INDEX	
SHEET NO.	SUBJECT
1	Midwest Guardrail System Assembly Index and General Notes
2 - 5	Midwest Guardrail System Assembly
6 - 7	Midwest Guardrail System Assembly, Omitted Post
8 - 9	Midwest Guardrail System Assembly, Long-Span
10	Midwest Guardrail System Assembly, Structure Top-Mounted Post
11	Midwest Guardrail System Assembly, Guardrail Transition with Curb
12	Midwest Guardrail System Assembly, Guardrail Transition without Curb
13 - 15	Midwest Guardrail System Assembly, Guardrail Transition
16	Midwest Guardrail System Assembly, Guardrail Height Transition
17 - 22	Midwest Guardrail System Assembly, Cable Terminal Anchor System
23	Midwest Guardrail System Assembly, Working Width

GENERAL NOTES:

1. The MIdwest Guardrail System (MGS) Is a steel or tImber post w-beam guardrail semi-rigid longitudinal barrier system. The standard post length for MGS w-beam guardrail shall be 6 ft, unless noted otherwise.

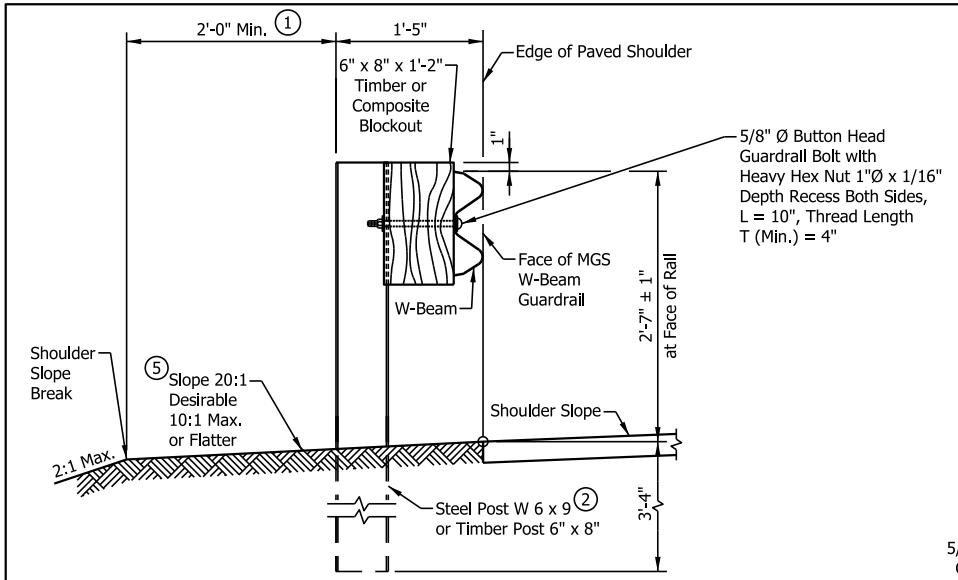
2. MGS w-beam guardrail, omitted post, long-span, structure top-mount, guardrail transition, and cable terminal anchor are MASH TL-3 compliant.

3. Guardrail post W 6 x 8.5 may be substituted for W 6 x 9.

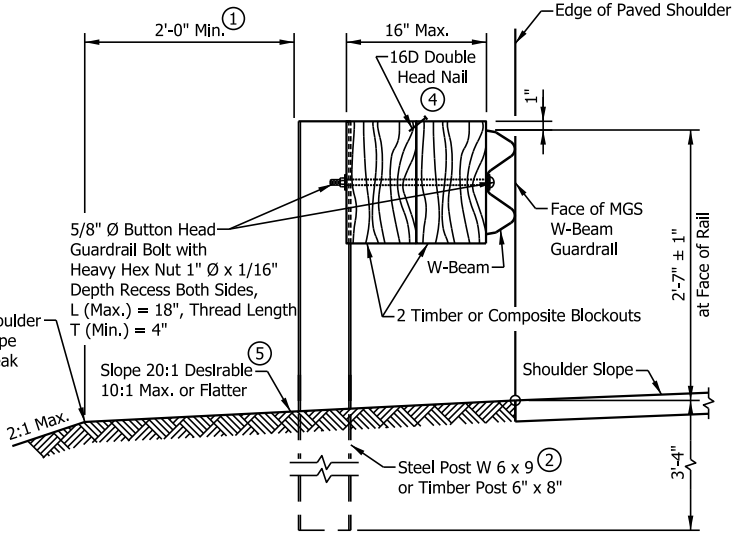
INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY INDEX AND GENERAL NOTES

Eff. for Lettings On or After 01-01-18



TYPICAL MGS W-BEAM INSTALLATION



DETAIL FOR ALTERNATE BLOCKOUT DEPTH (3)

NOTES:

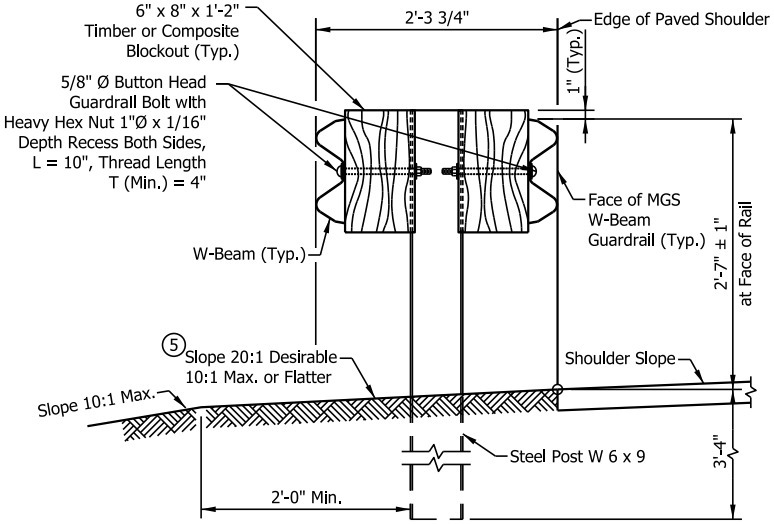
(1) Where the distance from back of post to shoulder slope break is less than 2 ft the working width shall be adjusted. See RPD 601-R-658d Sheet 23.

(2) Timber and steel posts shall not be intermixed. See RPD 601-R-658d Sheet 04 for post details.

(3) Blockouts of 12 in. or 16 in. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.

(4) Where two timber blockouts are installed one 16D galvanized double head nail shall be centered at the back of the blockout and driven into the adjacent blockout to prevent rotation.

(5) The post shall not be encased with asphalt, concrete, or riprap.



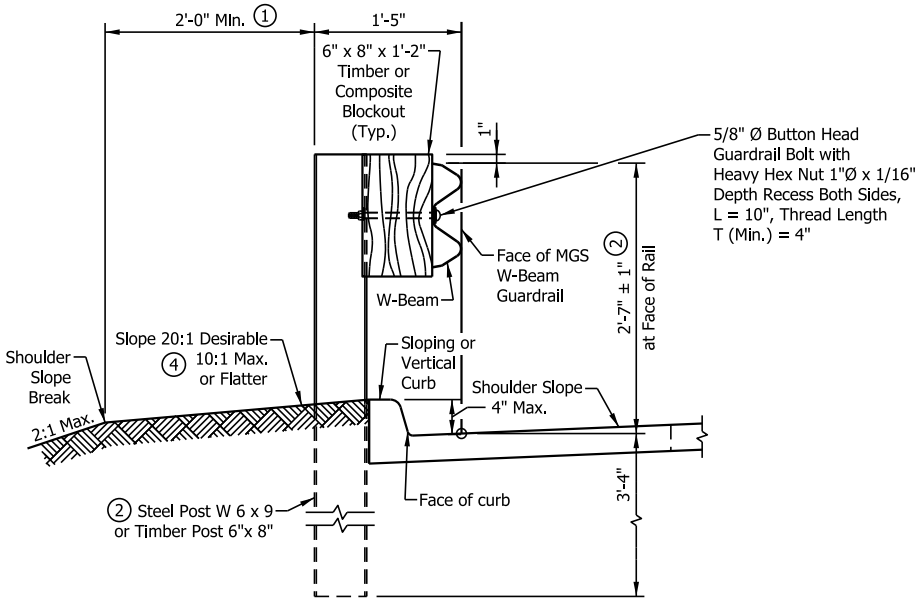
TYPICAL DOUBLE-FACED MGS W-BEAM INSTALLATION

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY

E 601-R-658d 2 of 23

Eff. for Lettings On or After 01-01-18



TYPICAL MGS W-BEAM INSTALLATION AT CURB

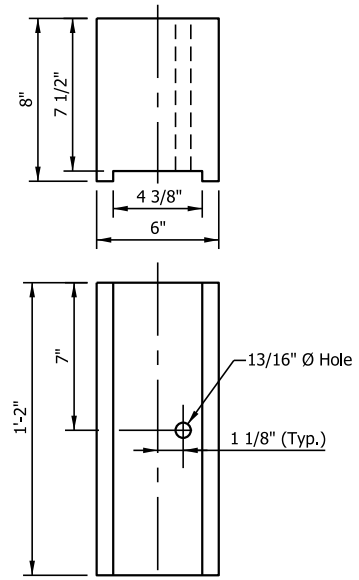
NOTES:

(1) Where the distance from back of post to shoulder slope break is less than 2 ft the working width shall be adjusted. See RPD 601-R-658d Sheet 23.

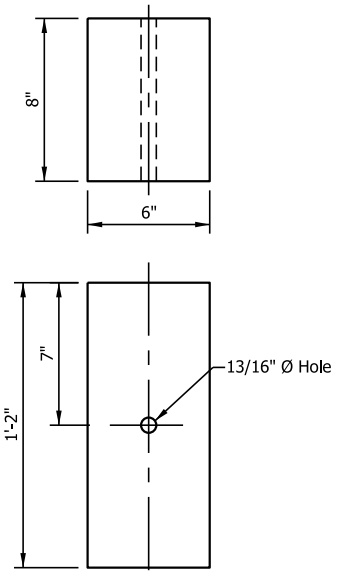
(2) Timber and steel posts shall not be intermixed. See RPD 601-R-658d Sheet 04 for post details.

3. Blockouts of 12 in. or 16 in. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.

(4) The post shall not be encased with asphalt, concrete, or riprap.



