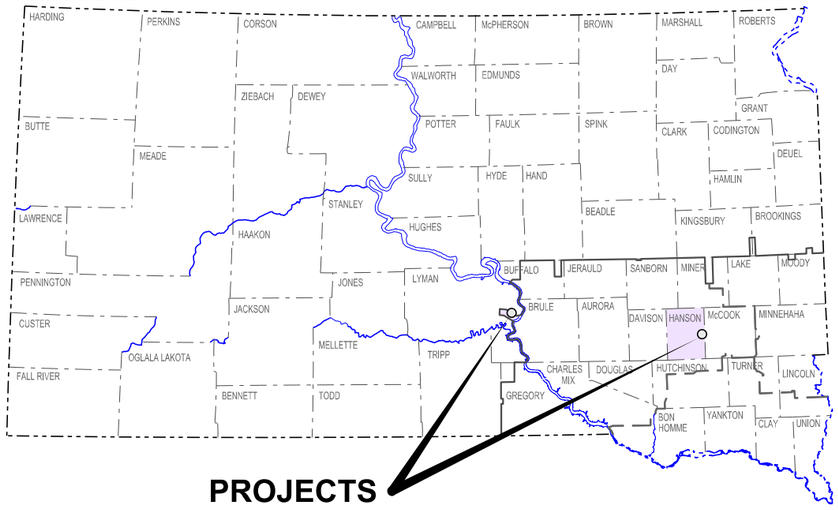


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECTS
090WF–288, 090WF–288 & 038–288
I90 W FRONTAGE ROAD &
SD HIGHWAY 38
LYMAN & HANSON COUNTIES

EXCAVATION, COLD MILLING ASPHALT CONCRETE,
ASPHALT CONCRETE RESURFACING & GUARDRAIL
AT BRIDGE APPROACHES
PCN I56A, I56C & I55Y

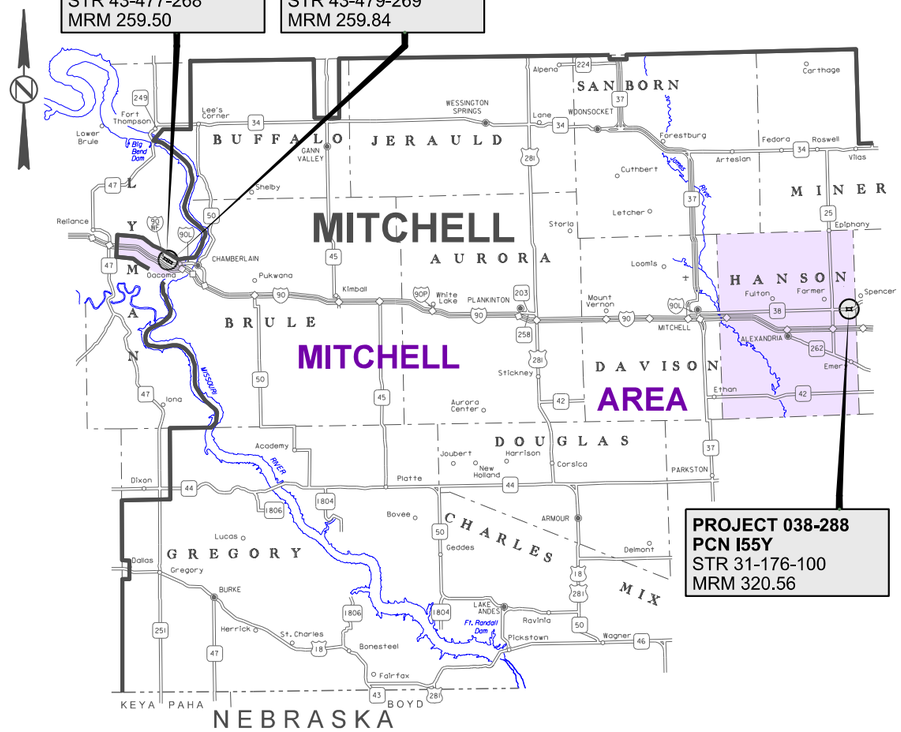
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090WF-288 & 038-288	1	20

Plotting Date: 06/05/2018

INDEX OF SHEETS

PROJECT 090 WF-288
PCN I56A
STR 43-477-268
MRM 259.50

PROJECT 090 WF-288
PCN I56C
STR 43-479-269
MRM 259.84



PROJECT 038-288
PCN I55Y
STR 31-176-100
MRM 320.56

DESIGN DESIGNATION	
PROJECT	038-288
ADT(2017)	936
ADT(2037)	1,058
DHV	125
D	50%
T DHV	7.7%
T ADT	17.0%
V	65 MPH

STORM WATER PERMIT
(None required)

PLOT SCALE - 1:1.05000
PLOTTED FROM - TRM11NT15
PLOT NAME - 1
FILE - ...\LYMN155Y\TITLI55Y.DGN

ESTIMATE OF QUANTITIES & ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090WF-288 & 038-288	2	20

ESTIMATE OF QUANTITIES 090 WF-288 PCN I56A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
320E1200	Asphalt Concrete Composite	10.0	Ton
332E0010	Cold Milling Asphalt Concrete	44	SqYd
632E2220	Guardrail Delineator	16	Each
634E0010	Flagging	25.0	Hour
634E0110	Traffic Control Signs	48.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS

ESTIMATE OF QUANTITIES 090 WF-288 PCN I56C

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0730	Remove Beam Guardrail	150.0	Ft
110E0780	Remove W Beam Guardrail Modified Eccentric Loader Terminal	4	Each
110E6200	Remove Double Thrie Beam Guardrail for Reset	50.0	Ft
110E6230	Remove W Beam Guardrail for Reset	150.0	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	4	Each
120E0010	Unclassified Excavation	940	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	640.0	Ton
320E1200	Asphalt Concrete Composite	410.0	Ton
630E2015	W Beam Guardrail Flared End Terminal	4	Each
630E5130	Reset Double Thrie Beam Rail	50.0	Ft
630E5160	Reset W Beam Rail	150.0	Ft
630E5200	Reset W Beam to Thrie Beam Transition Rail	4	Each
632E2220	Guardrail Delineator	16	Each
634E0010	Flagging	25.0	Hour
634E0110	Traffic Control Signs	122.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E0640	Temporary Pavement Marking	2,000	Ft
734E0010	Erosion Control	Lump Sum	LS
831E0300	Reinforcement Fabric (MSE)	930	SqYd

ESTIMATE OF QUANTITIES 038-288 PCN I55Y

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
320E1200	Asphalt Concrete Composite	210.0	Ton
332E0010	Cold Milling Asphalt Concrete	1,867	SqYd
634E0010	Flagging	50.0	Hour
634E0110	Traffic Control Signs	48.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Section A Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: http://www.sddot.com/resources/Manuals/EnvironProcManual.pdf

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Office at 605-773-3098 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species waters within South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment to prevent and control the introduction and spread of invasive species into the project vicinity.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of Aquatic Invasive Species in South Dakota can be accessed at: http://sdleastwanted.com/maps/default.aspx.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The Storm Water, Erosion, and Sediment Control Inspection Report Form DOT 298, will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly and sediment is not tracked off of the site.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT:
http://www.sddot.com/business/environmental/stormwater/Default.aspx

DENR: http://denr.sd.gov/des/sw/stormwater.aspx

EPA: https://www.epa.gov/npdes

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating No Dumping Allowed.
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

Cost associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

State Historical Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities require a cultural resource review prior to scheduling the pre-construction meeting. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view of which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

UTILITIES

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

Utilities are not planned to be affected on this project. 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 shall contact the Project Engineer to determine if project changes are necessary to avoid utility impacts.

WORK AT STRUCTURE 43-477-268 – I90 SERVICE ROAD WEST BRIDGE

Cold mill the existing asphalt concrete to a 3” depth from the bridge face to 6 ft. off the east end of the bridge. The milling width will be 14 feet per lane.

Cold mill the existing asphalt concrete to a 3” depth from the bridge face to 8 ft. off the west end of the bridge. The milling width will be 14 feet per lane.

Place 3” of asphalt concrete composite on the entire milled surface.

WORK AT STRUCTURE 43-479-269 – I90 SERVICE ROAD EAST BRIDGE

Install traffic control as per Standard Plate 634.25.

Remove Topsoil for 160 feet off all four corners of the structure as per the Remove and Replace topsoil note.

Remove the existing beam guardrail and end terminals at all four corners of the structure.

Remove all existing asphalt concrete from the bridge face to a distance 160 ft. from the bridge face on both ends of the structure.

Excavate from the bridge end to a distance of 60 feet on west end of the structure and 80 feet on the east end of the structure to a depth of 18” below the new surface elevation as shown in the elevation table. Excavation shall be daylighted to the inslope.

Place Reinforcement Fabric (MSE) on the subgrade 18” below the new surface elevation to a distance of 60 feet on west end of the structure and 80 feet on the east end of the structure. The width of Reinforcement fabric is 26 ft. per lane.

Place a 12” lift of base course to a distance of 60 feet on west end of the structure and 80 feet on the east end of the structure. Base Course shall be placed so that it is daylighted to the inslope.
.
Shape the existing material from 60 feet on the west end of the structure to 160 feet off the structure and from 80 feet on the east end of the structure to 160 feet off the structure to a depth 6” below the new surface elevation.
Place 6” of Asphalt Concrete in 2 equal lifts.

Shape the shoulder and place 2” of asphalt concrete at all guardrail in accordance with Standard Plate 630.87 prior to installing guardrail.

Reset beam guardrail with new wood posts and new flared end terminal at all four corners of the structure.

WORK AT STRUCTURE 31-176-100 – SD38 OVER WOLF CREEK

Cold mill the existing asphalt concrete on the west end of the structure from the bridge end 320 ft. Mill 2 inches deep at the bridge end to a depth of 1 inch 40 ft. off the bridge end, mill 1” from 40 feet to 280 feet and taper from 1” to 2” from 280 ft. to 320 off the bridge end. The milling width for entire length will be 14 ft. per lane.

Cold mill the existing asphalt concrete on the east end of the structure from the bridge end 280 ft. Mill 2 inches deep at bridge end to a depth of 1 inch 40 ft. off the bridge end, mill 1” depth from 40 feet to 240 feet and taper from 1” to 2” from 240 ft. to 280 ft.

Place 2 inches of asphalt concrete composite on the entire cold milled surface. The new asphalt must match the existing elevation at 14 feet wide to ensure the guardrail height in relationship to the existing roadway elevation is not changed.

ELEVATION TABLE (STRUCTURE 43-479-269)

Station	Elevation 12' L	Elevation Centerline	Elevation 12' R
1463+35.25	1411.88	1412.08	1411.70
1463 +55.25	1413.03	1413.25	1412.97
1463 +75.25	1414.18	1414.42	1414.20
1463+95.25	1415.33	1415.59	1415.43
1464+15.25	1416.48	1416.76	1416.66
1464+35.25	1417.63	1417.93	1417.89
1464+55.25	1418.78	1419.10	1419.12
1464+75.25	1419.93	1420.27	1420.35
1464+95.25(West Bridge End)	1421.14	1421.44	1421.55
1467+44.25(East Bridge End)	1436.28	1436.41	1436.14
1467+64.25	1437.35	1437.49	1437.27
1467+84.25	1438.50	1438.65	1438.46
1468+04.25	1439.65	1439.81	1439.64
1468+24.25	1440.72	1440.97	1440.82
1468+44.25	1441.84	1442.13	1442.00
1468+64.25	1442.96	1443.29	1443.18
1468+84.25	1444.08	1444.45	1444.37
1469+04.25	1445.20	1445.61	1445.54
Benchmark 1(NW Wing)	1421.92		
Benchmark 2(SE Wing)	1437.03		

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

REMOVE AND REPLACE TOPSOIL

Prior to beginning surfacing operations, a 4” depth of topsoil shall be bladed down the respective inslopes and left in a windrow 10’+/- from the subgrade shoulder on the median side and 10’+/- from the subgrade shoulder on the outside shoulder of the guardrail embankment area(s) Following completion of surfacing operations, topsoil shall be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 138 CuYds.

Cost associated with removing and replacing the topsoil along areas to be resurfaced shall be incidental to the contract lump sum price for Remove and Replace Topsoil.

UNCLASSIFIED EXCAVATION

Compaction of the material reused from Unclassified Excavation shall be to the satisfaction of the Engineer.

REINFORCEMENT FABRIC (MSE) – At Bridge Ends

The top of the subgrade shall be prepared by smoothing the surface of the subgrade to minimize any ruts, ridges, and depressions. Any rocks or other protrusions that might damage the fabric will be removed. The fabric will unrolled perpendicular to the centerline and overlapped a minimum of 2 feet.

