SECTION B: GRADING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B1	37

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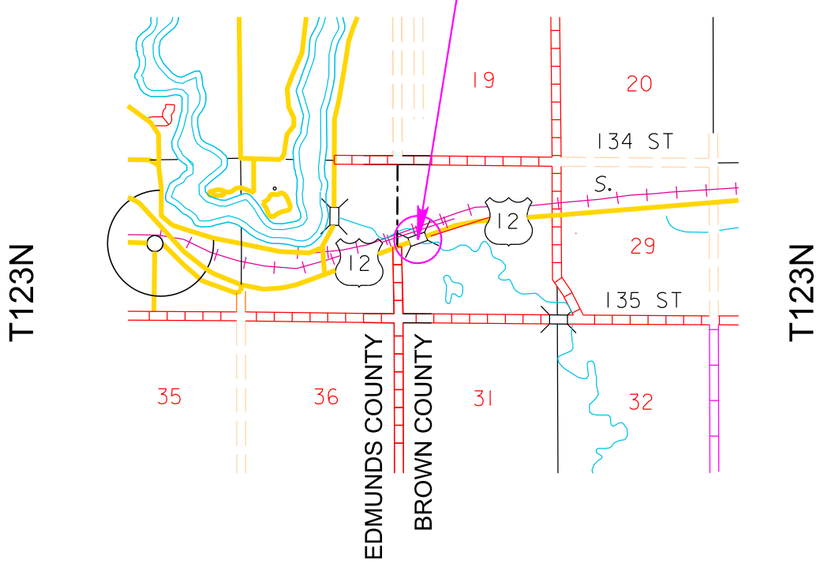

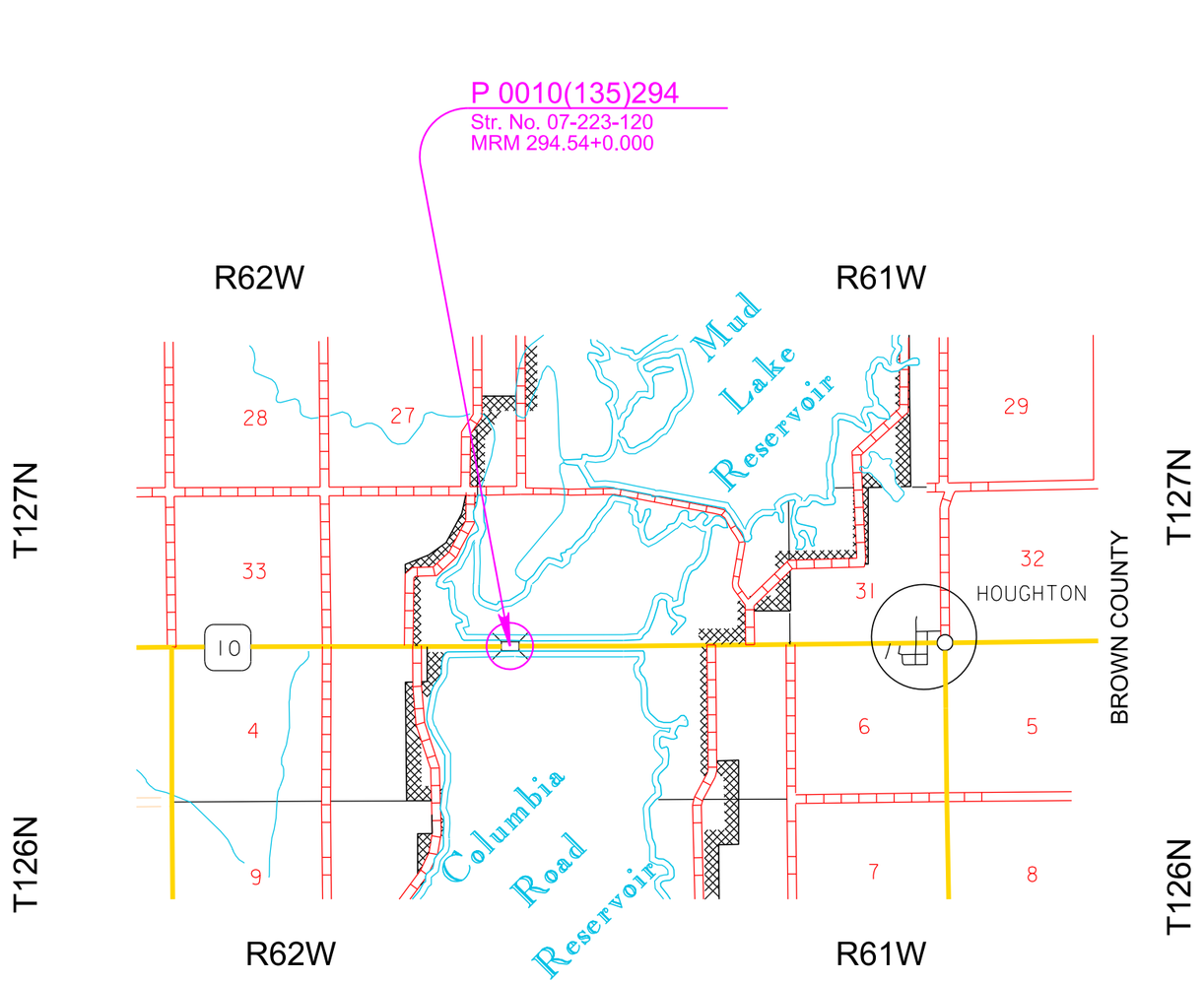

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SECTION B ESTIMATE OF QUANTITIES

PCN: 03AL

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.297	Mile
009E3250	Miscellaneous Staking	0.297	Mile
009E3280	Slope Staking	0.297	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
110E0700	Remove 3 Cable Guardrail	350	Ft
110E0730	Remove Beam Guardrail	805.6	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	4	Each
110E1010	Remove Asphalt Concrete Pavement	5,066.7	SqYd
120E0010	Unclassified Excavation	13,724	CuYd
120E2000	Undercutting	7,691	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
450E0122	18" RCP Class 2, Furnish	168	Ft
450E0130	18" RCP, Install	168	Ft
450E2008	18" RCP Flared End, Furnish	2	Each
450E2009	18" RCP Flared End, Install	2	Each
462E0100	Class M6 Concrete	5.6	CuYd
480E0100	Reinforcing Steel	932	Lb
600E0200	Type II Field Laboratory	1	Each
630E0500	Type 1 MGS	100.0	Ft
630E1500	Type 1 Guardrail Transition	4	Each
630E2017	MGS MASH Flared End Terminal	4	Each
670E0200	Type A Frame and Grate	4	Each
670E5400	Precast Drop Inlet Collar	4	Each

PCN: 05V1

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
009E3230	Grade Staking	0.369	Mile
009E3250	Miscellaneous Staking	0.369	Mile
009E3280	Slope Staking	0.369	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
110E0600	Remove Fence	1,263	Ft
110E0730	Remove Beam Guardrail	553.1	Ft
110E1010	Remove Asphalt Concrete Pavement	1,644.4	SqYd
110E1100	Remove Concrete Pavement	2,466.7	SqYd
120E0010	Unclassified Excavation	12,735	CuYd
120E0600	Contractor Furnished Borrow Excavation	30,433	CuYd
120E1000	Muck Excavation	2,700	CuYd
120E2000	Undercutting	4,592	CuYd
120E6100	Water for Embankment	542.6	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
450E0122	18" RCP Class 2, Furnish	72	Ft
450E0130	18" RCP, Install	72	Ft
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
462E0100	Class M6 Concrete	2.7	CuYd
480E0100	Reinforcing Steel	477	Lb
600E0200	Type II Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	622	Ft
620E0510	Type 1 Temporary Fence	641	Ft
620E1020	2 Post Panel	3	Each
630E0500	Type 1 MGS	500.0	Ft
630E1500	Type 1 Guardrail Transition	4	Each
630E2017	MGS MASH Flared End Terminal	4	Each
670E0200	Type A Frame and Grate	2	Each
670E5400	Precast Drop Inlet Collar	2	Each
831E0110	Type B Drainage Fabric	1,284	SqYd

GRADING OPERATIONS

Water for Embankment for PCN 05V1 is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste.

Water for Embankment for PCN 03AL is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 9.6 MGal. No separate payment will be made for the Water for Embankment and all costs associated will be incidental to the contract unit price per cubic yard of “Unclassified Excavation”.

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.

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

General Geology

The project structures are located within glacial terrain typical of eastern South Dakota. Lacustrine sediments and Alluvium may be encountered with the approach grading required for the SD10 structure near Houghton. Glacial Till overlies the Pierre Shale at the US12 structure location. The existing approach embankment is constructed of Shale derived materials likely borrowed from a nearby source. The South Dakota Geological Survey describes each as:

Lacustrine sediments consist of glaciolacustrine clay and silt with minor sand and gravel.

Alluvium consists of clay to boulder-sized clasts with locally abundant organic material.

Ground moraine till deposits consists of compact, silty, clay-rich matrix with sand to boulder sized clasts of glacial origin.

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 lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items 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 DIVERSION – 05V1

The traffic diversion is located at Sta. 757+33. The traffic diversion will be constructed according to Section 4.5 A of the Specifications. Installation and removal of the traffic diversion will meet all requirements as set forth in the South Dakota Surface Water Quality Standards.

The traffic diversion located at Station 757+33 will be constructed according to the geometric layouts shown in the plans with the temporary drainage structure 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 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 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
757+33	10 year	1378.9	1381.3	2-96" 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 C riprap. Type B drainage fabric will be placed under the riprap and under the diversion embankment that is placed in a wetland as shown in the construction plans. The Type B drainage fabric will also be placed above the riprap. The quantity of riprap used in the traffic diversion is included in the quantity for "Class C Riprap" in Section E-Structures estimate of quantities. The quantity of riprap used for the traffic diversion will 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 C Riprap". 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.

Traffic Diversion Excavation as shown on the plans profile sheets is the excavation required to construct the traffic diversion portion that is located inside the mainline cross section work limits. The Traffic Diversion Excavation quantity is included in the mainline excavation quantity in the Table of Excavation Quantities by Balances and in the Table of Unclassified Excavation.

Traffic Diversion Borrow, as shown on the plans profile sheets, is obtained from Contractor Furnished Borrow. The Traffic Diversion Borrow quantity is included in the Table of Excavation Quantities by Balances.

Added Traffic Diversion Excavation as shown on the plans profile sheets is the excavation required to construct the traffic diversion portion that is located outside the mainline cross section work limits. The Added Traffic Diversion Excavation quantity is added to the unclassified excavation quantity in the Table of Unclassified Excavation.

TABLE OF TRAFFIC DIVERSION RIPRAP AND DRAINAGE FABRIC – 05V1

Station	L/R	Ordinary High Water Elevation	Traffic Diversion Riprap (Ton)	Section E Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
757+33	R	1381.3	675.9	675.9	1284.4
		Totals	675.9	675.9	1284.4

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SHRINKAGE FACTOR: Embankment – 03AL +40% – 05V1 +35%

TABLE OF EXCAVATION QUANTITIES BY BALANCES – 03AL

Station to	Station	Excavation (CuYd)	* Undercut (CuYd)	Total Excavation (CuYd)
12+26	30+56	4125	7691	11816
	Totals:	4125	7691	11816

* 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 – 03AL

	(CuYd)
Excavation	4125
Undercut	7691
Topsoil	1357
Exc. for Bridge Berm(s) between bridge abutments and channel shaping	551
Total	13724

TABLE OF EXCAVATION QUANTITIES BY BALANCES – 05V1

Station to	Station	Excavation (CuYd)	* Undercut (CuYd)	* Muck Exc. (CuYd)	* Contractor Furnished Borrow Exc. (CuYd)	Total Excavation (CuYd)	** Waste (CuYd)
752+00	763+50	2621	4592			7213	3249
Traffic	Diversion			2700	30433	33714	2700
	Totals:	2621	4592	2700	30433	40927	5949

* 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	2621
Undercut	4592
Topsoil	1552
Added Traffic Diversion Excavation	581
Exc. for Bridge Berm(s) between bridge abutments and channel shaping	3389
Total	12735

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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.

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.

The volume of in place Concrete Surfacing and Asphalt Surfacing removed will NOT be paid for as Unclassified Excavation.

The Excavation quantities from individual balances and the table above have been reduced by the volume of in place concrete pavement and asphalt pavement that will be removed.

UNDERCUTTING

In all cut sections the earthen subgrade will be undercut 2 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 2 feet in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 2 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

PCN 05V1

Station	to	Station
752+00		756+00
758+00		763+50

PCN 03AL

Station	to	Station
12+50		20+00
23+00		30+50

MUCK EXCAVATION – 05V1 – Div757

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 2700 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 – 05V1

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
4+50 (Div.)		8+00 (Div.)	L/R	3	2700
				Total:	2700

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.

INCIDENTAL WORK, GRADING – 05V1

Station		L/R	Remarks
753+76		L to R	Take Out 24”-175’ CMP
758+23		L	Take Out Drop Inlet
758+23		R	Take Out Drop Inlet
758+23	to 758+26	L to R	Take Out 12”-82’ CMP
758+23	to 758+20	L to R	Take Out 12” 79’ CMP

INCIDENTAL WORK, GRADING – 03AL

Approximately 1200’ west of the structure, the Contractor shall provide reshaping of the inslope of an erosion area at an existing pipe location on the north side of the highway. The needed embankment material is at the location and is to be shaped to match the adjacent roadway inslope. The inslope reshaping areas is estimated to be approximately 200’ X 20’. All costs for this inslope shaping will be incidental to the contract lump sum price for “Incidental Work, Grading”.

REMOVAL OF EXISTING CONCRETE PAVEMENT – 05V1 STA. 752+00 to STA. 763+50

Existing asphalt concrete and/or existing asphalt concrete patch work that was placed above the existing concrete pavement is included in the quantity for “Remove Concrete Pavement”. The Contractor will dispose of the concrete pavement and asphalt concrete at a site approved by the Engineer.

The existing 7-inch P.C.C. Pavement is typically 24 feet wide. This information is from original construction plans and actual pavement thickness may vary.

TABLE OF CONCRETE PAVEMENT REMOVAL – 05V1

Station	to	Station	Description	Quantity (SqYd)
752+00		763+50	Remove full width of pavement	2466.7
			Total:	2466.7

REMOVE ASPHALT CONCRETE PAVEMENT – 05V1

An estimated 1644.4 Square Yards of the in-place asphalt concrete surfacing will be removed from the existing highway shoulders and wasted as property of the Contractor.

The quantity of removed asphalt material is estimated from the in-place surfacing typical sections. This estimated quantity is not included in the unclassified excavation quantities.

TEMPORARY FENCE

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

TABLE OF FENCE QUANTITIES – 05V1

Station to Station		Side (L/R)	Right-of-Way Fence Type 2 (Ft)		Temporary Fence Type 1 (Ft)		Post Panels 2 Post Panel (Each)		Remove Fence (Ft)
US Highway 12 (PCN 05V1)									
754+47	760+69	R		622		641		3	1263
TOTALS (PCN 05TQ):				622		641		3	1263

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

TABLE OF GUARDRAIL – 05V1

Location	Remove Beam Guardrail (Ft)	Salvage 3 Cable Guardrail (Ft)	Salvage Beam Guardrail (Ft)	Type 1 MGS (Ft)	Type 1 Guardrail Transition (Each)	MGS MASH Flared End Terminal (Each)
Structure No. 07-001-346						
Begin Bridge Lt.	94.8			100	1	1
Begin Bridge Rt.	178.8			150	1	1
End Bridge Lt.	183.5			150	1	1
End Bridge Rt.	96.0			100	1	1
Totals:	553.1			500	4	4

TABLE OF GUARDRAIL – 03AL

Location	Remove 3 Cable Guardrail (Ft)	Remove 3 Cable Guardrail Anchor Assembly (Each)	Remove Beam Guardrail (Ft)	Salvage 3 Cable Guardrail (Ft)	Salvage Beam Guardrail (Ft)	Type 1 MGS (Ft)	Type 1 Guardrail Transition (Each)	MGS MASH Flared End Terminal (Each)
Structure No. 07-223-120								
Begin Bridge Lt.	174.8	2	401.3			25	1	1
Begin Bridge Rt.	175.5	2	404.3			25	1	1
End Bridge Lt.						25	1	1
End Bridge Rt.						25	1	1
Totals:	350.3	4	805.6			100	4	4

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TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking: Length (Mile)	Grade Staking: Lane Factor	Grade Staking: *Sets of Stakes	Grade Staking: **Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
PCN 05V1											
US 12 (2 Lanes AC)	752+00	763+50	2	920	0.175	1	1	0.175	0.175	0.175	
US 12 (Diversion)	0+00	10+22	2	1022	0.194	1	1	0.194	0.194	0.194	
US 12 Str. 07-001-346											1
							Totals:	0.369	0.369	0.369	1
PCN 03AL											
US 10 (2 Lanes AC)	12+26	30+56	2	1568	0.297	1	1	0.297	0.297	0.297	
US 10 Str. 07-223-120											1
							Totals:	0.297	0.297	0.297	1

* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)
2 = Blue Top and Paving Hub Stakes (PCC Pavement)

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

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL – 05V1

Station	to	Station	L/R	Quantity (SqYd)
752+00		763+50	L	822.2
752+00		763+50	R	822.2
			Total:	1644.4

REMOVE ASPHALT CONCRETE PAVEMENT – 03AL

An estimated 5066.7 Square Yards of the in-place asphalt concrete surfacing will be removed from the existing highway and wasted as property of the Contractor.

