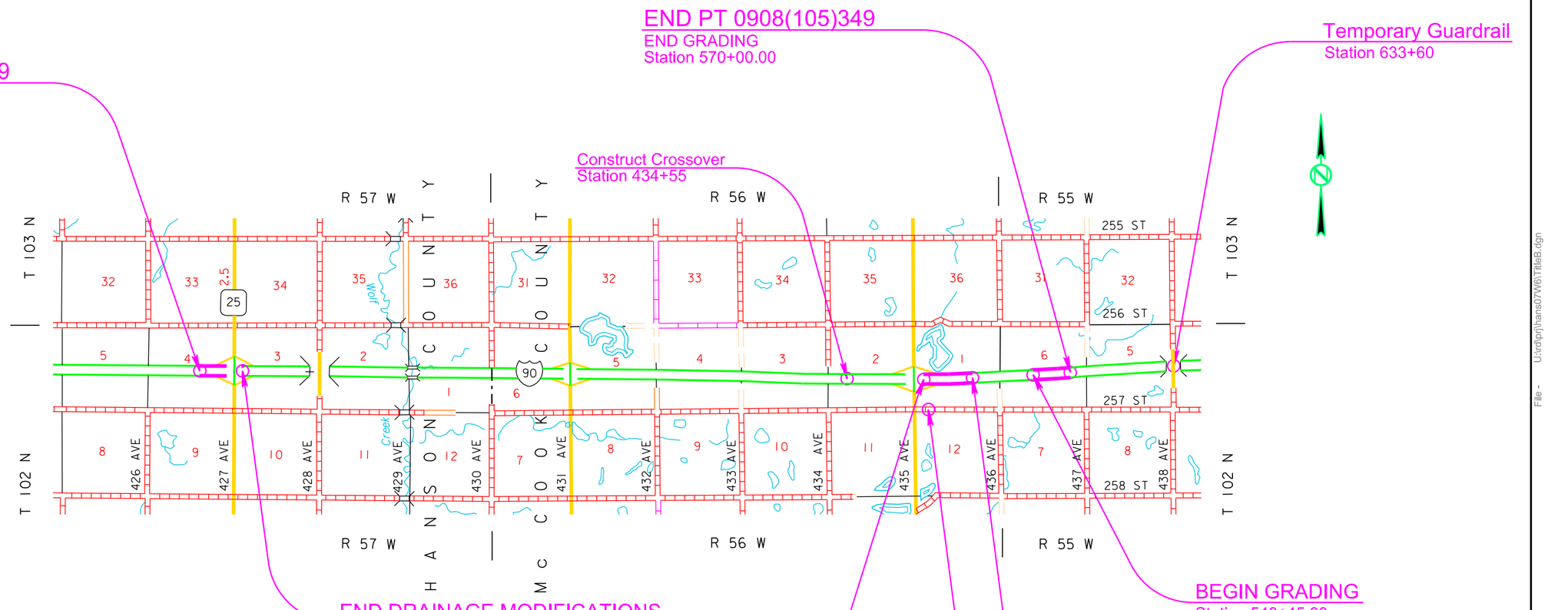
SECTION B: GRADING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B1	B70

Plotting Date: 08/12/2024

INDEX OF SHEETS



SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	92	Each
009E3230	Grade Staking	4.958	Mile
009E3245	Final Cross Section Survey	2.663	Mile
009E3250	Miscellaneous Staking	2.663	Mile
009E3280	Slope Staking	2.266	Mile
009E3290	Structure Staking	3	Each
009E3301	Engineer Directed Surveying/Staking	10.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	11,606	Ft
110E0707	Remove High Tension 4 Cable Guardrail	840	Ft
110E0730	Remove Beam Guardrail	466.0	Ft
110E1010	Remove Asphalt Concrete Pavement	16,261.8	SqYd
110E1100	Remove Concrete Pavement	32,690.3	SqYd
110E6016	Remove High Tension 4 Cable Guardrail Anchor Assembly for Reset	4	Each
110E6250	Remove Beam Guardrail Trailing End Terminal for Reset	2	Each
120E0010	Unclassified Excavation	86,136	CuYd
120E0600	Contractor Furnished Borrow	72,011	CuYd
120E1000	Muck Excavation	12,074	CuYd
120E2000	Undercutting	36,927	CuYd
120E6100	Water for Embankment	1,375.3	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
421E0100	Pipe Culvert Undercut	85	CuYd
450E0122	18" RCP Class 2, Furnish	520	Ft
450E0130	18" RCP, Install	520	Ft
450E0142	24" RCP Class 2, Furnish	298	Ft
450E0150	24" RCP, Install	298	Ft
450E0182	36" RCP Class 2, Furnish	184	Ft
450E0190	36" RCP, Install	184	Ft
450E0192	42" RCP Class 2, Furnish	76	Ft
450E0200	42" RCP, Install	76	Ft
450E0416	24" RCP Bend, Furnish	4	Each
450E0417	24" RCP Bend, Install	4	Each
450E2028	36" RCP Flared End, Furnish	2	Each
450E2029	36" RCP Flared End, Install	2	Each
450E2032	42" RCP Flared End, Furnish	2	Each
450E2033	42" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	4	Each
450E2201	24" RCP Sloped End, Install	4	Each
450E2304	18" RCP Safety End, Furnish	5	Each
450E2307	18" RCP Safety End, Install	5	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5243	66" CMP Flared End, Furnish	2	Each
450E5244	66" CMP Flared End, Install	2	Each
450E5314	30" CMP Sloped End, Furnish	2	Each
450E5315	30" CMP Sloped End, Install	2	Each
450E7630	30" Steel Pipe, Furnish	72	Ft
450E7666	66" Steel Pipe, Furnish	134	Ft
451E5130	Bore and Jack 30" Pipe	72	Ft
451E5166	Bore and Jack 66" Pipe	134	Ft
462E0100	Class M6 Concrete	9.4	CuYd
480E0100	Reinforcing Steel	888	Lb
600E0200	Type II Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	11,606	Ft
620E0510	Type 1 Temporary Fence	10,904	Ft
620E0515	Type 1A Temporary Fence	702	Ft
620E1020	2 Post Panel	12	Each
620E1030	3 Post Panel	28	Each
629E0110	High Tension 4 Cable Guardrail	840	Ft
629E0290	High Tension Cable Guardrail Anchor Assembly	4	Each
629E0295	Reset High Tension Cable Guardrail Anchor Assembly	4	Each
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	175.0	Ft
630E0500	Type 1 MGS	150.0	Ft
630E1500	Type 1 Guardrail Transition	2	Each
630E2001	Asymmetrical W Beam to Thrie Beam Guardrail Transition	4	Each
630E2017	MGS MASH Flared End Terminal	2	Each
630E2018	MGS MASH Tangent End Terminal	4	Each
630E2055	Thrie Beam Guardrail Trailing End Terminal	2	Each
630E5210	Reset Beam Guardrail Trailing End Terminal	2	Each
670E4205	Type M Frame and Grate Assembly	5	Each
720E1010	PVC Coated Bank and Channel Protection Gabion	23.0	CuYd
831E0110	Type B Drainage Fabric	66	SqYd

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 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.

Special ditch grades and other sections of the roadway different than the typical section(s) 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 alignment traverses glacial terrain typical of eastern South Dakota. Included within this terrain may be areas of loess, shale, sand, gravel, glacial till, and boulder till. As is the case with most glacial terrain, the materials throughout the project can vary greatly in a short distance.

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.

INSLOPE TRANSITIONS

A Type 2 Inslope transition will be required at the drainage structure located at 553+90. Refer to Standard Plate 120.05 for details.

SHRINKAGE FACTOR: Embankment +40%

TABLE OF EXCAVATION QUANTITIES BY BALANCES

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)	** Out-of-Balance Waste (CuYd)	** Haul (CuYdSta)	** Out-of-Balance Haul (CuYdSta)
Exit 350 Ramp B-dr700												
0+20		2+25	542				542			542		
Exit 350 Ramp C-dr700												
603+00		624+09	11255				11255			11255		
Exit 357 Ramp A												
704+60		718+10	2095	2490	2221	15831	22637		2221			
Exit 357 Ramp B												
809+02		817+97	2175	2172	1557	3798	9702		1557			
I 90 WB												
479+55		496+00	1099	4845	1335		7297	13602	1335			5238000
496+00		507+30	486	3074	1781	10976	16317		1781			
548+45		570+00	956	8443	1633	11815	22847		1633			
I 90 EB												
479+55		507+30	5014	7761	2109	19226	34110		2109			
548+45		570+00	3420	8142	1438	10365	23365		1438			
257th St												
1+40		2+14	70				70		70			
		Totals:	27112	36927	12074	72011	148142	13602	12144	11797	0	5238000

* 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	27112
Undercut	36927
Topsoil	13239
Exc. for Median Crossover at 434+55*	1805
Exc. for RCBC Installation	7053
Total	86136

*This material is used as Out-of-Balance Excavation in the I 90 WB 479+55 to 496+00 balance.

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 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.

When finaling a project, the estimated quantity of 2477 cubic yards of Concrete Pavement and Asphalt Pavement removed from the cut sections will be subtracted from the Unclassified Excavation quantity for final payment. The quantity of Concrete Pavement and Asphalt Pavement from cut sections subtracted from the Unclassified Excavation quantity will be plans quantity and will not be adjusted according to field measurements.

HAUL

Included in the Table of Excavation Quantities by Balances is Out-of-Balance Haul. There is no regular Haul for this project. They are not pay items and are for informational purposes only. Haul was not estimated for moving Contractor Furnished Borrow Excavation. 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 = 5238000/86136 = 60.8 Sta.

Compensation for "Extra Haul" will not be made for haul distances less than 5 stations. When payment for "Extra Haul" is authorized, the distance used for "Extra Haul" calculations will be that in excess of 5 stations.

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

Station	to	Station
Exit 357 Ramp A		
704+60		706+50
Exit 357 Ramp B		
809+02		813+00
I 90		
479+55		484+00
505+00		507+30
548+45		553+50
568+00		570+00

UNSTABLE MATERIAL EXCAVATION

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 2 feet. The estimated quantity of 3706 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 will be excavated. The unstable material excavated on this project will be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil.

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)
Exit 357 Ramp A					
704+60		710+50	L	2	1023
704+60		711+50	R	2	904
I 90					
479+55		485+00	R	2	555
479+55		486+00	L	2	564
553+50		561+00	R	2	660
				Total:	3706

MUCK EXCAVATION

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 12,074 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)
Exit 357 Ramp A					
710+50		718+10	L	3	2221
Exit 357 Ramp B					
811+00		817+97	R	3	1557
I 90					
491+88		499+00	R	3	2109
491+88		499+00	L	3	3116
553+00		554+18	L	3	180
561+00		569+00	R	3	1438
561+00		569+00	L	3	1453
				Total:	12074

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.

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

The Contractor furnished borrow excavation material will be uniform in texture and free from organic material. The liquid limit will not exceed 45 and the plastic index will be at least 10 but not exceed 25.

The Contractor will be responsible for the following minimum testing prior to use of each borrow site:

A minimum of one test for liquid limit and plastic index and a 4 point for each location and soil type, with samples obtained according to SD201.

The Department will be responsible for the following minimum testing:

A minimum of one test for liquid limit and plastic index and a 4 point for every 100,000 cubic yards or a major change in soil type. Independent Assurance testing will not be required.

EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Included in the quantity of “Unclassified Excavation” are 7053 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.

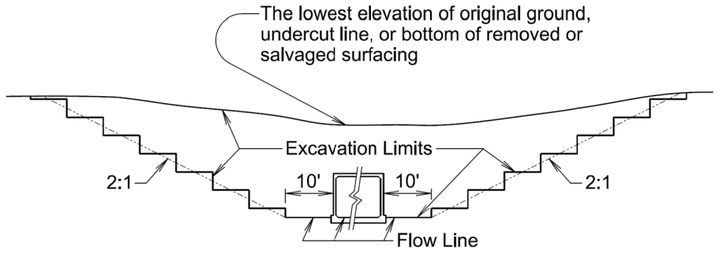


TABLE OF EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Station	Quantity (CuYd)
I 90	
496+42	4370
553+87	1980
257th St	
1+82	703
Total:	7053

PIPE CULVERT UNDERCUT

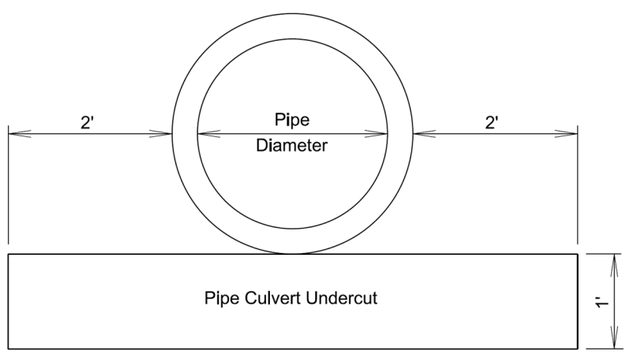
The table includes undercut for 36 inch and larger pipe culverts. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. Pipes listed may or may not require undercutting and pipes not listed may require undercutting. The Engineer will determine which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

Station	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
Exit 357 – Ramp A		
707+83	1	28.2
I 90		
481+42	1	56.9
	Total:	85.1

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	Remarks
Exit 357 – Ramp A	
707+83	Take Out 30”-65’ RCP
I 90	
445+95	Take Out 18”-64’ CMP
444+95	Eliminate Median Crossover
481+42	Take Out 24”185’ RCP
481+52 L	Take Out 18”-82’ RCP
494+92 L	Take Out 18”-69’ RCP
496+42	Take Out 30”-276’ RCP
553+87	Take Out 24”-179’ CMP
553+98 L	Take Out 18”-75’ RCP
554+18	Take Out Twin 36”-177’ CMP
561+81 L	Take Out 18”-71’ RCP
563+96	Take Out 30”-176’ CMP
568+86 L	Take Out 18”-77’ RCP
257th St	
1+52	Take Out 24”-63’ CMP
1+81	Take Out 30”-81’ CMP

REMOVAL OF EXISTING CONCRETE PAVEMENT

The Contractor will dispose of the concrete pavement at a site approved by the Engineer.

EASTBOUND LANES: The existing mainline PCC Pavement is 10" Continuously Reinforced PCC Pavement (26' wide). Reinforced with No. 4 Transverse Deformed Steel Bars spaced at 42" c-to-c and No. 6 Longitudinal Deformed Steel Bars spaced at 6 ¼" c-to-c.

The existing acceleration/deceleration lanes is 10" Nonreinforced PCC Pavement (transverse joint spacing = 20'). Transverse joints have 1 ¼" Plain Round dowel Bars spaced at 18" c-to-c and longitudinal joints have No. 5 Epoxy Coated Deformed Tie Bars spaced at 30" c-to-c.

The aggregate in the existing PCC Pavement is quartzite.

WESTBOUND LANES: The existing mainline PCC Pavement is 10" Continuously Reinforced PCC Pavement (26' wide). Reinforced with No. 4 Transverse Deformed Steel Bars spaced at 48" c-to-c and No. 6 Longitudinal Deformed Steel Bars spaced at 6 ½" c-to-c.

The existing acceleration/deceleration lanes is 10" Nonreinforced PCC Pavement (transverse joint spacing = 20'). Transverse joints have 1 ¼" Plain Round dowel Bars spaced at 12" c-to-c and longitudinal joints have No. 5 Epoxy Coated Deformed Tie Bars spaced at 30" c-to-c.

The aggregate in the existing PCC Pavement is quartzite.

TABLE OF CONCRETE PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
I 90				
479+55		507+30	R	10310.5
479+55		507+30	L	9860.1
548+45		570+00	R	6261.5
548+45		570+00	L	6258.2
			Total:	32690.3

REMOVAL OF EXISTING ASPHALT PAVEMENT

The Contractor will dispose of the asphalt pavement at a site approved by the Engineer.

Refer to Section F for in place typical sections which show the asphalt pavement thicknesses and widths.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
Exit 357- Ramp A				
704+60		713+84		2511.7
Exit 357- Ramp B				
809+02		813+92		1335.3
I 90				
55+80		56+97	R	43.3
56+09		47+19	L	46.7
479+55		507+30	R	2769.0
479+55		507+30	L	3224.2
548+45		570+00	R	3112.6
548+45		570+00	L	3219.0
			Total:	16261.8

PLUG PIPE ENDS

The existing pipe located at 704+14 (Exit 350 – Ramp B) will have the ends plugged by a method approved by the Engineer. A quantity of 2 cubic yards of Class M6 concrete has been included in the contract quantities for this work. All costs for plugging the pipe ends, including labor, materials, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Class M6 Concrete".

PIPE COVER

The earthen subgrade cover for some pipe installations is less than one foot. The Contractor will take the necessary precautions to ensure the structural properties of the pipes are not damaged after installation and prior to the placement of final surfacing. Any additional costs for preventing damage to these pipes will be incidental to the contract unit price per foot for the corresponding pipe installation contract item.

BORE AND JACK STEEL PIPE

The Contractor will install steel pipe at stations 104+98 (SD 25) and 615+06 (Exit 350 – Ramp C) by boring and jacking the pipe through the existing highway embankment. The pipe will be installed by boring and jacking methods as specified herein unless an alternate plan is submitted in writing and approved by the Engineer.

Steel pipe for boring and jacking will meet or exceed the requirements of ASTM A53 Grade B, ASTM A139 Grade B or ASTM A252 Grade 2. Hydrostatic testing will not be required for this application. The pipe will be required to have the minimum wall thickness as shown in the following table:

Pipe Diameter	Wall Thickness
48" & below	1/2"
54"	5/8"
60"	5/8"
66"	3/4"
72"	3/4"

The exterior of the steel pipe will be coated with a fusion bonded epoxy coating and an abrasion resistant overcoat or a two-component coal tar epoxy. The coal tar will meet the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal. Applications of the coatings will be in conformance with the manufacturer's recommendations.

The pipe joints will be welded by a certified welder in accordance with Section 410.3 D of the Specifications. After the welding has been completed, the exposed area will be coated with 3M Scotchkote Liquid Epoxy 328 or a two-component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal.

The jacking pit will be constructed of sufficient size to accommodate equipment and workmen. The pit walls will be sloped or shored to comply with all applicable State and Federal regulations. The Contractor will be responsible for the design of the pit floor and jacking thrust restraint wall to carry the cyclic loads and thrust applied by the Contractor's operation. Water will not be allowed to accumulate in the jacking pit. All components of the jacking pit will be removed after installation of the pipe unless otherwise allowed by the Engineer.

The pipe will be pushed into position from a jacking pit with hydraulic jacks while simultaneously excavating at the forward end of the pipe. Each pipe section will be jacked from the jacking pit as the excavation at the boring head progresses so that the excavation is supported by the boring head or the pipe at all points.

Jacking thrust will be applied to the pipe by means of a yoke or frame designed to distribute the thrust uniformly around the pipe joint. The thrust will be applied to the pipe joint only in the location and only to the maximum force recommended by the pipe manufacturer. The pipe will be jacked into place without visible damage to the pipe or joint.

The boring head excavation will be circular with a maximum diameter equal to the outside diameter of the jacking pipe plus 1 inch. The Contractor will take whatever corrective action is necessary to prevent running, flowing, or squeezing ground conditions at the cutting face from causing large voids or significant loss of soil that may cause surface settlement.

The Contractor will control the alignment and grade of the pipe installation to meet the following tolerances:

1. Maximum horizontal deviation from plan shown alignment will be less than 0.15% of pipe length from the downstream end of pipe to the point of measurement.

2. Maximum vertical deviation from plan shown alignment will be less than 0.075% of pipe length from the downstream end of pipe to the point of measurement.

All material excavated by the boring head for the pipe installation will be disposed of by the Contractor. The excavated material from the boring pit will be used as backfill for the pit and compacted into place to the satisfaction of the Engineer.

Steel casing will be installed horizontally through 72' to 134'± of embankment. The pipes will be placed through an approximate 8-18' vertical depth of silt clay embankment fill material. The glacial deposits from which the embankment materials were excavated include clay to boulder sized clasts. Large boulders are not anticipated within the bore and jack envelopes. Borings were completed at the bore and jack locations in August 2022. A boring drilled to a depth of 29' on SD 25 at Station 104+85, 15' Rt. was dry but caved a depth of 25.7' (Elevation 1355.71). A 19' boring completed at Station 615+06, 11' Rt. on I90 Exit 350 Ramp C was dry but caved at 16.2' (Elevation 1352.09).

Installation of CMP ends on the steel pipe will require the placement of a minimum of 2 welded stops at each pipe end to prevent the end from slipping off the steel pipe. The location and size will be determined in the field by the Engineer and installed by a certified welder. Stops will be coated with a coal tar epoxy. All costs, including labor and materials for the installation of the stops will be incidental to the contract unit price per foot for the corresponding steel pipe furnish contract item. Alternative methods of attachment may be allowed with the approval of the Engineer.

Payment for furnishing the pipe will be incidental to the contract unit price per foot for the corresponding steel pipe furnish contract item.

All costs involved with boring and jacking the pipe including labor, equipment, welding, materials, disposal of waste material, constructing and backfilling the jacking pit, and excavating and backfilling the roadway embankment will be incidental to the contract unit price per foot for the corresponding bore and jack pipe contract item.

TABLE OF TYPE M MEDIAN DRAINS

Station	L/R	Class M6 Concrete (CuYd)	Reinforcing Steel (Lb)	Type M Frame and Grate Assembly (Each)
I 90				
481+67		1.47	177	1
495+00		1.62	194	1
553+50		1.35	163	1
562+00		1.38	167	1
569+00		1.56	187	1
	Totals:	7.38	888	5

TABLE OF CLASS M6 CONCRETE

Item	Class M6 Concrete (CuYd)
Median Drains	7.38
Plug Pipe Ends	2.00
Total:	9.38

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)
Exit 350 – Ramp C			
615+06	R	6.0	19
SD 25			
104+98	L	17.0	47
	Totals:	23.0	66

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B8	B70

Plotting Date: 08/12/2024 Rev 08-12-2024 JRF

Location	Remove High Tension 4 Cable Guardrail (Ft)	Remove High Tension 4 Cable Guardrail Anchor Assembly for Reset (Each)	Reset High Tension Cable Guardrail Anchor Assembly (Each)	Remove Beam Guardrail (Ft)	Remove and Reset Thrie Beam Guardrail Trailing End Terminal (Each)	High Tension 4 Cable Guardrail (Ft)	Type 1 MGS (Ft)	Type 1 Guardrail Transition (Each)	Asymmetrical W Beam to Thrie Beam Guardrail Transition Section (Each)	Double Class A Thrie Beam Guardrail (Ft)	Thrie Beam Guardrail Trailing End Terminal (Each)	MGS MASH Flared End Terminal (Each)	MGS MASH Tangent End Terminal (Each)
I-90 EBL													
Structure No. 31-150-125													
Outside Shoulder				120			75		1	50	1	1	
Structure No. 44-050-127													
Outside Shoulder								1					1
Median Shoulder	210	1	1			210							
Structure No. 44-080-125													
Outside Shoulder				107	1				1	37.5			1
Median Shoulder	210	1	1			210							
I-90 WBL													
Structure No. 31+150-125													
Outside Shoulder				132			75		1	50	1	1	
Structure No. 44-050-127													
Outside Shoulder								1					1
Median Shoulder	210	1	1			210							
Structure No. 44-080-125													
Outside Shoulder				107	1				1	37.5			1
Median Shoulder	210	1	1			210							
Totals:	840	4	4	466	2	840	150	2	4	175	2	2	4

HIGH TENSION CABLE GUARDRAIL

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

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

The high tension cable guardrail system will be in compliance with Specifications Section 6.9 Buy America.

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

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

Delineation of the high tension cable guardrail will be in conformance with standard plate 632.40.

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

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

High tension cable guardrail will be installed on a 10:1 or flatter slope and the embankment limits will match the high tension cable guardrail limits. The embankment quantities may vary from plans quantity.

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

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

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

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

HIGH TENSION CABLE GUARDRAIL ANCHOR ASSEMBLY

The beginning and end of each “run” of high tension cable guardrail will terminate with an anchor assembly. The High Tension Cable Anchor Assemblies will be one of the following products:

Valtir (Trinity) – CASS Cable Terminal (CCT)
Brifen – MASH Gating Terminal (MGT)

The footing(s) for the anchor assembly will be designed to allow for 1 inch maximum of lateral deflection. The allowable design soil pressure will be 1000 psf. The top 2 feet of soil pressure will be neglected in the design of the footing(s). The footing(s) will be a minimum of 5’ deep. The footing(s) design will be submitted through proper channels to the Office of Bridge Design for a one-time approval. Any changes to the anchor assembly that could affect footing size including configuration changes such as different number of cables and different number of footings will be resubmitted for approval. The approval will be obtained a minimum of 4 weeks prior to construction of the anchor footing(s).

Delineation of the high tension cable guardrail anchor assembly will be in conformance with standard plate 632.40.

All costs for furnishing and installing the High Tension Cable Guardrail Anchor Assembly including all labor, equipment, and materials which include the anchor footing(s), hardware, and all attachments to the anchor footing(s), will be incidental to the contract unit price per each for “High Tension Cable Guardrail Anchor Assembly”.

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 0 PLSS corners and 92 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)

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)	Final Cross Section Survey Quantity (Mile)	Structure Staking Quantity (Each)
Exit 350 – Ramp C												
Grade Ditch	603+00	611+50		850					0.161		0.161	
Grade Ditch	615+00	624+08		908					0.172		0.172	
Grade Ditch	123+47	124+80		133					0.025		0.025	
Exit 350 – Ramp B												
Grade Ditch	0+20	2+25		205					0.039		0.039	
Exit 357 – Ramp A												
1 Lane – PCCP	704+60	718+10	2	1350	0.256	1	2	0.512	0.256	0.256	0.256	
Exit 357 – Ramp B												
1 Lane – PCCP	809+02	817+97	2	895	0.170	1	2	0.340	0.170	0.170	0.170	
I 90 Eastbound												
2 Lanes - PCCP	479+55	491+88	2	1233	0.234	1	2	0.468	0.234	0.234	0.234	
3 Lanes – PCCP	491+88	501+30	3	942	0.178	1.5	2	0.534	0.178	0.178	0.178	
Transition from 3 Lanes to 2 Lanes – PCCP	501+30	507+30	3	600	0.114	1.5	2	0.342	0.114	0.114	0.114	
8’ x 8’ RCBC	496+40											1
2 Lanes – PCCP	548+45	570+00	2	2155	0.408	1	2	0.816	0.408	0.408	0.408	
2-9’x4’ RCBC	553+90											1
I 90 Westbound												
2 Lanes - PCCP	479+55	491+88	2	1233	0.234	1	2	0.468	0.234	0.234	0.234	
3 Lanes – PCCP	491+88	499+50	3	762	0.102	1.5	2	0.306	0.102	0.102	0.102	
Transition from 3 Lanes to 2 Lanes – PCCP	499+50	501+90	3	240	0.046	1.5	2	0.138	0.046	0.046	0.046	
2 Lanes - PCCP	501+90	507+30	2	540	0.102	1	2	0.204	0.102	0.102	0.102	
2 Lanes – PCCP	548+45	570+00	2	2155	0.408	1	2	0.816	0.408	0.408	0.408	
257th St												
1+40 to 2+14 - Gravel	1+40	2+14	2	74	0.014	1	1	0.014	0.014	0.014	0.014	
11’x5’ RCBC	1+82											1
							Totals:	4.958	2.663	2.266	2.663	3

* 1 = Blue Top Stakes Only (Gravel Surfacing)
2 = Blue Top and Paving Hub Stakes (PCC Pavement)

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B11	B70

Plotting Date: 08/12/2024 Rev 08-12-2024 JRF

TABLE OF PIPE QUANTITIES

	Reinforced Concrete - Cicular									Corrugated Metal - Circular		Steel - Circular	
	Pipe				Bends	Sloped Ends	Safety Ends	Flared Ends		Sloped Ends	Flared Ends	Pipe	
Station Offset (L/R)	18" Cl. 2 Ft	24" Cl. 2 Ft	36" Cl. 2 Ft	42" Cl. 2 Ft	24" 45° Each	24" Each	18" Each	36" Each	42" Each	30" Each	66" Each	30" Ft	66" Ft
Exit 350 - Ramp C													
615+06										2		72	
SD 25													
104+98											2		134
110+22		158			2	2							
111+83		140			2	2							
Exit 357 Ramp A													
707+83				76					2				
I90													
481+42			184					2					
481+67-0' L to 111' L	102						1						
495+00-0' L to 125' R	116						1						
553+50-0' L to 105' R	100						1						
562+00-0' L to 107' R	102						1						
569+00-0' L to 107' R	100						1						
Total:	520	298	184	76	4	4	5	2	2	2	2	72	134

TABLE OF FENCE QUANTITIES

Station to Station		Side (L/R)	Right-of-Way Fence Type 2 (Ft)	Post Panels 2 Post (Each)	Post Panels 3 Post (Each)	Temporary Fence Type 1 (Ft)	Temporary Fence Type 1A (Ft)	Remove Fence (Ft)
Exit 350 - Ramp C								
602+50	623+56	R	2077	3	5	2077		2077
SD 25								
103+96	105+03	L	106	1	1	106		106
103+96	105+20	R	204	2	2	204		204
Exit 357 - Ramp A								
704+00	714+01	L	986	1	1	986		986
Exit 357 - Ramp B								
808+50	813+85	R	221	2	2	221		221
I 90								
487+91	500+98	R	1347		6	1347		1347
500+98	508+00	R	702		1		702	702
554+34	570+50	R	1651		5	1651		1651
487+90	508+00	L	2000		3	2000		2000
548+00	570+00	L	2250	1	2	2250		2250
257th St								
1+50	2+12	R	62	2		62		62
	TOTALS:		11606	12	28	10904	702	11606

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

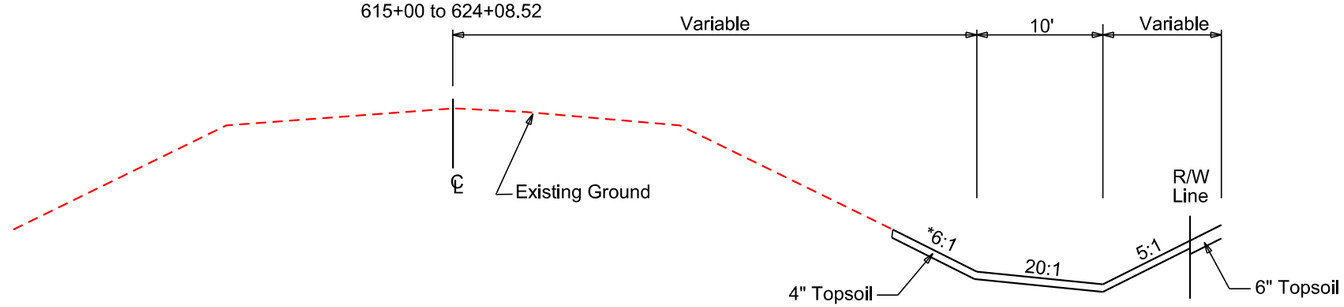
Post Type and Sequence:
Right-of-way fence will be constructed using alternate wood and steel posts except as noted.

