

STANDARD TYPE S-C GUARD RAIL

NOTES

Among the essential features of this type of guard rail are a semi-floating type of ribbon-to-post fixture and some form of spring joint or "take-up" which is capable of adjustment for tension and yet which provides a certain amount of flexibility and resiliency in case of impact or collision. Alternate designs of (A) Ribbon-to-post link, (B) Spring joint or "take-up", and (C) Ribbon end fixture will be permitted providing they are unquestionably equivalent to the items shown hereon, in securing the above described results.

POSTS:
Round posts to be treated as per Specifications and shall be 8" minimum diameter and 10" maximum bottom diameter except white cedar, which shall be 8 3/4" minimum diameter.
Square posts shall be full 6"x8" and of white oak or chestnut.
Bolt holes shall be bored and tops of posts trimmed after the posts are set.
The last two posts at each end of the section shall be set in concrete of 1:6 1/2 mix.

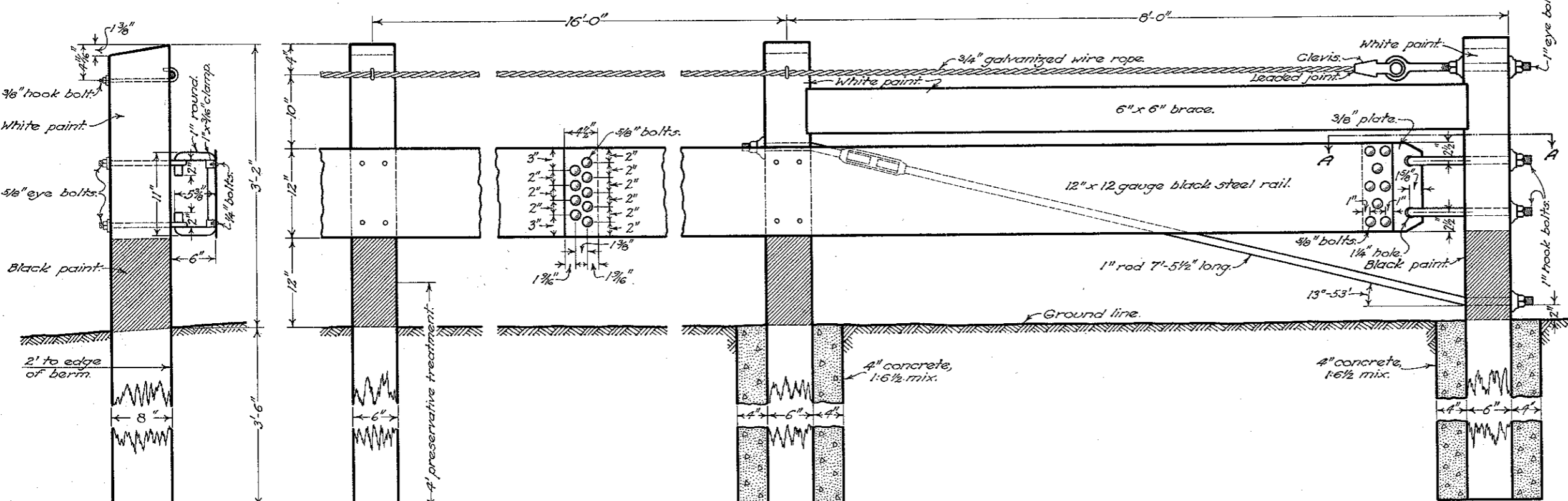
CABLE:
Cable may be 3/4" wire rope or 21 strand woven wire tape conforming to the requirements of the Material Details.
Splicing of the cable will not be permitted.

STEEL RAIL:
Steel rail shall be a black steel ribbon 12" 12 gauge having a tensile strength of 45,000 lbs. per square inch. Rail splices shall in all cases be lap joints located midway between posts in lapping adjacent members of the rail, due consideration shall be given to the direction of traffic.

GALVANIZED FITTINGS:
Clevis or wedge connections, eye bolts, cable hook bolts, spring joint bracket bolts, nuts, turnbuckles and washers, except those of cast iron, to be galvanized to conform with the requirements of the Material Details.
Length of cable hook bolts, 3/8" eye bolts and spring joint bracket bolts to be determined by size of posts.
A wedge connection may be used instead of the clevis if approved by the engineer.
If woven wire tape is used, modified hook bolts shall be provided.

