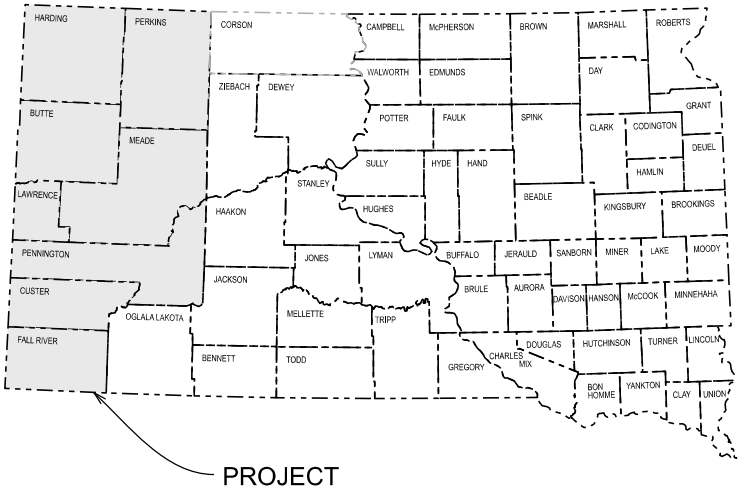
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

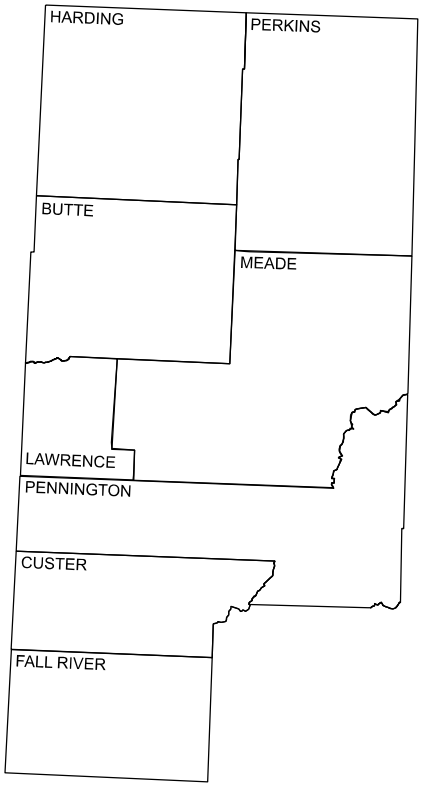
PLANS FOR PROPOSED

PROJECTS
000I-469, 000N-469, & 000P-469
RAPID CITY REGION
GUARDRAIL MAINTENANCE

GUARDRAIL REPAIR AT VARIOUS LOCATIONS
ON A DEMAND BASIS
PCNS i874, i875 & i876



INDEX OF SHEETS



STORM WATER PERMIT
No Permit Required

ESTIMATE OF QUANTITIES						
		Interstate	Non-Priority	Priority		
		000I-469	000N-469	000P-469		
		PCN i874	PCN i875	PCN i876		
BID ITEM NUMBER	ITEM	QUANTITY	QUANTITY	QUANTITY	TOTAL QUANTITY	UNIT
009E0197	Mobilization 1		3	5	**8**	**Each**
009E0198	Mobilization 2	11	6	2	**19**	**Each**
009E0199	Mobilization 3		3	6	**9**	**Each**
110E0730	Remove Beam Guardrail	350.0	425.0	600.0	**1,375**	**Ft**
110E0770	Remove W Beam Guardrail Breakaway Cable Terminal	1	1	1	**3**	**Each**
629E0110	NCHRP 350 Test Level 3 High Tension Cable Guardrail	50	50	50	**150**	**Ft**
629E0290	NCHRP 350 Test Level 3 High Tension Cable Guardrail Anchor Assembly	1	1	1	**3**	**Each**
629E0453	Retension High Tension 3 Cable Guardrail	300	300	300	**900**	**Ft**
629E0454	Retension High Tension 4 Cable Guardrail	500	300	500	**1,300**	**Ft**
629E1000	Repair 3 Cable Guardrail	1,900	300	700	**2,900**	**Ft**
629E1010	Repair 3 Cable Guardrail Slip Base Anchor Assembly	1	1	1	**3**	**Each**
629E1100	3 Cable Guardrail End Post	5	5	2	**12**	**Each**
629E1102	3 Cable Guardrail Intermediate Post	60	60	30	**150**	**Each**
629E1104	3 Cable Guardrail Post, Winter	30	30	15	**75**	**Each**
629E1106	Drive Down 3 Cable Guardrail Post	2	2	2	**6**	**Each**
629E1112	Cable Splice	1	1	1	**3**	**Each**
629E1114	3 Cable Guardrail J Hook Bolt	200	200	100	**500**	**Each**
629E1116	Steel Turnbuckle Cable End Assembly	1	1	1	**3**	**Each**
629E1118	Spring Cable End Assembly with Turnbuckle	6	6	2	**14**	**Each**
629E1120	W Beam to 3 Cable Transition Bracket	4	4	2	**10**	**Each**
629E1122	3 Cable Guardrail End Post Cap	5	5	1	**11**	**Each**
629E1143	High Tension 3 Cable Guardrail Post	2	2	2	**6**	**Each**
629E1144	High Tension 4 Cable Guardrail Post	2	2	2	**6**	**Each**
629E1158	High Tension 3 Cable Guardrail Post and Sleeve	2	2	2	**6**	**Each**
629E1159	High Tension 4 Cable Guardrail Post and Sleeve	3	3	2	**8**	**Each**
629E1163	High Tension 3 Cable Guardrail Sleeve	3	3	2	**8**	**Each**
629E1164	High Tension 4 Cable Guardrail Sleeve	3	3	2	**8**	**Each**
629E1170	High Tension Cable Guardrail Terminal Post	1	1	1	**3**	**Each**
629E1174	Hardware for High Tension Cable Attachment to Terminal Post	3	3	2	**8**	**Each**
629E1175	Hardware for High Tension Cable Attachment to Post	3	3	2	**8**	**Each**
629E1180	High Tension Cable Guardrail Post Strap	3	3	1	**7**	**Each**
629E1181	High Tension Cable Guardrail Cable Spacer	3	3	1	**7**	**Each**
630E0200	Straight Class A Thrie Beam Rail	50.0	50.0	25.0	**125**	**Ft**
630E1200	Straight Class A W Beam Rail	250.0	250.0	200.0	**700**	**Ft**
630E2000	W Beam to Thrie Beam Guardrail Transition	2	2	1	**5**	**Each**
630E2015	W Beam Guardrail Flared End Terminal	1	1	2	**4**	**Each**
630E2020	W Beam Guardrail Tangent End Terminal	2	2	4	**8**	**Each**
630E2110	Beam Guardrail Post and Block	30	30	20	**80**	**Each**
630E2120	Beam Guardrail Post and Block, Winter	10	10	10	**30**	**Each**
634E0010	Flagging	20.0	20.0	75.0	**115**	**Hour**
634E0125	Traffic Control for Guardrail Repair	10	10	12	**32**	**Site**
634E0420	Type C Advance Warning Arrow Panel	10	10	4	**24**	**Each**

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

A Construction Schedule is not required on this project.

CONTRACT TIME PROVISIONS

At such time as repairs are required, the Contractor will be notified. The Contractor will have 7 calendar days to complete the repairs.

WORK DESCRIPTION

Repair of guardrail at various locations in the Rapid City Region on a demand basis.

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

MOBILIZATION

If more than one location within an area is to be repaired, the Contractor will be compensated for only one mobilization per area.

Mobilization 1 is the cost of mobilization per each time the Contractor is called in by the Belle Fourche Area Engineer, or his designated representative, to perform guardrail repair within the Belle Fourche Area.

Mobilization 2 is the cost of mobilization per each time the Contractor is called in by the Rapid City Area Engineer, or his designated representative, to perform guardrail repair within the Rapid City Area.

Mobilization 3 is the cost of mobilization per each time the Contractor is called in by the Custer Area Engineer, or his designated representative, to perform guardrail repair within the Custer Area

Mobilization will be paid once each time the Contractor is called to repair guardrail, regardless of the number of sites requiring repair within the project limits.

Guardrail repairs will be limited to all Interstate and State highways within the boundaries of the Rapid City Region.

GENERAL TRAFFIC CONTROL

The bid item “Traffic Control for Guardrail Repair” will include all necessary traffic control devices as required by these plans and will be measured and paid and the contract unit price per “site”. The Contractor will be compensated each time they are required to mobilize to a “site” for guardrail repair. If the Contractor relocates the traffic control devices to a different location during the same mobilization, additional compensation will not be made and it will be considered the same “site”.

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

RESTORATION OF DISTURBED AREAS

Areas disturbed as a result of the work necessary to repair guardrail will be reshaped and/or restored to the satisfaction of the Engineer. The disturbed areas will be tilled to a minimum depth of three inches and seeded with the following seed mix rate:

Type F Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
	Total:	26

All costs for reshaping, leveling, tilling, and seeding disturbed areas will be incidental to the various bid items on the project.

GUARDRAIL

Retension High Tension3 Cable Guardrail will include all costs to adjust the tension in a length of 3 Cable Guardrail. Measurement for payment will be per foot for all runs of 3 Cable Guardrail and will include all 3 cables and both anchor ends that make up a run of 3 Cable Guardrail. Retension 3 Cable Guardrail may include cutting and shortening of cables at the anchors to allow for the proper tensioning. Payment will be center of anchor to center of anchor.

Retension High Tension 4 Cable Guardrail will include all costs to adjust the tension in a length of High Tension 4 Cable Guardrail to manufacturers specifications. Measurement for payment will be from center of anchor to center of anchor and will include all 4 cables that make up a run of High Tension 4 Cable Guardrail. Retension High Tension 4 Cable Guardrail will include cutting and shortening of cables at the anchors to allow for the proper tensioning.

Repair 3 Cable Guardrail Slip Base Anchor Assembly will include full compensation for repair of the damaged Slip Base Anchor Assembly. This work will be performed if it is determined that the Slip Base Anchor Assembly can be repaired without total footing removal. See detail provided in these plans.

3 Cable Guardrail End Post will include all costs for removal of damaged end post and installation of 3 cable guardrail end post. 3 Cable Guardrail End Post will also include a new end post cap. All costs incurred for removal and replacement of the existing cable on the new post will be incidental to this contract item.

3 Cable Guardrail Intermediate Post will include all costs for removal of damaged post and installation of 3 cable guardrail intermediate line post.
All costs incurred for removal and replacement of the existing cable on the new post, including J Hook Bolts will be incidental to this contract item.

3 Cable Guardrail Slip Base Anchor Post will include all costs for removal of damaged post and installation of 3 cable guardrail slip base anchor post. All costs incurred for removal and replacement of the existing cable on the new post, will be incidental to this contract item.

3 Cable Guardrail Post, Winter will include all costs for removal of the damaged post and installation of cable guardrail post when there is in excess of one foot of frozen ground at the work site. When this condition exists, the contract unit price per each for “3 Cable Guardrail Post, Winter” will be the pay unit rather than the contract unit price per each for "3 Cable Guardrail Intermediate Post" and/or "3 Cable Guardrail End Post". The Contractor will furnish Hook Bolts as needed.

All costs for removal and replacement of the existing cable on the new post, including Hook Bolts will be incidental to this contract item.

Drive Down 3 Cable Guardrail Post will include all costs for adjusting the height of a Cable Rail Post. All costs to disassemble the cable rail to do this work will be incidental to this contract item.

Reset 3 Cable Guardrail Post will include all costs incurred for the realignment and/or removal and resetting of a cable guardrail post to properly align cable guardrail section. The Contractor will furnish Hook Bolts as needed. Work under this item may require straightening of in place bent cable guardrail posts to bring them into alignment with cable guardrail section. Payment for “Reset 3 Cable Guardrail Post” will be the same whether in frozen or unfrozen ground. All costs for removal and replacement of the existing cable on the new post will be incidental to this item.

Cable Anchor Bracket will include furnishing and installing the Cable Anchor Bracket.

GUARDRAIL (Continued)

Cable Splice will include all costs incurred for cutting existing cable and for furnishing and installing the necessary cable splice. This contract item will be used for low tension and high tension cable guardrail.

3 Cable Guardrail J Hook Bolt will include furnishing & installing Hook Bolts when that is the only work required for the 3 cable guardrail.

Steel Turnbuckle Cable End Assembly will include all costs for furnishing and installing the Steel Turnbuckle Cable End Assembly.

Turnbuckle Assembly will include all costs for furnishing and installing the Turnbuckle Assembly on high tension cable guardrail.

Spring Cable End Assembly with Turnbuckle will include all costs for furnishing and installing the Spring Cable End Assembly with Turnbuckle.

W Beam to 3 Cable Transition Bracket will include all costs for removing the damaged transition bracket and installing a new transition bracket.

3 Cable Guardrail End Post Cap will include all costs for furnishing and installing an end post cap.

High Tension 4 Cable Guardrail Post: High Tension 4 Cable Guardrail Post will include all costs for removal of damaged post and installation of a High Tension 4 Cable Guardrail Post. All costs incurred for removal and replacement of the existing cable on the new post, including hardware will be incidental to this contract item.

High Tension 4 Cable Guardrail Post and Sleeve will include all costs for removal of damaged post and sleeve, and installation of a High Tension 4 Cable Guardrail Post and Sleeve. All costs incurred for removal and replacement of the existing cable on the new post, including hardware will be incidental to this contract item.

High Tension 4 Cable Guardrail Sleeve will include all costs for removal of damaged sleeve and installation of a High Tension 4 Cable Guardrail
Sleeve. All costs incurred for removal and replacement of the existing post and of the existing cable on the post, including hardware will be incidental to this contract item.

High Tension Cable Guardrail Terminal Post will include all costs for removal of damaged terminal post and installation of a High Tension Cable Guardrail Terminal Post. All costs incurred for removal and replacement of the existing
cable on the new post, including reflective sheeting, hardware and tensioning cable will be incidental to this contract item.

Hardware For High Tension Cable Attachment To Terminal Post will be used for furnishing and installing the hardware for a high tension cable guardrail terminal post. This item is used for a typical repair if a high tension cable guardrail terminal post is struck and releases the cable(s). Use this item
when the terminal post is in good condition and only new hardware and resetting the terminal post is necessary. Payment includes cost for furnishing and installing hardware for the high tension cable attachment to terminal post, resetting terminal post, labor, equipment, and incidentals.

GUARDRAIL (Continued)

Hardware For High Tension Cable Attachment To Post will be used for furnishing and installing the hardware for a high tension cable attachment to post. This item is used for a typical repair if the hardware was damaged by a snow plow or other crash. Use this item when the post is in good condition and only new hardware is necessary. The quantity and unit for the bid item is one “Each” for one attachment, i.e. if several attachments are damaged on a high tension 4 cable guardrail post then the quantity would be more than 1. Payment includes cost for furnishing and installing hardware for the high tension cable attachment to post, labor, equipment, and incidentals.

High Tension Cable Guardrail Cable Strap will include all costs for removal of damaged/missing strap and installation of a High Tension Cable Guardrail Cable Strap. High Tension Cable Guardrail Cable Strap contract item will not be paid for when a new guardrail post is paid for as the new guardrail post will include the strap. This item is specific to products from Trinity known as the CASS high tension cable barrier.

High Tension Cable Guardrail Cable Spacer will include all costs for removal of damaged spacer and installation of a High Tension Cable Guardrail Cable Spacer. High Tension Cable Guardrail Cable Spacer contract item will not be paid for when a new guardrail post is paid for as the new guardrail post will include the spacer. This item is specific to products from Trinity known as the CASS high tension cable barrier.

W Beam Guardrail Flared End Terminal will include all costs incurred for furnishing and installing an approved flared end terminal in accordance with details on Standard Plate 630.87. At some locations of W Beam Guardrail Flared End Terminal damage, the Area Engineer may decide to replace the existing W Beam Guardrail Flared End Terminal in lieu of replacing the various components of the W Beam Guardrail Flared End Terminal.

The W Beam Guardrail Flared End Terminal will be on the approved products list:
http://apps.sd.gov/HC60ApprovedProducts/main.aspx

The contract unit price per each for “W Beam Guardrail Flared End Terminal” will include all costs incurred for furnishing and installing one (1) end section as shown on Standard Plate 630.87 including removal of the existing end terminal.

W Beam Guardrail Tangent End Terminal will include all costs incurred for furnishing and installing an approved tangent end terminal in accordance with details on Standard Plate 630.88. At some locations of W Beam Guardrail Tangent End Terminal damage, the Area Engineer may decide to replace the existing W Beam Guardrail Tangent End Terminal in lieu of replacing the various components of the W Beam Guardrail Tangent End Terminal.

The W Beam Guardrail Tangent End Terminal will be on the approved products list:
http://apps.sd.gov/HC60ApprovedProducts/main.aspx

The contract unit price per each for “W Beam Guardrail Tangent End Terminal” will include all costs incurred for furnishing and installing one (1) end section as shown on Standard Plate 630.88 including removal of the existing end terminal.

Beam Guardrail Block will include all costs for removing the broken block and installing a block.

Beam Guardrail Post & Block will include all costs for removing the broken post and installing a post and block. Beam Guardrail Post & Block will include replacement of post and blocks located within the limits of the Tangent and Flared End Terminals.

GUARDRAIL (Continued)

Beam Guardrail Post & Block, Winter will include all costs incurred for replacement of a steel beam guardrail post when there is in excess of one foot of frozen ground at the work site. When this condition exists, the contract unit price per each for “Beam Guardrail Post & Block, Winter” will be the pay unit rather than the contract unit price per each for “Beam Guardrail Post & Block". Beam Guardrail Post & Block, Winter will include replacement of post and blocks located within the limits of the Tangent and Flared End Terminals.

End Terminal Wood Breakaway Post will include all costs incurred for removal of a broken wood end post and installing a replacement wood end post in a steel tube sleeve. This contract item will include replacement of wood posts on various end terminals including Breakaway Cable Terminals (BCT), Trailing End Terminals, Tangent End Terminals and Flared End Terminals. The Contractor will be responsible for making sure the wood post matches the appropriate Standard Plate or end terminal manufacturer’s requirements.

End Terminal Hinged Breakaway Post will include all costs incurred for removal of a hinged breakaway end post and installing a replacement hinged post on a post bottom base. This contract item will include replacement of hinged breakaway posts on various end terminals including Tangent End Terminals and Flared End Terminals. The Contractor will be responsible for making sure the hinged breakaway post match the end terminal manufacturer’s requirements.

Breakaway Cable Terminal (B.C.T) End Rail will include all costs for removing the 12.5 ft. or 25 ft section of damaged B.C.T. W beam adjacent to the Radius Terminal Element and replacing with new guardrail. The Contractor will field drill holes in the guardrail for installation.

W-Beam Guardrail End Section Buffer will include all costs for installing a buffer assembly. Removal of the existing end section buffer will be incidental to this contract item.

Tangent End Terminal Extruder Head will include all costs incurred for removing the damaged extruder head and installing a new extruder head on the Tangent End Terminal.

Tangent End Terminal Rail will include all costs incurred for removing 12.5 ft. or 25 ft. section(s) of damaged beam guardrail and replacing new beam guardrail on the Tangent End Terminal.

Rubrail will include all costs to install rubrail. The Contractor will provide the necessary wood blocks and bolts to attach the rubrail to the wood posts.

Drive Down Beam Guardrail Post: Drive Down Beam Guardrail Post will include all costs for adjusting the height of a steel beam guardrail post. All costs to disassemble the steel beam guardrail will be incidental to this contract item.

Reset Beam Guardrail Post & Block will include all costs for removing and resetting post to properly align the steel beam section. Payment for “Reset Beam Guardrail Post & Block” will be the same in frozen or unfrozen ground.

HIGH TENSION CABLE GUARDRAIL

The Contractor will furnish and install a high tension cable guardrail system that meets the Test Level 3 crash testing requirements of the Manual for Assessing Safety Hardware (MASH). The maximum dynamic deflection of the system will be less than 10'-0" and the maximum post spacing will be 10'-6" unless specified otherwise in the plans. High Tension 4 Cable Guardrail will be one of the following products:

Valtir (Trinity) – CASS S3 M10
Brifen – 4 Rope O-Post System

The Contractor will install the system according to the manufacturer's installation recommendations except where stated otherwise in the plans. A copy of the detail drawings and installation instructions for the high tension cable guardrail and anchor assemblies will be given to the Engineer a minimum of 4 weeks prior to installation of the high tension cable guardrail system.

All posts will be galvanized and inserted into driven galvanized steel sleeves with soil plates. The driven sleeves must be designed for a minimum frost depth of 42" and to resist the additional lateral component of curved cable sections.

The cables provided will be pre-stretched in the factory.

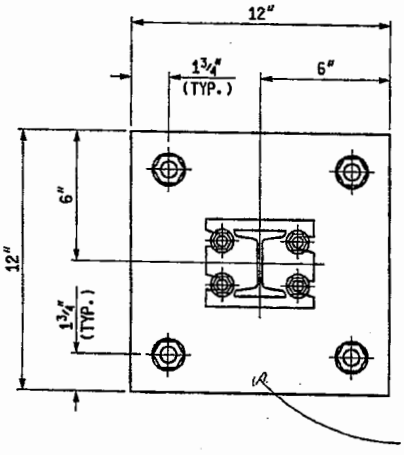
The Contractor will check and adjust the tension of the cables a minimum of 3 weeks after installation and not longer than 6 weeks after installation. Cost for this work will be incidental to the contract unit price per foot for "High Tension 3 Cable Guardrail" or "High Tension 4 Cable Guardrail".

The lengths of high tension cable guardrail stated in the plans are based on a minimum effective length (length of need). The length and location of the high tension cable guardrail at each site will need to be adjusted during construction as necessary depending on the system provided and will be approved by the Design Engineer before installation. When the Valtir (Trinity) CASS S3 M10 system is installed adjacent to one-way traffic roadways, 26' of the anchor assembly on the approach end is considered non-effective, and 51' on the non-approach end is considered non-effective; however, when the same system is installed adjacent to two-way traffic roadways, 26' of the anchor assembly on both the approach and non-approach ends is considered non-effective. For Brifen 4 Rope O-Post System installations, the anchor assembly is non-effective.

The Contractor will provide a signed letter of compliance to the Engineer upon completion of the high tension cable guardrail installation(s) stating that the high tension cable barrier system has been installed in conformance to the manufacturer installation instructions and specifications, meets the Test Level 3 crash test requirements of MASH, and is terminated with an approved anchor assembly.

The high tension cable guardrail will be measured along the centerline of the cable guardrail from the beginning to the end of the minimum effective length.

All costs for furnishing and installing the high tension cable guardrail system including all labor, materials, and equipment will be incidental to the contract unit price per foot for "High Tension 3 Cable Guardrail" or "High Tension 4 Cable Guardrail".

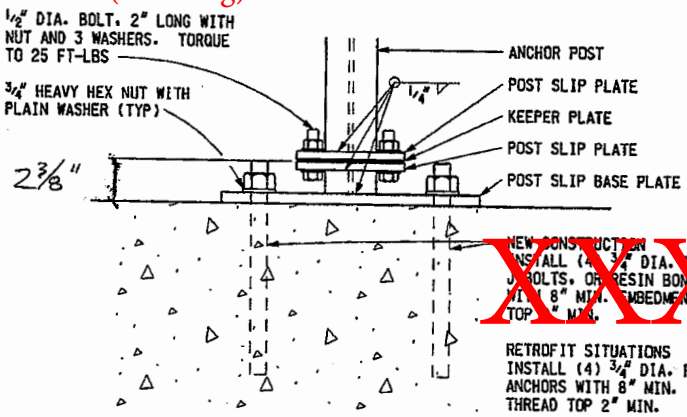


PLAN

Post Slip Base Plate

(ASTM A709 Gr 36) galvanized according to ASTM 123

(Exisiting)



3/4" Heavy Hex Nut (ASTM 563 Gr. DH)

3/4" Washer (ASTM F436)

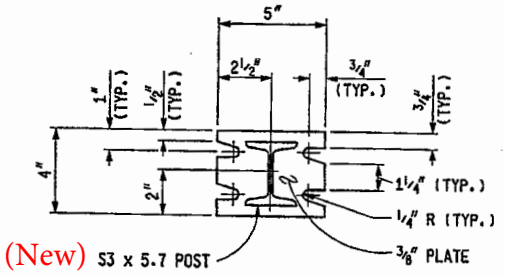
2" - S3x5.7 Post (ASTM 709 Gr. 36)

XXXX

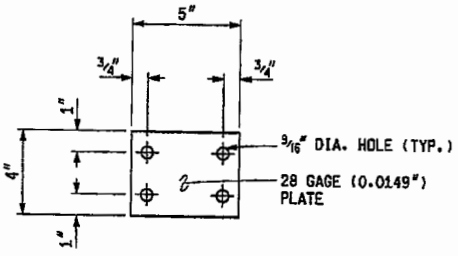
(ASTM 449)

ELEVATION

POST SLIP BASE



POST SLIP PLATE DETAIL
(Existing)



KEEPER PLATE DETAIL
(Exisiting)

Bolts, nut, & washers shall be galvanized in accordance with ASTM F2329.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

LOW TENSION 3-CABLE BARRIER

4-26-2007 F.H.W.A. APPROVAL	3-27-2007 PLAN DATE	R-70-C	SHEET 7 OF 10

GENERAL NOTES:

Either flanged channel steel posts or S3x5.7 steel I beam posts will be used, but post type will be consistent thoughout the project. The S3x5.7 steel I beam post will be used for the end posts.

All costs associated with furnishing and constructing the 3 cable guardrail anchor assembly including the concrete anchor, cable anchor bracket, compensating device, steel turnbuckle cable assembly, and necessary hardware will be incidental to the contract unit price per each for "3 Cable Guardrail Anchor Assembly".

All costs associated with furnishing and constructing the 3 cable guardrail including posts, cable, cable splices, and hardware will be incidental to the contract unit price per foot for "3 Cable Guardrail".

The following table and criteria will apply to the arrangement of the Spring Cable End Assemblies (Compensation Devices) and Turnbuckle Cable End Assemblies:

LENGTH OF CABLE RUN	CRITERIA FOR ARRANGEMENT OF THE SPRING CABLE END ASSEMBLIES (COMPENSATION DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES
Less than 500'	Use turnbuckle on the approaching traffic end and compensating device on the other end of each individual cable, except in the W Beam to 3 Cable Transition where all compensating devices will be provided at the bridge ends.
Greater than 500' to 1000'	Use compensating device on each end of each individual cable.
Greater than 1000'	Start new run by interlacing at last parallel post as shown on sheet 2 of 6.

All Compensating Devices will be attached to the cable anchor bracket when one end of the run is attached to a bridge.

Compensating Devices must have a spring rate of 450 ± 50 pounds per inch and will have a total available travel of 6 inches minimum.

The cable will be retensioned after the initial 2 week pretension period in accordance with the following table:

CABLE TENSIONING SPECIFICATIONS														
Temperature Range (Degree F)	-20 to -11	-10 to -1	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100 to 109	110 to 120
Spring Compression (Inch)	4¼	4	3¾	3½	3¼	3	2¾	2½	2¼	2	1¾	1½	1¼	1

POST SPACING FOR HORIZONTAL CURVES	
Roadway ℄ Curvature	Maximum Post Spacing (Ft)
1° and Less	16
Greater than 1° to 8°	12
Greater than 8° to 13°	8
Greater than 13°	NOT ALLOWED

