PLOT SCALE - 1:6000

PLOT NAME - 1

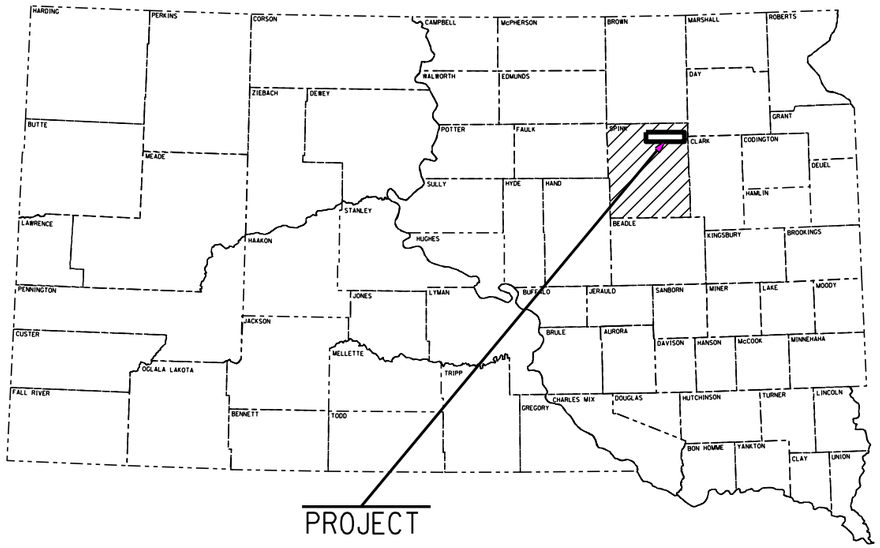
FILE -...\07YM TITLE SHEET.DGN

PLOTTED FROM - TRAB17901

Revised 06/11/25- PB

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(221)331	1	69

Plotting Date: 06/11/2025



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT P 0020(221)331
S.D. HIGHWAY 20
SPINK COUNTY

Cold Milling Asphalt Concrete,
Asphalt Concrete Resurfacing,
Pipework, and Signing

PCN 07YM

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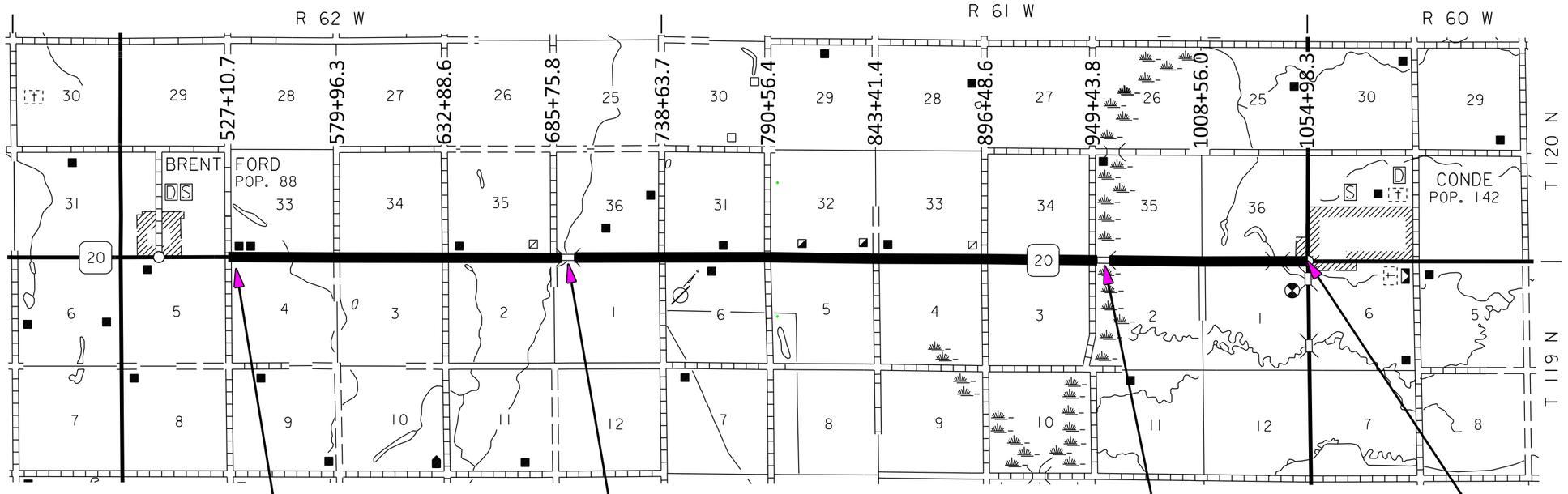


DESIGN DESIGNATION

AADT (2022)	576
AADT (2042)	784
DHV	87
D	50%
DHV T%	2.8%
AADT T%	6.2%
V	65

STORM WATER PERMIT
None Required

GROSS LENGTH	52747.6	FEET	9.990 MILES
LENGTH OF EXCEPTIONS	222.5	FEET	0.042 MILES
NET LENGTH	52525.1	FEET	9.948 MILES

3

December 10, 2025

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

Revised 10/02/25- PB

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
009E4200	Construction Schedule, Category II	Lump Sum	LS
110E0130	Remove Traffic Sign	36	Each
110E0510	Remove Pipe End Section	2	Each
110E0730	Remove Beam Guardrail	850.0	Ft
110E1010	Remove Asphalt Concrete Pavement	746.1	SqYd
110E7150	Remove Sign for Reset	2	Each
110E7500	Remove Pipe for Reset	20	Ft
110E7510	Remove Pipe End Section for Reset	1	Each
120E0100	Unclassified Excavation, Digouts	497	CuYd
120E0600	Contractor Furnished Borrow Excavation	502	CuYd
210E0100	Shoulder Clearing	20.0	Mile
260E1010	Base Course	2,192.8	Ton
260E1050	Base Course, Salvaged Asphalt Mix	3,000.0	Ton
320E0005	PG 58-34 Asphalt Binder	1,582.7	Ton
320E1200	Asphalt Concrete Composite	248.7	Ton
320E1202	Class Q2R Hot Mixed Asphalt Concrete	31,541.1	Ton
320E1800	Asphalt Concrete Blade Laid	1,492.2	Ton
320E4000	Hydrated Lime	330.2	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	20.0	Mile
320E7028	Grind Centerline Rumble Stripe in Asphalt Concrete	7.0	Mile
320E7030	Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete	3.0	Mile
320E7035	Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete	392.0	SqFt
330E0100	SS-1h or CSS-1h Asphalt for Tack	157.5	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	45.3	Ton
330E2000	Sand for Flush Seal	524.3	Ton
332E0010	Cold Milling Asphalt Concrete	176,273	SqYd
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
450E2016	24" RCP Flared End, Furnish	1	Each
450E2017	24" RCP Flared End, Install	1	Each
450E9000	Reset Pipe	20	Ft
450E9001	Reset Pipe End Section	1	Each
600E0300	Type III Field Laboratory	1	Each
630E0500	Type 1 MGS	550.0	Ft
630E1505	Type 2A Guardrail Transition	8	Each
630E2017	MGS MASH Flared End Terminal	8	Each
632E1320	2.0"x2.0" Perforated Tube Post	127.0	Ft
632E2028	4" Tubular White Delineator with 1.12 Lb/Ft Post	14	Each
632E2220	Guardrail Delineator	32	Each
632E2510	Type 2 Object Marker Back to Back	37	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	95.3	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	116.5	SqFt
632E3500	Reset Sign	2	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	15	Ft
633E1200	High Build Waterborne Pavement Marking Paint, White	555	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	85	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	15	Ft
634E0010	Flagging	370.0	Hour
634E0020	Pilot Car	175.0	Hour
634E0110	Traffic Control Signs	630.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	50.0	Mile
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	1,090	Ft
900E0010	Refurbish Single Mailbox	4	Each
900E1980	Storage Unit	1	Each

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

ENVIRONMENTAL COMMITMENTS

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

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.02 acres of wetlands becoming impacted.

Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1	643+01	0.00	0.00	0.01	0.00	0.01
2	761+11	0.00	0.00	0.01	0.00	0.01

Action Taken/Required:

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

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

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< https://sdleastwanted.sd.gov/maps/default.aspx >

< South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:
https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04 >

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, “No Dumping Allowed”.

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.
Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

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

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

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

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

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

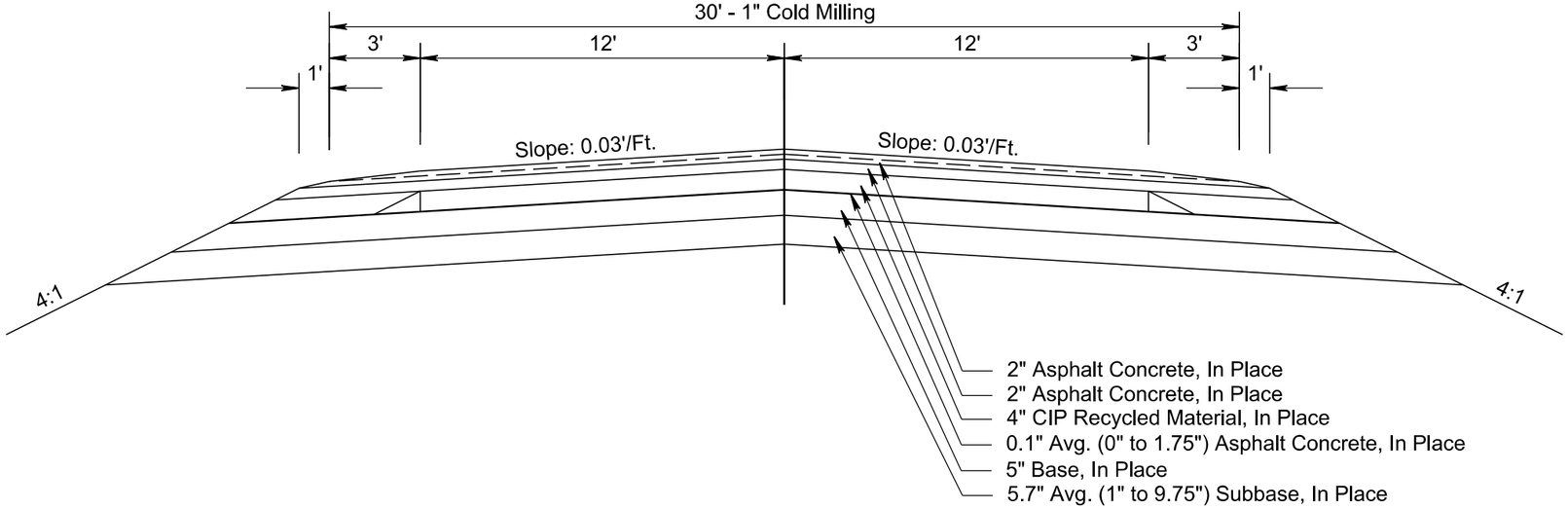
TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0020(221)331	5	69

Plotting Date: 03/25/2025

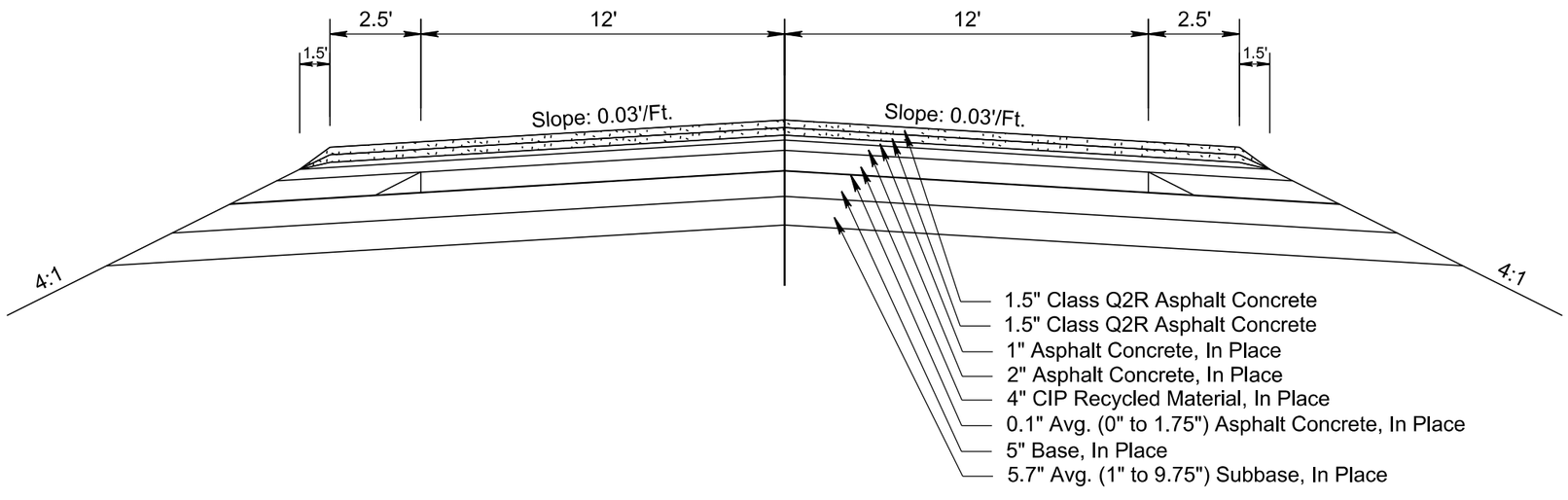
Section 1

SD HWY 20
Sta. 527+50.70 to Sta. 1054+98.30
In Place & Cold Milling Section



Section 1

SD HWY 20
Sta. 527+50.70 to Sta. 1054+98.30
Resurfacing Section



RATES OF MATERIALS

The Estimate of Quantities is based on the following quantities of material per mile.

Section 1 Sta. 527+50.70 to Sta. 1054+98.30

CLASS Q2R HOT MIXED ASPHALT CONCRETE – Each 1.5'' LIFT

Crushed Aggregate.....	1132 Tons
Salvaged Asphalt Concrete	283 Tons
PG 58-34 Asphalt Binder.....	70 Tons
Total without Lime	**1485 Tons**
Hydrated Lime.....	15 Tons
Total with Lime	**1500 Tons**

The exact proportion of these materials will be determined on construction.

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **5.6** tons applied **25** feet wide prior to Asphalt Concrete Blade Laid.
(Rate = 0.09 Gal./Sq.Yd.)

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **4.9** tons applied **33** feet wide prior to each Q2R Lift.
(Rate = 0.06 Gal./Sq.Yd.)

FLUSH SEAL

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **4.0** tons applied **32** feet wide.
(Rate = 0.05 Gal./Sq.Yd.).

Sand for Flush Seal at the rate of **52** tons applied **22** feet wide.
(Rate = 8 Lb./Sq.Yd.).

Revised 08/04/25- PB

TABLE OF QUANTITIES

SECTION	STATION	TO	STATION	LENGTH (Ft)	GROSS SECTION LENGTH (Ft)	GROSS SECTION LENGTH (Miles)	NET SECTION LENGTH (Ft)	NET SECTION LENGTH (Miles)
1	527+50.70	to	1054+98.30	52747.60	52747.6	9.990	52525.1	9.948
					52747.6	9.990	52525.1	9.948

TABLE OF MATERIAL QUANTITIES

	UNCLASSIFIED EXCAVATION, DIGOUTS	BASE COURSE	COLD MILLING ASPHALT CONCRETE	Estimated Cold Milled Material Produced	REMOVE ASPHALT CONCRETE PAVEMENT	ASPHALT CONCRETE COMPOSITE	ASPHALT CONCRETE BLADE LAID	HYDRATED LIME	PG 58-34 ASPHALT BINDER	VIRG. AGGR. (N.A.B.I.)	CLASS Q2R HOT MIXED ASPHALT CONCRETE	HYDRATED LIME	PG 58-34 ASPHALT BINDER	SALVAGED ASPHALT CONCRETE (RAP=20%) (N.A.B.I.)	VIRG.. AGGR. (NABI.)	CLASS Q2R HOT MIXED ASPHALT CONCRETE	HYDRATED LIME	PG 58-34 ASPHALT BINDER	SALVAGED ASPHALT CONCRETE (RAP=20%) (N.A.B.I.)	VIRG. AGGR. (NABI.)	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH	Sand for Flush Seal
							<----------Blade Laid---------->				<----------Spot Leveling---------->					<----------Mainline Lift---------->							
SECTION	CuYd	Ton	SqYd	Ton	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	497	994.8	175084	9191.9	746.1	248.7	1492.2	14.9	110.4	1366.9	994.8	9.9	46.8	187.6	750.5	29844.0	298.4	1392.8	5630.6	22522.2	154.0	39.7	513.6
Additional Quantities	-	1198	1189	62.4	-	-	-	-	-	-	-	-	-	-	-	702.3	7.0	32.7	132.5	530.2	3.5	5.6	10.7
Totals	497	2192.8	176273	9254.3	746.1	248.7	1492.2	14.9	110.4	1366.9	994.8	9.9	46.8	187.6	750.5	30546.3	305.4	1425.5	5763.1	23052.4	157.5	45.3	524.3

TABLE OF ADDITIONAL QUANTITIES

LOCATIONS:	CLASS Q2R HOT MIXED ASPHALT CONCRETE TON	PG 58-34 ASPHALT BINDER TON	HYDRATED LIME TON	RECYCLED ASPHALT (RAP) N.A.B.I. TON	VIRGIN AGGREGATE N.A.B.I. TON	SS-1h/ CSS-1h ASPH. FOR TACK TON	SS-1h/ CSS-1h ASPH. FOR FLUSH TON	SAND FOR FLUSH TON	BASE COURSE TON	BASE COURSE, SALVAGED ASPHALT MIX TON	COLD MILLING ASPHALT CONCRETE SQ YD
End of Project: SD 37 Intersection- Pavement to Radius (North and South)	117.3	5.5	1.2	22.1	88.6	0.3	0.2	3.0	-	-	745
Extra Width at Bridge Ends on Structure No. 58-231-060	-	-	-	-	-	-	-	-	-	-	222
Extra Width at Bridge Ends on Structure No. 58-281-060	-	-	-	-	-	-	-	-	-	-	222
Base Course, Salvaged Asphalt Mix placed along Project Shoulders	-	-	-	-	-	-	-	-	-	3000.0	-
*Guardrail Work	172.0	8.0	1.7	32.5	129.8	-	-	-	173	-	-
**Intersecting Roads and Rural Entrances	413.0	19.2	4.1	77.9	311.8	0.7	0.4	7.7	1025	-	-
TOTALS	**702.3**	**32.7**	**7.0**	**132.5**	**530.2**	**1.0**	**0.6**	**10.7**	**1198**	**3000.0**	**1189**

*See "TABLE OF GUARDRAIL QUANTITIES"

**See "TABLE OF INTERSECTING ROADS, AND RESIDENTIAL/RURAL ENTRANCES"

The tonnage shown in the Table of Additional Quantities for Class Q2R Hot Mix Asphalt Concrete is based on an average compacted thickness of 3 inches for field entrance pads. Intersecting roads/residential entrances are based on an average compacted thickness of 2 inches. Application will be at the rate shown on the plans or as directed by the Engineer.

