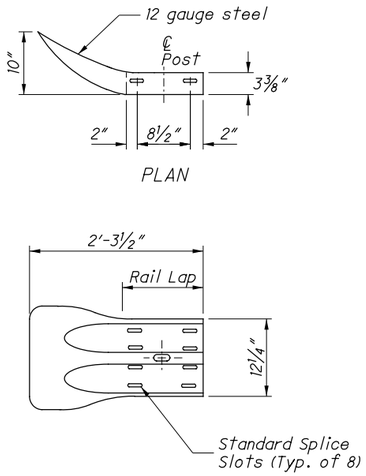
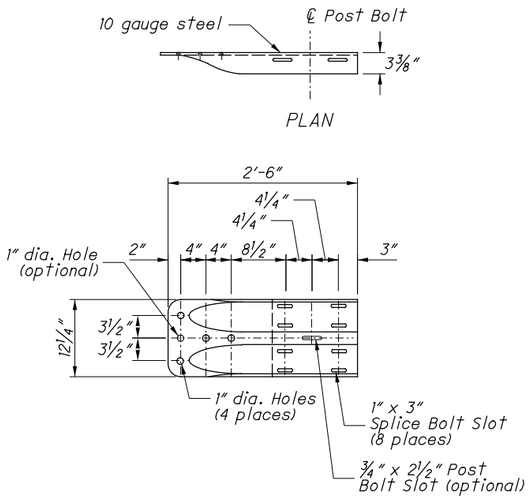
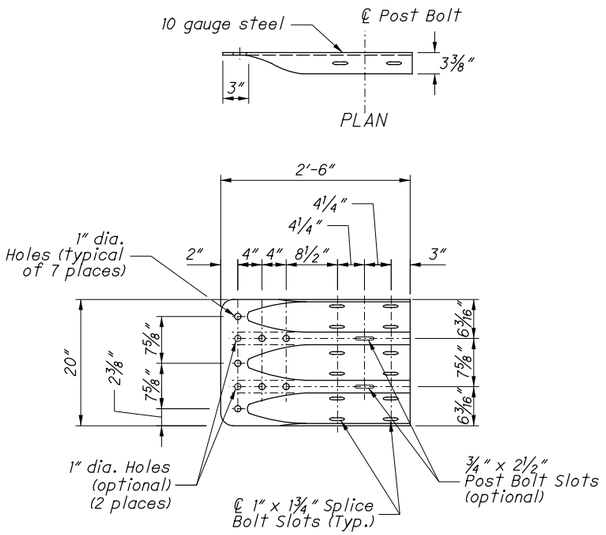


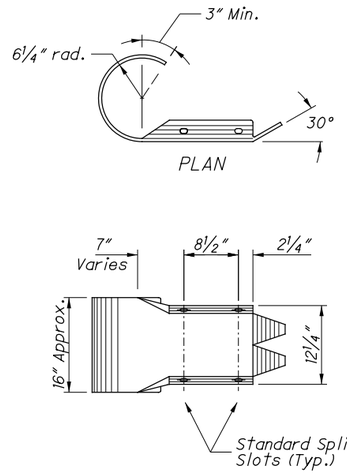
W-BEAM FLARED END SECTION



W-BEAM TERMINAL CONNECTOR



THRIE-BEAM TERMINAL CONNECTOR



ROUNDED W-BEAM END SECTION

ASYMMETRIC TRANSITION SECTION
(W to Thrie-Beam)

NOTES

GENERAL: *Components shown on this drawing are used in a variety of guardrail systems. See individual guardrail drawing for specific applications.*

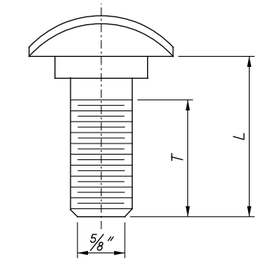
See CMS 606 for guardrail specifications not covered on these drawings.

Refer to AASHTO M 180-12 for dimensional details of W-Beam and Thrie-Beam rail elements, related buffer and end sections, beam splices, post and splice bolts, nuts, and Type 1 W-Beam to Thrie-Beam Transition sections. Beam washers are not to be used. Bolts grade shall be ASTM A307.

RAIL ELEMENTS: *Unless otherwise specified, W-Beam Rail is 12 gauge steel with an effective length of 12'-6" or 25'-0", with 29⁄32"x1⅛" splice bolt slots, and ¾" x 2½" post bolt slots on 3'-1½"" centers regardless of post spacing. Field punch or drill bolt holes or slots for irregularly spaced posts as specified in CMS 606.04.*

Substituting one 10 guage steel beam element where two nested 12 guage steel beams are specified is permitted (both W-beam and Thrie-beam).

