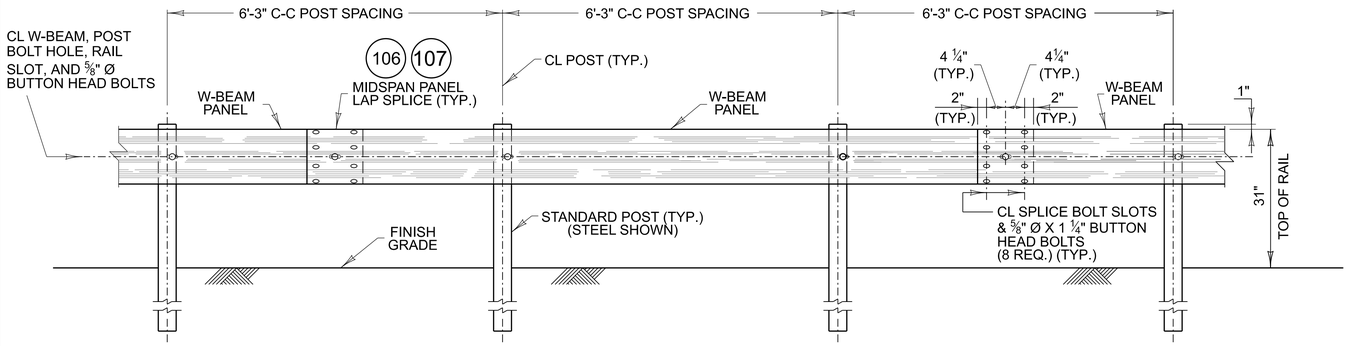
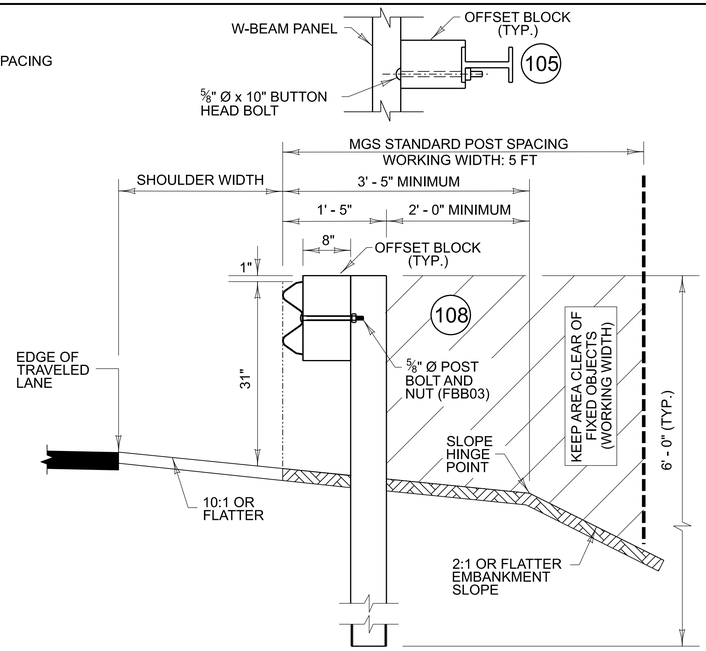


MGS GUARDRAIL – STANDARD INSTALLATION (PLAN)



MGS GUARDRAIL – STANDARD INSTALLATION (ELEVATION)



MGS GUARDRAIL – STEEL POST INSTALLATION

~ NOTES ~

101. MGS STANDARD GUARDRAIL IS MASH TL-3 APPROVED WITH A MINIMUM SYSTEM LENGTH OF 175 FT MEASURED FROM LENGTH OF NEED POINT TO LENGTH OF NEED POINT.

102. THIS MGS GUARDRAIL SYSTEM HAS A WORKING WIDTH OF APPROX. 5 FT. DO NOT INSTALL WHERE FIXED OBJECTS ARE LOCATED WITHIN 5 FT OF THE FACE OF GUARDRAIL (SEE PLAN VIEW). SEE SHEET 2 FOR OPTIONS WHEN AVAILABLE WORKING WIDTH IS LESS THAN 5 FT.

(103) STANDARD MGS W-BEAM GUARDRAIL POST LENGTH IS 6 FT, UNLESS NOTED OTHERWISE. DO NOT MIX STEEL AND WOOD POSTS WITHIN A SINGLE GUARDRAIL LENGTH UNLESS SHOWN ON ANOTHER DRAWING.

(104) DO NOT MIX WOOD AND COMPOSITE OFFSET BLOCKS WITHIN A SINGLE LENGTH OF GUARDRAIL UNLESS OTHERWISE INDICATED BY ANOTHER DRAWING.

(105) WHEN STEEL POSTS ARE USED, INSTALL THE BOLT ON THE SIDE CLOSEST TO THE DIRECTION OF TRAVEL. SEE SPLICE DETAIL.

(106) UNLESS OTHERWISE INDICATED, LOCATE ALL GUARDRAIL SPLICES AT MIDSPAN BETWEEN POSTS AT 6'-3" SPACING.

(107) LAP ALL GUARDRAIL SPLICES IN THE DIRECTION OF VEHICLE TRAVEL.

(108) PROVIDE 2'-0" MIN. HORIZONTAL EMBANKMENT WIDTH (10:1 OR FLATTER) BEHIND POSTS TO THE SLOPE HINGE POINT FOR 2:1 OR FLATTER FILL SLOPES. SEE SHEETS 3 AND 4 WHEN THIS WIDTH IS NOT AVAILABLE. CONTRARY TO RGX-001, ROUNDING OF SLOPES IS NOT PERMITTED AT THE HINGE POINT BEHIND GUARDRAIL. FOR FILL SLOPES STEEPER THAN 2:1, SEE RBR-202, SHEET 2 (THRIE-BEAM).

109. SEE STANDARD DRAWING PACKET RBR-203 FOR DETAILS OF THE W-BEAM RAIL, STEEL POST, WOOD POST, OFFSET BLOCK, AND BOLTS, NUTS, AND WASHERS.

110. SEE STANDARD DRAWING RBR-018 WHEN TRANSITIONING TO HEIGHT LESS THAN 31".

111. BOTH 12'-6" AND 25'-0" LENGTHS OF W-BEAM GUARDRAIL SECTIONS ARE PERMITTED UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

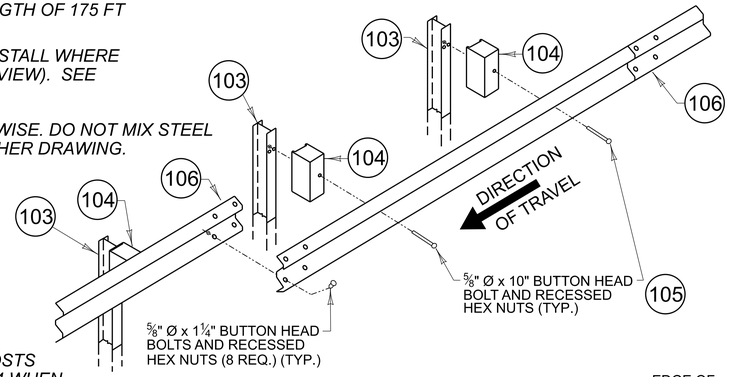
112. SEE RBR-055 FOR DELINEATOR FOR GUARDRAIL TYPES AND SPACING.

113. IF ROCK IS ENCOUNTERED DURING POST INSTALLATION, SEE RBR-204 SHEET 6.

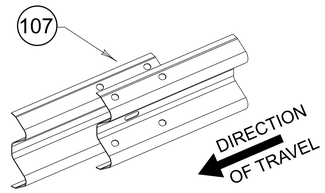
114. FOR POSTS SET IN ASPHALT OR CONCRETE PAVEMENT, SEE RBR-204 SHEET 6.

BID ITEM AND UNIT TO BID

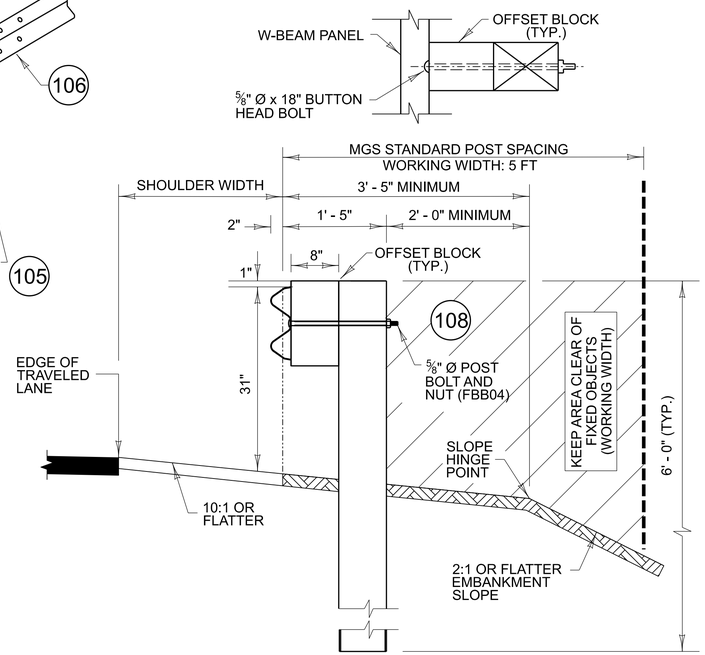
G/R-W BEAM-S FACE TL-3 LF



MIDSPAN LAP SPLICE DETAIL (STEEL POST SHOWN)