The quantity of removed asphalt material is estimated from the in-place surfacing typical sections. This estimated quantity is not included in the unclassified excavation quantities.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL – 03AL

Station	to	Station	L/R	Quantity (SqYd)
12+26		30+56	Mainline	5066.7
			Total:	5066.7

TABLE OF PIPE QUANTITIES

			Reinforced Concrete	
			Circular	Circular Flared Ends
			18"	18"
Station to	Station	Offset (L/R)	Ft	Each
Str. No. 07-001-346, PCN 05V1				
758+19	758+19	L/R	38	
758+19	758+19	R	34	1
		TOTAL (PCN 05V1):	72	1
Str. No. 07-223-120, PCN 03AL				
19+94	19+94	L/R	34	
19+94	19+94	R	54	1
22+82	22+82	L/R	34	
22+82	22+82	R	46	1
		TOTAL (PCN 03AL):	168	2

DROP INLETS

The plan shown quantities of the drop inlet components such as Class M6 Concrete, Reinforcing Steel, 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

PCN 05V1

Station	L / R	Drop Inlet Size	Drop Inlet Type	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Precast Drop Inlet Collar (Each)	Frame and Grate/Lid Type
758+19	L	2'x3'	B	1.07	196	1	A
758+19	R	2'x3'	B	1.67	281	1	A
			Totals:	2.74	477	2	

Total Type A Frame and Grate 2

PCN 03AL

Station	L / R	Drop Inlet Size	Drop Inlet Type	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Precast Drop Inlet Collar (Each)	Frame and Grate/Lid Type
19+94	L	2'x3'	B	1.13	198	1	A
19+94	R	2'x3'	B	1.57	256	1	A
22+82	L	2'x3'	B	1.14	199	1	A
22+82	R	2'x3'	B	1.75	279	1	A
			Totals:	5.59	932	4	

Total Type A Frame and Grate 4

TYPICAL GRADING SECTION

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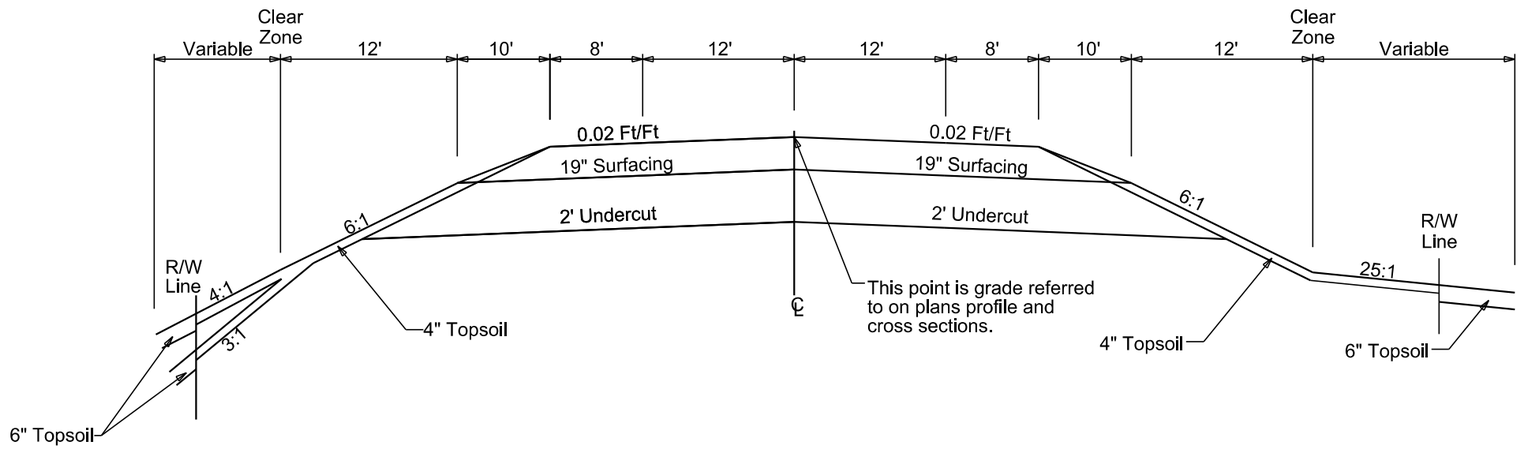
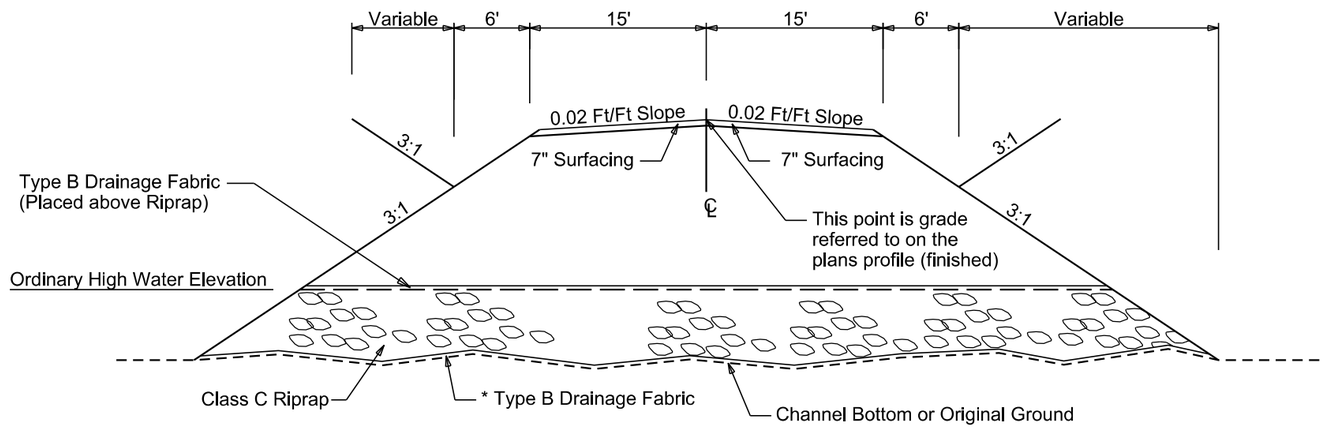
752+00 to 763+50



Traffic Diversion

Div757 -752+47.96 to 762+20.16 ML - 0+00 to 10+21.65 Diversion



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

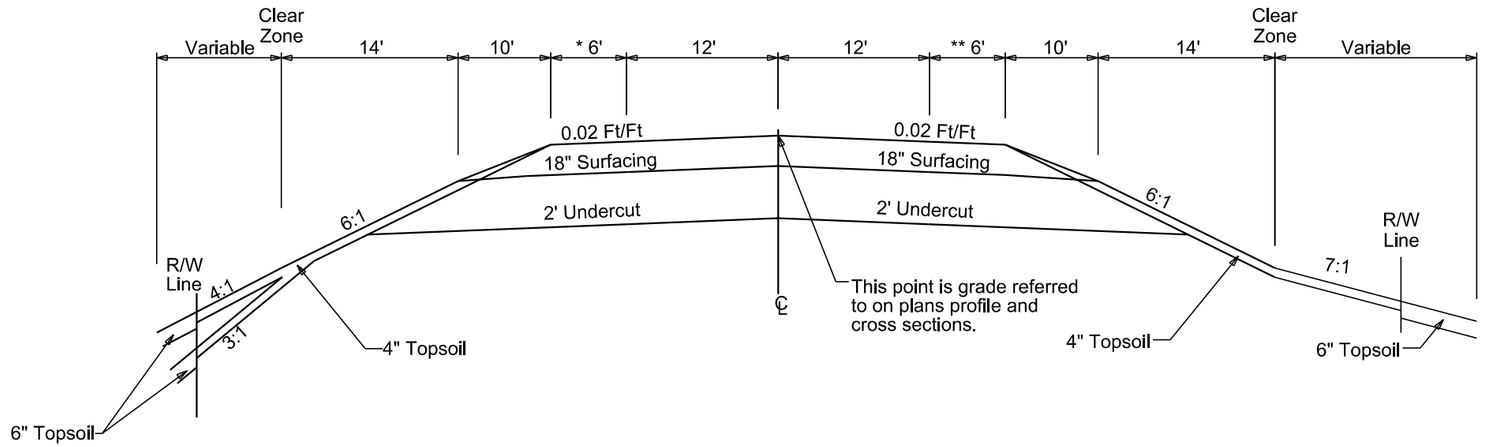
TYPICAL GRADING SECTION

Str. No. 07-223-120

12+26 to 30+56

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B10	37

Plotting Date: 02/28/2024



Transitions:

* 12+26 to 12+76 - 4' to 6'
30+06 to 30+56 - 6' to 4'

** 12+26 to 12+76 - 5' to 6'
30+06 to 30+56 - 6' to 5'

HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B11	37

Plotting Date: 02/28/2024

Str. No. 07-001-346

MAINLINE

Type	Station			Northing	Easting
PI	737+56.20			587400.432	2295187.756
		TL= 2576.26	N 69°03'46" E		
PC	763+32.47			588321.046	2297593.915
PI	775+06.14	R = 8594.37	Delta = 15°33'10" R	588740.452	2298690.095
PT	786+65.38			588850.587	2299858.590

Div757

Type	Station			Northing	Easting
PC	0+00.00			587933.505	2296581.020
PI	1+04.92	R = 400.00	Delta = 29°23'41" R	587970.997	2296679.010
PRC	2+05.21			587955.566	2296782.788
PI	3+13.68	R = 400.00	Delta = 30°20'40" L	587939.613	2296890.078
PT	4+17.06			587980.048	2296990.729
		TL= 187.54	N 69°03'46" E		
PC	6+04.60			588042.325	2297153.499
PI	7+13.07	R = 400.00	Delta = 30°20'40" L	588079.401	2297255.435
PRC	8+16.44			588162.896	2297324.676
PI	9+21.36	R = 400.00	Delta = 29°23'41" R	588243.657	2297391.649
PT	10+21.65			588281.149	2297489.640

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/2011); epoch 2010; Geoid 2012a; SF = 0.99989858

Str. No. 07-223-120

MAINLINE

Type	Station			Northing	Easting
POB	10+00.00			708221.701	2410130.040
		TL= 2287.70	N 88°59'28" E		
POE	32+87.70			708261.982	2412417.385

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/2011); epoch 2010.00; Geoid 2012a; SF = 0.99995838

Plot Scale - 1:200

Plotted From - TRRC11903

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CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B12	37

Plotting Date: 02/28/2024

HORIZONTAL AND VERTICAL CONTROL POINTS (Str. No. 07-001-346)						
POINT	**STATION**	**OFFSET**	**DESCRIPTION**	**NORTHING**	**EASTING**	**ELEVATION**
6006	Not On	Project	cap at dot	595223.927	2345088.709	1318.709
16006	Not On	Project		595223.955	2345088.738	1318.709
16007	Not On	Project		590062.214	2285824.177	1438.555
16008	Not On	Project		590062.216	2285824.157	1438.644
13	Not On	Project	usgs brass cap 12-278.02	587210.325	2294966.814	1423.335
14	Not On	Project	usgs brass cap 12-280.2	589630.888	2306544.375	1402.804
15	758+27.22	139.08’ R	5/8” x 5’ smooth bar	588010.602	2297171.724	1382.886
16	758+10.07	140.80’ L	5/8” x 5’ smooth bar	588265.878	2297055.701	1382.671
17	756+59.71	147.87’ L	5/8” x 5’ smooth bar	588218.747	2296912.744	1384.180
18	755+99.36	135.52’ R	5/8” x 5’ smooth bar	587932.497	2296957.639	1389.651

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone NAD 83(2011); epoch 2010.00; Geoid12A; SF = 0.99989858
The elevations shown on this sheet are based on NAVD 88.

HORIZONTAL AND VERTICAL CONTROL POINTS (Str. No. 074-223-120)						
POINT	**STATION**	**OFFSET**	**DESCRIPTION**	**NORTHING**	**EASTING**	**ELEVATION**
1	Not On	Project	harn 281 209.74	667765.710	2347557.930	1372.720
PRS470642632635	Not On	Project		596379.108	2375548.020	1332.301
150	Not On	Project		667765.733	2347557.902	1372.720
151	Not On	Project	Gin spike	708252.248	2413598.029	1296.487
152	23+42.32	26.28’ L	5' smooth bar	708271.613	2411471.692	1294.039
PRS53128867808	Not On	Project		794439.396	2343833.864	1485.660
153	20+00.75	42.13’ R	5' smooth bar	708197.196	2411131.380	1292.667

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone NAD 83(2011); epoch 2010; Geoid12A; SF = 0.99995838
The elevations shown on this sheet are based on NAVD 88.

LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B13	37

Plotting Date: 02/28/2024

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Commercial Sign Double Face
- Commercial Sign One Post
- Commercial Sign Overhead
- Commercial Sign Two Post
- 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
- Guide Sign One Post
- Guide Sign Two Post
- Gutter
- Guy Pole
- Haystack
- Hedge
- 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
- Regulatory Sign One Post
- Regulatory Sign Two Post
- 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 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 —
- Warning Sign One Post
- Warning Sign Two Post
- 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 - TRRC11903

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B14	37

Plotting Date: 02/28/2024

753+76
Take Out 24"-175' CMP
(Incidental Work, Grading)

Remove Guardrail
at Following Locations:
754+82 to 756+67 R
755+69 to 756+67 L
758+04 to 759+02 R
758+04 to 759+89 L

756+63.24 to 758+08.05
Take Out Bridge
(Incidental Work, Structure)

756+17.34 to 758+05.34
Install 189'-0" Prestressed Girder Bridge
DA = 344 sq mi
(See Section E)

Take Out Drop Inlet
at the following locations:
(Incidental Work Grading)
758+23 L
758+23 R

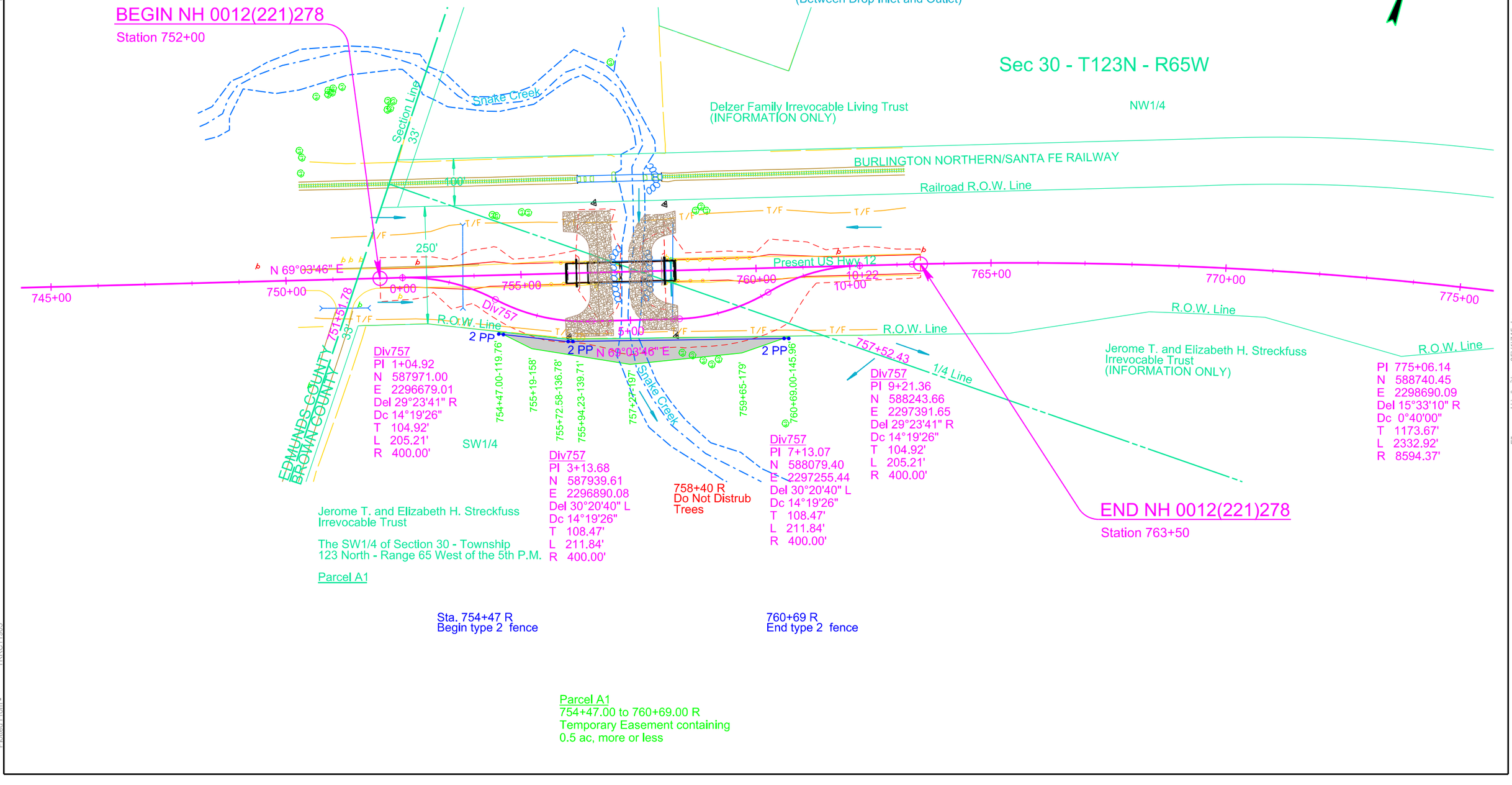
758+19.09-19.48' L to 19.48' R
Install 18"-38' RCP
(Between Drop Inlets)