The fabric will be placed as taut as possible with minimal wrinkles. Placement will be done so that subsequent granular cover material does not shove, wrinkle or distort the in place fabric. The overlaps will be shingled in a manner that assures granular material will not be forced under the fabric during backfilling operations. The fabric may be held in place with small piles of granular material or staples. No traffic will be allowed on the uncovered fabric.

Granular material will be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. The granular material will be placed as a single 6 inch lift or as directed by the Engineer. The granular material will be compacted to 95% maximum dry density as determined by the Specified Density Method.

Fabric Specification:

The fabric will conform to the specification for Geotextiles and Impermeable Plastic Membrane, Reinforcement Fabric (MSE) (Section 831 of the Specifications). The fabric will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

Fabric will be paid for at the contract unit price per square yard. for Reinforcement Fabric (MSE). Payment quantities will be based on area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the fabric only. Granular backfill materials will be paid for under a separate bid item.

The Reinforcement Fabric (MSE) shall be in conformance with Section 831 of the Specifications. The Reinforcement Fabric (MSE) shall be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

The Reinforcement Fabric (MSE) should be kept as taut as possible prior to placing.

Equipment will not be allowed on the Reinforcement Fabric (MSE) until the first lift of granular material is in place.

All seams in the Reinforcement Fabric (MSE) shall be overlapped at least 2’ and shingled.

BASE COURSE

To ensure water can drain from the bridge ends, Base Course shall be placed so that it is daylighted to the inslope.

WATER FOR COMPACTION

Cost for water for compaction of granular material and embankment shall be incidental to the contract unit prices for the various contract items.

COLD MILLING ASPHALT CONCRETE

Cold Milling Asphalt Concrete operations ahead of asphalt concrete laydown will be limited by particular job conditions and will be subject to approval of the Engineer. In no case shall cold milling operations ahead of asphalt concrete laydown operations exceed seven calendar days.

Cold Milling Asphalt Concrete operations ahead of asphalt concrete laydown will be limited by particular job conditions and be subject to approval of the Engineer.

The requirement for a traveling stringline shall be waived.

TEMPORARY PAVEMENT MARKING

Temporary Pavement Marking shall be used as per Standard Plate 634.25.

Temporary Pavement Marking quantities are 500 feet of double yellow 4” line and one 24” stop bar at each bridge end.

The Contractor shall remove and dispose of temporary flexible vertical markers (tabs) after Permanent Pavement Marking is applied. Removal shall be accomplished within one week of completion of the Permanent Pavement Marking.

EROSION CONTROL

The estimated area requiring erosion control is 9,640 square feet (Roughly 0.055 Acre per bridge corner). Cost for furnishing, placing and maintaining erosion control including equipment, labor, permanent seeding and mulching shall be incidental to the contract lump sum price for Erosion Control.

The limits of erosion control work will be determined by the Engineer during construction.

The areas to be seeded consist of all newly disturbed areas within the project limits except for the top of roadways.

Type C Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	16
Canada Wildrye	Mandan	2
	Total:	18

Grass Hay or Straw Mulch shall be applied at the rate specified in Section 732.

SHEETING FOR TRAFFIC CONTROL SIGNS

All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R2-1), DO NOT ENTER (R5-1) and WRONG WAY (R5-1a) signs shall conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors shall conform to the requirements of ASTM D4956 Type IV.

GENERAL MAINTENANCE OF TRAFFIC

Sufficient traffic control devices have been included in these plans to sign one workspace as per Standard Plate 634.23 and one workspace as per Standard Plate 634.25. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

TABLE FOR REMOVAL AND INSTALLATION OF GUARDRAIL AND RELATED ITEMS

LOCATION		REMOVE BEAM GUARDRAIL	REMOVE W BEAM GUARDRAIL MODIFIED ECCENTRIC LOADER TERMINAL	REMOVE DOUBLE THRIE BEAM GUARDRAIL FOR RESET (CLASS B)	REMOVE W BEAM GUARDRAIL FOR RESET (CLASS A)	REMOVE W BEAM GUARDRAIL FOR RESET (CLASS B)	REMOVE W BEAM TO THRIE BEAM GUARDRAIL TRANSITION FOR RESET	ASPHALT CONCRETE COMPOSITE	W BEAM GUARDRAIL FLARED END TERMINAL	RESET DOUBLE THRIE BEAM RAIL WITH NEW POSTS (CLASS B)	RESET W BEAM RAIL WITH NEW POSTS *	RESET W BEAM TO THRIE BEAM TRANSITION RAIL (WITH NEW POSTS)
BRIDGE CORNER	LANE	Ft	Each	Ft	Ft	Ft	Each	Ton	Each	Ft	Ft	Each
STRUCTURE 43-479-269 SERVICE ROAD												
Begin Bridge L	WBL	37.5	1	12.5	12.5	12.5	1	27	1	12.5	25	1
Begin Bridge R	EBL	37.5	1	12.5	37.5	12.5	1	30	1	12.5	50	1
End Bridge L	WBL	37.5	1	12.5	37.5	12.5	1	30	1	12.5	50	1
End Bridge R	EBL	37.5	1	12.5	12.5	12.5	1	27	1	12.5	25	1
TOTALS:		**150**	**4**	**50**	**100**	**50**	**4**	**114**	**4**	**50**	**150**	**4**

* The Class B Section of W Beam shall be reset adjacent to the W Beam to Thrie Beam Transition Section.

TABLE OF GUARDRAIL DELINEATORS & OBJECT MARKERS

LOCATION		TYPE 2 OBJECT MARKER BACK TO BACK	TYPE 2 OBJECT MARKER	GUARDRAIL TERMINAL END OBJECT MARKER (ADHESIVE)	GUARDRAIL DELINEATOR			
				N.A.B.I.	BEAM		CABLE	
BRIDGE CORNER	LANE-SHOULDER	(M) #	(M) #	[E] #	(B) #		(C) #	
					Yellow	White	Yellow	White
STRUCTURE 43-479-269 SERVICE ROAD								
Begin Bridge L	WBL			1		4		
Begin Bridge R	EBL			1		4		
End Bridge L	WBL			1		4		
End Bridge R	EBL			1		4		
STRUCTURE 43-477-268 SERVICE ROAD								
Begin Bridge L	WBL			1		4		
Begin Bridge R	EBL			1		4		
End Bridge L	WBL			1		4		
End Bridge R	EBL			1		4		
TOTALS		**-**	**-**	**8**	**-**	**32**	**-**	**-**
					32			

- For **KEY**, Refer to Standard Plate 632.40 - Sheet 1 of 4.

N.A.B.I. = Not A Bid Item - Cost is incidental to the contract unit prices for the various items.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS - PCN I56A

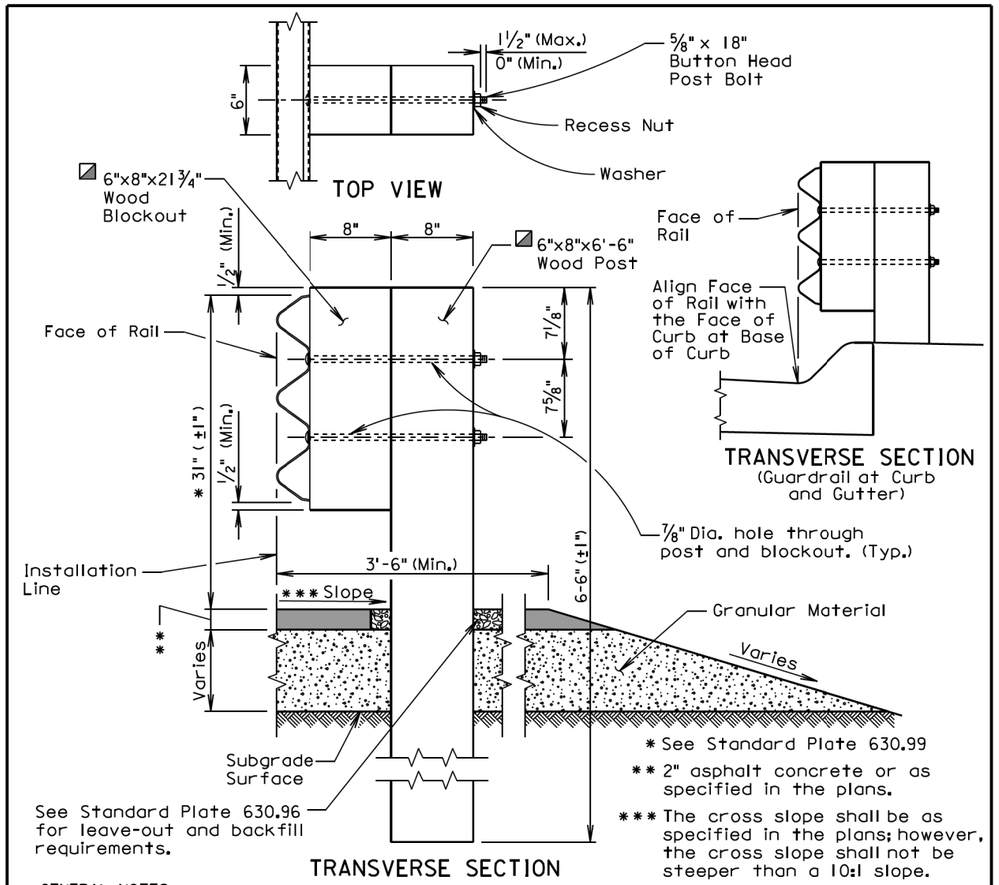
		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	1	48" x 48"	16.0	16.0
W20-4	ONE LANE ROAD AHEAD	1	48" x 48"	16.0	16.0
W20-7	FLAGGER (symbol)	1	48" x 48"	16.0	16.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			48.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS - PCN I56C

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30" x 30"	5.2	10.4
W1-3	REVERSE TURN (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			122.4

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS - PCN I55Y

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	1	48" x 48"	16.0	16.0
W20-4	ONE LANE ROAD AHEAD	1	48" x 48"	16.0	16.0
W20-7	FLAGGER (symbol)	1	48" x 48"	16.0	16.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			48.0



* See Standard Plate 630.99

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

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

GENERAL NOTES:

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

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

Topsoil is not shown in the transverse section drawing.

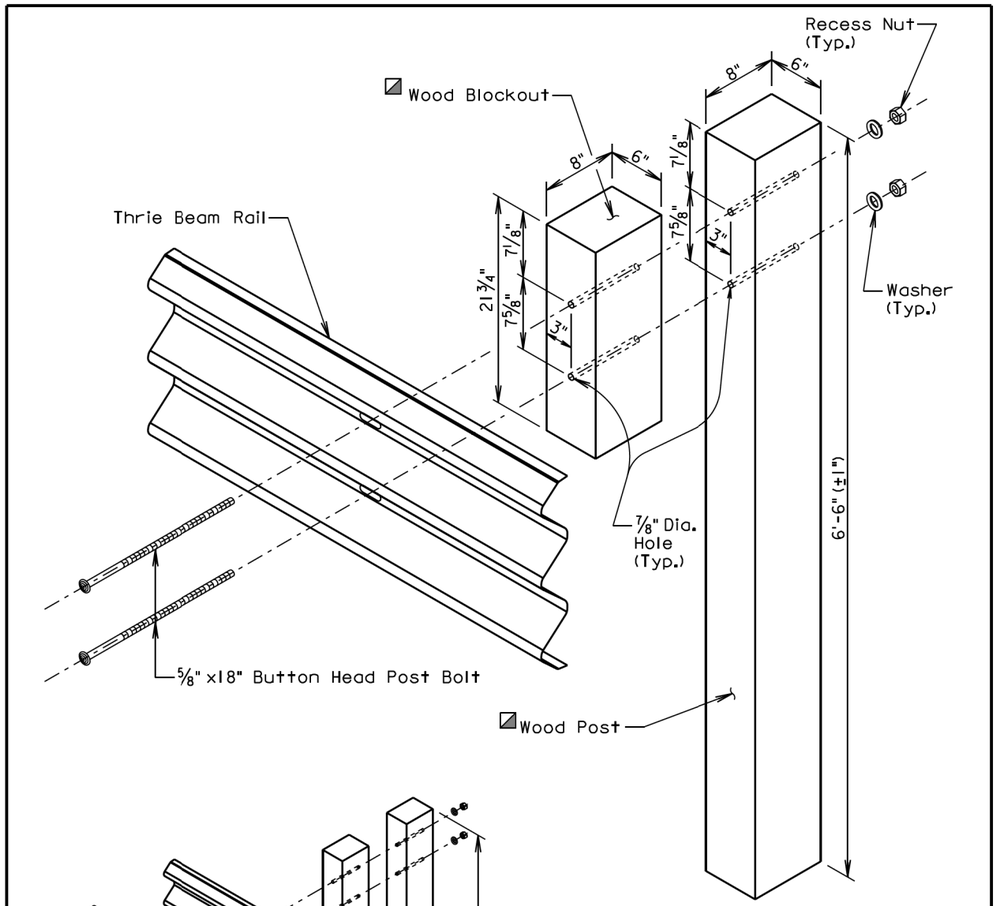
☑ The post and blockout illustrated above is typical for standard thrie beam guardrail. When other variations of posts and blockouts are specified on other standard plates (e.g. transitions) then the posts and blockouts shall be as specified on the other standard plates or as specified in the plans.

