

DEEP BEAM RAIL TYPE 4

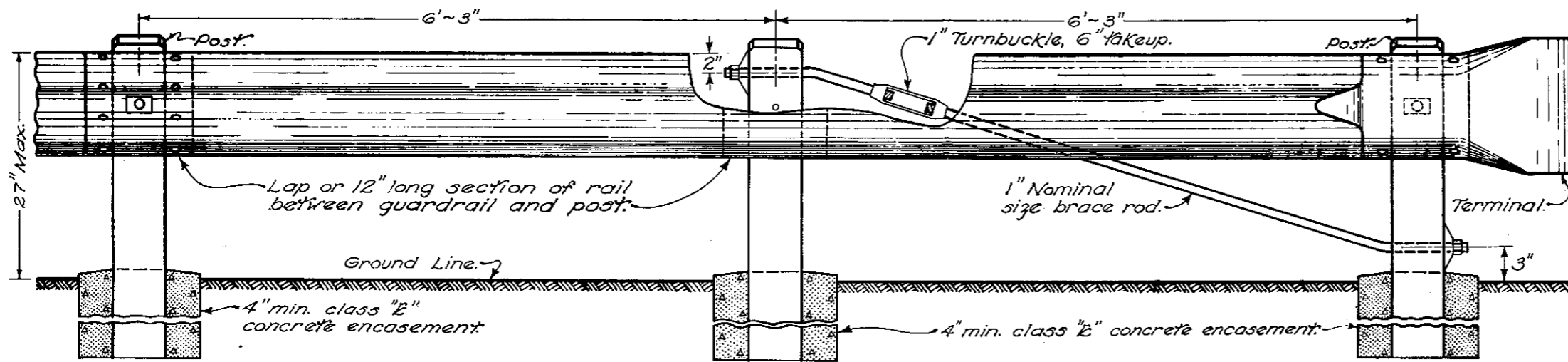
NOTES

POSTS: Posts for standard design may be round or square-sawed pressure-treated wood or may be 6B x 8 1/2 pound galvanized steel. Posts for barrier design shall be square-sawed pressure-treated wood or 6B x 8 1/2 pound galvanized steel. The same type post shall be used throughout the length of a project unless otherwise required by the plans or permitted by the Engineer. For details of wood posts not shown hereon, see Standard Drawing GR-1. Posts other than the last three at each end of each continuous run need not be set in concrete, and shall be spaced at 12'-6" centers unless otherwise specified, except that post spacing in runs of less than 100 feet in length and in flares shall be 6'-3".

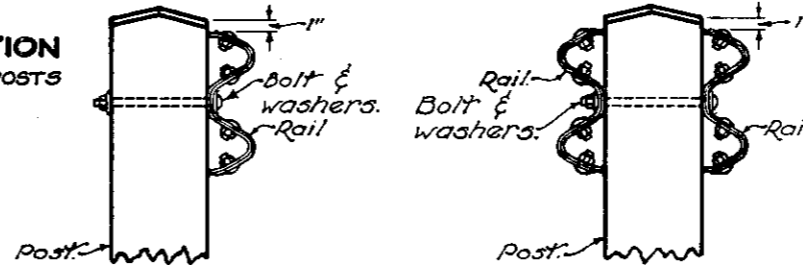
ANCHOR ASSEMBLY: The anchor assembly shown in elevation shall be used at each end section of standard or barrier deep beam guardrail. Brace rod assembly shall develop a tensile strength of at least 50,000 pounds. Not required at junction of standard and barrier designs in a continuous run.

BRIDGE RAILING: Where deep beam rail is used as bridge railing, post spacing shall be 6'-3" on the bridge and for a minimum distance of 12'-6" beyond each corner of the bridge. If the deep beam guardrail terminates within 18'-6" of the last bridge post, all standard design posts shall be set in concrete and an anchor assembly provided as detailed hereon.

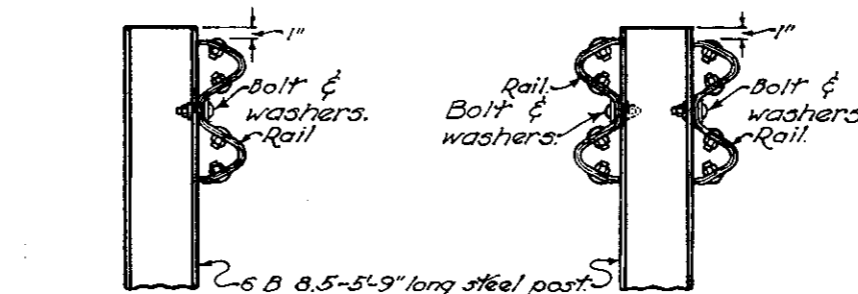
RAIL ELEMENT: Rail elements may be fabricated with post bolt hole slots on 6'-3" centers regardless of post spacing. At each post where an overlap of rail elements does not occur, a 12-inch-long section of rail shall be provided between the main rail element and the post, fastened by the post bolt. Washers shall be provided at each end of each post bolt: provide a standard 5/8" round steel washer between the nut and post; provide a 1 1/16" x 3" x 8 ga. steel washer at each rail connection between bolt and rail. Washer hole shall be elongated to accommodate the shoulder when used adjacent to the bolt head and shall be a round hole 1/16" in diameter when used adjacent to a nut.



