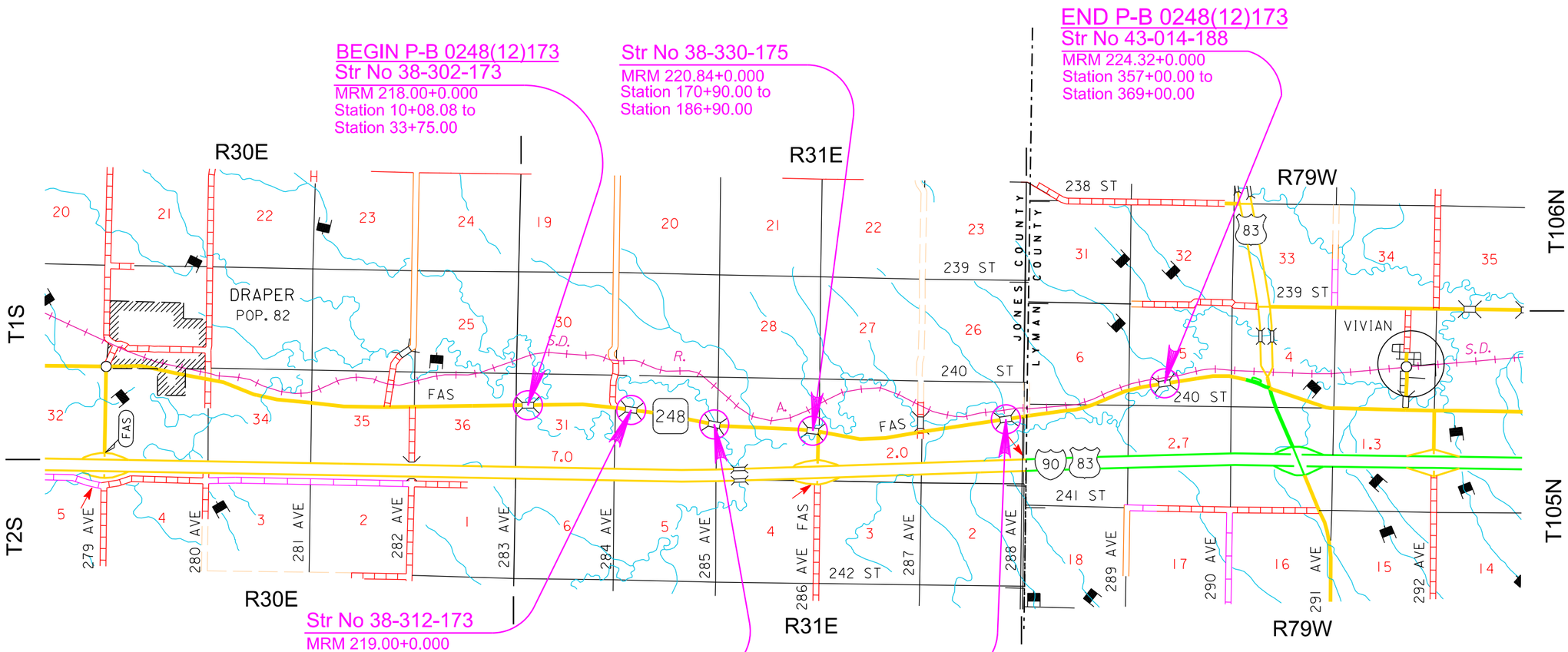
SECTION B: GRADING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B1	B72

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SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0030	Maintenance of Traffic Diversion(s)	Lump Sum	LS
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	123	Each
009E3225	Reestablish Public Land Survey System Corner	5	Each
009E3230	Grade Staking	3.351	Mile
009E3245	Final Cross Section Survey	3.351	Mile
009E3250	Miscellaneous Staking	6.702	Mile
009E3280	Slope Staking	3.351	Mile
009E3290	Structure Staking	6	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	23,085	Ft
110E0730	Remove Beam Guardrail	3,732.0	Ft
120E0010	Unclassified Excavation	347,001	CuYd
120E0600	Contractor Furnished Borrow Excavation	45,458	CuYd
120E1000	Muck Excavation	513	CuYd
120E2000	Undercutting	31,462	CuYd
120E6100	Water for Embankment	4,734.9	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	31,007.5	Ton
421E0100	Pipe Culvert Undercut	83	CuYd
430E0700	Precast Concrete Headwall for Drain	2	Each
450E0122	18" RCP Class 2, Furnish	28	Ft
450E0130	18" RCP, Install	28	Ft
450E0142	24" RCP Class 2, Furnish	70	Ft
450E0143	24" RCP Class 3, Furnish	232	Ft
450E0144	24" RCP Class 4, Furnish	70	Ft
450E0150	24" RCP, Install	372	Ft
450E2200	24" RCP Sloped End, Furnish	6	Each
450E2201	24" RCP Sloped End, Install	6	Each
450E2304	18" RCP Safety End, Furnish	1	Each
450E2307	18" RCP Safety End, Install	1	Each
450E4758	18" CMP 14 Gauge, Furnish	22	Ft
450E4759	18" CMP 16 Gauge, Furnish	120	Ft
450E4760	18" CMP, Install	142	Ft
450E4808	48" CMP 14 Gauge, Furnish	90	Ft
450E4810	48" CMP, Install	90	Ft
450E5010	18" CMP Elbow, Furnish	2	Each
450E5011	18" CMP Elbow, Install	2	Each
450E5306	18" CMP Sloped End, Furnish	1	Each

SECTION B ESTIMATE OF QUANTITIES (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5307	18" CMP Sloped End, Install	1	Each
450E5406	18" CMP Safety End, Furnish	4	Each
450E5407	18" CMP Safety End, Install	4	Each
450E5433	48" CMP Safety End with Bars, Furnish	2	Each
450E5435	48" CMP Safety End, Install	2	Each
450E8009	18" RCP to CMP Transition, Furnish	1	Each
450E8010	18" Pipe Transition, Install	1	Each
451E0006	6" PVC Encasement Pipe	294	Ft
600E0200	Type II Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	22,219	Ft
620E0520	Type 2 Temporary Fence	22,462	Ft
620E1020	2 Post Panel	110	Each
620E1030	3 Post Panel	4	Each
630E0500	Type 1 MGS	137.5	Ft
630E1500	Type 1 Guardrail Transition	2	Each
630E1510	Type 3 Guardrail Transition	2	Each
630E2018	MGS MASH Tangent End Terminal	4	Each
632E2220	Guardrail Delineator	16	Each
632E2510	Type 2 Object Marker Back to Back	4	Each
670E0200	Type A Frame and Grate	2	Each
670E1010	2' x 3' Type B Drop Inlet	2	Each
670E5400	Precast Drop Inlet Collar	2	Each
680E0304	4" Perforated Dual Wall HDPE Pipe	50	Ft
680E0324	4" Dual Wall HDPE Pipe	100	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	1,450	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	419.0	Ton
700E0210	Class B Riprap	1,121.0	Ton
720E1010	PVC Coated Bank and Channel Protection Gabion	4.5	CuYd
831E0110	Type B Drainage Fabric	1,800	SqYd
831E0400	Impermeable Plastic Membrane	28	SqYd
900E0010	Refurbish Single Mailbox	2	Each
998E0100	Railroad Protective Insurance	Lump Sum	LS

MACHINE CONTROL GRADING & MODEL INFORMATION

Electronic design files are made available by the SDDOT Bid Letting Office through the SDDOT's SharePoint Directory for Contractors. The roadway subgrade models xml files provided for this project includes the following highway features: guardrail widening, inslope transitions at pipes and box culverts, and mailbox turnouts. It is the Contractor's responsibility to verify the features listed as being incorporated in the model are actually included. If any discrepancy exists, the plans will govern over the provided electronic information, regardless of the features listed above.

Highway features not included in the roadway subgrade model(s) xml file(s) are the following: intersecting roads and entrances, ditch blocks, undercutting, muck excavation, and unstable excavation.

Other subgrade model xml files provided for this project include channel work and the bridge berms top of riprap.

The model contains transitions from a typical section with fence berms to the structure typical sections, the transitions may require some field warping and fitting and will be approved by the Engineer.

These files are provided for informational purposes only. The information shown in the plans will govern over the provided electronic information. The Contractor assumes the risk of error if the information is used for any purposes for which the information was not intended. The Contractor assumes all risk of any assumptions or manipulations made of the electronic information.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste.

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

The estimated excavation required for placing the Granular Bridge End Backfill and/or Bridge End Embankment, and for constructing the Bridge Berm(s) between bridge abutments and shaping the bridge waterway channel(s) are listed in the Table of Unclassified Excavation. Overburden Excavation for Riprap is not included in the Unclassified Excavation quantity. Refer to Section E for information regarding the Overburden Excavation for Riprap. The excavated material from the construction of the Bridge Berm(s) and shaping the bridge waterway channel(s) should be disposed of at a site provided by the Contractor and approved by the Engineer. This waste material is not included in the Waste shown in the Table of Excavation Quantities by Balances.

Special ditch grades and other sections of the roadway different than the typical sections will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

For embankment soil in the upper 3 feet of subgrade an optimum moisture of 20% or greater, the Density Specification (Percent of Maximum Dry Density) will be 92% to 98% and the Moisture Specification (Percent of Optimum Moisture) will be -2% to +3%.

As per Section 120.3 B.3.a of the Specifications, soil used to construct the roadway embankment within the area bounded by the toe of the berm slope and extending to a line 100 feet back from the bridge end will have an optimum moisture of less than 25%. The Contractor is advised that it is unlikely any soil meeting this requirement will be available within the project limits. Mixing a more suitable material with the onsite soils will likely be required to meet this specification. No additional compensation will be made to the Contractor for producing the suitable material.

The Contractor is advised that at the time of the subsurface investigation (January-February 2021), groundwater was encountered at levels that will be above or near the bottom of the proposed ditch cuts in the area around Stations 16+00 and 17+00. Seasonal changes may affect the groundwater elevations.

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GRADING OPERATIONS (CONTINUED)

The Contractor is encouraged to review the soil borings shown in the cross sections for additional water table information.

A copy of the subsurface/subgrade investigation is available for review at the Pierre Region and Winner Area offices.

Temporary fence and/or permanent fence will be placed ahead of the grading operation unless otherwise directed by the Engineer.

GENERAL GEOLOGY

The project alignment traverses the Pierre Shale and localized area of Quaternary Alluvium Deposits. The South Dakota Geologic Survey describes the deposits/formations that will be encountered on the project as outlined below:

Quaternary Alluvium deposits consist of clay to boulder sized clasts with locally abundant organic material. Alluvial material may be encountered within the Medicine Creek floodplain.

The Pierre Shale consists of blue-gray to dark gray, fissile to blocky shale with persistent beds of bentonite, black organic shale, and light-brown chalky shale. Contains minor sandstone, conglomerate, and abundant carbonate and ferruginous concretions.

CLASSIFICATION OF EXCAVATION

Most of the material encountered should be able to be excavated using conventional methods associated with normal Unclassified Excavation. Muck Excavation will be required at the areas shown in the plans or as directed by the Engineer.

TYPE II FIELD LABORATORY

The Contractor will provide high-speed broadband internet connection to the field lab. The multiport internet connection may be hardwired, through a cellular method, or other approved service that allows Wi-Fi connection. Prior to obtaining the internet connection, the Contractor will submit the internet connection's technical data to the Area Office to check for compatibility with the state's computer equipment. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. The internet service will be incidental to the contract unit price per each for "Type II Field Laboratory".

UTILITIES

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

TRAFFIC DIVERSIONS

The traffic diversions are located at Sta's. 27+93, 80+40, 124+36, 177+50, 275+97, and 361+22. The traffic diversions will be constructed according to Section 5.14 B of the Specifications. Installation and removal of the traffic diversions will meet all requirements as set forth in the South Dakota Surface Water Quality Standards.

The traffic diversions are located at Sta's. 27+93, 80+40, 124+36, 177+50, 275+97, and 361+22 will be constructed according to the geometric layouts shown in the plans with the temporary drainage structure(s) provided in the following table. The temporary structure sizes are designed to pass the design flood frequency flows without overtopping the traffic diversion grade, to minimize potential upstream flooding, and are sized to meet FEMA (Federal Emergency Management Agency) requirements where applicable. The structure(s) will be placed at the flowline elevation and location as stated in the "Table of Temporary Drainage Structures in Traffic Diversions". If the Contractor proposes to use a different size drainage structure and/or a different geometric layout for the temporary diversion, the proposal must be submitted to the Engineer during the project preconstruction meeting. This information will be forwarded to the DOT Hydraulics Office for review. Construction of the traffic diversion(s) will not be allowed until approval of the proposal is obtained from the Hydraulics Office.

Table of Temporary Drainage Structures in Traffic Diversions

Traffic Diversion Location	Design Flood Frequency	* Flowline Elevation	Ordinary High Water Elevation	Temporary Structure Option 1
27+93	2 year	2048.7	2049.7	3-48" CMP
80+40	2 year	2025.3	2025.4	3-48" CMP
124+36	2 year	1995.2	1998.0	3-48" CMP
177+50	2 year	1973.9	1974.8	3-48" CMP
275+97	2 year	1939.2	1942.0	3-48" CMP
361+22	2 year	1915.3	1918.2	3-48" CMP

* The flowline elevation is at the inlet of the traffic diversion.

Costs to provide temporary drainage structures will be incidental to the contract lump sum price for "Maintenance of Traffic Diversion(s)".

Traffic diversions in waterways will be constructed such that any material placed below the ordinary high water elevation will conform to the requirements of class B riprap. Type B drainage fabric will be placed under the riprap and under any diversion embankment that is placed in a wetland as shown in the construction plans. Type B drainage fabric will also be placed above riprap. A portion or all of the quantity of riprap used in the traffic diversion is included in the quantity for "Class B Riprap" as shown in the Section E-Structures estimate of quantities. If the quantity of riprap for the permanent installation at the structure is less than the quantity needed at the traffic diversion, then the additional quantity of riprap is included in the quantity for "Class B Riprap" in the Section B-Grading estimate of quantities. At the Contractor's discretion, the riprap used for the traffic diversion may be reused as riprap for the structure and all costs incurred to place and remove the riprap at the traffic diversion and subsequently place the riprap at the structure will be incidental to the contract unit price per ton for "Class B Riprap". If the Contractor elects not to reuse the riprap from the traffic diversion or if there is surplus riprap after the traffic diversion riprap is reused, the Contractor can retain ownership of the riprap or waste the riprap at a site as approved by the Project Engineer.

The traffic diversions will be built in close conformity to the plan gradeline. Unless otherwise shown in the plans, the traffic diversions will be removed such that the original ground surface contours and elevations are restored and the hydraulic capacity of the waterway is maintained. The removal will be done in such a manner that there is minimal disturbance to the channel bed.

The removed traffic diversion embankment will be used in the mainline embankment unless otherwise approved by the Engineer.

Material may be available from mainline excavation to construct the traffic diversion if sequencing allows. If mainline excavation material is utilized for traffic diversion embankment a CCO will change Contractor Furnished Borrow to Unclassified Excavation.

TABLE OF TRAFFIC DIVERSION RIPRAP AND DRAINAGE FABRIC

Station	L/R	Ordinary High Water Elevation	Traffic Diversion Riprap (Ton)	Section E Class B Riprap (Ton)	Section B Class B Riprap (Ton)	Type B Drainage Fabric (SqYd)
28+00	R	2049.7	550	74	476	426
80+00	R	2025.4	114	74	40	105
124+00	R	1998.0	622	96	526	593
177+00	R	1974.8	175	96	79	200
276+00	L	1942.0	77	96		170
361+00	R	1918.2	303	1,640		291
		Totals:	1,847	2,076	1,121	1,785

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SHRINKAGE FACTOR: Embankment +25% to +40%

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Alignment	Station	to	Station	Excavation (CuYd)	* Undercut (CuYd)	* Muck Exc. (CuYd)	* Contractor Furnished Borrow Exc. (CuYd)	Total Excavation (CuYd)	**Out-of-Balance Exc. (CuYd)	** Waste (CuYd)	** Haul (CuYdSta)	** Out-of-Balance Haul (CuYdSta)
Mainline	10+08.08		33+75	73,823	6,443	513		80,779		34,832	229,239	
Mainline	63+27.31		94+38	67,266	6,502			73,768	4,693		311,866	138,444
Mainline	108+69		141+97	66,426	5,856			72,282	38,789		272,233	3,178,830
Mainline	170+90		186+90	17,469	5,697			23,165		10,209	6,860	
Mainline	271+61		280+00	825	2,941		4,891	8,657				
Mainline	357+00		369+00	3,229	4,023		864	8,116			2,688	
Div 28	1+50		11+00	809			8,374	9,183			756	
Div 80	1+50		12+00	400			14,242	14,642			50	
Div 124	1+50		11+00	5,208			12,673	10,740			10,740	
Div 177	1+50		10+00	5,572				5,572		2,787	1,449	
Div 276	1+00		8+00	273			3,002	3,275				
Div 361	1+00		8+50	1,276			1,412	2,688			1,352	
			Totals:	242,576	31,462	513	45,458	312,867	43,482	47,828	837,233	3,317,274

* The quantities for these items are in the Estimate of Quantities under their respective contract items.
** The quantities for these items are for information only.

TABLE OF UNCLASSIFIED EXCAVATION

	(CuYd)
Excavation	242,576
Undercut	31,462
Topsoil	28,004
Exc. for RCBC Installation	19,412
Exc. for Deep Pipe Removal	7,705
Exc. for Granular Bridge End Backfill and/or Bridge End Embankment	475
Exc. for Bridge Berm(s) between bridge abutments and channel shaping	961
Salvaged Asphalt Mix and Granular Base Material (from cut sections)	11,521
Salvaged Asphalt Mix and Granular Base Material (from fill sections)	4,885
Total:	347,001

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil and salvaged surfacing items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The Unstable Material Excavation quantity is included in the Excavation quantity listed in the Table of Unclassified Excavation. When finaling a project, the Unstable Material Excavation quantity will be added to the Excavation quantity to compute the Unclassified Excavation quantity.

Out-of-Balance Excavation is material obtained from waste generated from excavation from other balances. The quantity of Out-of-Balance Excavation is included in the Excavation quantity in the balance where it is excavated and is paid for once as Unclassified Excavation.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil will be used in place of the estimated Topsoil quantity. The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed and/or salvaged.

Salvaged Asphalt Mix and Granular Base Material will be paid for at the contract unit price per ton and is also included in and paid for once as Unclassified Excavation. As shown in the Table of Unclassified Excavation, the estimated quantity of 4,885 cubic yards of Salvaged Asphalt Mix and Granular Base Material from fill sections will be added to the Excavation quantity to determine the Unclassified Excavation quantity. When finaling a project, the quantities of Salvaged Asphalt Mix and Granular Base Material from fill sections will not be adjusted according to field measurements. The quantity of Salvaged Asphalt Mix and Granular Base Material from cut sections will not be added to the Excavation quantity as it is already in the cuts on the final cross sections.

WASTE EXCAVATION

The quantity of waste in the Table of Excavation Quantities by Balances that is muck excavation or excess excavation material will be disposed of at a Contractor furnished site acceptable to the Engineer. Waste material that is not muck excavation should be used as Out-of-Balance Excavation where specified in the plans.

HAUL

Included in the Table of Excavation Quantities by Balances are Out-of-Balance Haul, and Haul. They are not pay items and are for informational purposes only. The mass haul diagram is available as part of the bid package for use in figuring this haul.

Out-of-Balance Haul: Estimated quantity (CuYdSta) for moving material from an earthwork balance to another earthwork balance.

Haul: Estimated quantity (CuYdSta) for moving unclassified excavation material to the locations where it is needed throughout the earthwork balance.

For Purpose of Extra Haul Computations:

Average Haul = (Haul + Out-of-Balance Haul)/Unclassified Excavation = 4,257,174/347,001 = 12.3 Sta.

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TABLE OF OUT-OF-BALANCE HAUL

Earthwork Balance Location Hauled From	Earthwork Balance Location Hauled To	Out-of-Balance Haul Distance (Sta)	Out-of-Balance Exc. (CuYd)	Out-of-Balance Haul (CuYdSta)
Mainline-33+75	Mainline-63+27	29.5	4,693	138,444
Mainline-33+75	Mainline-121+64	87.9	28,580	2,512,182
Mainline-186+90	Mainline-121+64	65.3	10,209	666,648
		Total:	43,482	3,317,274

Stations in the above table are estimated locations where the Out-of-Balance Excavation material is to be hauled out from an earthwork balance to the receiving earthwork balance for haul calculations.

The quantities listed in the above table are for information only. The quantities are also included in the Table of Excavation Quantities by Balances.

UNDERCUTTING

In all grading sections the earthen subgrade will be undercut 3 feet below the earthen subgrade surface. The undercut material or other suitable material, as directed by the Engineer, will then be replaced and compacted to the density specified for the section being constructed.

Shallow embankment sections, fills less than 3 feet in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 3 foot height of earth embankment for the entire width of roadbed. The upper 6 inches of undercut material that consists of topsoil with a high humus content will be used as topsoil, placed in the fill slopes outside the shoulders of the earthen subgrade, or placed in the lower portion (below 4 foot depth) in fills which are greater than 4 feet in height. The remaining undercut soil and soil obtained from adjacent excavation (excluding the upper 6 inches) will then be replaced and compacted to the density specified for the section being constructed.

The plan shown quantity will be the basis of payment. However, if there are additional areas of undercut other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

TABLE OF UNDERCUTTING LOCATIONS RURAL

Station	to	Station
10+08		33+75
63+27		94+38
108+69		141+97
170+90		186+90
271+61		280+00
357+00		369+00

UNSTABLE MATERIAL EXCAVATION

The areas of unstable material excavation are drawn on the cross sections with normal depths listed in the Table of Unstable Material Excavation. The estimated quantity of 14,568 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for “Unclassified Excavation”.

All areas designated as Unstable willl be excavated. Unstable Excavation will be required to excavate displaced or weak compressible soils and other organic materials. A nominal depth of compressible material is anticipated to be removed from the embankment footprint prior to construction of the embankment. The depth of unstable excavation may be adjusted by the Engineer to ensure a solid foundation free of organic, soft, unstable material is prepared.

The unstable material excavated on this project will be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil. Project earthwork quantities assume the excavated material is used in the embankment fill sections.

Field measurement of unstable material excavation will not be made. However, if there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

TABLE OF UNSTABLE MATERIAL EXCAVATION

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
10+08		11+75	L	2	148
10+08		11+75	R	2	91
22+00		27+00	L	2	914
25+00		27+00	R	2	250
28+50		29+50	L	2	177
28+50		29+50	R	2	192
63+27		66+50	R	2	1,067
78+00		80+00	L	2	633
78+00		80+00	R	2	746
81+00		84+50	L	2	1,492
81+00		84+50	R	2	1,633
119+00		123+50	L	3	4,015
120+00		123+50	R	2	525
125+00		129+00	L	2	1,270
125+00		129+00	R	2	1,415
			Total:		14,568

LANDSLIDE DEBRIS EXCAVATION

Excavate landslide debris and unstable compressible material creating a temporary 2:1 inslope parallel to centerline from 119+00-L± to 123+50-L± as shown in the plans and cross sections.

The Landslide Debris Excavation limits will not exceed those shown on the cross section sunless directed by the Engineer. Temporary 2:1 backslopes are required to excavate the Landslide Debris and reconstruct the inslopes.

The temporary slopes will be unstable over the long-term. However, the slopes should remain globally stable over the short-term during construction if measures are taken to divert runoff away from the slopes and construction activities are sequenced to minimize the amount of time the temporary backslopes are left exposed and unsupported. Regular Monitoring of temporary slopes is required during construction. If temporary slopes become unstable, excavation will cease, and the slope will be evaluated by the Engineer.

The estimated quantity of 10,443 cubic yards of landslide debris excavation will be paid for at the contract unit price per cubic yard for “Unclassified Excavation” and is included in the Table of Excavation Quantities by Balances. It is anticipated that most of the excavated Landslide Debris can be used in the construction embankment.

MUCK EXCAVATION

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 513 cubic yards of muck excavation will be paid for at the contract unit price per cubic yard for “Muck Excavation”.

Muck excavation consists of the removal of highly organic and/or highly saturated material from the designated areas shown on the cross sections. Highly organic muck material will not be used in the embankment but may be used as topsoil. Non-organic muck material may be used as embankment outside of the fill subgrade shoulder if it is properly handled and dried prior to placement in the embankment.

Field measurement of muck excavation will not be made unless the Engineer orders additional excavation, or when the Engineer determines, in accordance with Section 120.3 A.1 of the Specifications, that the classification of excavation be changed.

If the areas designated as muck excavation can be removed with similar equipment and procedures as used for unclassified excavation, the material will be measured and paid for as “Unclassified Excavation”.

TABLE OF MUCK EXCAVATION

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
16+00		18+00	L	3	111
16+00		18+00	R	3	89
23+00		25+00	R	3	313
				Total:	513

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SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 21. This value was obtained from testing during construction of the in-place asphalt concrete.

An estimated 31,007.5 tons (16,406.1 Cubic Yards) of asphalt mix and granular base material will be salvaged from the existing highway according to the in-place surfacing typical sections and stockpiled at a site furnished by the Contractor and satisfactory to the Engineer.

Salvaged material will be processed to meet the requirements of Section 884.2 D.7 prior to stockpiling. The Contractor will ensure that no vegetation, topsoil, subgrade, or other foreign material is incorporated into the salvaged asphalt mix and granular base material.

The salvaged material not used on the project will be stockpiled or disposed of as directed by the Engineer.

The quantity of salvaged asphalt mix and granular base material may vary from the plans.

The quantity of salvageable material is estimated from the in-place surfacing typical sections. This estimated quantity was included in the unclassified excavation quantities.

TABLE OF SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL

			Salvage and Stockpile Asphalt Mix and Granular Base Material
Station	to	Station	tons
SD 248			
10+08.08	to	27+13.93	4571.2
28+71.69	to	33+75.00	1348.8
63+27.31	to	79+70.07	4402.2
81+09.72	to	94+38.00	3559.4
108+69.00	to	123+58.06	3990.3
125+15.30	to	141+97.00	4506.5
170+90.00	to	176+72.35	1560.5
178+23.99	to	186+90.00	2320.7
271+61.00	to	275+24.93	975.2
276+70.44	to	280+00.00	883.1
357+00.00	to	360+61.11	967.7
361+82.80	to	369+00.00	1921.9
		Total	31007.5

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site will be the responsibility of the Contractor.

EXCAVATION FOR DEEP PIPE REMOVAL

Included in the quantity of "Unclassified Excavation" are 7,705 cubic yards of excavation for removal of deep pipes. Deep pipes are existing mainline pipes at depths of 10 feet or greater (measured from the flow line to the lowest elevation of either the existing ground line, undercut line, or bottom of removed or salvaged surfacing).

All work necessary to excavate and backfill the deep pipes including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for deep pipe will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.

The excavation quantities for deep pipes are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the deep pipes are based on the limits shown in the drawing below. The drawing shows a box culvert for illustration purposes only; the limits are similar for a pipe.

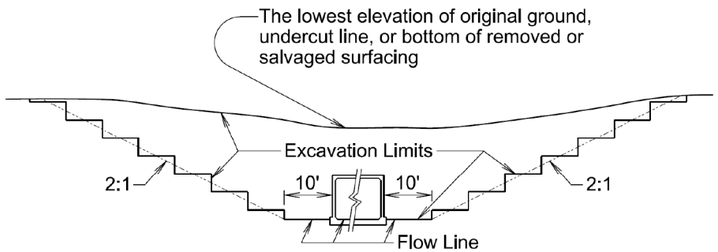


TABLE OF EXCAVATION FOR DEEP PIPE REMOVAL

Station	Type	Quantity (CuYd)
10+84	Pipe	6,108
93+58	Pipe	1,597
	Total:	7,705

EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Included in the quantity of "Unclassified Excavation" are 19,412 cubic yards of excavation for installation of reinforced concrete box culverts.

All work necessary to excavate a trench for installation of reinforced concrete box culverts including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for excavation of reinforced concrete box culverts will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.

The excavation quantities for installation of reinforced concrete box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the reinforced concrete box culverts are based on the limits shown in the drawing below.

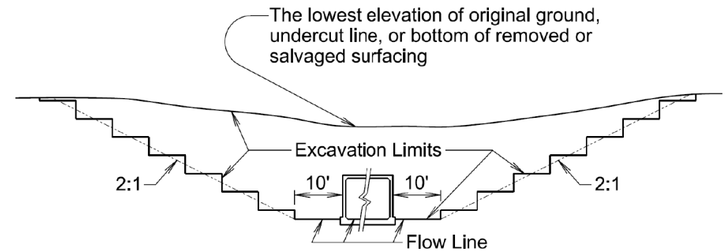


TABLE OF EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Station	Quantity (CuYd)
27+78	4,975
80+33	3,985
124+58	5,161
177+51	3,075
275+89	2,216
Total:	19,412

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\prj\jons06G7\Notes\SectionB.dgn

PIPE CULVERT UNDERCUT

The table includes undercut for 36 inch and larger pipe culverts. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. Pipes listed may or may not require undercutting and pipes not listed may require undercutting. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

Station	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
178+93	2	83.1
	Total:	83.1

Material types and groundwater elevations encountered during the subsurface investigation in April 2023:

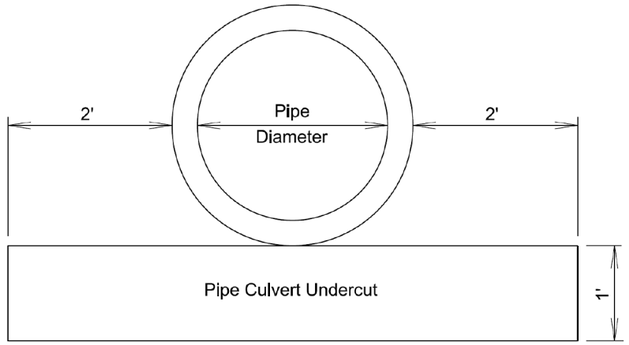
Station	Soil Below Flowline	Groundwater Elevation	Flowline of Pipe	
			Inlet	Outlet
178+93	Gray clay (Pierre Shale)	1977.04	1988.62	1984.11

The pipe culvert will be undercut to a minimum depth of 24 inches. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. The Engineer will determine how much undercut will be done in accordance with Section 421 of the Specifications but will not reduce the undercut to less than the depth stated above.

The table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the drawing below and conforms to the Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

Storm sewer and approach pipes do not require undercutting unless specified otherwise in these plans.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1' Depth (CuYd/Ft)	Arch Pipe Undercut Rate for 1' Depth (CuYd/Ft)
24	0.2407	0.2577
30	0.2623	0.2847
36	0.2840	0.3110
42	0.3056	0.3337
48	0.3272	0.3596
54	0.3488	0.3827
60	0.3704	0.4105
66	0.3920	---
72	0.4136	0.4630
78	0.4352	---
84	0.4568	0.5123
90	0.4784	---



INCIDENTAL WORK, GRADING

Station	L/R	Remarks
10+84		Take Out 24"-150' RCP
71+89	R	Take Out 18"-42' CMP
93+58		Take Out 24"-138' RCP
179+33		Take Out 24"-86' RCP
185+74		Take Out 24"-72' RCP

DITCH DRAINS

Install underdrains to capture and redirect water from seeps to prevent saturation of the subgrade and improve long-term performance of the grade. Install underdrains in the ditches from Station 14+00±, 40' Lt. & Rt. to Station 20+50±, 40' Lt. & Station 22+00±, 40' Rt. The underdrains will consist of 4" Slotted Polyethylene Tubing placed in a 2-foot-wide by 4-foot-deep trench backfilled with 2 feet of Porous Backfill and 2 feet of compacted soil. The underdrains will outlet through 30 and 50 feet of 4" Dual Wall HDPE Pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrains will daylight at headwalls placed at approximately Station 20+60±, 60' Lt. and Station 22+50±, 48' Rt. or as directed by the Engineer.

Estimate of Quantities:

4" Slotted Corrugated Polyethylene Drainage Tubing	1450 feet
4" Dual Wall HDPE Pipe	80 feet
Porous Backfill	405 tons
Headwall (Standard Plate No. 680.01)	2 each

CUTOFF DRAIN

Cutoff drains will be installed in conjunction with the grading for the structure replacement. After construction of the subgrade and placement of the base course has been completed, cutoff drains will be installed perpendicular to the centerline across both lanes at the following location:

Station 116+00±

Cutoff drain will be installed prior to placement of asphaltic surfacing. Cutoff drain will be installed in a trench 2 feet wide by 3 feet deep. The trench will be graded to maintain a minimum of 0.01ft/ft. or 1% drop from centerline to the ditches. Once the trench is excavated, place Impermeable Plastic Membrane on the trench bottom and against the downgrade side of the trench the entire width of the finished subgrade surface. The membrane will extend upward through the base course overlying the subgrade. The membrane will be folded, not cut, to fit against the bottom and the downgrade side of the trench. This may be done by rolling out the membrane perpendicular to centerline, folding the membrane into the trench, and cutting off the excess membrane from the top of the trench after backfilling. After the membrane is placed into the trench, place 4" Perforated Dual Wall HDPE Pipe on top of the membrane in the center of the trench bottom. Using a coupler, connect 4" Dual Wall HDPE Pipe to both ends of the 4" Perforated Dual Wall HDPE Pipe and place in the center of the unlined trench. The 4" Dual Wall HDPE Pipe will daylight at a headwall placed above the ditch bottom so as to provide positive drainage from the outlet and blend into the inslope. The depth of the trench may be adjusted to maintain the minimum grade needed to maintain positive drainage and proper placement of the headwalls. Backfill the membrane lined trench containing the 4" Perforated Dual Wall HDPE Pipe with porous backfill and 12" of Base Course. The remainder of the trench from the edge of the subgrade top to the headwall will be backfilled with compacted soil.

Estimate of Quantities:

Impermeable Plastic Membrane	28 sq. yd.
4" Perforated Dual Wall HDPE Pipe	50 ft.
4" Dual Wall HDPE Pipe	20 ft.
Porous Backfill	14 tons
Headwalls (See Standard Plate No. 430.50)	2 each

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\prj\jons06G7\NotesSection8.dgn

GENERAL UNDERDRAIN CONSTRUCTION

Each underdrain trench will be graded to maintain a minimum of 0.01 ft/ft. or 1% drop from beginning to outlet. Each Outlet Headwall will be placed to blend in with the surrounding topography with the outlet tubing placed above the bottom of the drainage to permit proper flow from the outlet.

Dual Wall HDPE Pipe and Perforated Dual Wall HDPE Pipe will conform to the requirements of ASTM D3350 and AASHTO M252, Type S or Type SP. All labor, tools, equipment, and incidentals necessary for the installation of the Dual Wall HDPE Pipe will be incidental to the contract unit price per foot for each pipe type.

The Contractor will ensure all segments of drainage tubing and outlet pipe are positively connected utilizing couplers, tees, gaskets, fittings or other approved methods. The contractor will take precautions to assure each connection remains soil tight during installation of the underdrain system.

Care must be taken to ensure that the underdrain and outlet pipe is not damaged during construction. Sufficient cover material is to be placed over the underdrains before heavy equipment is allowed to work over the underdrains. Damaged pipe will be replaced by the Contractor at no additional cost to the Department.

The underdrain locations and elevations given are based on the best information available to the Geotechnical Engineering Activity. Actual field conditions may require that adjustments be made by the Engineer during construction to provide for sufficient drainage. The Geotechnical Engineering Activity will be available for onsite assistance if necessary.

Headwalls must be cleared of topsoil, straw, or other debris after seeding operations have been completed. The as built headwall locations will be recorded and submitted to the Engineer. Each headwall location will be identified by GPS coordinates and Station and Offset. The headwall locations will be cataloged in the Winner Area office for reference in post construction maintenance.

CORRUGATED METAL PIPE

Areas within the project have soils that are highly corrosive to steel. Corrugated metal pipe in these areas will be polymer coated 14 gauge steel as specified in the Table of Pipe Quantities. Any required connection bands, elbows, tees, crosses, wyes, reducers, and transitions will also be polymer coated. The connection bands will be 24 inches wide. All polymer coated corrugated metal pipe and components will be in conformance with AASHTO M245. Riveted pipe will not be allowed.

All damage to the polymer coating will be repaired in accordance with the manufacturer's recommendations prior to installation of the pipe.

All costs associated with the polymer coating including repair of polymer coating will be incidental to the corresponding CMP contract items.

Metal pipe end sections connected to polymer coated CMP will be aluminum-coated (Type 2) in accordance with AASHTO M36 as specified in the Table of Pipe Quantities. All costs associated for gauge, coating, and connections will be incidental to the corresponding CMP End Section contract items

PIPE FOR APPROACHES AND INTERSECTING ROADS

Class 2 reinforced concrete pipe, high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe may be substituted for corrugated metal pipe at approaches and intersecting roads at no additional cost to the State.

If corrugated metal pipes are provided, the pipes will be as specified in the CORRUGATED METAL PIPE note.

If high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe are provided, then the end sections will be metal, be compatible, and conform to the type of end section as shown in the plans.

REINFORCED CONCRETE PIPE

High sulfate levels are likely to be encountered on this project. The type of cement will be either a type V or a type II with 20% to 25% Class F Modified Fly Ash substituted for cement in accordance with section 605. The Water/Cementitious material ratio will not exceed 0.45 as defined in section 460.3 C. The mix will be as per fabricator's design; however, minimum compressive strength will not be less than 4500 psi at 28 days. The pipe must be marked in an acceptable way to designate meeting the requirements for sulfate resistance.

DROP INLETS

Where drop inlets are constructed within areas of curb and gutter, the Contractor will construct weep holes of at least 3 inches in diameter in the drop inlet walls. The weep holes will be constructed at the same elevation as the adjacent top of the earthen subgrade and will be maintained clean and open at all times until the permanent surfacing is placed. The drop inlets will be covered throughout construction operations as necessary with an Engineer approved cover to provide safe travel for motorists and to prevent materials from entering the storm sewer system. After the permanent surfacing has been placed, the Contractor will seal the weep holes with grout and remove all debris from the drop inlet. All costs involved with the coverings, weep holes, and removing debris from the drop inlets will be incidental to the contract unit prices for the components of the drop inlets.

The plan shown quantities of the 2' x 3' Type B Drop Inlet, Type A Frame and Grate, and Precast Drop Inlet Collar will be the basis of payment for these items.

If additions or reductions to the number of drop inlets are ordered by the Engineer, payment for the components required to construct the drop inlets will be made at the contract unit prices for the components of the drop inlets.