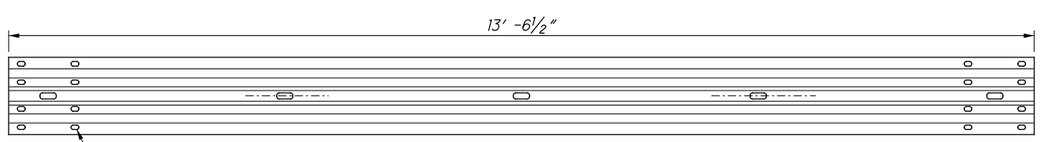
RAIL SPLICES: *Lap splices between two rail elements or between a rail and terminal connector in the direction of traffic. Lap the flared end sections in the direction of traffic.*



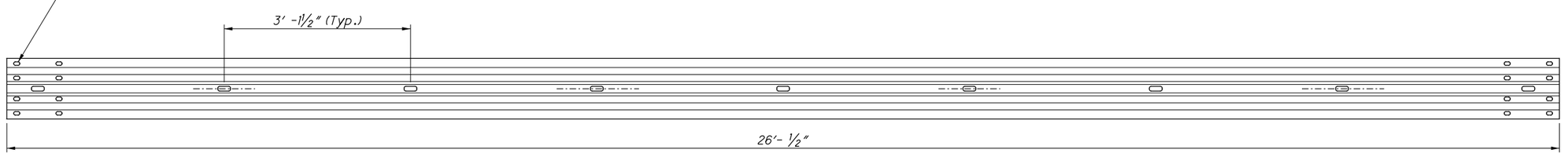
GUARDRAIL BOLT (For Post and Splice Bolts)		
L	**T min.**	**Bolt Use**
22" (Standard Rail)	4"	Type MGS: WP/WB, PB
34" (Barrier Rail)		
14"	4"	Type MGS: SP/WB, PB
1¼"	1⅛"	Splice Bolt

WP = Wood Post WB = Wood Blockout
SP = Steel Post PB = Plastic Blockout

Longer Bolt may be needed for round Wood Post larger than 8" dia.



12'-6" W-BEAM SECTION



25'-0" W-BEAM SECTION

THIS DRAWING REPLACES MGS-1.1 DATED 7-21-2017

REVISION DATE 1-19-2018

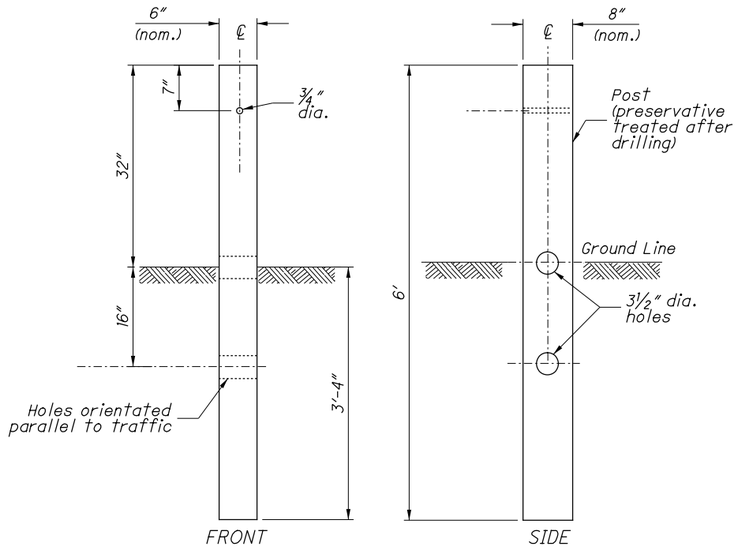
STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER D. Fisher

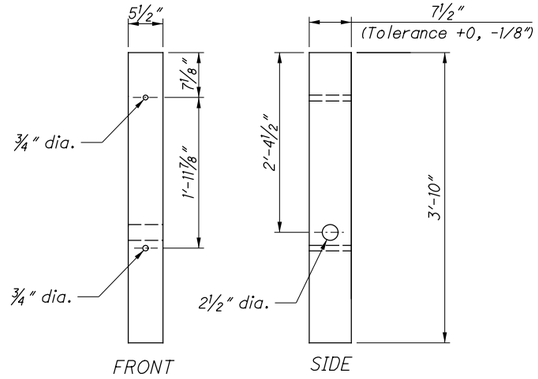
OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING
MIDWEST GUARDRAIL SYSTEM
GUARDRAIL DETAILS
(Rail Components)