SPRING JOINTS:
For all sections of guard rail whose length between end posts is 32' or less, no spring joints will be required. For lengths greater than 32' up to and including 112'; one spring joint shall be installed at the mid post. For lengths greater than 112', spring joints shall be installed as follows:-- Distance between adjacent spring joints shall in all cases be 96', the distance from end post to first spring joint shall be identical for the two ends of any one section of rail, but this distance shall in no case exceed 48'.

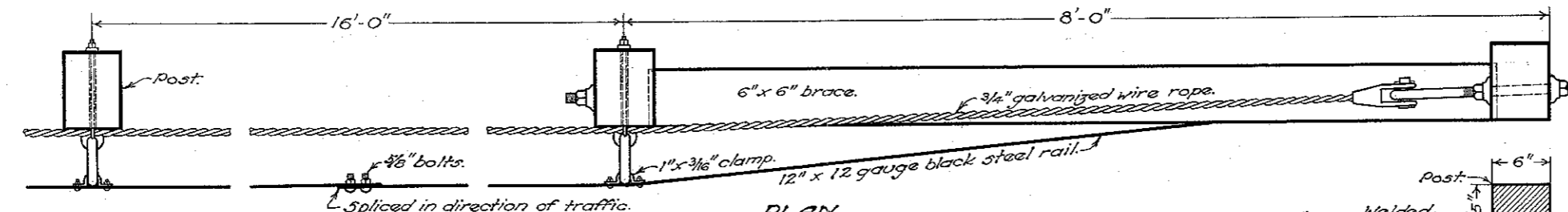
PAINTING:
Steel rail shall be given a prime coat of red lead paint and two coats of white lead and linseed oil paint. All other exposed metal surfaces not galvanized shall have three coats of white lead and linseed oil paint. Wood posts and braces shall be given one prime coat and two finishing coats. All surfaces in contact, not galvanized, shall receive one coat of the above paint before erection. Wood posts shall be painted from the ground line to the bottom of the steel rail with three coats of black paint. All paint shall conform to the requirements of the Material Details.
All bolts that pass thru posts shall be dipped in paint on using.



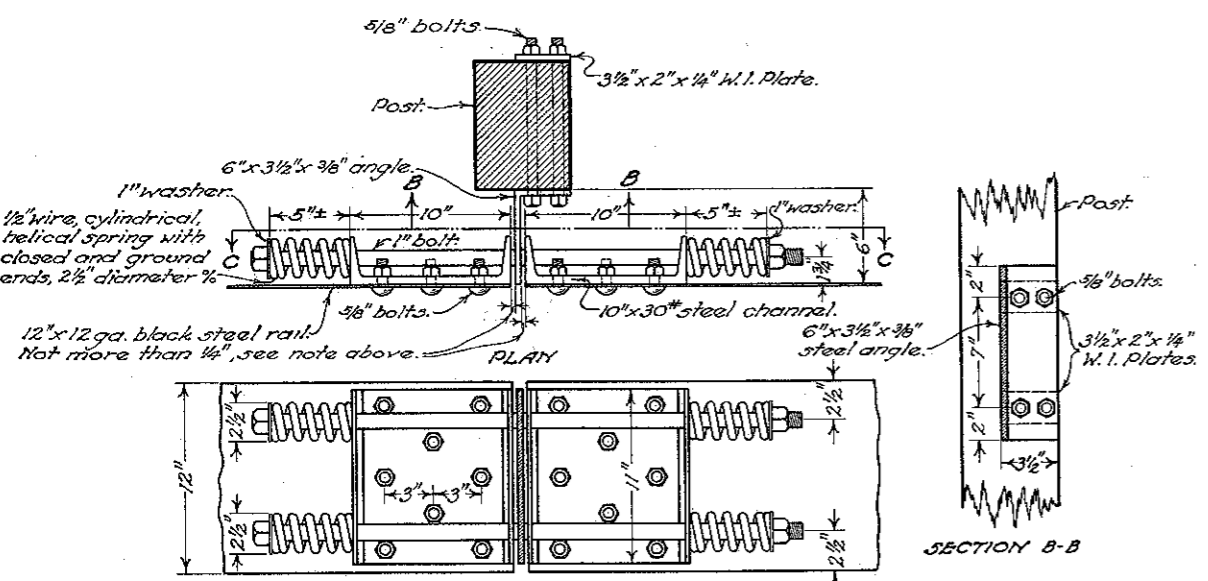
SIDE VIEW

ELEVATION

NOTE:
The opening between sections of the steel rail at the spring joints shall be governed by the temperature at time of erection.