TABLE OF DROP INLETS AND QUANTITIES

Station	L / R	Drop Inlet Size	Drop Inlet Type	Precast Drop Inlet Collar (Each)	Frame and Grate/Lid Type
361+73.63	L	2'x3'	B	1	A
361+73.63	R	2'x3'	B	1	A
			Totals:	2	

Total Type A Frame and Grate	2
Total 2 'x 3' Type B Drop Inlet	2

TABLE OF PVC COATED BANK AND CHANNEL PROTECTION GABIONS AND DRAINAGE FABRIC

Station	L/R	PVC Coated Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
361+74	R	4.5	15
	Totals:	4.5	15

MAILBOXES

The Contractor will reset the existing mailboxes on new posts with the necessary support hardware for single mailbox assemblies. The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware will be incidental to the contract unit price per each for "Refurbish Single Mailbox".

Single mailboxes will be refurbished at Sta. 72+02 R and Sta. 137+48 R.

TABLE OF REFURBISH MAILBOX

Station	L/R	Single (Each)
72+02	R	1
137+48	R	1
	Total:	2

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\prj\ons06G7\Notes\SectionB.dgn

TEMPORARY FENCE

The Contractor will verify the location of the temporary fence with the landowner prior to installation of the fence.

BRACE PANELS FOR ROW FENCE

The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer. The E-Z Brace will be attached to each wood post utilizing two 5/16” x 3” lag screws. Holes of appropriate diameter, based on wood post condition, will be drilled

before placement of lag screws. The following is the contact regarding the E-Z Brace:

Charlie Mack
Macksteel E-Z Braces
415 20th Ave. SE.
Watertown, SD 57201
605-882-2177

TABLE OF GUARDRAIL

Location	Remove Beam Guardrail (Ft)	Type 1 MGS (Ft)	Type 1 Guardrail Transition (Each)	Type 3 Guardrail Transition (Each)	MGS MASH Tangent End Terminal (Each)	Guardrail Delineators (Each)	Type 2 Object Marker Back to Back (Each)
Structure No. 38-302-173							
Sta. 26+31.87 to Sta. 29+54.04 Lt.	323						
Sta. 26+31.74 to Sta. 29+53.94 Rt.	323						
Structure No. 38-312-173							
Sta. 78+88.71 to Sta. 81+91.42 Lt.	303						
Sta. 78+88.44 to Sta. 81+91.15 Rt.	303						
Structure No. 38-319-174							
Sta. 122+75.82 to Sta. 125+97.49 Lt.	322						
Sta. 122+75.90 to Sta. 125+97.15 Rt.	322						
Structure No. 38-330-175							
Sta. 175+90.44 to Sta. 179+05.79 Lt.	316						
Sta. 175+90.61 to Sta. 178+73.31 Rt.	328						
Structure No. 38-348-174							
Sta. 274+43.54 to Sta. 277+52.73 Lt.	310						
Sta. 274+43.00 to Sta. 277+51.89 Rt.	310						
Structure No. 43-014-188							
Sta. 359+79.33 to Sta. 362+64.37 Lt.	286						
Sta. 359+79.53 to Sta. 362+64.50 Rt.	286						
Begin Bridge Lt.		12.5	1		1	4	1
Begin Bridge Rt.		62.5	1		1	4	1
End Bridge Lt.		50.0		1	1	4	1
End Bridge Rt.		12.5		1	1	4	1
Totals:	3,732	137.5	2	2	4	16	4

TABLE OF SUPERELEVATION

Station	to	Station		
10+08.00		10+58.00	-	Superelevation Transition to Match Existing
33+25.00		33+75.10	-	Superelevation Transition to Match Existing
63+27.31		63+77.00	-	Superelevation Transition to Match Existing
93+88.00		94+38.00	-	Superelevation Transition to Match Existing
108+69.00		109+00.00	-	Superelevation Transition to Match Existing
141+50.00		141+97.00	-	Superelevation Transition to Match Existing
170+90.00		171+50.00	-	Superelevation Transition to Match Existing
186+00.00		186+90.00	-	Superelevation Transition to Match Existing
271+61.00		272+00.00	-	Superelevation Transition to Match Existing
279+50.00		280+00.00	-	Superelevation Transition to Match Existing
357+00.00		357+50.00	-	Superelevation Transition to Match Existing
368+50.00		369+00.00	-	Superelevation Transition to Match Existing

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\prj\jons0fG7\NotesSectionB.dgn

PUBLIC LANDS SURVEY SYSTEM, RIGHT OF WAY, AND PROPERTY CORNERS

The Contractor will have a Land Surveyor, licensed in the State of South Dakota, to set, reestablish or verify public land survey system (PLSS) corners, right of way (ROW) corners, and property corners as directed by the appropriate SDDOT Region Land Surveyor. It is estimated that 5 PLSS corners and 123 ROW and property corners will be set, reestablished, or verified for this project. The Contractor's Land Surveyor, under the direction of the Region Land Surveyor, will set, reestablish, or verify all corner monuments after surfacing and fencing operations are completed in accordance with the PUBLIC LANDS SURVEY SYSTEM CORNERS section and the RIGHT OF WAY AND PROPERTY CORNERS section in Chapter 8 of the SDDOT Survey Manual.

< https://dot.sd.gov/doing-business/engineering/design-services/surveyors >

All costs associated with furnishing and installing PLSS caps, rebar, and all other materials associated with setting, reestablishing, or verifying PLSS, ROW corners, and property corners in accordance with the SDDOT Survey Manual will be incidental to the contract unit price per each for "Reestablish Public Land Survey System Corner" and/or "Reestablish Right-of-Way and Property Corner".

TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

					Grade Staking								
Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	***Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Final Cross Section Survey Quantity (Mile)	Structure Staking Quantity (Each)
SD 248 (2 Lanes AC Pavement)	10+08	33+75	2	2,367	0.448	1	1	0.448	0.896	0.448	0.448	
Str No 38-302-173												1
Diversion – Div 28 (2 Lanes Gravel Surfacing)	1+50	11+00	2	950	0.180	1	1	0.180	0.360	0.180	0.180	
SD 248 (2 Lanes AC Pavement)	63+27	94+38	2	3,111	0.589	1	1	0.589	1.178	0.589	0.589	
Str No 38-312-173												1
Diversion – Div 80 (2 Lanes Gravel Surfacing)	1+50	12+00	2	1,050	0.199	1	1	0.199	0.398	0.199	0.199	
SD 248 (2 Lanes AC Pavement)	108+69	141+97	2	3,328	0.630	1	1	0.630	1.260	0.630	0.630	
Str No 38-319-174												1
Diversion – Div 124 (2 Lanes Gravel Surfacing)	1+50	11+00	2	950	0.180	1	1	0.180	0.360	0.180	0.180	
SD 248 (2 Lanes AC Pavement)	170+90	186+90	2	1,600	0.303	1	1	0.303	0.606	0.303	0.303	
Str No 38-330-175												1
Diversion – Div 177 (2 Lanes Gravel Surfacing)	1+50	10+00	2	850	0.161	1	1	0.161	0.322	0.161	0.161	
SD 248 (2 Lanes AC Pavement)	271+61	280+00	2	839	0.159	1	1	0.159	0.318	0.159	0.159	
Str No 38-348-174												1
Diversion – Div 276 (2 Lanes Gravel Surfacing)	1+00	8+00	2	700	0.133	1	1	0.133	0.266	0.133	0.133	
SD 248 (2 Lanes AC Pavement)	357+00	369+00	2	1,200	0.227	1	1	0.227	0.454	0.227	0.227	
Str No 43-014-188												1
Diversion – Div 361 (2 Lanes Gravel Surfacing)	1+00	8+50	2	750	0.142	1	1	0.142	0.284	0.142	0.142	
							Totals:	3.351	6.702	3.351	3.351	6

* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)

** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)

*** Miscellaneous Staking Quantity includes stakes for centerline staking for paving operations and for easement staking

Plot Scale - 1:200
Plotted From - TRPR17190
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PIPE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B11	B72

Plotting Date: 09/15/2026 Rev 09/15/2026 RU

	Reinforced Concrete												Corrugated Metal										Pipe Transition		PVC		
	Circular					Circular Sloped Ends		Circular Safety Ends			Circular			Circular Safety Ends			Circular Sloped End		Circular Elbow			Round RCP to CMP Transition		Encasement Pipe		
Station Offset (L/R)	18" Cl. 2 Ft	24" Cl. 2 Ft	24" Cl. 3 Ft	24" Cl. 4 Ft		24" Each		18" Each			18" 16 Ga Ft	18" 14 Ga Ft	48" 14 Ga Ft	18" Each	48" w/ Bars Each		18" Each		18" 20.0° Each			18" Outlet Each		6" Sch. 80 Ft		
10+84			100	70		2																					
71+84 - 50' L											58			2													
71+91 - 50' R											62			2													
78+50 - 88' L to 78+50 - 105' R																										194	
93+58			132			2																					
176+00 - 50' L to 176+00 - 50' R																										100	
* 178+93 - 80' R													90		2												
185+74		70				2																					
361+74 L	20							1																			
* 361+74 R	8											22						1		2			1				
Subtotal:	28	70	232	70		6		1			120	22	90	4	2		1		2			1		294		

Pipes denoted with an asterisk(*) indicate that the entire length or a portion of the pipe requires polymer coating in accordance with the CORRUGATED METAL PIPE plan note.

Plot Scale - 1:200

Plotted From - TRPR17190

File - ...\rdu\prj\ons06G7\TaplePipe.dgn

FENCE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B12	B72

Plotting Date: 12/03/2025

Station to Station		Side (L/R)	Right-of-Way Fence Type 2 (Ft)					Temporary Fence Type 2 (Ft)			Post Panels 2 Post Panel (Each)	Post Panels 3 Post Panel (Each)	Gates (for informational purposes only)				Remove Fence (Ft)
														Barbed Wire Gate (Each)			
10+00	20+02	L	1052					1111			5	1		1			1045
20+76	33+74	L	1359					1393			5	1					1209
63+30	70+15	L	752					792			4						520
72+11	94+53	L	1423					1458			10	1					2378
111+91	123+90	L	1251					1357			4						1262
124+87	142+12	L	1735					1769			4						1728
170+75	177+92	L	648					777			5						669
*178+66	187+08	L	940					965			4			1			843
271+44	280+17	L	877								6						871
360+51	361+77	L	119					1019			4						877
13+86	19+87	R	712					850			4						854
20+70	33+91	R	1337					1115			6	1					1053
63+11	70+22	R	774					980			5						754
72+27	94+55	R	2325					2307			11						1924
108+63	125+25	R	1706					1852			4						1693
125+95	142+15	R	1650					1688			8						1658
170+73	178+15	R	651					837			5						843
*179+19	187+07	R	788					908			2						847
271+44	280+17	R	811								6						804
356+83	368+90	R	1309					1284			8						1253
TOTALS:			22219					22462			110	4		2			23085

Post Type and Sequence:

Right-of-way fence will be constructed using alternate wood and steel posts except as noted.

*The Contractor and the Department will confirm with the landowner the installation of the new ROW fence after completion of the structure and grading work.

Plot Scale - 1:200

Plotted From - TRPR17190

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TYPICAL GRADING SECTION

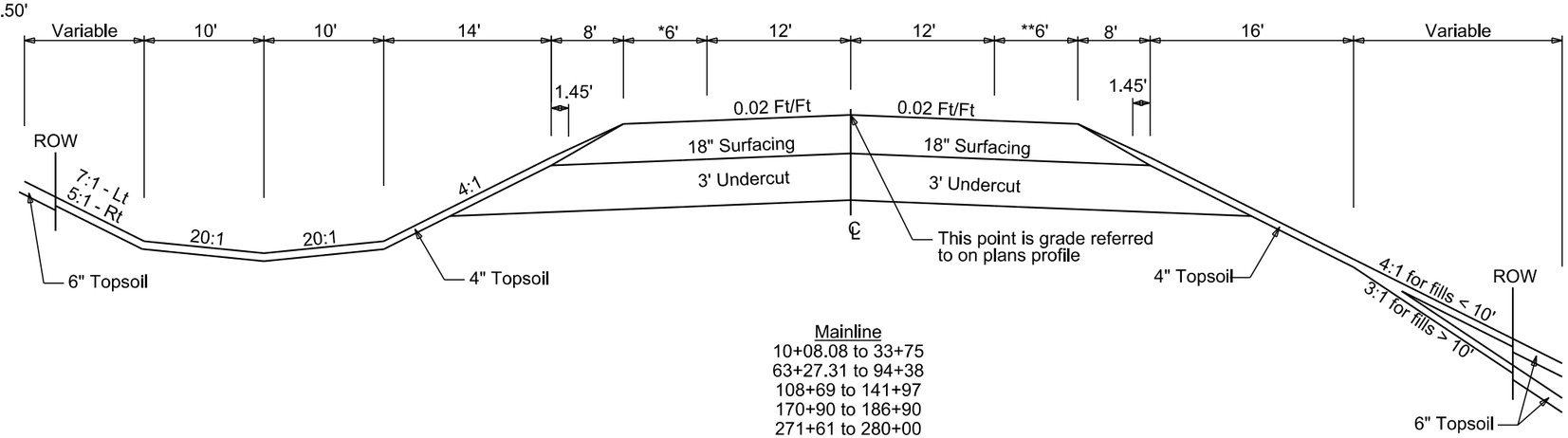
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B13	B72

Plotting Date: 11/07/2025

Mainline
357+00 to 369+00

Transitions:

* 357+00 to 357+50 - 2' to 6'
358+57.50 to 360+54.40 - Widen for Guardrail
361+60.40 to 364+66.20 - Widen for Guardrail
368+50 to 369+00 - 6' to 0.50'



Transitions:

** 357+00 to 357+50 - 1.5' to 6'
357+50.00 to 360+54.40 - Widen for Guardrail
361+60.40 to 363+70.68 - Widen for Guardrail
368+50 to 369+00 - 6' to 0'

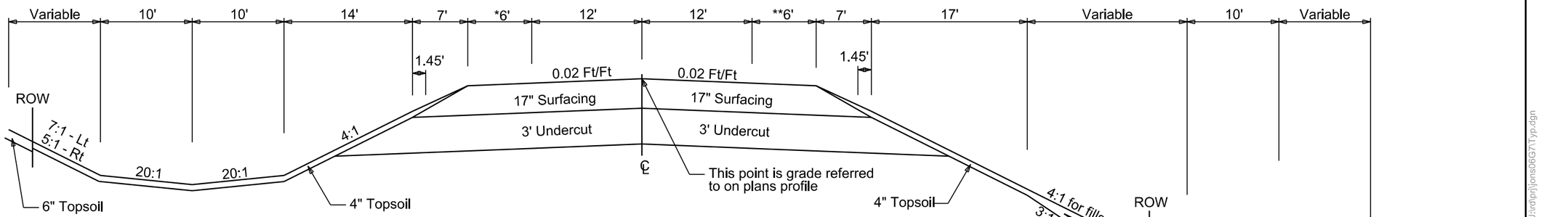
Transitions:

** 10+08.08 to 10+58.08 - 1' to 6'
33+25 to 33+75 - 6' to 2'
63+27.31 to 64+00 - 0.5' to 6'
71+47 to 71+87 - 6' to 8'
71+87 to 72+08 - 8'
72+08 to 72+33 - 8' to 6'
93+50 to 94+38 - 6' to 2'
108+69 to 109+00 - 3.5' to 6'
136+93 to 137+33 - 6' to 8'
137+33 to 137+54 - 8'
137+54 to 137+79 - 8' to 6'
141+50 to 141+97 - 6' to 2.5'
170+90 to 171+50 - 5' to 6'
186+00 to 186+90 - 6' to 2.5'
271+61 to 272+00 - 0.5' to 6'
279+50 to 280+00 - 6' to 2'

Mainline
10+08.08 to 33+75
63+27.31 to 94+38
108+69 to 141+97
170+90 to 186+90
271+61 to 280+00

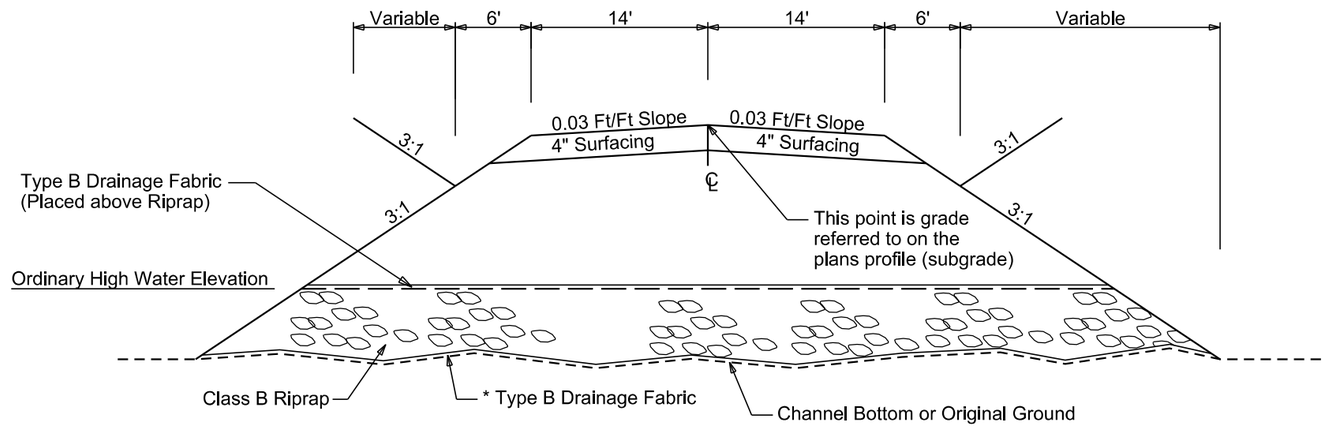
Transitions:

* 10+08.08 to 10+58.08 - 0' to 6'
33+25 to 33+75 - 6' to 2.5'
63+27.31 to 64+00 - 1' to 6'
93+50 to 94+38 - 6' to 0'
108+69 to 109+00 - 3' to 6'
141+50 to 141+97 - 6' to 5'
170+90 to 171+50 - 1' to 6'
186+00 to 186+90 - 6' to 2'
271+61 to 272+00 - 2' to 6'
279+50 to 280+00 - 6' to 1.5'



Traffic Diversions

23+50 to 32+24 Mainline - 1+50 to 11+00 Div 28
75+50 to 85+34 Mainline - 1+50 to 12+00 Div 80
119+49 to 127+89 Mainline - 1+50 to 11+00 Div 124
173+50 to 181+50 Mainline - 1+50 to 10+00 Div 177
272+61 to 279+13 Mainline - 1+00 to 8+00 Div 276
357+99 to 365+01 Mainline - 1+00 to 8+50 Div 361



* Place Type B Drainage Fabric under all Riprap and any embankment that is placed in wetland areas as shown in Section B.

Plot Scale - 1:200

Plotted From - TRPP17190

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HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B14	B72

Plotting Date: 12/01/2025

MAINLINE

Type	Station			Northing	Easting
POB	10+00.00			577706.648	1932302.861
		TL= 4149.34	N 88°13'17" E		
PC	51+49.34			577835.427	1936450.204
PI	55+43.92	R = 5730.00	Delta = 7°52'43" R	577847.673	1936844.593
PT	59+37.26			577805.743	1937236.939
		TL= 3230.84	S 83°54'00" E		
PC	91+68.09			577462.418	1940449.482
PI	96+25.97	R = 11460.00	Delta = 4°34'34" R	577413.762	1940904.766
PT	100+83.36			577328.938	1941354.717
		TL= 2576.88	S 79°19'26" E		
PC	126+60.24			576851.556	1943886.991
PI	133+43.87	R = 7350.00	Delta = 10°37'40" L	576724.910	1944558.786
PT	140+23.57			576724.333	1945242.415
		TL= 2476.24	S 89°57'06" E		
PC	164+99.82			576722.241	1947718.658
PI	169+82.91	R = 5580.00	Delta = 9°53'46" R	576721.834	1948201.750
PT	174+63.60			576638.406	1948677.584
		TL= 1639.36	S 80°03'20" E		
PC	191+02.96			576355.296	1950292.316
PI	200+44.49	R = 5580.00	Delta = 19°09'18" L	576192.699	1951219.696
PT	209+68.44			576343.399	1952149.083
		TL= 9975.14	N 80°47'23" E		
PC	309+43.58			577940.010	1961995.618
PI	316+40.15	R = 6010.00	Delta = 13°13'20" L	578051.502	1962683.205
PT	323+30.53			578317.310	1963327.062
		TL= 1529.64	N 67°34'02" E		
PC	338+60.17			578901.015	1964740.951
PI	344+99.50	R = 5580.00	Delta = 13°04'20" R	579144.982	1965331.902
PT	351+33.28			579248.964	1965962.720
		TL= 2048.32	N 80°38'23" E		
POE	371+81.60			579582.107	1967983.768

Div 28

Type	Station			Northing	Easting
POB	0+00.00			577743.890	1933502.280
		TL= 82.93	N 88°13'28" E		
PC	0+82.93			577746.460	1933585.169
PI	2+00.00	R = 400.00	Delta = 32°37'35" R	577750.087	1933702.182
PT	3+10.70			577690.053	1933802.686
		TL= 91.76	S 59°08'57" E		
PC	4+02.46			577643.000	1933881.459
PI	6+47.57	R = 400.00	Delta = 62°59'52" L	577517.306	1934091.887
PT	8+42.27			577647.727	1934299.418
		TL= 130.50	N 57°51'11" E		
PC	9+72.77			577717.163	1934409.908
PI	10+81.31	R = 400.00	Delta = 30°21'51" R	577774.918	1934501.810
PT	11+84.75			577778.294	1934610.301
		TL= 66.45	N 88°13'02" E		
POE	12+51.20			577780.362	1934676.719

Div 80

Type	Station			Northing	Easting
POB	0+00.00			577650.302	1938691.397
		TL= 105.61	S 83°54'03" E		
PC	1+05.61			577639.080	1938796.412
PI	2+00.00	R = 400.00	Delta = 26°33'16" R	577629.052	1938890.266
PT	2+91.00			577578.124	1938969.736
		TL= 197.66	S 57°20'47" E		
PC	4+88.66			577471.473	1939136.157
PI	6+81.56	R = 400.00	Delta = 51°29'32" L	577367.390	1939298.572
PT	8+48.14			577429.679	1939481.142
		TL= 232.80	N 71°09'41" E		
PC	10+80.94			577504.850	1939701.469
PI	11+69.39	R = 400.00	Delta = 24°56'18" R	577533.412	1939785.184
PT	12+55.04			577524.013	1939873.135
		TL= 111.53	S 83°54'01" E		
POE	13+66.57			577512.162	1939984.030

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83 Conus); epoch 2010.00; Geoid 12A; SF = 0.9998282605

Plot Scale - 1:200
Plotted From - TRPR17192
File - ...\rdp\pjons06G7\DataHoriz.dgn

HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B15	B72

Plotting Date: 12/01/2025

Plot Scale - 1:200

Div 124

Type	Station			Northing	Easting
POB	0+00.00			577011.009	1943041.527
		TL= 51.81	S 79°16'46" E		
PC	0+51.81			577001.372	1943092.432
PI	2+00.17	R = 400.00	Delta = 40°42'00" R	576973.774	1943238.204
PT	3+35.95			576857.793	1943330.722
		TL= 40.88	S 38°34'46" E		
PC	3+76.83			576825.837	1943356.213
PI	7+35.32	R = 400.00	Delta = 83°44'06" L	576545.589	1943579.767
PT	9+61.41			576737.226	1943882.736
		TL= 17.85	N 57°41'08" E		
PC	9+79.26			576746.769	1943897.824
PI	11+29.24	R = 400.00	Delta = 41°06'29" R	576826.945	1944024.579
PT	12+66.25			576804.016	1944172.800
		TL= 50.11	S 81°12'23" E		
POE	13+16.35			576796.355	1944222.319

Div 276

Type	Station			Northing	Easting
POB	0+00.00			577334.566	1958261.798
		TL= 35.55	N 80°47'13" E		
PC	0+35.55			577340.257	1958296.885
PI	1+39.01	R = 353.00	Delta = 32°40'14" L	577356.822	1958399.011
PT	2+36.83			577425.894	1958476.037
		TL= 16.67	N 48°06'58" E		
PC	2+53.49			577437.021	1958488.444
PI	4+84.79	R = 353.00	Delta = 66°28'05" R	577591.439	1958660.644
PT	6+63.00			577495.213	1958870.973
		TL= 2.57	S 65°24'57" E		
PC	6+65.57			577494.145	1958873.307
PI	7+72.94	R = 353.00	Delta = 33°50'04" L	577449.478	1958970.940
PT	8+74.03			577466.737	1959076.910
		TL= 13.24	N 80°44'59" E		
POE	8+87.27			577468.866	1959089.982

Div 177

Type	Station			Northing	Easting
POB	0+00.00			576677.809	1948416.808
		TL= 97.34	S 81°47'04" E		
PC	0+97.34			576663.900	1948513.146
PI	1+99.25	R = 400.00	Delta = 28°35'15" R	576649.337	1948614.013
PT	2+96.92			576588.285	1948695.614
		TL= 97.97	S 53°11'49" E		
PC	3+94.88			576529.596	1948774.056
PI	6+08.76	R = 400.00	Delta = 56°15'59" L	576401.470	1948945.308
PT	7+87.70			576472.735	1949146.964
		TL= 62.24	N 70°32'12" E		
PC	8+49.93			576493.472	1949205.644
PI	9+54.87	R = 400.00	Delta = 29°23'58" R	576528.437	1949304.584
PT	10+55.18			576510.330	1949407.946
		TL= 94.89	S 80°03'50" E		
POE	11+50.07			576493.957	1949501.414

Div 361

Type	Station			Northing	Easting
POB	0+00.00			579341.139	1966521.896
		TL= 7.15	N 80°40'30" E		
PC	0+07.15			579342.297	1966528.952
PI	0+99.90	R = 400.00	Delta = 26°06'34" R	579357.326	1966620.476
PT	1+89.43			579330.543	1966709.275
		TL= 129.22	S 73°12'56" E		
PC	3+18.65			579293.228	1966832.988
PI	4+73.29	R = 300.00	Delta = 54°32'24" L	579248.572	1966981.042
PT	6+04.22			579343.258	1967103.307
		TL= 92.27	N 52°14'40" E		
PC	6+96.49			579399.757	1967176.262
PI	7+97.22	R = 400.00	Delta = 28°16'08" R	579461.432	1967255.901
PT	8+93.85			579478.034	1967355.252
		TL= 155.60	N 80°30'48" E		
POE	10+49.45			579503.680	1967508.724

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83 Conus); epoch 2010.00; Geoid 12A; SF = 0.9998282605

Plotted From - TRPR17192

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HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B16	B72

Plotting Date: 12/01/2025

dr 124 L

Type	Station			Northing	Easting
POB	0+00.00			577005.54	1943689.63
		TL= 0.86	N 15°26'59" E		
PC	0+00.86			577006.37	1943689.86
PI	0+27.99	R = 200.00	Delta = 15°26'59" L	577032.52	1943697.08
PT	0+54.79			577059.65	1943697.08
		TL= 35.21	N 0°00'00" E		
POE	0+90.00			577094.86	1943697.08

dr 124 R

Type	Station			Northing	Easting
POB	0+00.00			576775.94	1943686.92
		TL= 60.00	S 0°40'34" W		
POE	0+60.00			576715.95	1943686.21

dr 28

Type	Station			Northing	Easting
POB	0+00.00			577865.87	1934076.76
		TL= 0.47	N 1°48'32" W		
PC	0+00.47			577866.35	1934076.75
PI	0+91.93	R = 71.50	Delta = 103°57'42" L	577957.75	1934073.86
PT	1+30.21			577932.90	1933985.85
		TL= 0.07	S 74°13'45" W		
POE	1+30.28			577932.88	1933985.78

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83 Conus); epoch 2010.00; Geoid 12A; SF = 0.9998282605

Plot Scale - 1:200

Plotted From - TRPR17192

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CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B17	B72

Plotting Date: 11/07/2025

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	**STATION**	**OFFSET**	**DESCRIPTION**	**NORTHING**	**EASTING**	**ELEVATION**
OS0828	NOT ON PROJECT		NGS HARN POINT	574855.210	1974000.510	1961.99
W-8	NOT ON PROJECT		W-8 BRASS CAP IN CONCRETE	578234.699	2962950.310	1947.71
CP 5	273+85.13	52.26' R	REBAR & GRDS. BRIDGE @ MRM 222.70	577318.860	1958491.409	1951.28
CP 6	361+81.80	47.93' L	REBAR & GRDS. BRIDGE @ MRM 224.32	579466.788	1966989.484	1927.27
CP 1	30+32.74	65.50' R	REBAR & GRDS. BRIDGE @ MRM 218.00	577713.267	1934336.373	2072.69
CP 2	77+20.78	74.90' R	REBAR & GRDS. BRIDGE @ MRM 219.00	577541.745	1939002.400	2045.54
CP 2A	91+14.62	63.46' L	5/8" X 5' REBAR & GUARDS	577531.203	1940403.060	2069.17
CP 3	122+01.10	60.86' R	REBAR & GRDS. BRIDGE @ MRM 219.83	576876.811	1943424.529	2024.51
CP 4	178+24.63	67.02' R	REBAR & GRDS. BRIDGE @ MRM 220.84	576510.043	1949021.617	1995.01
OS0846	NOT ON PROJECT		NGS HARN POINT I 90 194.87 STEEL PIPE IN SLEEVE	569222.080	1880690.940	2301.18

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83 Conus); epoch 2010.00
Geoid 12A; SF = 0.9998282605
The elevations shown on this sheet are based on NAVD 88.

Plot Scale - 1:200
Plotted From - TRPR17190
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LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B18	B72

Plotting Date: 11/07/2025

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush/Hedge
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Concrete Symbol
- Control Point
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Deck Edge
- Ditch Block
- Doorway Threshold
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Electric Transformer/Power Junction Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Miscellaneous
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Gutter
- Guy Pole
- Haystack
- Highway ROW Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Miscellaneous
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Miscellaneous Line
- Miscellaneous Property Corner
- Miscellaneous Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pedestrian Push Button Pole
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad ROW Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Subsurface Utility Exploration Test Hole
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Sign Double Face
- Traffic Sign One Post
- Traffic Sign Two Post
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner
- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- ROW Line
- New ROW Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)
- Drainage Arrow
- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement
- Remove Concrete Curb and/or Gutter
- Detectable Warning Pedestrian Push Button Pole and 30" x 48" Clear Space with 1.5% slope

Plot Scale - 1:200

Plotted From - TRPR17190

File - U:\rdr\prj\jons06G7\Legend.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B19	B72

Plotting Date: 12/03/2025

10+84
Take Out 24"-150' RCP
(Incidental Work, Grading)

10+84 (16 ac)
Install 24"-170' RCP
(CL3-38', CL4-70', CL3-62')
(Skewed 30° RHF)
& 2 Sloped Ends

Remove Steel Guardrail
at the following locations:
26+32 to 29+54 L
26+32 to 29+54 R

14+00-40' L to 20+60-60' L
Install Ditch Drain
See Section B Notes & Details

14+00-40' R to 22+50-48' R
Install Ditch Drain
See Section B Notes & Details

27+93
Take Out 158' Bridge
(Incidental Work, Structure)

27+78 (21.64 sq mi)
Alternate A
Install 3-12'x12' -209'-1 5/8"Box Culvert
(C.I.P)
Alternate B
Install 3-14'x12' 210'-0" Box Culvert
(Precast)
(See Section E)

BEGIN P-B 248(12)173
BEGIN GRADING
Station 10+08.08

Kerwin K. Sletto
Parcel 3, 3A & A9

Sec 31 - T1S - R31E

Sec 36 - T1S - R30E

Kerwin K. Sletto
Parcel A1

E1/2 NW1/4

END GRADING
Station 33+75.00

12+22 L
1-24' Barbed wire gate

Shirley Vik and Steven R. Vik
Parcel 1

NE1/4

20+02 L
End type 2 fence

Section Line

Government Lot 1

20+76 L
Begin type 2 fence

Medicine Creek

1/16 Line

Government Lot 2

4-2 PP
Type 2 fence

32+21 L
End type 2 fence

3 PP

2-2 PP

Type 2 fence

Present SD Hwy 248

N 88°13'28" E

N 88°13'17" E

N 88°13'02" E

S 89°08'57" E

S 67°57'17" E

2 PP

13+86 R
Begin type 2 fence

19+87 R
End type 2 fence

Robert Fuoss, Inc.
Parcel 2

20+70 R
Begin type 2 fence
22+00 R
End type 2 fence

Government Lot 2

Div 28
PI 2+00.00
N 577750.09
E 1933702.18
Del 32°37'35" R
Dc 14°19'26"
T 117.07'
L 227.78'
R 400.00'

Div 28
PI 6+47.57
N 577517.31
E 1934091.89
Del 62°59'52" L
Dc 14°19'26"
T 245.11'
L 439.81'
R 400.00'

LaDell L. Sletto
Parcel 4 & 4A

28+05 R
Begin type 2 fence

31+13 R
End type 2 fence

Div 28
PI 10+81.31
N 577774.92
E 1934501.81
Del 30°21'51" R
Dc 14°19'26"
T 108.54'
L 211.98'
R 400.00'

LaDell L. Sletto
Parcel A2

Parcel 1
10+00.00 to 20+07.73 L
Temporary easement containing
3.1 ac, more or less

Parcel 2
10+00.30 to 20+03.16 R
Temporary easement containing
3.2 ac, more or less

Parcel 3A
26+20.00 to 29+53.00 L
Temporary easement containing
0.5 ac, more or less

Parcel 3
20+72.34 to 32+25.36 L
Temporary easement containing
1.0 ac, more or less

Parcel A9
26+23.00 to 28+44.65 L
Temporary easement containing
0.3 ac, more or less

Parcel 4
20+63.36 to 32+20.39 R
Temporary easement containing
2.0 ac, more or less

Parcel A1
32+23.58 to 33+77.00 L
Temporary easement containing
0.2 ac, more or less

Parcel A2
32+18.98 to 33+95.00 R
Temporary easement containing
0.2 ac, more or less

Plot Scale - 1:200

Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B20	B72

Plotting Date: 12/15/2025

10+08.08
Begin Work

33+77.00
End Work

Excavation	73,823		
Undercut	6443		
Muck	513		
	80779		
Embankment	30315		
+25%	7579	37894	
Undercut	6443		
+25%	1611	8053	
Waste		34832	
		80779	

Haul 229,239 CuYdSta

513 CuYd of Waste is muck excavation to be disposed of at a site approved by the engineers.

33,273 CuYd of Waste is material used as Out-of-Balance Excavation to be used in Mainline at Station 63+27 and 121+64.

12+23 L
24' Rd

13+71 R
24' Ent

PVI 10+08
Elev 2132.95

PVI 15+25
Elev 2134.18

0.2385%

-4.9992%

1.5652%

L 800.00ft
G1 0.2385%
G2 -4.9992%
K 153

L 900.00ft
G1 -4.9992%
G2 1.5652%
K 137

FL 2108.8
FL 2114.2

PVI 33+75
Elev 2080.95

PVI 27+77
Elev 2071.59

FL 2046.27
FL 2046.57

CP 1
30+32.74-65.50' R
REBAR & GRDS. Bridge
@ MRM 218.00
Elev. 2072.69

Alt A
Q_{100} = 2160 cfs
El 2058.6
Qd = Q_{25} = 1205 cfs
El 2056.5
Q_{OT} > Q_{100}
El 2077.0

Alt B
Q_{100} = 2160 cfs
El 2058.7
Qd = Q_{25} = 1205 cfs
El 2056.5
Q_{OT} > Q_{100}
El 2077.0

2180 2170 2160 2150 2140 2130 2120 2110 2100 2090 2080 2070 2060 2050 2040 2030 2020 2010 2000

2133.17 2133.22 2132.64 2131.41 2129.52 2126.97 2123.77 2119.92 2115.41 2110.43 2105.43 2100.44 2095.44 2090.63 2086.53 2083.16 2080.51 2078.60 2077.41 2076.96 2077.23 2078.24 2079.78

10+00 15+00 20+00 25+00 30+00 35+00 40+00

Plot Scale - 1:200

Plotted From - TRPR17190

File - U:\rdprjjons\6G7\101v.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B21	B72

Plotting Date: 11/07/2025

Plot Scale - 1:200

Div 28

	Excavation	809	Embankment	7346	
Contractor Furnished Borrow		8374	+25%	1837	
		9183		9183	

Haul 756 CuYdSta

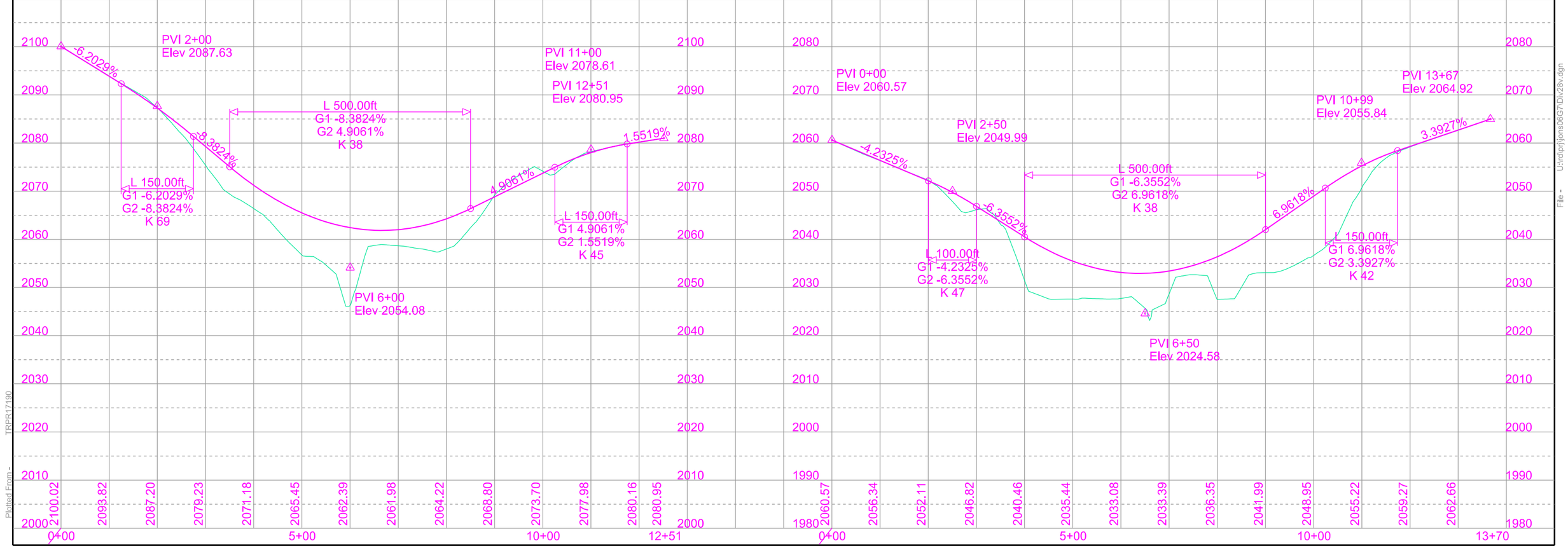
Material may be available from mainline excavation to construct the traffic diversion if sequencing allows. If mainline excavation material is utilized for traffic diversion embankment a CCO will change Contractor Furnished Borrow to Unclassified Excavation.