SCD NUMBER **MGS-1.1**

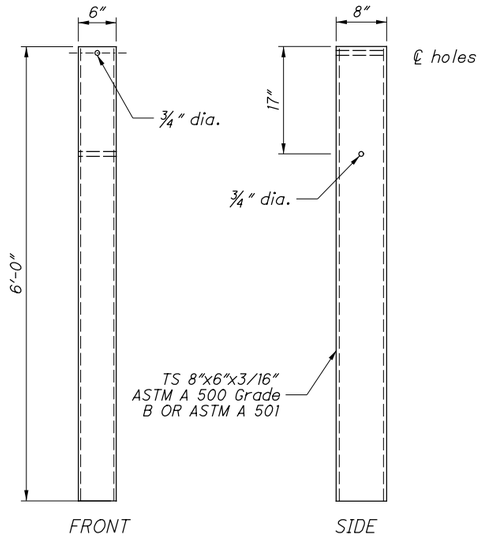


TYPE 1 BREAKAWAY CRT POST

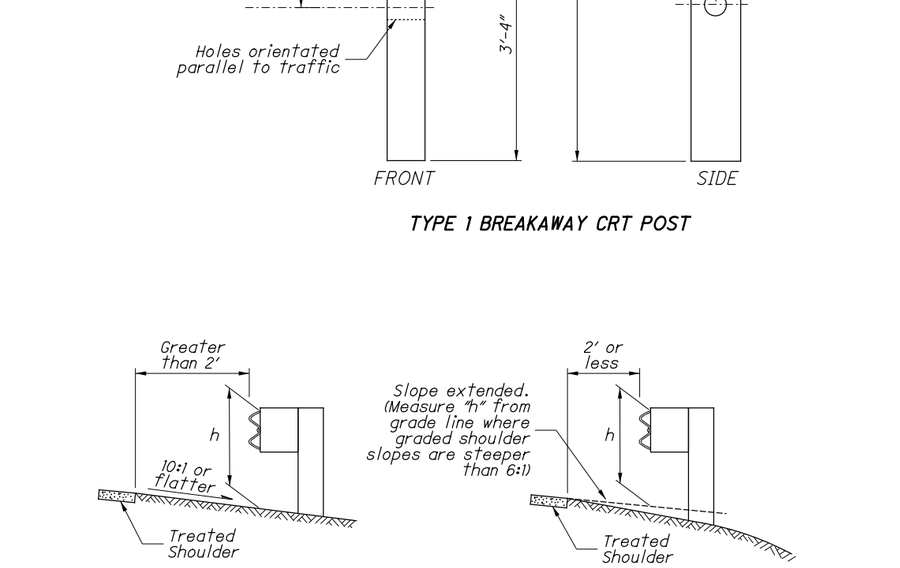


TYPE 2 BREAKAWAY BCT TIMBER POST

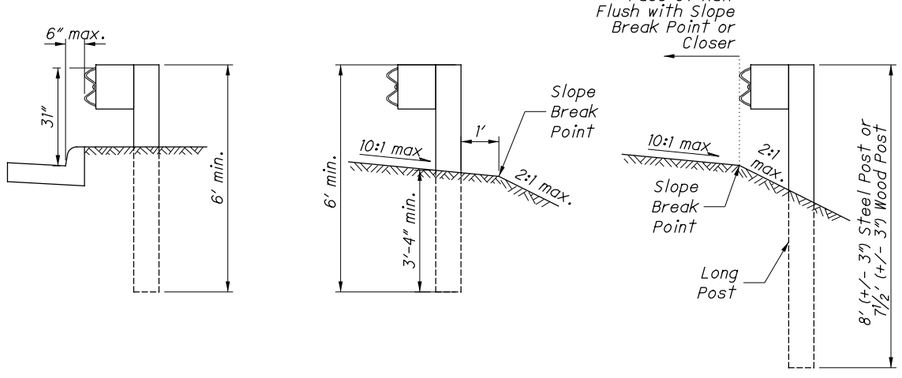
STEEL BEAM POSTS				
Size	**Beam depth**	**Flange width**	**Flange thickness**	**Web thickness**
Rolled W6x8.5	5.8″	3.94″	0.193″	0.170″
Rolled W6x9	5.9″	3.94″	0.215″	0.170″
Welded 6x8.5	6.0″	3.94″	0.193″	0.170″
Welded 6x9	6.0″	3.94″	0.215″	0.170″