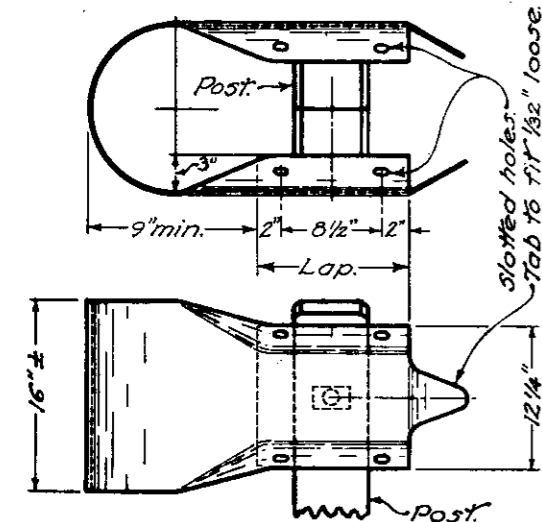
ELEVATION TERMINAL SECTION
TO BE USED WITH BOTH STEEL AND WOOD POSTS



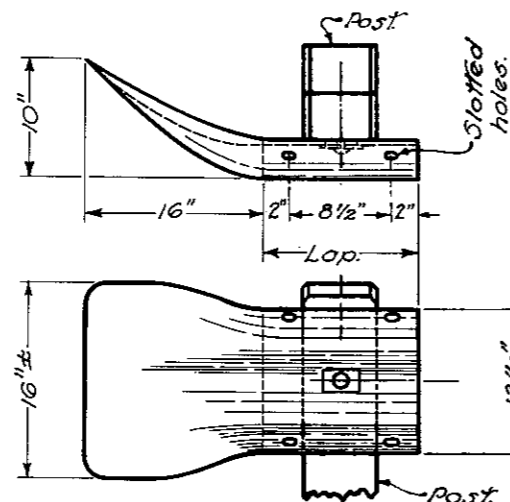
STANDARD DESIGN USING WOOD POSTS



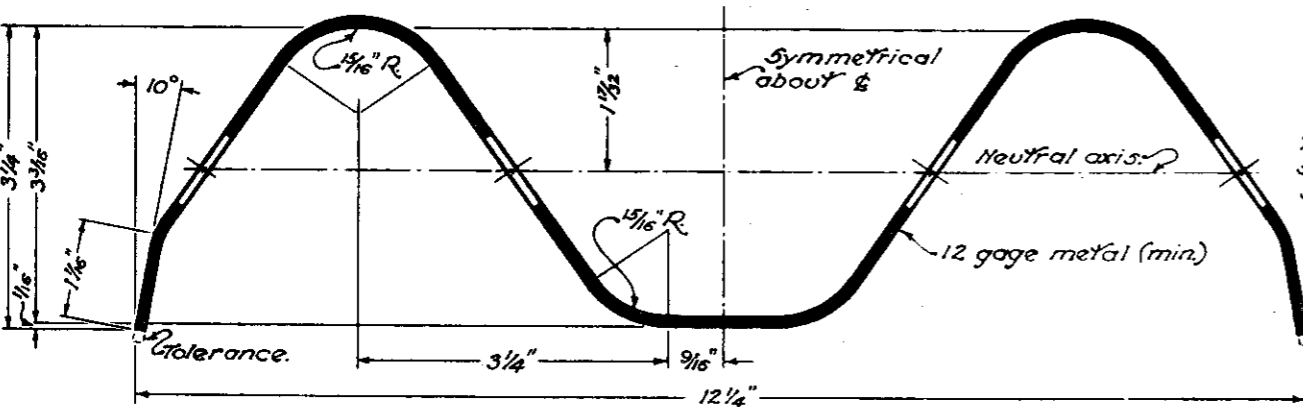
STANDARD DESIGN USING STEEL POSTS



BARRIER TERMINAL

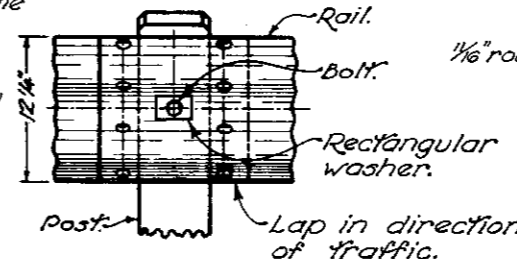
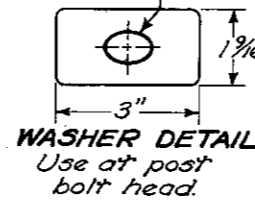


STANDARD TERMINAL

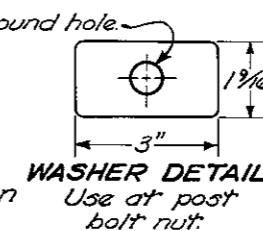


SECTION THRU RAIL ELEMENT

1/16" x 1 1/16" oval hole, same shape as post bolt shoulder.