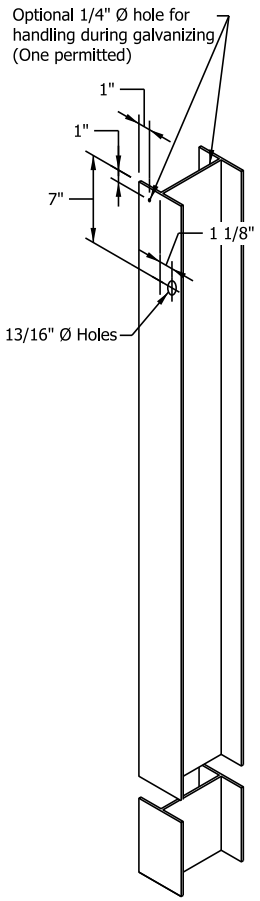
TIMBER OR COMPOSITE BLOCKOUT WITH STEEL POST



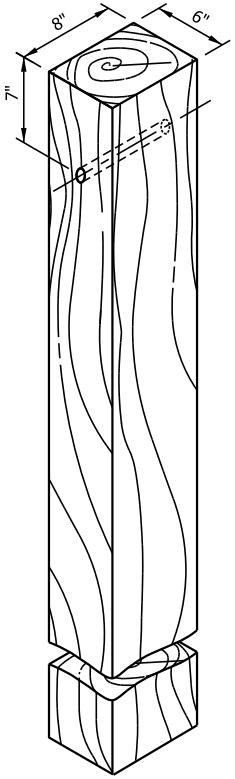
TIMBER BLOCKOUT WITH TIMBER POST

INDIANA DEPARTMENT OF TRANSPORTATION

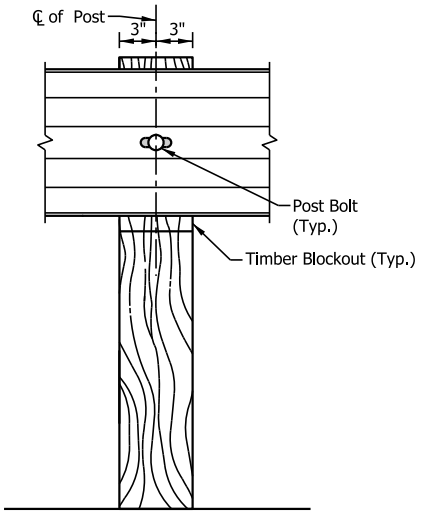
MIDWEST GUARDRAIL SYSTEM ASSEMBLY



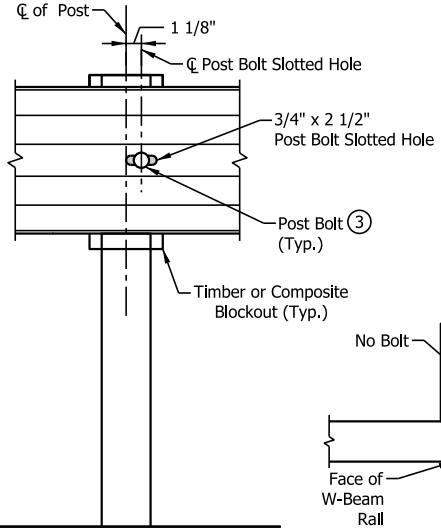
STEEL POST &
HOLE PUNCHING DETAIL
(W 6 X 9) ②



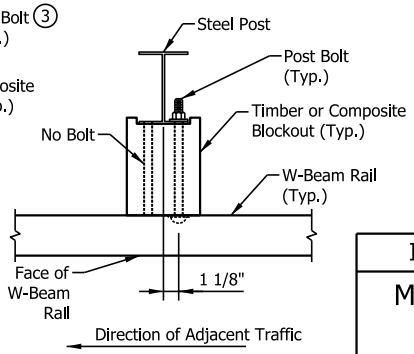
TIMBER POST
(6" X 8") NOMINAL



FRONT VIEW (TIMBER POST)



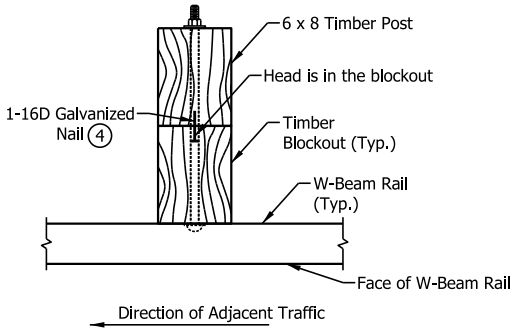
FRONT VIEW (STEEL POST)



PLAN VIEW (STEEL VIEW)

NOTES:

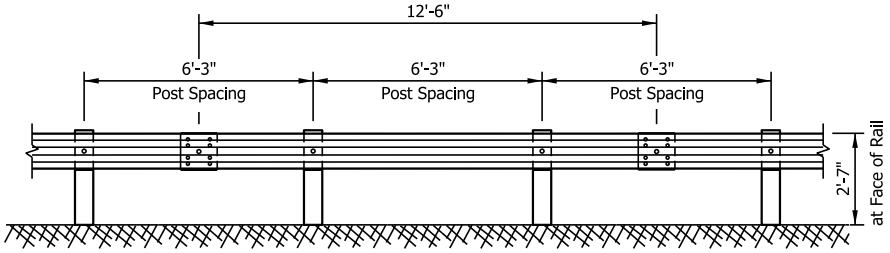
1. Timber or steel posts may be used. Timber and steel posts shall not be intermixed.
2. Guardrail post W 6 x 8.5 may be substituted for W 6 x 9.
3. Install steel posts with holes on approaching traffic side.
4. Where a timber post and a timber blockout are installed one 16D galvanized double head nail shall be centered at the back of the blockout and driven into the adjacent post to prevent rotation.
5. Blockouts of 12 In. or 16 In. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.
6. Hole pattern for posts may be drilled in back flange.



PLAN VIEW (TIMBER POST)

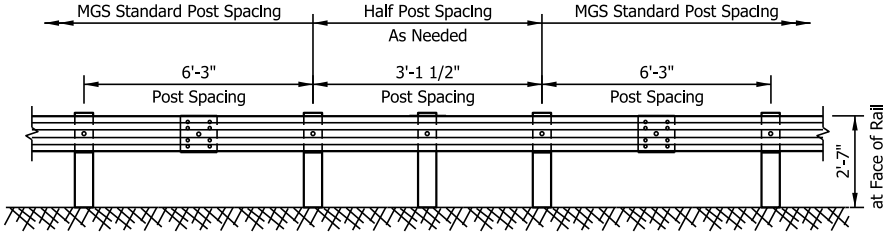
INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY



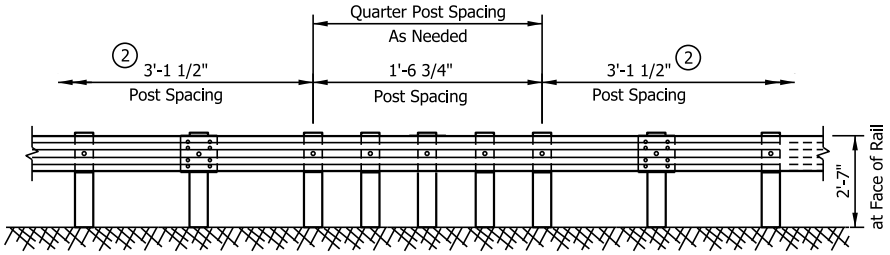
ELEVATION VIEW

MGS W-BEAM STANDARD POST SPACING, 6'-3"



ELEVATION VIEW

MGS W-BEAM HALF POST SPACING, 3'- 1 1/2"



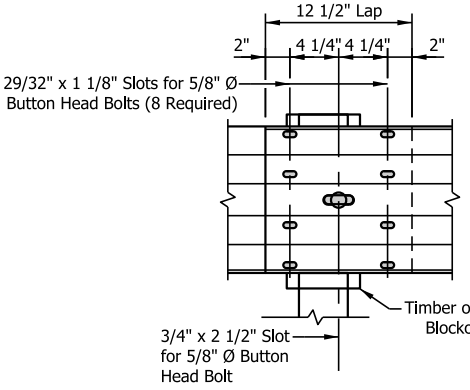
ELEVATION VIEW

MGS W-BEAM QUARTER POST SPACING, 1'-6 3/4"

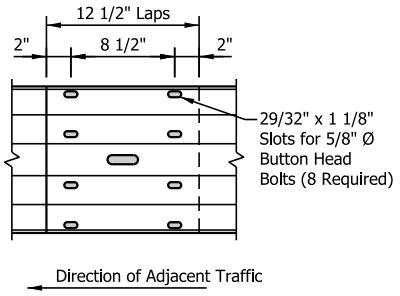
NOTES:

1. Splice locations shall be as shown.

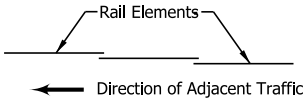
(2) Where quarter post spacing is placed a minimum of 25 ft of half post spacing shall be on the approach and departure ends of quarter post spacing.



