

# STANDARD GUARD RAIL

## TWO END POSTS WITH ANCHOR

### NOTES

**GENERAL:**—Guard rail details hereon are shown to depict various requirements of the Standard Construction and Material Specifications. These details and notes are to supplement the Specifications. In furnishing and erecting guard rail the drawings and Specifications should be used together. The information hereon also supplements Standard Construction Drawings I-15 N<sup>o</sup> 2 and I-15 N<sup>o</sup> 3, which show the various types of guard rail.

**POSTS:**—Posts and braces shall conform to the requirements of Specifications shown hereon. The posts shall be made of No. 7 gage steel unless otherwise specified. Steel for posts shall meet the requirements of Sec. M-7.4 (a), Structural Steel. Load analysis determination only will be required. Check analysis may be made by the Laboratory from the finished material.

All posts shall be driven or set in the ground.  $\frac{3}{8}$  inch "U" bolts or brackets must be used to fasten cable or tape to steel posts where the plans permit fastening with "J" or "L" bolts to wood posts.

If cable, tape or fabric band is fastened with non-spring brackets a  $14" \times 3" \times \frac{1}{4}"$  steel plate is required between the rail elements and the post if either edge of the bracket fails to have bearing on the face of the posts.

Post spacing, measured along the center line of the rails, shall be as follows:—

For flexible plate 16'.  
For cable, traffic tape and woven wire band 16'.  
On curves having radii less than 600' they shall be spaced as called for in the Specifications. For steel beam type 12'-6".

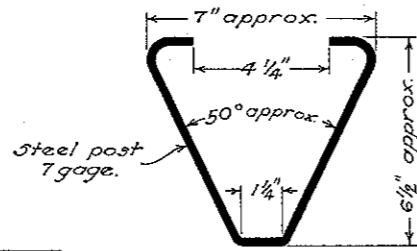
**END ANCHORAGE:**—Deadmen shall be used for end anchorage except where physical features such as bridges, drives, road intersections, etc. make this impractical, in which case the end anchorage shall be of the bracing type as shown hereon. In lieu of the concrete anchor shown a  $30" \times 30"$  bituminous coated metal anchor made of two 10 gage (or thicker) corrugated metal plates with their corrugations at right angles and welded together may be used. The corrugations shall have a pitch of  $5\frac{1}{4}"$  to 6" and a depth of  $\frac{1}{2}"$  to 2". A  $4" \times 3" \times 8$  gage bearing plate shall be used on the anchor rod. For runs of 160' or less the springs may be omitted from the tension assembly at one end.

**FITTINGS:**—Wedge connections, bolts, nuts, turnbuckles, anchor rods, brace rods, bearing plates and washers, except those of cast iron, shall be galvanized to conform with the requirements of the Material Details.

**RAILS:**—The various types of rail shall be erected and conform with the requirements of the Specifications and Material Details.

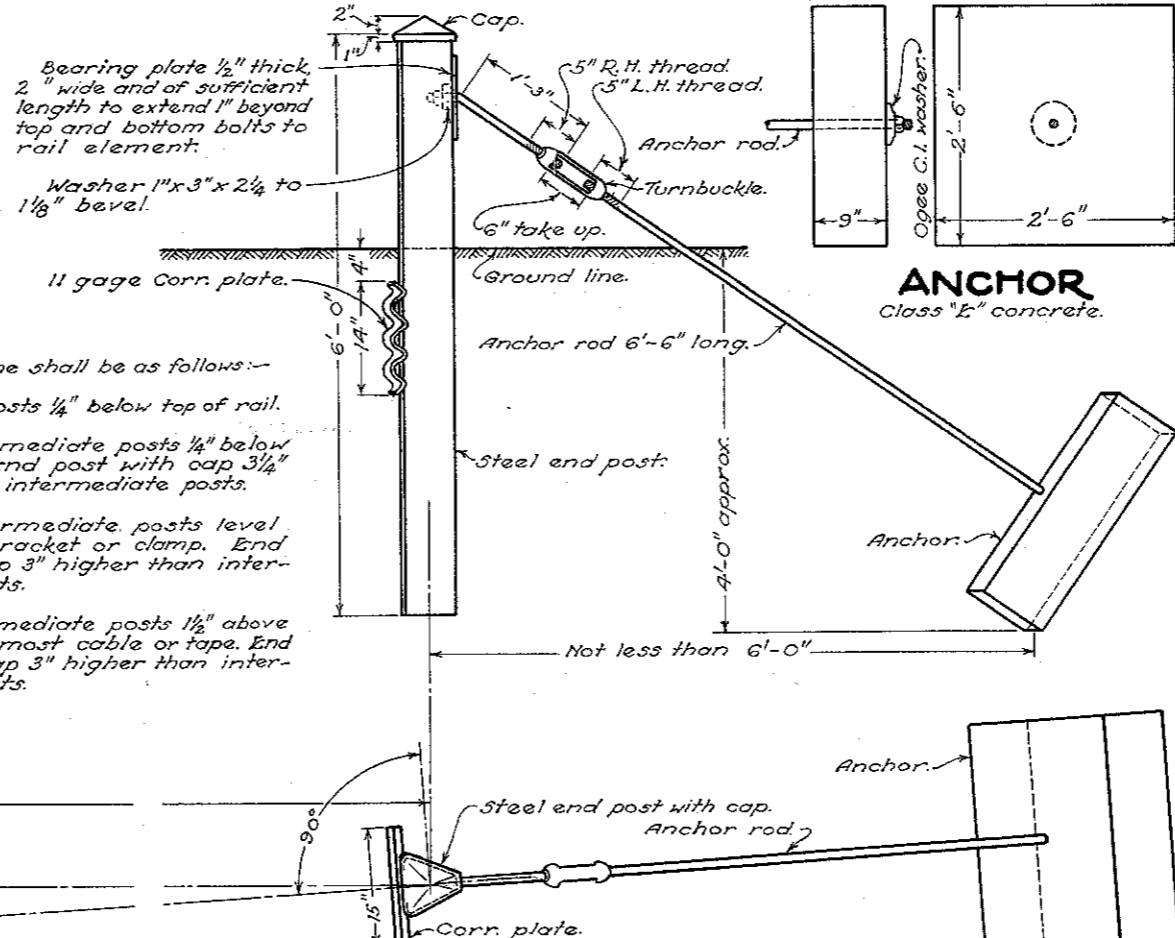
**PAINTING:**—Guard rail and appurtenances, except galvanized parts and posts, shall be painted with one shop coat as specified in Sec. I-15.08 and two field coats of white as specified in Sec. I-15.10.

