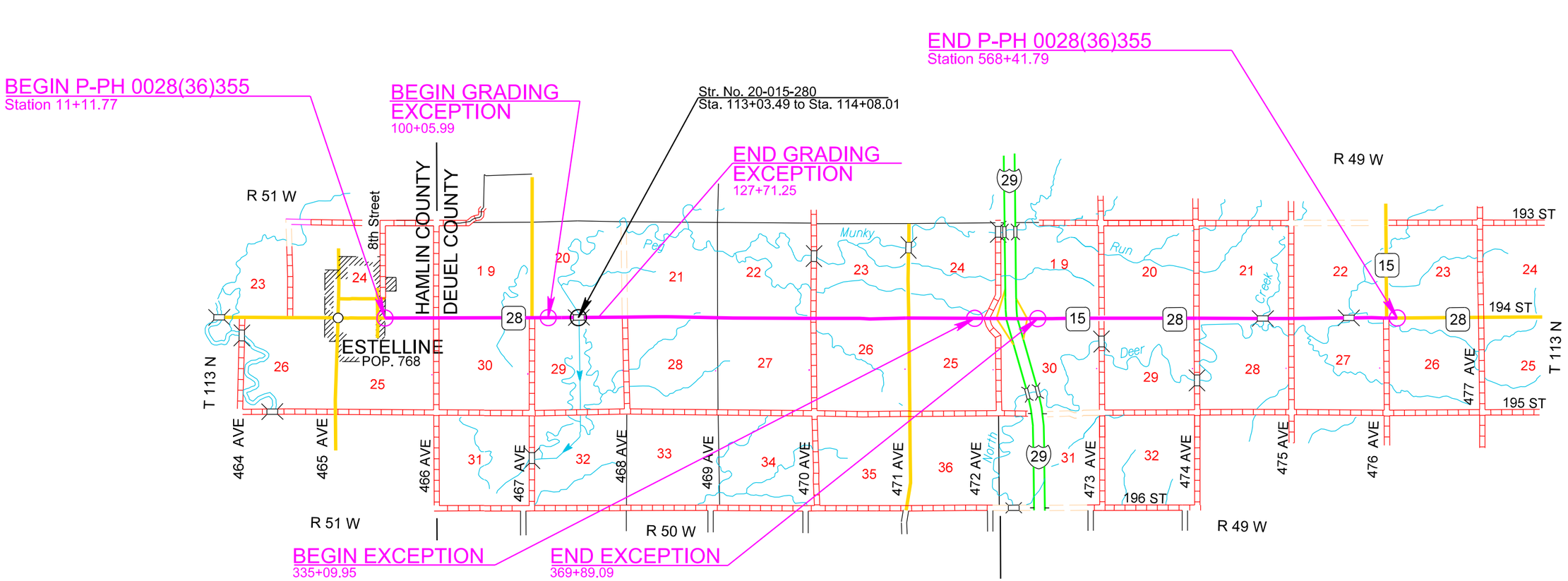
Section F: Surfacing Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F1	F28

Plotting Date: 11/27/2024

INDEX OF SHEETS



Revised: 11-26-2024 LLA

SECTION F ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0400	Remove Drop Inlet	2	Each
110E0500	Remove Pipe Culvert	66	Ft
110E0730	Remove Beam Guardrail	600.0	Ft
110E1000	Remove Asphalt Concrete Pavement	Lump Sum	LS
120E6200	Water for Granular Material	2,083.4	MGal
260E1010	Base Course	32,372.0	Ton
260E1030	Base Course, Salvaged	140,589.5	Ton
260E3500	Temporary Gravel Surfacing	900.0	Ton
320E1200	Asphalt Concrete Composite	86.2	Ton
320E5020	Saw Joint in Asphalt Concrete	1,220	Ft
330E0010	MC-70 Asphalt for Prime	302.3	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	43.7	Ton
330E1000	Blotting Sand for Prime	734.2	Ton
330E3000	Sand for Fog Seal	10.0	Ton
360E0020	AE150S Asphalt for Surface Treatment	238.8	Ton
360E1050	Type 3 Cover Aggregate	3,212.4	Ton
450E0122	18" RCP Class 2, Furnish	160	Ft
450E0130	18" RCP, Install	160	Ft
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
462E0100	Class M6 Concrete	2.2	CuYd
480E0100	Reinforcing Steel	380	Lb
630E0500	Type 1 MGS	350.0	Ft
630E1501	Type 1 Retrofit Guardrail Transition	4	Each
630E2017	MGS MASH Flared End Terminal	4	Each
632E2220	Guardrail Delineator	16	Each
670E0200	Type A Frame and Grate	2	Each
670E5400	Precast Drop Inlet Collar	2	Each

SURFACING THICKNESS DIMENSIONS

The plans shown spread rates will be applied even though the thickness may vary from that shown on the plans.

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

SALVAGED MATERIAL

The quantity of salvaged asphalt mix and granular base material may vary from the plans. The Contractor will be required to use all of the salvaged material on this project, except for material stockpiled for use on a future surfacing project, by decreasing or increasing the quantity of Base Course as necessary, or as directed by the Engineer.

TABLE OF SALVAGED MATERIAL
(For Informational Purposes Only, See Typical Sections & Section B)

Location	Salvaged Asphalt Mix Material (tons)	Salvaged Asphalt Mix and Granular Base Material (tons)
SD 28		
		900
*Sta. 11+11.77 to Sta. 568+41.79	12,400.0	140,589.5
TOTALS =	12,400.0	141,489.5

*Removal Exceptions:
Sta. 100+05.99 to Sta. 127+71.25 and Sta. 335+09.95 to Sta. 369+89.09

COVER AGGREGATE

Cover Aggregate will conform to the requirements of the Specifications for Type 3 and will be furnished by the Contractor.

TABLE OF SALVAGED MATERIAL UTILIZATION

	RAP for Class HR Asphalt Concrete for Future Project (PCN 05Q7) (tons)	Base Course, Salvaged (tons)	Temporary Gravel Surfacing (tons)
Salvaged Asphalt Mix Material	12,400.0		
Salvaged Asphalt Mix and Granular Base Material		140,589.5	900.0

BASE COURSE, SALVAGED

Base Course, Salvaged will be obtained from the stockpile site(s) provided by the Contractor and may be used without further gradation testing.

The Contractor will ensure the Base Course, Salvaged material contains no more than 50% salvaged asphalt mix material and at least 50% granular material (salvaged or virgin). Blended material will be to the satisfaction of the Engineer.

All other requirements for Base Course, Salvaged will apply.

BLOTTING SAND FOR PRIME

Included in the Estimate of Quantities are 10 tons of Blotting Sand for Prime to be used where necessary for maintenance of traffic as directed by the Engineer. (Rate = 10 pounds per square yard)

FOG SEAL

The fog seal will be placed following the completion of the asphalt surface treatment. Prior to the application of the fog seal, the Contractor will be required to broom the asphalt surface treatment. A CSS-1h or SS-1h emulsion will be used for the fog seal application. A water-to-emulsion rate of 1:1 should be used for the Fog Seal application.

The Contractor will fog seal the entire asphalt surface treatment surface.

The Contractor will plan the fog seal operation to allow adequate cure time for the fog seal and to minimize/eliminate the need to apply Sand for Fog Seal.

If adequate cure time for the Fog Seal is not available, to facilitate traffic, the Contractor will be allowed to place a minimum sufficient amount of blotting sand on the fog seal to allow traffic to cross the uncured portion of the fog seal, as permitted by the Engineer.

Sand for Fog Seal is only intended to be placed for accesses to businesses, intersection crossings, and as determined by the Engineer to facilitate traffic movements. Sand for Fog Seal(10 tons) will not be placed to accelerate the Contractor's schedule.

Sand that is applied will be broomed off the surface of the roadway once the fog seal has sufficiently cured as determined by the Engineer.

Sand for Fog Seal will conform to Section 879.1.B.

Prior to hauling, Sand for Fog Seal will be screened to minimize segregation, eliminate oversize, and effectively breakup or discard material bonded into chunks. All costs for supplying, hauling, placing, and brooming the blotting sand will be incidental to the contract unit price per ton for "Sand for Fog Seal".

TABLE OF DROP INLET REMOVAL

All costs for removal of the frame and grate assembly will be incidental to the contract unit price per each for "Remove Drop Inlet".

Station	L/R	Quantity (Each)
112+88.49	L	1
112+88.49	R	1
	Total:	2

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DROP INLETS

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

The plan shown quantities of the drop inlet components will be the basis of payment for these items.

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

TABLE OF DROP INLETS AND QUANTITIES

Station	L/R	Drop Inlet Size	Drop Inlet Type	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Precast Drop Inlet Collar (Each)
112+88.49	L	2'x3'	B	1.1	187	1
112+88.49	R	2'x3'	B	1.1	193	1
			Totals:	2.2	380	2

Total Type A Frame and Grate 2

SAW JOINT IN ASPHALT CONCRETE

Prior to the removal of in place asphalt concrete pavement, the existing pavement will be sawed full depth to a true line with a vertical face. See Asphalt Concrete Layouts. If approved by the Engineer, the Contractor may elect to use a different method to create this vertical face. All costs to saw joint will be incidental to the contract unit price per foot for "Saw Joint in Asphalt Concrete".

RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per **mile**.

SD 28 MAINLINE

Sta. 11+11.77 to Sta. 100+05.99
Sta. 127+71.25 to Sta. 160+60.00
Sta. 173+20.00 to Sta. 335+09.95
Sta. 369+89.09 to Sta. 552+97.79

Base Course or Base Course, Salvaged 17,562 tons

Water for Granular Material at the rate of 210.7 M Gallons

MC-70 Asphalt for Prime at the Rate of 32.0 tons applied 46 feet wide (Rate = 0.30 gallon per square yard).

Blotting Sand for Prime at the rate of 70.0 tons applied 24 feet wide (Rate = 10 lbs. per square yard).

ASPHALT SURFACE TREATMENT

AE 150S Asphalt for Surface Treatment at the rate of 24.4 tons applied 28 feet wide (Rate = 0.35 gallon per square yard).

Type 3 Cover Aggregate at the rate of 329 Tons applied 28 feet wide (Rate = 40 lbs. per square yard).

FOG SEAL

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 3.5 ton applied 28 feet wide (Rate = 0.05 gallon per square yard).

TABLE OF MATERIALS

Revised: 11-26-2024 LLA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F4	F28

Plotting Date: 11/27/2024

LOCATION	WATER FOR GRANULAR MATERIAL	BASE COURSE, SALVAGED OR BASE COURSE	BASE COURSE	TEMPORARY GRAVEL SURFACING	ASPHALT CONCRETE COMPOSITE (Ton)			ASPHALT FOR PRIME	BLOTTING SAND FOR PRIME	ASPHALT FOR SURFACE TREATMENT	COVER AGGREGATE FOR AST	ASPHALT FOR FOG SEAL	SAND FOR FOG SEAL
Station to Station	(MGal)	(Ton)	(Ton)	(Ton)	1st Lift	2nd Lift	Top Lift	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)
Mainline													
11+11.77 to 100+05.99 - Rate	354.9	29,583.2						53.9	117.9	41.1	554.2	8.9	
127+71.25 to 160+60.00 - Rate	131.2	10,939.4						19.9	43.6	15.2	204.9	2.2	
160+60.00 to 164+50.00	17.6	1,467.5						1.7	11.3	1.9	26.0	0.3	
164+50.00 to 169+30.00	24.2	2,013.7						2.5	15.5	2.9	38.4	0.5	
169+30.00 to 173+20.00	17.6	1,467.5						1.7	11.3	1.9	26.0	0.3	
173+20.00 to 335+09.95 - Rate	646.1	53,850.4						98.1	214.6	74.8	1,008.8	15.3	
369+89.09 to 552+97.79 - Rate	730.6	60,898.0						111.0	242.7	84.6	1,140.8	14.6	
552+97.79 to 556+68.79	16.8	1,396.0						1.7	10.8	1.8	24.7	0.4	
556+68.79 to 564+51.79	39.4	3,285.3						4.1	25.2	4.7	62.6	0.8	
564+51.79 to 568+41.79	17.6	1,467.5						1.7	11.3	1.9	26.0	0.4	
Mainline Vertical Transitions													
11+11.77 to 12+71.77	1.1	99.2											
98+45.99 to 100+05.99	1.1	99.2											
127+71.25 to 129+31.25	1.1	99.2											
333+49.95 to 335+09.95	1.1	99.2											
369+89.09 to 371+49.09	1.1	99.2											
566+81.79 to 568+41.79	1.1	99.2											
Traffic Diversions													
10+00.00 to 18+90.00	7.1		623.0										
Intersecting Roads & Entrances													
28' Int. Rds. - 20 each	12.0	1,080.0						6.0	20.0	8.0	100.0		
40' Entrances - 17 each	13.6	1,173.0											
24' Entrances - 31 each	15.5	1,302.0											
Sta. 230+86 Lt. & Rt. - 40'	1.6	133.0											
Sta. 444+90 Rt. - 40'	1.5	129.0											
Sta. 535+79 Lt. & Rt. - 40'	1.6	131.0											
Sta. 243+96 Lt. &Rt. - 28'	2.5	211.0											
Sta. 297+18 Lt. & Rt. - 28'	1.5	122.0											
Sta. 403+97 Lt. & Rt. - 28'	0.9	77.0											
Sta. 456+79 Lt. & Rt. - 28'	1.1	89.0											
Sta. 509+33 Lt. & Rt. - 28'	0.9	77.0											
Sta. 562+20 Rt. - 28'	0.7	59.0											
Sta. 128+26 Lt. - 24'	0.9	73.0											
Sta. 139+41 Lt. & 144' Ah - 24'	3.8	314.0											
Sta. 204+37 Lt. - 24'	0.8	64.0											
Sta. 409+09 Rt. - 24'	0.7	59.0											
Sta. 520+63 Rt. - 24'	0.8	69.0			55.0								
Asphalt Concrete Tie-In to Structure No. 20-015-280													
112 + 71.58 to 112 + 81.58	0.3	26.4			5.2	5.2	5.2						
114 + 29.14 to 114 + 39.14	0.3	26.4			5.2	5.2	5.2						
Guardrail Surfacing from Guardrail Table													
Begin Bridge Right	0.9	74.5											
Begin Bridge Left	0.3	26.1											
End Bridge Right	0.3	25.3											
End Bridge Left	0.4	34.1											
TEMPORARY GRAVEL SURFACING - Traffic Control	10.8			900.0									
MATERIALS FROM NOTES													
BLOTTING SAND FOR PRIME - Maintenance of Traffic									10.0				
SAND FOR FOG SEAL - Facilitate Traffic													10.0
Rates Totals	2,083.4	172,338.5	623.0	900.0	86.2			302.3	734.2	238.8	3,212.4	43.7	10.0

Plot Scale - 1:200

Plotted From - TRPR13462

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Application Rates for Materials in the Table of Materials above per square yard : MC-70 Asphalt for Prime rate = 0.30 gallon

Blotting Sand for Prime rate = 10 lbs. per square yard.

AE 150S Asphalt for Surface Treatment rate = 0.35 gallon per square yard.

Type 3 Cover Aggregate rate = 40 lbs. per square yard.

SS-1h or CSS-1h Asphalt for Fog Seal rate = 0.05 gallon per square yard.