POST SPLICE DETAIL



MID-SPAN SPLICE DETAIL



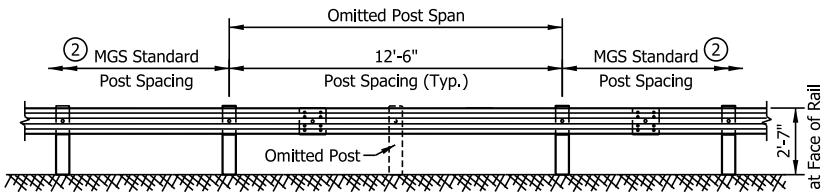
LAPPING PROCEDURE

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY

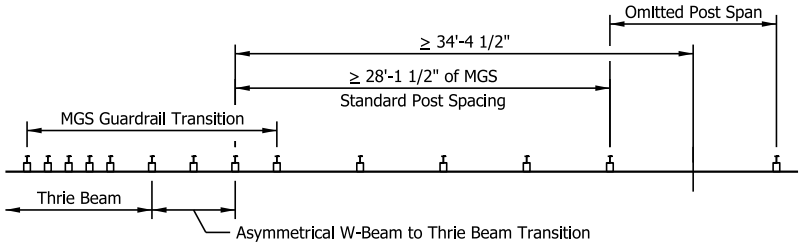
E 601-R-658d 5 of 23

Eff. for Lettings On or After 01-01-18



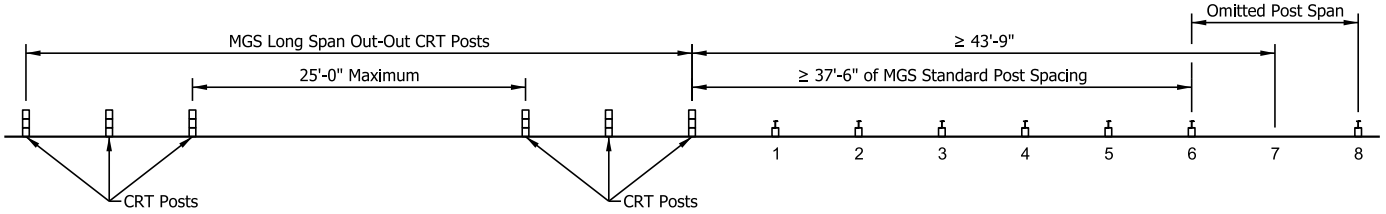
ELEVATION VIEW

MGS W-BEAM OMITTED POST



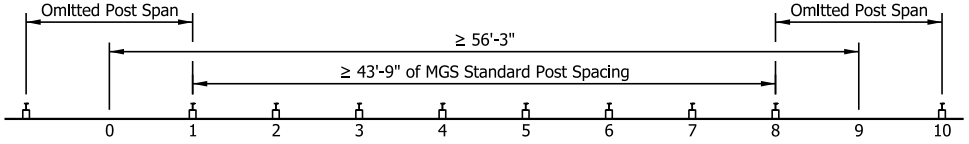
PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS GUARDRAIL TRANSITION



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS LONG-SPAN OUTER CRT POST



PLAN VIEW

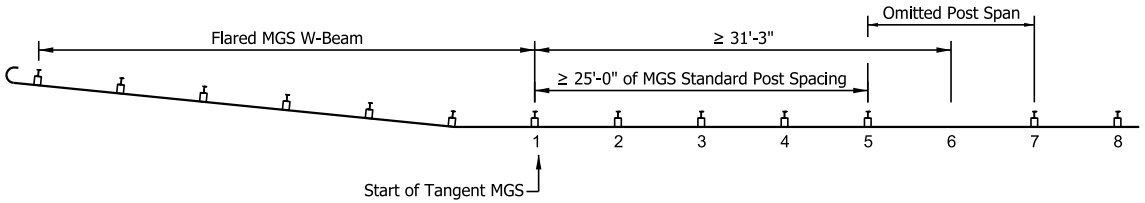
MINIMUM DISTANCE BETWEEN OMITTED POSTS

NOTES:

1. A single post may be omitted within an MGS w-beam guardrail run.
2. Where a post is omitted a minimum length of MGS standard post spacing guardrail shall be place as shown.
3. MGS w-beam guardrail run containing an omitted post shall not be placed adjacent vertical or sloping curb.

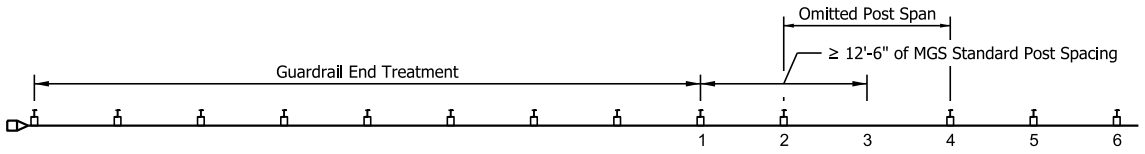
INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
OMITTED POST



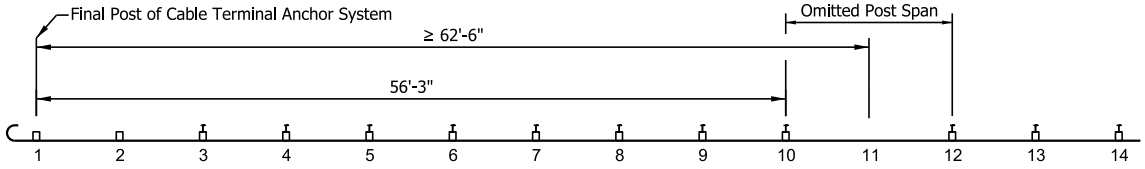
PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND FLARED MGS W-BEAM



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND GUARDRAIL END TREATMENT



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS CABLE TERMINAL ANCHOR SYSTEM

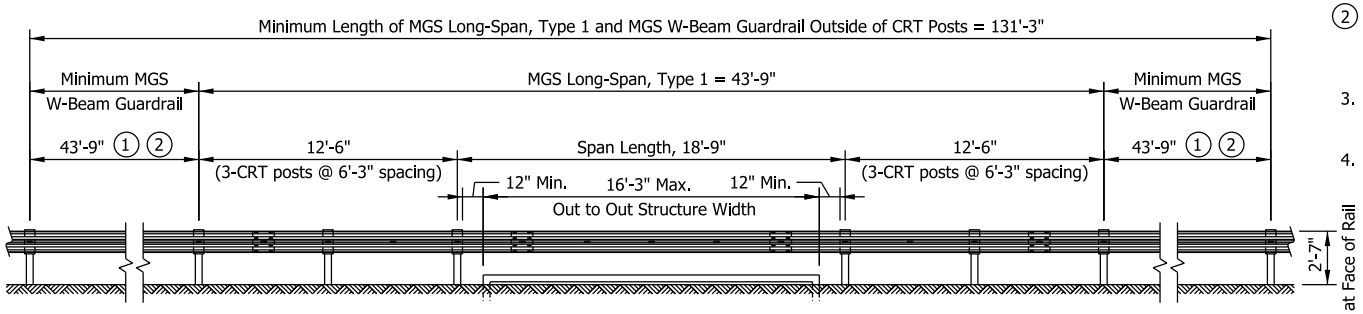
NOTES:

1. A single post may be omitted within an MGS w-beam guardrail run. See RPD 601-R-658d Sheet 06.
2. Where a post is omitted a minimum length of MGS standard post spacing guardrail shall be place as shown.
3. MGS w-beam guardrail run containing an omitted post shall not be placed adjacent vertical or sloping curb.

INDIANA DEPARTMENT OF TRANSPORTATION

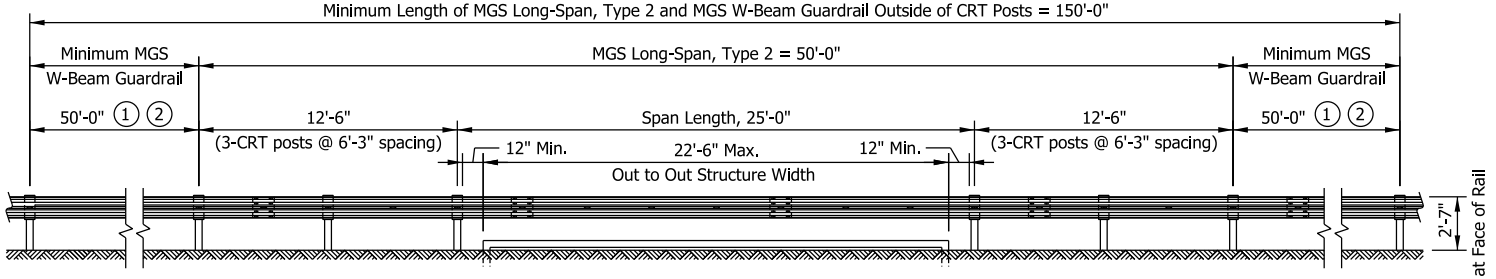
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
OMITTED POST

Eff. for Lettings On or After 01-01-18



ELEVATION VIEW

INSTALLATION TYPE 1
(2 POSTS OMITTED)

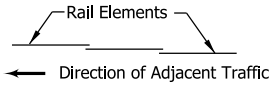


ELEVATION VIEW

INSTALLATION TYPE 2
(3 POSTS OMITTED)

NOTES:

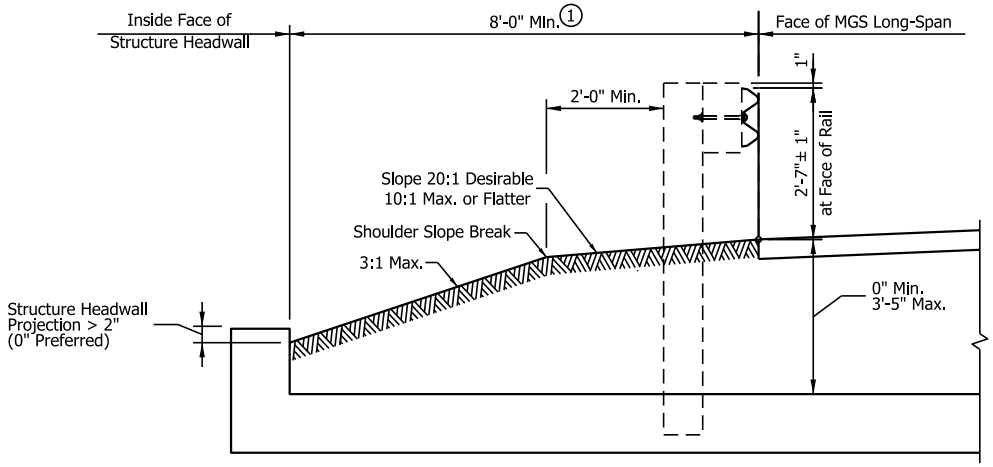
1. A minimum length of MGS w-beam guardrail shall be installed both upstream and downstream of the outermost CRT posts. This length may include the length of a guardrail end treatment, cable terminal anchor, or transition.
2. A minimum of 62 ft 6 in. of tangent MGS w-beam guardrail shall be installed between the outermost CRT post and the beginning of any flared guardrail section.
3. An MGS w-beam guardrail run containing a long-span shall not be placed adjacent vertical or sloping curb.
4. See RPD 601-R-658d Sheet 06 for one omitted post, span length 12 ft 6 in.