The entire length of the posts shall be given one shop coat of paint as specified in Sec. I-15.08 and the upper three feet of the posts shall be given two shop coats of white paint meeting the requirements of Sec. M-9.6.

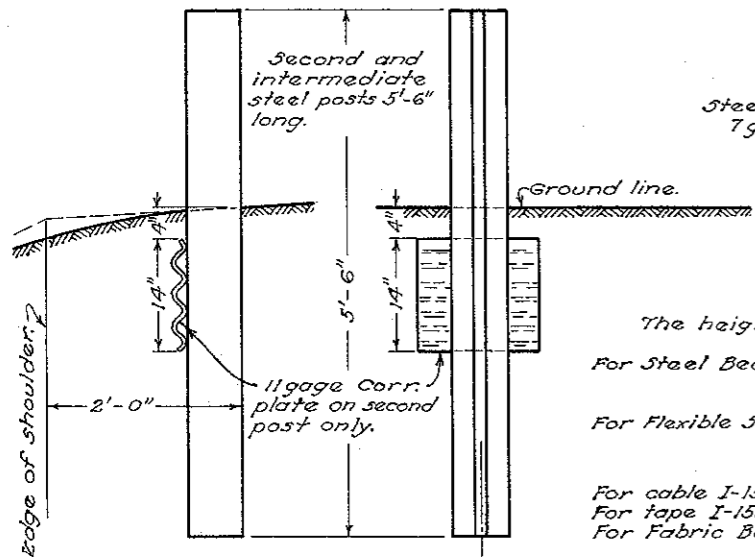


**SECTION OF STEEL POST**

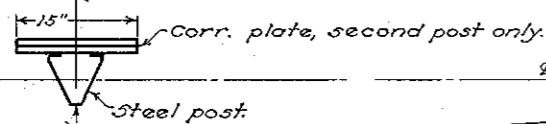
- The height of posts above the ground line shall be as follows:—
- For Steel Beam I-15.05 } Top of all posts  $\frac{1}{4}"$  below top of rail.
  - For Flexible Steel Plate I-15.03 } Top of intermediate posts  $\frac{1}{4}"$  below top of rail. End post with cap  $\frac{3}{4}"$  higher than intermediate posts.
  - For cable I-15.04 or I-15.04 A } Top of intermediate posts level with top of bracket or clamp. End posts with cap 3" higher than intermediate posts.
  - For tape I-15.06 or I-15.06 A } Top of intermediate posts  $\frac{1}{2}"$  above top of uppermost cable or tape. End posts with cap 3" higher than intermediate posts.
  - For Fabric Band I-15.06 B } Top of intermediate posts  $\frac{1}{2}"$  above top of uppermost cable or tape. End posts with cap 3" higher than intermediate posts.
  - For cable or tape fastened with  $\frac{3}{8}"$  "U" bolts. } Top of intermediate posts  $\frac{1}{2}"$  above top of uppermost cable or tape. End posts with cap 3" higher than intermediate posts.



**ELEVATION**



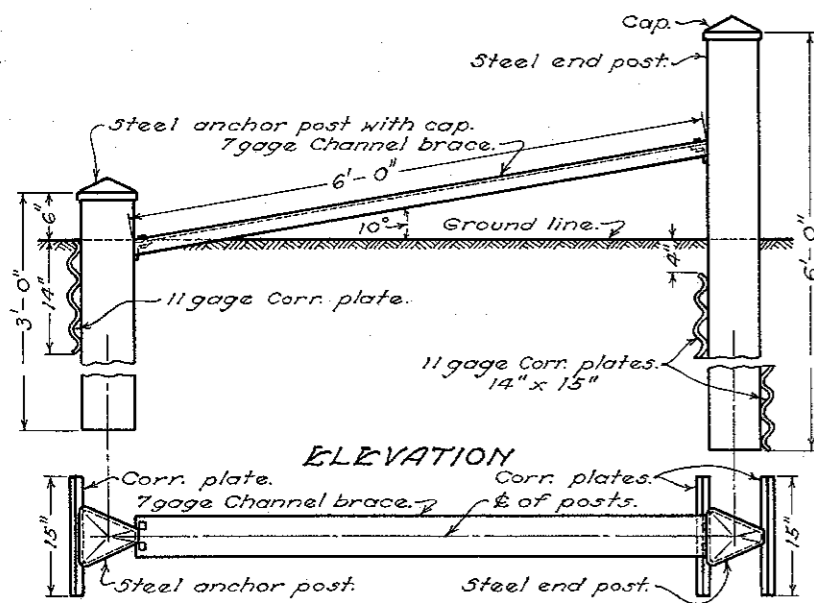
**SIDE VIEW**



**PLAN**

Type I-15.03	5" to 8"
Type I-15.04	5" to 7"
Type I-15.06	5" to 7"
Type I-15.04 A	0"
Type I-15.06 A	0"
Type I-15.06 B	0"