758+19.09-19.48' R to 55' R
Install 18"-34' RCP
& 1 Safety End
(Between Drop Inlet and Outlet)

758+23-21' L to 758+26-103' L
Take Out 12"-82' CMP
(Incidental Work, Grading)

758+23-21' R to 758+20-100' R
Take Out 12"-79' CMP
(Incidental Work, Grading)

Install 2'x3' Type B Drop Inlet
with 6" Conc Collar
& Type A Frame and Grate
at the following locations:
758+19.09-19.48' L
758+19.09-19.48' R



Plot Scale - 1:200

Plotted From - TRRC11903

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B15	37

Plotting Date: 02/28/2024

752+00
Begin Grading

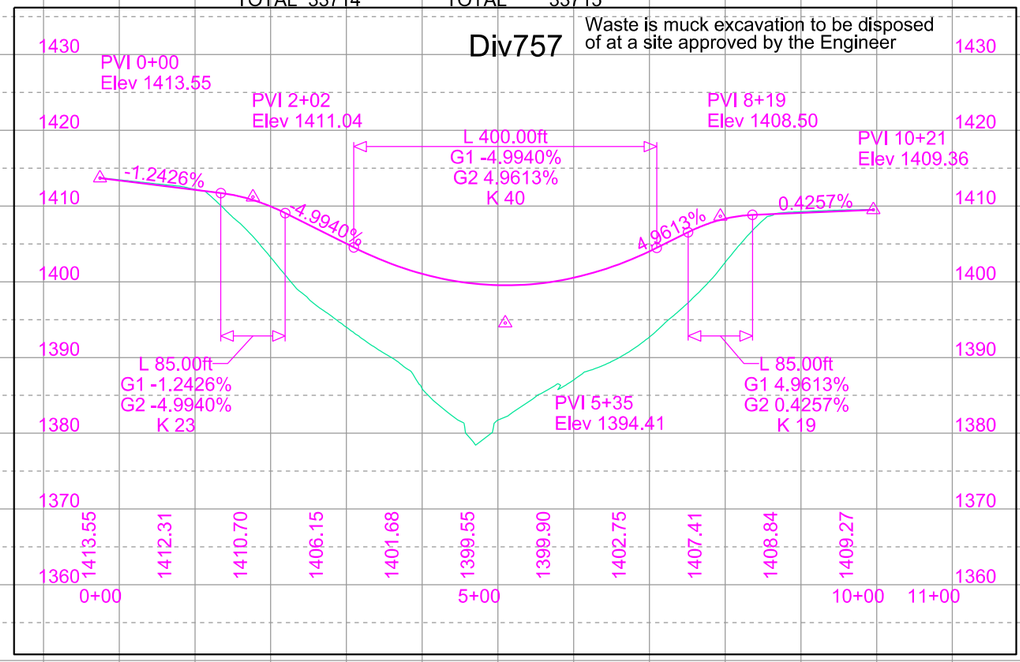
Excavation	2621	Embankment	854		
Undercut	4592	+35%	299	1153	
Borrow	139	Undercut	4592		
TOTAL	7352	+35%	1607	6199	
		TOTAL		7352	

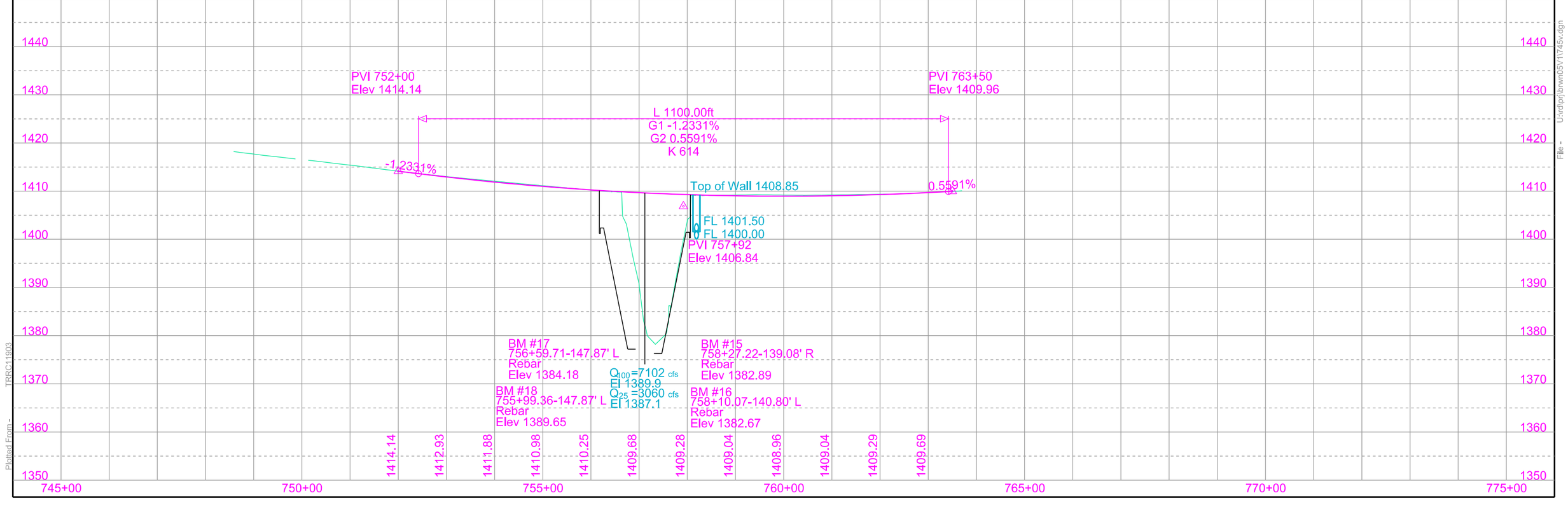
Bridge Berm Excavation (3389 CuYd)
NOT included in quantities

763+50
End Grading

Excavation	581	Embankment	22974		
Muck	2700	+35%	8041	31015	
Borrow	30433	Waste	2700		
TOTAL	33714	TOTAL	33715		

Waste is muck excavation to be disposed of at a site approved by the Engineer





Plot Scale - 1:200
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B16	37

Plotting Date: 02/28/2024 Revised 08/23/23 NAS

Remove Guardrail
at Following Locations:
18+28 to 23+42 R
19+38 to 24+51 L

19+94.32-17.48' L to 17.48' R
Install 18"-34' RCP
(Between Drop Inlets)

19+94.32-17.48' R to 72' R
Install 18"-54' RCP
& 1 Flared End
(Between Drop Inlet and Outlet)

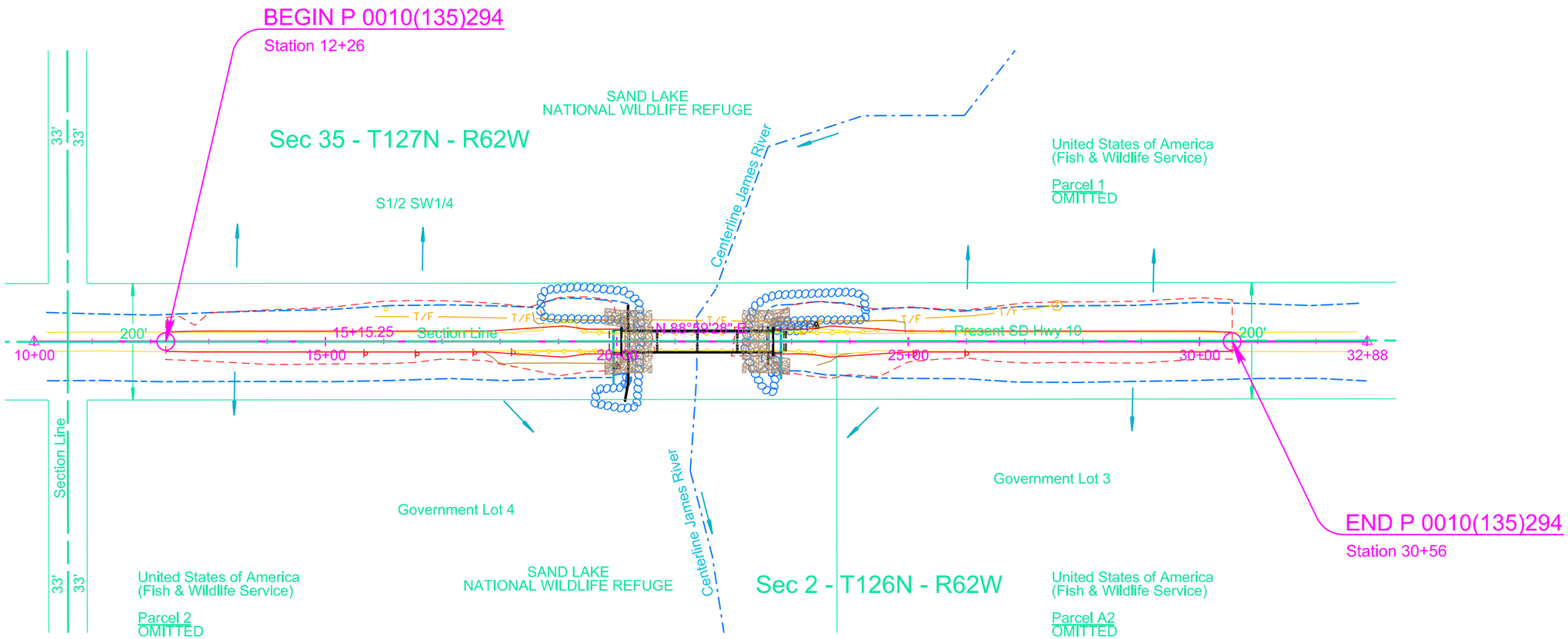
20+18.84 to 22+60.84
Take Out 242' Bridge
(Incidental Work, Structure)

20+07.07 to 22+69.07
Install 262'-0" Steel Girder Bridge
DA = 5501 sq mi
(See Section E)

22+81.82-17.48' L to 17.48' R
Install 18"-34' RCP
(Between Drop Inlets)

22+81.82-17.48' R to 65' R
Install 18"-46' RCP
& 1 Flared End
(Between Drop Inlet and Outlet)

Install 2'x3' Type B Drop Inlet
with 6" Conc Collar
& Type A Frame and Grate
at the following locations:
19+94.32-17.48' L
19+94.32-17.48' R
22+81.82-17.48' L
22+81.82-17.48' R



Plot Scale - 1:200
Plotted From - TRRC11903
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B17	37

Plotting Date: 02/28/2024 Revised 02/28/2024 DRG

Plot Scale - 1:200

12+26
Begin Grading

Excavation	4125	Embankment	960	
Undercut	7691	+40%	384	1344
Borrow	295	Undercut		7691
TOTAL	12111	+40%	3076	10767
		TOTAL		12111

Bridge Berm Excavation (551 CuYd)
NOT included in quantities

30+56
End Grading

PVI 12+26
Elev 1297.32

L 600.00ft
G1 -0.3257%
G2 0.3929%
K 835

PVI 21+41
Elev 1298.40

L 600.00ft
G1 -0.3929%
G2 0.2657%
K 911

PVI 30+56
Elev 1297.11

-0.3257%

Top of Wall 1297.47
0.3929%
FL 1291.00
FL 1290.62

Top of Wall 1297.50
-0.3929%
FL 1290.25
FL 1290.00

0.2657%

PVI 15+76
Elev 1296.18

PVI 27+06
Elev 1296.18

L 250.00ft
G1 0.3929%
G2 -0.3929%
K 318

Q_{100}=6440 cfs
EI 1294.4
Q_{25} =4130 cfs
EI 1293.1

BM #153
20+00.75-42.13' R
Rebar
Elev 1292.67

BM #152
23+42.3-26.28' L
Rebar
Elev 1294.04

1297.08 1296.85 1296.73 1296.73 1296.85 1297.09 1297.45 1297.85 1298.13 1298.10 1297.78 1297.38 1297.04 1296.80 1296.68 1296.66 1296.76 1296.96

1405 1400 1390 1380 1370 1360 1350 1340 1330 1320 1310 1300 1290 1280 1270 1260 1250 1240 1230 1220

10+00 15+00 20+00 25+00 30+00 33+00

Plotted From - TRRC11903

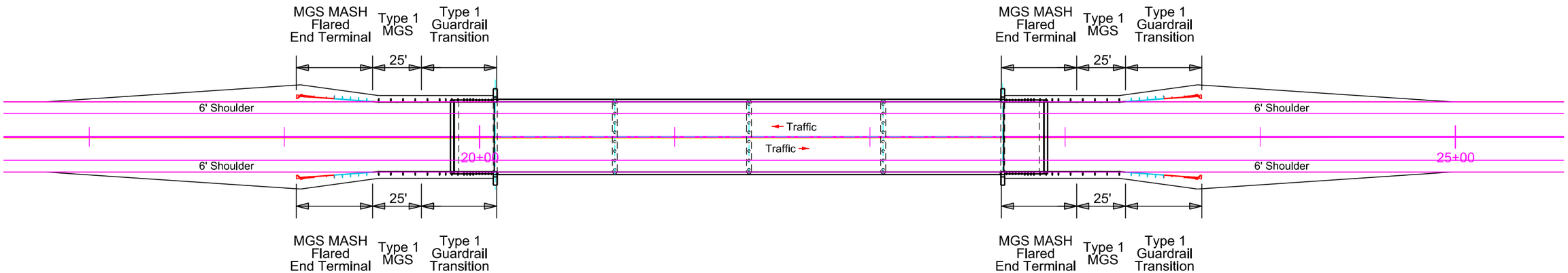
File - U:\rdr\pr\brwn05\V1101ov.dgn

GUARDRAIL LAYOUT

Str. No. 07-223-120

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B18	37

Plotting Date: 02/28/2024



Plot Scale - 1:52.8

Plotted From - TRRC11903

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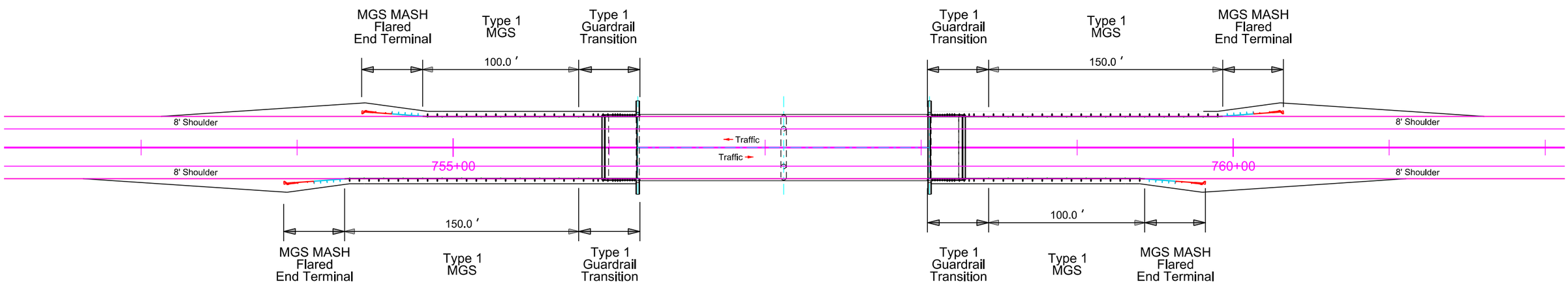
GUARDRAIL LAYOUT

Str. No. 07-001-346

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B19	37

Plotting Date: 02/28/2024



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Plotted From - TRRC11903

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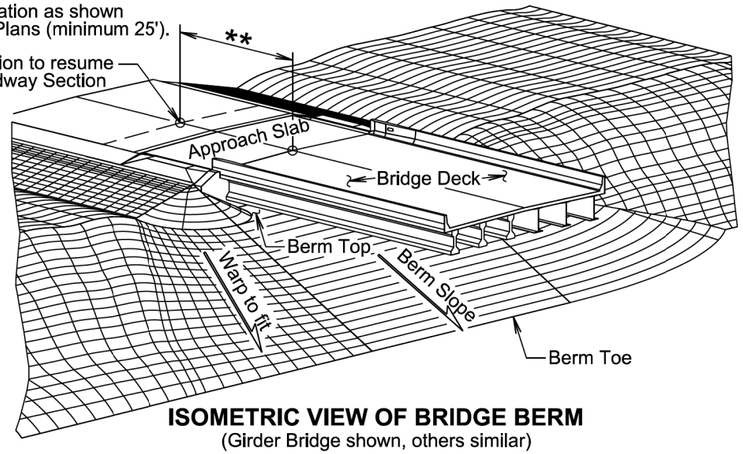
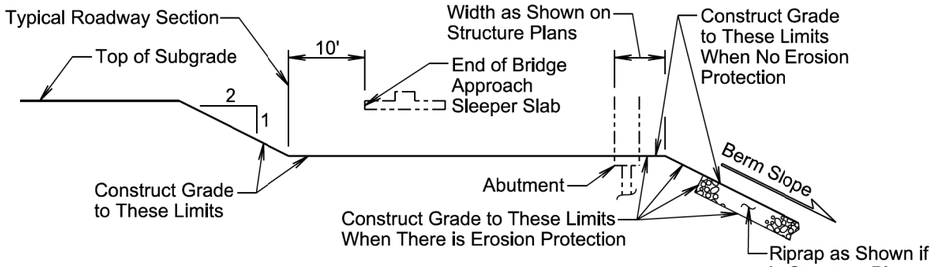
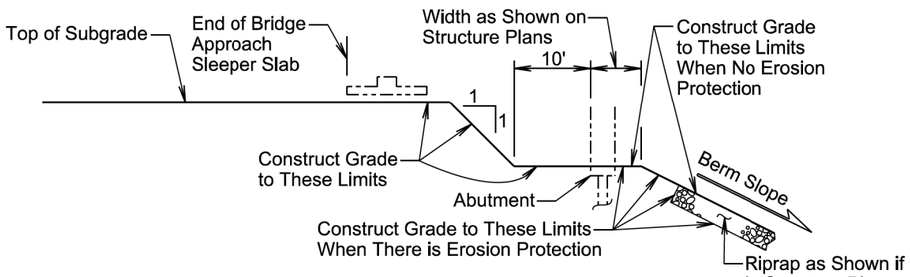


ISOMETRIC VIEW OF BRIDGE BERM
(Girder Bridge shown, others similar)



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



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

GENERAL NOTES:

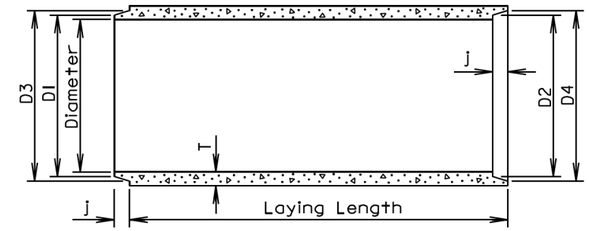
The bridge berm elevation and slope will be as shown in the Structure Plans.
See Structure Plans to determine which grading profile to use.