Slots in the rails shall 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 shall be smooth and free of burrs or notches.

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

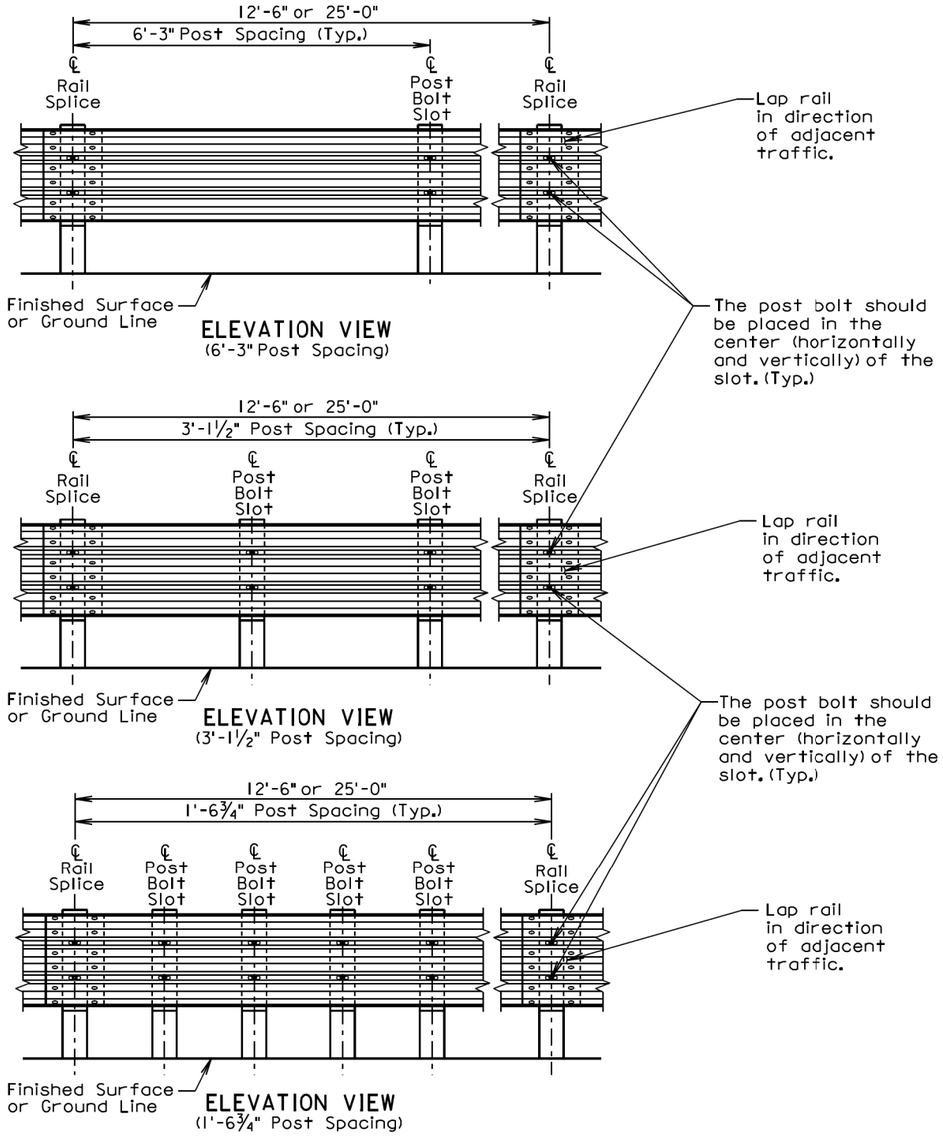
September 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 1 of 5



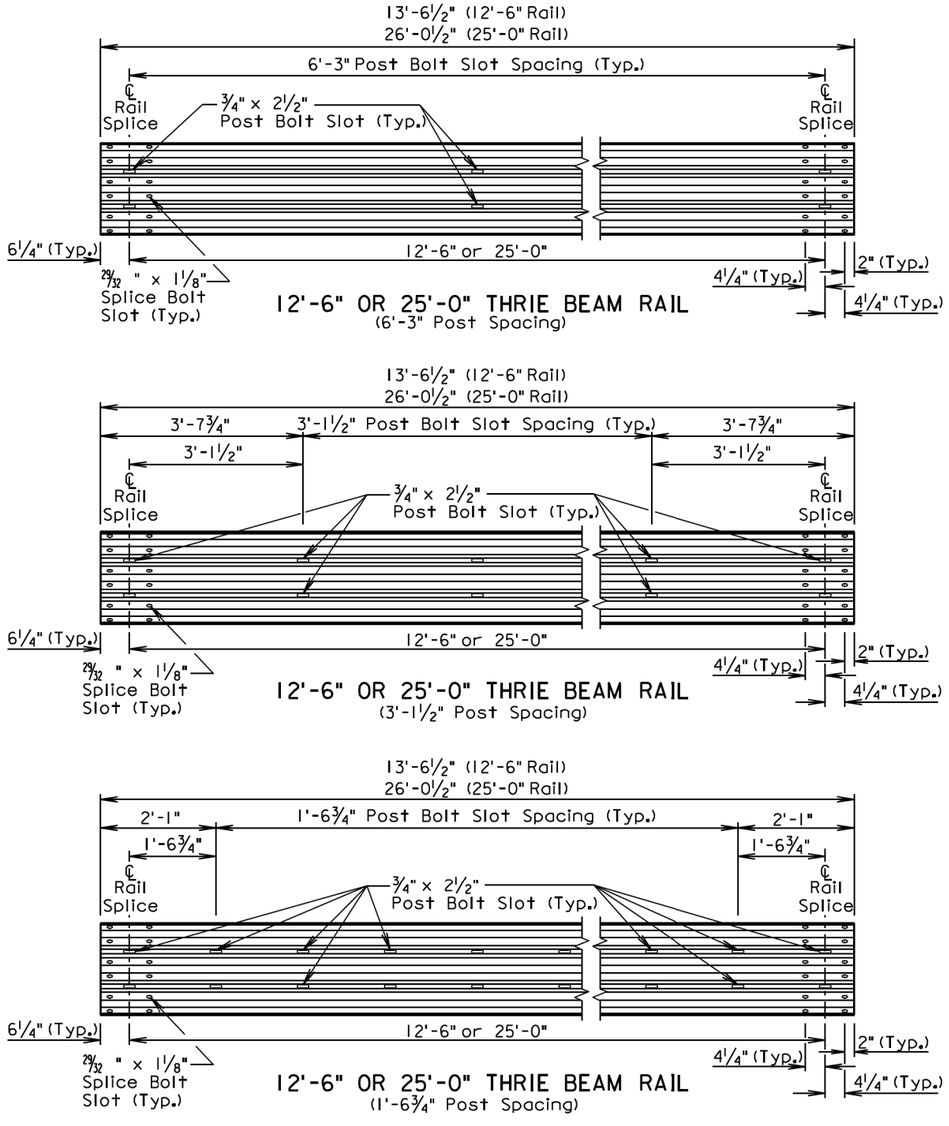
September 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 2 of 5



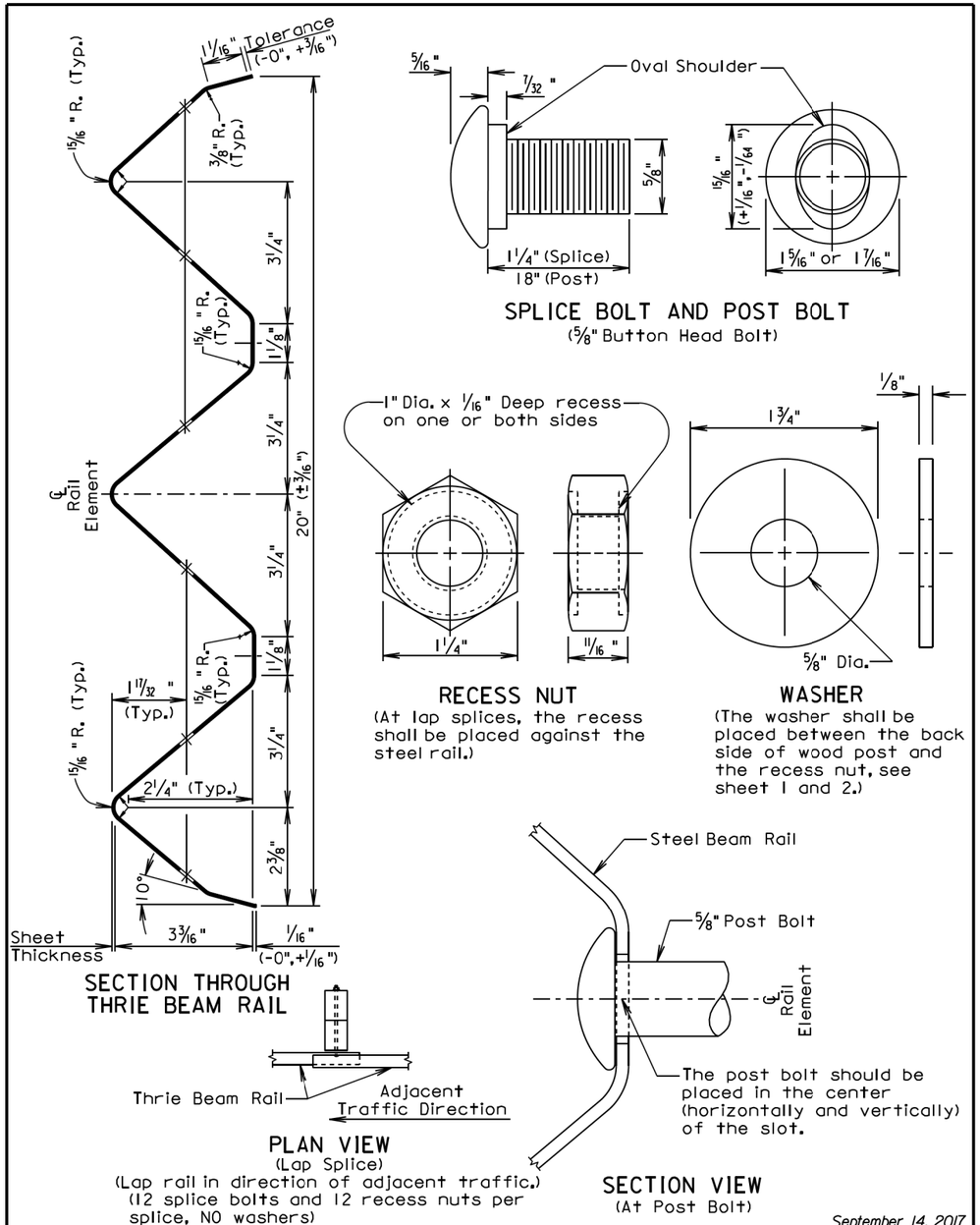
September 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 3 of 5



September 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 4 of 5



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

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

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

SECTION THROUGH THRIE BEAM RAIL

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)

The post bolt should be placed in the center (horizontally and vertically) of the slot.