Revised: 11-26-2024 LLA

LOCATION OF INTERSECTING ROADS AND FARM ENTRANCES

INTERSECTING ROADS		FARM ENTRANCES	
*28' Intersecting Roads	24' Farm Entrance		40' Farm Entrance
(20 each)	(31 each)		(17 each)
Sta. 34+56 Lt. & Rt.	Sta. 11+46 Lt.	Sta. 256+28 Lt.	Sta. 165+61 Rt.
Sta. 87+74 Lt. & Rt.	Sta. 12+52 Rt.	Sta. 275+74 Rt.	Sta. 168+65 Lt.
Sta. 139+41 Lt. & Rt.	Sta. 26+10 Lt.	Sta. 285+35 Lt.	Sta. 219+16 Rt.
Sta. 191+58 Lt.	Sta. 28+60 Rt.	Sta. 377+42 Rt.	Sta. 230+86 Lt. & Rt.
* 40' - Sta. 191+58 Rt.	Sta. 40+38 Rt.	Sta. 409+09 Rt.	Sta. 270+58 Lt. & Rt.
Sta. 243+96 Lt. &Rt.	Sta. 57+62 Lt.	Sta. 431+77 Rt.	Sta. 324+22 Lt.
Sta. 297+18 Lt. & Rt.	Sta. 62+69 Lt.	Sta. 453+10 Lt.	Sta. 371+68 Lt.
Sta. 403+97 Lt. & Rt.	Sta. 62+82 Rt.	Sta. 488+44 Rt.	Sta. 377+60 Lt.
Sta. 456+79 Lt. & Rt.	Sta. 71+61 Lt.	Sta. 511+39 Lt.	Sta. 417+14 Lt.
Sta. 509+33 Lt. & Rt.	Sta. 128+26 Lt. & Rt.	Sta. 520+63 Rt.	Sta. 430+28 Lt.
* 40' - Sta. 562+20 Lt.	Sta. 139+41 Lt. & 144' Ah	Sta. 544+73 Rt.	Sta. 444+90 Rt.
Sta. 562+20 Rt.	Sta. 175+32 Lt.	Sta. 550+94 Rt.	Sta. 469+88 Lt.
	Sta. 193+83 Lt.	Sta. 564+88 Lt.	Sta. 482+96 Lt.
	Sta. 204+37 Lt.	Sta. 562+20 Lt. 282' Ah	Sta. 535+79 Lt. & Rt.

Table of Guardrail Surfacing

LOCATION	WATER FOR GRANULAR MATERIAL (MGal)	BASE COURSE OR BASE COURSE, SALVAGED (Ton)
Str. No. 20-015-280		
Begin Bridge Right	0.9	74.5
Begin Bridge Left	0.3	26.1
End Bridge Right	0.3	25.3
End Bridge Left	0.4	34.1
Totals	1.9	160.0

TABLE OF GURARDRAIL ITEMS

Location	Remove Beam Guardrail	# Remove Flared End Terminal	Type 1 Retrofit Guardrail Transition	Type 1 MGS	MGS Flared End Terminal	Steel Beam Guardrail Delineator
	Feet	Each	Each	Feet	Each	Each
SD28						
Str. # 20-015-280						
Begin Bridge Right Sh.	193.75	1	1	137.5	1	4
Begin Bridge Left Sh.	106.25	1	1	37.5	1	4
End Bridge Right Sh.	106.25	1	1	37.5	1	4
End Bridge Left Sh.	193.75	1	1	137.5	1	4
TOTAL	600.0	4	4	350.0	4	16

For Informational Purposes Only: All cost to remove these items will be incidental to the contract unit price per foot for "Remove Beam Guardrail"

IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F6	F28

Plotting Date: 11/27/2024

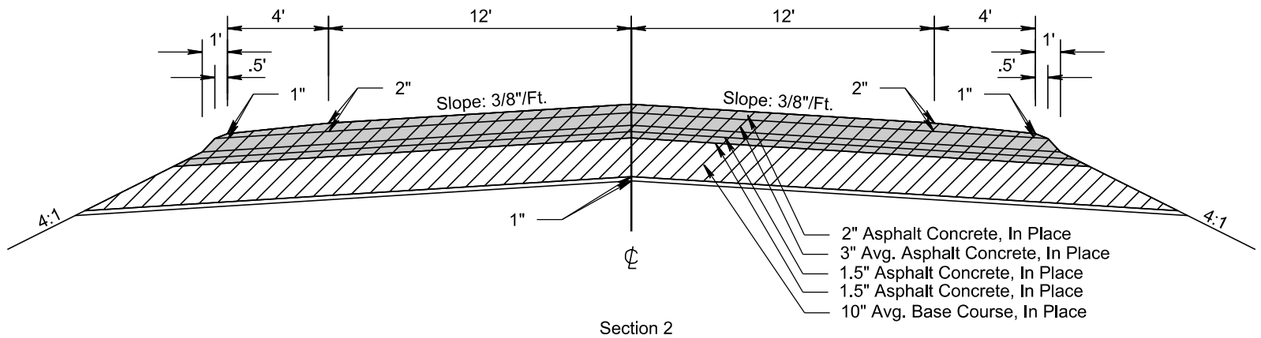
Salvage & Stockpile Asphalt Mix Material (12,400 tons)

Salvage & Stockpile Asphalt Mix & Granular Base Material

Section 1

SD HWY 28 - MAINLINE

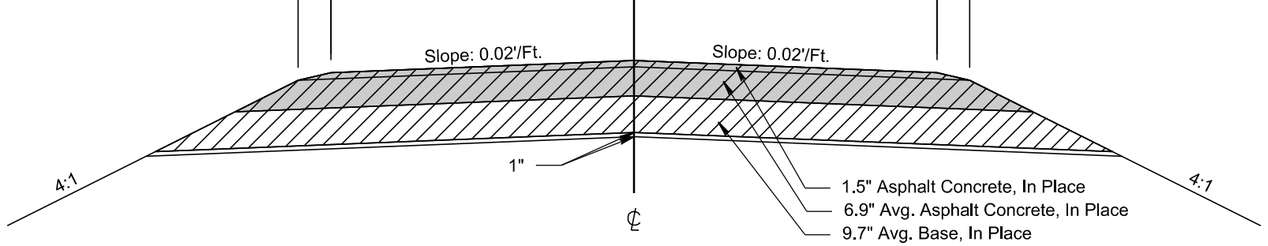
Sta. 11+11.77 to Sta. 34+55.88



Section 2

SD HWY 28 - MAINLINE

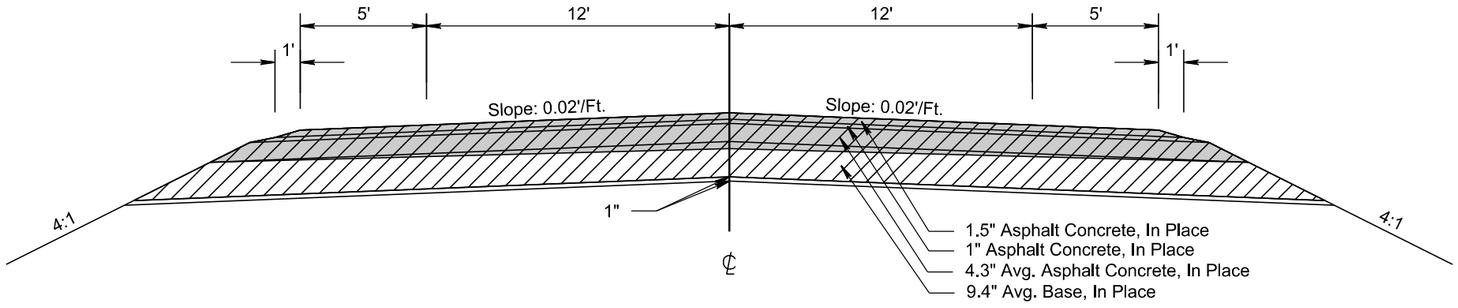
Sta. 34+55.88 to Sta. 99+80.61
Sta. 127+97.61 to Sta. 334+39.99



Section 3

SD HWY 28 - MAINLINE

Sta. 99+80.61 to Sta. 100+05.99
Sta. 127+71.25 to Sta. 127+97.61



Removal Exceptions:

Sta. 100+05.99 to Sta. 112+71.58
Sta. 114+39.14 to Sta. 127+71.25
Sta. 335+09.95 to Sta. 369+89.08

Material to be Removed at these Locations:

Sta. 112+71.58 to Sta. 112+81.58
Sta. 114+29.14 to Sta. 114+39.14

IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F7	F28

Plotting Date: 11/27/2024

Salvage & Stockpile Asphalt Mix Material (12,400 tons)

Salvage & Stockpile Asphalt Mix & Granular Base Material

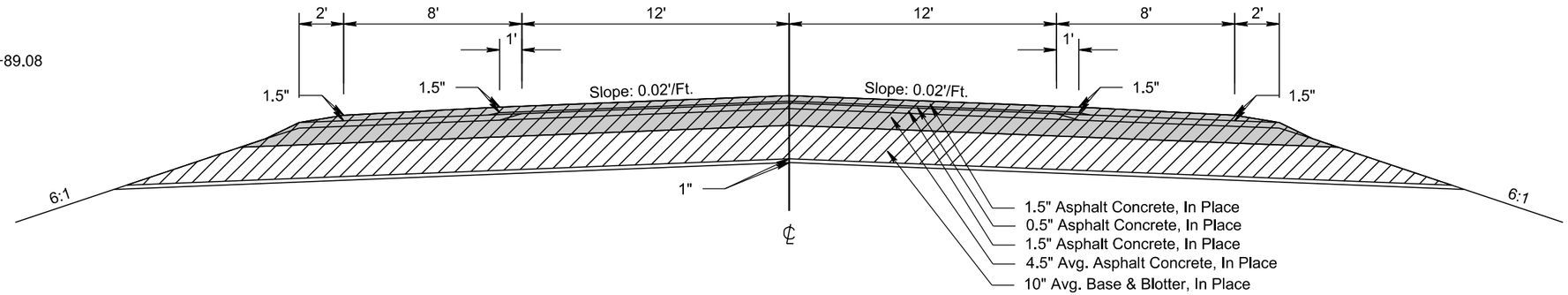
Removal Exception:

Sta. 335+09.95 to Sta. 369+89.08

Section 4

SD HWY 28 - MAINLINE

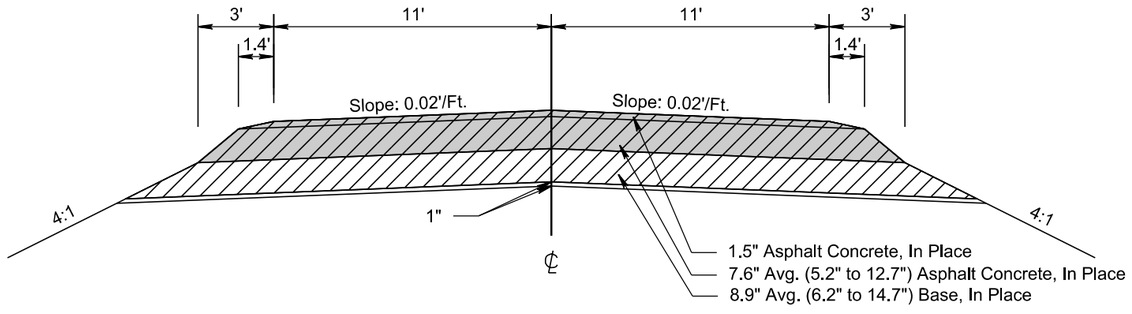
Sta. 334+39.99 to Sta. 335+09.95
Sta. 369+89.08 to Sta. 370+39.99



Section 5

SD HWY 28 - MAINLINE

Sta. 370+39.99 to Sta. 542+65.49



IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F8	F28

Plotting Date: 11/27/2024

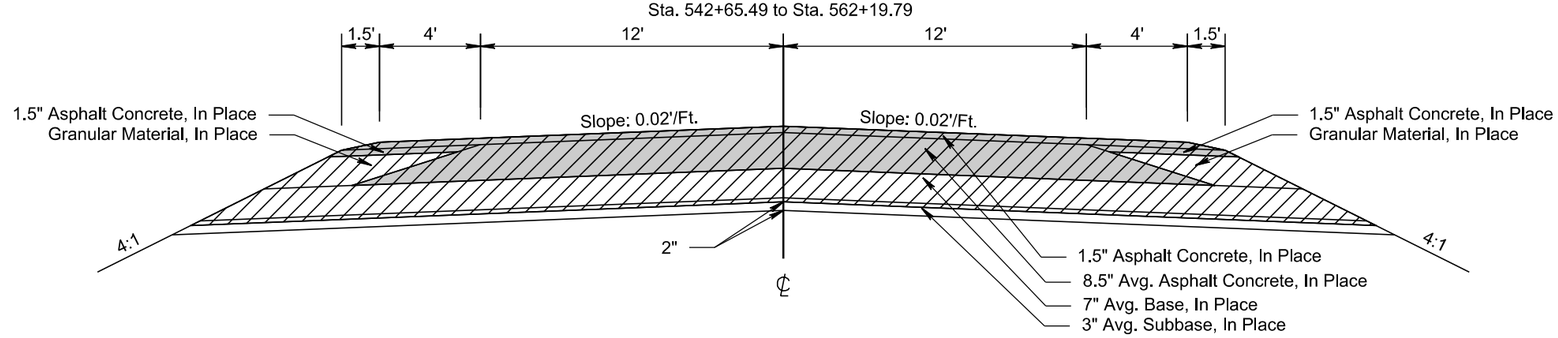
Salvage & Stockpile Asphalt Mix Material (12,400 tons)

Salvage & Stockpile Asphalt Mix & Granular Base Material

Section 6

SD HWY 28 - MAINLINE

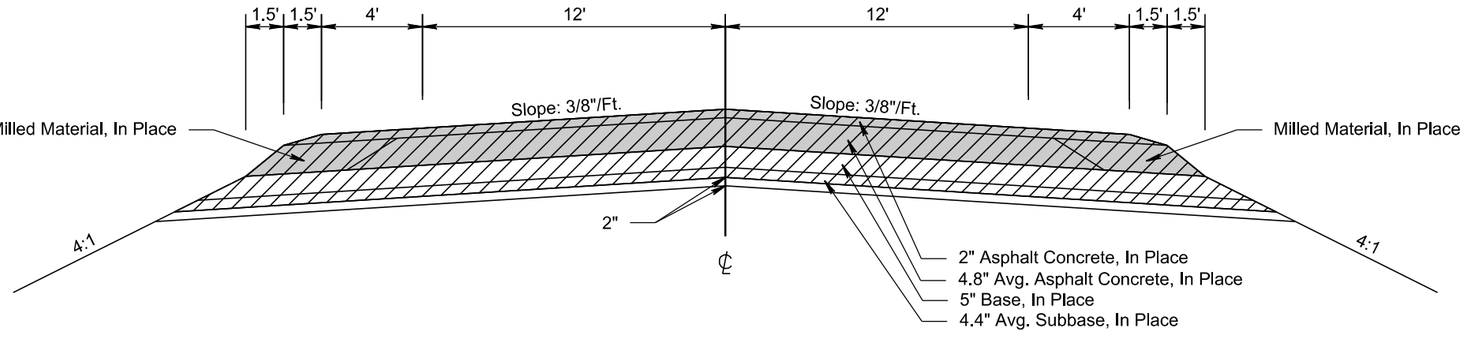
Sta. 542+65.49 to Sta. 562+19.79



Section 7

SD HWY 28 - MAINLINE

Sta. 562+19.79 to Sta. 568+41.79



TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F9	F28

Plotting Date: 11/27/2024

Revised: 10/23/2024 RTS

Transitions:

Sta. 160+60 to Sta. 164+50
*14' to 20'

Sta. 164+50 to Sta. 169+30
*20'

Sta. 169+30 to Sta. 173+20
* 20' to 14'

Sta. 552+97.79 to Sta. 556+68.79
*14' to 20'

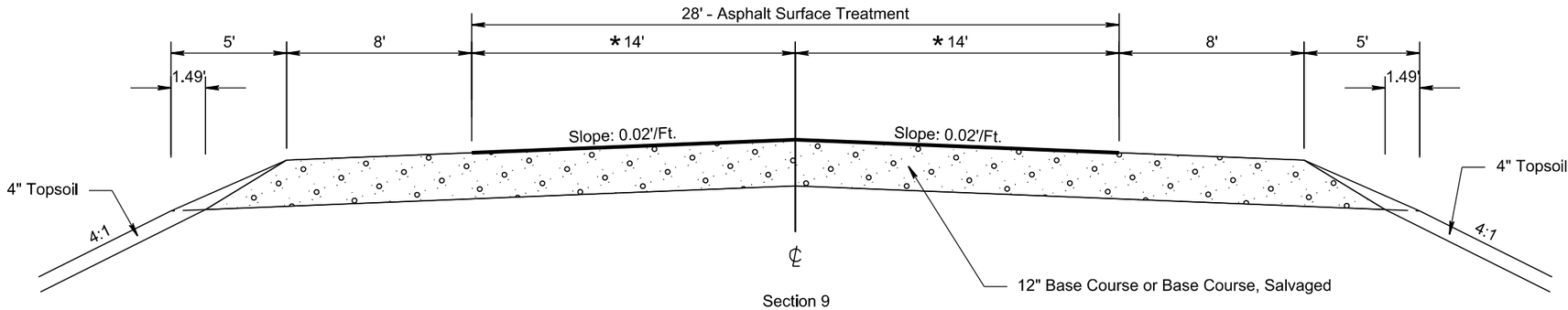
Sta. 556+68.79 to Sta. 564+51.79
* 20'