LAP SPLICE



MGS GUARDRAIL – WOOD POST INSTALLATION

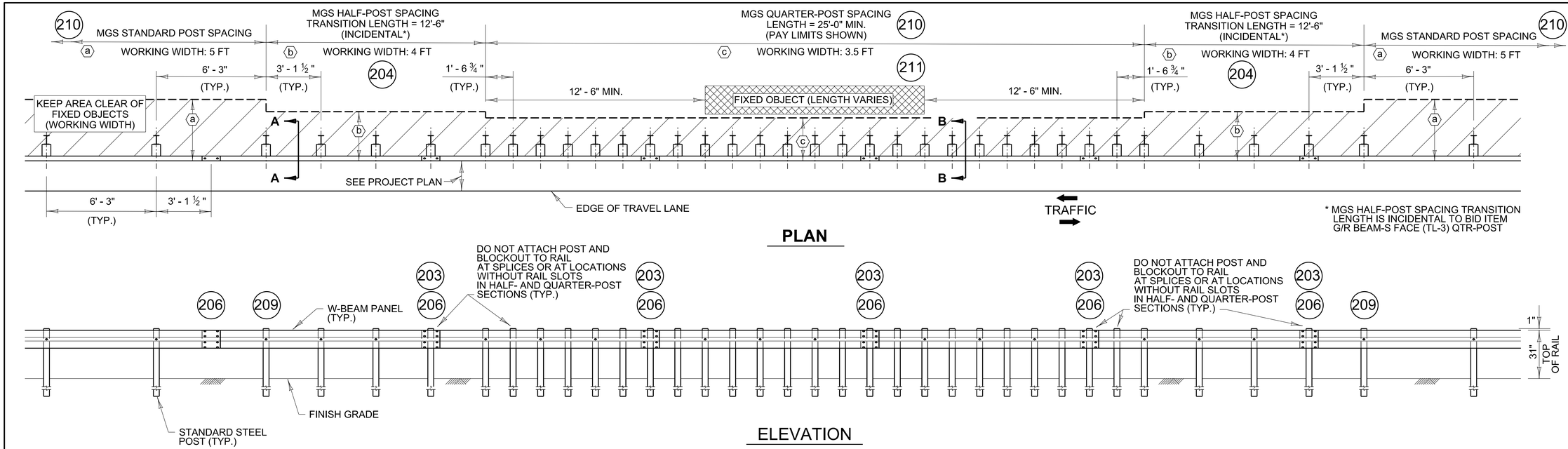
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DATE

BARRIERS



MGS GUARDRAIL STIFFENING – QUARTER-POST SPACING

~ NOTES ~

201. *THIS MGS GUARDRAIL SYSTEM HAS BEEN CRASH TESTED AND IS MASH TL-3 APPROVED.*

202. *USE 12'-6" LONG W-BEAM RAIL WITH FOUR SPACES (HARDWARE GUIDE NUMBER RWM04a) IN THE QUARTER-POST & HALF-POST TRANSITION SECTIONS.*

(203) *AT RAIL SPLICE LOCATIONS OR WHERE THE RAIL HAS NO SLOTS, DO NOT BOLT THE RAIL TO THE POSTS. INSTEAD, BOLT THE POSTS AND BLOCKOUTS TOGETHER AND SET THEM TO ABUT THE RAIL WITHOUT ATTACHMENT.*

(204) *REGARDLESS OF TRAFFIC DIRECTION, PROVIDE A 12'-6" HALF-POST-SPACED GUARDRAIL STIFFENING TRANSITION AT EACH END OF THE QUARTER-POST-SPACED SECTION AS SHOWN. INCLUDE AND PAY FOR THE HALF-POST LENGTH AS PART OF THE QUARTER-POST BID ITEM. THE HALF-POST SPACING SHALL ONLY BE USED IN THIS CONFIGURATION AND SHALL NOT BE INSTALLED AS A STANDALONE CONFIGURATION, UNLESS SHOWN IN ANOTHER STANDARD DRAWING.*

205. *THIS MGS SYSTEM — STIFFENING WITH TRANSITION TO QUARTER-POST SPACING — HAS A VARIABLE WORKING WIDTH AS FOLLOWS:*
   - (a) • *APPROX. 5 FT AT STANDARD POST SPACING*
   - (b) • *APPROX. 4 FT AT HALF-POST SPACING*
   - (c) • *APPROX. 3.5 FT AT QUARTER-POST SPACING*

   DO NOT INSTALL WHERE FIXED OBJECTS ARE WITHIN THE WORKING WIDTH (SEE PLAN VIEW).

(206) *EIGHT ⅝" x 1 ¼" BUTTON HEAD BOLTS AND RECESSED HEX NUTS REQUIRED AT RAIL SPLICE. SEE RBR-200 SHEET 1 FOR CONNECTION DETAILS OF THE SPLICE.*

207. *USE STEEL POSTS FOR MGS GUARDRAIL STIFFENING. WOOD POSTS ARE NOT PERMITTED FOR STIFFENING. WOOD POSTS MAY BE USED IN THE MGS STANDARD CONFIGURATION.*

208. *THE FOLLOWING STANDARD MGS GUARDRAIL INSTALLATION NOTES APPLY TO REDUCED POST SPACING INSTALLATIONS: RBR-200, SHEET 1, NOTES 104, 105, 107, 109, 110, 112, & 113.*

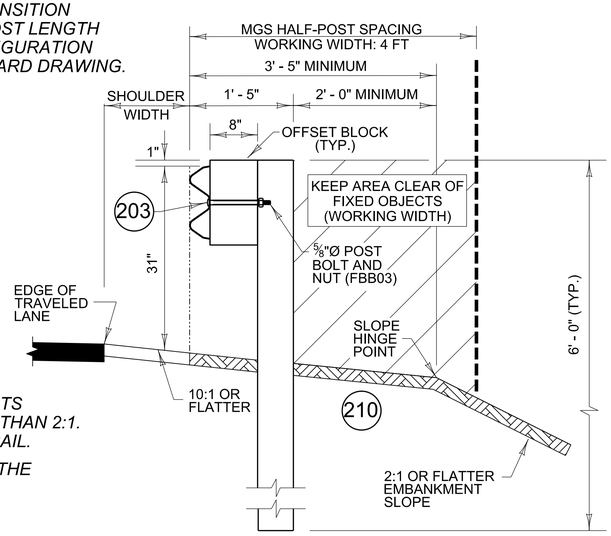
(209) *WHEN USING MGS STIFFENING TO QUARTER-POST SPACING, LOCATE END TREATMENTS AND APPROACH GUARDRAIL TRANSITIONS A MINIMUM OF 25 FT FROM THE FIRST POST OF STANDARD MGS GUARDRAIL.*

(210) *PROVIDE A MINIMUM 2' - 0" HORIZONTAL EMBANKMENT WIDTH (10:1 OR FLATTER) BEHIND GUARDRAIL POSTS TO THE SLOPE HINGE POINT FOR 2:1 OR FLATTER FILL SLOPES. DO NOT USE WITH FILL SLOPES STEEPER THAN 2:1. CONTRARY TO RGX-001, ROUNDING OF SLOPES IS NOT PERMITTED AT THE HINGE POINT BEHIND GUARDRAIL.*

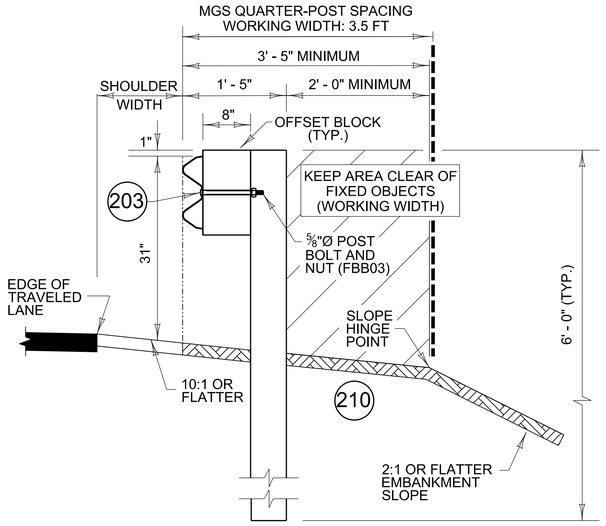
(211) *THE MINIMUM QUARTER-POST MGS LENGTH IS 25'. FOR A SINGLE FIXED OBJECT, LOCATE THE OBJECT AT THE MIDPOINT OF THE QUARTER-POST SECTION. FOR LARGER FIXED OBJECTS, LENGTHEN THE SECTION AS NEEDED; ADDED LENGTH MAY BE PROVIDED IN 12'-6" INCREMENTS (ONE GUARDRAIL PANEL). PROVIDE A MINIMUM 12'-6" QUARTER-POST MGS BEFORE AND AFTER THE FIXED OBJECT.*

BID ITEM AND UNIT TO BID

G/R-W BEAM-S FACE (TL-3) QTR POST LF



MGS HALF-POST SPACING
SECTION A - A

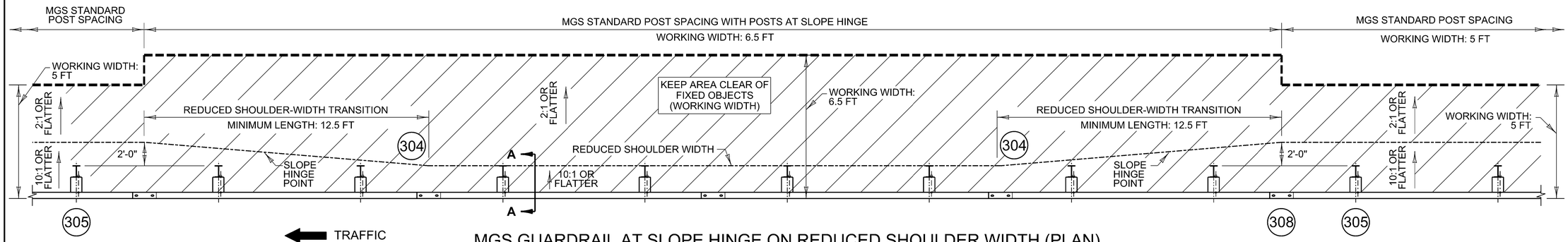


MGS QUARTER-POST SPACING
SECTION B - B

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BARRIERS



MGS GUARDRAIL AT SLOPE HINGE ON REDUCED SHOULDER WIDTH (PLAN)

~ NOTES ~

301. THIS MGS GUARDRAIL SYSTEM HAS BEEN CRASH TESTED AND IS MASH TL-3 APPROVED.

302. THIS MGS GUARDRAIL SYSTEM — STANDARD MGS AT THE SLOPE HINGE ON REDUCED SHOULDER WIDTH — HAS A WORKING WIDTH OF APPROX. 6.5 FT. DO NOT INSTALL WHERE FIXED OBJECTS ARE LOCATED WITHIN 6.5 FT OF THE FACE OF GUARDRAIL (SEE PLAN VIEW).