September 14, 2018

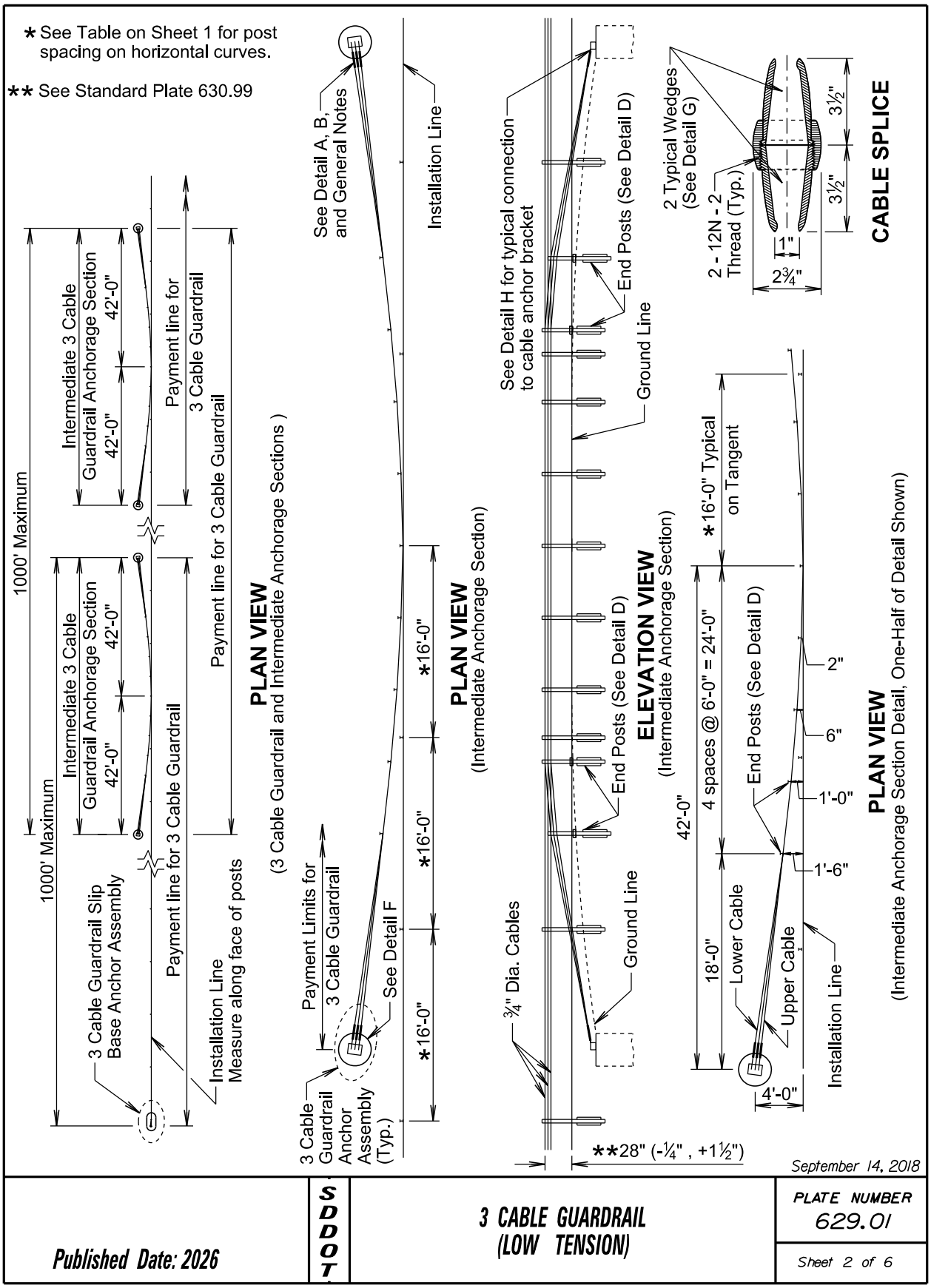
Published Date: 2026

SDDOT

3 CABLE GUARDRAIL (LOW TENSION)

PLATE NUMBER 629.01

Sheet 1 of 6



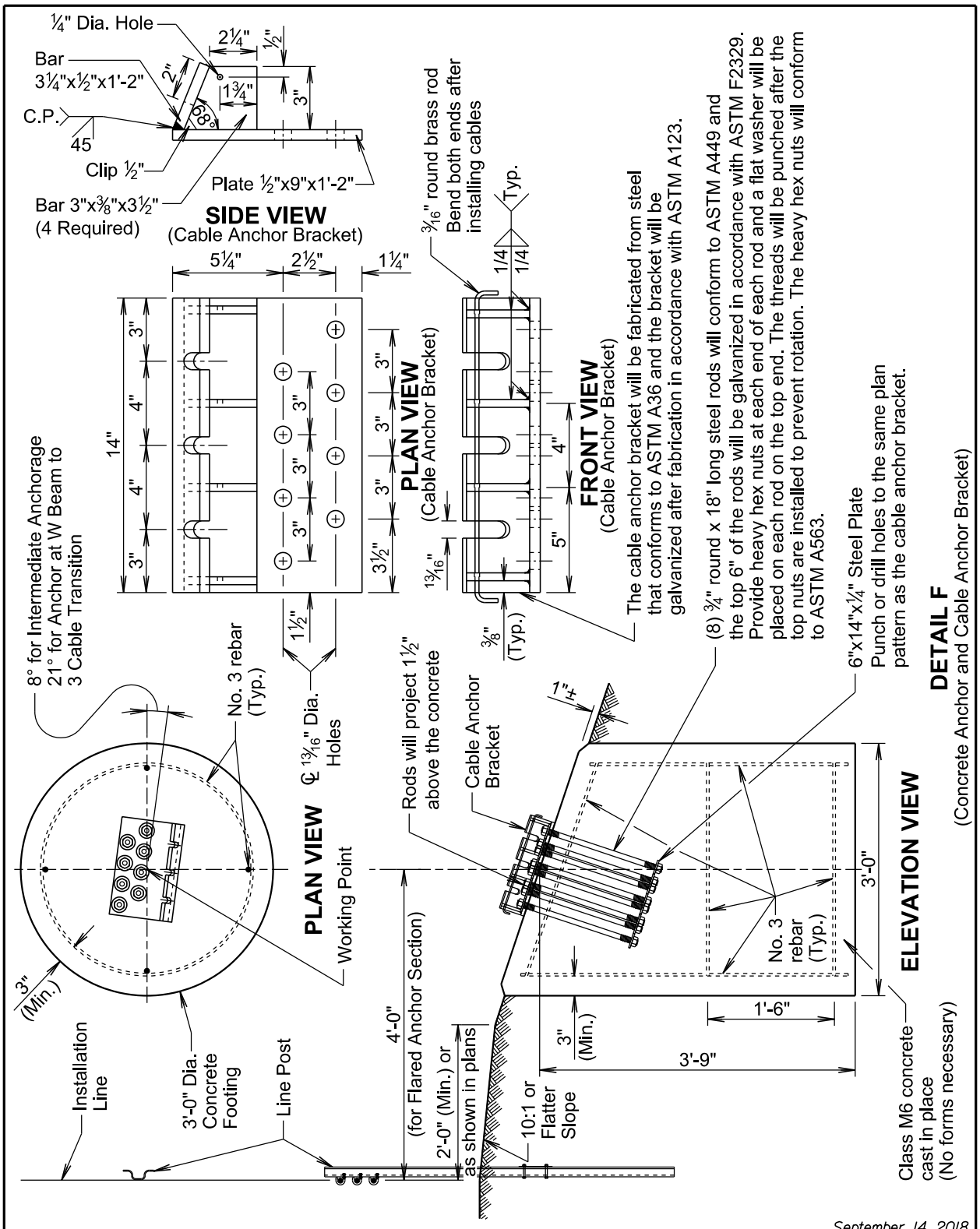
Published Date: 2026

SDDOT

3 CABLE GUARDRAIL
(LOW TENSION)

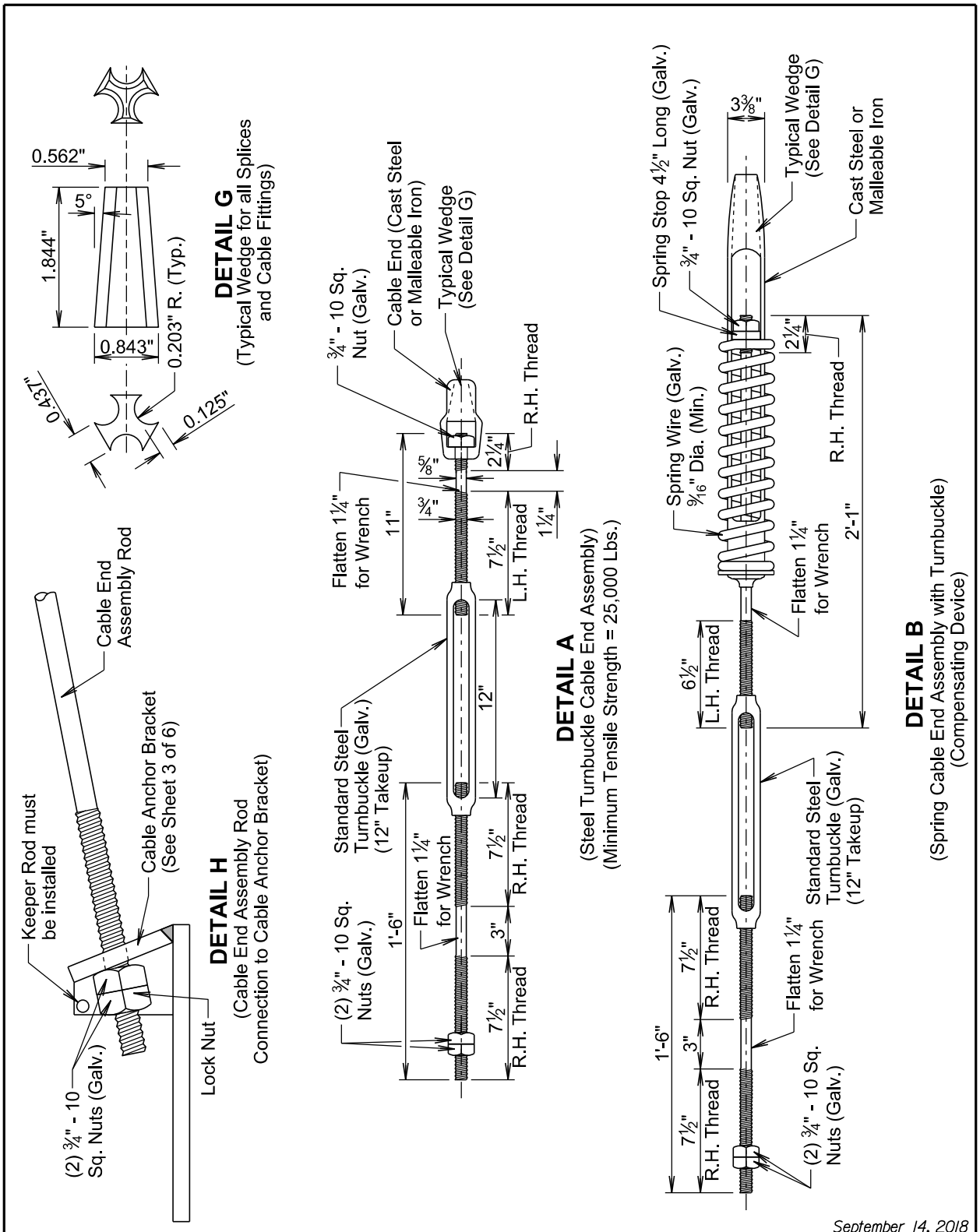
PLATE NUMBER
629.01

Sheet 2 of 6



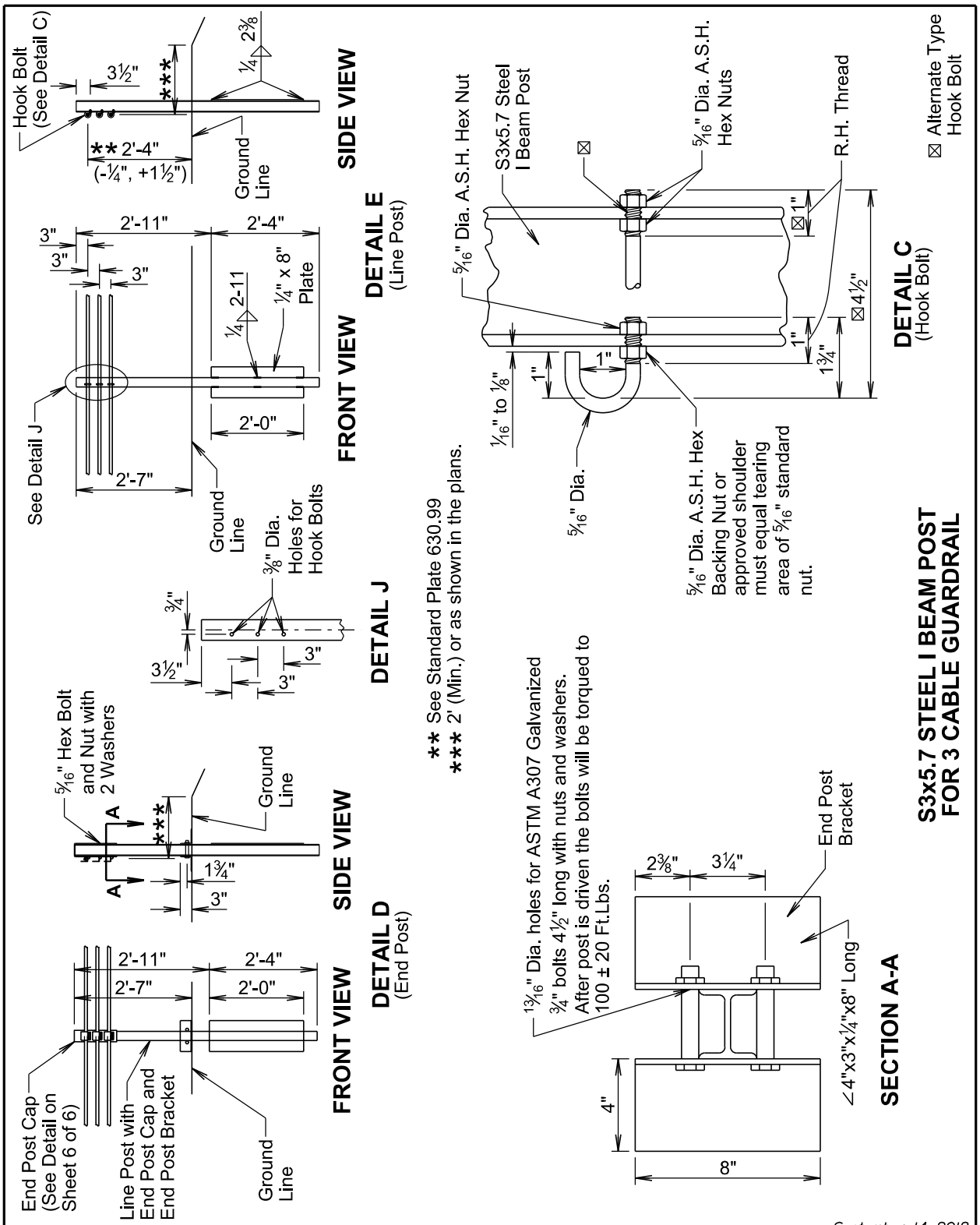
September 14, 2018

Published Date: 2026	SDDOT	3 CABLE GUARDRAIL (LOW TENSION)	PLATE NUMBER 629.01 Sheet 3 of 6



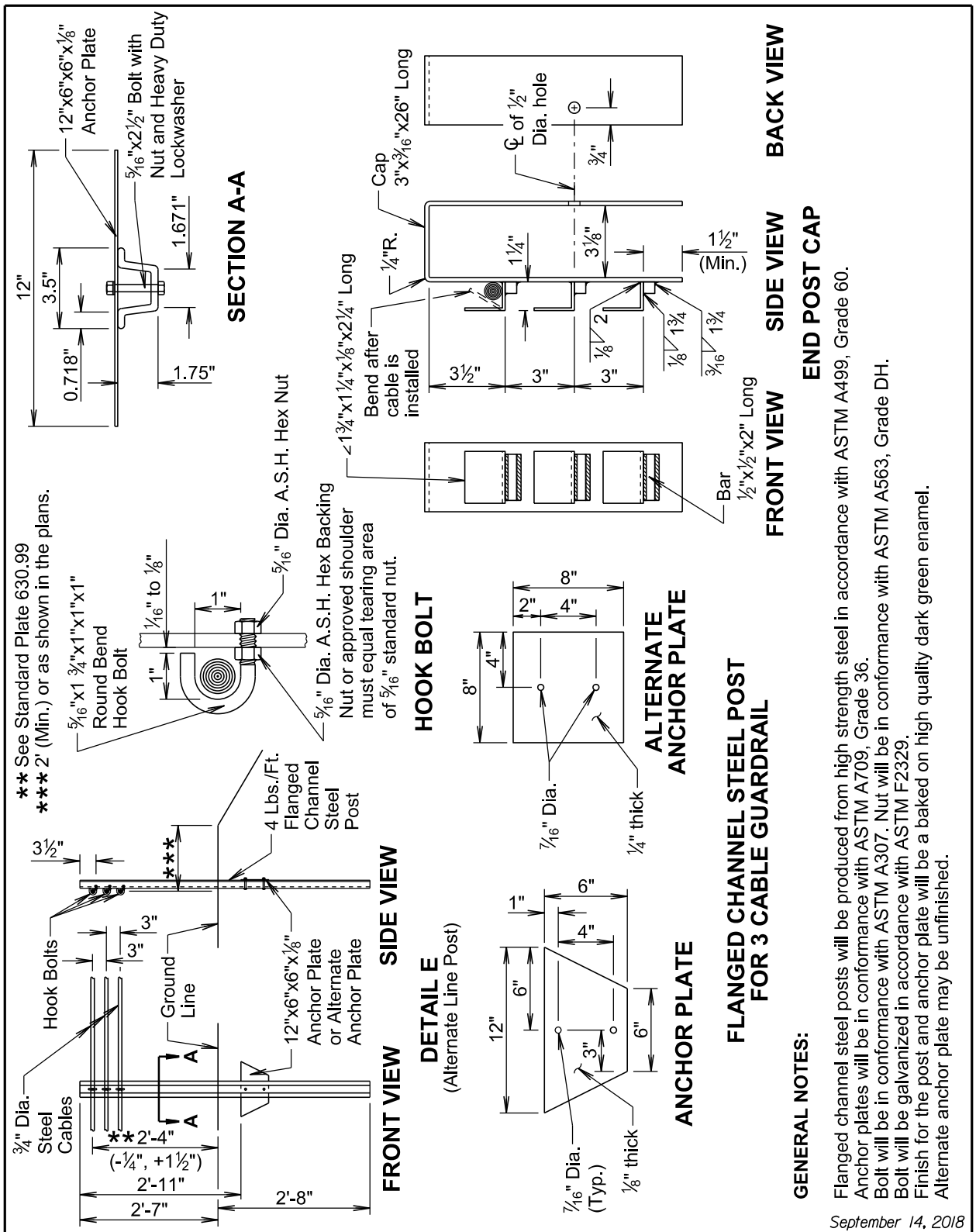
September 14, 2018

Published Date: 2026	SDDOT	3 CABLE GUARDRAIL (LOW TENSION)	PLATE NUMBER 629.01 Sheet 4 of 6



September 14, 2018

Published Date: 2026	3 CABLE GUARDRAIL (LOW TENSION)	PLATE NUMBER 629.01
		Sheet 5 of 6



GENERAL NOTES:

Flanged channel steel posts will be produced from high strength steel in accordance with ASTM A499, Grade 60.
Anchor plates will be in conformance with ASTM A709, Grade 36.
Bolt will be in conformance with ASTM A307. Nut will be in conformance with ASTM A563, Grade DH.
Bolt will be galvanized in accordance with ASTM F2329.
Finish for the post and anchor plate will be a baked on high quality dark green enamel.
Alternate anchor plate may be unfinished.

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3 CABLE GUARDRAIL (LOW TENSION)

PLATE NUMBER
629.01

Sheet 6 of 6

PLAN VIEW

POST SPACING PRIOR TO OBSTACLE		
X Deflection Distance (Ft.)	Number of Post Spaces	Post Spacing (Ft.)
10.5 to 11.4	8	4
11.5 to 12.9	6	8
13.0 to 14.9	4	12
15 and Greater	3	16

GENERAL NOTES:

* Post spacing for deflection control will continue to one post past the obstacle for one-way traffic.

Post spacing for deflection control will be provided on both sides of the obstacle for two-way traffic.

For illustrational purposes, the 3 cable guardrail posts and post spacings shown on this standard plate depict the situation when there is a box culvert 10.5' to 11.49' away from the 3 cable guardrail and the traffic is one-way.

This standard plate will not be used for high tension cable guardrail installations.

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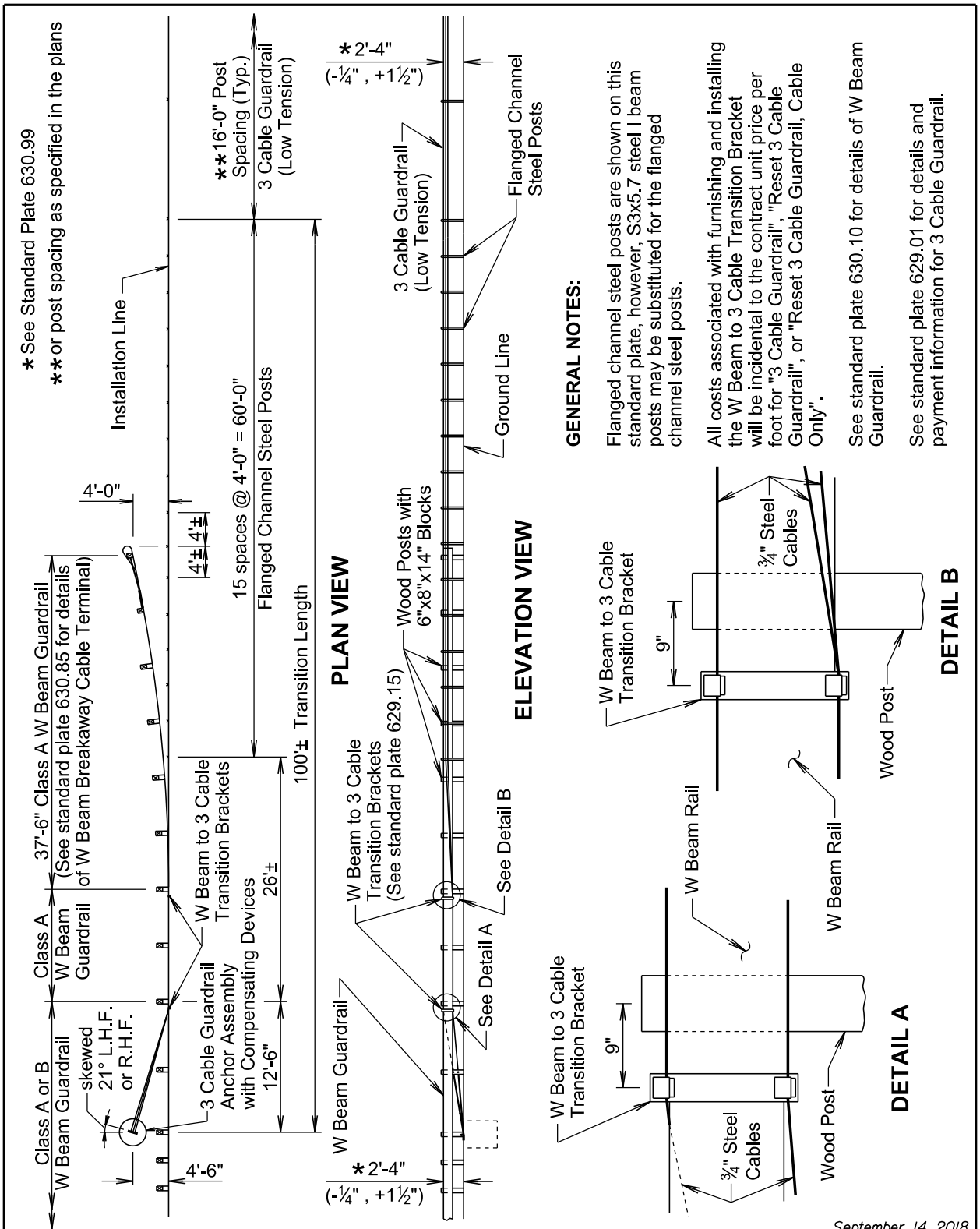
Published Date: 2026

SDDOT

3 CABLE GUARDRAIL (LOW TENSION) POST SPACING FOR DEFLECTION CONTROL

PLATE NUMBER
629.02

Sheet 1 of 1



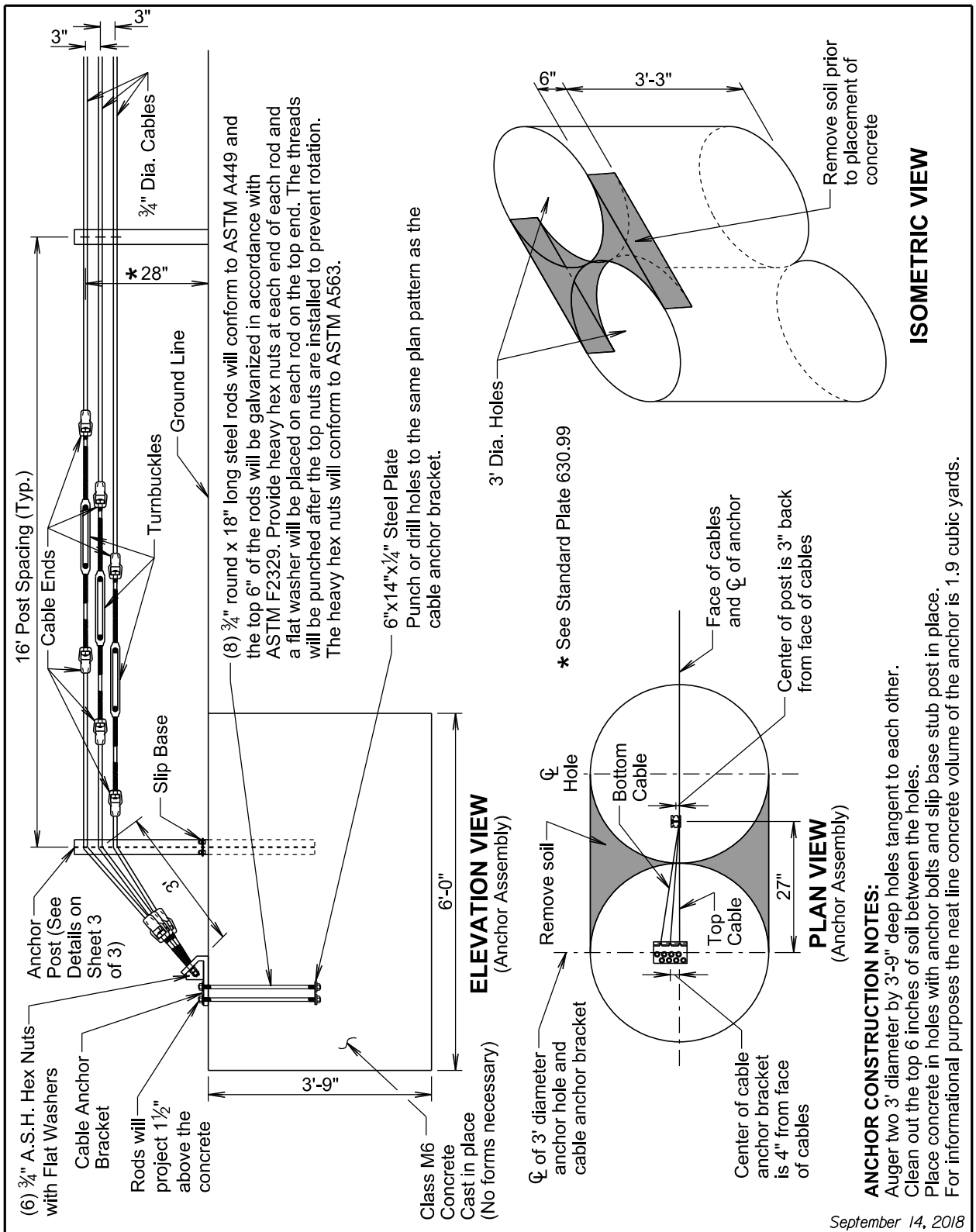
Published Date: 2026

SDDOT

W BEAM TO 3 CABLE TRANSITION

PLATE NUMBER
629.05

Sheet 1 of 1



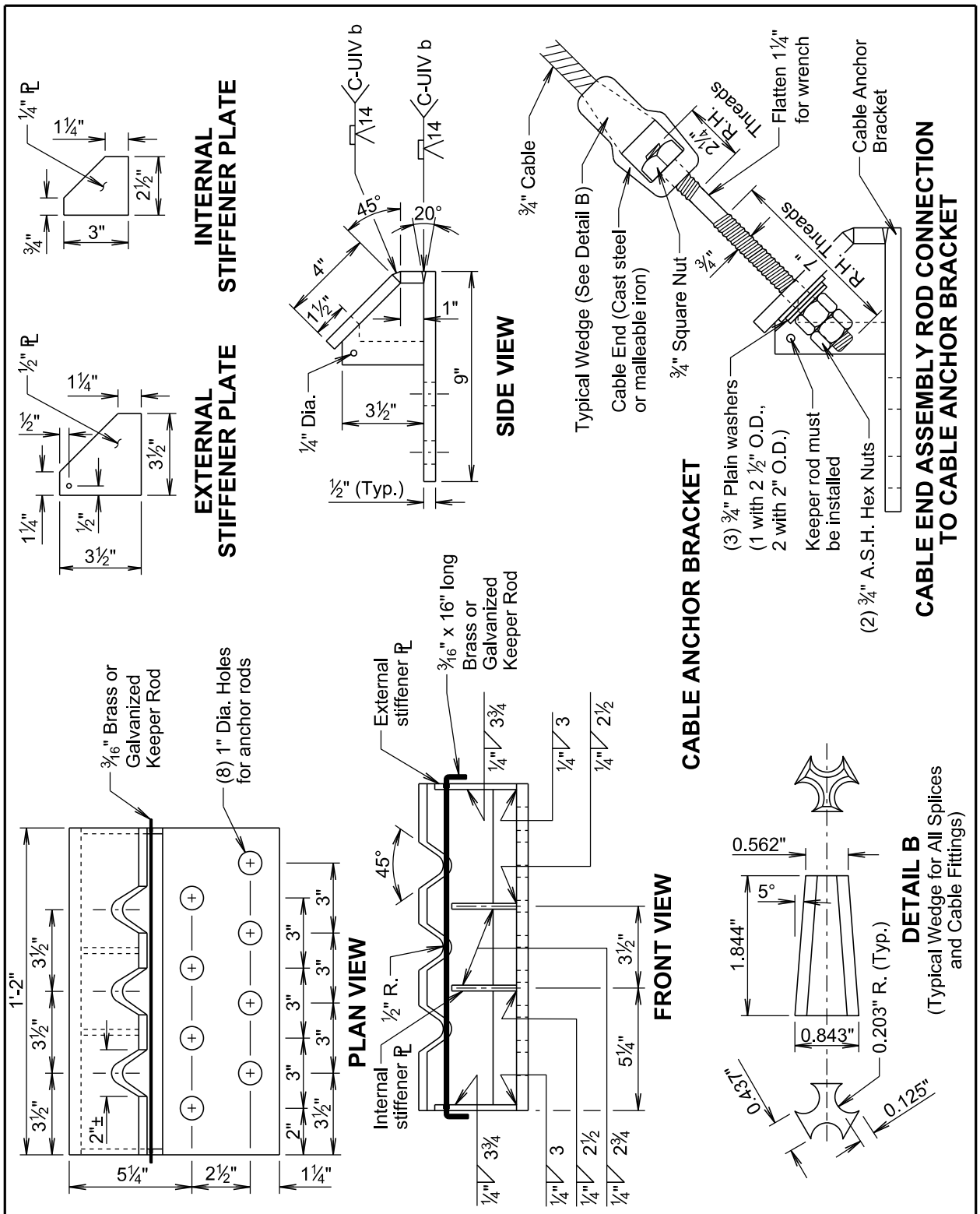
Published Date: 2026

SDDOT

3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY

PLATE NUMBER
629.10

Sheet 1 of 3



September 14, 2018

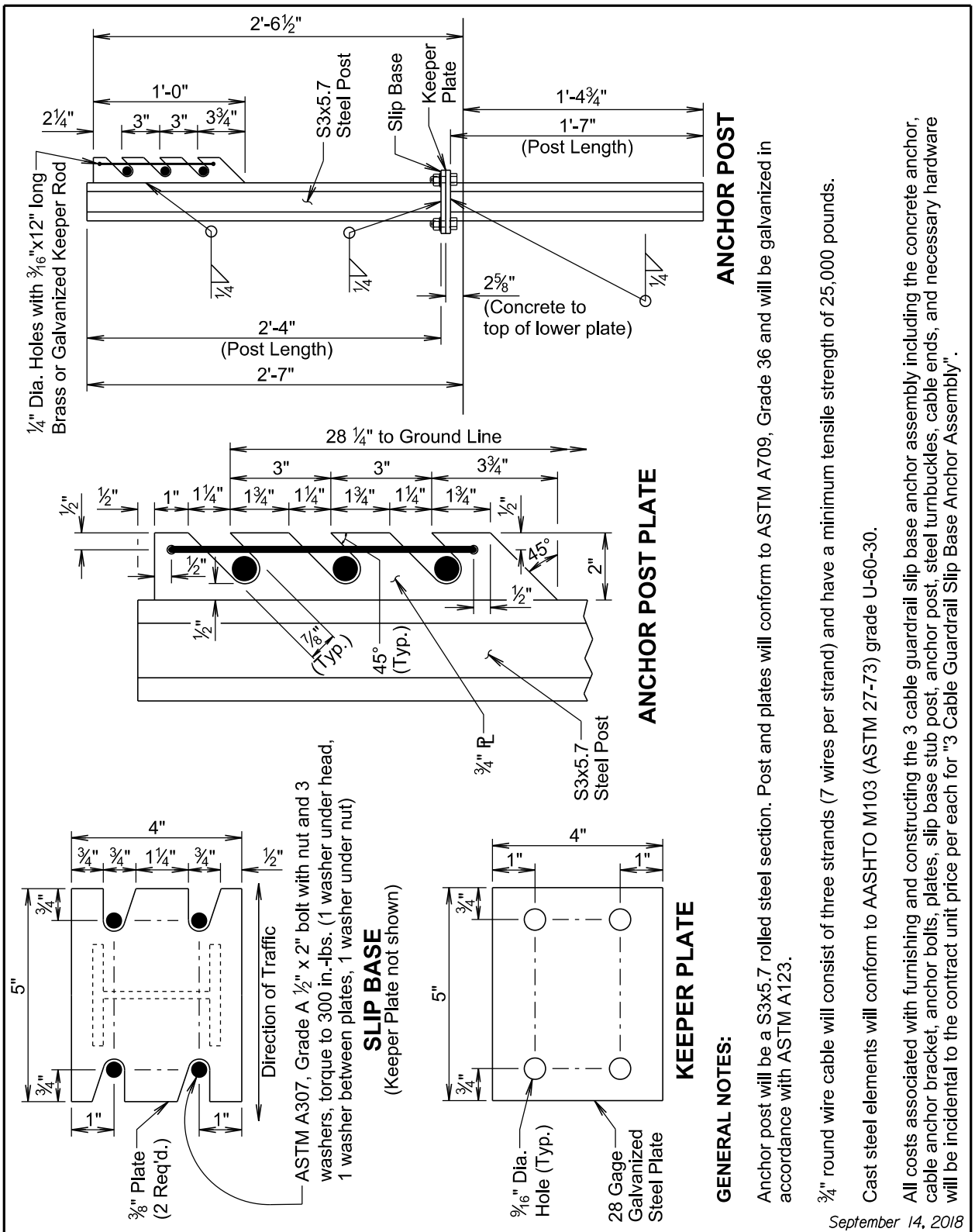
Published Date: 2026

SDDOT

3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY

PLATE NUMBER
629.10

Sheet 2 of 3



GENERAL NOTES:

Anchor post will be a S3x5.7 rolled steel section. Post and plates will conform to ASTM A709, Grade 36 and will be galvanized in accordance with ASTM A123.

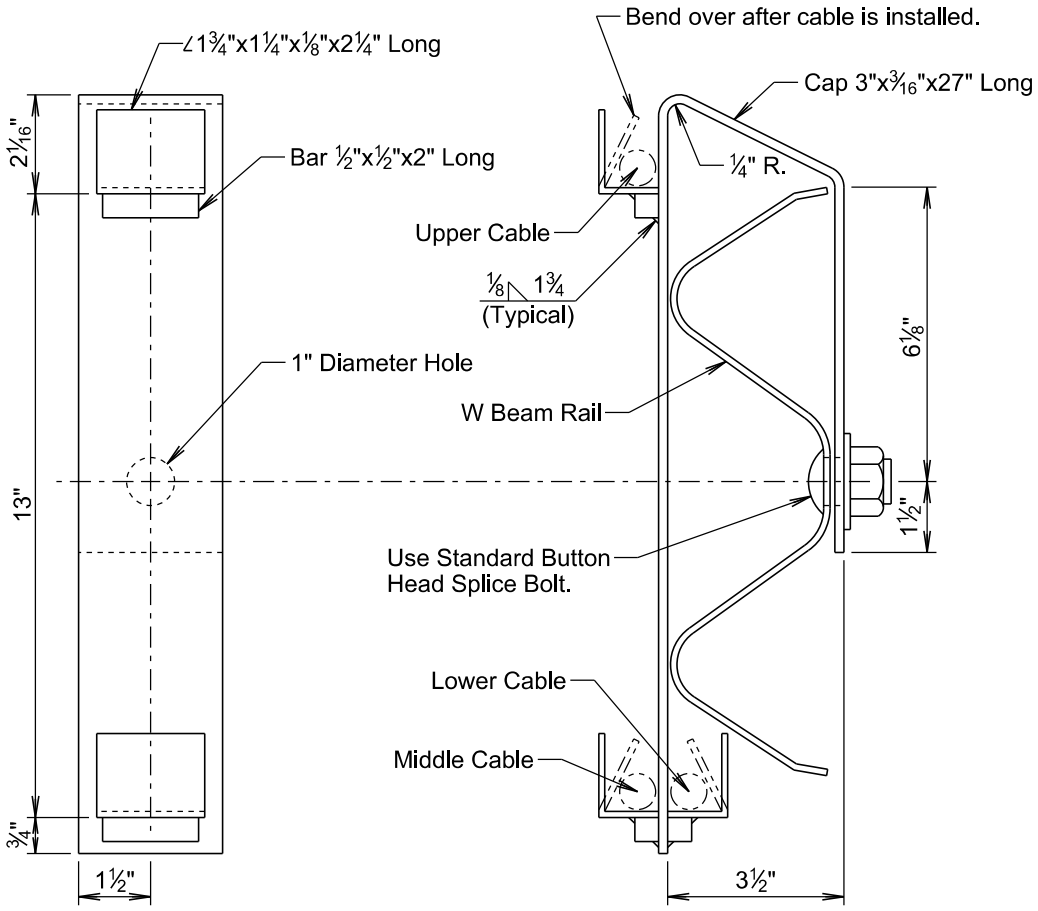
¾" round wire cable will consist of three strands (7 wires per strand) and have a minimum tensile strength of 25,000 pounds.

Cast steel elements will conform to AASHTO M103 (ASTM 27-73) grade U-60-30.

All costs associated with furnishing and constructing the 3 cable guardrail slip base anchor assembly including the concrete anchor, cable anchor bracket, anchor bolts, plates, slip base stub post, anchor post, steel turnbuckles, cable ends, and necessary hardware will be incidental to the contract unit price per each for "3 Cable Guardrail Slip Base Anchor Assembly".

September 14, 2018

Published Date: 2026	SDDOT	**3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY**	PLATE NUMBER 629.10 Sheet 3 of 3



ELEVATION VIEW
(Transition Bracket)

END VIEW
(W Beam Rail and Transition Bracket)

GENERAL NOTES:

Steel used in the fabrication of the bracket will conform to ASTM A36 and the bracket will be galvanized after fabrication in accordance with ASTM A123.