Sta. 564+51.79 to Sta. 568+41.79
* 20' to 14'

Section 8

SD HWY 28 - MAINLINE

Sta. 11+11.77 to Sta. 100+05.99
Sta. 127+71.25 to Sta. 335+09.95
Sta. 369+89.08 to Sta. 568+41.79



Note - Mainline Vertical Transition above the 12" of Base Course or Base Course, Salvaged to tie into Existing Pavement:

Sta. 11+11.77 to Sta. 12+71.77
4.5" to 0"

Sta. 98+45.99 to Sta. 100+05.99
0" to 4.5"

Sta. 127+71.25 to Sta. 129+31.25
4.5" to 0"

Sta. 333+49.95 to Sta. 335+09.95
0" to 4.5"

Sta. 369+89.08 to Sta. 371+49.09
4.5" to 0"

Sta. 566+81.79 to Sta. 568+41.79
0" to 4.5"

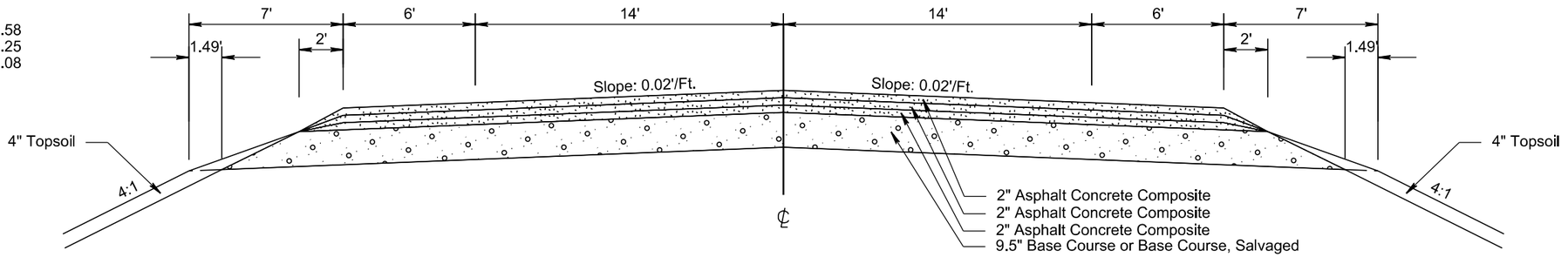
Section 9

SD HWY 28 - Mainline tie-ins to Str. No. 20-015-280

Sta. 112+71.58 to Sta. 112+81.58
Sta. 114+29.14 to Sta. 114+39.14

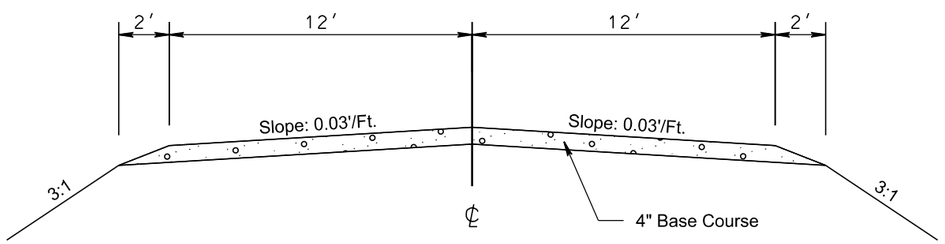
Surfacing Exceptions:

Sta. 100+05.99 to Sta. 112+71.58
Sta. 114+39.14 to Sta. 127+71.25
Sta. 335+09.95 to Sta. 369+89.08



TRAFFIC DIVERSION

Sta. 10+92.65 to Sta. 17+92.22



PLOT SCALE - 1:6.00001

PLOTTED FROM - TRPR13462

PLOT NAME - 9

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ULTIMATE SURFACING SECTIONS - INFORMATION ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F10	F28

Plotting Date: 11/27/2024

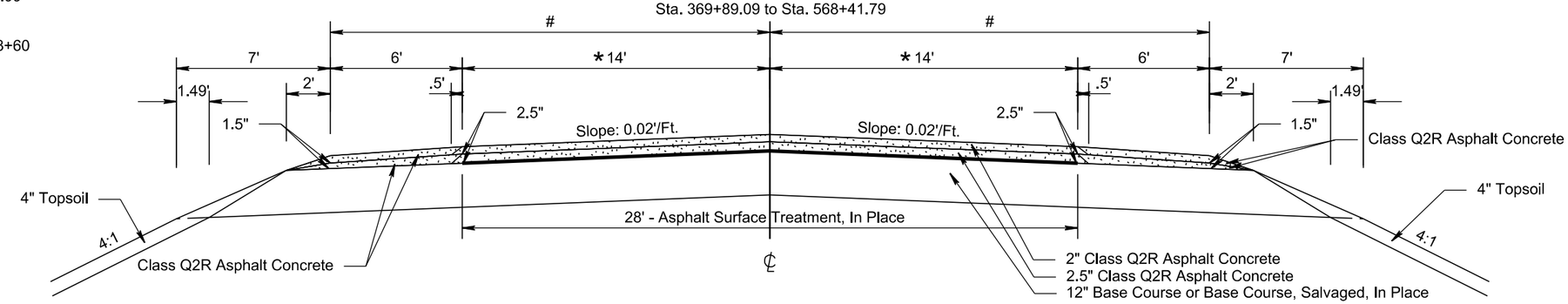
Revised: 11/19/2024 LLA

Mainline/ Shoulder Transitions:

Sta. 99+50 to Sta. 100+05.99
40' to 34'

Sta. 127+71.25 to Sta. 128+60
34' to 40'

Section 9
SD HWY28 - MAINLINE
Sta. 11+11.77 to Sta. 100+05.99
Sta. 128+60 to Sta. 335+09.95
Sta. 369+89.09 to Sta. 568+41.79



Transitions:

Sta. 160+60 to Sta. 164+50
*14' to 20'

Sta. 164+50 to Sta. 169+30
*20'

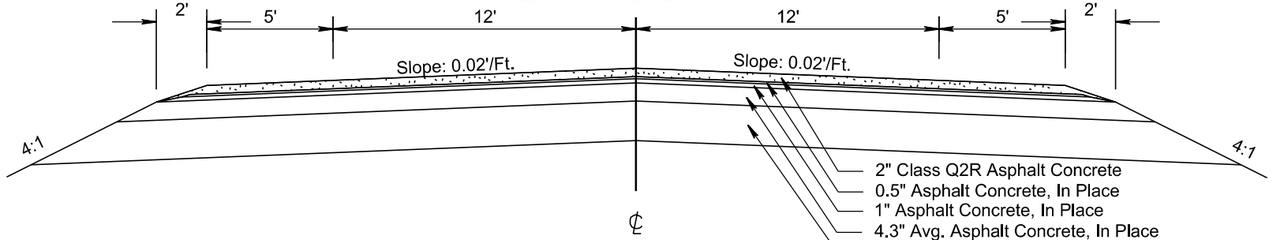
Sta. 169+30 to Sta. 173+20
* 20' to 14'

Sta. 552+97.79 to Sta. 556+68.79
*14' to 20'

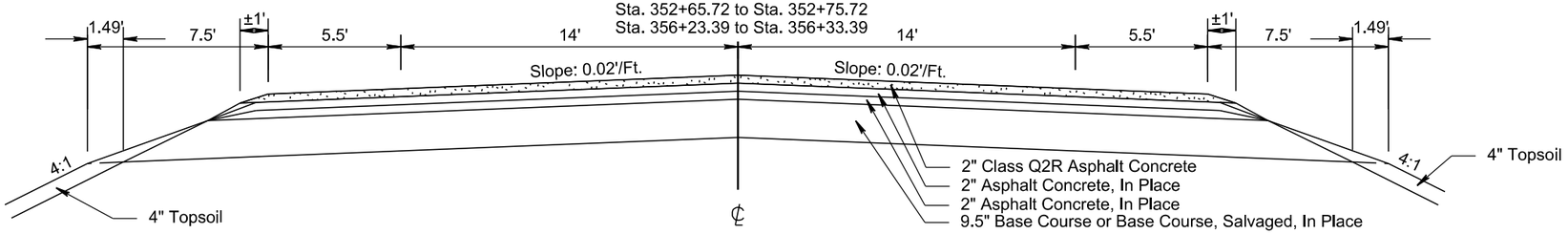
Sta. 556+68.79 to Sta. 564+51.79
* 20'

Sta. 564+51.79 to Sta. 568+41.79
* 20' to 14'

Section 10
SD HWY 28 - MAINLINE
Sta. 100+05.99 to Sta. 112+71.49
Sta. 114+39.99 to Sta. 127+71.25



Section 11
SD HWY 28
Sta. 112+71.49 to Sta. 112+81.49
Sta. 114+29.99 to Sta. 114+39.99
Sta. 352+65.72 to Sta. 352+75.72
Sta. 356+23.39 to Sta. 356+33.39

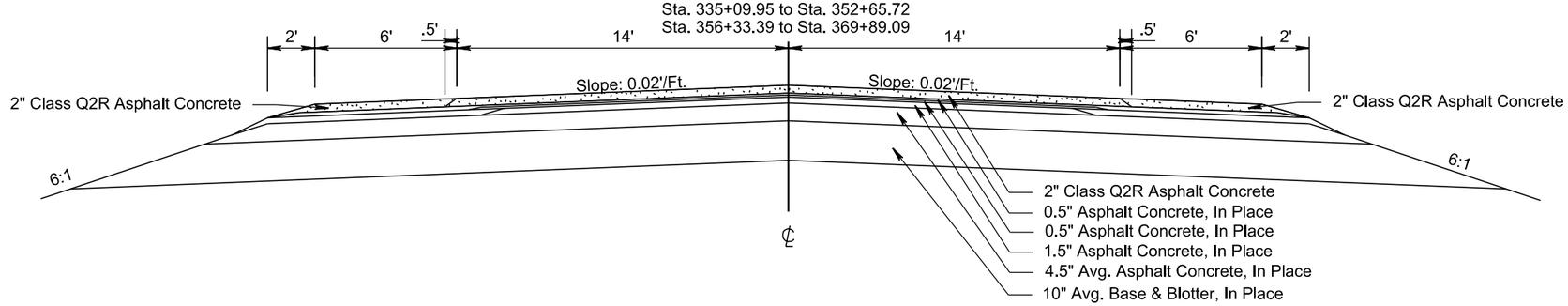


Bridge Exception including Approach Slabs:

Sta. 112+81.49 to Sta. 114+29.99

Sta. 352+75.72 to Sta. 356+23.39

Section 12
SD HWY 28 - MAINLINE
Sta. 335+09.95 to Sta. 352+65.72
Sta. 356+33.39 to Sta. 369+89.09



GUARDRAIL LAYOUTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F11	F28

Plotting Date: 11/27/2024

Revised: 11/26/2024 RTS

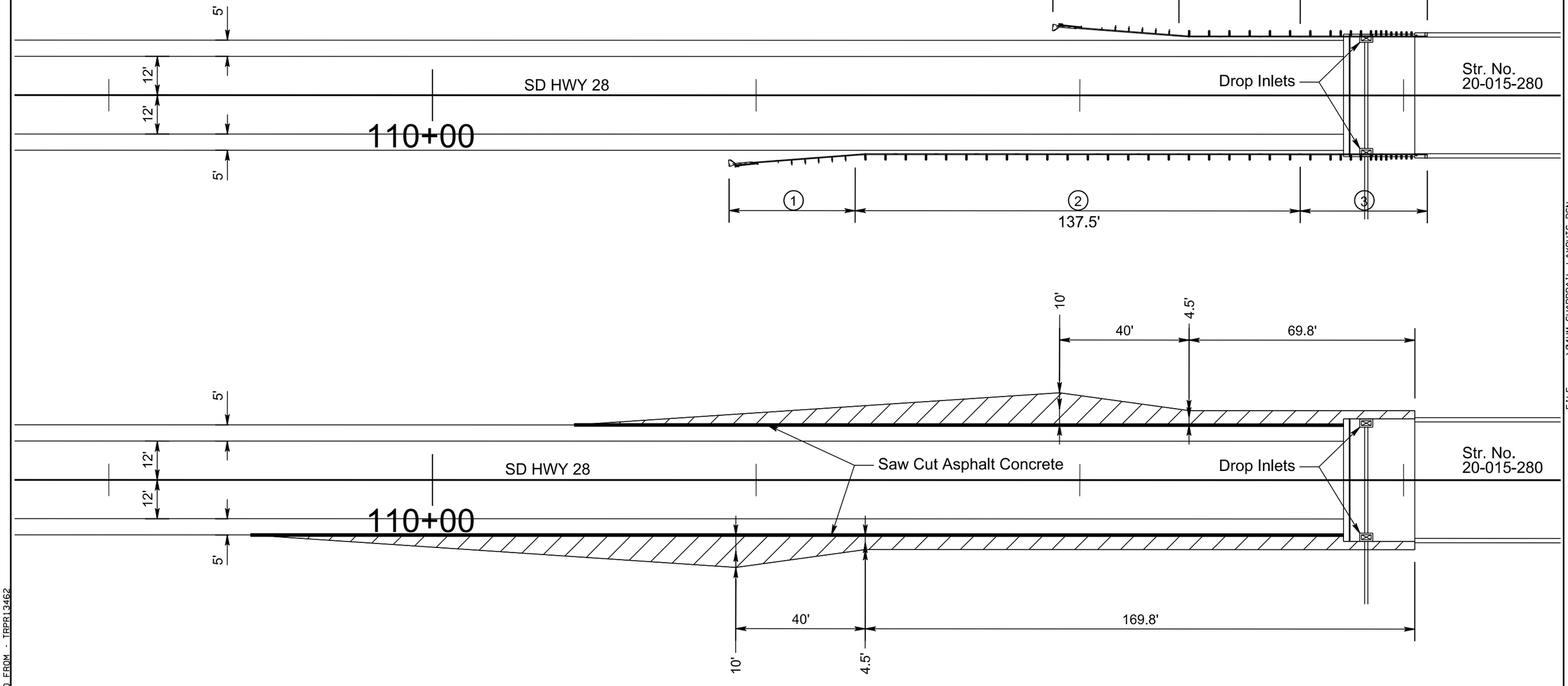
Scale 1 Inch = 40 Feet
Sheet 1 of 2 Sheets

