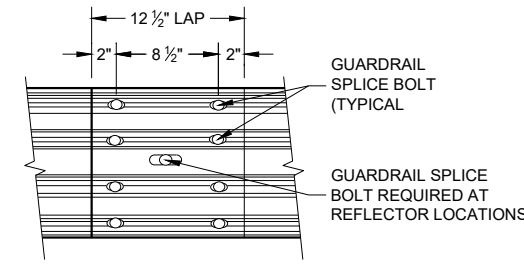


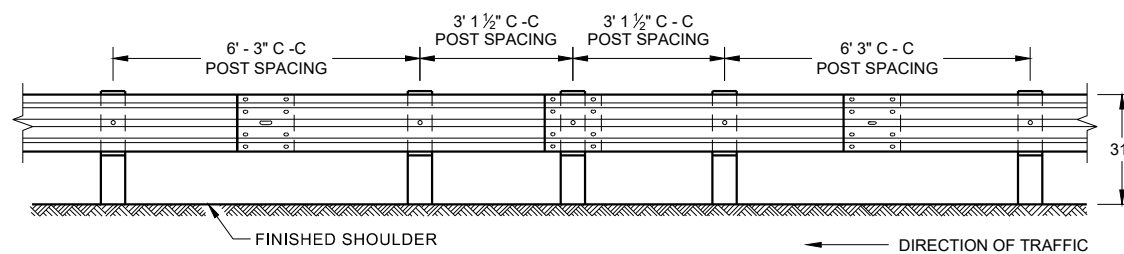
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



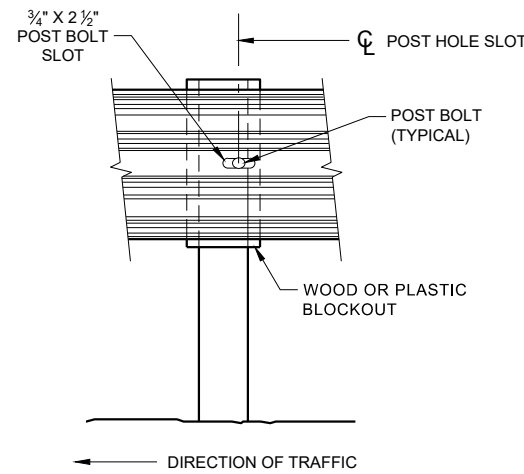
**FRONT VIEW  
MID-SPAN BEAM SPLICE**

**GENERAL NOTES**

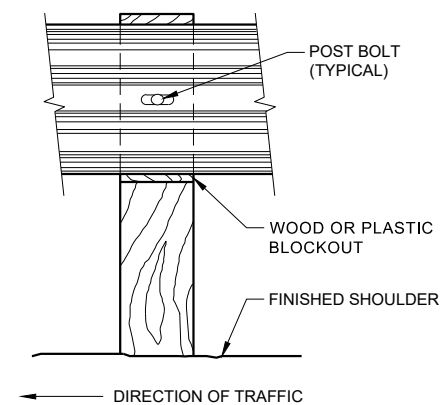
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
  - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



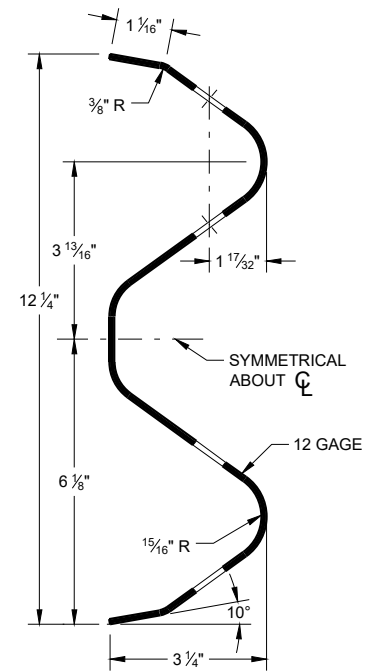
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