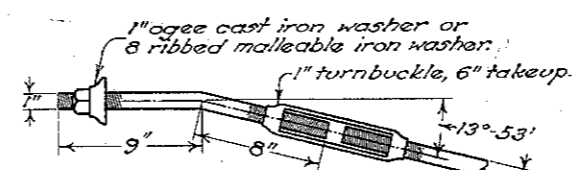


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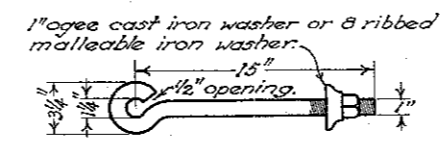


SECTION C-C
DETAIL OF SPRING JOINT

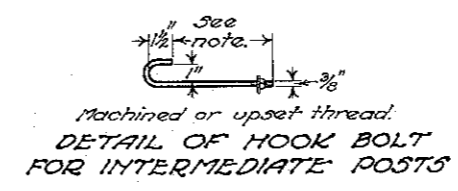
SECTION B-B



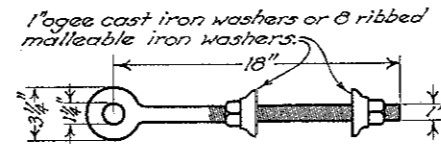
DETAIL OF FITTING FOR END POST TIE ROD



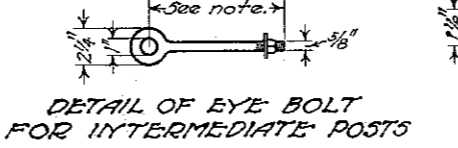
DETAIL OF HOOK BOLT FOR END POSTS



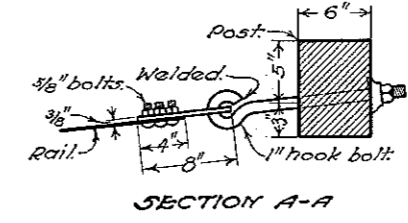
DETAIL OF HOOK BOLT FOR INTERMEDIATE POSTS



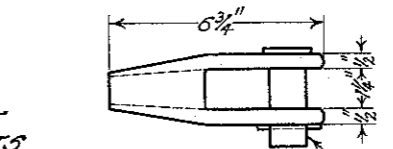
DETAIL OF EYE BOLT FOR END POSTS



DETAIL OF EYE BOLT FOR INTERMEDIATE POSTS



SECTION A-A



DETAIL OF CABLE CLEVIS

BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

GUARD RAIL

STANDARD
CONSTRUCTION I-15 S-C
DRAWING

APPROVED: *E. H.* CHIEF ENGR. CONST.

NOV. 1933
NOV. 1, 34

STANDARD TYPE S-C GUARD RAIL

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Among the essential features of this type of guard rail are a semi-floating type of ribbon-to-post fixture and some form of spring joint or "take-up" which is capable of adjustment for tension and yet which provides a certain amount of flexibility and resiliency in case of impact or collision. Alternate designs of (A) Ribbon-to-post link, (B) Spring joint or "take-up", and (C) Ribbon end fixture will be permitted providing they are unquestionably equivalent to the items shown hereon, in securing the above described results.

POSTS:
Square posts shall be full 6"x8" and of white oak or chestnut.
Bolt holes shall be bored and tops of posts trimmed after the posts are set.
The last two posts at each end of the section shall be set in concrete of 1:6 1/2 mix.