1. MGS Mash Flared End Terminal
2. Type 1 MGS
3. Type 1 Retrofit Guardrail Transition

Remove Asphalt Concrete Pavement

Base Course or Base Course, Salvaged

Str. No. 20-015-280
MRM 357.02



PLOT SCALE - 1:30.0391

PLOT NAME - 11

FILE - ...\04HM_GUARDRAIL LAYOUTS.DGN

PLOTTED FROM - TRPR13462

GUARDRAIL LAYOUTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F12	F28

Plotting Date: 11/27/2024

Revised: 11/26/2024 RTS

Scale 1 Inch = 40 Feet
Sheet 2 of 2 Sheets

Str. No. 20-015-280
MRM 357.02

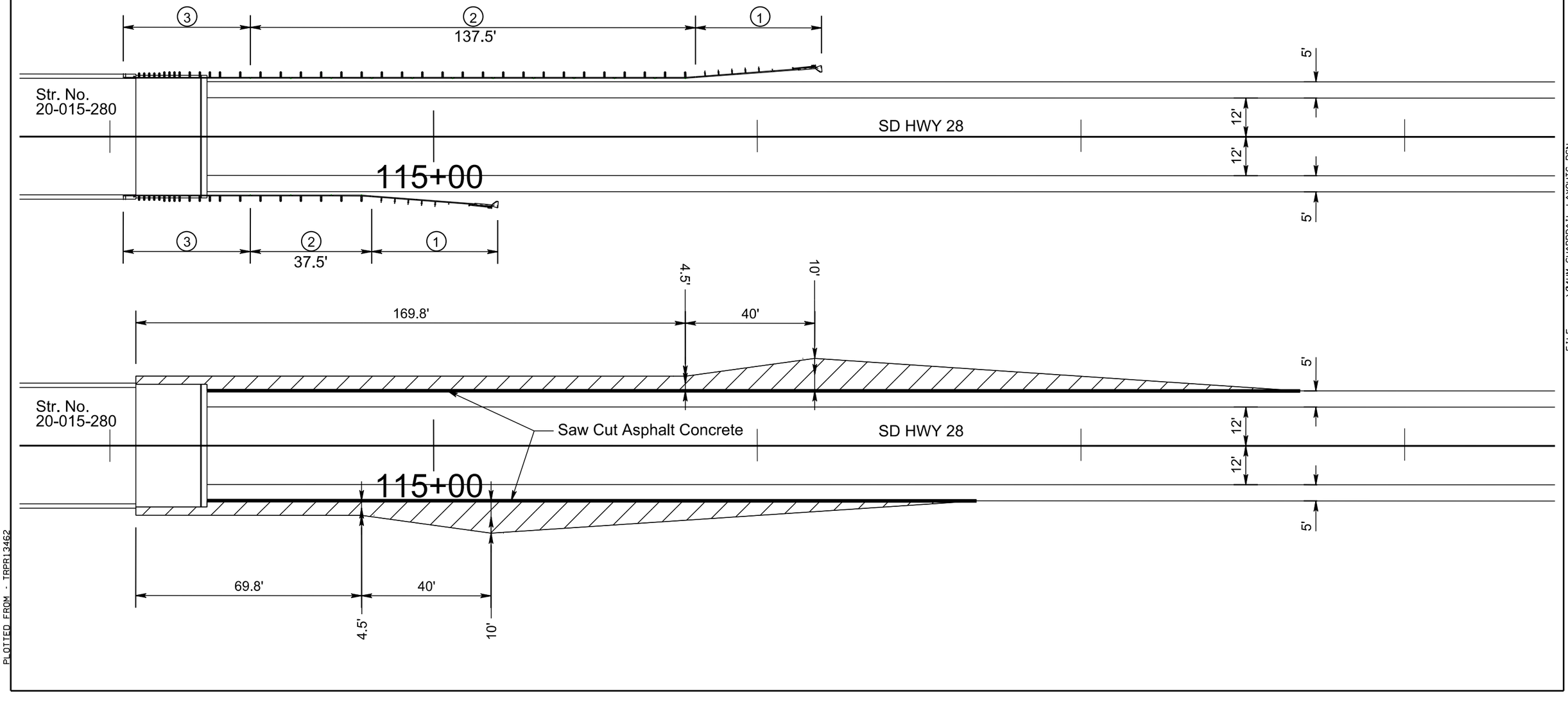
① MGS Mash Flared End Terminal

② Type 1 MGS

③ Type 1 Retrofit Guardrail Transition

Remove Asphalt Concrete Pavement

Base Course or Base Course, Salvaged



PLOT SCALE - 1:30.0391

PLOT NAME - 12

FILE - ...\04HM_GUARDRAIL LAYOUTS.DGN

PLOTTED FROM - TRPR13462

ASPHALT CONCRETE LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F13	F28

Plotting Date: 11/27/2024

Revised: 10-15-2024 RTS

Scale 1 Inch = 40 Feet
Sheet 1 of 1 Sheets

Str. No. 20-015-280
MRM 357.02

Sta. 112+88.17 - 17.38 L
Sta. 112+88.32 - 17.81' R
Take Out Drop Inlet

Sta. 112+88.17 - 17.38' L to Sta. 112+87.65 - 48.66 ' R
Take Out 18" - 66' RCP

112+88.49-17.62'L
Install 2'x3' Type B Drop Inlet
with 6" Concrete Collar
and Type A Frame and Grade

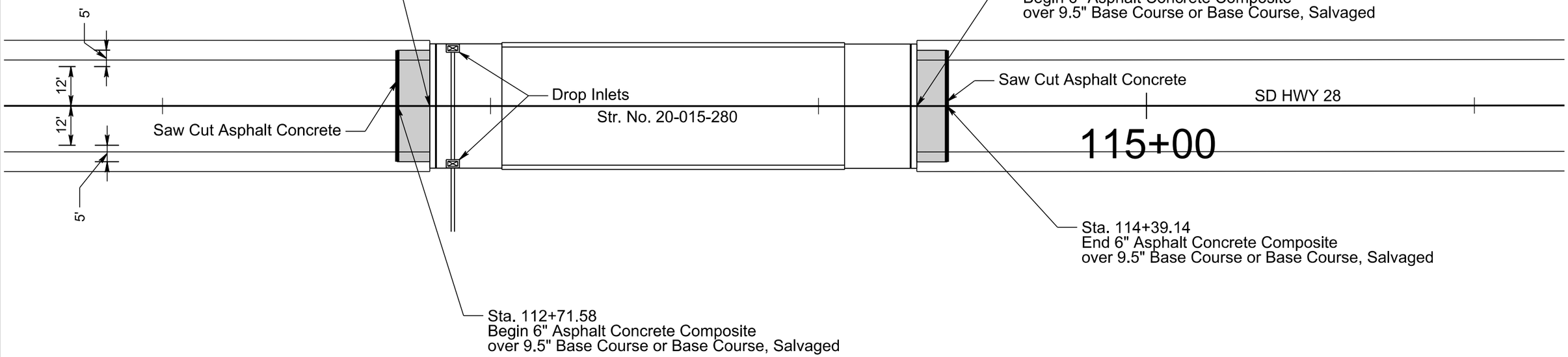
112+88.49-17.62'L to 17.62'R
Install 18" - 34' RCP
(Between Drop Inlets)

112+88.49-17.62'R
Install 2'x3' Type B Drop Inlet
with 6" Concrete Collar
and Type A Frame and Grade

112+88.49 - 44'R
Install 18" - 126' RCP
1 - 18" RCP Flared End
(Between Drop Inlet and Outlet)

Sta. 112+81.58
End 6" Asphalt Concrete Composite
over 9.5" Base Course or Base Course, Salvaged

Sta. 114+29.14
Begin 6" Asphalt Concrete Composite
over 9.5" Base Course or Base Course, Salvaged



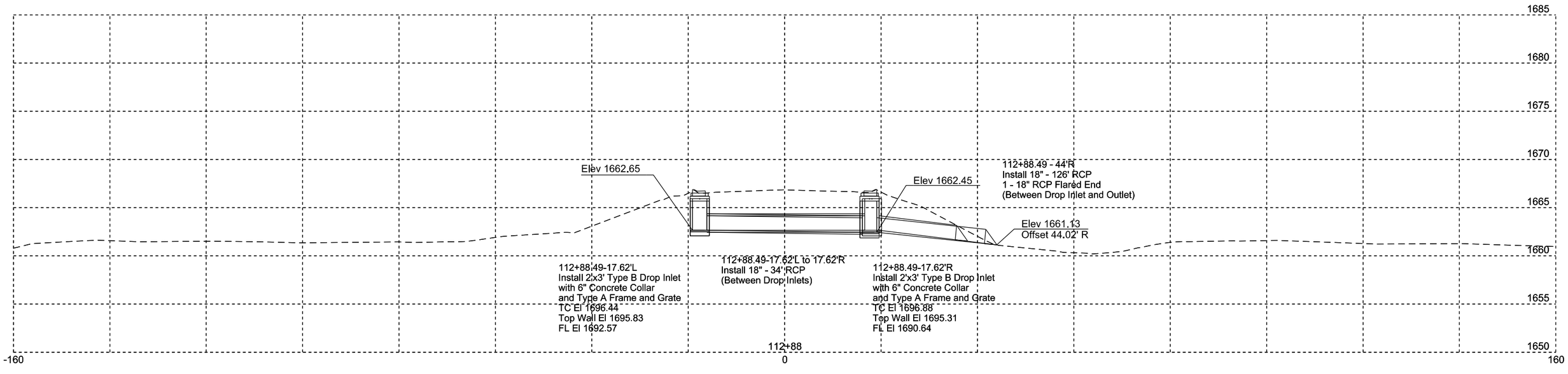
Sta. 112+71.58
Begin 6" Asphalt Concrete Composite
over 9.5" Base Course or Base Course, Salvaged

Sta. 114+39.14
End 6" Asphalt Concrete Composite
over 9.5" Base Course or Base Course, Salvaged

Plotting Date: 11/27/2024

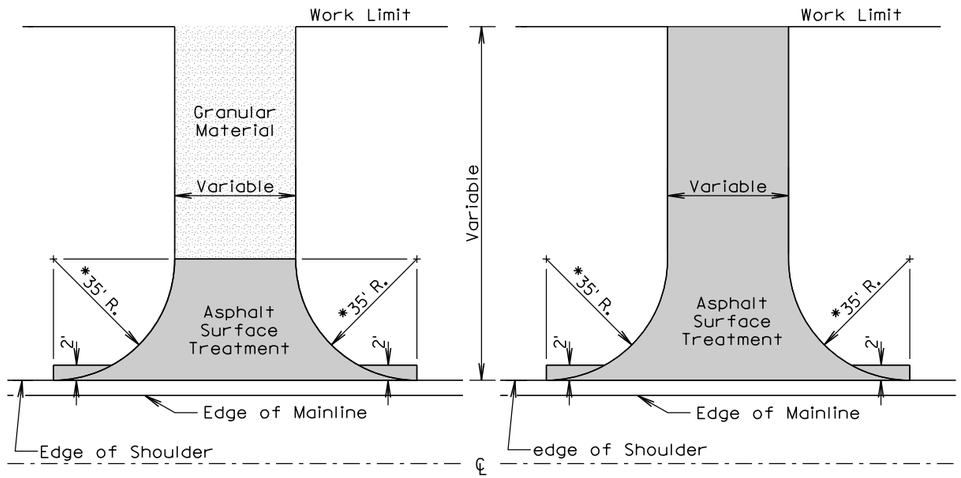
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F14	F28

DROP INLET DETAIL
STR. NO. 20-015-280
MRM 357.02



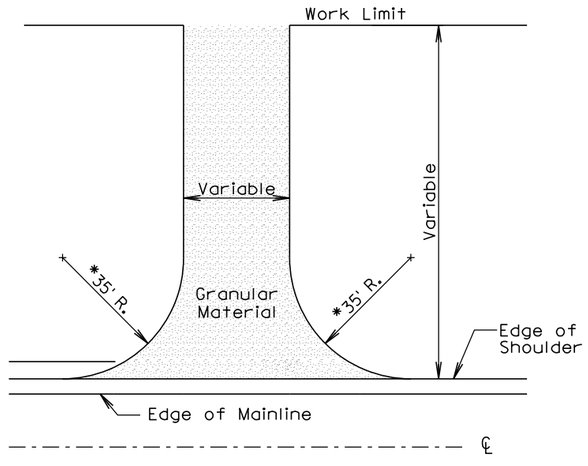
SPECIAL DETAILS

INTERIM SURFACING OF INTERSECTING ROADS AND ENTRANCES



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND RIGHT OF WAY

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND RIGHT OF WAY



ENTRANCE

GENERAL NOTES:

The details shown are provided as a guide for surfacing. The precise construction limits for situations other than the standards shown will be determined by the Engineer during construction.

* 35' Radius except as noted elsewhere in plans.

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

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

GENERAL NOTES:

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

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

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

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

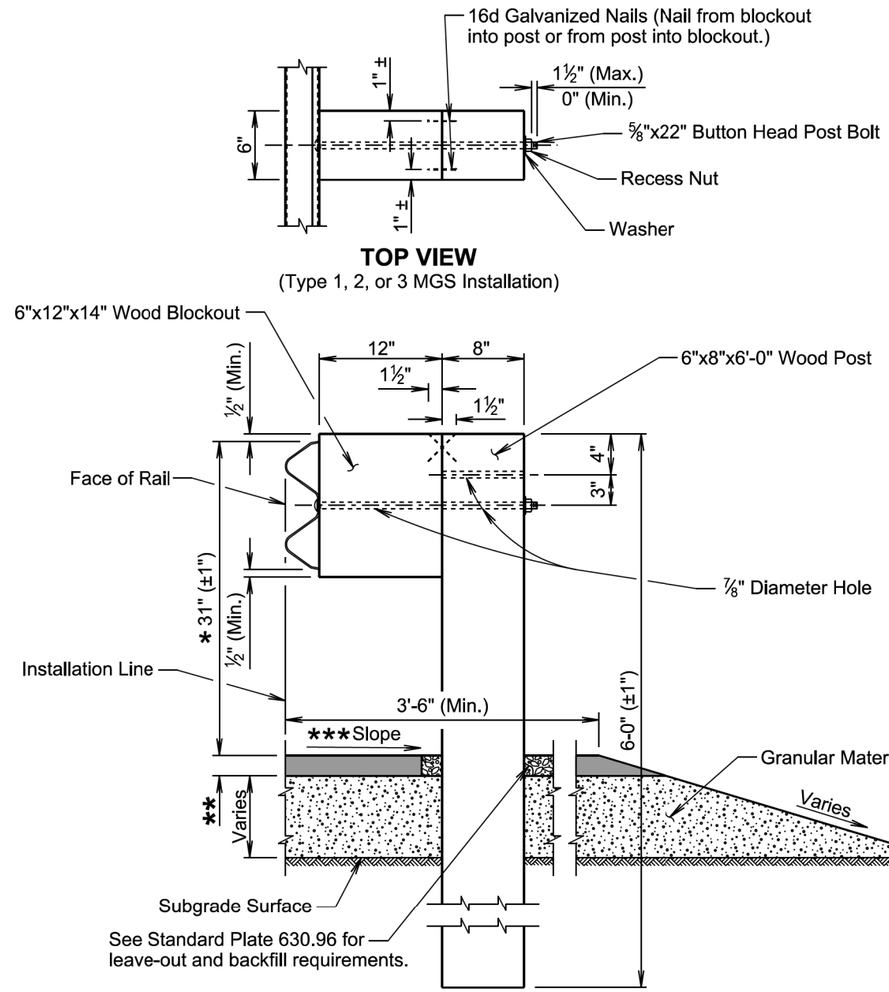
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