The above quantities are included in the Estimate of Quantities.

SUMMARY OF ASPHALT CONCRETE

LOCATIONS:	Class Q2R Hot Mixed Asphalt Concrete with Specified Density Compaction TONS	Class Q2R Hot Mixed Asphalt Concrete without Specified Density Compaction TONS	Asphalt Concrete Composite TONS
Section 1 (24' Mainline with Specified Density)	11838.9	-	248.7
Section 1 (2.5' Shoulders, and 1.5' Sluff without Specified Density)	-	18005.1	
Spot Leveling, Strengthening, and Repair of existing surface	-	994.8	-
Table of Additional Quantities	-	702.3	-
TOTAL	**11838.9**	**19702.2**	**248.7**
Total Class Q2R Hot Mixed Asphalt Concrete:	31541.1	*Tons*	

Revised 06/18/25- PB

TABLE OF GUARDRAIL QUANTITIES

(For Information Only)

Location		Remove Beam Guardrail (Ft)	Type 1 MGS (Ft)	Type 2A Guardrail Transition (Each)	MGS MASH Flared End Terminal (Each)	Guardrail Delineator (Each)	Contractor Furnished Borrow Excavation (CuYd)	Base Course (Ton)	Class Q2R Hot Mixed Asphalt Concrete (Ton)
Str. 58-231-060	Begin Bridge Left (NW)	81.25	25.0	1	1	4	6	2	19
	Begin Bridge Right (SW)	131.25	112.5	1	1	4	51	19	24
	End Bridge Left (NE)	131.25	112.5	1	1	4	92	36	24
	End Bridge Right (SE)	81.25	25.0	1	1	4	73	25	19
Str. 58-281-060	Begin Bridge Left (NW)	81.25	25.0	1	1	4	47	15	19
	Begin Bridge Right (SW)	131.25	112.5	1	1	4	143	45	24
	End Bridge Left (NE)	131.25	112.5	1	1	4	81	28	24
	End Bridge Right (SE)	81.25	25.0	1	1	4	9	3	19
	Total:	**850**	**550**	**8**	**8**	**32**	**502**	**173**	**172**

The above quantities are included in the Estimate of Quantities

Revised 08/04/25- PB

HWY 20: TABLE OF INTERSECTING ROADS, AND RESIDENTIAL/RURAL ENTRANCES

MRM	DSIPL.	SIDE	DESCRIPTION	SURFACING REQUIRED	Asphalt Surface Area (SqFt) (N.A.B.I.)	Base Course (Ton)	Class Q2R Hot Mixed Asphalt Concrete (Ton)	SS-1h or CSS-1h Asphalt for Tack (Ton)	SS-1h or CSS-1h Asphalt for Flush (Ton)	Sand for Flush Seal (Ton)
331.00	+.704	L	RESIDENTIAL DRIVEWAY	Asphalt to end of Radius, then Gravel.	1600	15	3	-	-	-
331.00	+.760	L	RESIDENTIAL DRIVEWAY	Asphalt to end of Radius, then Gravel.	1700	15	3	-	-	-
332.00	+.126	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
332.00	+.624	L	397TH AVENUE	Asphalt to end of Radius, then Gravel.	820	15	11	0.04	0.02	0.4
332.00	+.625	R	397TH AVENUE	Asphalt to end of Radius, then Gravel.	530	15	7	0.03	0.02	0.3
332.00	+.684	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
333.00	+.107	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
333.00	+.603	B	398TH AVENUE	Asphalt to end of Radius, then Gravel.	2520	30	32	0.11	0.06	1.2
333.00	+.660	L	COMMERCIAL DRIVEWAY	Asphalt to end of Radius, then Gravel.	900	15	3	-	-	-
333.00	+.660	R	COMMERCIAL DRIVEWAY	Asphalt to end of Radius, then Gravel.	1300	15	3	-	-	-
333.00	+.717	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
333.00	+.924	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
334.00	+.360	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
334.00	+.480	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
334.00	+.609	L	399TH AVENUE	Asphalt to end of Radius, then Gravel	1000	15	13	0.05	0.03	0.5
334.00	+.609	R	399TH AVENUE- Field Entrance	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
334.72	+.000		STRUCTURE		-	-	-	-	-	-
334.72	+.215	L	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	1150	25	3	-	-	-
334.72	+.215	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
335.00	+.078	L	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	-	25	3	-	-	-
335.00	+.078	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
335.00	+.096	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
335.00	+.140	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
335.00	+.242	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
335.00	+.415	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
335.00	+.602	B	400TH AVENUE	Asphalt to end of Radius, then Gravel	2800	15	35	0.12	0.07	1.3
335.00	+.813	R	COMMERCIAL DRIVEWAY	*5' Asphalt Pad with Gravel	-	15	3	-	-	-
335.00	+.990	R	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	3000	15	3	-	-	-
336.00	+.064	L	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	2400	15	3	-	-	-

The above quantities are included in the Table of Additional Quantities. See the Table of Additional Quantities for quantity of binder, lime, RAP, and virgin granular material required with the Class Q2R Hot Mixed Asphalt Concrete.

*Field Entrances will be surfaced with a new 5' wide pad at a 3" depth, as per Std. Plate 320.04.
Surfacing will be at a 2" depth for any other intersecting roads/driveways, besides the new 5' pads.
(Some entrances may require removing some granular material to reach proper asphalt pad depth.)

HWY 20: TABLE OF INTERSECTING ROADS, AND RESIDENTIAL/RURAL ENTRANCES

MRM	DSIPL.	SIDE	DESCRIPTION	SURFACING REQUIRED	Asphalt Surface Area (SqFt) (N.A.B.I.)	Base Course (Ton)	Class Q2R Hot Mixed Asphalt Concrete (Ton)	SS-1h or CSS-1h Asphalt for Tack (Ton)	SS-1h or CSS-1h Asphalt for Flush (Ton)	Sand for Flush Seal (Ton)
336.00	+.080	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
336.00	+.440	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
336.00	+.585	B	401ST AVENUE	Asphalt to end of Radius, then Gravel.	3060	30	39	0.13	0.08	1.4
336.00	+.833	L	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	1900	30	4	-	-	-
337.00	+.366	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
337.00	+.455	L	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	1200	15	4	-	-	-
337.00	+.589	B	402ND AVENUE	Asphalt to end of Radius, then Gravel.	1740	15	22	0.08	0.05	0.8
337.00	+.662	L	RESIDENTIAL DRIVEWAY	*5' Asphalt Pad with Gravel	1400	30	3	-	-	-
337.00	+.662	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
337.00	+.805	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
338.00	+.099	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
338.00	+.457	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
338.00	+.498	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	1800	15	4	-	-	-
338.00	+.599	B	403RD AVENUE	Asphalt to end of Radius, then Gravel.	2000	15	25	0.09	0.05	0.9
339.00	+.106	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
339.00	+.615	B	404TH AVENUE	Asphalt to end of Radius, then Gravel.	2000	15	25	0.09	0.05	0.9
339.67	+.000		STRUCTURE		-	-	-	-	-	-
339.67	+.095	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
340.00	+.128	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
340.00	+.324	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
340.00	+.602	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
340.00	+.815	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
341.00	+.100	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
341.00	+.276	L	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
341.00	+.297	R	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	15	4	-	-	-
341.32	+.000		STRUCTURE		-	-	-	-	-	-
341.32	+.028	B	FIELD ENTRANCE	*5' Asphalt Pad with Gravel	-	30	8	-	-	-
341.32	+.232	L	COMMERCIAL DRIVEWAY	Asphalt to end of Radius, then Gravel.	2300	30	6	-	-	-
				TOTALS:	**-**	**1025**	**413**	**0.7**	**0.4**	**7.7**

The above quantities are included in the Table of Additional Quantities. See the Table of Additional Quantities for quantity of binder, lime, RAP, and virgin granular material required with the Class Q2R Hot Mixed Asphalt Concrete.

*Field Entrances will be surfaced with a new 5' wide pad at a 3" depth, as per Std. Plate 320.04.
Surfacing will be at a 2" depth for any other intersecting roads/driveways, besides the new 5' pads.
(Some entrances may require removing some granular material to reach proper asphalt pad depth.)

Revised 05/20/25- PB

SD 20 TABLE OF MAINLINE CULVERT WORK

Culvert #	Culvert Inventory #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type		Culvert Length (Ft)	Culvert End Type	Direction of Flow	Drainage Area Acre	Remove Pipe: for Reset (Ft)	Remove Pipe: End Section (Each)	Remove Pipe: End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	Furnish and Install: 24" RCP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Repair Comments
1	211167	332.00	0.19	556+96	L	24"	CMP	62	Flared	North									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
2W	1479595	332.00	0.66	*581+49	L	42"	**RCPA**	60	Flared	North									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
2M	1479595	332.00	0.66	*581+49	L	42"	**RCPA**	60	Flared	North									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
2E	1479595	332.00	0.66	*581+49	L	42"	**RCPA**	60	Flared	North									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
3	211169	333.00	0.80	643+01	L	24"	RCP	46	Flared	South	281	10	1			1	10		Replace north FE. Reset 10' of barrel on north end.
					R				Flared										
4W	211170	334.00	0.60	*685+10	L	36"	RCP	54	Flared	South									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
4E	211170	334.00	0.60	*685+10	L	36"	RCP	54	Flared	South									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
5	211171	335.00	0.82	750+17	L	18"	CMP w/slipliner	66		Equalizer									No Work Required. (Culvert cleaned in 2022.)
					R				Flared										

Revised 05/20/25- PB

SD 20 TABLE OF MAINLINE CULVERT WORK

Culvert #	Culvert Inventory #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type		Per Original Plans: Culvert Length (Ft)	Per Original Plans: Culvert End Type	Per Original Plans: Direction of Flow	Per Original Plans: Drainage Area Acre	Remove Pipe: for Reset (Ft)	Remove Pipe: End Section (Each)	Remove Pipe: End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	Furnish and Install: 24" RCP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Repair Comments
6	211172	336.00	0.03	761+11	L	18"	RCP	56	Flared	South	12		1		1				Replace the north Flared End.
					R				Flared										
7	211173	336.00	0.60	791+46	L	24"	RCP	56	Flared	South	37	10		1			10	1	Reset Flared End and 10' of barrel section on north side.
					R				Flared										
8	1480001	337.00	0.62	844+77	L	24"	RCP	36	Flared										No Work Required.
					R				Flared										
9	211174	337.00	0.69	848+67	L	24"	CMP		Flared										No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
10	211175	340.00	0.39	991+14	L	30"	CMP	60		Equalizer									No Work Required. (Cleaned and Lined in 2022 via PCN 06WD)
					R				Flared										
11	211176	341.00	0.31	1039+50	L	6"	CMP	67		NA	NA								No Work Required.
					R														
										TOTAL		20	2	1	1	1	20	1	

Left and Right based upon project station, thus Left is North side and Right is South side.

In place Culvert Markers will be removed and reset when performing Culvert Work.
Cost to remove and reset Culvert Markers will be incidental to the various culvert contract items.

Initial Inspection held on 9-15-21. Above table produced from that inspection.

Culvert type and size obtained from a combination of visual inspection and original construction plans. Additional repair may be required at time of construction.

*General stationing in center of grouped pipes.

Object Marker Table for Pipe

Station	Type 2 Object Marker Back-to-Back (Each)	Description
556+96	2	1 Each Side of Road
581+43	2	1 Each Side of Road
581+46	1	1 Right Side of Road
581+67	2	1 Each Side of Road
631+76	1	1 Left Side of Road
634+76	1	1 Left Side of Road
643+01	2	1 Each Side of Road
685+06	2	1 Each Side of Road
685+21	2	1 Each Side of Road
709+86	1	1 Left Side of Road
710+86	1	1 Left Side of Road
750+17	2	1 Each Side of Road
761+09	1	1 Right Side of Road
761+13	1	1 Left Side of Road
763+50	1	1 Left Side of Road
791+46	2	1 Each Side of Road
836+61	1	1 Left Side of Road
844+77	2	1 Each Side of Road
848+67	2	1 Each Side of Road
991+14	2	1 Each Side of Road
1039+50	2	1 Each Side of Road
1040+30	2	1 Each Side of Road
1040+58	2	1 Each Side of Road
Total	**37**	

SD 20 Permanent Sign Installation Table

Station	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
547+16	Rt.	Mile Marker 332 (Two Signs)	D10-6	4.5	18								E/W	Telespar	Leave in Place at Existing MRM Location
579+76	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
580+15	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
580+23	Lt.	397 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
601+13	Rt.	Mile Marker 333 (Two Signs)	D10-6	4.5	18								E/W	Telespar	Leave in Place at Existing MRM Location
632+60	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
601+61	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
601+66	Lt.	398 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
622+08	Rt.	Mile Marker 334 (Two Signs)	D10-6	4.5	18	1.1				1			E/W	Telespar	Replace Existing Signs with New Signs on Existing Post at Existing MRM Location
634+40	Lt.	No Passing Zone	W14-3	48X48X36			5.6			1			W	Telespar	Replace Existing Sign with New Sign on Existing Post
650+83	Rt.	No Passing Zone	W14-3	48X48X36			5.6			1			E	Telespar	Replace Existing Sign with New Sign on Existing Post
654+10	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
651+20	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
651+30	Lt.	399 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
657+62	Rt.	Mile Marker 334.72 (Two Signs)	D10-6	4.5	21								E/W	Telespar	Leave in Place at Existing MRM Location
672+11	Rt.	Mile Marker 335 (Two Signs)	D10-6	4.5	18								E/W	Telespar	Leave in Place at Existing MRM Location
702+72	Lt.	WEST	M3-4A	24	12	2.0				1			E	Telespar	Replace Existing Signs with New Signs on Existing Post
		SD 20	M1-4	24	24	4.0									
703+71	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
704+05	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
704+20	Lt.	400 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
705+10	Rt.	EAST	M3-2A	24	12	2.0				1			W	Telespar	Replace Existing Sign with New Sign on Existing Post
		SD 20	M1-4	24	24	4.0									
725+02	Rt.	Mile Marker 336 (Two Signs)	D10-6	4.5	18								E/W	Telespar	Leave in Place at Existing MRM Location
755+59	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
756+11	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post

SD 20 Permanent Sign Installation Table

Station	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
756+11	Lt.	401 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
777+52	Rt.	Mile Marker 337 (Two Signs)	D10-6	4.5	18	1.1				1			E/W	Telespar	Replace Existing Signs with New Signs on Existing Post at Existing MRM Location
808+43	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
808+83	Lt.	NO MAINTENANCE							2		1	1	S	Telespar	Remove and Reset Existing Signs on Existing Posts with New Anchors Outside of DOT ROW
		NO TRAVEL ADVISED													
808+83	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
808+93	Lt.	402 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
830+13	Rt.	Mile Marker 338 (Two Signs)	D10-6	4.5	18	1.1				1			E/W	Telespar	Replace Existing Signs with New Signs on Existing Post at Existing MRM Location
861+53	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
861+95	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
861+99	Lt.	403 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
882+22	Rt.	Mile Marker 339 (Two Signs)	D10-6	4.5	18	1.1				1			E/W	Telespar	Replace Existing Signs with New Signs on Existing Post at Existing MRM Location
914+47	Lt.	Stop	R1-1	30	30		5.2			1			N	Telespar	Replace Existing Sign with New Sign on Existing Post
914+91	Rt.	Stop	R1-1	30	30		5.2			1			S	Telespar	Replace Existing Sign with New Sign on Existing Post
914+97	Lt.	404 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
918+98	Rt.	Mile Marker 339.67 (Two Signs)	D10-6	4.5	21								E/W	Telespar	Leave in Place at Existing MRM Location
936+06	Rt.	Mile Marker 340 (Two Signs)	D10-6	4.5	18								E/W	Telespar	Leave in Place at Existing MRM Location
968+03	Rt.	Stop	R1-1	30	30								S	Telespar	Leave In Place
968+16	Lt.	405 Ave (Two Signs)	D3-1	36	12								E/W	Telespar	Leave in Place
		SD 20 (Two Signs)	D3-1	30	12								N/S		
988+70	Rt.	Mile Marker 341 (Two Signs)	D10-6	4.5	18								E/W	Telespar	Leave in Place at Existing MRM Location
1005+27	Rt.	Stop Ahead	W3-1	36	36					1			W	Telespar	Remove Existing Sign
1005+72	Rt.	Mile Marker 341.32 (Two Signs)	D10-6	4.5	21								E/W	Telespar	Leave in Place at Existing MRM Location
1007+46	Rt.	JCT	M2-1	21	15					1			W	Telespar	Remove Existing Signs
		SD 37	M1-4	24	24										