RAIL SPLICE



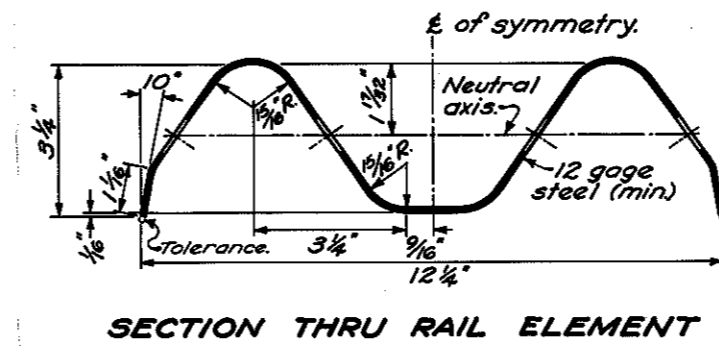
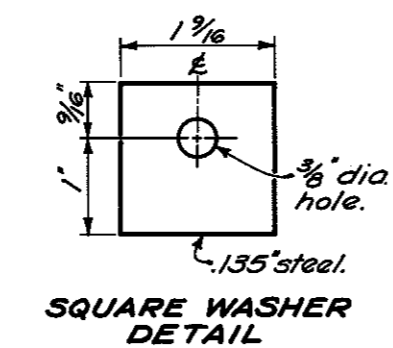
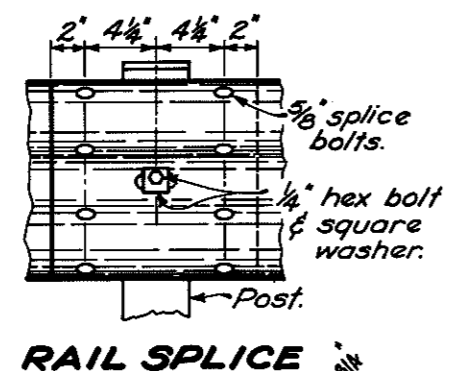
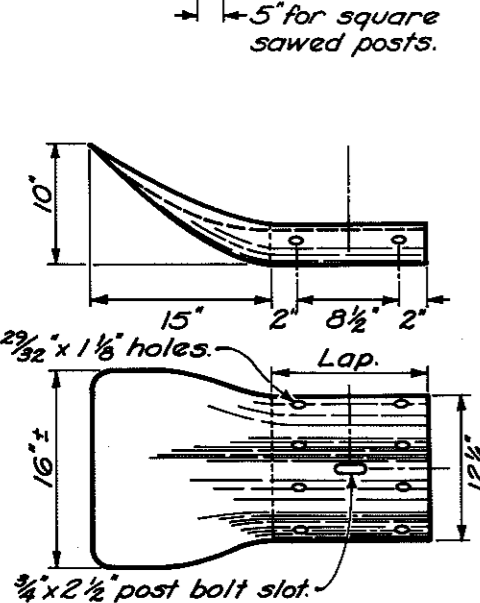
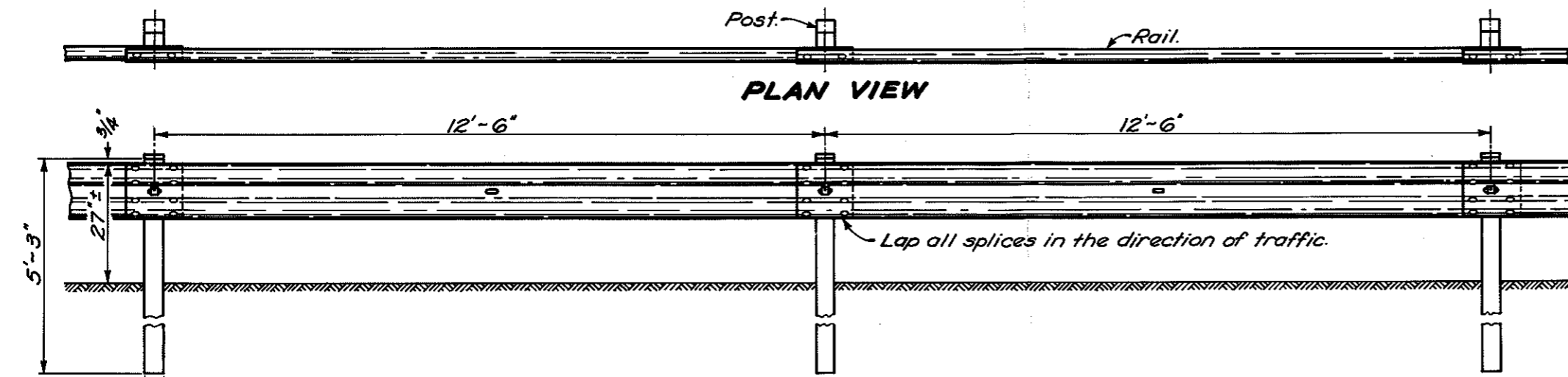
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF HIGHWAYS

GUARD RAIL

STANDARD CONSTRUCTION DRAWING **GR-2A**

APPROVED *K.E. Gutter* ENGR. L. & D.