TYPICAL GRADING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B12	B70

Plotting Date: 08/12/2024

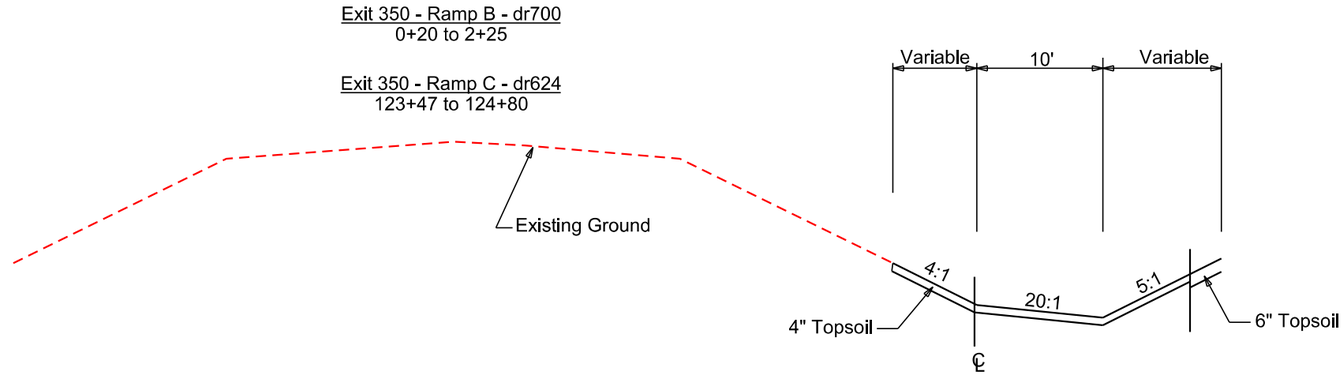
Exit 350 - Ramp C
603+00 to 611+50
615+00 to 624+08.52



* 615+00 to 624+08.52 - 4:1

Exit 350 - Ramp B - dr700
0+20 to 2+25

Exit 350 - Ramp C - dr624
123+47 to 124+80



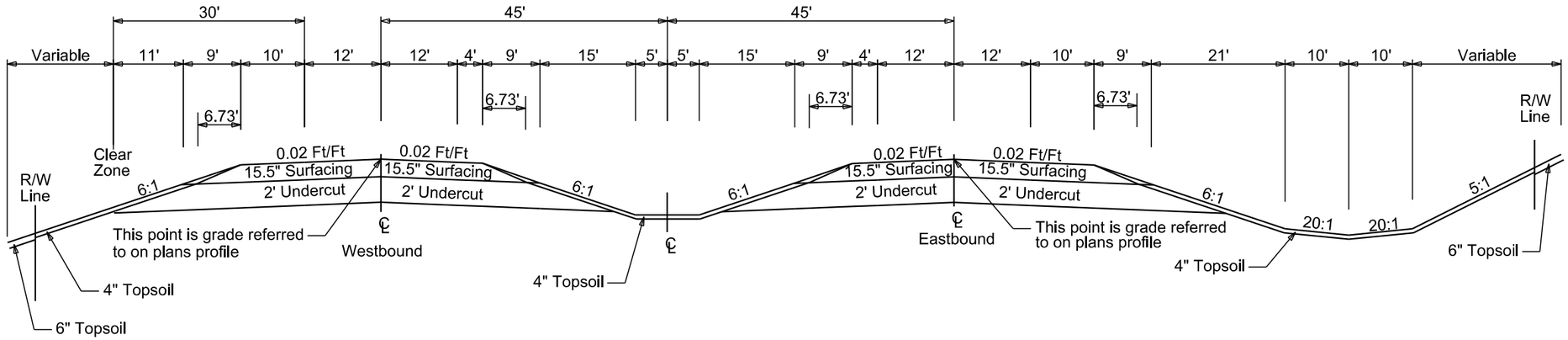
TYPICAL GRADING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B13	B70

Plotting Date: 08/12/2024

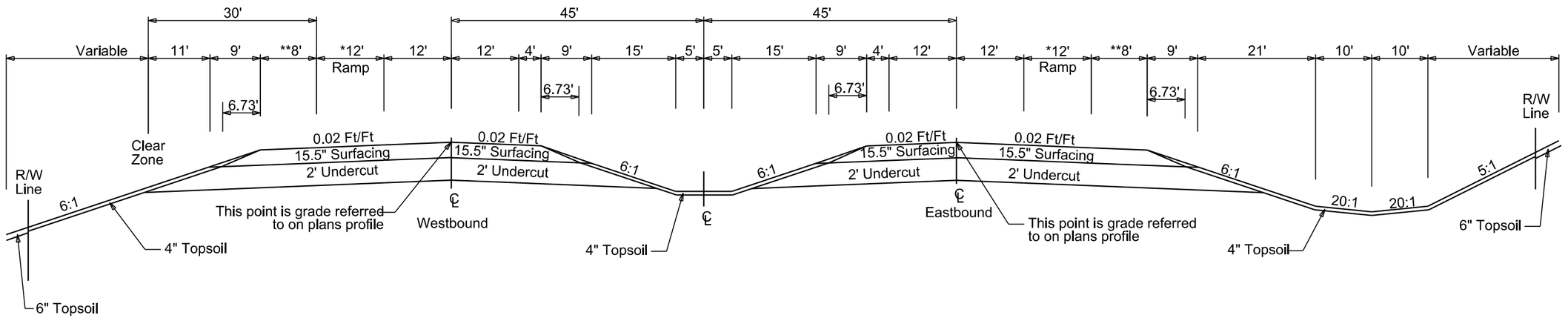
I90-Exit 357

479+55 to 491+88



I90-Exit 357

491+88 to 507+30



* 499+50 to 501+90 L - 12' to 0' Transition
501+90 to 507+30 L - 0'

** 499+50 to 501+90 L - 8' to 10' Transition
501+90 to 507+30 L - 10'

* 501+30 to 507+30 R - 12' to 0' Transition

** 505+80 to 507+30 R - 8' to 10' Transition

Plot Scale - 1:200

Plotted From - TRPR14435

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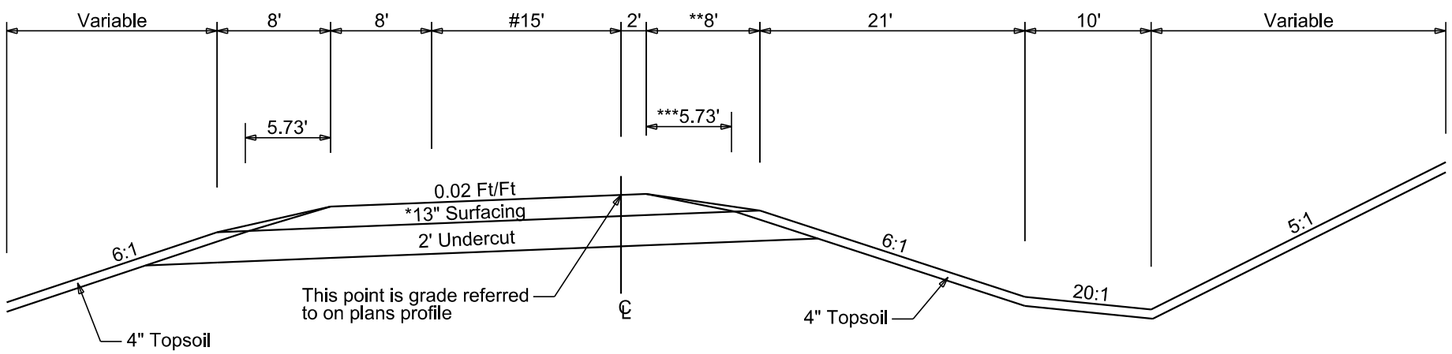
TYPICAL GRADING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B14	B70

Plotting Date: 08/12/2024

Exit 357 - Ramp A

704+60 to 718+10



* 714+66 to 717+70 - 15.5"

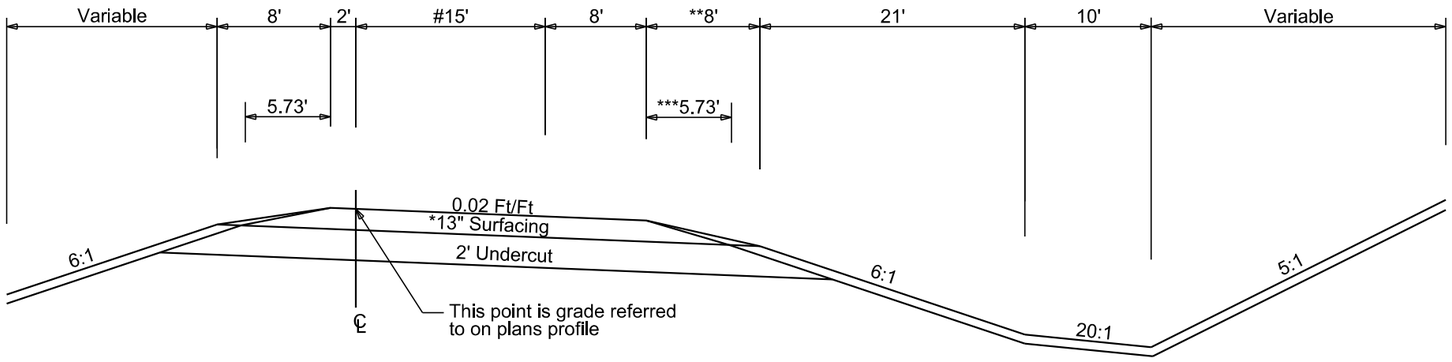
** 714+66 to 717+70 L - 9'

*** 714+66 to 717+70 L - 6.73'

716+20 to 717+70 - 15' to 12' Transition
717+70 to 718+10 - 12'

Exit 357 - Ramp B

809+01.50 to 817+97



* 815+07 to 817+97 - 15.5"

** 815+07 to 817+97 R - 9'

*** 815+07 to 817+97 R - 6.73'

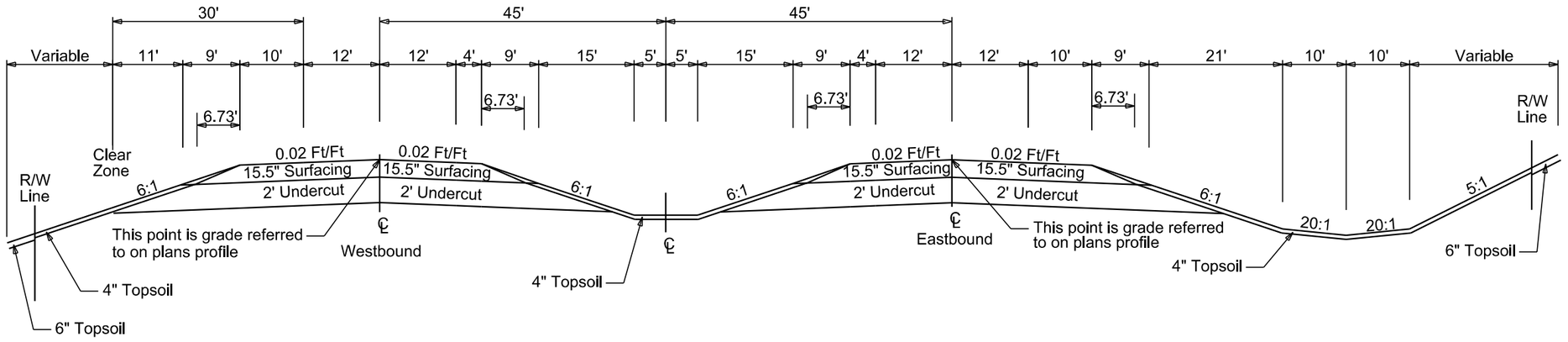
816+08 to 817+58 - 15' to 12' Transition
817+58 to 817+97 - 12'

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B15	B70

Plotting Date: 08/12/2024

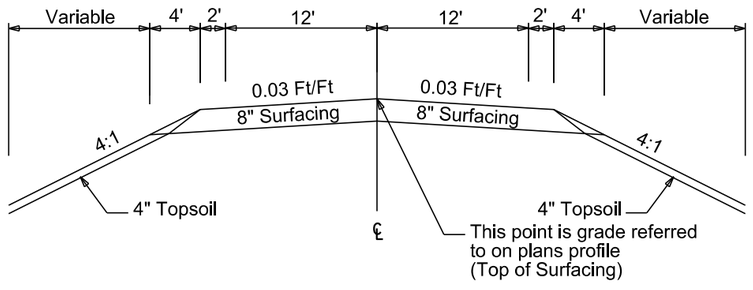
I90

548+45 to 570+00



257th Street

1+40 to 2+14



Plot Scale - 1:200

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HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B16	B70

Plotting Date: 08/12/2024

MAINLINE

Type	Station			Northing	Easting
POB	10+00.00			496781.126	2669367.590
		TL= 21629.11	N 88°27'26" E		
PC	226+29.11			497363.475	2690988.857
PI	236+87.54	R = 114591.00	Delta = 1°03'30" R	497391.973	2692046.901
PT	247+45.90			497400.922	2693105.291
		TL= 10857.09	N 89°30'56" E		
PC	356+03.00			497492.717	2703961.997
PI	366+98.62	R = 114591.00	Delta = 1°05'44" L	497501.980	2705057.577
PT	377+94.17			497532.190	2706152.780
		TL= 11322.00	N 88°25'12" E		
PC	491+16.17			497844.373	2717470.472
PI	502+38.19	R = 34377.47	Delta = 3°44'20" L	497875.311	2718592.074
PT	513+59.43			497979.320	2719709.272
		TL= 7077.97	N 84°40'52" E		
POE	584+37.40			498635.428	2726756.768

SD 25

Type	Station			Northing	Easting
POB	100+00.00			495805.399	2674055.492
		TL= 2320.72	N 1°54'12" W		
POE	123+20.72			498124.841	2673978.413

Exit 350 Ramp C

Type	Station			Northing	Easting
POB	600+00.00			496784.639	2671681.508
		TL= 785.14	N 88°38'09" E		
PC	607+85.14			496803.330	2672466.429
PI	611+49.07	R = 1909.86	Delta = 21°34'38" R	496811.994	2672830.258
PT	615+04.38			496686.251	2673171.776
		TL= 904.14	S 69°47'13" E		
POE	624+08.52			496373.861	2674020.230

Exit 350 Ramp C dr624

Type	Station			Northing	Easting
POB	123+46.98			496335.867	2673950.700
		TL= 23.53	S 60°11'51" E		
PI	123+70.52			496324.170	2673971.122
		TL= 28.54	S 35°15'54" E		
PI	123+99.06			496300.867	2673987.600
		TL= 28.35	S 6°40'09" E		
PI	124+27.41			496272.704	2673990.893
		TL= 77.74	S 5°05'14" E		
POE	125+05.15			496195.275	2673997.786

Exit 350 Ramp B dr700

Type	Station			Northing	Easting
POB	0+00.00			496198.045	2674102.605
		TL= 76.11	N 2°01'26" W		
PI	0+76.11			496274.110	2674099.917
		TL= 31.83	N 2°36'19" E		
PI	1+07.95			496305.912	2674101.364
		TL= 24.35	N 37°33'14" E		
PI	1+32.29			496325.213	2674116.203
		TL= 32.00	N 57°46'44" E		
PI	1+64.30			496342.277	2674143.278
		TL= 52.27	N 65°45'01" E		
PI	2+16.57			496363.745	2674190.936
		TL= 51.09	N 70°51'01" E		
POE	2+67.66			496380.506	2674239.203

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00; Geoid18; SF = 0.9998421017

HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B17	B70

Plotting Date: 08/12/2024

Exit 357 Ramp A

Type	Station			Northing	Easting
POB	700+00.00			498328.858	2715795.028
		TL= 954.98	S 71°18'12" E		
PC	709+54.98			498022.733	2716699.610
PI	713+67.42	R = 2300.00	Delta = 20°19'59" L	497890.520	2717090.291
PCC	717+71.19			497902.297	2717502.568
PI	717+90.39	R = 34320.47	Delta = 0°03'51" L	497902.845	2717521.760
PT	718+09.59			497903.415	2717540.952

Exit 357 Ramp B

Type	Station			Northing	Easting
POB	800+00.00			497268.891	2715836.941
		TL= 939.91	N 67°58'25" E		
PC	809+39.91			497621.387	2716708.244
PI	813+53.56	R = 2300.00	Delta = 20°23'28" R	497776.521	2717091.705
PRC	817+58.46			497788.325	2717505.190
PI	817+77.66	R = 34434.47	Delta = 0°03'50" L	497788.873	2717524.382
PT	817+96.86			497789.442	2717543.573

257th Street

Type	Station			Northing	Easting
POB	0+00.00			495964.582	2716889.985
		TL= 344.28	N 87°45'57" E		
POE	3+44.28			495978.004	2717234.004

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00; Geoid18; SF = 0.9998421017

CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B18	B70

Plotting Date: 08/12/2024

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	**STATION**	**OFFSET**	**DESCRIPTION**	**NORTHING**	**EASTING**	**ELEVATION**
I90 360.9	NOT ON PROJECT		Stainless Steel Ball Epoxied to a Pipe with Access through a 5” Logo Cap	499182.340	2731109.430	1471.32
H 455	580+77.38	147.51’ R	Steel Rod – Access through a 5” Logo Cap	498455.176	2726411.970	1449.11
I90 357.8	462+59.22	216.05’ L	Stainless Steel Ball Epoxied to a Steel Pipe with Access through a 5” Logo Cap	497981.568	2714608.656	1444.94
A 453	396+65.73	99.02’ R	Steel Rod – Access through 5” Logo Cap	497484.812	2708026.360	1441.02
I90 353.9	259+23.83	395.57’ R	Steel Ball Epoxied to a Steel Pipe with Access through a 5” Logo Cap	497015.321	2694286.520	1408.88
I90 350.1	58+49.67	548.66’ L	Steel Ball Epoxied to a Steel Pipe with Access through a 5” Logo Cap	497460.163	2674200.728	1376.89
I90 346.9	NOT ON PROJECT		Steel Ball Epoxied to a Steel Pipe with Access through a 5” Logo Cap	496568.880	2657375.680	1362.08

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00
Geoid18; SF = 0.9998421017
The elevations shown on this sheet are based on NAVD 88.

LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B19	B70

Plotting Date: 08/12/2024

- 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 - TRPR14435

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B20	B70

Plotting Date: 08/12/2024 Rev. 03-06-2024 JRF

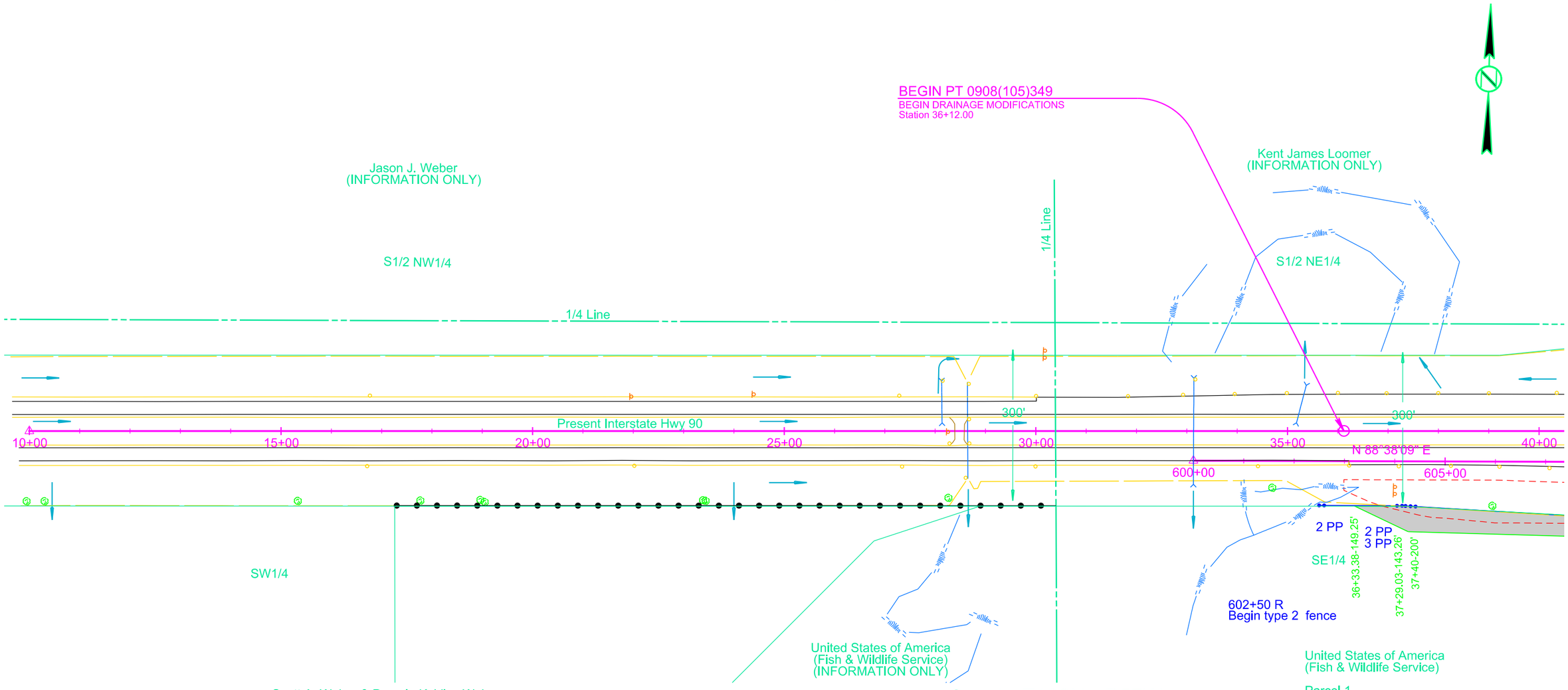
28+13 L
Retain 18"-84' RCP

28+65 (DA 23 ac)
Retain 5'x7'-192' Cattle Pass

33+14 (DA 322 ac)
Retain 30"-211' RCP

35+25 L
Retain 18"-77' RCP

603+00 to 611+50 R (Ramp C)
Grade Ditch
(See Typical Sections and Alignment Information)



Parcel A8
36+33.38 to 43+04.35 R
Temporary Easement containing
0.5 ac, more or less

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B21	B70

Plotting Date: 08/12/2024 Rev. 03-06-2024 JRF

49+13 (DA 7 ac)
Retain 24"-170' RCP

615+06 (Ramp C) (38 ac)
Bore & Jack 30" - 72' Steel Pipe
& Install 2 CMP Sloped Ends

615+06 R (Ramp C)
Install Bank & Channel
Protection Gabions (6.0 CY)
and Type B
Drainage Fabric (19 Sq yd)

50+12 R
Retain 18"-65' RCP

104+98 (SD 25) (359 ac)
Bore & Jack 66" - 134' Steel Pipe
& Install 2 CMP Flared Ends

104+98 L (SD 25)
Install Bank & Channel
Protection Gabions (17.0 CY)
and Type B
Drainage Fabric (47 Sq yd)

Grade Ditch
at the following locations:
0+20 to 2+25 (Ramp B-dr700)
615+00 to 624+09 R (Ramp C)
123+47 to 124+80 R (Ramp C-dr624)
(See Typical Sections and Alignment Information)

615+26 (Ramp C)
Retain 30"-72' RCP

Cut Inlet/Outlet Ditch at Pipe End
at the following locations:
109+96 - 86' L
110+00 - 80' R
111+99 - 73' L
112+02 - 75' R
(Incidental Work, Grading)

Remove Beam Guardrail
at the following locations:
56+32 to 57+64 L
55+55 to 56+75 R

701+14 (Ramp B)
Retain 30"-162' RCP

701+14 (Ramp B)
Plug Pipe Ends

Install Guardrail
(See Layouts)

58+10
Retain 24"-171' RCP Arch

110+22 (SD 25)(9.5 ac)
Install 24" - 158' RCP (28' & 114' & 22')
& 2-45° RCP Bends at 110+22.00-60.00' L
& 110+22.00-58.00' R
& 2 Sloped Ends

65+03 R
Retain 18"-66' RCP

111+83 (SD 25) (9.5 ac)
Install 24" - 140' RCP (14' & 108' & 18')
& 2-45° RCP Bends at 111+83.00-56.59' L
& 111+83.00-55.41' R
& 2 Sloped Ends

111+83 (SD 25)
Place 1' Embankment Material over Pipe
(Incidental Work, Grading)

Kent James Loomer
(INFORMATION ONLY)

S1/2 NE1/4

Micheal J. Roster & Teresa A. Roster
(INFORMATION ONLY)

S1/2 S1/2 NW1/4

R.O.W. Line
1/4 Line
Present Interstate Hwy 90
40+00
45+00
50+00
55+00
60+00
65+00
70+00
610+00
615+00
620+00
624+09
700+00
705+00
710+00
712+84
200'
115+00
N 15°51'12" W
110+00
300'
Present SD Hwy 25
Ramp C
Ramp B
S 69°47'13" E
N 66°40'42" E
2-3 PP
END DRAINAGE MODIFICATIONS
Station 58+00.00
40+90-210'
43+04.35-181.31'
47+50-254.96'
49+25-390'
54+85-643' & 706'
55+56.77-599.39'
55+57.45-706'
57+56.95-626.65'
57+57.45-706'
58+35-591.17' & 706'
103+00
100+00
200'
2+68
0+00
3 PP
2 PP
105+20 R
End type 2 fence
103+96 L
End type 2 fence
103+96 R
Begin type 2 fence
Exit 350 Ramp C - dr624
Refer to Horizontal
Alignment Data Sheet
Exit 350 Ramp B - dr700
Refer to Horizontal
Alignment Data Sheet
Section Line

Ramp C
PI 611+49.07
N 496811.99
E 2672830.26
Del 21°34'38" R
Dc 3°00'00"
T 363.93'
L 719.24'
R 1909.86'

Ramp B
PI 710+60.54
N 496823.76
E 2675084.03
Del 13°27'25" R
Dc 3°00'00"
T 225.32'
L 448.56'
R 1909.86'

SE1/4

SW1/4

United States of America
(Fish & Wildlife Service)

The SE1/4 of Section 4 - Township102 North - Range 57 West of the 5th P.M., except 1 acre of land situated in the southeast corner of the SE1/4, said tract being approximately 9 rods east and west and 11 rods north and south and except Lot H1 therein

Parcel 1
Omitted

Parcel A8

Gregory Lynn Kayser & Beth Kayser
(INFORMATION ONLY)

Sec 4 - T102N - R57W

Sec 3 - T102N - R57W

LOT A

Boyd A. Reimnitz

Lot A in the SW1/4 of Section 3 -
Township 102 North - Range 57 West of the 5th P.M.

Parcel A1

Parcel A8
47+50 to 55+57.45 R
Temporary Easement containing
1.2 ac, more or less

Parcel A1
57+56.95 to 58+35 R
Temporary Easement containing
0.2 ac, more or less

Plot Scale - 1:200

Plotted From - TPPR114435

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Exit 350 - Ramp B & C

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B22	B70

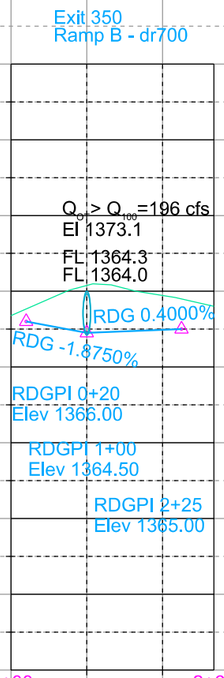
Plotting Date: 08/12/2024

EXIT 350 RAMP B - dr700 - 0+20 to 2+25

Excavation 542 Out-of-Balance Waste 542

Haul 0 C Y Sta's

Waste is excess material assumed to be used as Out-of-Balance
Excavation in I 90 WB from 479+55 to 507+30

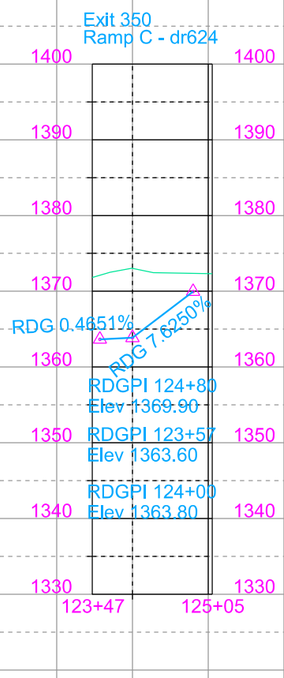


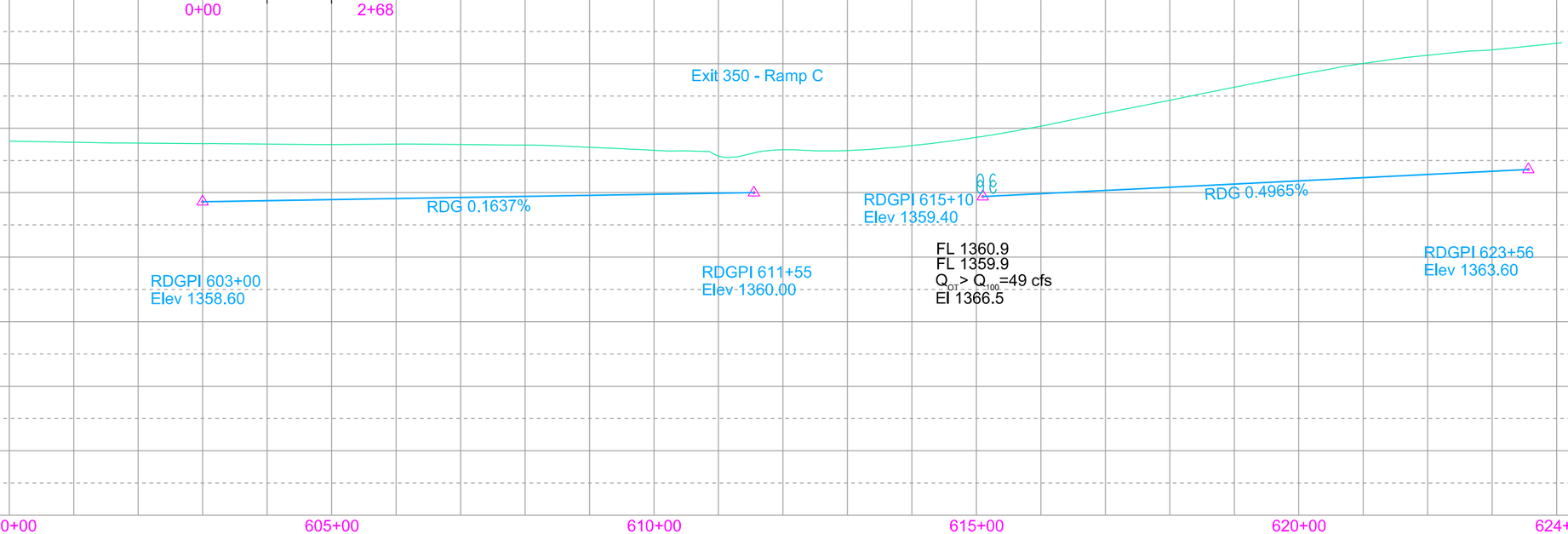
EXIT 350 RAMP C - 603+00 to 624+09
(Includes dr624 earthwork)

Excavation 11255 Out-of-Balance Waste 11255

Haul 0 C Y Sta's

Waste is excess material assumed to be used as Out-of-Balance
Excavation in I 90 WB from 479+55 to 507+30





Plot Scale - 1:200

Plotted From - TRPR14435

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434+45
Install Median Crossover
(See Section F for Details)

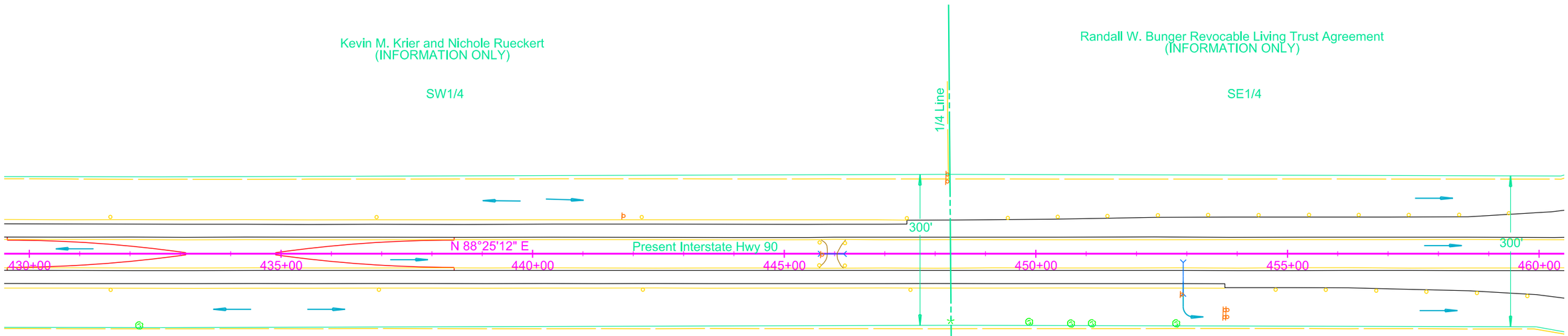
445+95
Take Out 18"-64' CMP
(Incidental Work, Grading)

445+95
Take Out Maintenance Crossover
(Incidental Work, Grading)

452+93 R
Retain 18"-62' RCP

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B23	B70

Plotting Date: 08/12/2024



SW1/4

Lloyd A. Schallenkamp Family Trust and
Mary L. Schallenkamp Family Trust
(INFORMATION ONLY)

SE1/4

Randall W. Bunger Revocable Living Trust Agreement
(INFORMATION ONLY)

Sec 2 - T102N - R56W

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B24	B70

Plotting Date: 08/12/2024

467+92 L
Retain 18"-87' RCP

917+11 (DA 25 ac)
Retain 24"-84' RCP

474+60 L (DA 11 ac)
Retain 24"-129' RCP

474+62 R (DA 32 ac)
Retain 24"-141' RCP

707+83
Take Out 30" - 65' RCP
(Incidental Work,Grading)

707+83 (82 ac)
Install 42" - 76' RCP
and 2 Flared Ends

Install Temporary Guardrail
(See Layouts)

481+42
Take Out 24"-185' RCP
(Incidental Work,Grading)

808+94 (DA 21 ac)
Retain 30"-50' CMP

481+52 L
Take Out 18" - 82' RCP
(Incidental Work,Grading)

481+42 (61 ac)
Install 36" - 184' RCP
and 2 Flared Ends

481+67 - 0' L to 111' L
Install 18" - 102' RCP
and 1 Safety End
(Between Median Drain and Pipe Outlet)

481+67 - 0' L
Install Type M Median Drain

Ramp A
PI 713+67.42
N 497890.52
E 2717090.29
Del 20°19'59" L
Dc 2°29'28"
T 412.45'
L 816.22'
R 2300.00'

Ramp A
PI 717+90.39
N 497902.85
E 2717521.76
Del 0°03'51" L
Dc 0°10'01"
T 19.20'
L 38.40'
R 34320.47'

State of South Dakota
(Department of Game, Fish, & Parks)
(INFORMATION ONLY)

704+00 L
Begin type 2 fence

Government Lot 6

2 PP

Randall W. Bunger Revocable Living Trust Agreement
(INFORMATION ONLY)

SE1/4

R.O.W. L ine

Section line

700+00

Ramp A

R.O.W. L ine

S 71°18'12" E

705+00

BEGIN GRADING
Station 479+55.00

State of South Dakota
(Department of Game, Fish, & Parks)

Government Lot 7 and Relicted Lot 2 in Section 1 - Township 102 North - Range 56 West of the 5th P.M., lying north of Lot H1