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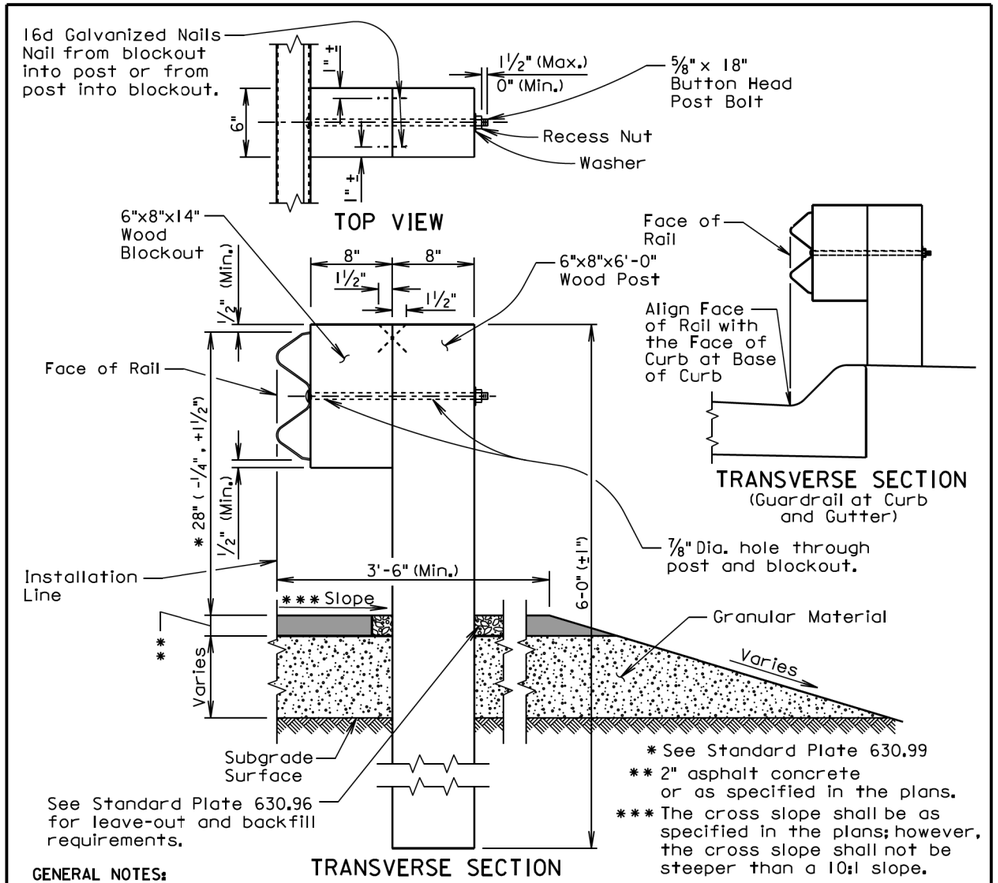
Published Date: 2nd Qtr. 2018	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 5 of 5



GENERAL NOTES:

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

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall 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 shall be Type I and Class A (12 Ga.) unless specified otherwise in the plans.

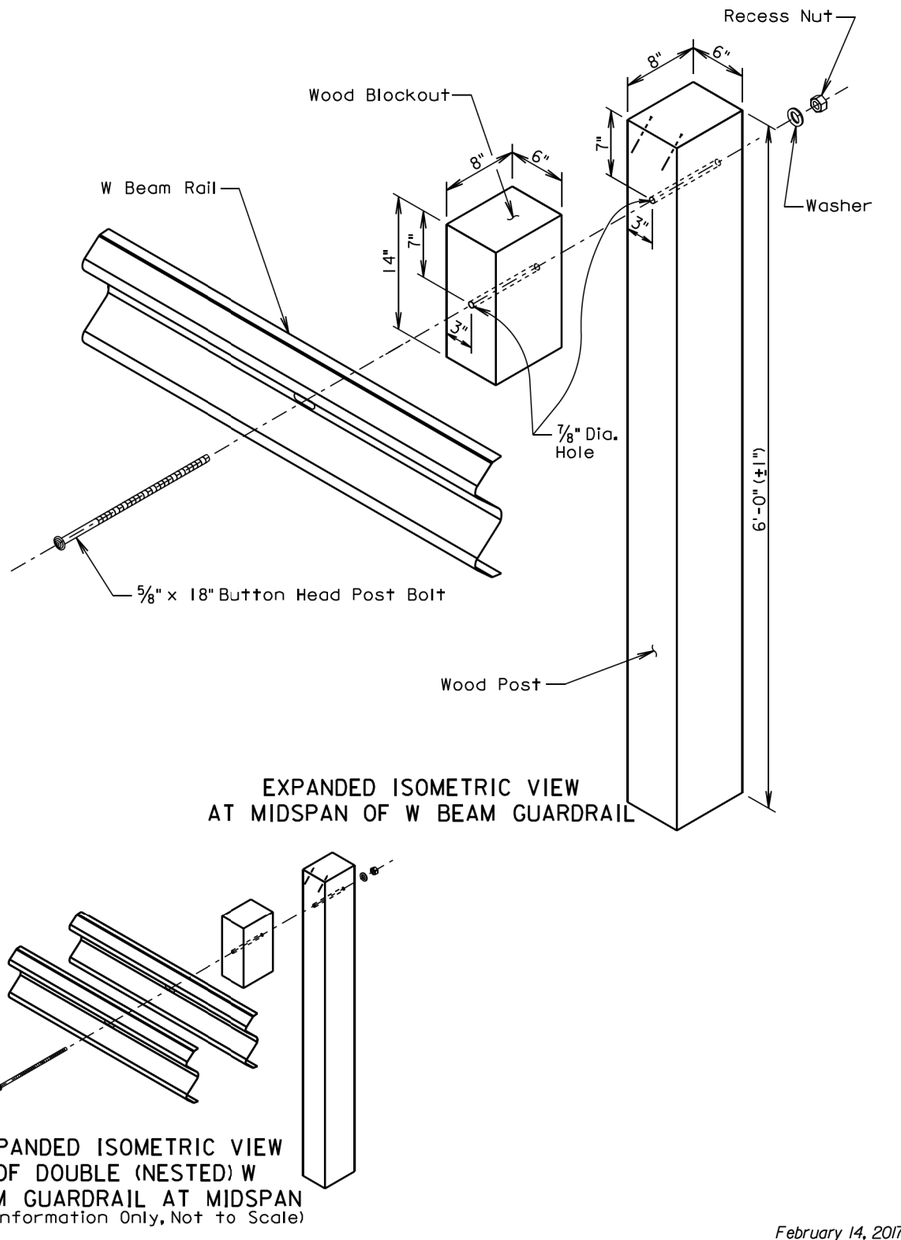
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

Slots in the rails shall 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 shall be smooth and free of burrs or notches.

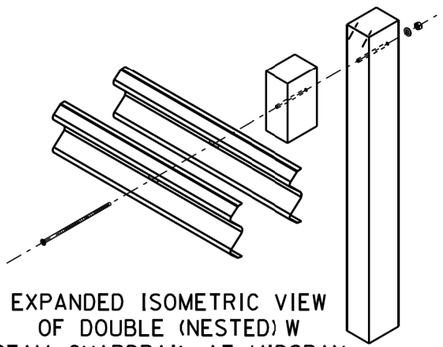
The top of post and top of block shall have a true square cut. The top of block shall be a maximum of ±1/2 inch from the top of the post.

February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 1 of 5



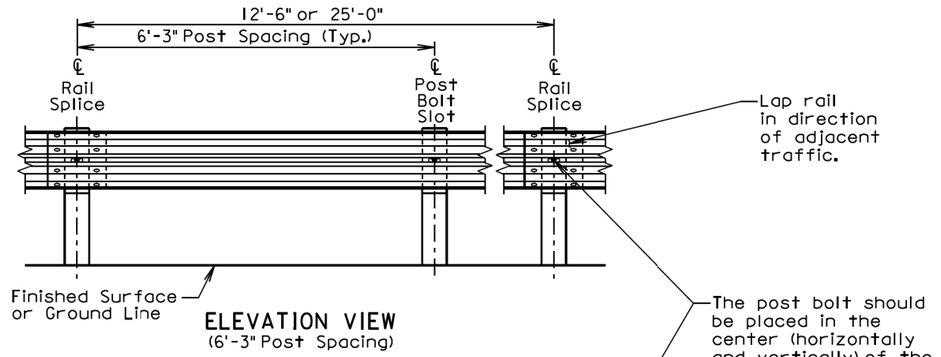
EXPANDED ISOMETRIC VIEW
AT MIDSPAN OF W BEAM GUARDRAIL



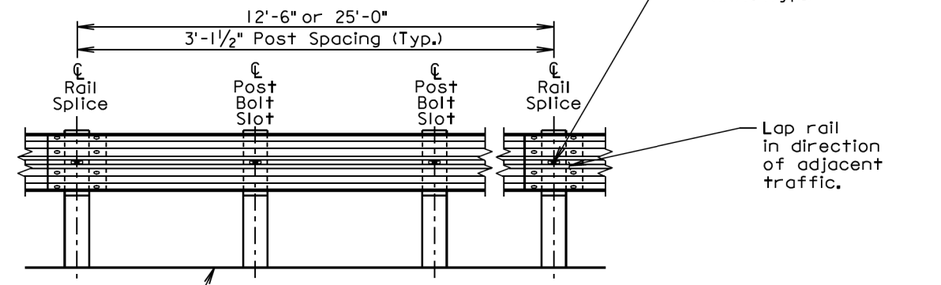
EXPANDED ISOMETRIC VIEW
OF DOUBLE (NESTED) W
BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

February 14, 2017

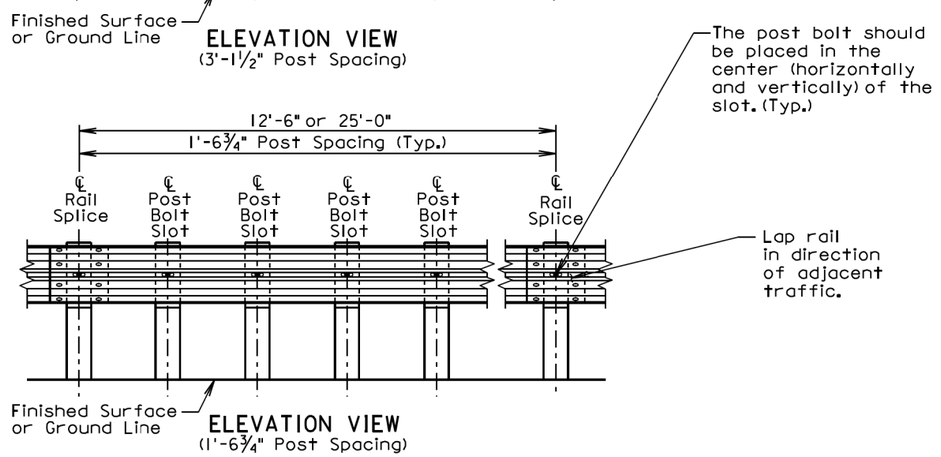
Published Date: 2nd Qtr. 2018	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 2 of 5



ELEVATION VIEW
(6'-3" Post Spacing)



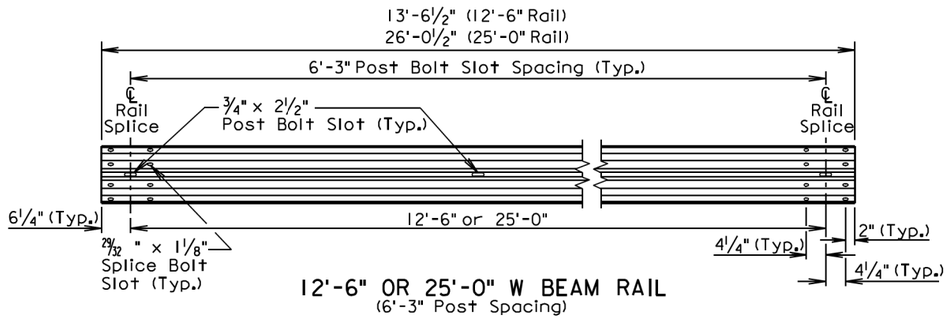
ELEVATION VIEW
(3'-1½" Post Spacing)



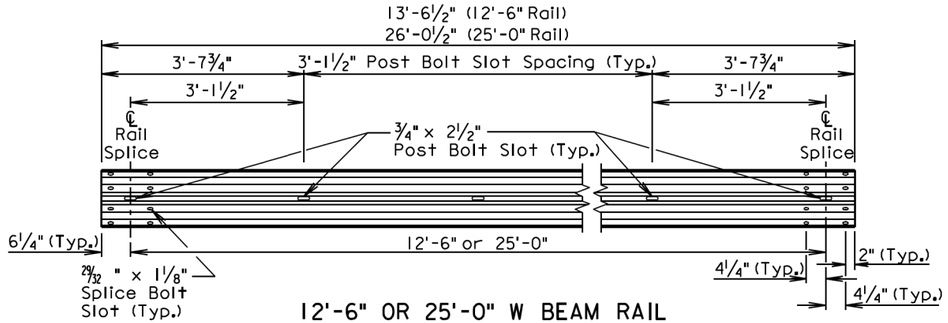
ELEVATION VIEW
(1'-6¾" Post Spacing)