303. THE FOLLOWING STANDARD MGS GUARDRAIL INSTALLATION NOTES APPLY TO MGS SYSTEMS INSTALLED AT THE SLOPE HINGE ON REDUCED SHOULDER-WIDTH: RBR-200, SHEET 1, NOTES 103, 104, 105, 106, 107, 109, 111, 112, & 113.

(304) TRANSITION THE GRADED AREA BEHIND GUARDRAIL POSTS FROM NORMAL WIDTH (2 FT BEHIND GUARDRAIL POST) TO REDUCED SHOULDER WIDTH (0 FT BEHIND GUARDRAIL POST) OVER A MINIMUM 12.5 FT LENGTH. CONTRARY TO RGX-001, ROUNDING OF SLOPES IS NOT PERMITTED AT THE HINGE POINT BEHIND GUARDRAIL.

(305) GUARDRAIL HEIGHT SHALL BE 31" ALONG REDUCED SHOULDER WIDTH AND THROUGH THE REDUCED SHOULDER-WIDTH TRANSITIONS. SEE STANDARD DRAWING RBR-018 WHEN TRANSITIONING TO A HEIGHT LESS THAN 31".

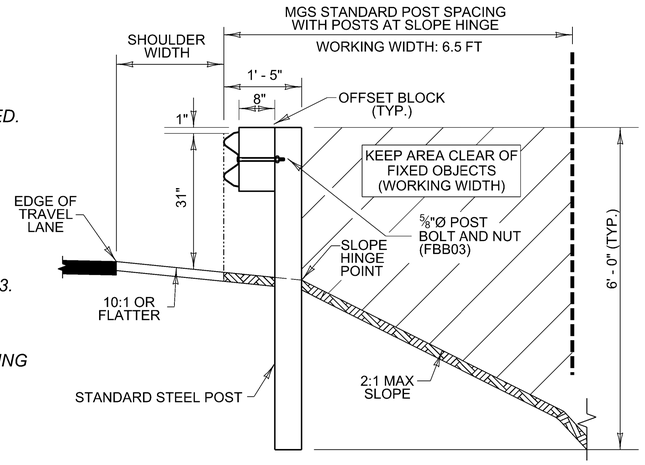
306. THE FOLLOWING GUARDRAIL CONFIGURATIONS SHALL NOT BE USED WITH THIS MGS GUARDRAIL SYSTEM (6'-0" STEEL POSTS ON A 2:1 SLOPE INSTALLED AT THE SLOPE HINGE POINT):

- *GUARDRAIL WITH HALF- OR QUARTER-POST SPACING (RBR-200 SHEET 2)*
- *TL-2 GUARDRAIL (RBR-201)*
- *OMITTED POSTS (RBR-200 SHEETS 6, 7, & 8)*
- *LONG-SPAN GUARDRAIL (RBR-200 SHEET 9 & 10)*
- *GUARDRAIL WITH CURBING (RBR-205)*

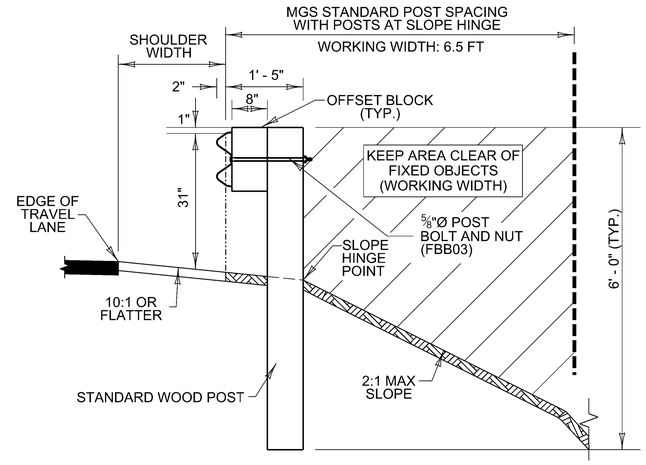
(307) WHEN USING GUARDRAIL WITH POSTS PLACED AT THE SLOPE POINT AND TRANSITIONING TO A THRIE-BEAM, LOCATE THE ASYMMETRIC W-BEAM TO THRIE-BEAM TRANSITION RAIL A MINIMUM OF 25 FT FROM THE REDUCED SHOULDER-WIDTH TRANSITION. SEE DETAIL A.

(308) END TREATMENTS AND CRASH CUSHIONS REQUIRE SPECIFIC GRADING CONDITIONS TO FUNCTION PROPERLY. CONSULT THE MANUFACTURER'S INSTALLATION MANUAL WHEN INSTALLING PROPRIETARY SYSTEMS NEAR SLOPES. LOCATE STANDARD TERMINALS A MINIMUM OF 25 FT FROM THE REDUCED SHOULDER WIDTH. REFER TO DETAIL A FOR GENERAL LAYOUT.

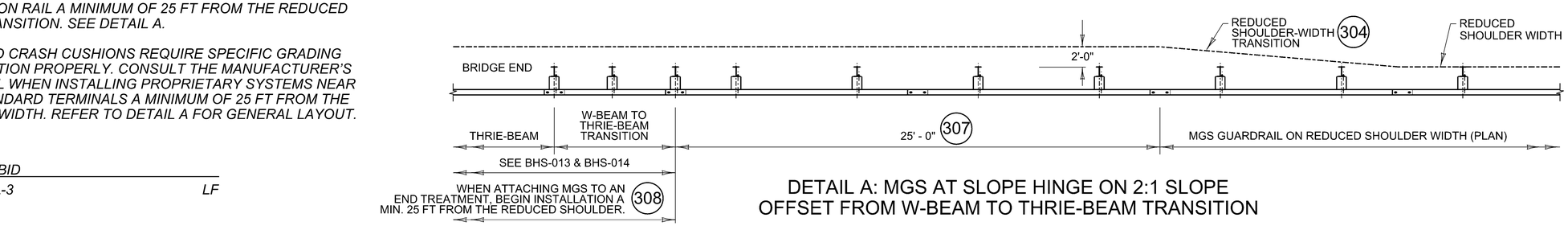
BID ITEM AND UNIT TO BID	
G/R-W BEAM-S FACE TL-3	*LF*



SECTION A - A
STANDARD STEEL POST AT SLOPE HINGE WITH REDUCED SHOULDER WIDTH



SECTION A - A
STANDARD WOOD POST AT SLOPE HINGE WITH REDUCED SHOULDER WIDTH



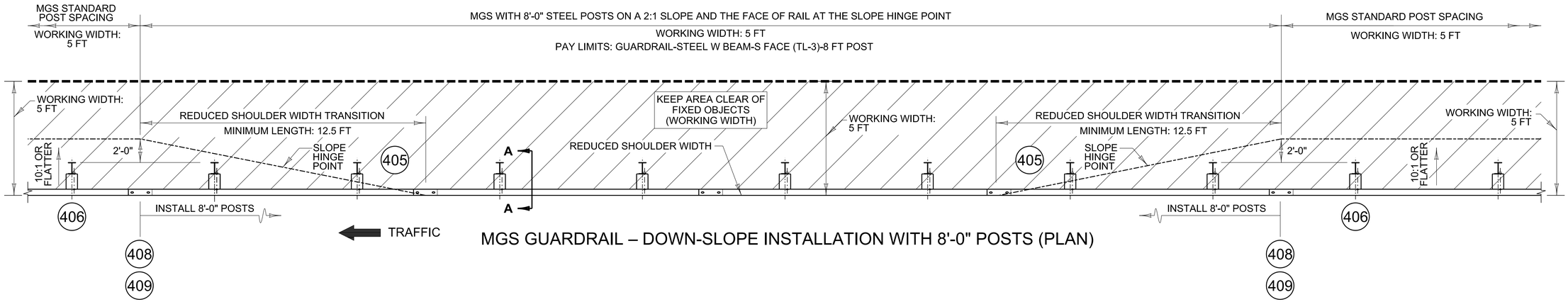
DETAIL A: MGS AT SLOPE HINGE ON 2:1 SLOPE OFFSET FROM W-BEAM TO THRIE-BEAM TRANSITION

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BARRIERS



MGS GUARDRAIL – DOWN-SLOPE INSTALLATION WITH 8'-0" POSTS (PLAN)

~ NOTES ~

401. THIS MGS GUARDRAIL SYSTEM HAS BEEN CRASH TESTED AND IS MASH TL-3 APPROVED.

402. THIS MGS GUARDRAIL SYSTEM WITH 8'-0" STEEL POSTS ON A 2:1 SLOPE AND THE FACE OF RAIL AT THE SLOPE HINGE POINT HAS A WORKING WIDTH OF APPROX. 5 FT. DO NOT INSTALL WHERE FIXED OBJECTS ARE WITHIN 5 FT OF THE FACE OF GUARDRAIL (SEE PLAN VIEW).

403. USE STEEL POSTS ONLY FOR THIS MGS GUARDRAIL CONFIGURATION. WOOD OR OTHER POST TYPES ARE NOT PERMITTED.

404. THE FOLLOWING STANDARD MGS GUARDRAIL INSTALLATION NOTES APPLY TO THIS MGS SYSTEM WITH 8'-0" STEEL POSTS INSTALLED ON A 2:1 SLOPE AT THE SLOPE HINGE POINT: RBR-200, SHEET 1, NOTES 104, 105, 106, 107, 109, 111, 112, & 113.

(405) WHERE POSTS ARE INSTALLED DOWN THE SLOPE, TRANSITION BACK-OF-POST GRADING FROM 2'-0" TO THE FACE OF GUARDRAIL AT THE SLOPE HINGE POINT OVER A MINIMUM 12.5 FT LENGTH, AND USE 8'-0" LONG STEEL POSTS.

(406) GUARDRAIL HEIGHT SHALL BE 31" ALONG REDUCED SHOULDER WIDTH AND THROUGH THE REDUCED SHOULDER WIDTH TRANSITIONS. SEE STANDARD DRAWING RBR-018 WHEN TRANSITIONING TO A HEIGHT LESS THAN 31".