Div 80

	Excavation	400	Embankment	11714	
Contractor Furnished Borrow		14242	+25%	2928	
		14642		14642	

Haul 50 CuYdSta

Material may be available from mainline excavation to construct the traffic diversion if sequencing allows. If mainline excavation material is utilized for traffic diversion embankment a CCO will change Contractor Furnished Borrow to Unclassified Excavation.



Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B22	B72

Plotting Date: 12/03/2025

71+89-36' R
Take Out 18"-42' CMP
(Incidental Work, Grading)

71+84-50' L (1 ac)
Install 18"-58' CMP
& 2 Safety Ends

71+91-50' R (2 ac)
Install 18"-62' CMP
& 2 Safety Ends

Remove Steel Guardrail
at the following locations:
78+89 to 81+91 L
78+88 to 81+91 R

78+50-88' L to 78+50-105' R
Install 6"-194' PVC Encasement Pipe
(Schedule 80)

80+40
Take Out 140' Bridge
(Incidental Work, Structure)

80+33 (23.05 sq mi)
Alternate A
Install 3-12'x12' 195' 1 1/8" Box Culvert (C.I.P)
Alternate B
Install 3-14'x12' 196'-0" Box Culvert
(Precast)
(See Section E)

72+02 R
Refurbish Single Mailbox

Sec 31 - T1S - R31E

Kerwin K. Sletto
Parcel A3

NE1/4

BEGIN GRADING
Station 63+27.31

65+00 L
Begin type 2 fence

70+15 L
End type 2 fence

28th Avenue

Section Line

72+11 L
Begin type 2 fence

S1/2 NW1/4

Medicine Creek

LaDell L. Sletto
Parcel 6, 6A & 6B

1/16 Line

Present SD Hwy 248

Type 2 fence

2 PP

3-2 PP

4-2 PP

3 PP
2-2 PP

S 83°54'03" E

S 83°54'00" E

S 83°54'01" E

60+00 65+00 70+00 75+00 80+00 85+00 90+00

0+00 13+67

63+27-53.58' & 72'
64+90-70'
65+48-238'
71+38.57-100.00'
71+43.36-55.18'
71+82.48
72+05.34-96.32'
72+09.75-55.21'
75+09.75-54.72'
75+09.77-70.72'
79+91.75-53.93'
79+91.85-117.93'
80+72.85-117.80'
80+72.75-53.80'
81+57.00-140.77'
82+23.85-117.55'
84+33.00-95.00'
84+48.77-69.19'
84+48.75-53.19'
85+16.00-218.00'
89+23.00-277.00'

63+08-46.44' & 153'
63+24.09-46.41'
63+24.25-128.41'
63+25 R
Begin type 2 fence
66+40.25-127.79'
67+23.09-45.63'
69+82-165'
70+22 R
End type 2 fence
71+54.09-44.78'
71+62.69-125'
72+20.47-44.79'
72+29.07-125'
72+27 L
Begin type 2 fence
75+76-95
77+23.47-45.61'
78+00.35-117.74'
79+78.47-46.03'
79+78.35-118.03'
79+66-232'
80+85.35-118.20'
80+85.47-46.20'
84+49.35-118.80'
84+49.47-46.80'

NE1/4

LaDell L. Sletto
Parcel 5

Section Line

Div 80
PI 2+00.00
N 577629.05
E 1938890.27
Del 26°33'16" R
Dc 14°19'26"
T 94.39'
L 185.38'
R 400.00'

Div 80
PI 6+81.56
N 577367.39
E 1939298.57
Del 51°29'32" L
Dc 14°19'26"
T 192.90'
L 359.48'
R 400.00'

Div 80
PI 11+69.39
N 577533.41
E 1939785.18
Del 24°56'18" R
Dc 14°19'26"
T 88.45'
L 174.10'
R 400.00'

S1/2 NW1/4

Sec 32 - T1S - R31E

Parcel A3
63+27.00 to 71+43.37 L
Temporary easement containing
1.8 ac, more or less

Parcel 5
63+08.00 to 71+62.69 R
Temporary easement containing
1.6 ac, more or less

Parcel 6
72+05.34 to 94+57.00 L
Temporary easement containing
3.5 ac, more or less

Parcel 6
72+20.47 to 94+58.00 R
Temporary easement containing
4.2 ac, more or less

Plot Scale - 1:200

Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B23	B72

Plotting Date: 12/03/2025

Plot Scale - 1:200

63+27.31
Begin Grading

Excavation	67266	Embankment	56267	
Undercut	6502	+25%	14067	70334
Out-of-Balance Excavation	4693	Undercut	6502	
	78461	+25%	1626	8128
				78461

Haul 311,866 CuYdSta
Out-of-Balance Haul 138,444 CuYdSta

Out-of-Balance Excavation material is Waste from Mainline

71+84 L
24' Int Rd
71+91 R
24' Drive

PVI 69+03
Elev 2081.38

PVI 89+38
Elev 2074.72

PVI 63+27
Elev 2068.47

2.2430%

L 950.00ft
G1 2.2430%
G2 -4.0000%
K 152

L 950.00ft
G1 -4.0000%
G2 2.8893%
K 138

2.8893%

L 800.00ft
G1 2.8893%
G2 -1.4748%
K 183

PVI 78+53
Elev 2043.38

FL 2021.14
FL 2021.66

CP 2
77+20.78-74.90' R
REBAR & GRDS. Bridge
@ MRM 219.00
Elev. 2045.54

Alt A
Q_{100} = 2238 cfs
El 2032.1
Qd = Q25 = 1250 cfs
El 2030.3
Q_{OT} > Q100
El 2051.4

Alt B
Q_{100} = 2238 cfs
El 2032.1
Qd = Q25 = 1250 cfs
El 2030.3
Q_{OT} > Q100
El 2051.4

2160 2150 2140 2130 2120 2110 2100 2090 2080 2070 2060 2050 2040 2030 2020 2010 2000 1990 1980

2070.10 2072.17 2073.61 2074.40 2074.52 2073.99 2072.81 2070.96 2068.46 2065.30 2061.52 2058.04 2055.29 2053.26 2051.96 2051.38 2051.53 2052.40 2054.00 2056.32 2059.18 2062.07 2064.86 2067.13 2068.86 2070.05 2070.69

60+00 65+00 70+00 75+00 80+00 85+00 90+00

Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B24	B72

Plotting Date: 12/04/2025

93+58
Take Out 24"-138' RCP
(Incidental Work, Grading)

93+58 (14 ac)
Install 24"-132' RCP
(CL3-132')
& 2 Sloped Ends

116+00
Install Cutoff Drain with
Concrete Headwalls L & R
(See Details, Section B
Notes, & Section X)

Sec 32 - T1S - R31E

1/16 Line

1/4 Line

END GRADING
Station 94+38.00

BEGIN GRADING
Station 108+69.00

94+53 L
End type 2 fence

94+55 R
End type 2 fence

Mainline
PI 96+25.97
N 577413.76
E 1940904.77
Del 4°34'34" R
Dc 0°30'00"
T 457.88'
L 915.27'
R 11460.00'

111+91 L
Begin type 2 fence

108+63 R
Begin type 2 fence

125+25 R
End type 2 fence

Present SD Hwy 248

S 79°19'26" E

S 79°16'46" E

Type 2 fence

Type 2 fence

2 PP

3-2 PP

2-2 PP

2 PP

2 PP

2 PP

91+29-102'

92+29.22-51.91'

93+35.17-100.01'

93+80.78-100.13'

94+25.20-51.59'

94+57-116'
94+57-51.54'

91+84-76'

91+14-123'

93+42.94-148.26'
93+42.82-88.26'

93+73.05-88.31'
93+73.06-48.31'

94+58-88.76'
94+58-48.44'

108+49-50.34' & 67'

108+59-49.65' & 144.30'

111+70-68'

115+40-239'

118+76.51-49.73'

119+95.57-149.65'

120+28-145'

LaDell L. Sletto
Parcel 6,6A & 6B

S1/2 NW1/4

SW1/4

NE1/4

SE1/4

LaDell L. Sletto
Parcel 7 & 7A

LaDell L. Sletto
Parcel A4

Parcel 7
108+49.00 to 124+66.57 L
Temporary easement containing
3.2 ac, more or less

Parcel 7
108+59.00 to 125+39.22 R
Temporary easement containing
4.1 ac, more or less

90+00 95+00 100+00 105+00 110+00 115+00 120+00 0+00

100'

Plot Scale - 1:200

Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B25	B72

Plotting Date: 12/15/2025

94+38.00
End Grading

108+69.00
Begin Grading

Excavation	66426	Embankment	83001	
Undercut	5856	+25%	20750	103751
Out-of-Balance Excavation	38789	Undercut	5856	
	111071	+25%	7320	7320
				111071

Haul 272,233 CuYdSta
Out-of-Balance Haul 3,178,830 CuYdSta

Out-of-Balance Excavation material is Waste from Mainline

91+45 L
24' Fe Ent
91+42 R
24' Fe Ent

PVI 94+38
Elev 2067.34

-1.4748%

L 800.00ft
G1 2.8893%
G2 -1.4748%
K 183

FL 2052.3
FL 2055.7

CP 2A
91+14.62-63.46' L
5/8" x 5' Rebar & Guards
Elev. 2069.17

PVI 108+69
Elev 2073.79

PVI 112+70
Elev 2073.80

0.0034%

L 800.00ft
G1 0.0034%
G2 -4.4843%
K 178

L 1050.00ft
G1 -4.4843%
G2 3.1980%
K 137

-4.4843%

2070.69 2070.78 2070.33 2069.34 2067.90 2073.76 2073.32 2072.31 2070.74 2068.61 2065.93 2062.68 2058.86 2054.52 2050.03 2045.55 2041.07

90+00 95+00 100+00 105+00 110+00 115+00 120+00

2170 2160 2150 2140 2130 2120 2110 2100 2090 2080 2070 2060 2050 2040 2030 2020 2010 2000 1990

Plot Scale - 1:200

Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B26	B72

Plotting Date: 12/04/2025

124+37
Take Out 158' Bridge
(Incidental Work, Structure)

Remove Steel Guardrail
at the following locations:
122+76 to 125+97 L
122+76 to 125+97 R

124+58 (24.39 sq mi)
Alternate A
Install 4-12'x12' 229'-7 7/8" Box Culvert (C.I.P)
10° Skew RHF
Alternate B
Install 4-12'x12' 228'-0" Box Culvert (Precast)
10° Skew RHF
(See Section E)

137+48 R
Refurbish Single Mailbox

Sec 32 - T1S - R31E

Sec 33 - T1S - R31E

LaDell L. Sletto
Parcel 7 & 7A

Medicine Creek

NE1/4

RINGNECK & WESTERN RAILWAY

150'

125+28.55 Section Line

119+95.57-149.65'

123+76.51-49.48'
123+76.57-149.43'

123+66.00-175.31'
123+65.00-220.00'

124+50.70-232.85'
124+63.03-168

124+66.57-149.37'

125+39.32-120.09'

125+37.43-130'

125+41 L
Begin type 2 fence

Mainline
PI 133+43.87
N 576724.91
E 1944558.79
Del 10°37'40" L
Dc 0°46'46"
T 683.63'
L 1363.34'
R 7350.00'

127+60.96-119.59'

130+15.25-49.30'

Randall Vevig and
Estate of Alfred T. Sletto

Parcel 8

NW1/4

132+40-129'

133+79-187'

142+12 L
End type 2 fence

END GRADING
Station 141+97.00

142+16-49.79' & 83'

2-2 PP

2 PP

3-2 PP

4-2 PP

S 38°24'15" E

S 81°12'23" E

N 57°47'05" E

Present SD Hwy 248

120+00

125+00

130+00

135+00

140+00

145+00

150+00

13+16

10+00

5+00

100'

33'

1/4 Line

NW1/4

Div 124

120+28-145'

121+96.41-50.45'

121+96.36-133.45'

122+41.92
287.77'

124+24.41-50.58'
124+24.36-133.58'

125+20.36-133.64'

125+48.57-282'
125+39.22-232.84'

125+87.66-134.25'

126+04.11-270.77'
126+54.18-211.40'

126+06.36-232.63'

127+36.27-134.53'

130+84.08-50.66'

131+52.09-133.38'

132+46-136'

133+22-167'

142+18-50.21' & 100'
142+18.00-81.39'

125+25 R
End type 2 fence

125+91 R
Begin type 2 fence

142+15 R
Begin type 2 fence

137+25 R
Do Not Disturb
Cattle Guard

SW1/4

SE1/4

Section Line

Medicine Creek

Div124
PI 2+00.17
N 576973.77
E 1943238.20
Del 40°42'00" R
Dc 14°19'26"
T 148.36'
L 284.14'
R 400.00'

LaDell L. Sletto
Parcel A4

Div124
PI 7+35.32
N 576545.59
E 1943579.77
Del 83°44'06" L
Dc 14°19'26"
T 358.49'
L 584.58'
R 400.00'

Div124
PI 11+29.24
N 576826.94
E 1944024.58
Del 41°06'29" R
Dc 14°19'26"
T 149.98'
L 286.99'
R 400.00'

Randall Vevig and
Estate of Alfred T. Sletto

Parcel A5

Parcel A4
122+41.92 to 125+48.57 R
Temporary easement containing
0.2 ac, more or less

Parcel 8
125+37.43 to 142+16.00 L
Temporary easement containing
2.9 ac, more or less

Parcel 8
125+87.66 to 142+18.00 R
Temporary easement containing
2.1 ac, more or less

Parcel A5
126+04.11 to 126+54.18 R
Temporary easement containing
0.1 ac, more or less

Parcel A5
131+52.09 to 142+18.00 R
Temporary easement containing
0.8 ac, more or less

Plot Scale - 1:200

Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B27	B72

Plotting Date: 12/03/2025

Plot Scale - 1:200

141+97.00
End Grading

137+29 R
24' Drive

PVI 135+34
Elev 2051.02

L 1050.00ft
G1 -4.4843%
G2 3.1980%
K 137

PVI 141+97
Elev 2028.29

-3.4279%

L 1000.00ft
G1 3.1980%
G2 -3.4279%
K 151

PVI 125+09
Elev 2018.24

FL 1993.50
FL 1993.91

Alt A
Q_{100} = 2311 cfs
El 2003.0
Qd = Q25 = 1291 cfs
El 2001.6
Q_{OT} > Q100
El 2028.0

Alt B
Q_{100} = 2311 cfs
El 2003.1
Qd = Q25 = 1291 cfs
El 2001.6
Q_{OT} > Q100
El 2028.0

CP 3
122+01.10-60.86' R
REBAR & GRDS, Bridge
@ MRM 219.83
Elev. 2024.51

2130 2120 2110 2100 2090 2080 2070 2060 2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950

2041.07 2037.07 2033.80 2031.27 2029.46 2028.38 2028.04 2028.43 2029.55 2031.40 2033.98 2037.00 2039.43 2041.19 2042.30 2042.74 2042.52 2041.63 2040.09 2037.88 2035.01 2031.62

120+00 125+00 130+00 135+00 140+00 145+00 150+00

Plotted From - TRPR17190

File - U:\rdprj\jonsd6G7\120v.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B28	B72

Plotting Date: 11/07/2025

Plot Scale - 1:200

Div 124

	Excavation	5208	Embankment	14305
Contractor Furnished Borrow		12673	+25%	3576
		17881		17881

Haul 10,740 CuYdSta

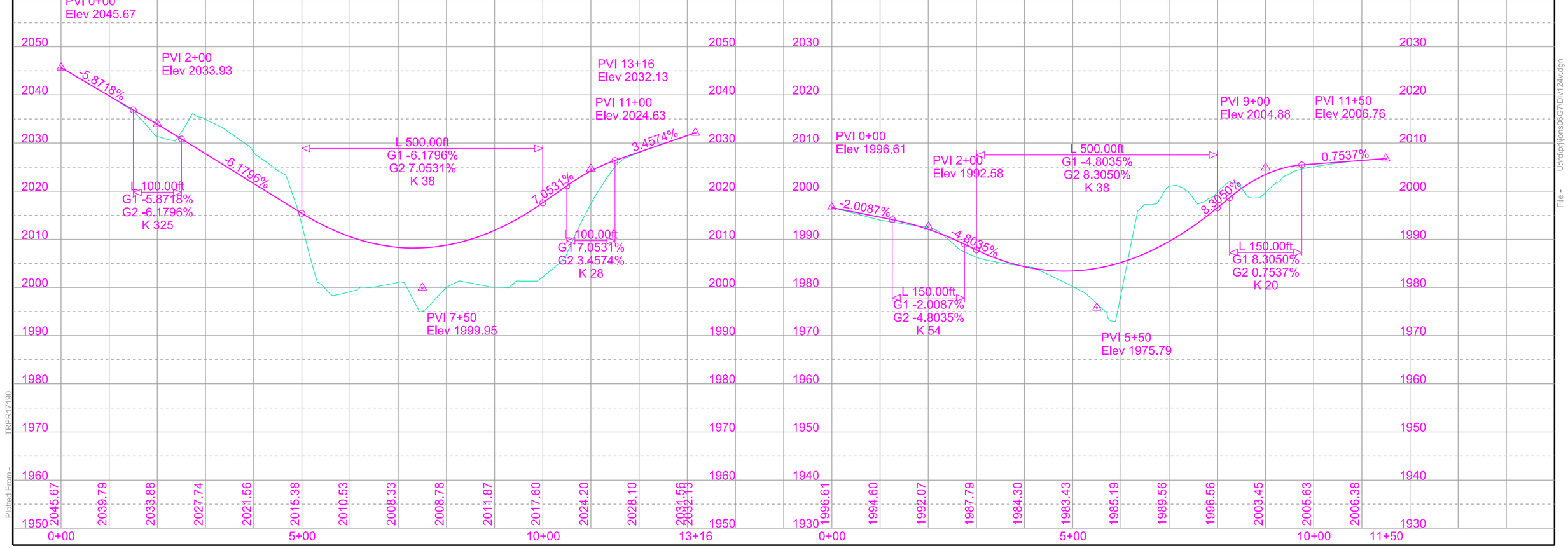
Material may be available from mainline excavation to construct the traffic diversion if sequencing allows. If mainline excavation material is utilized for traffic diversion embankment a CCO will change Contractor Furnished Borrow to Unclassified Excavation.

Div 177

Excavation	5572	Embankment	2063
	5572	+35%	722
		Waste	2787
			5572

Haul 1,449 CuYdSta

Waste material is excess excavation to be disposed of at a site approved by the engineer.



Plotted From - TRPR17190

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B29	B72

Plotting Date: 12/03/2025

Remove Steel Guardrail
at the following locations:
175+90 to 179+06 L
175+91 to 178+73 R

176+00-50' L to 176+00-50'R
Install 6"-100' PVC Encasement Pipe
(Schedule 80)

177+48
Take Out 152' Bridge
(Incidental Work, Structure)

177+51 (41.53 sq mi)
Alternate A
Install 4-12'x12' 148'-1 11/16" Box Culvert (C.I.P)
5° Skew LHF
Alternate B
Install 4-13'x12' 148'-0" Box Culvert (Precast)
5° Skew LHF
(See Section E)

179+33
Take Out 24"-86' RCP
(Incidental Work, Grading)

178+93-80' R (34 ac)
Install 48"-90' CMP
& 2 Safety Ends with Bars

185+74
Take Out 24"-72' RCP
(Incidental Work, Grading)

185+74 (6 ac)
Install 24"-70' RCP
& 2 Sloped Ends

Sec 33 - T1S - R31E

Sec 34 - T1S - R31E

100' RINGNECK & WESTERN RAILWAY

BEGIN GRADING
Station 170+90.00

END GRADING
Station 186+90.00

Randall Vevig
Parcel 9 & 9A

Randall Vevig
Parcel A6

Medicine Creek

SE1/4 NE1/4

SW1/4 NE1/4

S1/2 NW1/4

SW1/4

SE1/4

Present SD Hwy 248

1/4 Line

Cutoff

Section Line

260th Avenue

170+75 L
Begin type 2 fence

178+66 L
Begin type 2 fence

184+26 L
1-24' Barbed wire gate

187+08 L
End type 2 fence

170+73 R
Begin type 2 fence

178+15 R
End type 2 fence

179+19 R
Begin type 2 fence

187+07 R
End type 2 fence

5-2 PP

2 PP

2-2 PP

4-2 PP

Div 177

Mainline
PI 169+82.91
N 576721.83
E 1948201.75
Del 9°53'46" R
Dc 1°01'37"
T 483.09'
L 963.78'
R 5580.00'

Div 177
PI 1+99.25
N 576649.34
E 1948614.01
Del 28°35'15" R
Dc 14°19'26"
T 101.91'
L 199.58'
R 400.00'

Div 177
PI 6+08.76
N 576401.47
E 1948945.31
Del 56°15'59" L
Dc 14°19'26"
T 213.88'
L 392.81'
R 400.00'

Div 177
PI 9+54.87
N 576528.44
E 1949304.58
Del 29°23'58" R
Dc 14°19'26"
T 104.94'
L 205.25'
R 400.00'

Randall Vevig
Parcel 10 & 10A

Kevin C. Meyers
Parcel A7

Parcel 9
170+72.00 to 177+88.23 L
Temporary easement containing
0.6 ac, more or less

Parcel 10
170+69.00 to 178+44.21 R
Temporary easement containing
1.3 ac, more or less

Parcel A6
178+57.44 to 181+11.92 L
Temporary easement containing
0.1 ac, more or less

Parcel A7
178+82.66 to 187+10.00 R
Temporary easement containing
1.6 ac, more or less

Parcel A7
178+60.80 to 187+10.00 L
Temporary easement containing
1.0 ac, more or less

Plot Scale - 1:200

Plotted From - TRPR17190

File - U:\rpr\jlons\d6G37\160.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B30	B72

Plotting Date: 12/03/2025

170+90.00
Begin Grading

186+90.00
End Grading

Excavation	17469		Embankment	3901	
Undercut	5697		+25%	1365	5266
	23165		Undercut	5697	
			+25%	1994	7690
			Waste		10209
					23165

Haul 6,860 CuYdSta

Waste is material used as Out-of-Balance Excavation to be used in Mainline at Station 121+64.

178+93 R
40' Int Rd
70' Rad Bk
85' Rad Ah

184+36 L
24' Fe Ent
184+33 R
24' Fe Ent

PVI 170+90
Elev 1999.73

-3.0280%

L 850.00ft
G1 -3.0280%
G2 3.1076%
K 139

PVI 175+65
Elev 1985.35

FL 1971.89
FL 1971.71

CP 4
178+24.63-67.02' R
REBAR & GRDS. Bridge
@ MRM 220.84
Elev. 1995.01

PVI 182+90
Elev 2007.88

3.1076%

L 600.00ft
G1 3.1076%
G2 -0.2105%
K 181

-0.2105%

PVI 186+90
Elev 2007.04

FL 2000.3
FL 2001.3

Alt A
Q_{100} = 3123 cfs
El 1983.6
Qd = Q25 = 1751 cfs
El 1981.2
Q_{OT} > Q100
El 1991.9

Alt B
Q_{100} = 3123 cfs
El 1983.4
Qd = Q25 = 1751 cfs
El 1981.3
Q_{OT} > Q100
El 1991.9

1999.43 1996.53 1994.30 1992.79 1992.00 1991.93 1992.58 1993.96 1996.05 1998.87 2001.64 2003.86 2005.53 2006.65 2007.21 2007.23

2110 2100 2090 2080 2070 2060 2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930

160+00 165+00 170+00 175+00 180+00 185+00 190+00

Plot Scale - 1:200

Plotted From - TRPR17190

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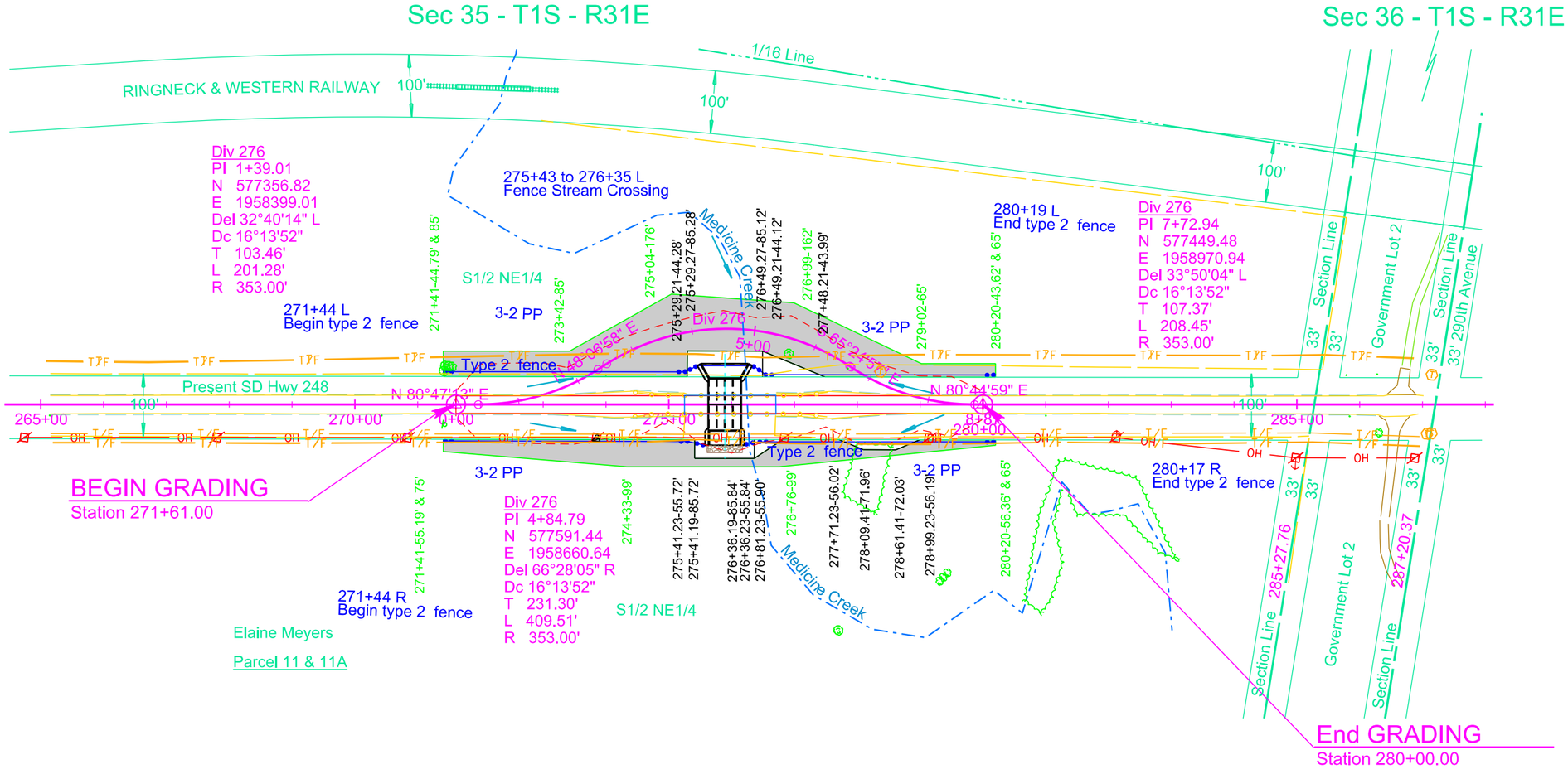
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B31	B72

Plotting Date: 12/03/2025

275+98
Take Out 146' Bridge
(Incidental Work, Structure)

Remove Steel Guardrail
at the following locations:
274+44 to 277+53 L
274+43 to 277+52 R

275+89 (51.78 sq mi)
Alternate A
Install 4-12'x12' 130'-1 11/16" Box Culvert (C.I.P)
Alternate B
Install 4-13'x12' 128'-0" Box Culvert (Precast)
(See Section E)



Parcel 11
271+41.00 to 280+20.00 L
Temporary easement containing
1.3 ac, more or less

Parcel 11
271+41.00 to 280+20.00 R
Temporary easement containing
0.5 ac, more or less

Plot Scale - 1:200
Plotted From - TRPR17190
File - U:\roj\rjl\jobs\6G\7265.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B32	B72

Plotting Date: 12/03/2025

271+61.00
Begin Grading

280+00.00
End Grading

Excavation	825	
Undercut	2941	
Contractor Furnished Borrow	4891	
	8657	

Embankment	3242	
+40%	1297	4539
Undercut	2941	
+40%	1176	4117
		8657

PVI 271+61
Elev 1956.91

L 400.00ft
G1 -0.2452%
G2 0.0922%
K 1185

PVI 280+00
Elev 1956.84

-0.2452%

0.0922%

PVI 274+11
Elev 1956.30

FL 1937.80
FL 1937.60

Alt A
Q_{100} = 3539 cfs
EI 1950.4
Qd = Q25 = 1987 cfs
EI 1948.1
Q_{OT} > Q100
EI 1956.4

Alt B
Q_{100} = 3539 cfs
EI 1950.6
Qd = Q25 = 1987 cfs
EI 1948.1
Q_{OT} > Q100
EI 1956.4

CP 5
273+85.13-52.26' R
REBAR & GRDS. Bridge
@ MRM 220.70
Elev. 1951.28

1956.82 1956.61 1956.48 1956.43 1956.47 1956.57 1956.66 1956.75 1956.84

2070 2060 2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890

265+00 270+00 275+00 280+00 285+00

Plot Scale - 1:200

Plotted From - TRPR17190

File - U:\drdprj\jons66r7\265v.dgn

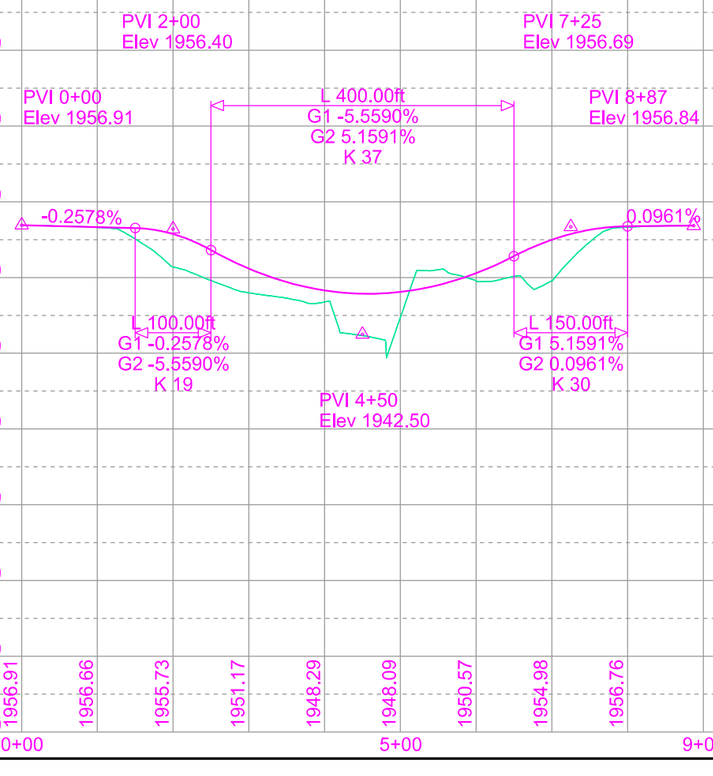
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B33	B72

Plotting Date: 11/07/2025

Div 276

	Excavation	273	Embankment	2339
Contractor Furnished Borrow		3002	+25%	936
		3275		3275

Material may be available from mainline excavation to construct the traffic diversion if sequencing allows. If mainline excavation material is utilized for traffic diversion embankmenta CCO will change Contractor Furnished Borrow to Unclassified Excavation.

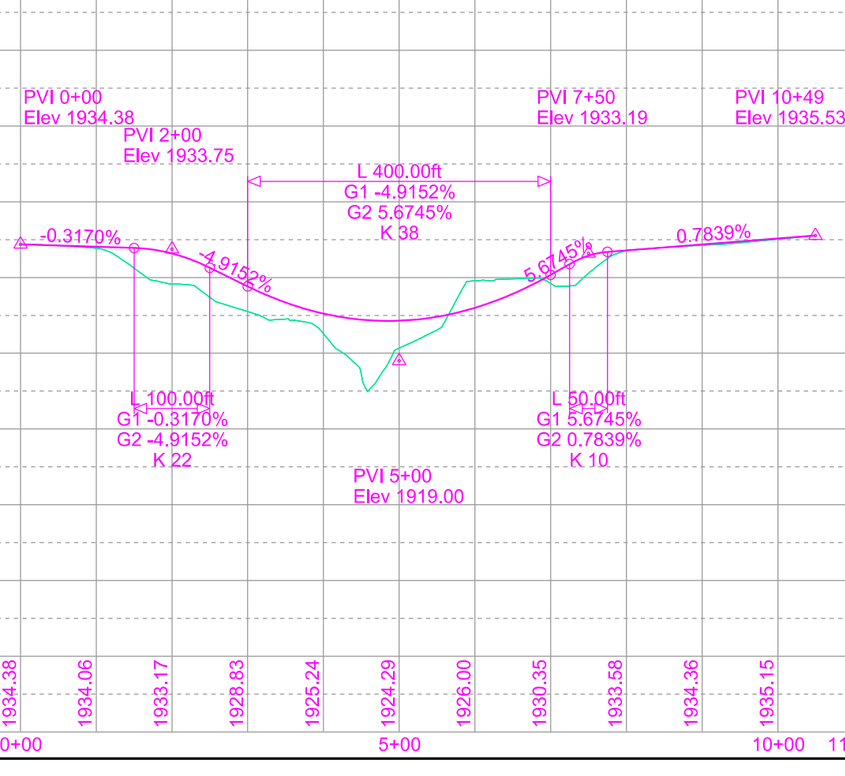


Div 361

	Excavation	1276	Embankment	1920
Contractor Furnished Borrow		1412	+25%	768
		2688		2688

Haul 1,362 CuYdSta

Material may be available from mainline excavation to construct the traffic diversion if sequencing allows. If mainline excavation material is utilized for traffic diversion embankment a CCO will change Contractor Furnished Borrow to Unclassified Excavation.



Plot Scale - 1:200

Plotted From - TRPR17190

File - U:\rdprj\jons66s7\Div276v.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B34	B72

Plotting Date: 09/15/2026 Rev 09/15/2026 RU

361+22
Take Out 122' Bridge
(Incidental Work, Structure)

360+54.40 to 361+60.40 (62.24 sq mi)
Install 106' 0" Steel Girder Bridge
(See Section E)

Remove Steel Guardrail
at the following locations:
359+79 to 362+64 L
359+80 to 362+65 R

Install 2'x3' Type B Drop Inlet
with 6" Concrete Collar and
Type A Frame & Grate
at the following locations:
361+73.63-17.44' L
361+73.63-17.44' R

361+74 L
Install 18"-20' RCP
& 1 RCP Safety End
(Outlet from Drop Inlet)

361+74 R
Install 18"-8' RCP
Install 18"-22' CMP (14' & 8')
And 2-20.0° Elbows
& 1-18" RCP to CMP Outlet Transition
& 1 CMP Sloped End
(Outlet from Drop Inlet)

361+74 R
Install Bank and Channel
Protection Gabions (4,5 CuYd)
and Type B Drainage Fabric
(15 SqYd)

Ringneck & Western Railroad, L.L.C.