Parcel A2

RELICTED LOT 2

SW1/4

487+07 - 186.67'

489+76 - 153.39'

2-3 PP

710+00

715+00

300'

Present Interstate Hwy 90

460+00 465+00 470+00 475+00 480+00 485+00 490+00

Ramp C

R.O.W. L ine

SE1/4

Randall W. Bunger Revocable Living Trust Agreement
(INFORMATION ONLY)

800+00

Sec 2 - T102N - R56W

Ramp B

N 67°58'25" E

805+00

810+00

815+00

2 PP
2-3 PP

3 PP

3 PP

2 PP

Ramp B
PI 817+77.66
N 497788.87
E 2717524.38
Del 0°03'50" L
Dc 0°09'59"
T 19.20'
L 38.40'
R 34434.47'

Ramp B
PI 813+53.56
N 497776.52
E 2717091.70
Del 20°23'28" R
Dc 2°29'28"
T 413.65'
L 818.56'
R 2300.00'

485+26 - 247.76'

487+82.81 - 193'

R.O.W. L ine

Government Lot 6

808+50 R
Begin type 2 fence

Government Lot 7

1/16 Line

S1/2 SW1/4

Sec 1 - T102N - R56W

487+10 to 487+80 R
Do Not Disturb Trees

Gary and Karen Schallenkamp Living Trust

Government Lot 7 and the S1/2SW1/4 of Section 1 - Township 102 North - Range 56 West of the 5th P.M., except Government Lot 7 lying north of Lot H1 in the SW1/4 and except Lot H1 in the SW1/4

Parcel A3

Parcel A2
487+07 to 489+76 L
Temporary Easement containing
0.1 ac, more or less

Parcel A3
485+26 to 500+98.07 R
Temporary Easement containing
0.9 ac, more or less

Plot Scale - 1:200

Plotted From - TRPR14435

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B25	B70

Plotting Date: 08/12/2024

I90 WB 479+55 to 496+00

Excavation	1099	Embankment		9116	
Undercut	4845		+40.0%	3647	12763
Out-of-Balance	13602	Undercut		4845	
Muck	1335		+40.0%	1938	6783
	20881	Waste			1335
					20881

Haul 0 CY Sta's
Out-of-Balance Haul 5,238,000 CY Sta's

Out-of-Balance Excavation material comes from Exit 350 Ramp B (542 CY), Ramp C (11,255 CY), and Crossover at 434+55 (1805 CY)

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

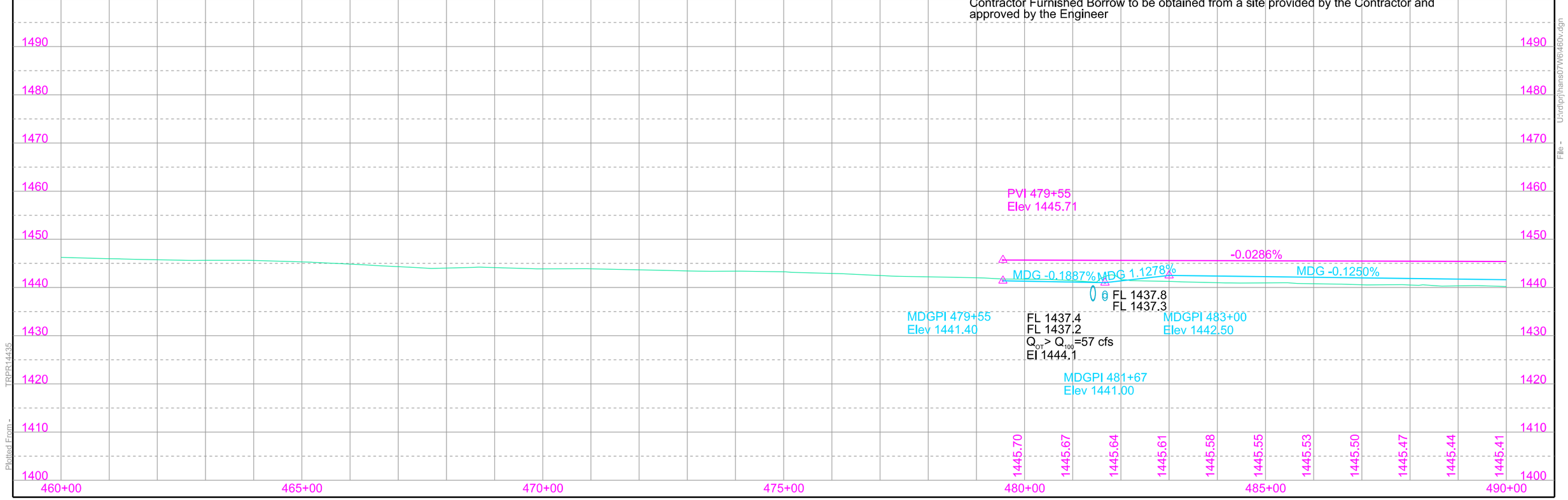
I90 EB 479+55 to 507+30

Excavation	5014	Embankment		15097
Undercut	7761		+40.0%	6039 21136
Contractor Furnished Borrow	19226	Undercut		7761
Muck	2109		+40.0%	3104 10865
	34110	Waste		2109
				34110

Haul 0 CY Sta's

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

Contractor Furnished Borrow to be obtained from a site provided by the Contractor and approved by the Engineer



Plot Scale - 1:200

Plotted From - TRPP14435

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B26	B70

Plotting Date: 08/12/2024

Exit 357 - Ramp A

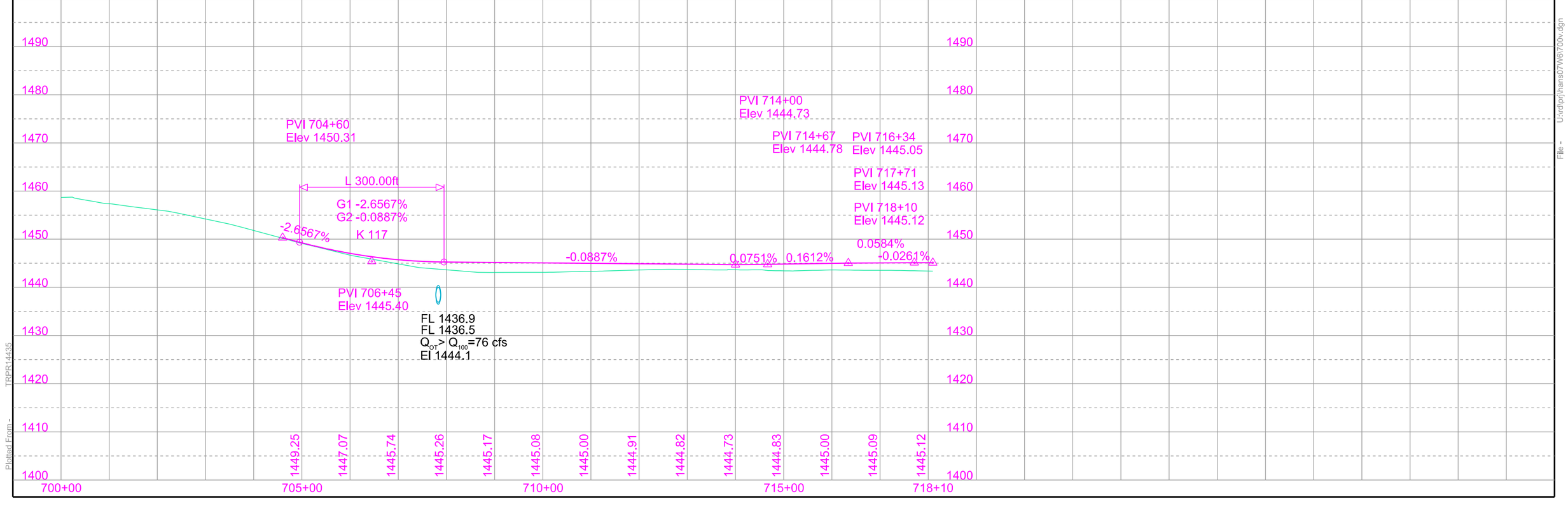
EXIT 357 RAMP A 704+60 to 718+10

Excavation	2095	Embankment	12093		
Undercut	2490	+40.0%	4837	16930	
Contractor Furnished Borrow	15831	Undercut	2490		
Muck	2221	+40.0%	996	3486	
	22637	Waste		2221	
				22637	

Haul 0 CY Sta's

Contractor Furnished Borrow to be obtained from a site provided by the Contractor and approved by the Engineer

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



Plot Scale - 1:200

Plotted From - TRPP14435

File - U:\rdprj\hans\07W\67700v.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B27	B70

Plotting Date: 08/12/2024

Exit 357 - Ramp B

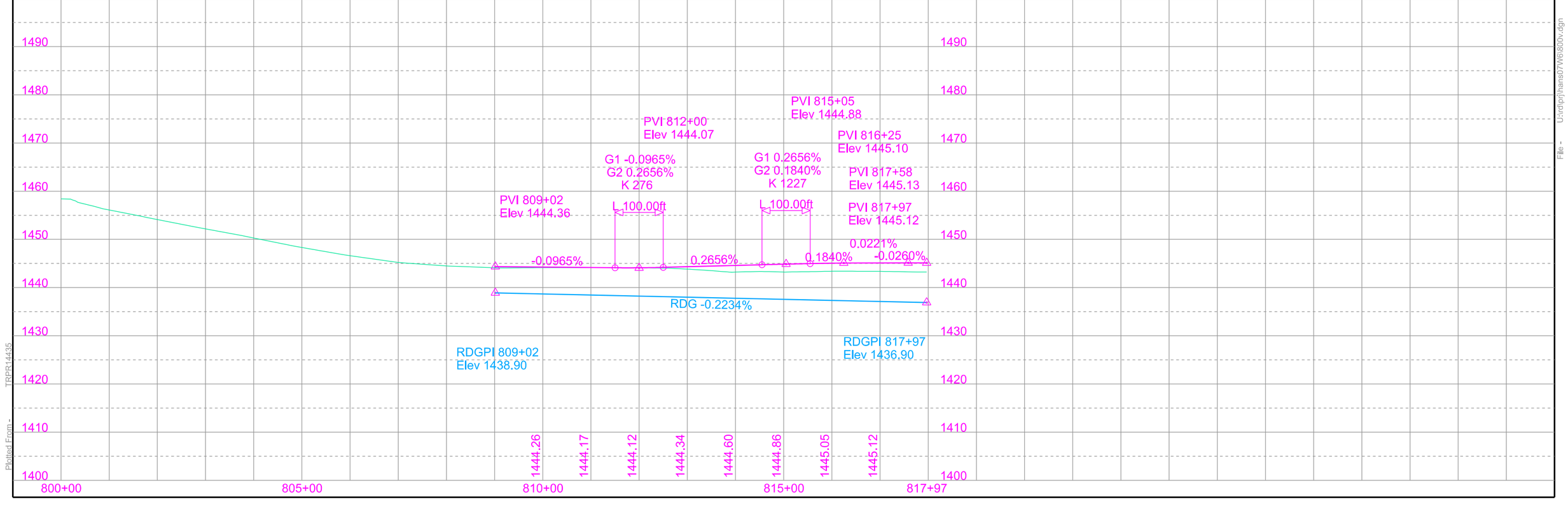
EXIT 357 RAMP B 809+02 to 817+97

Excavation	2175	Embankment	3646		
Undercut	2172	+40.0%	1458	5104	
Contractor Furnished Borrow	3798	Undercut	2172		
Muck	1557	+40.0%	869	3041	
	9702	Waste		1557	
				9702	

Haul 0 CY Sta's

Contractor Furnished Borrow to be obtained from a site provided by the Contractor and approved by the Engineer

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



Plot Scale - 1:200

Plotted From - TRPP14435

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B28	B70

Plotting Date: 08/12/2024 Rev. 10-25-2023 JWF

494+92 L
Take Out 18"- 69' RCP
(Incidental Work,Grading)

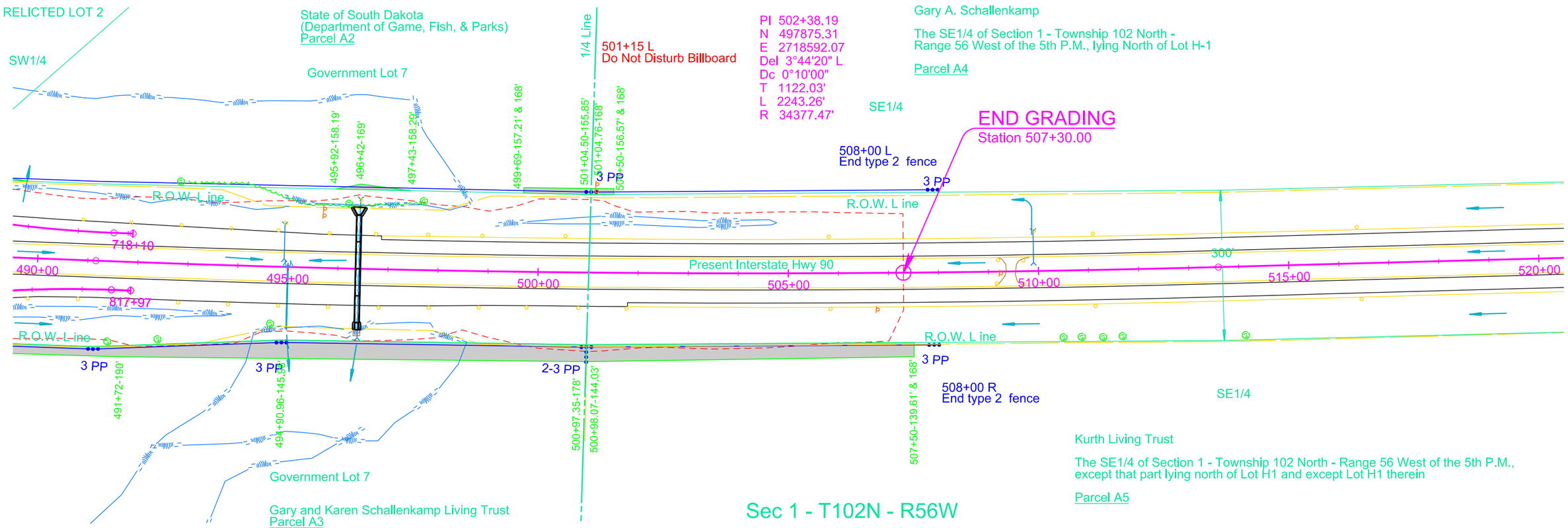
495+00 - 0' L
Install Type M Median Drain

495+00 - 0' L to 125' R
Install 18" - 116' RCP
and 1 Saftey End
(Between Median Drain & Pipe Outlet)

496+42
Take Out 30"-276' RCP
(Incidental Work, Grading)

496+40 (10.08 sq mi)
Site 1
Alternate A
Install 8'x8'-245' - 3 1/4"
Box Culvert (CIP)
Alternate B
Install 9'x8'-248' - 0"
Box Culvert (Precast)
(See Section E)

509+90 L
Retain 18"-63' RCP



Parcel A2
495+92 to 497+43 L
Temporary Easement containing
0.1 ac, more or less

Parcel A2
499+69 to 501+04.76 L
Temporary Easement containing
0.1 ac, more or less

Parcel A5
500+97.35 to 507+50 R
Temporary Easement containing
0.5 ac, more or less

Parcel A4
501+04.50 to 501+50 L
Temporary Easement containing
0.1 ac, more or less

Plot Scale - 1:200

Plotted From - TRPR14435

File - U:\rdp\hans07W6490.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B29	B70

Plotting Date: 08/12/2024

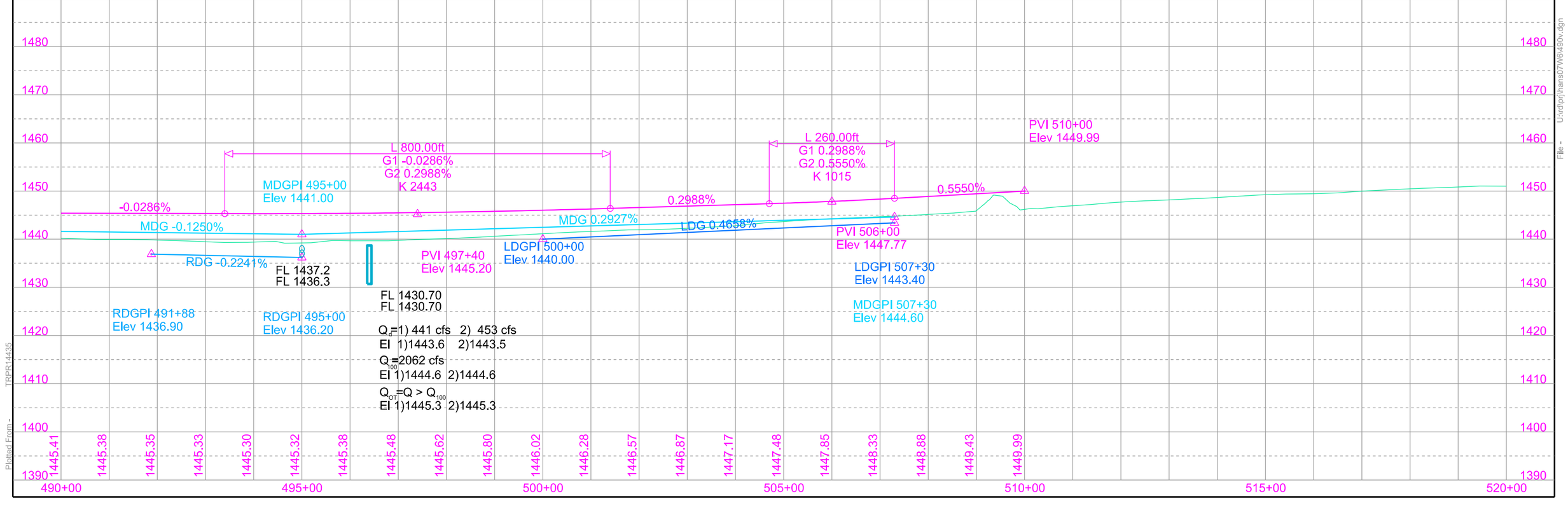
I90 WB 495+55 to 507+30

Excavation	486	Embankment	7309		
Undercut	3074	+40.0%	2923	10232	
Contractor Furnished Borrow	10976	Undercut	3074		
Muck	1781	+40.0%	1203	4304	
	16317	Waste		1781	
				16317	

Haul 0 CY Sta's

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

Contractor Furnished Borrow to be obtained from a site provided by the Contractor and approved by the Engineer



Plot Scale - 1:200

Plotted From - TRPP14435

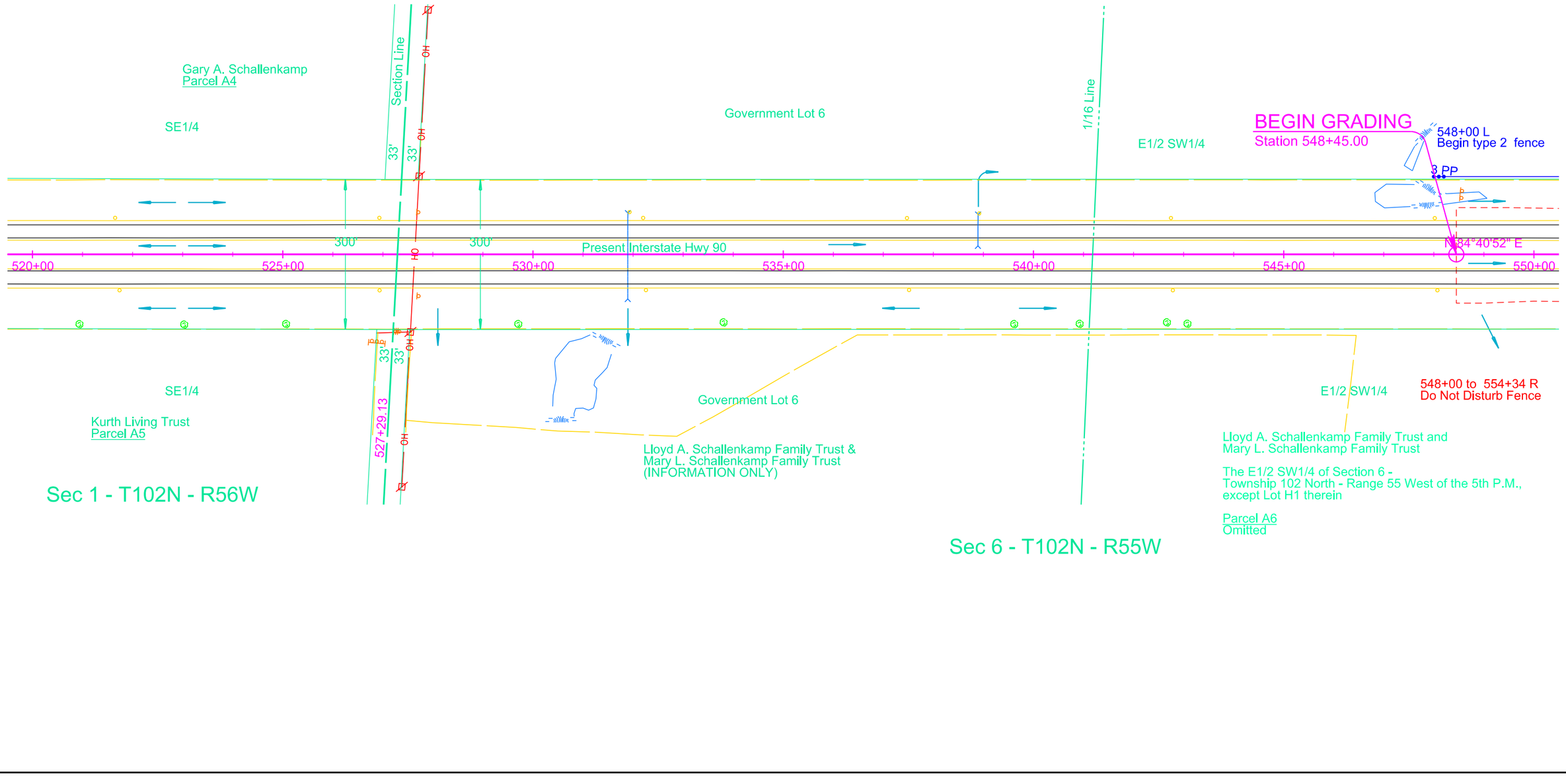
File - U:\rdplrj\hansi07W6\490v.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B30	B70

Plotting Date: 08/12/2024 Rev. 06-27-2024 JRF

531+89
Retain 24"-171' RCP

538+89 L
Retain 18"-63' RCP



Plot Scale - 1:200

Plotted From - TRPR14435

File - U:\trdprj\hans07W6\520.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B31	B70

Plotting Date: 08/12/2024

Plot Scale - 1:200

Plotted From - TRPP14435

File - U:\rdprj\hans\07W6\520v.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B32	B70

Plotting Date: 08/12/2024 Rev. 06-27-2024 JRF

553+50-0' L to 105' R
Install 18" - 100' RCP
and 1 Safety End
(Between Median Drain & Pipe Outlet)

553+87
Take Out 24"-179' CMP
(Incidental Work, Grading)

553+90 (4.42 sq mi)
Install 2-9'x4' -182' - 0"
Box Culvert (Precast)
(See Section E)

553+98 L
Take Out 18"-75' RCP
(Incidental Work, Grading)

554+18
Take Out Twin 36"-177' CMP
(Incidental Work, Grading)

561+81 L
Take Out 18"-71' RCP
(Incidental Work, Grading)

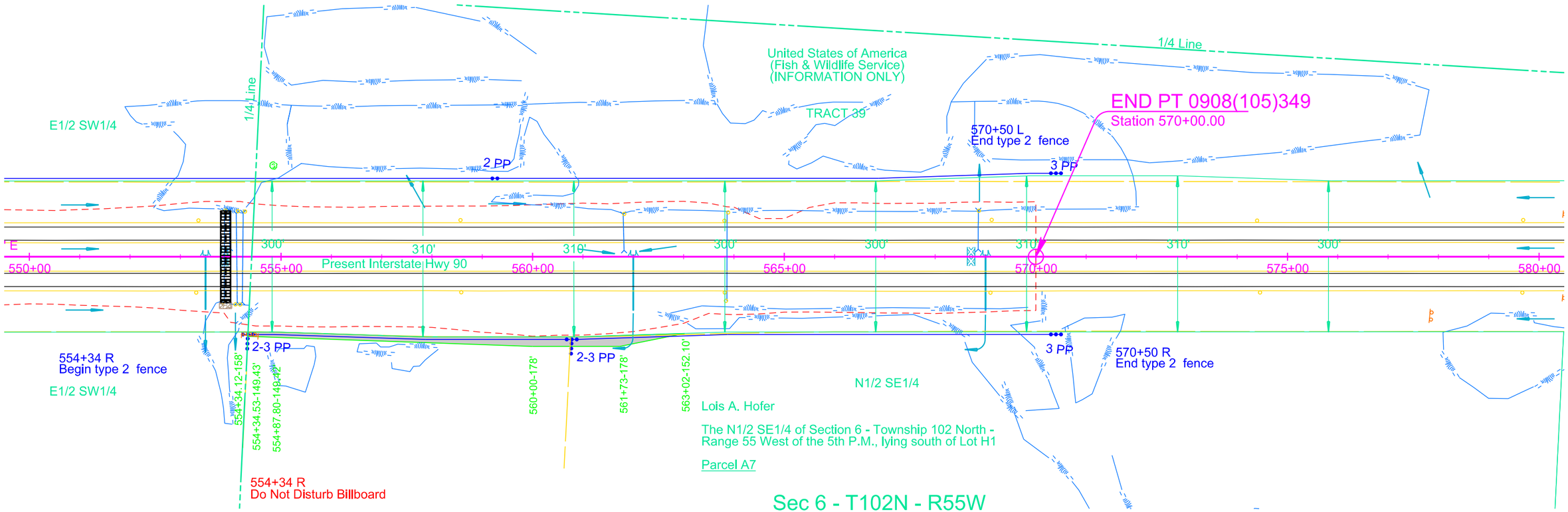
562+00-0' L to 107' R
Install 18" - 102' RCP
and 1 Safety End
(Between Median Drain & Pipe Outlet)

563+86
Take Out 30"-176' CMP
(Incidental Work, Grading)

569+00-0' L to 107' R
Install 18" - 100' RCP
and 1 Safety End
(Between Median Drain & Pipe Outlet)

568+86 L
Take Out 18"-77' RCP
(Incidental Work, Grading)

Install Type M Median Drain
at the following locations:
553+50-0' L
562+00-0' L
569+00-0' L



Parcel A7
554+34.12 to 563+02 R
Temporary Easement containing
0.3 ac, more or less

Plot Scale - 1:200
Plotted From - TRPR14435
File - U:\rdp\hans07W\6550.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B33	B70

Plotting Date: 08/12/2024

I90 WB 548+45 to 570+00

Excavation	956	Embankment	6710	
Undercut	8443	+40.0%	2684	9394
Contractor Furnished Borrow	11815	Undercut	8443	
Muck	1633	+40.0%	3377	11820
	22847	Waste		1633
				22847

Haul 0 CY Sta's

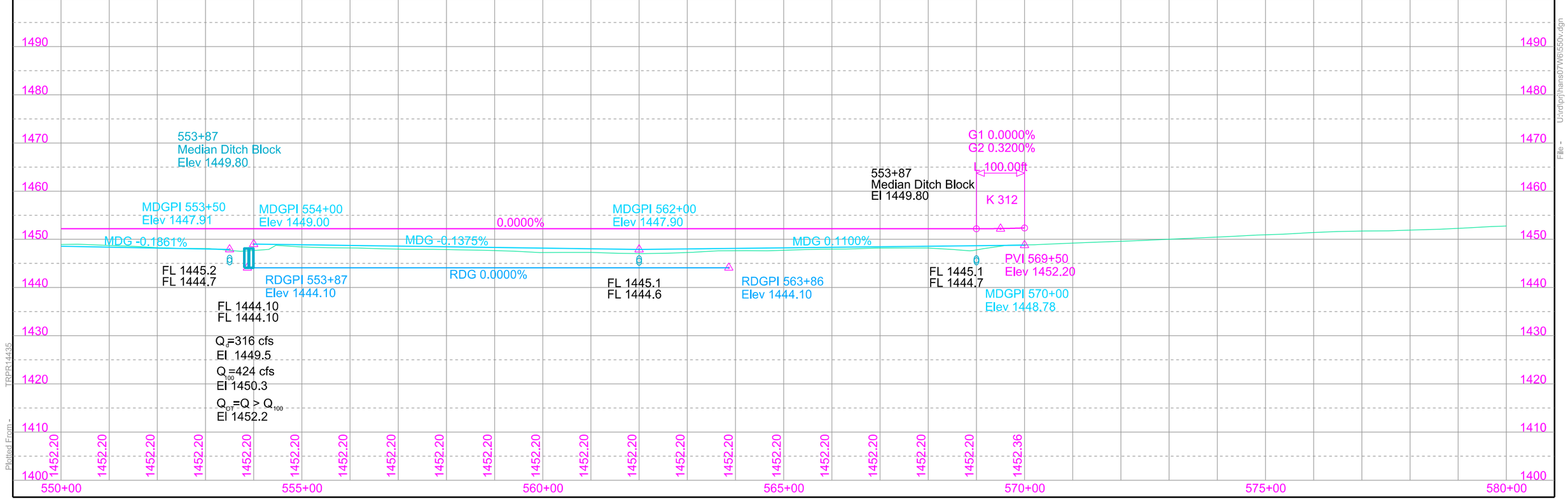
Waste is Muck excavation to be disposed of at a site approved by the Engineer

I90 EB 548+45 to 570+00

Excavation	3420	Embankment	7520	
Undercut	8142	+40.0%	3008	10528
Contractor Furnished Borrow	10365	Undercut	8142	
Muck	1438	+40.0%	3257	11399
	23365	Waste		1438
				23365

Haul 0 CY Sta's

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



Plot Scale - 1:200

Plotted From - TRPP14435

File - U:\rdprj\hans\07W6550v.dgn

257th St

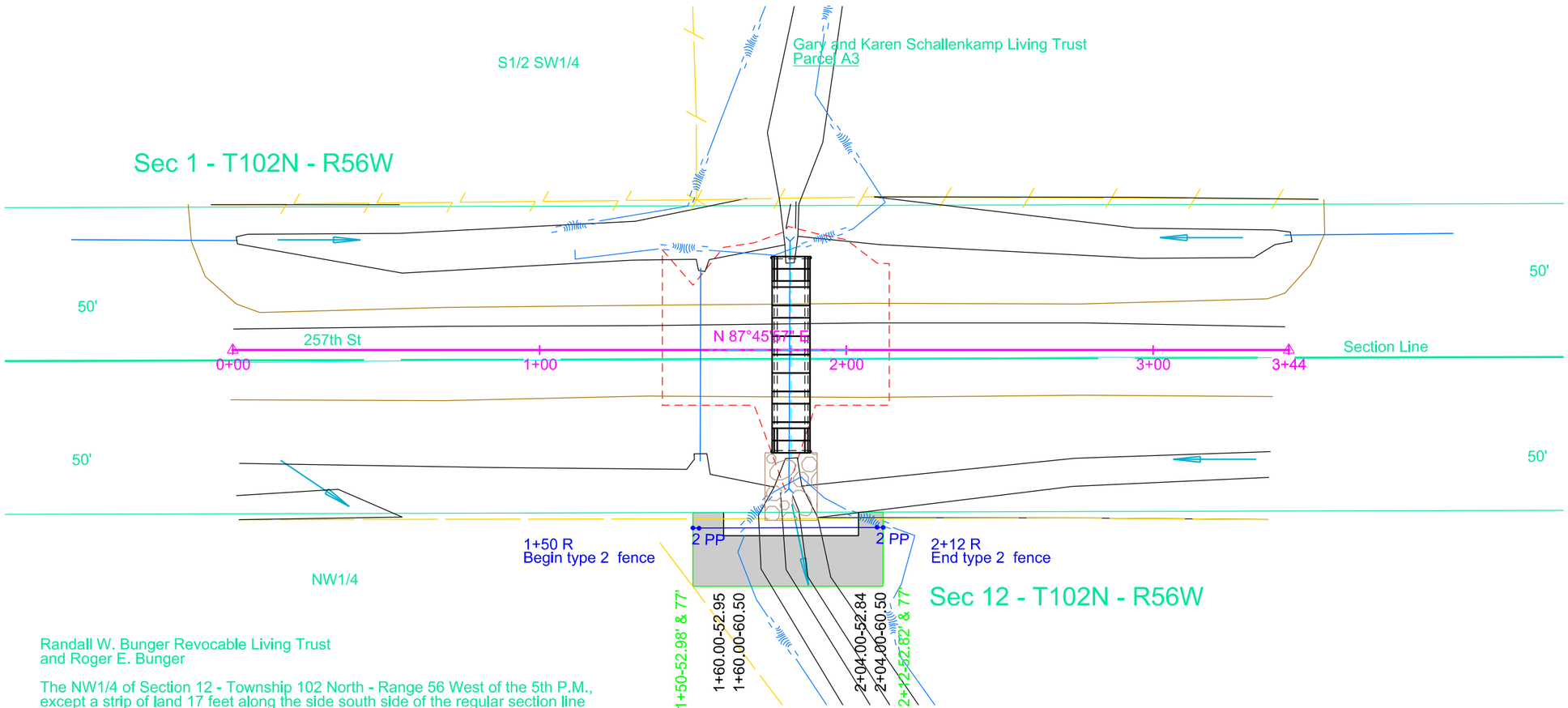
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B34	B70

