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**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.
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 rail 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.

6. Where the working width is 2’-0” the normal working width shall be 1’-5”.

7. The distance from back of post to shoulder slope break shall be no less than 2 ft.

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

9. 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.

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

11. The post shall not be encased with asphalt, concrete, or riprap.

TYPICAL MGS W-BEAM INSTALLATION

- 2'-0" Min. or Timber Post 3'-4" or Flatter
- 3'-4" or Timber Post 6" x 8" or Flatter
- Steel Post W 6 x 9 or Timber Post 6" x 8"
- Shoulder Slope Break
- Edge of Paved Shoulder
- 5/8" Ø Button Head
- Guardrail Bolt with Heavy Hex Nut 1" Ø x 1/16"
- Depth Recess Both Sides, L = 10", Thread Length T (Min.) = 4"
- Face of MGS W-Beam Guardrail
- 16D Double Face Nail
- 10:1 Max. or Flatter
- Slope 20:1 Desirable
- Timber or Composite Blockout (Typ.)
- 6" x 8" x 1'-2"
- Steel Post W 6 x 9
- or Timber Post 6" x 8"
- Edge of Paved Shoulder
- 2'-0" Min.
- 1'-5"
- Shoulder Slope Break
- 2'-3 3/4" or Flatter
- 1" Ø x 1/16"
- Face of MGS W-Beam Guardrail
- W-Beam (Typ.)
- Slope 10:1 Max.
- 10:1 Max. or Flatter
- Slope 20:1 Desirable
- 16D Double Face Nail
- 6" x 8" x 1'-2"
- Steel Post W 6 x 9
- or Timber Post 6" x 8"
- Face of MGS W-Beam Guardrail
- W-Beam (Typ.)
- Slope 10:1 Max.
- 10:1 Max. or Flatter
- Slope 20:1 Desirable
- 16D Double Face Nail
- 6" x 8" x 1'-2"
- Steel Post W 6 x 9
- or Timber Post 6" x 8"
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.
NOTES:
1. Timber or steel posts may be used. Timber and steel posts shall not be intermixed.

2. Guardrail post W 6 x 8 1/2 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.
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.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
Thrie Beam

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS GUARDRAIL TRANSITION

PLAN VIEW

Standard Post Spacing

\[ 28'-1\ 1/2" \]

Asymmetrical W-Beam to Thrie Beam Transition

ELEVATION VIEW

MGS W-BEAM OMITTED POST

ELEVATION VIEW

MGS Guardrail Transition

25'-0" Maximum

\[ \geq 43'-9" \]

\[ \geq 28'-1\ 1/2" \] of MGS Standard Post Spacing

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
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 placed as shown.

3. MGS w-beam guardrail run containing an omitted post shall not be placed adjacent vertical or sloping curb.

OMITTED POST

MIDWEST GUARDRAIL SYSTEM ASSEMBLY

placed adjacent vertical or sloping curb.

A single post may be omitted within an MGS w-beam guardrail run. See RPD 601-R-658d Sheet 06.

Where a post is omitted a minimum length of MGS standard post spacing guardrail shall be placed as shown.

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
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.
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.
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 RES500 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.
**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.


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.

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION WITHOUT CURB

NOTE:
1. An optional 4 in. sloping curb may be placed 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-659d Sheet 11 for guardrail transition adjacent a curb.
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.
INDIANA DEPARTMENT OF TRANSPORTATION
E 601-R-658d 14 of 23

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
GUARDRAIL TRANSITION

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.
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.
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
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.


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


7. See Standard Drawing E 601-WBGC-01 for curved terminal end details.
NOTES:


1. Attach BCT Post 3/4" Ø Hole to T 8" x 6" x 3/16"

GALVANIZED STEEL FOUNDATION TUBE

BCT TIMBER POST

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM

Eff. for Lettings On or After 01-01-18
BCT ANCHOR CABLE ASSEMBLY

1" Ø Hex Nut with Round Washer

Standard Swaged Fitting and Stud (Stud Threaded Entire Length)

1/8" Pitch Threads (Both Sides)

1" Ø Hex Nut with Round Washer

3/4" Ø (6 x 19) Galvanized Cable

Cable to be Swage-Connected

BCT POST SLEEVE

BCT BEARING PLATE

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY

CABLE TERMINAL ANCHOR SYSTEM

EFF. FOR LETTINGS ON OR AFTER 01-01-18
INDIANA DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM ASSEMBLY
CABLE TERMINAL ANCHOR SYSTEM

BENT PLATE 1'-4" x 1'-0 5/8" x 3/16"

Weld End Plate to Bracket

3/4" Ø Holes

1 1/8" Ø Hole

2 3/4"

1 5/8"

3/8"

3/16"

1 3/8"

1 1/8"

2 3/4"

3/8"

Bracket

End Plate

3/8" R (Typ.)

1" R (Typ.)

3/8" R (Typ.)

3/8" Ø Holes

1"-4"

2"

4"

4"

4"

2"

3/4" END PLATE

GUARDRAIL, ANCHOR BRACKET

BENT PLATE 1'-4" x 1'-0 5/8" x 3/16"

Weld End Plate to Bracket

3/4" Ø Holes

1 1/8" Ø Hole

2 3/4"

1 5/8"

3/8"

3/16"

1 3/8"

1 1/8"

2 3/4"

3/8"

1"-4"

2"

4"

4"

4"

2"
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.
   a. Distance between the back of post and inside face of structure headwall.
   b. See RPD 601-R-658d Sheet 09 for the distance between front face of MSG Long-Span and inside face of structure headwall.

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<tr>
<td>MGS W-Beam Standard</td>
<td>6'-3&quot;</td>
<td>2 ft</td>
<td>5.0 ft</td>
</tr>
<tr>
<td>MGS W-Beam Standard w/Omitted Post</td>
<td>6'-3&quot;</td>
<td>2 ft</td>
<td>5.0 ft</td>
</tr>
<tr>
<td>MGS W-Beam Standard</td>
<td>6'-3&quot;</td>
<td>&lt; 2 ft</td>
<td>6.5 ft</td>
</tr>
<tr>
<td>MGS W-Beam Half Post Spacing</td>
<td>3'-1 1/2&quot;</td>
<td>2 ft</td>
<td>4.5 ft</td>
</tr>
<tr>
<td>MGS W-Beam Quarter Post Spacing</td>
<td>1'-6 3/4&quot;</td>
<td>2 ft</td>
<td>4.0 ft</td>
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<tr>
<td>MGS Long-Span</td>
<td>Varies</td>
<td>(3)</td>
<td>8.0 ft</td>
</tr>
<tr>
<td>MGS Structure Top-Mount Post</td>
<td>6'-3&quot;</td>
<td>1.5 ft</td>
<td>(3)</td>
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