February 14, 2017

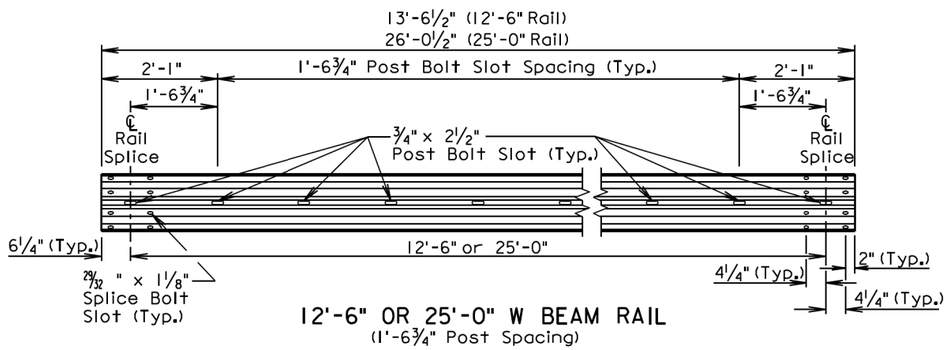
Published Date: 2nd Qtr. 2018	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 3 of 5



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



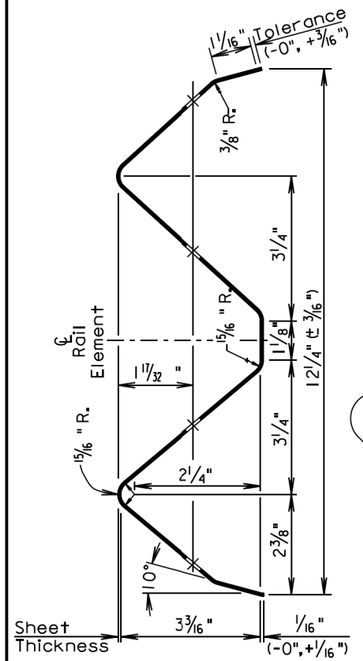
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" Post Spacing)



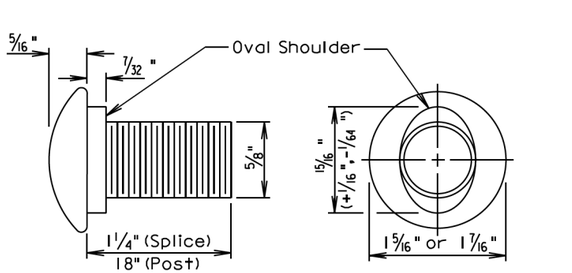
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

February 14, 2017

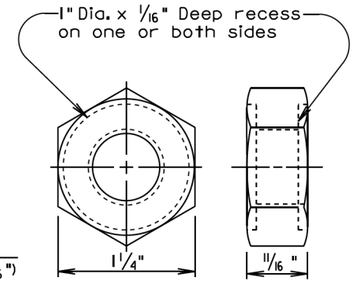
Published Date: 2nd Qtr. 2018	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 4 of 5



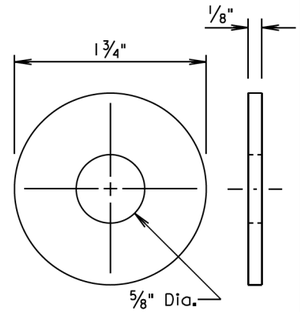
SECTION THROUGH W BEAM RAIL



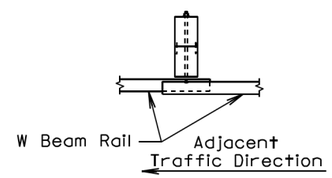
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



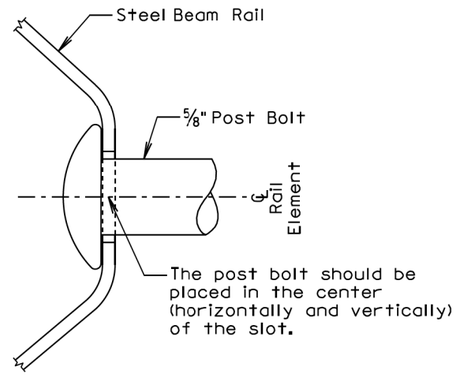
RECESS NUT
(At lap splices, the recess shall be placed against the steel rail.)



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



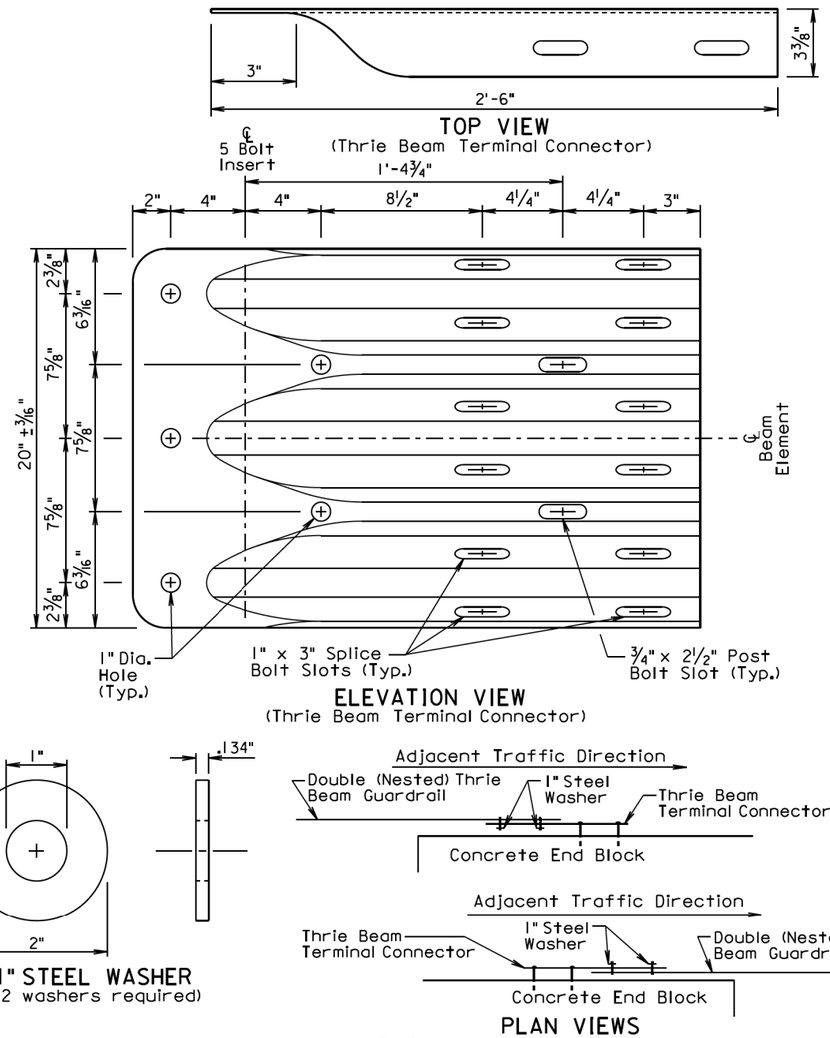
PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 5 of 5



GENERAL NOTES:

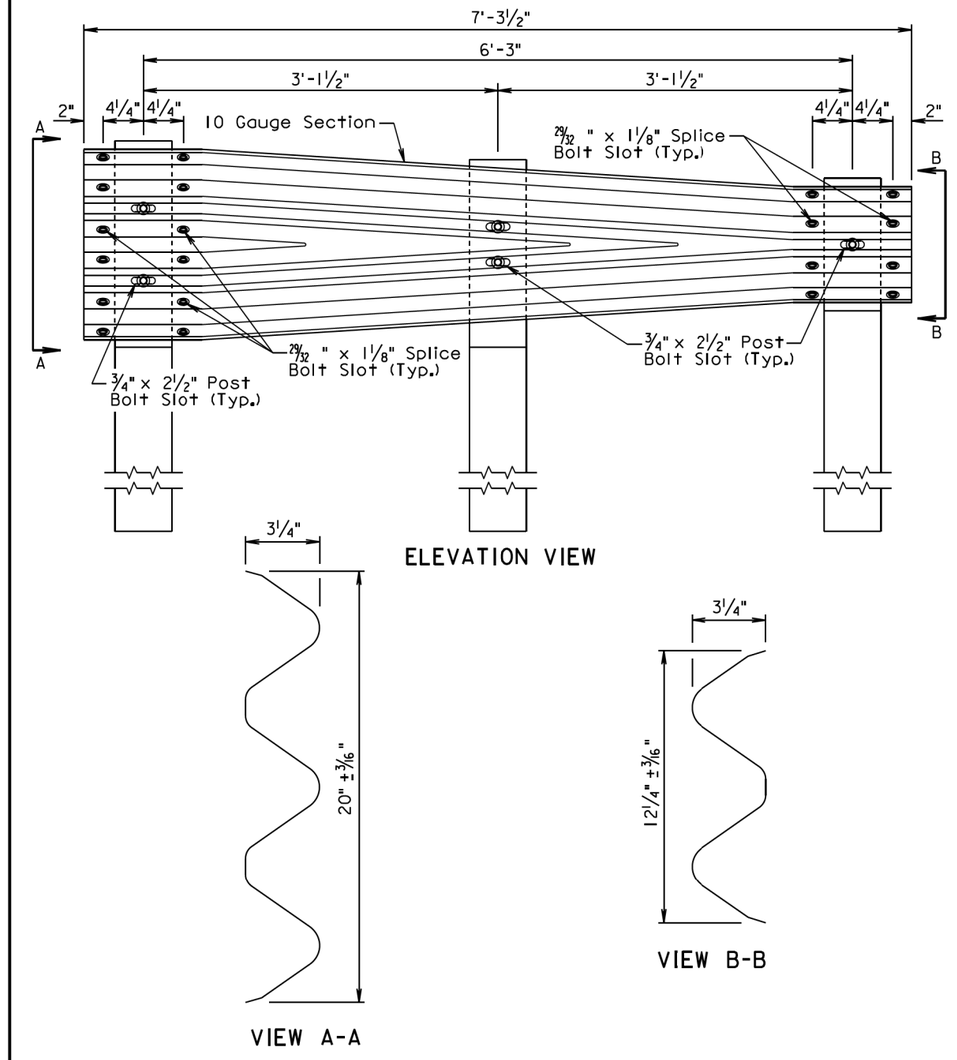
Thrie Beam Terminal Connectors shall be 10 gauge.

When the thrie beam terminal connector is used to connect the rail to the bridge or concrete end block, 1" steel washers shall be used at the lap splice and the washers shall 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 shall be incidental to the contract unit price of the respective guardrail item it is attached to.

February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	THRIE BEAM TERMINAL CONNECTOR	PLATE NUMBER 630.47
			Sheet 1 of 1

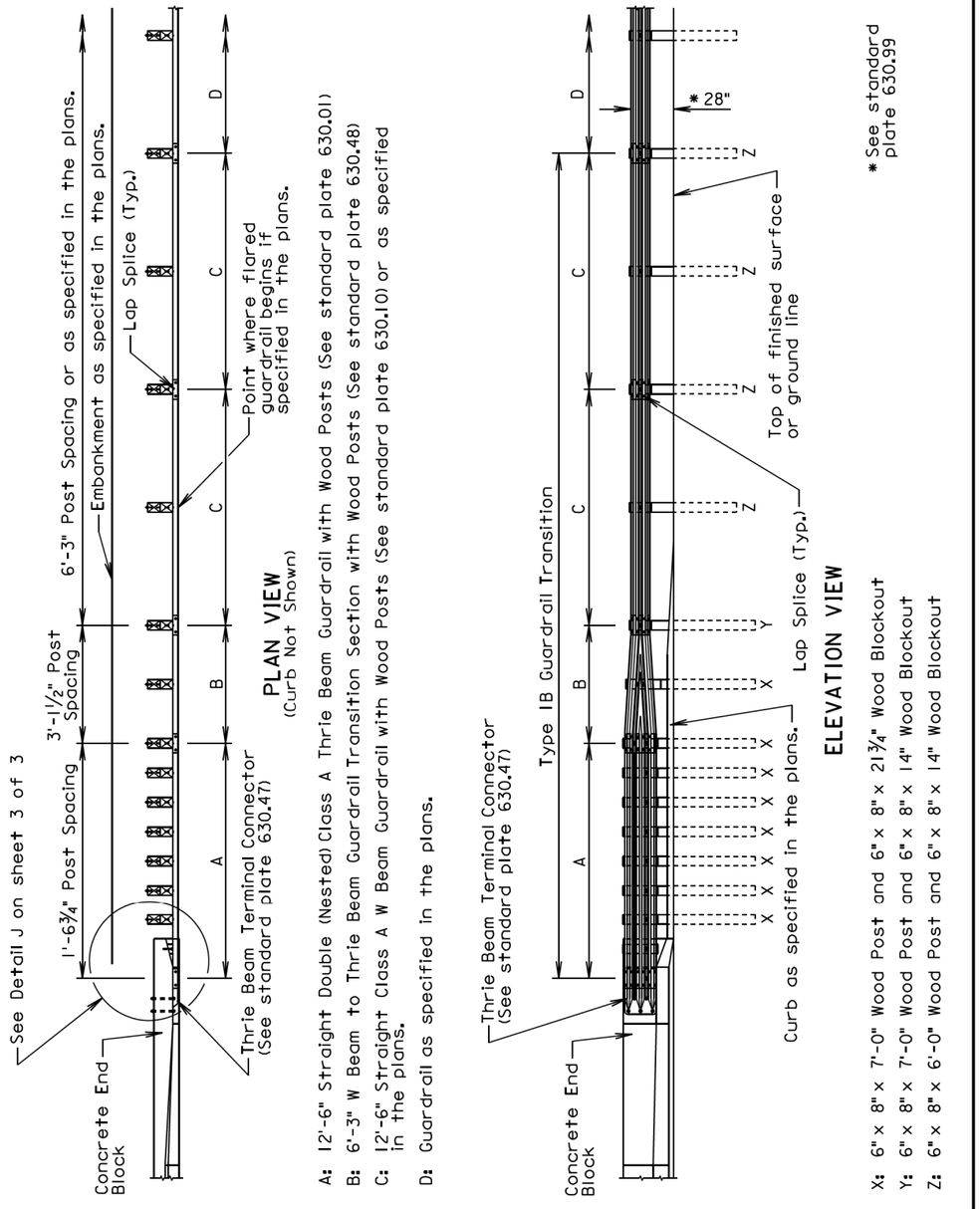


GENERAL NOTES:

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 shall be incidental to the contract unit price per each for "W Beam to Thrie Beam Guardrail Transition".