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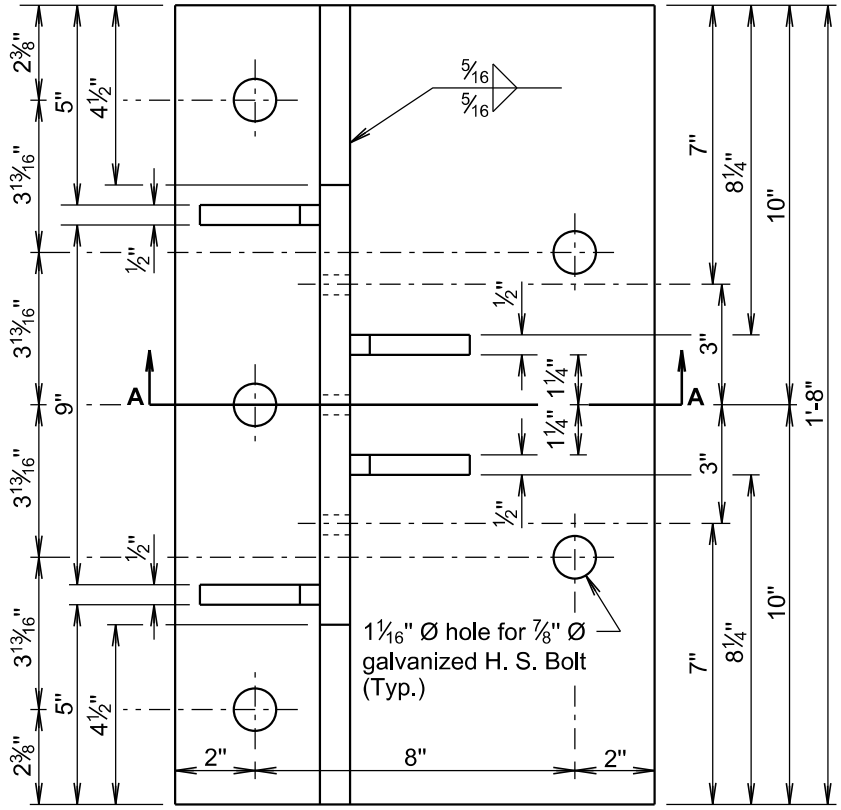
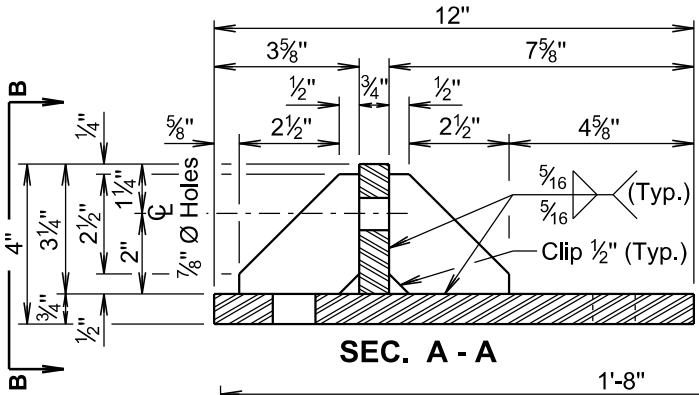
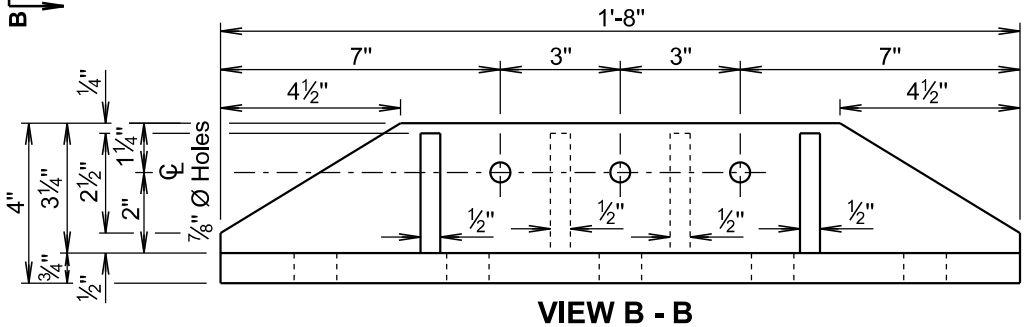
Published Date: 2026	SDDOT	W BEAM TO 3 CABLE TRANSITION BRACKET	PLATE NUMBER 629.15 Sheet 1 of 1



PLAN VIEW



SEC. A - A



VIEW B - B

GENERAL NOTES:

All steel will conform to ASTM A709, Grade 36.

Welding and weld inspection will be in conformance with AWS/ANSI D1.1 (Current Year) Structural Welding Code - Steel.

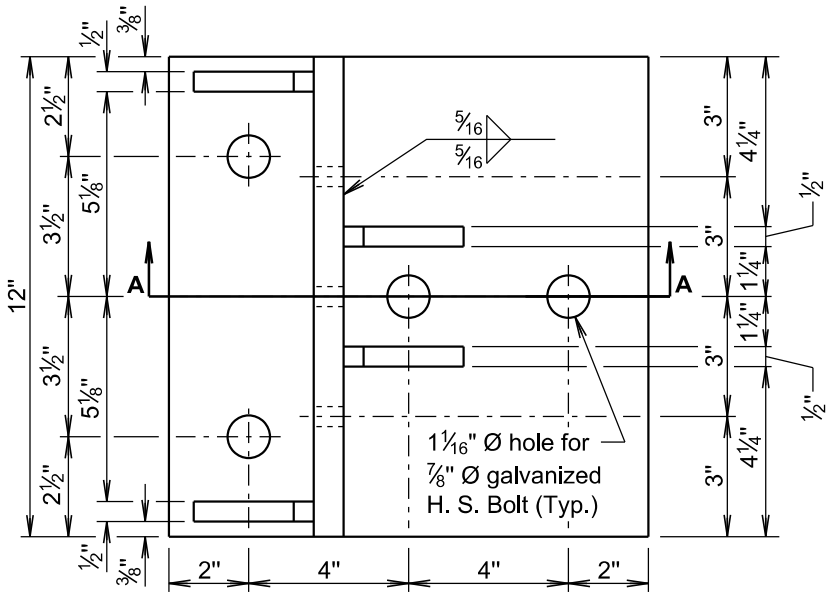
After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

Bolts, nuts, and washers will be provided with each assembly. Bolts will be galvanized and conform to the requirements of ASTM A307 or A449. Plain washers will be galvanized and conform to ASTM F844.

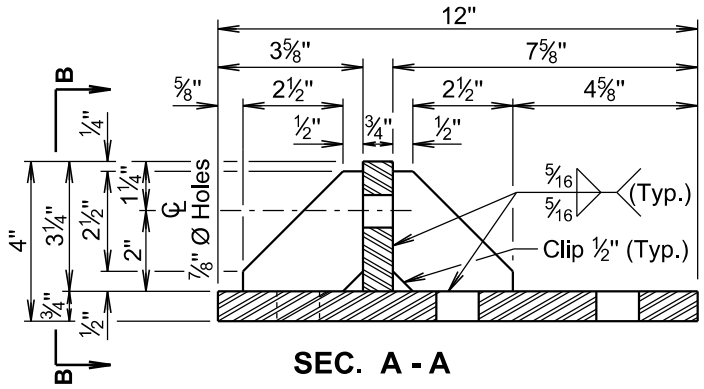
All Costs associated with furnishing and installing the 3 cable guardrail connection assembly will be incidental to the contract unit price for the bid items "Class A45 Concrete, Bridge Deck", "Class A45 Concrete, Bridge Repair", or "3 Cable Guardrail", as applicable.

September 14, 2018

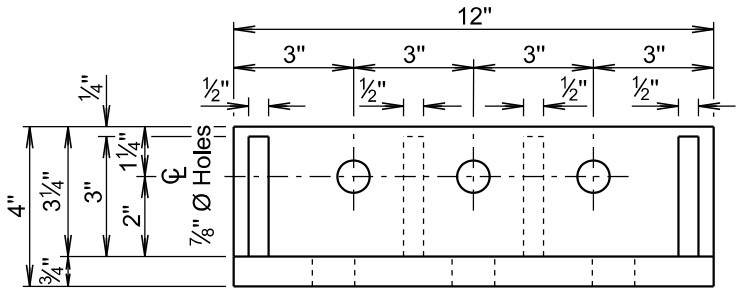
Published Date: 2026	SDDOT	*3 CABLE GUARDRAIL CONNECTION ASSEMBLY*	*PLATE NUMBER* 629.30 *Sheet 1 of 1*



PLAN VIEW



SEC. A - A



VIEW B - B

GENERAL NOTES:

All steel will conform to ASTM A709, Grade 36.

Welding and weld inspection will be in conformance with AWS/ANSI D1.1 (Current Year) Structural Welding Code - Steel.

After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

When required, provide ⅞ inch diameter x 2½ inch high strength cap screws with heavy hex heads and plate washers. Cap screws will be galvanized and conform to the requirements of ASTM A307 or A449. Plain washers will be galvanized and conform to ASTM F844.

All costs associated with furnishing and installing the 3 cable guardrail connection assembly will be incidental to the contract unit price for the bid items "Class A45 Concrete, Bridge Deck", "Class A45 Concrete, Bridge Repair", or "3 Cable Guardrail", as applicable.

September 14, 2018

Published Date: 2026	SDDOT	*3 CABLE GUARDRAIL CONNECTION ASSEMBLY*	*PLATE NUMBER* 629.31 *Sheet 1 of 1*

Pay Limits for One-Way Traffic Roadways
Valtir (Trinity) System

GENERAL NOTES:

Valtir (Trinity) CASS Cable Terminal has a total length of 57'-6". On one-way traffic roadways, it has 31'-6" effective length on the approach end of the terminal and 6'-6" effective length on the non-approach (departure) end. On two-way traffic roadways, it has 31'-6" effective length on both the approach and the non-approach ends of the terminal.

The High Tension Cable Guardrail pay limits will be the length of need (LON) or the effective length.

The High Tension Cable Guardrail Anchor Assembly pay limits will be the non-effective length of the terminal.

January 22, 2023

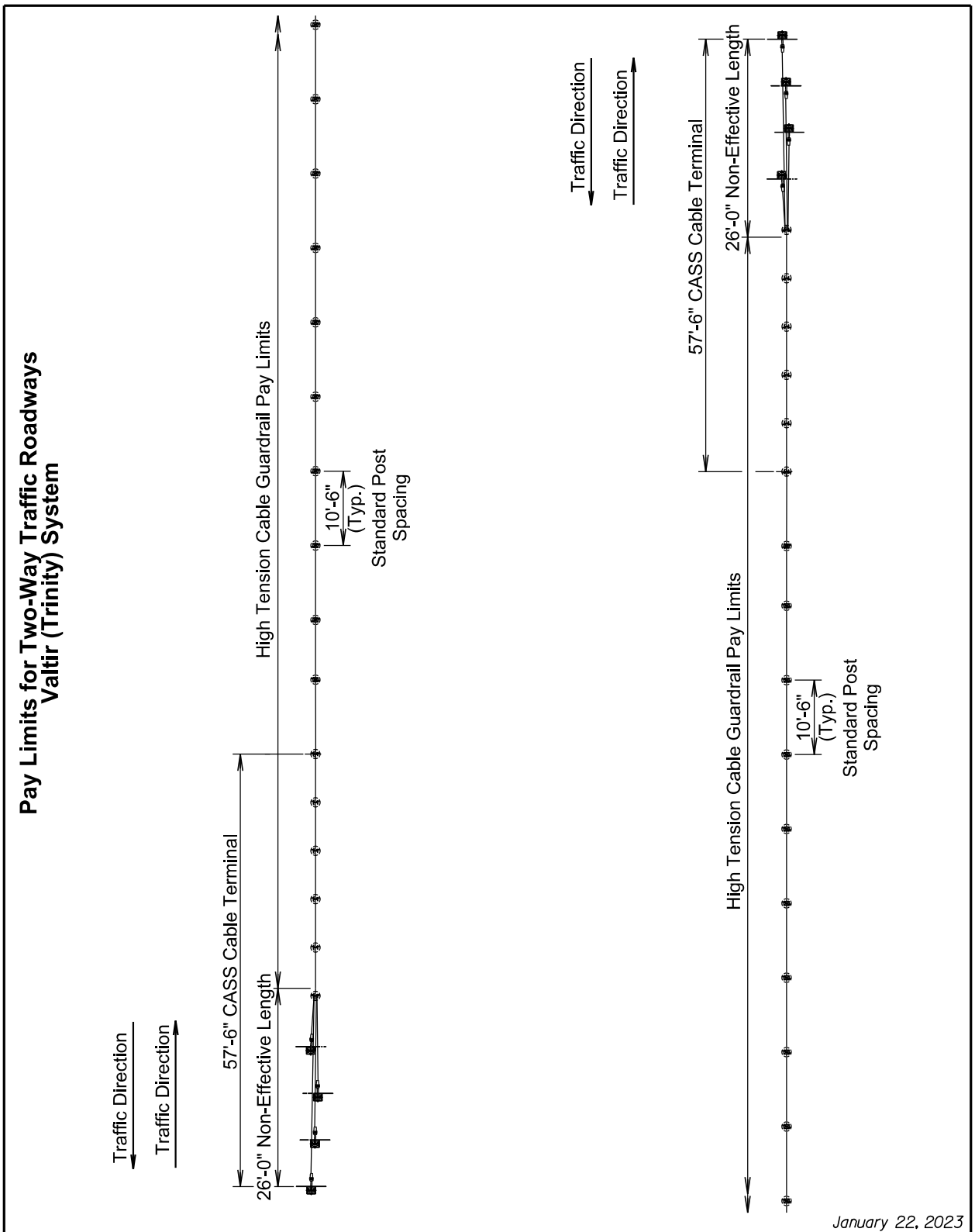
Published Date: 2026

SDDOT

HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER
629.50

Sheet 1 of 3



January 22, 2023

Published Date: 2026

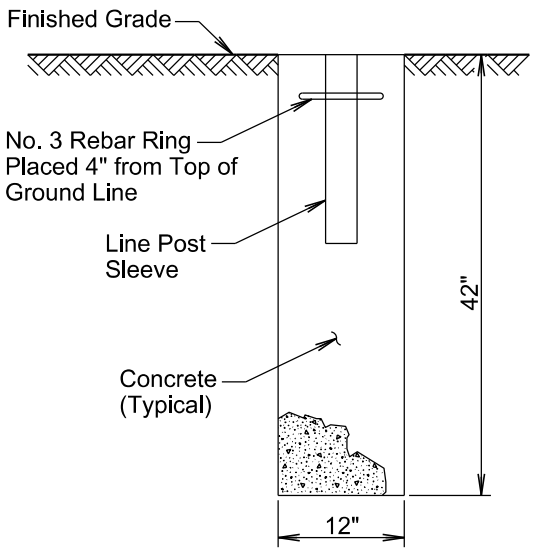
SDDOT

HIGH TENSION CABLE GUARDRAIL

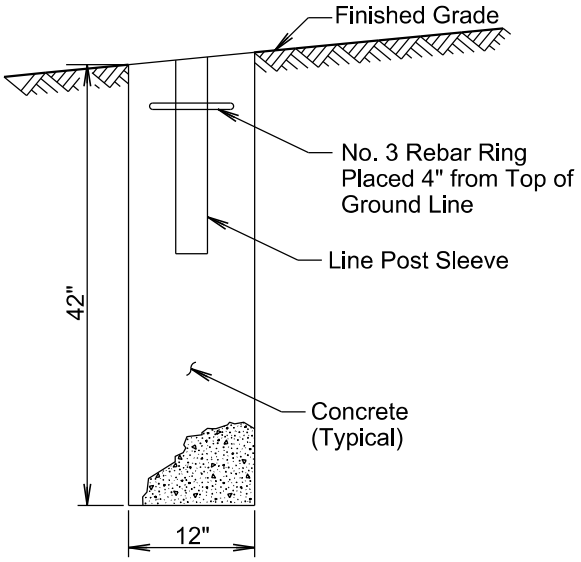
PLATE NUMBER
629.50

Sheet 2 of 3

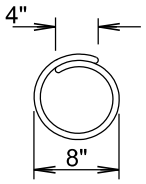
Pay Limits for One-Way and Two-Way Traffic Roadway
Brifen System
Traffic Direction
or
Traffic Direction
36'-6" MASH Gating Terminal
(Non-Effective Length)
High Tension Cable Guardrail Pay Limits
10'-6"
(Typ.)
Standard Post
Spacing
GENERAL NOTES:
The Brifen MASH Gating Terminal has a total length of 36'-6" and is non-effective.
The High Tension Cable Guardrail pay limits will be the length of need (LON) or the effective length.
The High Tension Cable Guardrail Anchor Assembly pay limits will be the non-effective length of the terminal.
Traffic Direction
or
Traffic Direction
36'-6" MASH Gating Terminal
(Non-Effective Length)
High Tension Cable Guardrail Pay Limits
10'-6"
(Typ.)
Standard Post
Spacing
January 22, 2023
Published Date: 2026
SDDOT
HIGH TENSION CABLE GUARDRAIL
PLATE NUMBER
629.50
Sheet 3 of 3



Line Post Concrete Footing on Slopes 10:1 or Flatter



Line Post Concrete Footing on Slopes from 4:1 to 10:1



No. 3 Rebar Ring

GENERAL NOTES:

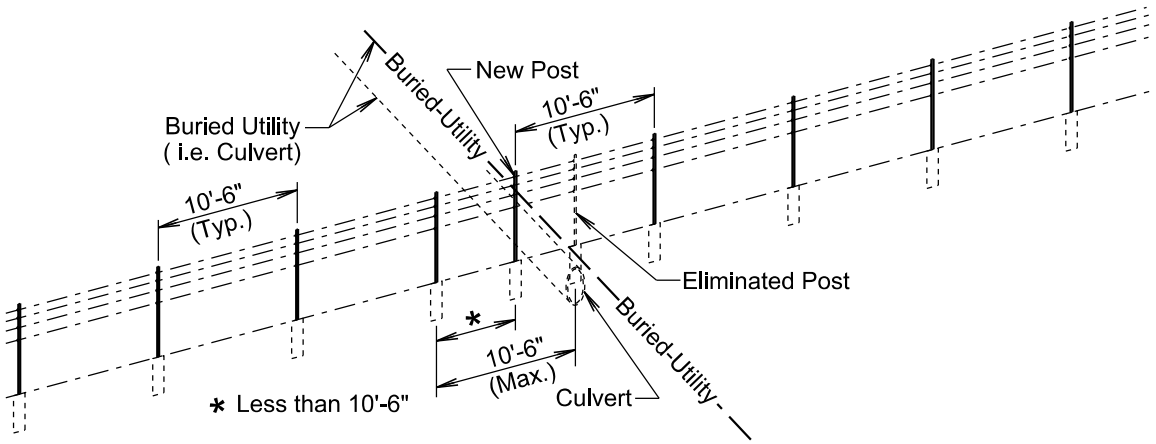
The line post sleeve will be furnished by the manufacturer.

The concrete for the post footing will be either Class M6 or a bagged mix conforming to ASTM C387 that is air entrained with a minimum 28 day compressive strength of 4,000 psi. To reduce the risk of frost heaving, the concrete at the top cannot be wider than the concrete in the lower footing.

All costs for materials, labor, equipment, and incidentals necessary to install the high tension cable guardrail line post footings will be incidental to the contract unit price per foot for "High Tension 3 Cable Guardrail" or "High Tension 4 Cable Guardrail".

March 31, 2024

Published Date: 2026	SDDOT	HIGH TENSION CABLE GUARDRAIL LINE POST CONCRETE FOOTING	PLATE NUMBER 629.60 Sheet 1 of 1



POST SPACING AT UTILITY CROSSING

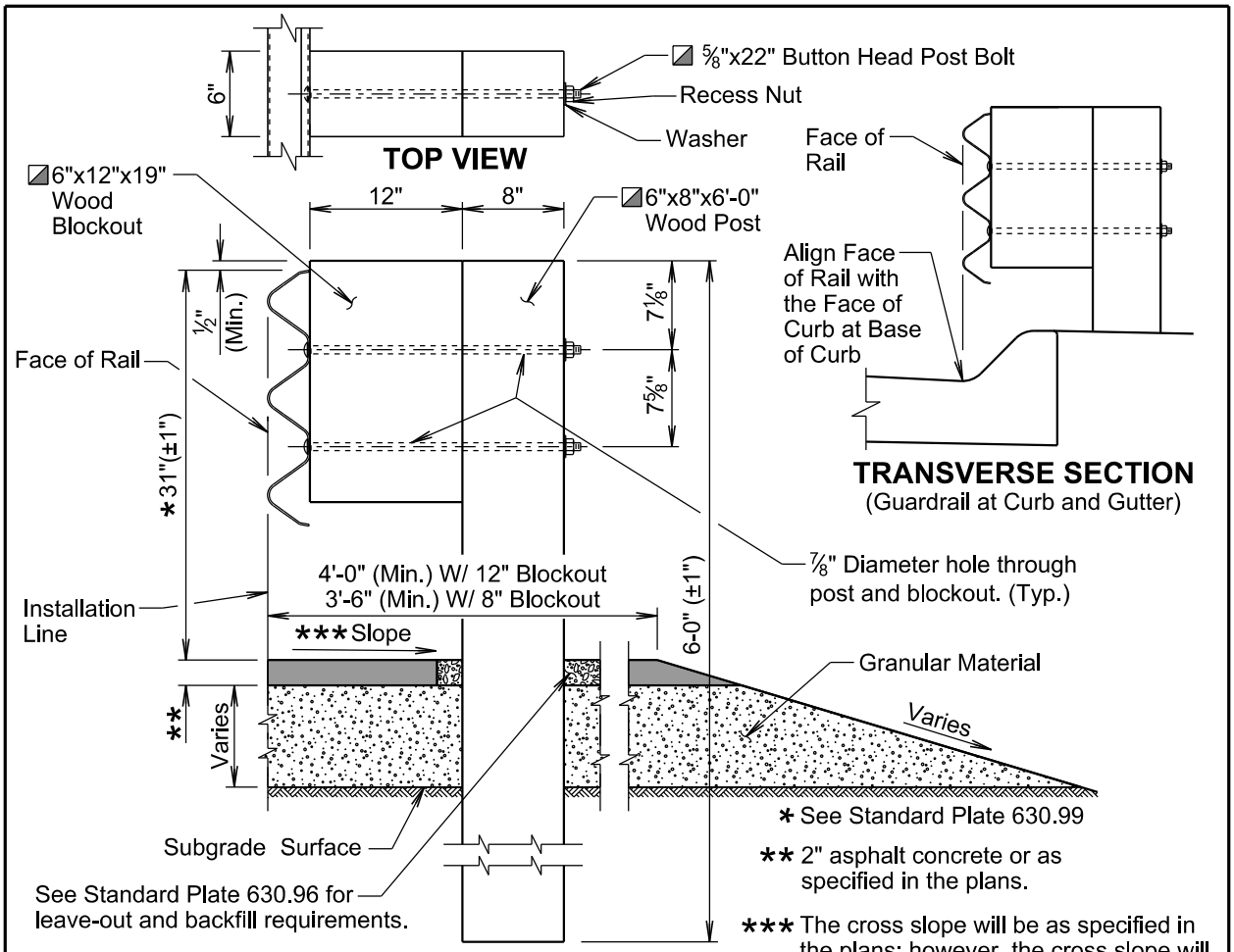
GENERAL NOTES:

The post spacing may be modified to avoid utility conflicts; however, the post spacing will not exceed 10'-6".

All costs for materials, labor, equipment, and incidentals necessary to install the high tension cable guardrail at an utility crossing will be incidental to the contract unit price per foot for "High Tension 3 Cable Guardrail" or "High Tension 4 Cable Guardrail".

March 31, 2024

Published Date: 2026	SDDOT	HIGH TENSION CABLE GUARDRAIL UTILITY CROSSING	PLATE NUMBER 629.70 Sheet 1 of 1



GENERAL NOTES:

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite."

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

Topsoil is not shown in the transverse section drawing.

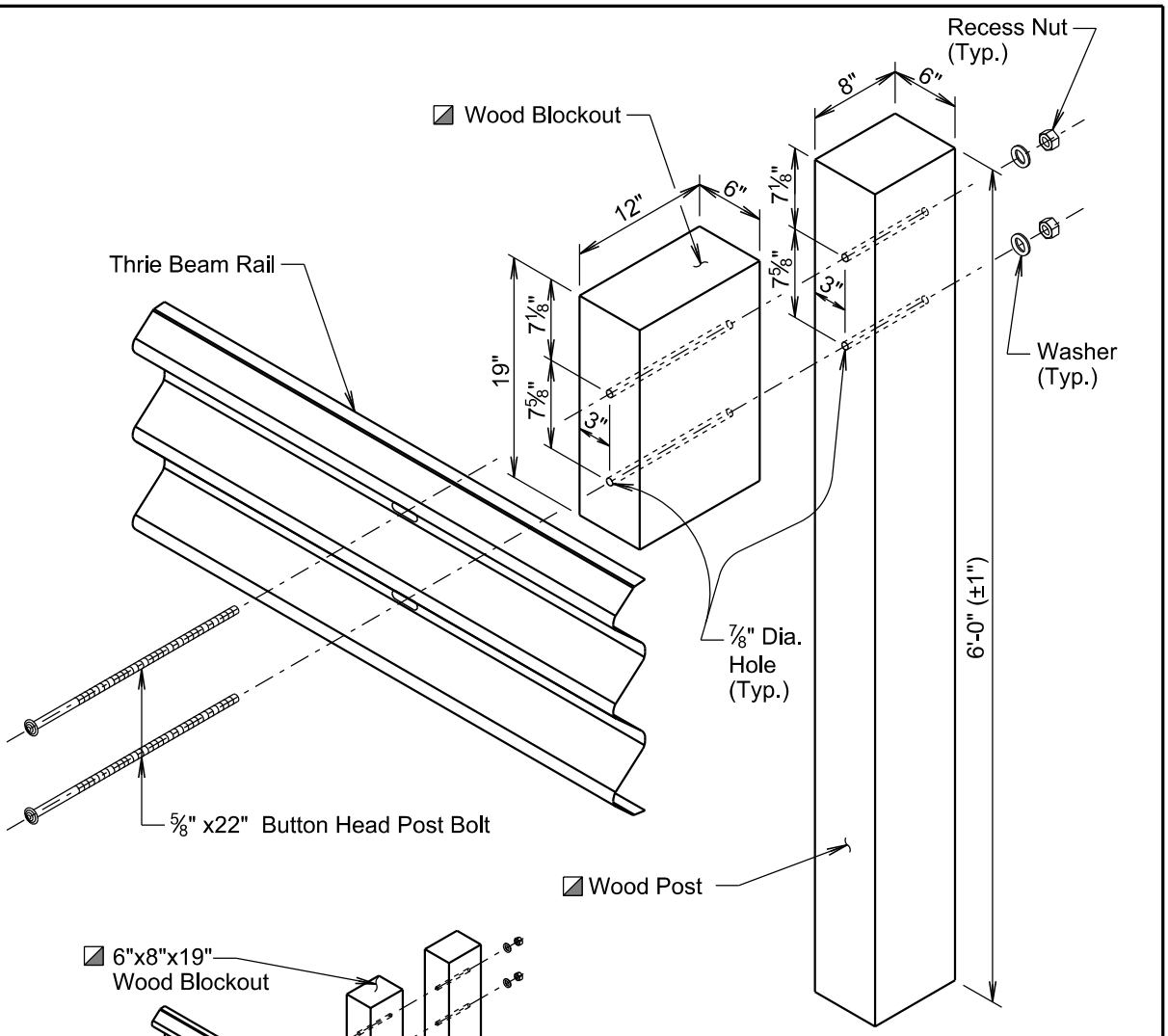
☑ The post and blockout illustrated above is typical for single thrie beam guardrail. When other variations of posts and blockouts are specified on other standard plates (e.g. transitions) then the posts and blockouts will be as specified on the other standard plates or as specified in the plans.

Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

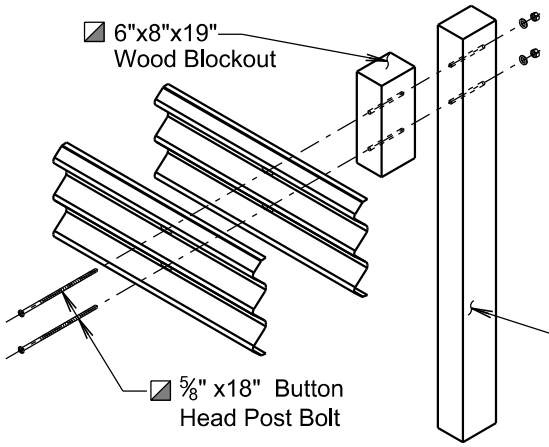
The top of post and top of block will have a true square cut. The top of block will be a maximum of ±½ inch from the top of the post.

April 8, 2025

Published Date: 2026	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 1 of 5



EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

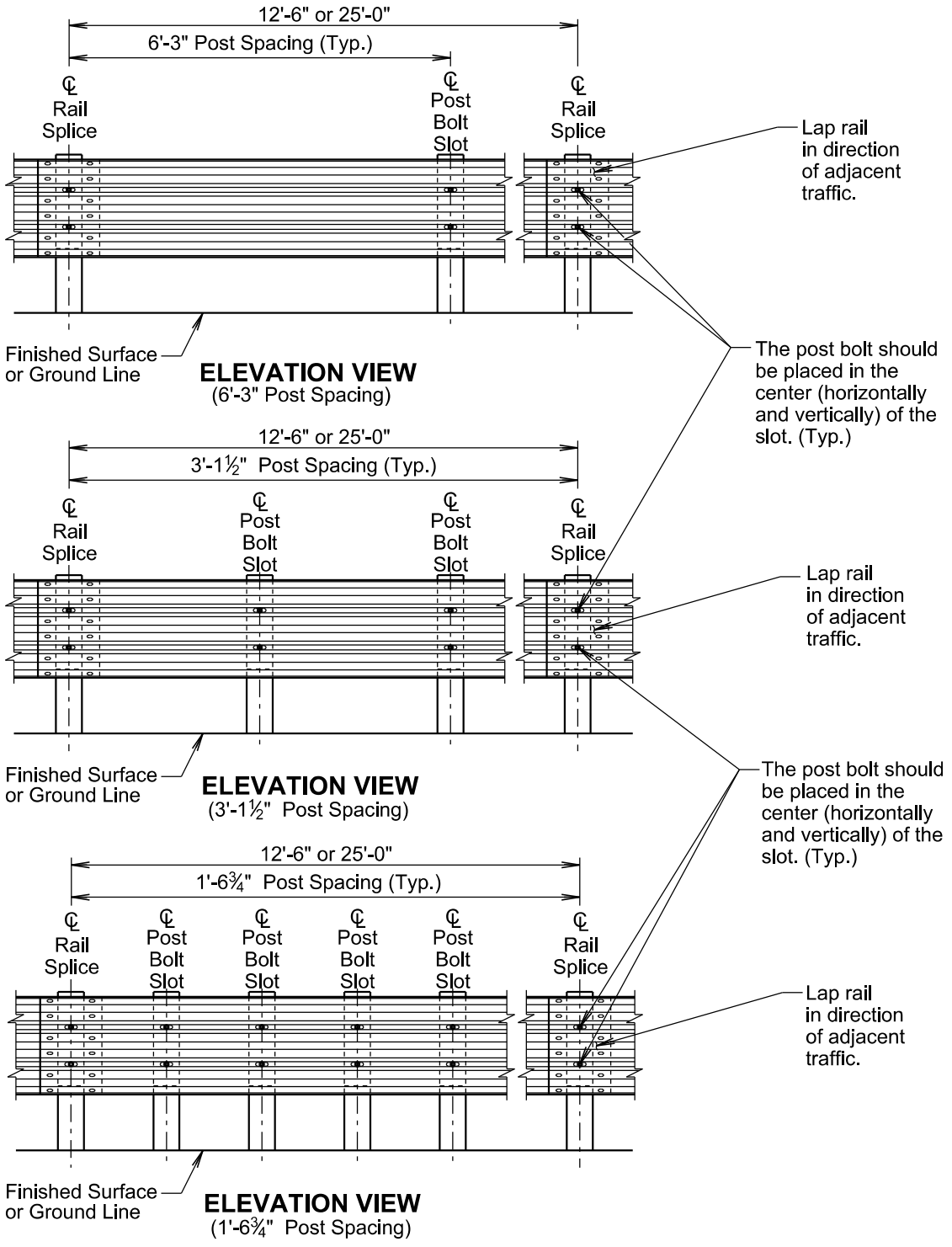


EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) THRIE BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

For single thrie beam guardrail use 6"x12"x19" wood blockout, ⅝"x22" button head post bolt, and 6"x8"x6'-0" wood post. For double (nested) thrie beam guardrail use 6"x8"x19" wood blockout, ⅝"x18" button head post bolt, and 6"x8"x7'-0" wood post.