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

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

September 14, 2019

Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 1 of 6



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

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

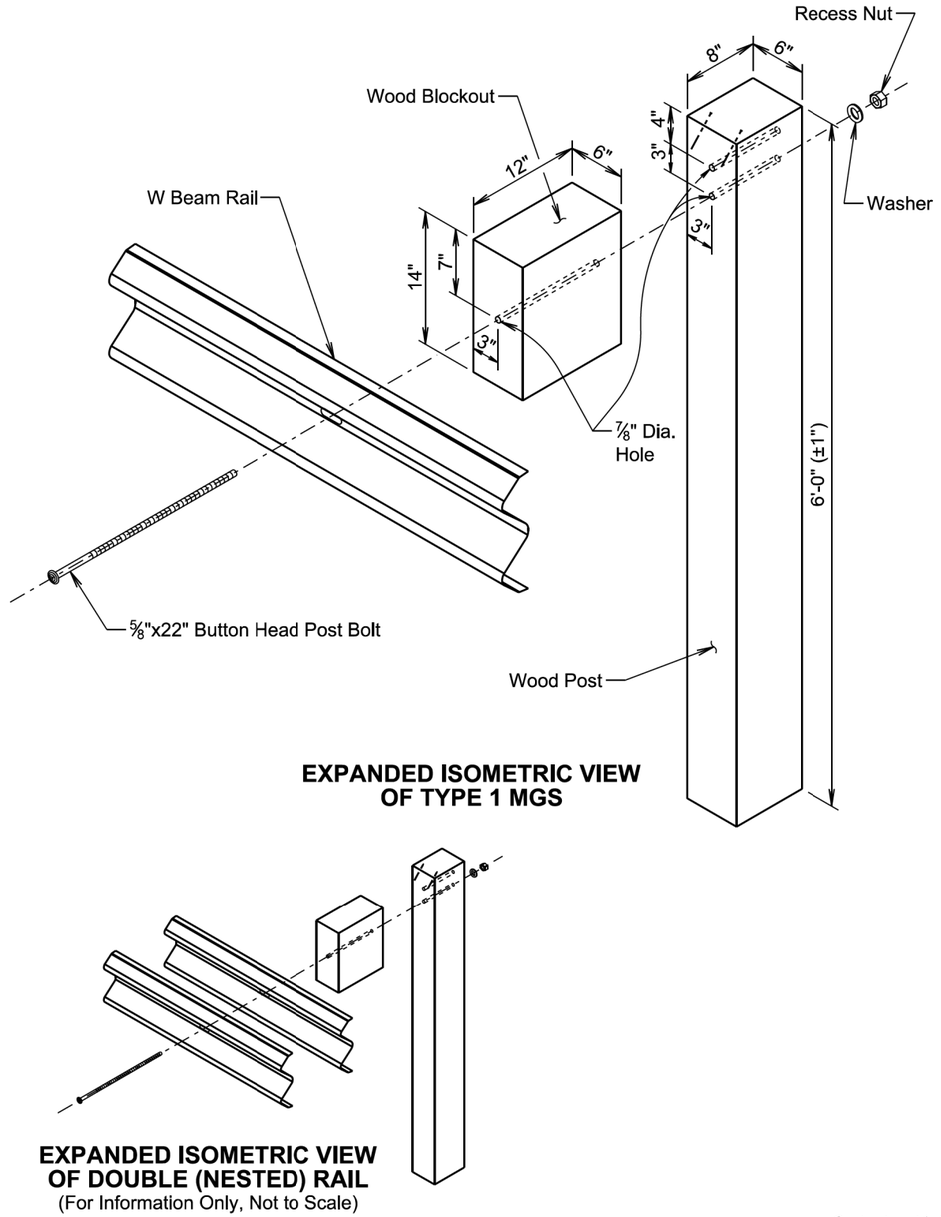
* See Standard Plate 630.99

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

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

September 14, 2019

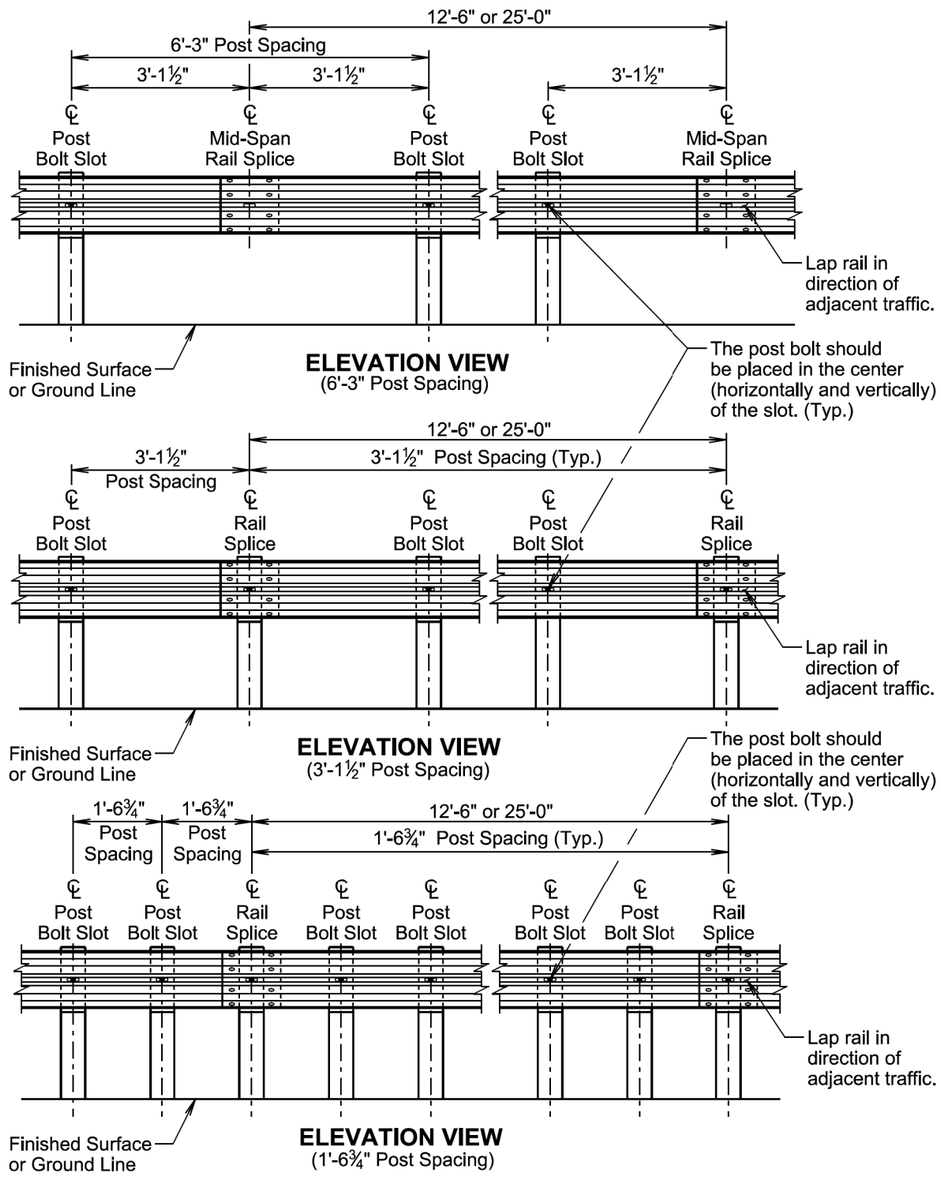
Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 2 of 6



EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS

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

September 14, 2019

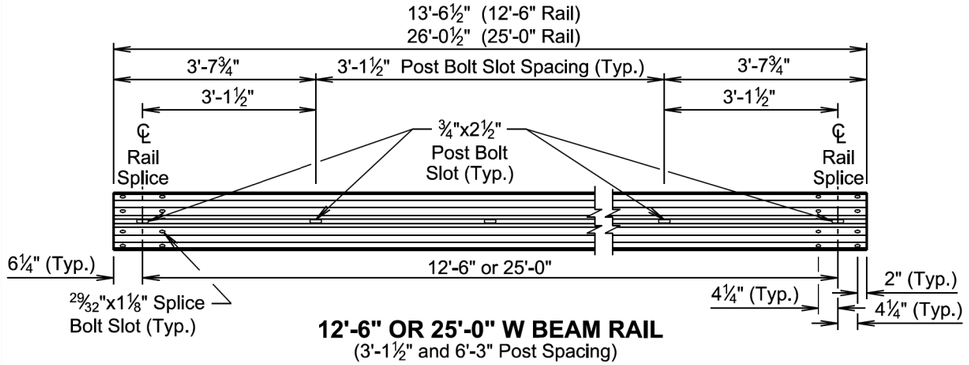


ELEVATION VIEW
(6'-3" Post Spacing)

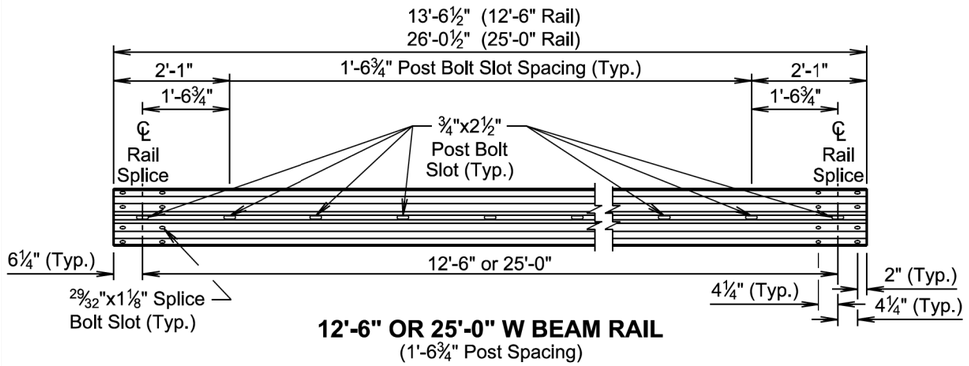
ELEVATION VIEW
(3'-1½" Post Spacing)

ELEVATION VIEW
(1'-6¾" Post Spacing)

September 14, 2019



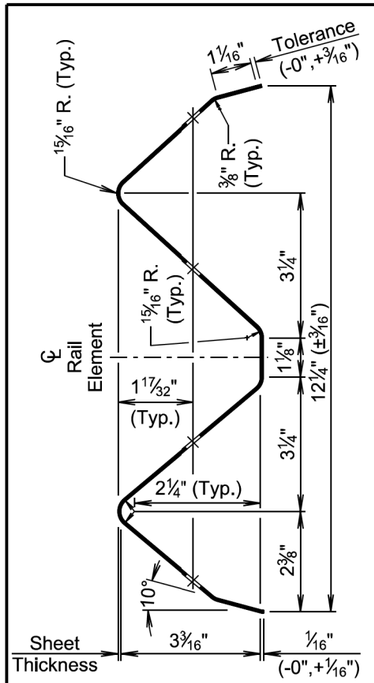
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



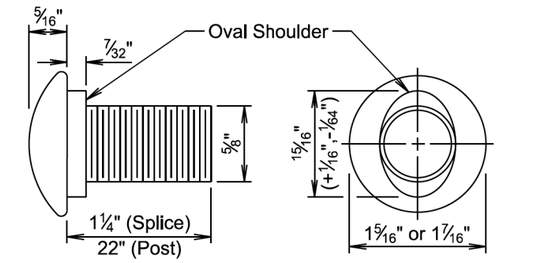
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

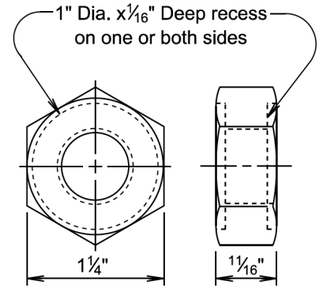
Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6



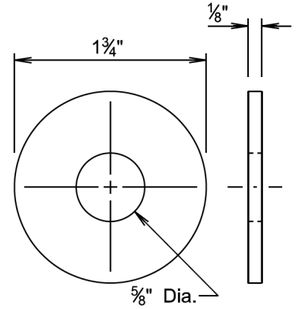
SECTION THROUGH W BEAM RAIL



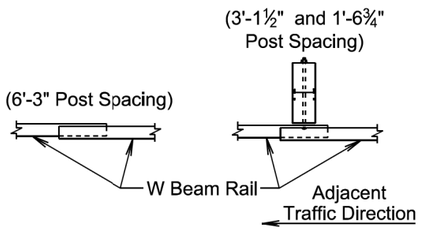
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



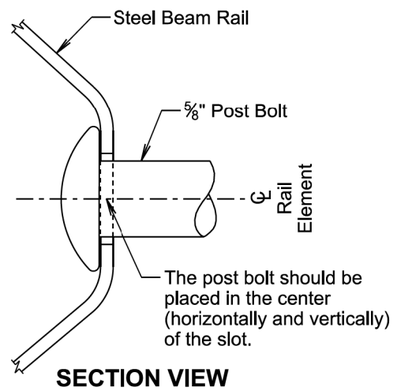
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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)

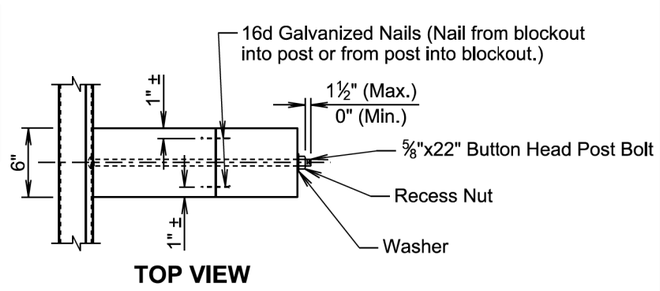


SECTION VIEW
(At Post Bolt)

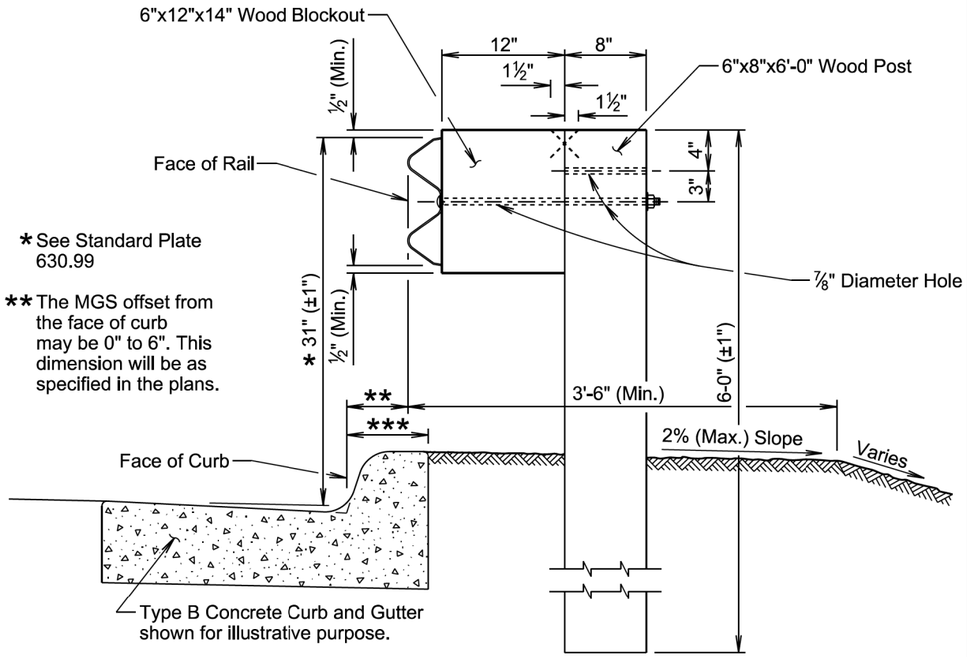
September 14, 2019

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

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



TOP VIEW



* See Standard Plate 630.99

** The MGS offset from the face of curb may be 0" to 6". This dimension will be as specified in the plans.

TRANSVERSE SECTION

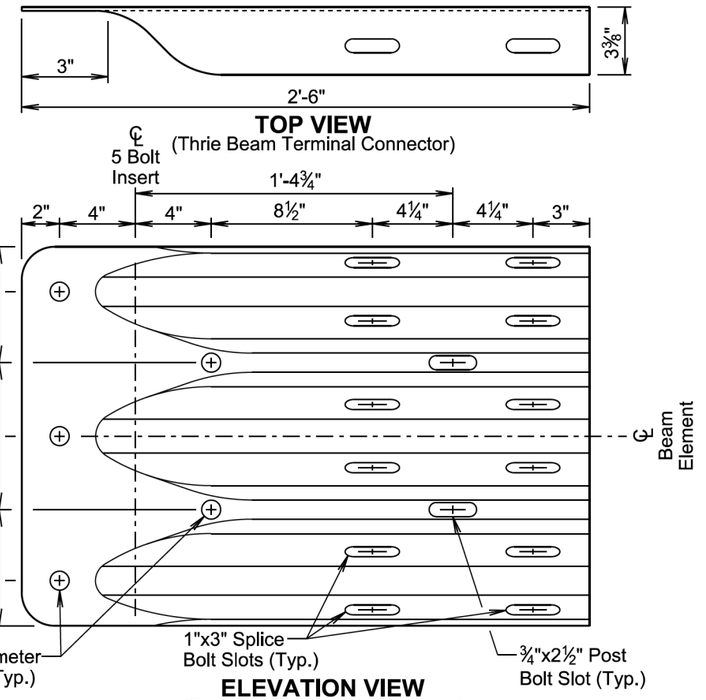
GENERAL NOTES:

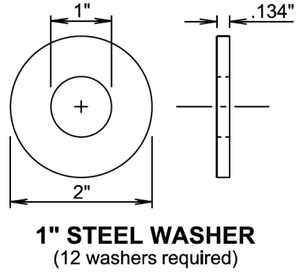
The guardrail on this standard plate is Type 1 MGS. See standard plate 630.20 for specifications regarding Type 1 MGS.