SD 20 Permanent Sign Installation Table

Station	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
1007+59	Lt.	Speed Limit 65	R2-1X	24	30	5.0				1			E	Telespar	Leave In Place
1008+05	Rt.	SD 20	M1-4	24	24					1			W	Telespar	Remove Existing Signs
		Right Turn Arrow	M5-1PR	21	15										
1010+71	Rt.	Stop Ahead	W3-1	36	36		9.0	24	2				W	Telespar	Place New Sign on New Posts
1011+51	Lt.	No Passing Zone	W14-3	48X48X36			5.6			1			W	Telespar	Replace Existing Sign with New Sign on Existing Post
1012+06	Rt.	<-- Groton 20 Turton 7 -->>br>Doland 18 -->	D1-3a	72	42					1			W		Remove Existing Sign
1012+01	Rt.	JCT	M2-1	21	15	2.2		13	1				W	Telespar	Place New Signs on New Post
		SD 37	M1-4	24	24	4.0									
1014+01	Rt.	EAST	M3-2A	24	12	2.0		13	1				W	Telespar	Place New Signs on New Post
		SD 20	M1-4	24	24	4.0									
		Right Turn Arrow	M5-1PR	21	15	2.2									
1014+98	Rt.	CONDE Pop. 142	D1-1	48	18					1			W	Telespar	Remove Existing Sign
		CONDE A PURPLE HEART CITY	I-NS8	24	24						1				Remove Sign for Reset at Station 1015+51
1015+26	Rt.	CONDE Pop. 142	D1-1	48	18	6		26	2				W	Telespar	Place New Sign on New Posts
		CONDE A PURPLE HEART CITY	I-NS8	24	24							1			Reset Existing Sign from Station 1014+98 on New Post
1016+51	Rt.	<-- Groton 20 Turton 7 -->>br>Doland 18 -->	D1-3a	72	42	21		26	2				W		Place New Sign on New Posts
1017+01	Lt.	WEST	M3-4A	24	12	2.0				1			E	Telespar	Replace Existing Signs with New Signs on Existing Post
		SD 20	M1-4	24	24	4.0									
1018+01	Rt.	Stop	R1-1	36	36		7.5			1			W	Telespar	Replace Existing Sign with New Sign on Existing Post
		Mile Marker 341.60 (Two Signs)	D10-6	4.5	21								E/W		Leave in Place
1018+06	Lt.	SD 37	M1-4	24	24	4.0		25	2	1			W	4"X6" Wood	Replace Existing Signs with New Signs on New Posts
		Horizontal Double Head Arrow	M6-4P	21	15	2.2									
		EAST	M3-2A	24	12	2.0									Place New Sign on New Post
		SD 20	M1-4	24	24	4.0									Replace Existing Signs with New Signs on New Posts
		Right Horizontal Arrow	M6-1P	21	15	2.2									
					TOTAL	**83.3**	**116.5**	**127.0**	**12**	**34**	**2**	**2**			

SD 37 & SD 20 Permanent Sign Installation Table

MRM	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Remove Sign For Reset (Each)	Reset Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
187.67 + 0.309	Lt.	CONDE Pop. 142	D1-1	48	18	6				1			N	Telespar	Replace Existing Sign with New Sign on Existing Post at Existing Location on SD 37
		CONDE A PURPLE HEART CITY	I-NS8	24	24										Leave In Place
341.61 + 0.075	Lt.	CONDE Pop. 142	D1-1	48	18	6				1			S	Telespar	Replace Existing Sign with New Sign on Existing Post at Existing Location on SD 20 & SD 37
		CONDE A PURPLE HEART CITY	I-NS8	24	24										Leave In Place
					TOTAL	**12.0**	**0.0**	**0.0**	**0**	**2**	**0**	**0**			

Sign Installation Summary SD 20 & SD 37

Sign Code	Description	Width (Inches)	Height (Inches)	Sq. Ft.	No.	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super or Very High Intensity (SQFT)	Text / Background
D1-1	Conde POP 142	48	18	6.0	3	18.0		White on Green
D1-3a	<-- Groton 20 Turton 7 -->> Doland 18 -->	72	42	21.0	1	21.0		White on Green
D10-6	Mile Markers 334, 337, 338, 339 (Two Signs for Each)	4.5	18	0.6	8	4.5		White on Green
M1-5	SD 20	24	24	4.0	5	20.0		See Standard Plate 632.20
M1-5	SD 37	24	24	4.0	2	8.0		See Standard Plate 632.20
M2-1	Junction Marker	21	15	2.2	1	2.2		Black on White/Green Border
M3-2	East	24	12	2.0	3	6.0		Black on White/Green Border
M3-4	West	24	12	2.0	2	4.0		Black on White/Green Border
M5-1PR	Right Turn Arrow	21	15	2.2	1	2.2		Black on White/Green Border
M6-1P	Right Horizontal Arrow	21	15	2.2	1	2.2		Black on White/Green Border
M6-4	Horizontal Double Arrow	21	15	2.2	1	2.2		Black on White/Green Border
R1-1	Stop	30	30	5.2	16		83.2	White on Red
R1-1	Stop	36	36	7.5	1		7.5	White on Red
R2-1X	Speed Limit 65	24	30	5.0	1	5.0		Black on White
W3-1	Stop Ahead	36	36	9.0	1		9.0	Black/Red on Fluorescent Yellow
W14-3	No Passing Zone	48X48X36		5.6	3		16.8	Black on Fluorescent Yellow
					Totals	**95.3**	**116.5**	

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SURFACING THICKNESS DIMENSIONS

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

SCOPE OF WORK

Work on this project involves cold milling asphalt concrete, placement of asphalt concrete pavement, guardrail replacement, culvert repair, rumble strips, pavement markings, and sign replacement.

SEQUENCE OF OPERATIONS

The following Sequence of Operations will be adhered to. Any changes must be approved in writing by the Area Engineer prior to changes being made.

1. Install Traffic Control Signing.
2. Complete Culvert Repairs.
3. Complete Guardrail Embankment Work.
4. Complete Cold Milling Operations.
5. Complete Unclassified Excavation for Digouts and Backfill Operations.
6. Complete Asphalt Concrete Paving Operations.
7. Grind Rumble Strips.
8. Complete Flush Seal.
9. Install Permanent Pavement Markings.
10. Refurbish Mailboxes.
11. Remove Traffic Control Signing.
12. Mow Project Inslopes and Complete any Remaining Project Cleanup.

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

GENERAL NOTES

The Contractor will be required to mow the inslopes with a rotary mower to a height of 6 inches for a distance of 14 feet from the edge of the roadway (or shoulder) for the length of the project. This work will be completed to the satisfaction of the Engineer after all construction activities are completed. All costs associated with this work will be incidental to the various contract items.

UTILITIES

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

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for TRAFFIC CONTROL SIGNS.

GROOVED PAVEMENT (W8-15) signs with MOTORCYCLE (W8-15P) plaques are required in advance of areas that have been cold milled and are not resurfaced the same day. The GROOVED PAVEMENT sign assemblies will be installed a minimum of 1000 feet in advance of cold milled sections and remain in place until the sections have been resurfaced.

The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access to make appropriate arrangements.

A mobile work operation will be allowed provided the rumble strip or rumble stripe grooving, flush sealing, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer.

If inappropriate or conflicting pavement markings exist, the markings will be removed and replaced with applicable temporary pavement markings when the work duration is more than 3 days. When the work duration is less than 3 days, the channelizing devices in the area where the pavement markings conflict will be placed at one-half of the normal channelizing device spacing. Pavement marking removals will be incidental to the contract price for TRAFFIC CONTROL, MISCELLANEOUS. Temporary pavement marking will be paid for at the contract unit price per mile/foot for TEMPORARY PAVEMENT MARKING. The additional channelizing devices will be incidental to the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

Lane closures will be limited to 5 miles in length. The distance between the closest points of any two-lane closures will be at least 3 miles, excluding tapers.

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FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.

It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for FLAGGING.

TYPE III FIELD LABORATORY

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

CHECKING SPREAD RATES

The Contractor will be responsible for checking the Class Q2R Hot Mixed Asphalt Concrete spread rates and taking the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor will compute the required spread rates for each typical surfacing section and create a spread chart prior to the start of material delivery and placement. The Engineer will review and check the Contractor's calculations and spread charts. The station to station spread will be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each day's shift, the Contractor will verify the following:

- All tickets are present and accounted for,
- The quantity summary for each item is calculated,
- The amount of material wasted if any,
- Each day's ticket summary is marked with the corresponding 'computed by',
- The ticket summary is initialed and certified that the delivered and placed quantity is correct.

All daily tickets and the summary by item will be given to the Engineer no later than the following morning.

If the checker is not properly and accurately performing the required duties, the Contractor will correct the problem or replace the checker with an individual capable of performing the duties to the satisfaction of the Engineer. Failure to do so will result in suspension of the work.

The Department will perform depth checks. The Contractor will be responsible for placement of material to the correct depth unless otherwise directed by the Engineer. If the placed material is not within a tolerance of ±1/2 inch of the plan shown depth, the Contractor will correct the problem at no additional cost to the Department. Excess material above the tolerance will not be paid for. Achieving the correct depth may require picking up and moving material or other action as required by the Engineer. All costs for providing the Contractor furnished checker and performing all related duties will be incidental to the contract lump sum price for the "Checker". No allowances will be made to the contract lump sum price for Checker due to authorized quantity variations unless the quantities for the material being checked vary above or below the estimated quantities by more than 25 percent. Payment for the Checker will then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

STORAGE UNIT

The Contractor will provide a storage unit such as a portable storage container or a semi-trailer meeting the minimum size requirements from the table below:

Project Total Asphalt Concrete Tonnage	Minimum Internal Size (Cu Ft)	Minimum External Size (L x W x H)
Less than 50,000 ton	1,166	20' x 8' x 8.6' std
More than 50,000 ton	2,360	40' x 8' x 8.6' std
All Gyratory Controlled QC/QA Projects	2,360	40' x 8' x 8.6' std

The storage unit is intended for use only by the Engineer for the duration of the project. The QC lab personnel or the Contractor will not be allowed to use the storage container while it is on the project, without permission of the Engineer.

The storage unit will be on site and operational prior to asphalt concrete production. Upon completion of asphalt concrete production, the Engineer will notify the Contractor when the storage unit can be removed from the project. The storage unit use will not exceed 30 calendar days from the completion of asphalt concrete production. The storage unit will remain the property of the Contractor.

The storage unit will be weather proof and will be set in a level position. The storage unit will be able to be locked with a padlock.

The storage unit will be placed adjacent to the QA lab, as approved by the Engineer.

The following will apply when the storage unit provided on the project is a portable storage container:

1. The portable storage container will be constructed of steel.
2. The portable storage container will be set such that it is raised above the surrounding ground level to keep water from ponding under or around the storage container.

The following will apply when the storage unit provided on the project is a semi-trailer:

1. A set of steps and hand railings will be provided at the exterior door.
2. If the floor of the semi-trailer is 18 inches or more above the ground, a landing will be constructed at the exterior door. The minimum dimensions for the landing will be 4 feet by 5 feet. The top of the landing will be level with the threshold or opening of the doorway.
3. The semi-trailer may be connected to the QA lab by a stable elevated walkway. The walkway will be a minimum of 48 inches wide and contain handrails installed at 32 inches above the deck of the walkway. The walkway will be constructed such that it is stable and the deck does not deform during use and allows for proper door operation. Walkway construction will be approved by the Engineer.

All cost for furnishing, maintaining, and removing the storage unit including labor, equipment, and materials including any necessary walkways, landings, stairways, and handrails will be included in the contract unit price per each for STORAGE UNIT.

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RCP CULVERT REPAIRS FOR MAINLINE PIPE CULVERTS

The Contractor is encouraged to thoroughly investigate the culvert repair sites prior to bidding. Prior to working on the sites that are inundated with water, a complete dewatering plan will be submitted for approval to the Engineer. No separate payment for dewatering will be made.

Resetting of RCP will be completed prior to other culvert repair operations.

All pipe and end treatments designated for removal will become the property of the Contractor for his disposal.

Prior to culvert repair work the Contractor will remove and stockpile all of the in place topsoil from the construction areas. On completion of construction operations this salvaged topsoil will be spread evenly over the newly constructed embankment inslopes. Removal and replacement of topsoil will be incidental to the various culvert contract items.

Tie bolts will be installed at all joint locations where existing pipe sections and end treatments are being reset or installed new. This may require drilling holes into the existing pipe sections and end treatments. Tie bolts will be installed in accordance with Standard Plate No. 450.18.

TABLE OF MAINLINE PIPE CULVERT REPAIR

Pipe culvert lengths shown in the SD 20 Table of Mainline Culvert Work were obtained from the original grading plans.

It is the Contractors responsibility to investigate each pipe culvert pipe repair site to determine the pipe culvert size and length, along with other information needed to prepare a bid.

SEDIMENT CONTROL

Sediment control may be required if water is flowing through the pipe culvert at the time of cleaning. Otherwise sediment control is not anticipated.

The Contractor will implement appropriate sediment control measures prior to water flushing in order to prevent discharges beyond the project boundaries.

CONTRACTOR FURNISHED BORROW EXCAVATION

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

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

GUARDRAIL EMBANKMENT

The fill material used for the guardrail embankment will be obtained from Contractor furnished sources.

Contractor Furnished Borrow Excavation quantities are computed using the volume of embankment plus forty (40) percent for shrinkage. The basis of payment will be the plans quantity. No separate measurement will be taken.

Compaction of the fill material will be to the satisfaction of the Engineer.

Prior to removal or placement of fill material the Contractor will be required to remove three (3) inches of topsoil and replace it following the removal or placement of the fill material. Removal and replacement of topsoil will not be measured for payment but will be incidental to the contract unit price per cubic yard for CONTRACTOR FURNISHED BORROW EXCAVATION.

It is anticipated that water for compaction will not be required. If the Engineer deems that the fill material is extremely dry, water may be ordered and placed to the satisfaction of the Engineer. Payment for the water will be incidental to the contract unit price for CONTRACTOR FURNISHED BORROW EXCAVATION.

INTERSECTING ENTRANCES

Intersecting entrances will be satisfactorily cleared of vegetation, shaped, and compacted prior to placement of mainline surfacing. This work will be considered incidental to other contract items. Separate measurement and payment will not be made.

In areas where granular material has been placed adjacent to the existing asphalt concrete, the Contractor will be required to remove the granular material to a depth below the existing asphalt concrete to allow for the placement of the new asphalt concrete. New asphalt concrete will be placed flush with the existing asphalt concrete. The existing granular material removed will be placed on the entrances, intersecting roads or other locations as directed by the Engineer.

All costs to remove and place the granular material including labor, equipment and incidentals will be incidental to the various related contract items.

SHOULDER CLEARING

Vegetation and accumulated material on or adjacent to the existing roadway edge will be removed by the Contractor, to the satisfaction of the Engineer, prior to cold milling. Any remaining windrow of accumulated material will be spread evenly on the inslope adjacent to the asphalt shoulder, to the satisfaction of the Engineer, following application of the flush seal.

Each shoulder will be measured for payment. Costs associated with this work will be included in the contract unit price per mile for SHOULDER CLEARING.

Location	Station to Station	Length (Ft)	Length (Miles)
Both Shoulders	527+50.70 to 1054+98.30	105495.2	19.9
	Total:	105495.2	20

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 23. This value was obtained from testing during construction of the in-place asphalt concrete.

Cold milling asphalt concrete will be done according to the typical section(s). In areas where maintenance patches have raised and/or widened the road, additional asphalt concrete will be milled to provide a uniform typical section from centerline to the edge of the finished shoulder. These areas also include farm, residential, field entrances and intersecting roads. Milling will be daylighted to the outside edge of the roadway. Any additional costs associated with this additional cold milling will be incidental to the contract unit price per square yard for COLD MILLING ASPHALT CONCRETE.

Cold milling asphalt is estimated to produce 9254.3 tons of cold milled asphalt concrete material. An estimated 5925.2 tons of cold milled asphalt concrete material will be used on this project as RAP in the Class Q2R Hot Mixed Asphalt Concrete mixture. This will leave 3329.1 tons of salvaged asphalt concrete material. An estimated 3000 tons of cold milled asphalt concrete material will be used on this project as Base Course, Salvaged Asphalt Mix on the shoulders to prevent a drop off outside the asphalt sluff. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q2R Hot Mixed Asphalt Concrete.