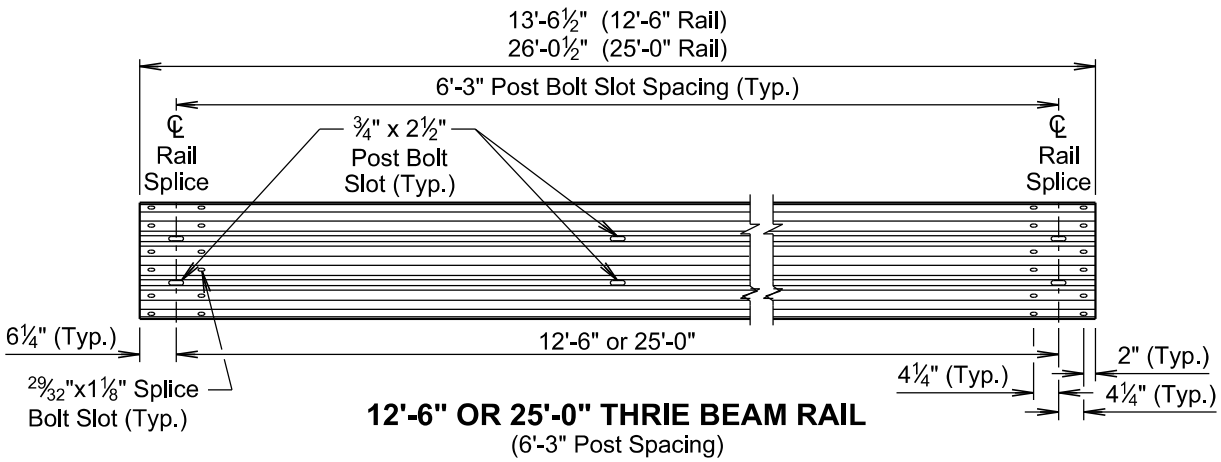
April 8, 2025

Published Date: 2026	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 2 of 5

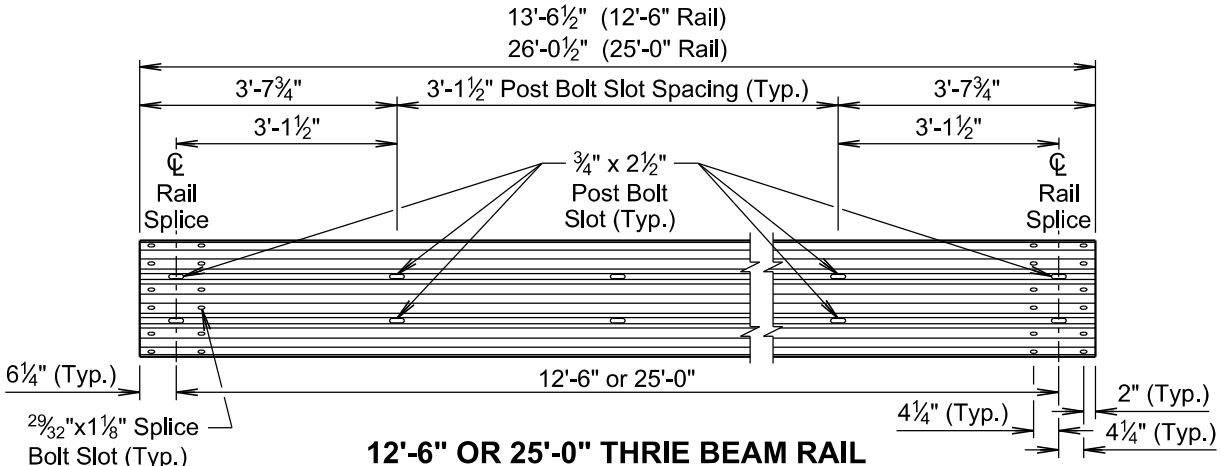


April 8, 2025

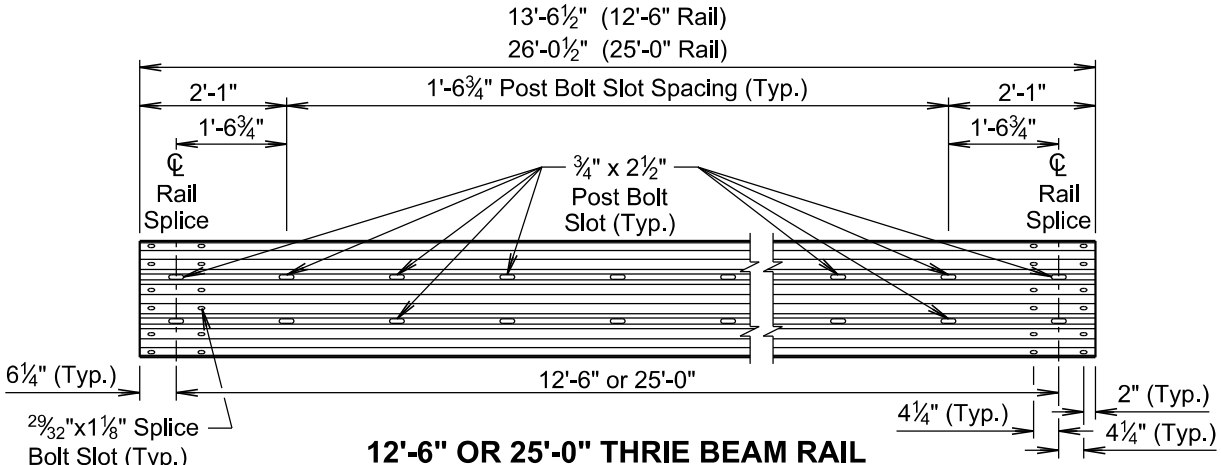
Published Date: 2026	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 3 of 5



12'-6" OR 25'-0" THRIE BEAM RAIL
(6'-3" Post Spacing)



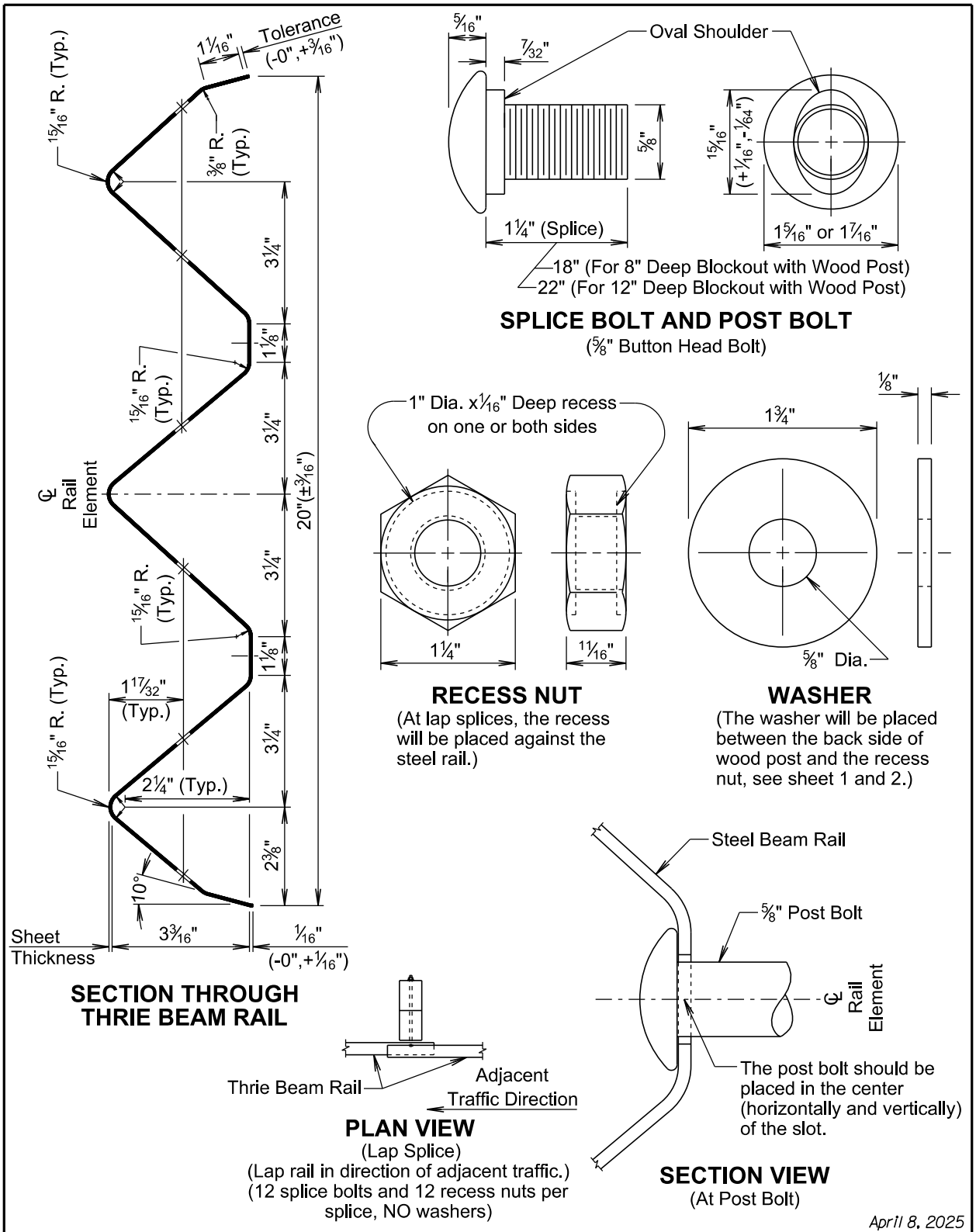
12'-6" OR 25'-0" THRIE BEAM RAIL
(3'-1½" Post Spacing)



12'-6" OR 25'-0" THRIE BEAM RAIL
(1'-6¾" Post Spacing)

April 8, 2025

Published Date: 2026	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 4 of 5



SECTION THROUGH THRIE BEAM RAIL

SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)

RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)

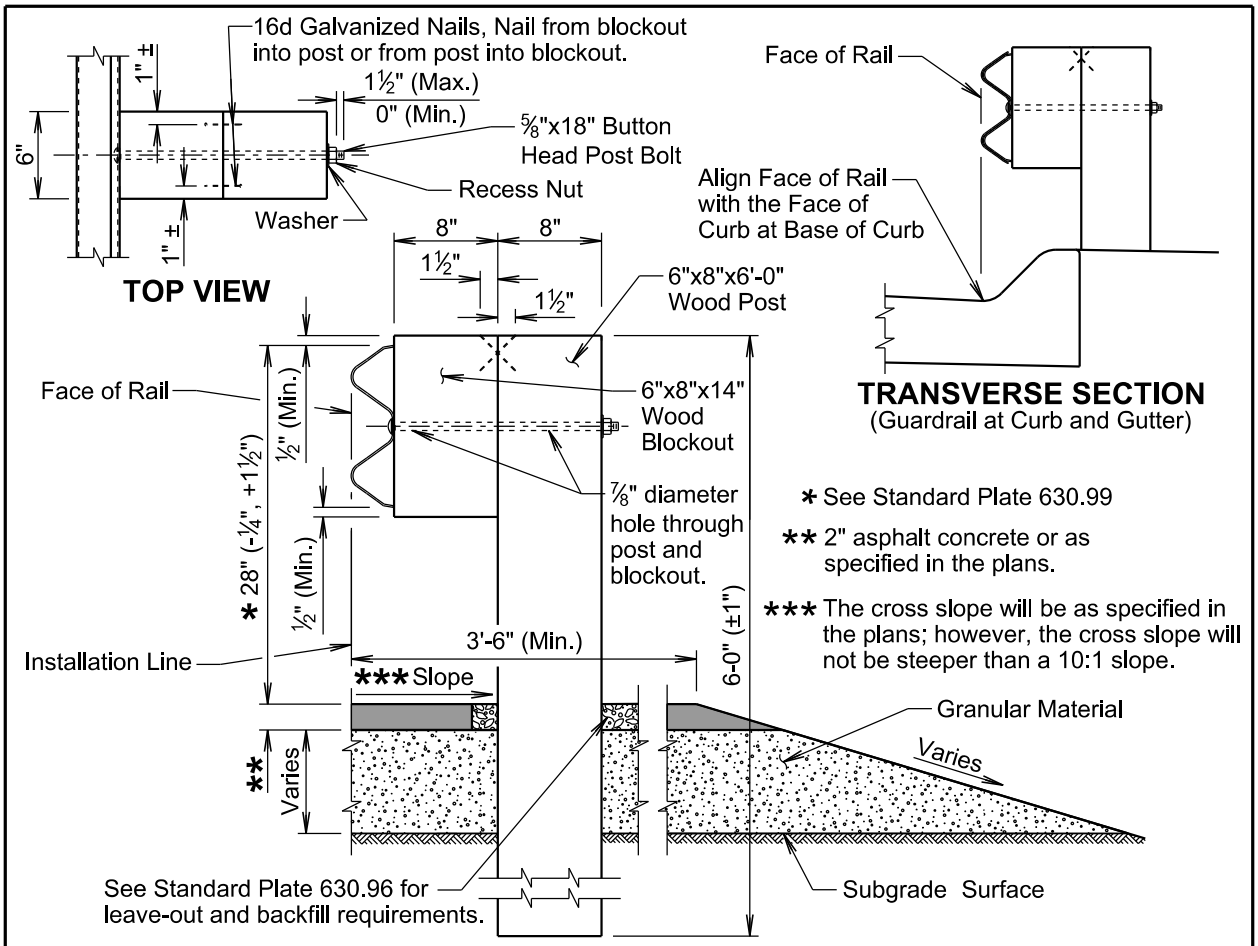
WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 1 and 2.)

PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(12 splice bolts and 12 recess nuts per splice, NO washers)

SECTION VIEW
(At Post Bolt)

April 8, 2025

Published Date: 2026	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 5 of 5



TRANSVERSE SECTION

GENERAL NOTES:

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite".

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

Topsoil is not shown in the transverse section drawing.

All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

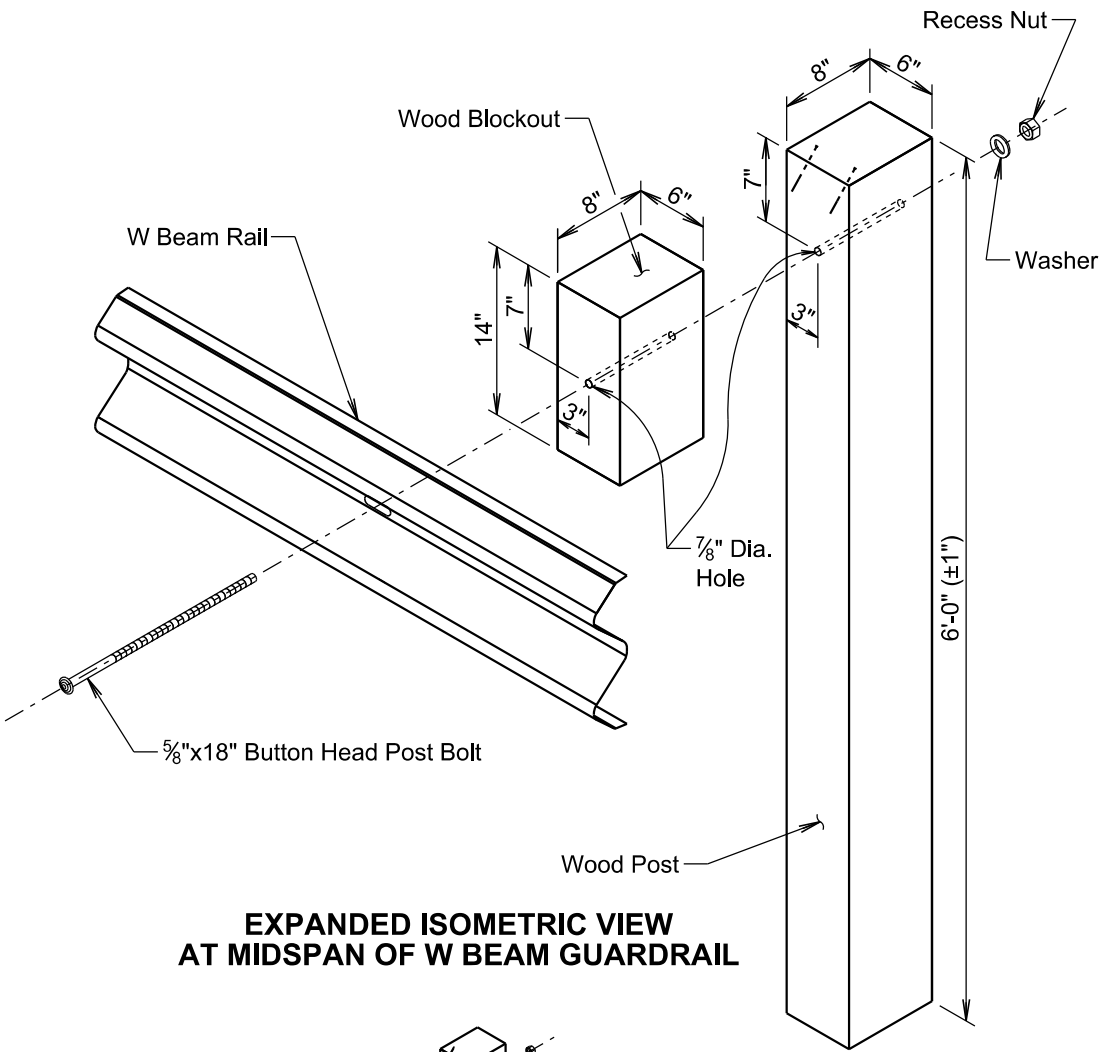
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

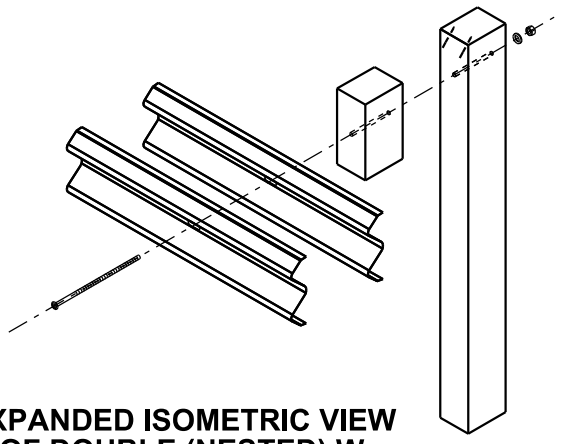
The top of post and top of block will have a true square cut. The top of block will be a maximum of ± ½ inch from the top of the post.

September 14, 2019

Published Date: 2026	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 1 of 5



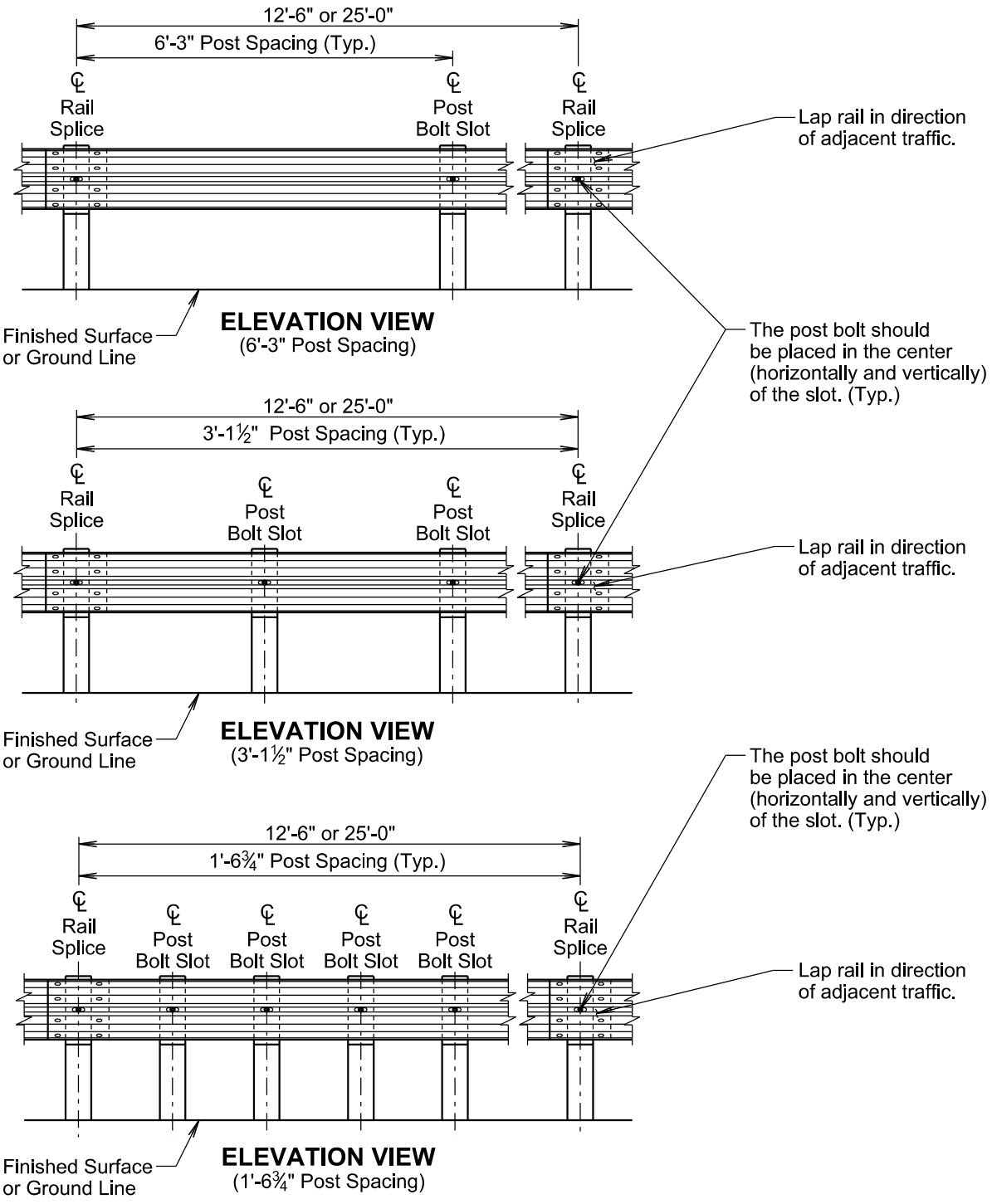
EXPANDED ISOMETRIC VIEW AT MIDSPAN OF W BEAM GUARDRAIL



EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) W BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

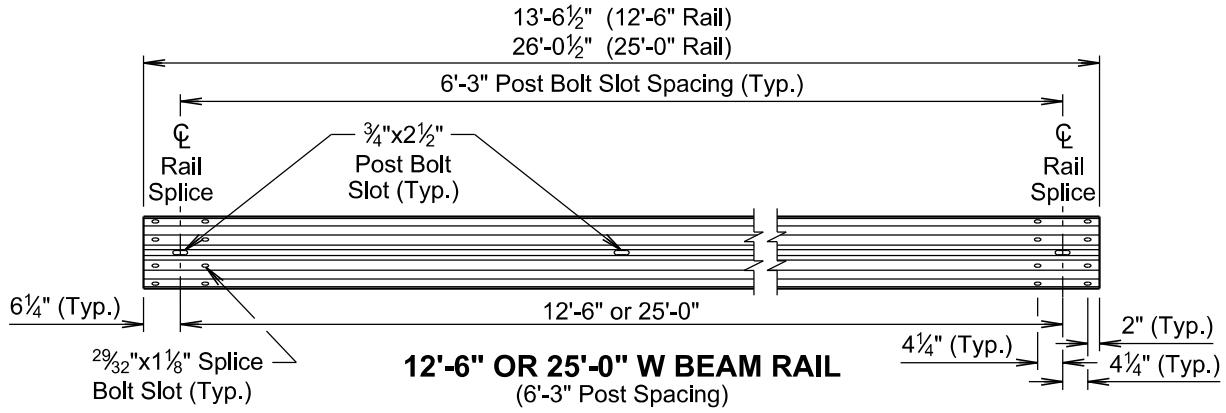
September 14, 2019

Published Date: 2026	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10 Sheet 2 of 5

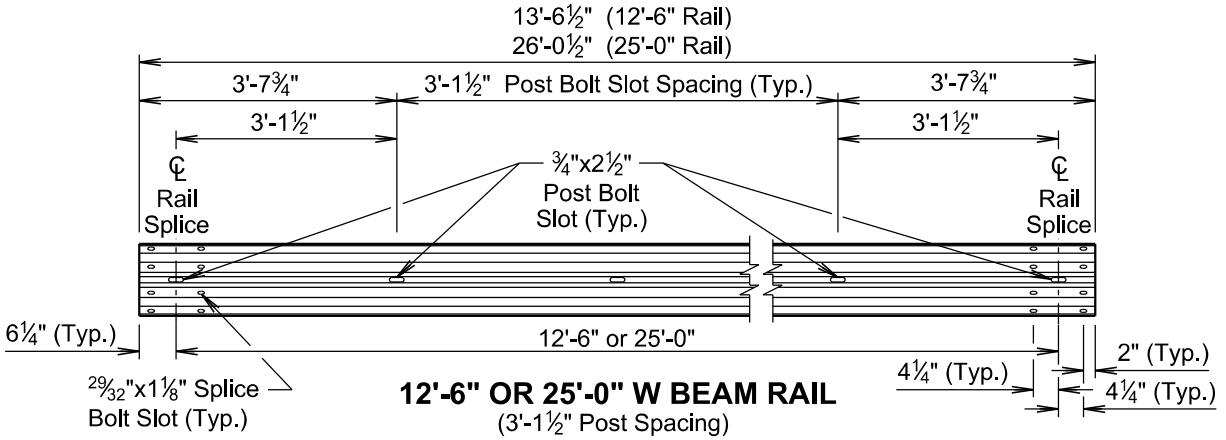


September 14, 2019

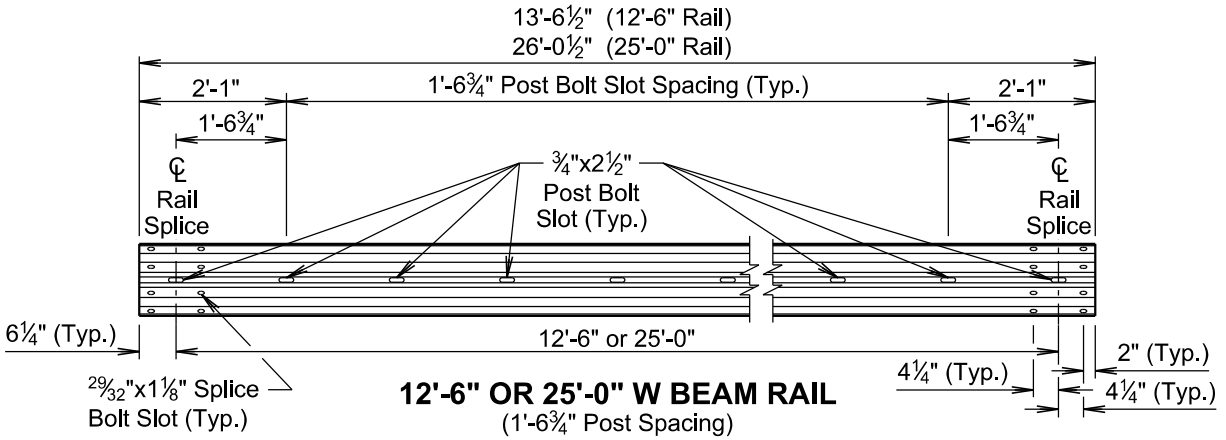
Published Date: 2026	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 3 of 5



12'-6" OR 25'-0" W BEAM RAIL
(6'-3" Post Spacing)



12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" Post Spacing)



12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

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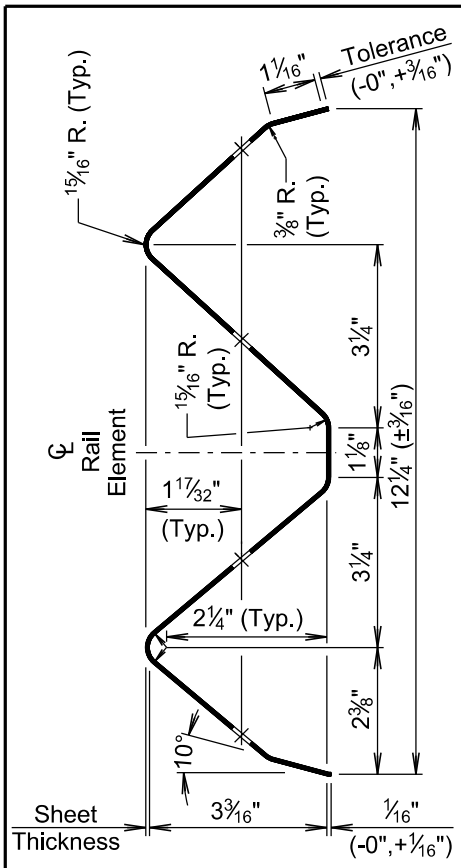
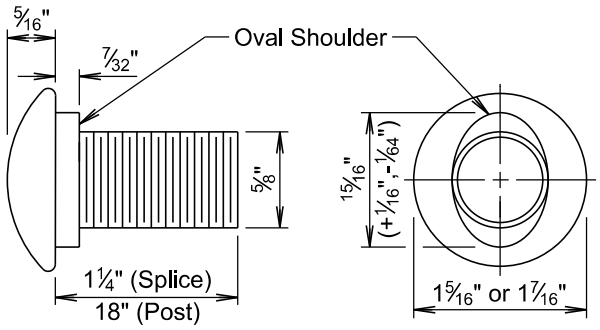
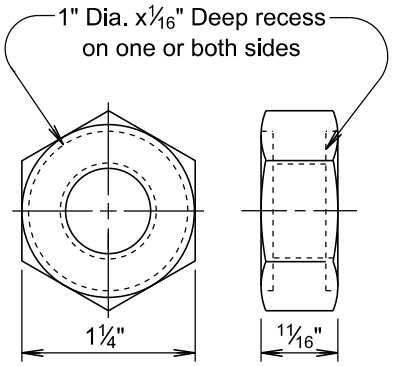
Published Date: 2026	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10 Sheet 4 of 5



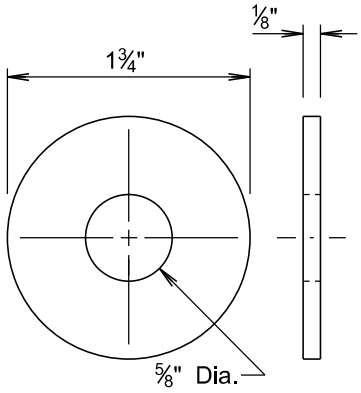
SECTION THROUGH W BEAM RAIL



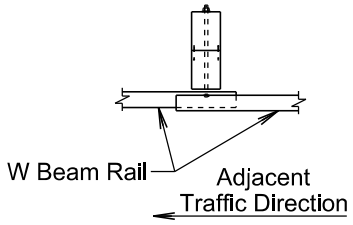
SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)



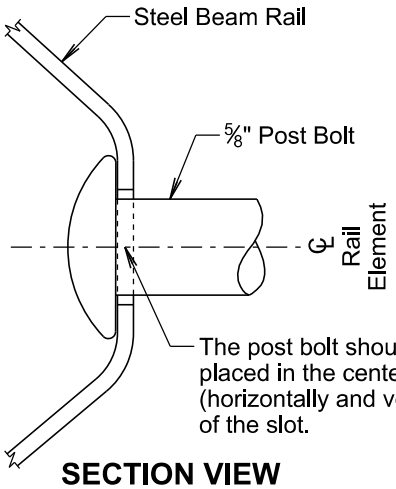
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 1 and 2.)



PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

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Published Date: 2026	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10 Sheet 5 of 5

TYPE AND DETAILS OF MGS						
Type of MGS	W Beam Rail Single or Double (Nested)	Blockout Size	Blockout Material	Post Size	Post Material	Post Spacing
1	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"
1C	Single	6"x12"x14"	Wood	6"x8"x7'-6"	Wood	6'-3"
2	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	3'-1½"
3	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	1'-6¾"
4	Double	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"

STANDARD PLATE REFERENCE	
Type of MGS	See Standard Plate(s)
1	630.20, 630.22
1C	630.20, 630.25
2	630.20
3	630.20
4	630.20

GENERAL NOTES:

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite".

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

Topsoil is not shown in the transverse section drawing on sheet 2 of 6.