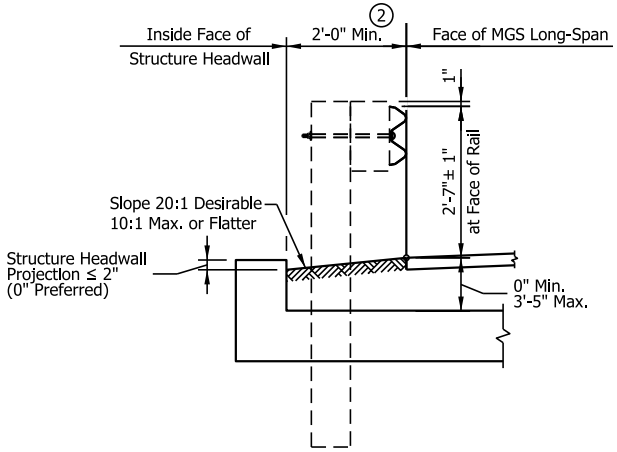
LAPPING PROCEDURE

INDIANA DEPARTMENT OF TRANSPORTATION

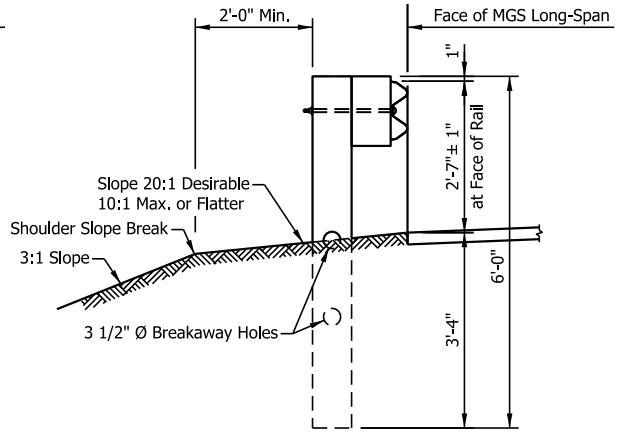
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
LONG-SPAN



STRUCTURE HEADWALL PROJECTION > 2"



STRUCTURE HEADWALL PROJECTION ≤ 2"



TYPICAL SECTION AT CRT POST

NOTES:

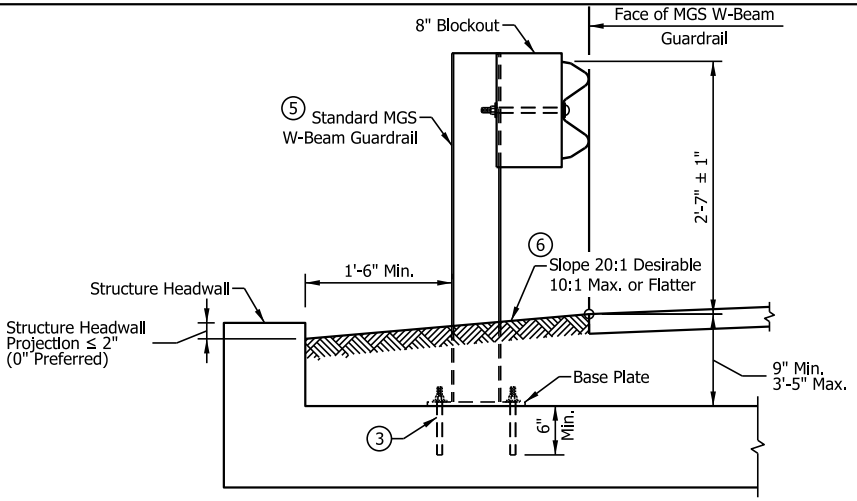
① Where the structure headwall projection is greater than 2 in. above the grade, the inside face of the headwall shall be 8 ft from the face of MGS w-beam.

② Where the structure headwall projection is 2 in. or less above the grade, the inside face of the headwall may be 2 ft from the face of MGS Long-Span.

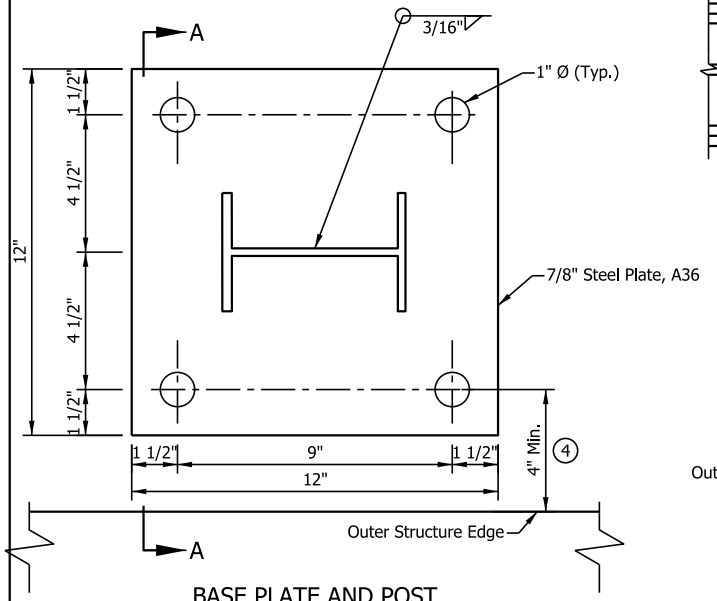
3. MGS Long-Span shall not be placed adjacent vertical or sloping curb.

INDIANA DEPARTMENT OF TRANSPORTATION

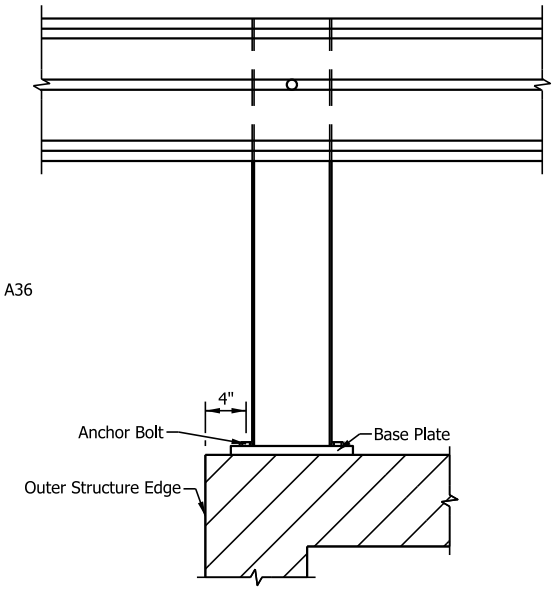
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
LONG-SPAN



TYPICAL SECTION
(EPOXY SECTION)



BASE PLATE AND POST



SECTION A-A

NOTES:

1. Install top-mounted post to deck of flat-topped structure where standard post embedment or a long-span system can not be installed. A top-mounted post shall not be installed with an arch-topped or true-arch structure.
2. Top-mounted post shall be spaced in accordance with standard MGS w-beam guardrail post spacing of 6ft -3in. on centers.

(3) The anchor bolt shall be 7/8 in. dia. rod, cut off to 8 1/2 in. length, with washer and nut, galvanized. The minimum embedment shall be 6 in. The anchor bolt shall be installed using Hilti RE500 Epoxy Anchoring System.

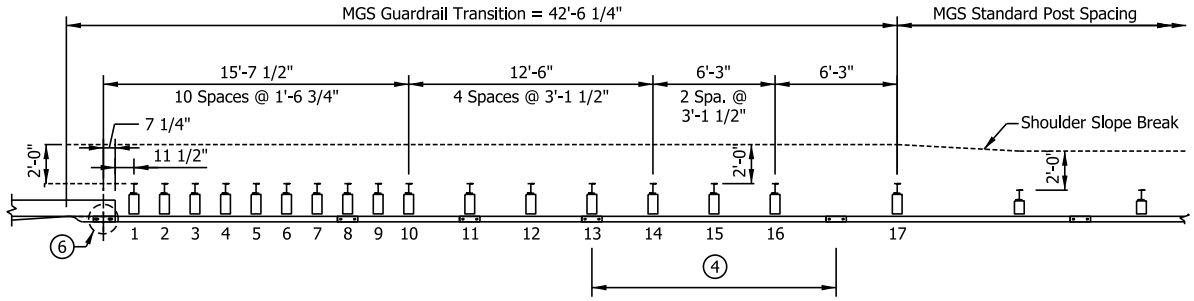
(4) The center of the anchor bolt shall be installed a minimum of 4 in. from the outer structure edge.

(5) The top of the post may be field cut to adjust the length. Where the post is field cut, drill holes at appropriate locations. All cut and hole surfaces shall receive a galvanized coating.

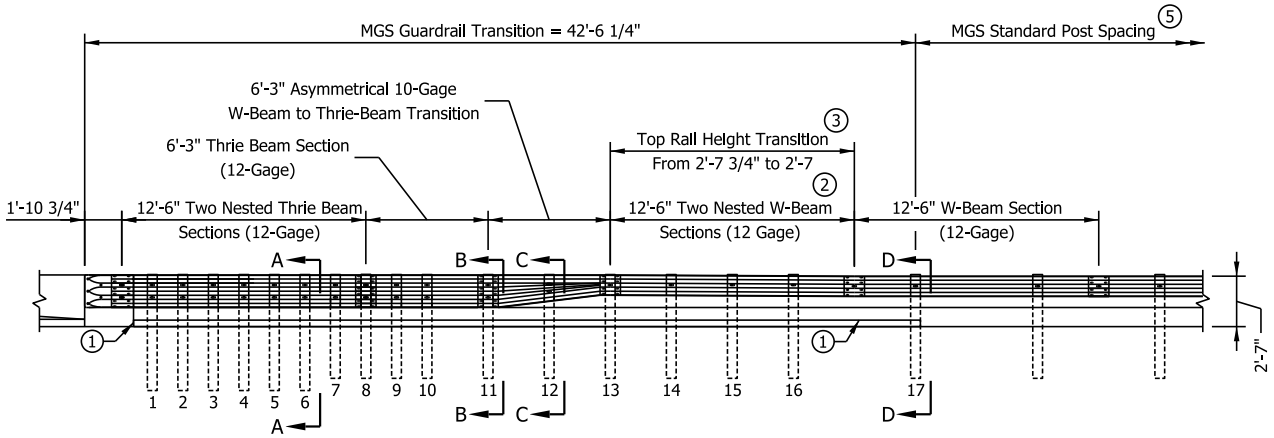
(6) The post shall not be encased with asphalt, concrete, or riprap.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY STRUCTURE TOP-MOUNTED POST