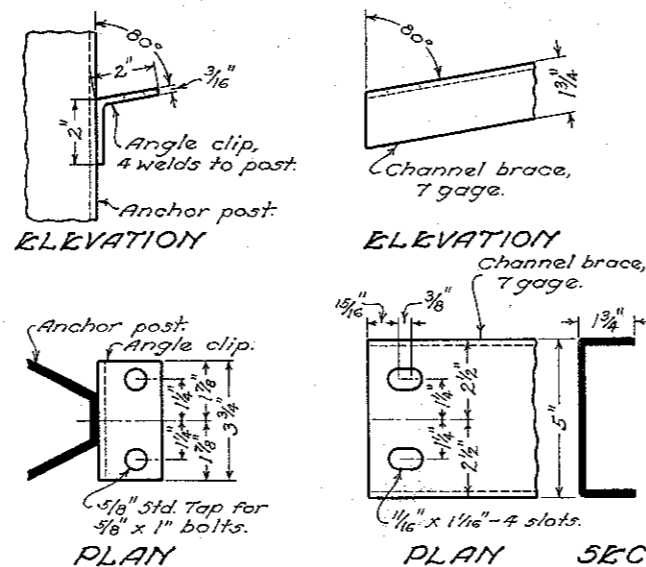
## END POST WITH BRACK



**ELEVATION**

**PLAN**

## CHANNEL BRACE AND ANGLE CLIP



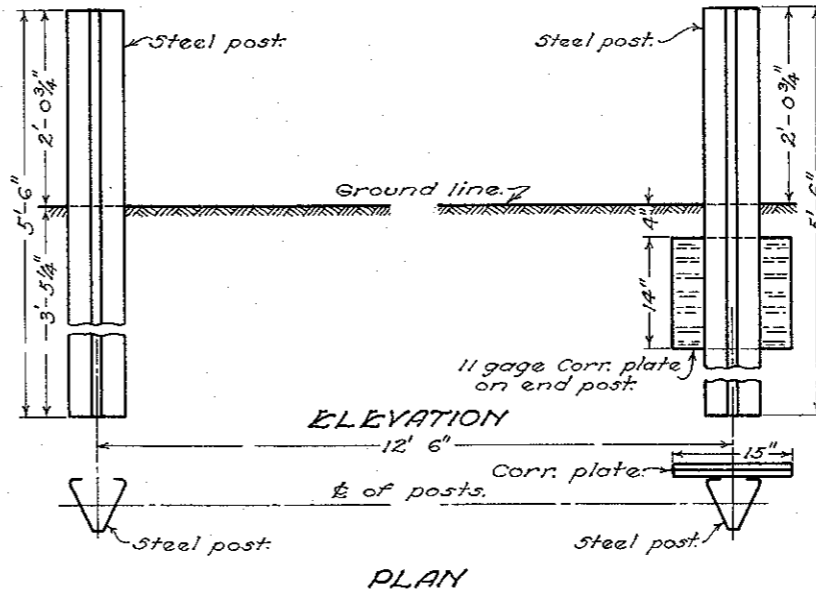
**ELEVATION**

**ELEVATION**

**PLAN**

**PLAN SEC.**

## TWO END POSTS FOR BEAM TYPE RAIL



**ELEVATION**

**PLAN**

BUREAU OF LOCATION & RIGHT OF WAY  
OHIO DEPARTMENT OF HIGHWAYS

**GUARD RAIL**

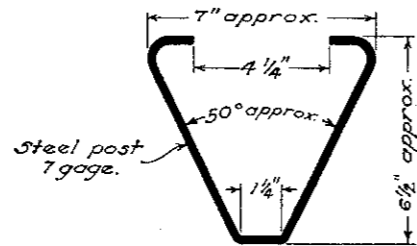
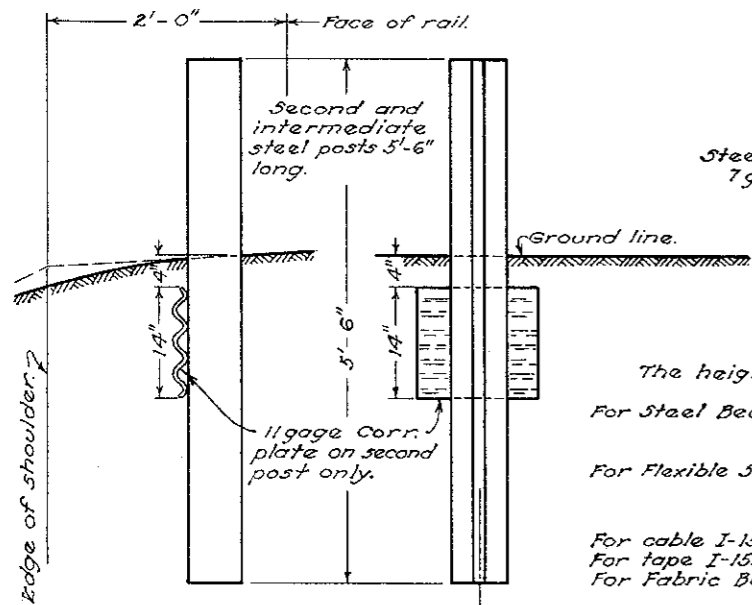
STANDARD CONSTRUCTION DRAWING I-15 N<sup>o</sup> 4  
APPROVED M.D.S. CHIEF ENGINEER

DATE 6-16-41

# STANDARD GUARD RAIL

## TWO END POSTS WITH ANCHOR

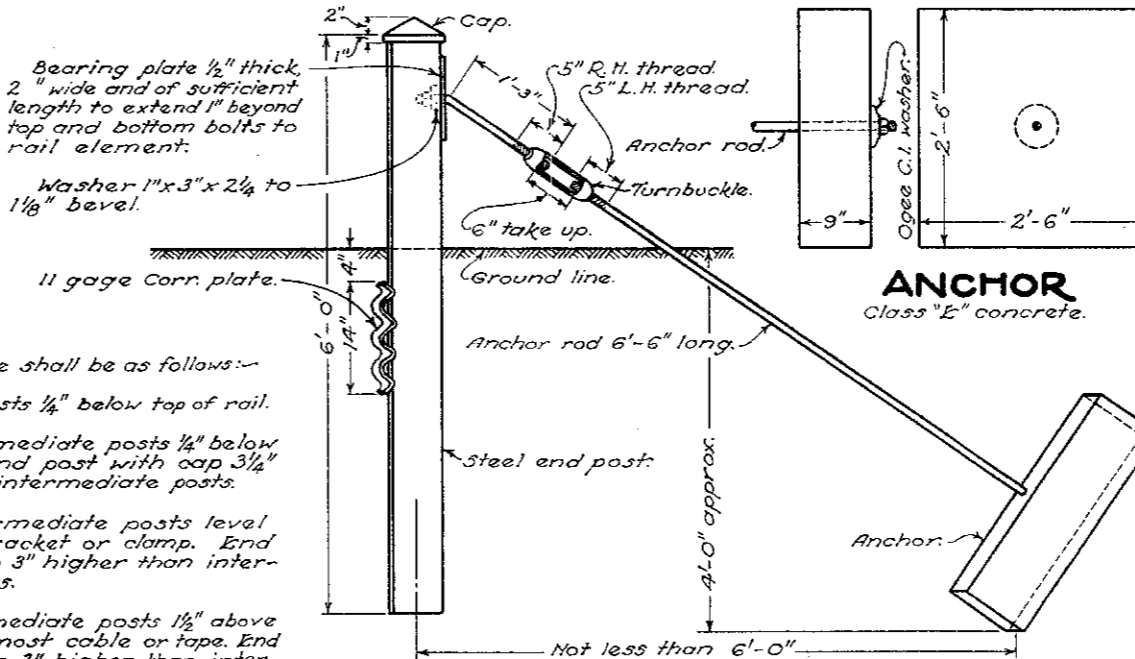
## NOTES



**SECTION OF STEEL POST**

The height of posts above the ground line shall be as follows:-

For Steel Beam I-15.05	Top of all posts $\frac{1}{4}$ " below top of rail.
For Flexible Steel Plate I-15.03	Top of intermediate posts $\frac{1}{4}$ " below top of rail. End post with cap $\frac{3}{4}$ " higher than intermediate posts.
For cable I-15.04 or I-15.04 A For tape I-15.06 or I-15.06 A For Fabric Band I-15.06 B	Top of intermediate posts level with top of bracket or clamp. End posts with cap 3" higher than intermediate posts.
For cable or tape fastened with $\frac{3}{8}$ " U bolts	Top of intermediate posts $\frac{1}{2}$ " above top of uppermost cable or tape. End posts with cap 3" higher than intermediate posts.