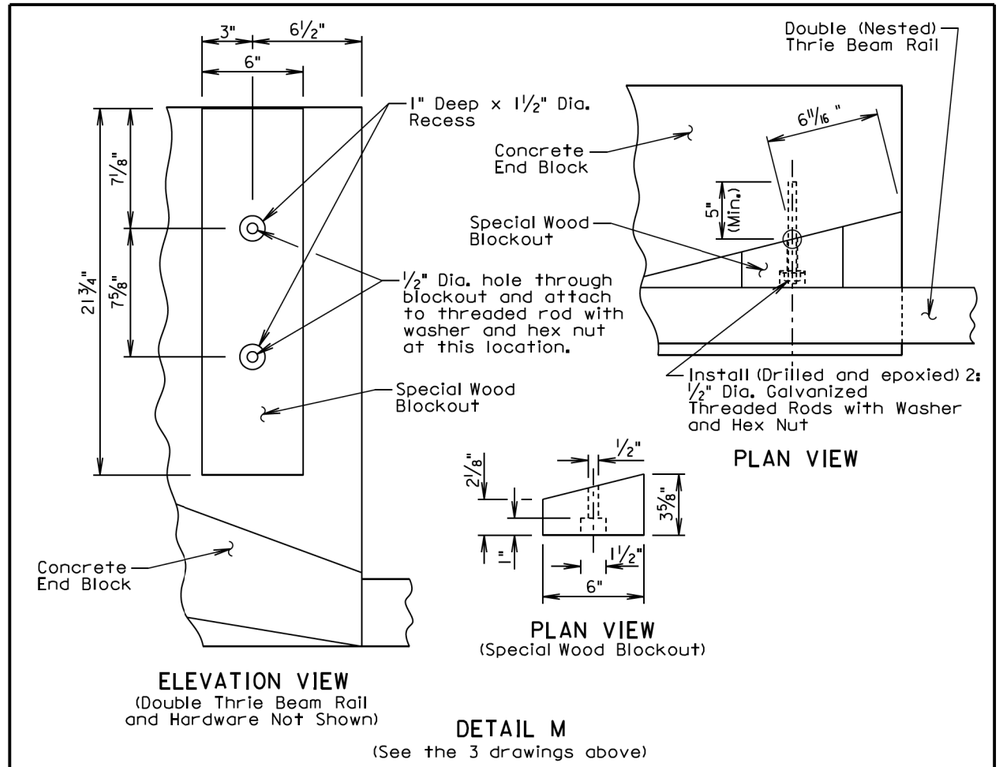
February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.48
			Sheet 1 of 1



February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	TYPE 1B GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)	PLATE NUMBER 630.53
			Sheet 1 of 3



DETAIL M

(See the 3 drawings above)

GENERAL NOTES FOR INSTALLING THREADED RODS INTO CONCRETE:

The special wood blockout may need to be installed at a different location than what is shown in Detail M as the in place concrete end block may not have been constructed to the exact dimensions. The blockout may be moved in the longitudinal (sideways) direction as necessary such that the blockout rests against the back of the double (nested) thrie beam rail and the rail is straight. The location shall be approved by the Engineer before installation of the blockout.

The threaded rods shall be ½" diameter and conform to ASTM F1554 Grade 55. The threaded rods shall be embedded a minimum of 5" into the concrete.

The diameter of the drilled holes shall not be less than ⅛" greater or more than ⅜" greater than the diameter of the threaded rods or as per the Manufacturer's recommendations. The holes shall not be drilled using core bits. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to the epoxy injection.

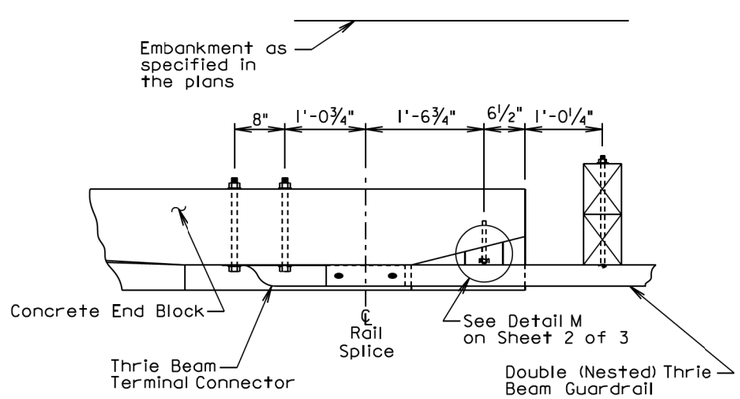
The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).

Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes ⅓ to ½ full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel rod. Rotate the steel rod during installation to eliminate voids and ensure complete bonding of the rod. Insertion of the rods by the dipping or painting methods will not be allowed.

Loads shall not be applied to the epoxy grouted threaded rods until the epoxy resin has had sufficient time to cure as specified by the epoxy resin Manufacturer.

February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	TYPE 1B GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)	PLATE NUMBER 630.53
			Sheet 2 of 3



DETAIL J

GENERAL NOTES:

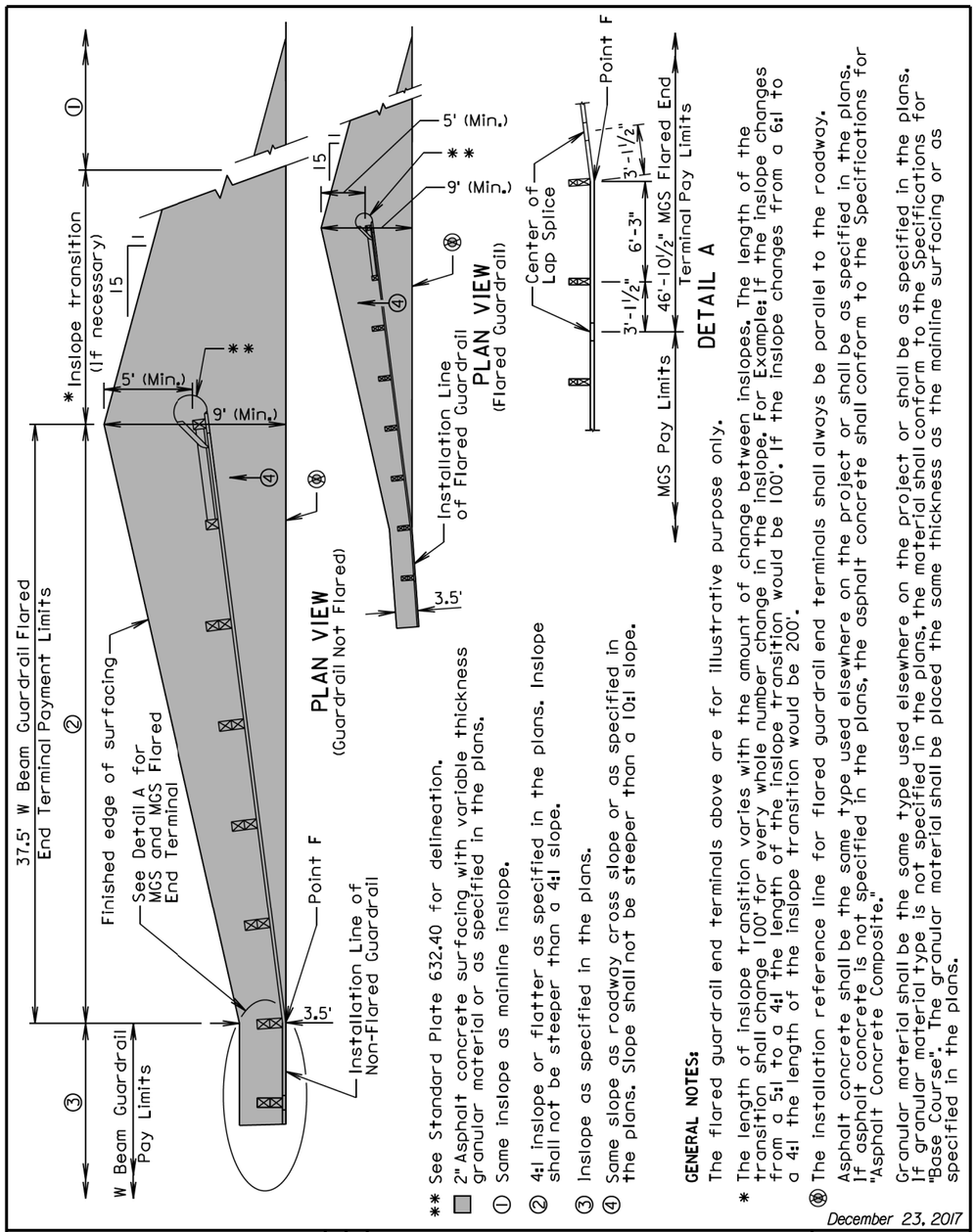
Throughout the type 1B guardrail transition, slots in the rails shall be provided as specified in the plans and by the Manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges shall 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, special blockout, thrie beam terminal connector, and hardware shall 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 1B guardrail transition including labor, equipment, and materials shall be included in the contract unit price for the respective guardrail bid items.

February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	TYPE 1B GUARDRAIL TRANSITION (CONCRETE END BLOCK TO W BEAM GUARDRAIL)	PLATE NUMBER 630.53
			Sheet 3 of 3



** 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.
② 4:1 inslope or flatter as specified in the plans. Inslope shall not be steeper than a 4:1 slope.
③ Inslope as specified in the plans.
④ Same slope as roadway cross slope or as specified in the plans. Slope shall 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 shall 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'.

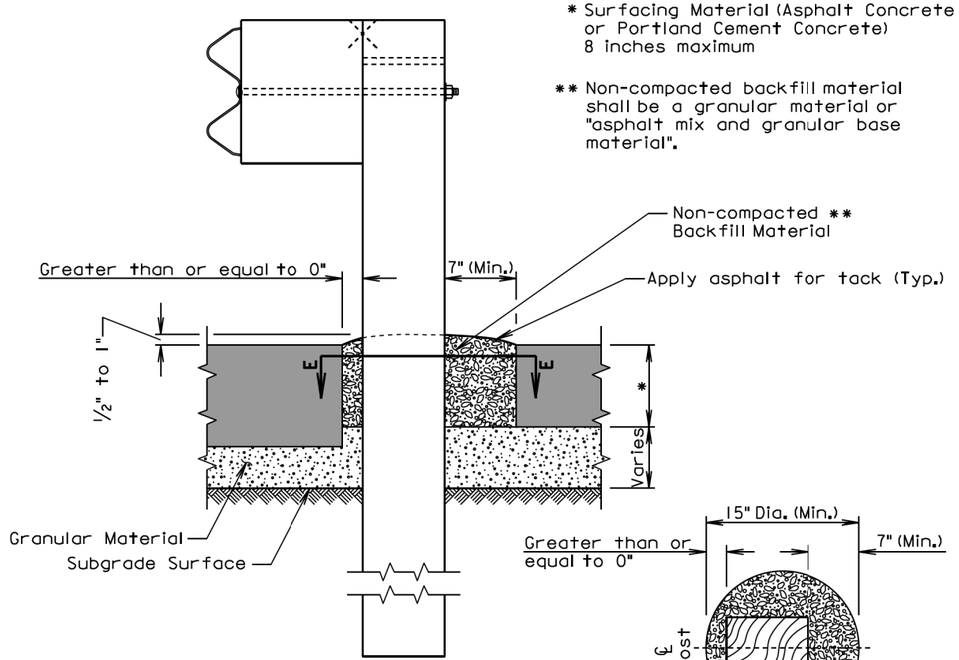
Ⓜ The installation reference line for flared guardrail end terminals shall always be parallel to the roadway.