PLAN VIEW



ELEVATION VIEW

MGS GUARDRAIL TRANSITION

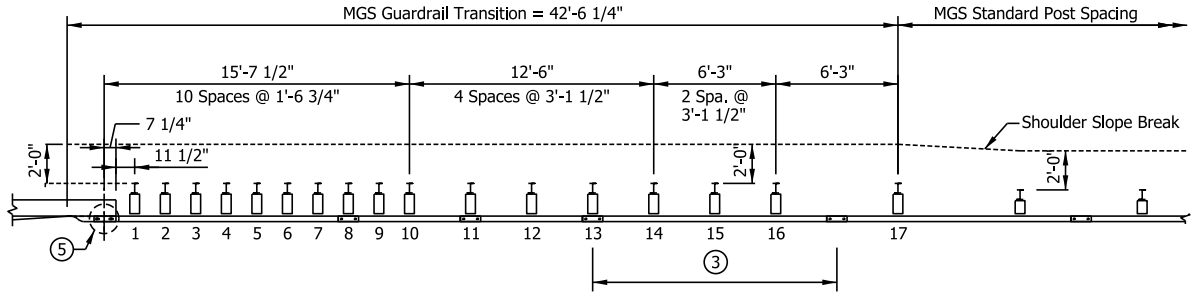
NOTES:

1. Optional 4 in. sloping curb. See Standard Drawing E 605-CCCG-01 or 605-CCIN-01. The toe of the sloping curb shall be placed flush with the backside face of the guardrail and extended the length of the transition, to post 17.
2. Where a curb is not adjacent the transition, the nested w-beam may be eliminated.
3. Guardrail mounting height at bridge railing transition is 2 ft 7 3/4 in. Transition guardrail mounting height down to 2 ft 7 in.
4. The 12 ft 6 In. of MGS w-beam guardrail half post spacing beyond the w-beam to thrie-beam transition shall be placed for all installations.
5. A minimum of 12 ft 6 in. of tangent MGS w-beam guardrail shall be installed beyond the MGS guardrail transition limits and the beginning of any flared guardrail section.
6. See RPD 601-R-658d Sheet 13 for lap detail.
7. See RPD 601-R-659d Sheet 01 for Thrie-Beam Guardrail Components.
8. See RPD 601-R-658d Sheet 14 through 15 for post and blockout details.
9. See RPD 601-R-658d Sheet 12 for guardrail transition not adjacent a curb.
10. See Standard Drawing E 706-CBRT-04 for bridge railing attachment details.

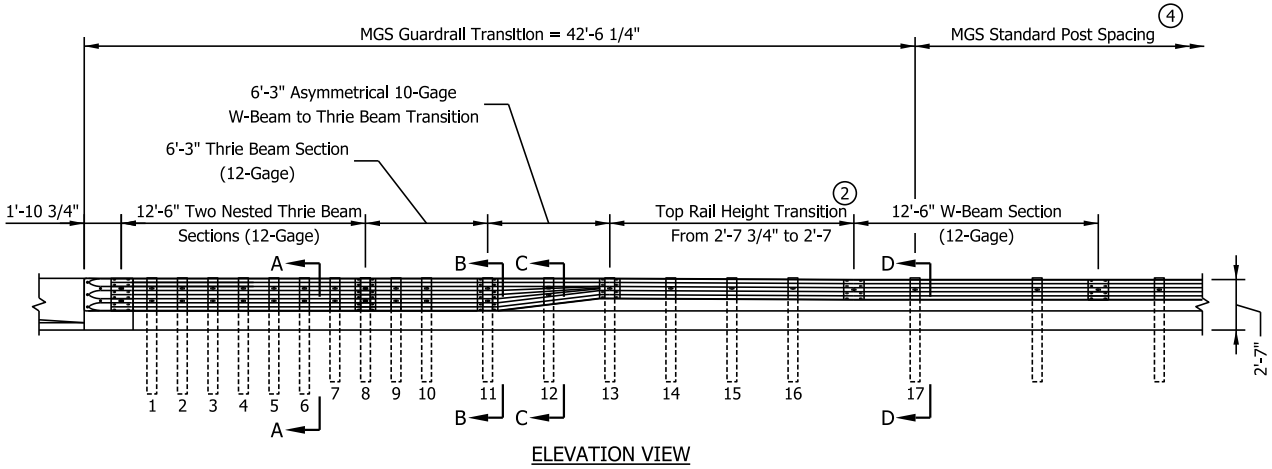
INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION WITH CURB

Eff. for Lettings On or After 01-01-18



PLAN VIEW



ELEVATION VIEW

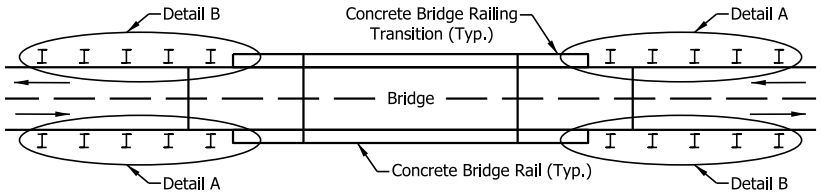
MGS GUARDRAIL TRANSITION

NOTES:

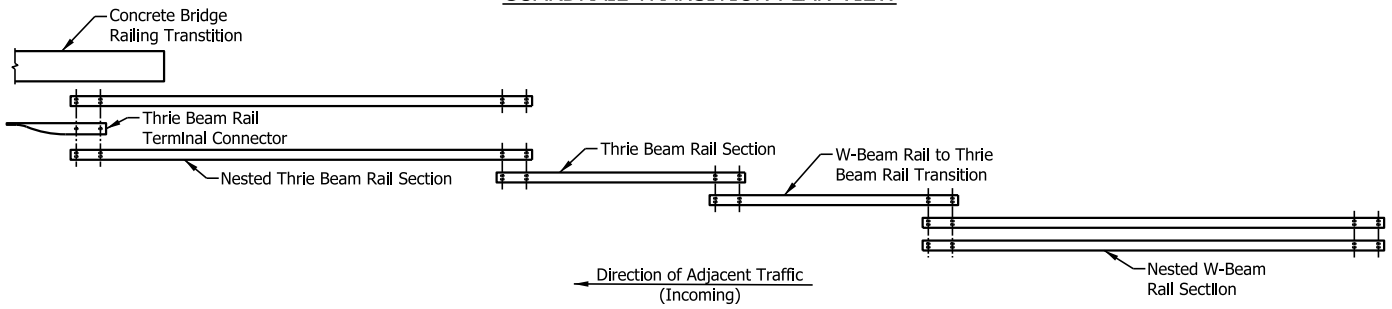
1. An optional 4 in. sloping curb may be place adjacent a guardrail transition. See RPD 601-R-658d Sheet 11.
2. Guardrail mounting height at bridge railing transition is 2 ft 7 3/4 in. Transition guardrail mounting height down to 2 ft 7 in.
3. The 12 ft 6 in. of MGS w-beam guardrail half post spacing beyond the asymmetrical thrie beam transition shall be placed for all installations.
4. A minimum of 12 ft 6 in. of tangent MGS w-beam guardrail shall be installed beyond the MGS guardrail transition limits and the beginning of any flared guardrail section.
5. See RPD 601-R-658d Sheet 13 for lap detail.
6. See RPD 601-R-659d Sheet 01 for Thrie-Beam Guardrail Components.
7. See RPD 601-R-658d Sheet 14 through 15 for post and blockout details.
8. See RPD 601-R-658d Sheet 11 for guardrail transition adjacent a curb.
9. See Standard Drawing E 706-CBRT-04 for bridge railing attachment details.

INDIANA DEPARTMENT OF TRANSPORTATION

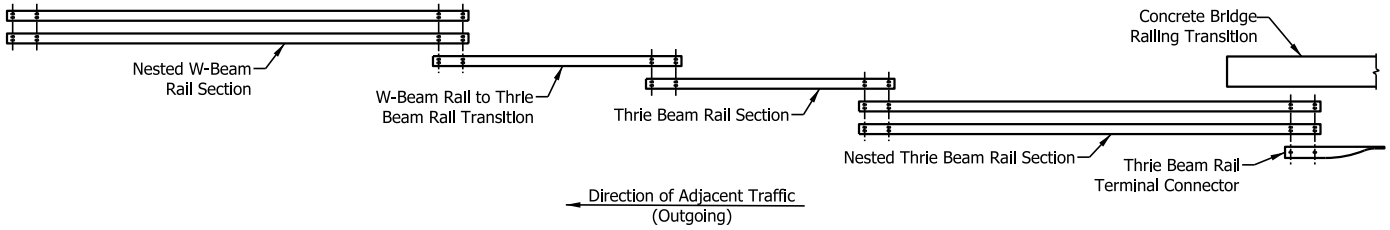
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION WITHOUT CURB



GUARDRAIL TRANSITION PLAN VIEW



DETAIL A

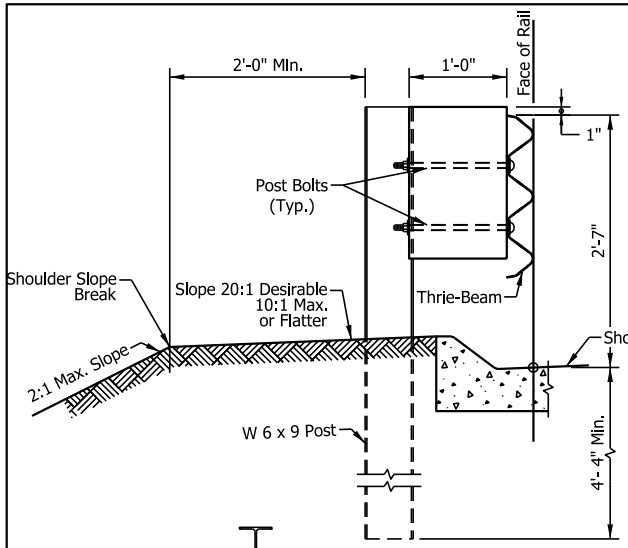


DETAIL B

LAP DETAIL AT BRIDGE RAILING TRANSITION PLAN VIEWS

INDIANA DEPARTMENT OF TRANSPORTATION

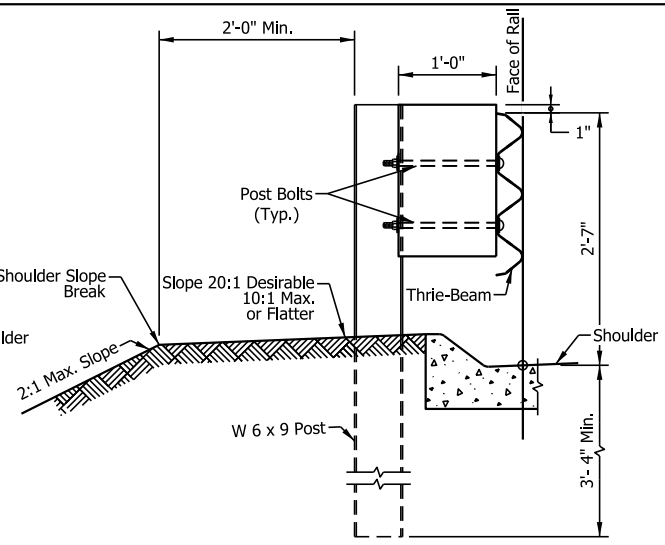
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION



TOP VIEW

SECTION A-A

POSTS 1-6

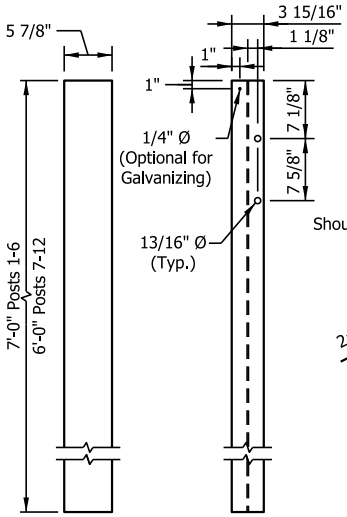


SECTION B-B

POSTS 7-11

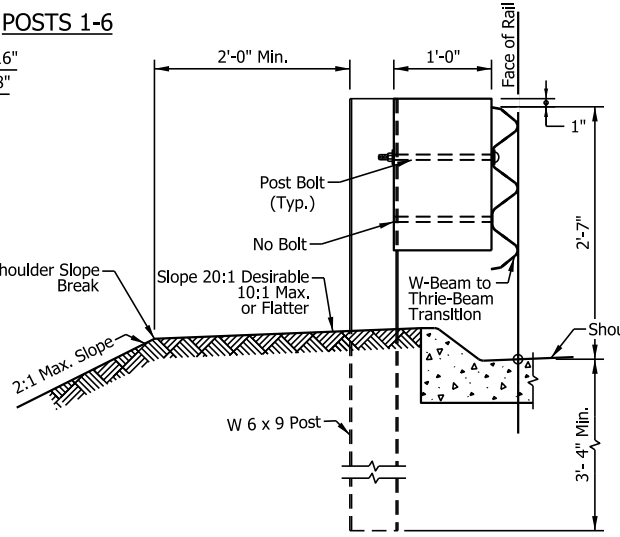
NOTES:

1. All holes drilled or punched to 13/16 in. dia.
2. Timber posts shall not be used within the limits of the MGS guardrail transition.
3. Hole pattern for post numbers 1 through 12 may be drilled in back flange.
4. See RPD 601-R-658d Sheet 11 or 12 for post numbers and sections.



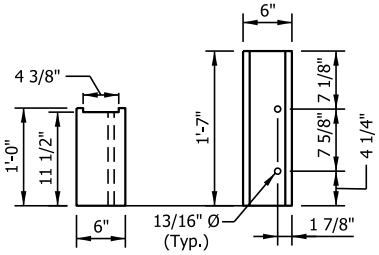
SIDE VIEW FRONT VIEW

W 6 x 9 POST DETAILS ②



SECTION C-C

POSTS 12

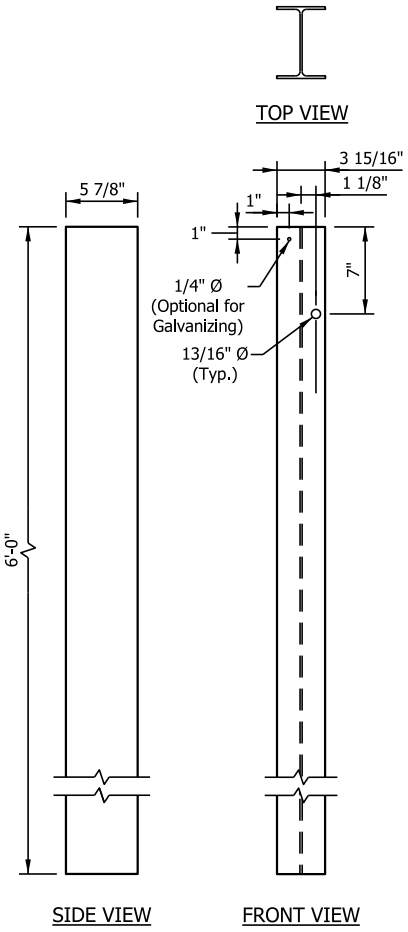


TOP VIEW FRONT VIEW

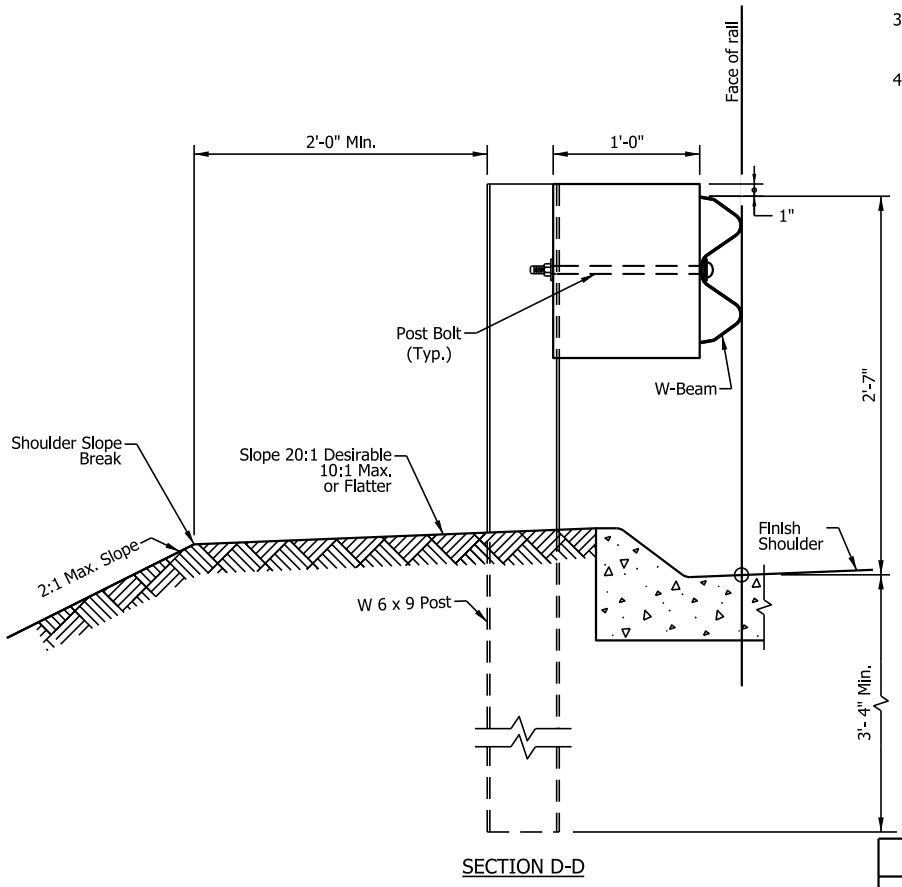
BLOCKOUT POSTS 1-12
(TIMBER OR COMPOSITE)

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION



POSTS 13-17 ②

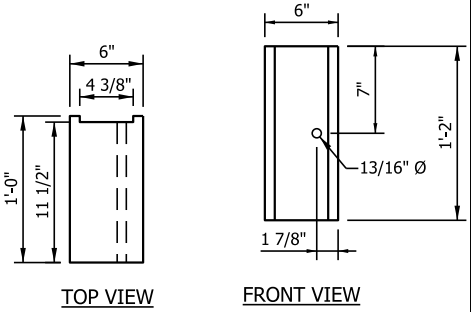


SECTION D-D

POSTS 13-17

NOTES:

1. All holes drilled or punched to 13/16 in. dia.
2. Timber posts shall not be used within the limits of the MGS guardrail transition.
3. Hole pattern for post numbers 13 through 17 may be drilled in back flange.
4. See RPD 601-R-658d Sheet 11 or 12 for post numbers and sections.



BLOCKOUT POSTS 13-17
(TIMBER OR COMPOSITE)

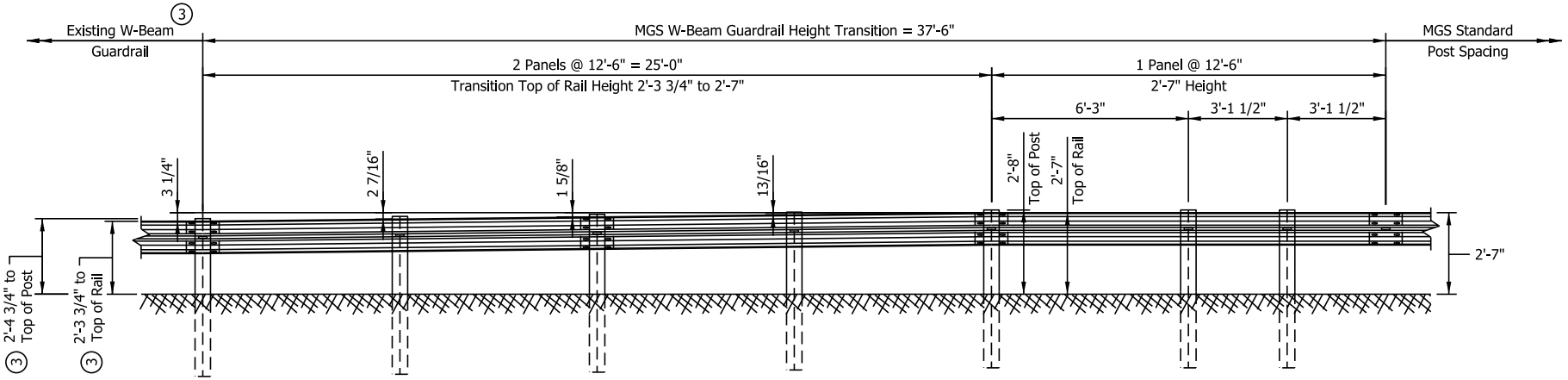
INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION

NOTES:

1. If rub-rail is not spliced at post the channel shall be cut and repositioned behind the flange.
2. If rub-rail is spliced at post, the splice material shall be removed and the channel shall be repositioned behind the flange.