**ANCHOR**  
Class "E" concrete.

**GENERAL:**—Guard rail details hereon are shown to depict various requirements of the Standard Construction and Material Specifications. These details and notes are to supplement the Specifications. In furnishing and erecting guard rail the drawings and Specifications should be used together. The information hereon also supplements Standard Construction Drawings I-15 No 2 and I-15 No 3, which show the various types of guard rail.

**POSTS:**—Posts and braces shall conform to the requirements of Specifications shown hereon. The posts shall be made of No 7 gage steel unless otherwise specified. Steel for posts shall meet the requirements of Sec. M-7.4 (a), Structural steel. Lateral analysis determination only will be required. Check analysis may be made by the Laboratory from the finished material.

All posts shall be driven or set in the ground.  $\frac{3}{8}$  inch "U" bolts or brackets must be used to fasten cable or tape to steel posts where the plans permit fastening with "J" or "L" bolts to wood posts.

If cable, tape or fabric band is fastened with non-spring brackets a  $14" \times 3" \times \frac{1}{4}"$  steel plate is required between the rail elements and the post if either edge of the bracket fails to have bearing on the face of the posts.

Post spacing, measured along the center line of the rails, shall be as follows:-

For flexible plate 16'.  
For cable, traffic tape and woven wire band 16'.  
On curves having radii less than 600' they shall be spaced as called for in the Specifications.  
For steel beam type 12'-6".

**SIDE VIEW**

**ELEVATION**

Type I-15.03	5" to 8"
Type I-15.04	5" to 7"
Type I-15.06	5" to 7"
Type I-15.04 A	0"
Type I-15.06 A	0"
Type I-15.06 B	0"

Corr. plate, second post only.

Steel post.

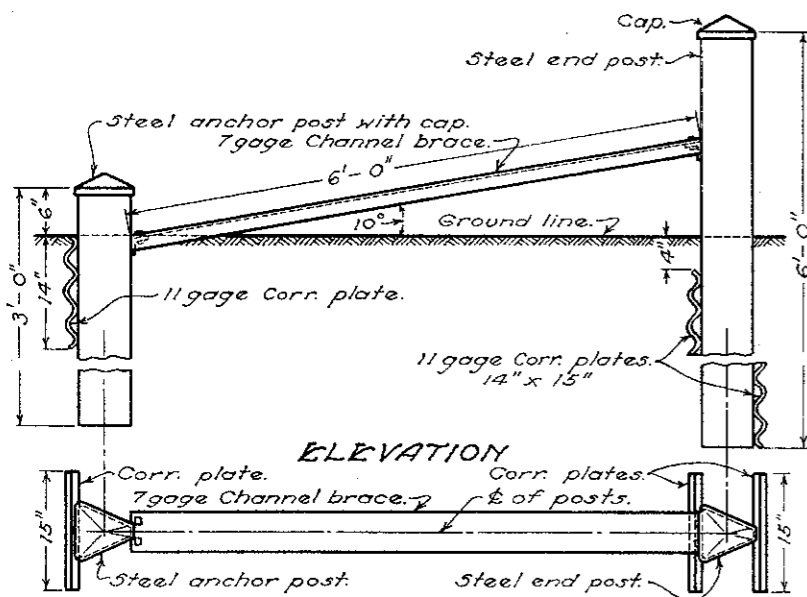
$\frac{1}{2}$  of posts.

**PLAN**

## END POST WITH BRACK

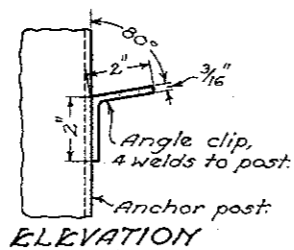
## CHANNEL BRACE AND ANGLE CLIP

## TWO END POSTS FOR BEAM TYPE RAIL

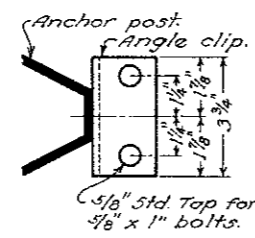


**ELEVATION**

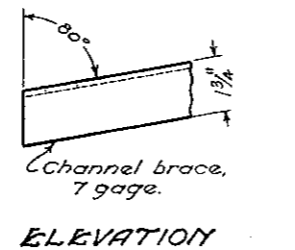
**PLAN**



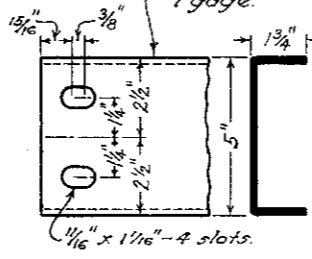
**ELEVATION**



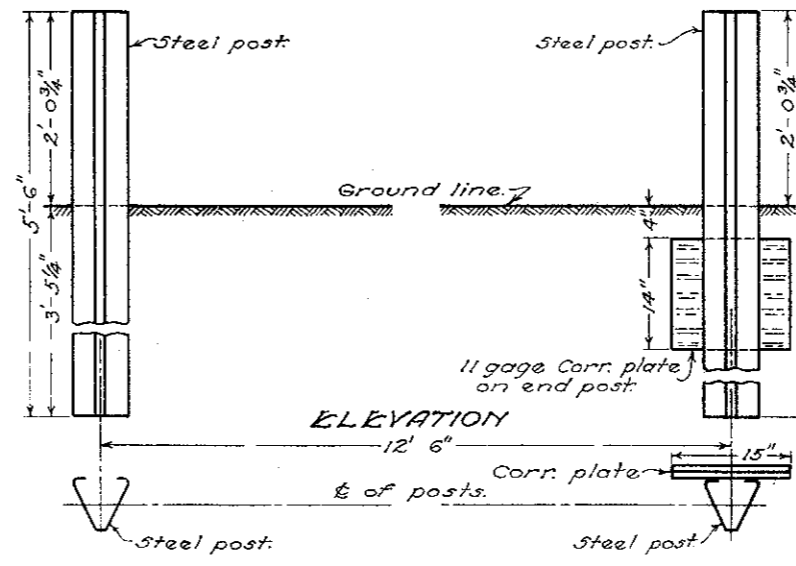
**PLAN**



**ELEVATION**



**PLAN SEC.**



**ELEVATION**

**PLAN**

**END ANCHORAGE:**—Deadmen shall be used for end anchorage except where physical features such as bridges, drives, road intersections, etc make this impractical, in which case the end anchorage shall be of the bracing type as shown hereon. In lieu of the concrete anchor shown a  $30" \times 30"$  bituminous coated metal anchor made of two 10 gage (or thicker) corrugated metal plates with their corrugations at right angles and welded together may be used. The corrugations shall have a pitch of  $5\frac{3}{4}"$  to 6" and a depth of  $\frac{1}{2}"$  to 2". A  $4" \times 3" \times 8$  gage bearing plate shall be used on the anchor rod. For runs of 160' or less the springs may be omitted from the tension assembly at one end.