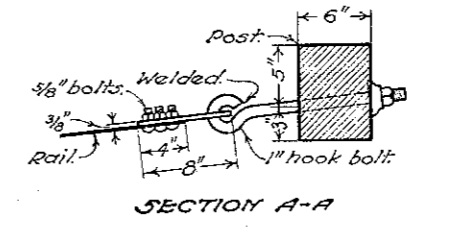
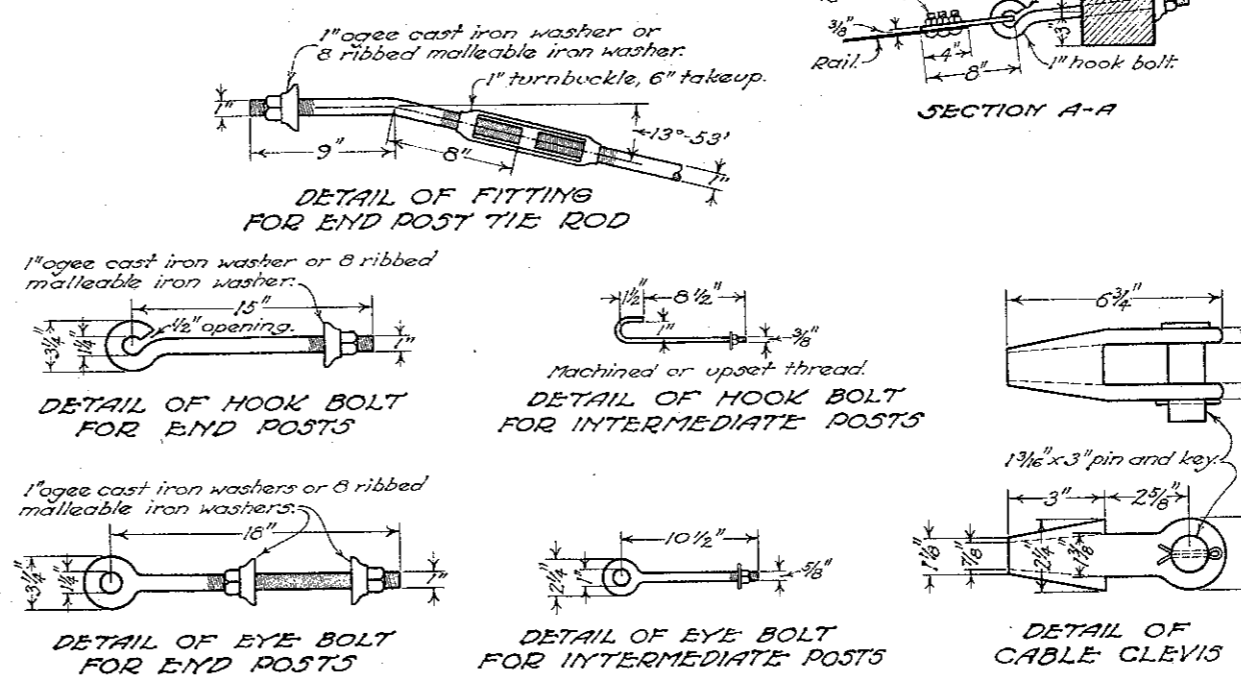
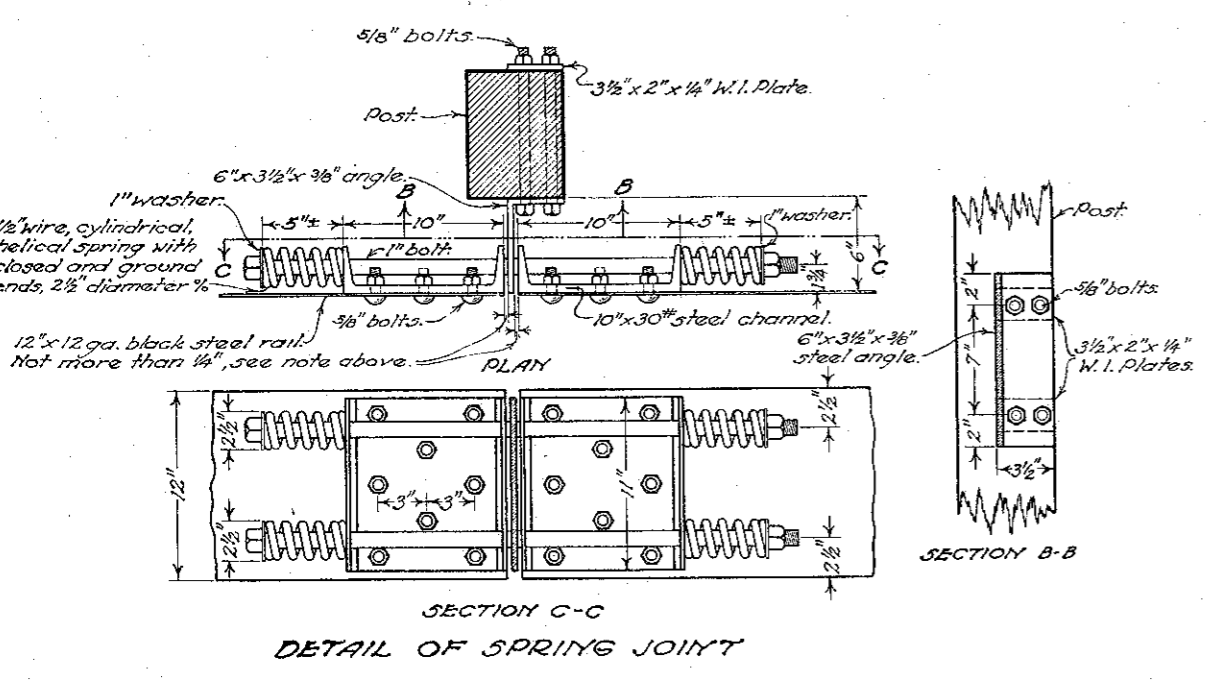
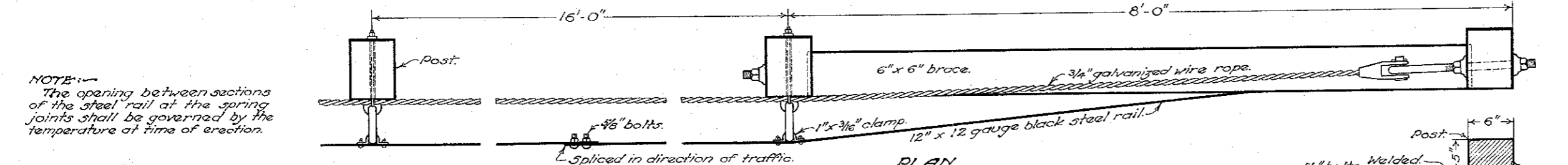
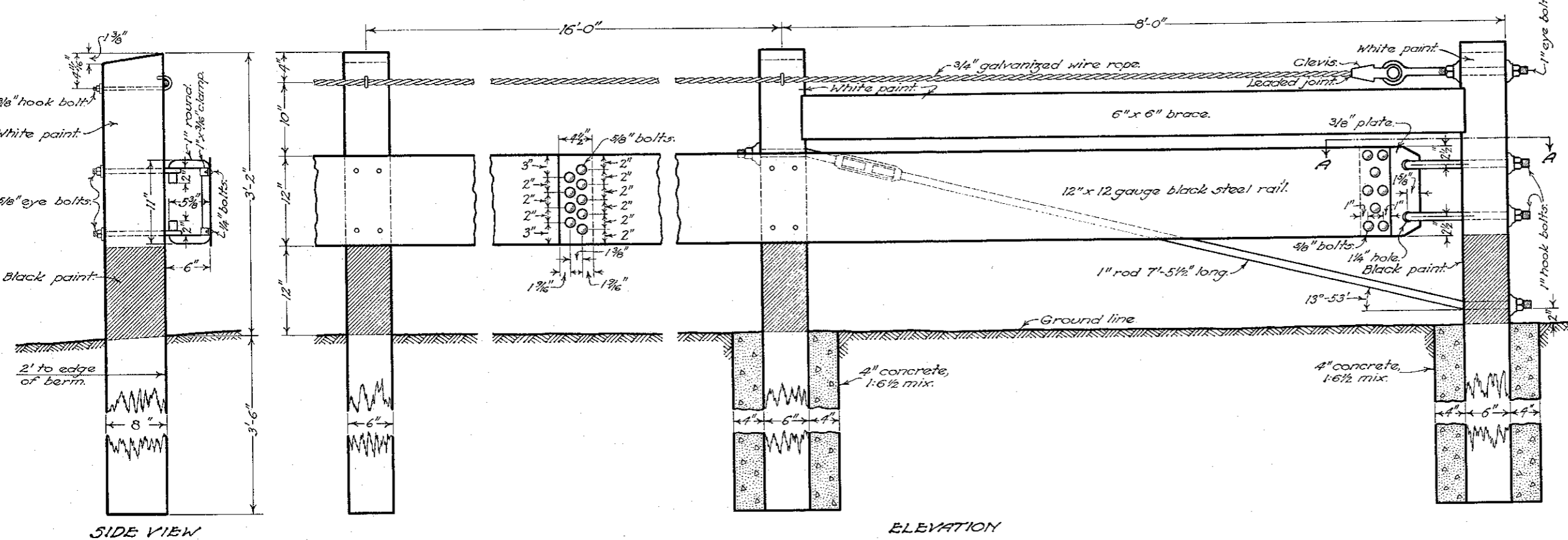
CABLE:
Cable may be 3/4" wire rope or 21 strand woven wire tape conforming to the requirements of the Material Details.
Splicing of the cable will not be permitted.