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

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

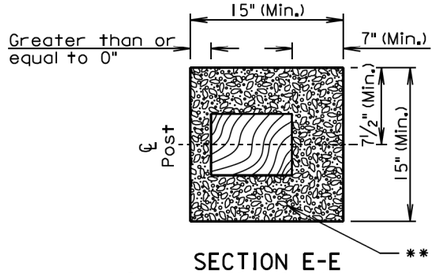
December 23, 2017

Published Date: 2nd Qtr. 2018	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR W BEAM GUARDRAIL FLARED END TERMINAL AND MGS FLARED END TERMINAL	PLATE NUMBER 630.87
			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)



SECTION E-E
(Square 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.

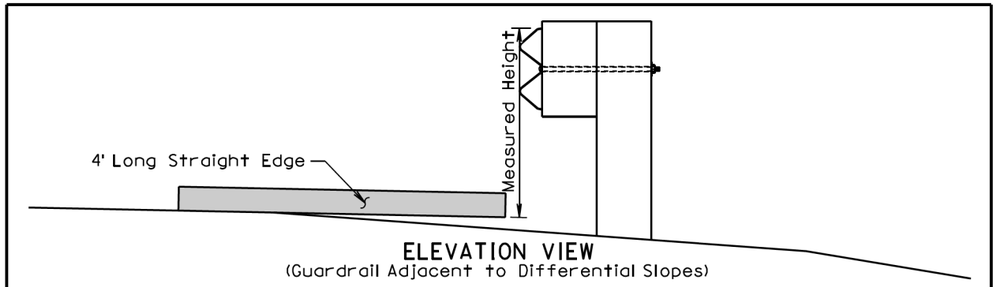
The backfill material shall be mounded ½ inch to 1 inch above the top of the adjacent surfacing as illustrated above.

Asphalt for tack shall be applied to the surface of the backfill material at the rate of .15 to .20 gallons per square yard.

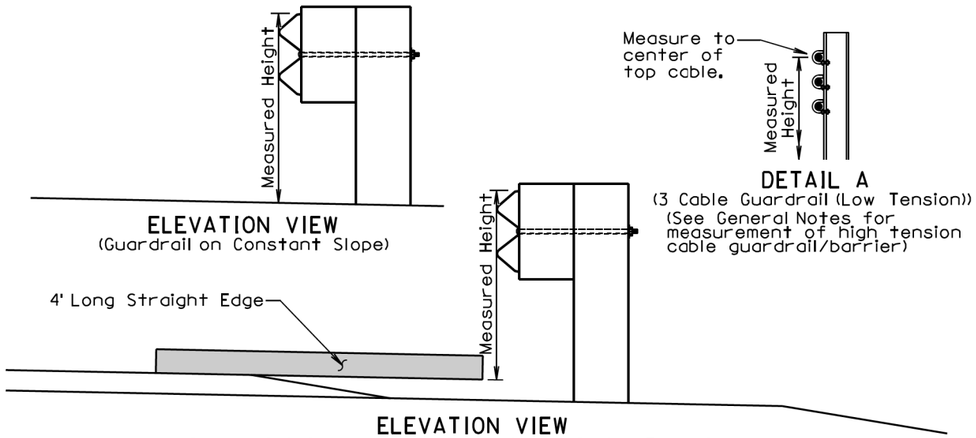
All costs for constructing the leave-out including labor, equipment, and materials which includes the backfill material and tack coat shall be incidental to the contract unit price for the respective guardrail bid item.

February 14, 2017

Published Date: 2nd Qtr. 2018	SDDOT	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96
			Sheet 1 of 1



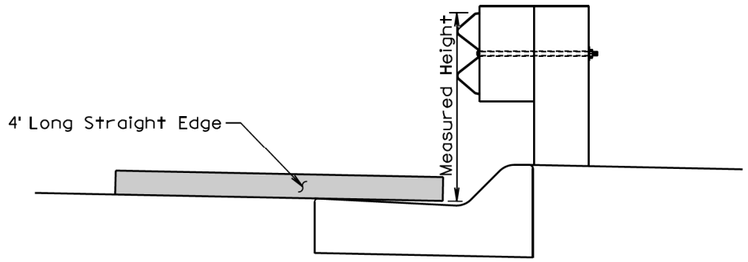
ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)



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:

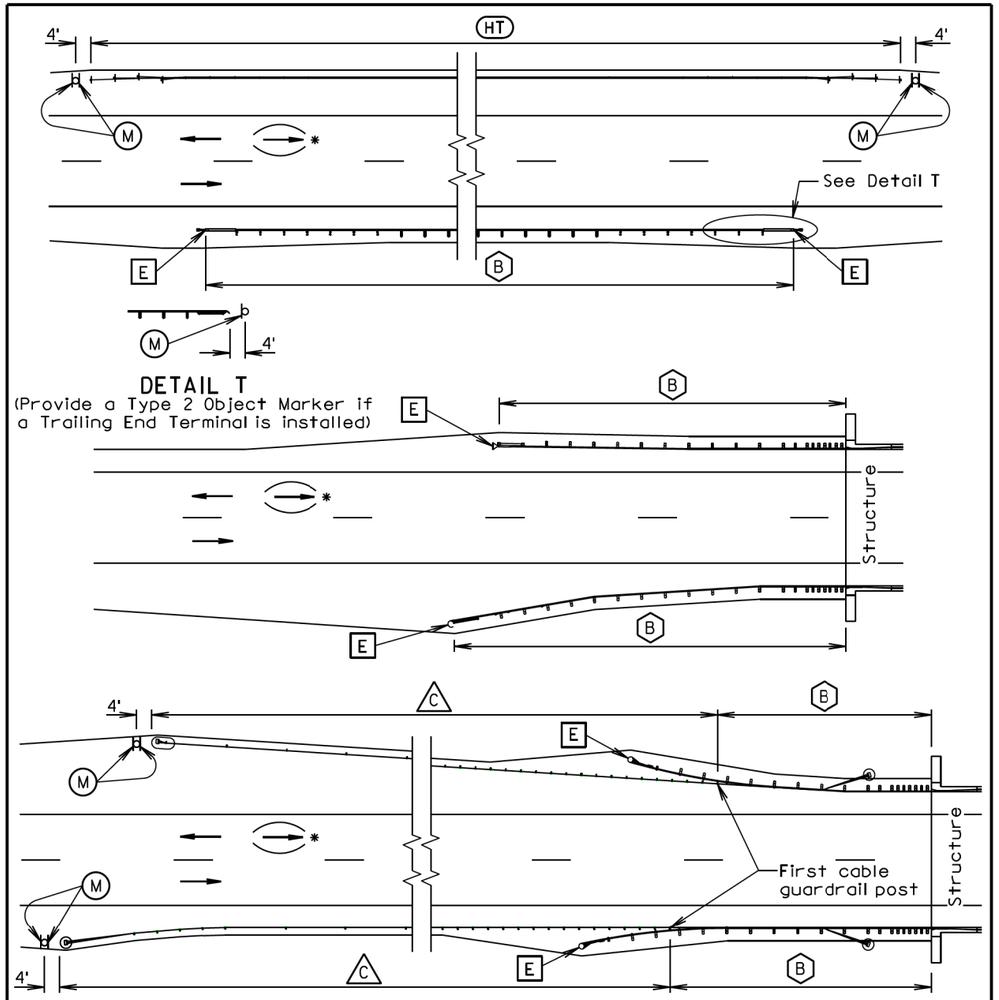
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier shall be measured in accordance with this standard plate.

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

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

December 23, 2017

Published Date: 2nd Qtr. 2018	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99
			Sheet 1 of 1



TYPICAL GUARDRAIL LAYOUTS

(B) Steel Beam Guardrail Delineation

[E] Guardrail End Terminal Object Marker

(C) 3 Cable Guardrail Delineation

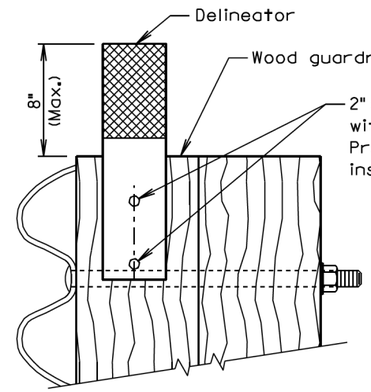
(HT) High Tension Cable Guardrail Delineation

(M) Type 2 Object Marker

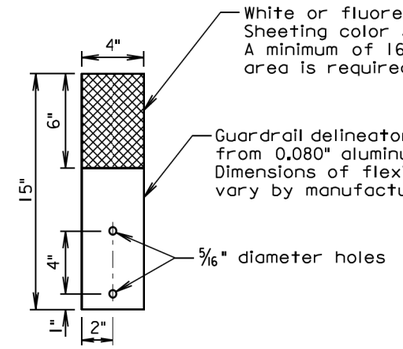
* For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

June 9, 2017

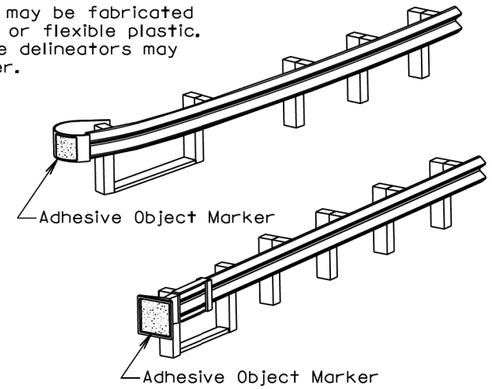
Published Date: 2nd Qtr. 2018	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



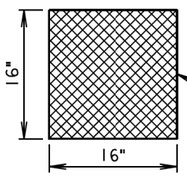
(B) STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



[E] GUARDRAIL END TERMINAL OBJECT MARKER



ADHESIVE OBJECT MARKER

Adhesive object marker dimensions may vary due to shape of terminal end. A minimum of 256 square inches of object marker sheeting area is required. The sheeting shall be fluorescent yellow.

June 9, 2017

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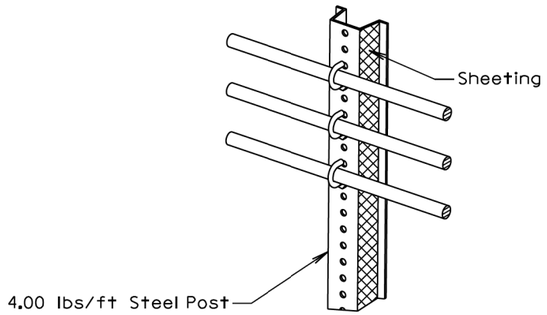
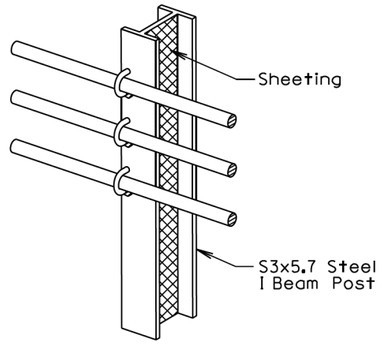
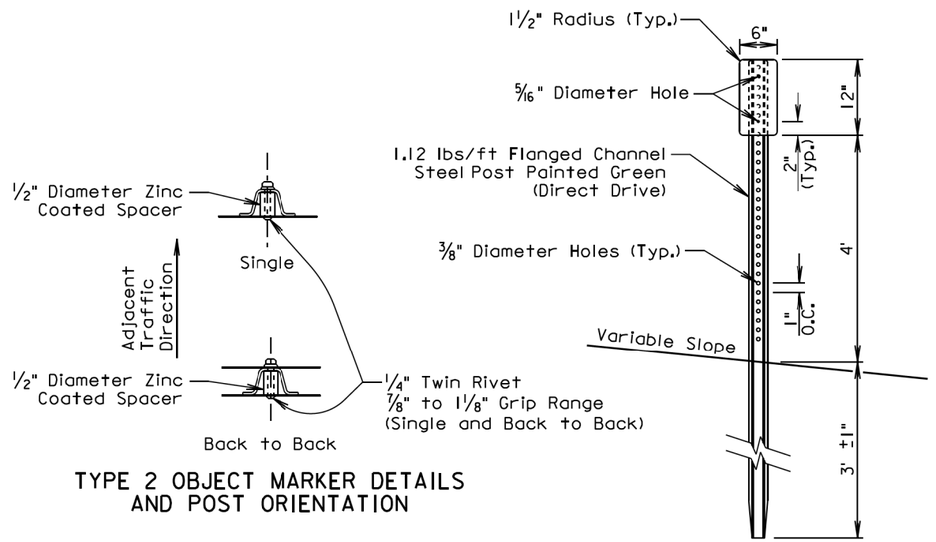


Ⓒ 3 CABLE GUARDRAIL DELINEATION



Ⓒ 3 CABLE GUARDRAIL DELINEATION



TYPE 2 OBJECT MARKER DETAILS
AND POST ORIENTATION

Ⓜ TYPE 2 OBJECT MARKER

(For Marking 3 Cable Guardrail Anchor,
High Tension Cable Guardrail Anchor,
and Trailing End Terminal)

June 9, 2017

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GENERAL NOTES:

The delineation of high tension cable guardrail shall be reflective sheeting placed back to back on every other post cap or cable spacer. The sheeting shall be type XI in conformance with ASTM D4956. The color of the reflective sheeting shall be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail posts shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting shall be on both sides of the delineators and guardrail posts and shall be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

When steel beam guardrail is attached to a bridge the first delineator shall be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators shall be placed in addition to the end terminal yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail, the delineators shall be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators shall be placed in addition to the end terminal yellow object markers. The spacing between the delineators shall be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail, the delineators shall be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail shall be included in the contract unit price per each for "Guardrail Delineator".