**FITTINGS:**—Wedge connections, bolts, nuts, turnbuckles, anchor rods, brace rods, bearing plates and washers, except those of cast iron, shall be galvanized to conform with the requirements of the Material Details.

**RAILS:**—The various types of rail shall be erected and conform with the requirements of the Specifications and Material Details.

**PAINTING:**—Guard rail and appurtenances, except galvanized parts and posts, shall be painted with one shop coat as specified in Sec. I-15.08 and two field coats of white as specified in Sec. I-15.10.

The entire length of the posts shall be given one shop coat of paint as specified in Sec. I-15.08 and the upper three feet of the posts shall be given two shop coats of white paint meeting the requirements of Sec. M-9.6.

BUREAU OF LOCATION & RIGHT OF WAY  
OHIO DEPARTMENT OF HIGHWAYS

**GUARD RAIL**

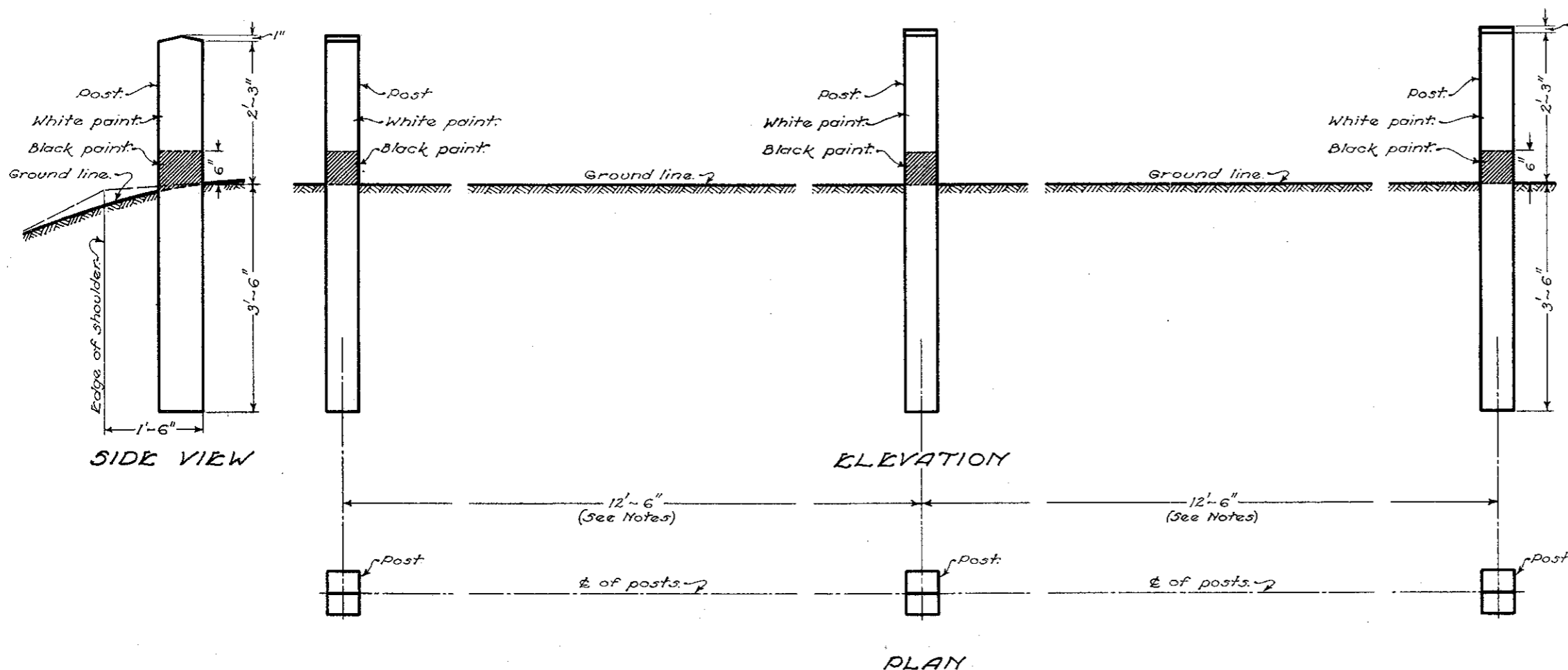
STANDARD CONSTRUCTION DRAWING  
I-15 No 4

APPROVED M.D.S. CHIEF ENGINEER

DATE  
6-16-41  
11-1-41

# STANDARD WOOD GUARD RAIL POSTS WITHOUT RAIL

## POST ALIGNMENT



### NOTES

**GENERAL:**—Guard rail post details shown hereon shall be used when guard rail posts only are specified on the plans or proposals.

**POSTS** shall conform to the requirements of the Construction and Material Specifications.

Posts shall be 6"x 8" sawed or round posts. When so specified posts shall be 6"x 6" sawed.

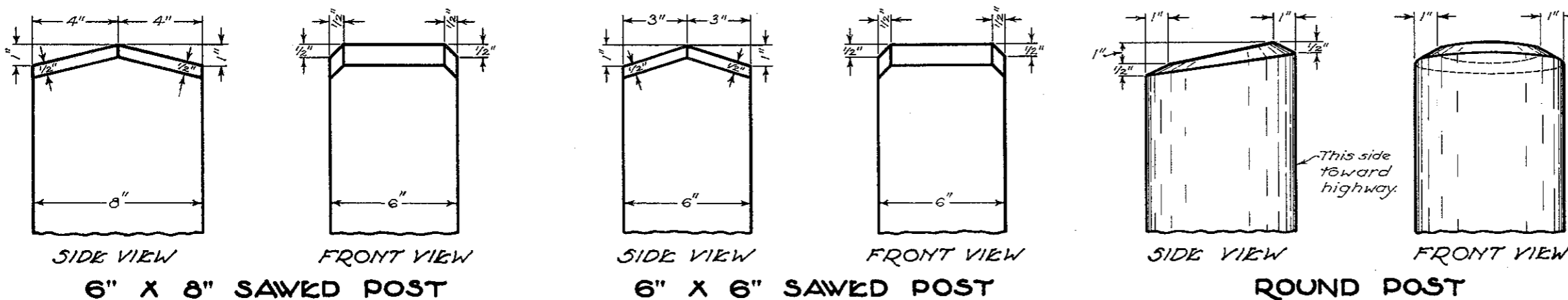
All posts shall be spaced 12'-6" on centers, unless otherwise specified, measured along the face of the posts. Top of posts shall be trimmed after posts are set.