Plotting Date: 08/12/2024 Rev. 10-25-2023 JWF

1+52
Take Out 24"-63' CMP
(Incidental Work, Grading)

1+81
Take Out 30" - 81' CMP
(Incidental Work, Grading)

1+82 (10.22 sq mi)
Install 11'x5' - 64' - 0"
Box Culvert (Precast)
(See Section E)



Randall W. Bunger Revocable Living Trust
and Roger E. Bunger

The NW1/4 of Section 12 - Township 102 North - Range 56 West of the 5th P.M., except a strip of land 17 feet along the side south side of the regular section line right of way extending along the north side of the NW1/4 and except a strip of land 17 feet wide along the east side of the regular section line right of way extending along the west side of the NW1/4

Parcel 2

Parcel 2
1+50 to 2+12 R
Temporary Easement containing
0.61 ac, more or less

Plot Scale - 1:40

Plotted From - TRPR14435

File - ...\rd\pr\hans07W6000_257st.dgn

257th St

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0908(105)350	B35	B70

Plotting Date: 08/12/2024 Rev 08-12-2024 JRF

Plot Scale - 1:40

1+40 to 2+14

Excavation 70 Embankment 20

+40.0% 8 28

Waste 42

70

Haul 0 CY Sta's

Waste is excess material to be disposed of at a site approved by the Engineer

PVI 1+40
Elev 1440.91

PVI 1+80
Elev 1440.75

PVI 2+14
Elev 1440.76

PVI 1+60
Elev 1440.83

PVI 2+00
Elev 1440.73

-0.3982% -0.4000% -0.1000% 0.2143%

FL 1433.32
FL 1432.23

Q_d =333 cfs
El 1438.5
Q_{100}=2062 cfs
El 1440.6
Q_{OT}=Q > Q_{100}
El 1440.8

1490 1485 1480 1475 1470 1465 1460 1455 1450 1445 1440 1435 1430 1425 1420 1415 1410 1405 1400

1440.91 1440.83 1440.75 1440.73

0+00 1+00 2+00 3+00 3+44

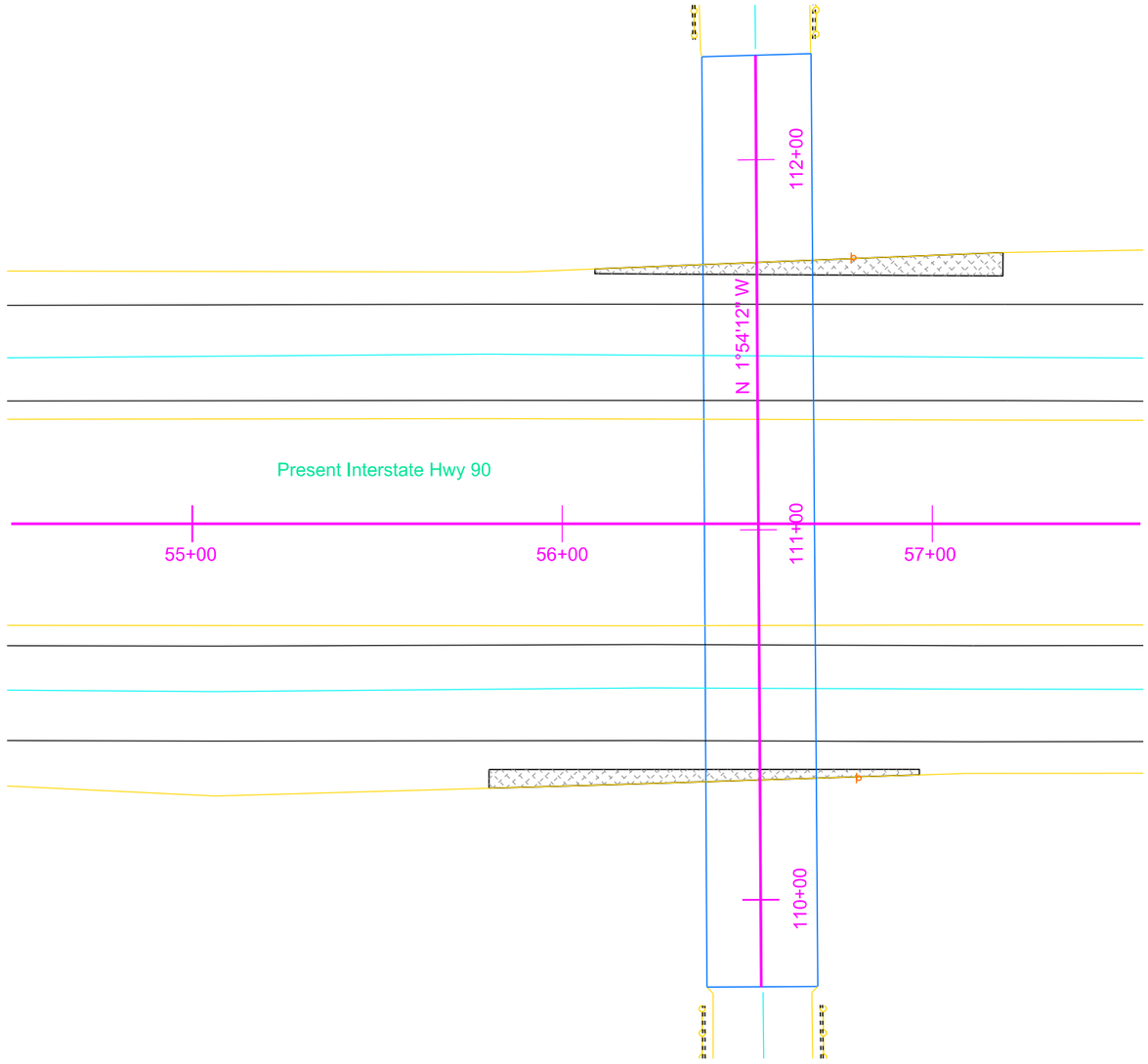
Plotted From - TRPR14435

File - ...\rdp\hans07W6\000v_257st.dgn

PAVEMENT REMOVAL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B36	B70

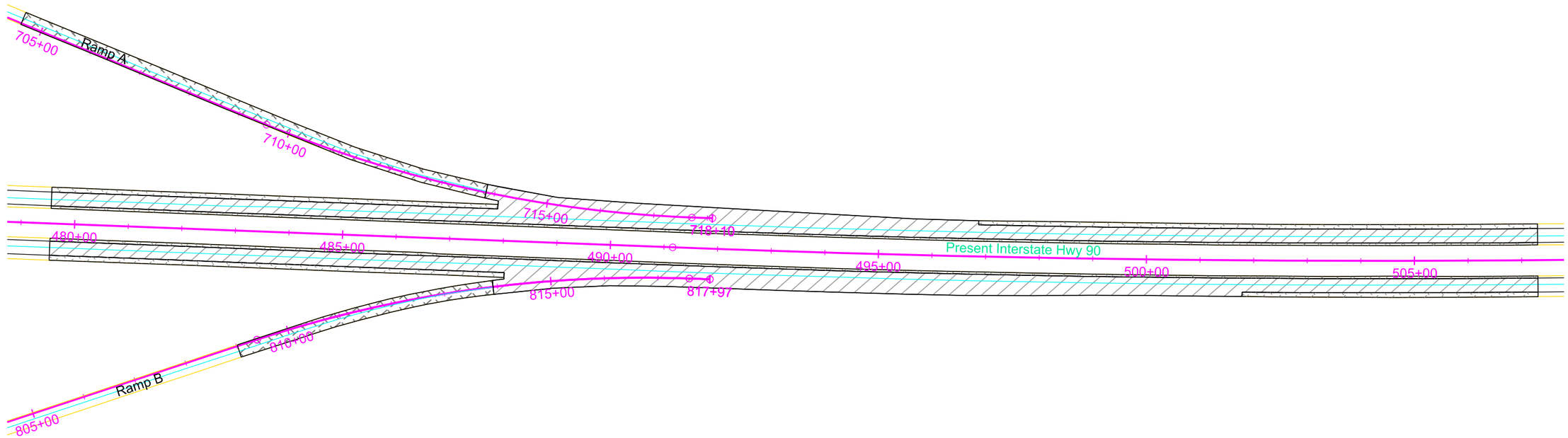
Plotting Date: 08/12/2024



PAVEMENT REMOVAL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B37	B70

Plotting Date: 08/12/2024 Rev. 10-25-2023 JWF



Plot Scale - 1:200

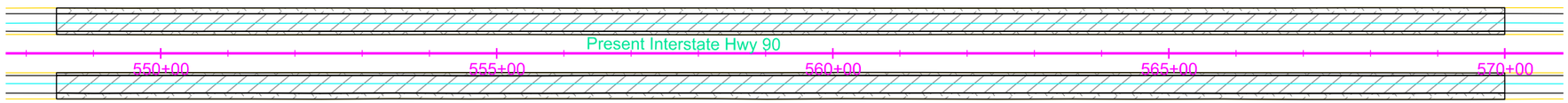
Plotted From - TRPR14435

File - U:\rd\pr\hans07W6480pr.dgn

PAVEMENT REMOVAL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B38	B70

Plotting Date: 08/12/2024



GUARDRAIL EMBANKMENT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B39	B70

Plotting Date: 08/12/2024

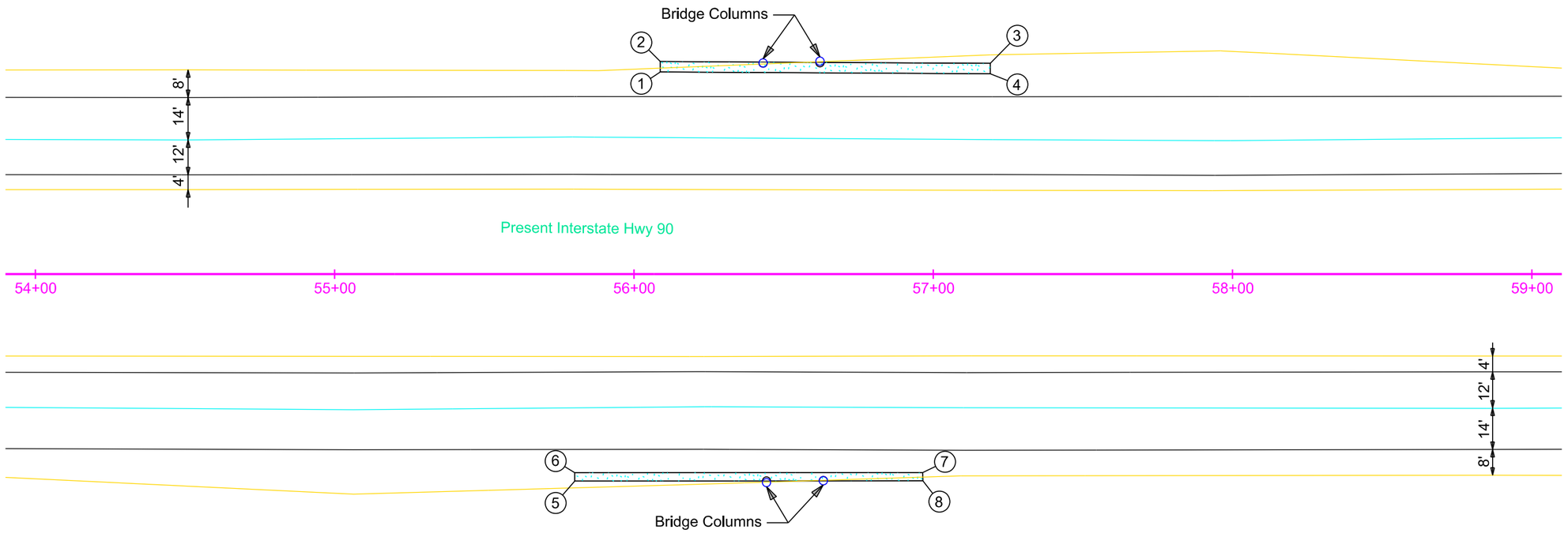
Structure Number 31-150-125

2" Asphalt Concrete Composite
& 11.3" Base Course
(See Section F)

Edge Existing Asphalt

Edge Existing PCCP

1	56+09-67.60' L
2	56+09-71.10' L
3	57+19-70.50' L
4	57+19-67.00' L



5	55+80-69.20' R
6	55+80-66.40' R
7	56+97-66.40' R
8	56+97-69.20' R

Plot Scale - 1:40

Plotted From - TRPR14435

File - ...\054_Guardrail Embankment.dgn

GUARDRAIL EMBANKMENT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B40	B70

Plotting Date: 08/12/2024

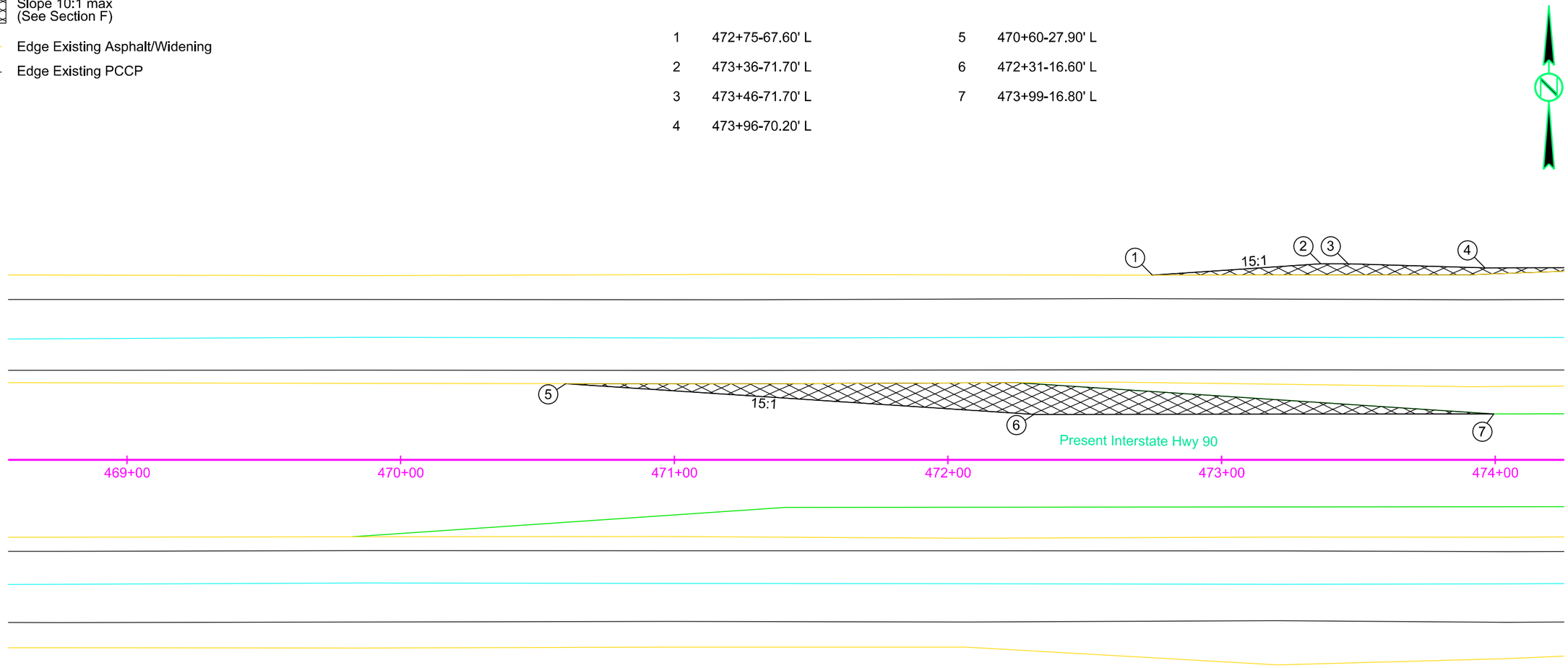
Structure Number 44-050-127

Base Course
Slope 10:1 max
(See Section F)

Edge Existing Asphalt/Widening

Edge Existing PCCP

1	472+75-67.60' L	5	470+60-27.90' L
2	473+36-71.70' L	6	472+31-16.60' L
3	473+46-71.70' L	7	473+99-16.80' L
4	473+96-70.20' L		



GUARDRAIL EMBANKMENT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B41	B70

Plotting Date: 08/12/2024

Structure Number 44-050-127

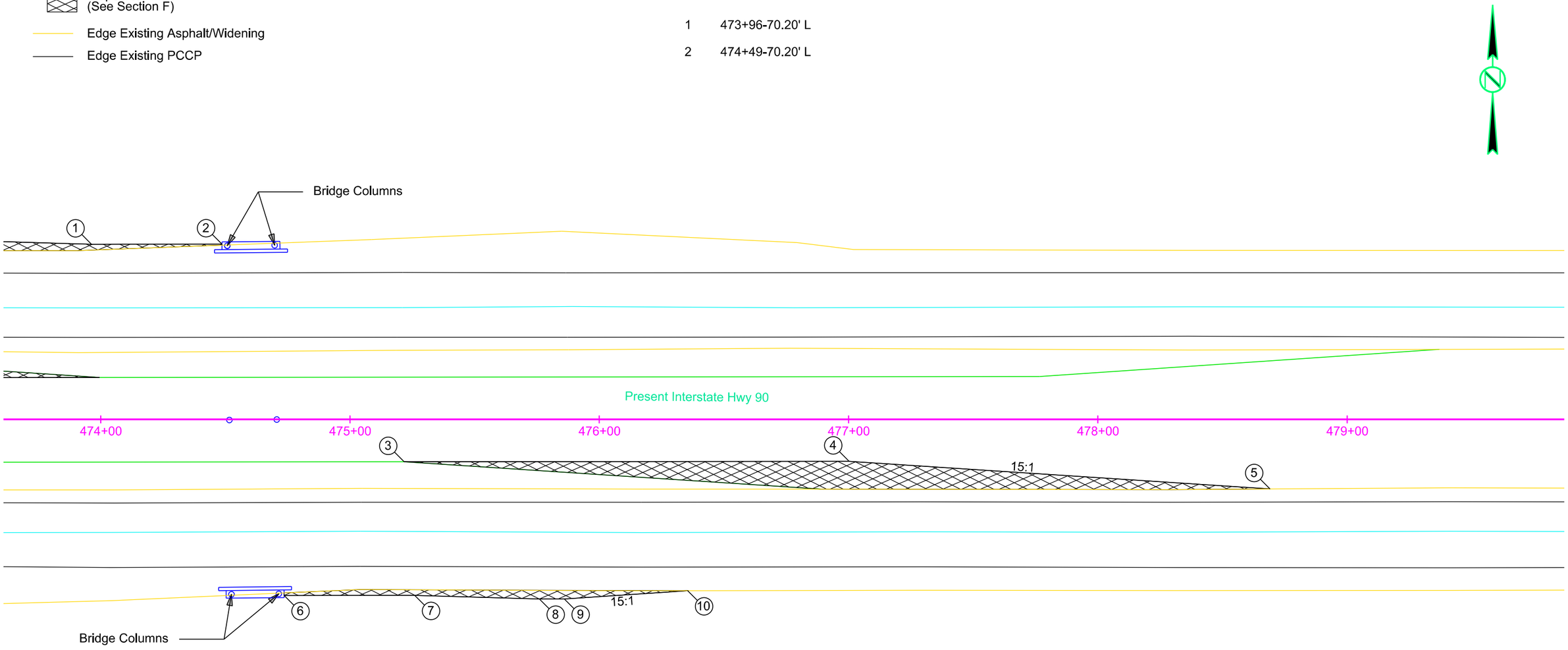
Base Course
Slope 10:1 max
(See Section F)

Edge Existing Asphalt/Widening

Edge Existing PCCP

1 473+96-70.20' L

2 474+49-70.20' L



3 475+22-17.00' R

4 477+00-16.80' R

5 478+69-27.90' R

6 474+74-70.60' R

7 475+26-70.60' R

8 475+76-72.00' R

9 475+86-72.00' R

10 476+36-68.70' R

GUARDRAIL EMBANKMENT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B42	B70

Plotting Date: 08/12/2024

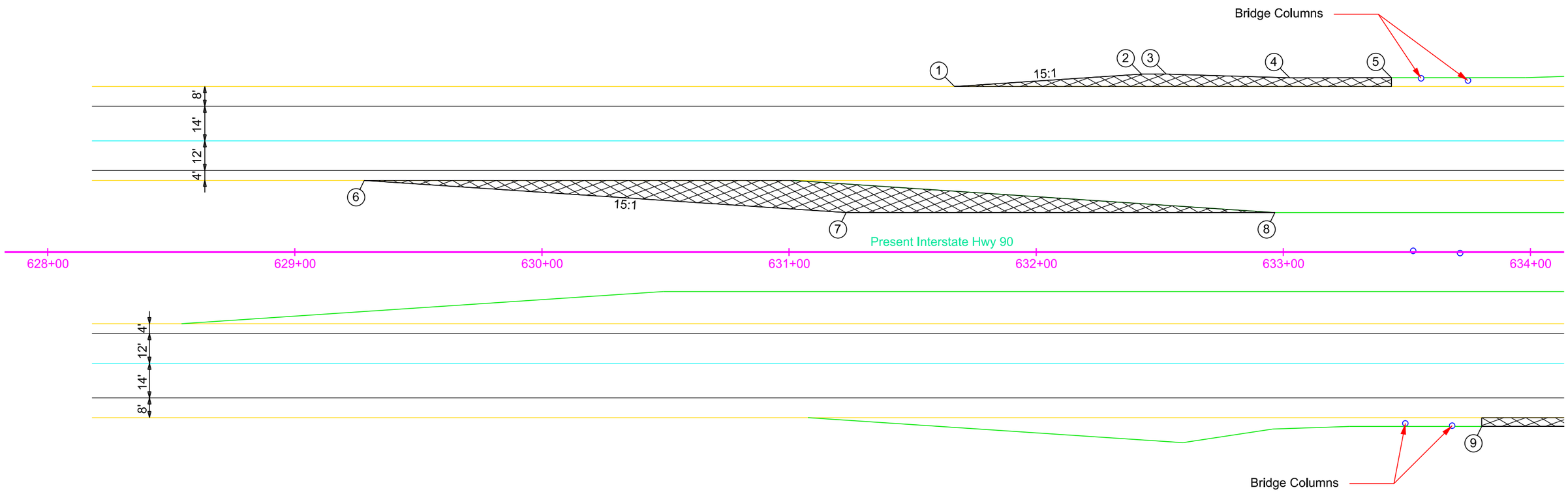
Structure Number 44-080-125

Base Course
Slope 10:1 max
(See Section F)

Edge Existing Asphalt/Widening

Edge Existing PCCP

1	631+67-67.00' L	6	629+28-29.00' L
2	632+43-72.00' L	7	631+23-16.00' L
3	632+53-72.00' L	8	632+97-16.00' L
4	633+03-70.50' L		
5	633+44-70.50' L		



9 633+80-70.50' R

GUARDRAIL EMBANKMENT LAYOUT

Structure Number 44-080-125

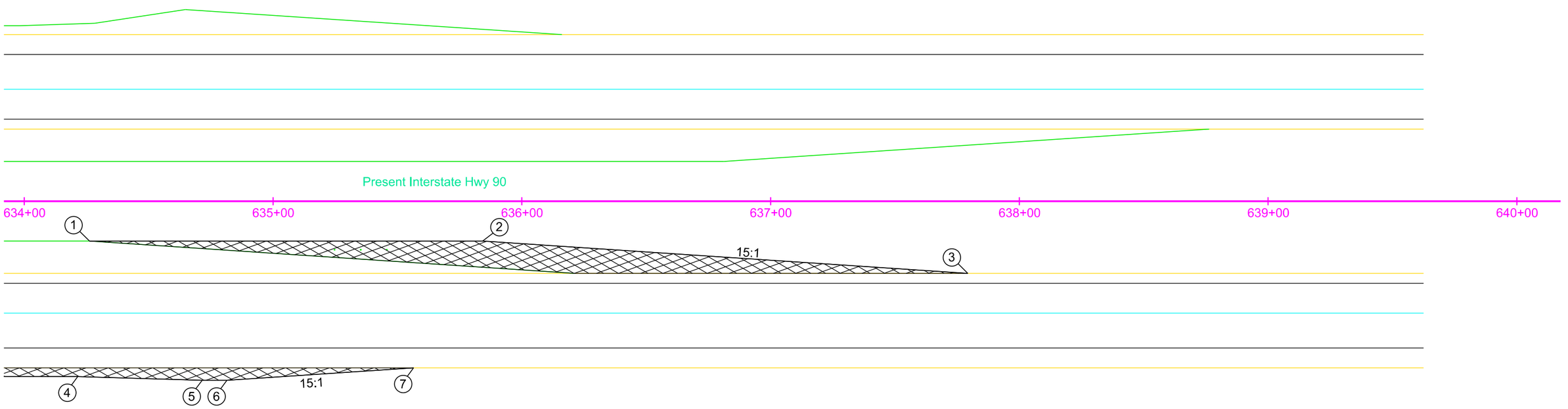
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B43	B70

Plotting Date: 08/12/2024

Base Course
Slope 10:1 max
(See Section F)

Edge Existing Asphalt/Widening

Edge Existing PCCP



1	634+26-16.00' R	4	634+21-70.50' R
2	635+84-16.00' R	5	634+71-72.00' R
3	637+79-29.00' R	6	634+81-72.00' R
		7	635+56-67.00' R

GUARDRAIL LAYOUT

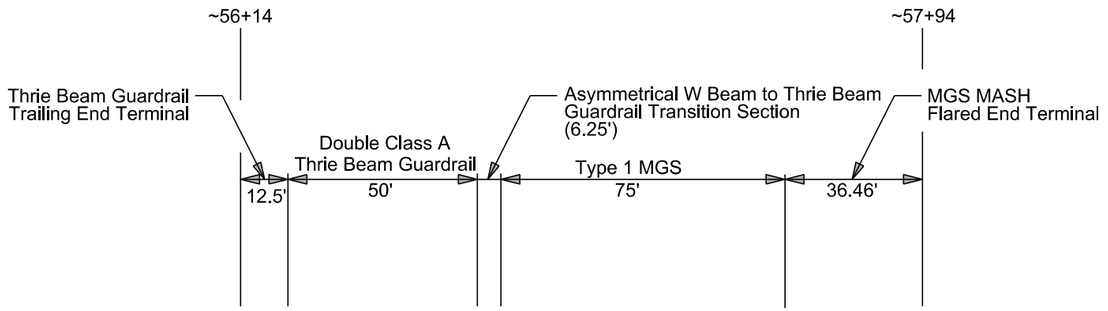
Structure Number 31-150-125

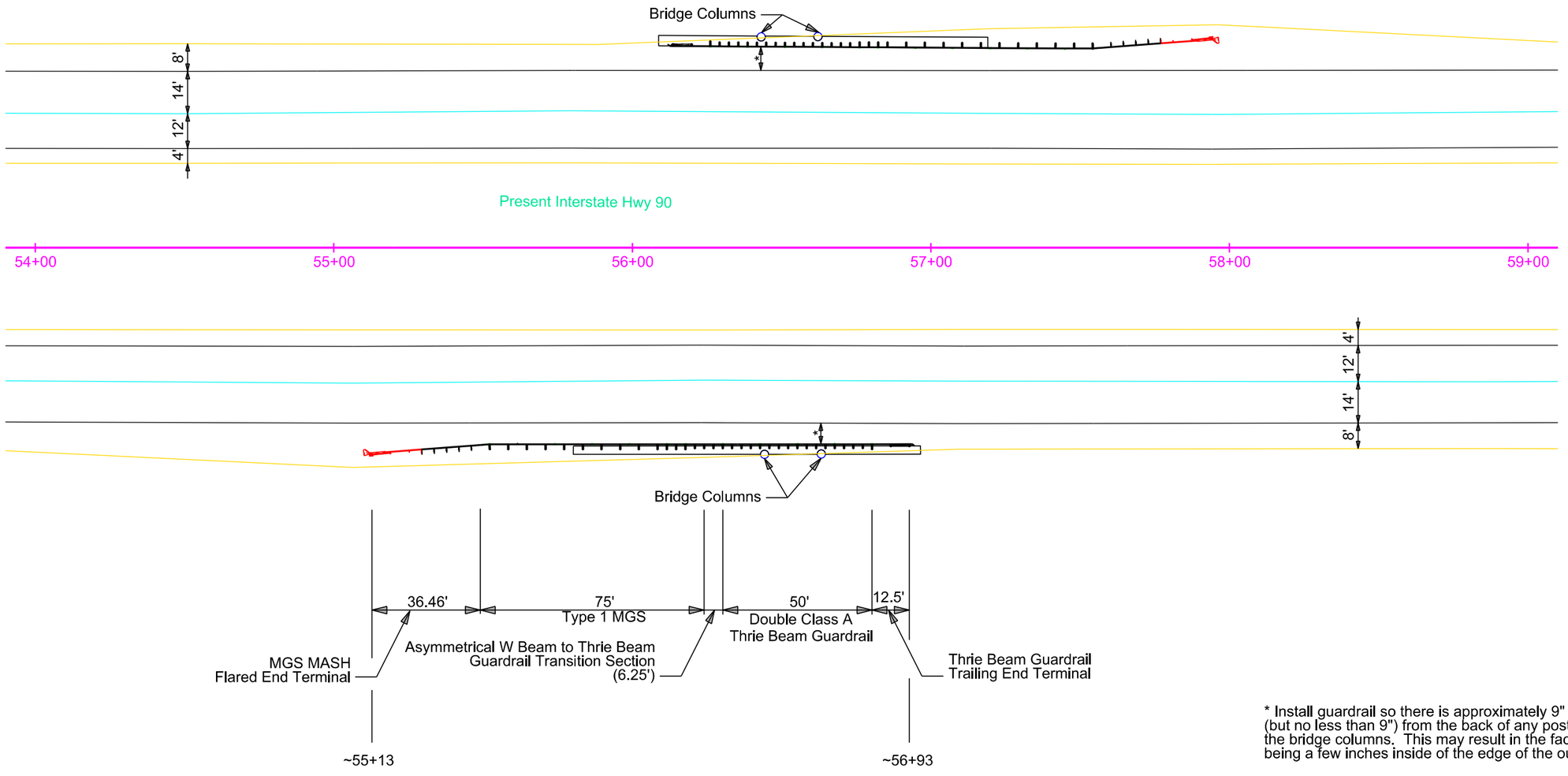
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B44	B70

Plotting Date: 08/12/2024

Edge Existing Asphalt

Edge Existing PCCP





* Install guardrail so there is approximately 9" of clearance (but no less than 9") from the back of any post to the edge of the bridge columns. This may result in the face of the guardrail being a few inches inside of the edge of the outside shoulder.

TEMPORARY GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B45	B70

Plotting Date: 08/12/2024

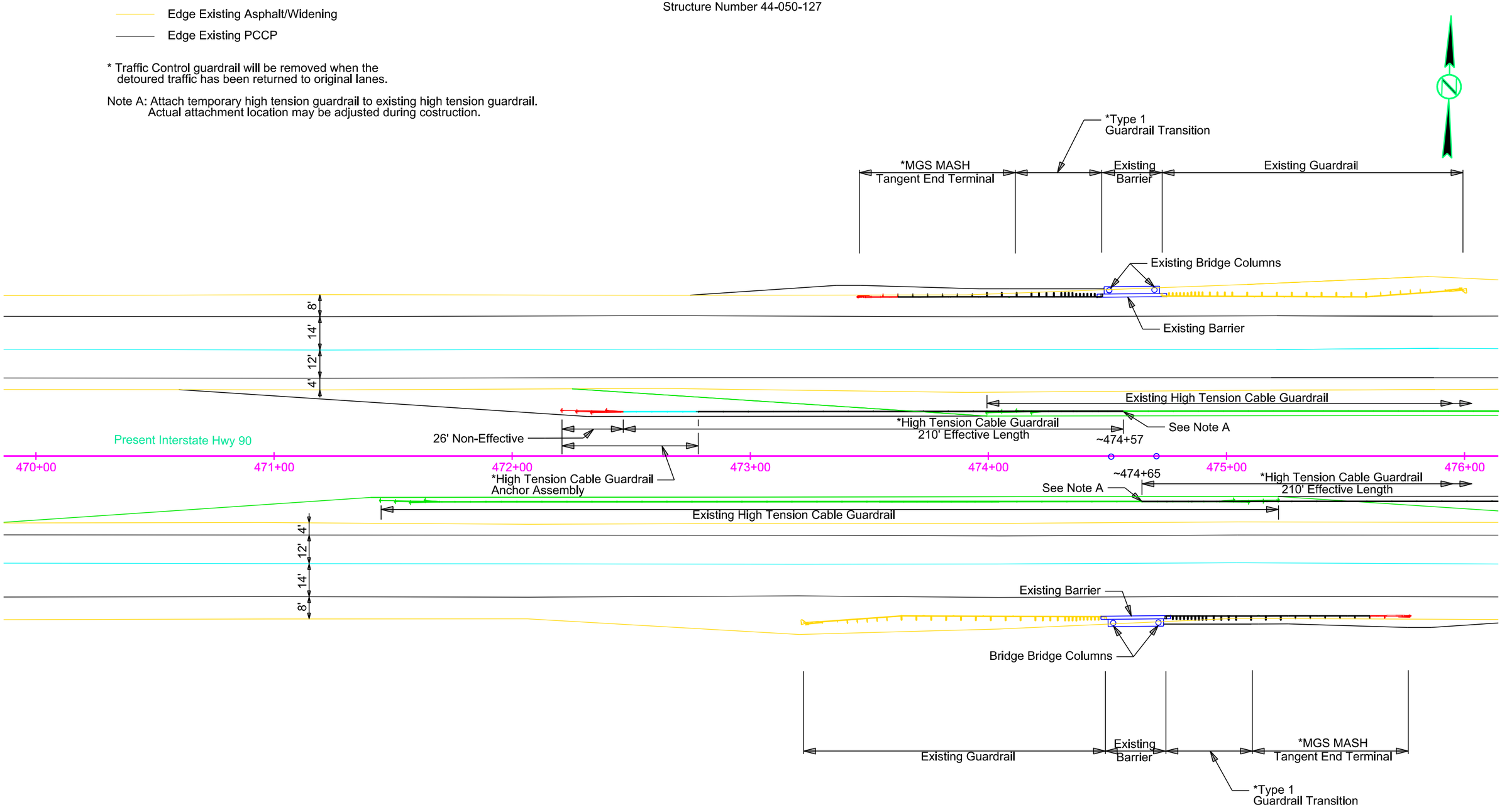
Structure Number 44-050-127

Edge Existing Asphalt/Widening

Edge Existing PCCP

* Traffic Control guardrail will be removed when the detoured traffic has been returned to original lanes.