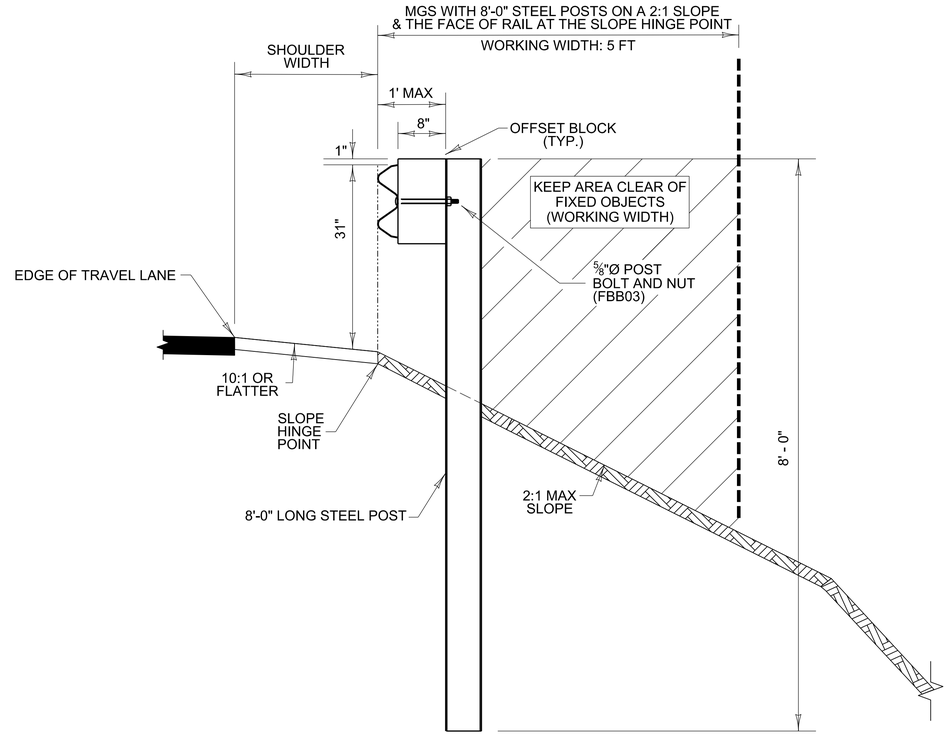
407. THE FOLLOWING GUARDRAIL CONFIGURATIONS SHALL NOT BE USED WITH THIS MGS GUARDRAIL SYSTEM (8'-0" STEEL POSTS ON A 2:1 SLOPE WITH FACE OF RAIL AT SLOPE HINGE POINT):
- *GUARDRAIL WITH HALF- OR QUARTER-POST SPACING (RBR-200 SHEET 2)*
- *TL-2 GUARDRAIL (RBR-201)*
- *OMITTED POSTS (RBR-200 SHEETS 6, 7, AND 8)*
- *LONG-SPAN GUARDRAIL (RBR-200 SHEETS 9 AND 10)*
- *GUARDRAIL WITH CURBING (RBR-205)*

(408) WHEN USING GUARDRAIL WITH POSTS PLACED DOWN THE SLOPE AND TRANSITIONING TO A THRIE-BEAM, LOCATE THE ASYMMETRIC W-BEAM TO THRIE-BEAM TRANSITION RAIL A MINIMUM OF 25 FT FROM THE REDUCED SHOULDER WIDTH TRANSITION. REFER TO DETAIL A ON RBR-200 SHEET 3 FOR GENERAL LAYOUT.

(409) END TREATMENTS AND CRASH CUSHIONS REQUIRE SPECIFIC GRADING CONDITIONS TO FUNCTION PROPERLY. CONSULT THE MANUFACTURER'S INSTALLATION MANUAL WHEN INSTALLING PROPRIETARY SYSTEMS NEAR SLOPES. LOCATE STANDARD TERMINALS A MINIMUM OF 25 FT FROM THE REDUCED SHOULDER WIDTH. REFER TO DETAIL A ON RBR-200 SHEET 3 FOR GENERAL LAYOUT.

BID ITEM AND UNIT TO BID

G/R-W BEAM-S FACE (TL-3) 8 FT POST LF



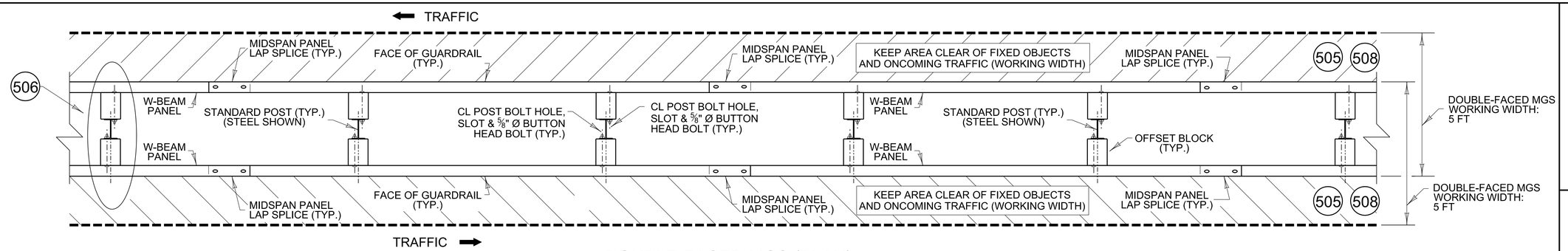
SECTION A - A
8'-0" LONG STEEL POST DOWN THE SLOPE WITH REDUCED SHOULDER WIDTH

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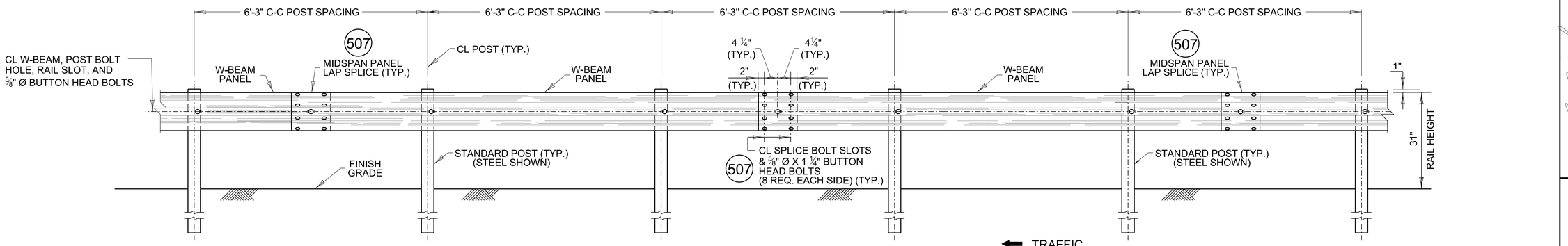
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BARRIERS



DOUBLE-FACED MGS (PLAN)



DOUBLE-FACED MGS (ELEVATION)

~ NOTES ~

501. *THIS MGS GUARDRAIL SYSTEM HAS BEEN CRASH TESTED AND IS MASH TL-3 APPROVED.*

502. *THIS MGS DOUBLE-FACED W-BEAM BARRIER SYSTEM HAS A WORKING WIDTH OF APPROX. 5 FT. THIS CONFIGURATION IS USED WHERE TRAFFIC IS PRESENT ON BOTH SIDES, SUCH AS BETWEEN OPPOSING ROADWAYS OR BETWEEN A MAINLINE AND AN ACCESS ROAD OR RAMP. DO NOT INSTALL WHERE THE EDGE OF TRAVELED WAY IS WITHIN 5 FT OF THE OPPOSITE FACE OF RAIL (SEE DOUBLE FACED MGS - STEEL POST INSTALLATION DETAIL).*

503. *USE STEEL POSTS ONLY FOR THIS MGS GUARDRAIL CONFIGURATION. WOOD OR OTHER POST TYPES ARE NOT PERMITTED.*

504. *THE FOLLOWING STANDARD MGS GUARDRAIL INSTALLATION NOTES APPLY TO THE MGS DOUBLE -FACED W-BEAM BARRIER SYSTEM: RBR-200, SHEET 1, NOTES 104, 106, 109, 110, 111, 112, 113, & 114.*

(505) *A 10:1 OR FLATTER SLOPE IS ALLOWABLE FROM THE EDGE OF PAVEMENT TO THE DOUBLE-SIDED MGS.*

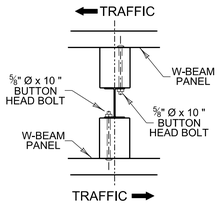
(506) *FOR THE MGS DOUBLE-FACED W-BEAM BARRIER SYSTEM, INSTALL POST BOLTS ON THE STEEL POST FACE NEAREST THE APPROACHING TRAFFIC. REFER TO DETAIL A FOR PROPER PLACEMENT IN BOTH UNI-DIRECTIONAL AND BI-DIRECTIONAL TRAFFIC CONFIGURATIONS.*

(507) *SEE DETAIL B FOR RAIL SPLICE LAPPING DIRECTION FOR UNI-DIRECTIONAL AND BI-DIRECTIONAL TRAFFIC.*

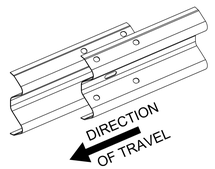
(508) *THE SHOULDER WIDTH MAY NEED TO BE INCREASED IF THE EDGE OF TRAVELED WAY IS CLOSE TO THE SHOULDER. ENSURE THE REQUIRED WORKING WIDTH (5 FT) IS PROVIDED FROM THE OPPOSITE FACE OF RAIL TO THE EDGE OF TRAVELED WAY WHEN DETERMINING SHOULDER WIDTH.*