DATE
6-1-65
9-1-65
1-1-67



NOTES

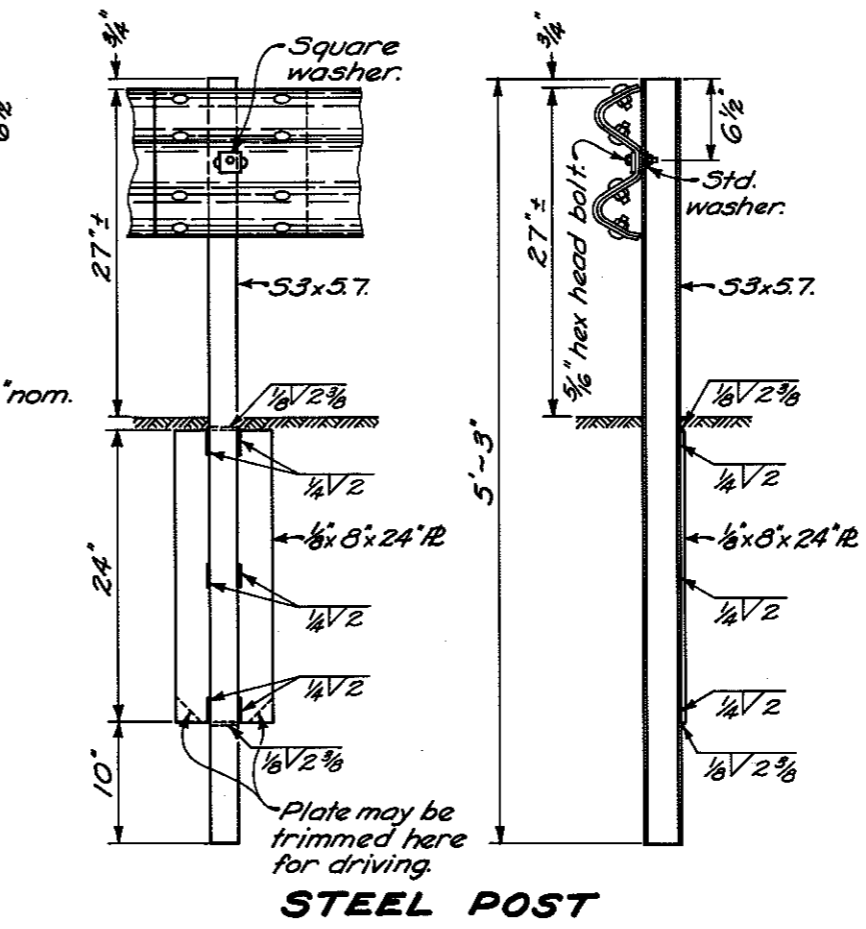
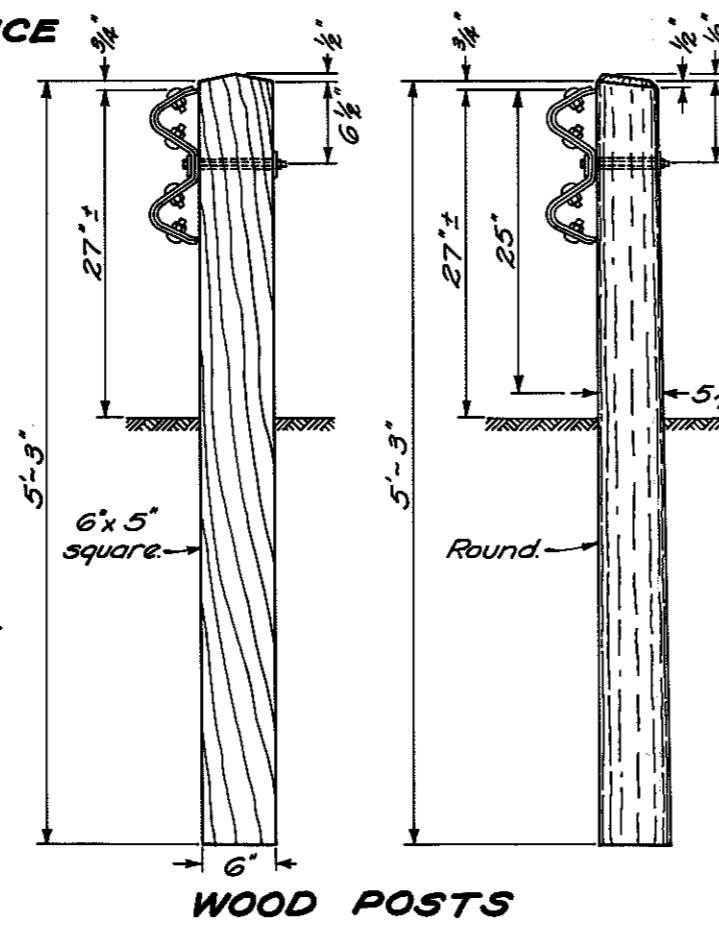
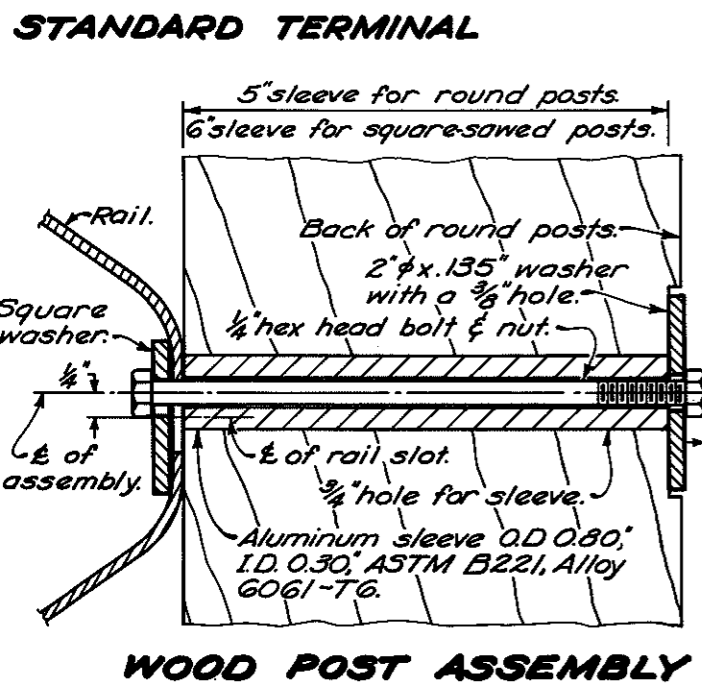
STEEL POSTS shall be S3x5.7 710.15 with a 1/8"x8"x24" steel plate welded to the back as shown, galvanized after fabrication. Post bolts shall be 5/16" by 1 1/4" hex head full body bolts, ASTM A-307, Grade A, with a minimum of 5/8" unthreaded. Provide a 1 1/8" x .135" square steel washer between post bolt and rail and one standard round steel washer between post and nut.

WOOD POSTS: Pressure treated wood posts 710.14 may be 5"x6" square sawed or 5 1/2" plus or minus 1/2" diameter round, measured at a point 25" below top of rail. Post bolts shall be 1/2" hex head full body bolts, ASTM A-307, Grade B. Provide a 1 1/8" x .135" square steel washer between post bolt and rail, and a 2" x .135" round steel washer between post and nut. Aluminum pipe sleeve shall conform with ASTM B-221 Alloy 6061-T6.

POST SPACING ON CURVES shall be in accordance with the following:

Radius of Curvature	Post Spacing
220 feet and over.	12'-6"
Between 110 feet and 220 feet.	6'-3"
110 feet incl. to 75 feet.	4'-2"
75 feet incl. to 50 feet incl.	3'-1 1/2"
Less than 50 feet, not recommended.	

GUARD POSTS shall conform with the details and requirements for Type 7 wood posts except that posts shall be spaced 6'-0" center to center unless otherwise shown on the plans, and shall be pressure treated with pentachlorophenol prior to painting. Guard posts shall be painted with one prime coat and two finish coats of white paint 708.05.