Posts shall be butt treated unless otherwise specified.

**PAINTING** shall be done in accordance with the pertinent sections of the Specifications governing guard rail posts.

White prime coat, upper 2.2".  
 White finish coats, two, upper 2.2".  
 Black coats, two, 6" band above ground line.

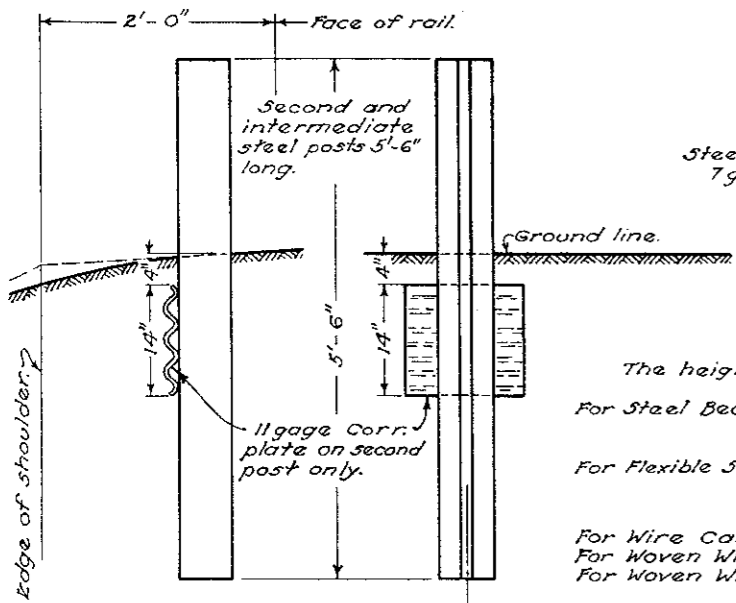
### TOPS OF POSTS



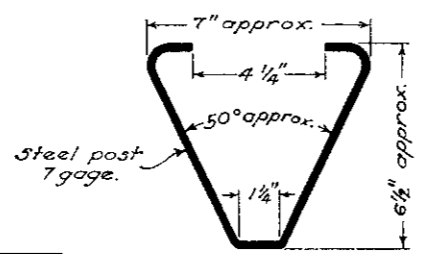
BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF HIGHWAYS	
<b>GUARD RAIL</b>	
STANDARD CONSTRUCTION DRAWING	I-15 NO. 4
APPROVED: <i>K. R. [Signature]</i> ENGR. L. & D.	
DATE: 3-10-42 2-1-47 12-1-54	

# STANDARD METAL GUARD RAIL POSTS

## TWO END POSTS WITH ANCHOR



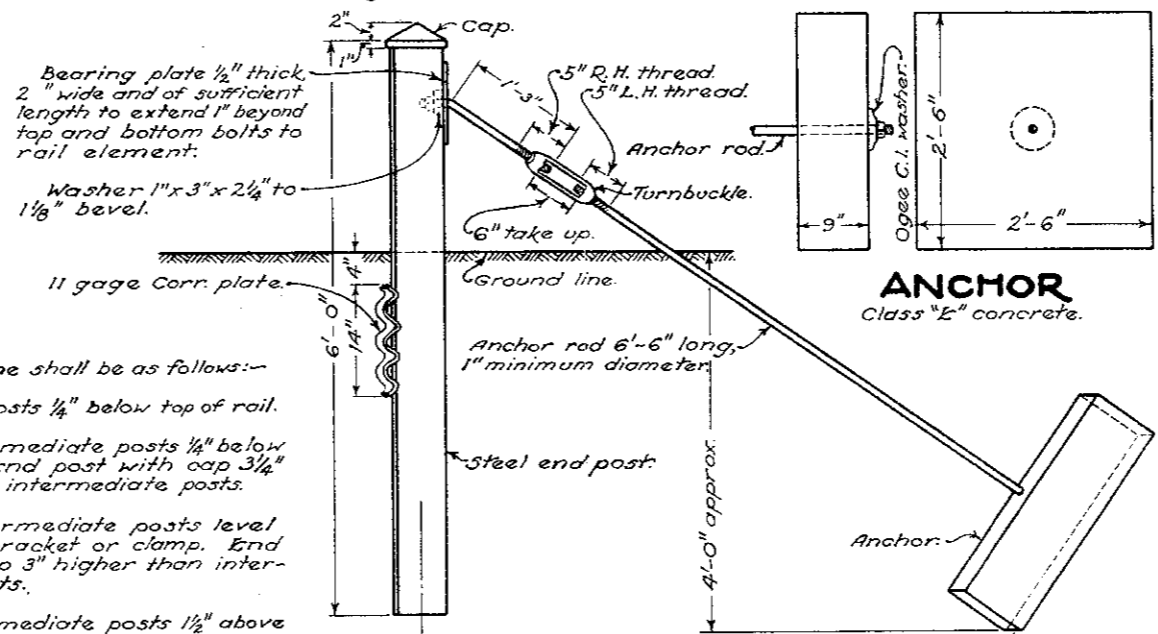
SIDE VIEW



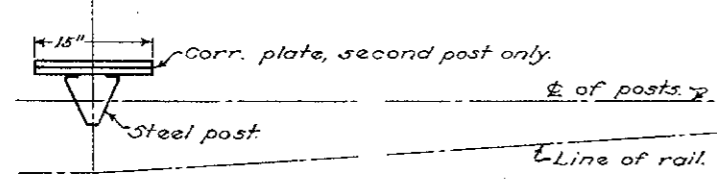
SECTION OF STEEL POST

The height of posts above the ground line shall be as follows:-

- For Steel Beam } Top of all posts 1/4" below top of rail.
- For Flexible Steel Plate } Top of intermediate posts 1/4" below top of rail. End post with cap 3 1/4" higher than intermediate posts.
- For Wire Cable } Top of intermediate posts level with top of bracket or clamp. End posts with cap 3" higher than intermediate posts.
- For Woven Wire Tape } Top of intermediate posts 1/2" above top of uppermost cable or tape. End posts with cap 3" higher than intermediate posts.
- For cable or tape fastened with 3/8" U bolts.