STEEL RAIL:
Steel rail shall be a black steel ribbon 12"-12 gauge having a tensile strength of 45,000 lbs. per square inch. Rail splices shall in all cases be lap joints located midway between posts. In lapping adjacent members of the rail, due consideration shall be given to the direction of traffic.

GALVANIZED FITTINGS:
Clevis or wedge connections, eye bolts, cable hook bolts, spring joint bracket bolts, nuts, turnbuckles and washers, except those of cast iron, to be galvanized to conform with the requirements of the Material Details.
A wedge connection may be used instead of the clevis if approved by the engineer.
If woven wire tape is used, modified hook bolts shall be provided.

SPRING JOINTS:
For all sections of guard rail whose length between end posts is 32' or less, no spring joints will be required. For lengths greater than 32' up to and including 112'; one spring joint shall be installed at the mid post. For lengths greater than 112', spring joints shall be installed as follows: Distance between adjacent spring joints shall in all cases be 96'; the distance from end post to first spring joint shall be identical for the two ends of any one section of rail, but this distance shall in no case exceed 48'.

PAINTING:
Steel rail shall be given a prime coat of red lead paint and two coats of white lead and linseed oil paint. All other exposed metal surfaces not galvanized shall have three coats of white lead and linseed oil paint. Wood posts and braces shall be given one prime coat and two finishing coats. All surfaces in contact, not galvanized, shall receive one coat of the above paint before erection. Wood posts shall be painted from the ground line to the bottom of the steel rail with three coats of black paint. All paint shall conform to the requirements of the Material Details.
All bolts that pass thru posts shall be dipped in paint on using.