All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

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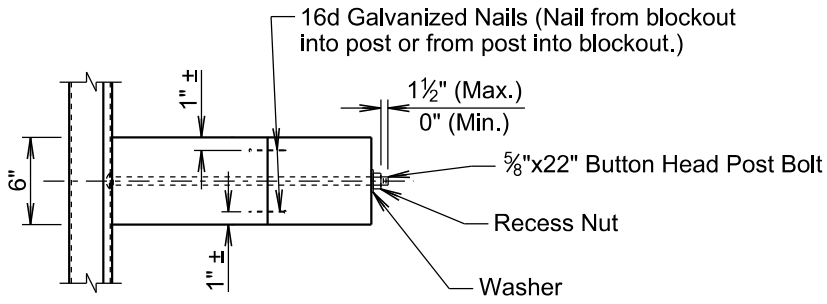
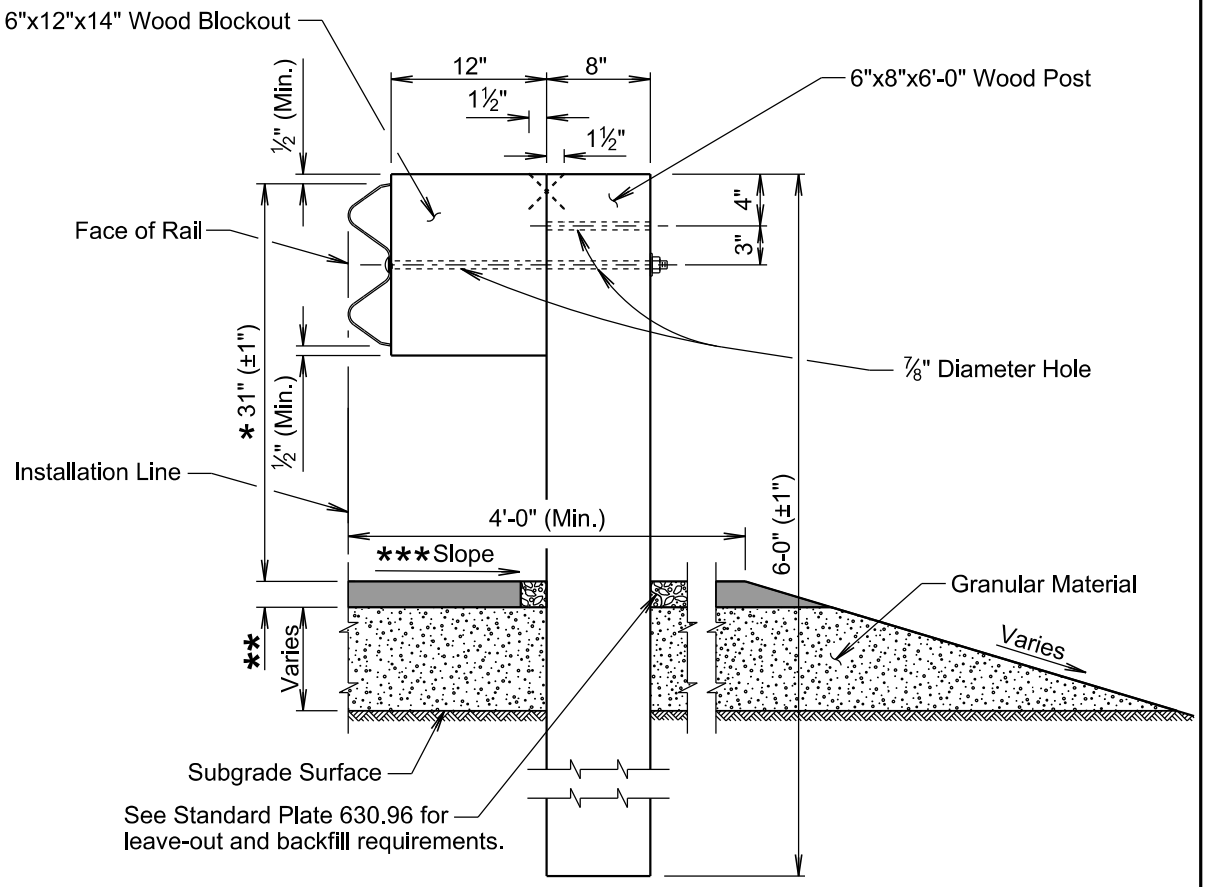
Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 1 of 6



TOP VIEW
(Type 1, 2, or 3 MGS Installation)



TRANSVERSE SECTION
(Type 1, 2, or 3 MGS Installation)

* See Standard Plate 630.99

** 2" asphalt concrete or as specified in the plans.

*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

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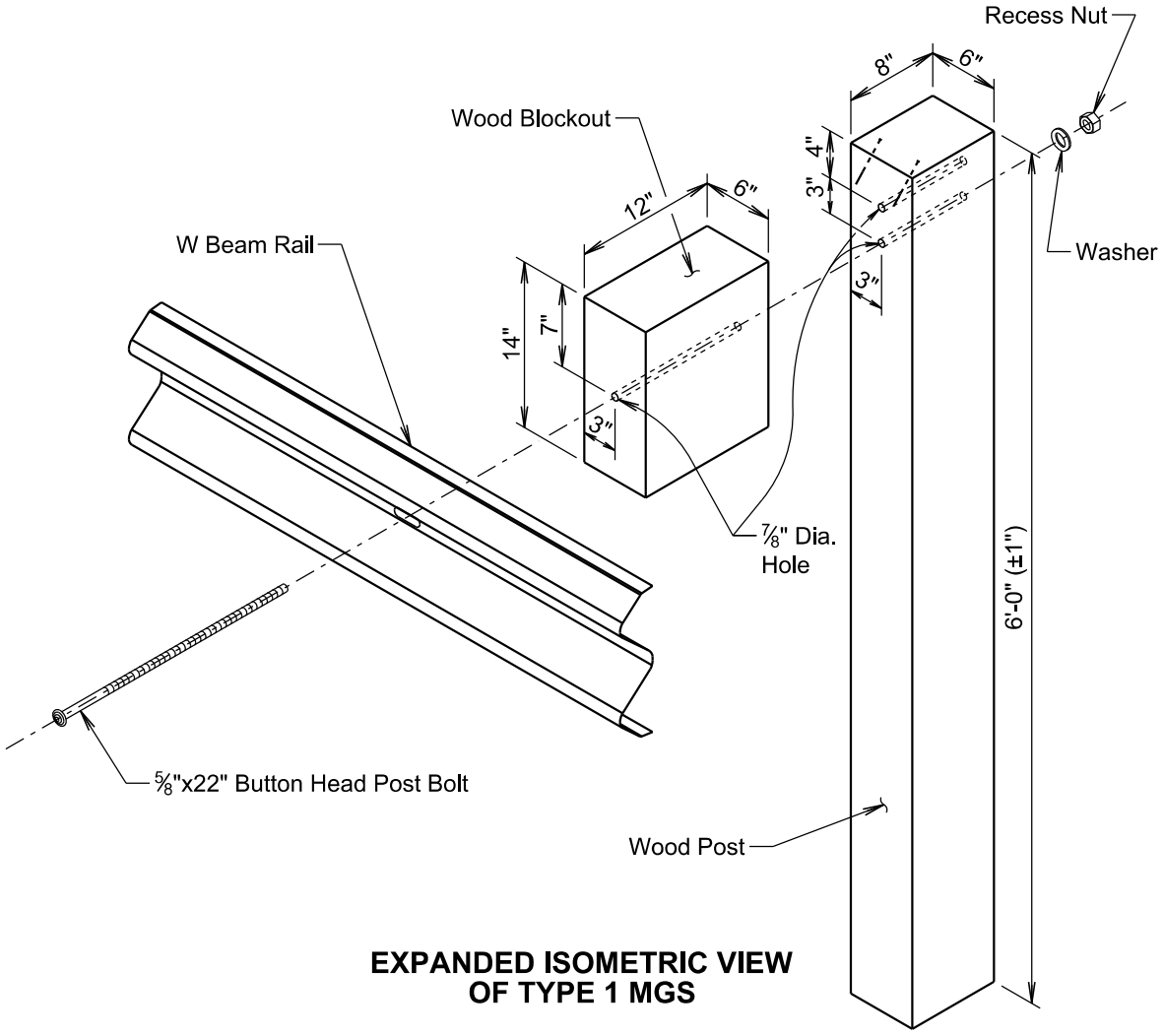
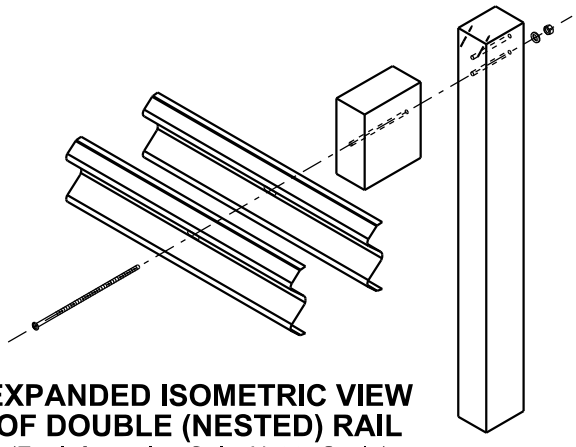
Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 2 of 6



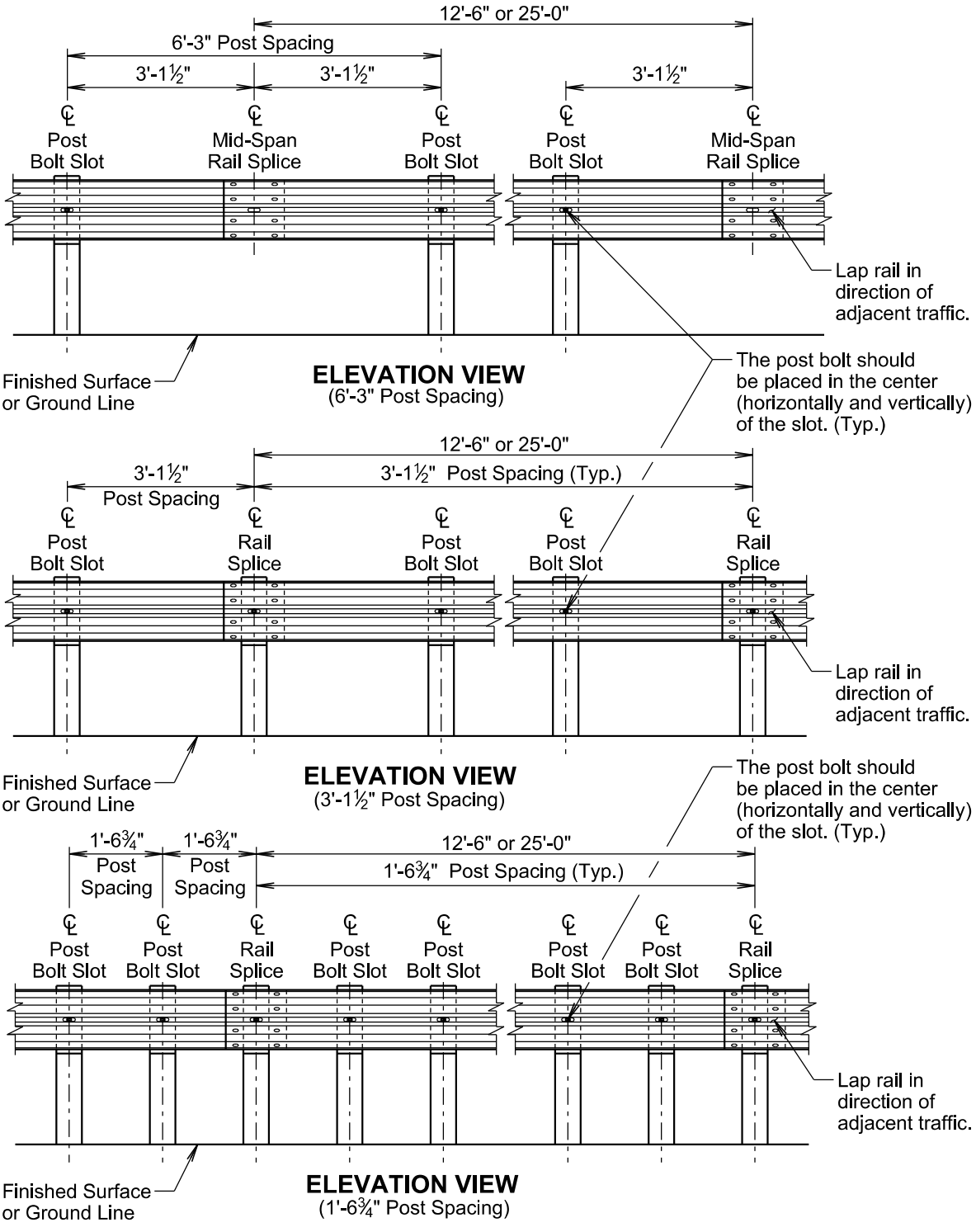
EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS



EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) RAIL
(For Information Only, Not to Scale)

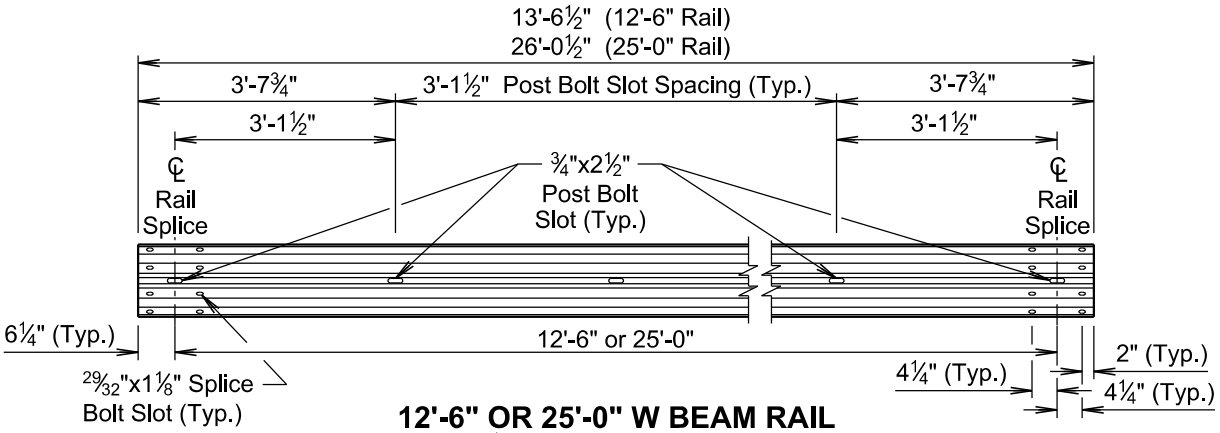
April 8, 2025

Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 3 of 6

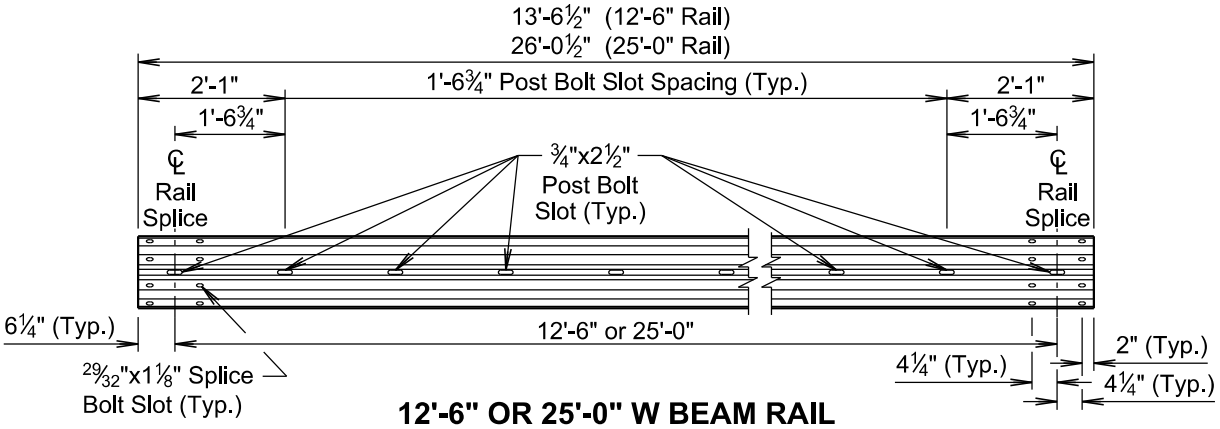


April 8, 2025

Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 4 of 6



12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

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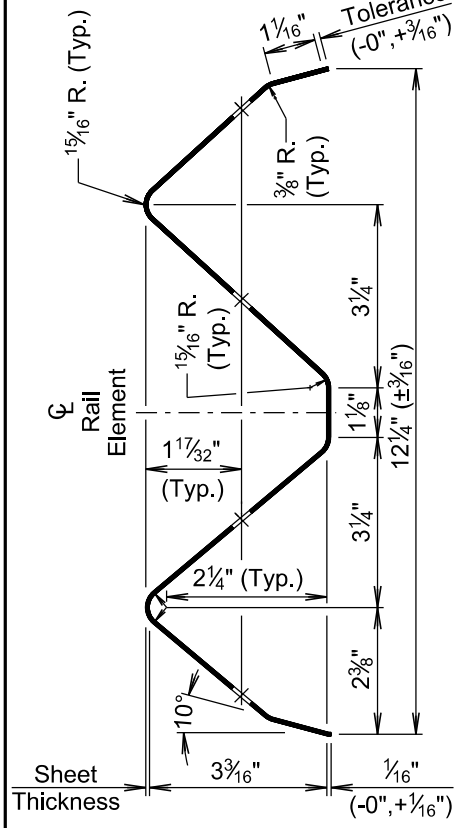
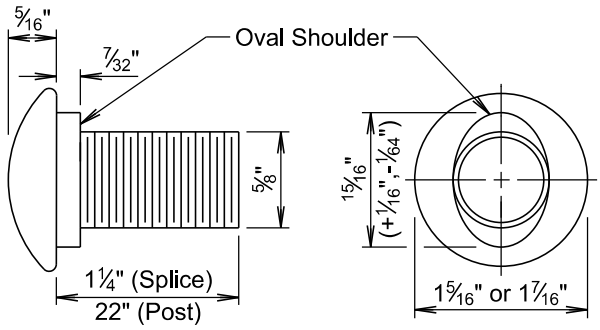
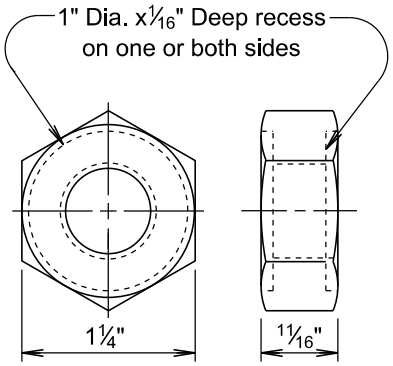
Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 5 of 6



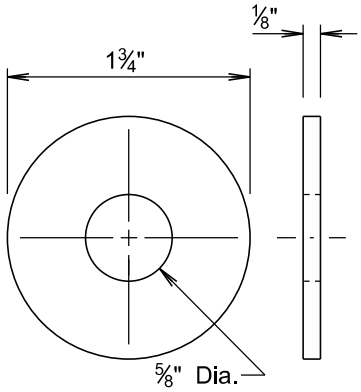
SECTION THROUGH W BEAM RAIL



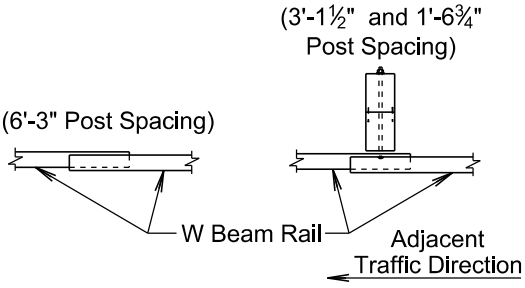
SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)



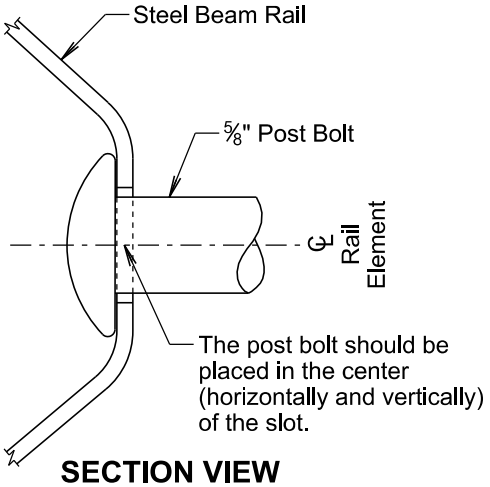
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 2 and 3.)



PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

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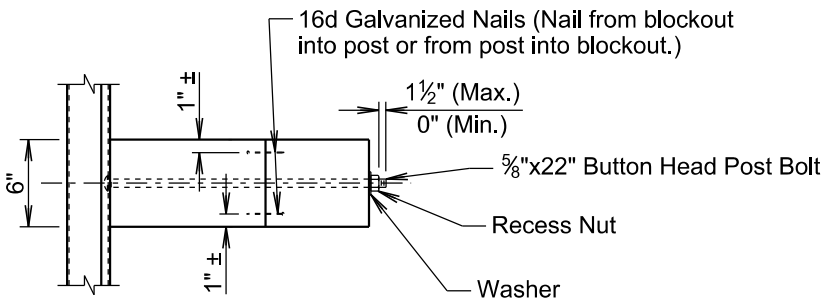
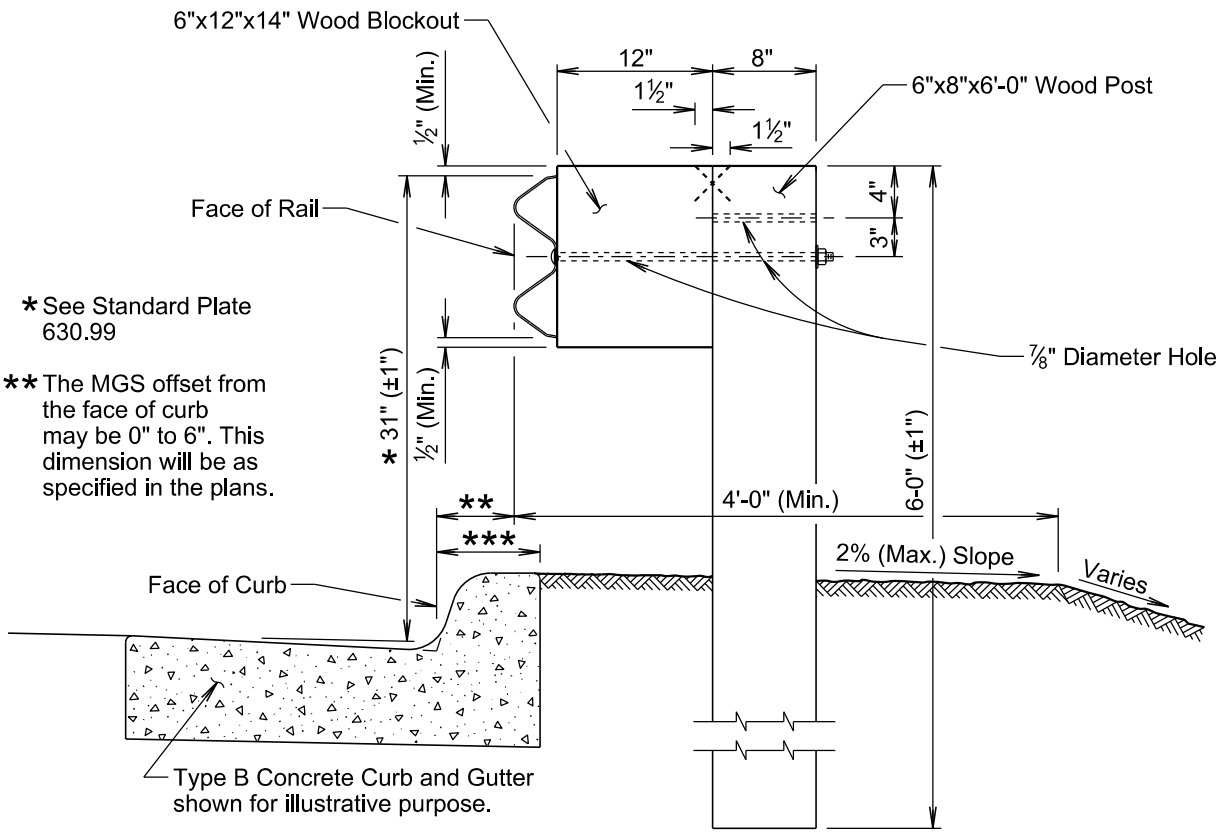
Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 6 of 6

CONCRETE CURB AND GUTTER TYPE	DIMENSION *** (in.)
B and BL	8
D	12
F and FL	10
R	11



TOP VIEW



TRANSVERSE SECTION

GENERAL NOTES:

The guardrail on this standard plate is Type 1 MGS. See standard plate 630.20 for specifications regarding Type 1 MGS.

When PCC pavement or asphalt concrete pavement is adjacent to the post, see standard plate 630.96 for leave-out and backfill requirements.

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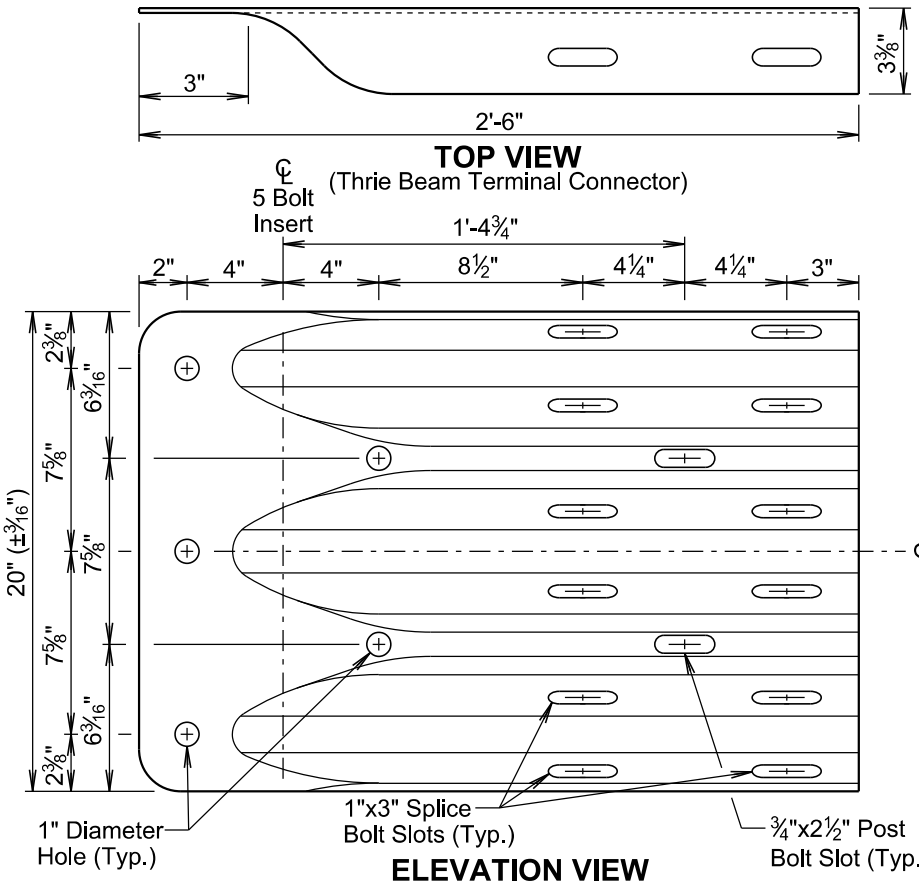
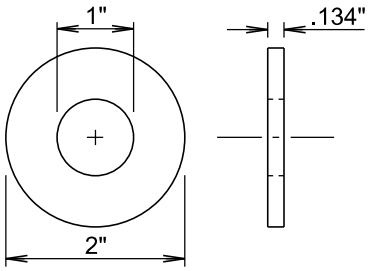
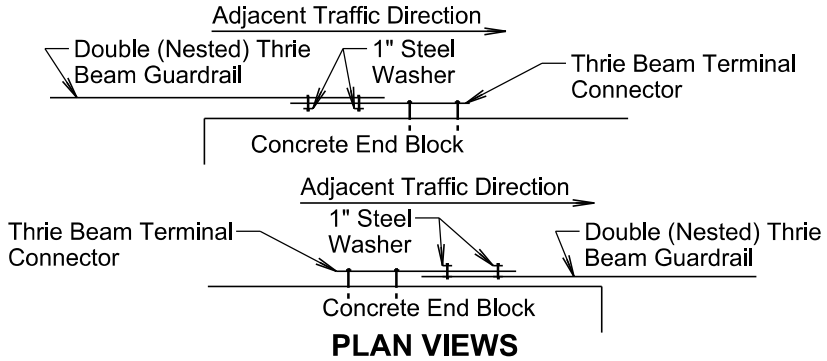
Published Date: 2026	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS) AT CURB AND GUTTER	PLATE NUMBER 630.22 Sheet 1 of 1





1" STEEL WASHER
(12 washers required)



PLAN VIEWS
(Typical Locations of 1" Steel Washers)
(Washers are required at these lap splices)

GENERAL NOTES:

Thrie Beam Terminal Connectors will be 10 gauge.

When the thrie beam terminal connector is used to connect the rail to the bridge or concrete end block, 1" steel washers will be used at the lap splice and the washers will be in direct contact with the 3" slots of the thrie beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.

There will be no separate payment for furnishing and installing the thrie beam terminal connector. All costs for furnishing and installing the thrie beam terminal connector will be incidental to the contract unit price of the respective guardrail item it is attached to.

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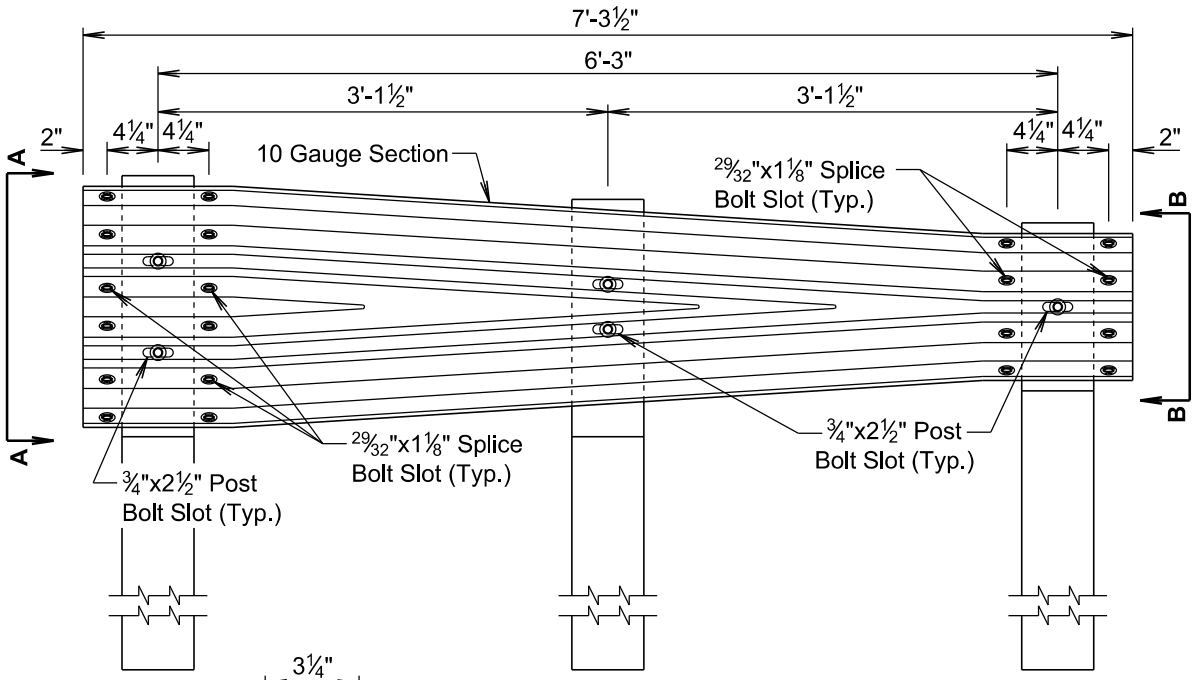
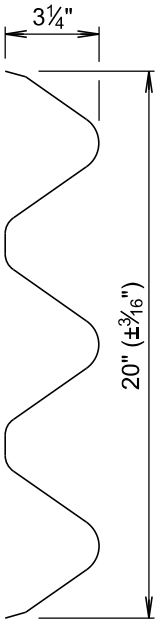
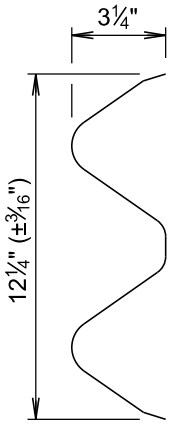
Published Date: 2026	SDDOT	*THRIE BEAM TERMINAL CONNECTOR*	*PLATE NUMBER* 630.47 *Sheet 1 of 1*



ELEVATION VIEW



VIEW A-A



VIEW B-B

GENERAL NOTES:

All costs for furnishing and installing the W beam to thrie beam guardrail transition including labor, equipment, and materials including two posts, two blocks, W beam to thrie beam transition section, and hardware will be incidental to the contract unit price per each for "W Beam to Thrie Beam Guardrail Transition".

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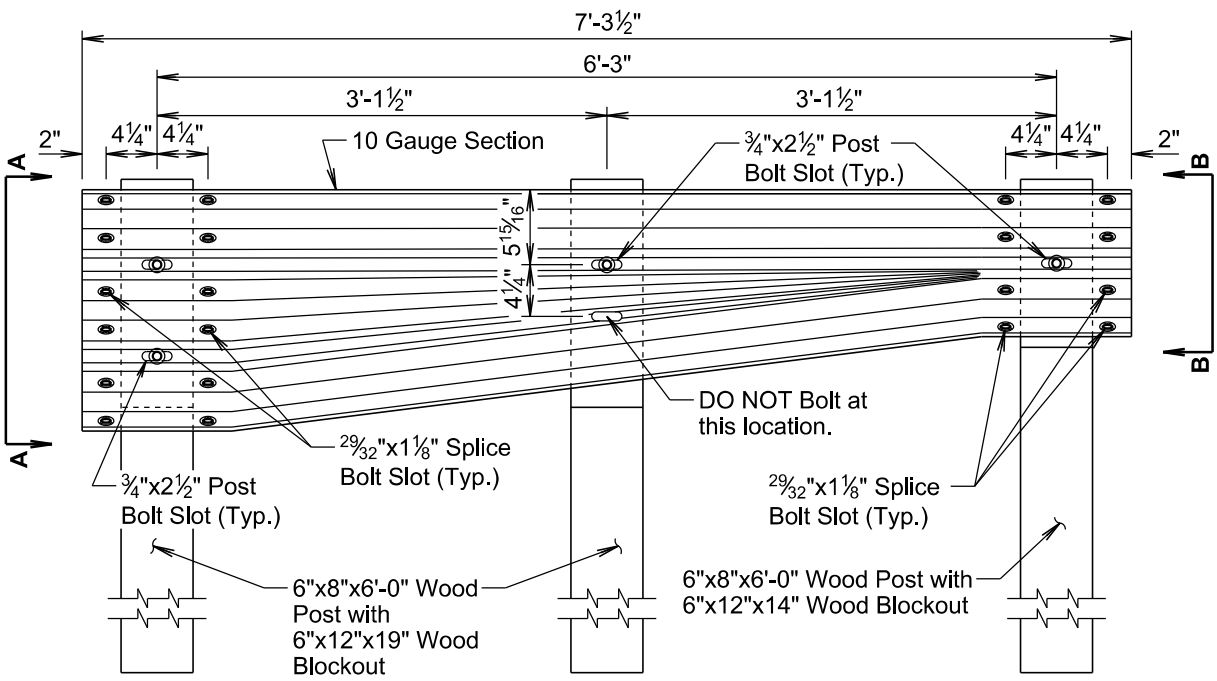
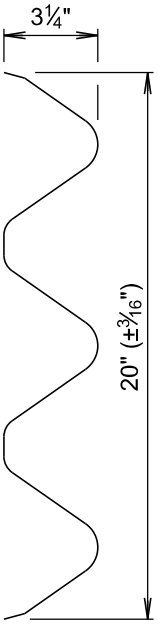
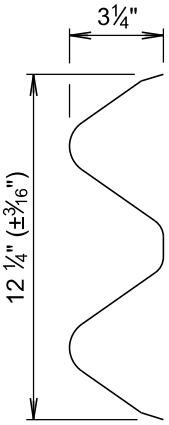
Published Date: 2026	SDDOT	*W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION*	*PLATE NUMBER* 630.48 *Sheet 1 of 1*



ELEVATION VIEW



VIEW A-A



VIEW B-B

GENERAL NOTES:

All costs for furnishing and installing the asymmetrical W beam to thrie beam guardrail transition including labor, equipment, and materials including two posts, two blocks, asymmetrical W beam to thrie beam transition section, and hardware will be incidental to the contract unit price per each for the corresponding guardrail transition contract item.