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

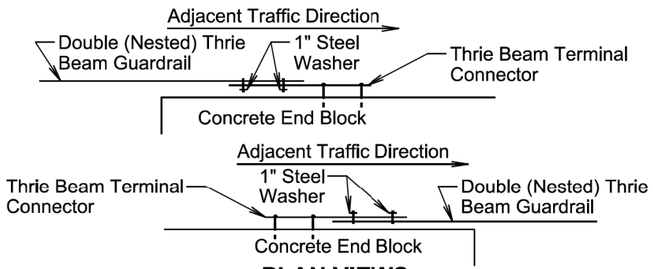
September 14, 2019

Published Date: 2025	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS) AT CURB AND GUTTER	PLATE NUMBER 630.22
			Sheet 1 of 1





1" STEEL WASHER
(12 washers required)



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

GENERAL NOTES:

Thrie Beam Terminal Connectors will be 10 gauge.

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

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

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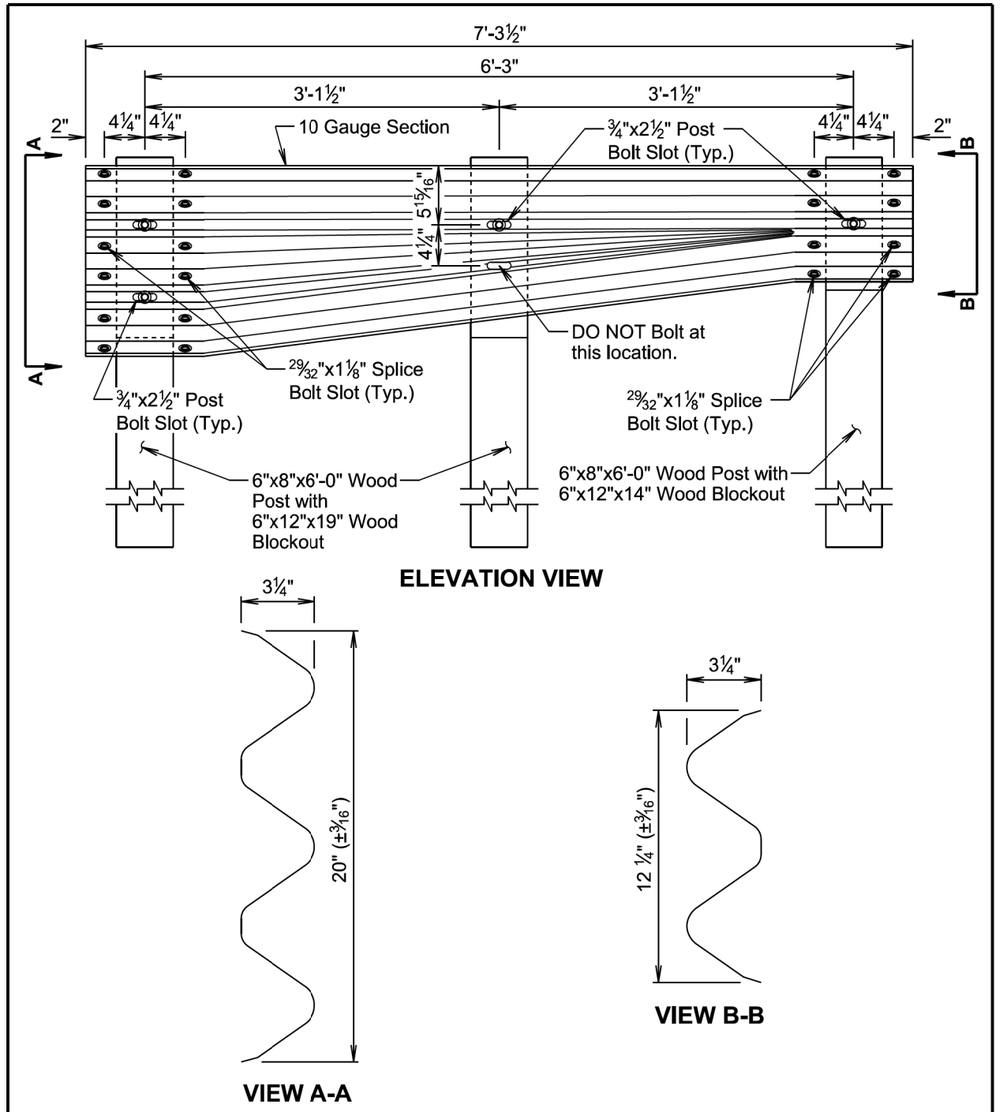
Published Date: 2025	SDDOT	THRIE BEAM TERMINAL CONNECTOR	PLATE NUMBER 630.47
			Sheet 1 of 1



ELEVATION VIEW

VIEW A-A

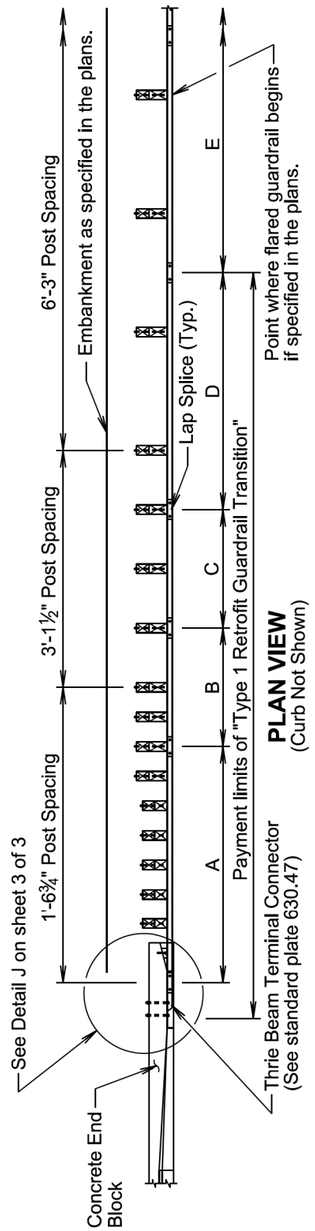
VIEW B-B

GENERAL NOTES:

All costs for furnishing and installing the 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.

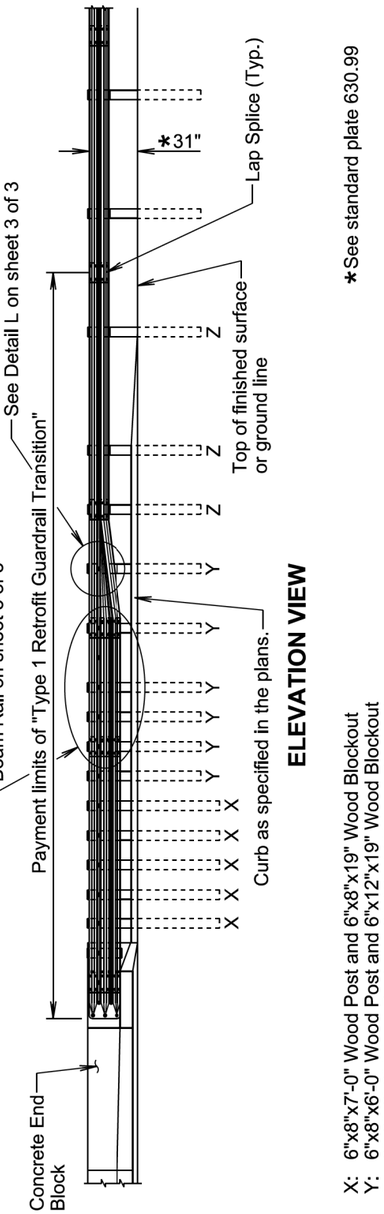
September 14, 2019

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



PLAN VIEW
(Curb Not Shown)

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



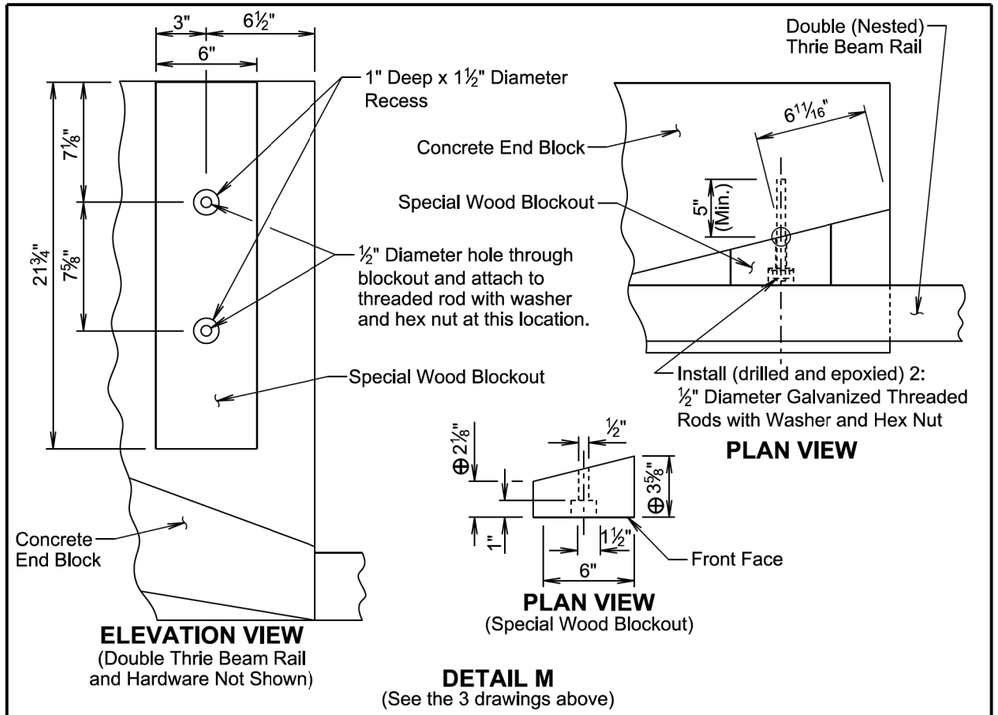
ELEVATION VIEW

*See standard plate 630.99

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

September 14, 2019

Published Date: 2025	SDDOT	TYPE 1 RETROFIT GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.51
			Sheet 1 of 3



GENERAL NOTES FOR INSTALLING THREADED RODS INTO CONCRETE:

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

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

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

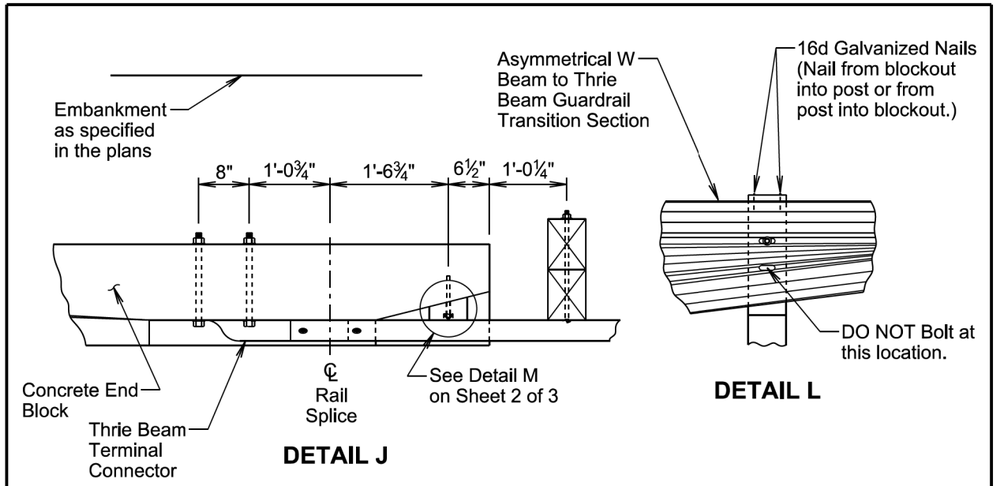
The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).

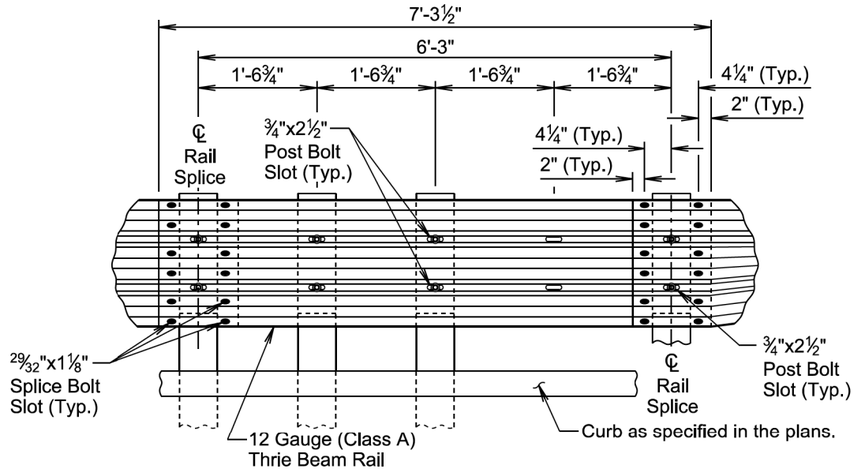
Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes ⅓ to ½ full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel rod. Rotate the steel rod during installation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

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

September 14, 2019

Published Date: 2025	SDDOT	TYPE 1 RETROFIT GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.51
			Sheet 2 of 3





GENERAL NOTES:

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

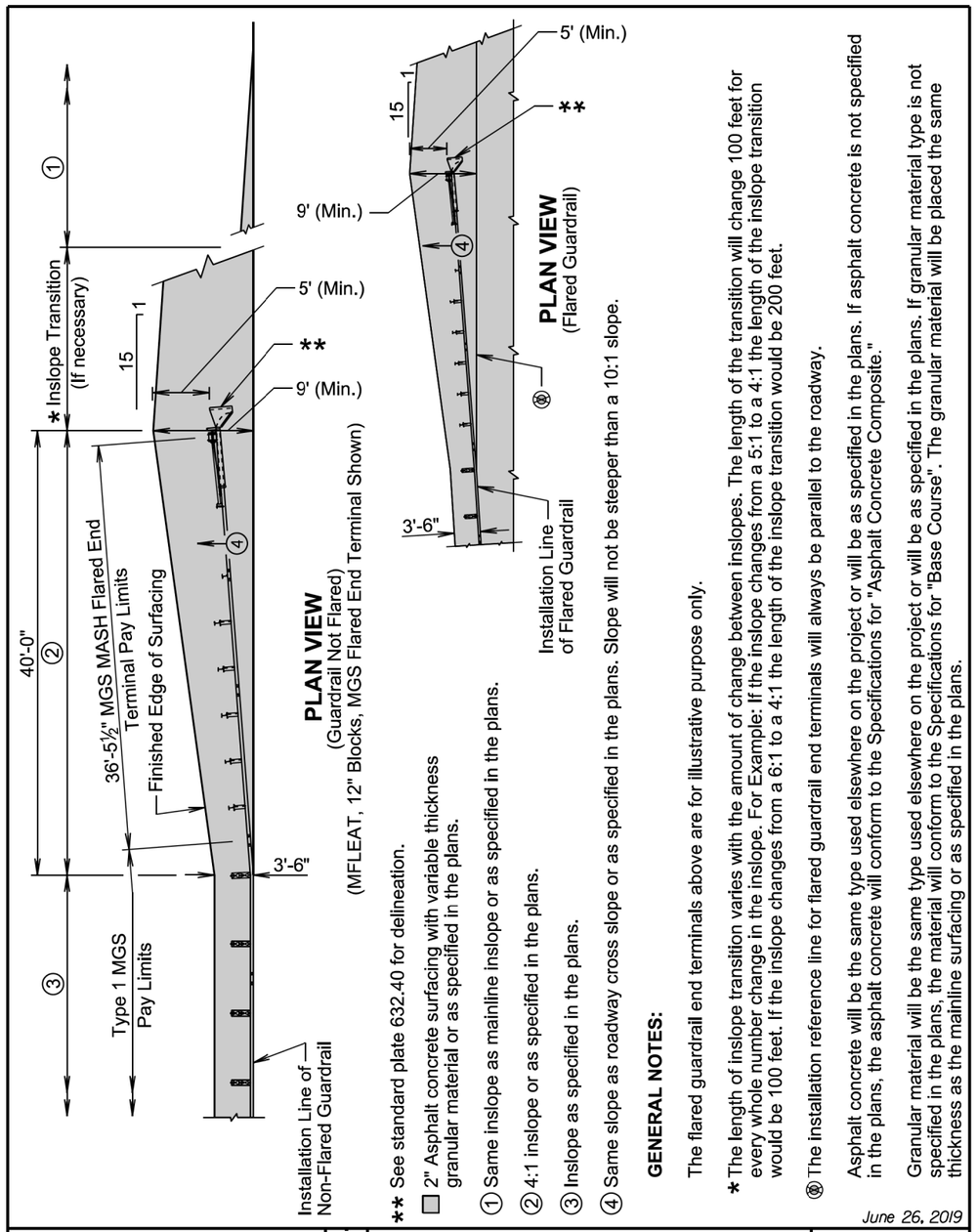
All costs for furnishing and installing the type 1 retrofit guardrail transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, special blockout, hardware, and incidentals will be included in the contract unit price per each for "Type 1 Retrofit Guardrail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

September 14, 2019

Published Date: 2025	SDDOT	TYPE 1 RETROFIT GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.51
			Sheet 3 of 3

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F22	F28

Plotting Date: 11/27/2024



** See standard plate 632.40 for delineation.

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

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

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

③ Inslope as specified in the plans.