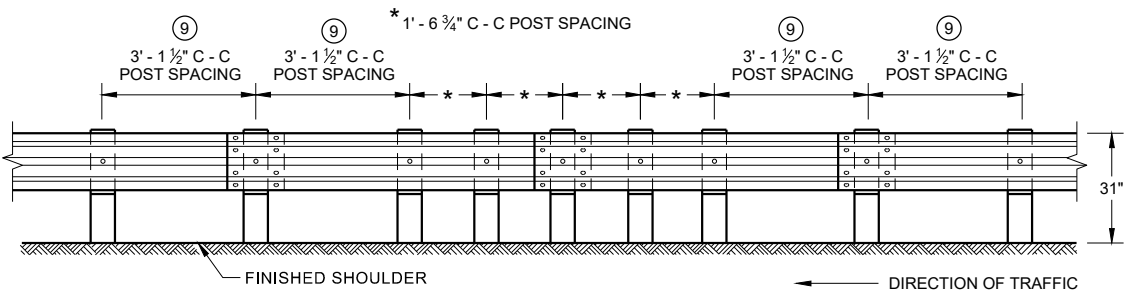
**FRONT VIEW AT STEEL POST**



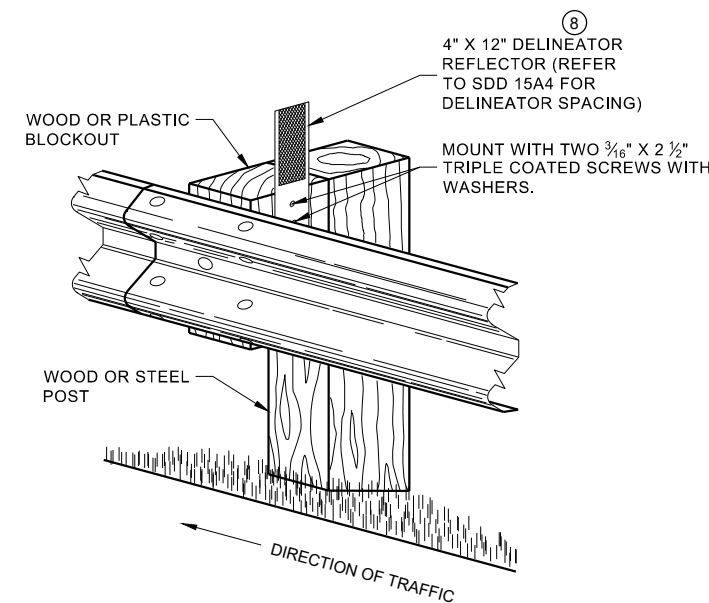
**FRONT VIEW AT WOOD POST**



**SECTION THRU W-BEAM RAIL**



**FRONT VIEW  
QUARTER POST SPACING (QS)**



**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

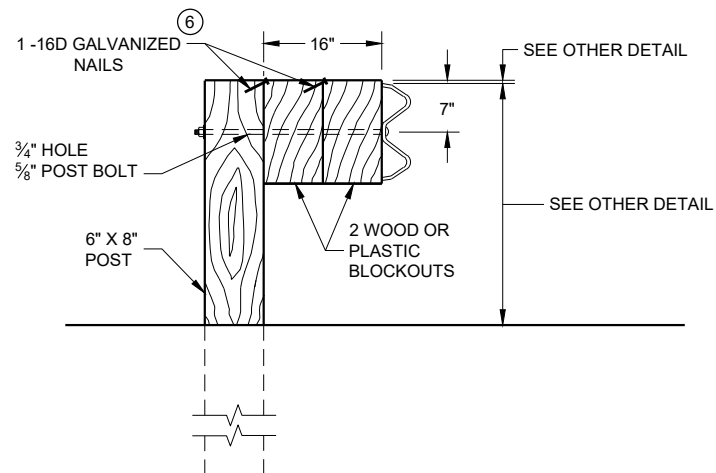
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

6

SDD 14B42 - 07b

SDD 14B42 - 07b

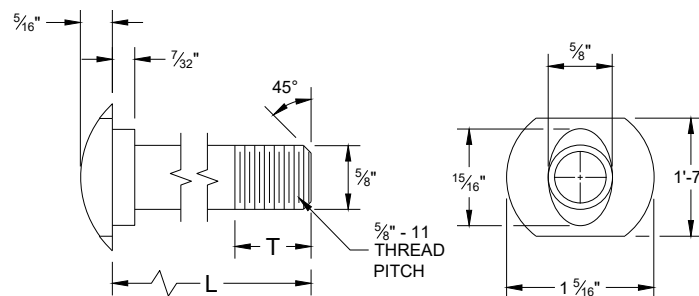


### DETAIL FOR 16" BLOCKOUT DEPTH

IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

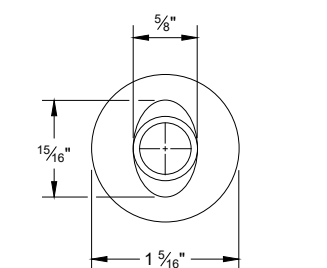
**NOTE:**

1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF  $\frac{3}{16}$ ".
2. IF THE BOLT EXTENDS MORE THAN  $\frac{1}{4}$ " FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