The remainder of the salvaged asphalt concrete material will become the property of the Contractor for disposal.

RAP achieved for project use and/or other uses is based on the dimensions given in the typical section(s). Field conditions will vary from that given in the typical section(s). Therefore, the Contractor may be required to adjust the mill depth, as necessary, to provide the quantity of RAP specified by the plans, if approved by the Engineer.

TABLE OF IN PLACE MAINTENANCE PATCHES

Eastbound (For Information Only)

MRM	to	MRM	Length (Ft)
331.65		331.69	179.5
331.71		331.77	311.5
331.80		332.06	1341.1
332.14		332.50	1900.8
333.25		333.31	316.8
333.47		333.66	1003.2
333.69		333.85	855.4
333.96		334.31	1848.0
334.41		334.67	1372.8
334.67		334.73	316.8
334.74		334.93	992.6
334.96		335.15	1013.8
335.43		335.50	369.6
335.53		335.66	712.8
335.99		336.20	1108.8
336.48		336.55	369.6
336.84		336.94	528.0
337.13		337.17	211.2
337.23		337.35	633.6
337.46		337.61	792.0
337.62		337.66	211.2
339.64		339.67	169.0
339.70		339.74	200.6
341.55		341.60	290.4
		Total:	17049

Westbound (For Information Only)

MRM	to	MRM	Length (Ft)
331.64		331.71	369.6
331.76		331.83	369.6
331.86		331.95	475.2
332.00		332.12	633.6
332.20		332.24	211.2
332.38		332.46	422.4
332.61		332.65	211.2
332.72		332.90	950.4
333.08		333.29	1108.8
333.39		333.54	792.0
333.87		334.04	897.6
334.09		334.24	792.0
334.39		334.72	1742.4
334.74		334.88	739.2
334.90		334.99	475.2
335.47		335.53	316.8
335.98		336.09	580.8
336.30		336.34	211.2
336.41		336.47	316.8
336.77		336.89	607.2
336.95		337.04	501.6
337.07		337.12	253.4
337.20		337.24	211.2
337.31		337.34	158.4
337.45		337.50	269.3
337.61		337.65	200.6
339.64		339.74	538.6
341.53		341.60	348.5
		Total:	14705

ASPHALT CONCRETE COMPOSITE

Section 324 will apply except that Class Q2R Hot Mixed Asphalt Concrete as specified elsewhere in the plans may be used as Asphalt Concrete Composite.

Plans specified locations for Asphalt Concrete Composite will be paid for at the contract unit price per ton for ASPHALT CONCRETE COMPOSITE regardless of the class of asphalt concrete used at such locations.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Asphalt Concrete Composite and Base Course. The depth of asphalt will match the in-place thickness.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts and 75 square yards of Remove Asphalt Concrete Pavement per mile for the removal of asphalt and unstable material throughout the project.

Included in the Estimate of Quantities are 100 tons of Base Course and 25 tons of Asphalt Concrete Composite per mile for backfill of Unclassified Excavation, Digouts.

The digouts will be extended through the shoulder and backfilled with granular material that will daylight to the inslope to allow water to escape the subsurface.

A copy of the surfacing/subgrade investigation for this project is available from the Aberdeen Region and Huron Area offices.

WATER FOR COMPACTION OF GRANULAR MATERIALS

Cost of water for compaction of the granular material will be incidental to the contract unit price for the various contract items. Six percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

ASPHALT CONCRETE BLADE LAID

Included in the Estimate of Surfacing Quantities are 150 tons of Asphalt Concrete Blade Laid, 1.5 tons of Hydrated Lime, and 11.1 tons of PG 58-34 Asphalt Binder per mile and will be tight bladed on the existing surface 24 feet wide prior to the overlay. Gaps at centerline will not be permitted.

Mineral Aggregate for tight bladed material will use only the fine aggregate components combined in the same proportions as the Class Q2R Hot Mixed Asphalt Concrete mix. Mineral Aggregate for tight bladed material will meet the gradation requirements of the Job Mix Formula. Fine Aggregate Angularity and Sand Equivalent requirements will be the same as the Class Q2R Hot Mixed Asphalt Concrete mix. Quality testing is not required on the coarse aggregate (+No. 4 sieve) in this mixture.

The Asphalt Concrete Blade Laid Lift will be designed using an N_{design} Gyratory Compactive Effort of 65. The asphalt binder content will be determined so that the air voids of Asphalt Concrete Blade Laid Lift are between 3.0% and 5.0%.

Included in the Estimate of Surfacing Quantities are 56 tons of SS-1h or CSS-1h Asphalt for Tack for use prior to the application of the Blade Laid lift. (Rate = 0.09 Gal./SqYd)

ASPHALT FOR TACK

Included in the Estimate of Quantities are 2.5 tons of SS 1h or CSS 1h Asphalt for Tack for surface repair, strengthening, and spot leveling areas throughout the project. (Rate = 0.06 Gal./ Sq.Yd.).

CLASS Q2R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

Asphalt concrete aggregates will consist of reclaimed asphalt pavement (RAP) and virgin aggregate.

Virgin mineral aggregate for Class Q2R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q2.

The Class Q2R Hot Mixed Asphalt Concrete will include 20 percent RAP in the mixture. RAP will be obtained from the material produced by cold milling on this project.

Mix Design Criteria:

Gyratory Controlled QC/QA Mix Design requirements for the Class Q2R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q2.

All remaining requirements for Class Q2 will apply.

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ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 100 tons of Class Q2R Asphalt Concrete and, 1.0 tons of Hydrated Lime of Asphalt concrete and 4.7 tons of PG 58-34 Asphalt Binder, per mile for spot leveling, strengthening, and repair of the existing surface for the project length. This material will be placed where and as directed by the Engineer.

BASE COURSE, SALVAGED ASPHALT MIX

Base Course, Salvaged Asphalt Mix estimated at 3000 tons will be obtained from the cold milled material produced on this project. (150 tons/mile per shoulder)

The Base Course, Salvaged Asphalt Mix will be crushed to meet the requirements of Section 884.2 D.3 prior to placement.

Base Course, Salvaged Asphalt Mix placed on the shoulders will be compacted to the satisfaction of the Engineer. Compaction to a specified density is not required. The stockpiling, hauling, crushing, placement, shaping, and compaction of the material will be incidental to the contract unit price per ton of BASE COURSE, SALVAGED ASPHALT MIX.

FLUSH SEAL

Application of flush seal will be completed within 10 working days following completion of the asphalt concrete surfacing.

Application of flush seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer will notify the Contractor as soon as possible that the flush seal is unnecessary.

SAND FOR FLUSH SEAL

The sand application will be placed 11' wide in each lane, leaving 12" on center line and 6" on each edge line free of sand.

REFURBISH MAILBOXES

Existing mailboxes will be removed, turnouts constructed, and mailboxes reset on new posts with the necessary support hardware for single or double mailbox assemblies (See Standard Plate No's. 900.02 and 900.03). The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

TABLE OF REFURBISH MAILBOXES

Location MRM	SIDE	SINGLE MAILBOX EACH
334+0.94	Rt	1
335+0.97	Rt	1
336+0.82	Rt	1
337+0.45	Rt	1
TOTALS		4

If large mailboxes are located at double mailbox installations, a single post may need to be used for the large mailbox.

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

GRIND RUMBLE STRIPES IN ASPHALT CONCRETE

Asphalt concrete rumble stripes will be constructed on the shoulders. Rumble stripes will be paid for at the contract unit price per mile for Grind 8” Rumble Strip or Stripe in Asphalt Concrete. It is estimated that 20 miles of asphalt concrete rumble stripes will be required.

Rumble stripe installation will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed 8” rumble stripes at a width of 18” and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

Table of 8’’ Rumble Stripes on Shoulders

	8’’ Rumble Stripes
Station to Station:	527+50.7 to 1054+98.3
Total:	105495.2 ft
	20 mi

*Edgeline Rumble Stripes will be installed along the full project’s length. (With flush seal application rate of 0.05 gal./sq.yd.)

GRIND SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE

Sinusoidal rumble stripes will be constructed on the centerline, as detailed in the plan set. Sinusoidal rumble stripes will be paid for at the contract unit price per mile for GRIND SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE.

TABLE OF 12” RUMBLE STRIPS & SINUSOIDAL CENTERLINE RUMBLE STRIPES

	Sinusoidal, 12"	Traditional, 12"
Station to Station:	527+50.7 to 539+46.0	539+46.0 to 553+85.0
	553+85.0 to 573+18.0	573+18.0 to 658+19.0
	658+19.0 to 674+16.0	674+16.0 to 729+47.0
	729+47.0 to 748+86.0	748+86.0 to 782+16.0
	782+16.0 to 839+99.0	839+99.0 to 859+95.0
	859+95.0 to 885+43.0	885+43.0 to 1047+78.0
	1047+78.0 to 1054+98.3	-
Total:	15716 Feet	37032 Feet
	3.0 Miles	7.0 Miles

RUMBLE STRIPE/STRIP ROADWAY CLEANING

The Contractor will be required to remove loose material from the driving surface and/or asphalt shoulders. Loose material may be broomed to the edge of shoulders and it will be the Contractor’s responsibility to ensure the loose material does not enter any vegetated areas and/or waterways. A pick-up broom will not be required.

All costs associated with this work will be incidental to the contract unit price per mile for and/or GRIND 8” RUMBLE STRIP OR STRIPE IN ASPHALT CONCRETE or GRIND SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE.

CENTERLINE RUMBLE STRIPES – FLUSH SEAL

Asphalt for Flush Seal will be applied after the centerline rumble stripes have been installed. The application width will extend 1 ft beyond the centerline of the roadway in each direction to create a total application rate of 0.10 gal./sq.yd on the centerline rumble stripes.

5 tons of Flush seal have been added to the Estimate of Quantities for application over the centerline rumble stripe.

GRIND SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE

Advance intersection warning sinusoidal transverse rumble strips will be constructed on the mainline pavement leading up to the SD 37 intersection, as detailed in Std. Plate 320.46. In accordance with Std. Plate 320.46, the distance from the stop sign to the furthest set of rumble strips will be designated at 1000 feet. Sinusoidal transverse rumble strips will be paid for at the contract unit price square foot for Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete. It is estimated that 392 square feet of sinusoidal transverse rumble strips will be required.

Sinusoidal transverse rumble strips will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed sinusoidal transverse rumble strips at a width of 10.5’ and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

TEMPORARY PAVEMENT MARKINGS

Temporary flexible vertical markers (tabs) will be installed on one side of the centerline rumble for the temporary pavement marking. No passing zones will be marked in accordance with Specifications. DO NOT PASS (R4-1) and PASS WITH CARE (R4-2) signs will also be used in addition to the temporary flexible vertical markers (tabs) placed per Specifications to mark no passing zones.

The total length of no passing zone on this project is estimated to be **0.31** miles.

It is estimated that 3 DO NOT PASS (R4-1) and 3 PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Quantities of Temporary Pavement Markings consist of:

One pass on top of the milled surface
One pass on top of the Blade Laid lift of asphalt concrete
One pass on top of the first Class Q2R lift of asphalt concrete
One pass on top of the second Class Q2R lift of asphalt concrete
One pass on top of the Flush Seal

Temporary pavement marking paint will not be allowed on the final lift of asphalt surfacing. Temporary pavement marking paint will not be allowed on the flush seal. The Contractor may use tabs with covers, uncovering them for the flush seal. As an alternative, the Contractor may install new tabs for the fog seal or flush seal.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs after each installation as detailed below at no additional cost to the State.

If the Engineer determines that an additional pass prior to the flush seal is not required, this application of the temporary pavement marking will be eliminated. If the flush seal is eliminated for the project, the application of the temporary pavement marking on top of the flush seal as well as the additional pass prior to the flush seal will be eliminated.

No adjustment in the contract unit price for TEMPORARY PAVEMENT MARKING will be made because of a variation in quantities.

In the absence of a signed lane closure or pilot car operation, FLAGGER (W20-7) symbol signs and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights will be positioned on the shoulder in advance of workers for both directions of traffic during the installation and removal of the temporary flexible vertical markers (tabs). The traffic control device used will be moved intermittently to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1) sign, a WORKER (W21-1) symbol sign or a BE PREPARED TO STOP (W3-4) sign will be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work must be approved by the Engineer.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

PERMANENT PAVEMENT MARKING

The Contractor will advise the Engineer a minimum of 3 weeks prior to the application of the permanent pavement marking to allow the State to check and mark the location of no passing zones.

The application of permanent pavement marking will begin no sooner than 7 calendar days following completion of the fog or flush seal. Application of permanent pavement marking will be completed within 14 calendar days following completion of the final surfacing.

Traffic control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights or advance warning arrow panel.

MARKINGS WITHIN SINUSOIDAL CENTERLINE RUMBLE STRIPES

The sinusoidal centerline rumble stripes are recessed below the pavement surface, so pavement marking grooving will not be required at these locations.

Retroreflectivity readings will not be taken for pavement markings within the sinusoidal rumble stripe. Restriping of pavement markings to meet the specified application rate requirements and to provide a quality retroreflective line will be at the expense of the Contractor with no additional cost to the Department. Sections to be restriped will be determined by the Engineer.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer’s recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads. Reflective media will require a Certificate of Compliance for Certification for each source and lot. Acceptance sampling will not be required.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4” line = 22.5 Gals/Mile
Dashed 4” line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal.

All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The Department may take retroreflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

If the Department chooses to take retroreflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken. The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retroreflectivity values will be 275 mc/m^2/lux for white and 170 mc/m^2/lux for yellow.

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. The cleaning of the residue for grooving will be to the satisfaction of the Engineer and may require more than one pass to adequately remove material. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot for GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING contract item.

COLD APPLIED PLASTIC PAVEMENT MARKING

A 15-foot stop bar will be grooved and installed at the SD 37 Intersection, as per Std. Plate 633.01.

All materials will be applied as per the manufacturer's recommendations.

Cold Applied Plastic Pavement Markings will be 3M Series 380 AW or an approved equal.

GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

REMOVE TRAFFIC SIGN

Existing signs that are shown as being removed in the Permanent Signing Table will become the property of the Contractor. Existing signposts and bases will be removed in their entirety. All existing signs, posts, and/or hardware removed will not be reused. Holes remaining from the removal of wood posts will be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, hardware, and backfilled holes will be incidental to the contract unit price per each for REMOVE TRAFFIC SIGN. Quantities will be per assembly at the contract unit price per each.

NEW PERMANENT SIGNING

All signs will be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All Flat Aluminum Signs, Nonremovable Copy High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type IV. All Flat Aluminum Signs, Nonremovable Copy Super/Very High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type XI.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will be incidental to the contract unit price per square foot for FLAT ALUMINUM SIGN, NONREMOVABLE COPY HIGH INTENSITY or FLAT ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY

DIGITALLY PRINTED SIGNS

Digitally printed signs will be allowed on this project. If the Contractor elects to provide digitally printed signs, such signs will adhere to the following specifications.

PROTECTIVE OVERLAY FILM

Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlaminate will comply with the retroreflective sheeting manufacturer's recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in Table 1.

Table 1: Retroreflective Film Minimum Durability Requirements

ASTM D4956 Type	Full Sign Replacement Term (years)	Sheeting Replacement Term (years)
I	0	7
III	7	10
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

FABRICATION

Retroreflective sheeting will be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Sign legend will be applied using digital print technologies and systems in accordance with the retroreflective sheeting manufacturer's recommendations and the requirements of these plans.

Finished signs will be free of ragged edges and must be supplied clean and free of scratches, grease, oil, lubricants or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from 30 feet or greater.

After application of the retroreflective sheeting, sign blanks will be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations. Finished signs will be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

DIGITALLY PRINTED SIGNS (Continued)

TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified, traffic control signs will be warranted for the duration shown in Table 1. Full product terms and conditions are as established by each sheeting manufacturer and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. A copy of the warranty document with complete details of terms and conditions will be supplied if requested by the Engineer.

CERTIFIED DIGITAL SIGN FABRICATOR

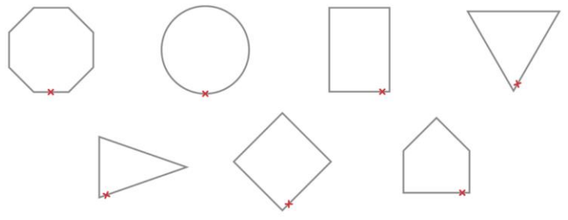
Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

DATE TAGGING SIGNS WITH PERTINENT INFORMATION

All digitally printed signs are required to be date-tagged with the following 2 components:

1. Date tags on the back of signs
   Tags will have the following information and be fabricated with material and printing system that are as durable as the warranted sign.
   - Name of Sign Fabricator
   - Date the sign was fabricated (month and year)
   - Process that was used for sign fabrication (digitally printed)
   - Supplier of sheeting that was used for fabricating the sign.

2. Border date
   The month and year (mm/yyyy) of sign fabrication will be printed in the border of the sign in 3/8" sans serif font. Border date will be printed with the same warranted printed system as the sign face. The date should be printed in the locations indicated below.