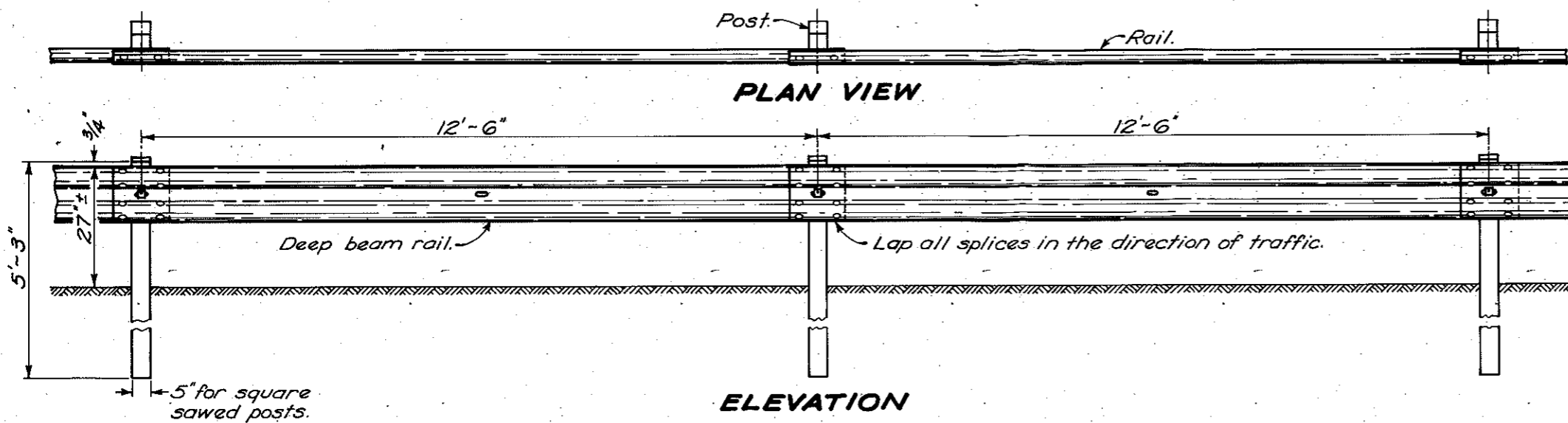
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF HIGHWAYS

**GUARDRAIL
TYPE 7**

STANDARD CONSTRUCTION DRAWING **GR-2A**

APPROVED *R.E. Smith* ENGR. L. & D.

DATE 1-1-71



NOTES

STEEL POSTS shall be 53x5.7 710.15 with a 1/8"x8"x24" steel plate welded to the back as shown, galvanized after fabrication. Post bolts shall be 5/8" by 1 1/4" hex head full body bolts, ASTM A-307, Grade A, with a minimum of 3/8" unthreaded. Provide a 1 1/2" x .135" square steel washer between post bolt and rail and one standard round steel washer between post and nut.

WOOD POSTS: Pressure treated wood posts 710.14 may be 5"x6" square sawed or 5 1/2" plus or minus 1/2" diameter round, measured at a point 25" below top of rail. Post bolts shall be 1/2" hex head full body bolts, ASTM A-307, Grade B. Provide a 1 1/2" x .135" square steel washer between post bolt and rail, and a 2" x .135" round steel washer between post and nut. Aluminum pipe sleeve shall conform with ASTM B-221 Alloy 6061-T6.

POST SPACING ON CURVES shall be in accordance with the following:

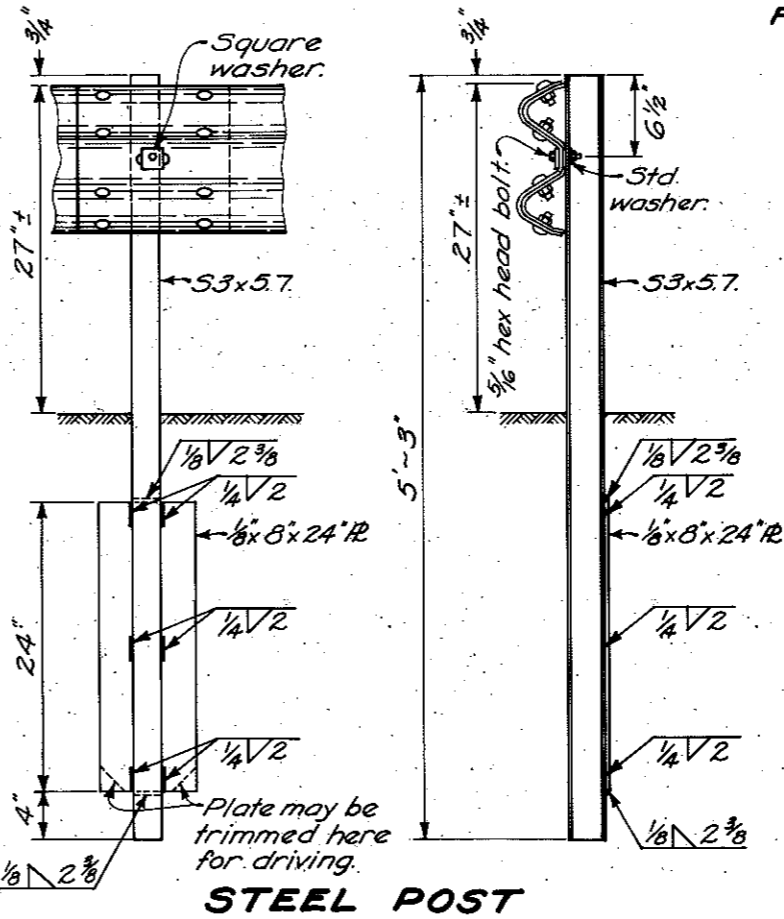
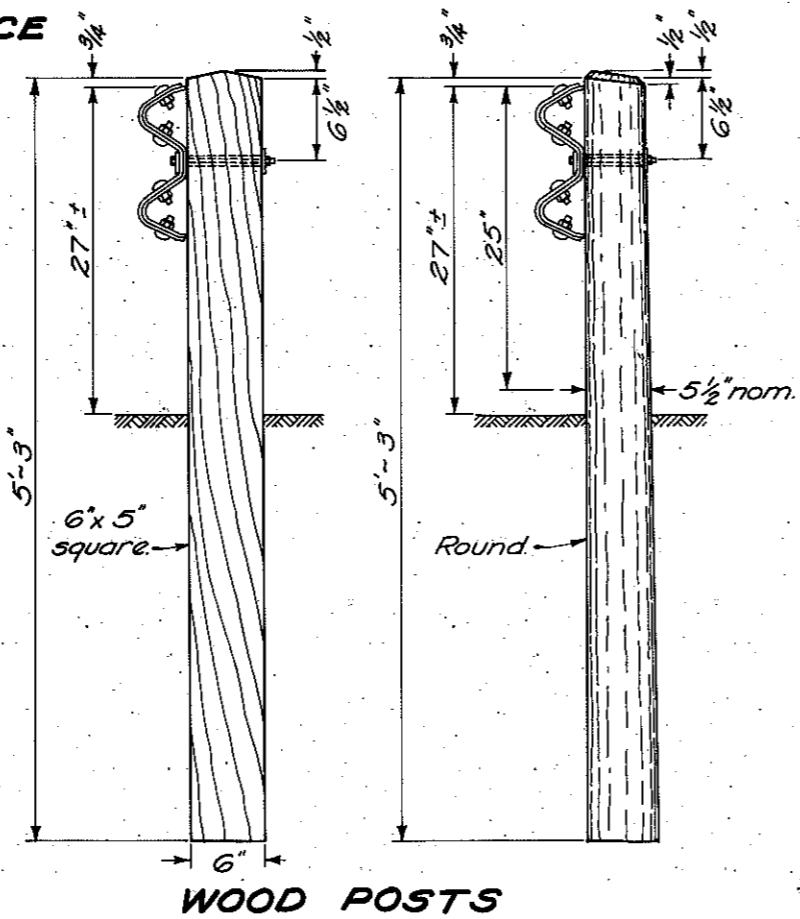
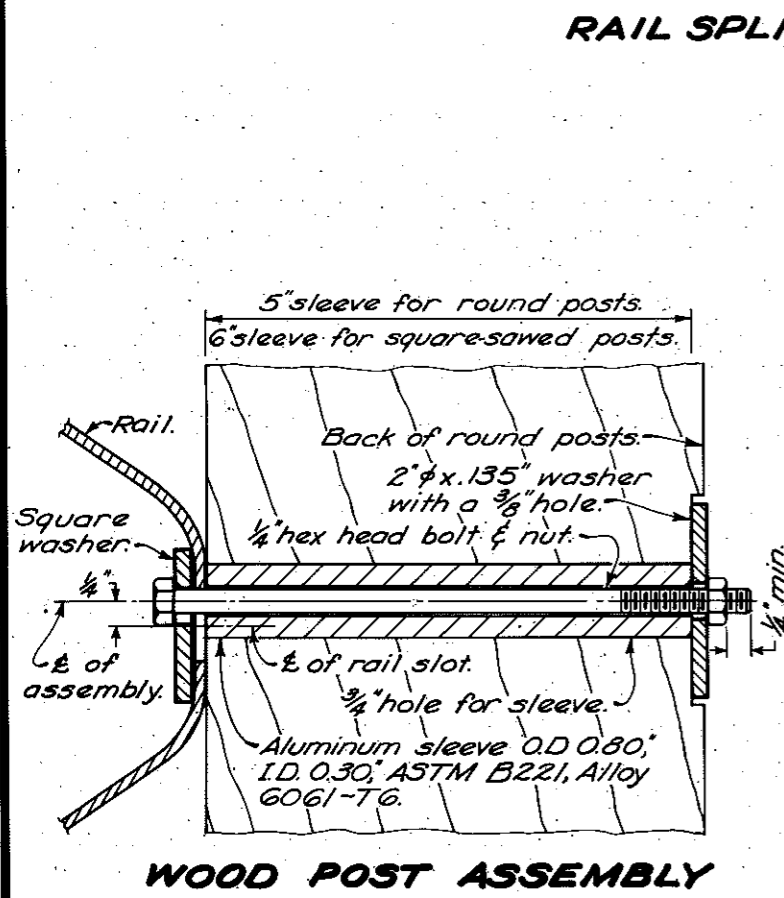
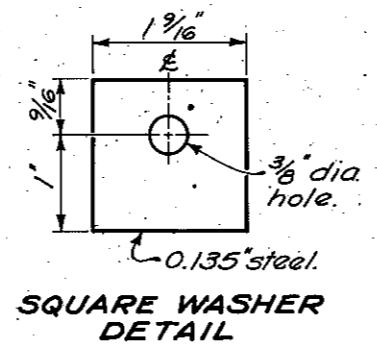
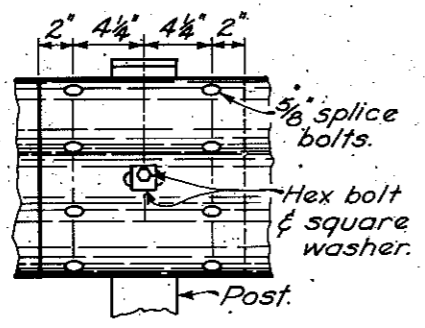
Radius of Curvature	Post Spacing
220 feet and over.	12'-6"
Between 110 feet and 220 feet.	6'-3"
110 feet incl. to 75 feet.	4'-2"
75 feet incl. to 50 feet incl.	3'-1 1/2"
Less than 50 feet,	not recommended.

POST SPACING ON CURVES shall be in accordance with the following:

Radius of Curvature	Post Spacing
220 feet and over.	12'-6"
Between 110 feet and 220 feet.	6'-3"
110 feet incl. to 75 feet.	4'-2"
75 feet incl. to 50 feet incl.	3'-1 1/2"
Less than 50 feet,	not recommended.

GUARD POSTS shall conform with the details and requirements for Type 7 wood posts except that posts shall be spaced 6'-0" center to center unless otherwise shown on the plans, and shall be pressure treated with pentachlorophenol prior to painting. Guard posts shall be painted with one prime coat and two finish coats of white paint 708.05.

FOR DETAILS not shown see GR-1.