Note A: Attach temporary high tension guardrail to existing high tension guardrail. Actual attachment location may be adjusted during costruction.



TEMPORARY GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B46	B70

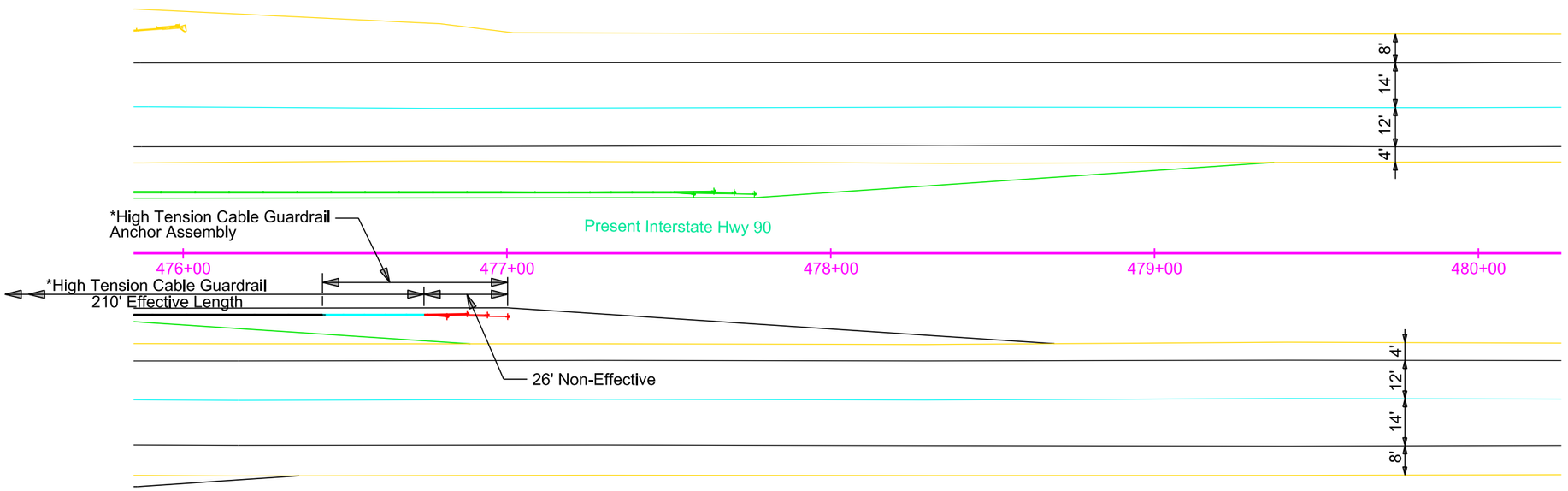
Plotting Date: 08/12/2024

Structure Number 44-050-127

Edge Existing Asphalt/Widening

Edge Existing PCCP

* Traffic Control guardrail will be removed when the detoured traffic has been returned to original lanes.



TEMPORARY GUARDRAIL LAYOUT

Structure Number 44-080-125

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B47	B70

Plotting Date: 08/12/2024 Rev 08-12-24 JRF

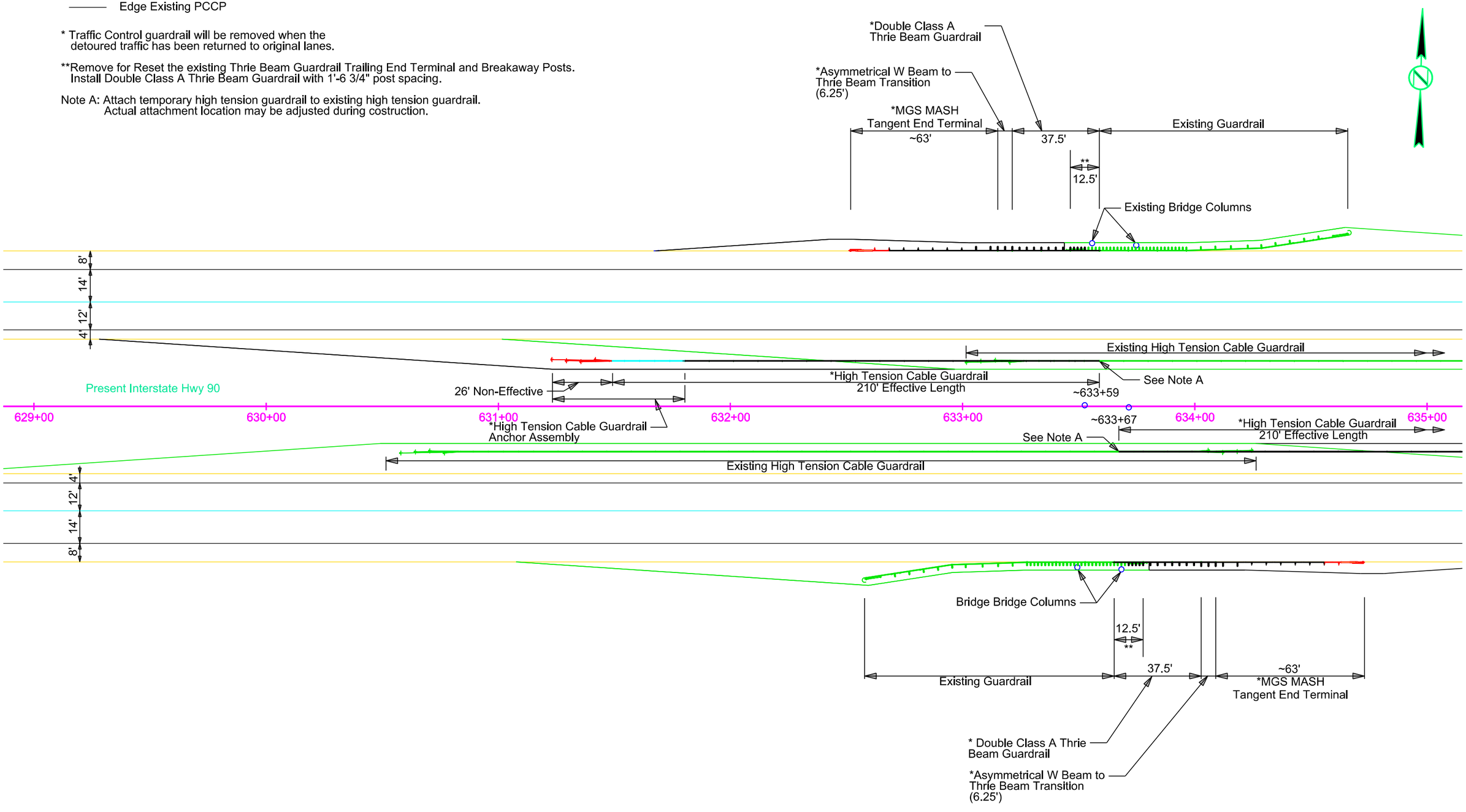
Edge Existing Asphalt/Widening

Edge Existing PCCP

* Traffic Control guardrail will be removed when the detoured traffic has been returned to original lanes.

**Remove for Reset the existing Thrie Beam Guardrail Trailing End Terminal and Breakaway Posts. Install Double Class A Thrie Beam Guardrail with 1'-6 3/4" post spacing.

Note A: Attach temporary high tension guardrail to existing high tension guardrail. Actual attachment location may be adjusted during costruction.



TEMPORARY GUARDRAIL LAYOUT

Structure Number 44-080-125

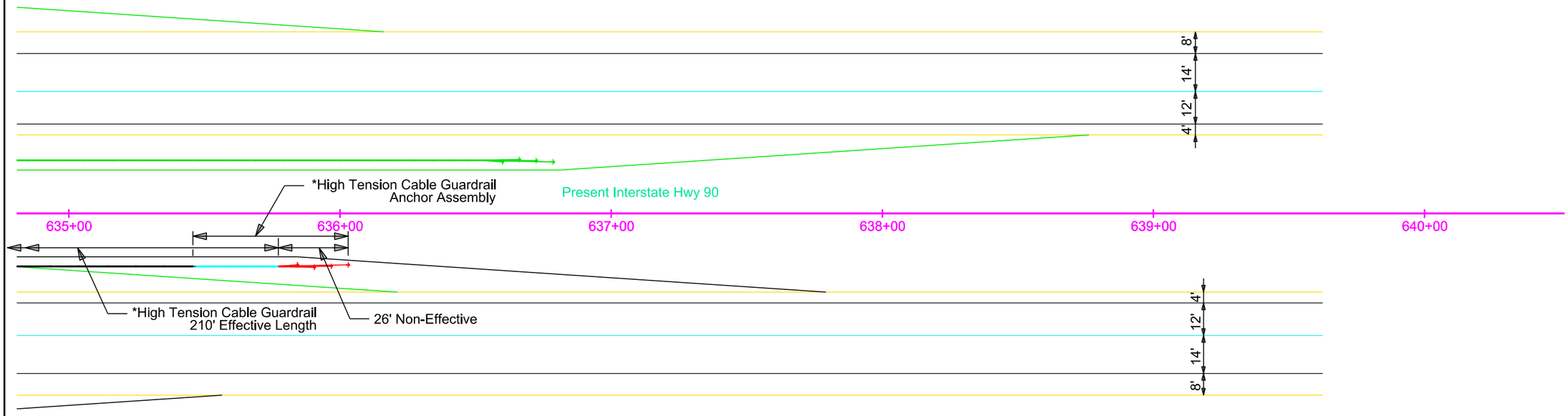
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B48	B70

Plotting Date: 08/12/2024

Edge Existing Asphalt/Widening

Edge Existing PCCP

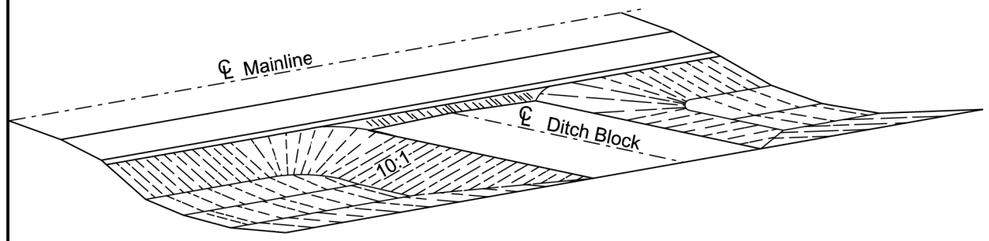
* Traffic Control guardrail will be removed when the detoured traffic has been returned to original lanes.



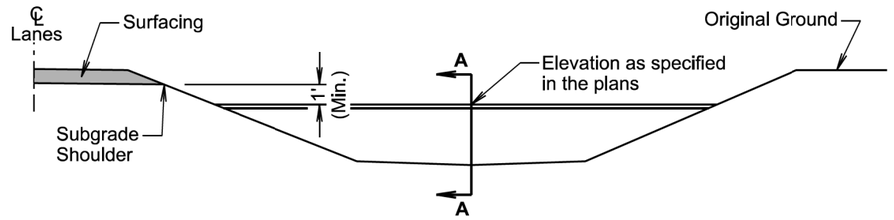
Plot Scale - 1:40

Plotted From - TRPR14435

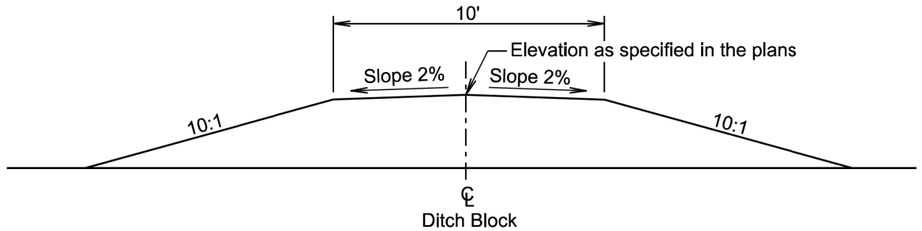
File - U:\rdp\hansd7\W6\635gr.dgn



PERSPECTIVE OF DITCH BLOCK



ELEVATION VIEW



SECTION A-A

GENERAL NOTES:

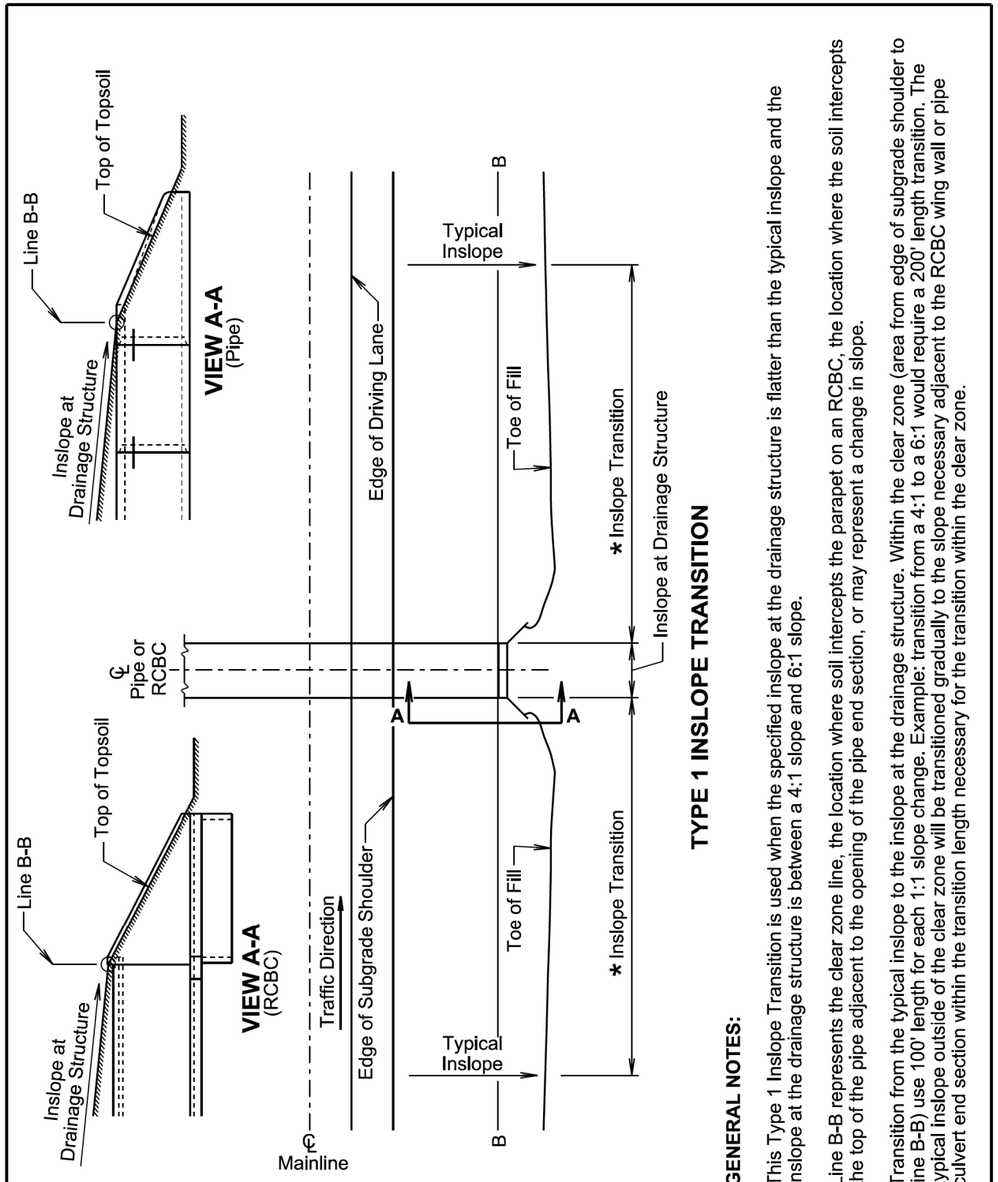
The ditch section shown above in the perspective and elevation view is only for illustrative purpose.

The inslopes of the ditch block will be 10:1 or as specified in the plans.

The transition area between the mainline inslope and the ditch block inslope will be rounded to eliminate an abrupt transition.

September 14, 2018

Published Date: 2025	SDDOT	DITCH BLOCK	PLATE NUMBER 120.02
			Sheet 1 of 1



TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

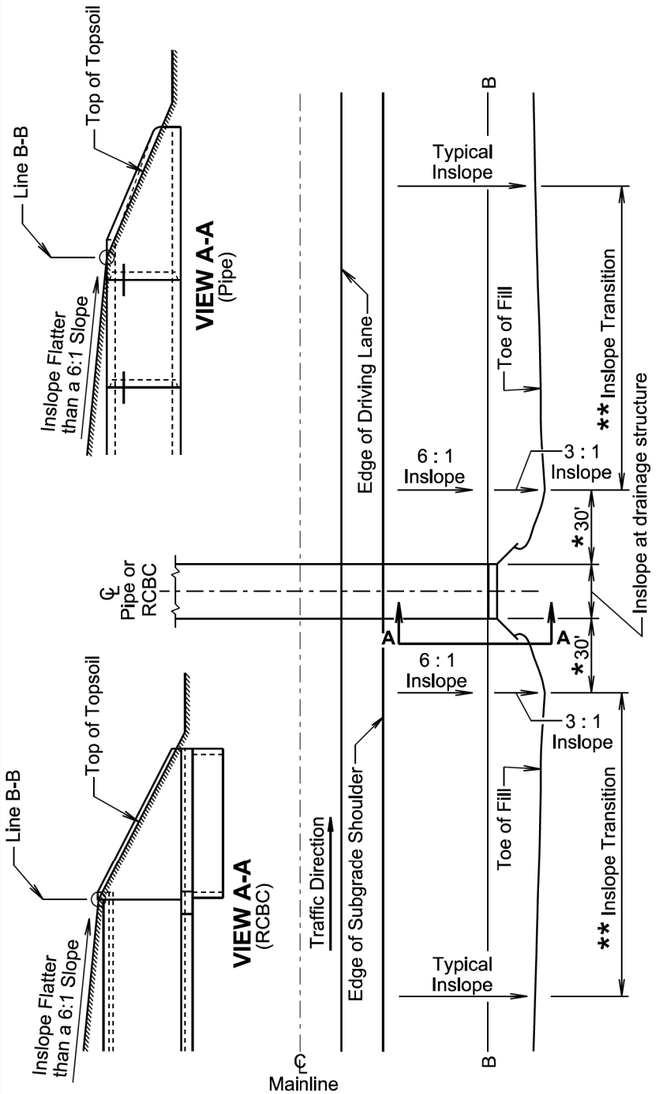
This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

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.

September 14, 2018

Published Date: 2025	SDDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 1 of 2



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.

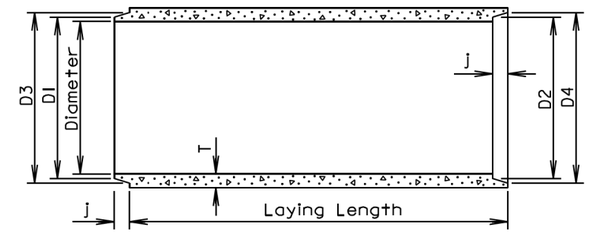
** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope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

September 14, 2018

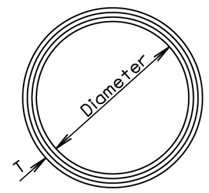
Published Date: 2025	SDDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 2 of 2

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:

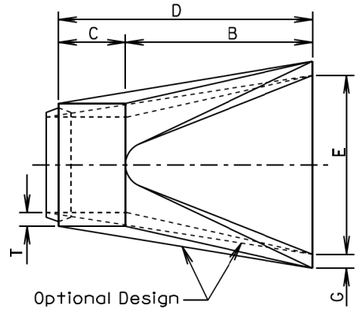
Construction of R. C. P. shall conform to the requirements of Section 990 of the Specifications.

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.

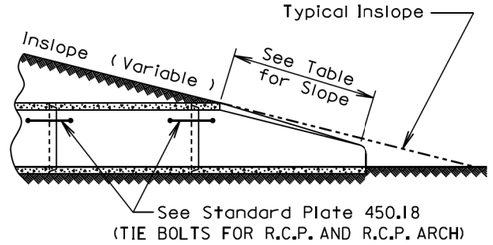
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	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 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

June 26, 2015

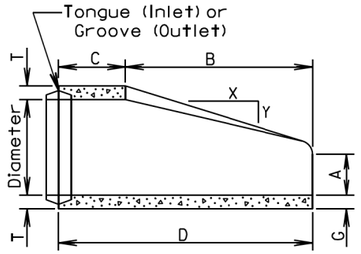
Published Date: 2025	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

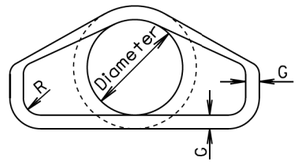


LONGITUDINAL SECTION

GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

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

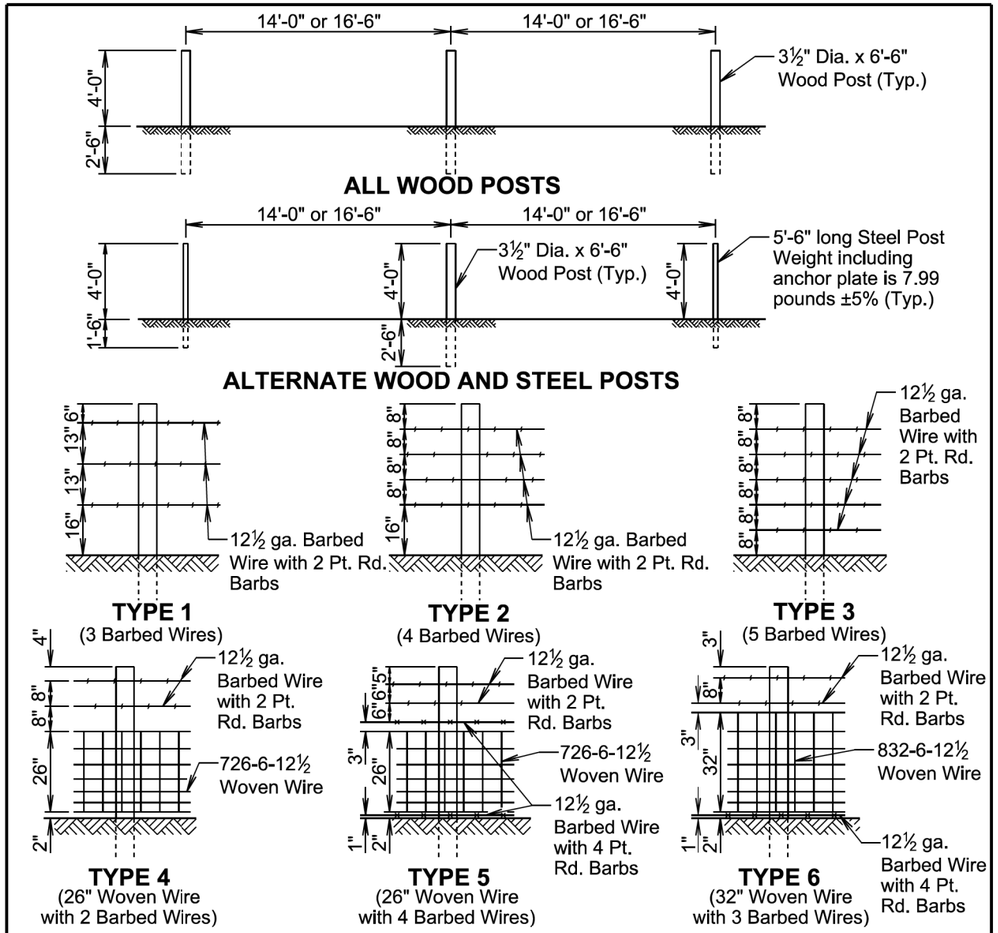


END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5:1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5:1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5:1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5:1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5:1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5:1	5	24	72	26	98	84	5	1 1/2
54	8240	2:1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9:1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7:1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8:1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8:1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6:1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5:1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

Published Date: 2025	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			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.

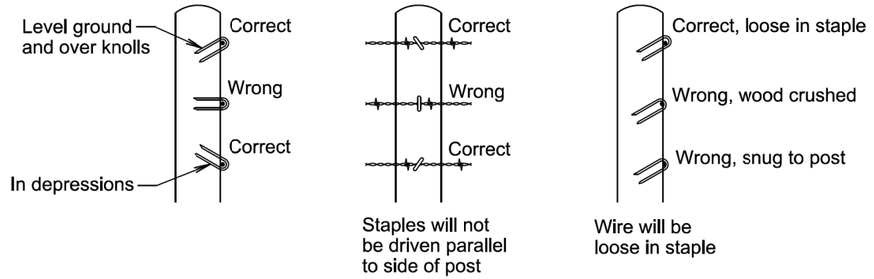
All degrees of curvature stated for fence are at centerline of roadway.

June 26, 2019

Published Date: 2025	SDDOT	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B52	B70

Plotting Date: 08/12/2024



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.

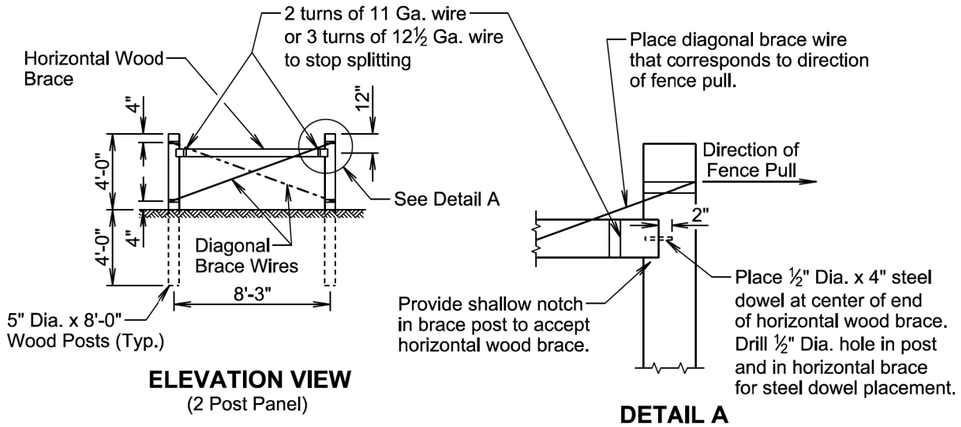
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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.

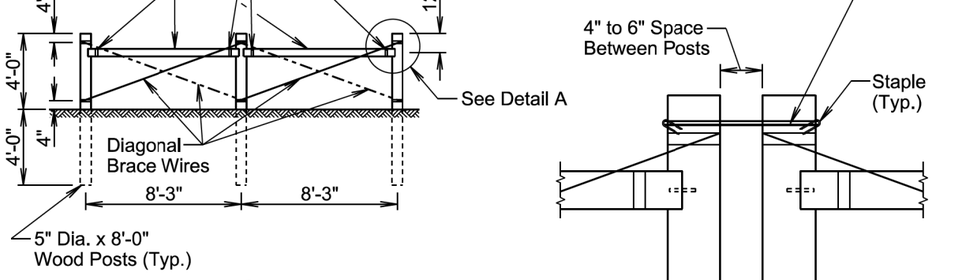
June 26, 2019

Published Date: 2025	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: 2025	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.

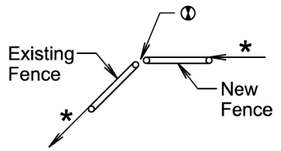
① See Detail B on Sheet 1 of 3.

GENERAL NOTE:

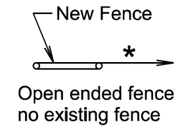
All radius of curvature stated for fence are at centerline of roadway.

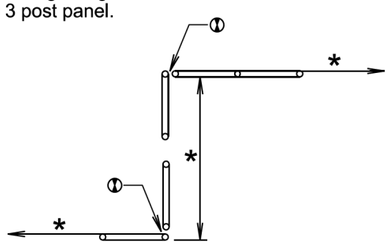
If fence length is less than 600' to next corner use a 2 post panel.

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

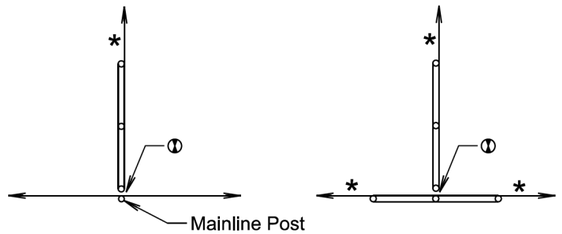


BEGIN OR END FENCE
(Where new fence ties into existing fence)

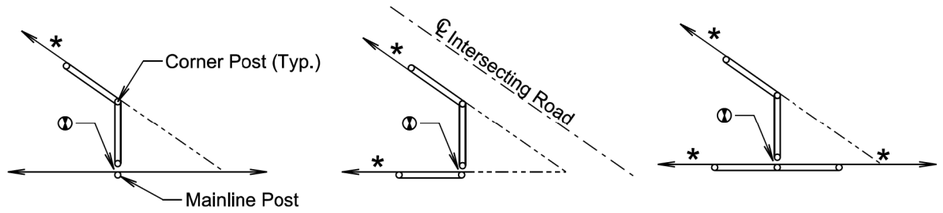




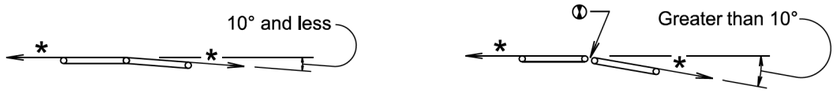
SHORT JOGS IN FENCE



CROSS FENCE



SHARP ANGLES IN CROSS FENCE



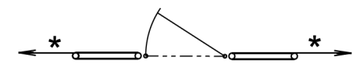
Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

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

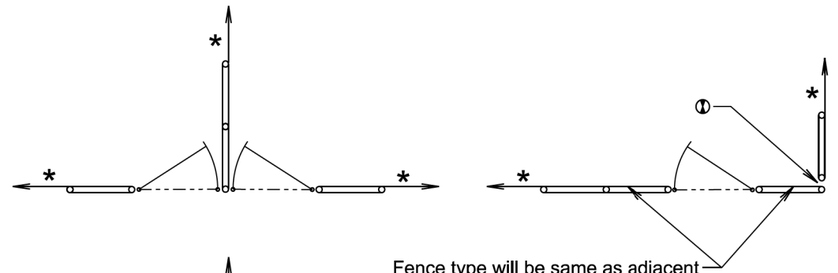
ANGLES IN MAINLINE FENCE

March 31, 2024

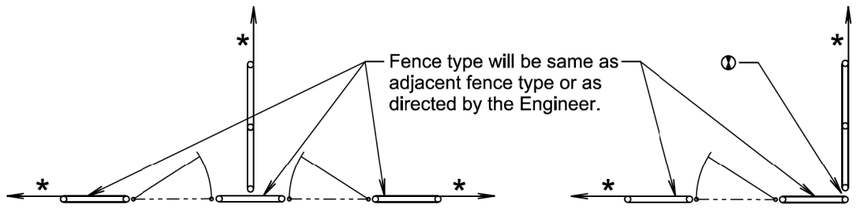
Published Date: 2025	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3



ENTRANCE
(Not on corner)



Fence type will be same as adjacent fence type or as directed by the Engineer.