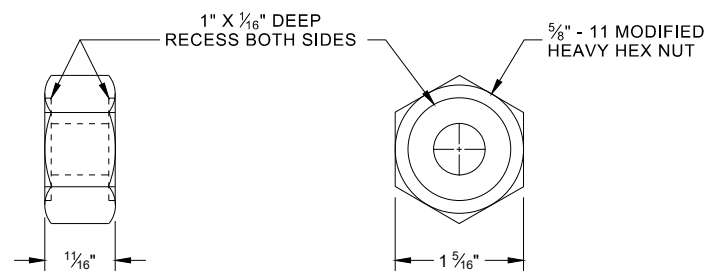


### POST BOLT TABLE

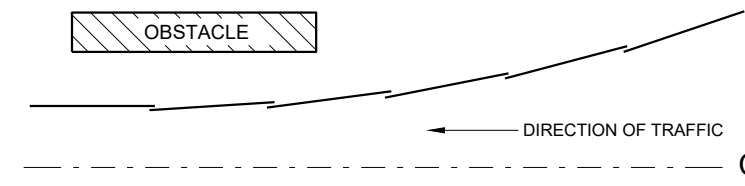
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



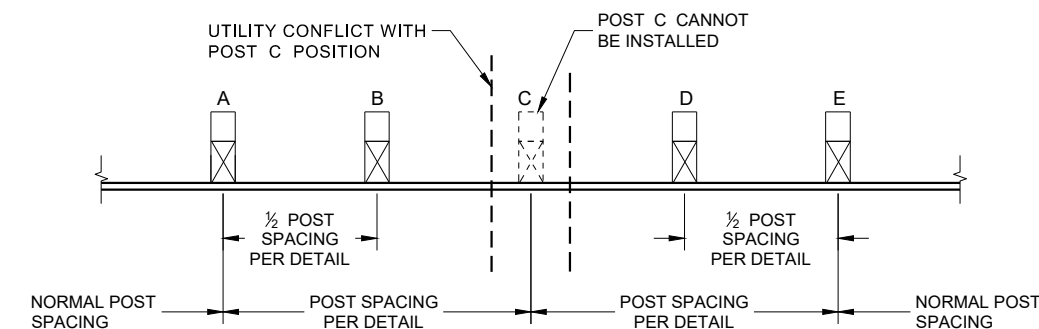
ALTERNATE BOLT HEAD



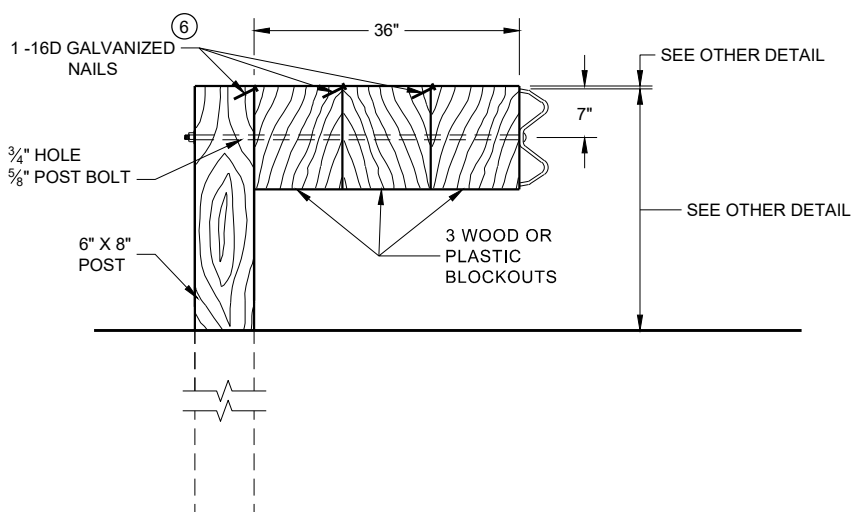
POST BOLT, SPLICE BOLT AND RECESS NUT



PLAN VIEW BEAM LAPPING DETAIL

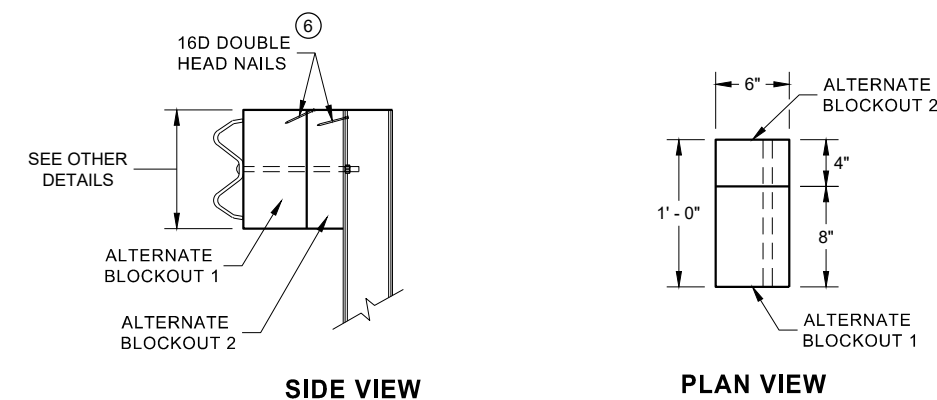


POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