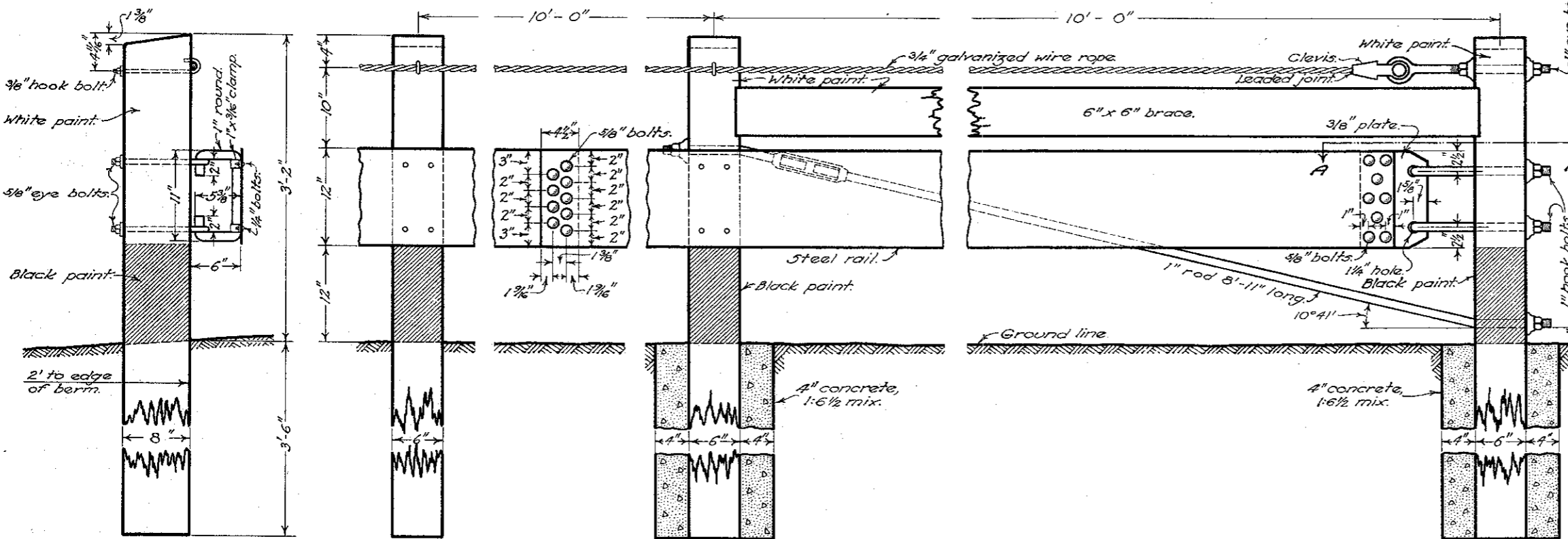
BUREAU OF LOCATION & DESIGN
OHIO DEPARTMENT OF HIGHWAYS

GUARD RAIL

STANDARD
CONSTRUCTION I-15 S-C
DRAWING

APPROVED *K. R.* CHIEF ENGINEER

STANDARD TYPE S-C GUARD RAIL



Among the essential features of this type guard rail are a semi-floating type of ribbon-to-post fixture and some form of spring joint or "take up" which is capable of adjustment for tension and yet which provides a certain amount of flexibility and resiliency in case of impact or collision. Alternate designs of (a) Ribbon-to-post link, (b) Spring joint or "take up" and (c) Ribbon end fixture will be permitted, providing they are unquestionably equivalent to the items shown hereon in securing the above described results, and have been approved by the Bureau of Construction prior to erection.

POSTS shall be full 6"x 8" sawed white oak or chestnut conforming with the requirements of the Material Details.

Bolt holes shall be bored and tops of posts trimmed after posts are set. The last two posts of each end of the section shall be set in concrete of 1-6 1/2 mix.

CABLE may be 3/4" wire rope or 21 strand woven wire tape conforming to the requirements of the Material Details. Splicing of the cable will not be permitted.

STEEL RAIL shall be 12" wide and not less than 12 gauge having a tensile strength of 60,000 pounds per square inch, and shall be galvanized as per Material Details or shall be delivered on the project unpainted. Rail splices shall in all cases be lap joints located midway between posts. In lapping adjacent members of the rail, due consideration shall be given to the direction of traffic.

FITTINGS:- Clevis or wedge connections, eye bolts, hook bolts, spring joint bracket bolts, nuts, turnbuckles and washers, except those of cast iron, to be galvanized or cadmium plated to conform to the requirements of the Material Details.

A wedge connection may be used instead of the clevis if approved by the engineer.

If woven wire tape is used, modified hook bolts shall be provided.

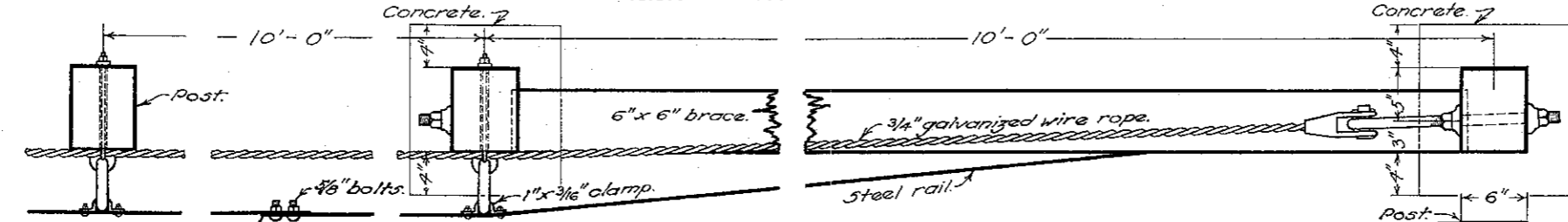
SPRING JOINTS:- For all sections of guard rail whose length between end posts is 30 feet or less, no spring joint will be required. For lengths greater than 30 feet up to and including 100 feet, one spring joint shall be installed at the mid post. For lengths greater than 100 feet spring joints shall be installed as follows: Distance between adjacent spring joints shall in all cases be 100 feet; the distance from end post to first spring joint shall be identical for the two ends of any one section of rail, but this distance shall in no case exceed 50 feet.

PAINTING:- Unpainted steel rail shall be given a prime coat of red lead paint and two coats of white lead and linseed oil paint. Galvanized steel rail shall be slightly etched with a diluted solution of vinegar, composed of one quart of vinegar and two gallons of water, and shall be painted with two coats of white paint. All other exposed surfaces, not galvanized or cadmium plated, shall be given one prime coat of white paint and two coats of white lead and linseed oil paint. All surfaces in contact, not galvanized or cadmium plated, shall be painted one coat of white lead and linseed oil paint before being assembled. Wood posts shall be painted from the ground line to the bottom of the steel rail with three coats of black paint.