January 22, 2021

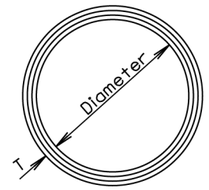
Published Date: 2024	SDDOT	BRIDGE BERM (NONPROJECTING EMBANKMENT)	PLATE NUMBER 120.10
			Sheet 1 of 1

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



END VIEW

GENERAL NOTES:

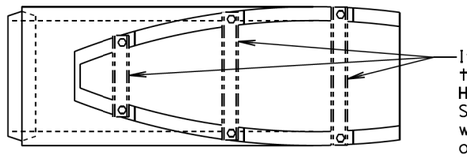
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

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.

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 1/8	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

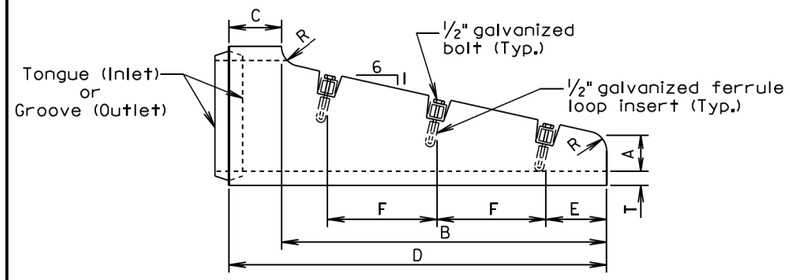
June 26, 2015

Published Date: 2024	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1

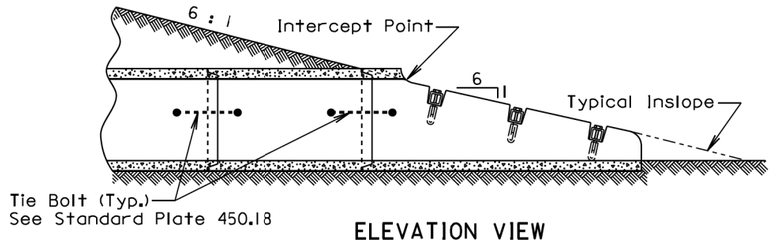


If bars are specified in the plans then provide HSS 2.5X2.5X.1875 Structural Steel Tubing in conformance with ASTM A500, Grade B or 3" Diameter Schedule 40 Pipe in conformance with ASTM A53, Grade B.

TOP VIEW



SIDE VIEW



ELEVATION VIEW

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.

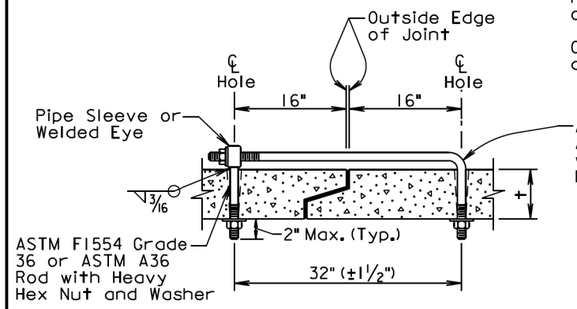
Safety ends without bars are acceptable with or without the bar notches.

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

August 31, 2013

Published Date: 2024	SDDOT	R. C. P. SAFETY ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.12
			Sheet 1 of 1

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3 1/4	5/8	3/4
3 1/2-6 1/2	3/4	1
≥ 7	1	1 1/4



ADJUSTABLE EYE BOLT TIE

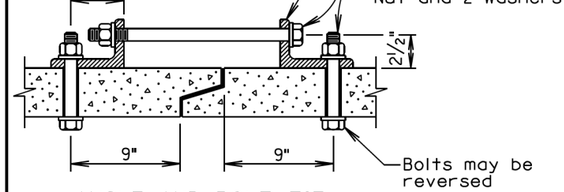
GENERAL NOTES:

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

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

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

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1



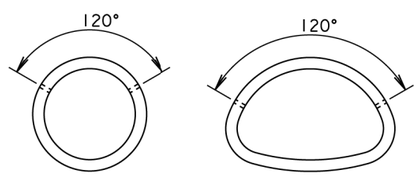
ANGLE AND BOLT TIE

GENERAL NOTES:

Angles shall conform to ASTM A36.

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

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



END VIEW "CIRCULAR"

END VIEW "ARCH"

GENERAL NOTES:

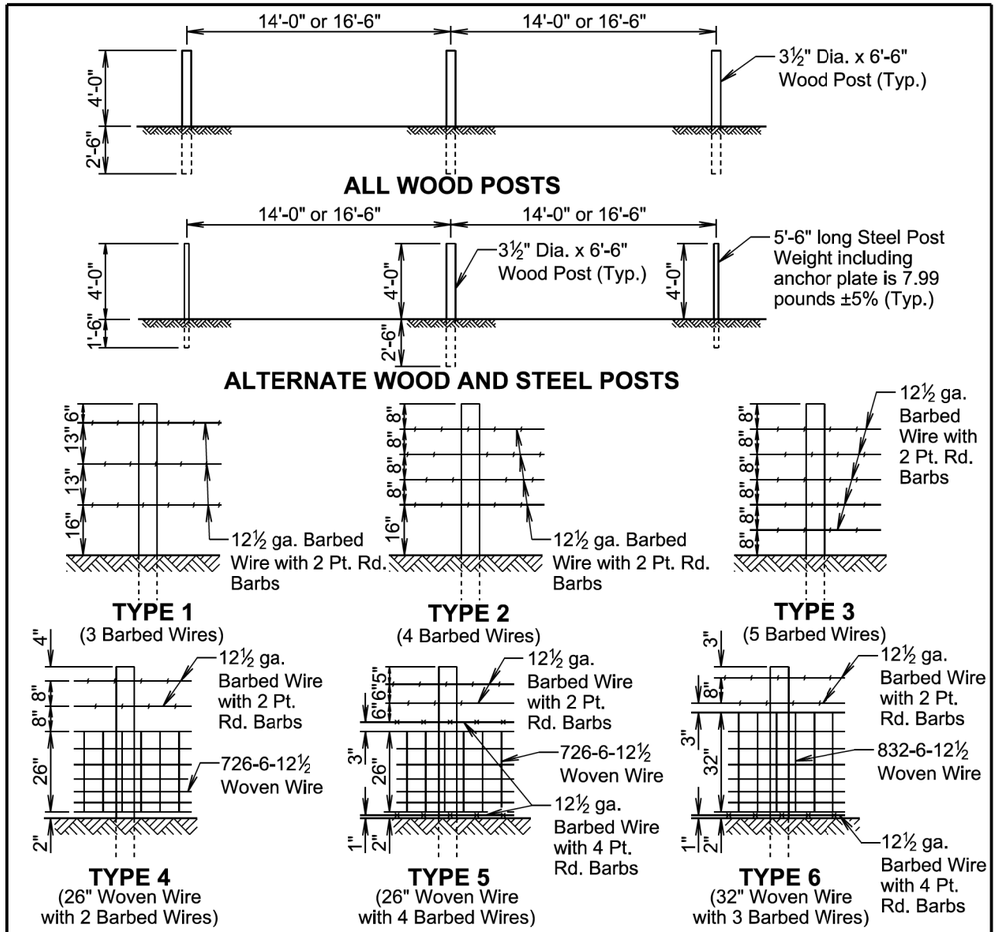
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch shall 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, manhole, and junction boxes shall 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 shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.

February 28, 2013

Published Date: 2024	SDDOT	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1



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:

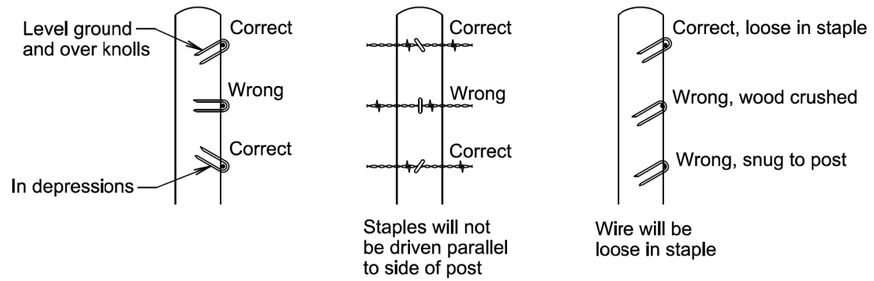
Fence types designated on the plans that are followed by the letter S will have smooth (barbless) wires.

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

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

June 26, 2019

Published Date: 2024	SDDOT	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
			Sheet 1 of 1



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.

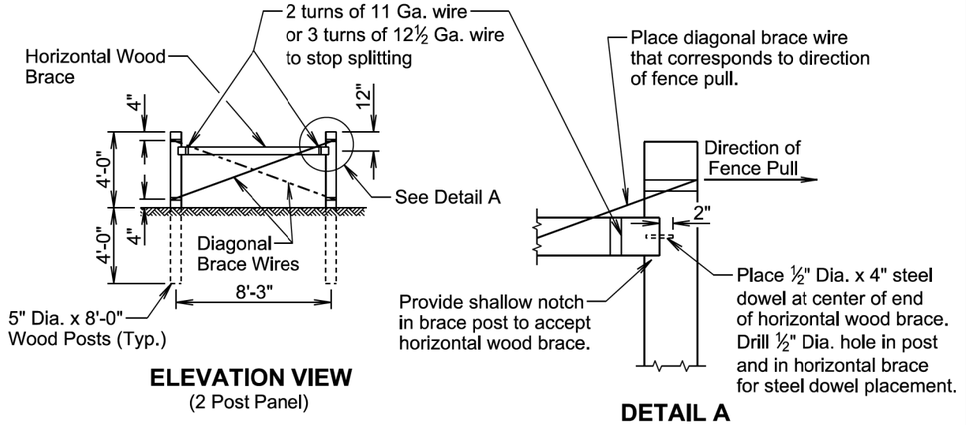
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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.

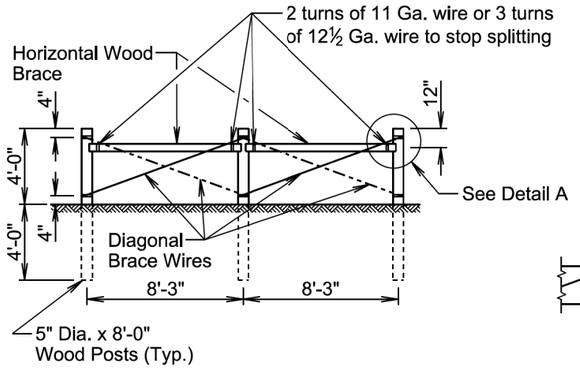
June 26, 2019

Published Date: 2024	SDDOT	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02
			Sheet 1 of 1

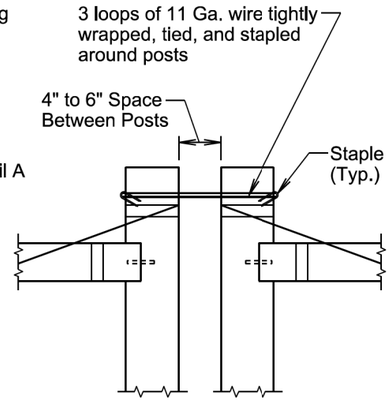


ELEVATION VIEW
(2 Post Panel)

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.

January 22, 2023

Published Date: 2024	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 1 of 3

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.

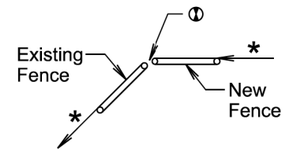
① See Detail B on Sheet 1 of 3.

GENERAL NOTE:

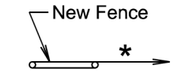
All degrees of curvature stated for fence are at centerline of roadway.

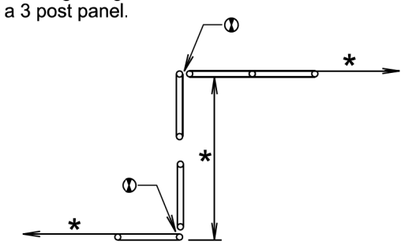
If fence length is less than 600' to next corner use a 2 post panel.

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

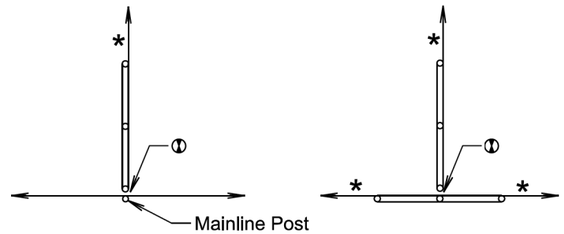


BEGIN OR END FENCE
(Where new fence ties into existing fence)

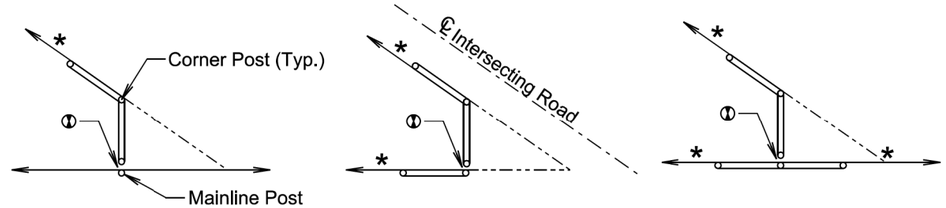




SHORT JOGS IN FENCE



CROSS FENCE



SHARP ANGLES IN CROSS FENCE

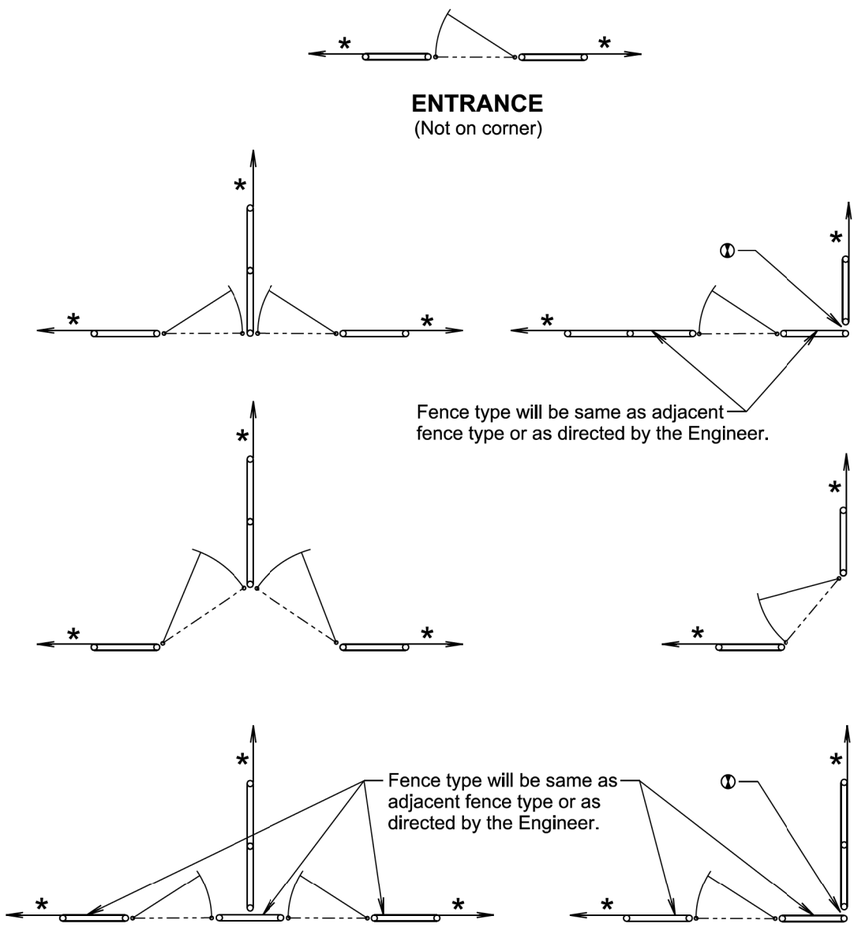
Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