Parcel A8

Sec 5 - T105N - R79W

BEGIN GRADING
Station 357+00.00

356+81-99' L to 369+02-187' L
Do Not Disturb Railroad

356+81-88' L to 369+02-174' L
Do Not Disturb
Railroad Embankment

END P-B 248(12)173
END GRADING
Station 369+00.00

356+80-48.73' & 75'
358+95.70-48.90'
359+01.16-49.97'
362+10.56-57.68'
362+10.57-49.10'
363+70-94'
365+26.08-83.78'
369+11.99-68'
369+10.67-49.52'

Medicine Creek
4-2 PP
1/4 Line
RINGNECK & WESTERN RAILWAY
100'
Cutoff
N 80°40'30" E
N 80°38'23" E
N 80°30'48" E
Present SD Hwy 248
355+00
0+00
360+00
365+00
10+00
370+00
371+
Type 2 fence
3-2 PP
Div 361
5+00
5-2 PP

356+83 R
Begin type 2 fence

356+80-51.21' & 81'
358+55-88'
360+06.77-51.01'
360+06.80-100.01'
361+03-184'
362+08.80-99.89'
362+08.77-50.89'
362+92-152'
363+75-102'
364+97-125'
368+90 R
End type 2 fence
369+02-25
368+87.63-87.00'
368+93.87-50.47'

Div 361
PI 0+99.90
N 579357.33
E 1966620.48
Del 26°06'34" R
Dc 14°19'26"
T 92.75'
L 182.28'
R 400.00'

Div 361
PI 4+73.29
N 579248.57
E 1966981.04
Del 54°32'24" L
Dc 19°05'55"
T 154.64'
L 285.57'
R 300.00'

Div 361
PI 7+97.22
N 579461.43
E 1967255.90
Del 28°16'08" R
Dc 14°19'26"
T 100.73'
L 197.35'
R 400.00'

SW1/4
SE1/4

Smith Family Land Limited Partnership
Parcel 12

Smith Family Land Limited Partnership
INFORMATION ONLY)

Parcel A8
356+80.00 to 356+26.29 L
Temporary easement containing
0.5 ac, more or less

Parcel 12
362+10.56 to 369+11.99 L
Temporary easement containing
0.3 ac, more or less

Parcel 12
356+80.00 to 368+93.77 R
Temporary easement containing
1.7 ac, more or less

Plot Scale - 1:200
Plotted From - TRPR17190
File - U:\rdi\prj\jons06G7355.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 248(12)173	B35	B72

Plotting Date: 09/15/2026 Rev 09/15/2026 RU

Plot Scale - 1:200

357+00.00
Begin Grading

369+00.00
End Grading

Excavation	3229		Embankment	1774	
Undercut	4023		+40%	710	2484
Contractor Furnished Borrow	864		Undercut	4023	
	8116		+40%	1609	5632
					8116

Haul 2,688 CuYdSta

361+73.63 - 17.44' L
Install 2'x3' Type B Drop Inlet
with 6" Concrete Collar
and Type A Frame & Grate
Top Curb Elev. 1933.31
Top Wall Elev 1932.14
Floor Elev. 1927.20

361+73.63 - 17.44' R
Install 2'x3' Type B Drop Inlet
with 6" Concrete Collar
and Type A Frame & Grate
Top Curb Elev. 1933.31
Top Wall Elev. 1932.14
Floor Elev. 1926.80

PVI 357+00
Elev 1934.38

L 800.00ft
G1 -0.2476%
G2 1.1118%
K 589

PVI 369+00
Elev 1937.62

-0.2476%

1.1118%

PVI 364+43
Elev 1932.54

FL 1926.93
FL 1921.97

Q_{100} = 3927 cfs
El 1927.0
Qd = Q_{25} = 2208 cfs
El 1924.7

CP 6
361+81.80-47.93' L
REBAR & GRDS. Bridge
@ MRM 224.32
Elev. 1927.27

1934.38 1934.13 1933.88 1933.64 1933.42 1933.35 1933.46 1933.73 1934.17 1934.79 1935.57 1936.52 1937.62

2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890 1880 1870

355+00 360+00 365+00 370+00 375+00

Plotted From - TRPR17190

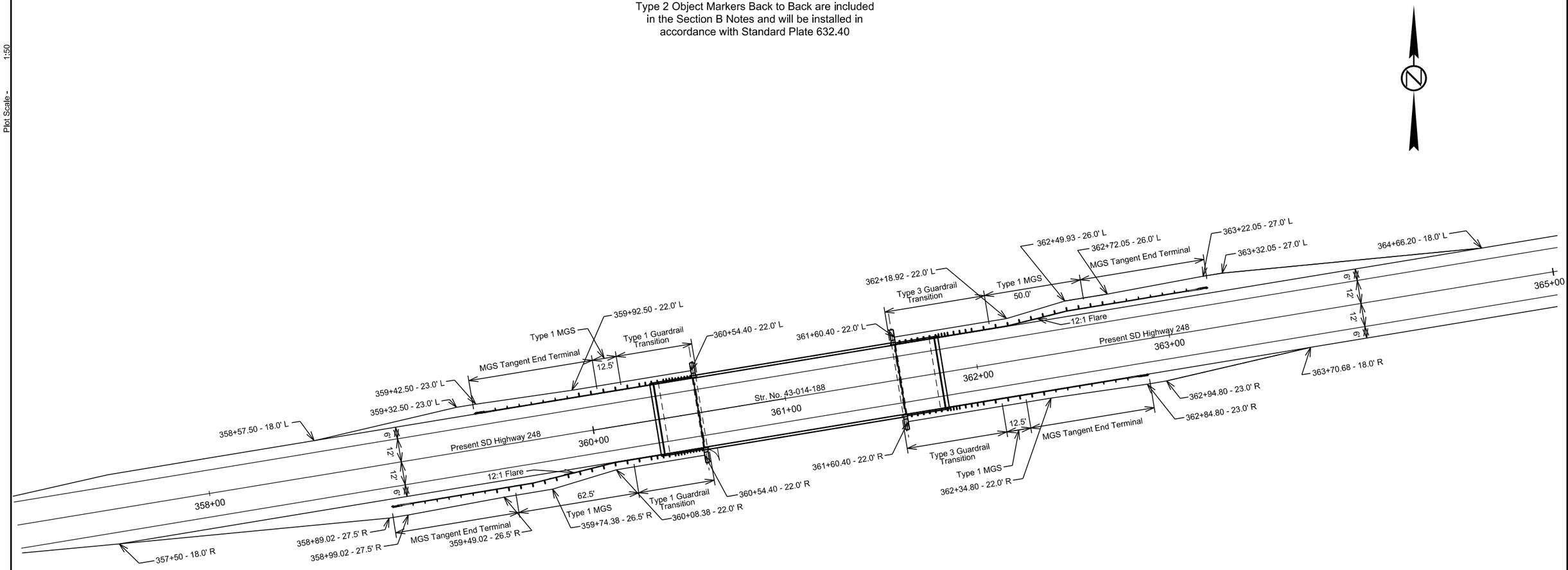
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GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B36	B72

Plotting Date: 09/15/2026 Rev 09/15/2026 RU

Note: The quantity for Guardrail Delineators and Type 2 Object Markers Back to Back are included in the Section B Notes and will be installed in accordance with Standard Plate 632.40



Plot Scale - 1:50

Plotted From - TRPR17190

File - U:\rd\prj\jons06G7360gr.dgn

TYPICAL UNDERDRAIN INSTALLATION

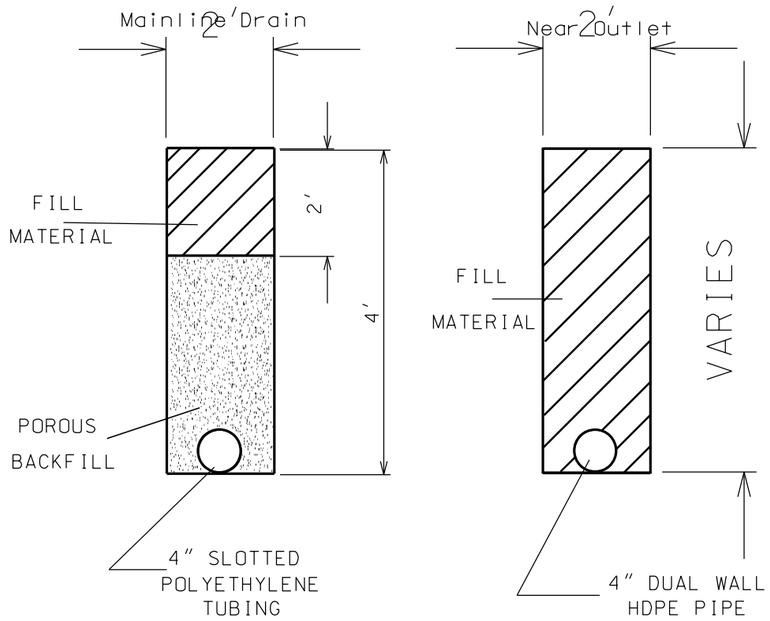
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B37	B72

Plotting Date: 11/17/2025

TYPICAL UNDERDRAIN INSTALLATION

Station 14+00± Lt. to Station 20+60± Lt.

Station 14+00± Rt. to Station 22+50± Rt.



UNDERDRAINS WILL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 680 OF THE SPECIFICATIONS

Plot Scale - 1:1.52291

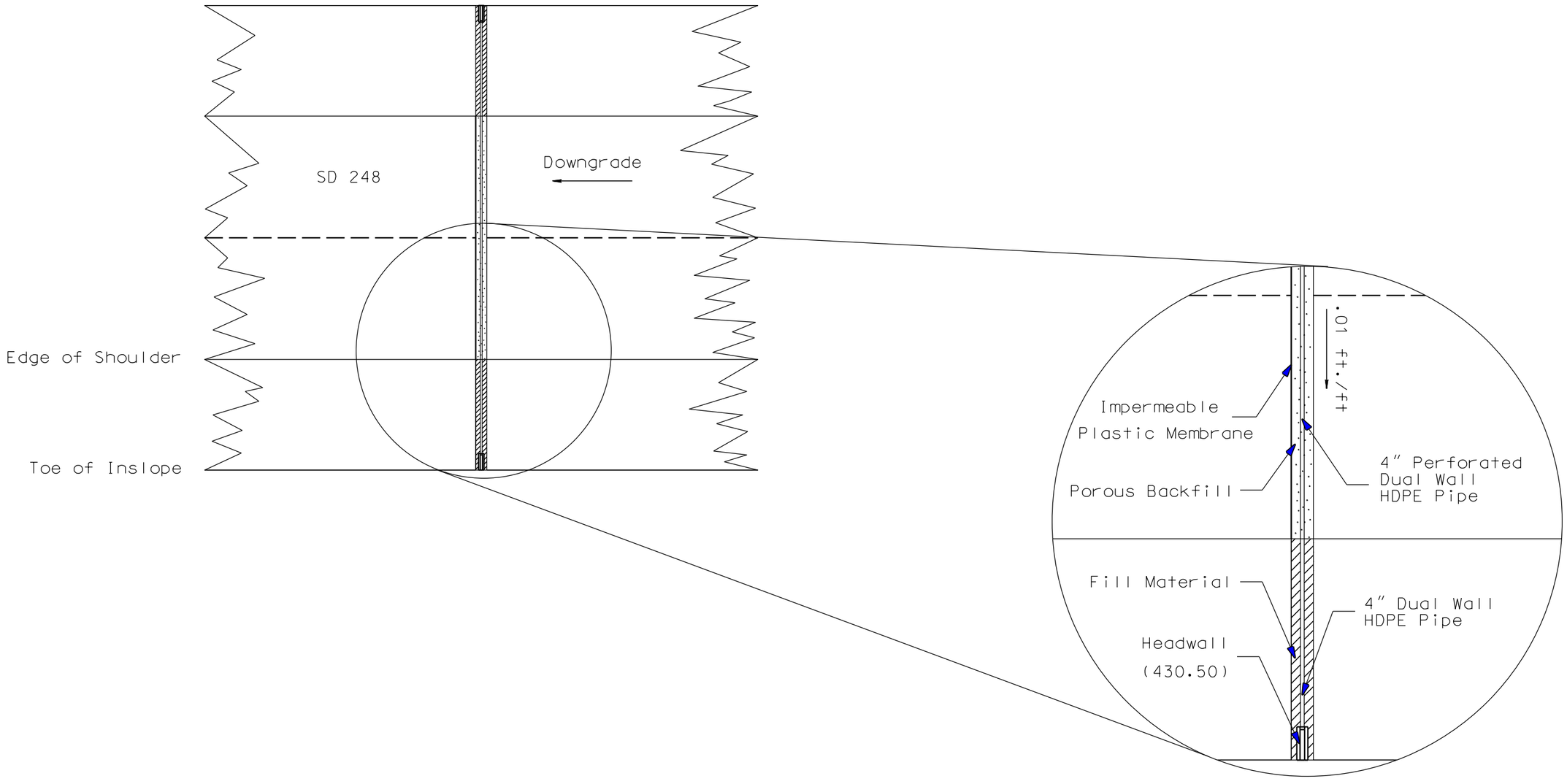
Plotted From - TRPR17190

File - ...\Jones06G7_Dual Wall udrain.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P-B 0248(12)173	B38	B72

Plotting Date: 11/13/2025

Typical Cutoff Drain Installation



Plot Scale - 1:4.99774

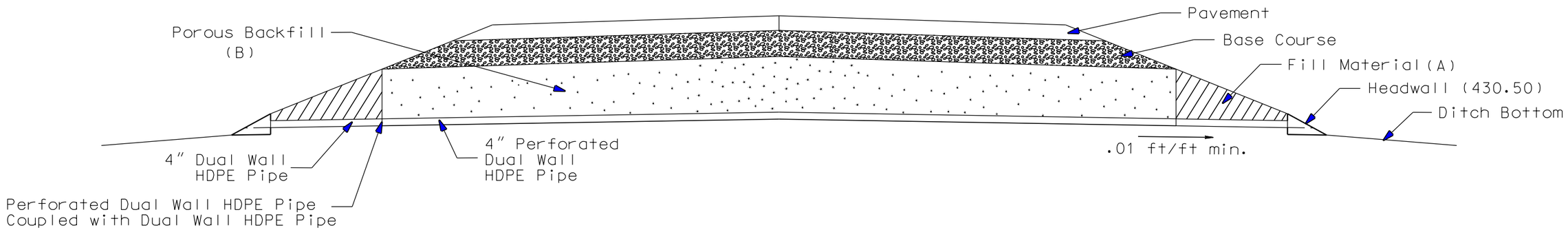
Plotted From - TRPR17190

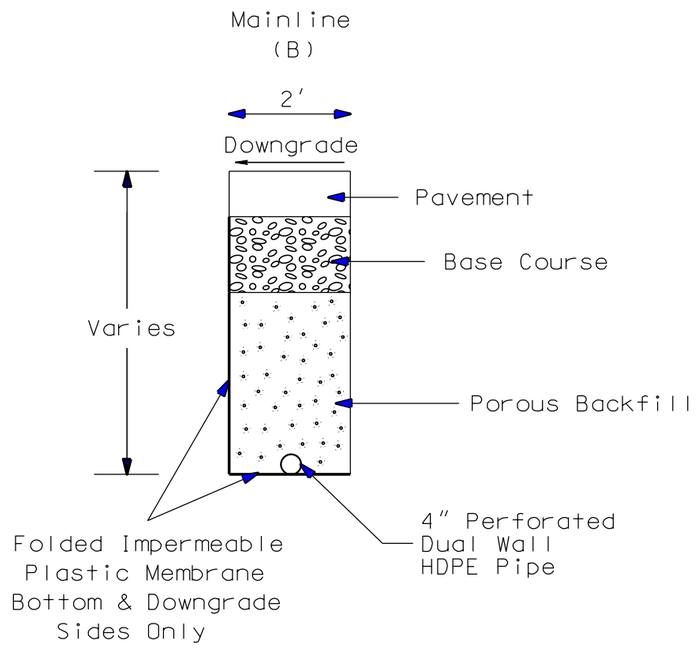
File - ...\Jones06G7_Dualwall HDPE Cutoff Drain.dgn

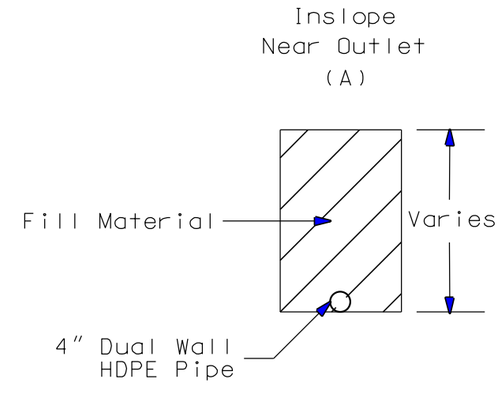
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P-B 0248(12)173	B39	B72

Plotting Date: 11/13/2025

Typical Cutoff Drain Installation







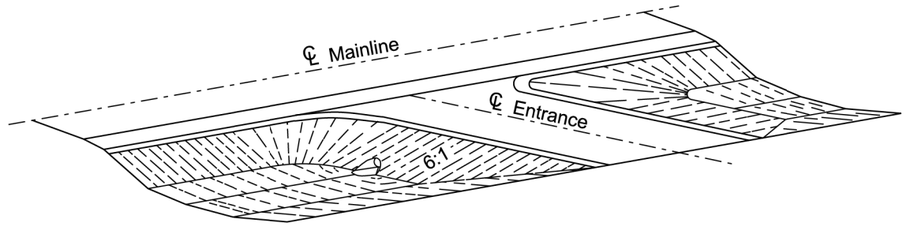
Plot Scale - 1:4.99774

Plotted From - TRPR17190

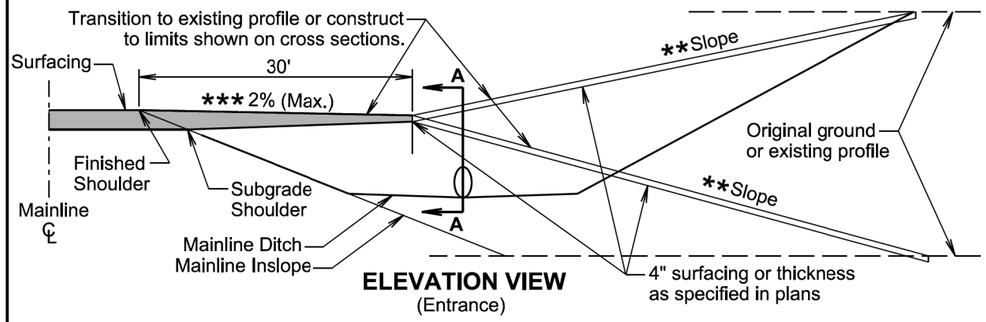
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B40	B72

Plotting Date: 09/15/2026



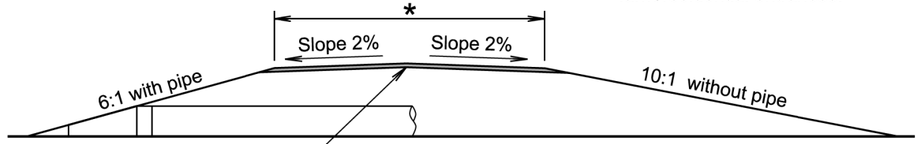
PERSPECTIVE OF ENTRANCE



ELEVATION VIEW
(Entrance)

*** 2% When on the inside of superelevation and 0% or flat when on outside of superelevation.

** Entrance maximum slope is typically 10:1 for field entrances and 15:1 for farm/residential entrances.



SECTION A-A
(Entrance and Intersecting Road)

* The finished surfacing width is stated elsewhere in the plans. The subgrade width is 4' wider than the finished surfacing width unless stated otherwise in the plans.

GENERAL NOTES:

The ditch section shown above in the perspective view is only for illustrative purpose.

The elevation view above is typical for either a ditch cut or fill section. Entrances that vary from above should be specified in the plans.

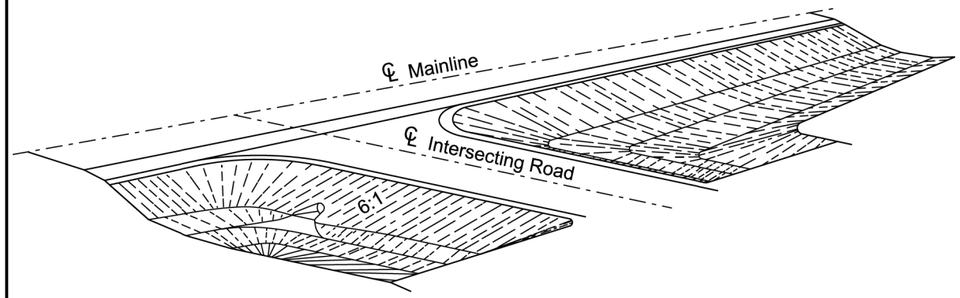
Pipe length will be adjusted if necessary during construction to obtain the 6:1 slope. For grading projects, the pipe length is estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the entrance or intersecting road inslope will be rounded to eliminate an abrupt transition.

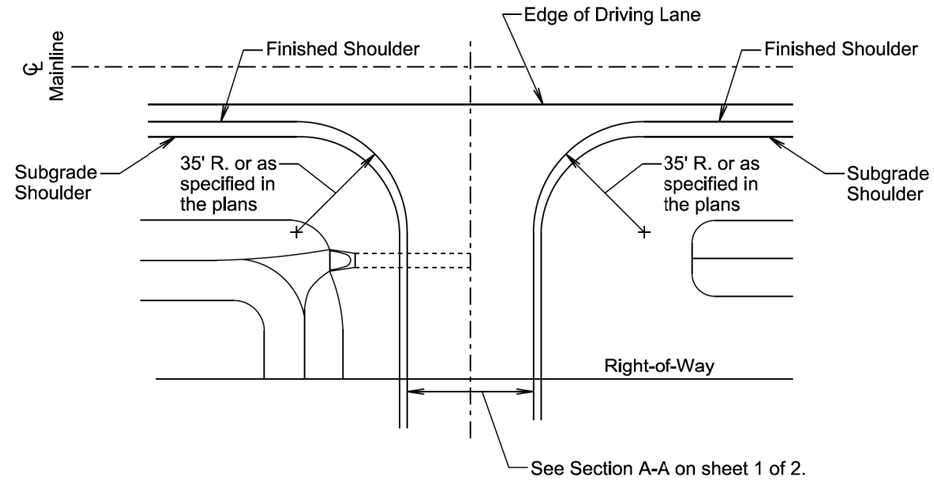
The turning radii will be 35' for intersecting roads and entrances unless stated otherwise in the plans.

November 19, 2021

Published Date: 2027	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



PERSPECTIVE OF INTERSECTING ROAD



PLAN VIEW

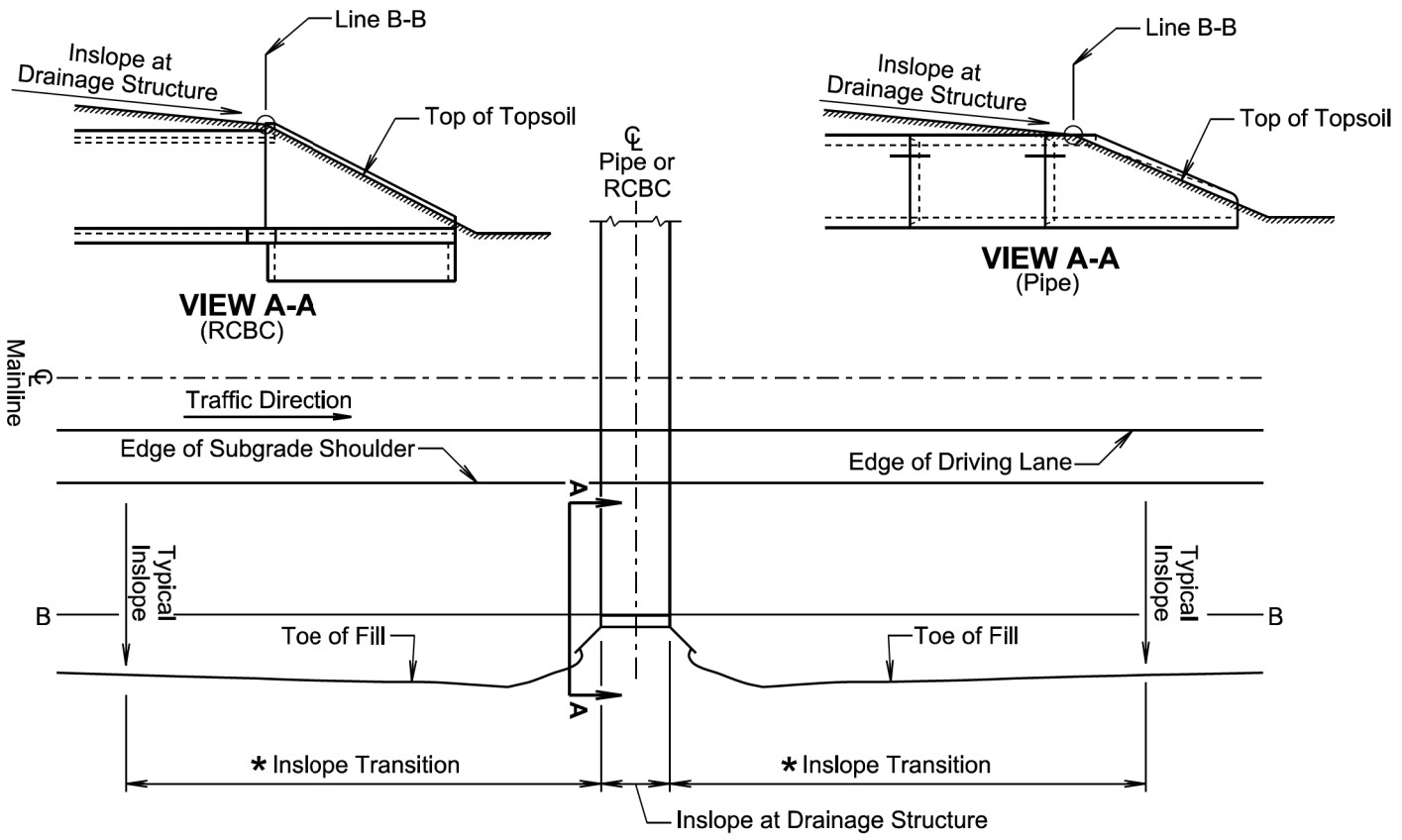
GENERAL NOTES:

The 6:1 or 10:1 intersecting road inslope will transition to the existing intersecting road inslope near the right-of-way or at a location as determined by the Engineer.

November 19, 2021

Published Date: 2027	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSectionB.dgn



TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

Published Date: 2027

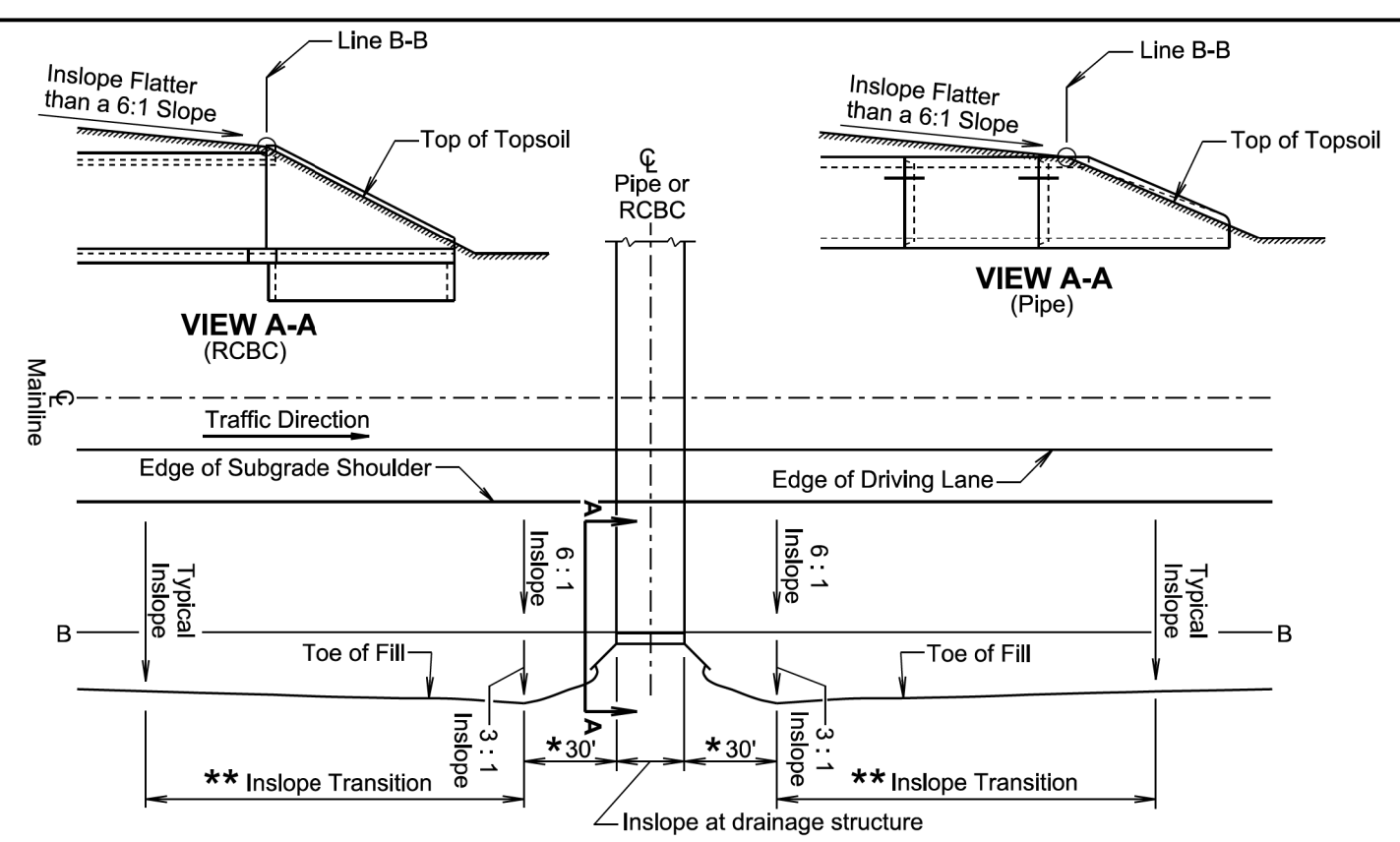
SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 1 of 2

September 14, 2018



TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from Inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope.

** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

Published Date: 2027

SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 2 of 2

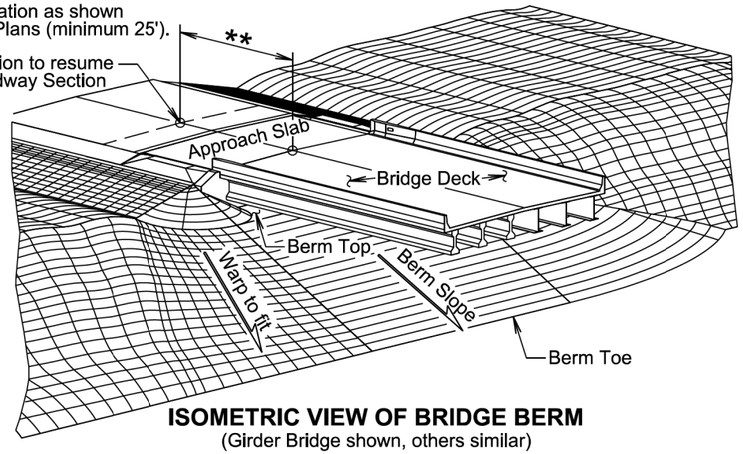
September 14, 2018

Plotting Date: 09/15/2026

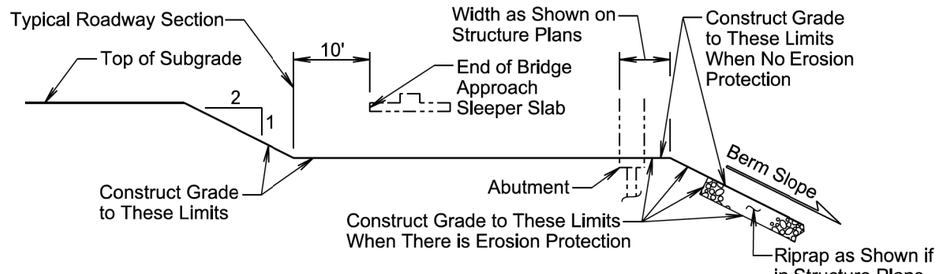
STATE OF SOUTH DAKOTA | PROJECT P-B 0248(12)173 | SHEET B41 | TOTAL SHEETS B72

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B42	B72

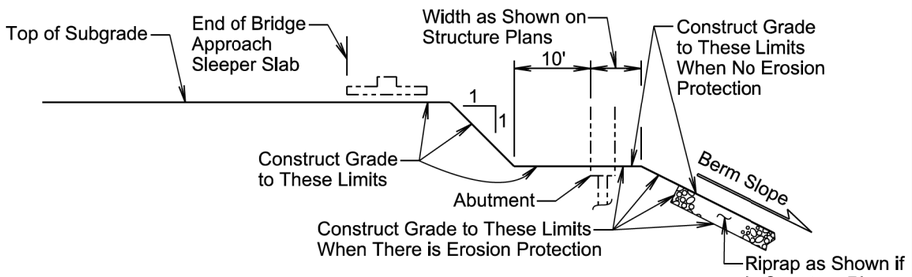
Plotting Date: 09/15/2026



ISOMETRIC VIEW OF BRIDGE BERM
(Girder Bridge shown, others similar)



TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to ℄ Abutment at ℄ Roadway)



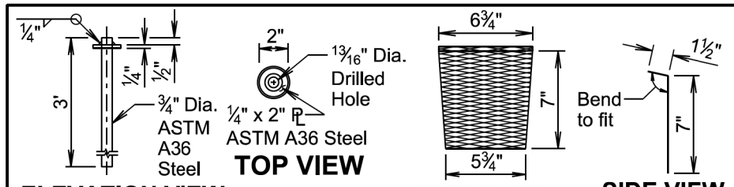
TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to ℄ Abutment at ℄ Roadway)

GENERAL NOTES:

The bridge berm elevation and slope will be as shown in the Structure Plans. See Structure Plans to determine which grading profile to use.

January 22, 2021

Published Date: 2027	SDDOT	***BRIDGE BERM (NONPROJECTING EMBANKMENT)***	*PLATE NUMBER* 120.10 / *Sheet 1 of 1*



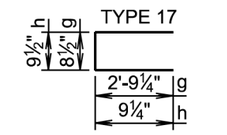
ELEVATION VIEW **TOP VIEW** **FRONT VIEW** **SIDE VIEW**

RETAINING ROD

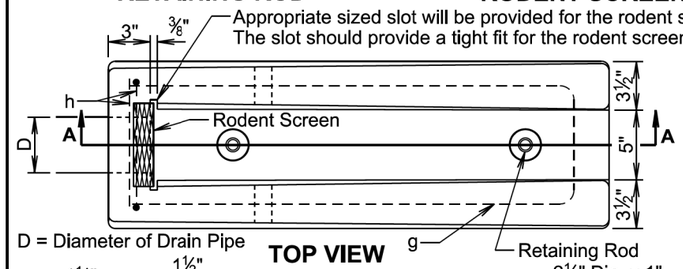
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

NOTE: All dimensions are out to out of bars.

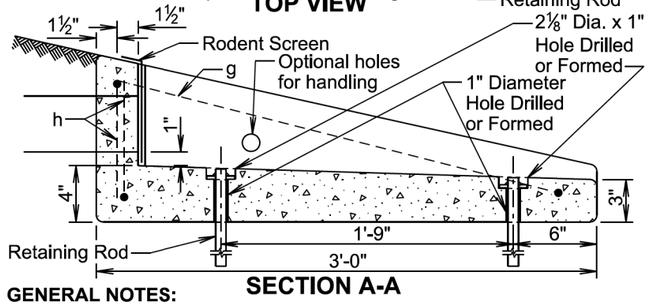
Bending Details



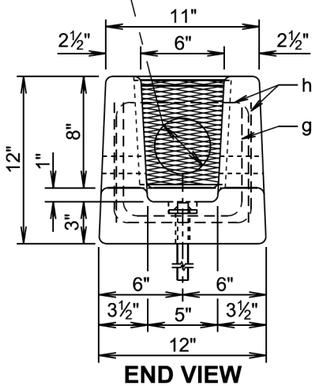
RODENT SCREEN



TOP VIEW



SECTION A-A



END VIEW

GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

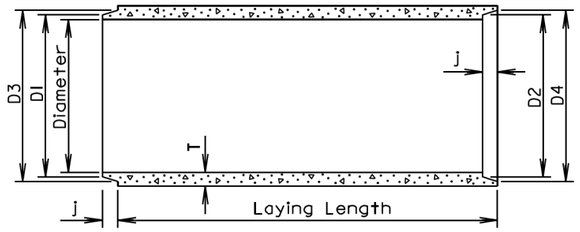
November 19, 2021

Published Date: 2027	SDDOT	***PRECAST CONCRETE HEADWALL FOR DRAIN***	*PLATE NUMBER* 430.50 / *Sheet 1 of 1*

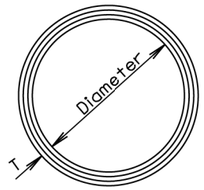
Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

TOLERANCES IN DIMENSIONS

Diameter: ±1.5% for 24" Dia. or less and ±1% or 3/8" whichever is more for 27" Dia. or greater.
Diameters at joints: ± 3/16" for 30" Dia. or less and ± 1/4" for 36" or greater.
Length of joint (j): ± 1/4".
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.
Laying length: shall not underrun by more than 1/2".



LONGITUDINAL SECTION
(* Tongue and Groove Style Shown)



END VIEW

GENERAL NOTES:

Construction of R. C. P. shall conform to the requirements of Section 990 of the Specifications.

Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

* Unless otherwise specified in the plans, the RCP may be either tongue and groove or bell and spigot style.

Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 7/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 7/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 7/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

April 17, 2026

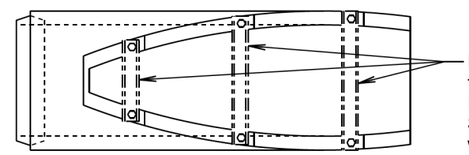
Published Date: 2027

SDDOT

REINFORCED CONCRETE PIPE

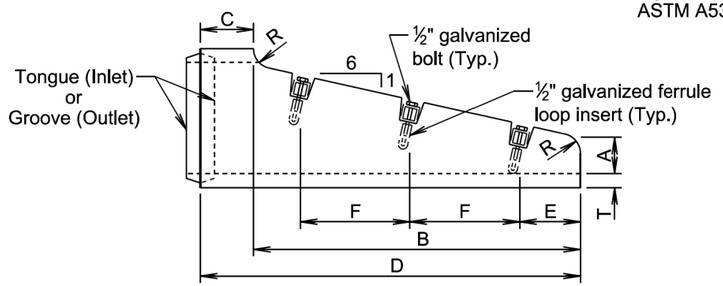
PLATE NUMBER 450.01

Sheet 1 of 1

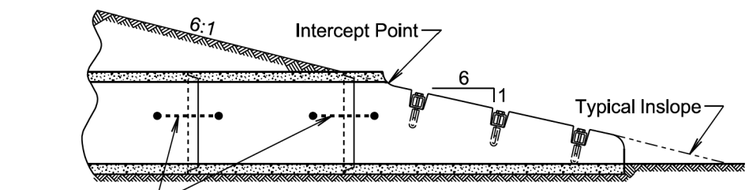


TOP VIEW

If bars are specified in the plans then provide HSS 2.5x2.5x.1875 Structural Steel Tubing in conformance with ASTM A500, Grade B or C or 3" Diameter Schedule 40 Pipe in conformance with ASTM A53, Grade B.



SIDE VIEW



ELEVATION VIEW

R. C. P. SAFETY ENDS										
Dia. (in.)	T (in.)	R (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	No. Sections	No. Bars
FOR CIRCULAR PIPE										
15	2 1/4	3	6	48	9	57	6	18	1	3
18	2 1/2	3	6	69	9	78	9	24	1	3
*24	3	3	6	111	9	120	6	24	1 or 2	5
FOR ARCH PIPE										
**18	2 1/2	1	6	39	33	72	6	24	1	2

* The use of 2 sections must be an approved design.
** Equivalent Diameter of Circular R.C.P.

GENERAL NOTES:

The length of concrete pipe shown on the plans is between safety ends.

Safety ends without bars are acceptable with or without the bar notches.

Bars will be galvanized after fabrication in accordance with ASTM A123.