DOUBLE ENTRANCES

ENTRANCES AT CORNERS

GATES

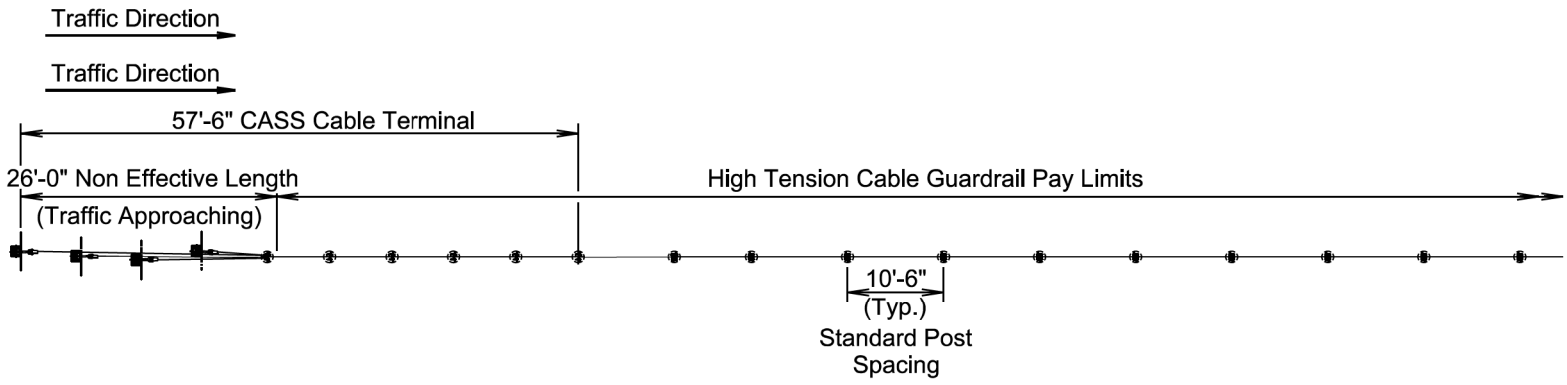
* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

① See Detail B on Sheet 1 of 3.

March 31, 2024

Published Date: 2025	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 3 of 3

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

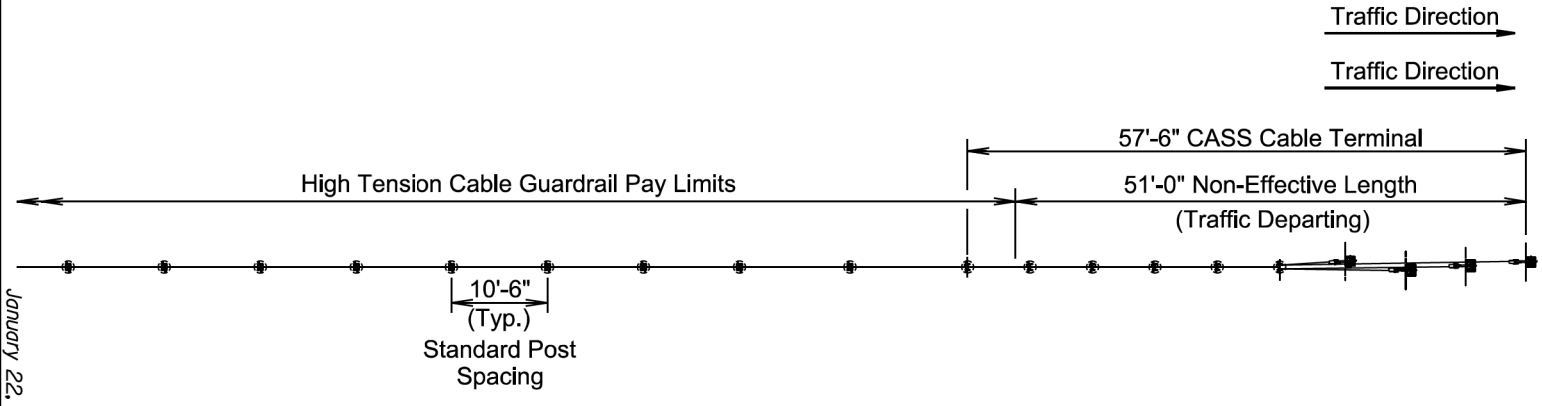


GENERAL NOTES:

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

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

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



Published Date: 2025

SDDOT

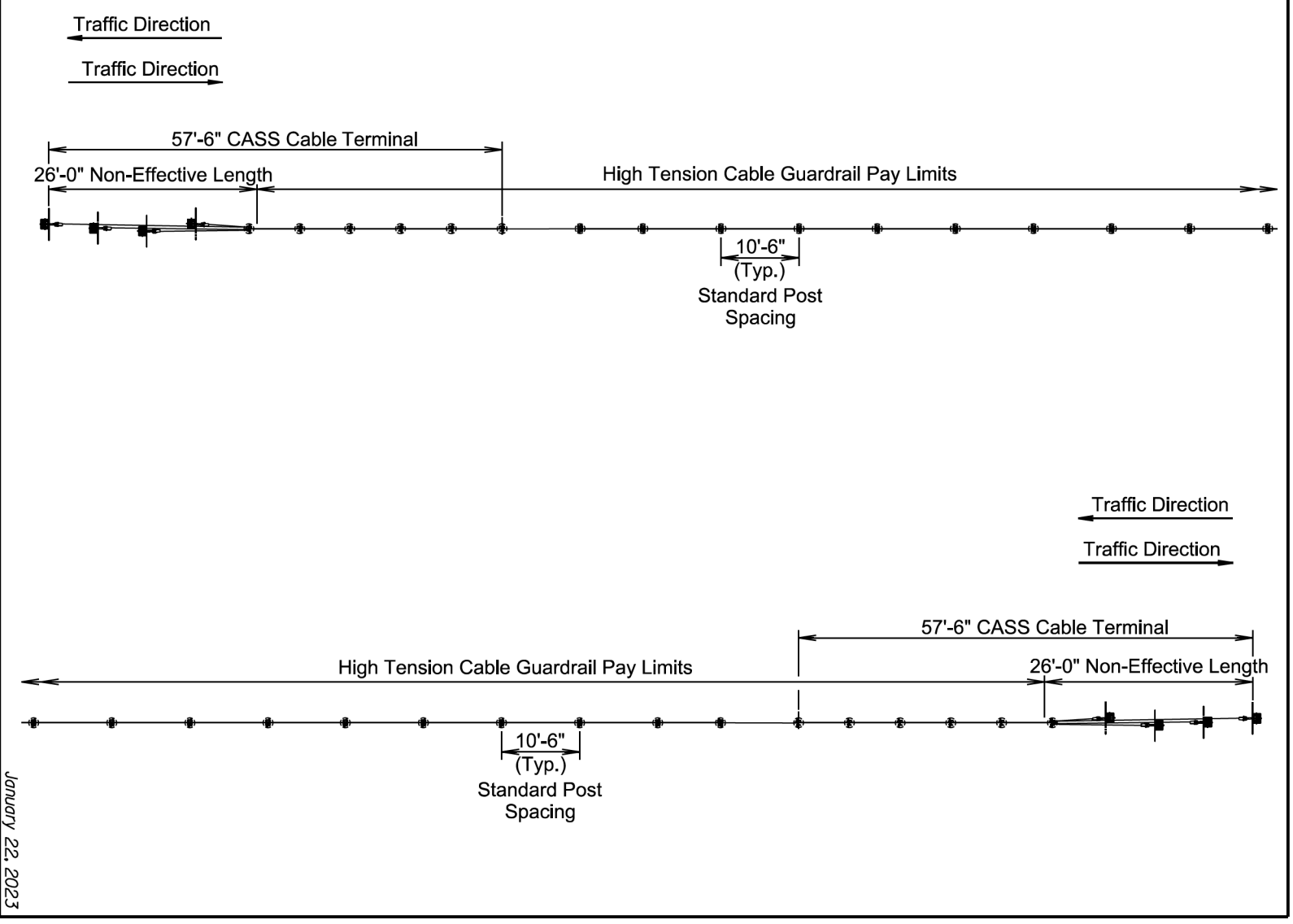
HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER 629.50

Sheet 1 of 3

January 22, 2023

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



Published Date: 2025

SDDOT

HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER 629.50

Sheet 2 of 3

January 22, 2023

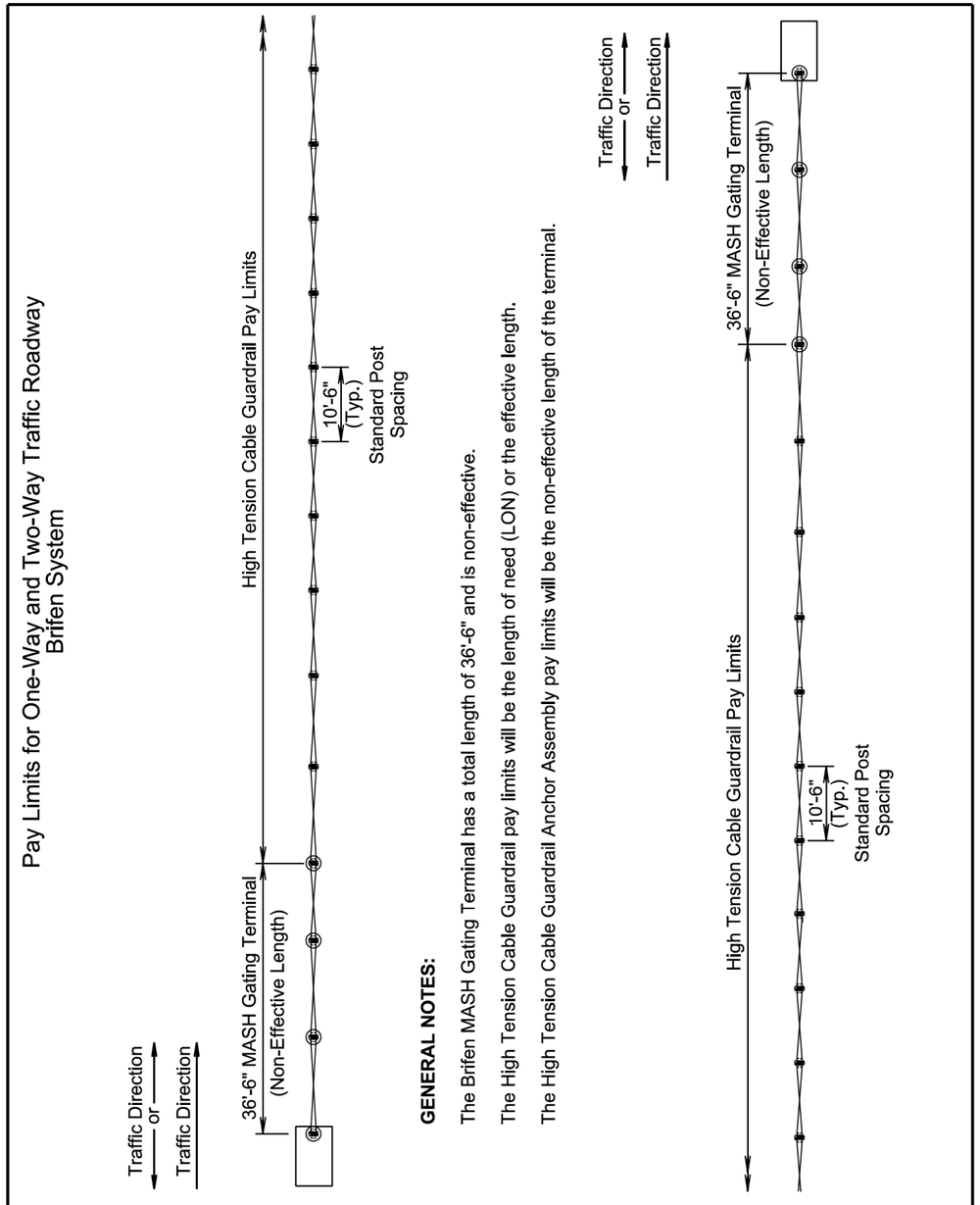
STATE OF SOUTH DAKOTA

PROJECT PT 0908(105)349

SHEET B54

TOTAL SHEETS B70

Plotting Date: 08/12/2024



GENERAL NOTES:

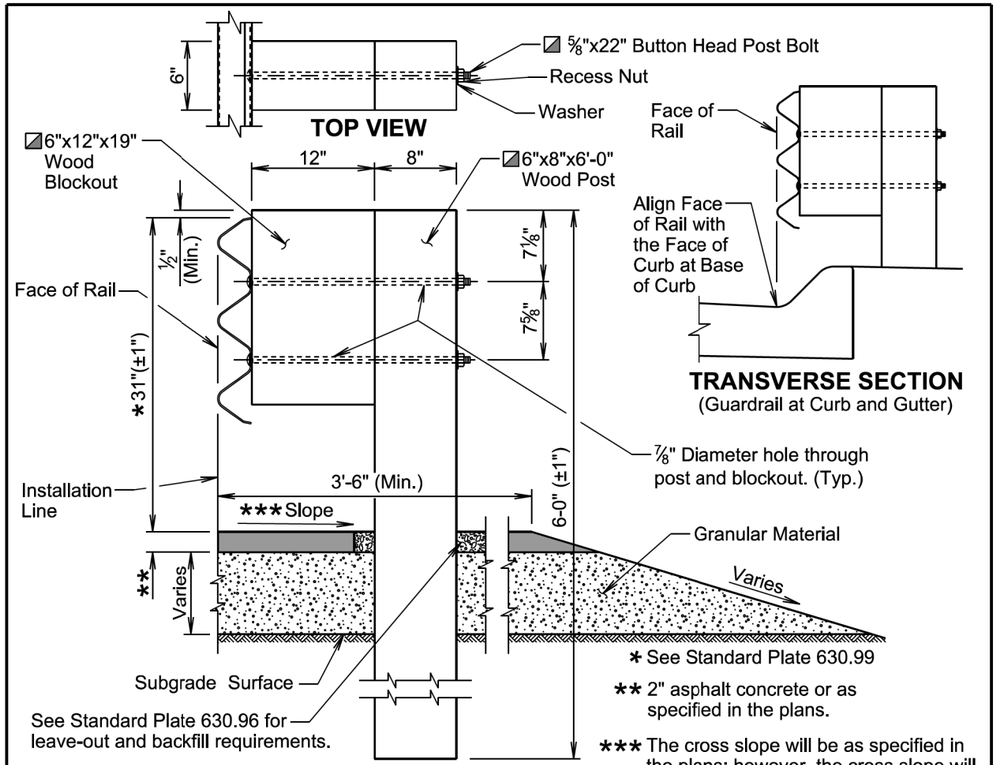
The Brifen MASH Gating Terminal has a total length of 36'-6" and is non-effective.

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

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

January 22, 2023

Published Date: 2025	SDDOT	HIGH TENSION CABLE GUARDRAIL	PLATE NUMBER 629.50
			Sheet 3 of 3



∗ 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.

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.

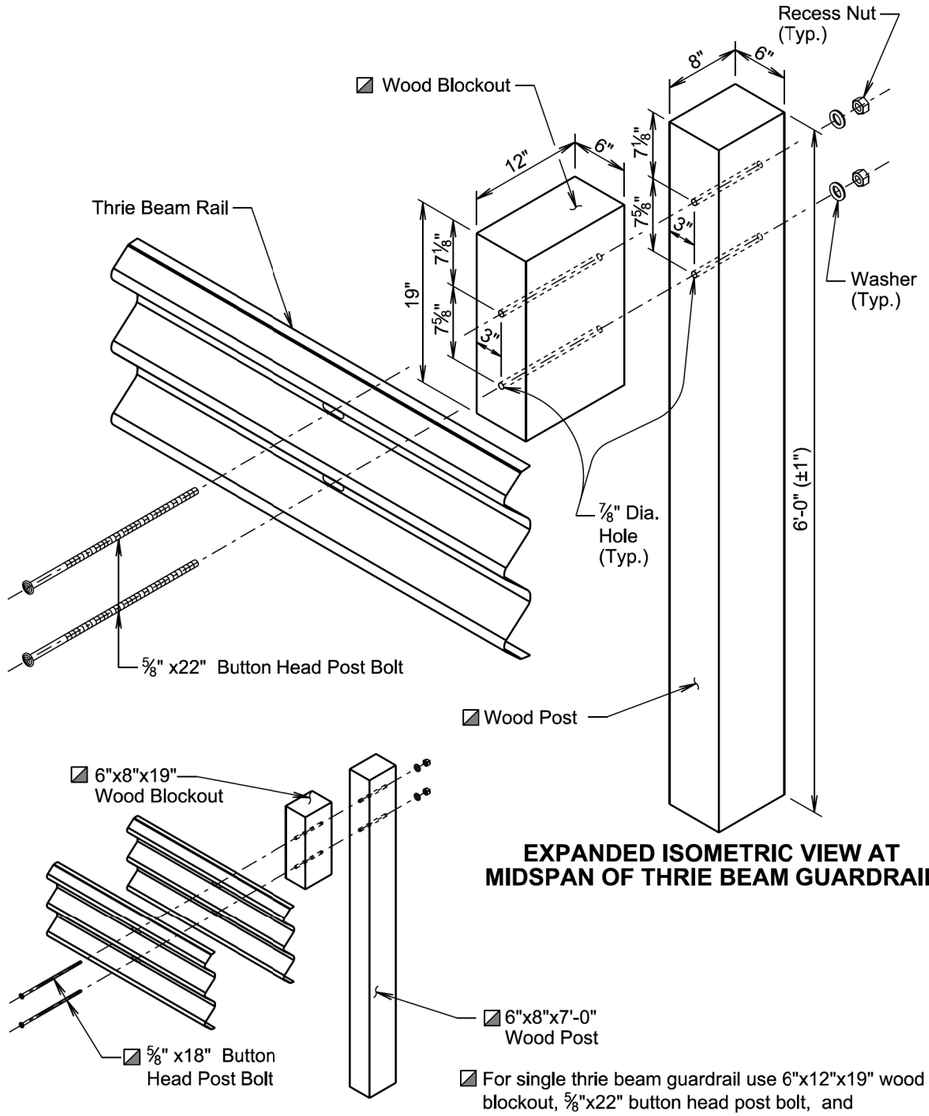
☒ The post and blockout illustrated above is typical for single thrie beam guardrail. When other variations of posts and blockouts are specified on other standard plates (e.g. transitions) then the posts and blockouts will be as specified on the other standard plates or as specified in the plans.

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: 2025	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 1 of 5



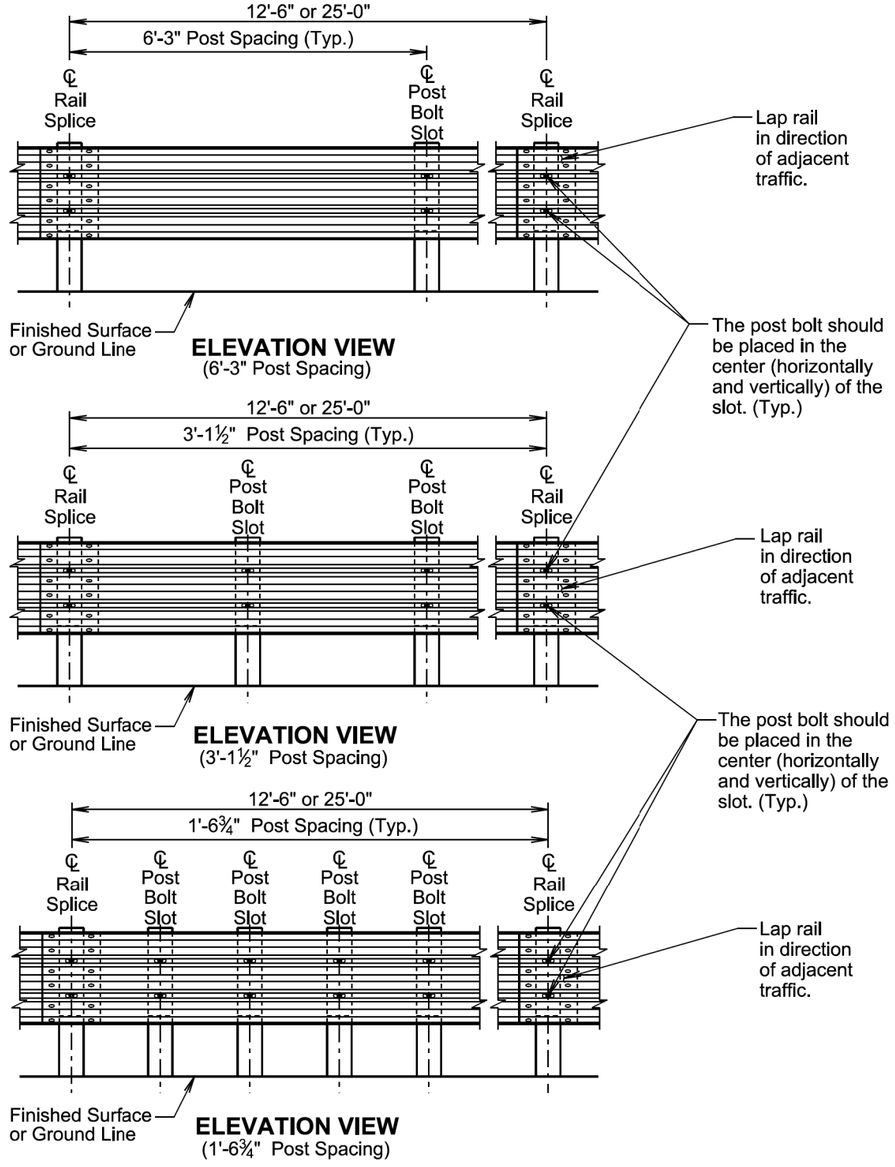
EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

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: 2025	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 2 of 5



ELEVATION VIEW
(6'-3" Post Spacing)

ELEVATION VIEW
(3'-1½" Post Spacing)

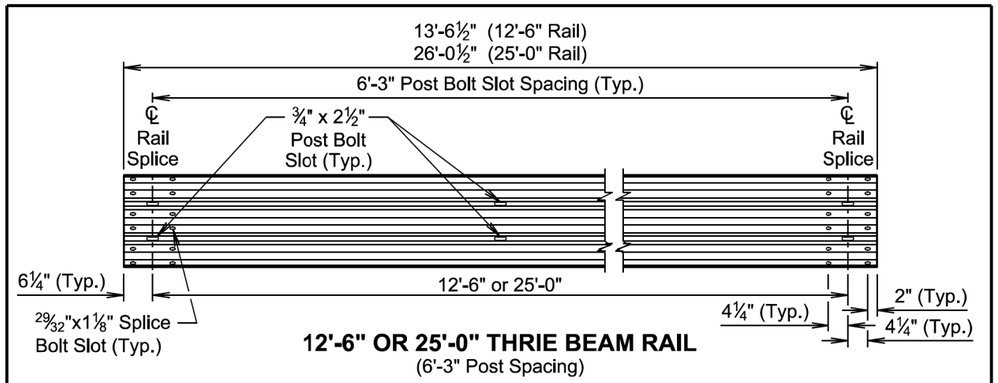
ELEVATION VIEW
(1'-6¾" Post Spacing)

September 14, 2019

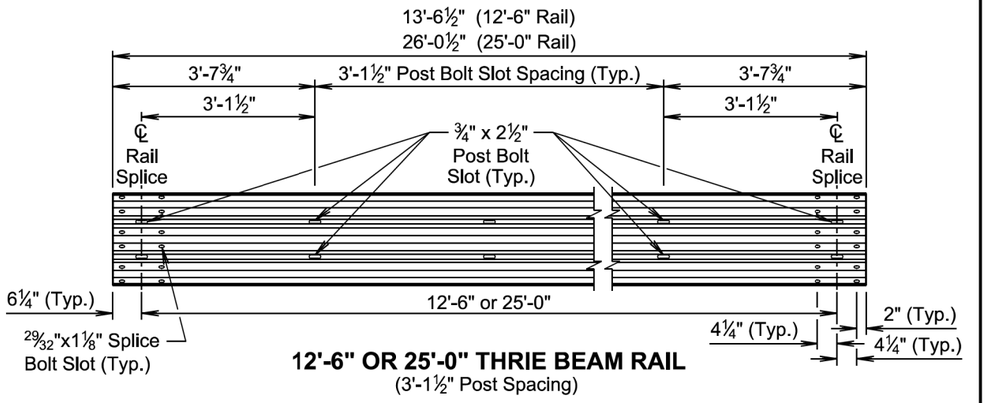
Published Date: 2025	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01 Sheet 3 of 5

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B57	B70

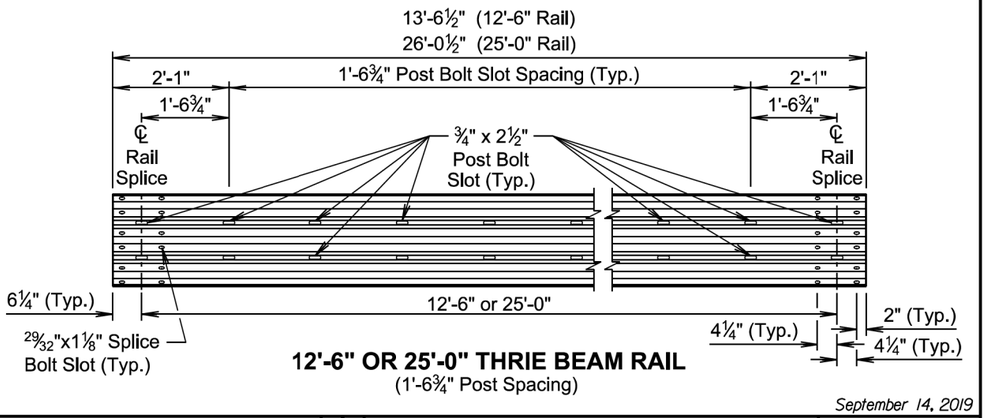
Plotting Date: 08/12/2024



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



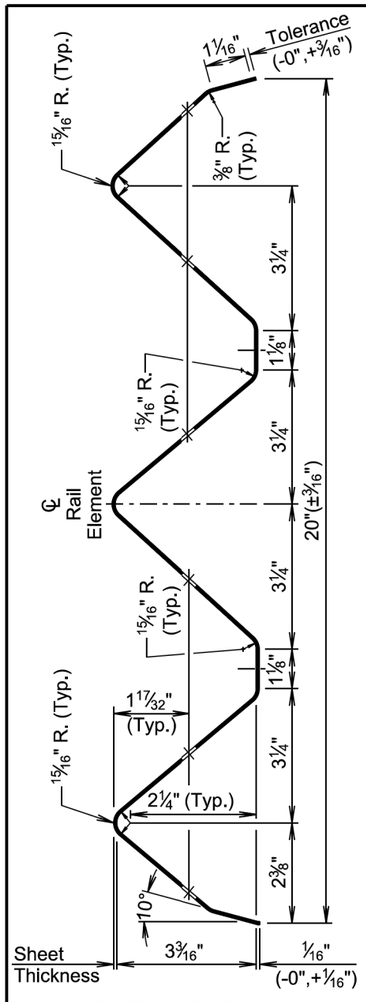
12'-6" OR 25'-0" THRIE BEAM RAIL
(3'-1½" Post Spacing)



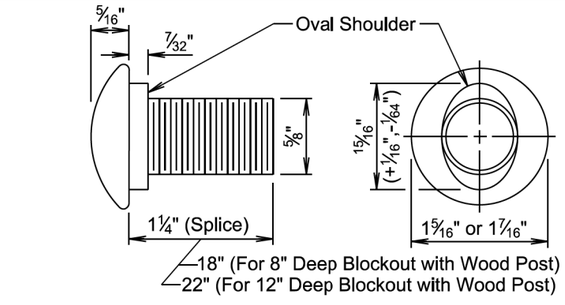
12'-6" OR 25'-0" THRIE BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

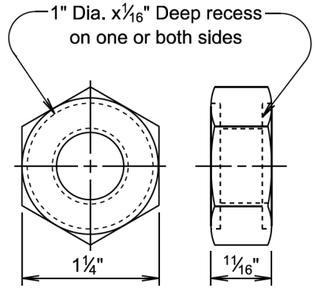
	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
Published Date: 2025			Sheet 4 of 5



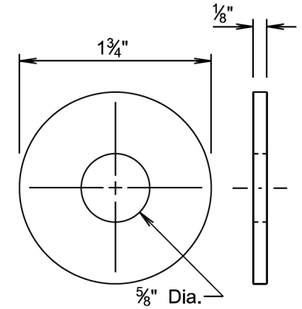
SECTION THROUGH THRIE BEAM RAIL



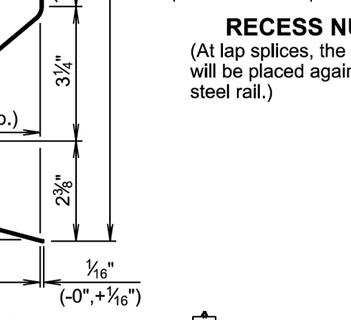
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



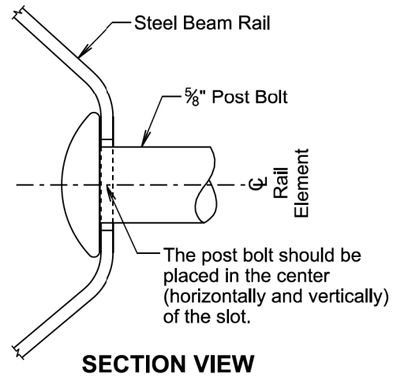
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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)

September 14, 2019

	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
Published Date: 2025			Sheet 5 of 5

Plot Scale - 1:200
Plotted From - TRPR14435
File - ...\hans07\W6StdPlateSectionB.dgn

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.

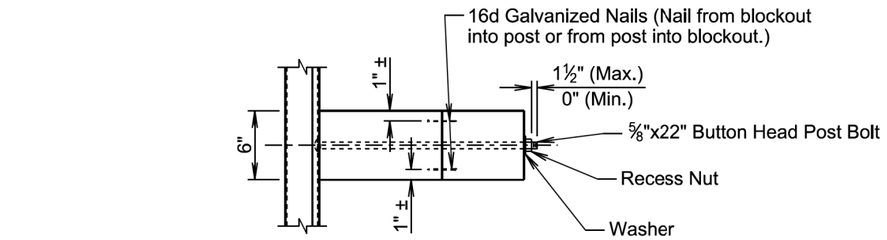
All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

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.

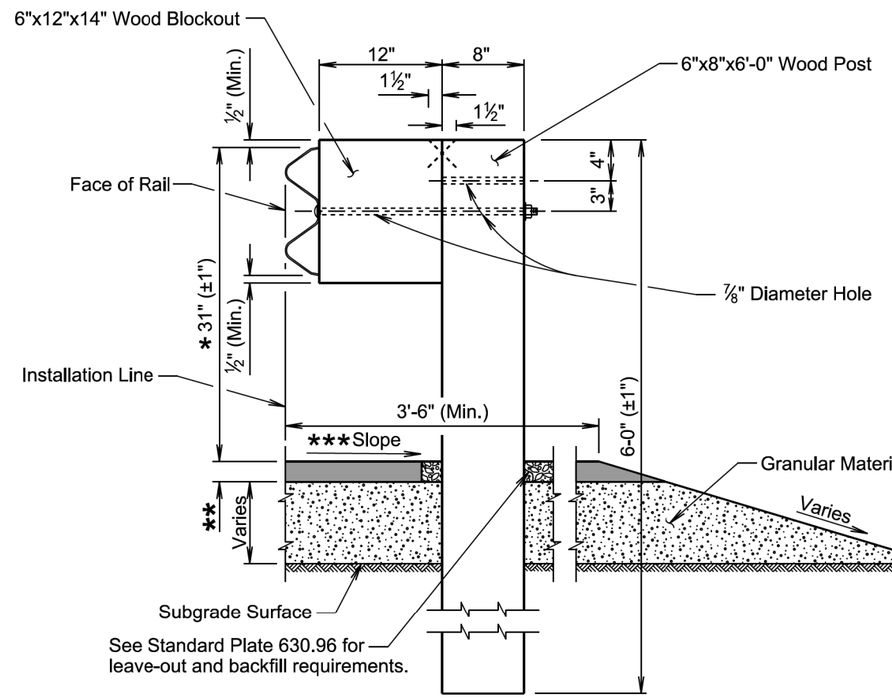
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or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



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



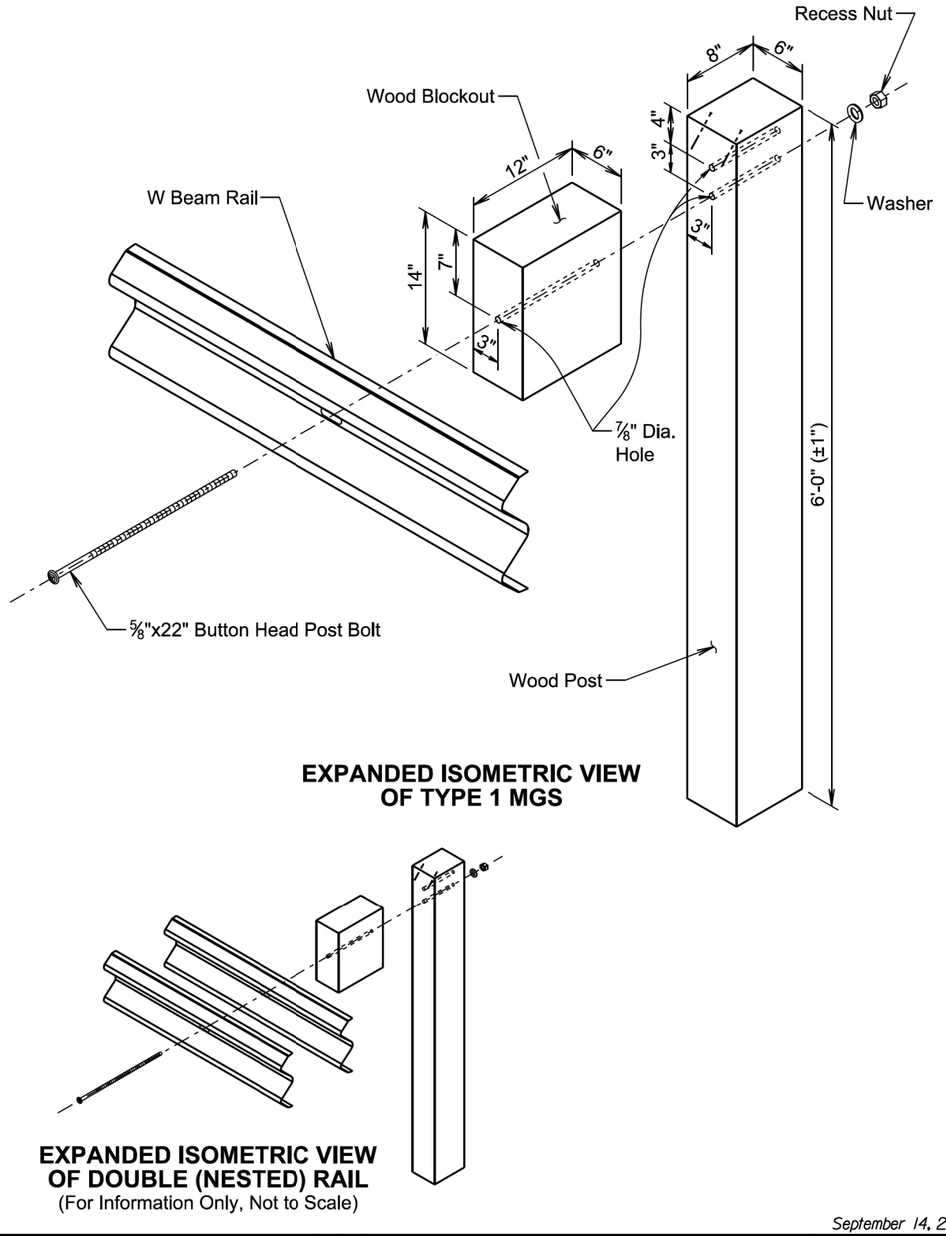
TRANSVERSE SECTION
(Type 1, 2, or 3 MGS Installation)

* 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.