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

ANGLES IN MAINLINE FENCE

January 22, 2023

Published Date: 2024	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3



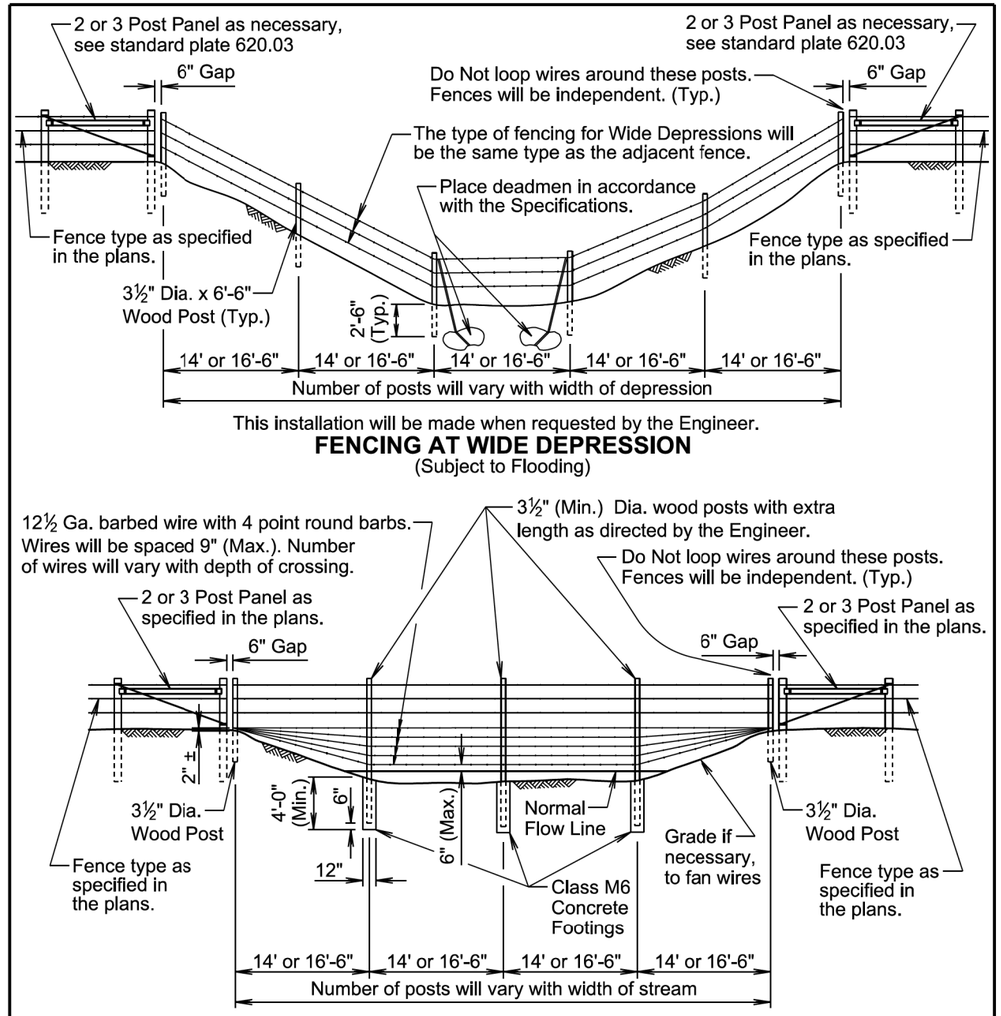
GATES

* 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.

January 22, 2023

Published Date: 2024	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 3 of 3



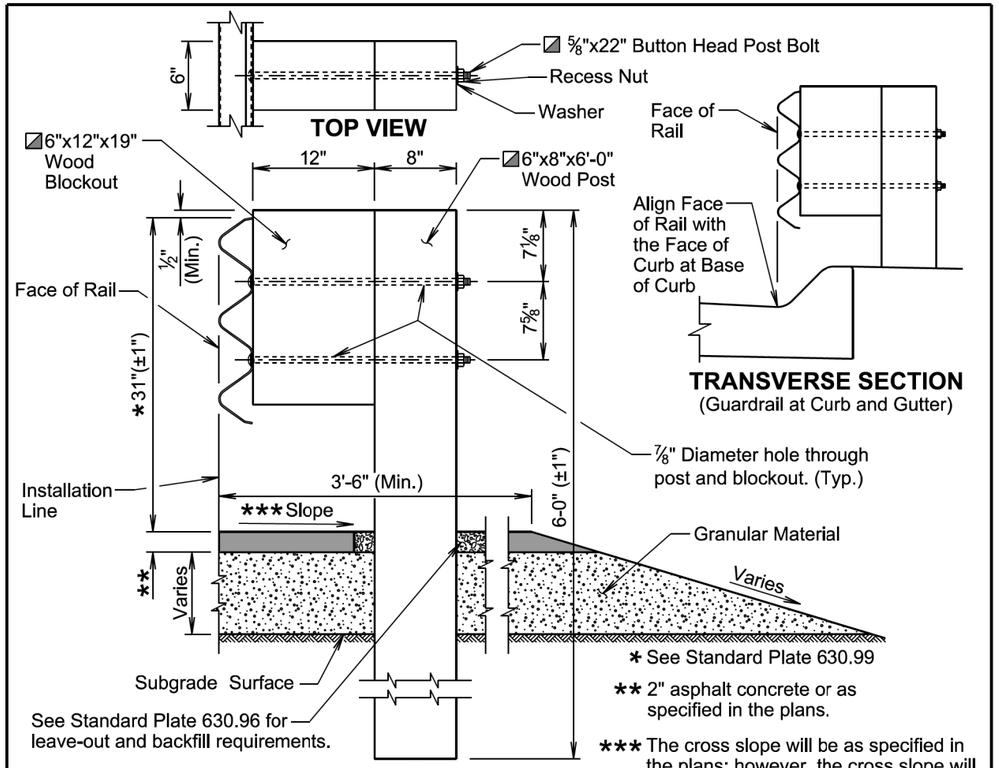
GENERAL NOTES:

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: 2024	SDDOT	FENCING AT WIDE DEPRESSION(S) AND STREAM CROSSING(S)	PLATE NUMBER 620.10
			Sheet 1 of 1



GENERAL NOTES:

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

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

Topsoil is not shown in the transverse section drawing.

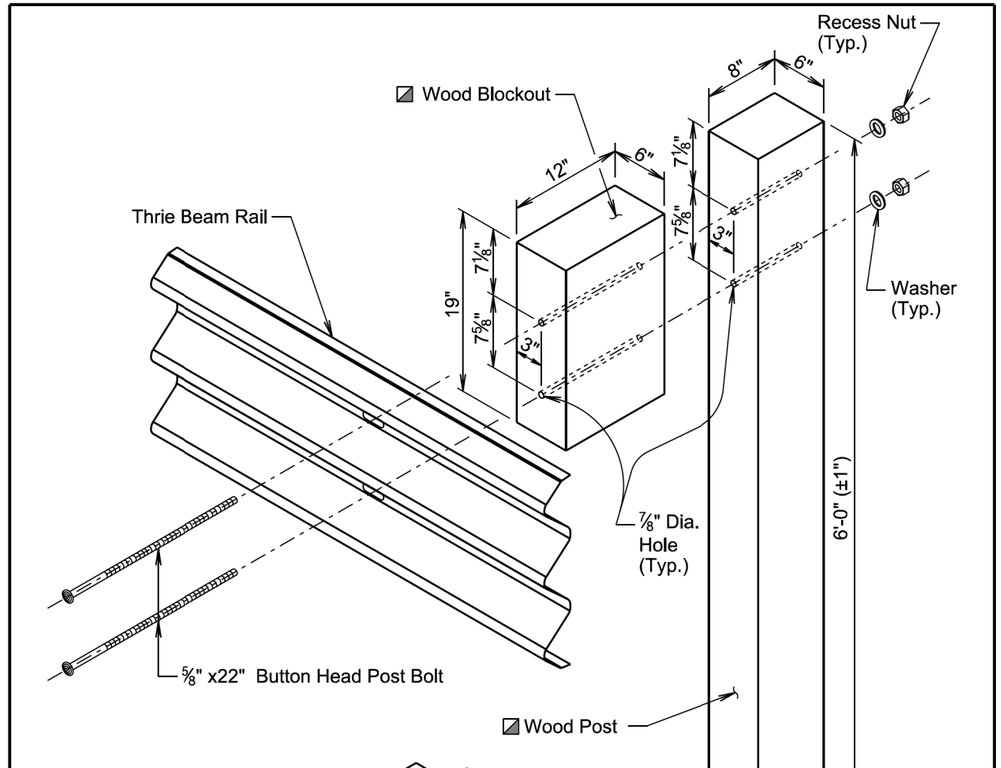
⧄ The post and blockout illustrated above is typical for single thrie beam guardrail. When other variations of posts and blockouts are specified on other standard plates (e.g. transitions) then the posts and blockouts will be as specified on the other standard plates or as specified in the plans.

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

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

September 14, 2019

Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 1 of 5



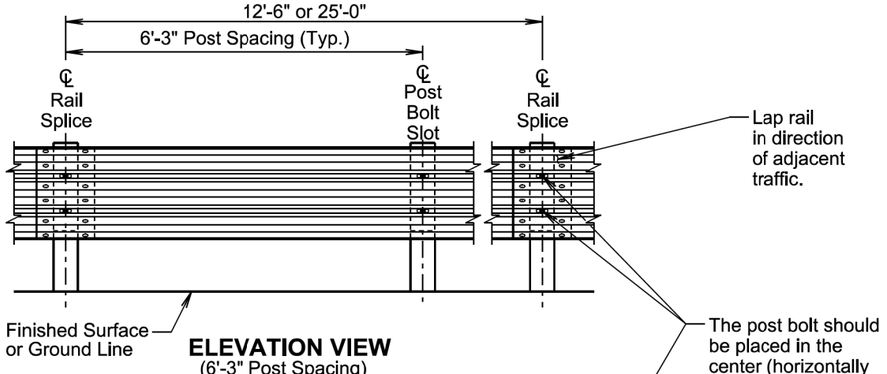
EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

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

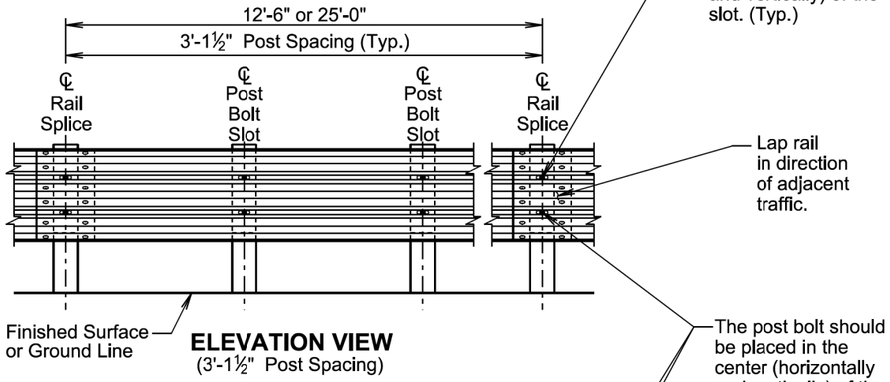
⧄ For single thrie beam guardrail use 6"x12"x19" wood blockout, ⅝"x22" button head post bolt, and 6"x8"x6'-0" wood post. For double (nested) thrie beam guardrail use 6"x8"x19" wood blockout, ⅝"x18" button head post bolt, and 6"x8"x7'-0" wood post.

September 14, 2019

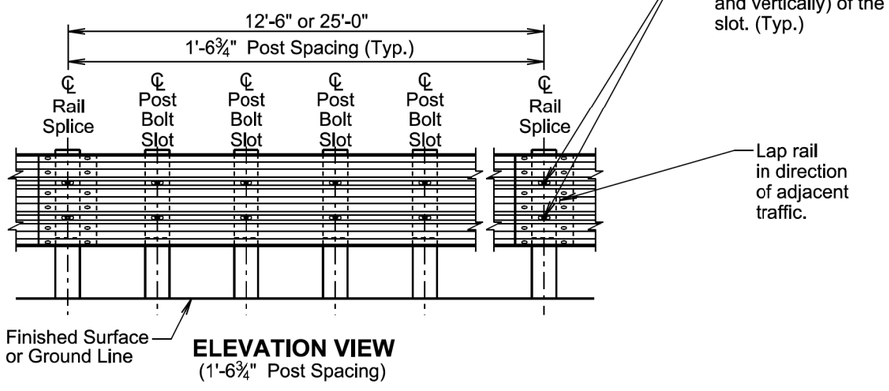
Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 2 of 5



ELEVATION VIEW
(6'-3" Post Spacing)



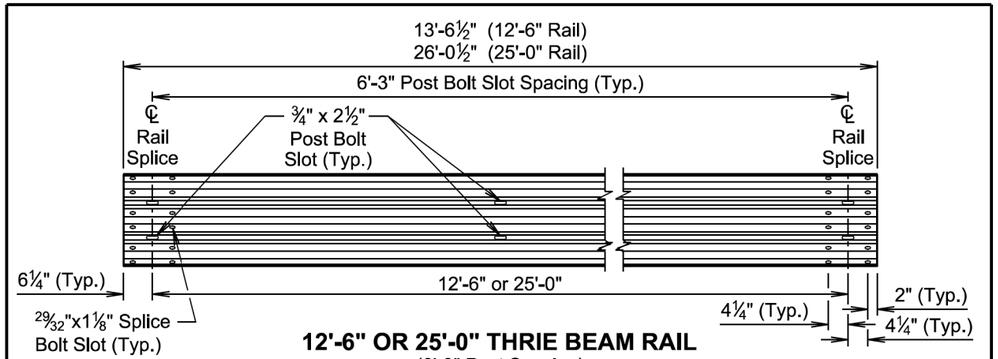
ELEVATION VIEW
(3'-1½" Post Spacing)



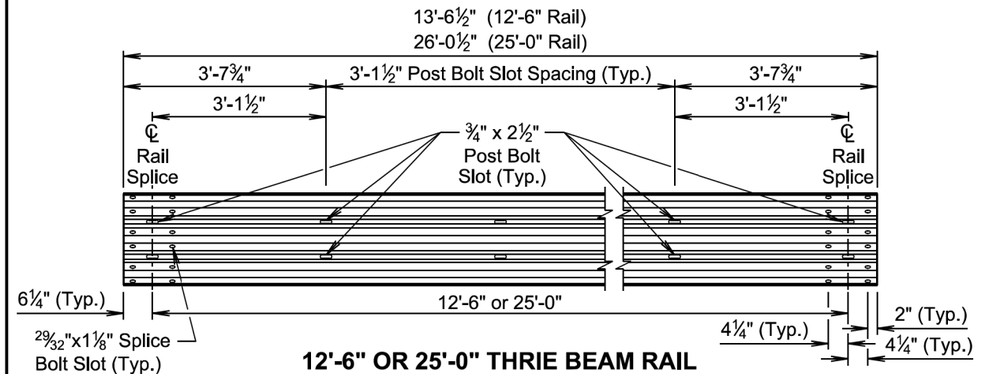
ELEVATION VIEW
(1'-6¾" Post Spacing)

September 14, 2019

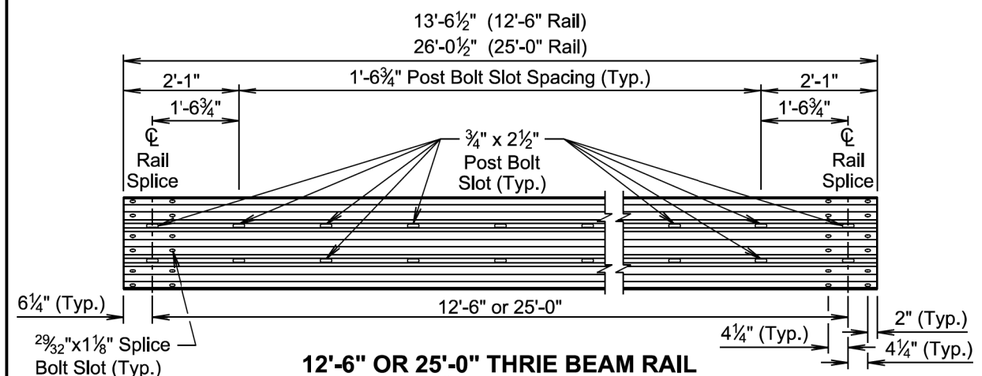
Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 3 of 5