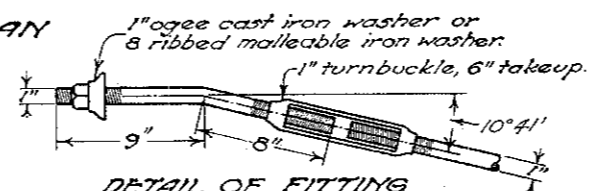
All paint shall conform to the requirements of the Material Details.

All bolts that pass thru posts shall be dipped in white paint upon using.

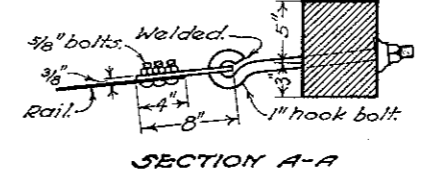
NOTE:- The opening between sections of the steel rail at the spring joints shall be governed by the temperature at time of erection.



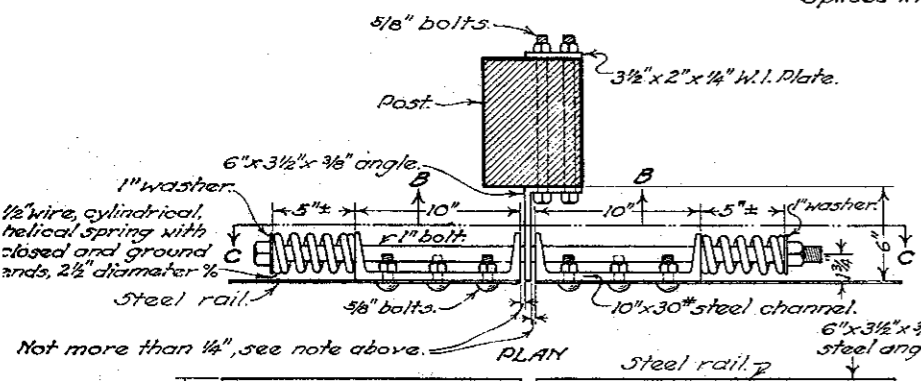
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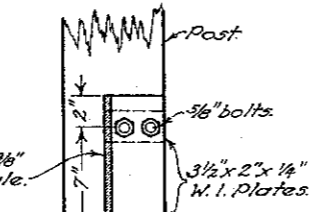
DETAIL OF FITTING FOR END POST TIE ROD



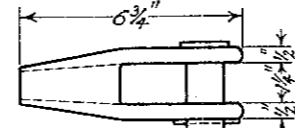
SECTION A-A



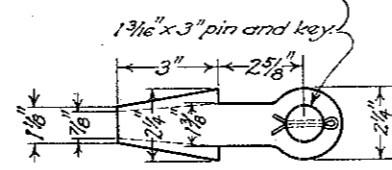
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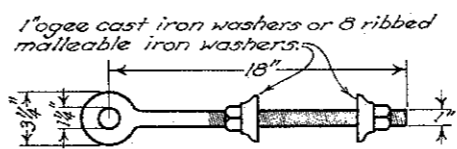
SECTION B-B



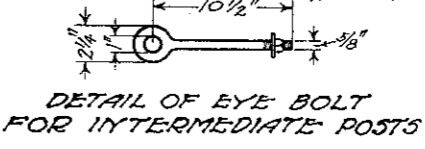
DETAIL OF HOOK BOLT FOR END POSTS



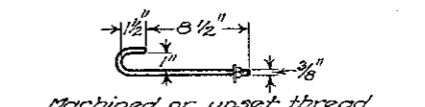
DETAIL OF CABLE CLEVIS



DETAIL OF EYE BOLT FOR END POSTS



DETAIL OF EYE BOLT FOR INTERMEDIATE POSTS



DETAIL OF HOOK BOLT FOR INTERMEDIATE POSTS

BUREAU OF LOCATION & DESIGN
OHIO DEPARTMENT OF HIGHWAYS

6-1-35
1-1-36

GUARD RAIL

STANDARD CONSTRUCTION I-15 S-C

DRAWING APPROVED *[Signature]* CHIEF ENGINEER