BID ITEM AND UNIT TO BID

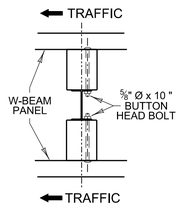
G/R-W BEAM-D FACE	*LF*



BI-DIRECTIONAL TRAFFIC

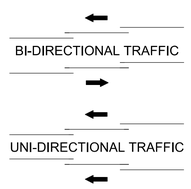


LAP SPLICE

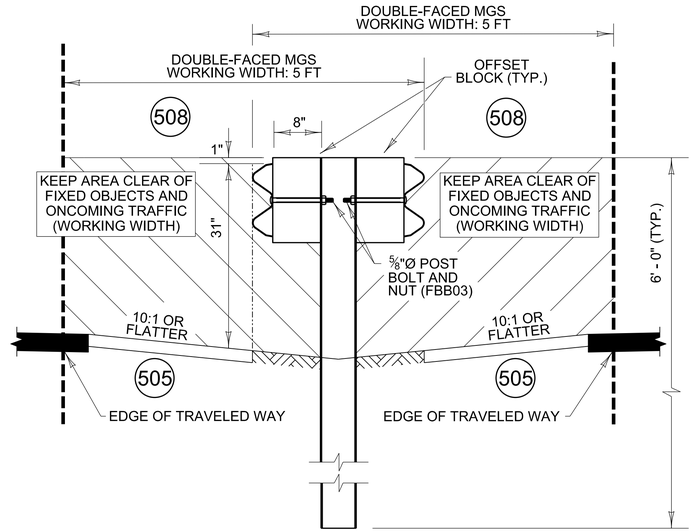


UNI-DIRECTIONAL TRAFFIC

DETAIL A (506)



DETAIL B (507)

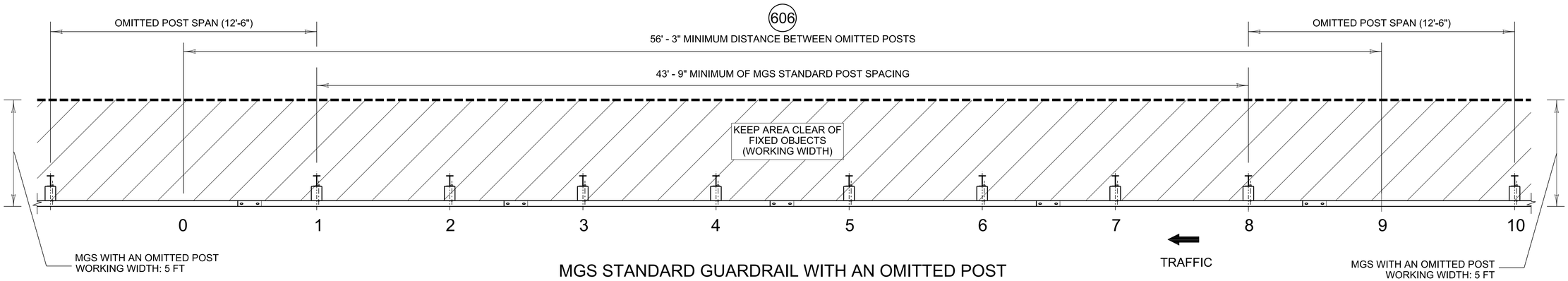


DOUBLE-FACED MGS – STEEL POST INSTALLATION

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STATE HIGHWAY ENGINEER

BARRIERS



MGS STANDARD GUARDRAIL WITH AN OMITTED POST
MINIMUM DISTANCE BETWEEN OMITTED POSTS

~ NOTES ~

601. THIS MGS GUARDRAIL SYSTEM HAS BEEN CRASH TESTED AND IS MASH TL-3 APPROVED. FOR STANDARD MGS GUARDRAIL (STANDARD RUNS ONLY), A SINGLE POST MAY BE OMITTED WITHOUT ANY OTHER SYSTEM MODIFICATIONS, PROVIDED A MINIMUM CONTINUOUS 50 FT OF GUARDRAIL IS INSTALLED. LIMIT USE TO ONE (1) OMITTED POST PER 50 FT OF GUARDRAIL LENGTH.

602. THIS MGS GUARDRAIL SYSTEM WITH AN OMITTED POST HAS A WORKING WIDTH OF APPROX. 5 FT. DO NOT INSTALL WHERE FIXED OBJECTS ARE LOCATED WITHIN 5 FT OF THE FACE OF GUARDRAIL.

603. A GUARDRAIL POST MAY BE OMITTED ONLY WHERE A PHYSICAL CONSTRAINT PREVENTS INSTALLATION AND ONLY AT LOCATIONS AND WITHIN LIMITS SHOWN ON THIS STANDARD DRAWING RBR-200, SHEETS 6, 7, AND 8.

604. POST OMISSIONS SHALL BE SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER IN THE FIELD WHEN A PHYSICAL CONSTRAINT PREVENTS INSTALLATION. FIELD OMISSION OF POSTS WITHOUT THE ENGINEER'S APPROVAL IS NOT PERMITTED.

605. THE FOLLOWING STANDARD MGS GUARDRAIL INSTALLATION NOTES APPLY TO THE MGS SYSTEM WITH AN OMITTED POST: RBR-200, SHEET 1, NOTES 103, 104, 105, 106, 107, 109, 111, 112, 113, & 114.

(606) PROVIDE 2'-0" MIN. HORIZONTAL EMBANKMENT WIDTH (10:1 OR FLATTER) BEHIND POSTS TO THE SLOPE HINGE POINT FOR 2:1 OR FLATTER FILL SLOPES.

(607) GUARDRAIL HEIGHT SHALL BE 31" FOR A DISTANCE OF 12'-6" BEFORE AND AFTER THE OMITTED POST. SEE STANDARD DRAWING RBR-018 WHEN TRANSITIONING TO A HEIGHT LESS THAN 31".

608. SEE RBR-200, SHEETS 7 AND 8, FOR APPROVED LOCATIONS WHERE POSTS MAY BE OMITTED NEAR END TREATMENTS, GUARDRAIL TRANSITIONS, AND ADJACENT TO CURB.

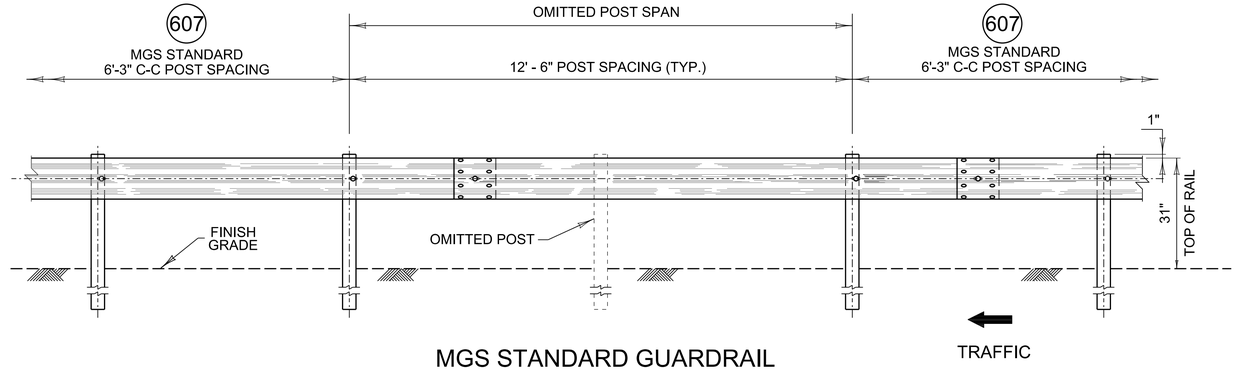
AN OMITTED POST IS NOT ALLOWED IN THE FOLLOWING MGS CONFIGURATIONS:
- *GUARDRAIL HALF- AND QUARTER-POST SPACING (RBR-200 SHEET 2)*
- *GUARDRAIL AT SLOPE HINGE POINT (RBR-200 SHEET 3)*
- *GUARDRAIL AT SLOPE HINGE POINT - 8FT POSTS (RBR-200 SHEET 4)*
- *GUARDRAIL DOUBLE-SIDED (RBR-200 SHEET 5)*
- *TL-2 GUARDRAIL (RBR-201)*
- *TL-3 THRIE-BEAM GUARDRAIL (RBR-202)*

609. AN OMITTED POST IN THE PRESENCE OF CURBING REQUIRES NESTED GUARDRAIL. SEE RBR-200, SHEET 8.

610. WHEN FIELD CONDITIONS REQUIRE MORE THAN ONE CONSECUTIVE POST TO BE OMITTED, USE THE MGS LONG SPAN CONFIGURATIONS SHOWN ON RBR-200, SHEETS 9 AND 10.