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

GENERAL NOTES:

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

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

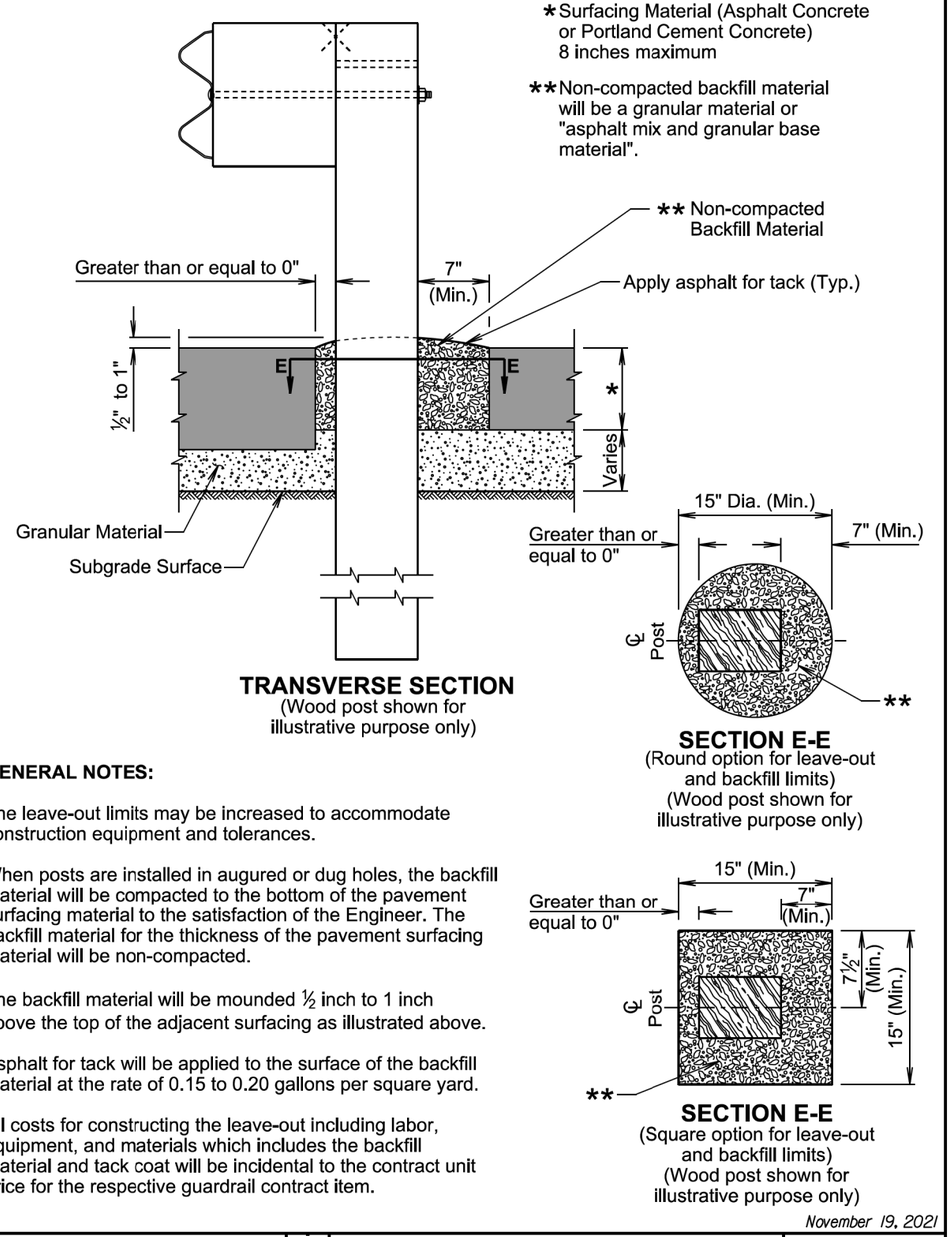
Ⓡ The installation reference line for flared guardrail end terminals will always be parallel to the roadway.

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

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

June 26, 2019

Published Date: 2025	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH FLARED END TERMINAL	PLATE NUMBER 630.87
			Sheet 1 of 1



TRANSVERSE SECTION
(Wood post shown for illustrative purpose only)

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

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)

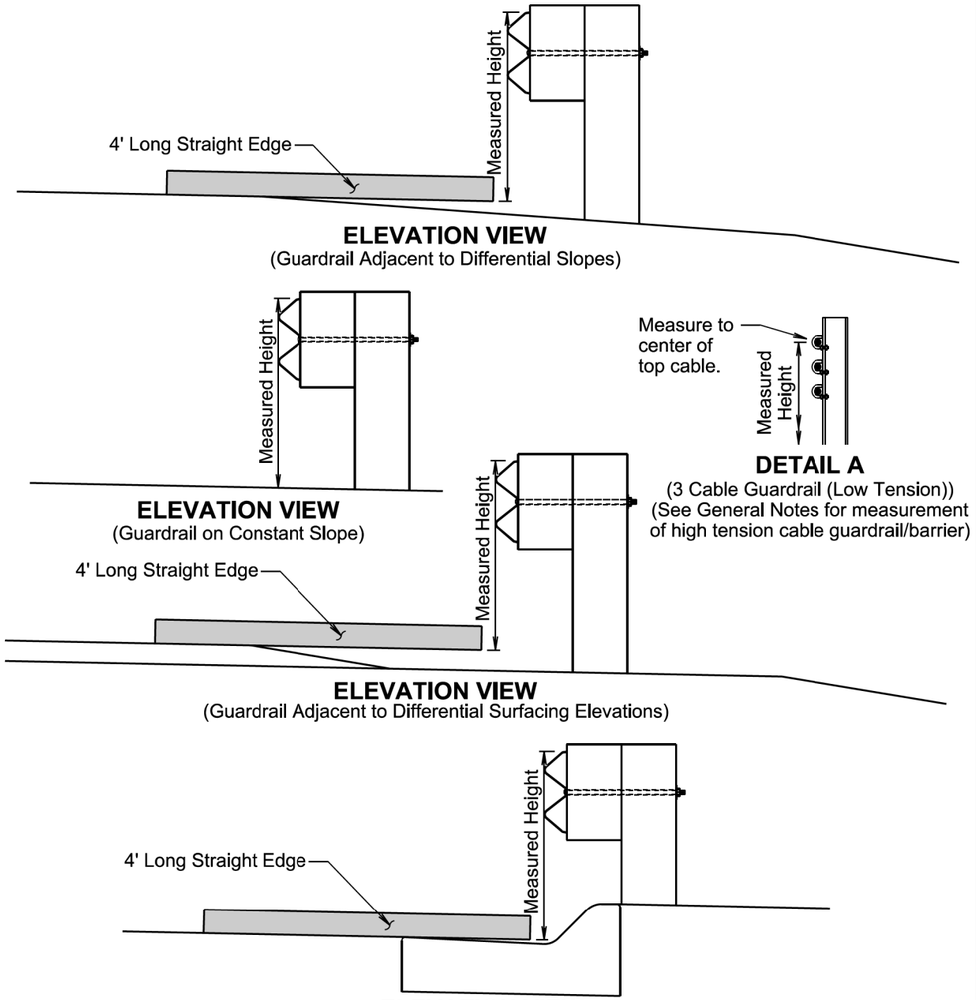
November 19, 2021

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

Plot Scale - 1:200

Plotted From - TRPR13462

File - ...\ham\04HMStdPlateSectionF.dgn



GENERAL NOTES:

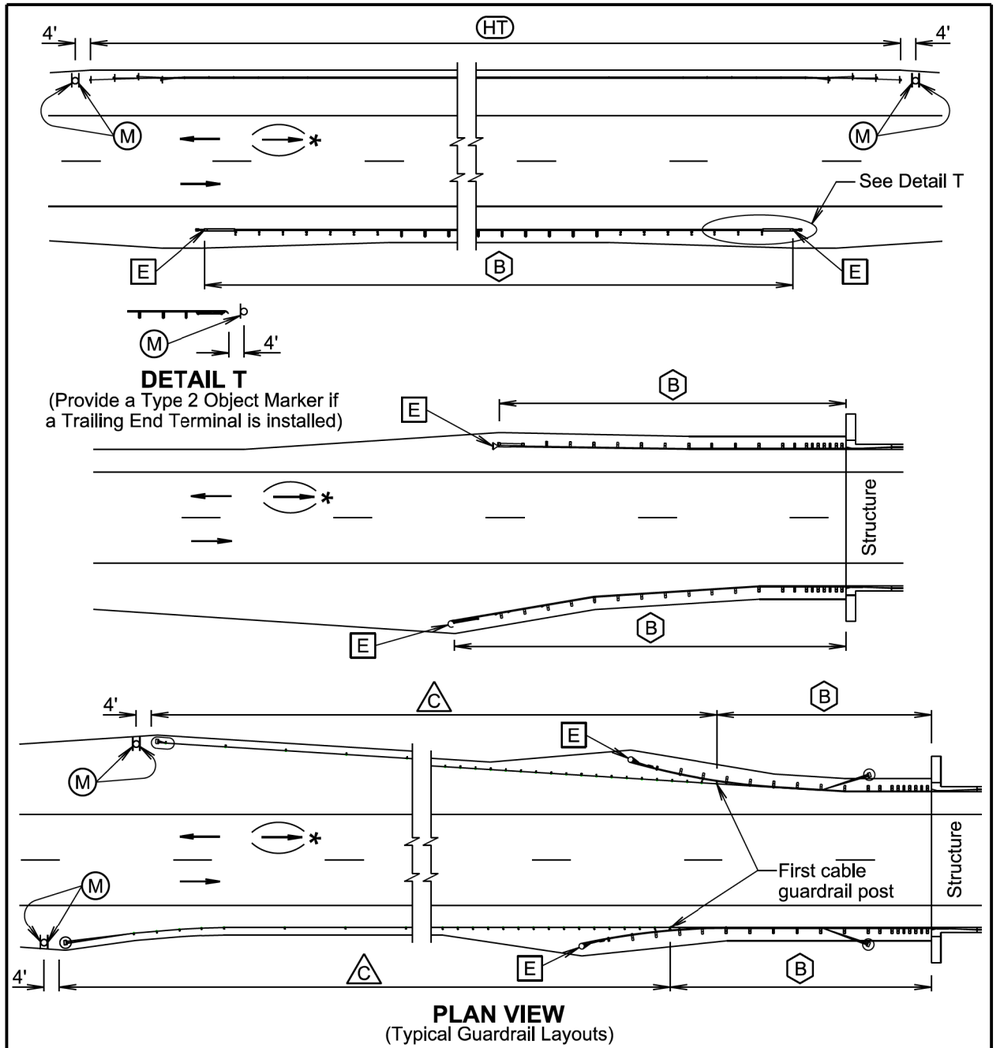
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

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*



(B) Steel Beam Guardrail Delineation

(E) Guardrail End Terminal Object Marker

(C) 3 Cable Guardrail (Low Tension) Delineation

(HT) High Tension Cable Guardrail Delineation

(M) Type 2 Object Marker

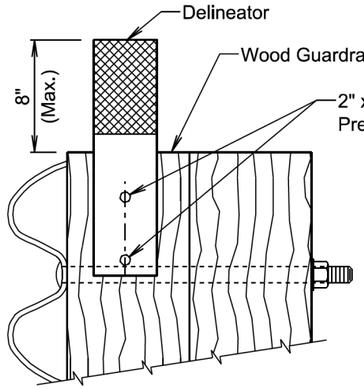
*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

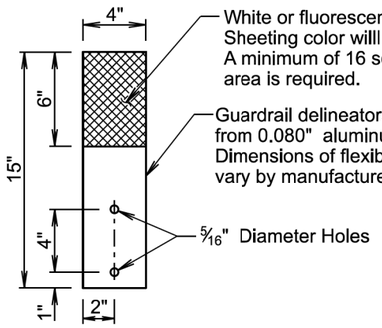
Published Date: 2025	SDDOT	***DELINEATION OF GUARDRAIL***	*PLATE NUMBER* 632.40 *Sheet 1 of 4*

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F24	F28

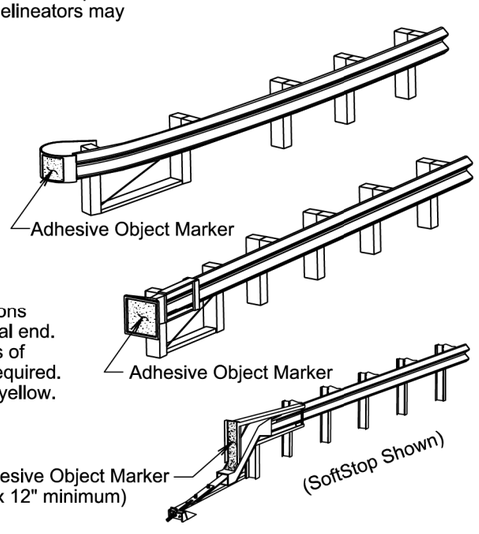
Plotting Date: 11/27/2024



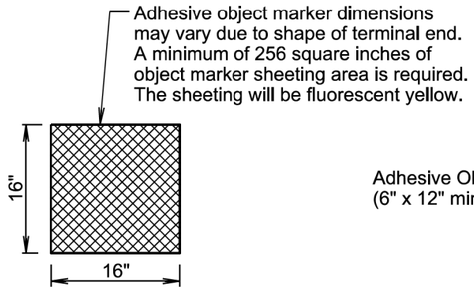
Ⓑ STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