### DETAIL FOR 36" BLOCKOUT DEPTH

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.  
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



ALTERNATE WOOD BLOCKOUT DETAIL

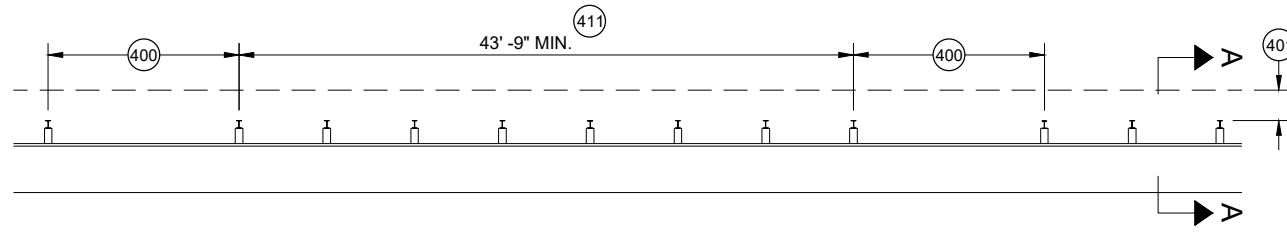
⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL**

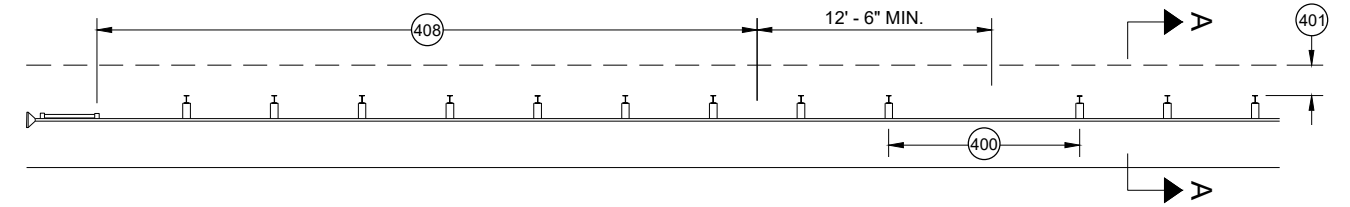
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



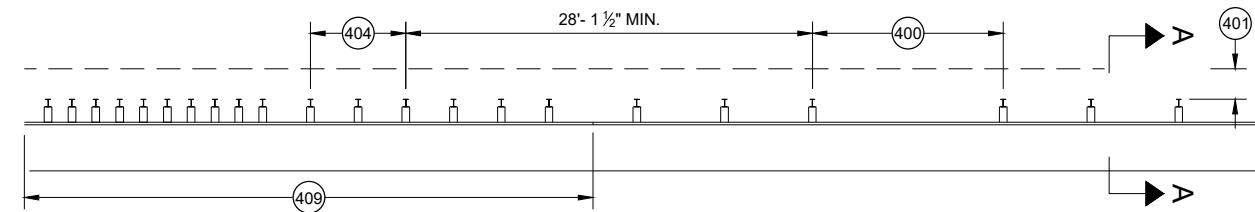
# SDD 14B42-d Midwest Guardrail System (MGS) Guardrail