April 8, 2025

Published Date: 2027

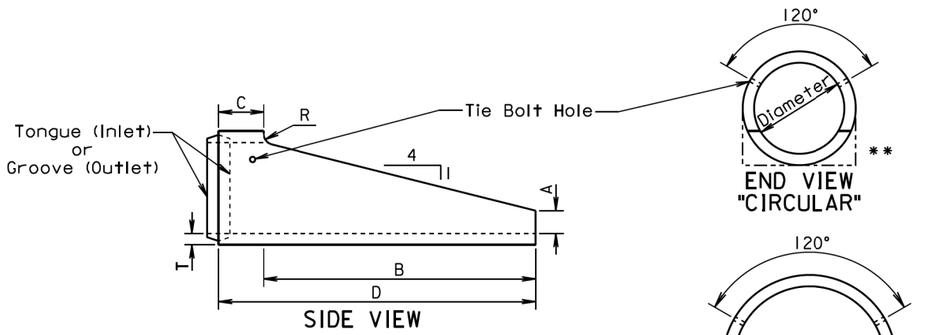
SDDOT

R.C.P. SAFETY ENDS WITH OR WITHOUT BARS

PLATE NUMBER 450.12

Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



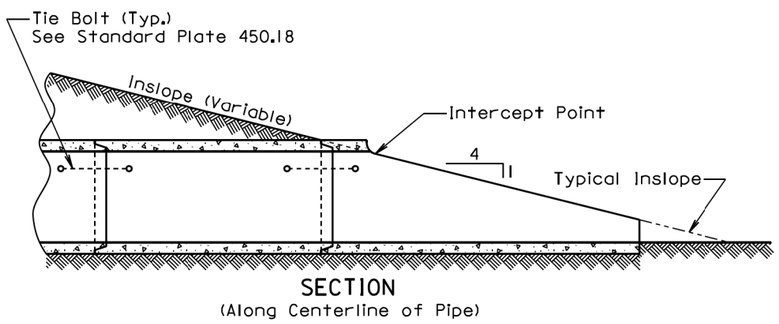
Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3½	7½	90	12	102	3½
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3½	7½	60	12	72	3½
* 36	4½	8⅝	66	30	96	0
* 42	4½	10	77¼	18¾	96	0

ALTERNATE

Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3½	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3½	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.



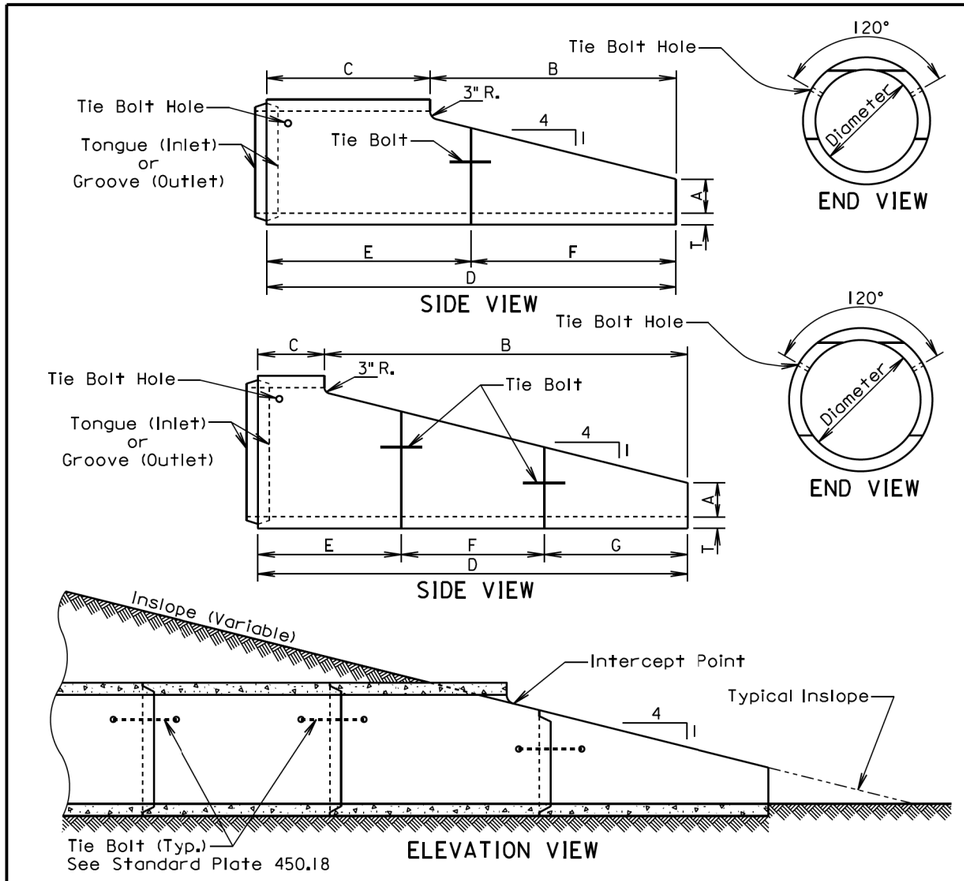
SECTION
(Along Centerline of Pipe)

GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends.

September 22, 2006

Published Date: 2027	SDDOT	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13 Sheet 1 of 1



Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)
36	4	12	86.5	57.5	144	72	72	
42	4.5	12	110.5	33.5	144	72	72	
48	5	12	134.5	33.5	168	96	72	
54	5.5	12	158.5	33.5	192	96	96	
60	6	12	182.5	33.5	216	72	72	72

GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends.

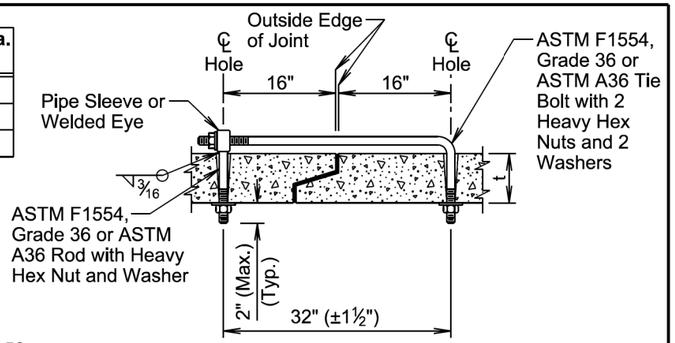
If bars are specified in the plans, then the bar assemblies shall be constructed in accordance with Standard Plate 450.15.

August 31, 2013

Published Date: 2027	SDDOT	R. C. P. SLOPED ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.14 Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	⅝	¾
3½-6½	¾	1
≥ 7	1	1¼



ADJUSTABLE EYE BOLT TIE

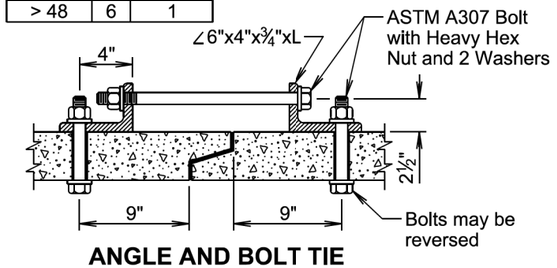
GENERAL NOTES:

Tie bolts will conform to ASTM F1554, Grade 36 or ASTM A36. Nuts will be heavy hex conforming to ASTM A563. Washers will conform to ASTM F436.

Pipe Sleeve will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	¾
> 48	6	1



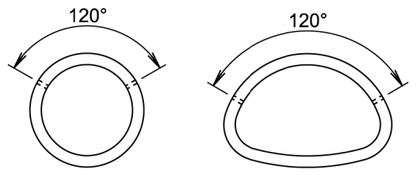
ANGLE AND BOLT TIE

GENERAL NOTES:

Angles will conform to ASTM A36.

Bolts will conform to ASTM A307. Nuts will be heavy hex conforming to ASTM A563. Washers will conform to ASTM F436.

Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



END VIEW (Circular)

END VIEW (Arch)

GENERAL NOTES:

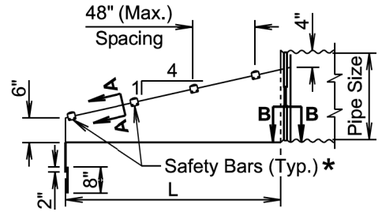
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch will be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manholes, and junction boxes will be tied with tie bolts.

There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts will be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.

April 8, 2025

Published Date: 2027	SDDOT	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1



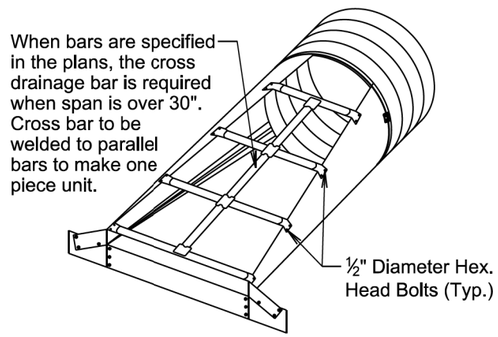
*Number of bars required will vary depending on the length of the end section.

ELEVATION VIEW

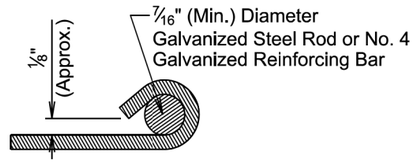


3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

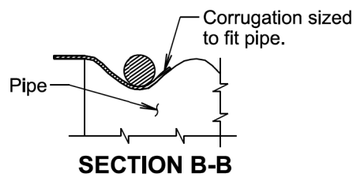
DETAIL OF SAFETY BARS



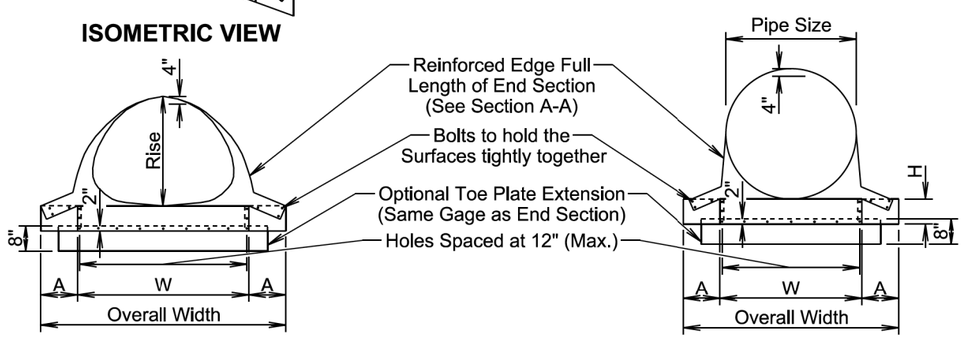
ISOMETRIC VIEW



SECTION A-A

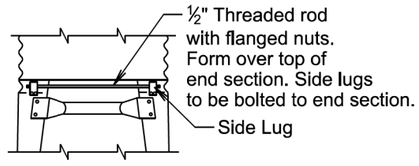


SECTION B-B

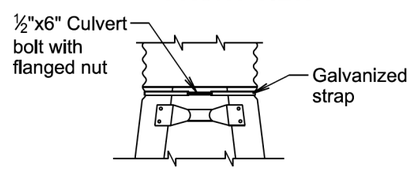


FRONT VIEW

FRONT VIEW



TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)
(For 21"x15" and Larger)



TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

April 8, 2025

Published Date: 2027	SDDOT	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 1 of 2

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

ARCH C.M.P. SLOPED ENDS										
Equiv. Dia. (Inch)	(Inches)		(Min.) Thick.		Dimensions (Inches)				L Dimensions	
	Span	Rise	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	4:1	20
21	24	18	.064	16	8	6	30	46	4:1	32
24	28	20	.064	16	8	6	34	50	4:1	40
30	35	24	.079	14	12	9	41	65	4:1	56
36	42	29	.109	12	12	9	48	72	4:1	76
42	49	33	.109	12	16	12	55	87	4:1	92
48	57	38	.109	12	16	12	63	95	4:1	112
54	64	43	.109	12	16	12	70	102	4:1	132
60	71	47	.109	12	16	12	77	109	4:1	148
72	83	57	.109	12	16	12	89	121	4:1	188

CIRCULAR C.M.P. SLOPED ENDS								
Pipe Dia. (Inch)	(Min.) Thick.		Dimensions (Inches)				L Dimensions	
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	4:1	20
18	.064	16	8	6	24	40	4:1	32
21	.064	16	8	6	27	43	4:1	44
24	.064	16	8	6	30	46	4:1	56
30	.109	12	12	9	36	60	4:1	80
36	.109	12	12	9	42	66	4:1	104
42	.109	12	16	12	48	80	4:1	128
48	.109	12	16	12	54	86	4:1	152
54	.109	12	16	12	60	92	4:1	176
60	.109	12	16	12	66	98	4:1	200

GENERAL NOTES:

Safety bars will be provided when specified in the plans.

Sloped ends will be fabricated from galvanized steel and will conform to the requirements of the Specifications.

Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B or C.

Slotted holes for safety bar attachment will be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter will be made with Type #1 straps. All other sizes will be attached with Type #2 rods and lugs.

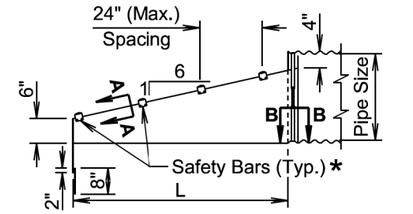
When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts. Steel for toe plate extension will be same gauge as end section. Dimensions will be overall width less 6" by 8" high.

Installation will be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of sloped ends will be incidental to the bid items for the various sizes of sloped ends.

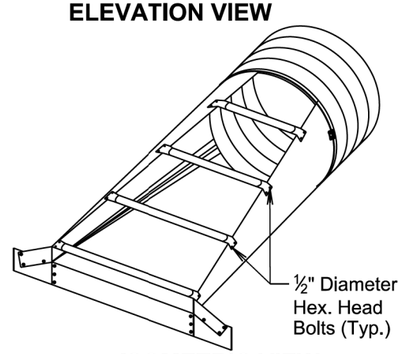
April 8, 2025

Published Date: 2027	SDDOT	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37 Sheet 2 of 2

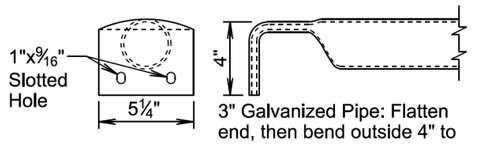


* Number of bars required will vary depending on the length of the end section.

ELEVATION VIEW

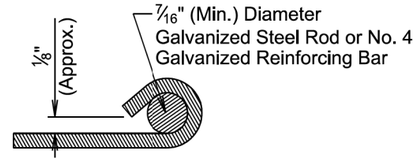


ISOMETRIC VIEW

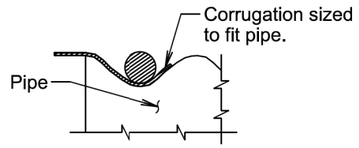


3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

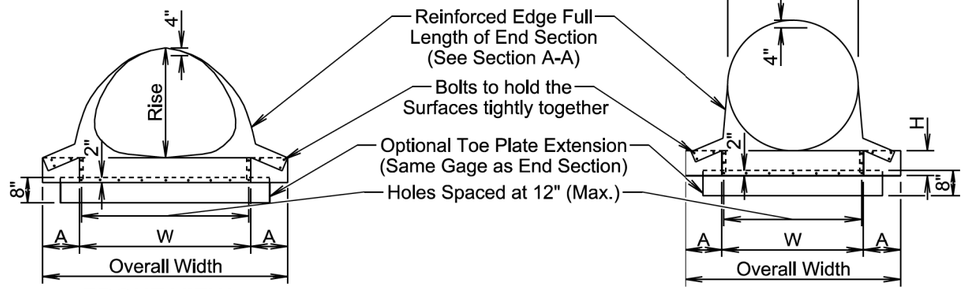
DETAIL OF SAFETY BARS



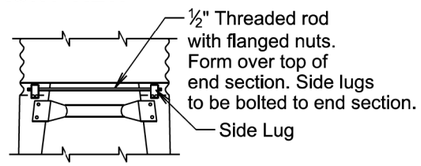
SECTION A-A



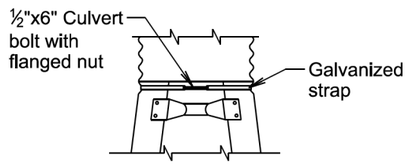
SECTION B-B



FRONT VIEW **FRONT VIEW**



TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)
(For 21"x15" and Larger)



TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

April 8, 2025

Published Date: 2027	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38 Sheet 1 of 2

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06Gr\StdPlatesSectionB.dgn

ARCH C.M.P. SAFETY ENDS										
Equlv. Dia. (Inch)	(Inches)		(Min.) Thick.		Dimensions (Inches)				L Dimensions	
	Span	Rise	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	38	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

CIRCULAR C.M.P. SAFETY ENDS								
Pipe Dia. (Inch)	(Min.) Thick.		Dimensions (Inches)				L Dimensions	
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

GENERAL NOTES:

Safety bars will be provided when specified in the plans.

Safety ends will be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B or C.

Slotted holes for safety bar attachment will be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter will be made with Type #1 straps. All other sizes will be attached with Type #2 rods and lugs.

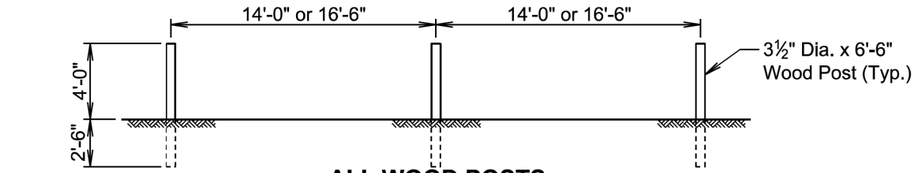
When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts. Steel for toe plate extension will be same gauge as end section. Dimensions will be overall width less 6" by 8" high.

Installation will be performed in accordance with the Specifications.

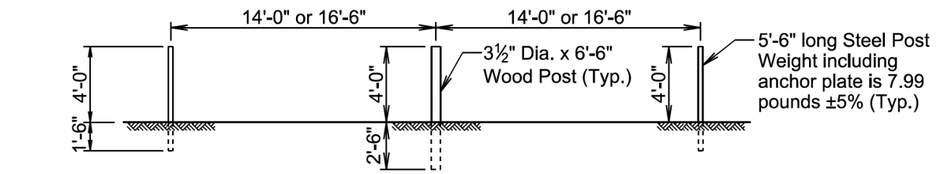
Cost of all work and materials required for fabrication and installation of safety ends will be incidental to the bid items for the various sizes of safety ends.

April 8, 2025

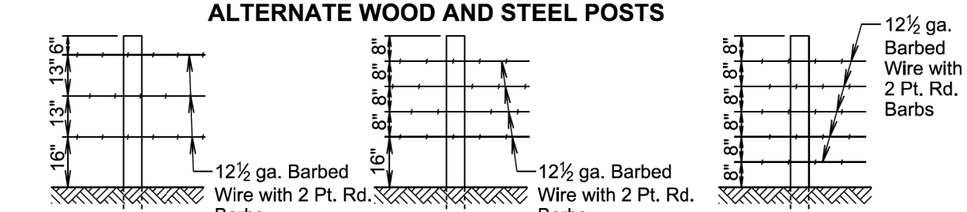
Published Date: 2027	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 of 2



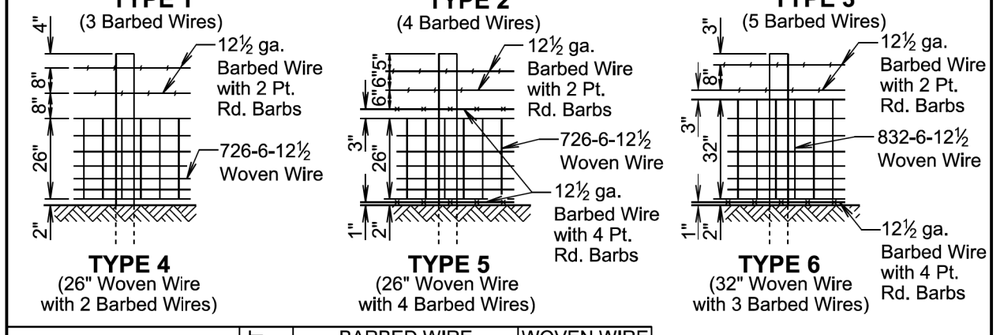
ALL WOOD POSTS



ALTERNATE WOOD AND STEEL POSTS



TYPE 1 (3 Barbed Wires)
TYPE 2 (4 Barbed Wires)
TYPE 3 (5 Barbed Wires)



TYPE 4 (26" Woven Wire with 2 Barbed Wires)
TYPE 5 (26" Woven Wire with 4 Barbed Wires)
TYPE 6 (32" Woven Wire with 3 Barbed Wires)

TYPE OF FENCE		LINE POST SPACING	BARBED WIRE		WOVEN WIRE
TYPE	DESCRIPTION		WIRE GAGE	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
1	3 Barbed Wires	16'-6"	12½	2 Point Round	—
2	4 Barbed Wires	16'-6"	12½	2 Point Round	—
3	5 Barbed Wires	16'-6"	12½	2 Point Round	—
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12½	2 Point Round	726-6-12½
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd.	726-6-12½
6	32" Woven Wire with 3 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 1 wire with 4 Pt. Rd.	832-6-12½

GENERAL NOTES:

Fence types designated on the plans that are followed by the letter S will have smooth (barbless) wires.

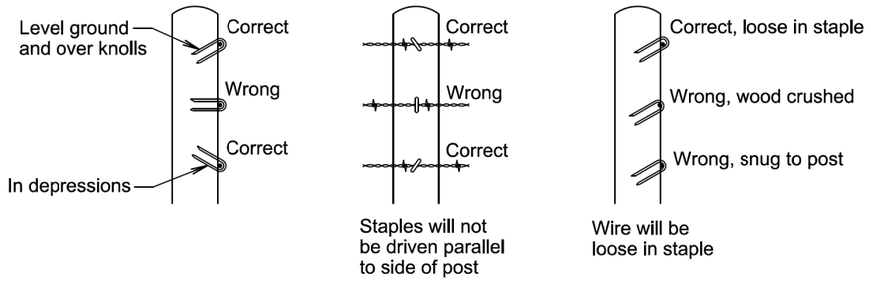
When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

All radius of curvature stated for fence are at centerline of roadway.

April 8, 2025

Published Date: 2027	SDDOT	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
			Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06Gr\StdPlatesSectionB.dgn



STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence will consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire will be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts will be used for brace panels. Gates will be of the type designated in the plans or as otherwise directed by the Engineer. Fence will be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

Right-of-Way fence on Interstate Projects will be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

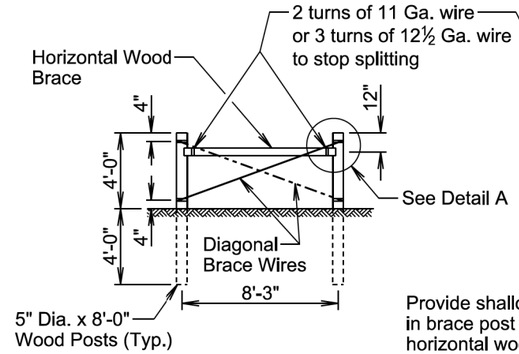
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs will be fabricated from zinc coated 14 ga. wire. Two point barbs will be wrapped twice around one main strand at four-inch spacings and the four point barbs will be interlocked and wrapped around both main strands at five-inch spacings.

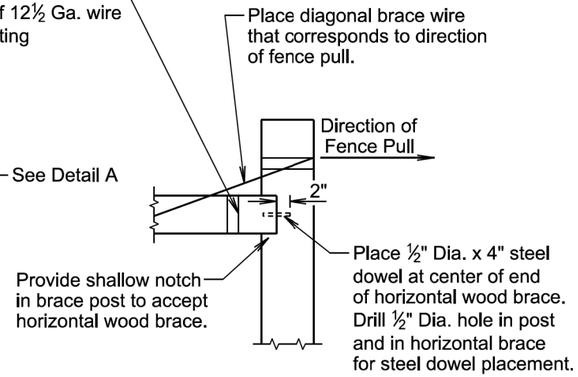
The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts will be as stated in AASHTO M281. Woven wire will conform to design and specifications of ASTM A116 and barbed wire will conform to ASTM A121.

June 26, 2019

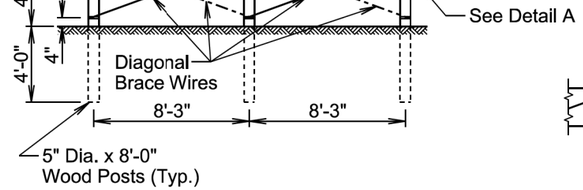
Published Date: 2027	SDDOT	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02
			Sheet 1 of 1



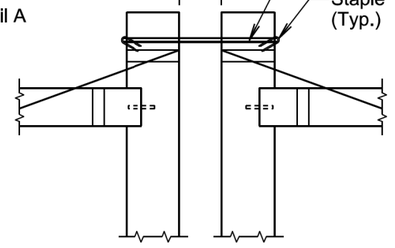
ELEVATION VIEW
(2 Post Panel)



DETAIL A



ELEVATION VIEW
(3 Post Panel)



DETAIL B

GENERAL NOTES:

Two Post Panels will be installed at least every 1320' between corners.

Two Post Panels will be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces will consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires will be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires will be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

March 31, 2024

Published Date: 2027	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 1 of 3

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jonst6G7\StdPlatesSectionB.dgn

SPACING OF 2 POST PANELS WITHIN CURVES	
RADIUS OF CURVE	SPACING OF 2 POST PANEL
Greater than 1800 Ft.	** 1320'
Less than 1800 Ft.	**At P.C., P.T., and at every 1320' between P.C. and P.T.

** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

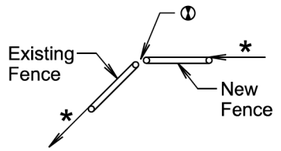
① See Detail B on Sheet 1 of 3.

GENERAL NOTE:

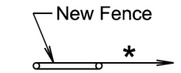
All radius of curvature stated for fence are at centerline of roadway.

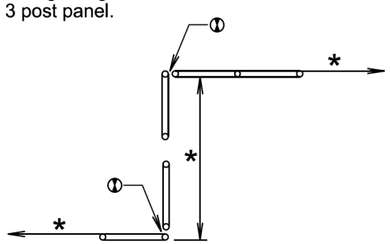
If fence length is less than 600' to next corner use a 2 post panel.

* If fence length is greater than 600' to next corner use a 3 post panel.

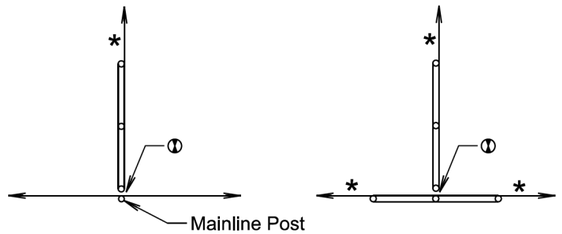


BEGIN OR END FENCE
(Where new fence ties into existing fence)

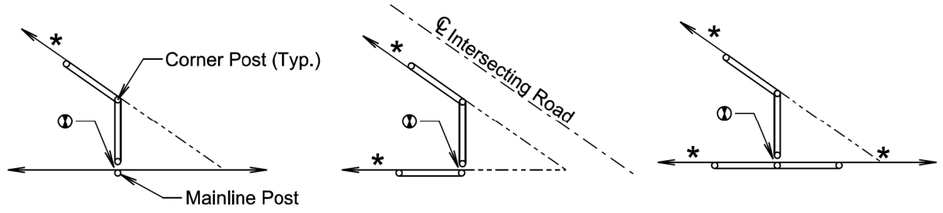




SHORT JOGS IN FENCE



CROSS FENCE



SHARP ANGLES IN CROSS FENCE



Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

Additional fence panel is required when an angle in the mainline fence is greater than 10°.

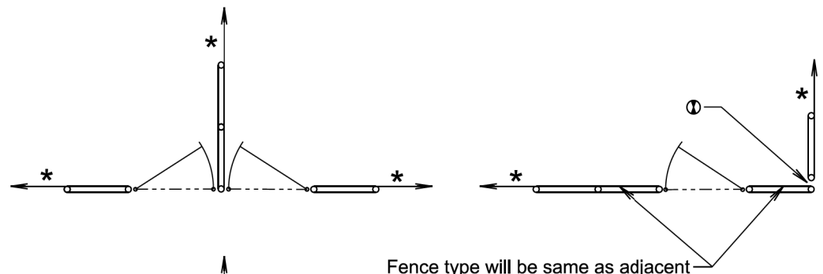
ANGLES IN MAINLINE FENCE

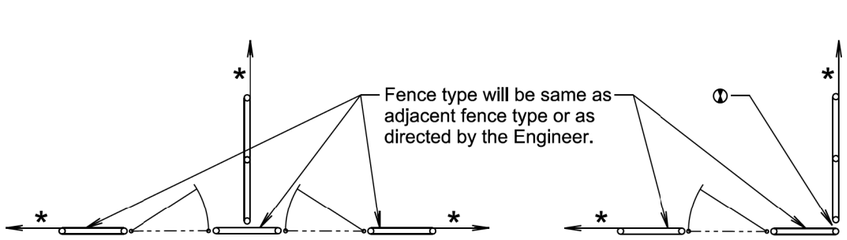
March 31, 2024

Published Date: 2027	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 2 of 3



ENTRANCE
(Not on corner)





DOUBLE ENTRANCES

ENTRANCES AT CORNERS

GATES

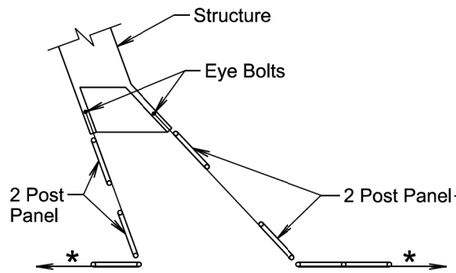
* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

① See Detail B on Sheet 1 of 3.

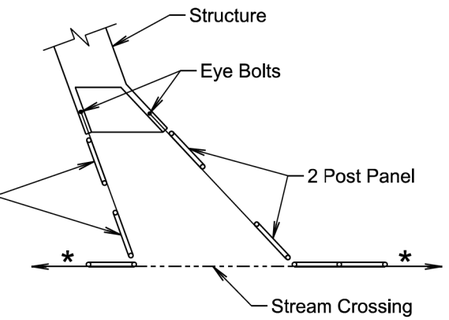
March 31, 2024

Published Date: 2027	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 3 of 3

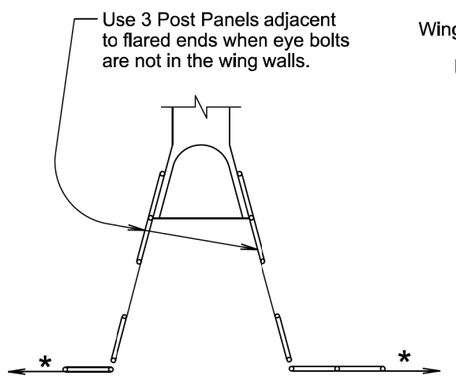
Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



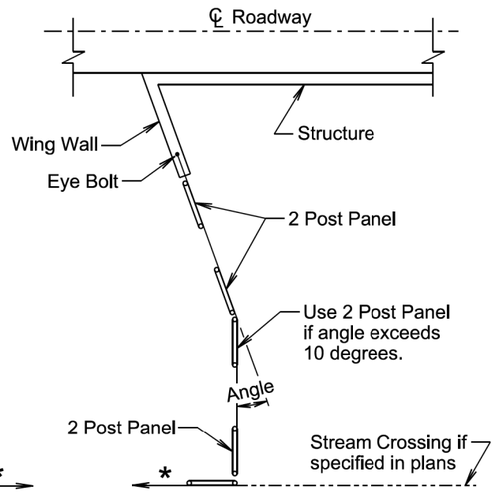
R.C. BOX CULVERT OR CATTLE PASS



STRUCTURE WITH STREAM CROSSING FENCE



R.C. BOX CULVERT OR CATTLE PASS

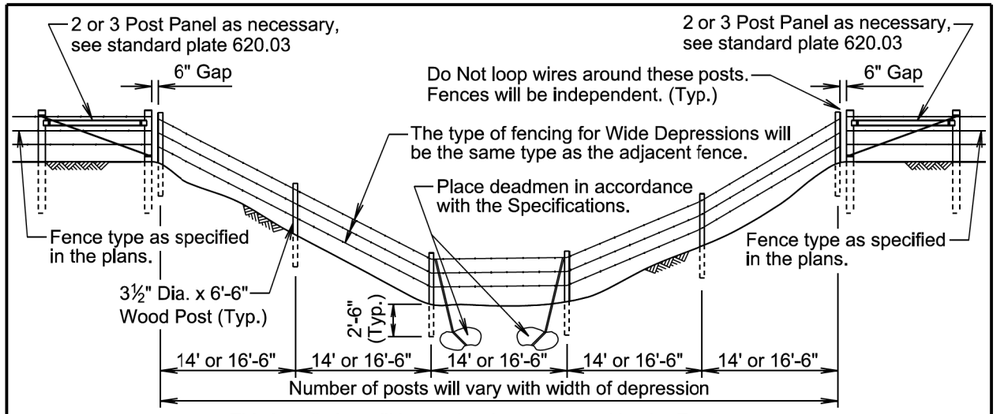


BRIDGE

* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' use a 3 post panel.

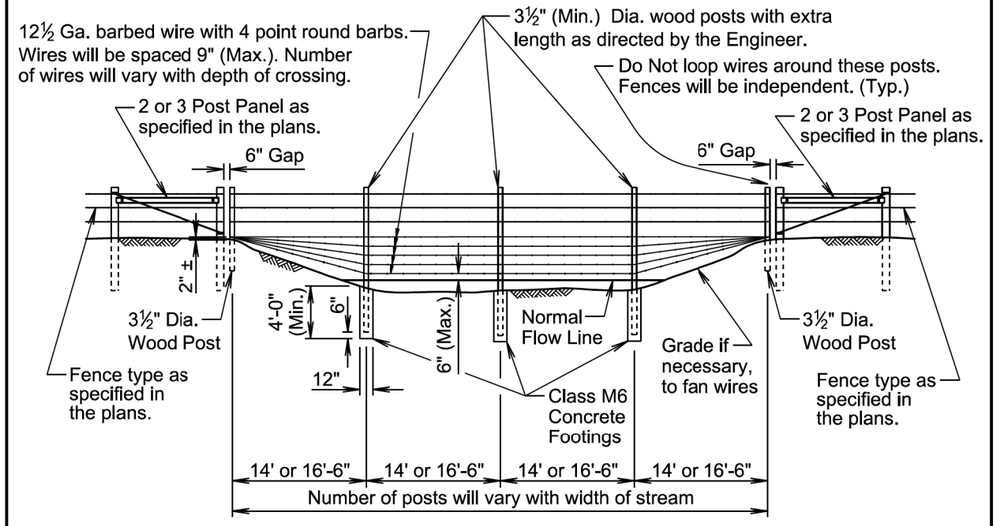
June 26, 2019

Published Date: 2027	SDDOT	BRACE PANEL APPLICATIONS AT STRUCTURES	PLATE NUMBER 620.04
			Sheet 1 of 1



This installation will be made when requested by the Engineer.

FENCING AT WIDE DEPRESSION
(Subject to Flooding)



This installation will be made only when stated in the plans.

FENCING AT STREAM CROSSING

GENERAL NOTES:

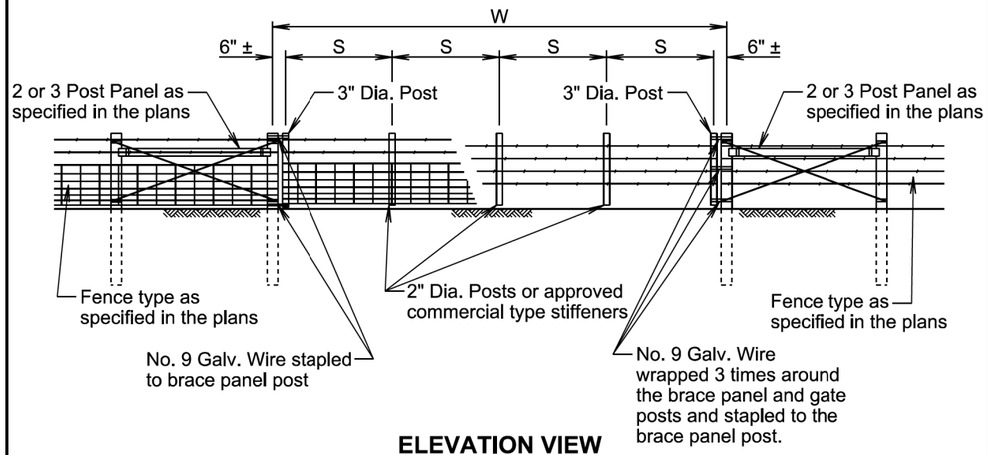
There will be no extra payment for the additional work and materials required to construct the fencing at the wide depression(s) and/or the fencing at the stream crossing(s). The deadmen will be paid for in accordance with 620.5 A of the Specifications.

Measurement and payment for the fencing at the wide depression(s) and/or the fencing at the stream crossing(s) will be at the contract unit price per foot for the corresponding Right-of-Way fence contract item.

June 26, 2019

Published Date: 2027	SDDOT	FENCING AT WIDE DEPRESSION(S) AND STREAM CROSSING(S)	PLATE NUMBER 620.10
			Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



ELEVATION VIEW

W Gate Width (Ft.)	S Post Spacing
16	3 @ 5'-0" ±
20	4 @ 4'-9" ±
24	4 @ 5'-9" ±
30	5 @ 5'-10" ±
40	6 @ 6'-6" ±

GENERAL NOTES:

Creosote treatment of the gate posts will not be accepted.

The type of fencing in the gate will be of the same type as specified for the adjacent Right-of-Way fence.

All costs for furnishing and constructing the wire gate(s) will be incidental to the contract unit price per foot for the respective Right-of-Way fence contract item.

June 26, 2019

Published Date: 2027	SDDOT	WIRE GATES	PLATE NUMBER 620.20 Sheet 1 of 1

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.