STEEL GROUND FOUNDATION TUBE



MEASURING GUARDRAIL HEIGHT



GUARDRAIL POST LENGTH AND POSITION

NOTES

GUARDRAIL HEIGHT: *For initial installation, construct the guardrail within ± 1″ of the standard 31″ height to the top of W-Beam rail. When subsequent projects, such as resurfacings, affect the height of existing guardrail, adjustment is not required if the finished height is within ±3″ of the standard height.*

POSTS: *The Standard Post Length is 6′-0″ (+3″,-0″ tolerance). Wood Posts are permitted instead of Standard Steel Posts per CMS 710.11.*

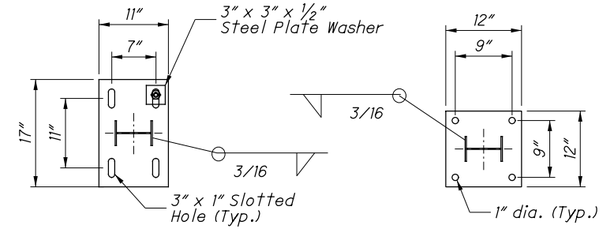
POST EMBEDMENT DEPTH: *Standard embedment depth is 3′-4″ minimum. Embedment depth shall be 37″ when using the round wooden post option. Do not drive posts located over a culvert with less than 4′-3″ of cover; instead set in drilled or dug holes. Where site constraints prohibit the post from being placed at least one foot in front of the slope break point, use longer posts as shown in the Guardrail Post Length and Position Detail. The face of the rail may not be beyond the slope break point.*

SPECIAL POST MOUNTINGS: *Install posts located over a drainage inlet or structure with a cover of less than 3′-4″ as shown in the FOOTING ANCHOR Detail.*

ANCHORS: *Holes shall comply with CMS 510. Use non-shrink, nonmetallic grout per CMS 705.20.*

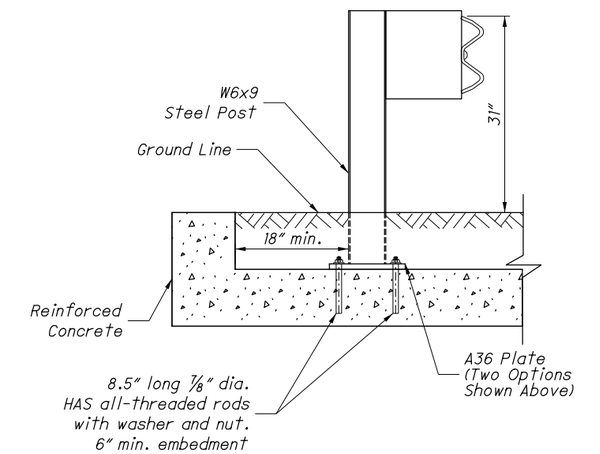
PROTECTIVE COATING: *In lieu of the complying with CMS 710.06, coat expansion shields, anchors and concrete insert anchor assemblies embedded in concrete in accordance with ASTM A 153 or be of stainless steel. Any bolts screwed into these devices shall meet CMS 710.06.*

PAYMENT: *Payment for standard guardrail is measured in feet as* ***Item 606 - Guardrail, Type MGS****. Runs with longer posts should be paid as* ***Item 606 - Guardrail, Type MGS With Long Posts****, also measured in feet. All costs associated with special post mountings are included in the unit price bid of Item 606 Guardrail of the type specified in the plans.*



ASTM A 36 PLATE ¾″ thick with slitted bolt holes and washers

ASTM A 36 PLATE 7/8″ thick with 1″ round bolt holes



FOOTING ANCHOR DETAIL

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STDS. ENGINEER D. Fisher

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(Rail Components)