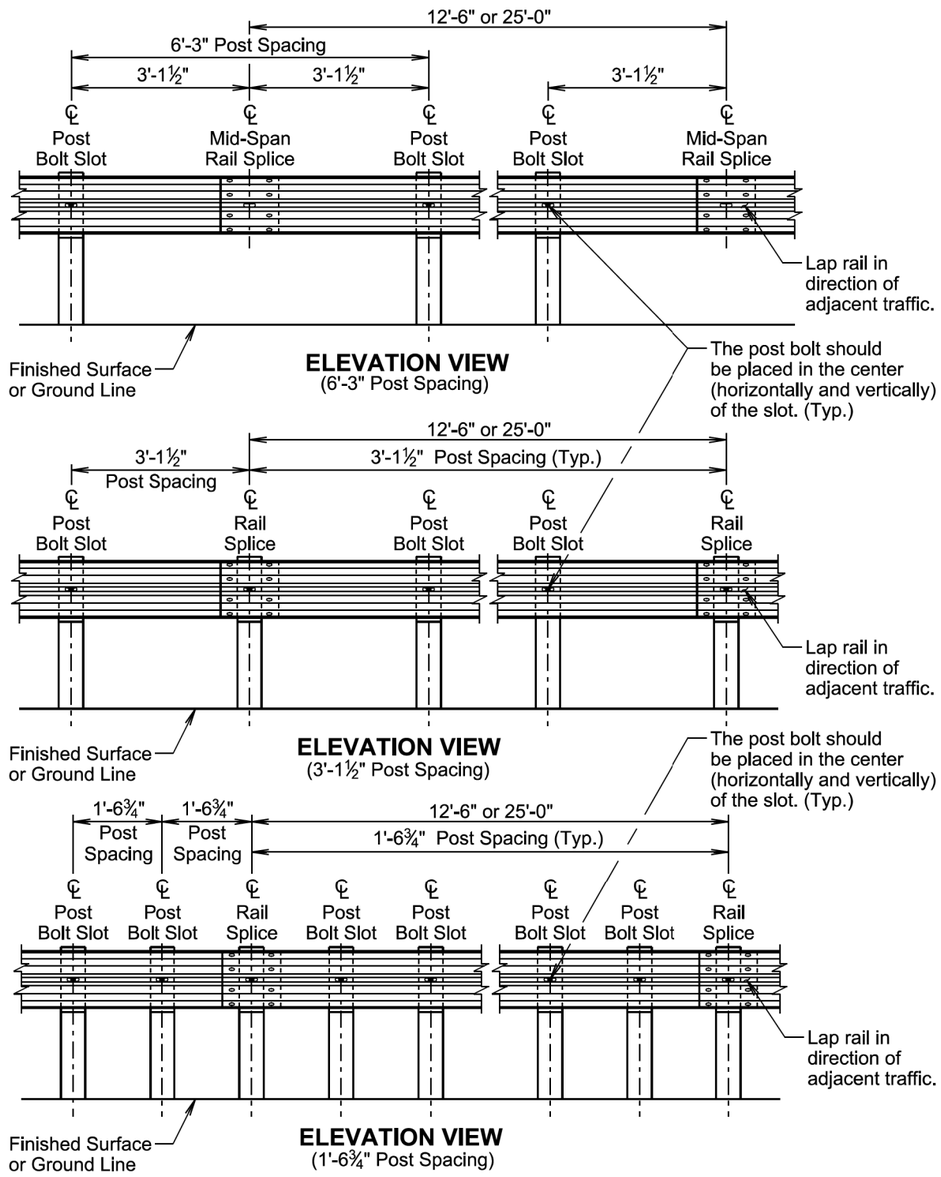
September 14, 2019



EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS

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

September 14, 2019



ELEVATION VIEW
(6'-3" Post Spacing)

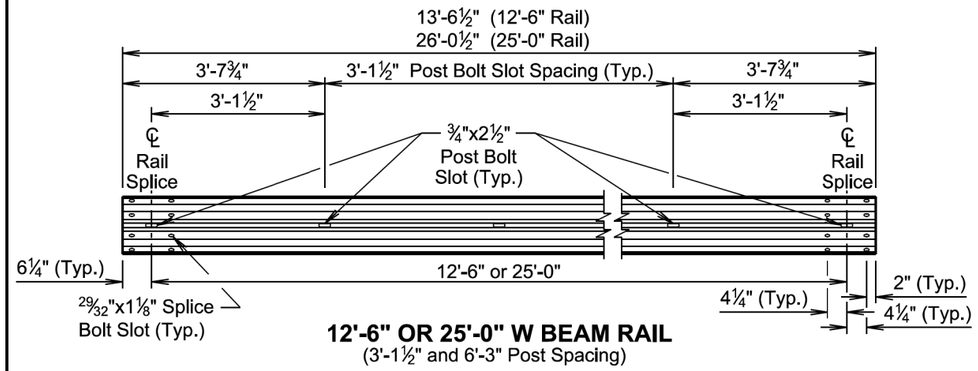
ELEVATION VIEW
(3'-1½" Post Spacing)

ELEVATION VIEW
(1'-6¾" Post Spacing)

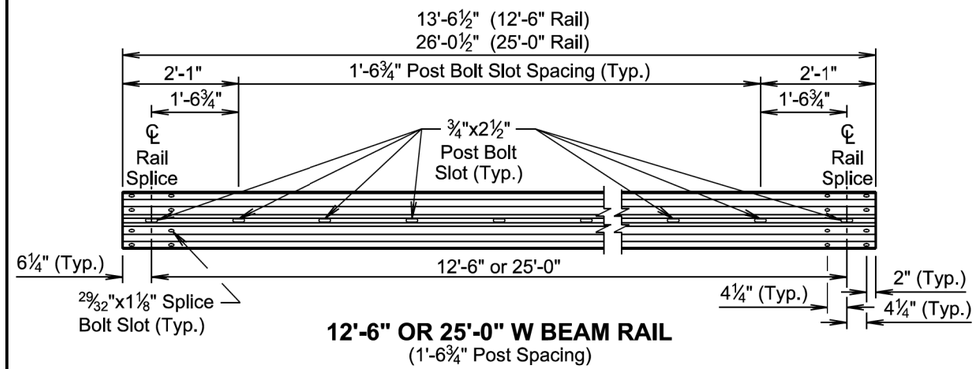
September 14, 2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B60	B70

Plotting Date: 08/12/2024



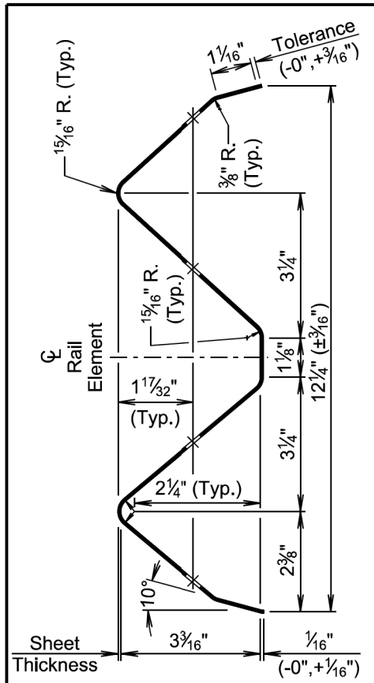
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



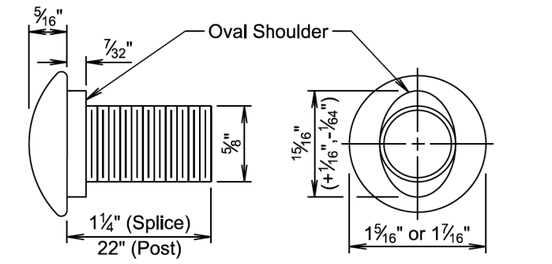
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

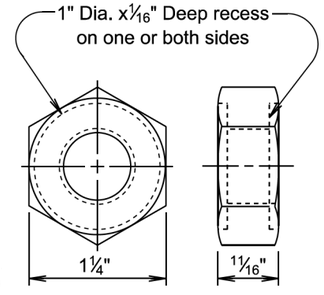
Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6



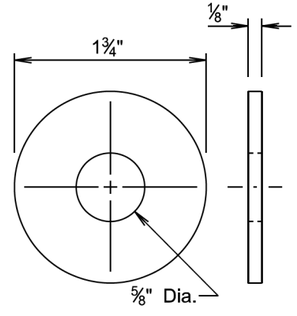
SECTION THROUGH W BEAM RAIL



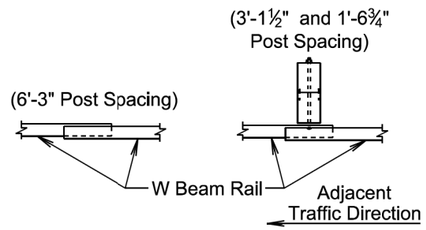
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



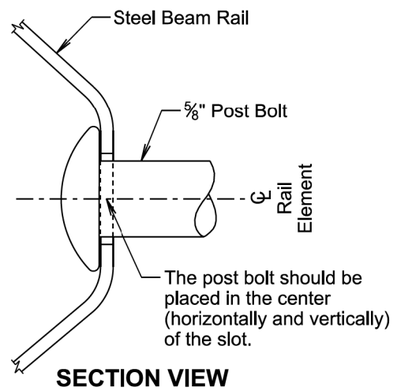
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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



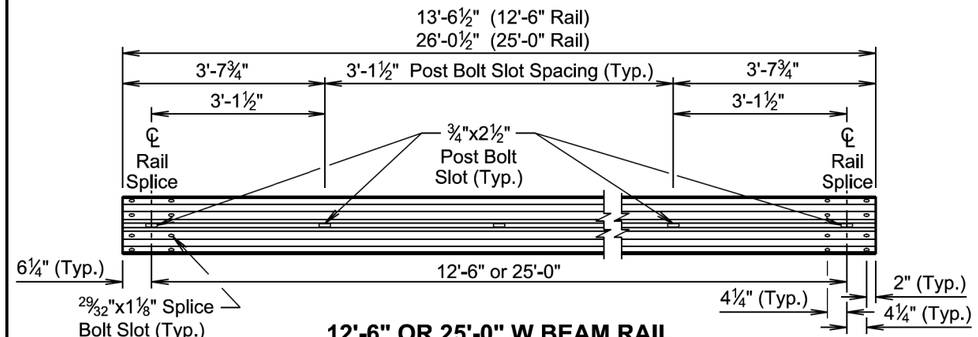
SECTION VIEW
(At Post Bolt)

September 14, 2019

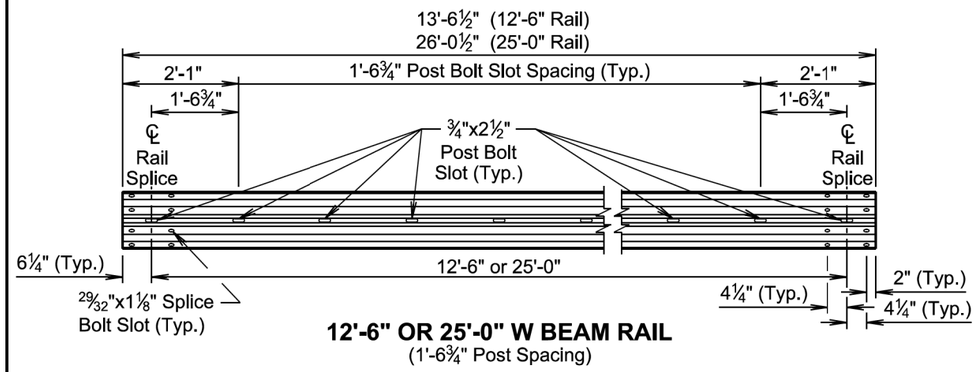
Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B61	B70

Plotting Date: 08/12/2024



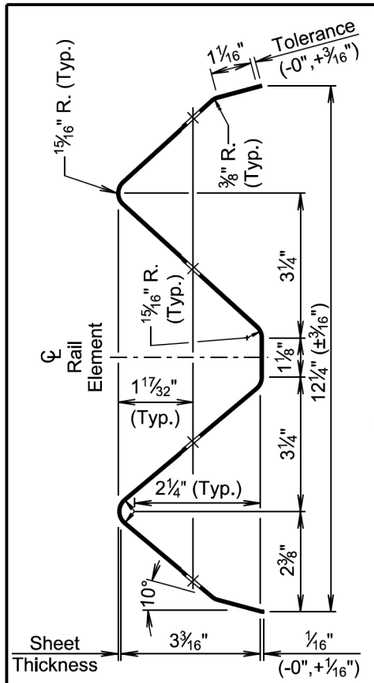
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



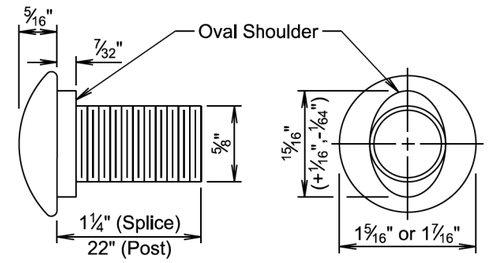
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

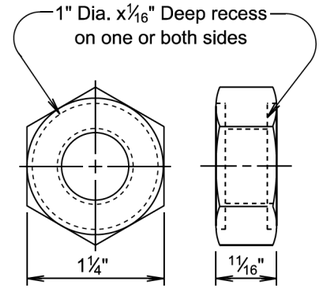
Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6



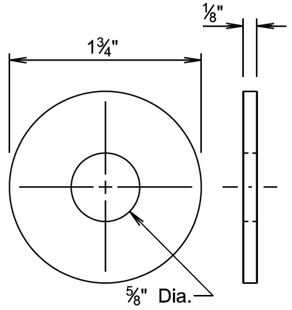
SECTION THROUGH W BEAM RAIL



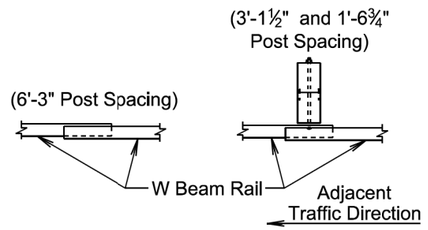
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



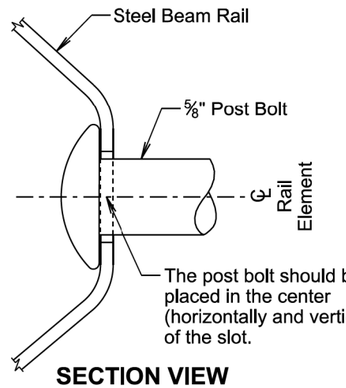
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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

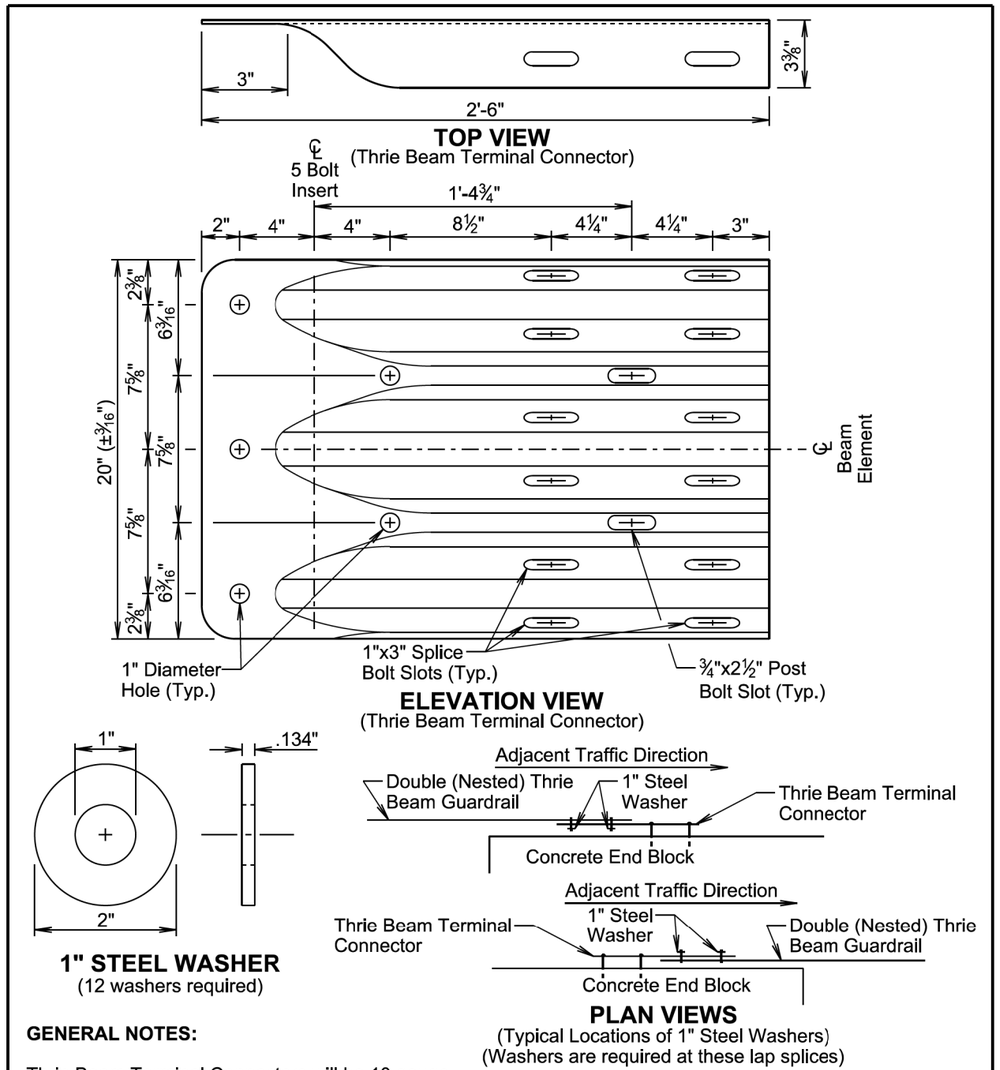
September 14, 2019

Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6

Plot Scale - 1:200
Plotted From - TRPR14435
File - ...\hans07W6StotPlateSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B62	B70

Plotting Date: 08/12/2024



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.

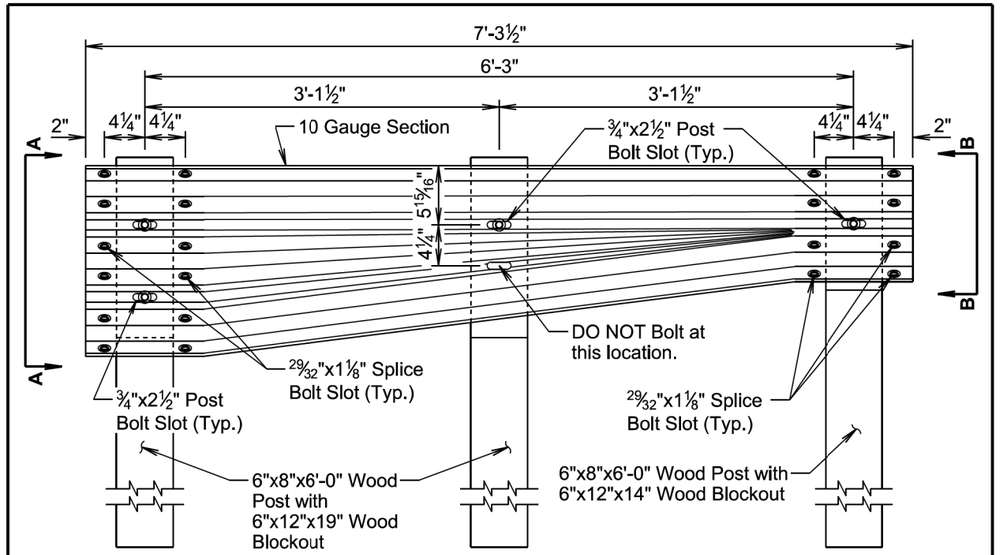
There will be no separate payment for furnishing and installing the thrie beam terminal connector. All costs for furnishing and installing the thrie beam terminal connector will be incidental to the contract unit price of the respective guardrail item it is attached to.

September 14, 2019

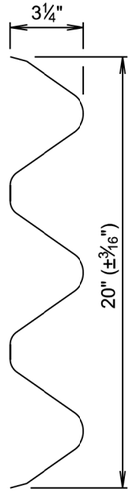
Published Date: 2025	SDDOT	***THRIE BEAM TERMINAL CONNECTOR***	*PLATE NUMBER* 630.47
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B63	B70

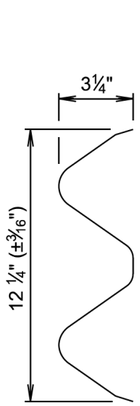
Plotting Date: 08/12/2024



ELEVATION VIEW



VIEW A-A



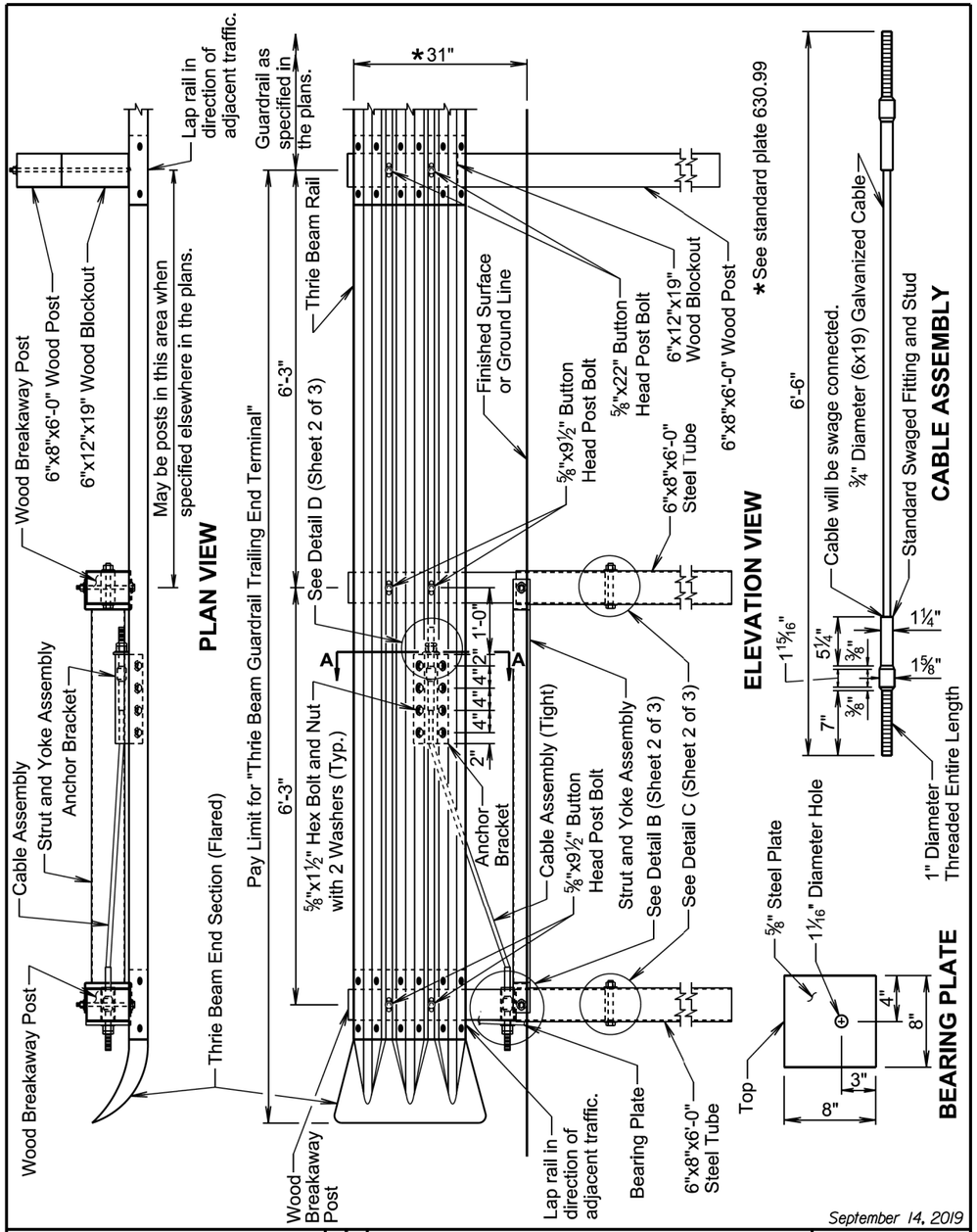
VIEW B-B

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: 2025	SDDOT	ASYMMETRICAL W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.49
			Sheet 1 of 1



September 14, 2019

Published Date: 2025	SDDOT	THRIE BEAM GUARDRAIL TRAILING END TERMINAL	PLATE NUMBER 630.80
			Sheet 1 of 3

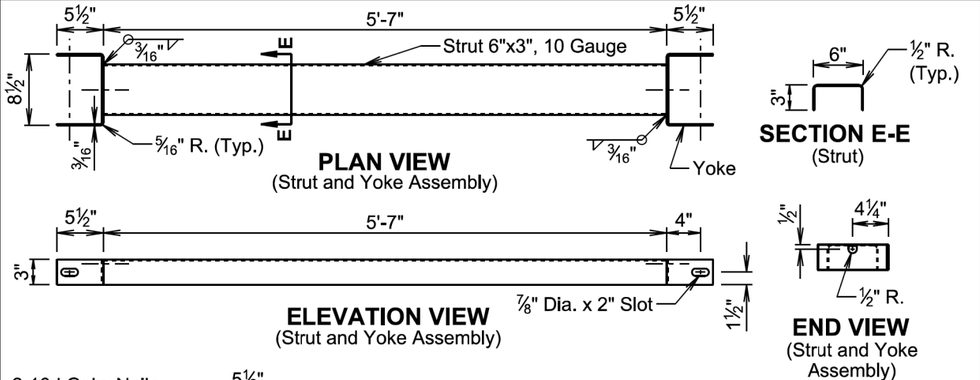
Plot Scale - 1:200

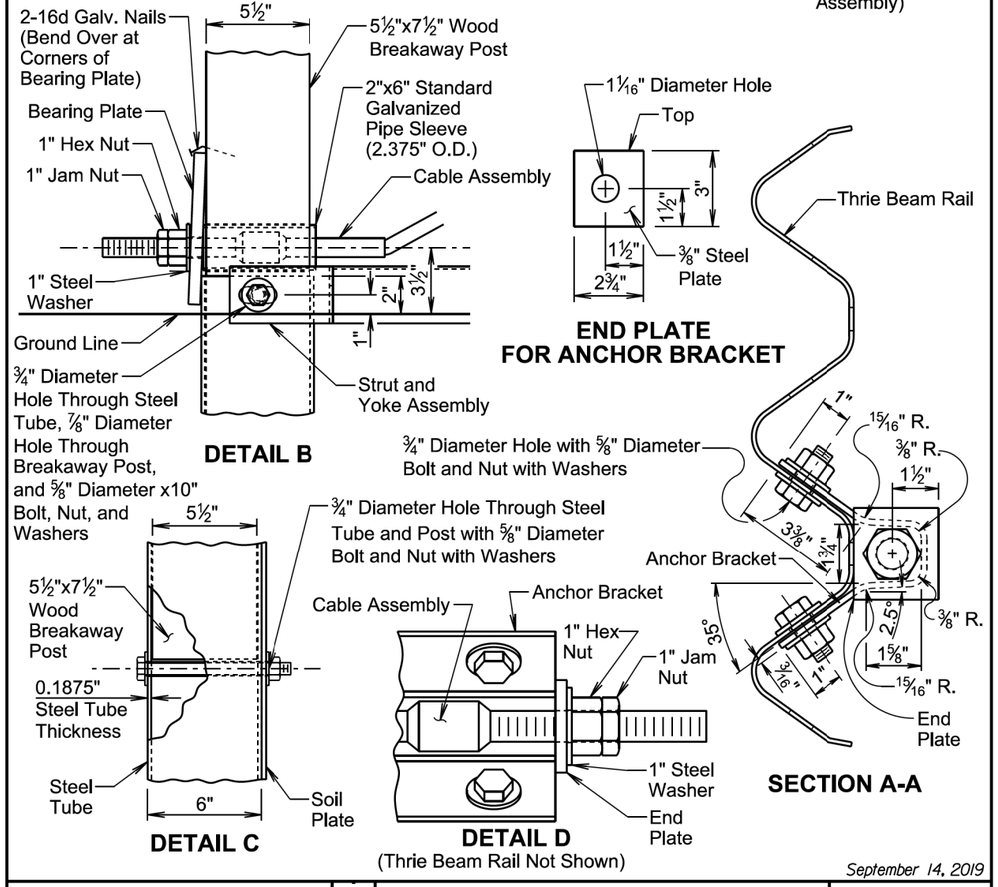
Plotted From - TRPR14435

File - ...\hans07\WiStdPlateSectionB.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B64	B70

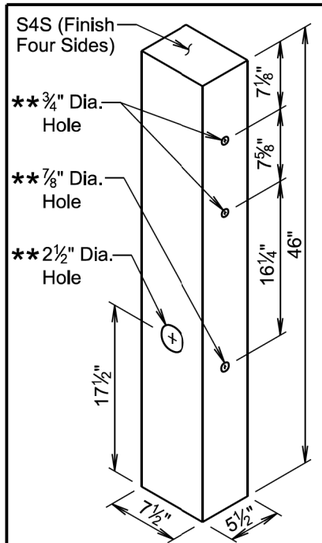
Plotting Date: 08/12/2024

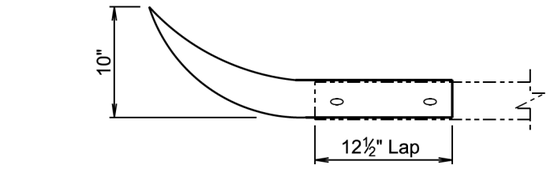


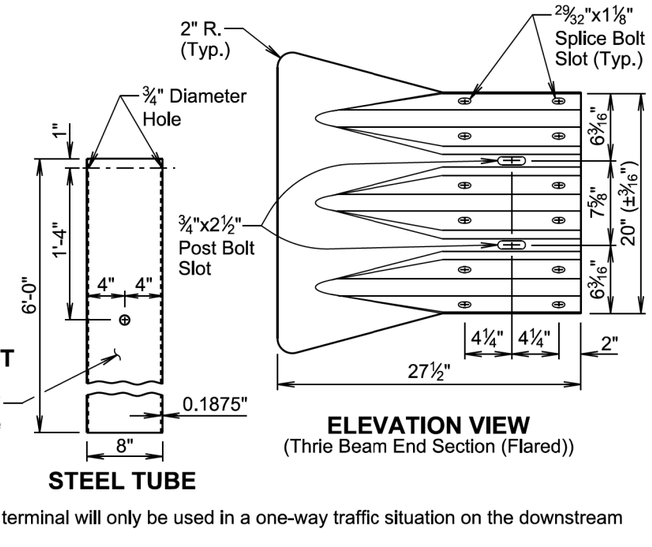


September 14, 2019

Published Date: 2025	SDDOT	THRIE BEAM GUARDRAIL TRAILING END TERMINAL	PLATE NUMBER 630.80
			Sheet 2 of 3







GENERAL NOTES:

The thrie beam guardrail trailing end terminal will only be used in a one-way traffic situation on the downstream traffic flow end.

Thrie beam end sections (flared) will be 12 gauge.

The cable will be ¾", Type II, with Class A coating in conformance with AASHTO M30.

The steel tube will meet the requirements of ASTM A500, Grade B, and will be galvanized after fabrication in accordance with the requirements of AASHTO M111.