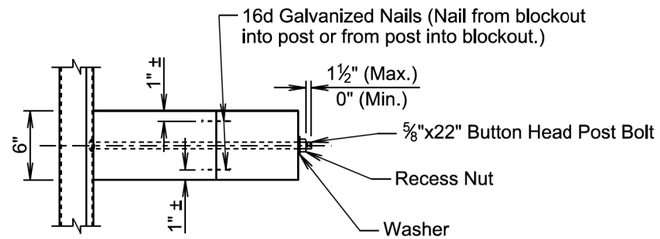
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or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

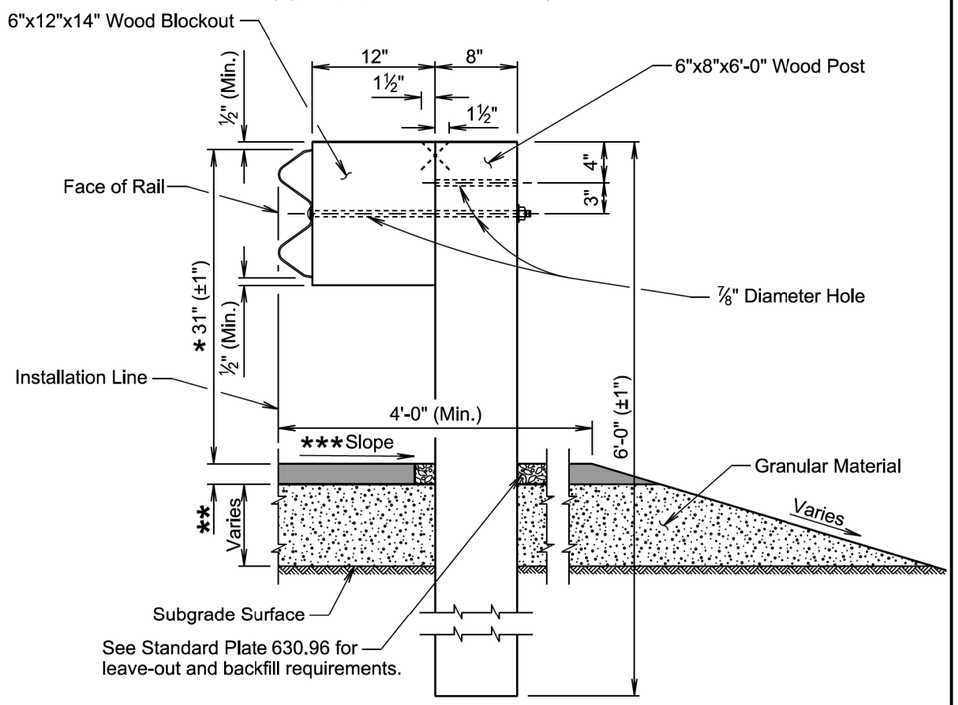
April 8, 2025

Published Date: 2027	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 1 of 6

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



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



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

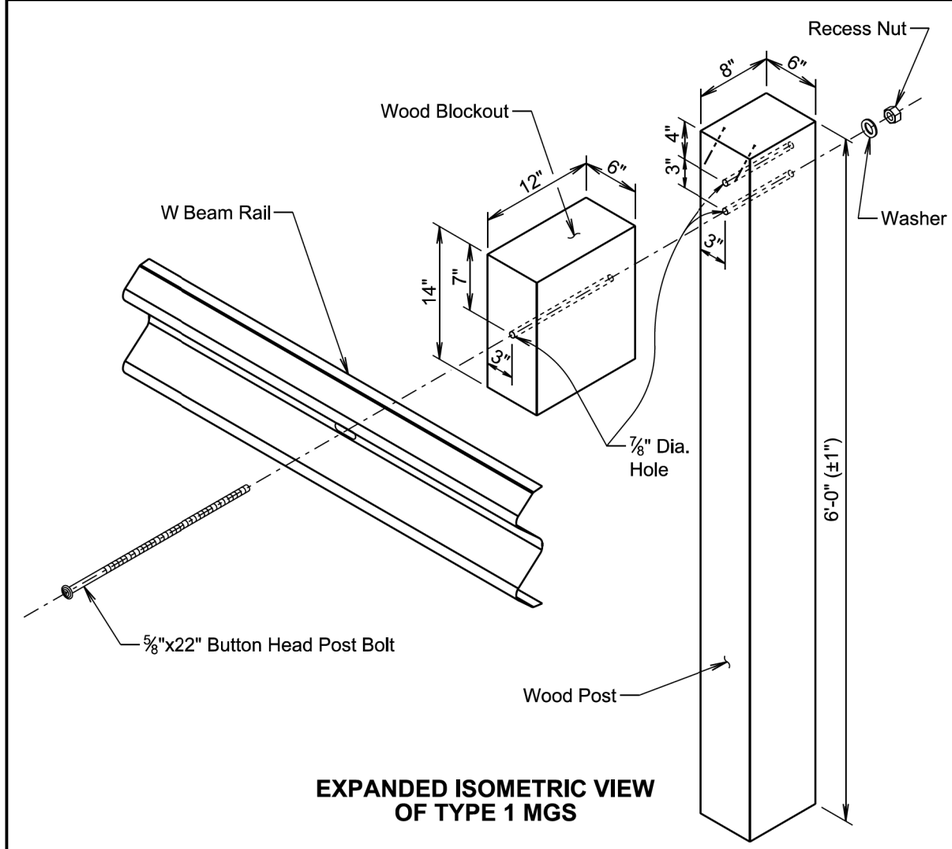
* See Standard Plate 630.99

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

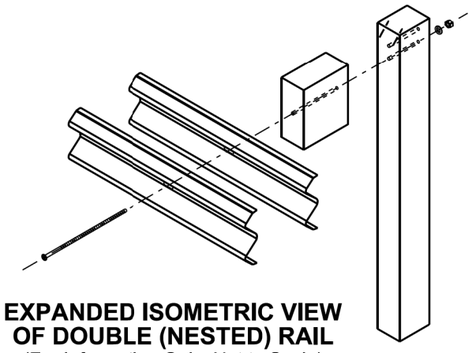
*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

April 8, 2025

Published Date: 2027	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)

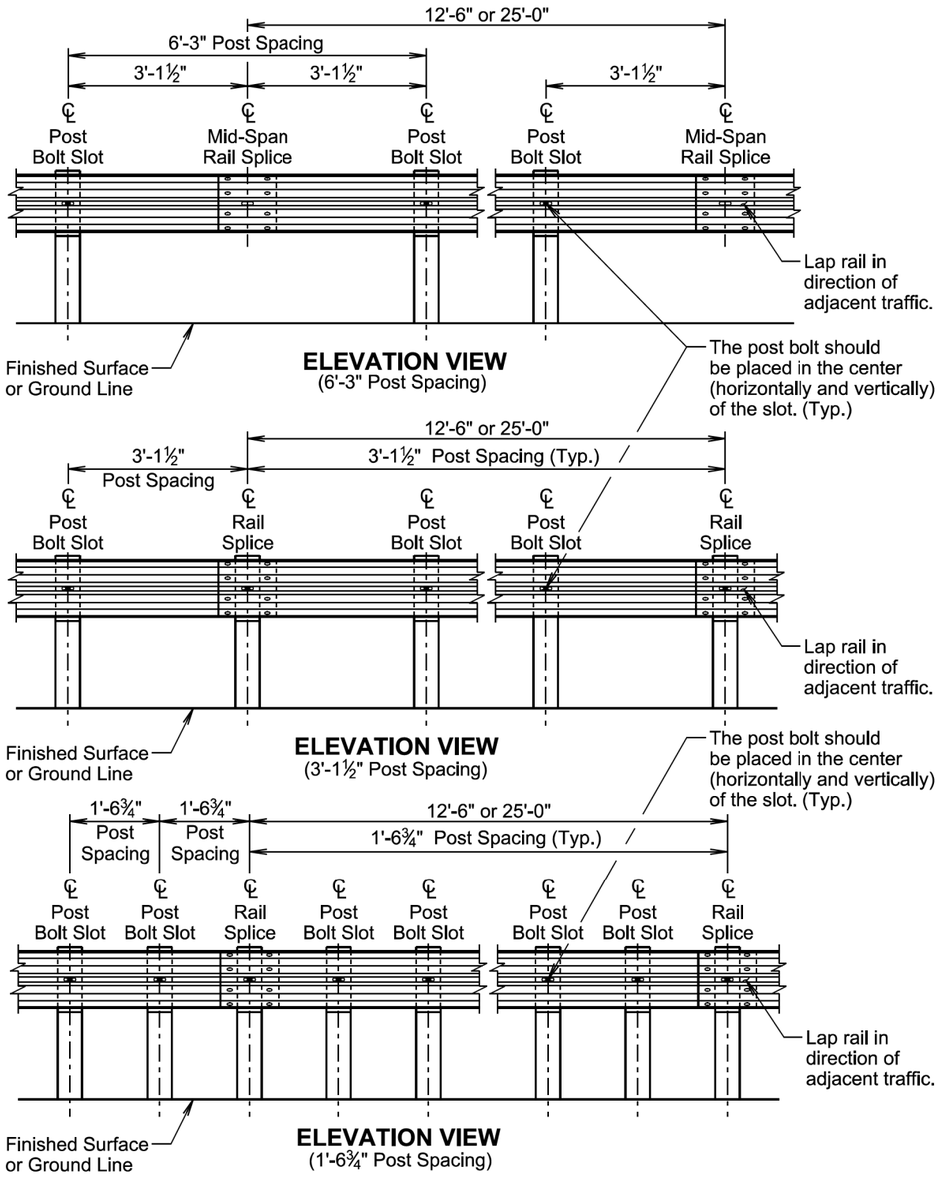
April 8, 2025

Published Date: 2027	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 3 of 6

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

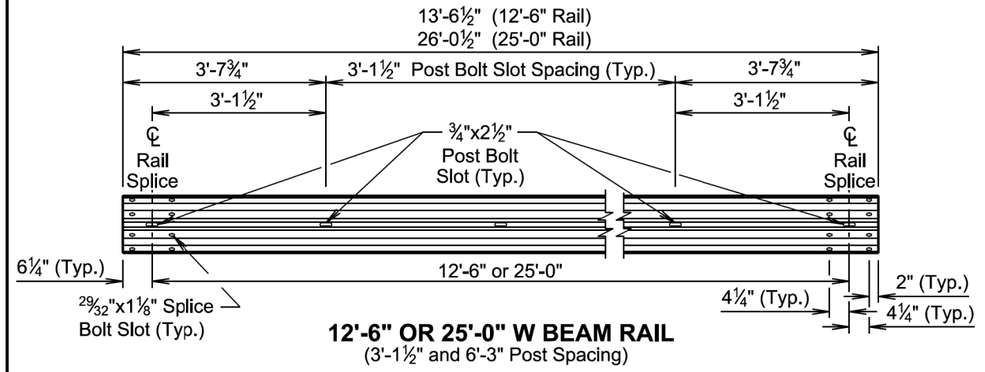
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B53	B72

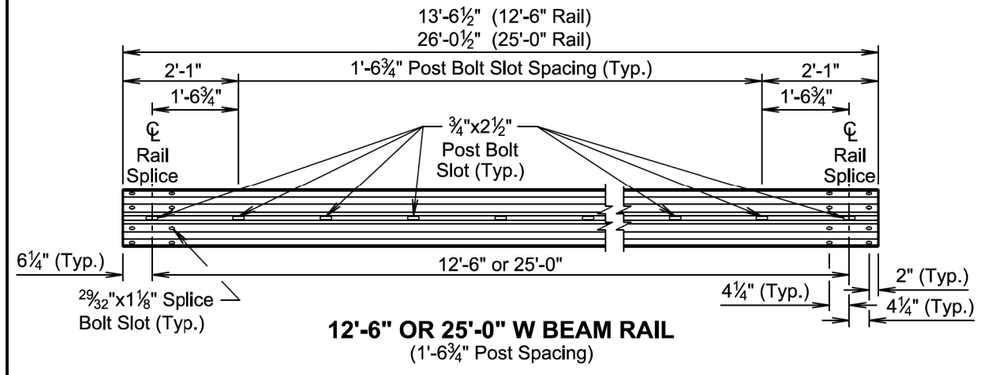
Plotting Date: 09/15/2026



April 8, 2025

Published Date: 2027	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 4 of 6





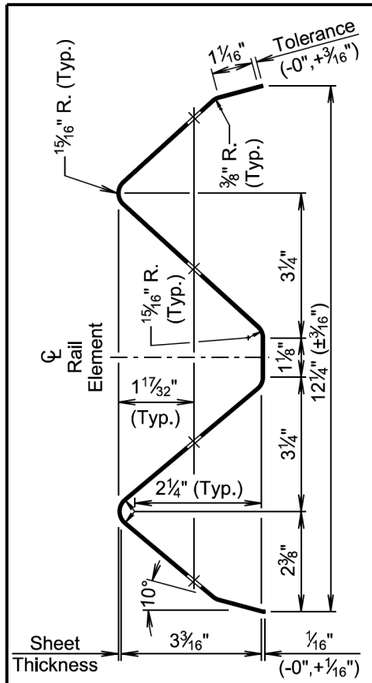
April 8, 2025

Published Date: 2027	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6

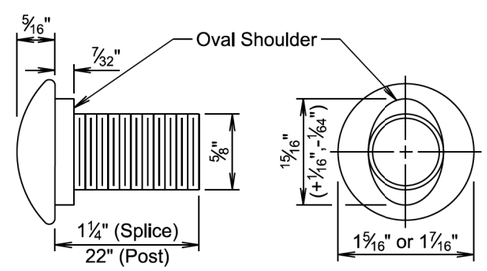
Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B54	B72

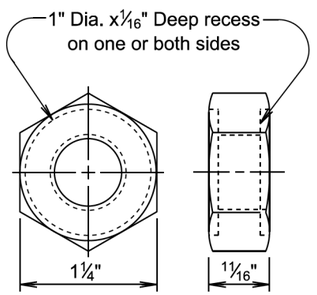
Plotting Date: 09/15/2026



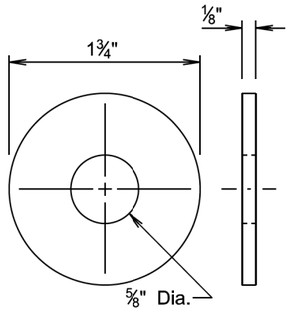
SECTION THROUGH W BEAM RAIL



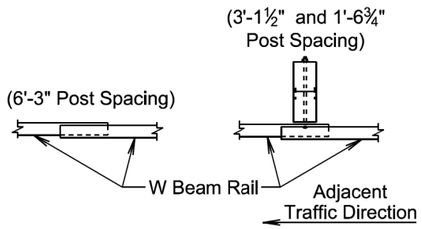
SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)



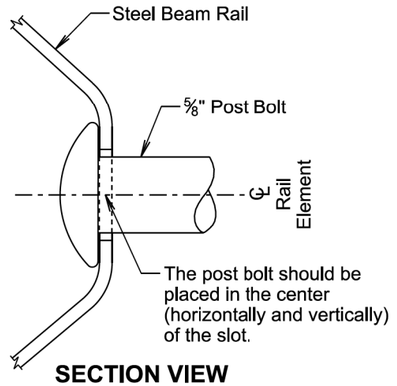
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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



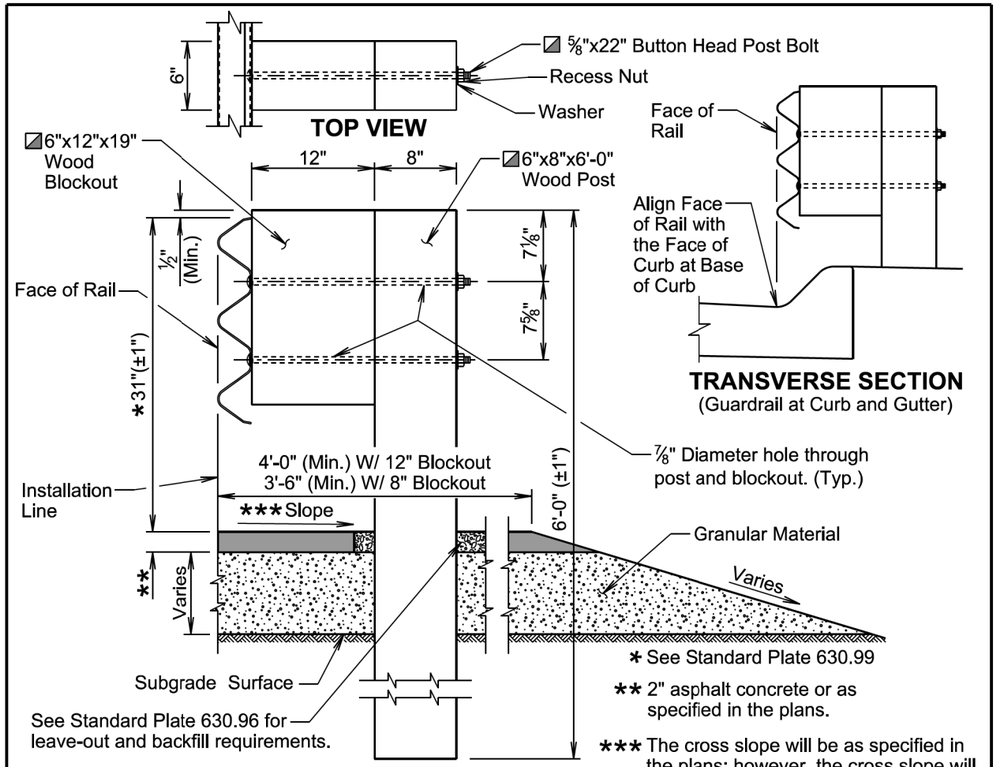
PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

April 8, 2025

Published Date: 2027	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6



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.

☑ 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.

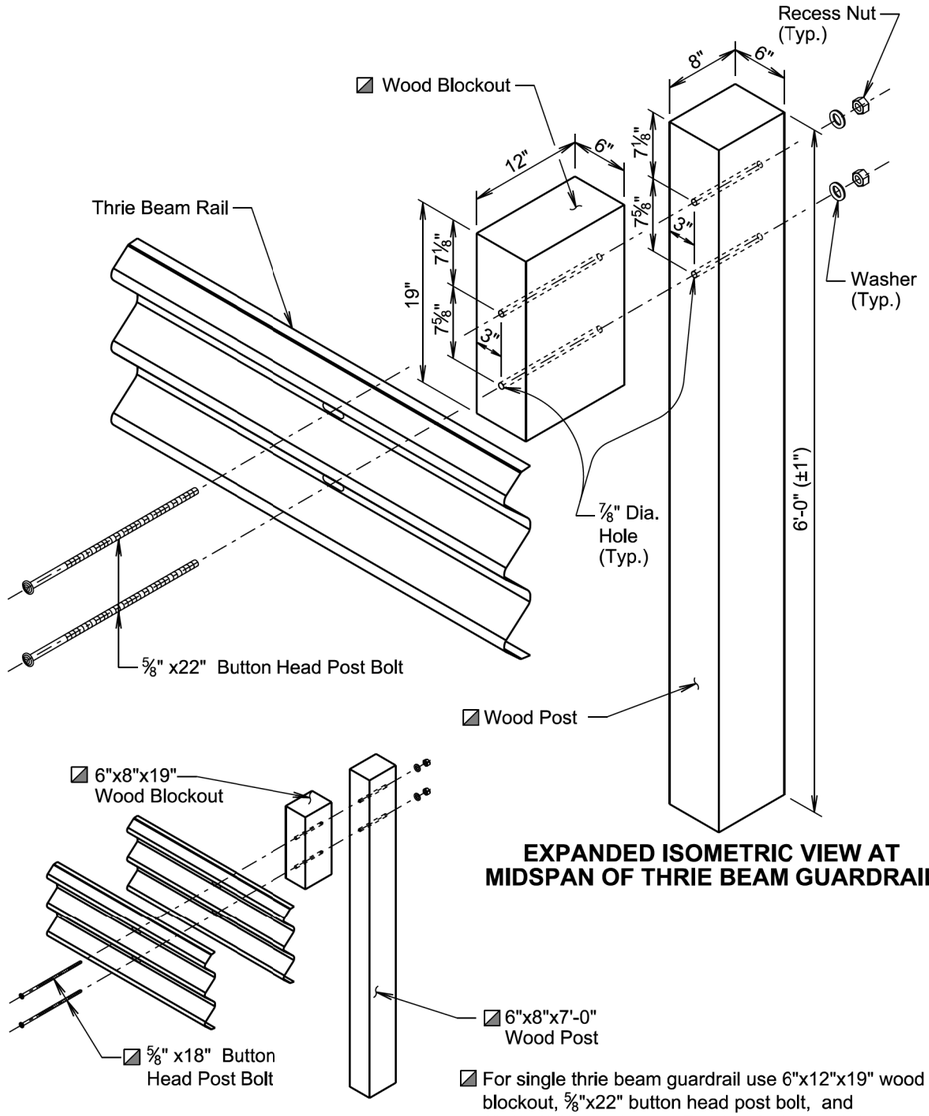
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or 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: 2027	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 1 of 5

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSection8.dgn



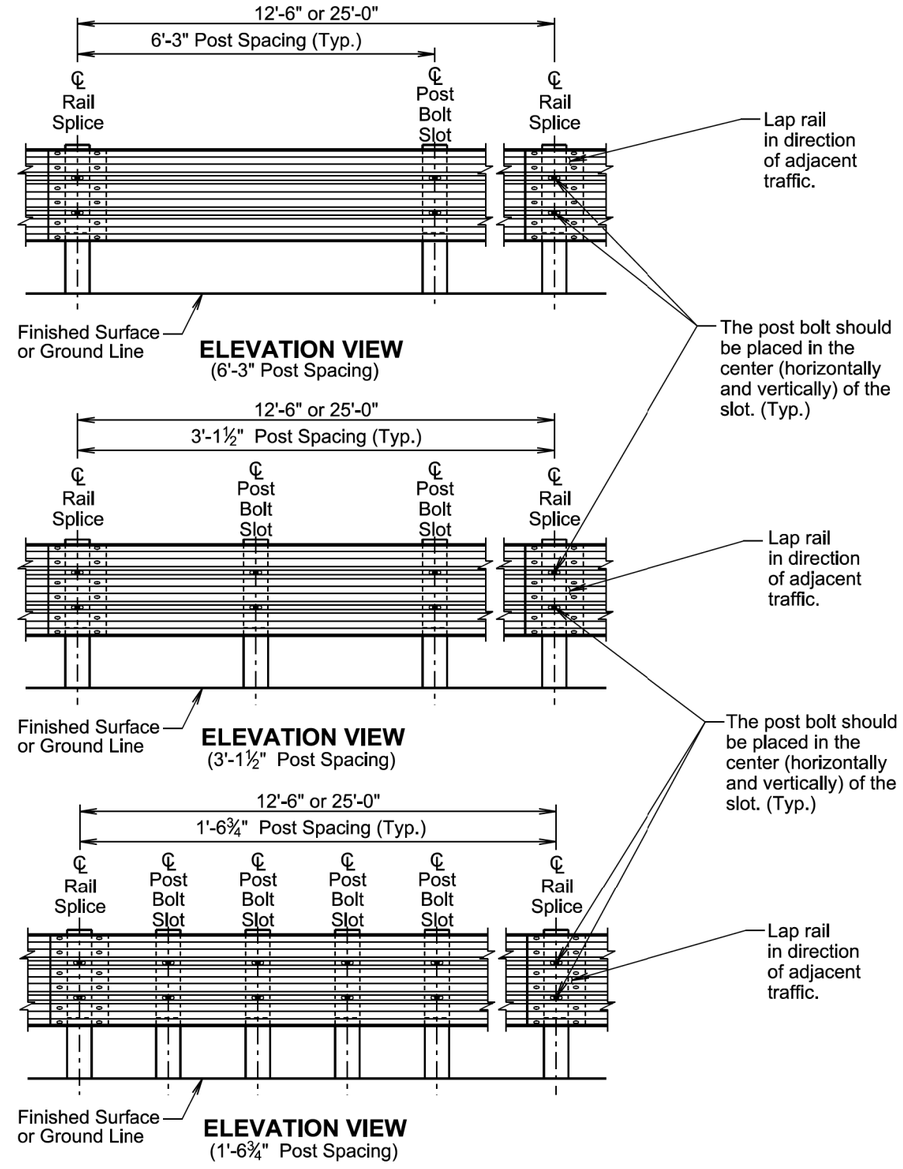
EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

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: 2027	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 2 of 5



ELEVATION VIEW
(6'-3" Post Spacing)

ELEVATION VIEW
(3'-1½" Post Spacing)

ELEVATION VIEW
(1'-6¾" Post Spacing)

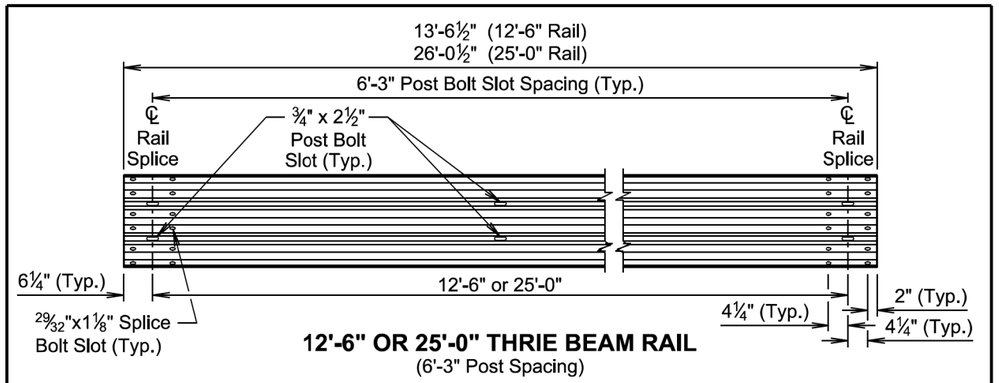
April 8, 2025

Published Date: 2027	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 3 of 5

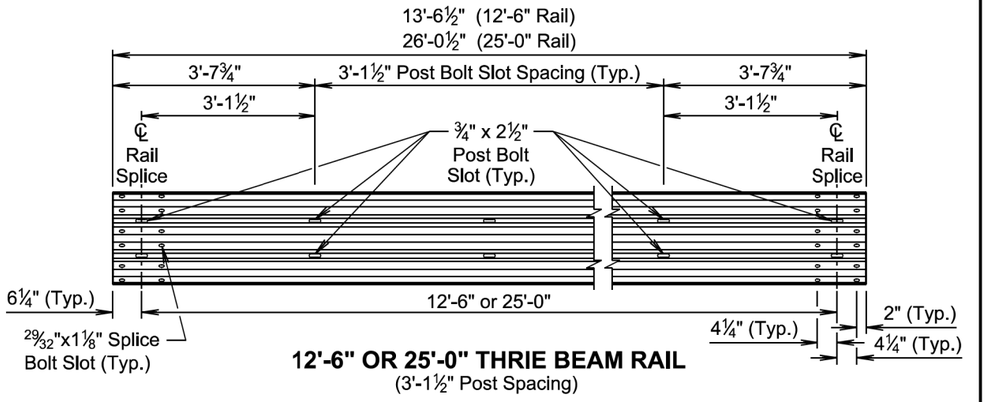
Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B56	B72

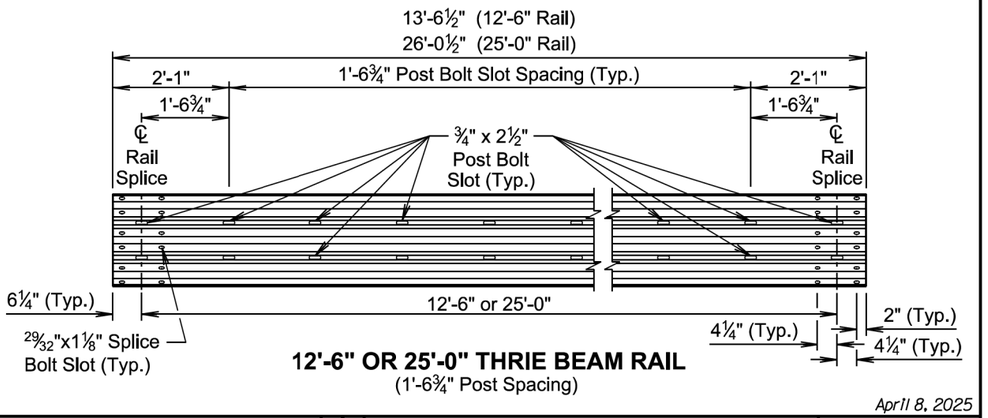
Plotting Date: 09/15/2026



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



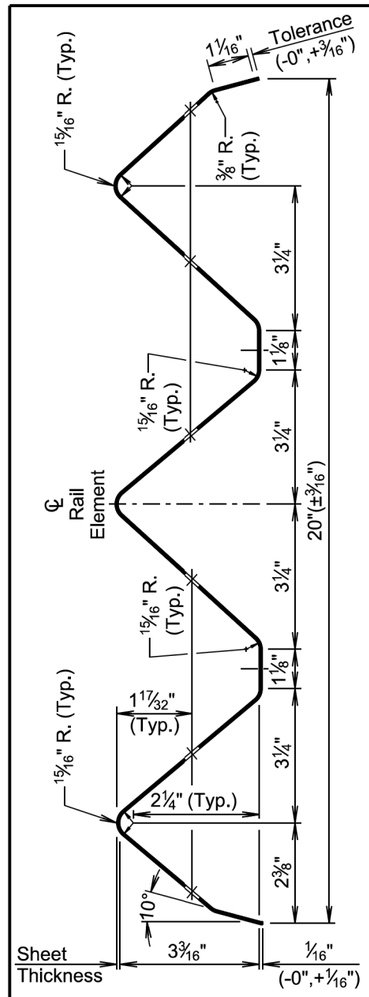
12'-6" OR 25'-0" THRIE BEAM RAIL
(3'-1½" Post Spacing)



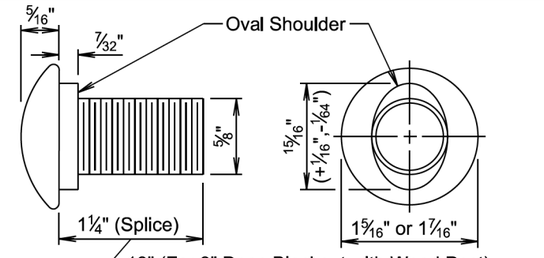
12'-6" OR 25'-0" THRIE BEAM RAIL
(1'-6¾" Post Spacing)

April 8, 2025

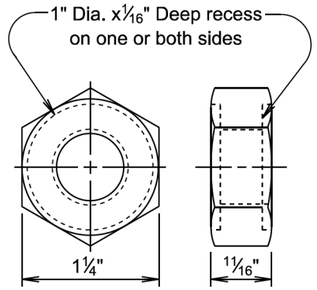
Published Date: 2027	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 4 of 5



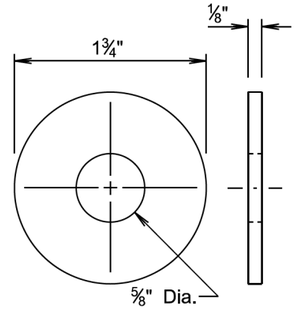
SECTION THROUGH THRIE BEAM RAIL



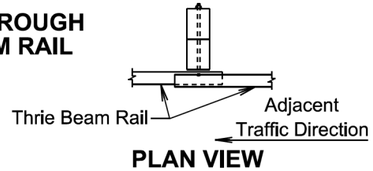
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



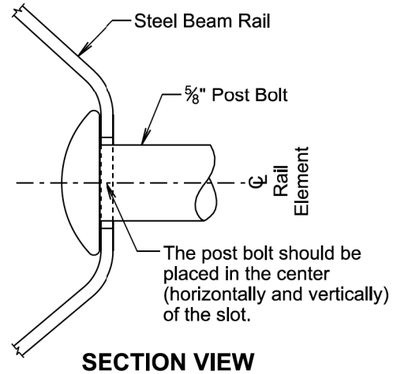
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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)

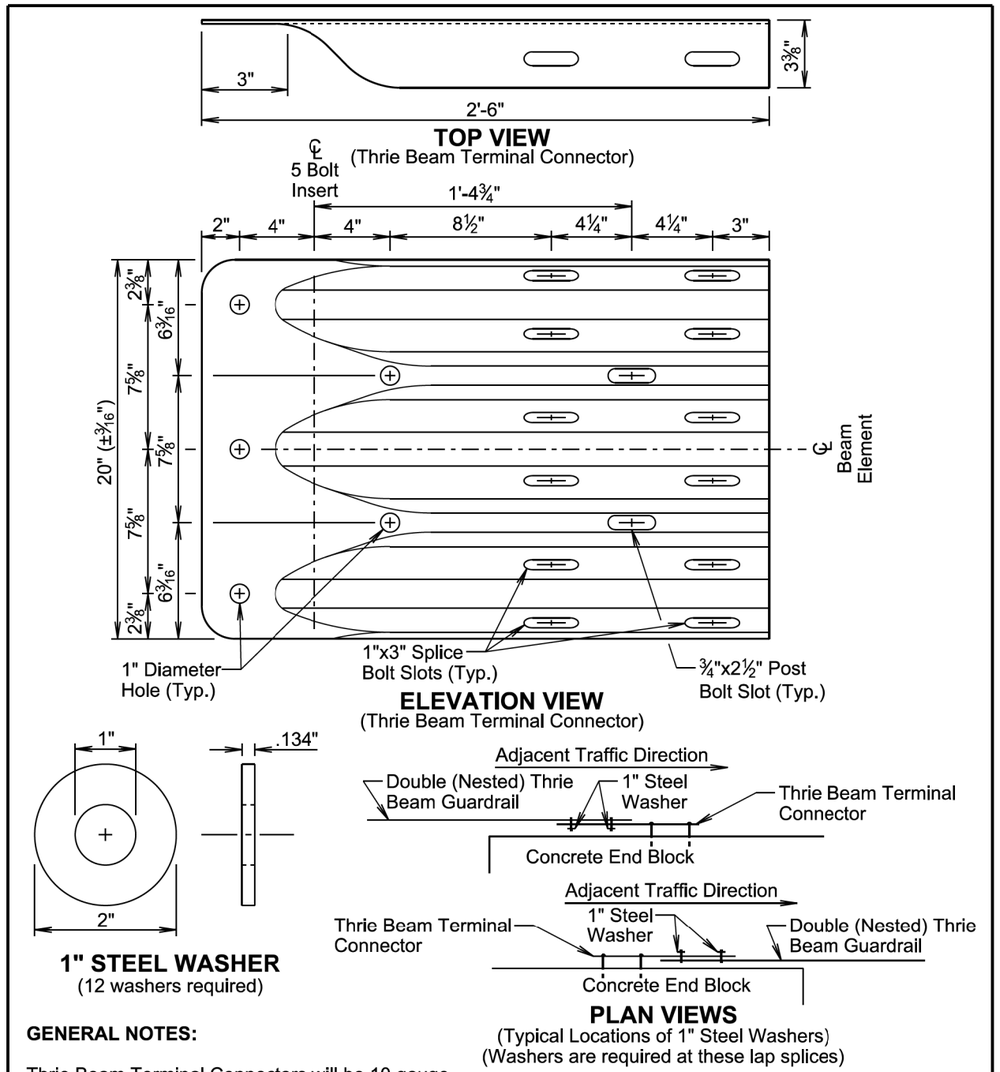
April 8, 2025

Published Date: 2027	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 5 of 5

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B57	B72

Plotting Date: 09/15/2026



GENERAL NOTES:

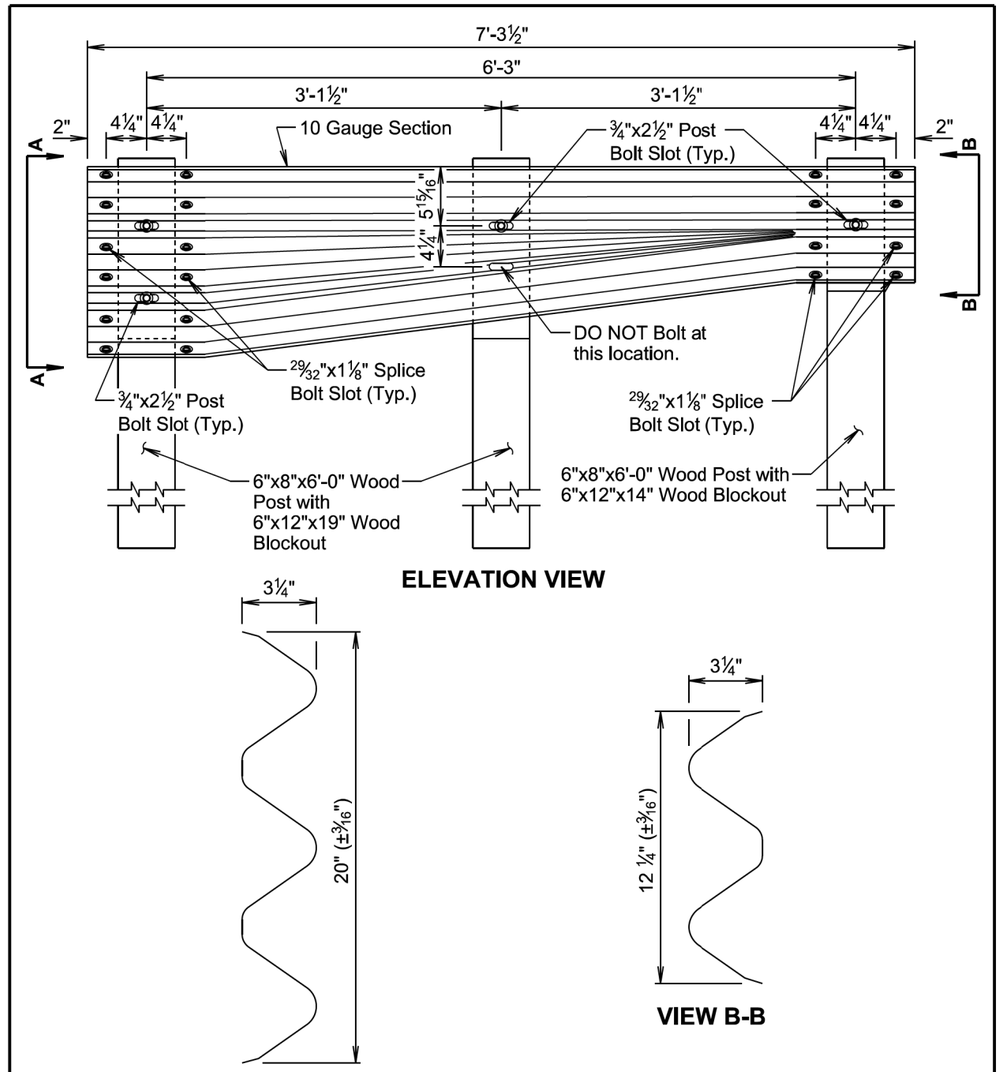
Thrie Beam Terminal Connectors will be 10 gauge.

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.

September 14, 2019

Published Date: 2027	SDDOT	THRIE BEAM TERMINAL CONNECTOR	PLATE NUMBER 630.47
			Sheet 1 of 1



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.