BID ITEM AND UNIT TO BID

G/R-W BEAM-S FACE TL-3	*LF*



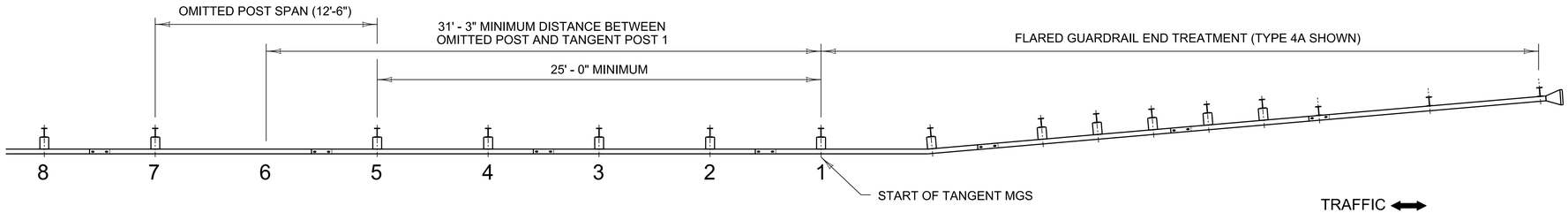
MGS STANDARD GUARDRAIL
WITH AN OMITTED POST

REVISION DATE: 05/06/2026
REVISION NUMBER: 0

05/06/2026
DATE
SUBMITTED
DIVISION DIRECTOR

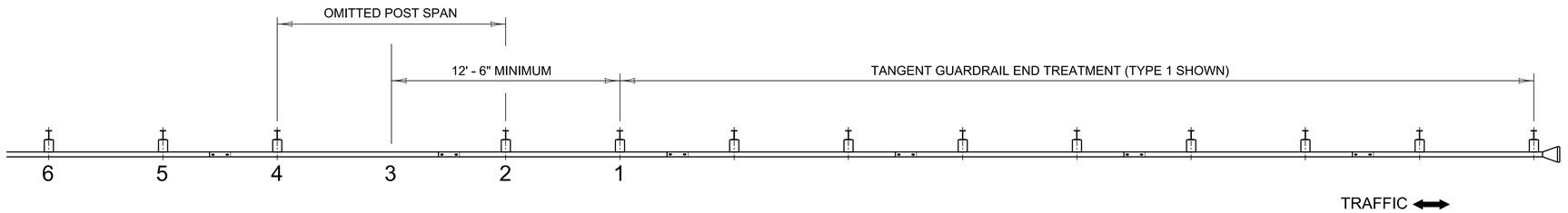
DATE
APPROVED
STATE HIGHWAY ENGINEER

BARRIERS



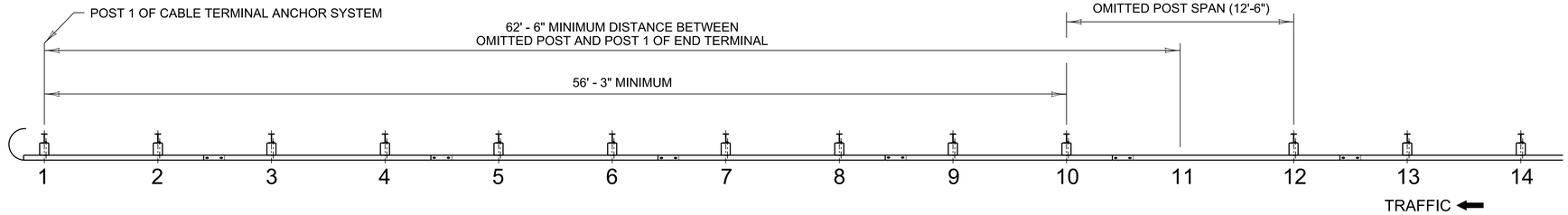
FLARED GUARDRAIL END TREATMENT

(REF: RBR-030 AND RBR-035 – GUARDRAIL END TREATMENTS TYPE 3 AND TYPE 4A)



TANGENT GUARDRAIL END TREATMENT

(REF: RBR-020 – GUARDRAIL END TREATMENT TYPE 1)



TRAILING END TERMINAL

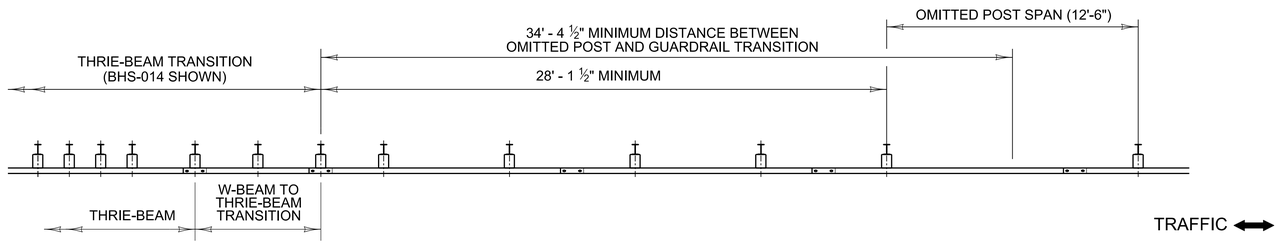
(REF: RBR-025 – GUARDRAIL END TREATMENT TYPE 2M)

~ NOTES ~

701. ALL DRAWINGS DEPICT MGS STANDARD GUARDRAIL WITH AN OMITTED POST, SHOW THE MINIMUM DISTANCE BETWEEN OMITTED POSTS AND OTHER ROADSIDE SAFETY HARDWARE, AND ARE MASH TL-3 APPROVED.

702. FOLLOW ALL NOTES ON RBR-200, SHEET 6.

703. FIELD OMISSION OF POSTS WITHOUT THE ENGINEER'S APPROVAL IS NOT PERMITTED.



THRIE-BEAM GUARDRAIL TRANSITION

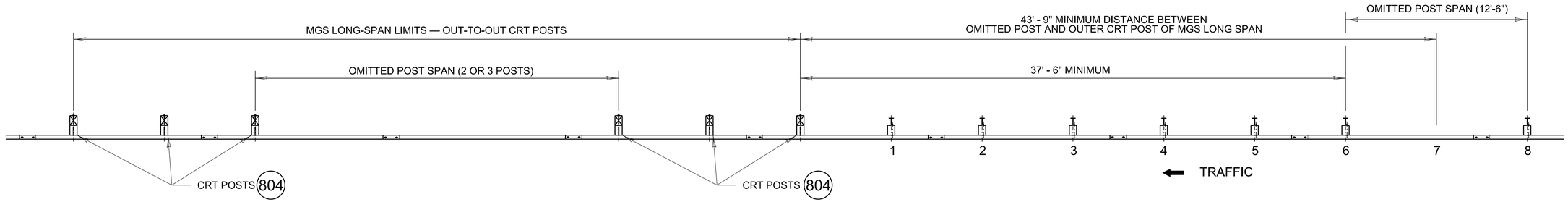
(REF: BHS-013 AND BHS-014)

REVISION DATE: 05/06/2026
REVISION NUMBER: 0

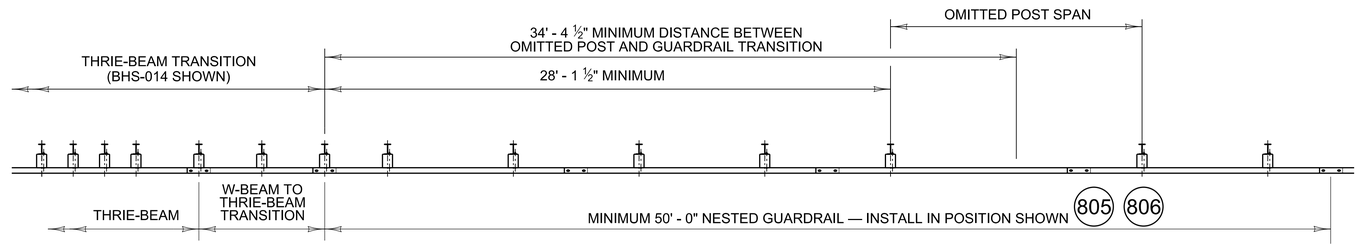
SUBMITTED — DIVISION DIRECTOR — 05/06/2026 DATE

APPROVED — STATE HIGHWAY ENGINEER — DATE

BARRIERS



MGS LONG SPAN
(REF: RBR-200, SHEETS 9 & 10 – MGS LONG SPAN)



NESTED MGS WITH OMITTED POSTS, LOCATED ABOVE OR ADJACENT TO CURB, CONNECTED TO A THRIE-BEAM GUARDRAIL TRANSITION (REF: BHS-013 AND BHS-014).

~ NOTES ~

801. *ALL DRAWINGS DEPICT MGS STANDARD GUARDRAIL WITH AN OMITTED POST, SHOW THE MINIMUM DISTANCES BETWEEN OMITTED POSTS AND OTHER ROADSIDE SAFETY HARDWARE, AND ARE MASH TL-3 APPROVED.*

802. *FOLLOW ALL NOTES ON RBR-200, SHEET 6.*

803. *FIELD OMISSION OF POSTS WITHOUT THE ENGINEER'S APPROVAL IS NOT PERMITTED.*

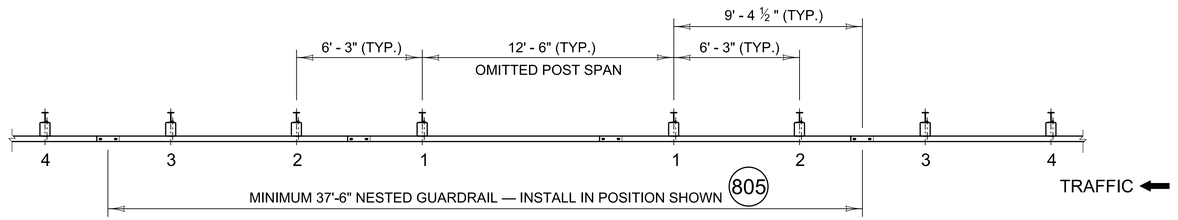
(804) *CRT = CONTROLLED RELEASE TERMINAL POSTS*

(805) *WHERE A CURB IS PRESENT, OMITTED POSTS REQUIRE A NESTED GUARDRAIL RAIL SECTION. PAY AS NESTED GUARDRAIL.*

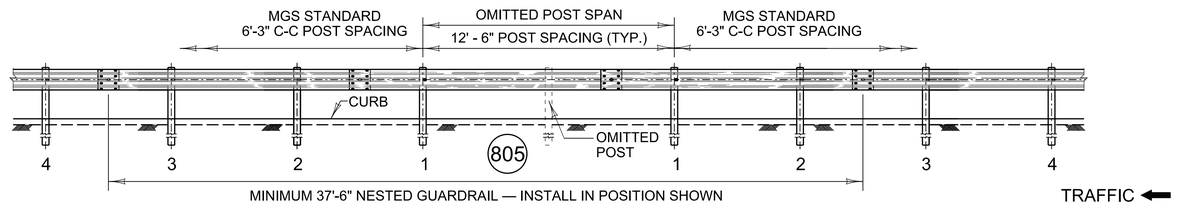
(806) *WHEN A POST IS OMITTED IN THE PRESENCE OF CURB NEAR A THRIE-BEAM GUARDRAIL TRANSITION, EXTEND THE NESTED GUARDRAIL TO THE W-BEAM–TO–THRIE-BEAM TRANSITION PANEL.*

BID ITEM AND UNIT TO BID

G/R-W BEAM-S FACE TL-3 (NESTED)	*LF*
G/R-W BEAM-S FACE TL-3	*LF*



PLAN



ELEVATION

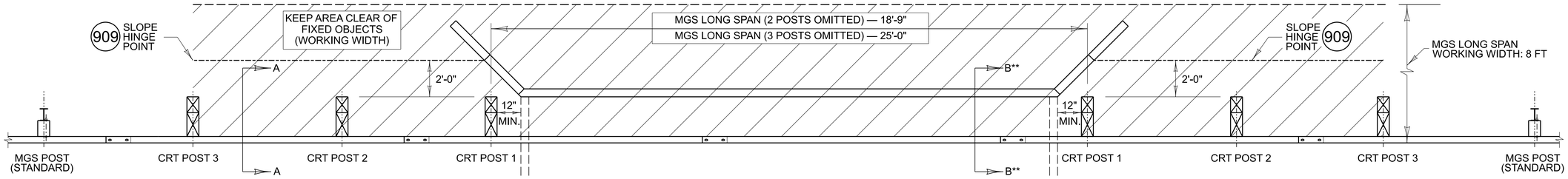
NESTED MGS WITH OMITTED POST, INSTALLED ABOVE OR ADJACENT TO CURB
(REF: RBR-205, MGS ADJACENT TO CURB)