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



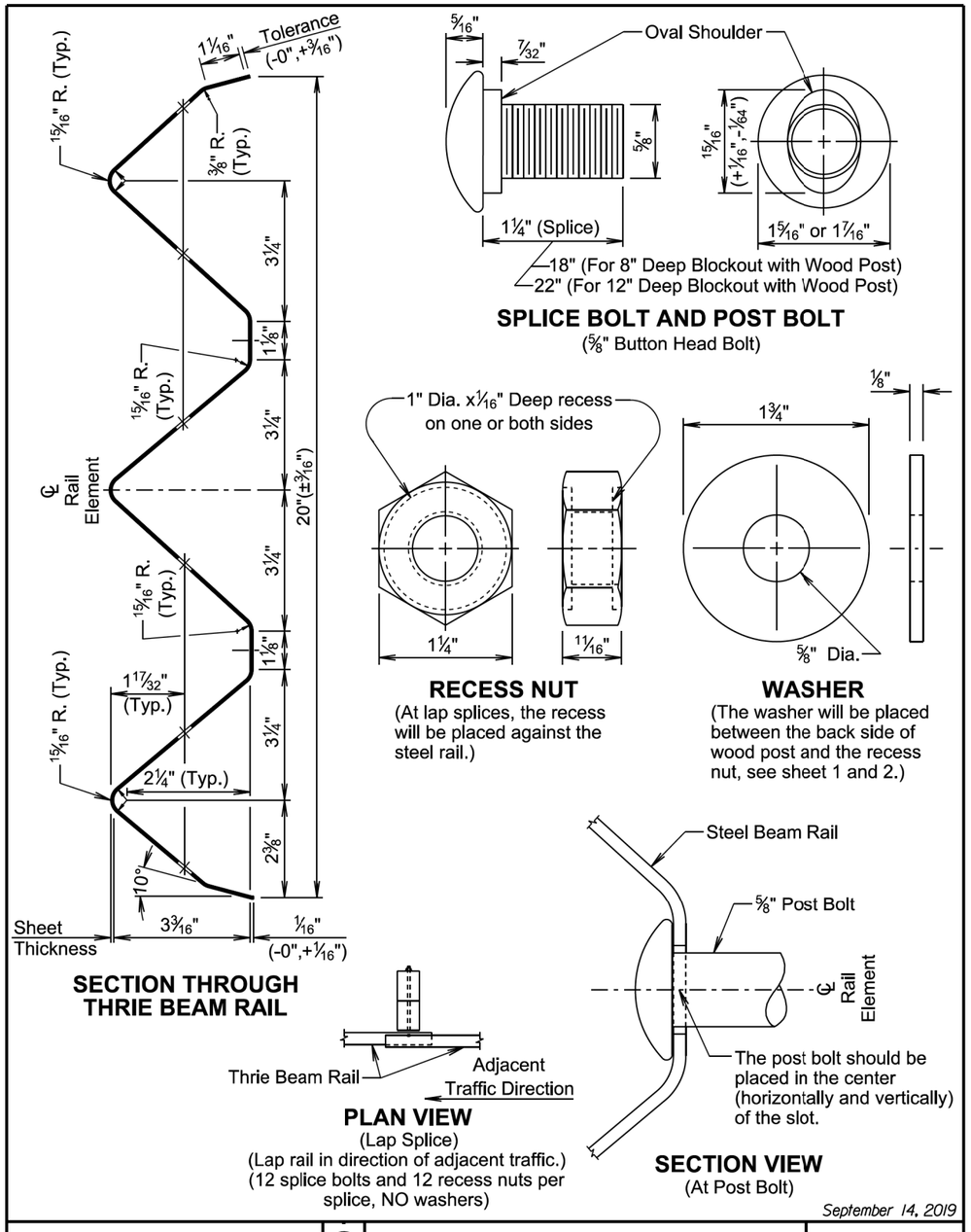
12'-6" OR 25'-0" THRIE BEAM RAIL
(3'-1½" Post Spacing)



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

September 14, 2019

Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 4 of 5



September 14, 2019

Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 5 of 5

TYPE AND DETAILS OF MGS

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

STANDARD PLATE REFERENCE

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

GENERAL NOTES:

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

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

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

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

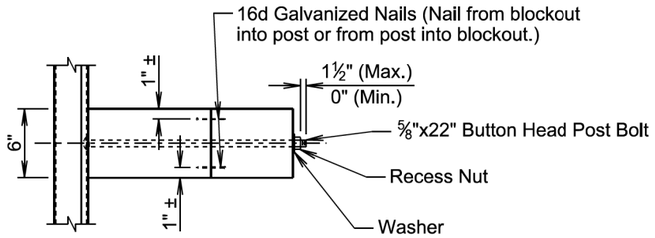
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

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

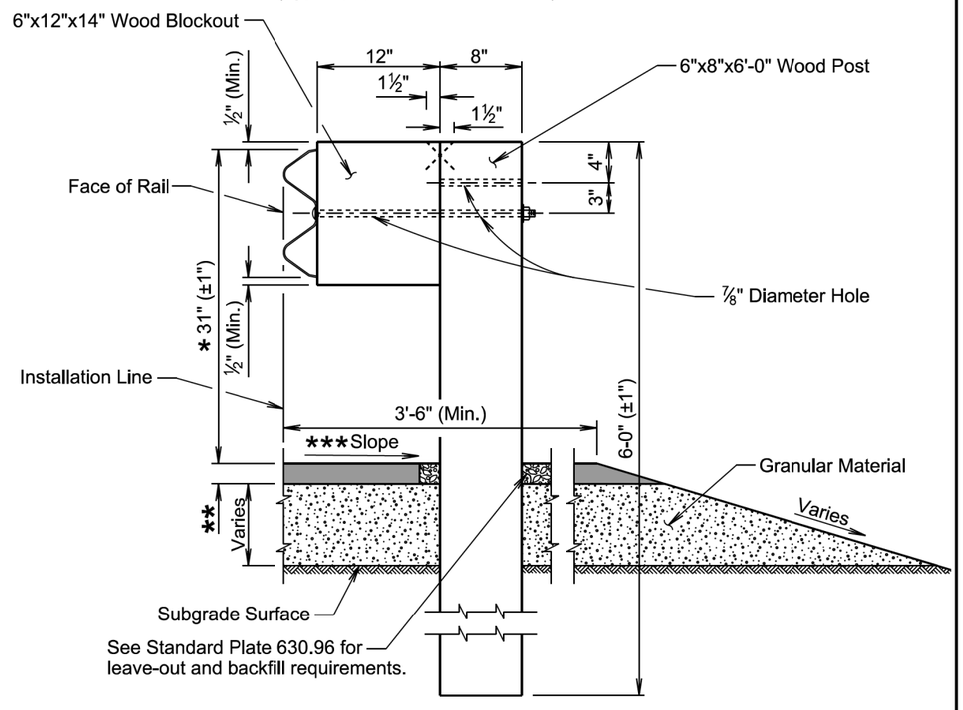
All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20 Sheet 1 of 6



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



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

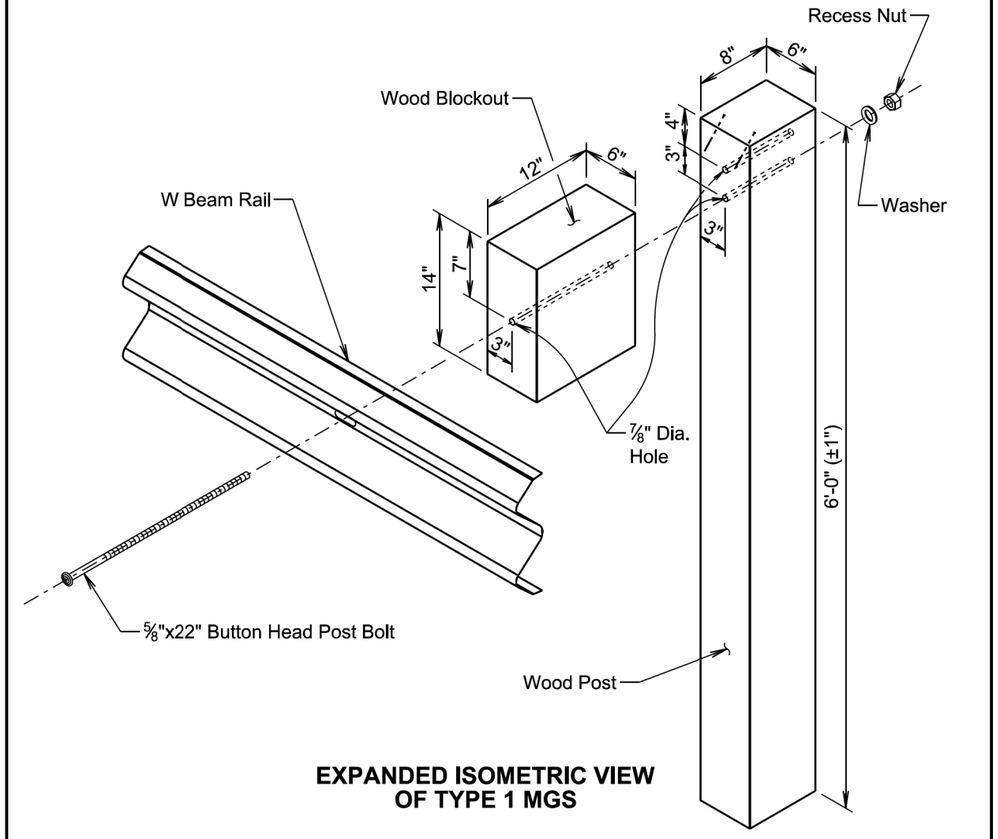
* See Standard Plate 630.99

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

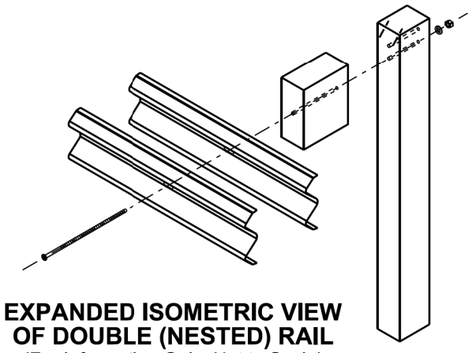
*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 2 of 6



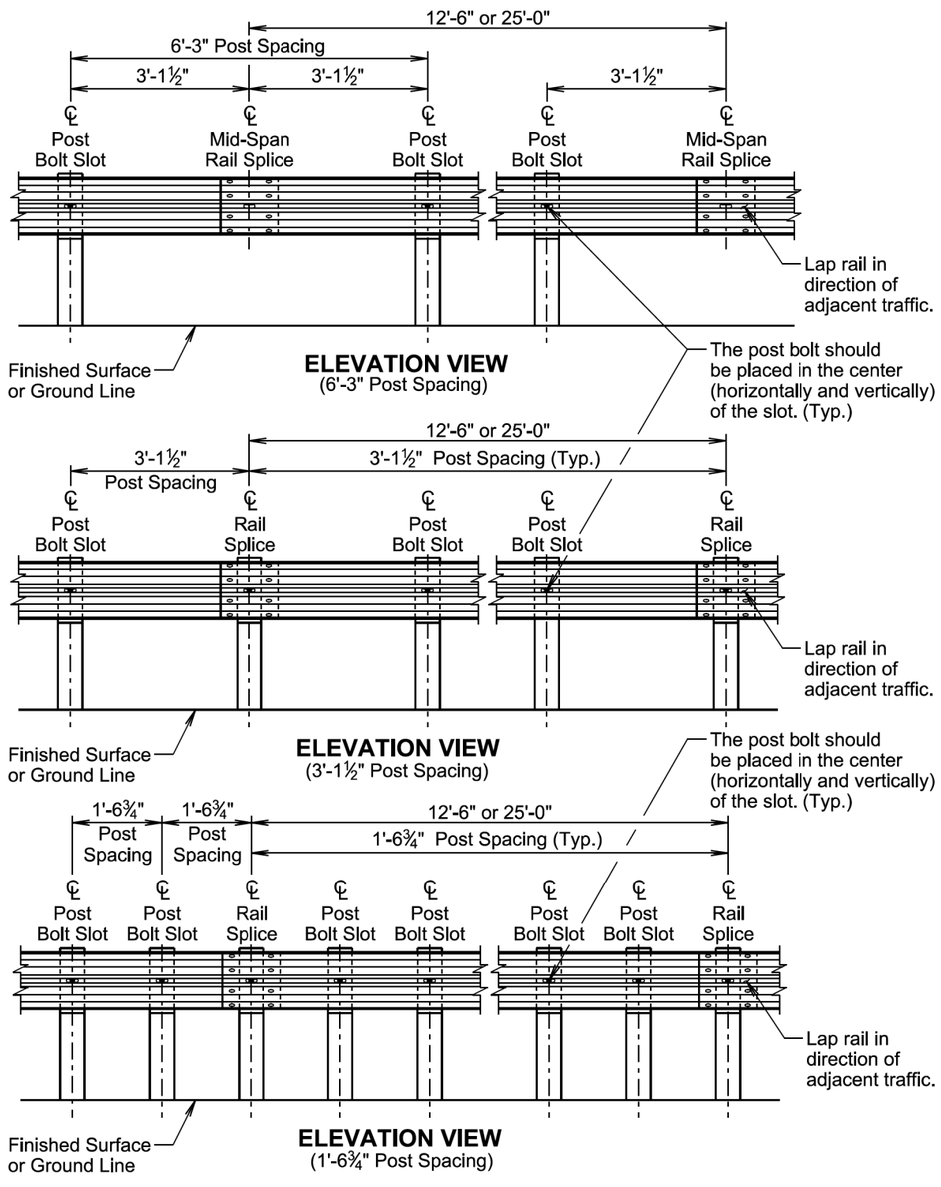
EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS



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

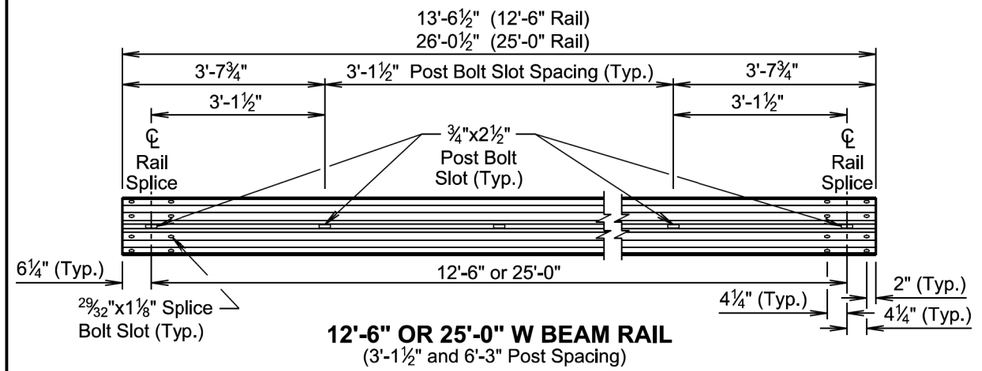
September 14, 2019

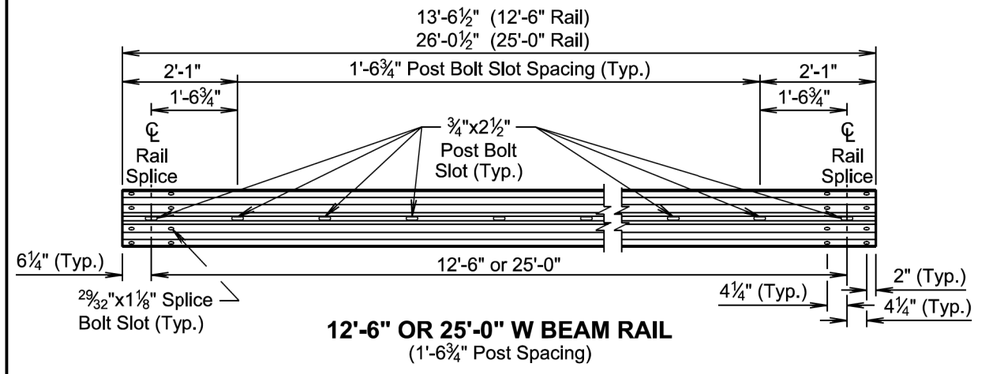
Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 3 of 6



September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 4 of 6



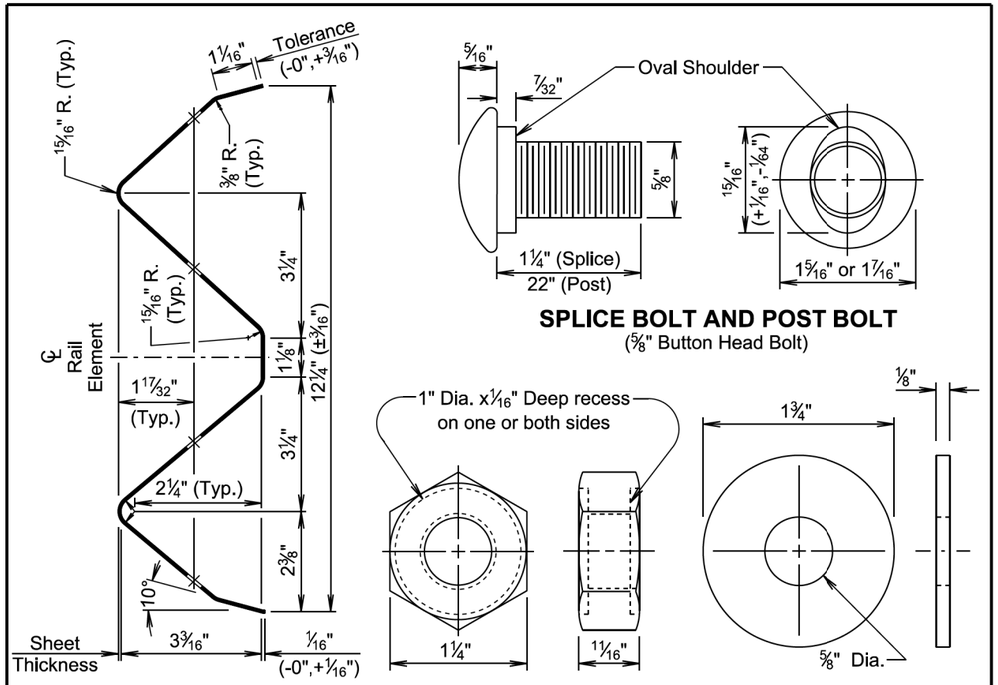


September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B30	37

Plotting Date: 02/28/2024

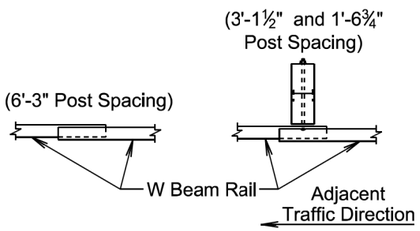


SECTION THROUGH W BEAM RAIL

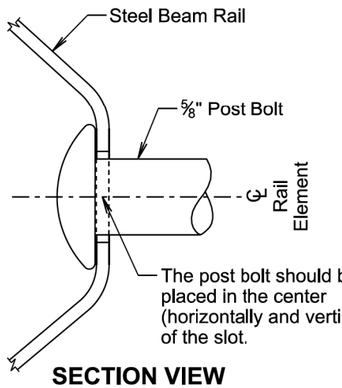
SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)

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.)