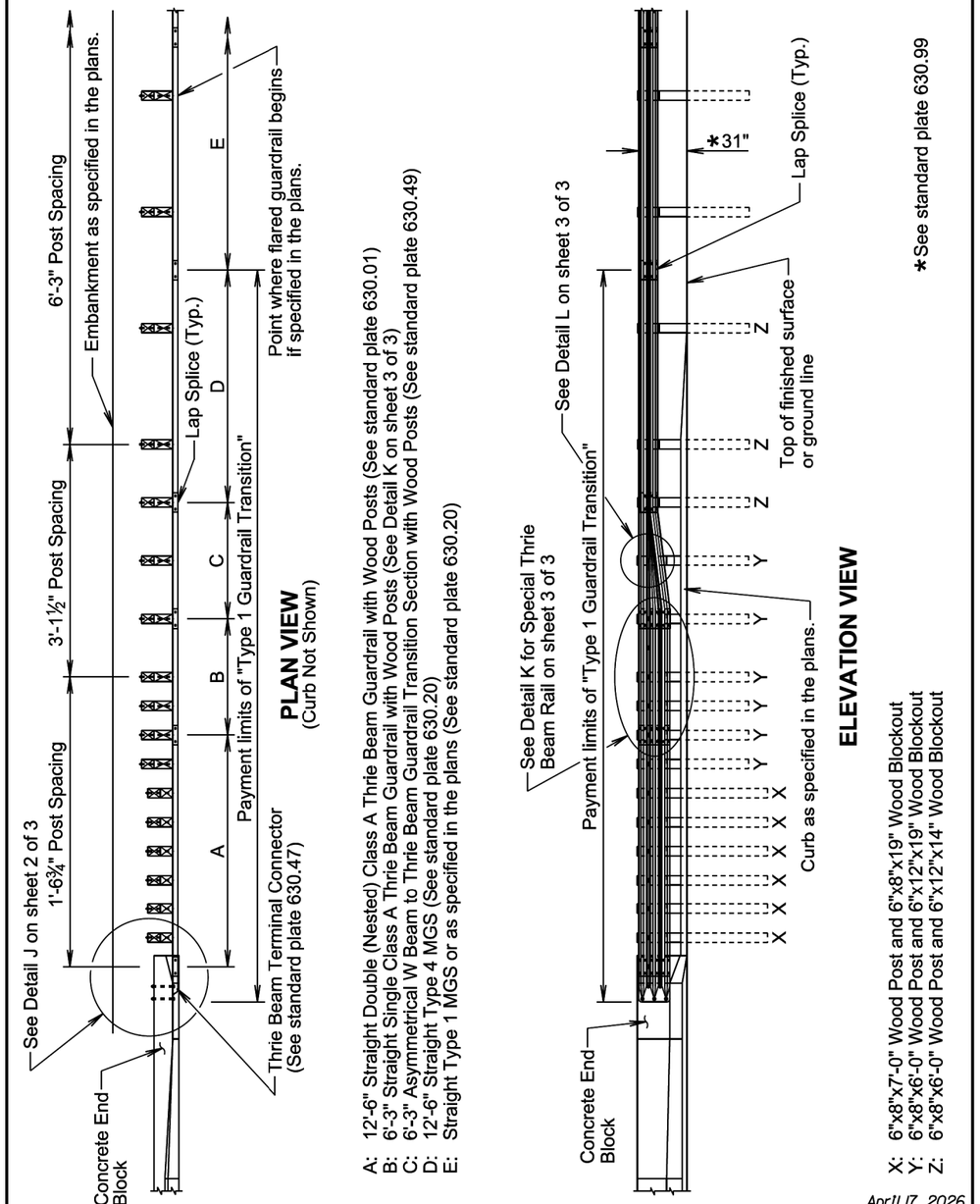
September 14, 2019

Published Date: 2027	SDDOT	ASYMMETRICAL W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.49
			Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPP17190
File - ...\jons06G7\StdPlatesSectionB.dgn

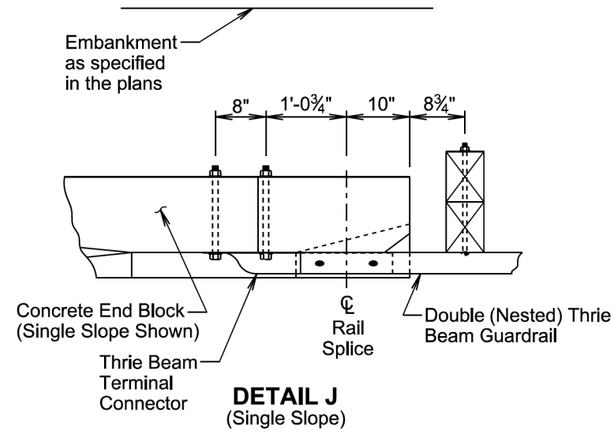
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B58	B72

Plotting Date: 09/15/2026

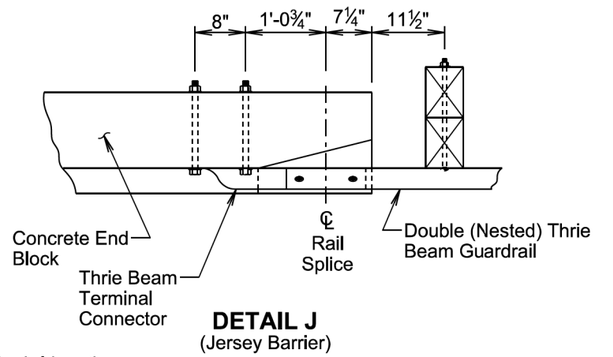


April 17, 2026

Published Date: 2027	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 1 of 3

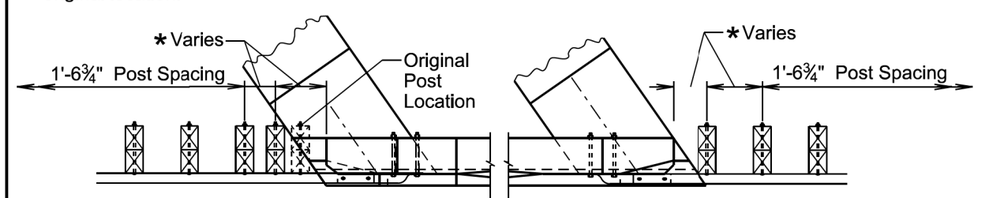


DETAIL J
(Single Slope)



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 its original location.

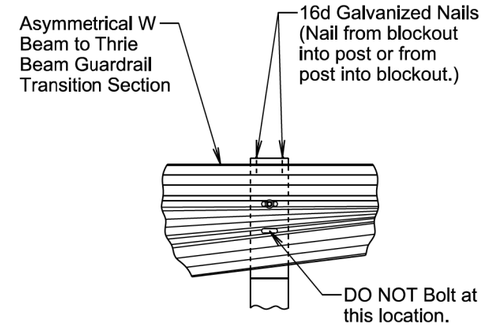


DETAIL J
(Skewed Bridge)

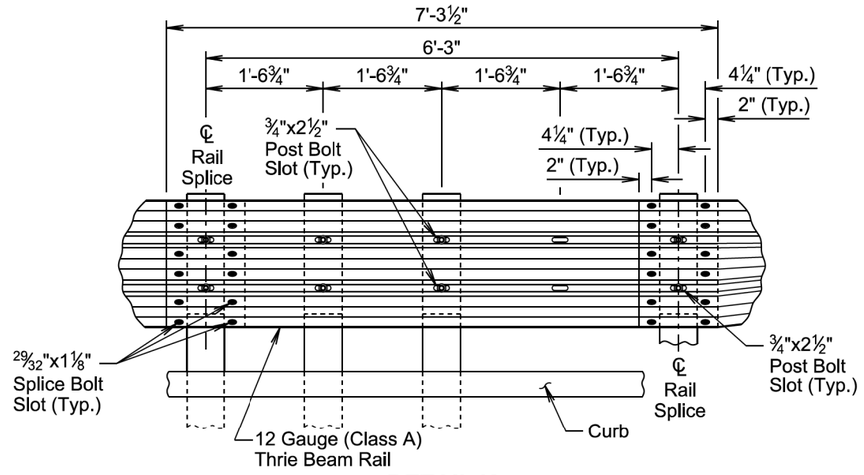
April 17, 2026

Published Date: 2027	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 2 of 3

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons\66G7\StdPlatesSectionB.dgn



DETAIL L



DETAIL K
(Special Thrie Beam Rail)

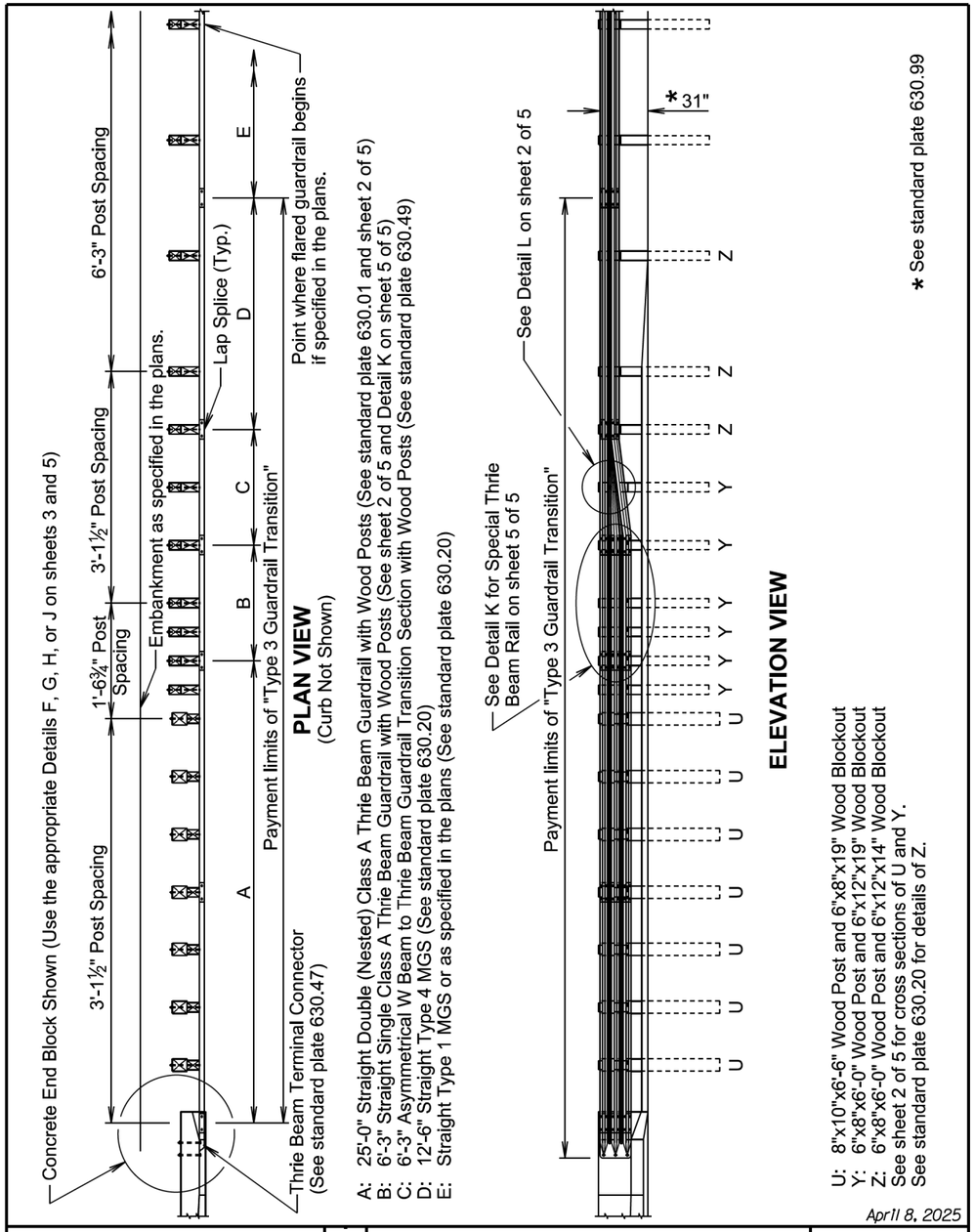
GENERAL NOTES:

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 17, 2026

Published Date: 2027	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 3 of 3



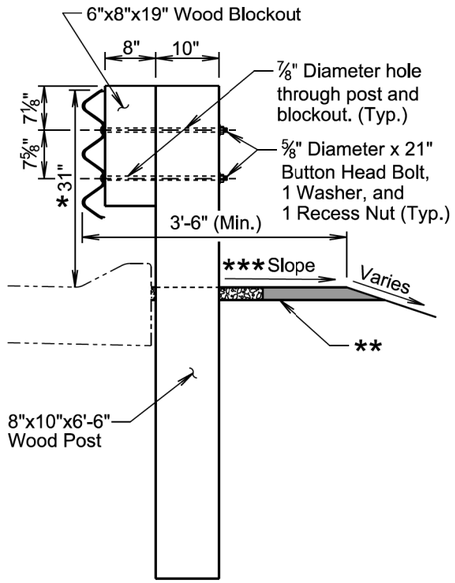
April 8, 2025

Published Date: 2027	SDDOT	TYPE 3 GUARDRAIL TRANSITION (VARIOUS BRIDGE RAILS AND CONCRETE END BLOCKS TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.56
			Sheet 1 of 5

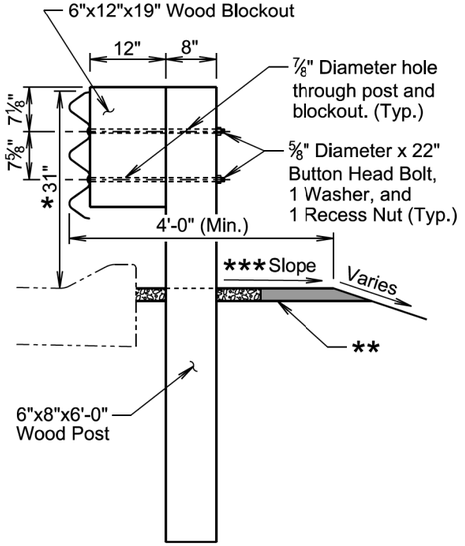
Plot Scale - 1:200
Plotted From - TPPR17190
File - ...\Jons06G7\Std\Plates\SectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B60	B72

Plotting Date: 09/15/2026



CROSS SECTION
(Post U)

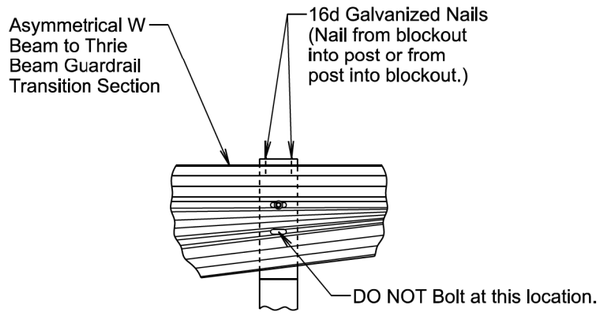


CROSS SECTION
(Post Y)
(Section through special single thrie beam rail portion)

* See standard plate 630.99

** 2" asphalt concrete or as specified in the plans and see standard plate 630.96 for leave-out and backfill requirements.

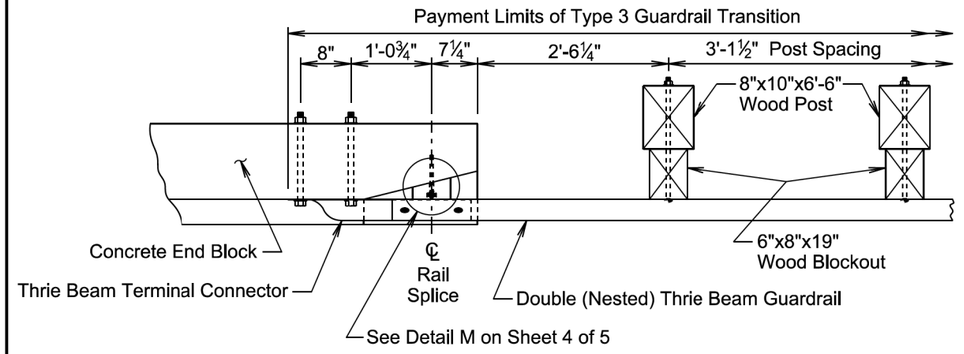
*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.



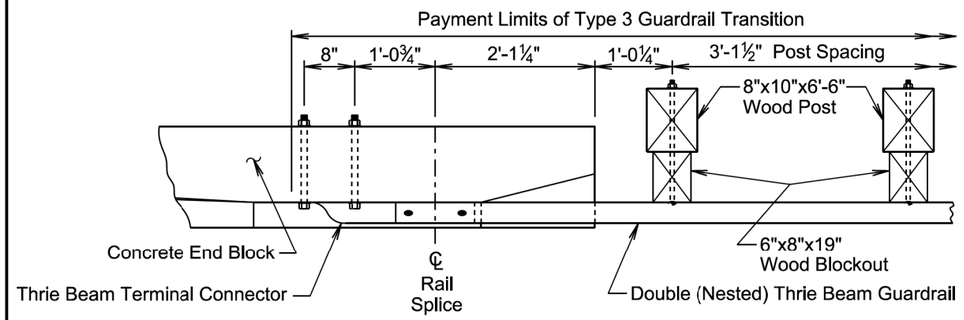
DETAIL L

April 8, 2025

Published Date: 2027	SDDOT	TYPE 3 GUARDRAIL TRANSITION (VARIOUS BRIDGE RAILS AND CONCRETE END BLOCKS TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.56
			Sheet 2 of 5



DETAIL F



DETAIL G

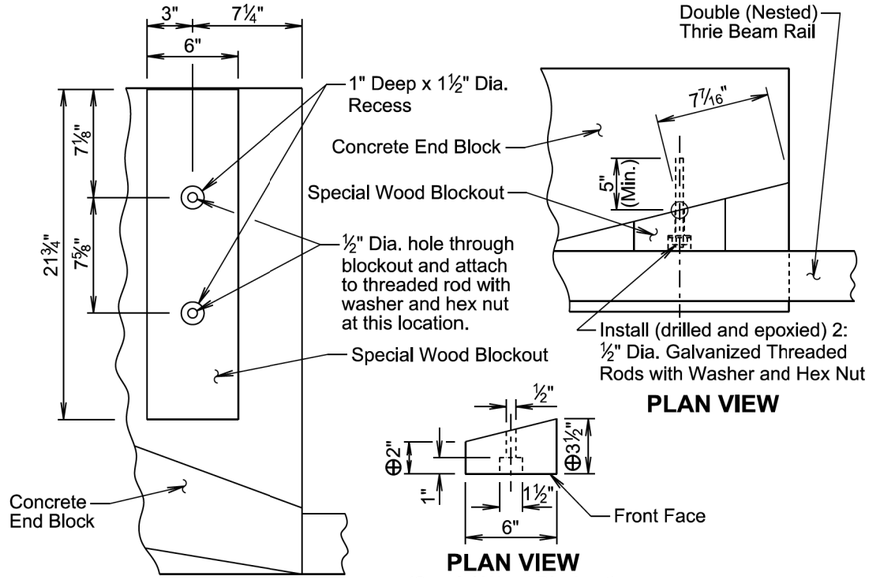
April 8, 2025

Published Date: 2027	SDDOT	TYPE 3 GUARDRAIL TRANSITION (VARIOUS BRIDGE RAILS OR CONCRETE END BLOCKS TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.56
			Sheet 3 of 5

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B61	B72

Plotting Date: 09/15/2026



GENERAL NOTES FOR INSTALLING THREADED RODS INTO CONCRETE:

⊕ The dimensions shown are estimated based on original construction plans of the concrete end block. The special wood blockout will be cut as necessary such that the front face of the special wood blockout will align with the vertical front face of the concrete end block ± ½".

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

The diameter of the drilled holes will 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 will not be drilled using core bits. The drilled holes will 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.

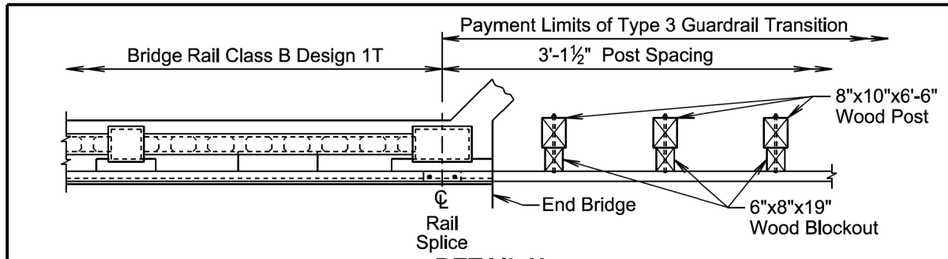
The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).

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.

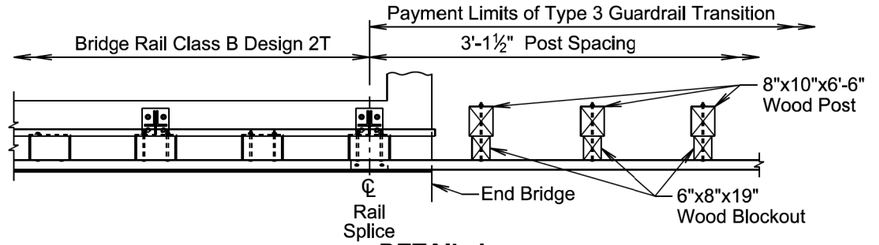
Loads will not be applied to the epoxy grouted threaded rods until the epoxy resin has had sufficient time to cure as specified by the epoxy resin Manufacturer.

April 8, 2025

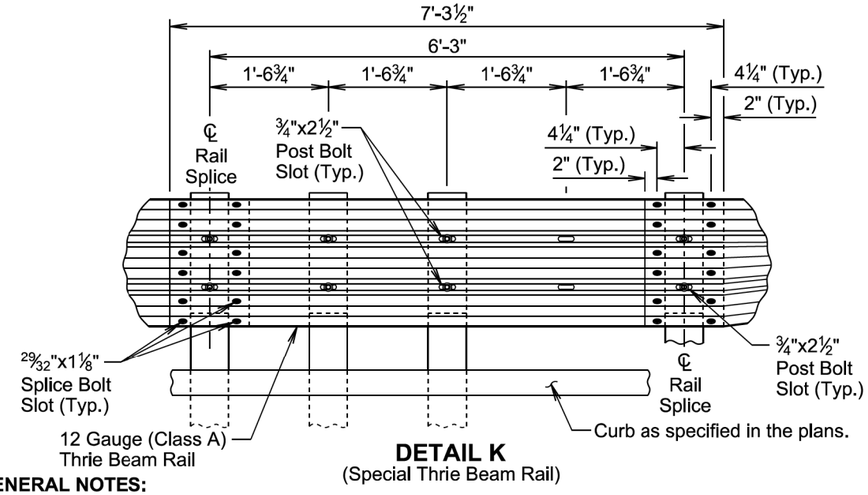
Published Date: 2027	SDDOT	TYPE 3 GUARDRAIL TRANSITION (VARIOUS BRIDGE RAILS OR CONCRETE END BLOCKS TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.56
			Sheet 4 of 5



DETAIL H



DETAIL J



DETAIL K
(Special Thrie Beam Rail)

GENERAL NOTES:

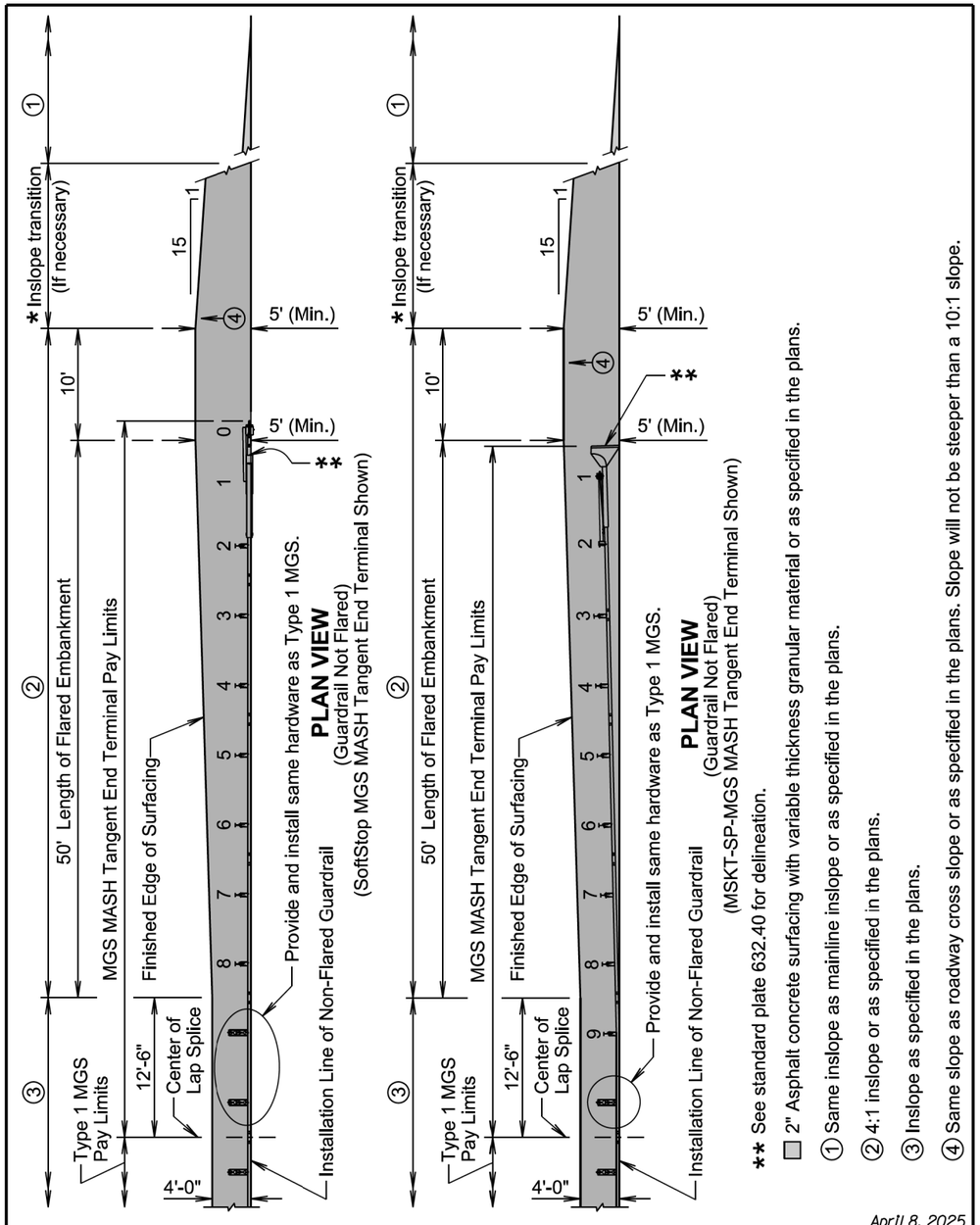
Throughout the type 3 guardrail transition, slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for furnishing and installing the type 3 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 3 Guardrail Transition".

April 8, 2025

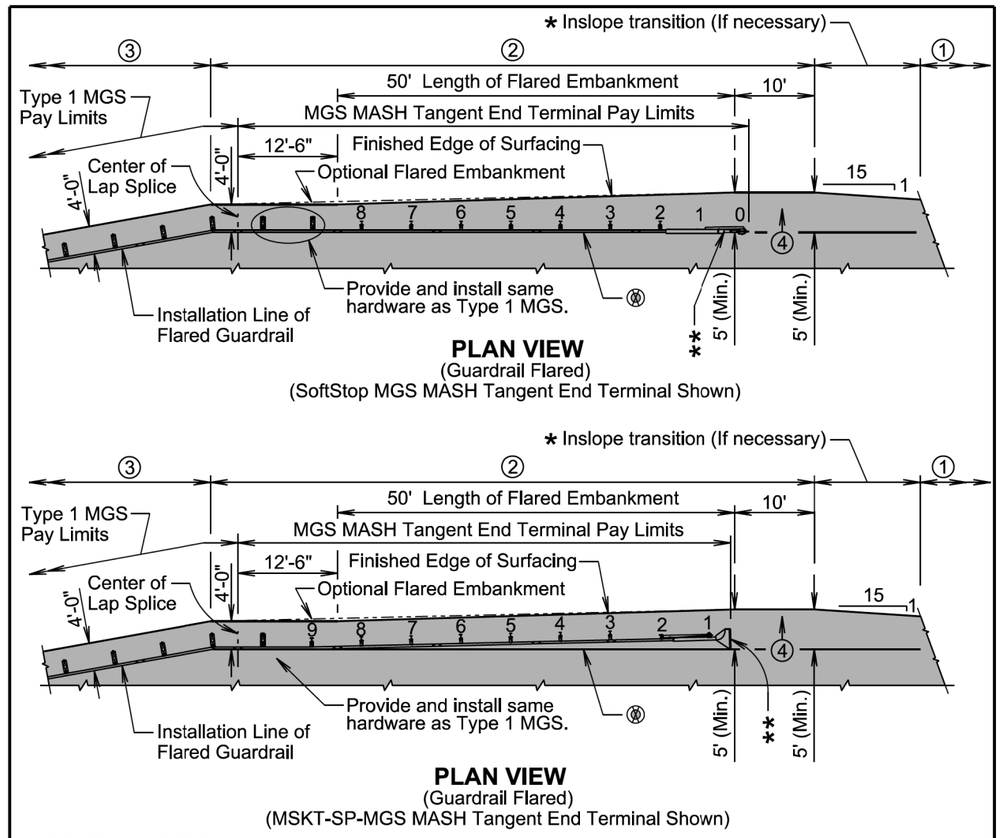
Published Date: 2027	SDDOT	TYPE 3 GUARDRAIL TRANSITION (VARIOUS BRIDGE RAILS AND CONCRETE END BLOCKS TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.56
			Sheet 5 of 5

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons\6627\StdPlatesSectionB.dgn



April 8, 2025

Published Date: 2027	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89
			Sheet 1 of 3



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.

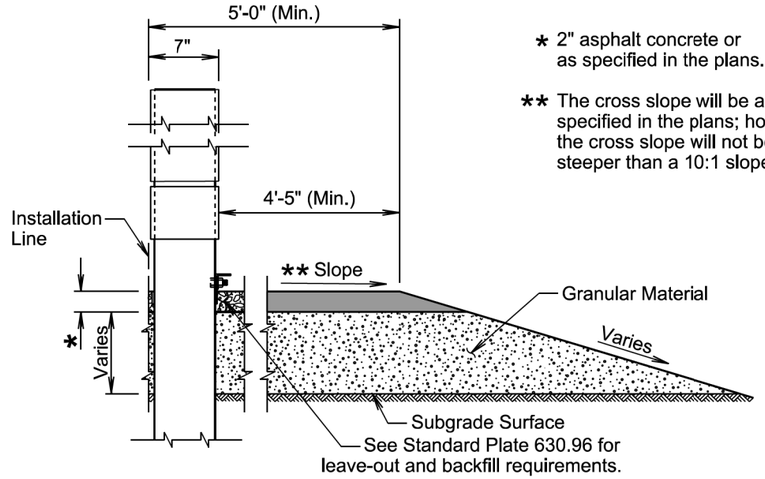
April 8, 2025

Published Date: 2027	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89
			Sheet 2 of 3

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B63	B72

Plotting Date: 09/15/2026

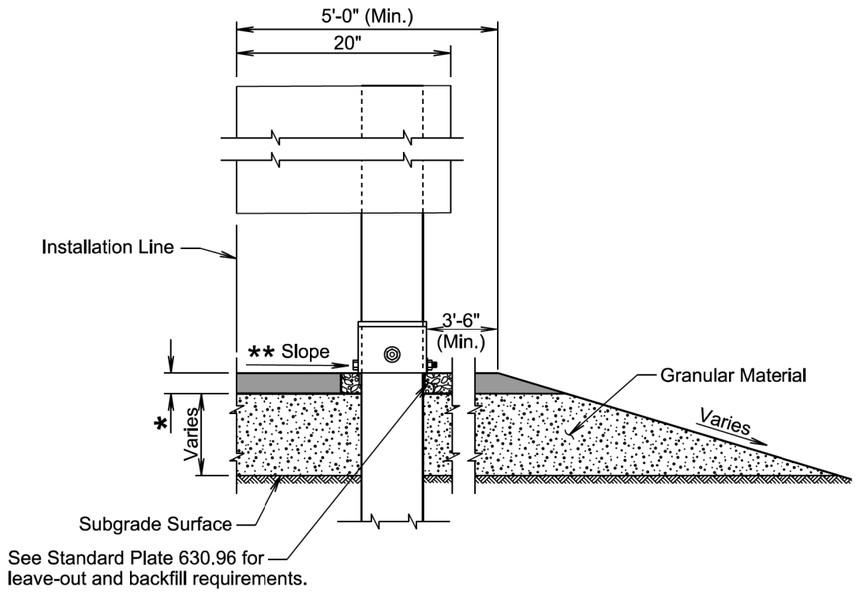


* 2" asphalt concrete or as specified in the plans.

** 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)

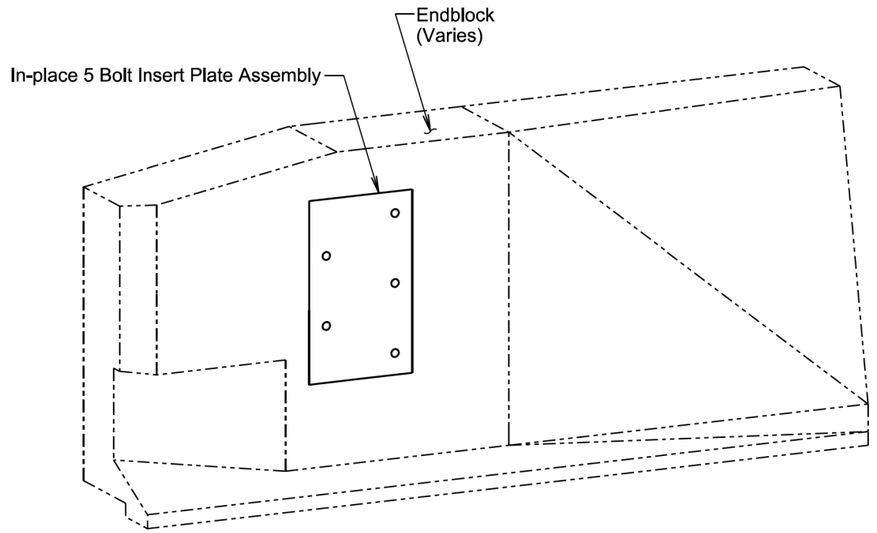


TRANSVERSE SECTION

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

April 8, 2025

Published Date: 2027	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89
			Sheet 3 of 3



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.

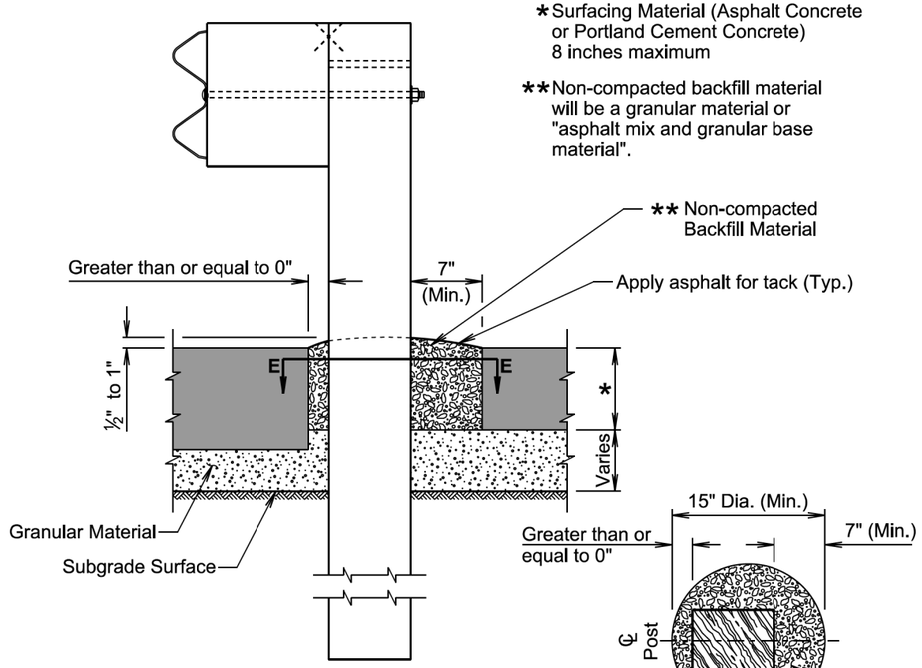
Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

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

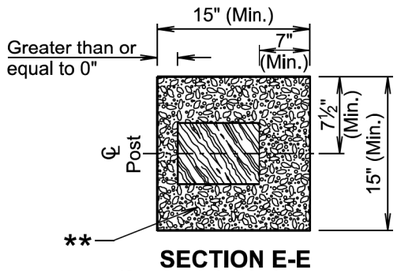
Published Date: 2027	SDDOT	GUARDRAIL ATTACHMENT TO BRIDGE ENDBLOCKS	PLATE NUMBER 630.93
			Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



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.

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.