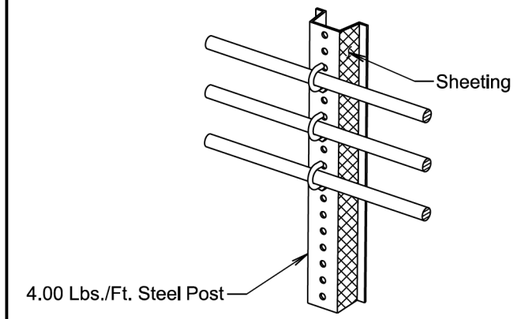
Ⓔ GUARDRAIL END TERMINAL OBJECT MARKER



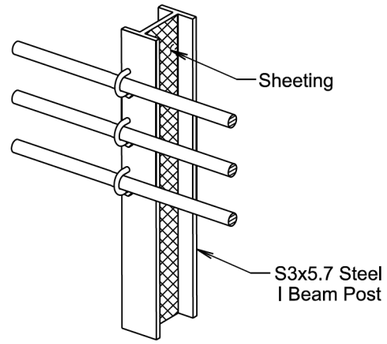
ADHESIVE OBJECT MARKER

March 31, 2024

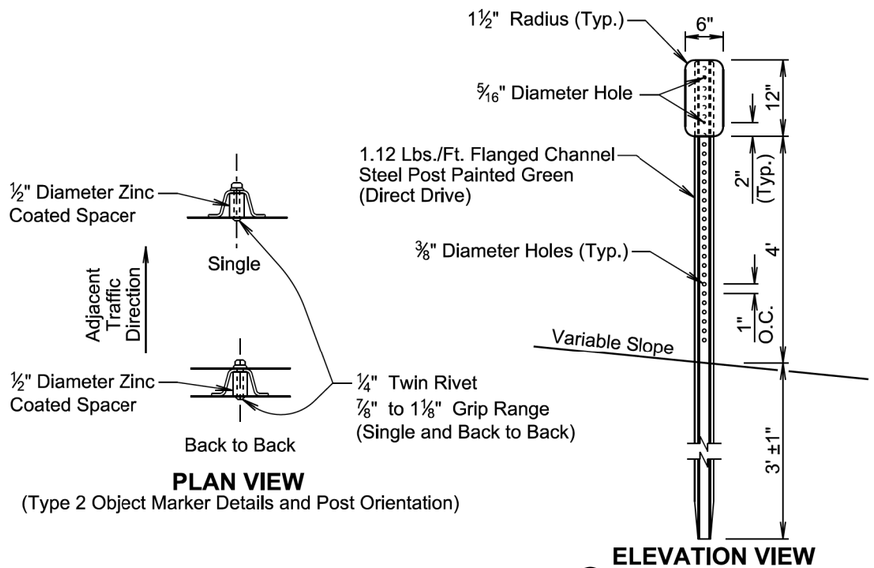
Published Date: 2025	SDDOT	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4



Ⓒ 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION



Ⓒ 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION



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

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

March 31, 2024

Published Date: 2025	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

Plot Scale - 1:200

Plotted From - TRPR13462

File - ...\hamil04HMStdPlateSectionF.dgn

GENERAL NOTES:

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

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

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

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

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

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

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

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

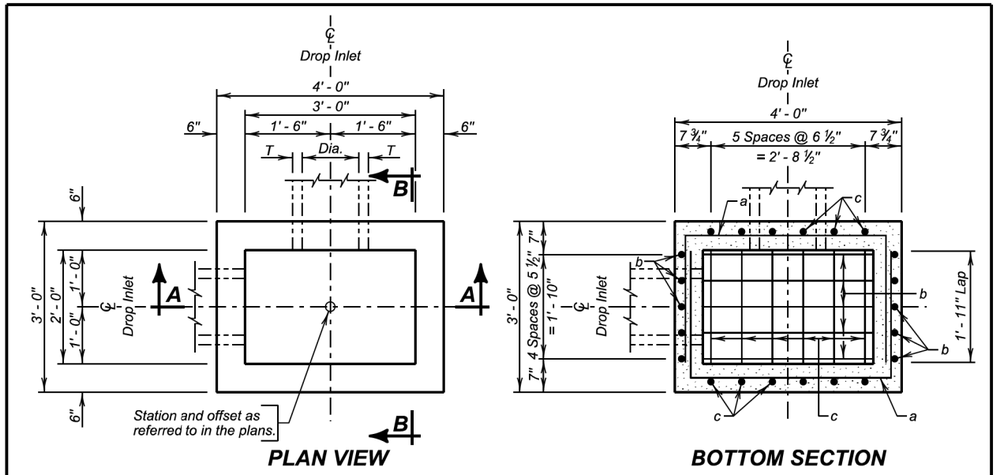
All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

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

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

March 31, 2024

Published Date: 2025	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4



ESTIMATED QUANTITIES

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

DROP INLETS FOR 12" TO 24" DIAMETER PIPE

SPECIFICATIONS

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

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

GENERAL NOTES:

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

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

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

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

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

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

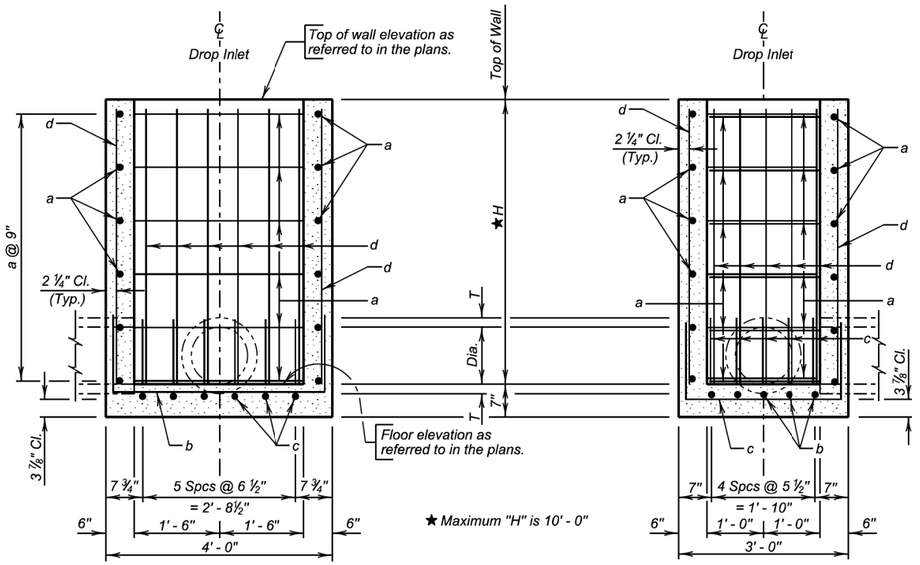
The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS

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

March 31, 2024

Published Date: 2025	SDDOT	2' X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01
			Sheet 1 of 2

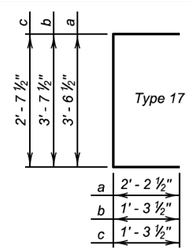


SEC. A - A **SEC. B - B**

REINFORCING SCHEDULE

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

NOTE:
All dimensions are out to out of bars.

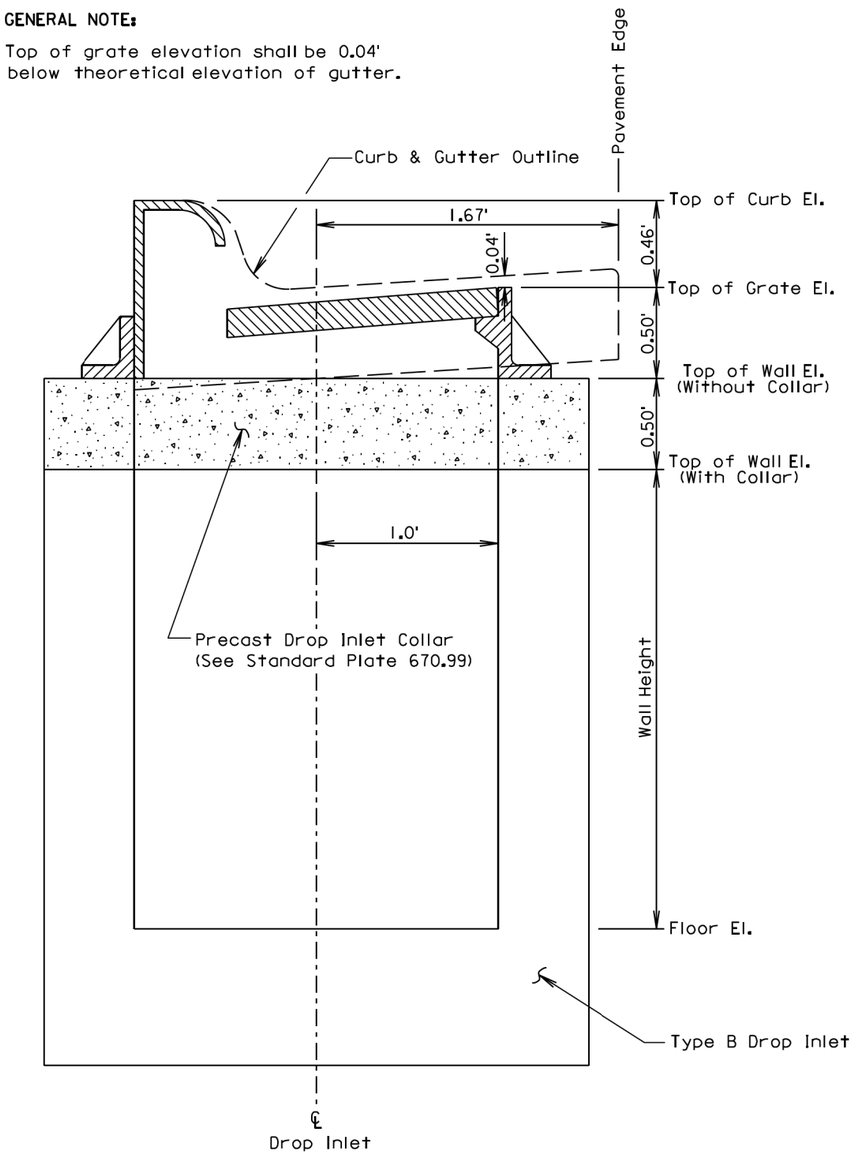


March 31, 2024

Published Date: 2025	SDDOT	2'X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01
			Sheet 2 of 2

GENERAL NOTE:

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

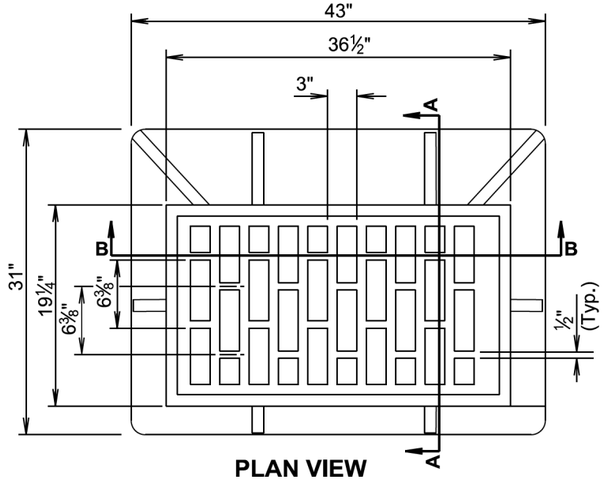


June 26, 2011

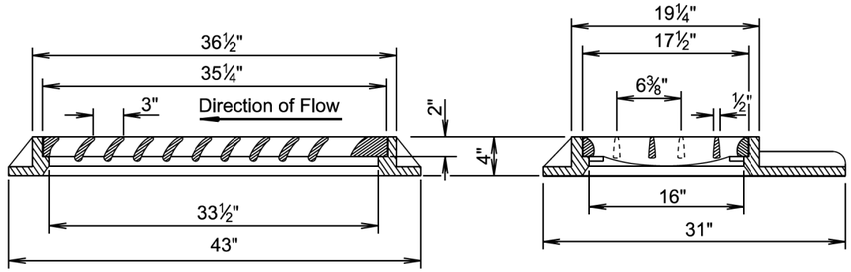
Published Date: 2025	SDDOT	INSTALLATION OF TYPE B DROP INLET	PLATE NUMBER 670.75
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0028(36)355	F27	F28

Plotting Date: 11/27/2024

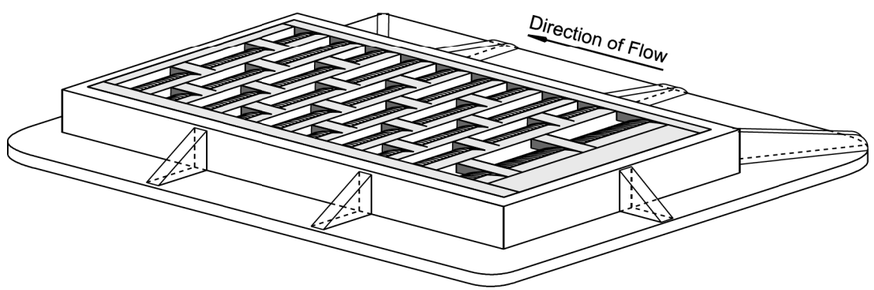


PLAN VIEW



SECTION B-B

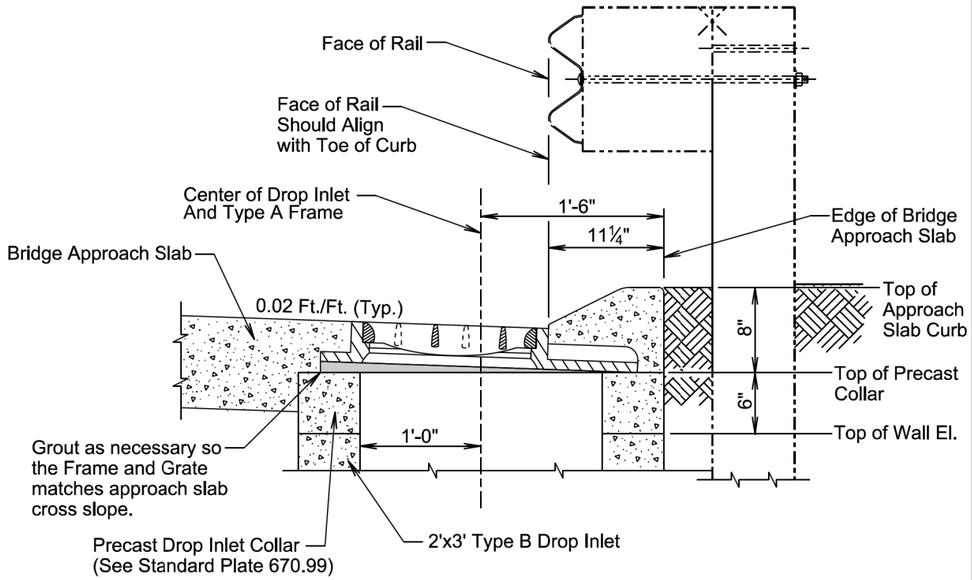
SECTION A-A



ISOMETRIC VIEW

March 31, 2024

Published Date: 2025	SDDOT	TYPE A FRAME AND GRATE	PLATE NUMBER 670.78
			Sheet 1 of 2



ELEVATION VIEW

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

GENERAL NOTES:

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

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

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

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

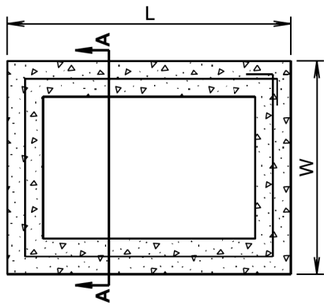
March 31, 2024

Published Date: 2025	SDDOT	TYPE A FRAME AND GRATE	PLATE NUMBER 670.78
			Sheet 2 of 2

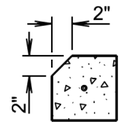
Plot Scale - 1:200

Plotted From - TRPR13462

File - ...\haml04HMStdPlateSectionF.dgn

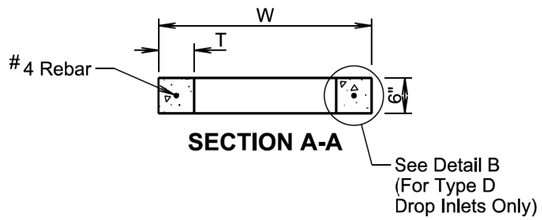


PLAN VIEW



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

DETAIL B



SECTION A-A

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

GENERAL NOTES:

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

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

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

June 1, 2022

Published Date: 2025	SDDOT	***PRECAST DROP INLET COLLAR***	***PLATE NUMBER 670.99***
			Sheet 1 of 1