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REVISION NUMBER: 0

05/06/2026
DATE
SUBMITTED
DIVISION DIRECTOR

DATE
APPROVED
STATE HIGHWAY ENGINEER

BARRIERS

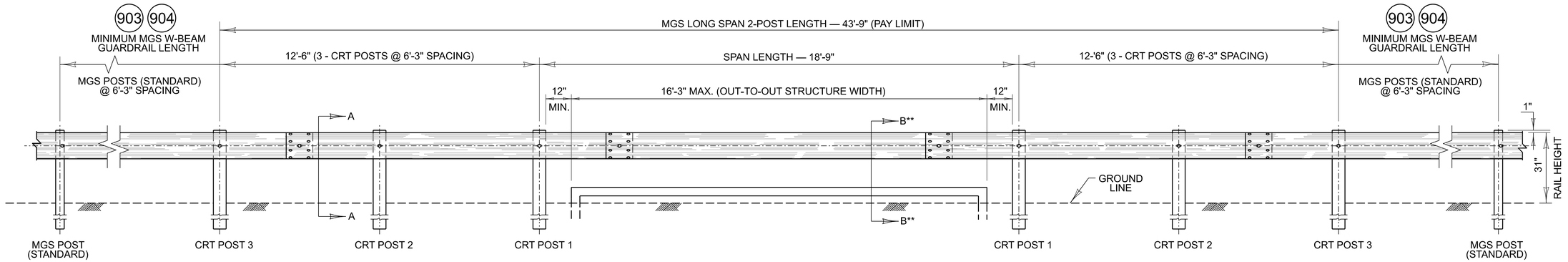


MGS LONG SPAN (2-POST AND 3-POST)* — PLAN

TRAFFIC

** MGS LONG SPAN 3-POST ELEVATION DETAILS ARE SHOWN ON RBR-200, SHEET 10.*

***SEE RBR-200, SHEET 10 FOR SECTION B - B.*



MGS LONG SPAN (2 POSTS OMITTED) — ELEVATION

~ NOTES ~

901. THE MGS LONG SPAN CONFIGURATIONS, 2-POST AND 3-POST HAVE BEEN CRASH TESTED AND ARE MASH TL-3 APPROVED.

902. MGS LONG SPAN INSTALLATIONS REQUIRE A WORKING WIDTH OF APPROXIMATELY 8 FT. DO NOT INSTALL WHERE FIXED OBJECTS ARE LOCATED WITHIN 8 FT OF THE FACE OF GUARDRAIL (SEE PLAN VIEW). FOR THE EFFECT OF CULVERT HEADWALL HEIGHT ON WORKING WIDTH, SEE NOTES 1001 AND 1002 IN RBR-200, SHEET 10.

(903) PROVIDE A MINIMUM OF 25'-0" OF MGS W-BEAM GUARDRAIL BETWEEN CRT POST 3 AND THE BEGINNING OF ANY OF THE FOLLOWING:
- *TYPE 1 END TREATMENT (POST 1, RBR-020)*
- *THRIE-BEAM GUARDRAIL TRANSITION (PAY LIMIT, BHS-013 AND BHS-014)*
- *QUARTER-POST SPACING (RBR-200, SHEET 2, NOTE 209)*

(904) PROVIDE A MINIMUM OF 62'-6" OF MGS W-BEAM GUARDRAIL BETWEEN CRT POST 3 AND THE BEGINNING OF ANY OF THE FOLLOWING:
- *TYPE 3 END TREATMENT (WHERE FLARING STARTS, RBR-030)*
- *TYPE 4A END TREATMENT (PAY LIMIT, RBR-035)*
- *ANY FLARED GUARDRAIL*

905. SEE RBR-200, SHEET 8, FOR MINIMUM DISTANCE REQUIREMENTS BETWEEN AN MGS LONG SPAN AND AN OMITTED POST.

906. ONLY CRT POSTS ARE PERMITTED WITHIN THE MGS LONG SPAN PAY LIMITS.

(907) FOR MGS LONG SPAN CONFIGURATIONS, USE 6" × 12" × 14" TIMBER BLOCKOUTS ONLY. OTHER BLOCKOUT TYPES ARE NOT PERMITTED.

908. THE FOLLOWING STANDARD MGS GUARDRAIL INSTALLATION NOTES APPLY TO MGS LONG SPAN CONFIGURATIONS: RBR-200, SHEET 1, NOTES 106, 107, 109, 111, AND 112.

(909) PROVIDE A MINIMUM 2'-0" HORIZONTAL WIDTH OF EMBANKMENT BEHIND CRT POSTS TO THE SLOPE HINGE POINT FOR 3:1 OR FLATTER SLOPES.

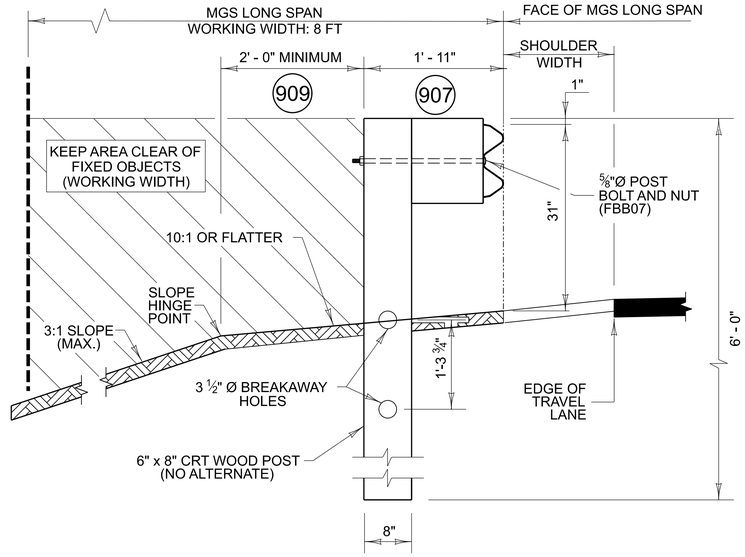
910. MAINTAIN A GUARDRAIL HEIGHT OF 31" THROUGHOUT MGS LONG SPAN CONFIGURATIONS AND FOR 12'-6" BEFORE AND AFTER EACH MGS LONG SPAN. WHEN TRANSITIONING TO A HEIGHT LESS THAN 31", SEE STANDARD DRAWING RBR-018.

911. MGS LONG SPAN INSTALLATIONS ARE NOT PERMITTED ADJACENT TO A CURB.

912. CRT = CONTROLLED RELEASE TERMINAL POSTS

BID ITEM AND UNIT TO BID

MGS LONG SPAN - 2 POST	*EACH*
MGS LONG SPAN - 3 POST	*EACH*



SECTION A - A: MGS LONG SPAN — CRT POST INSTALLATION

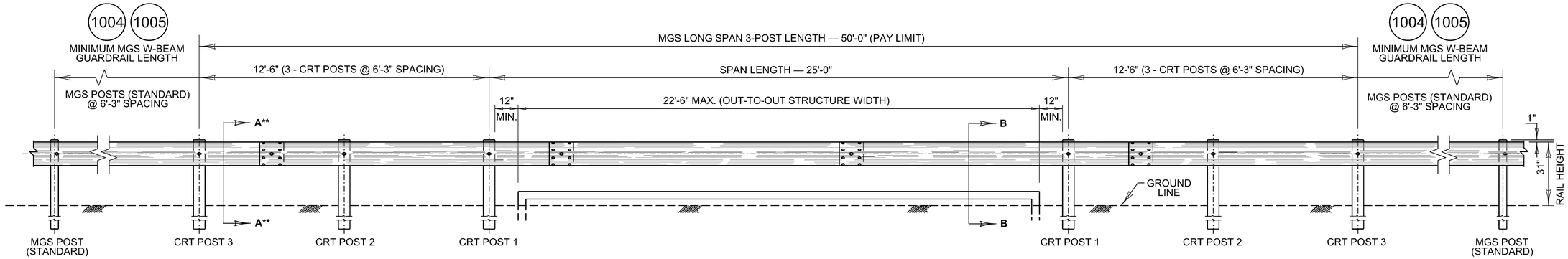
REVISION DATE: 05/06/2026
REVISION NUMBER: 0

05/06/2026
DATE

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APPROVED — STATE HIGHWAY ENGINEER — DATE

BARRIERS



MGS LONG SPAN (3 POSTS OMITTED)* — ELEVATION

** MGS LONG SPAN 3-POST PLAN DETAILS ARE SHOWN ON RBR-200, SHEET 9.*

***SEE RBR-200, SHEET 09 FOR SECTION A - A.*

REVISION DATE: 05/06/2026
REVISION NUMBER: 0

SUBMITTED — DIVISION DIRECTOR — 05/06/2026 DATE
APPROVED — STATE HIGHWAY ENGINEER — DATE

BARRIERS

~ NOTES ~

(1001) *WHERE THE STRUCTURE HEADWALL PROJECTS TWO (2) INCHES OR LESS ABOVE GRADE, POSITION THE BACK OF THE CRT POST NO FARTHER BACK THAN FLUSH WITH THE HEADWALL FACE.*

(1002) *WHEN THE STRUCTURE HEADWALL PROJECTION IS GREATER THAN TWO (2) INCHES ABOVE GRADE, LOCATE THE INSIDE FACE OF THE HEADWALL 8 FT FROM THE FACE OF MGS LONG SPAN.*