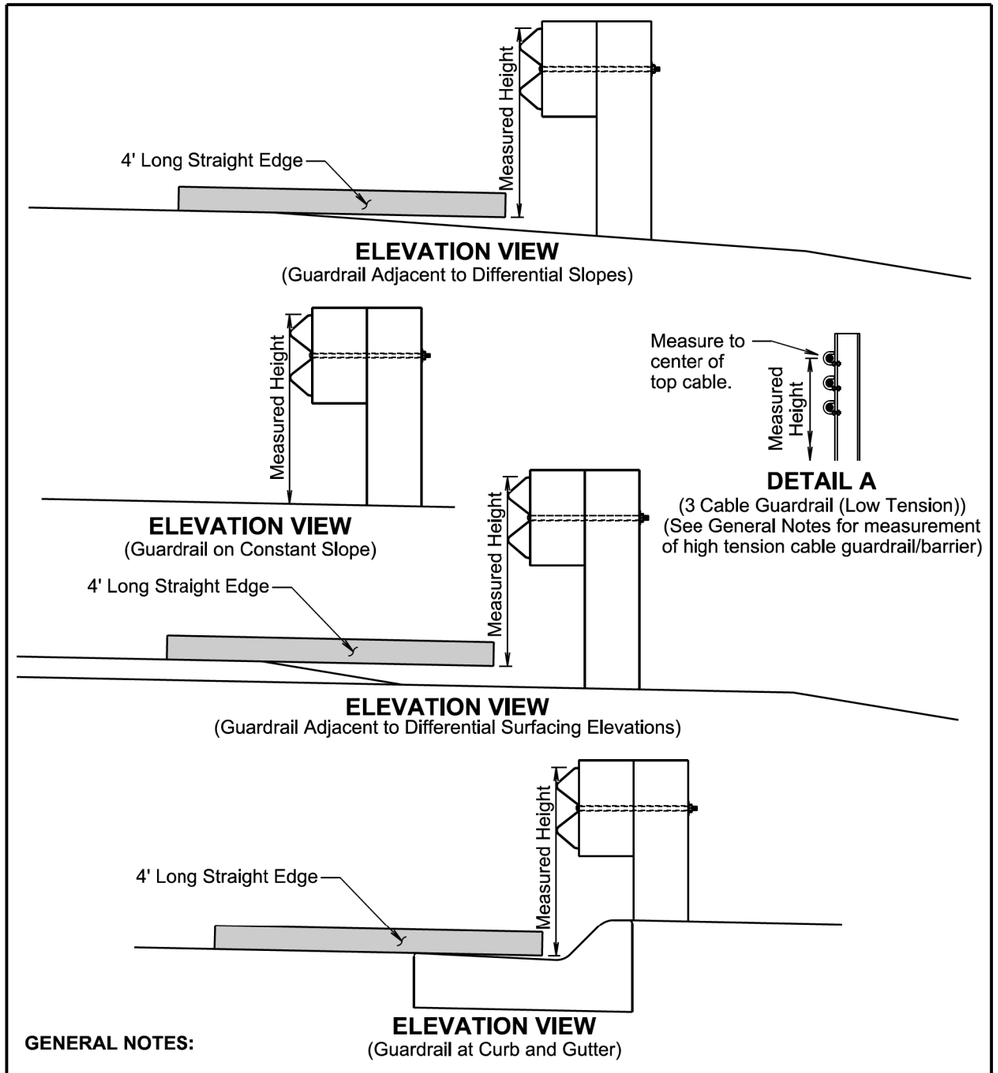
The backfill material will be mounded ½ inch to 1 inch above the top of the adjacent surfacing as illustrated above.

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.

November 19, 2021

Published Date: 2027	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 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.

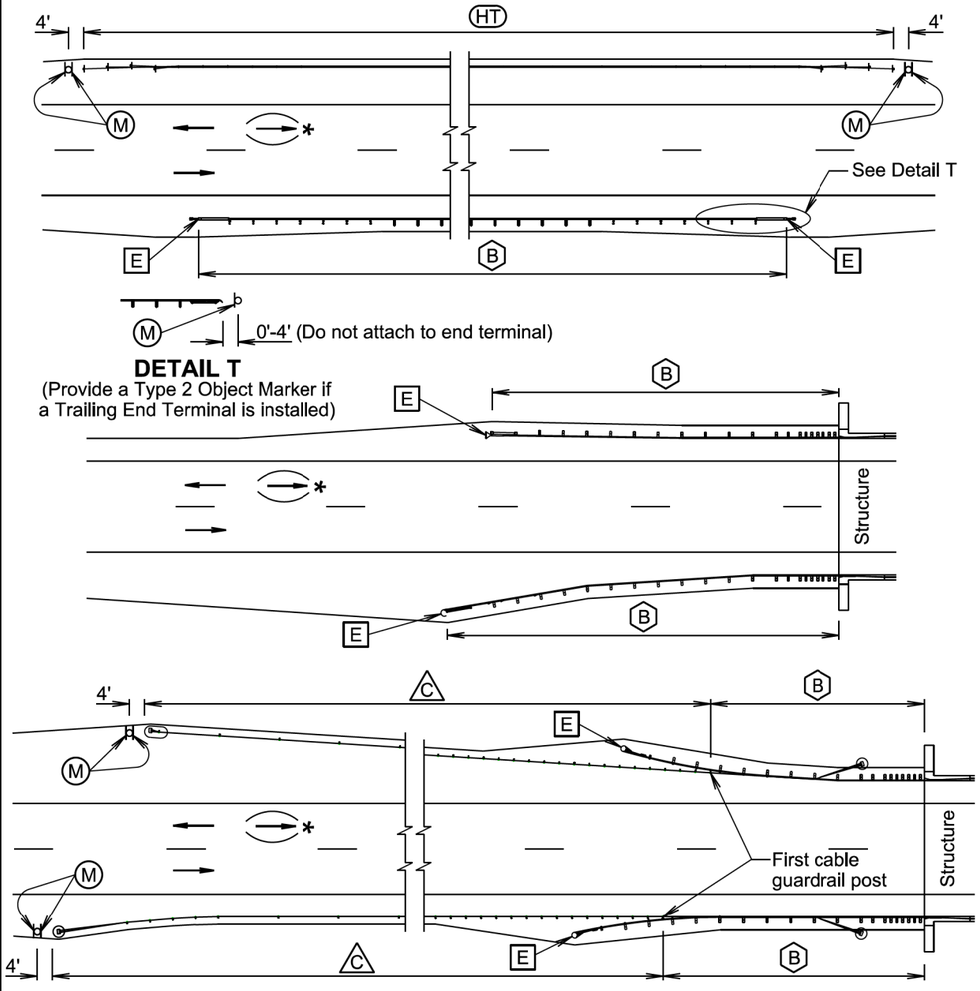
September 14, 2019

Published Date: 2027	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99
			Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B65	B72

Plotting Date: 09/15/2026



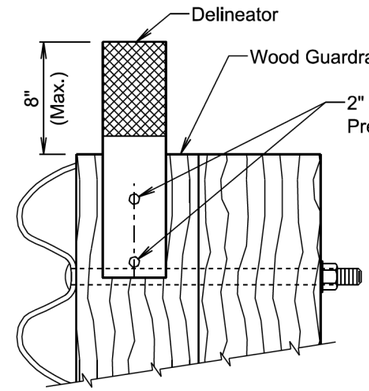
PLAN VIEW
(Typical Guardrail Layouts)

- (B) Steel Beam Guardrail Delineation
- [E] Guardrail End Terminal Object Marker
- (C) 3 Cable Guardrail (Low Tension) Delineation
- (HT) High Tension Cable Guardrail Delineation
- (M) Type 2 Object Marker

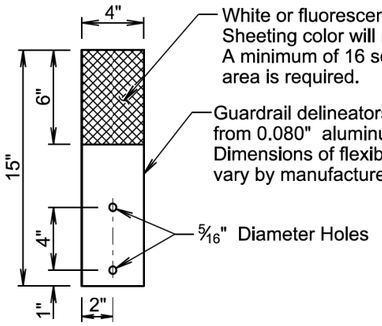
*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

April 8, 2025

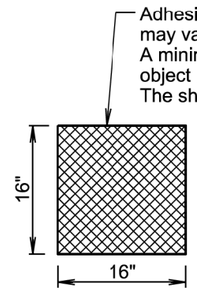
Published Date: 2027	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



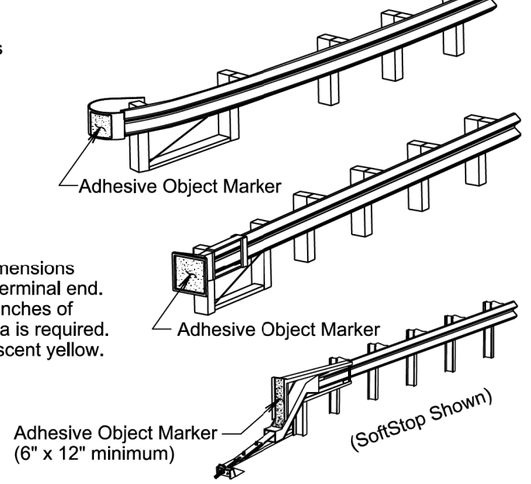
(B) STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



ADHESIVE OBJECT MARKER

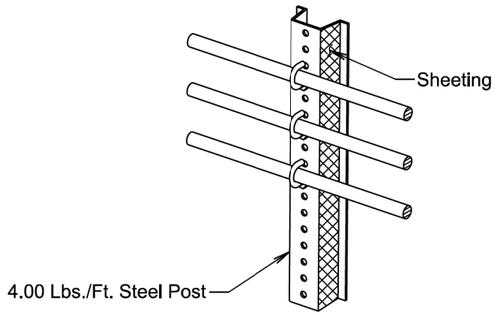


[E] GUARDRAIL END TERMINAL OBJECT MARKER

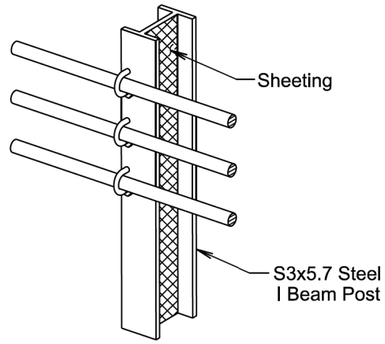
April 8, 2025

Published Date: 2027	SDDOT	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4

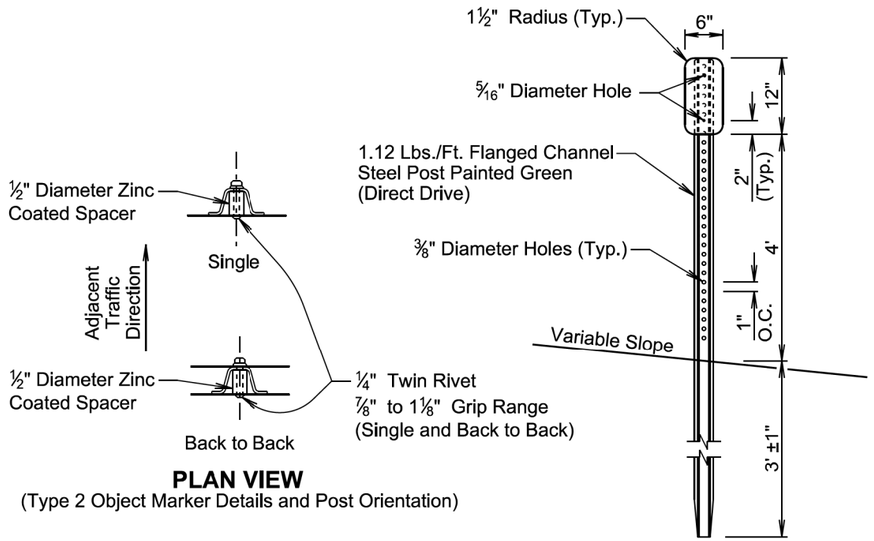
Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



Ⓒ **3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



Ⓒ **3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



PLAN VIEW
(Type 2 Object Marker Details and Post Orientation)

ELEVATION VIEW
Ⓜ (Type 2 Object Marker)
(For Marking 3 Cable Guardrail (Low Tension) Anchor, High Tension Cable Guardrail Anchor, and Trailing End Terminal)

April 8, 2025

Published Date: 2027	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

GENERAL NOTES:

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every third post cap or cable spacer. Maximum spacing of delineation will not exceed 35 feet. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting will be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will 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 will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will 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 (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will 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 will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will 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 (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will 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 will 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 will be incidental to the respective high tension cable guardrail contract item.

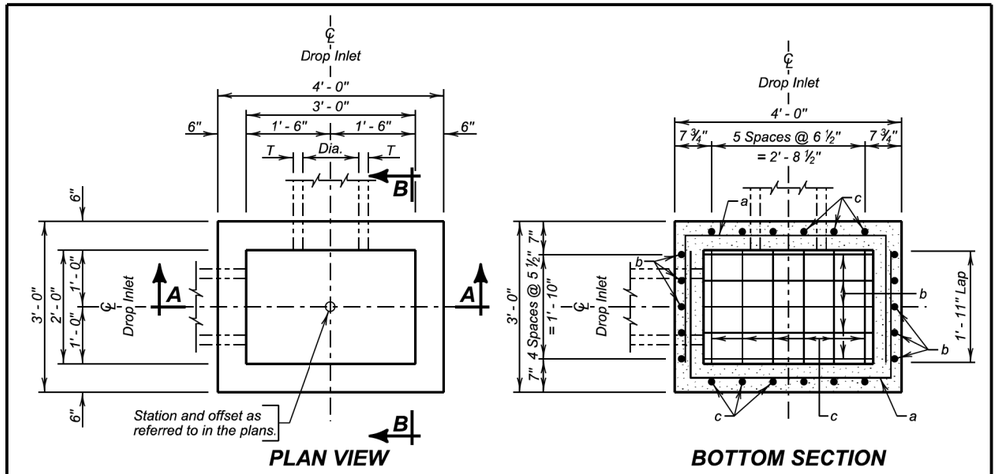
An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required on end terminals with sufficient surface area. Other end terminals (SoftStop) will require an adhesive object marker with a minimum size of 6" x 12". The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

A type 2 object marker will be placed such that the edges of the type 2 object marker and the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, or the trailing end terminal that are nearest to the roadway will be installed in line with the same lateral offset from the traveled way at the location as noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will 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 will 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.

April 8, 2025

Published Date: 2027	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn



ESTIMATED QUANTITIES

ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
⚹ Class M6 Concrete	Cu. Yd.	0.26	0.22H
Reinforcing Steel	Lb.	51.19	28.97H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12" TO 24" DIAMETER PIPE

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Version, Required Provisions, and Special Provisions as included in the Proposal.

GENERAL NOTES:

Design Live Load: HL-93. No construction loading in excess of legal load was considered.

Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12 inches with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.

Drop inlet may be precast. If precast drop inlet details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

⚹ Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.

Drop inlet shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering drop inlet must fit between the inside face of walls and shall not enter through the corners.

Maximum R.C.P. diameter shall not exceed 18 inches on the 2-foot wide side and shall not exceed 24 inches (24 inches for R.C. arch) on the 3-foot wide side of the drop inlet.

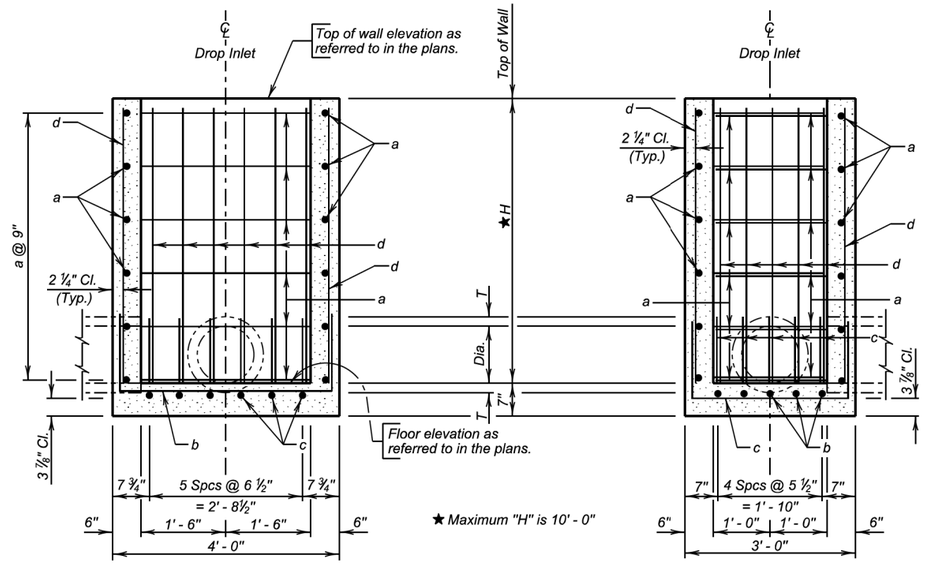
The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS

	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.05
	24	3	0.09
R.C. ARCH	18	2 ½	0.05
	24	3 ½	0.09

April 17, 2026

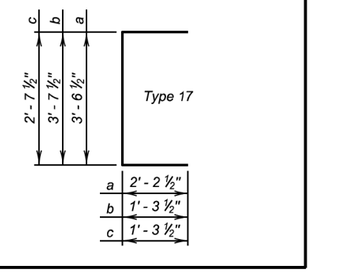
Published Date: 2027	SDDOT	2' X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01 Sheet 1 of 2



REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	8' - 0"	17	
b	5	5	6' - 3"	17	
c	6	4	5' - 3"	17	
d	22	4	H - 2"	Str.	

NOTE:
All dimensions are out to out of bars.



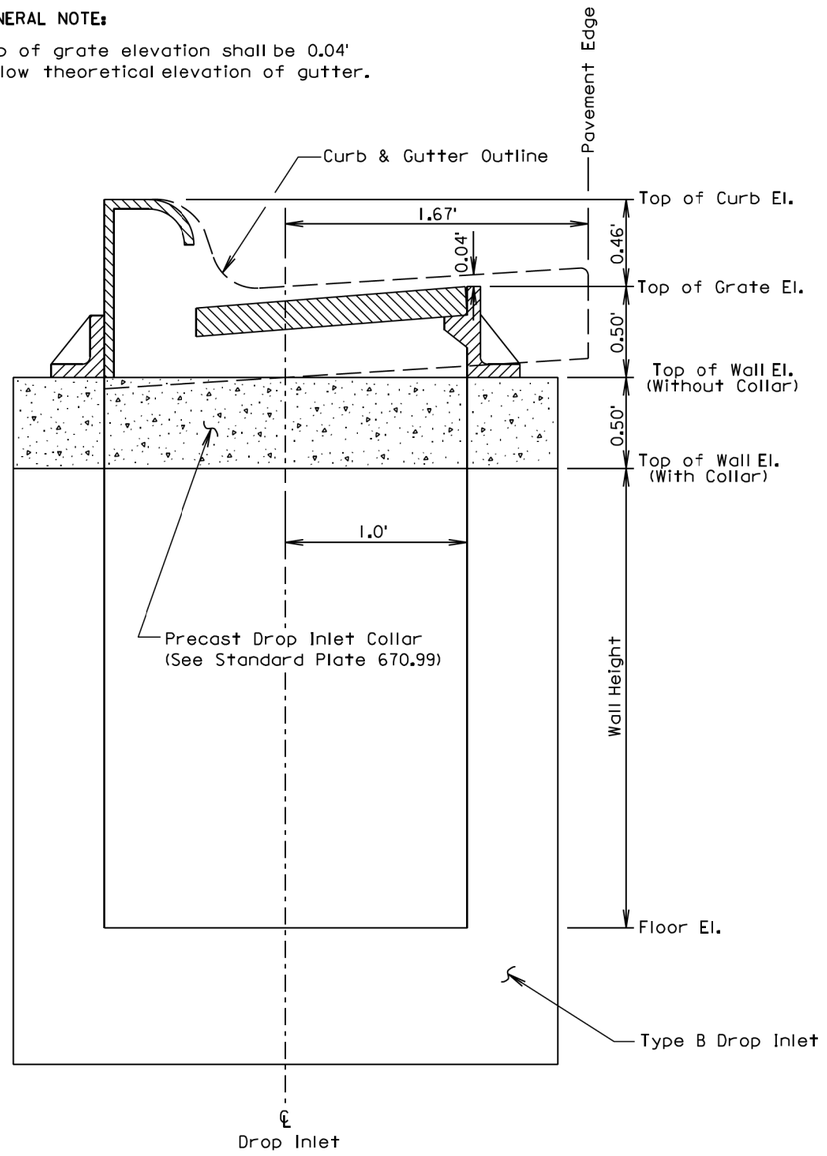
April 17, 2026

Published Date: 2027	SDDOT	2' X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01 Sheet 2 of 2

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

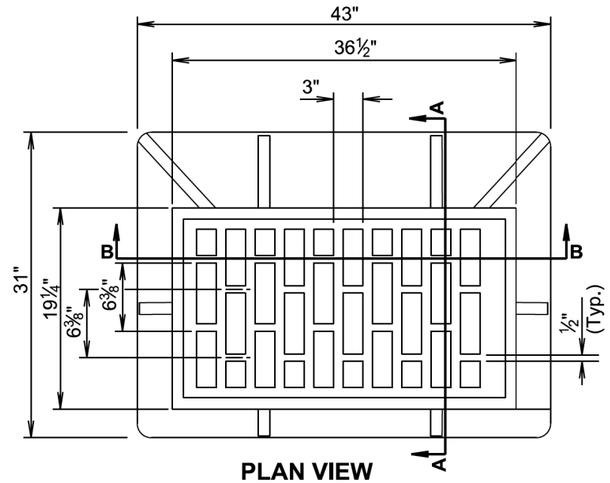
GENERAL NOTE:

Top of grate elevation shall be 0.04' below theoretical elevation of gutter.

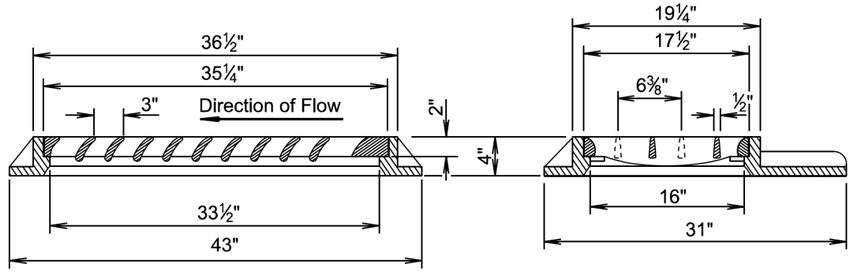


June 26, 2011

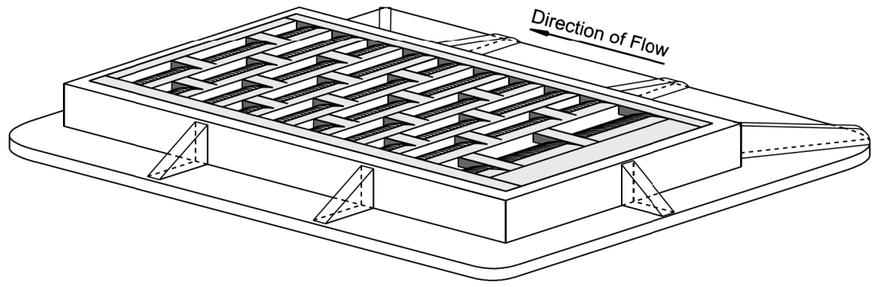
Published Date: 2027	SDDOT	INSTALLATION OF TYPE B DROP INLET	PLATE NUMBER 670.75
			Sheet 1 of 1



PLAN VIEW



SECTION B-B **SECTION A-A**

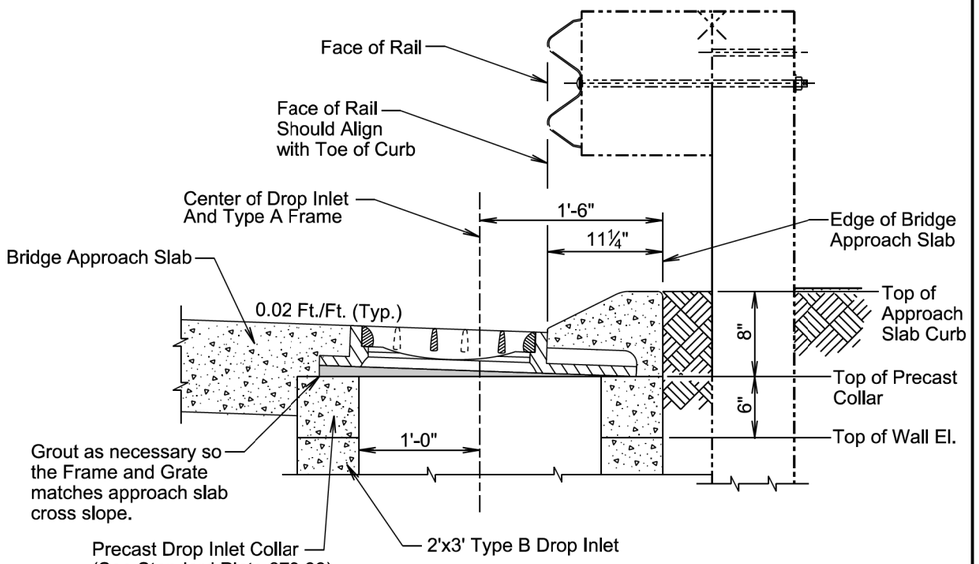


ISOMETRIC VIEW

March 31, 2024

Published Date: 2027	SDDOT	TYPE A FRAME AND GRATE	PLATE NUMBER 670.78
			Sheet 1 of 2

Plot Scale - 1:200
Plotted From - TRPR17190
File - ...\Jons06G7\StdPlatesSectionB.dgn



ELEVATION VIEW

(Installation of Type A Frame and Grate in Bridge Approach Slab)

GENERAL NOTES:

The product dimensions may vary from those shown on the standard plate depending on the manufacturer. Grate size and configuration will be similar to the standard plate for hydraulic capacity and bicycle safety. Any variation in dimensions will be approved by the Engineer and the type A frame and grate will be from a manufacturer on the approved products list.

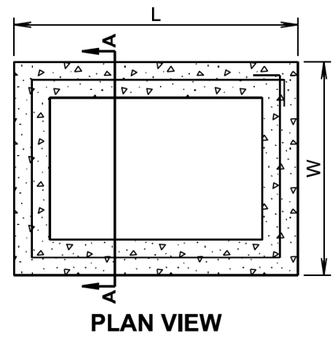
Design load for the grate will meet the requirements of AASHTO HL-93.

The type A frame and grate will be installed on a 2'x3' type B drop inlet.

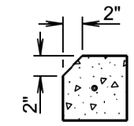
The direction of flow is shown for illustrative purpose only. The grate will be installed to intercept the direction of flow.

March 31, 2024

Published Date: 2027	SDDOT	TYPE A FRAME AND GRATE	PLATE NUMBER 670.78
			Sheet 2 of 2

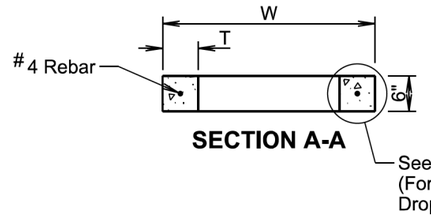


PLAN VIEW



For Type D Drop Inlets only:
Use Precast Drop Inlet Collar with
2" chamfer on L sides only.

DETAIL B



SECTION A-A

INFORMATIONAL QUANTITIES					
FRAME AND GRATE TYPE	L (Ft-in)	W (Ft-in)	T (in)	CLASS M6 CONCRETE (CuYd)	REINFORCING STEEL (Lb)
TYPE A, B, and E	4'-0"	3'-0"	6	0.11	9
TYPE C	5'-0"	4'-0"	6	0.15	11
TYPE D	4'-0"	2'-6"	6	0.10	8

GENERAL NOTES:

All reinforcing steel will conform to ASTM A615, Grade 60.

The ½" diameter bar will lap 6"± and will be centered in the concrete.

The cost of furnishing and installing Precast Drop Inlet Collars, including labor, materials, and incidentals will be incidental to the contract unit price per Each for "Precast Drop Inlet Collar".

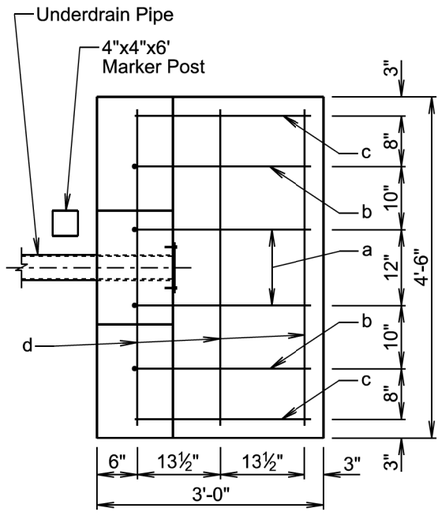
June 1, 2022

Published Date: 2027	SDDOT	PRECAST DROP INLET COLLAR	PLATE NUMBER 670.99
			Sheet 1 of 1

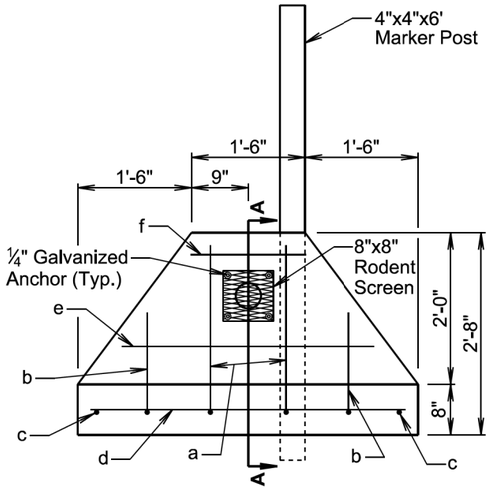
Plot Scale - 1:200
Plotted From - TPPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B70	B72

Plotting Date: 09/15/2026



PLAN VIEW



ELEVATION VIEW

GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications except the minimum curing time will be 72 hours. It is estimated that 0.55 cubic yards of concrete is required for each unit.

Four cast-in-place or drilled-in ¼" galvanized anchors will be placed in the headwall. Each galvanized anchor will be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.

All reinforcing steel will conform to ASTM A615, Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.

The underdrain pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

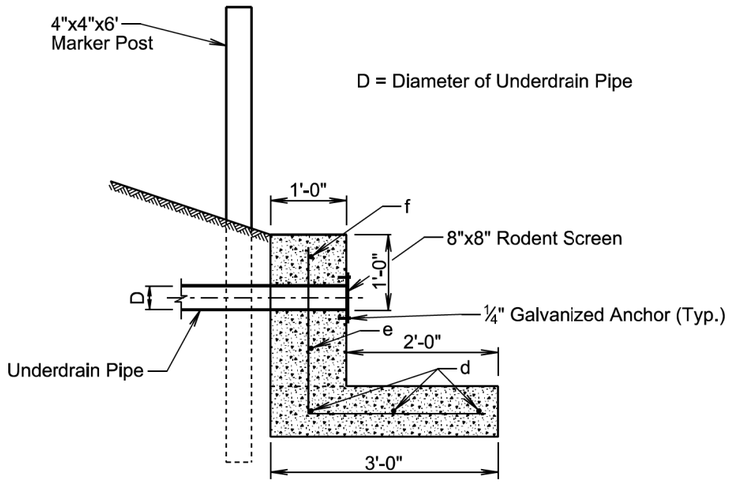
The 8"x8" rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen will be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.

A 4"x4"x6' marker post will be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post will project 3'± above the ground line. The marker post will be cedar or treated with a wood preservative and will be painted with two coats of white paint.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, rodent screen, anchors, and marker post will be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

December 23, 2019

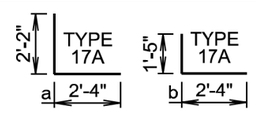
Published Date: 2027	SDDOT	CONCRETE HEADWALL FOR UNDERDRAIN	PLATE NUMBER 680.01
			Sheet 1 of 2



SECTION A-A

REINFORCING SCHEDULE

MK.	No.	Size	Length	Type	Bending Details
a	2	4	4'-6"	17A	
b	2	4	3'-9"	17A	
c	2	4	2'-4"	Str.	
d	3	4	4'-2"	Str.	
e	1	4	3'-4"	Str.	
f	1	4	1'-6"	Str.	



NOTE:
All dimensions are out to out of bars.

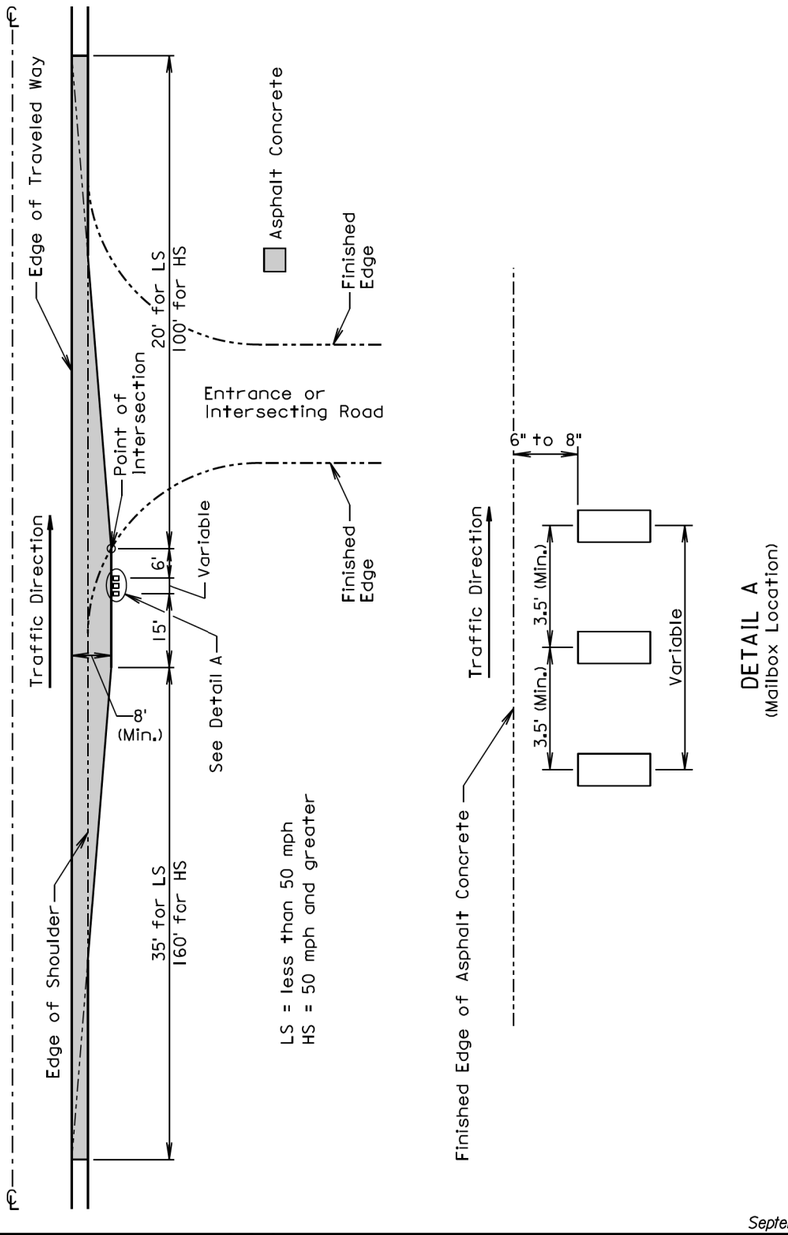
December 23, 2019

Published Date: 2027	SDDOT	CONCRETE HEADWALL FOR UNDERDRAIN	PLATE NUMBER 680.01
			Sheet 2 of 2

Plot Scale - 1:200
Plotted From - TPPR17190
File - ...\jons06G7\StdPlatesSectionB.dgn

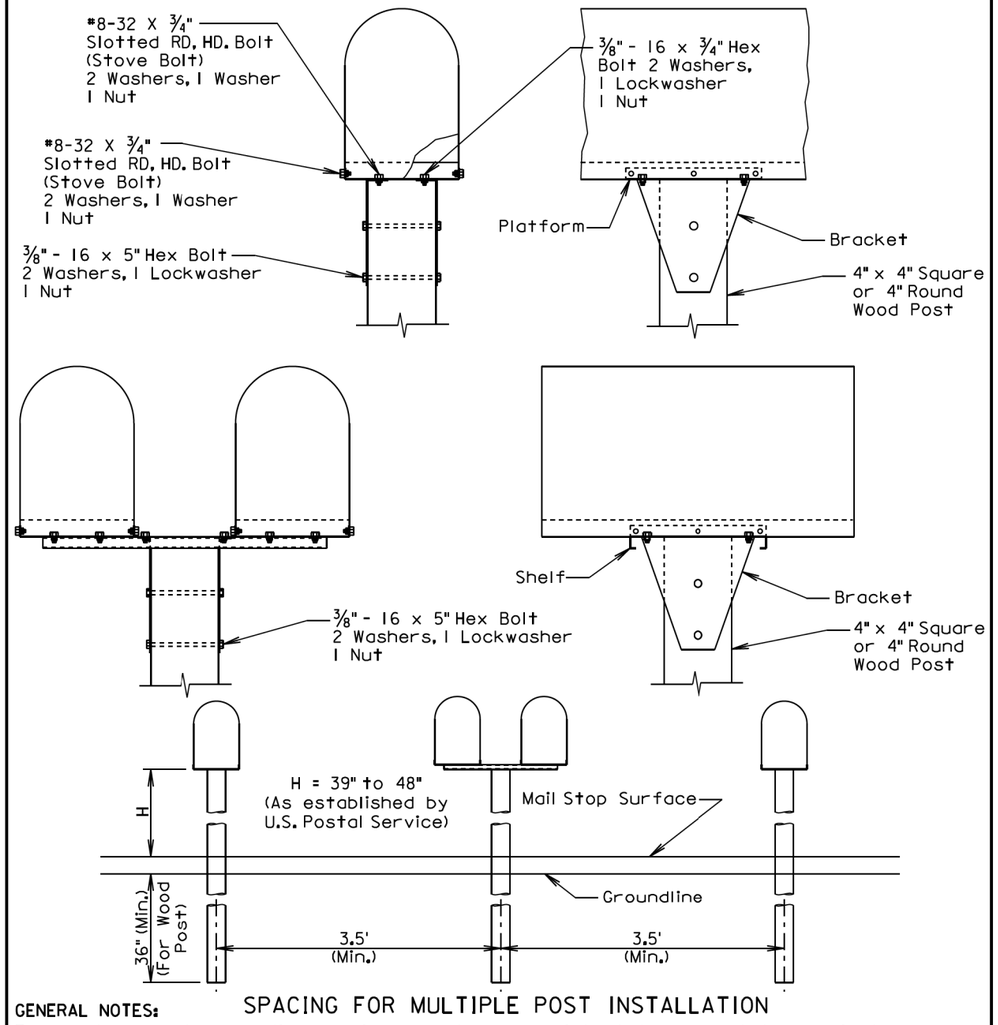
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B71	B72

Plotting Date: 09/15/2026



September 6, 2015

Published Date: 2027	SDDOT	MAILBOX TURNOUT	PLATE NUMBER 900.01
			Sheet 1 of 1



SPACING FOR MULTIPLE POST INSTALLATION

GENERAL NOTES:

The post support assemblies provided should be consistant throughout the project.

Single and double mailboxes may be in any sequence.

Post support assemblies shall be one from the approved products list, a 4"x4" or 4" round wood post, or an alternate post support assembly that meets the test level 3 crash testing requirements of NCHRP 350 or MASH.

Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation instructions.

September 6, 2013

Published Date: 2027	SDDOT	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER 900.02
			Sheet 1 of 1

Plot Scale - 1:200
Plotted From - TPPR17190
File - ...\Jons06G7\Std\Plates\SectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-B 0248(12)173	B72	B72

Plotting Date: 09/15/2026

March 31, 2000

Published Date: 2027	SDDOT	MAILBOX SUPPORT HARDWARE	PLATE NUMBER 900.03 Sheet 1 of 1

Plot Scale - 1:200

Plotted From - TRPR17190

File - ...\Jons06G7\StdPlatesSectionB.dgn