid Item: Do not use the non-standard bid item for this rail. The bid item for this rail shall be RAILING BR27D 3 RAILS. See Office Practice, Vol. V – Part 2, Chapter 3.

The rail connections and fabricator's notes (BR27D-11) and the appropriate terminal wall standard (BR27T-5 to BR27T-8) are to be included in the plans when using this standard. If this standard is used with an inside traffic barrier (ie., Standard BR27D-9), the guard rail transitioning from the roadway will not be attached to the terminal wall on the outside of structure, but on the inside of structure. Therefore, the terminal wall standard selected would have to be modified by removing details and notes that pertain to guard rail attachment.

54"-BR27_ STEEL RAILING

BR27D-SERIES

NOTES TO DESIGNER: (cont'd)

If an initial bituminous overlay is used on the bridge at the time of construction, vertical dimensions and dimensions for reinforcing steel need to be adjusted. The dimensions shown are established from the top of the roadway surface. Therefore, for example if a 1" overlay at the roadway surface is set, the 1'-6" dimension and overall 4'-6" height of the rail would need to be adjusted to 1'-7" and 4'-7" respectively (Section B-B) and the 1'-6" dimension in Section A-A would have to be adjusted to 1'-7".

It is the Contractor's responsibility to determine the number of reinforcing bars required as well as any details or dimensions. Therefore, these items are to be left blank in the Reinforcing Steel Schedule.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

SECTION A-A:

Modify vertical dimension (1'-6") as noted above if an initial overlay is used on bridge.

SECTION B-B:

Modify vertical dimensions (1'-6" and 4'-6" railing height) as noted above if an initial overlay is used on bridge.

NOTES:

Complete first note by adding the Class I, II or III of corrosion resistant reinforcing steel required. For additional information on corrosion resistant reinforcing steel (CRR), see Structure and Bridge Division Memorandum (current IIM-S&B-81).

Complete sheet no. for terminal wall.

Complete sheet no. for rail connections and fabricator's notes.

REINFORCING STEEL SCHEDULE:

Add dimension and length for rebar RG0401 or RG0402.

TITLE BLOCK:

Replace standard designation with Plan No.

STANDARD BR27D-10: NOTES TO DESIGNER

VOL. V - PART 3
DATE: 14Dec2012
SHEET 3 of 3
FILE NO. BR27D-10-3