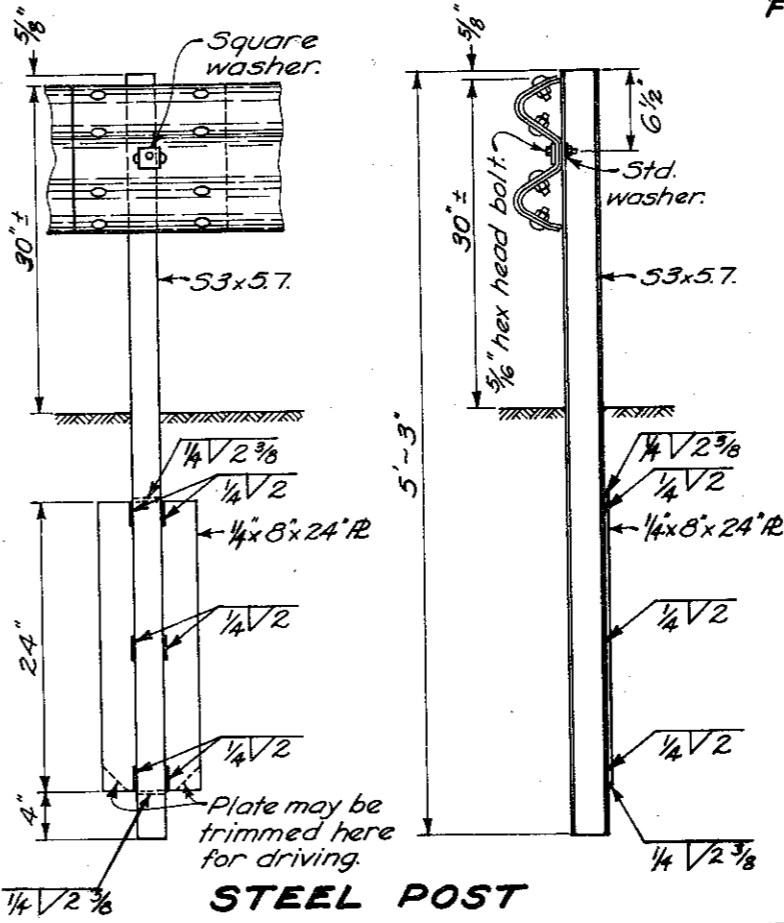
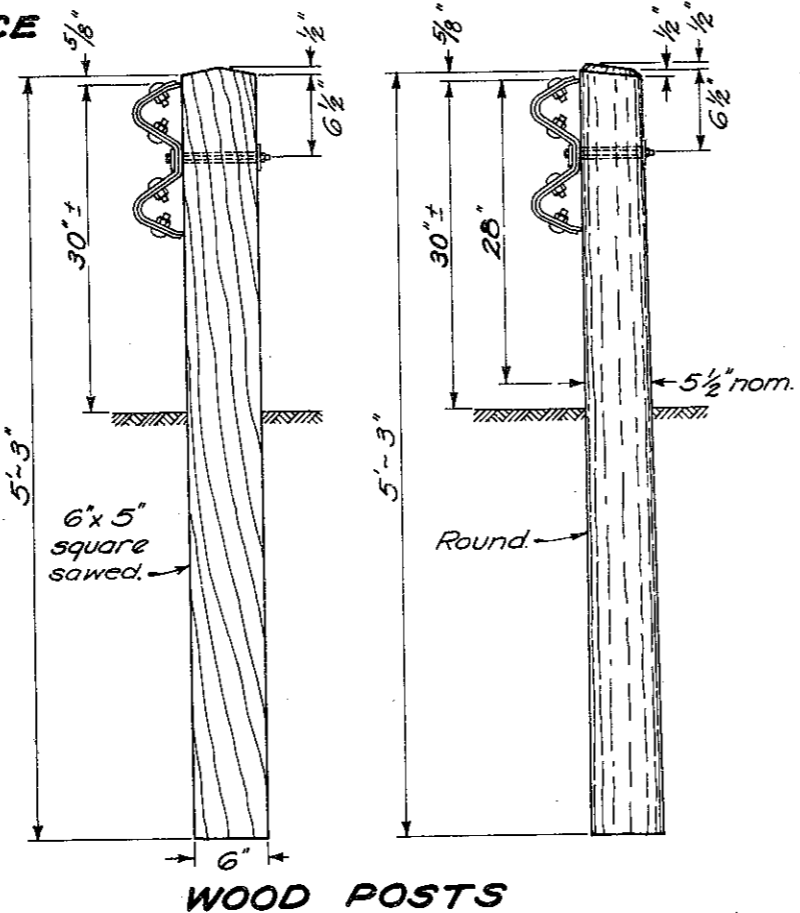
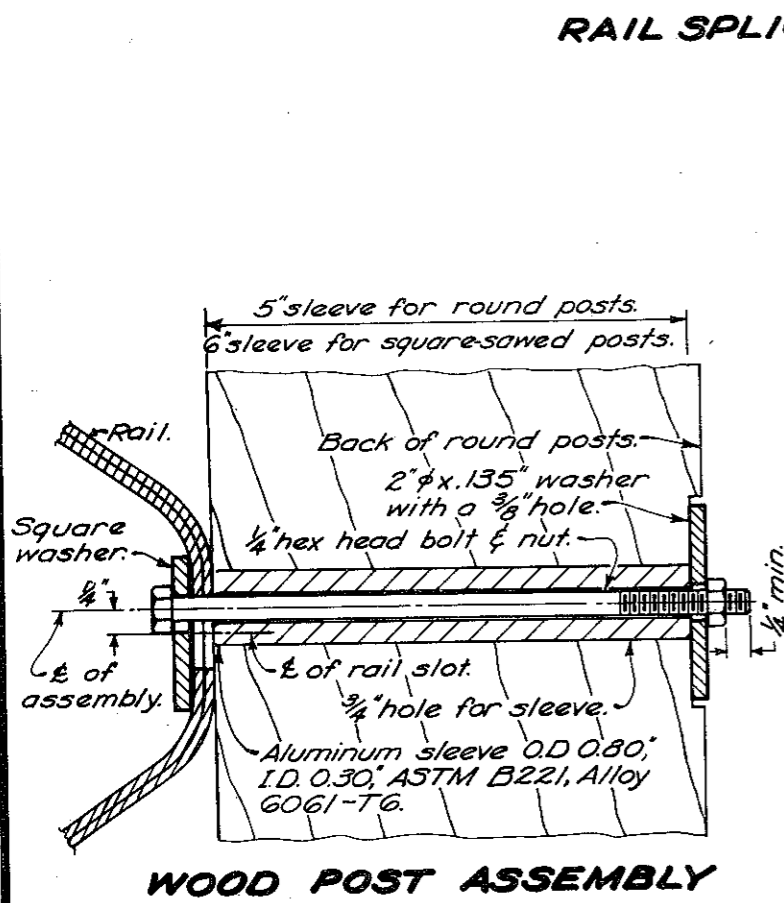
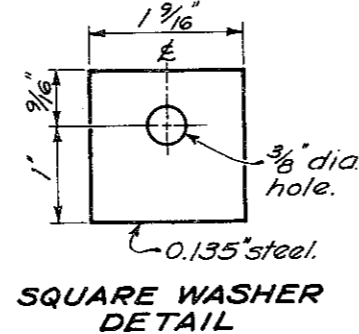
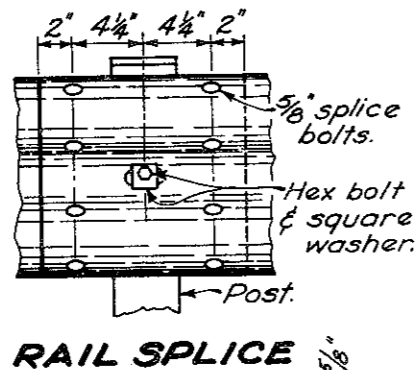
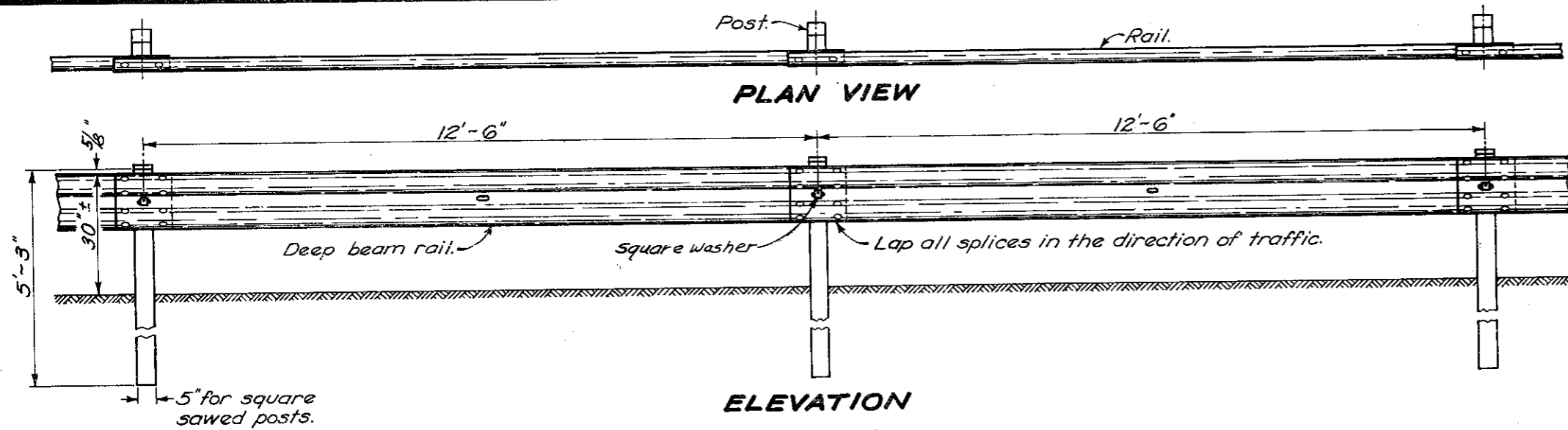
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