All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail shall be incidental to the respective high tension cable guardrail bid item.

An adhesive object marker shall be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor, high tension cable guardrail anchor, and trailing end terminal at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

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Published Date: 2nd Qtr. 2018	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4

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.

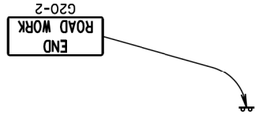
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall 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 shall be drums or 42" cones.

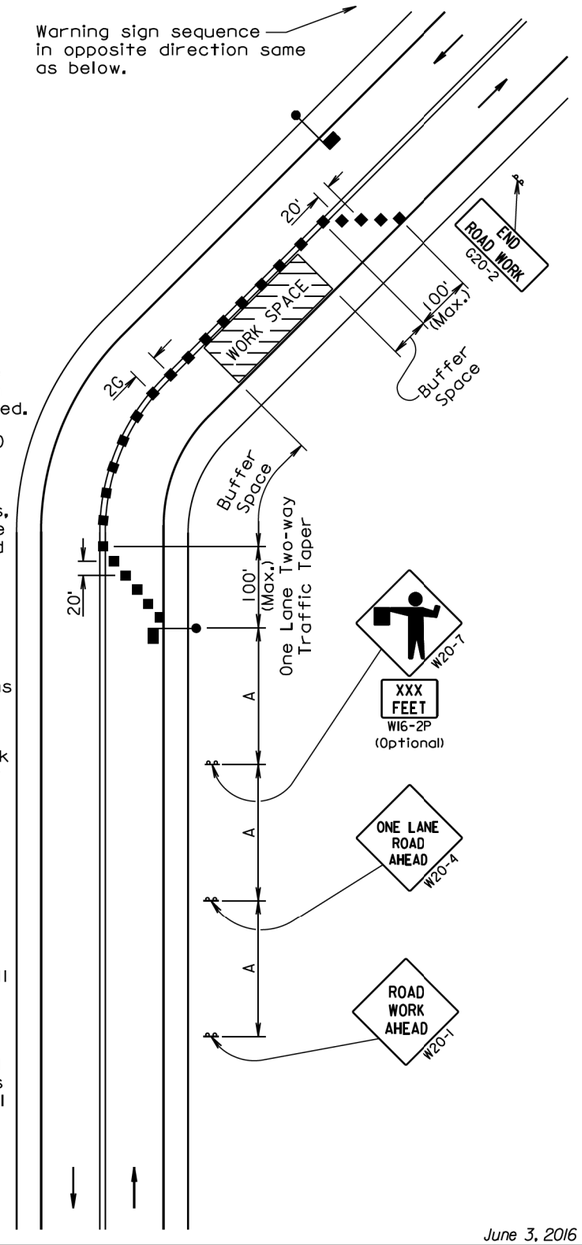
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



Channelizing devices and flaggers shall 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.

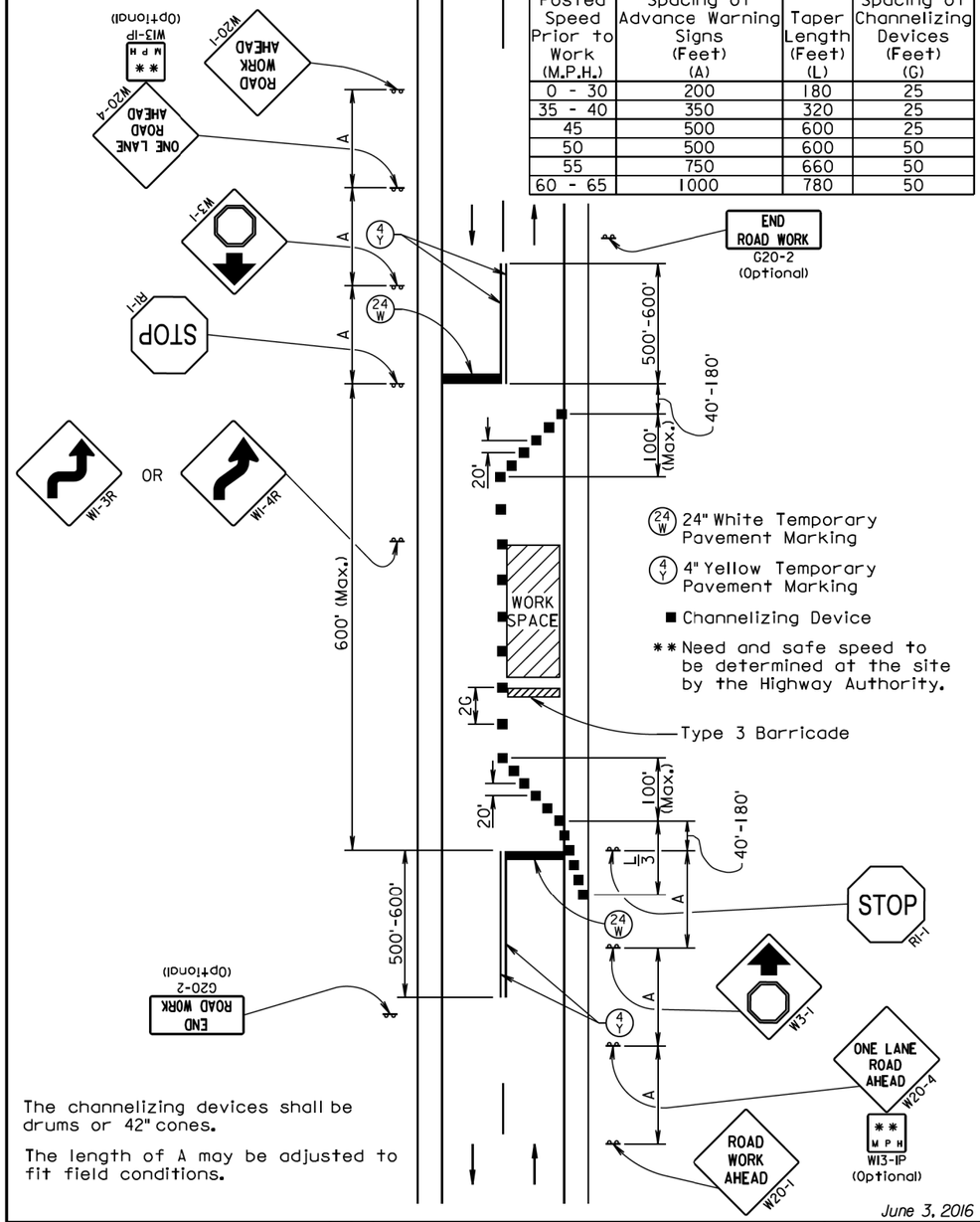
The length of A may be adjusted to fit field conditions.



June 3, 2016

Published Date: 2nd Qtr. 2018	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 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

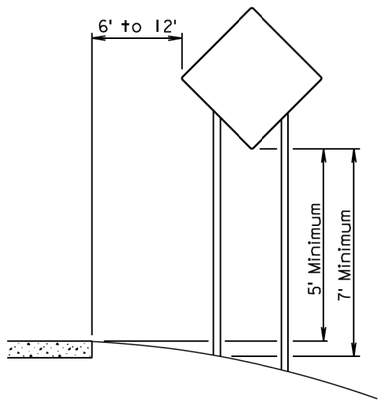


The channelizing devices shall be drums or 42" cones.

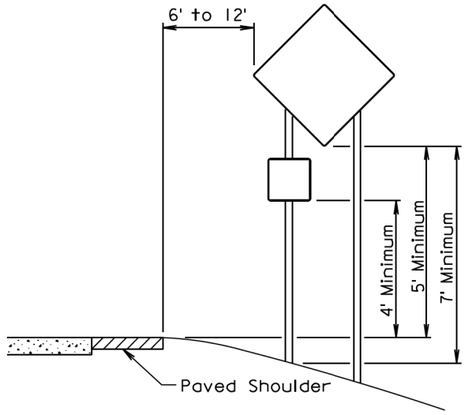
The length of A may be adjusted to fit field conditions.

June 3, 2016

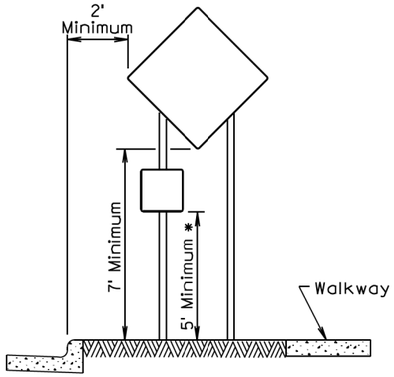
Published Date: 2nd Qtr. 2018	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25
			Sheet 1 of 1



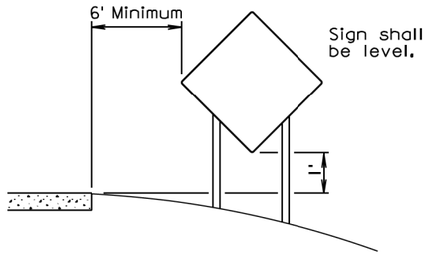
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

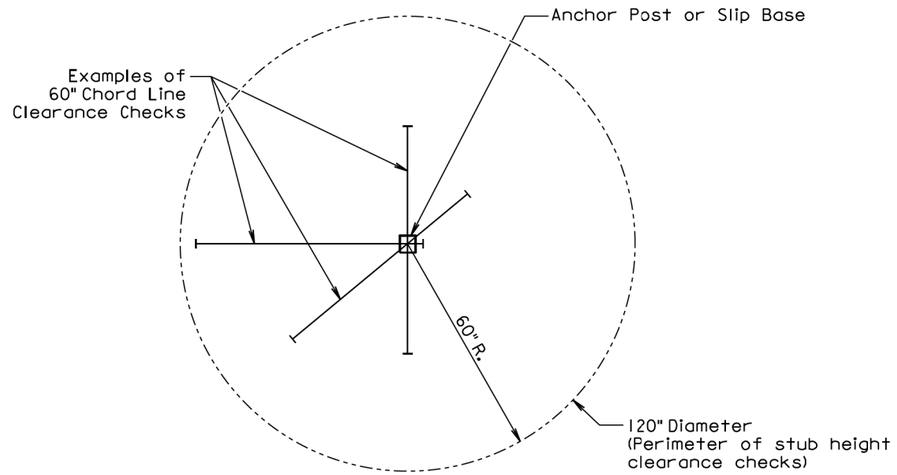


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

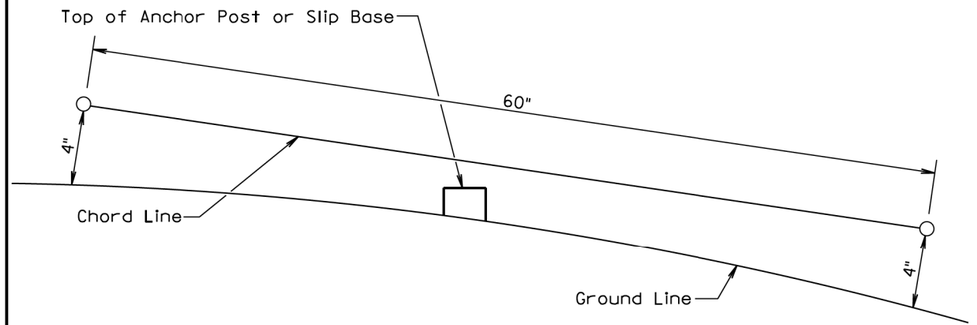
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22,2014

Published Date: 2nd Qtr. 2018	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 2nd Qtr. 2018	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1