All hardware will be galvanized in accordance with ASTM A153.

The anchor bracket, soil plate, and bearing plate will be fabricated from steel that meets ASTM A36 Specifications. They will be galvanized after fabrication in accordance with ASTM A123.

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 constructing the thrie beam guardrail trailing end terminal including labor, equipment, materials which includes thrie beam rail section, all posts and blockouts, wood breakaway posts, steel tubes, cable assembly, bearing plate, anchor bracket, strut and yoke assembly, thrie beam end section (flared), hardware, and incidentals will be included in the contract unit price per each for "Thrie Beam Guardrail Trailing End Terminal".

September 14, 2019

Published Date: 2025	SDDOT	THRIE BEAM GUARDRAIL TRAILING END TERMINAL	PLATE NUMBER 630.80
			Sheet 3 of 3

Published Date: 2025

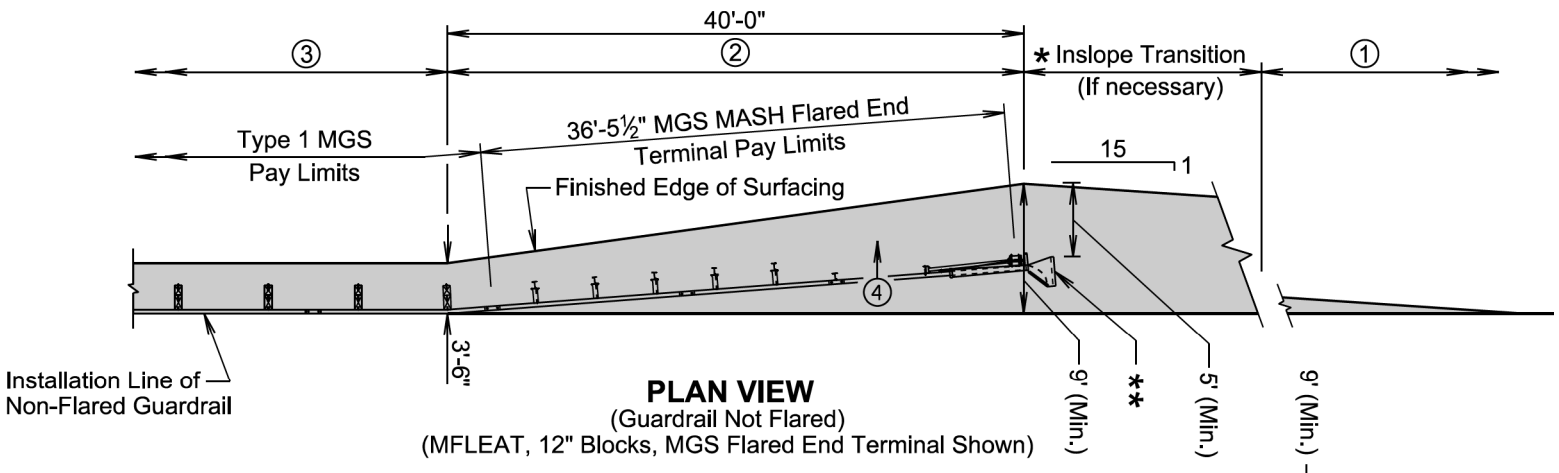
SDDOT

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

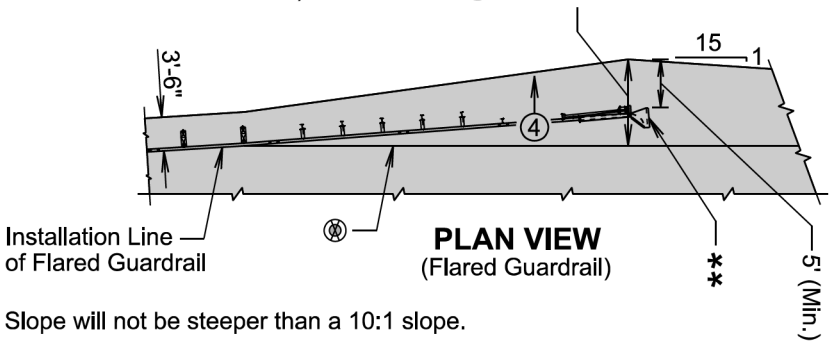
PLATE NUMBER 630.87

Sheet 1 of 1

June 26, 2019



PLAN VIEW
(Guardrail Not Flared)
(MFLEAT, 12" Blocks, MGS Flared End Terminal Shown)



PLAN VIEW
(Flared Guardrail)

** See standard plate 632.40 for delineation.

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

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

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

③ Inslope as specified in the plans.

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

GENERAL NOTES:

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

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

Published Date: 2025

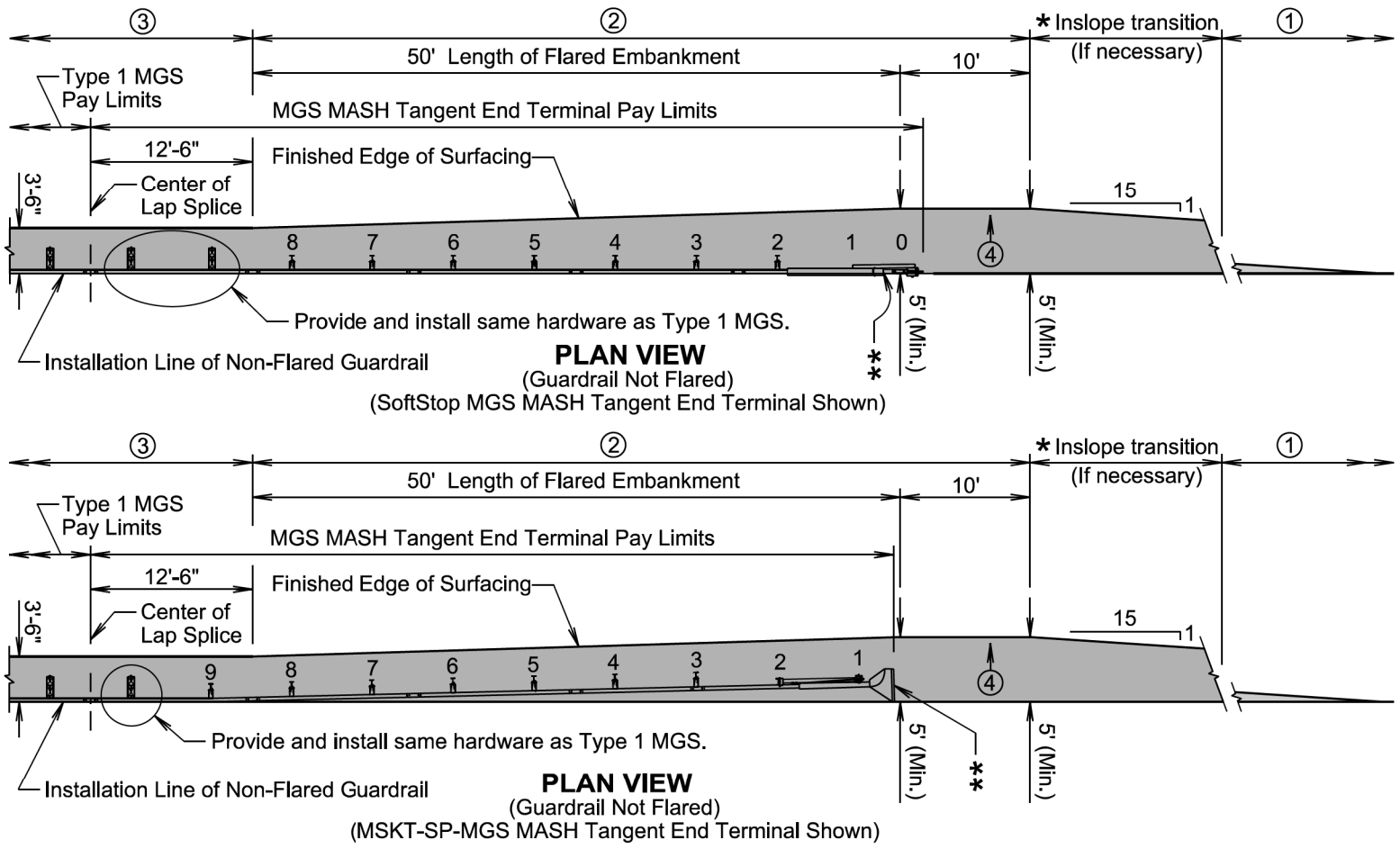
SDDOT

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

PLATE NUMBER 630.89

Sheet 1 of 2

November 19, 2021



PLAN VIEW
(Guardrail Not Flared)
(SoftStop MGS MASH Tangent End Terminal Shown)

PLAN VIEW
(Guardrail Not Flared)
(MSKT-SP-MGS MASH Tangent End Terminal Shown)

** See standard plate 632.40 for delineation.

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

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

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

③ Inslope as specified in the plans.

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

Plotting Date: 08/12/2024

STATE OF SOUTH DAKOTA

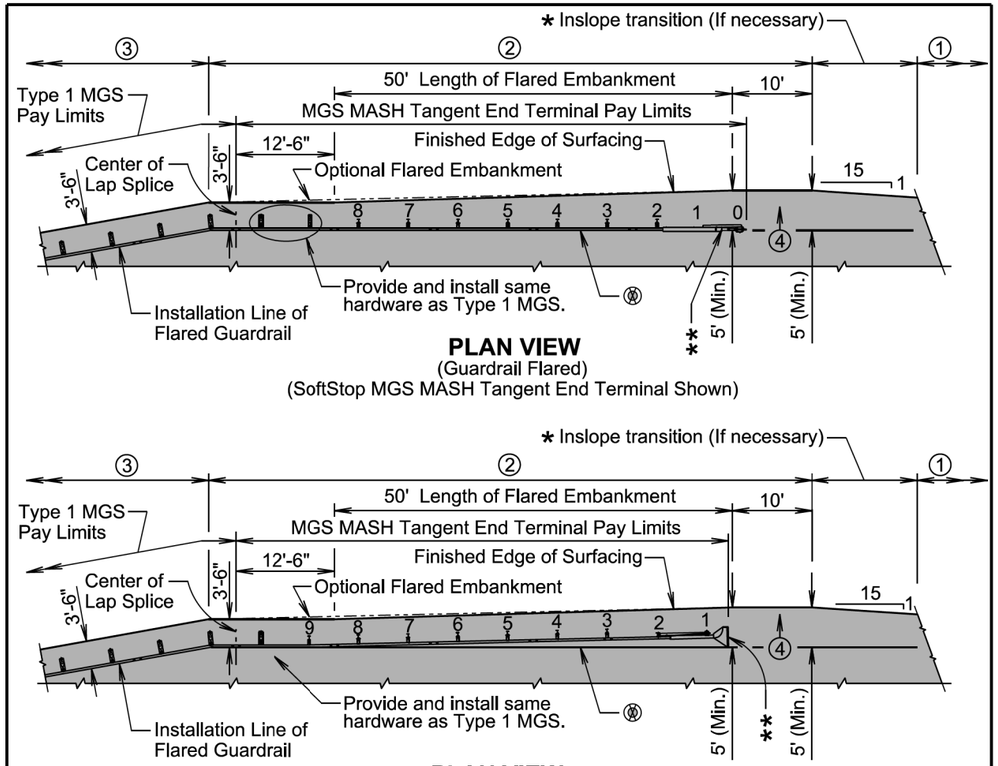
PROJECT PT 0908(105)349

SHEET B65

TOTAL SHEETS B70

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B66	B70

Plotting Date: 08/12/2024



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

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

GENERAL NOTES:

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

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

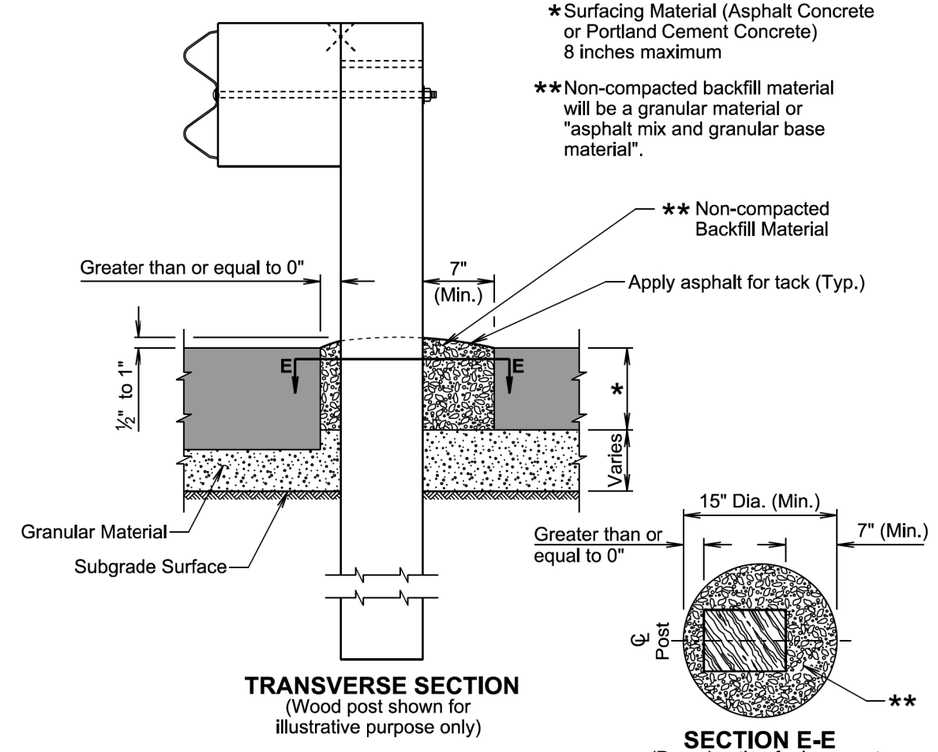
Ⓜ The installation reference line for MGS MASH tangent end terminals will always be parallel to the roadway.

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

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

November 19, 2021

Published Date: 2025	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL	PLATE NUMBER 630.89
			Sheet 2 of 2



TRANSVERSE SECTION
(Wood post shown for illustrative purpose only)

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

GENERAL NOTES:

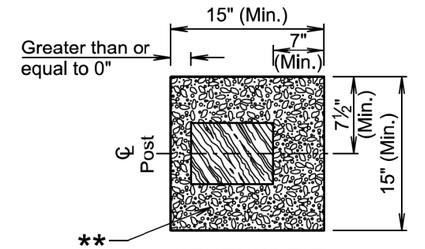
The leave-out limits may be increased to accommodate construction equipment and tolerances.

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

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

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

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



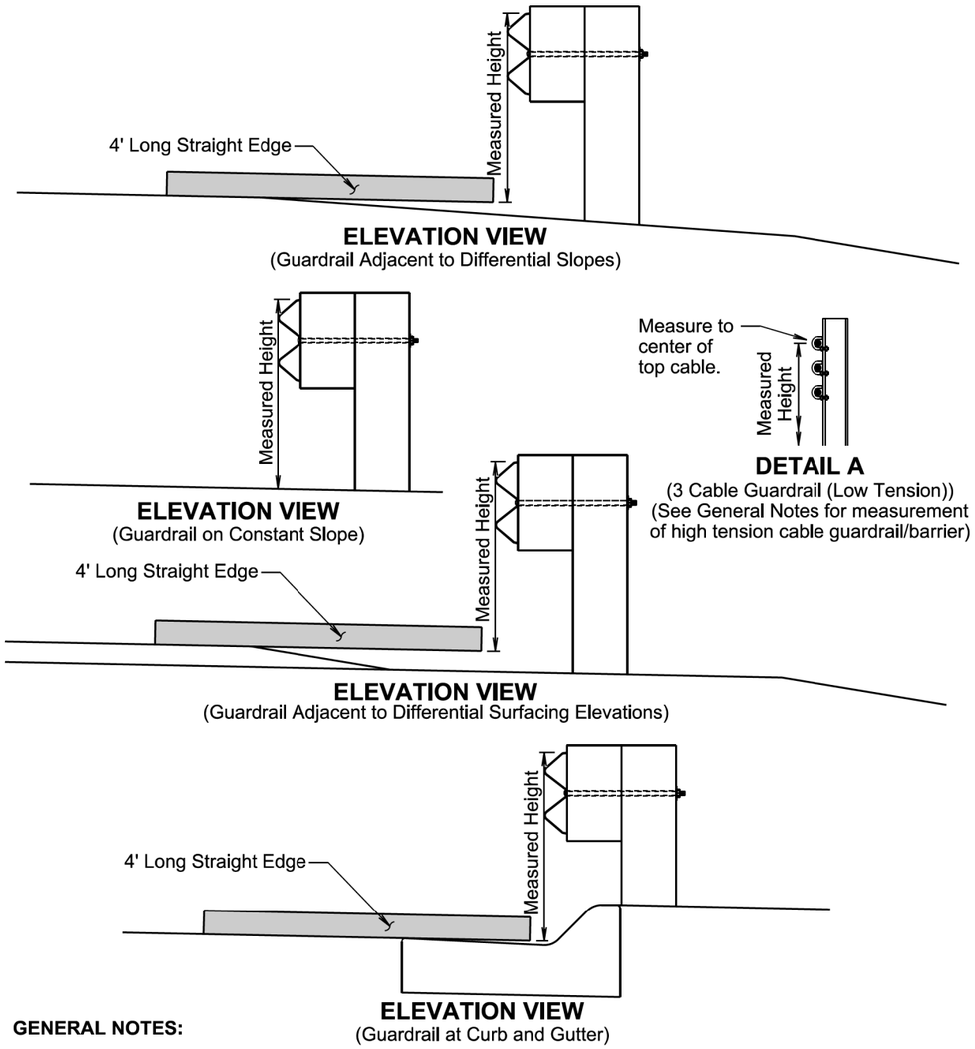
SECTION E-E
(Square option for leave-out and backfill limits)
(Wood post shown for illustrative purpose only)

November 19, 2021

Published Date: 2025	SDDOT	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B67	B70

Plotting Date: 08/12/2024



GENERAL NOTES:

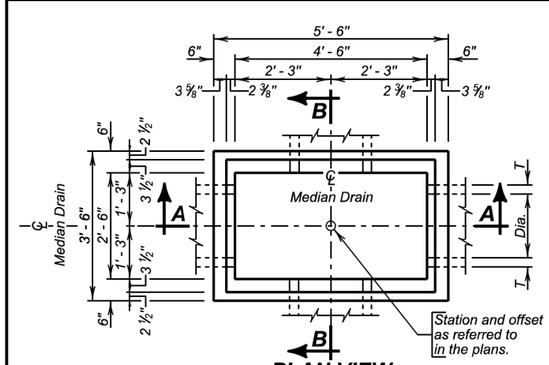
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

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

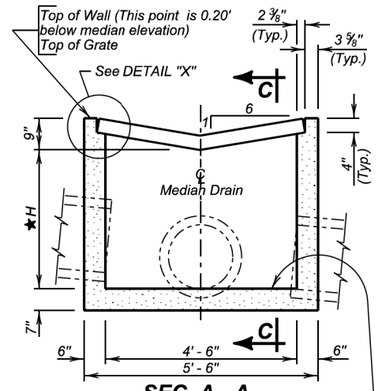
The height of high tension cable guardrail/barrier will be measured in accordance with the Manufacturer's installation instructions.

September 14, 2019

Published Date: 2025	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99 Sheet 1 of 1



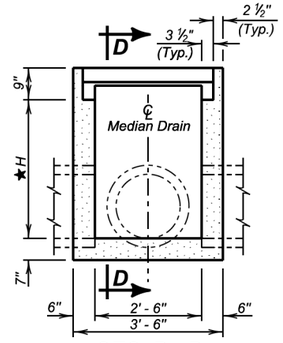
PLAN VIEW
(Frame and Grate Assembly Not Shown)



SEC. A - A

★Maximum "H" is 4' - 0"

ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
✳ Class M6 Concrete	Cu. Yd.	0.59	0.30H
Reinforcing Steel	Lb.	72.01	33.87H
Type M Frame and Grate Assembly	Each	1	—



SEC. B - B

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.

Median drain may be precast. If precast median drain 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.

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

Structural steel for angles and plates shall conform to ASTM A36. Structural steel for rectangular HSS shall conform to ASTM A500 grade B. For informational purpose, the approximate weight of the frame is 100 pounds and the approximate weight of the grate is 254 pounds.

Maximum R.C.P. diameter shall not exceed 30 inches (18 inches R. C. arch) on the 3-foot 6-inch wide side and shall not exceed 42 inches (36 inches for R. C. arch) on the 5-foot 6-inch wide side of the median drain.

The dimension of H is in feet. Maximum H is 4 feet.

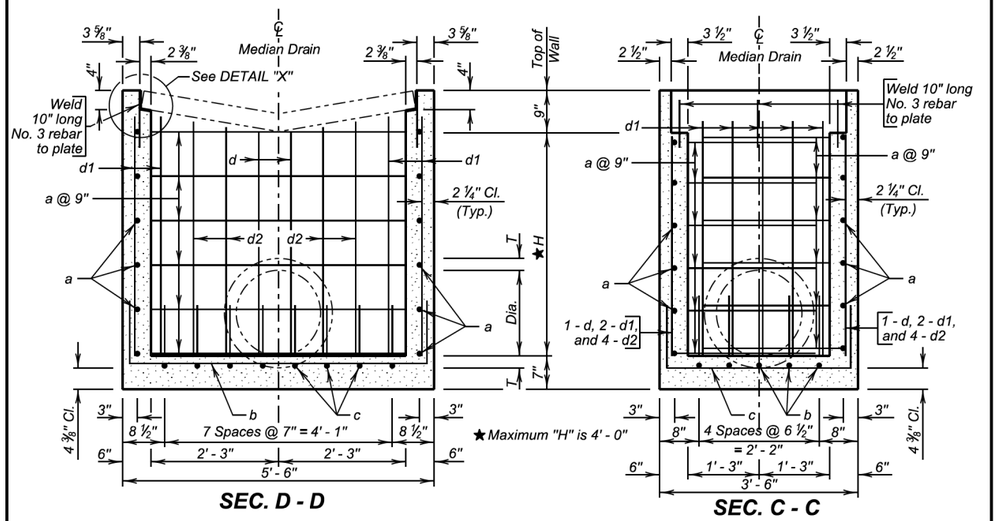
PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.05
	24	3	0.09
	30	3 ½	0.14
	36	4	0.20
	42	4 ½	0.26
R.C. ARCH	18	2 ½	0.05
	24	3 ½	0.09
	30	4	0.14
	36	4 ½	0.19

August 27, 2020

Published Date: 2025	SDDOT	TYPE M MEDIAN DRAIN	PLATE NUMBER 670.65 Sheet 1 of 3

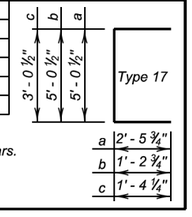
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B68	B70

Plotting Date: 08/12/2024



REINFORCING SCHEDULE

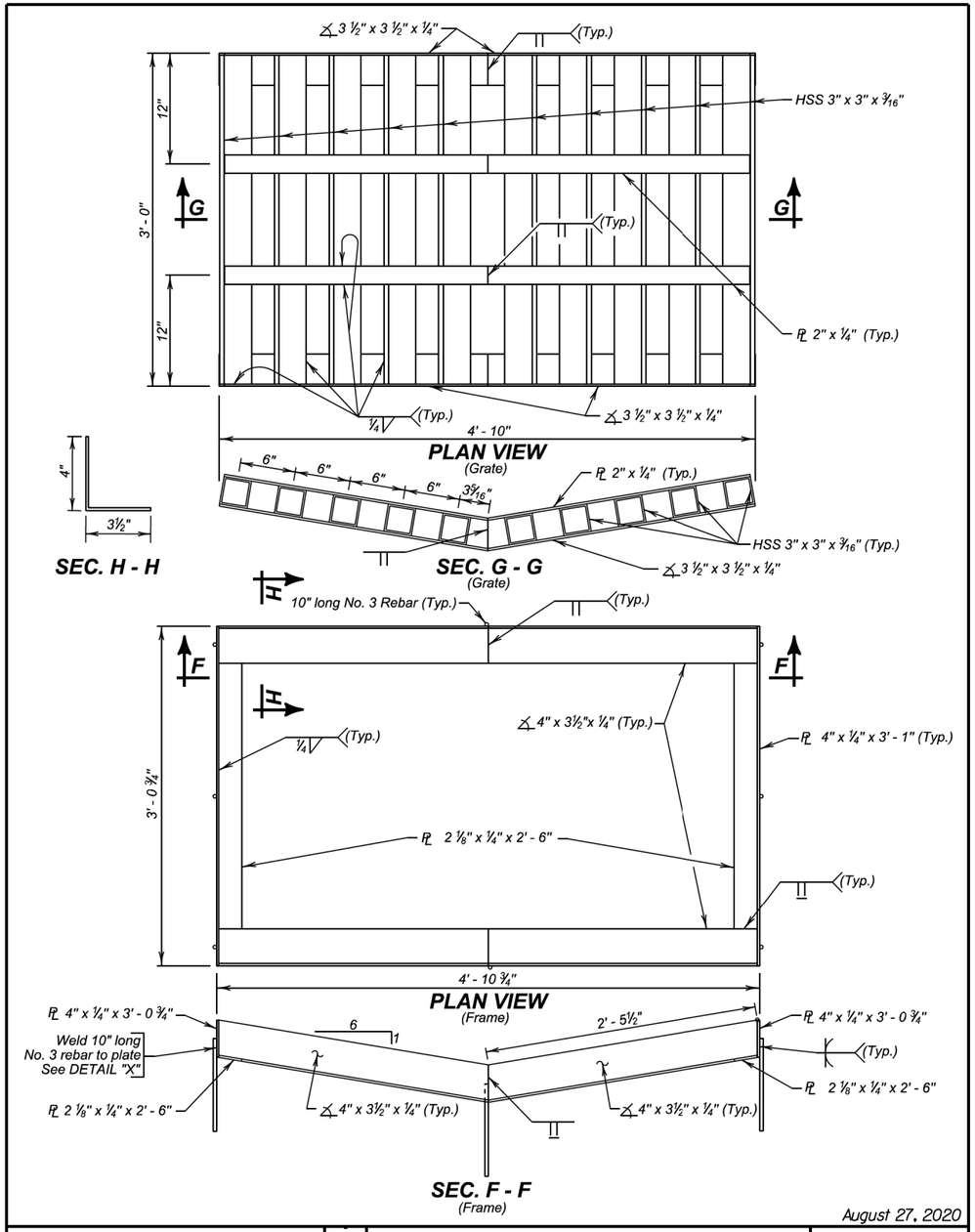
Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	10' - 0"	17	
b	5	5	7' - 6"	17	
c	8	4	5' - 9"	17	
d	2	4	H - 1 1/2"	Str.	
d1	14	4	H + 3"	Str.	
d2	8	4	H	Str.	



NOTE:
All dimensions are out to out of bars.

August 27, 2020

Published Date: 2025	SDDOT	TYPE M MEDIAN DRAIN	PLATE NUMBER 670.65
			Sheet 2 of 3

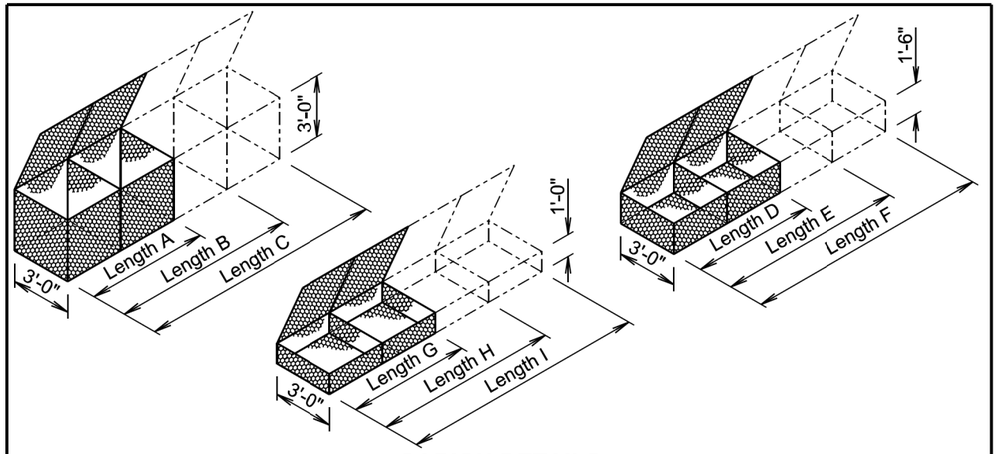


August 27, 2020

Published Date: 2025	SDDOT	TYPE M MEDIAN DRAIN	PLATE NUMBER 670.65
			Sheet 3 of 3

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B69	B70

Plotting Date: 08/12/2024



GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

GENERAL NOTES: Above dimensions subject to mill tolerances.

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

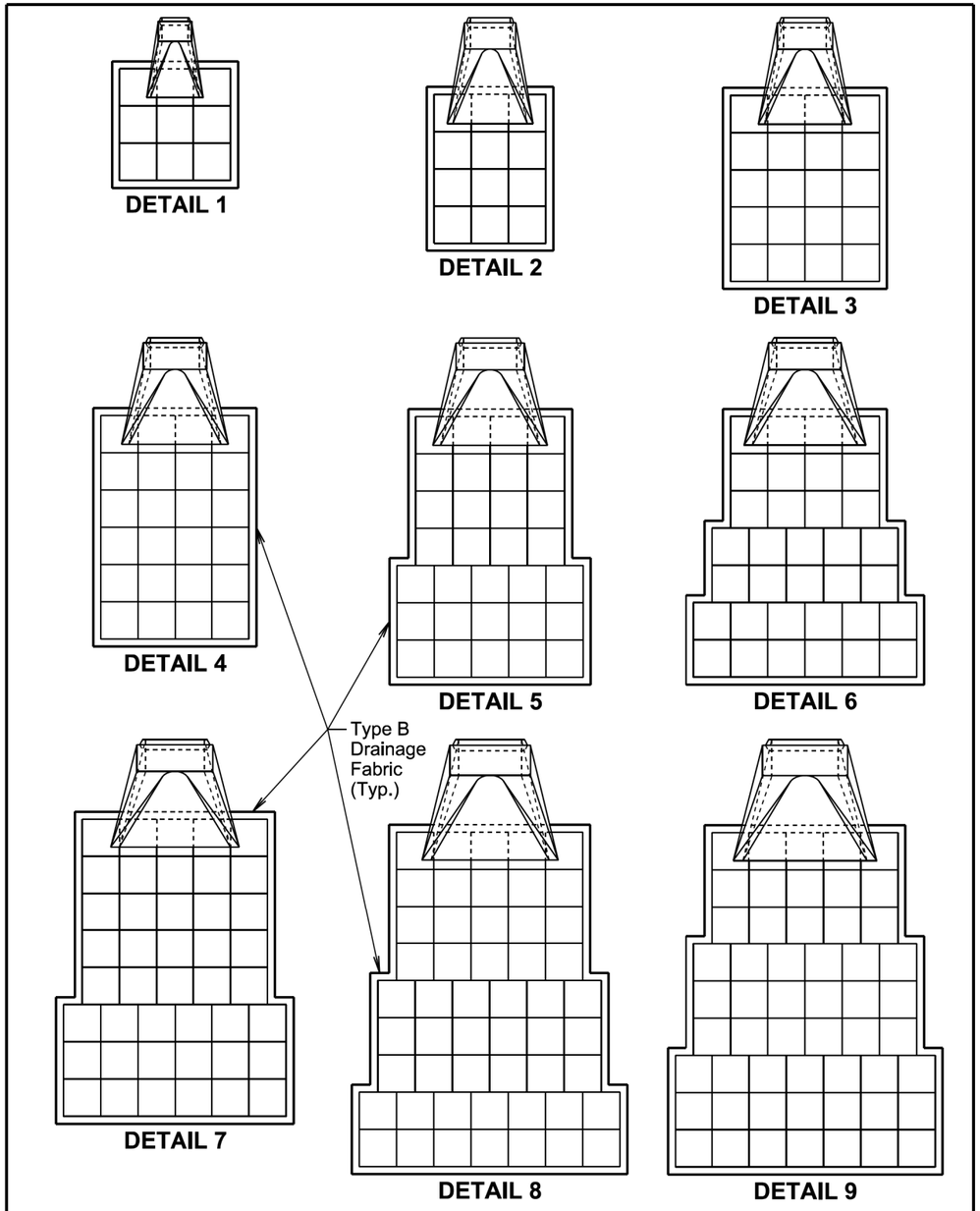
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

Published Date: 2025	SDDOT	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
			Sheet 1 of 1



February 14, 2020

Published Date: 2025	SDDOT	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 1 of 2

Plot Scale - 1:200

Plotted From - TRPR314435

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	B70	B70

Plotting Date: 08/12/2024

	* ESTIMATED QUANTITIES			
	Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)
RCP, RCP Arch, CMP, and CMP Arch	1	12, 18, and 24	4.5	15
	2	30 and 36	6.0	19
	3	42	10.0	29
	4	48 and 54	12.0	34
	5	60	15.5	43
	6	66	17.0	47
	7	72	21.5	57
	8	78	26.0	68
	9	84	27.0	70

GENERAL NOTES:

Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

* Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on standard plate 720.01.

Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance with Section 720 of the Specifications.

February 14, 2020

Published Date: 2025	SDDOT	***BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS***	***PLATE NUMBER*** *720.03*
			Sheet 2 of 2