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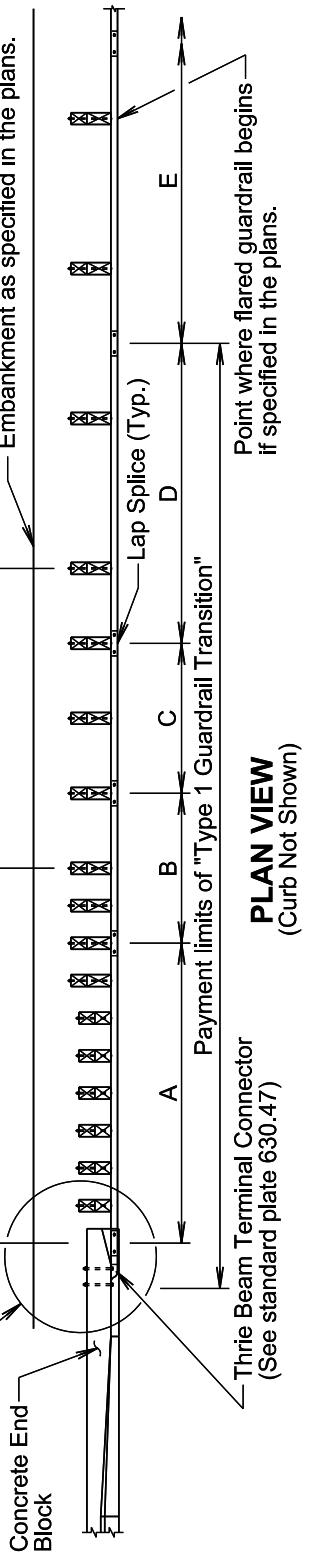
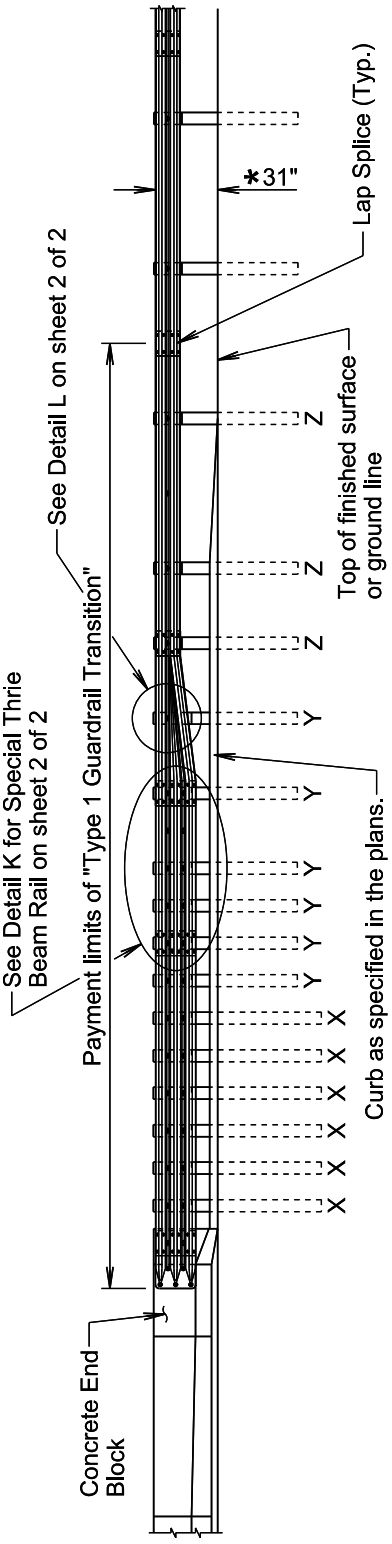
Published Date: 2026	SDDOT	ASYMMETRICAL W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.49 Sheet 1 of 1



PLAN VIEW
(Curb Not Shown)

A: 12'-6" Straight Double (Nested) Class A Thrie Beam Guardrail with Wood Posts (See standard plate 630.01)
B: 6'-3" Straight Single Class A Thrie Beam Guardrail with Wood Posts (See Detail K on sheet 2 of 2)
C: 6'-3" Asymmetrical W Beam to Thrie Beam Guardrail Transition Section with Wood Posts (See standard plate 630.49)
D: 12'-6" Straight Type 4 MGS (See standard plate 630.20)
E: Straight Type 1 MGS or as specified in the plans (See standard plate 630.20)



ELEVATION VIEW

*See standard plate 630.99

X: 6"x8"x7'-0" Wood Post and 6"x8"x19" Wood Blockout
Y: 6"x8"x6'-0" Wood Post and 6"x12"x19" Wood Blockout
Z: 6"x8"x6'-0" Wood Post and 6"x12"x14" Wood Blockout

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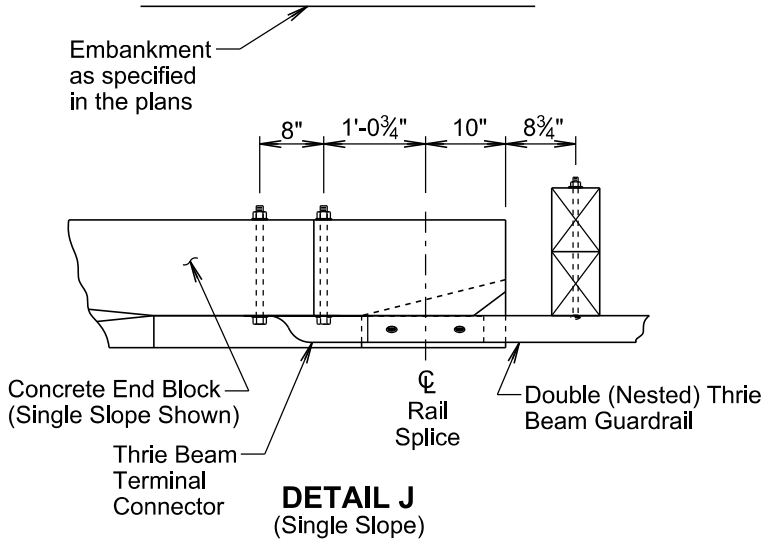
Published Date: 2026

SDDOT

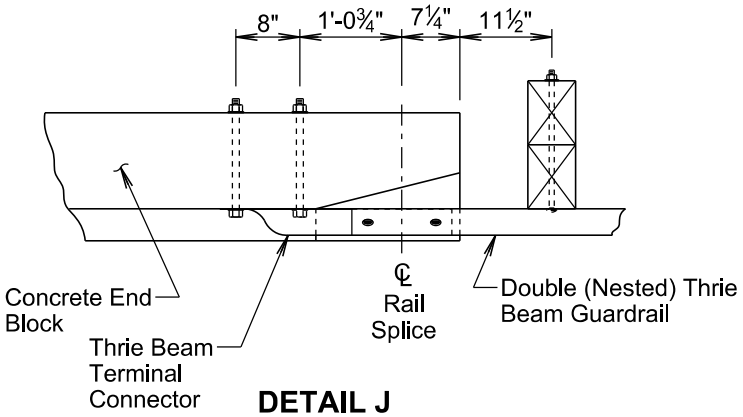
TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))

PLATE NUMBER
630.50

Sheet 1 of 3

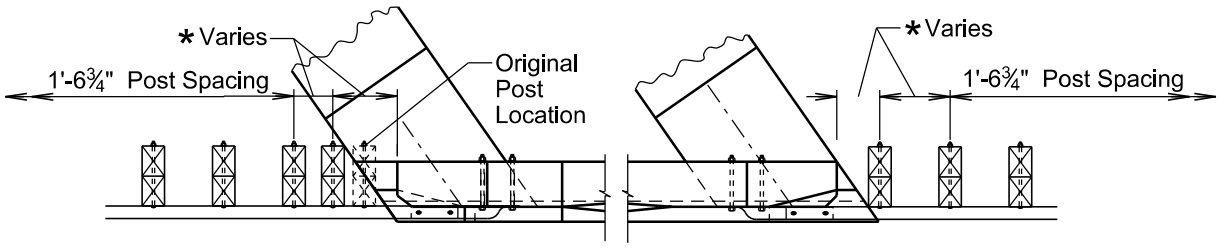


DETAIL J
(Single Slope)



DETAIL J
(Jersey Barrier)

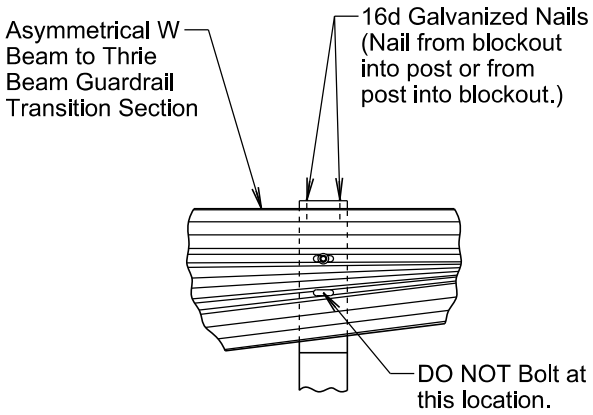
*Due to the skew of the bridge, the placement of the first "X" post and blockout will need to be moved from the original location. It will need to be installed as close as possible to the wingwall provided that the second "X" post and blockout is located in it's original location.



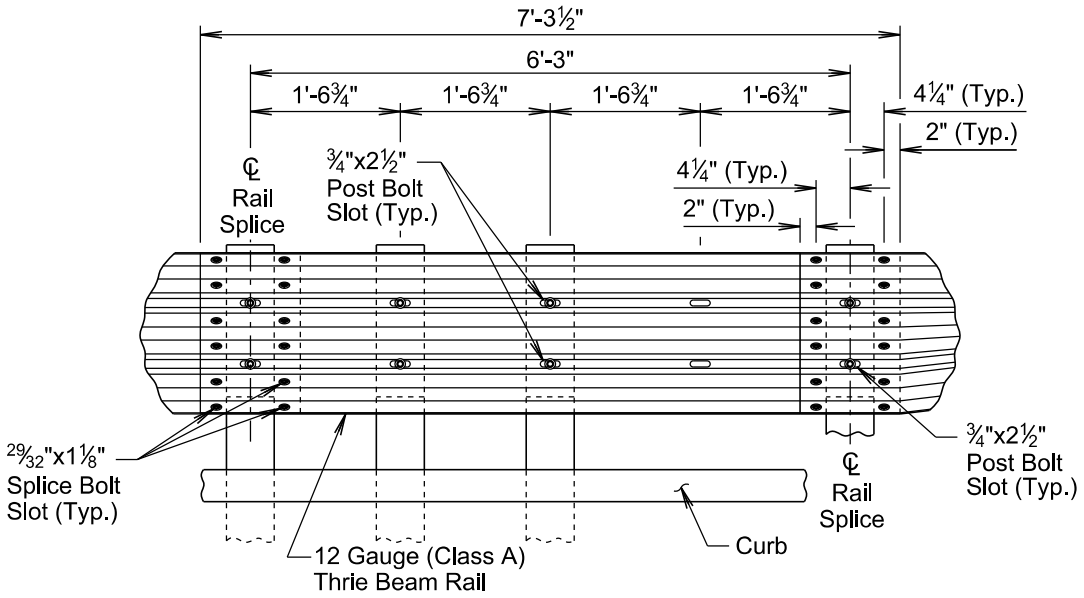
DETAIL J
(Skewed Bridge)

April 8, 2025

Published Date: 2026	SDDOT	*TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))*	PLATE NUMBER 630.50 Sheet 2 of 3



DETAIL L



DETAIL K
(Special Thrie Beam Rail)

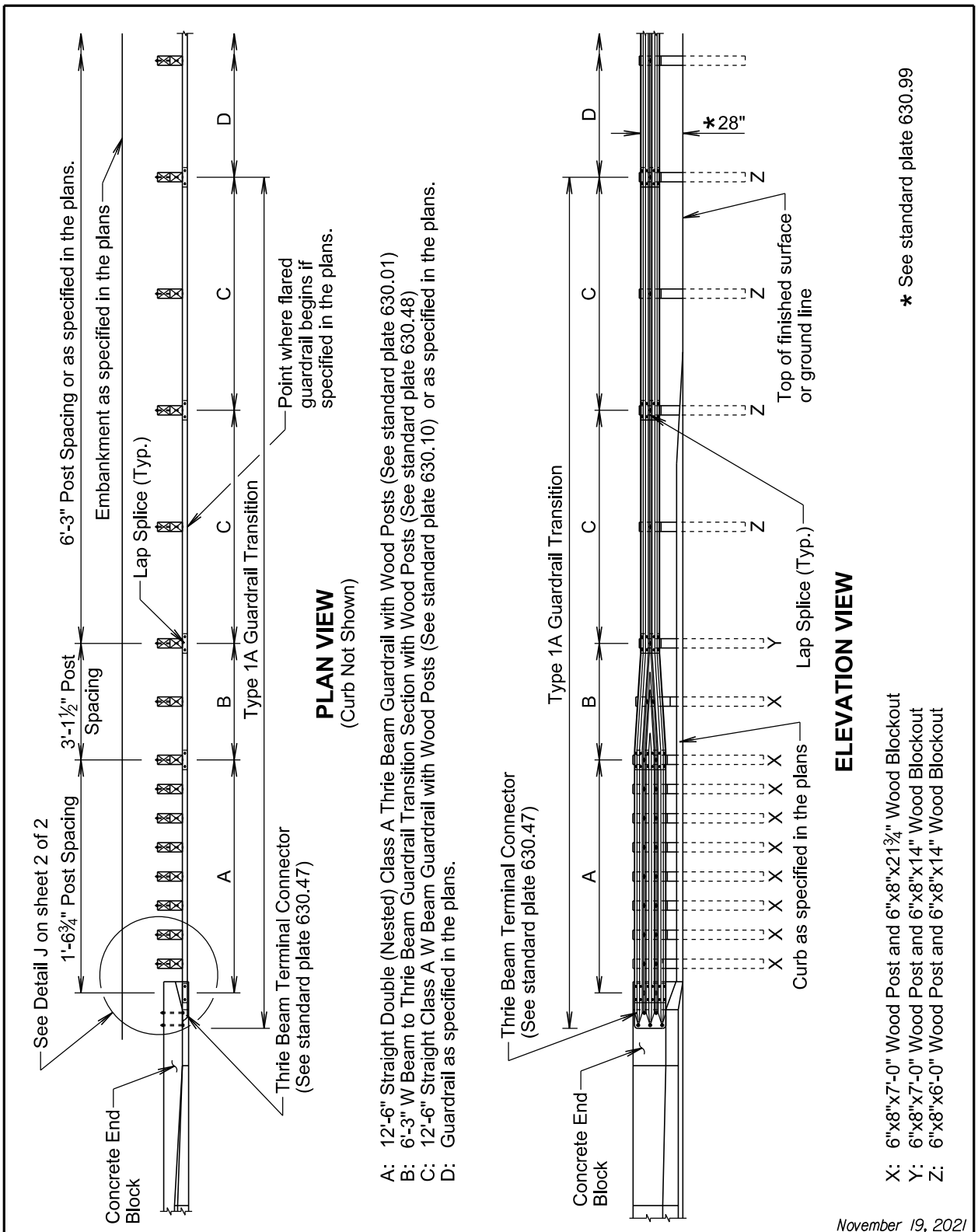
GENERAL NOTES:

Throughout the type 1 guardrail transition, slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for furnishing and installing the type 1 guardrail transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, hardware, and incidentals will be included in the contract unit price per each for "Type 1 Guardrail Transition".

April 8, 2025

Published Date: 2026	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50 Sheet 3 of 3



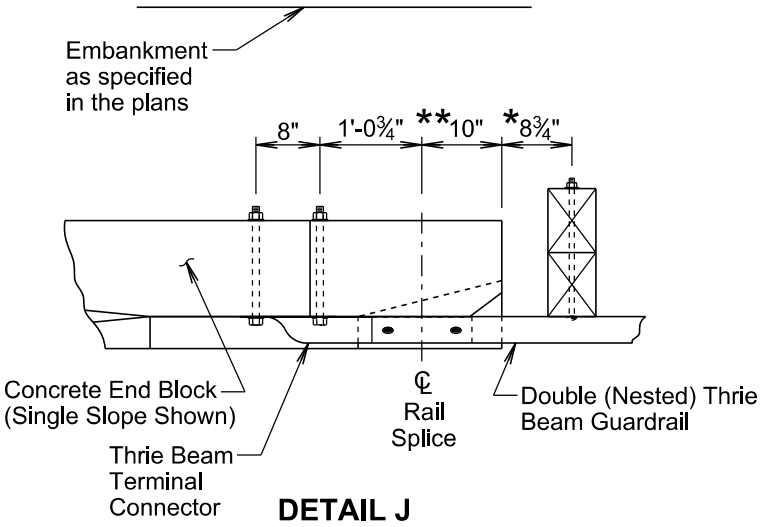
Published Date: 2026

SDDOT

TYPE 1A GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)

PLATE NUMBER
630.52

Sheet 1 of 2



DETAIL J

Jersey Barrier Dimensions are **7¼" and *11½"

GENERAL NOTES:

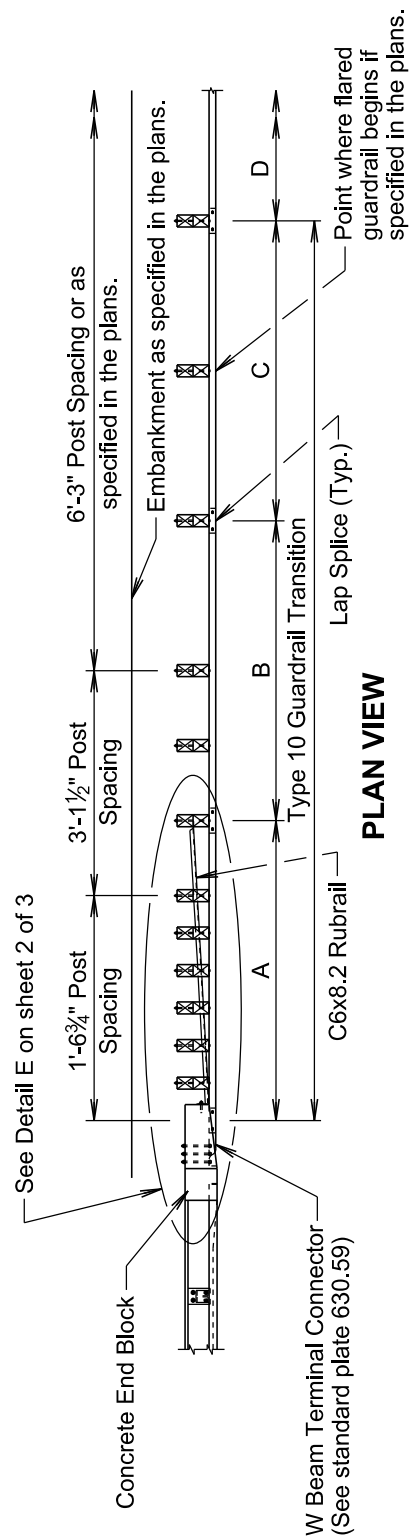
Throughout the type 1A guardrail transition, slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for furnishing and installing the straight double class A thrie beam guardrail including labor, equipment, and materials including the thrie beam rails, posts, blockouts, thrie beam terminal connector, and hardware will be incidental to the contract unit price per foot for "Straight Double Class A Thrie Beam Guardrail with Wood Posts".

All costs for furnishing and installing the type 1A guardrail transition including labor, equipment, and materials will be included in the contract unit price for the respective guardrail contract items.

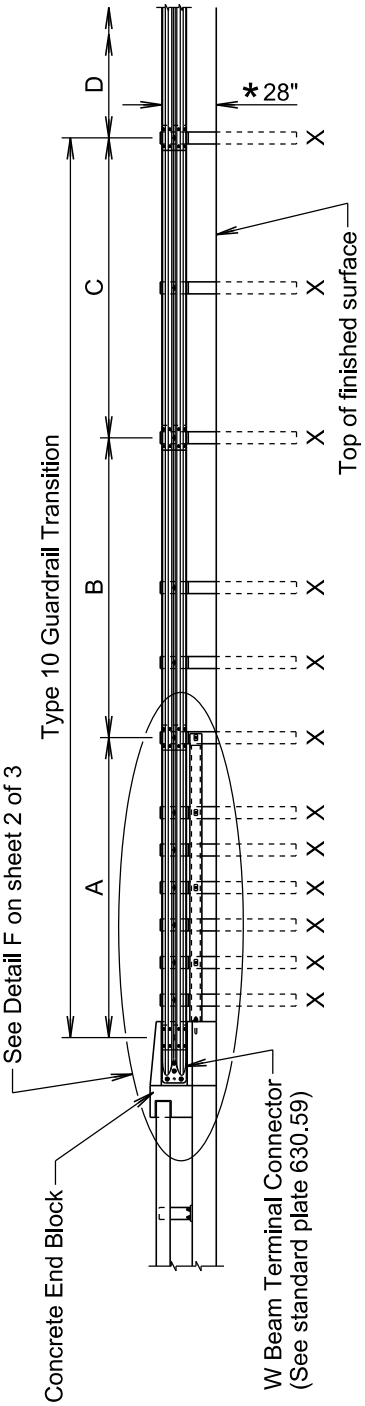
November 19, 2021

Published Date: 2026	SDDOT	TYPE 1A GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)	PLATE NUMBER 630.52 Sheet 2 of 2



PLAN VIEW

A: 12'-6" Straight Double (Nested) Class B W Beam Guardrail with Wood Posts (See standard plate 630.10)
B: 12'-6" Straight Class B W Beam Guardrail with Wood Posts (See standard plate 630.10)
C: 12'-6" Straight Class A W Beam Guardrail with Wood Posts (See standard plate 630.10) or as specified in the plans.
D: Guardrail as specified in the plans.



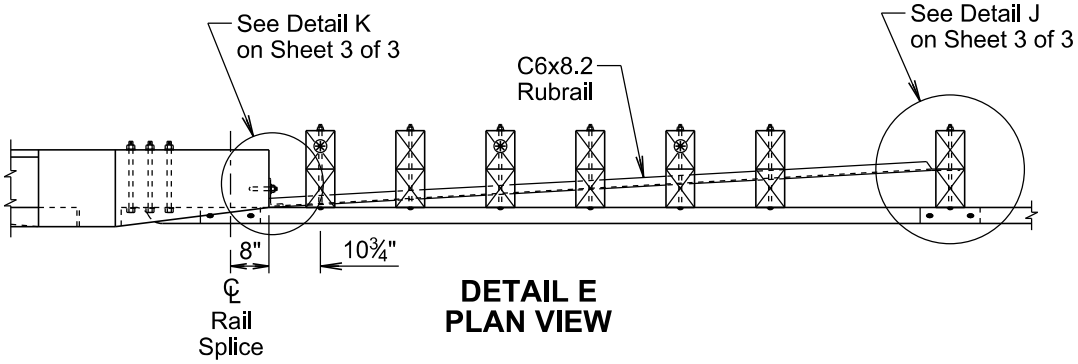
ELEVATION VIEW

* See standard plate 630.99

X: 6"x8"x6'-0" Wood Post and 6"x8"x14" Wood Blockout

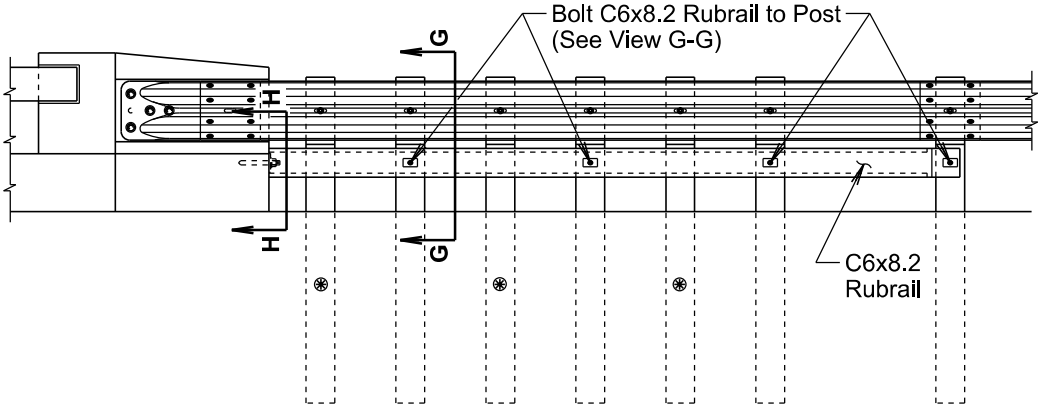
September 14, 2019

Published Date: 2026	SDDOT	TYPE 10 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)	PLATE NUMBER 630.60 Sheet 1 of 3

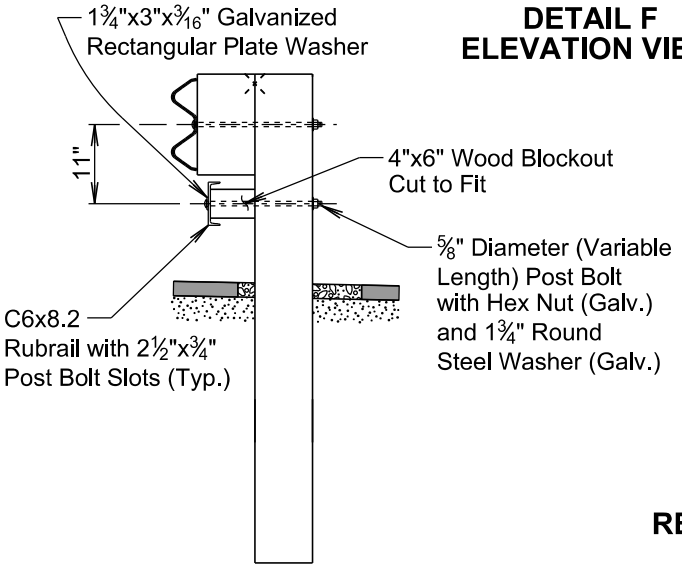


DETAIL E
PLAN VIEW

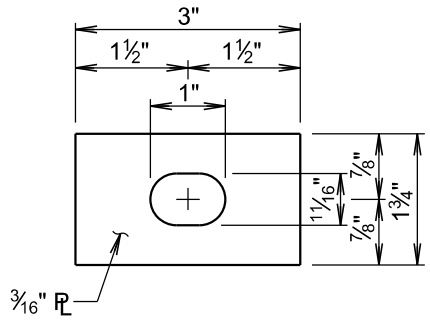
⊛ Rubrail will not be attached to these posts.



DETAIL F
ELEVATION VIEW



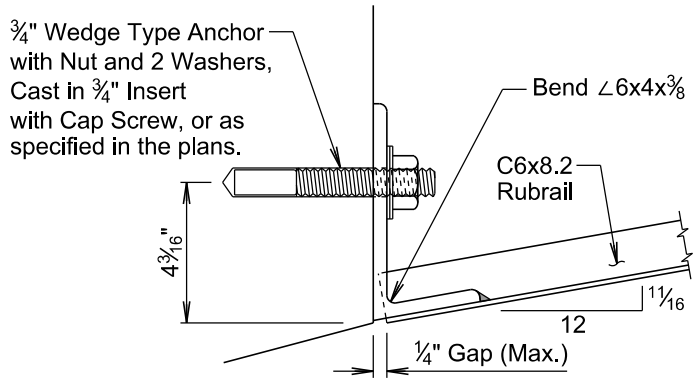
VIEW G-G



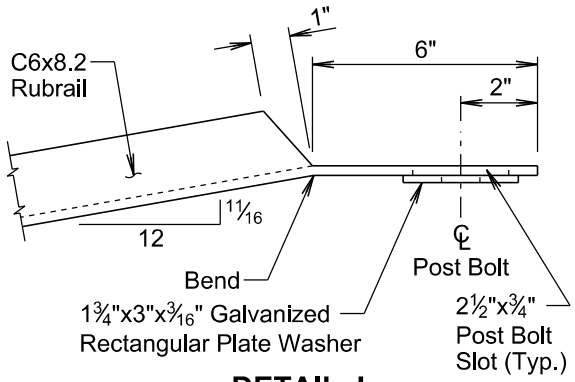
RECTANGULAR PLATE WASHER

September 14, 2019

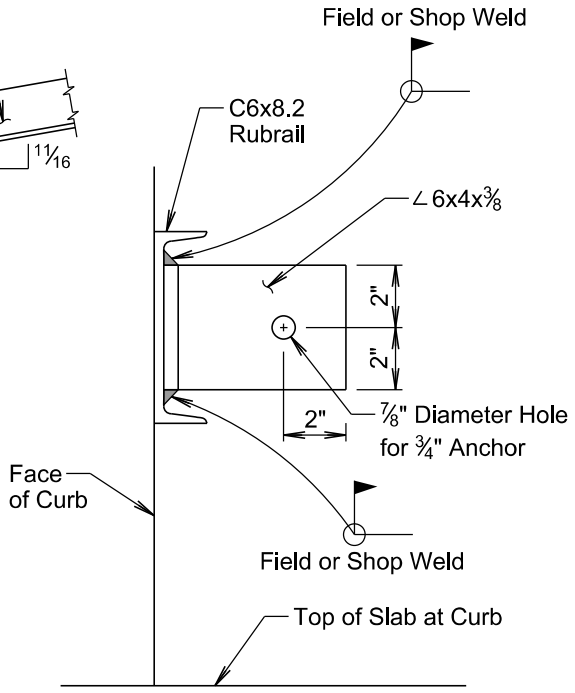
Published Date: 2026	SDDOT	TYPE 10 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)	PLATE NUMBER 630.60 Sheet 2 of 3



DETAIL K
(Double Class B Rail Not Shown)



DETAIL J
(Post, Blockout, Post Bolt, and Rail Not Shown)



VIEW H-H
(Anchor and Rail Not Shown)

GENERAL NOTES:

Throughout the type 10 guardrail transition, slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

The rubrail steel will be in conformance with ASTM A36 and will be galvanized after fabrication in conformance with ASTM A123. If pre-galvanized steel members are used, all cuts and welds will be coated with an approved galvanizing paint.

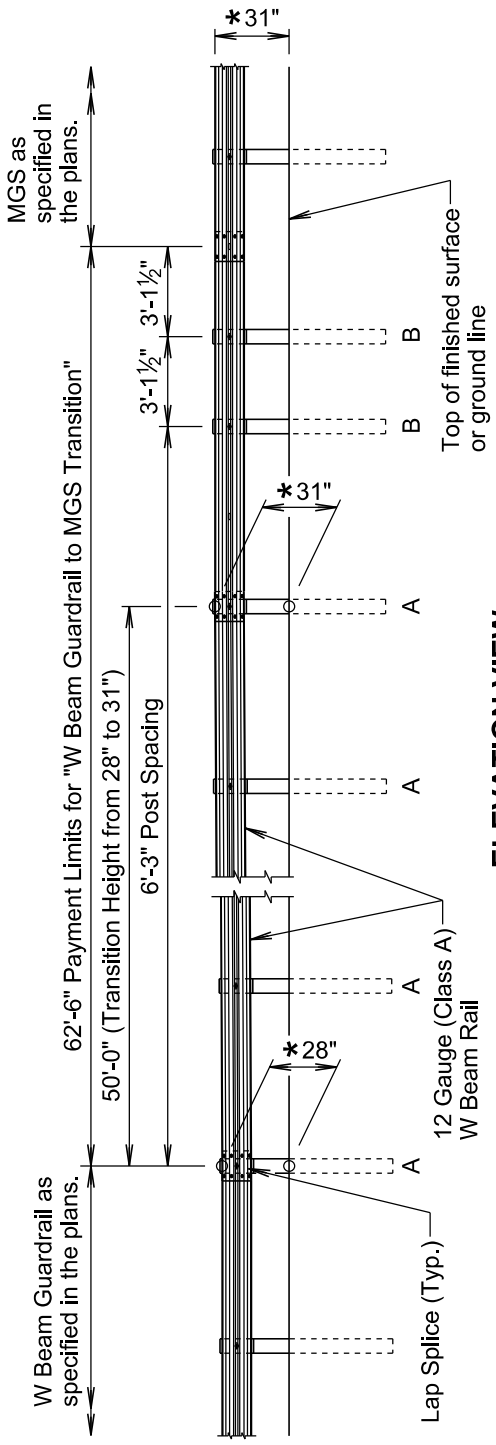
The wedge type anchor bolt, nut, and washers will be hot dipped galvanized or made of a corrosion resistent material. The wedge type anchor will be capable of sustaining an ultimate load in tension or shear of 17,000 pounds when the anchor is set in 4,500 psi compressive strength concrete. The anchor will be installed according to the manufacturer's recommendations. The Contractor will obtain certification from the manufacturer that the anchor meets the tensile and shear requirements and will submit the certification to the Engineer. The cost for furnishing and installing the wedge type anchor, nut, and washers will be incidental to the contract unit price per foot for "Rubrail".

All costs for furnishing and installing the straight double class B W beam guardrail including labor, equipment, and materials including the W beam rails, posts, blockouts, W beam terminal connector, and hardware will be incidental to the contract unit price per foot for "Straight Double Class B W Beam Guardrail with Wood Posts".

All costs for furnishing and installing the type 10 guardrail transition including labor, equipment, and materials will be included in the contract unit price for the respective guardrail contract items.

September 14, 2019

Published Date: 2026	SDDOT	*TYPE 10 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)*	PLATE NUMBER 630.60 Sheet 3 of 3



ELEVATION VIEW

A: 6"x8"x 6'-0" Wood Post and 6"x8"x14" Wood Blockout (See standard plate 630.10)
B: 6"x8"x 6'-0" Wood Post and 6"x12"x14" Wood Blockout (See standard plate 630.20)

* See standard plate 630.99

GENERAL NOTES:

All costs for furnishing and installing the W beam guardrail to MGS transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, hardware, and incidentals will be included in the contract unit price per each for "W Beam Guardrail to MGS Transition".

September 14, 2019

Published Date: 2026	SDDOT	W BEAM GUARDRAIL TO MGS (MIDWEST GUARDRAIL SYSTEM) TRANSITION	PLATE NUMBER 630.64 Sheet 1 of 1

** See standard plate 632.40 for delineation.

▢ 2" Asphalt concrete surfacing with variable thickness granular material or as specified in the plans.

① Same inslope as mainline inslope or as specified in the plans.

② 4:1 inslope or as specified in the plans.