1003. *FOLLOW ALL NOTES ON RBR-200, SHEET 9. CIRCLED NOTES ARE REPEATED BELOW FOR REFERENCE.*

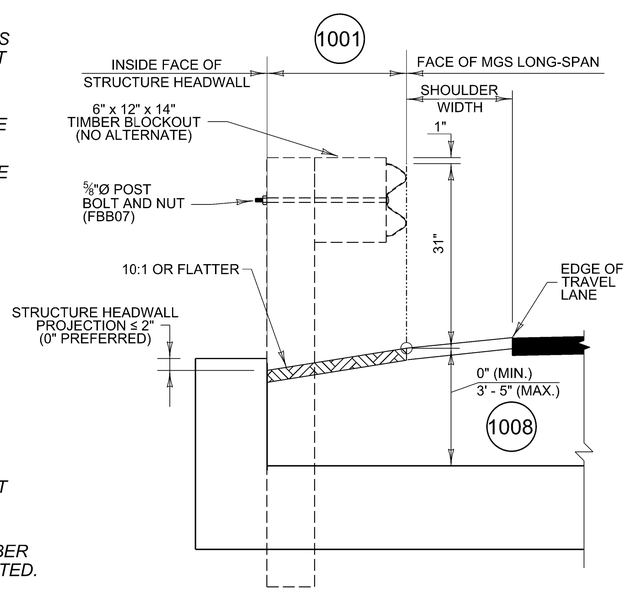
(1004) *PROVIDE A MINIMUM OF 25'-0" OF MGS W-BEAM GUARDRAIL BETWEEN CRT POST 3 AND THE BEGINNING OF ANY OF THE FOLLOWING:*
- *TYPE 1 END TREATMENT (POST 1, RBR-020)*
- *THRIE-BEAM GUARDRAIL TRANSITION (PAY LIMIT, BHS-013 AND BHS-014)*
- *QUARTER-POST SPACING (RBR-200, SHEET 2, NOTE 209)*

(1005) *PROVIDE A MINIMUM OF 62'-6" OF MGS W-BEAM GUARDRAIL BETWEEN CRT POST 3 AND THE BEGINNING OF ANY OF THE FOLLOWING:*
- *TYPE 3 END TREATMENT WHERE FLARING STARTS, RBR-030)*
- *TYPE 4A END TREATMENT (PAY LIMIT, RBR-035)*
- *ANY FLARED GUARDRAIL*

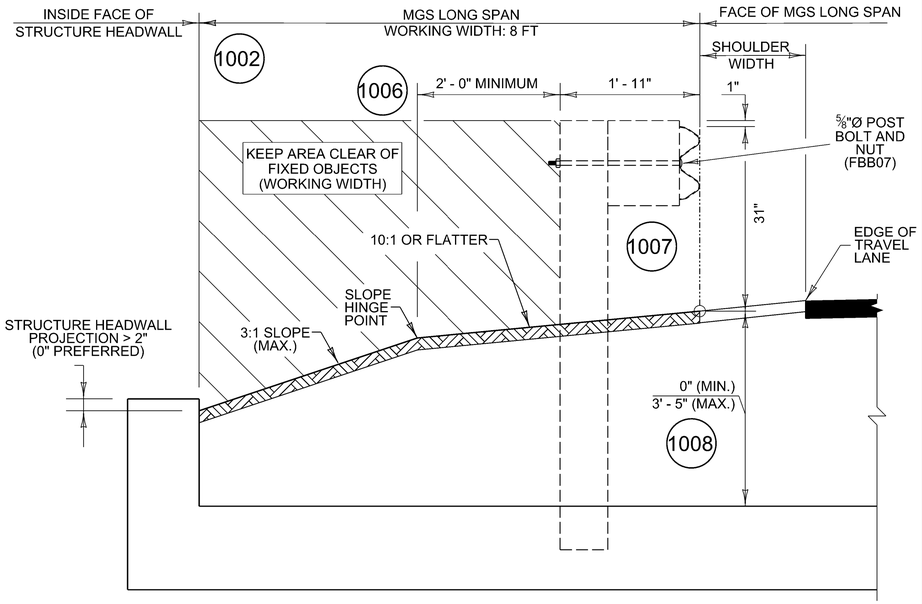
(1006) *PROVIDE A MINIMUM 2'-0" HORIZONTAL WIDTH OF EMBANKMENT BEHIND CRT POSTS TO THE SLOPE HINGE POINT FOR 3:1 OR FLATTER SLOPES.*

(1007) *FOR MGS LONG SPAN CONFIGURATIONS, USE 6" x 12" x 14" TIMBER BLOCKOUTS ONLY. OTHER BLOCKOUT TYPES ARE NOT PERMITTED.*

(1008) *WHEN THE FILL HEIGHT, MEASURED AT THE FACE OF RAIL FROM THE TOP OF SHOULDER TO THE TOP OF CULVERT, EXCEEDS 3'-5", USE THE STANDARD MGS INSTALLATION (RBR-200, SHEET 1).*



SECTION B - B
STRUCTURE HEADWALL PROJECTION ≤ 2"



SECTION B - B
STRUCTURE HEADWALL PROJECTION > 2"

Standard Drawing Reference Report

RBR-200-00-S

MIDWEST GUARDRAIL SYSTEM (MGS) – TL-3 W-BEAM GUARDRAIL

Effective Letting Date: June 25, 2026

Purpose of Standard Drawing Packet

The purpose of the **MGS Standard Guardrail Packet** is to provide guidance for the design and installation of **MASH Test Level 3-compliant W-beam guardrail** systems used on Kentucky highways.

These drawings establish standardized details and installation requirements based on crash-tested configurations. The drawings provide options for MGS installations, so highway professionals may select the MGS configuration appropriate for field conditions. **Questions regarding the configurations shown in this packet should be directed at the Highway Design Standard Drawing Section**.

Design Notes

MGS is a W-beam guardrail system developed by the Midwest Roadside Safety Facility. The system was developed to improve the performance of traditional strong-post W-beam guardrail with modern vehicle fleets and has successfully met MASH Test Level 3 crashworthiness criteria for applicable tested configurations. MGS uses the same W-beam rail element and components as traditional guardrail but incorporates a 31-inch rail height and mid-span rail splices to improve vehicle capture and reduce vehicle snagging during impact. In Kentucky, MGS is considered the default TL-3 longitudinal barrier system unless site conditions require an alternate barrier type.

MGS is a semi-rigid roadside barrier system used to shield obstacles where limited lateral deflection can be accommodated. During an impact, the system deflects as the posts rotate in the soil and the rail flexes. **No fixed objects should be located within the barrier's working width.** The typical working width for a standard MGS installation is approximately 5 feet. Other MGS configurations included in this packet have different working widths—some greater and some less than the standard installation—which are identified for each configuration.

Length of Need and Placement Considerations

MGS provides shielding only after the **Length of Need (LON)** has been developed. The LON is the portion of guardrail required to redirect an errant vehicle before it can reach the area of concern, which is either an obstacle or a non-traversable terrain feature being shielded. Additional guidance may be found in the Highway Knowledge Portal article on Length of Need. https://kp.uky.edu/knowledge-portal/articles/length-of-need/

The upstream end of the LON typically begins at or near the first full-strength post beyond the end treatment, depending on the terminal type used. For specific end treatments, refer to the applicable KYTC Standard Drawing to identify the LON post. Designers should determine the required guardrail length using established roadside design procedures in the **Highway Design Guidance Manual** and the **AASHTO Roadside Design Guide**. Adequate guardrail length must be provided upstream of the obstacle to ensure that vehicles impacting the barrier are properly redirected before reaching the obstacle. When determining guardrail length, it is common practice to round up to the nearest 12.5-ft increment, which represents the smallest standard length of W-beam rail.

Additional guidance may be found in the Highway Knowledge Portal article on guardrail.
https://kp.uky.edu/knowledge-portal/articles/guardrail/

References

KYTC Standard Specifications for Road and Bridge Construction

- Section 719 – Guardrail
- Section 814 – Guardrail Systems

Highway Design Guidance Manual

- HD-702.10.2 Shoulder Width and Slope
- HD-702.10.3 Guardrail Placement
- HD-702.10.4 Curb Placement and Border Area
- HD-801.3 Roadside Barriers
- HD-801.6 End Treatments & Crash Cushions
- Exhibits 700-05, 700-07, 700-08

AASHTO Roadside Design Guide

Crash Test Reports

MwRSF Report TRP-03-170-06, MwRSF Report TRP-03-171-06,
MwRSF Report TRP-03-172-06, MwRSF Report TRP-03-187-07,
MwRSF Report TRP-03-237-10, MwRSF Report TRP-03-241-11,
MwRSF Report TRP-03-243-11, MwRSF Report TRP-03-255-12,
MwRSF Report TRP-03-271-12, MwRSF Report TRP-03-272-13,
MwRSF Report TRP-03-274-12, MwRSF Report TRP-03-276-13,
MwRSF Report TRP-03-314-15, MwRSF Report TRP-03-320-16,
MwRSF Report TRP-03-326-16, MwRSF Report TRP-03-390-20,
MwRSF Report TRP-03-393-19, MwRSF Report TRP-03-433-21,
TTI Report 9-1002-4, TTI Report 610211-01 REV 2,
TTI Report 405160-20, TTI Report 9-1002-12-8,

FHWA Eligibility Letter B-189,
FHWA Eligibility Letter B-212, FHWA Eligibility Letter B-230A
FHWA Eligibility Letter B-240, FHWA Eligibility Letter B-261

Related Standard Drawings

RBB-001	GUARDRAIL AND BRIDGE END DRAINAGE FOR SINGLE STRUCTURE
RBB-002	GUARDRAIL AND BRIDGE END DRAINAGE FOR TWIN STRUCTURE
RBI-001	TYPICAL GUARDRAIL INSTALLATIONS
RBI-002	TYPICAL GUARDRAIL INSTALLATIONS
RBI-005	GUARDRAIL INSTALLATIONS AT BRIDGE COLUMNS
RBI-006	GUARDRAIL INSTALLATIONS AT SIGN SUPPORTS
RBR-010	GUARDRAIL TERMINAL SECTIONS
RBR-018	GUARDRAIL SYSTEM TRANSITION
RBR-055	DELINEATORS FOR GUARDRAIL

Standard Drawing Revision History

Revision	Description of Changes
RBR-200-00-S	**Created an MGS Guardrail TL-3 Standard Drawing packet documenting the following configurations:**
DATE: 2026-05-06	➢ Standard MGS guardrail configuration ➢ Reduced post spacing to increase system stiffness and reduce deflection ➢ MGS placement in areas with limited shoulder width ➢ MGS configurations with one, two, and three omitted posts