**GUARDRAIL
TYPE 7**

STANDARD CONSTRUCTION DRAWING GR-2A

APPROVED *[Signature]* ENGR., L&D.

DATE 1-1-71
12-6-76



NOTES

STEEL POSTS shall be 53x5.7 710.15 with a 1/4"x8"x24" steel plate welded to the back as shown, galvanized after fabrication. Post bolts shall be 5/16" by 1 1/4" hex head full body bolts, ASTM A-307, Grade A, with a minimum of 3/8" unthreaded. Provide a 1 1/8" x .135" square steel washer between post bolt and rail and one standard round steel washer between post and nut.

WOOD POSTS: Pressure treated wood posts 710.14 may be 5"x6" square sawed or 5 1/2" plus or minus 1/2" diameter round, measured at a point 28" below top of rail. Post bolts shall be 1/2" hex head full body bolts, ASTM A-307, Grade B. Provide a 1 1/8" x .135" square steel washer between post bolt and rail, and a 2" x .135" round steel washer between post and nut. Aluminum pipe sleeve shall conform with ASTM B-221 Alloy 6061-T6.

POST SPACING ON CURVES shall be in accordance with the following:

Radius of Curvature	Post Spacing
220 feet and over.	12'-6"
Between 110 feet and 220 feet.	6'-3"
110 feet incl. to 75 feet.	4'-2"
75 feet incl. to 50 feet incl.	3'-1 1/2"
Less than 50 feet, not recommended.	

GUARD POSTS shall conform with the details and requirements for Type 7 wood posts except that posts shall be spaced 6'-0" center to center unless otherwise shown on the plans, and shall be treated per 710.14 with paintable preservative prior to painting. Guard posts shall be painted with one prime coat and two finish coats of white paint 708.05.

FOR DETAILS not shown see GR-1.

BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF TRANSPORTATION	
GUARDRAIL TYPE 7	
STANDARD CONSTRUCTION DRAWING	GR-2A
APPROVED <i>[Signature]</i>	ENGR., L.&D.
DATE 1-1-71 12-6-76 2-5-82	