③ Inslope as specified in the plans.

④ Same slope as roadway cross slope or as specified in the plans. Slope will not be steeper than a 10:1 slope.

GENERAL NOTES:

The flared guardrail end terminals above are for illustrative purpose only.

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition will change 100 feet for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 200 feet. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200 feet.

⊗ The installation reference line for flared guardrail end terminals will always be parallel to the roadway.

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite."

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

April 8, 2025

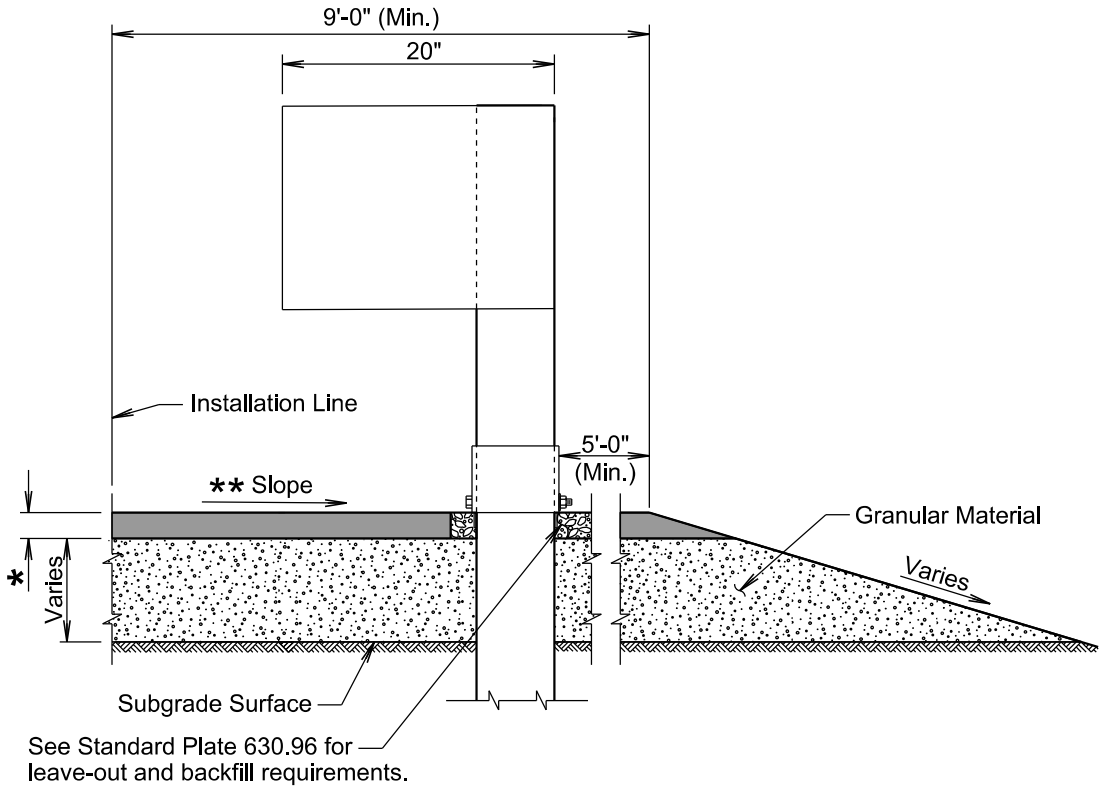
Published Date: 2026

SDDOT

EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH FLARED END TERMINAL

PLATE NUMBER
630.87

Sheet 1 of 2



TRANSVERSE SECTION

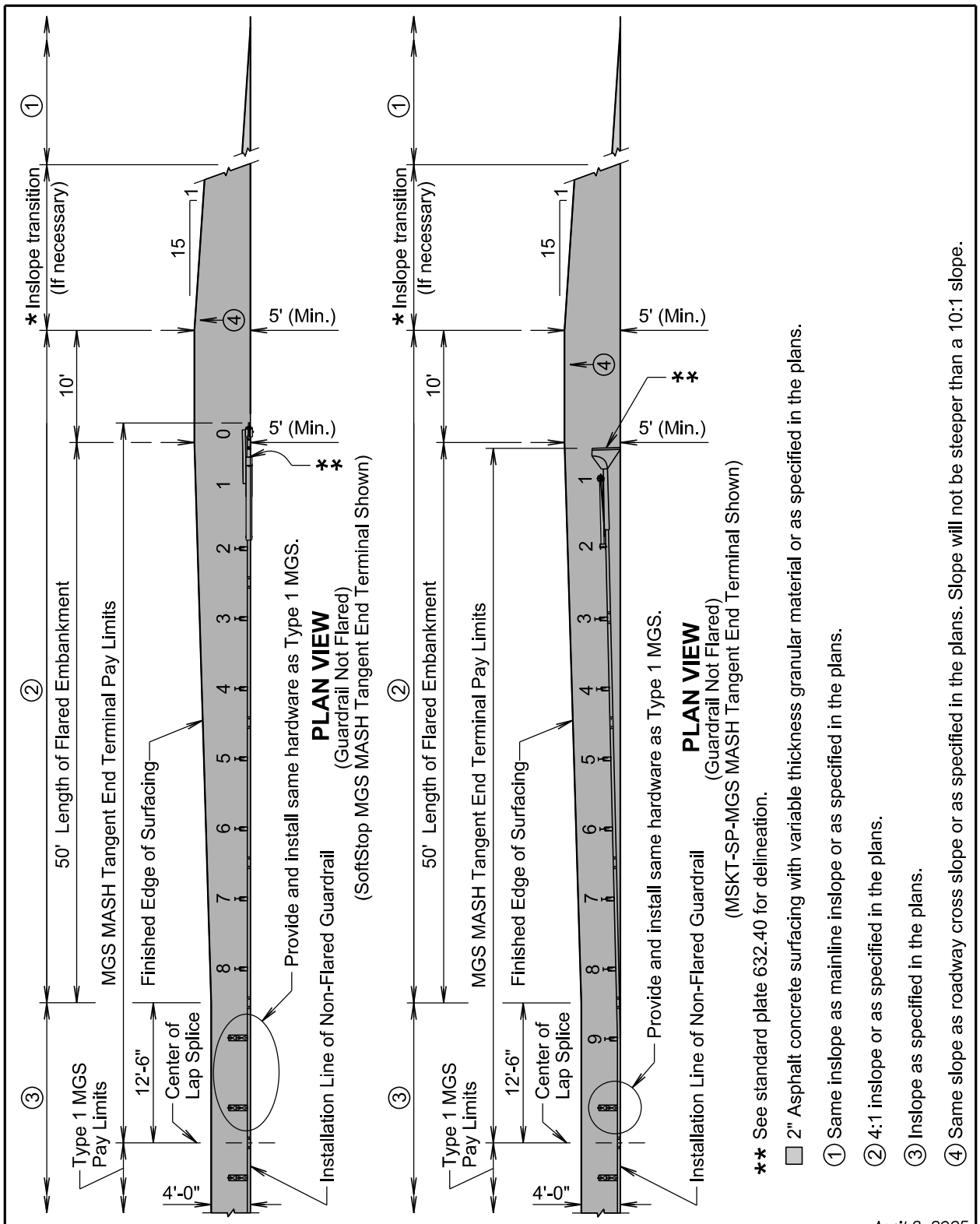
(MFLEAT MGS Flared End Terminal Shown)

* 2" asphalt concrete or as specified in the plans.

** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

April 8, 2025

Published Date: 2026	SDDOT	EMBANKMENT, SURFACING AND PAYMENT LIMITS FOR MGS MASH FLARED END TERMINAL	PLATE NUMBER 630.87 Sheet 2 of 2



** See standard plate 632.40 for delineation.

☐ 2" Asphalt concrete surfacing with variable thickness granular material or as specified in the plans.

① Same inslope as mainline inslope or as specified in the plans.

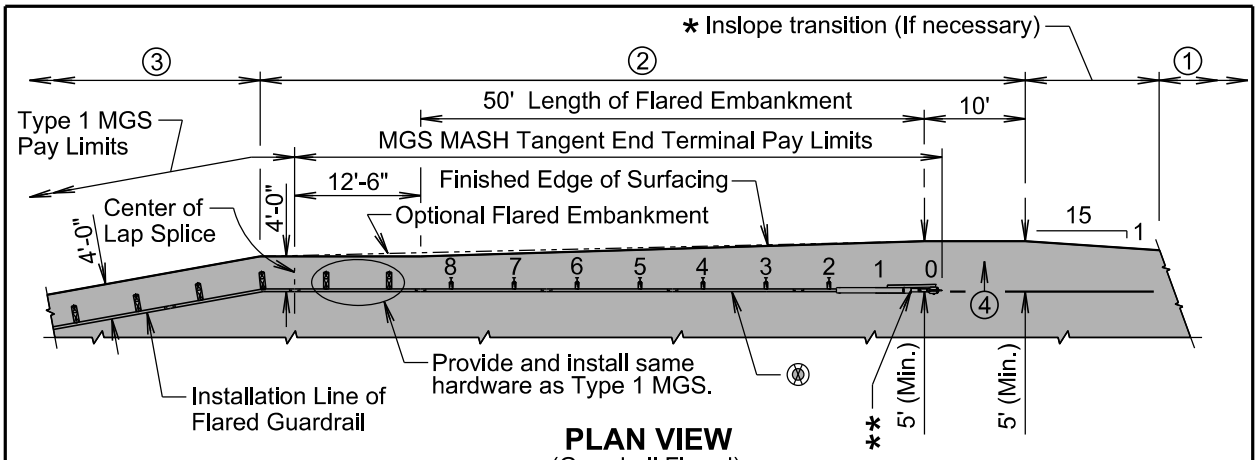
② 4:1 inslope or as specified in the plans.

③ Inslope as specified in the plans.

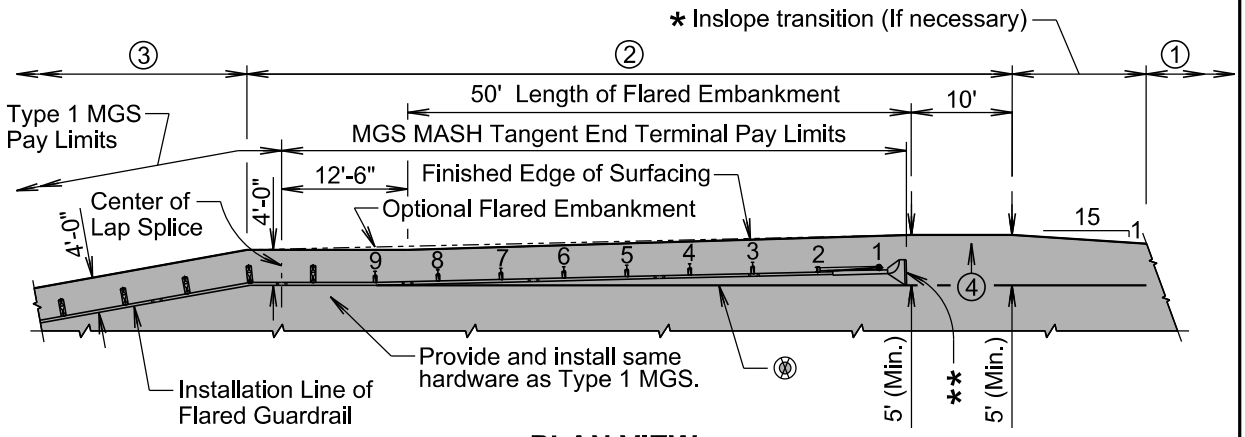
④ Same slope as roadway cross slope or as specified in the plans. Slope will not be steeper than a 10:1 slope.

April 8, 2025

Published Date: 2026	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89 Sheet 1 of 3



PLAN VIEW
(Guardrail Flared)
(SoftStop MGS MASH Tangent End Terminal Shown)



PLAN VIEW
(Guardrail Flared)
(MSKT-SP-MGS MASH Tangent End Terminal Shown)

GENERAL NOTES:

The MGS MASH tangent end terminals above are for illustrative purpose only. Pay limit length of the MGS MASH tangent end terminal is 62'-6".

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition will change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

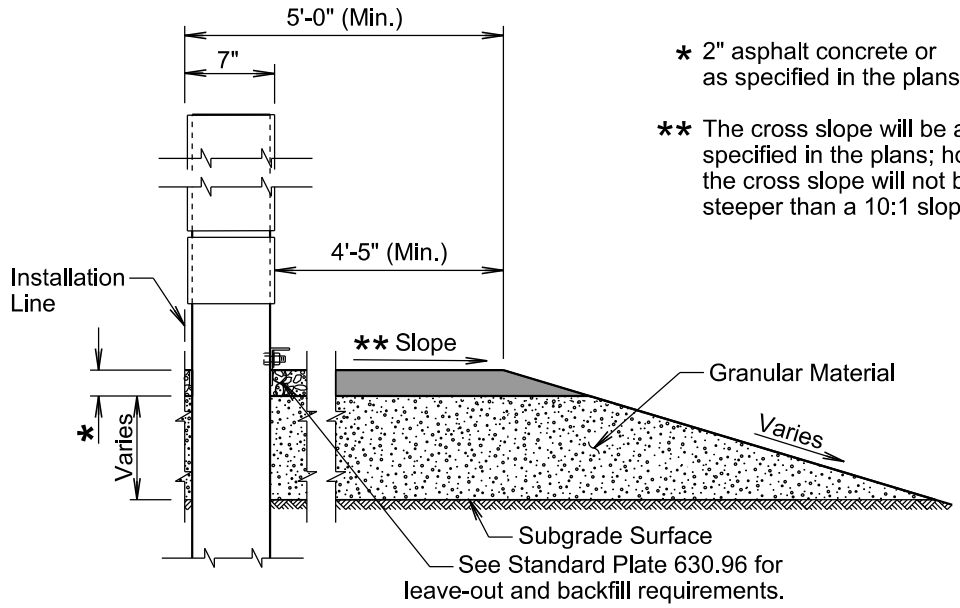
Ⓧ The installation reference line for MGS MASH tangent end terminals will always be parallel to the roadway.

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite."

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

April 8, 2025

Published Date: 2026	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89 Sheet 2 of 3

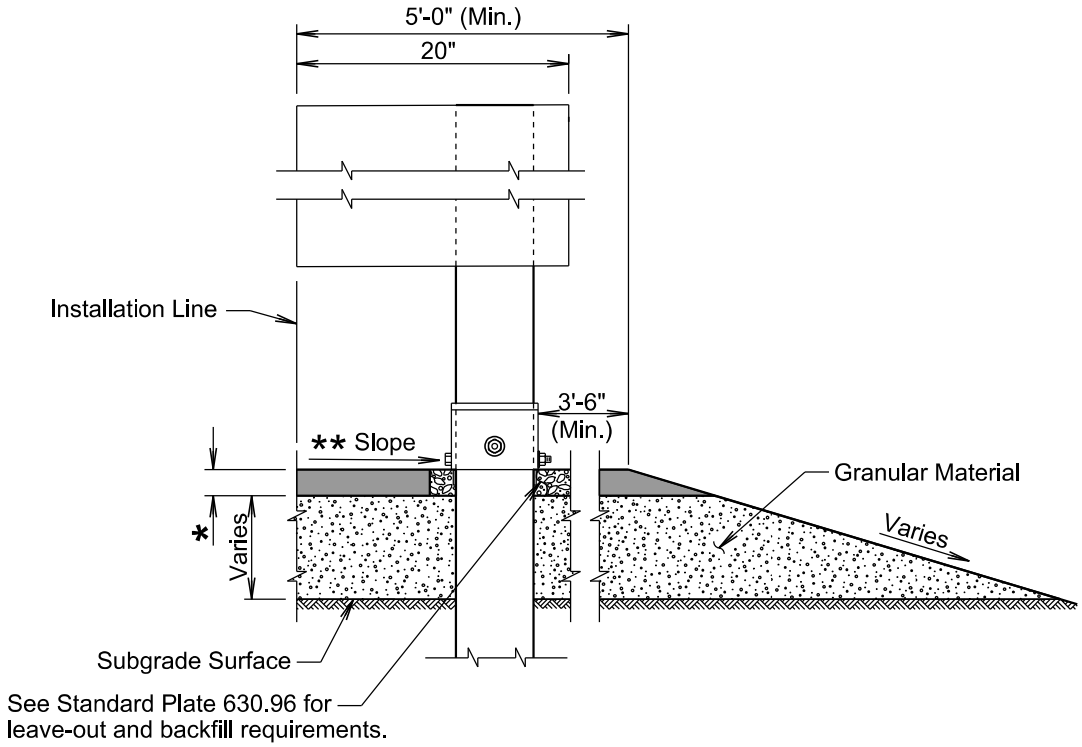


* 2" asphalt concrete or as specified in the plans.

** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

TRANSVERSE SECTION

(SoftStop MGS MASH Tangent End Terminal Shown)

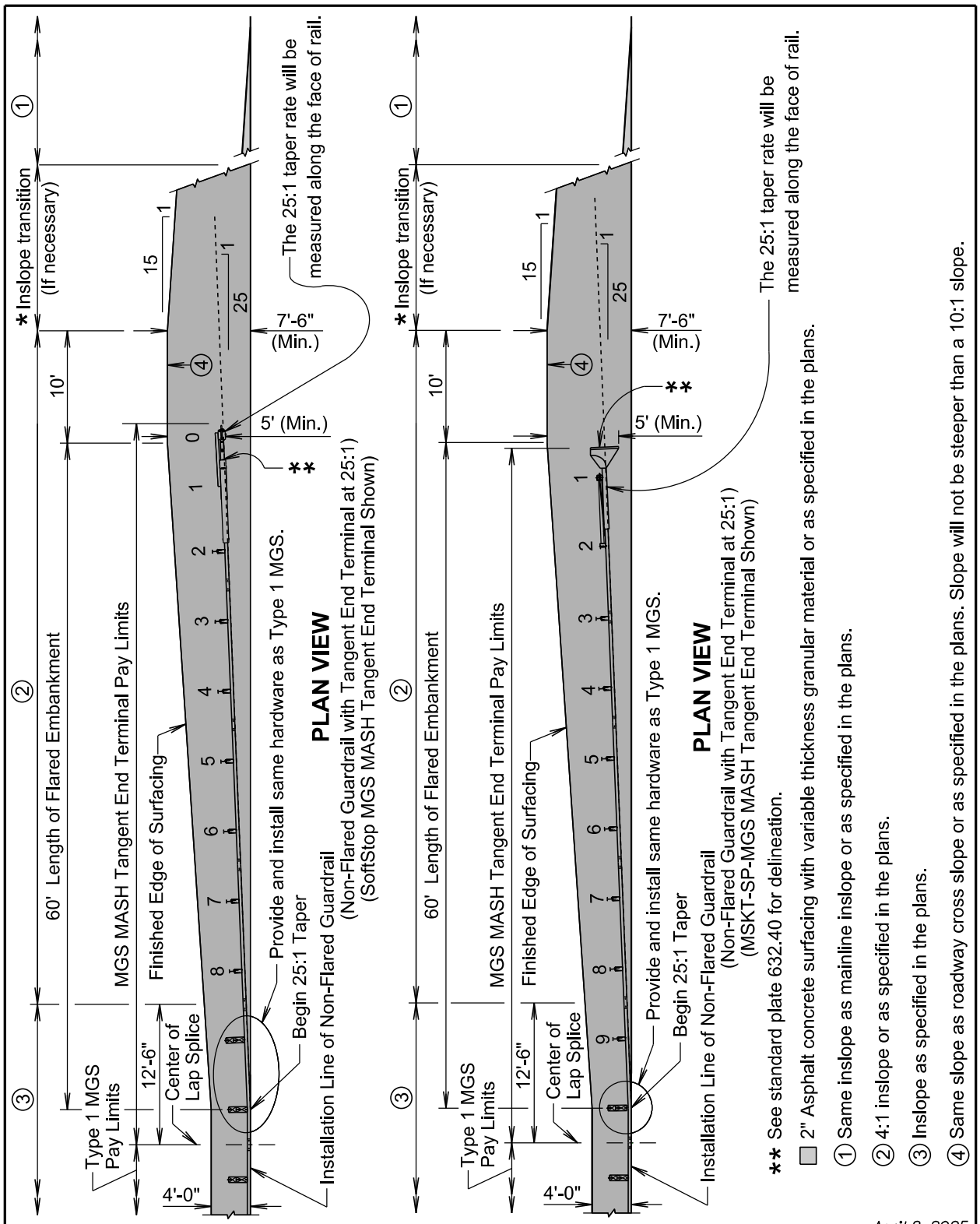


TRANSVERSE SECTION

(MSKT-SP-MGS MASH Tangent End Terminal Shown)

April 8, 2025

Published Date: 2026	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89 Sheet 3 of 3



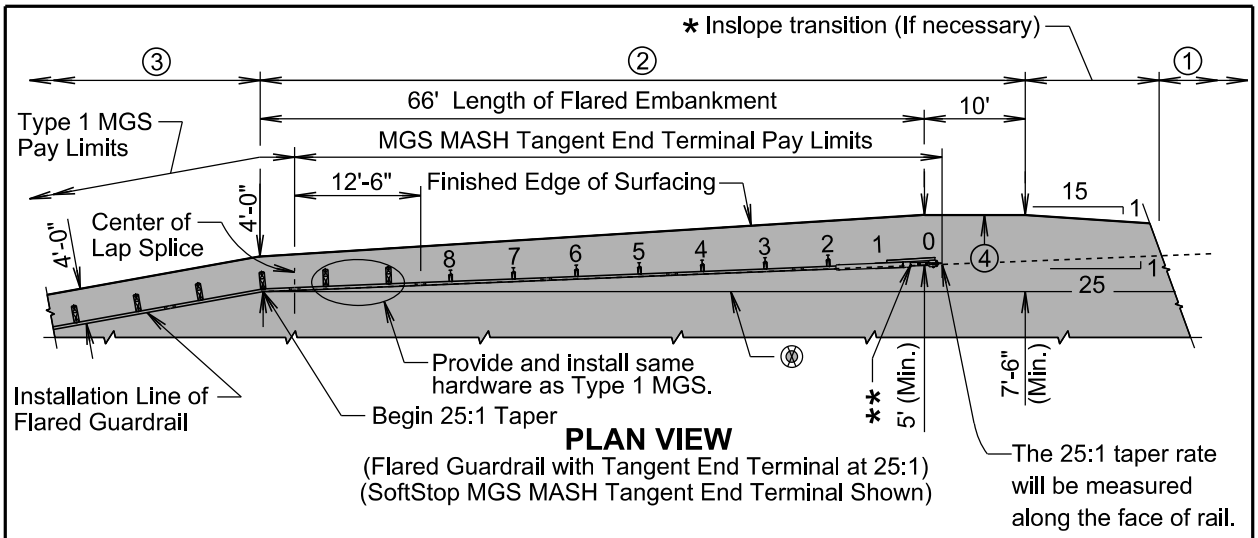
Published Date: 2026

SDDOT

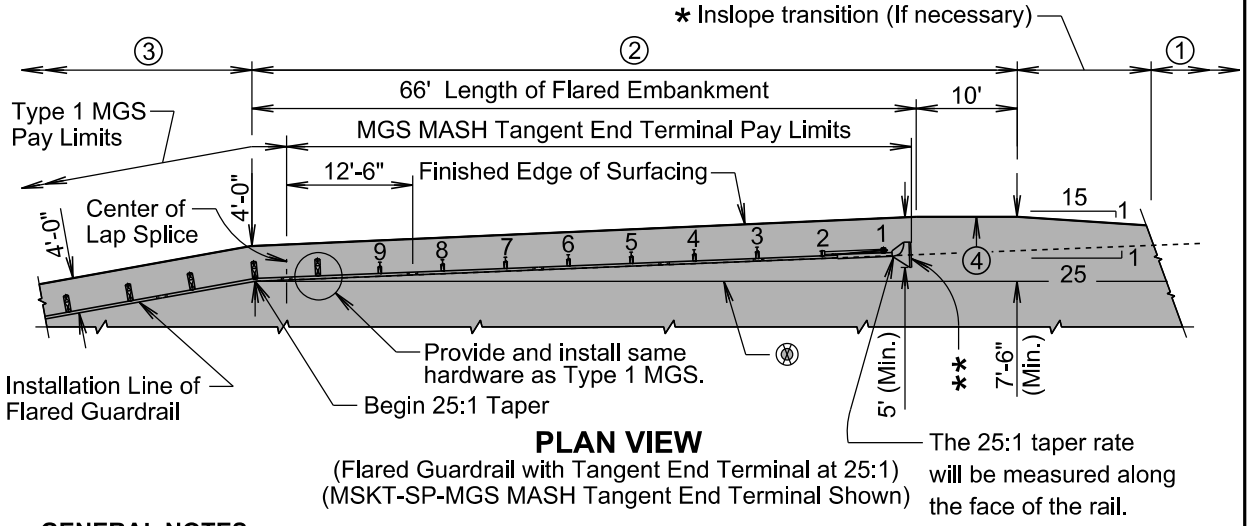
EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL INSTALLED WITH 25:1 TAPER

PLATE NUMBER
630.90

Sheet 1 of 3



PLAN VIEW
(Flared Guardrail with Tangent End Terminal at 25:1)
(SoftStop MGS MASH Tangent End Terminal Shown)



PLAN VIEW
(Flared Guardrail with Tangent End Terminal at 25:1)
(MSKT-SP-MGS MASH Tangent End Terminal Shown)

GENERAL NOTES:

The MGS MASH tangent end terminals above are for illustrative purpose only. Pay limit length of the MGS MASH tangent end terminal is 62'-6".

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition will change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

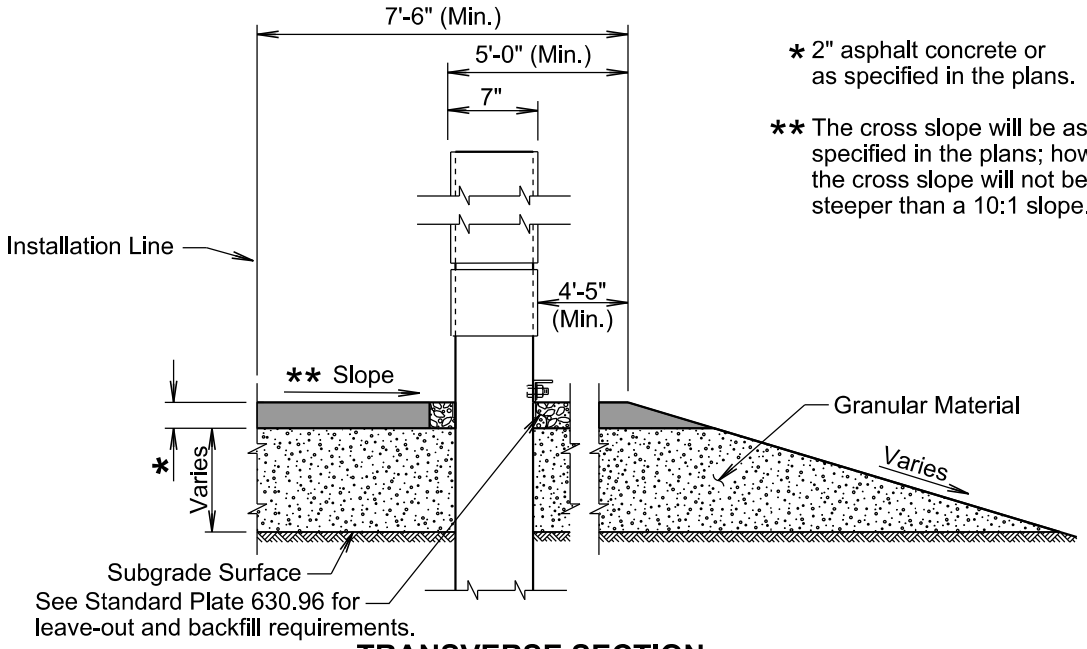
Ⓧ The installation reference line for MGS MASH tangent end terminals will always be parallel to the roadway.

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite."

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

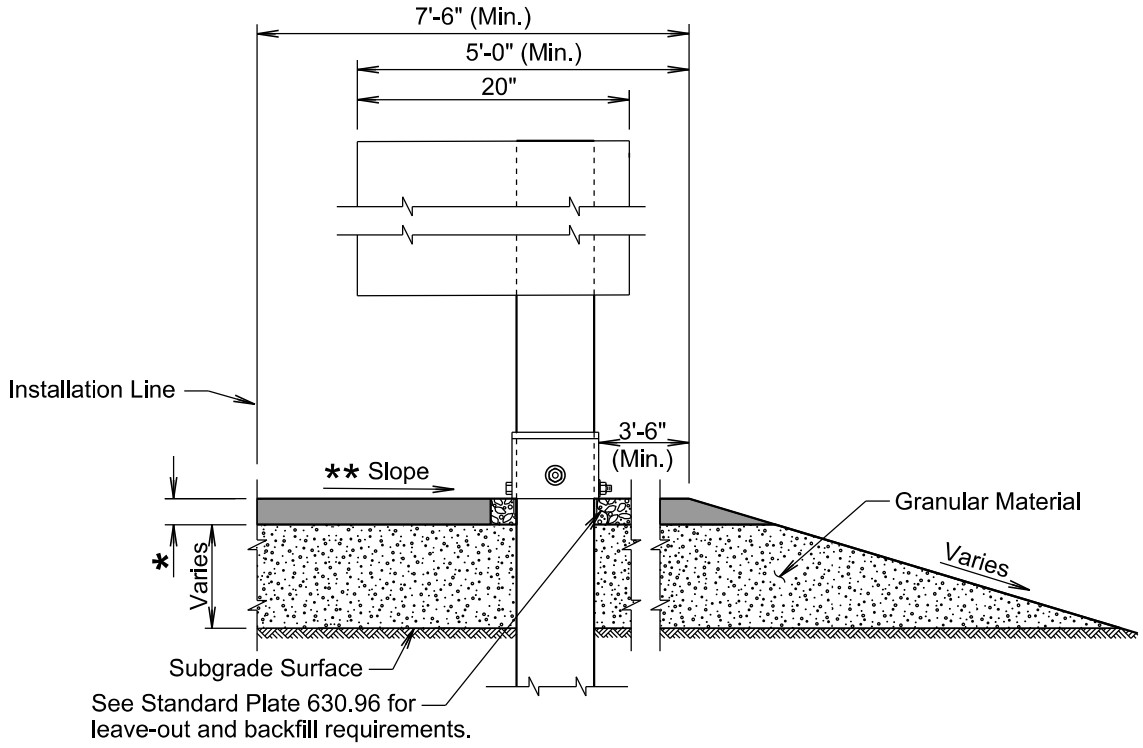
April 8, 2025

Published Date: 2026	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL INSTALLED WITH 25:1 TAPER	PLATE NUMBER 630.90 Sheet 2 of 3



TRANSVERSE SECTION

(SoftStop MGS MASH Tangent End Terminal Shown)

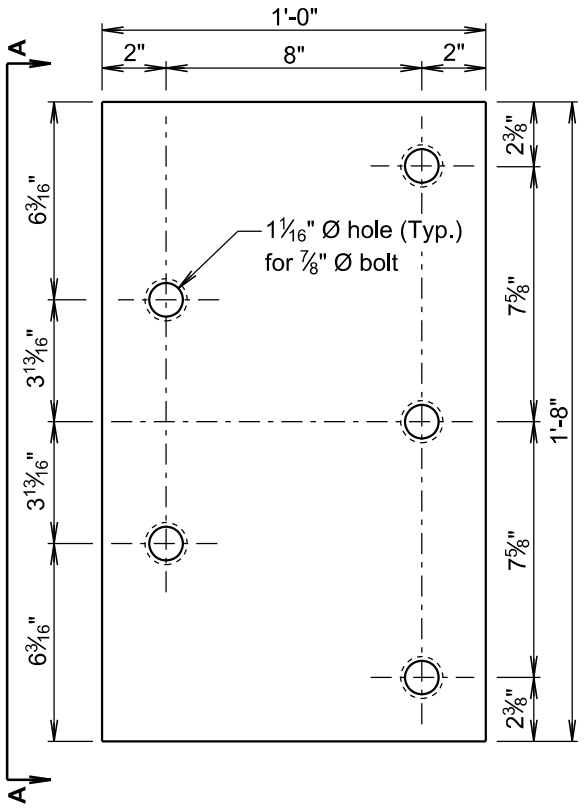


TRANSVERSE SECTION

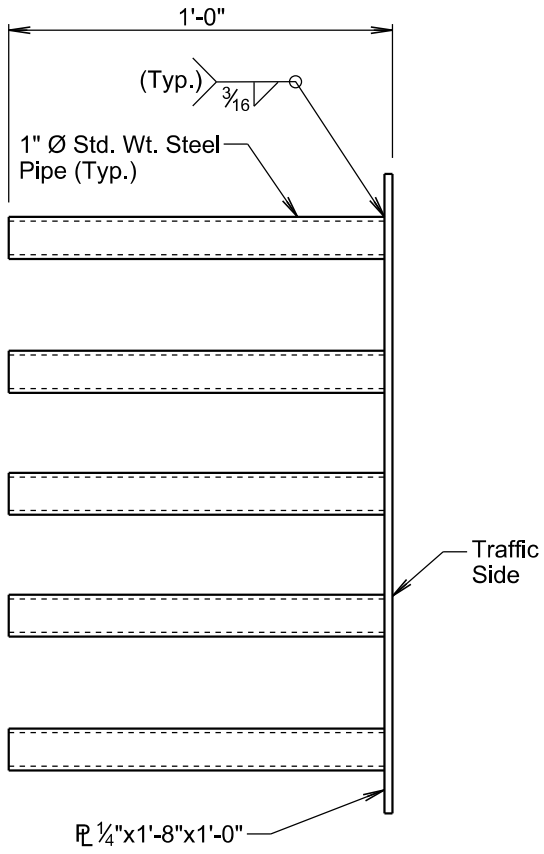
(MSKT-SP-MGS MASH Tangent End Terminal Shown)

April 8, 2025

Published Date: 2026	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL INSTALLED WITH 25:1 TAPER	PLATE NUMBER 630.90 Sheet 3 of 3



ELEVATION VIEW



VIEW A - A

GENERAL NOTES:

Steel plate for the insert assembly will conform to ASTM A709, Grade 36. The steel pipes will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

Welding and weld inspection will be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.