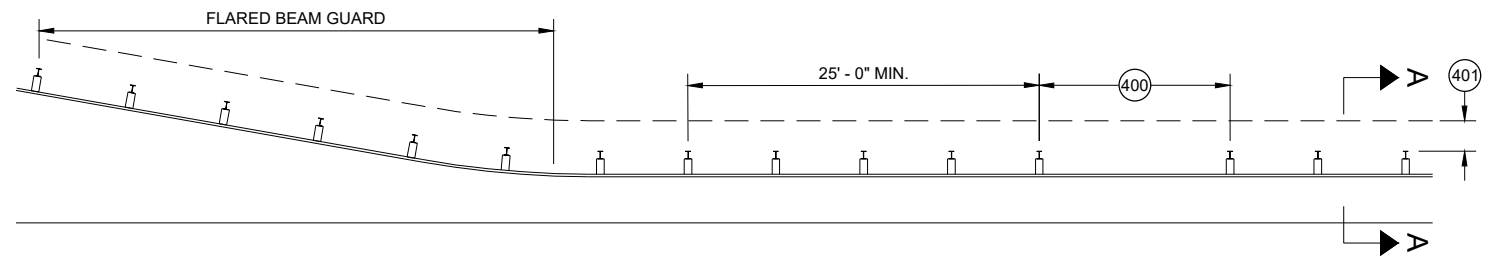
**MISSING POST IN MGS GUARDRAIL**



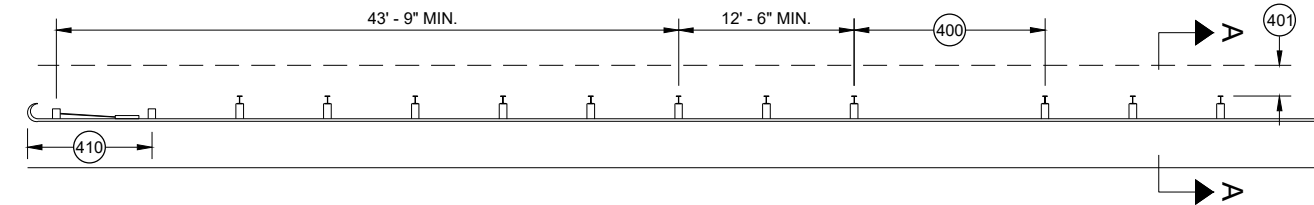
**MISSING POST IN MGS GUARDRAIL NEAR EAT**



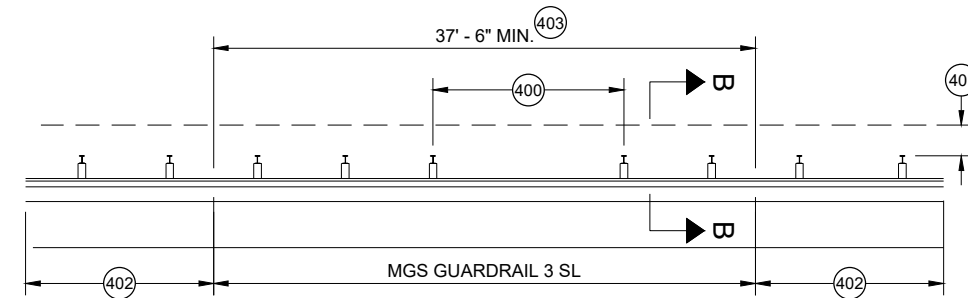
**MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION**



**MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD**

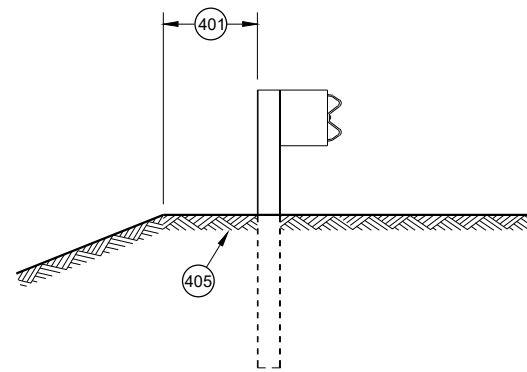


**MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL**

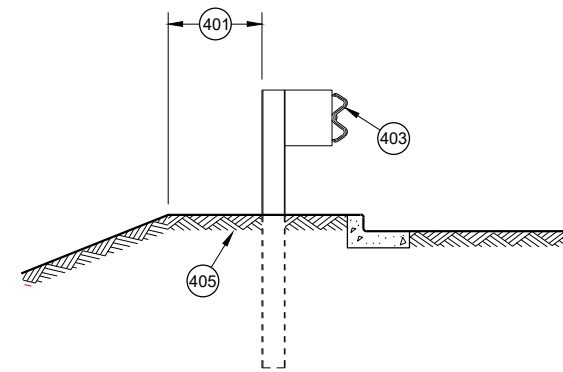


**MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)**

- (400) MAX SPAN 12' - 6"
- (401) 2' MIN.
- (402) MGS GUARDRAIL 3
- (403) NESTING BEAM GUARD
- (404) ASYMMETRIC TRANSITION
- (405) SOIL WELL DRAINED AND COMPACTED
- (406) SEE OTHER DRAWINGS IN THIS SDD
- (407) SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- (408) SEE SDD 14B44
- (409) SEE SDD 14B45
- (410) SEE SDD 14B47
- (411) MINIMUM DISTANCE BETWEEN MISSING POST SPANS.