SQUARE TUBE ANCHOR SLEEVE

The Contractor will furnish and install new 2.5" x 2.5" x 18", 12 Gauge square tube anchor sleeve or equivalent components as approved by the Engineer for 2.0" x 2.0" perforated tube posts. A 2.25" x 2.25" x 4', 12 Gauge perforated tube post will be used as the anchor post for installation with the square tube anchor sleeve.

NO PASSING ZONE SIGNS

SDDOT will be notified to do NO PASSING ZONE sign locates prior to project completion by calling the Aberdeen Region Traffic at (605)626-7879. Payment for this work will be incidental to the various signing contract items.

DELINEATION

Delineation installation and spacing will be done according to Standard Plates 632.42 and 632.44. Per the discretion of the Engineer, 14 4" Tubular White Delineator with 1.12 Lb/Ft Post will be installed as indicated in the table below.

Type	Intersecting Road	Number Per Radius	Total
4" Tubular White Delineators	SD 37	4 NW Quadrant	7
		3 NE Quadrant	
		3 SE Quadrant	7
		4 SW Quadrant	
		Total	14

OBJECT MARKERS

New Type 2 Object Markers and posts will be furnished and installed according to the details of Standard Plates 632.01, 632.03, and 632.04 by the Contractor at the locations shown in the Object Marker Table for Pipe.

Cost for new Type 2 Object Marker and post installation is included in the contract unit price per each for Type 2 Object Marker.

EROSION CONTROL

The estimated area requiring erosion control is 3524 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching will be incidental to the contract lump sum price for EROSION CONTROL.

The limits of erosion control work will be at guardrail replacement sites, pipework limits, and as determined by the Engineer during construction.

Mycorrhizal Inoculum

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

25% *Glomus intraradices*
25% *Glomus aggregatum or deserticola*
25% *Glomus mosseae*
25% *Glomus etunicatum*

Revised 05/27/25- PB

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract lump sum price for EROSION CONTROL.

The mycorrhizal inoculum will be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

Permanent Seeding

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

Type C Permanent Seed Mixture will consist of the following:

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

Mulching (Grass Hay or Straw) For Temporary Stabilization

Grass Hay or Straw Mulch for temporary stabilization is to be used on this project at locations noted in the table and at locations determined by the Engineer during construction. Two applications of Grass Hay or Straw Mulch on areas that receive temporary Grass Hay or Straw Mulch will not be required if the Engineer determines that there is sufficient Mulch remaining at the time permanent seeding takes place.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at structures noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor will provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles will remain on the project to decompose.

The erosion control wattle provided will be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

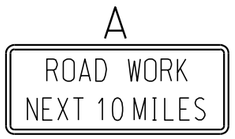
http://apps.sd.gov/HC60ApprovedProducts/main.aspx

TABLE OF EROSION CONTROL WATTLE

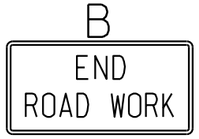
Structure	Location	Diameter (Inch)	Quantity (Ft)
58-231-060	NW Quadrant	12	120
	SW Quadrant		150
	NE Quadrant		150
	SE Quadrant		100
58-281-060	NW Quadrant	12	120
	SW Quadrant		150
	NE Quadrant		150
	SE Quadrant		100
	Additional Quantity:	12	50
		Total:	1090

FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

A



B



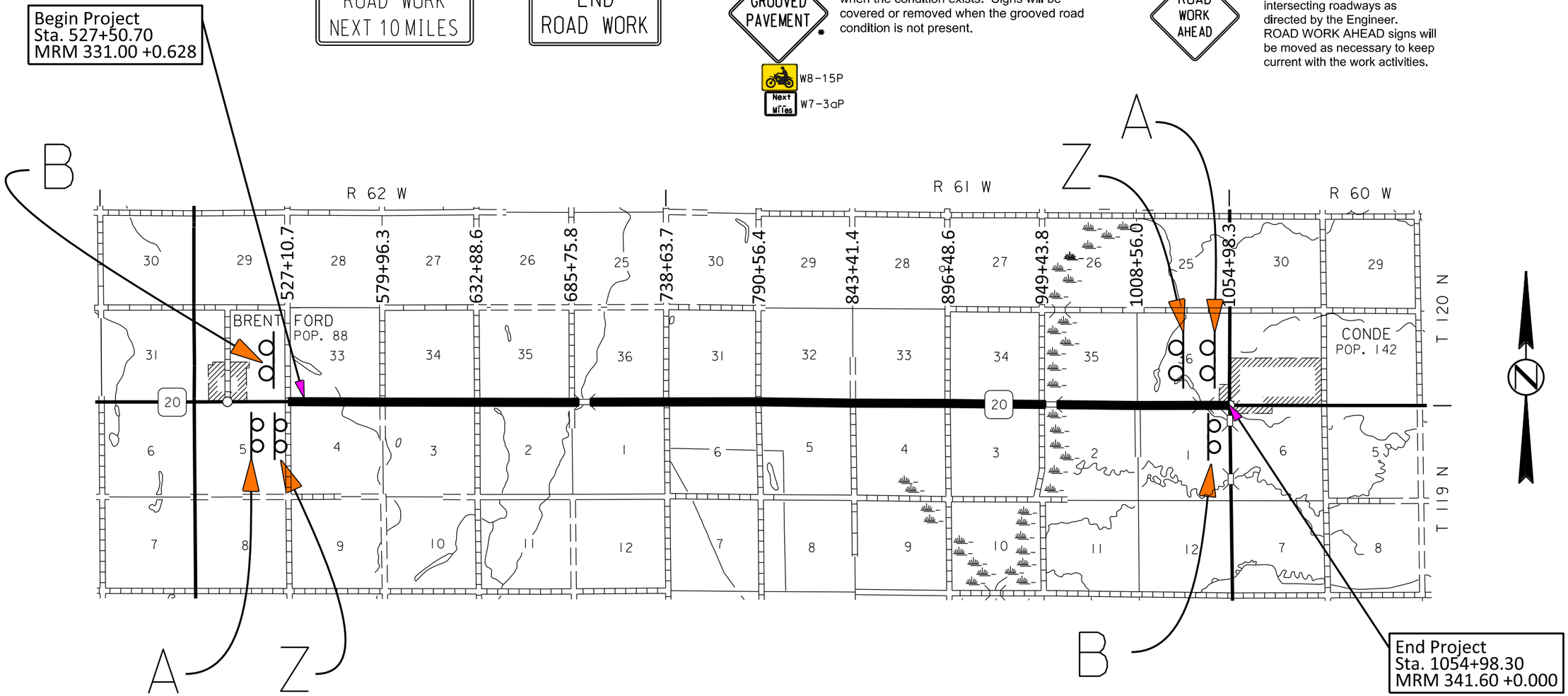
Z

W8-15P

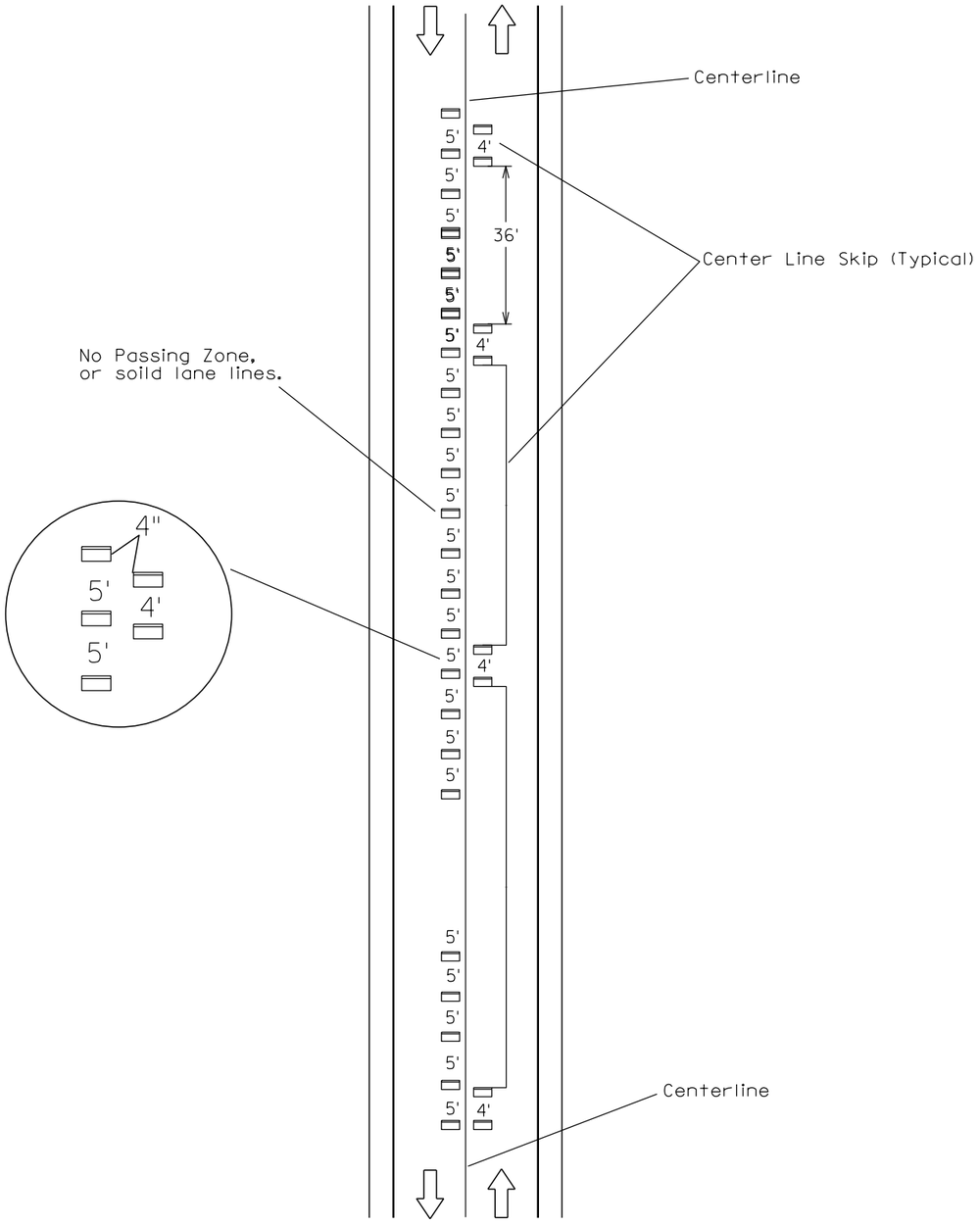
W7-3aP

GROOVED PAVEMENT signs must only be visible when the condition exists. Signs will be covered or removed when the grooved road condition is not present.

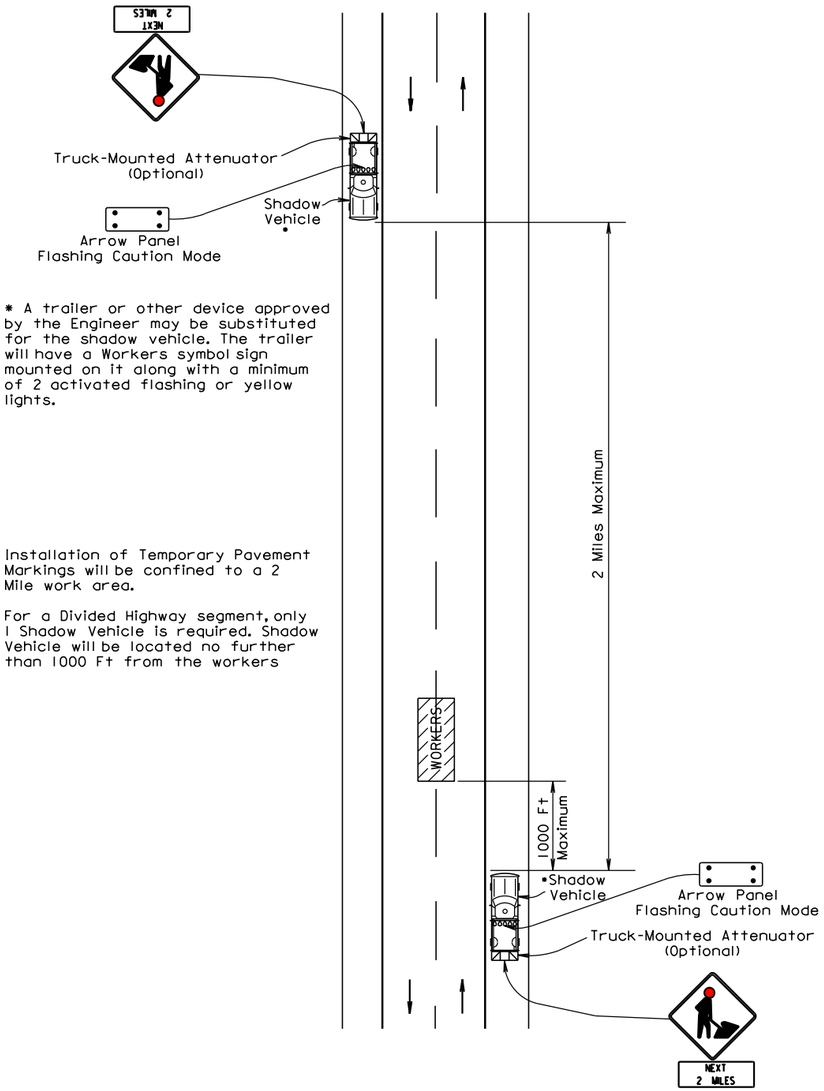
W20-1 ROAD WORK AHEAD signs will be mounted on portable supports, and will be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs will be moved as necessary to keep current with the work activities.



GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD MARKER INSTALLATION



GUIDES FOR TRAFFIC CONTROL DEVICES APPLICATION OF TEMPORARY PAVEMENT MARKING TABS



* A trailer or other device approved by the Engineer may be substituted for the shadow vehicle. The trailer will have a Workers symbol sign mounted on it along with a minimum of 2 activated flashing or yellow lights.

Installation of Temporary Pavement Markings will be confined to a 2 Mile work area.

For a Divided Highway segment, only 1 Shadow Vehicle is required. Shadow Vehicle will be located no further than 1000 Ft from the workers

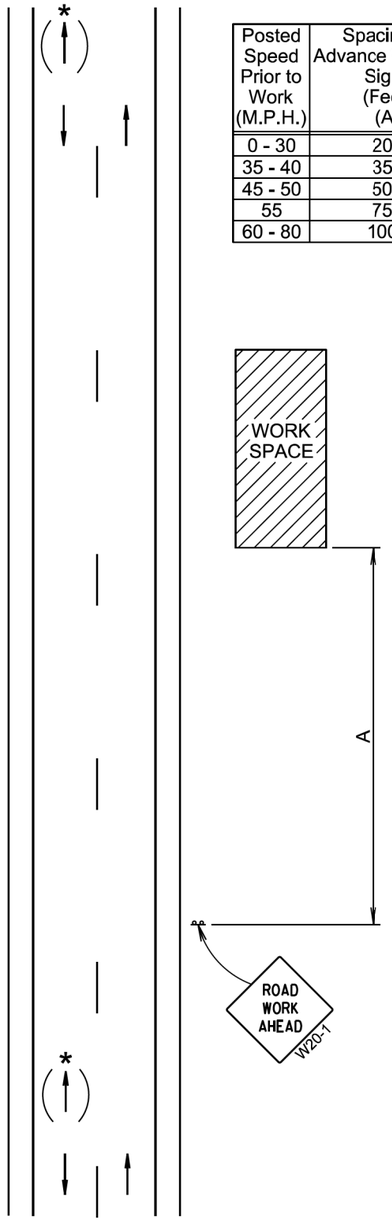
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated will be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000

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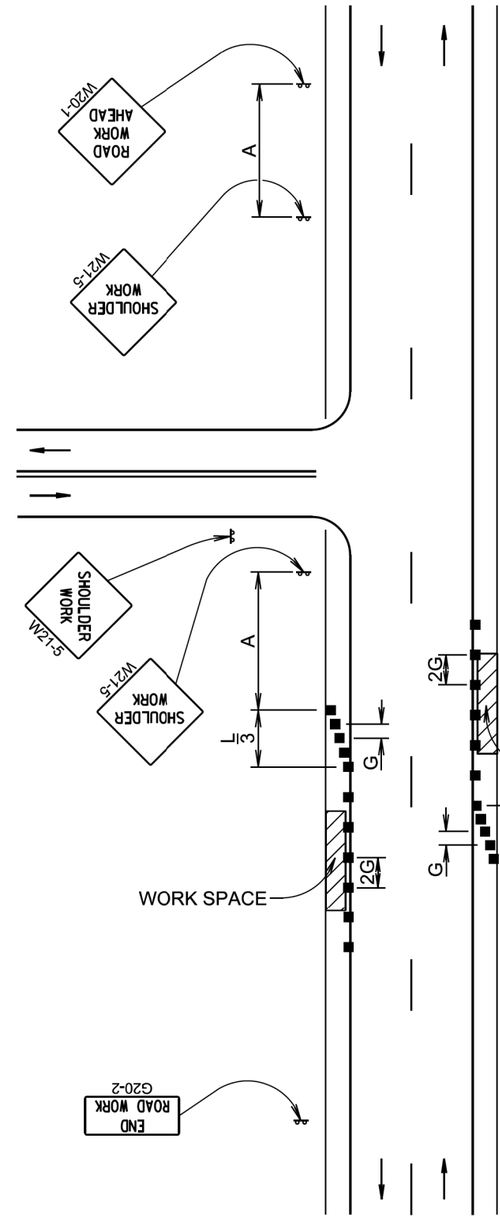
SDDOT

WORK BEYOND THE SHOULDER

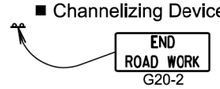
PLATE NUMBER 634.01

Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device



The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

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WORK ON SHOULDERS

PLATE NUMBER 634.03

Sheet 1 of 1

* Messages on signs will vary depending on the operation being conducted.

Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

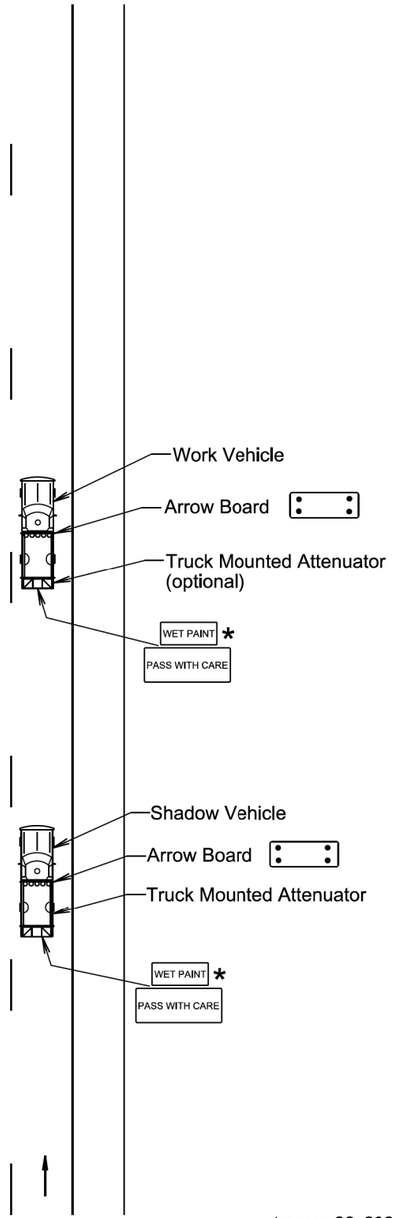
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable.

Arrow boards will, as a minimum, be Type B, with a size of 60" x 30".

All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".



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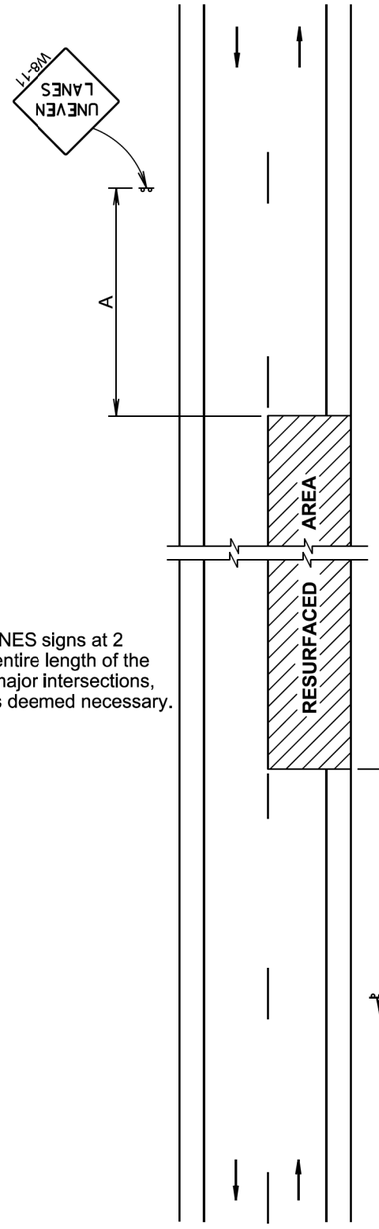
MOBILE OPERATIONS ON 2-LANE ROAD

PLATE NUMBER 634.06

Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

Install additional UNEVEN LANES signs at 2 mile intervals throughout the entire length of the uneven area and at affected major intersections, edge of towns, and other sites deemed necessary.

January 22, 2021

Published Date: 2026	SDDOT	UNEVEN ROAD SURFACE	PLATE NUMBER 634.22
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

Flagger

Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

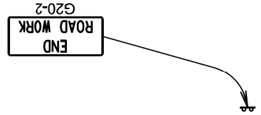
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

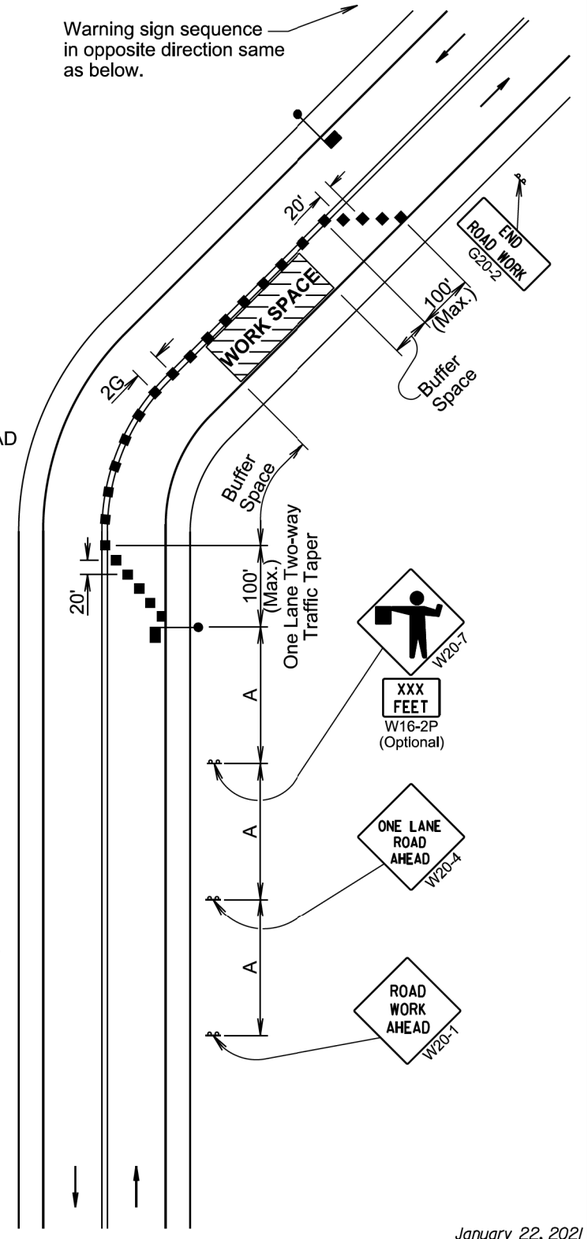
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

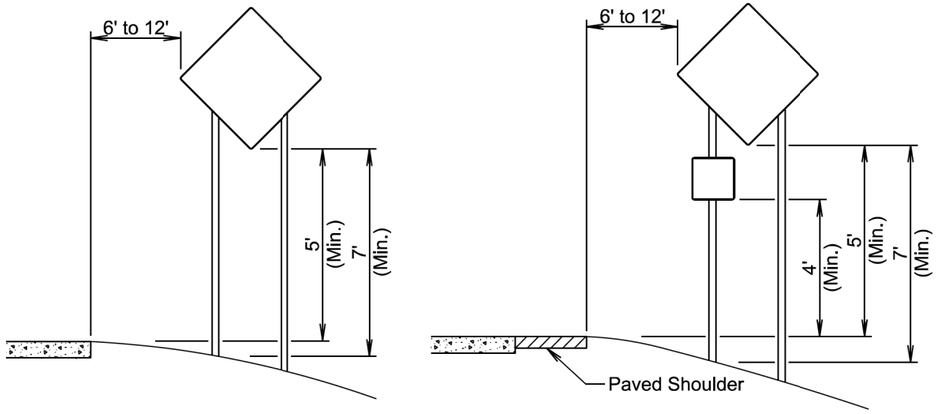
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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



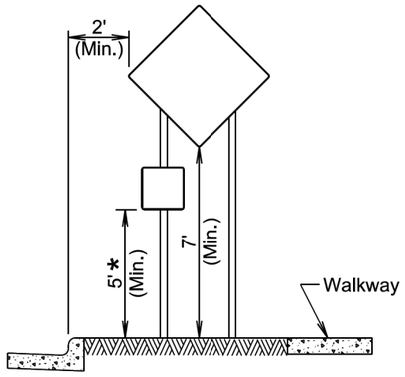
January 22, 2021

Published Date: 2026	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1

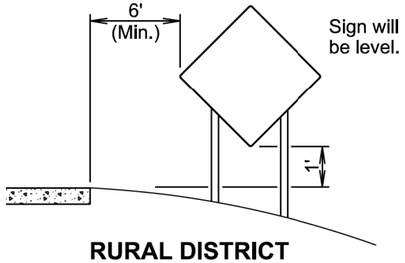


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

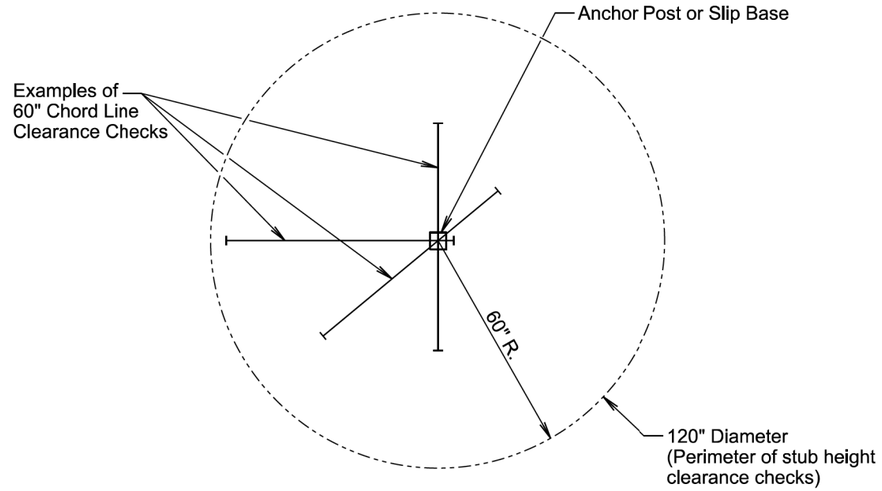


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

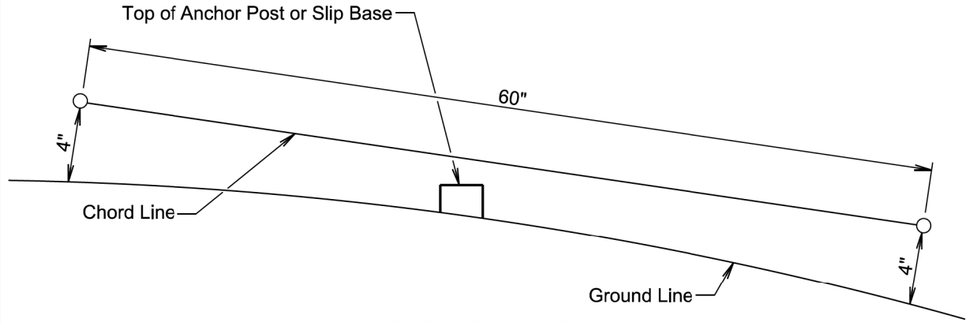
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

January 22, 2021

Published Date: 2026	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

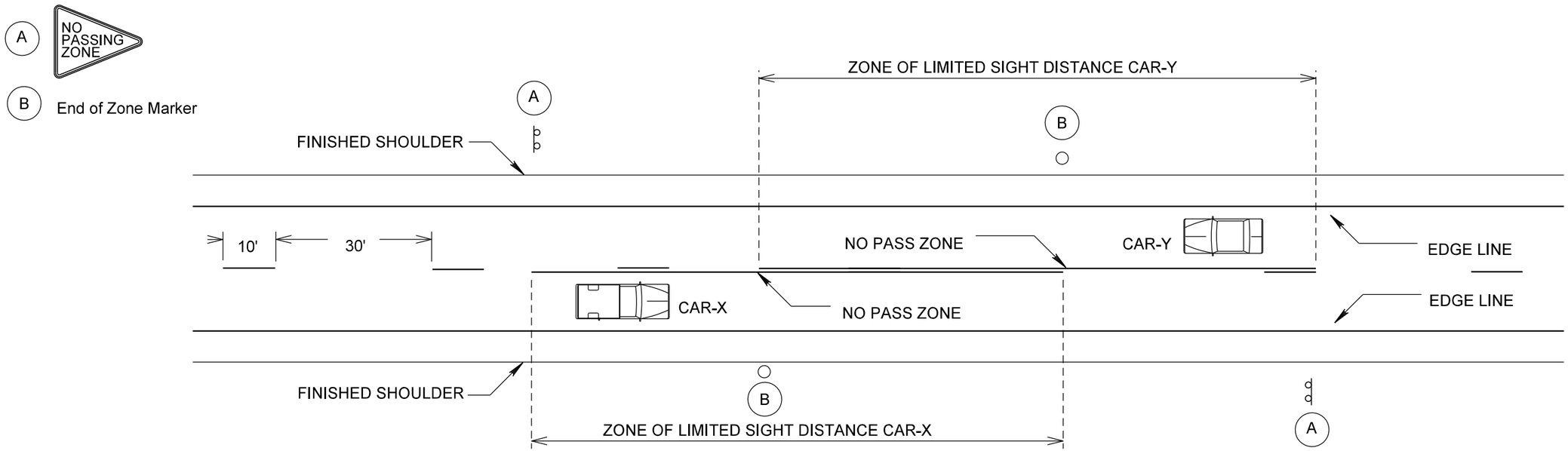
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

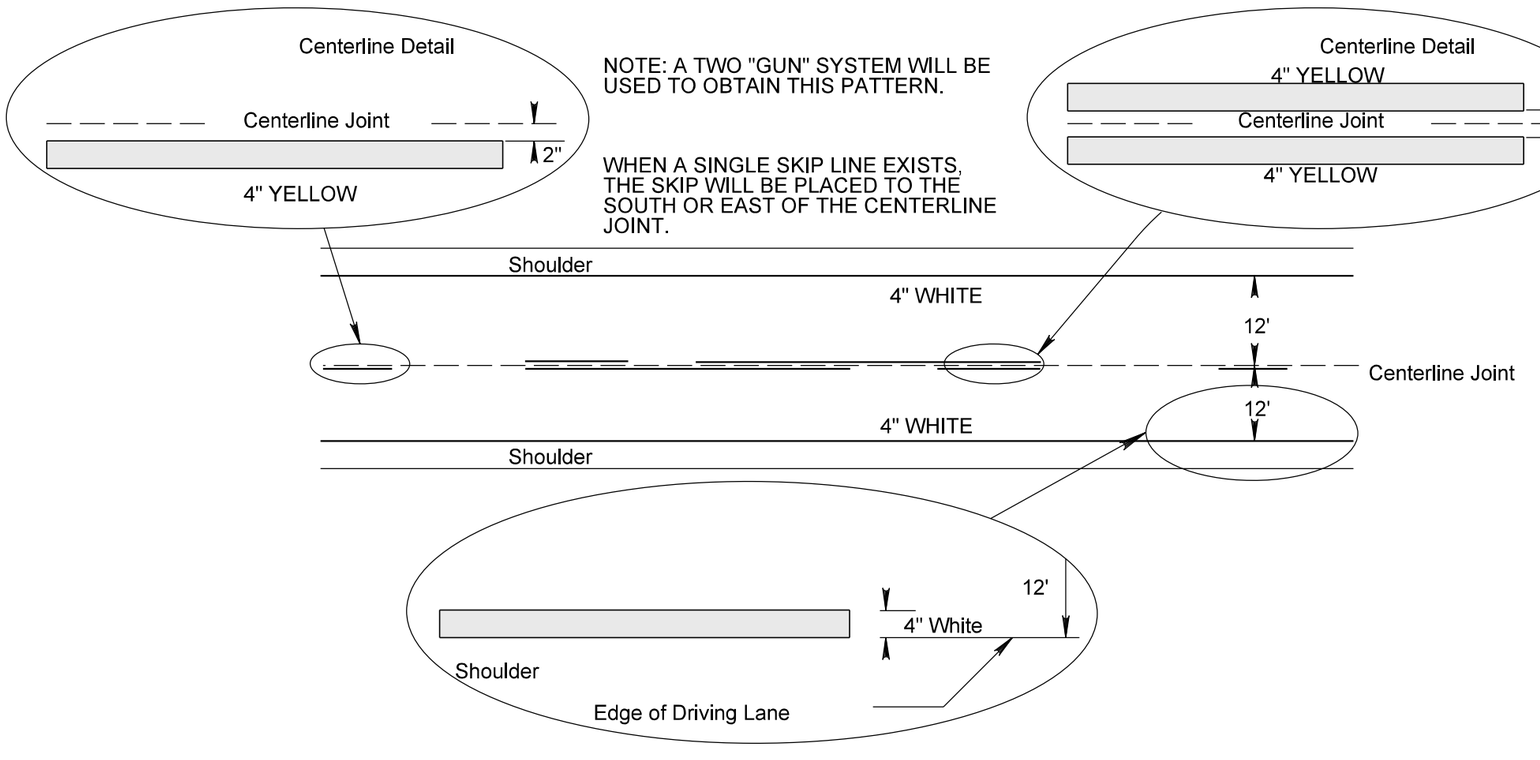
		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W7-3aP	NEXT __ MILES (plaque)	2	36" x 30"	7.5	15.0
W8-1	BUMP	6	48" x 48"	16.0	96.0
W8-6	TRUCK CROSSING	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
W8-11	UNEVEN LANES	4	48" x 48"	16.0	64.0
W8-15	GROOVED PAVEMENT	4	48" x 48"	16.0	64.0
W8-15P	MOTORCYCLE (plaque)	2	24" x 18"	3.0	6.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
G20-1	ROAD WORK NEXT 10 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			630.2

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(221)331	36	69

Plotting Date: 01/30/2025

TYPICAL PAVEMENT MARKING LAYOUT





FURNISHING AND APPLYING HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

1. The typical pavement markings as shown on this sheet will be applied throughout the entire length of the project.
2. Exact location of the NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, will not be used as the beginning and ending NO PASSING ZONE lines.
3. Traffic Control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights or advance warning arrow panel.