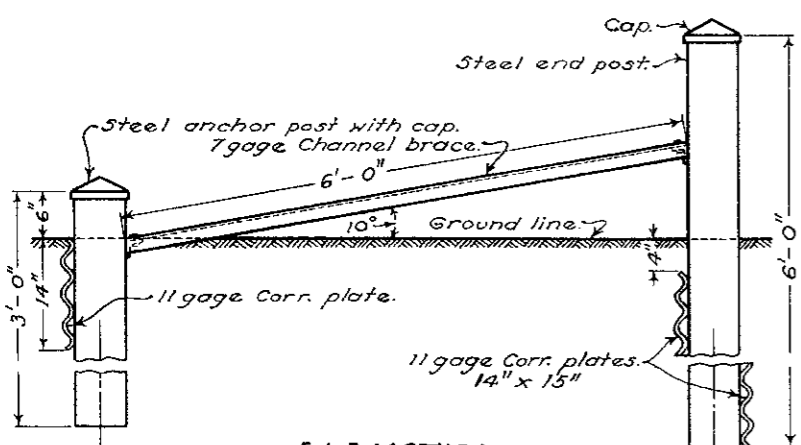


ELEVATION

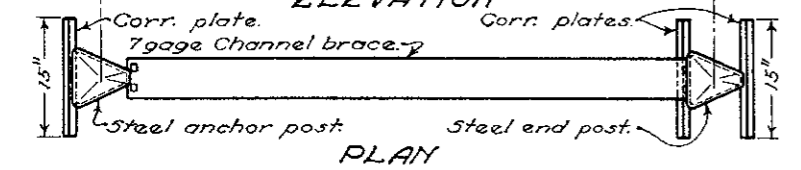


PLAN

## END POST WITH BRACK

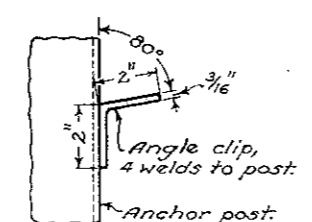


ELEVATION

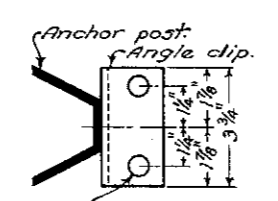


PLAN

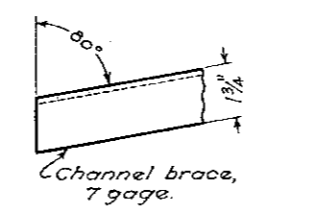
## CHANNEL BRACE AND ANGLE CLIP



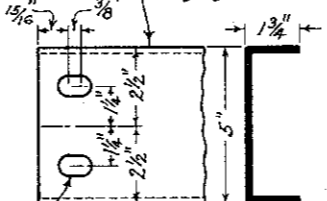
ELEVATION



PLAN

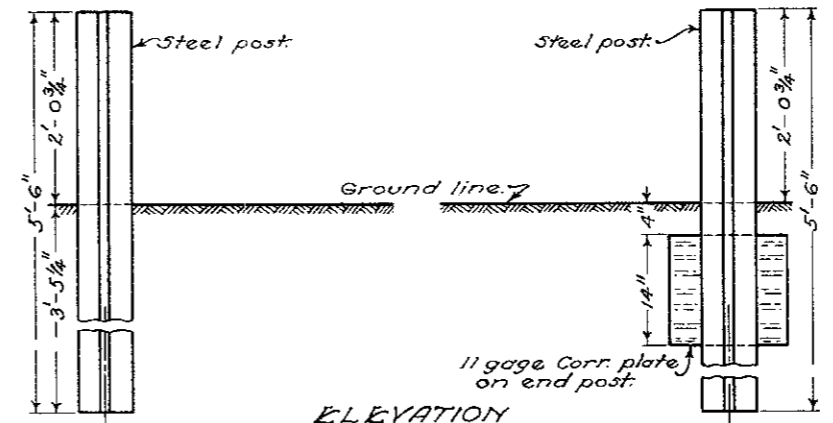


ELEVATION

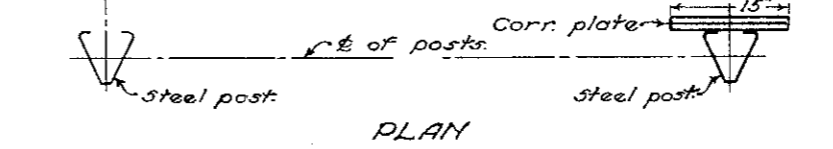


PLAN SEC.

## TWO END POSTS FOR BEAM TYPE RAIL



ELEVATION



PLAN

## NOTES

GENERAL: Standard Construction Drawings showing rail types shall be used in conjunction with this drawing.

POSTS and braces shall conform to the requirements of the specifications shown hereon. The posts shall be made of No. 7 gage steel unless otherwise specified. Steel for posts shall meet the requirements of Sec. M-74 (a), Structural Steel. Ladle analysis determination only will be required. Check analysis may be made by the Laboratory from the finished material.

All posts shall be driven or set in the ground. Posts shall be spaced 16 feet on centers for all types of rail except steel beam, measured along the center line of the rail except where otherwise noted in the Specifications for curves. Posts for steel beam type shall be spaced 12'-6" on centers measured along the center line of the rail.

3/8" U bolts or brackets shall be used to fasten cable or tape to steel posts where the plans permit fastening with "J" or "L" bolts to wood posts.

If cable, tape or woven wire band is fastened with non-spring brackets a 14"x3"x1/4" steel plate is required between the rail element and the post if either edge of the bracket fails to have bearing on the face of the post.

END ANCHORAGE: Where end anchorage is required deadmen shall be used except where physical features such as bridges, drives, road intersections, etc. make this impractical, in which case the end anchorage shall be of the bracing type as shown hereon. In lieu of the concrete anchor shown a 30"x30" bituminous coated metal anchor made of two 10 ga. (or thicker) corrugated metal plates with their corrugations at right angles and welded together may be used. The corrugations shall have a pitch of 5 3/4" to 6" and a depth of 1 1/2" to 2". A 4"x3"x8 ga. bearing plate shall be used on the anchor rod.