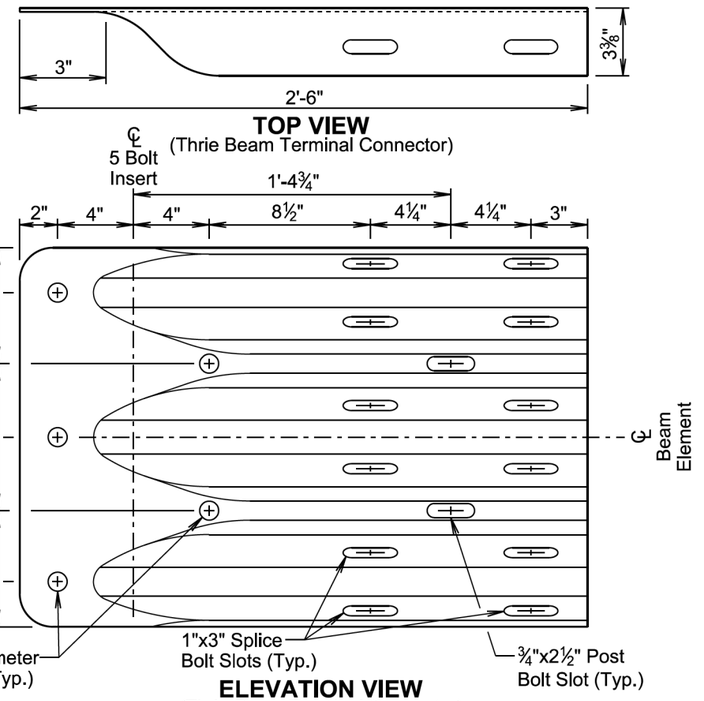
PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

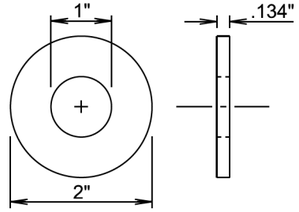
September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6

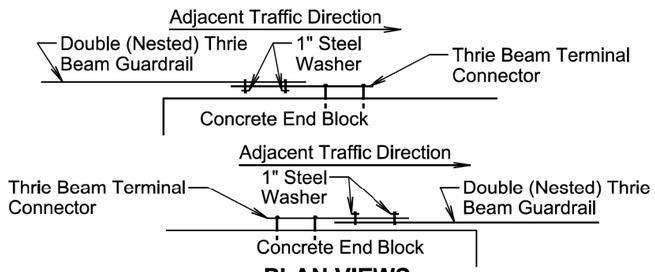


TOP VIEW
(Thrie Beam Terminal Connector)

ELEVATION VIEW
(Thrie Beam Terminal Connector)



1" STEEL WASHER
(12 washers required)



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

GENERAL NOTES:

Thrie Beam Terminal Connectors will be 10 gauge.

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

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

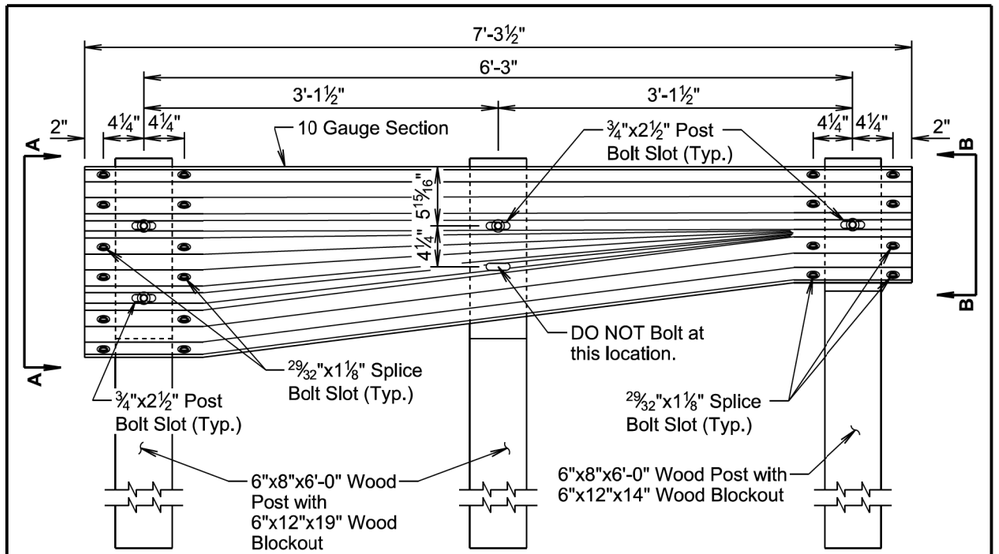
September 14, 2019

Published Date: 2024	SDDOT	THRIE BEAM TERMINAL CONNECTOR	PLATE NUMBER 630.47
			Sheet 1 of 1

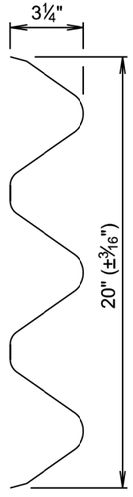
Plot Scale - 1:200

Plotted From - TRRC11903

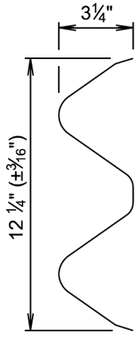
File - ...\StdPlateSection05V1.dgn



ELEVATION VIEW



VIEW A-A



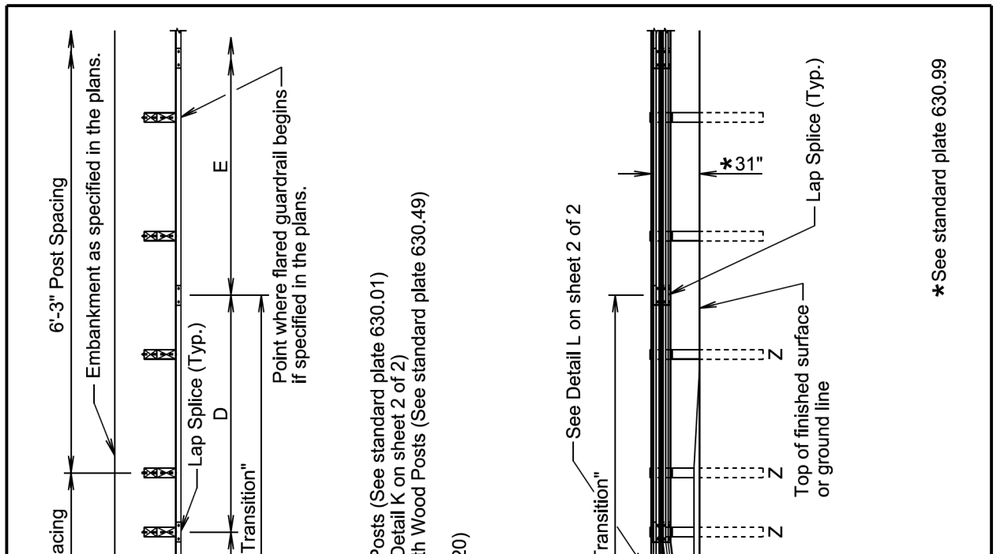
VIEW B-B

GENERAL NOTES:

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

September 14, 2019

Published Date: 2024	SDDOT	**ASYMMETRICAL W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION**	PLATE NUMBER 630.49 Sheet 1 of 1



PLAN VIEW
(Curb Not Shown)

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

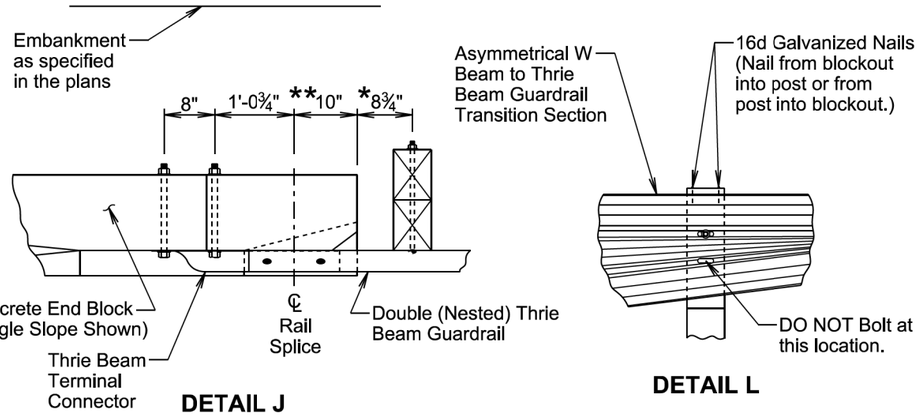
ELEVATION VIEW

*See standard plate 630.99

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

November 19, 2021

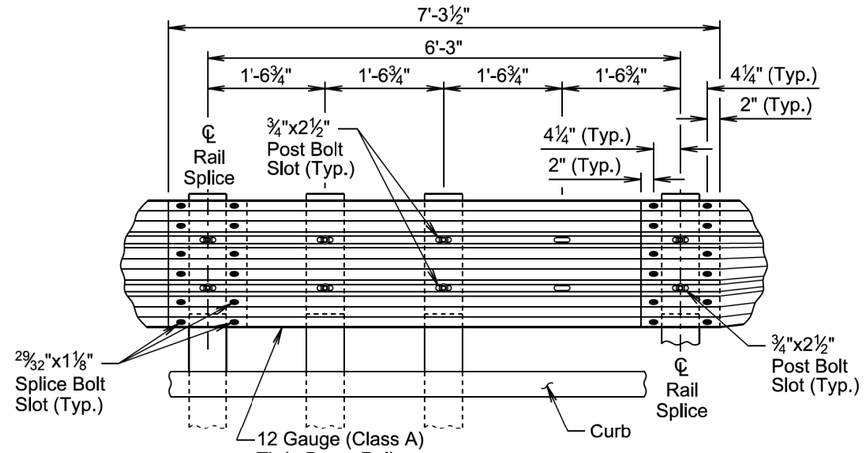
Published Date: 2024	SDDOT	**TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))**	PLATE NUMBER 630.50 Sheet 1 of 2



DETAIL J

DETAIL L

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



DETAIL K
(Special Thrie Beam Rail)

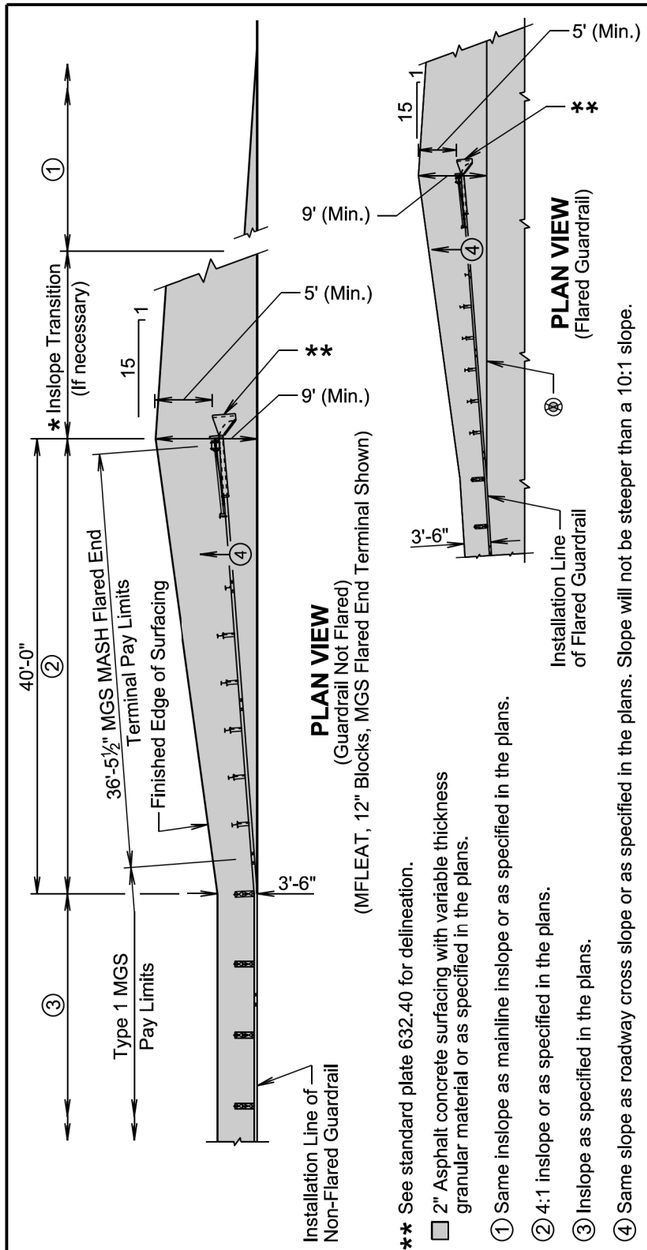
GENERAL NOTES:

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".

November 19, 2021

Published Date: 2024	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 2 of 2



** See standard plate 632.40 for delineation.

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

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

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

③ Inslope as specified in the plans.

④ Same slope as roadway cross slope or as specified in the plans.

GENERAL NOTES:

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

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

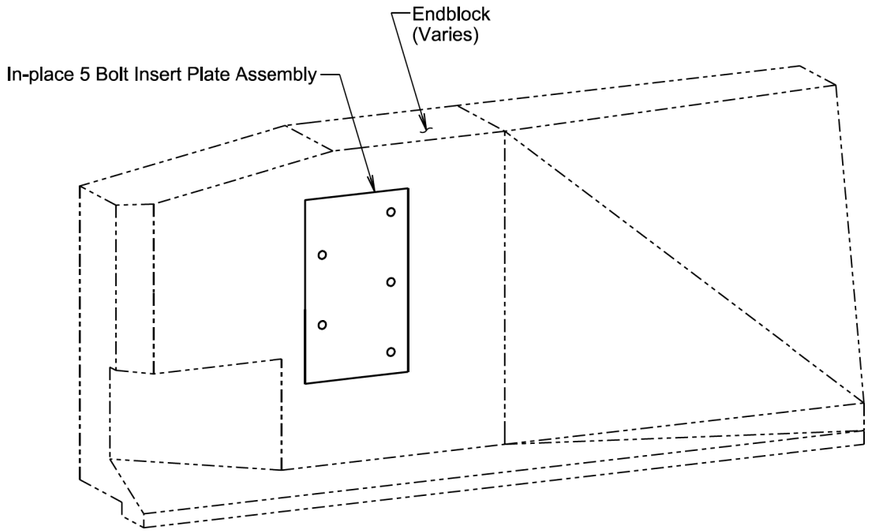
Ⓡ The installation reference line for flared guardrail end terminals will always be parallel to the roadway.

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

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

June 26, 2019

Published Date: 2024	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH FLARED END TERMINAL	PLATE NUMBER 630.87
			Sheet 1 of 1



ISOMETRIC VIEW

GENERAL NOTES:

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

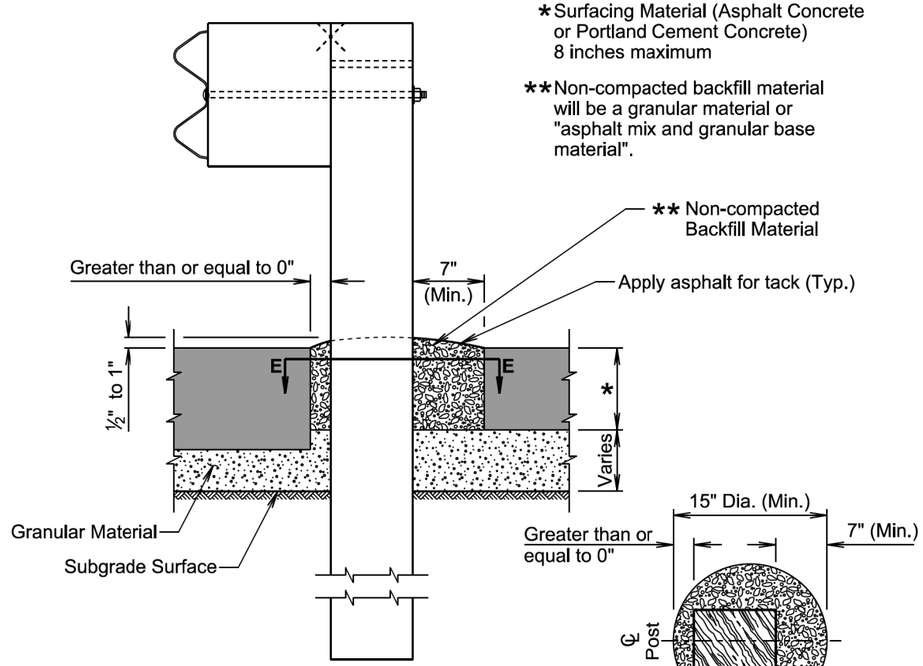
New bolts, if required, will be galvanized and conform to the requirements of ASTM A307, F-1554 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

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.