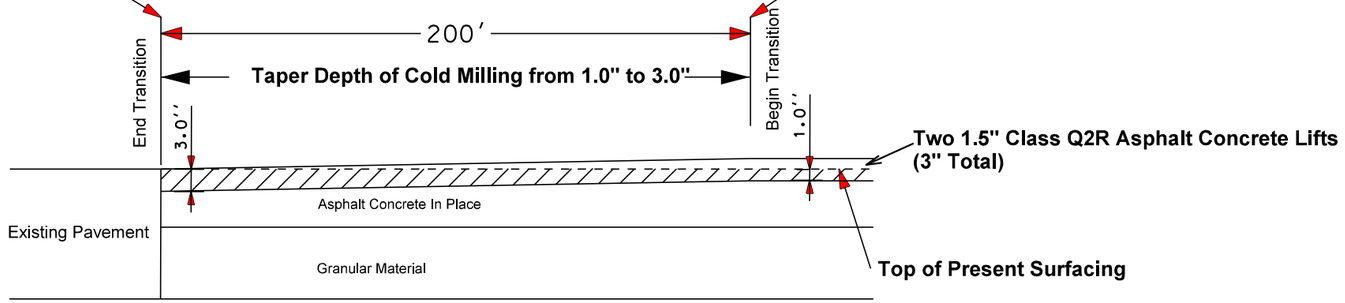
TRANSITION DETAILS FOR PROJECT LIMITS

TRANSITION SECTIONS

Sta. 527+50.70
and
Sta. 1054+98.30

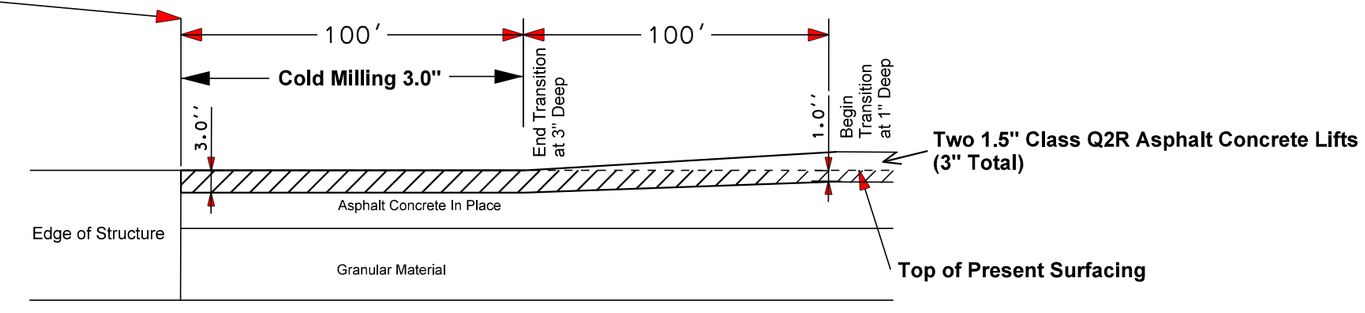
Sta. 529+50.70
and
Sta. 1052+98.30

Begin/End Resurfacing of Project Limits



Str. 58-231-060 &
Str. 58-281-060

Begin/End Resurfacing at Structures

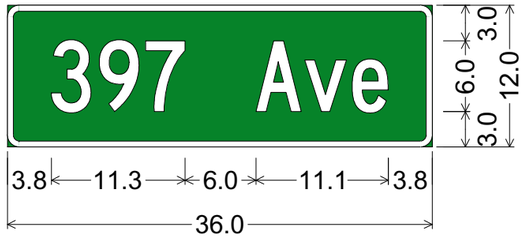


Cold Milling Asphalt Concrete

Notes: Width of Cold Milling Asphalt Concrete will match adjacent surfacing width.

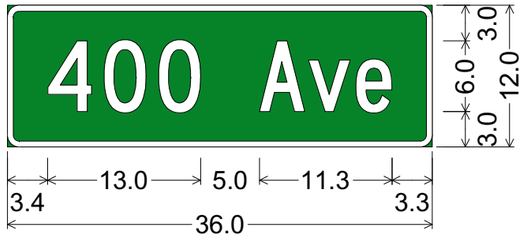
Quantities are Included in the Table of Additional Quantities for the Structure Transitions under Cold Milling Asphalt Concrete.

SPECIAL SIGN LAYOUT



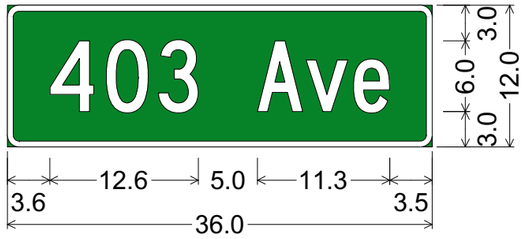
1.0" Radius, 0.5" Border, White on Green;
"397 Ave", C 2K;
Table of letter and object lefts

3	9	7	A	v	e
3.8	7.8	11.8	21.0	25.3	29.3



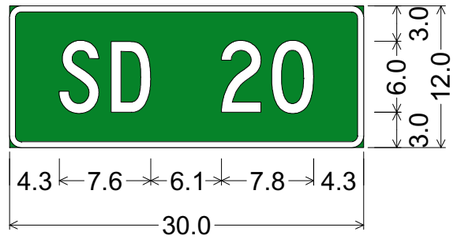
1.0" Radius, 0.5" Border, White on Green;
"400 Ave", C 2K;
Table of letter and object lefts

4	0	0	A	v	e
3.4	8.3	12.9	21.4	25.5	29.5



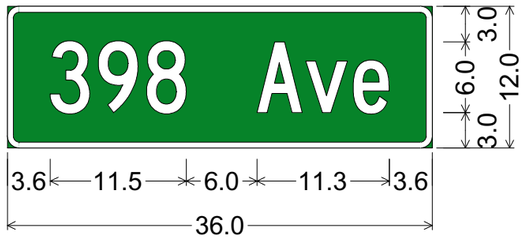
1.0" Radius, 0.5" Border, White on Green;
"403 Ave", C 2K;
Table of letter and object lefts

4	0	3	A	v	e
3.6	8.4	12.9	21.3	25.4	29.4



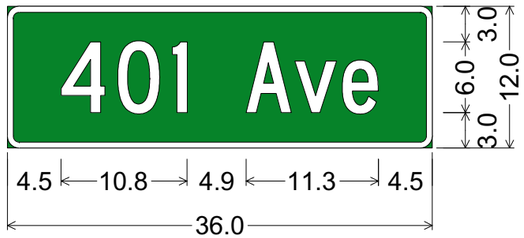
1.0" Radius, 0.5" Border, White on Green;
"SD 20", C 2K;
Table of letter and object lefts

S	D	2	0
4.3	8.6	18.0	22.3



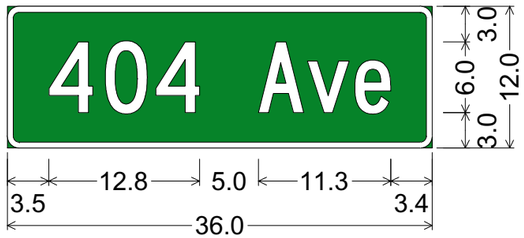
1.0" Radius, 0.5" Border, White on Green;
"398 Ave", C 2K;
Table of letter and object lefts

3	9	8	A	v	e
3.6	7.8	11.8	21.1	25.3	29.3



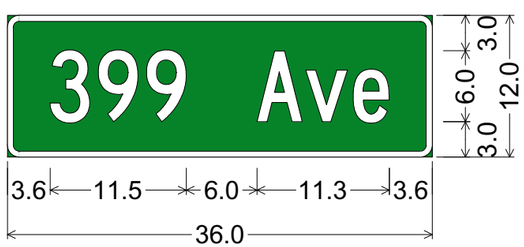
1.0" Radius, 0.5" Border, White on Green;
"401 Ave", C 2K;
Table of letter and object lefts

4	0	1	A	v	e
4.5	9.4	14.0	20.3	24.4	28.4



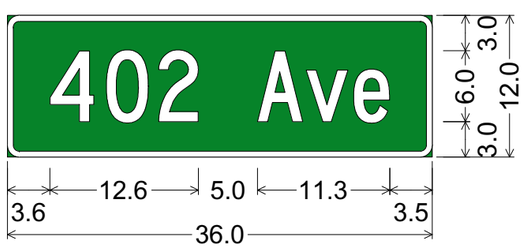
1.0" Radius, 0.5" Border, White on Green;
"404 Ave", C 2K;
Table of letter and object lefts

4	0	4	A	v	e
3.5	8.3	12.5	21.3	25.4	29.5



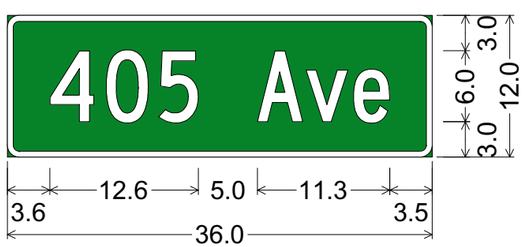
1.0" Radius, 0.5" Border, White on Green;
"399 Ave", C 2K;
Table of letter and object lefts

3	9	9	A	v	e
3.6	7.8	11.8	21.1	25.3	29.3



1.0" Radius, 0.5" Border, White on Green;
"402 Ave", C 2K;
Table of letter and object lefts

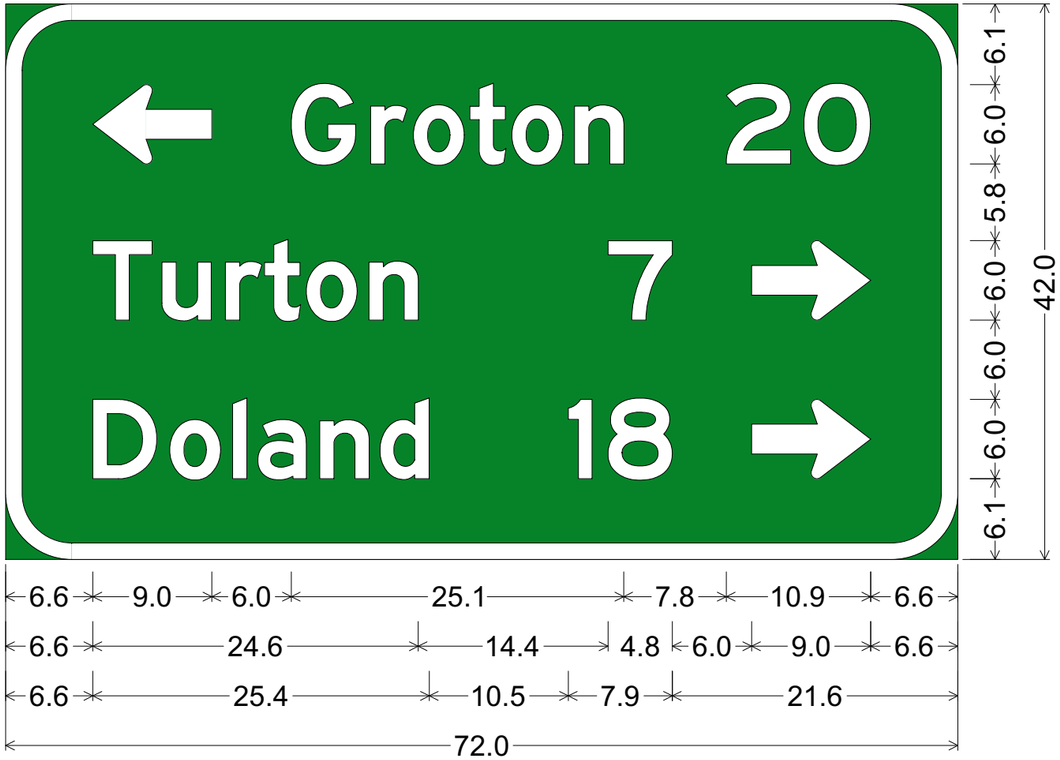
4	0	2	A	v	e
3.6	8.4	12.9	21.3	25.4	29.4



1.0" Radius, 0.5" Border, White on Green;
"405 Ave", C 2K;
Table of letter and object lefts

4	0	5	A	v	e
3.6	8.4	12.9	21.3	25.4	29.4

SPECIAL SIGN LAYOUT

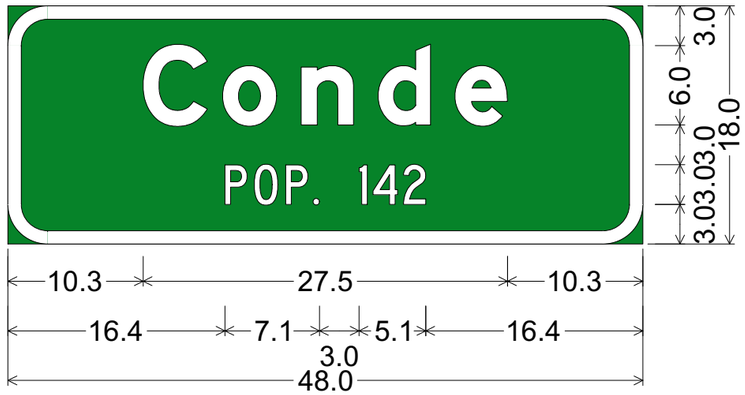


5.0" Radius, 1.3" Border, White on Green;
Standard Arrow Custom 9.0" X 6.0" 180°; "Groton", E 2K;
"20", E 2K; "Turton", E 2K; "7", E 2K;
Standard Arrow Custom 9.0" X 6.0" 0°; "Doland", E 2K; "18", E 2K;
Standard Arrow Custom 9.0" X 6.0" 0°;
Table of letter and object lefts

←	G	r	o	t	o	n	2	0
6.6	21.6	27.6	30.9	35.1	38.3	43.0	54.5	60.4

T	u	r	t	o	n	7	→
6.6	11.9	16.6	19.5	22.8	27.5	45.5	56.4

D	o	l	a	n	d	1	8	→
6.6	12.4	17.1	19.1	23.8	28.4	42.5	45.5	56.4

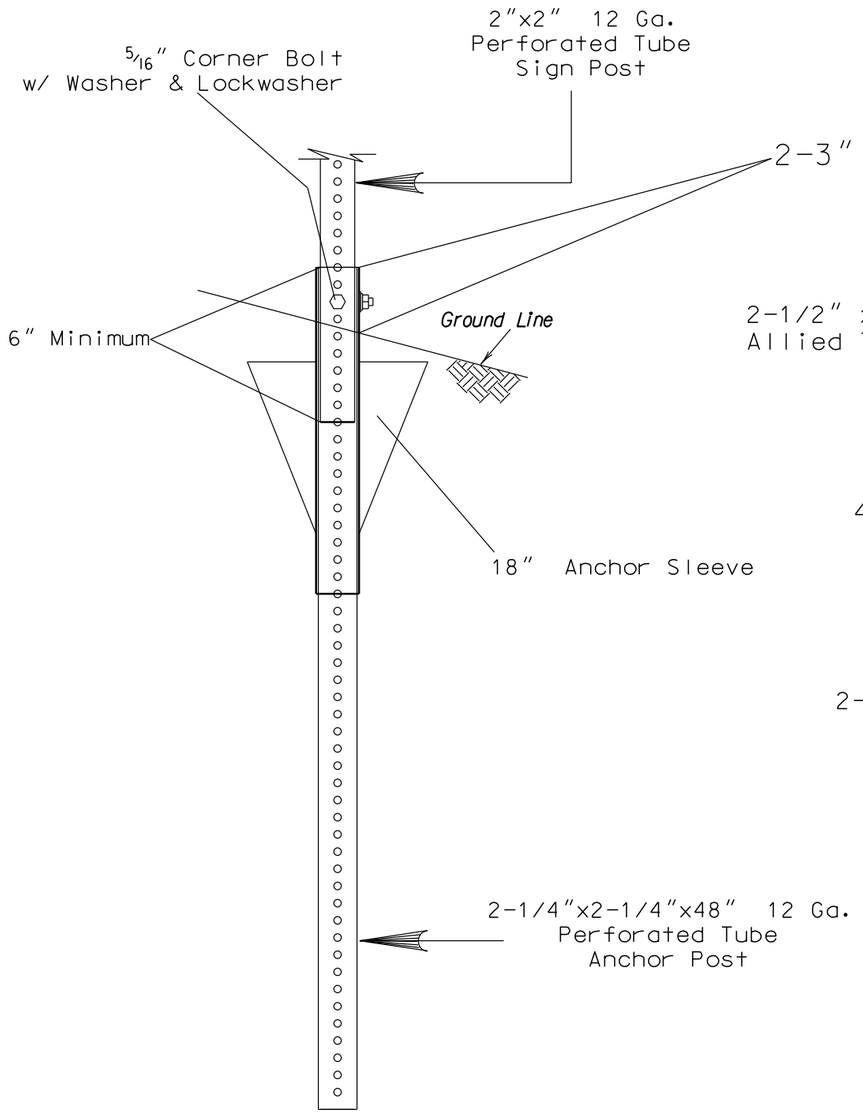


3.0" Radius, 1.0" Border, White on Green;
"Conde", E Mod 2K; "POP. 142", C 2K;
Table of letter and object lefts