PAINTING: The entire length of the post and channel brace, when used, shall be given one shop coat of paint. The portion of the post above the ground shall have two additional coats of paint. The paint below the lower edge of the rail shall be black and the paint above the lower edge of the rail shall be white.

BUREAU OF LOCATION AND DESIGN  
OHIO DEPARTMENT OF HIGHWAYS

**GUARD RAIL**

STANDARD CONSTRUCTION DRAWING  
APPROVED: *[Signature]* CHIEF ENGINEER

I-15  
No. 4

DATE:  
6-16-41  
11-1-41  
2-1-47

# STANDARD WOOD GUARD RAIL POSTS WITHOUT RAIL

## POST ALIGNMENT

### NOTES

**GENERAL:**—Guard rail post details shown hereon shall be used when guard rail posts only are specified on the plans or proposals.

**POSTS** shall conform to the requirements of the Construction and Material Specifications.

Posts shall be 6"x8" sawed or round posts. When so specified posts shall be 6"x6" sawed.

All posts shall be spaced 12'-6" on centers, unless otherwise specified, measured along the face of the posts.

Top of posts shall be trimmed after posts are set.

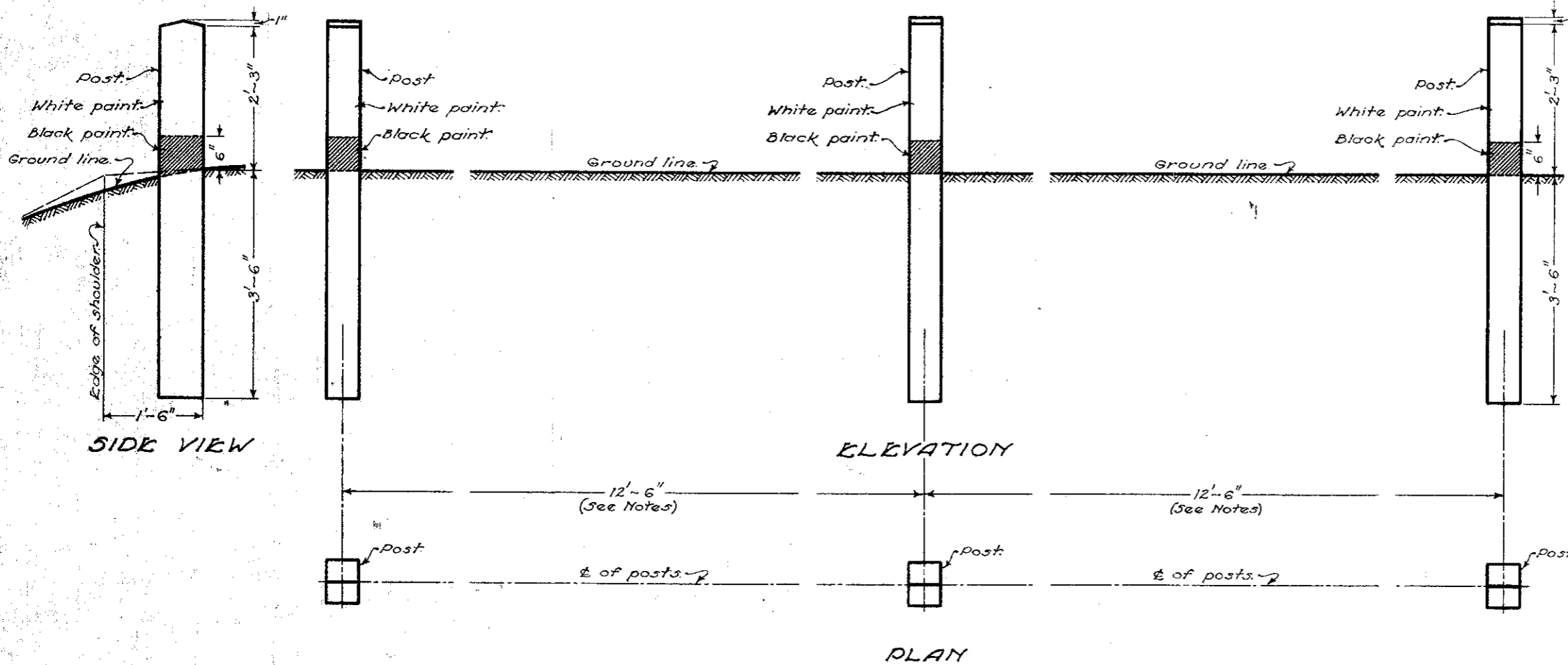
Posts shall be butt treated unless otherwise specified.

**PAINTING** shall be done in accordance with the pertinent sections of the Specifications governing guard rail posts.

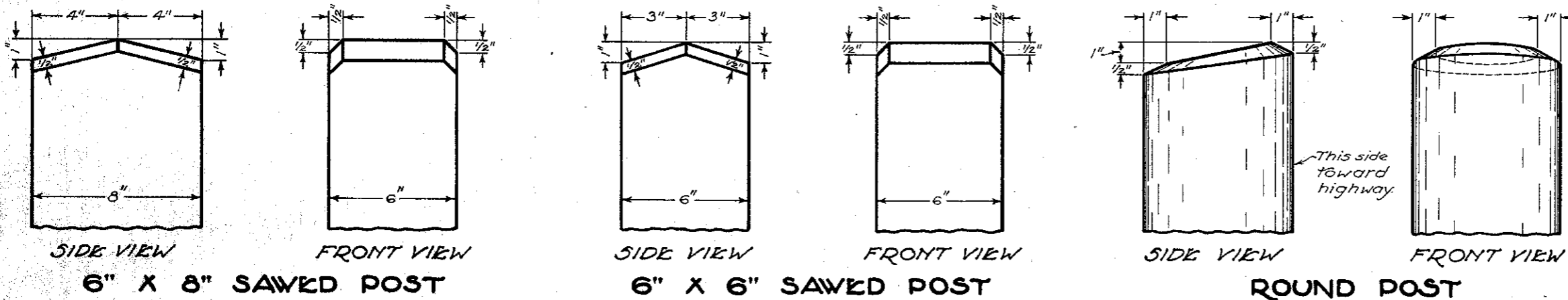
White prime coat, upper 22".

White finish coats, two, upper 22".

Black coats, two, 6" band above ground line.



### TOPS OF POSTS



BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF HIGHWAYS	
<b>GUARD RAIL</b>	
DATE 3-10-42 2-1-47 12-1-54	I-15 NO. 4
STANDARD CONSTRUCTION DRAWING	
APPROVED <i>K. R.</i> ENGR. L. & D.	