After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

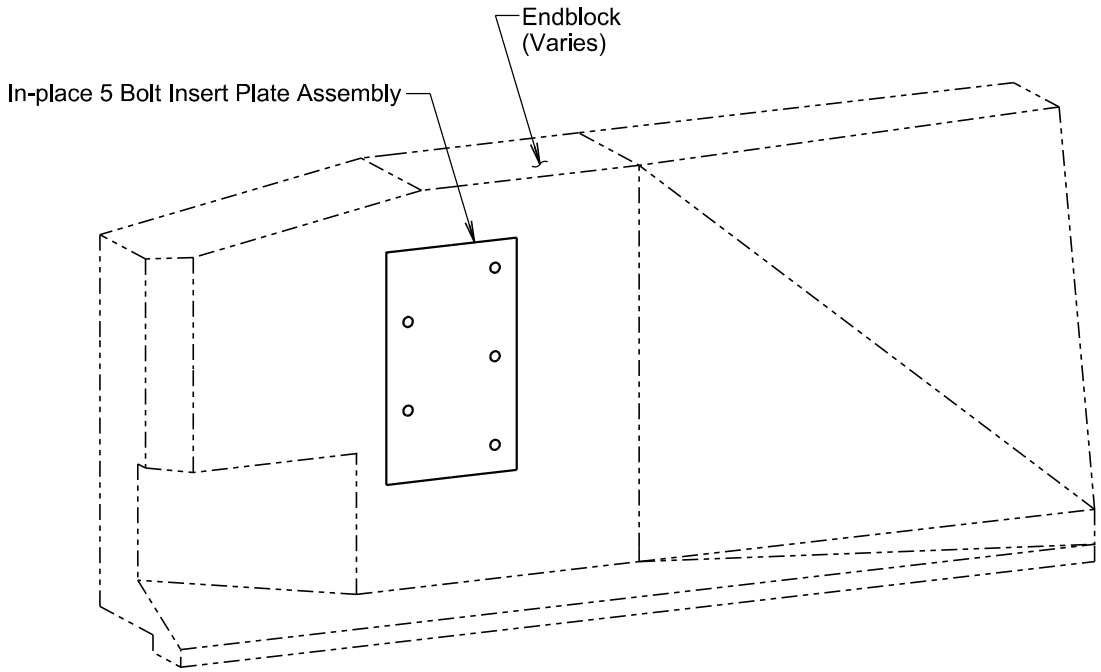
Bolts, nuts, and washers will be provided with each assembly. Bolts will be galvanized and conform to the requirements of ASTM A307, F3125 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing will be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

April 8, 2025

Published Date: 2026	SDDOT	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92 Sheet 1 of 1



ISOMETRIC VIEW

GENERAL NOTES:

Bolts, nuts, and washers are furnished with each new assembly. Where guardrail is to be reset, bolts will be salvaged and reset for guardrail installation. Any hardware damaged or lost from the Contractor's operation will be replaced at no additional cost to the State.

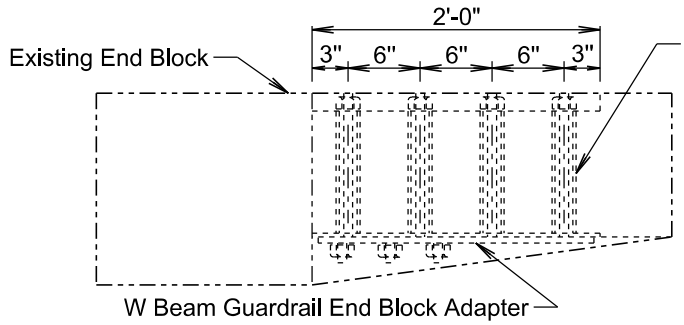
New bolts, if required, will be galvanized and conform to the requirements of ASTM A307, F3125 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

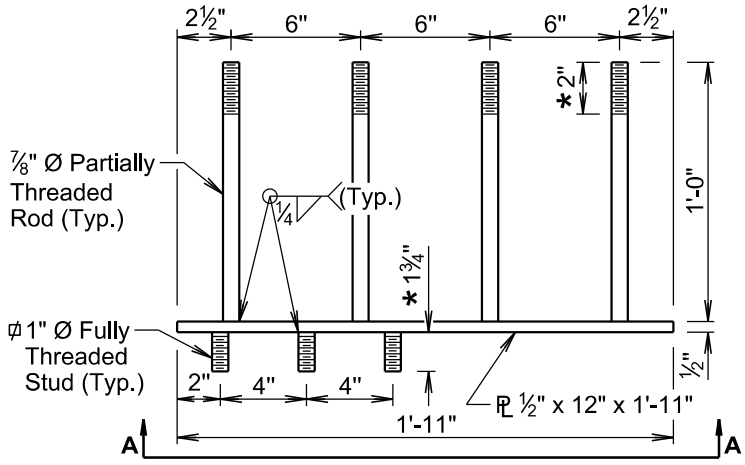
All costs for salvaging, resetting, and refurnishing lost hardware will be incidental to the contract unit price for the respective guardrail contract item.

April 8, 2025

Published Date: 2026	SDDOT	GUARDRAIL ATTACHMENT TO BRIDGE ENDBLOCKS	PLATE NUMBER 630.93 Sheet 1 of 1



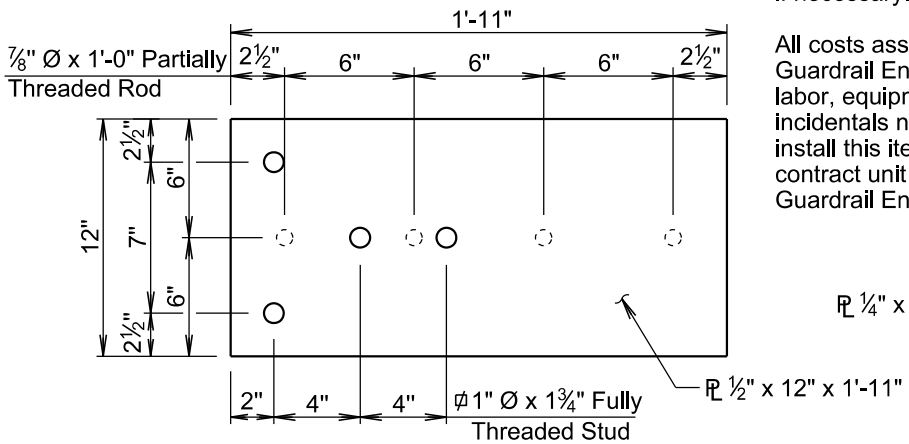
PLAN VIEW



PLAN VIEW
(W Beam Guardrail End Block Adapter)

* Threaded portions of the assembly will not be shop painted.

ϕ If necessary, ream the 1" Ø holes in the W beam terminal connector to fit over the threaded studs.



VIEW A - A

GENERAL NOTES:

The steel plate will conform to ASTM A709, Grade 36.

The fully threaded and partially threaded rod used in the assembly will be in accordance with ASTM A572, Grade 50.

After fabrication, paint in accordance with Section 411 of the Specifications, except that only the prime coat will be required. Areas not painted in the shop will be touched up in the field following installation, with prime coat only, according to Section 411. The color of the prime coat will be gray.

Nuts and plate washers will be provided with each assembly. Washers will be made of steel and follow the dimensions shown on this sheet. Nuts will be heavy hex and in accordance with ASTM A563. Nuts and washers will be galvanized in accordance with ASTM F2329.

Washers will be placed between the Adapter and the W Beam Terminal Connector and between the W Beam Terminal Connector and the nuts on the front.

Prior to fabrication, it will be the Contractor's responsibility to field verify that the partially threaded rod spacing shown above will coincide with the existing holes in the end block and adjust if necessary.

All costs associated with the W Beam Guardrail End Block Adapter including labor, equipment, materials, and any incidentals necessary to fabricate and install this item will be incidental to the contract unit price per each for "W Beam Guardrail End Block Adapter".

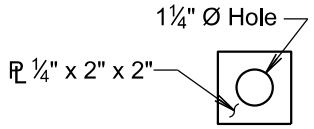
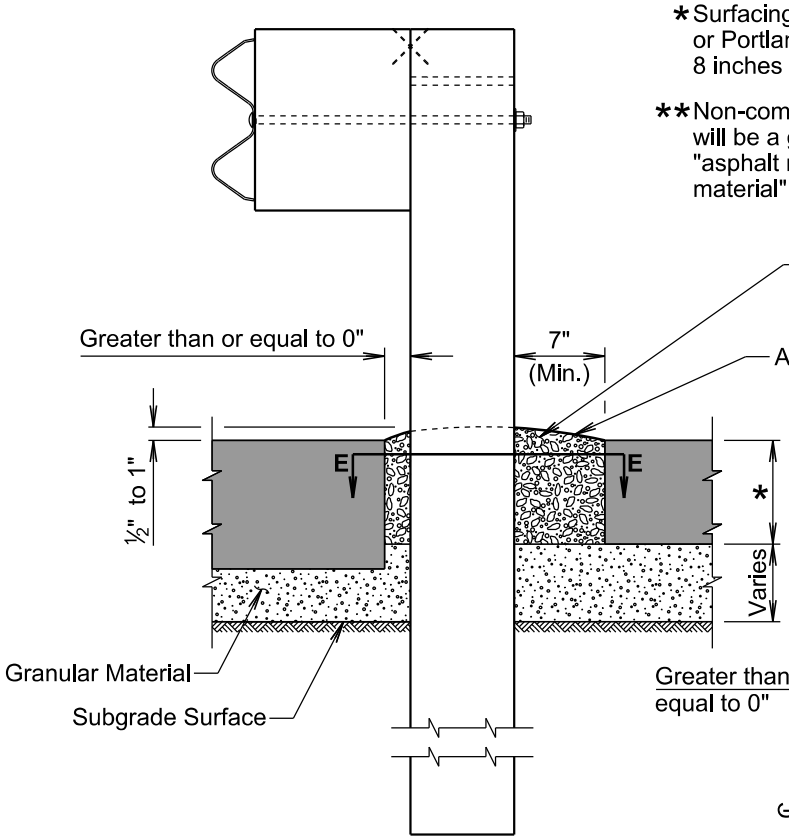


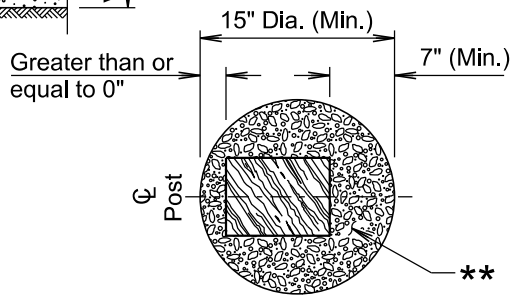
PLATE WASHER
(8 required)

September 14, 2019

Published Date: 2026	SDDOT	W BEAM GUARDRAIL END BLOCK ADAPTER	PLATE NUMBER 630.94 Sheet 1 of 1



TRANSVERSE SECTION
(Wood post shown for illustrative purpose only)



SECTION E-E
(Round option for leave-out and backfill limits)
(Wood post shown for illustrative purpose only)

GENERAL NOTES:

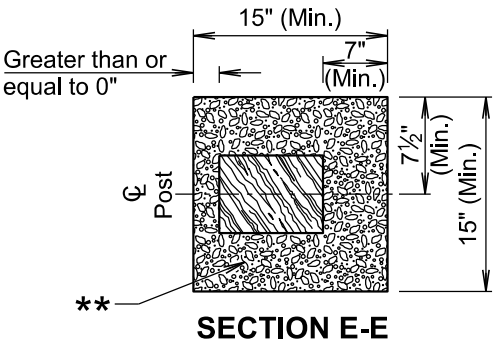
The leave-out limits may be increased to accommodate construction equipment and tolerances.

When posts are installed in augured or dug holes, the backfill material will be compacted to the bottom of the pavement surfacing material to the satisfaction of the Engineer. The backfill material for the thickness of the pavement surfacing material will be non-compacted.

The backfill material will be mounded ½ inch to 1 inch above the top of the adjacent surfacing as illustrated above.

Asphalt for tack will be applied to the surface of the backfill material at the rate of 0.15 to 0.20 gallons per square yard.

All costs for constructing the leave-out including labor, equipment, and materials which includes the backfill material and tack coat will be incidental to the contract unit price for the respective guardrail contract item.



SECTION E-E
(Square option for leave-out and backfill limits)
(Wood post shown for illustrative purpose only)

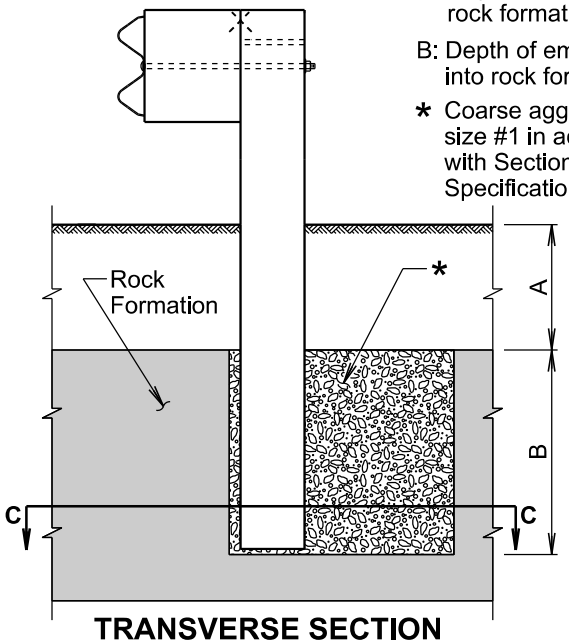
November 19, 2021

Published Date: 2026	SDDOT	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96 Sheet 1 of 1

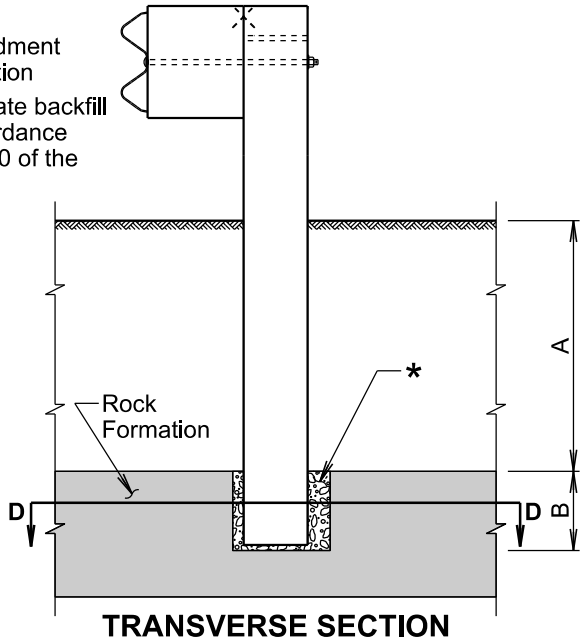
A: Depth of soil over rock formation

B: Depth of embedment into rock formation

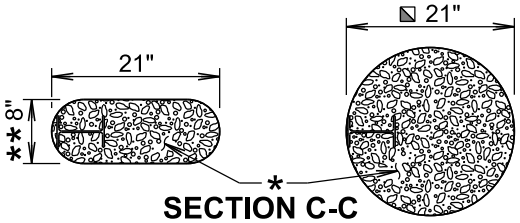
* Coarse aggregate backfill size #1 in accordance with Section 820 of the Specifications.



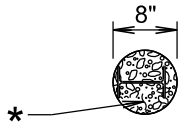
TRANSVERSE SECTION
(Configuration Type 1)
(Wood post shown for illustrative purpose only)



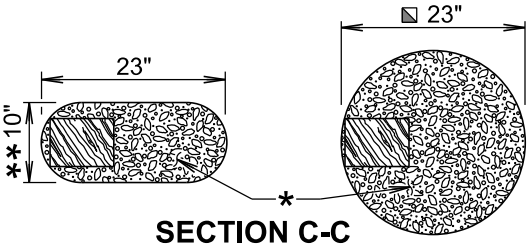
TRANSVERSE SECTION
(Configuration Type 2)
(Wood post shown for illustrative purpose only)



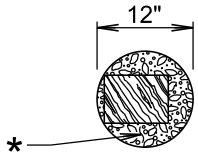
SECTION C-C
(Configuration Type 1)
(Steel posts, either hole shown is acceptable.)



SECTION D-D
(Configuration Type 2)
(Steel Posts)



SECTION C-C
(Configuration Type 1)
(Wood posts, either hole shown is acceptable.)



SECTION D-D
(Configuration Type 2)
(Wood Posts)

GENERAL NOTES FOR CONFIGURATION TYPE 1:

The overlying soil depth "A" is 0 to 18 inches and the depth into rock "B" is 24 inches.

** May be increased to 15 inches to accommodate construction tolerances.

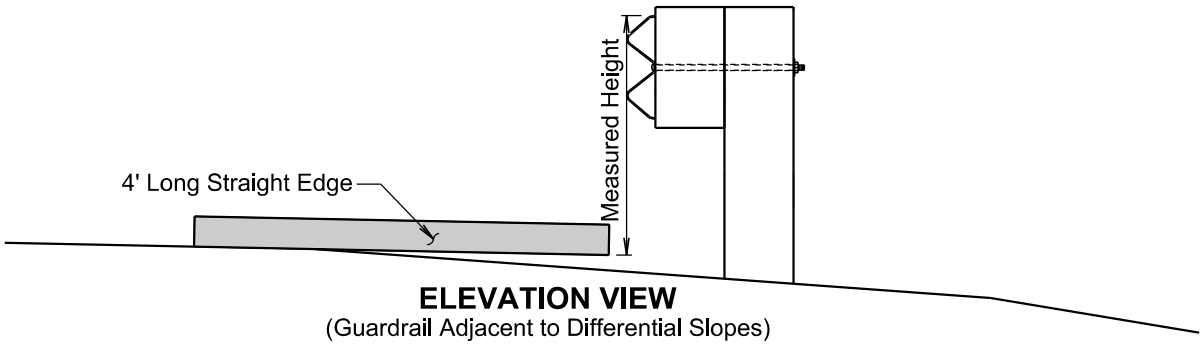
▧ May be increased to 24 inches to accommodate construction tolerances.

GENERAL NOTES FOR CONFIGURATION TYPE 2:

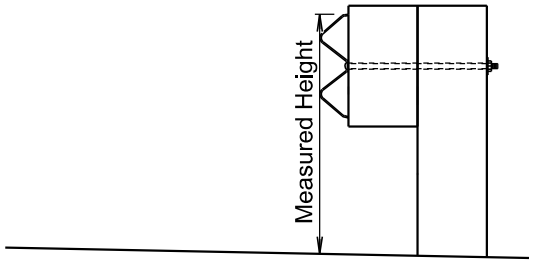
The overlying soil depth "A" is 18 inches to full post embedment depth. The required depth into rock "B" is equal to full post embedment depth minus "A".

September 14, 2019

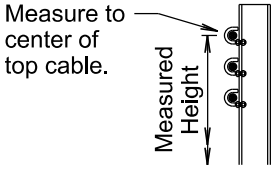
Published Date: 2026	SDDOT	GUARDRAIL POST INSTALLED IN ROCK FORMATION	PLATE NUMBER 630.97 Sheet 1 of 1



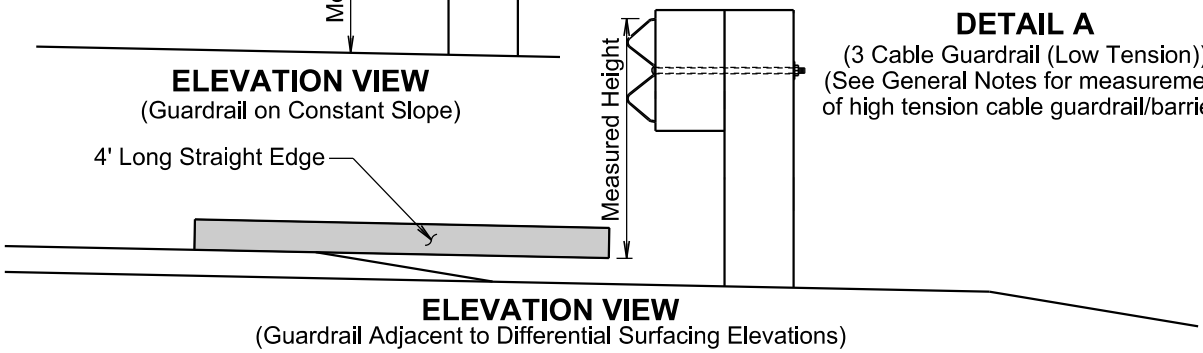
ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)



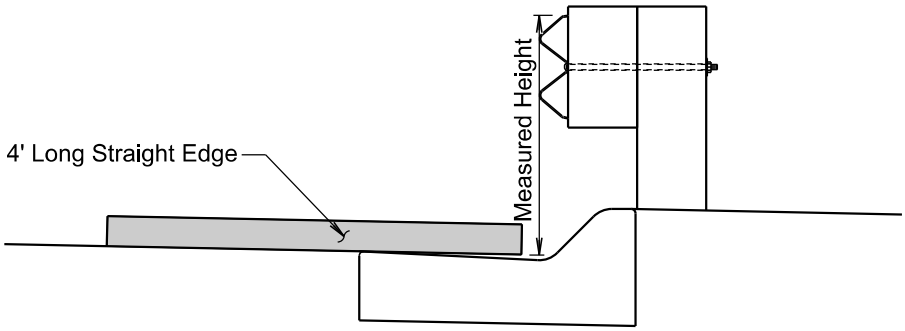
ELEVATION VIEW
(Guardrail on Constant Slope)



DETAIL A
(3 Cable Guardrail (Low Tension))
(See General Notes for measurement of high tension cable guardrail/barrier)



ELEVATION VIEW
(Guardrail Adjacent to Differential Surfacing Elevations)



ELEVATION VIEW
(Guardrail at Curb and Gutter)

GENERAL NOTES:

The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

When measuring height of 3 cable guardrail (low tension) the height will be measured to the center of the top cable. See Detail A.

The height of high tension cable guardrail/barrier will be measured in accordance with the Manufacturer's installation instructions.

September 14, 2019

Published Date: 2026	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99 Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

Flagger

Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

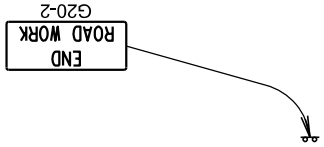
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

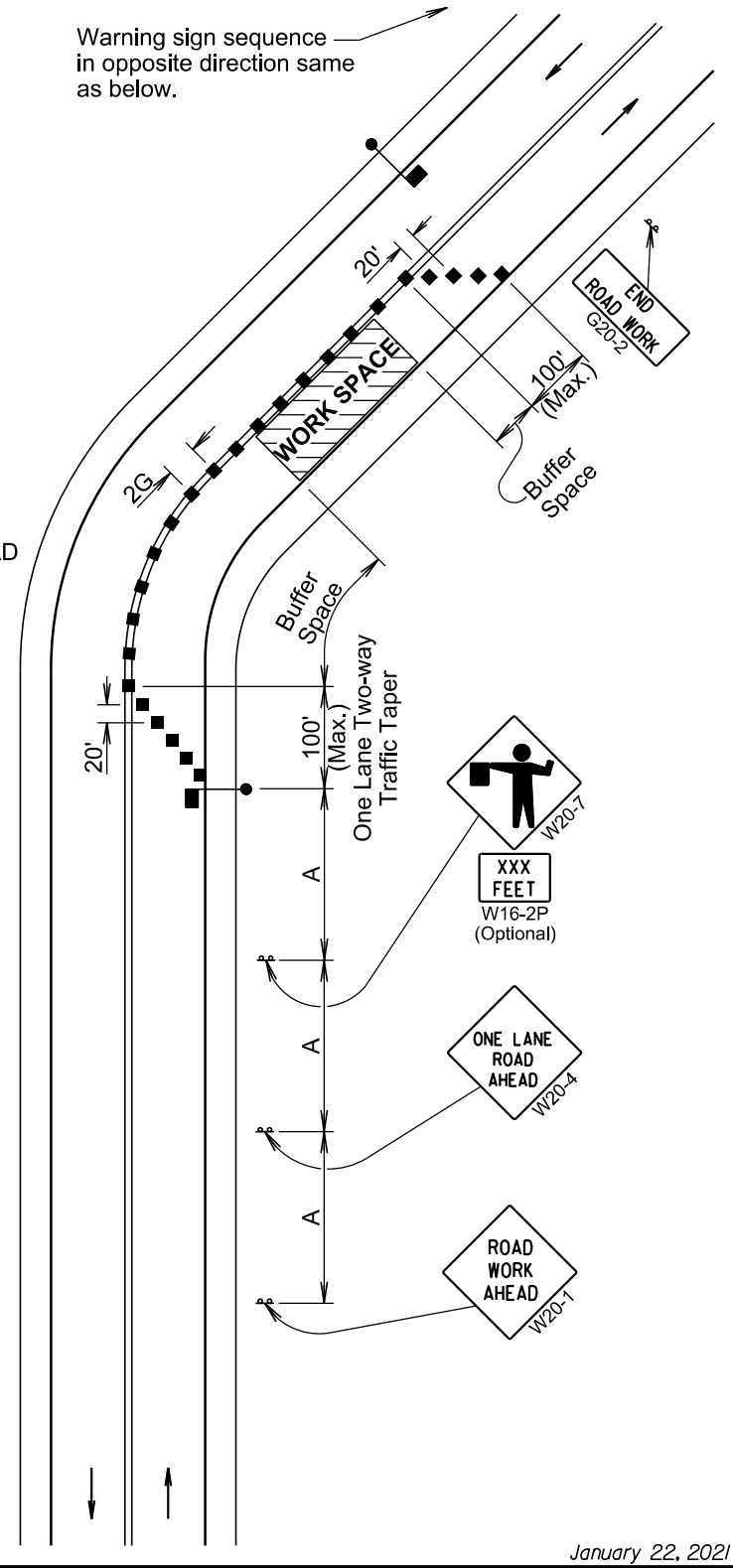
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.



January 22, 2021

Published Date: 2026	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23 Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum

■ Channelizing Device

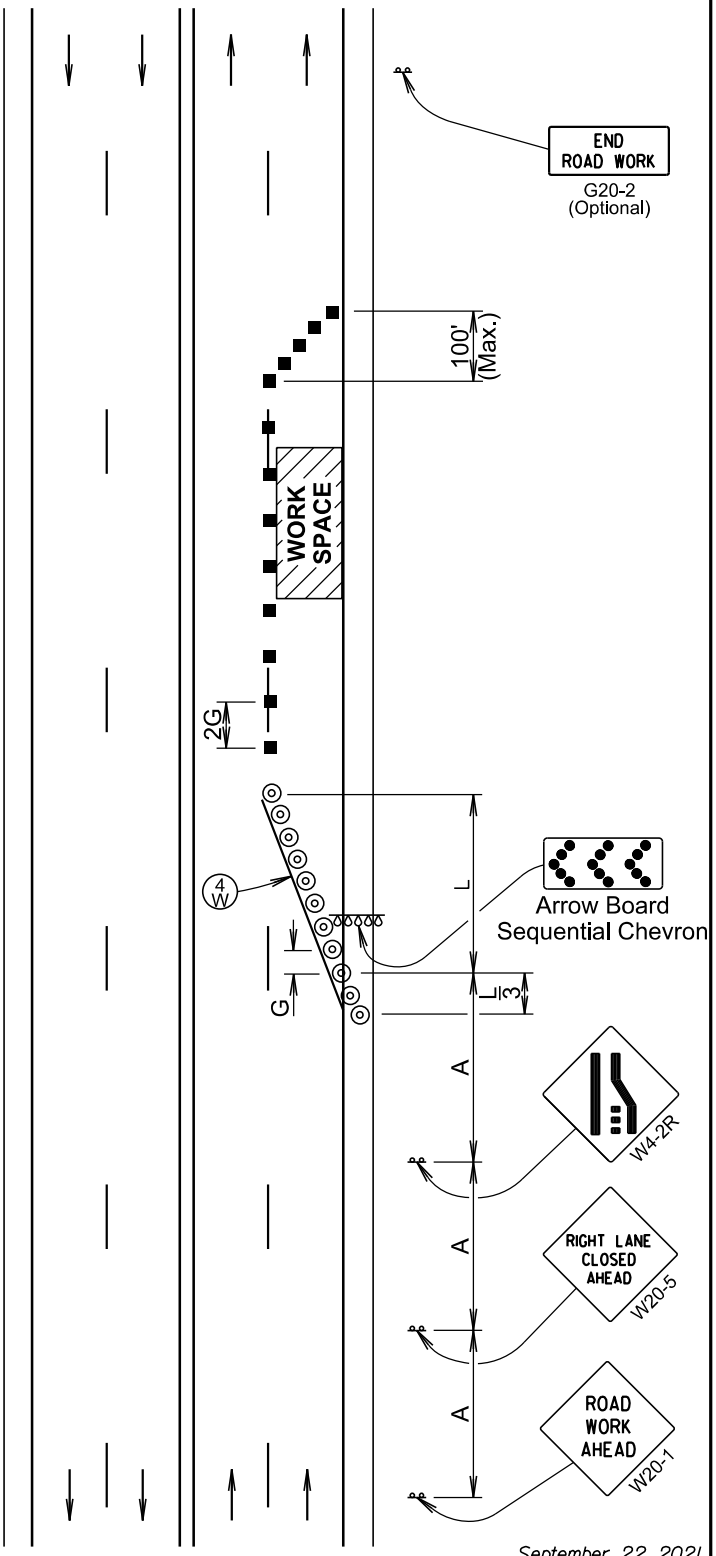
(4W) 4" White Temporary Pavement Marking

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

Temporary pavement markings will be used if traffic control must remain overnight.

The length of A and L may be adjusted to fit field conditions.



September 22, 2021

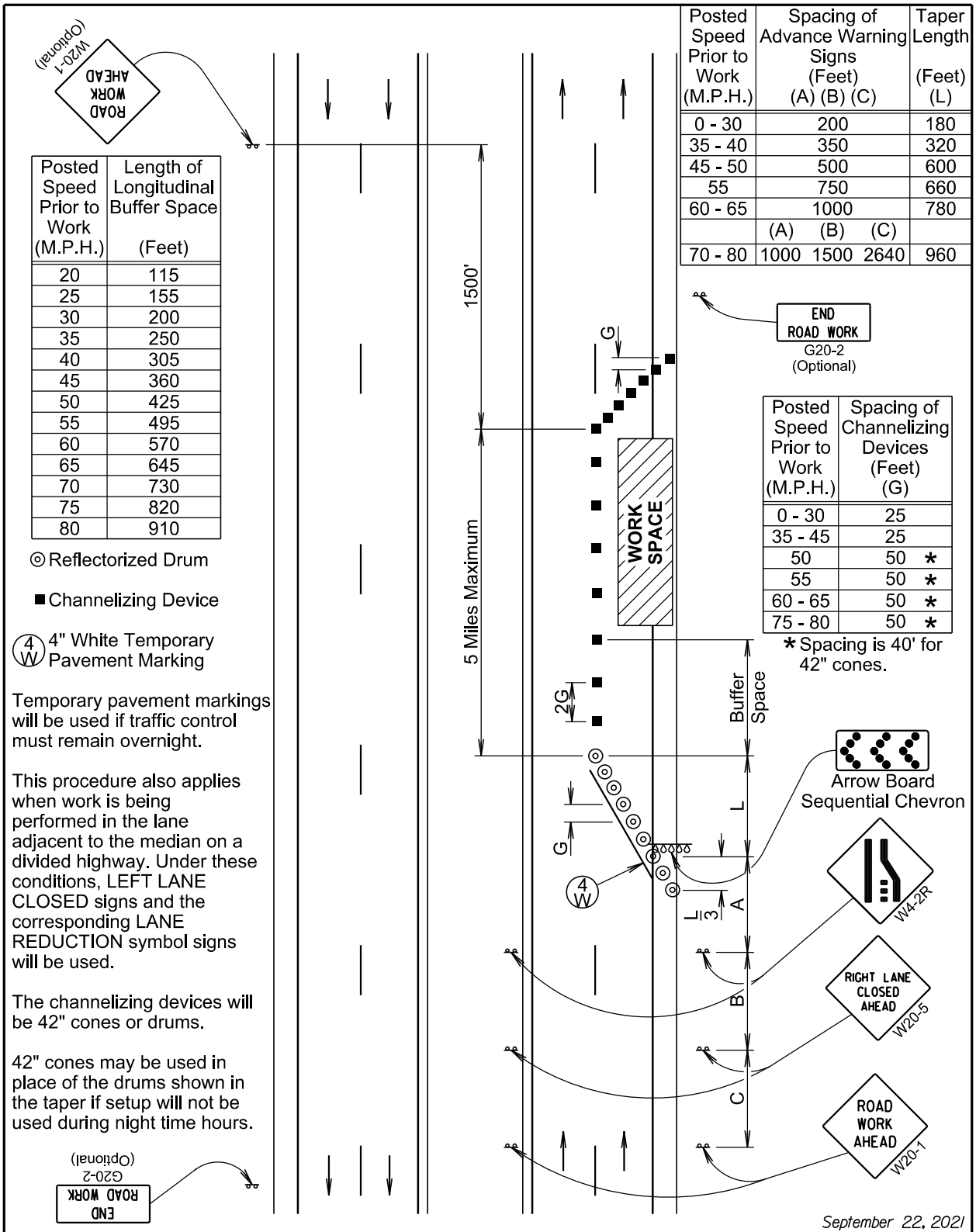
Published Date: 2026

SDDOT

4-LANE UNDIVIDED, RIGHT LANE CLOSED

PLATE NUMBER
634.47

Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

◎ Reflectorized Drum

■ Channelizing Device

4 W 4" White Temporary Pavement Marking

Temporary pavement markings will be used if traffic control must remain overnight.

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs will be used.

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
75 - 80	50 *

* Spacing is 40' for 42" cones.

September 22, 2021

Published Date: 2026

SDDOT

LANE CLOSURE WITHOUT BARRIER

PLATE NUMBER
634.64

Sheet 1 of 1