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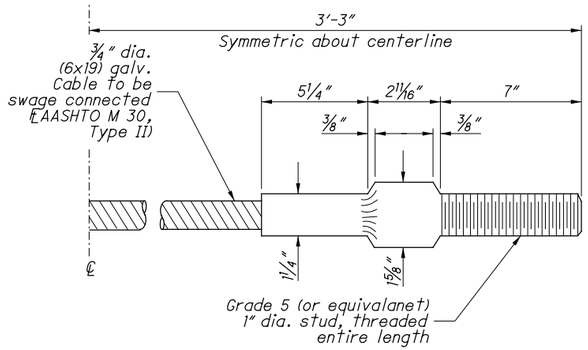
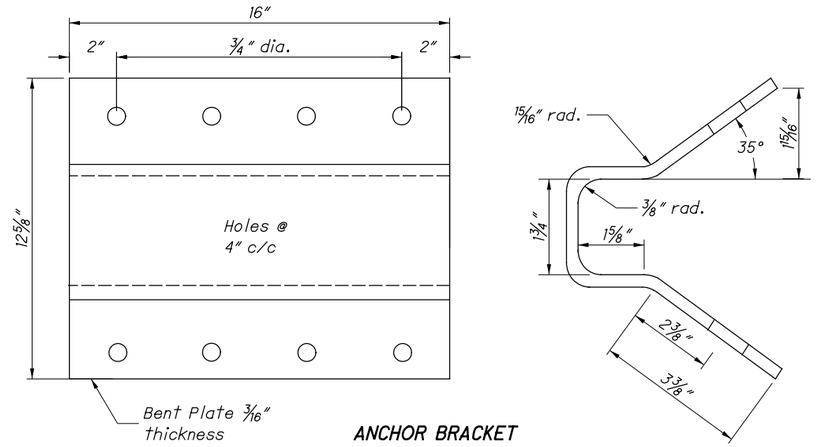
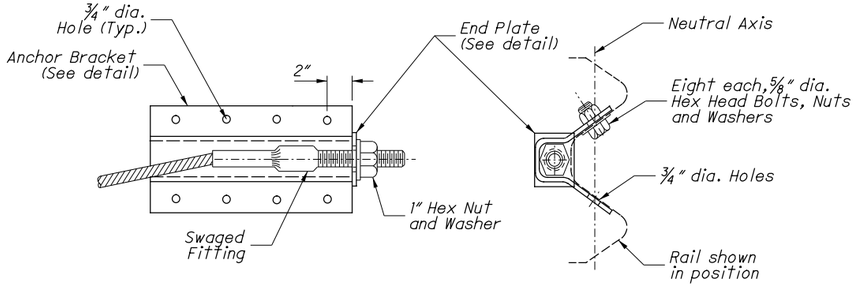


STANDARD SWAGED FITTING AND STUD

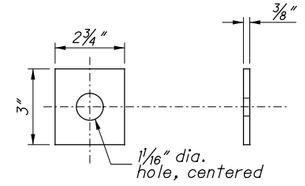
CABLE ANCHOR



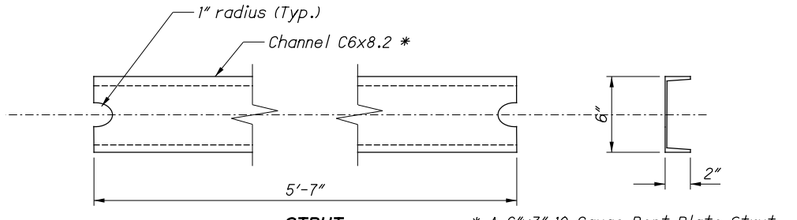
ANCHOR BRACKET



ANCHOR BRACKET ASSEMBLY DETAILS

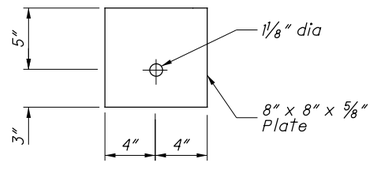


END PLATE

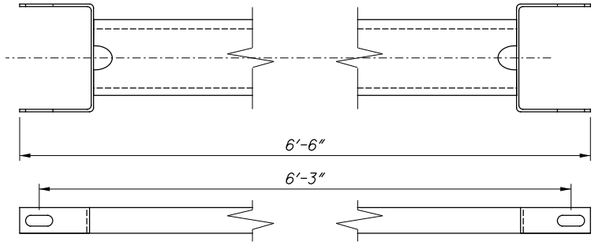


STRUT

* A 6"x3" 10 Gauge Bent Plate Strut may be substituted for the C-Channel

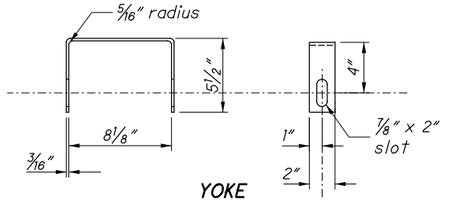


BEARING PLATE



Channel legs shown down. For opposite hand, install Channel legs up.

STRUT AND YOKE ASSEMBLY



YOKE

Two required in Assembly

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STANDARD ROADWAY CONSTRUCTION DRAWING

MIDWEST GUARDRAIL SYSTEM
GUARDRAIL DETAILS
(Rail Components)

SCD NUMBER **MGS-1.1**