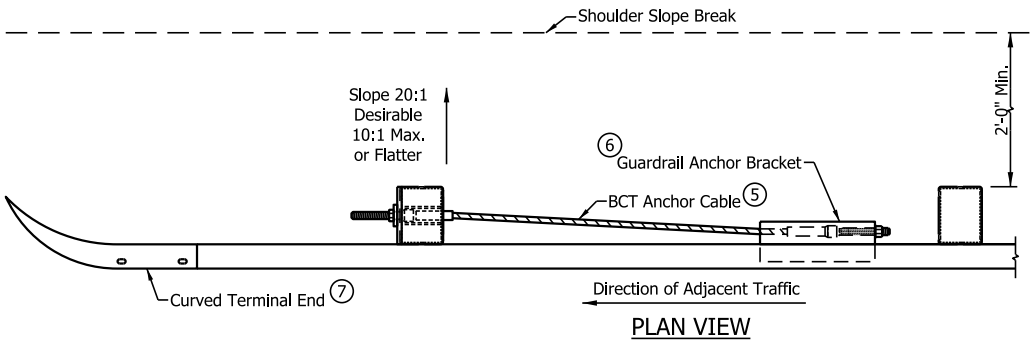
(3) Where MGS w-beam guardrail transitions to rub-rail, guardrail shall be set at 2 ft-6 in. and the top post shall be set at 2 ft -7 in.



ELEVATION VIEW

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
HEIGHT TRANSITION



PLAN VIEW

NOTES:

1. The MGS cable terminal anchor system shall only be used at the outgoing end of an MGS w-beam guardrail run not exposed to oncoming traffic.

(2) See RPD 601-R-658d Sheet 18 for Details A and B.

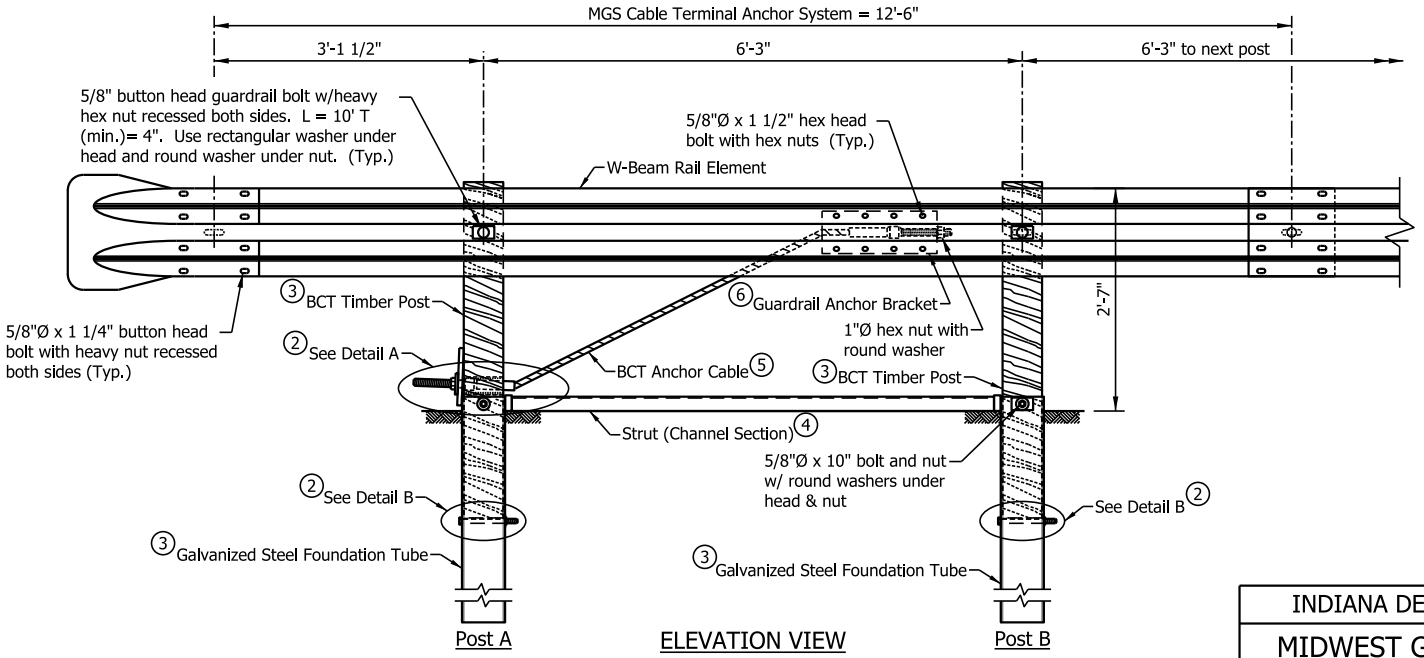
(3) See RPD 601-R-658d Sheet 19 for BCT timber post and steel foundation tube details.

(4) See RPD 601-R-658d Sheet 20 for strut details.

(5) See RPD 601-R-658d Sheet 21 for BCT anchor cable assembly details.

(6) See RPD 601-R-658d Sheet 22 for guardrail anchor bracket details.

(7) See Standard Drawing E 601-WBGC-01 for curved terminal end details.



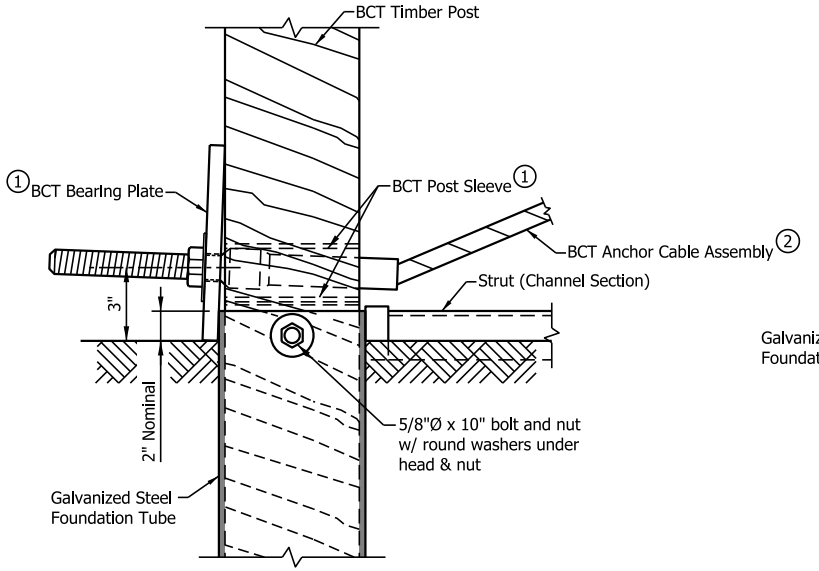
ELEVATION VIEW

INDIANA DEPARTMENT OF TRANSPORTATION

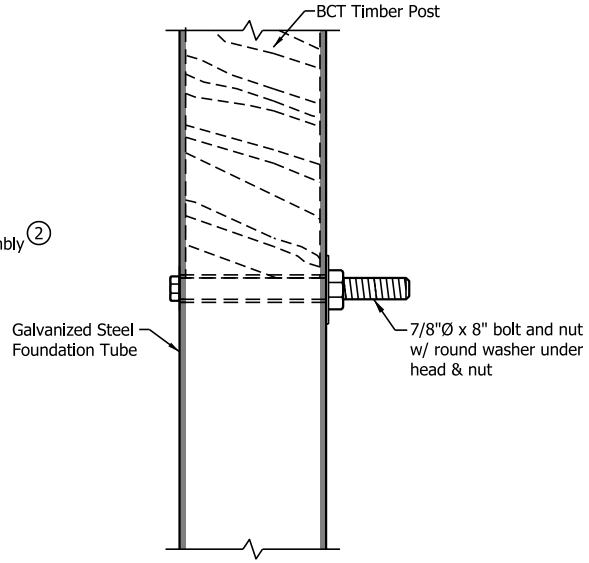
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM

NOTES:

1. See RPD 601-R-658d Sheet 21 for BCT post sleeve and BCT bearing plate details.
2. See RPD 601-R-658d Sheet 21 for BCT anchor cable assembly details.



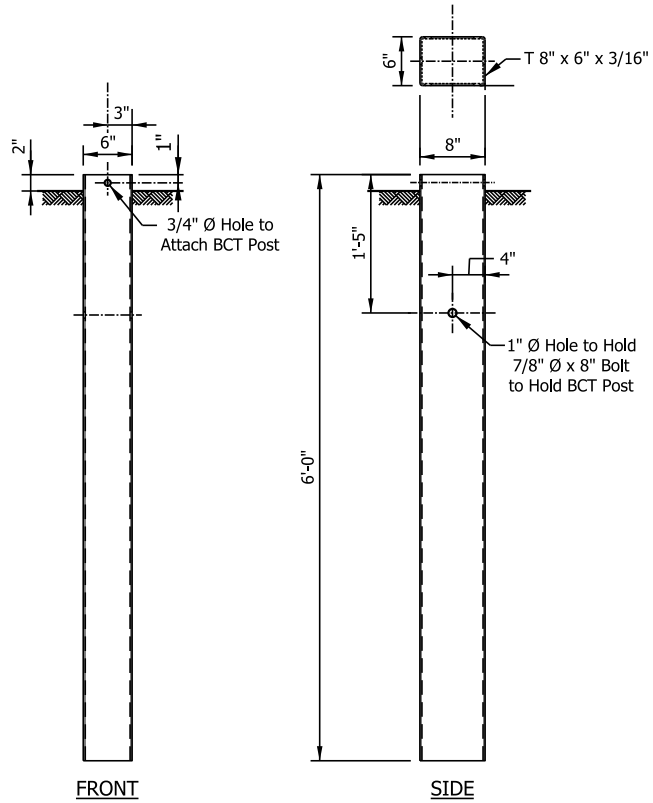
DETAIL A



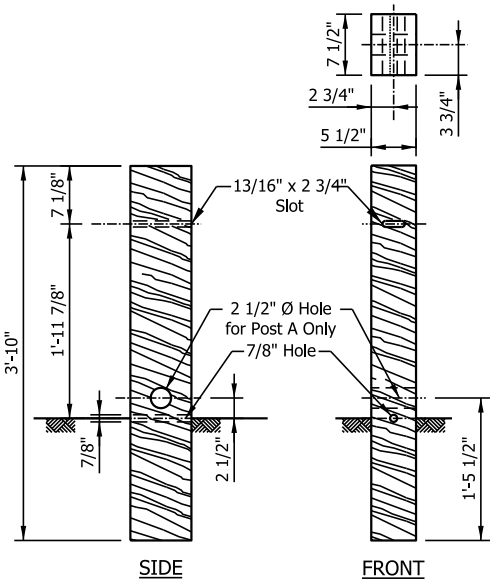
DETAIL B

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM



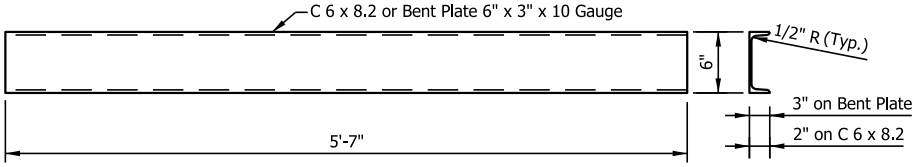
GALVANIZED STEEL
FOUNDATION TUBE



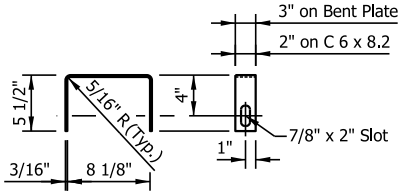
BCT TIMBER POST

INDIANA DEPARTMENT OF TRANSPORTATION

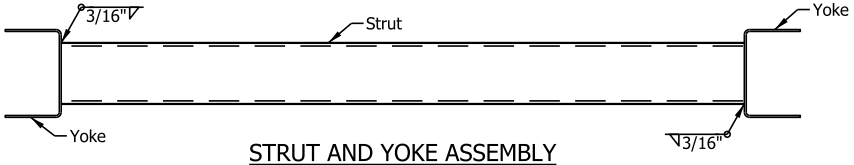
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM



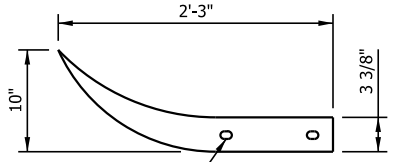
STRUT DETAILS



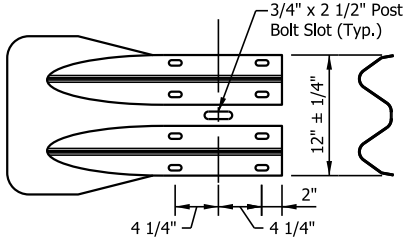
YOKE DETAILS
(2 Required)



STRUT AND YOKE ASSEMBLY



PLAN VIEW

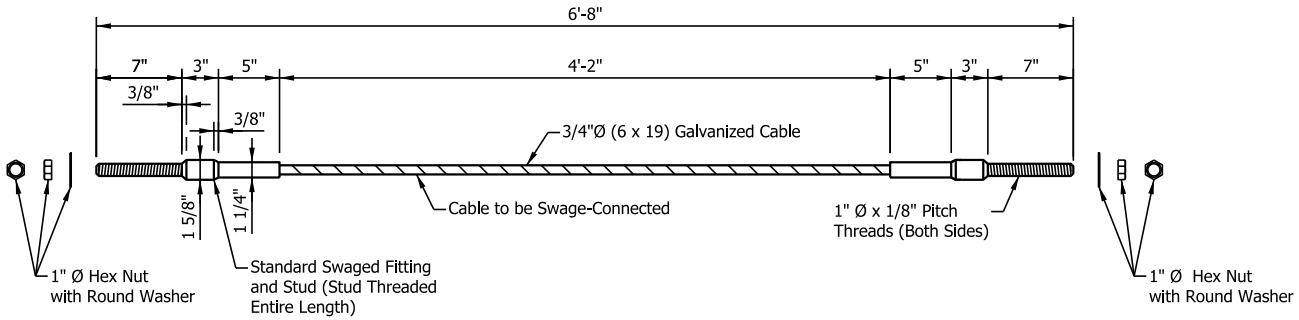


ELEVATION VIEW

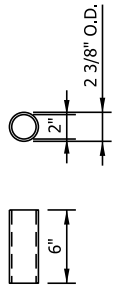
FLARED W-BEAM END SECTION

INDIANA DEPARTMENT OF TRANSPORTATION

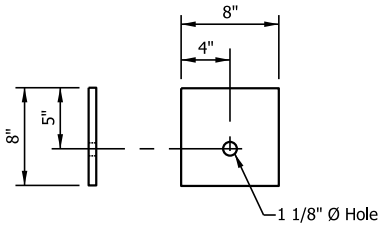
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM



BCT ANCHOR CABLE ASSEMBLY



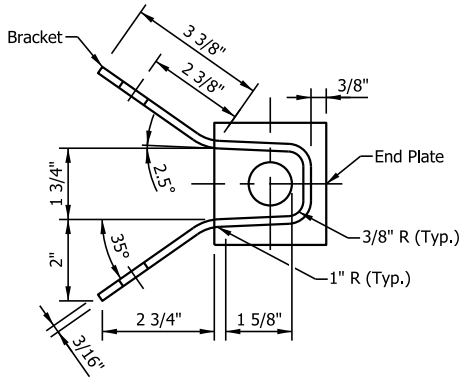
BCT POST SLEEVE

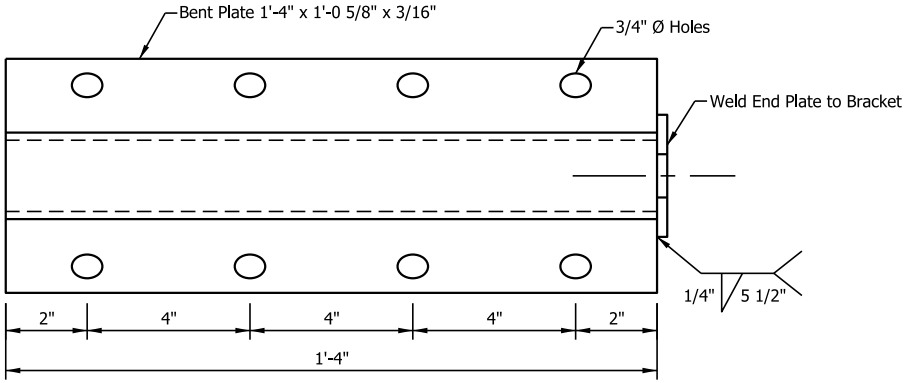


BCT BEARING PLATE

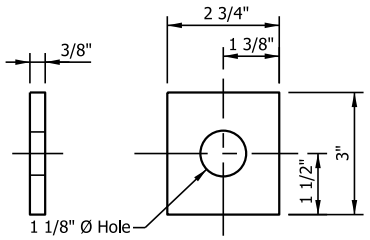
INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM





BRACKET

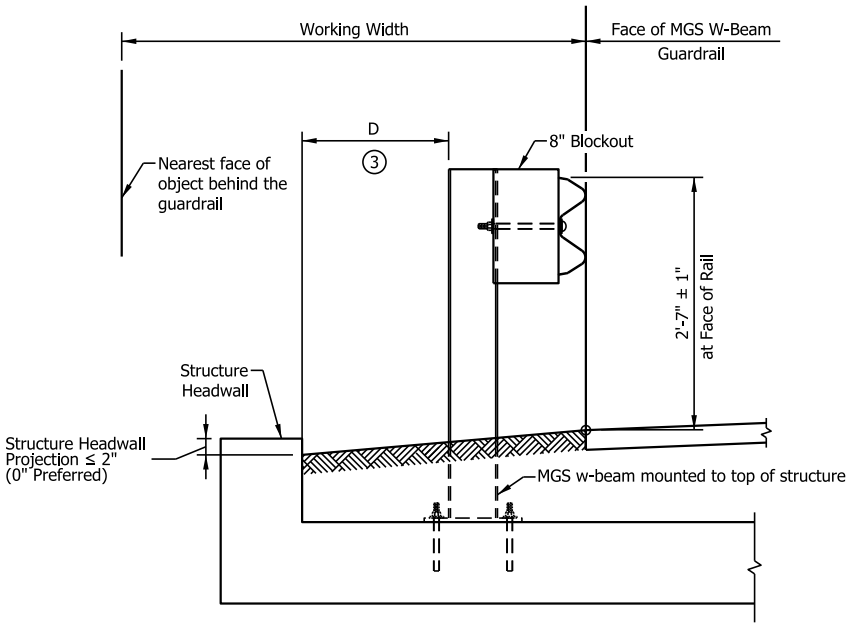


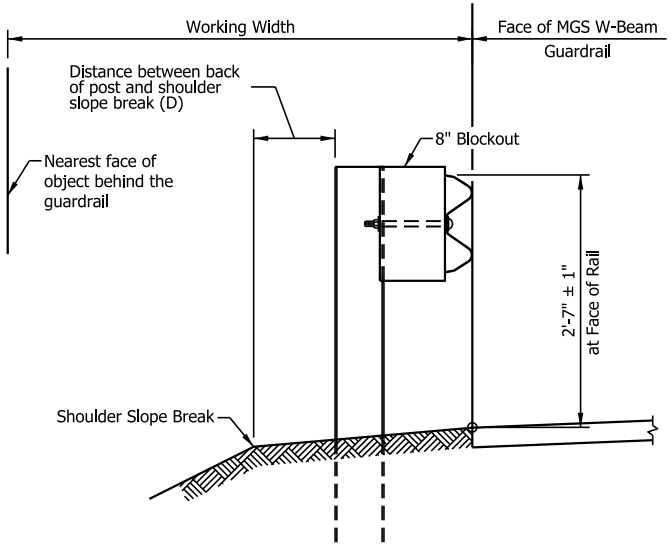
END PLATE

GUARDRAIL ANCHOR BRACKET

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM





NOTES:

1. Guardrail placement shall consider working width.
2. Working width assumes an 8-in. blockout. Where a deeper blockout is used, the working width shall be adjusted to include the additional depth.

(3) Distance between the back of post and inside face of structure headwall.

(4) See RPD 601-R-658d Sheet 09 for the distance between front face of MSG Long-Span and inside face of structure headwall.

Guardrail Type	Post Spacing	D	Working Width
MGS W-Beam Standard	6'-3"	2 ft	5.0 ft
MGS W-Beam Standard w/Omitted Post	6'-3"	2 ft	5.0 ft
MGS W-Beam Standard	6'-3"	< 2 ft	6.5 ft
MGS W-Beam Half Post Spacing	3'-1 1/2"	2 ft	4.5 ft
MGS W-Beam Quarter Post Spacing	1'-6 3/4"	2 ft	4.0 ft
MGS Long-Span	Varies	(4)	8.0 ft
MGS Structure Top-Mount Post	6'-3"	1.5 ft (3)	4.2 ft

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
WORKING WIDTH