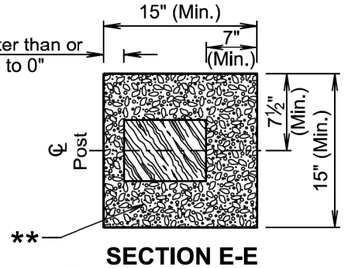
November 19, 2022

Published Date: 2024	SDDOT	GUARDRAIL ATTACHMENT TO BRIDGE ENDBLOCKS	PLATE NUMBER 630.93 Sheet 1 of 1



TRANSVERSE SECTION
(Wood post shown for illustrative purpose only)

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



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

GENERAL NOTES:

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

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.

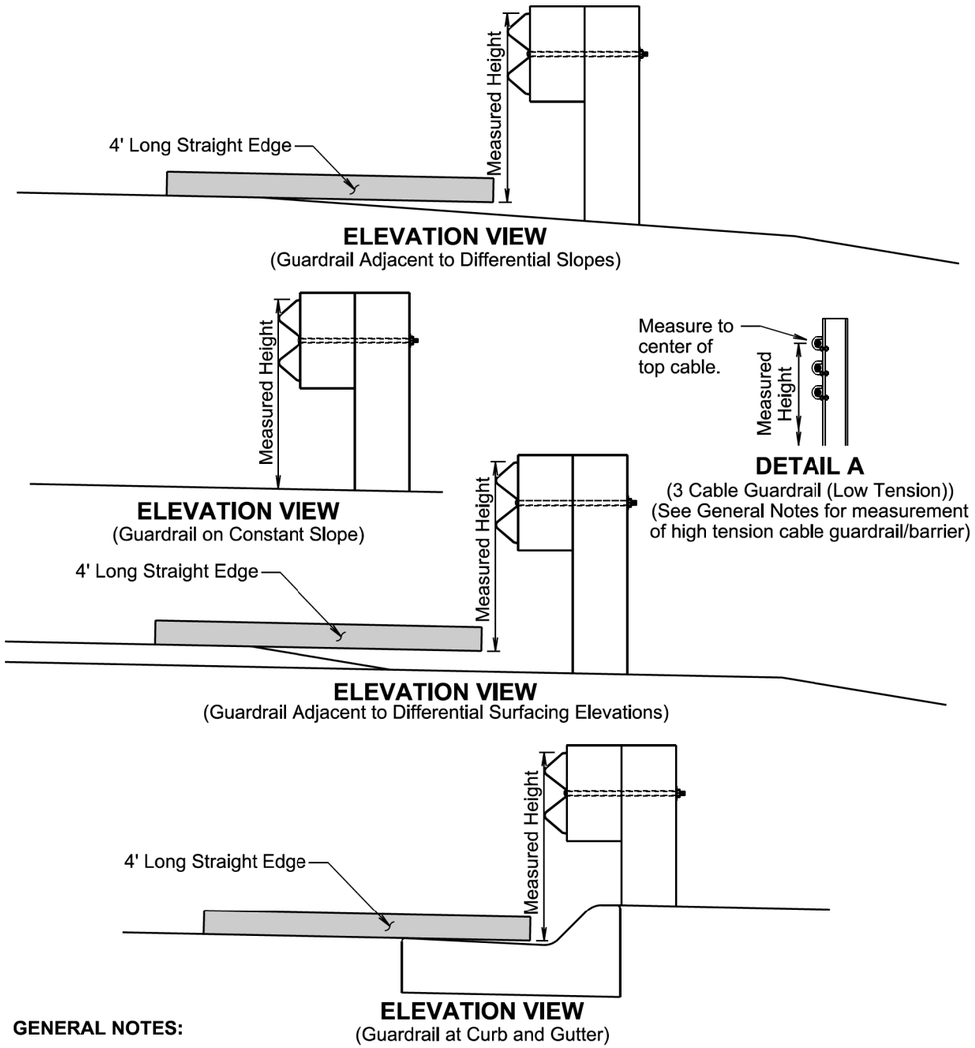
The backfill material will be mounded ½ inch to 1 inch above the top of the adjacent surfacing as illustrated above.

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: 2024	SDDOT	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96 Sheet 1 of 1



GENERAL NOTES:

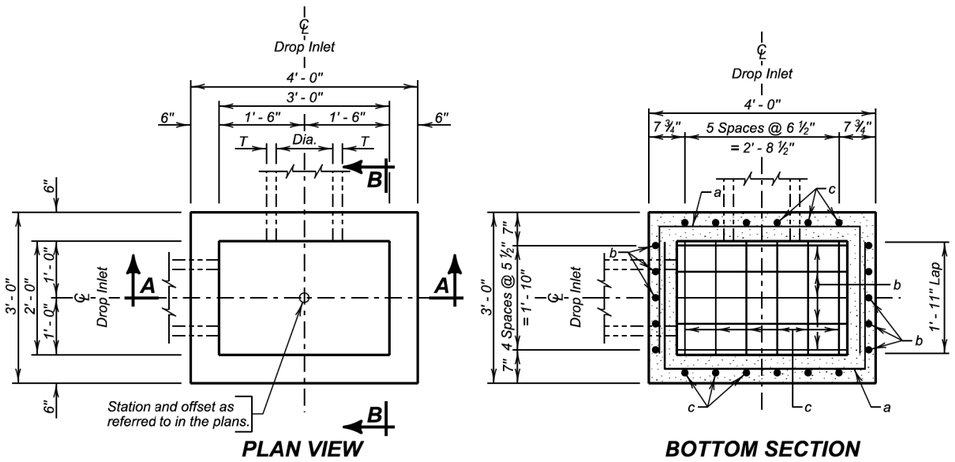
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

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: 2024	SDDOT	***MEASURING GUARDRAIL HEIGHT***	***PLATE NUMBER*** 630.99 *Sheet 1 of 1*



ESTIMATED QUANTITIES

ITEM	*UNIT*	*CONSTANT QUANTITY*	*VARIABLE QUANTITY*
⚹ *Class M6 Concrete*	*Cu. Yd.*	*0.26*	*0.22H*
Reinforcing Steel	*Lb.*	*83.03*	*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 Edition and required Provisions, Supplemental Specifications, 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.

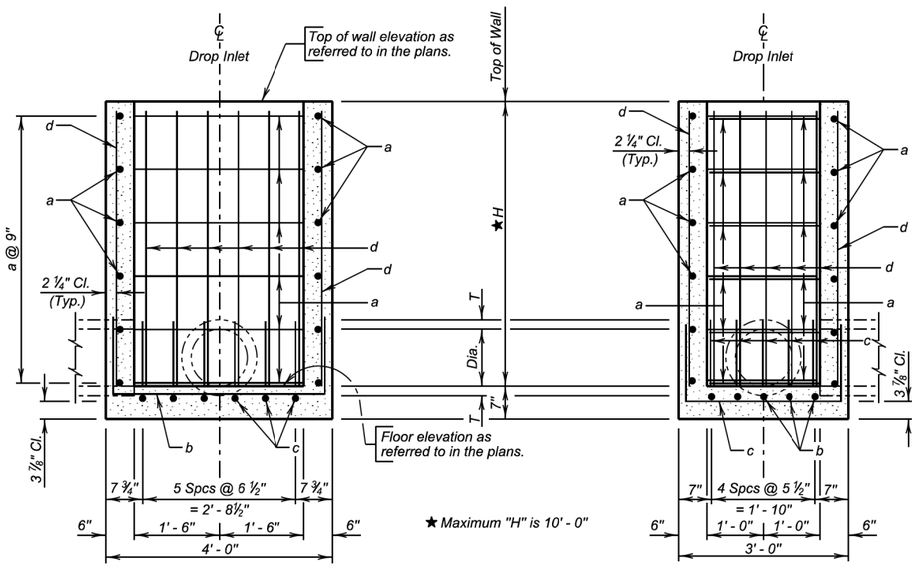
The dimension of H is in feet. Maximum H is 10 feet.

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

December 16, 2015

Published Date: 2024	SDDOT	***2' X 3' TYPE B REINFORCED CONCRETE DROP INLET***	***PLATE NUMBER*** 670.01 *Sheet 1 of 2*

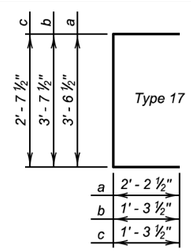


SEC. A - A ***SEC. B - B***

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.

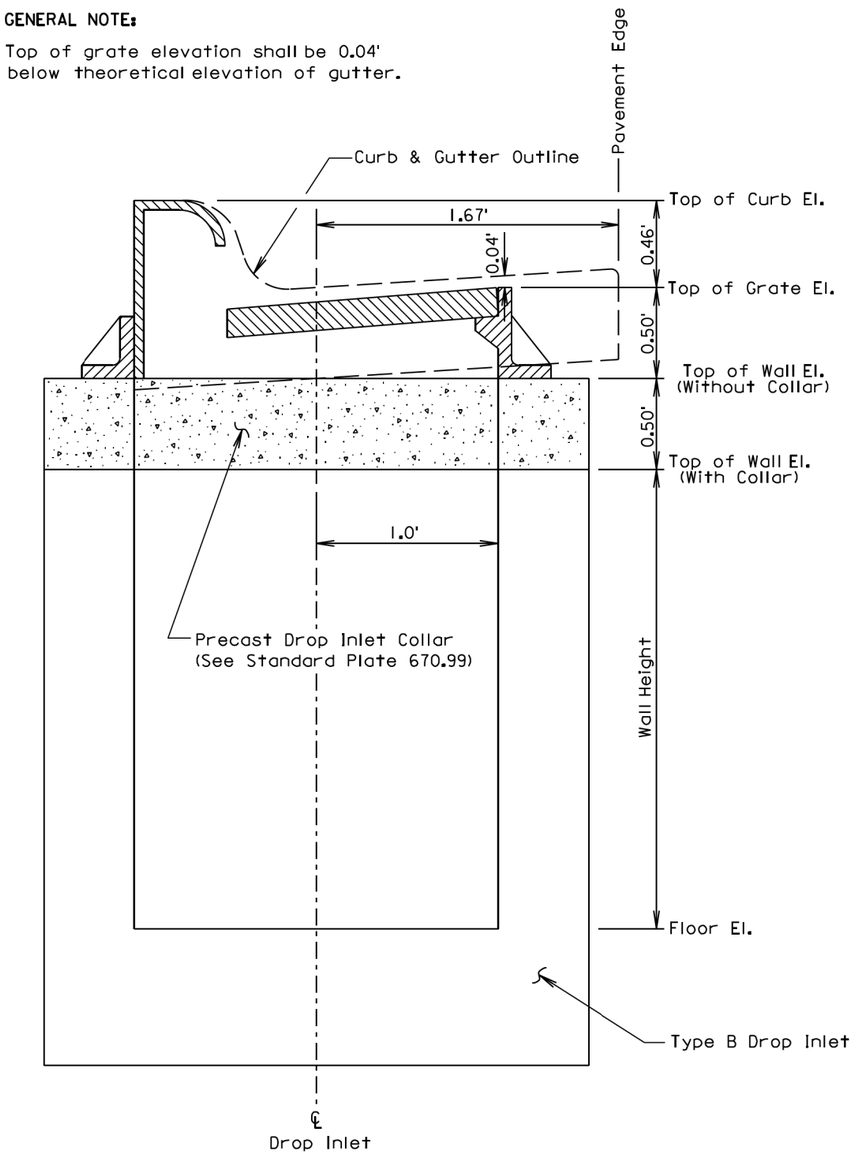


December 16, 2015

Published Date: 2024	SDDOT	2'X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01
			Sheet 2 of 2

GENERAL NOTE:

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

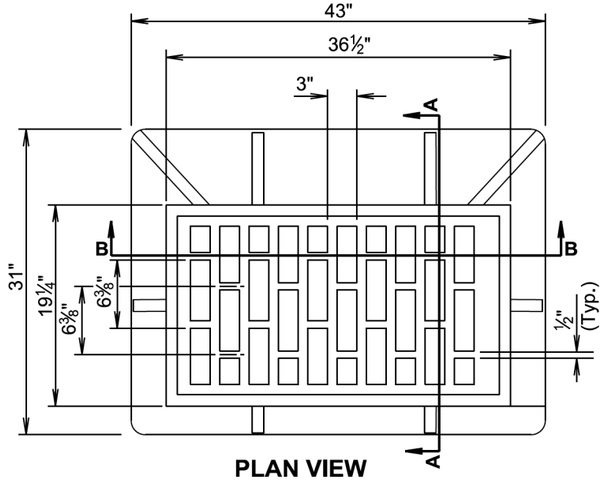


June 26, 2011

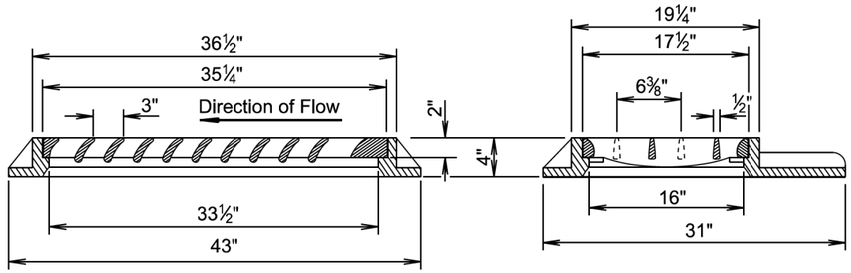
Published Date: 2024	SDDOT	INSTALLATION OF TYPE B DROP INLET	PLATE NUMBER 670.75
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	B36	37

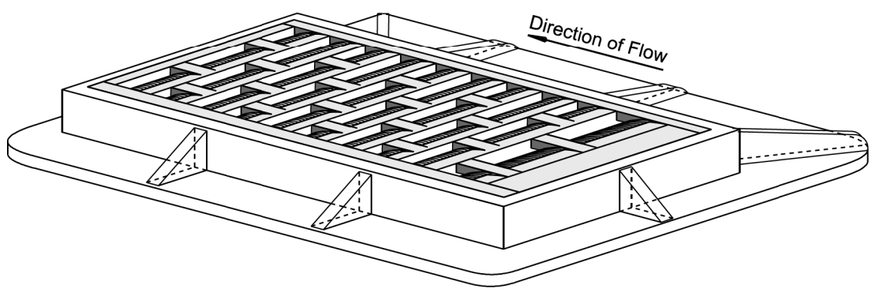
Plotting Date: 02/28/2024



PLAN VIEW



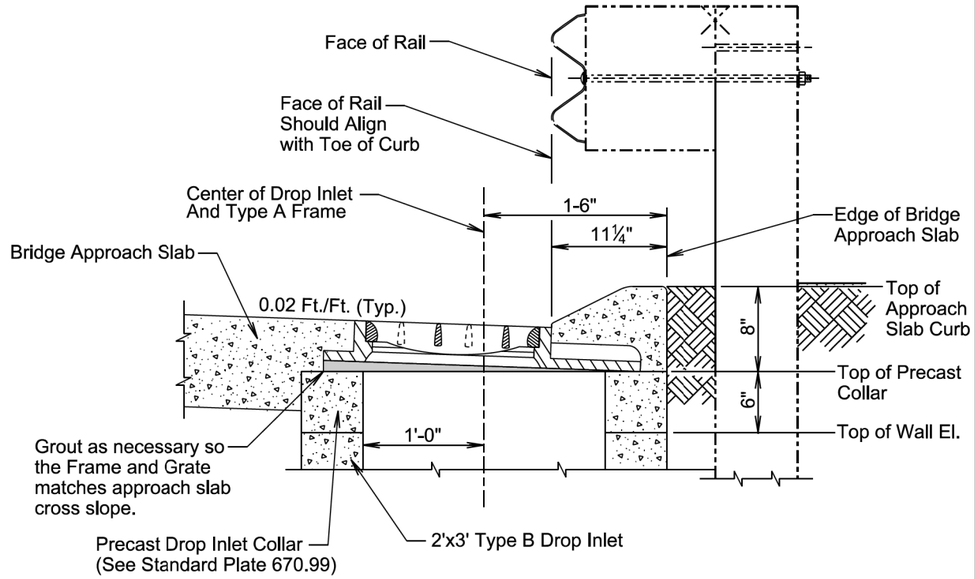
SECTION B-B **SECTION A-A**



ISOMETRIC VIEW

June 1, 2022

Published Date: 2024	SDDOT	***TYPE A FRAME AND GRATE***	***PLATE NUMBER*** 670.78 *Sheet 1 of 2*



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.

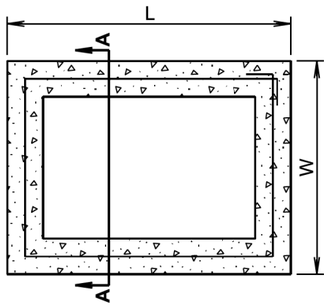
Design load for the grate will meet the requirements of AASHTO HL-93.

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

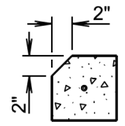
The direction of flow is shown for illustrative purpose only. The grate will be installed to intercept the direction of flow.

June 1, 2022

Published Date: 2024	SDDOT	***TYPE A FRAME AND GRATE***	***PLATE NUMBER*** 670.78 *Sheet 2 of 2*

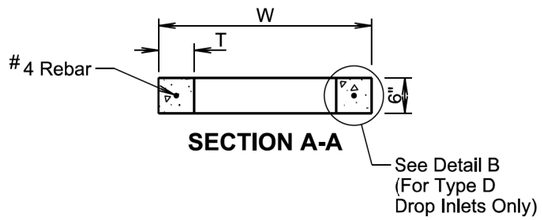


PLAN VIEW



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: 2024	SDDOT	***PRECAST DROP INLET COLLAR***	***PLATE NUMBER 670.99*** *Sheet 1 of 1*