**SECTION A - A**



**SECTION B - B**

## MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE May 2021 /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

FHWA

*Midwest Guardrail System (MGS) Guardrail***References:**[Standard Spec 614](#)[FDM 11-45-30](#)

CMM 625

AASHTO Roadside Design Guide

MwRSF Report TRP-03-136-03, MwRSF Report TRP-03-139-04,

MwRSF Report TRP-03-157-04, MwRSF Report TRP-03-165-07,

MwRSF Report TRP-03-170-06, MwRSF Report TRP-03-171-06

MwRSF Report TRP-03-172-06, MwRSF Report TRP-03-185-10

MwRSF Report TRP-03-188-08, MwRSF Report TRP-03-191-08

MwRSF Report TRP-03-205-09, MwRSF Report TRP-03-221-09,

MwRSF Report TRP-03-234-10, 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

TTI Report 0-4162-2

FHWA Memo W-Beam Guardrail Installations in Rock and in Mowing Strips March 10, 2004

FHWA Memo Roadside Design: Steel Strong Post W-beam Guardrail May 17, 2010

**Bid items associated with this drawing:**

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
614.0010	Barrier System Grading Shaping Finishing .....	EACH
614.0400	Adjusting Steel Plate Beam Guard .....	LF
614.0920	Salvaged Rail.....	LF
614.0925	Salvaged Guardrail End Treatments.....	EACH
614.0930 – 0939	Salvaged (component).....	EACH
614.0950	Replacing Guardrail Posts and Blocks.....	EACH
614.0951	Replacing Guardrail Rail and Hardware.....	LF
614.0952	Replacing Guardrail Reflectors.....	EACH
614.1000	MGS Guardrail Temporary.....	LF
614.1100	MGS Guardrail Temporary Thrie Beam Transition.....	LF
614.1200	MGS Guardrail Temporary Terminal EAT.....	EACH
614.2300	MGS Guardrail 3.....	LF
614.2310	MGS Guardrail 3 HS.....	LF
614.2320	MGS Guardrail 3 QS.....	LF
614.2330	MGS Guardrail 3 K.....	LF
614.2340	MGS Guardrail 3 L.....	LF
614.2345	MGS Guardrail 3 SL.....	LF
614.2500	MGS Thrie Beam Transition.....	LF
614.2610	MGS Guardrail Terminal EAT.....	EACH
614.2620	MGS Guardrail Terminal Type 2.....	EACH

**Standardized Special Provisions associated with this drawing:**

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

**Other SDDs associated with this drawing:**

<a href="#">SDD 8D1</a>	Concrete Curb, Concrete Curb & Gutter and Ties
<a href="#">SDD 14B28</a>	Guardrail Mow Strip
<a href="#">SDD 14B43</a>	Midwest Guardrail System Long Span (MGS L)
<a href="#">SDD 14B44</a>	Midwest Guardrail System Terminal (MGS)
<a href="#">SDD 14B45</a>	Midwest Guardrail System (MGS) Thrie Beam Transition
<a href="#">SDD 14B47</a>	Midwest Guardrail System (MGS) Type 2 Terminal
<a href="#">SDD 15A4</a>	Deflector Post with Reflective Sheeting (Required)

**Design Notes:**

Midwest guardrail system (MGS) is a semi-rigid barrier system. MGS is NCHRP 350 or MASH test level 3 compliant. All projects with August 2011 PSE or later are to use MGS details for new beam guard installations.

Indicate in plan where different types of MGS (e.g. HS, QS, K, L...) are to be installed. If the distance from the back of post to the shoulder hinge point is less than 2-feet, install longer post at half post spacing (MGS K) .

Placement of objects that limit post rotation requires approval by BPD. Limited project by project exceptions for placing objects that may limit post rotation may be granted by BPD. However, these exceptions will be rare. Document the exception in DSR.

**Contact Person:**

Erik Emerson (608) 266-2842