C	o	n	d	e
10.3	16.3	22.1	28.0	33.8

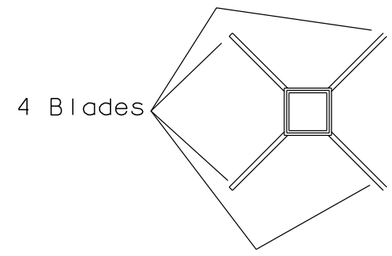
P	0	P	.	1	4	2
16.4	18.6	21.0	23.1	26.5	27.6	29.9

SIGN BASE DETAILS FOR A 2" SIGN POST



Anchor Sleeve
Top View

2-1/2" x 18" 12 Ga. Anchor Sleeve
Allied Tube - Part No. 739199

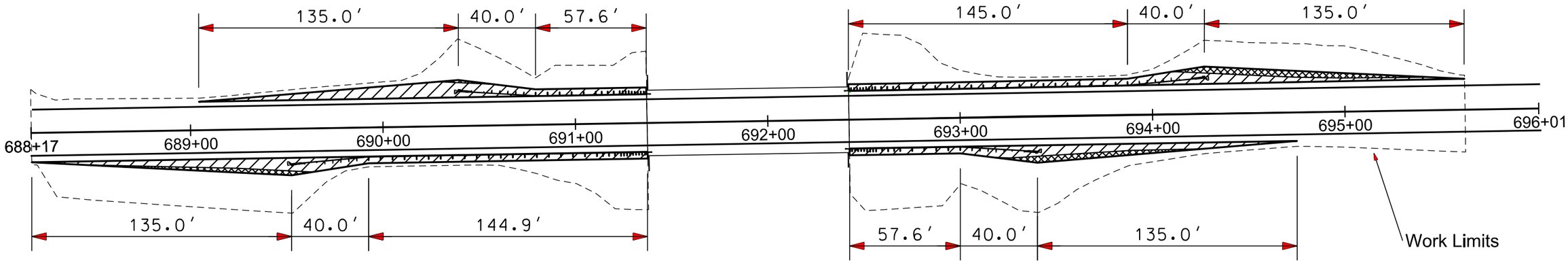


2-1/2" x 18" Anchor Sleeve
For Soil Stabilization

PLOT SCALE - 1:53.4375

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(221)331	41	69
Plotting Date: 03/05/2025			

Str. No. 58-231-060 DETAIL DRAWINGS
EMBANKMENT & SURFACING LAYOUT



3" Q2R Asphalt Concrete

Contractor Furnished Borrow, Excavation/ 20" Base Course/ 3" Q2R Asphalt Concrete

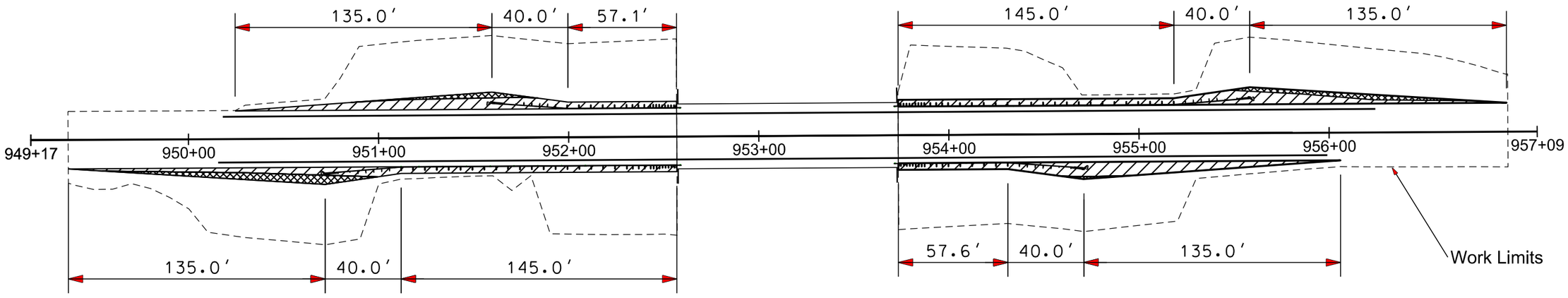
See Standard Plate 630.87 for more Embankment Details

PLOTTED FROM - TRAB17901

PLOT NAME - 3

FILE - ...\REGION DESIGN\GUARDRAIL.DGN

Str. No. 58-281-060 DETAIL DRAWINGS
EMBANKMENT & SURFACING LAYOUT



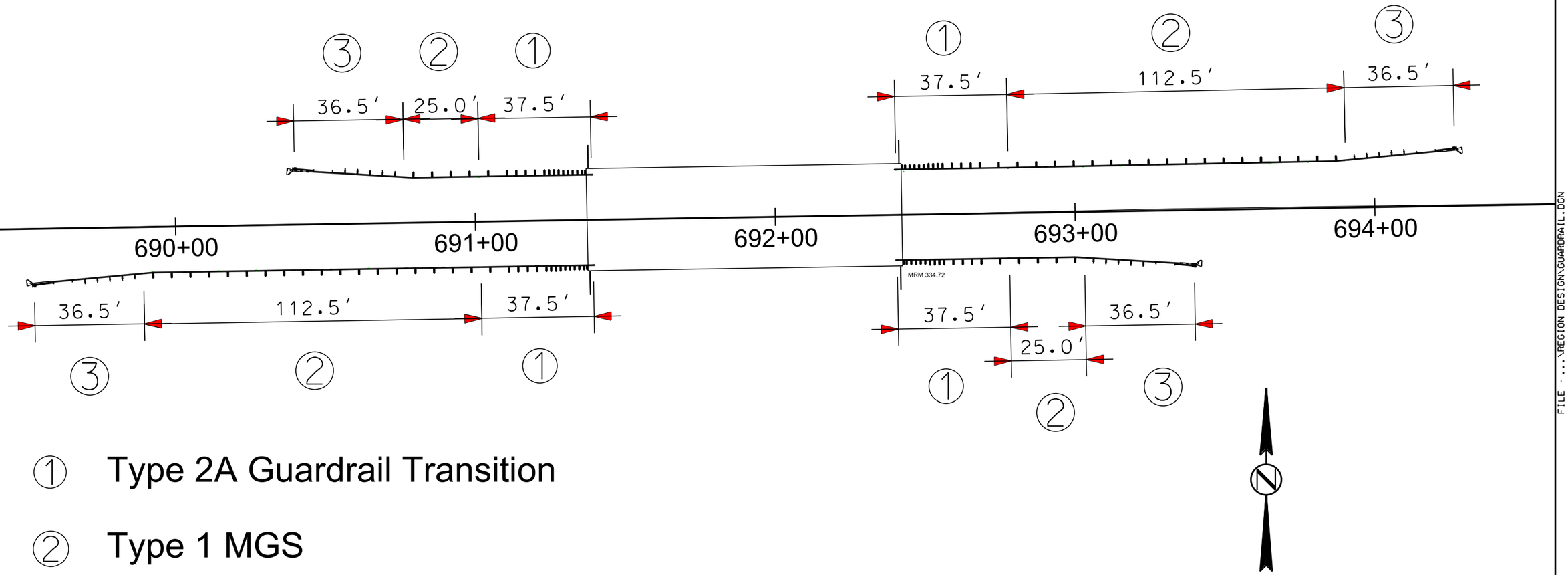
3" Q2R Asphalt Concrete

Contractor Furnished Borrow, Excavation/ 20" Base Course/ 3" Q2R Asphalt Concrete

See Standard Plate 630.87 for more Embankment Details

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(221)331	43	69
Plotting Date: 03/05/2025			

Str. No. 58-231-060 DETAIL DRAWINGS
GUARDRAIL LAYOUT



① Type 2A Guardrail Transition

② Type 1 MGS

③ MGS MASH Flared End Terminal

PLOT SCALE - 1:33.75

PLOTTED FROM - TRAB17901

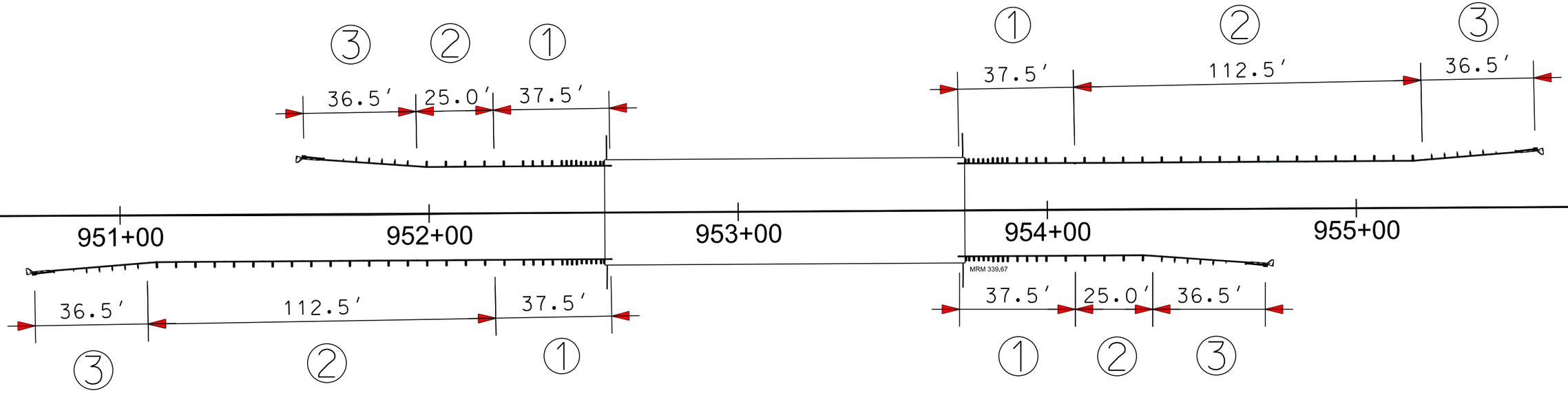
PLOT NAME - 4

FILE - ...\REGION DESIGN\GUARDRAIL.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(221)331	44	69

Plotting Date: 03/05/2025

Str. No. 58-281-060 DETAIL DRAWINGS
GUARDRAIL LAYOUT



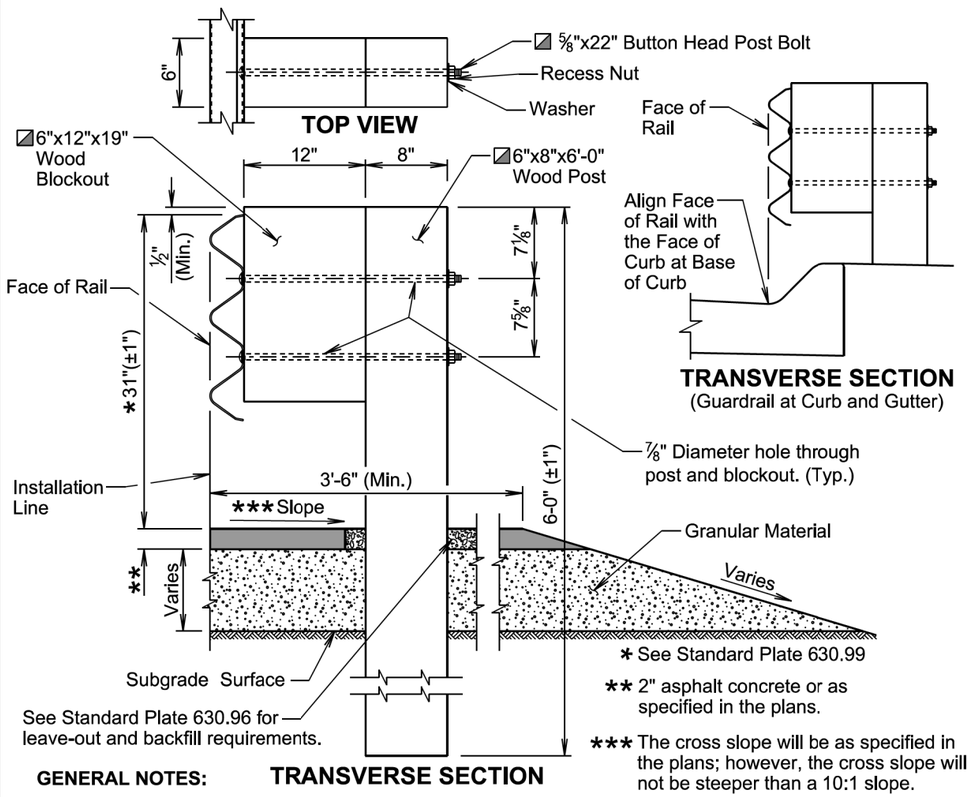
① Type 2A Guardrail Transition

② Type 1 MGS

③ MGS MASH Flared End Terminal

THRIE BEAM GUARDRAIL

Sheet 1 of 5



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.

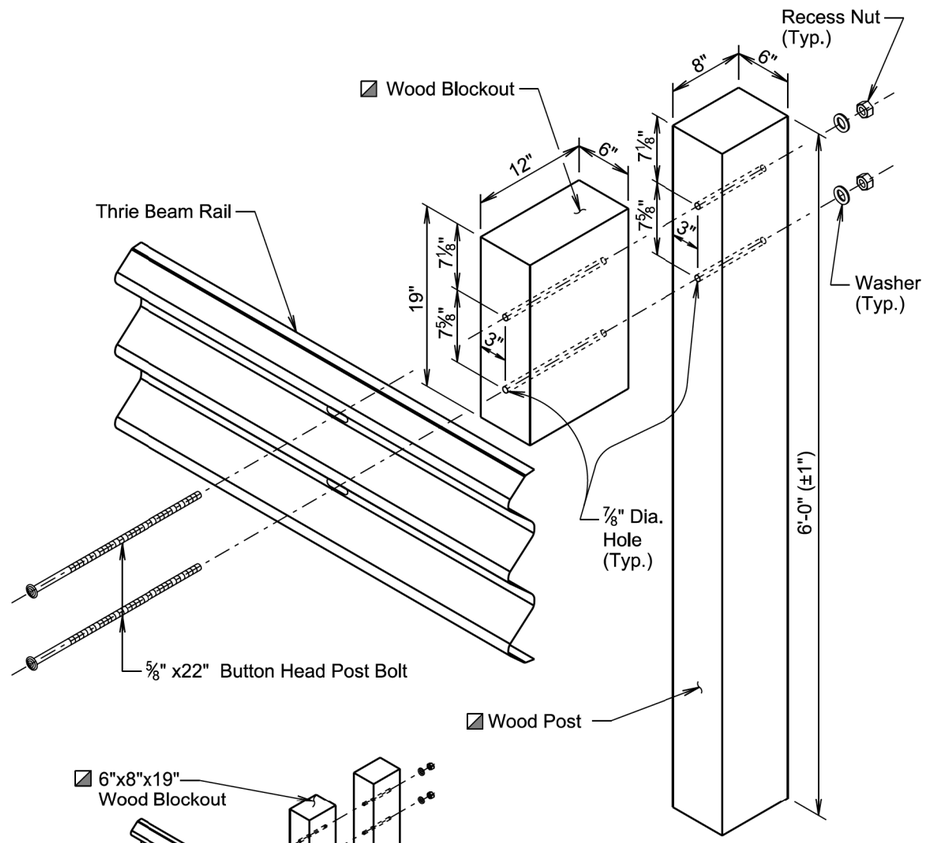
☑ The post and blockout illustrated above is typical for single thrie beam guardrail. When other variations of posts and blockouts are specified on other standard plates (e.g. transitions) then the posts and blockouts will be as specified on the other standard plates or as specified in the plans.

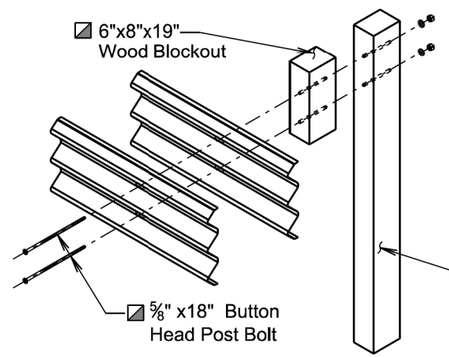
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or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

THRIE BEAM GUARDRAIL

Sheet 2 of 5



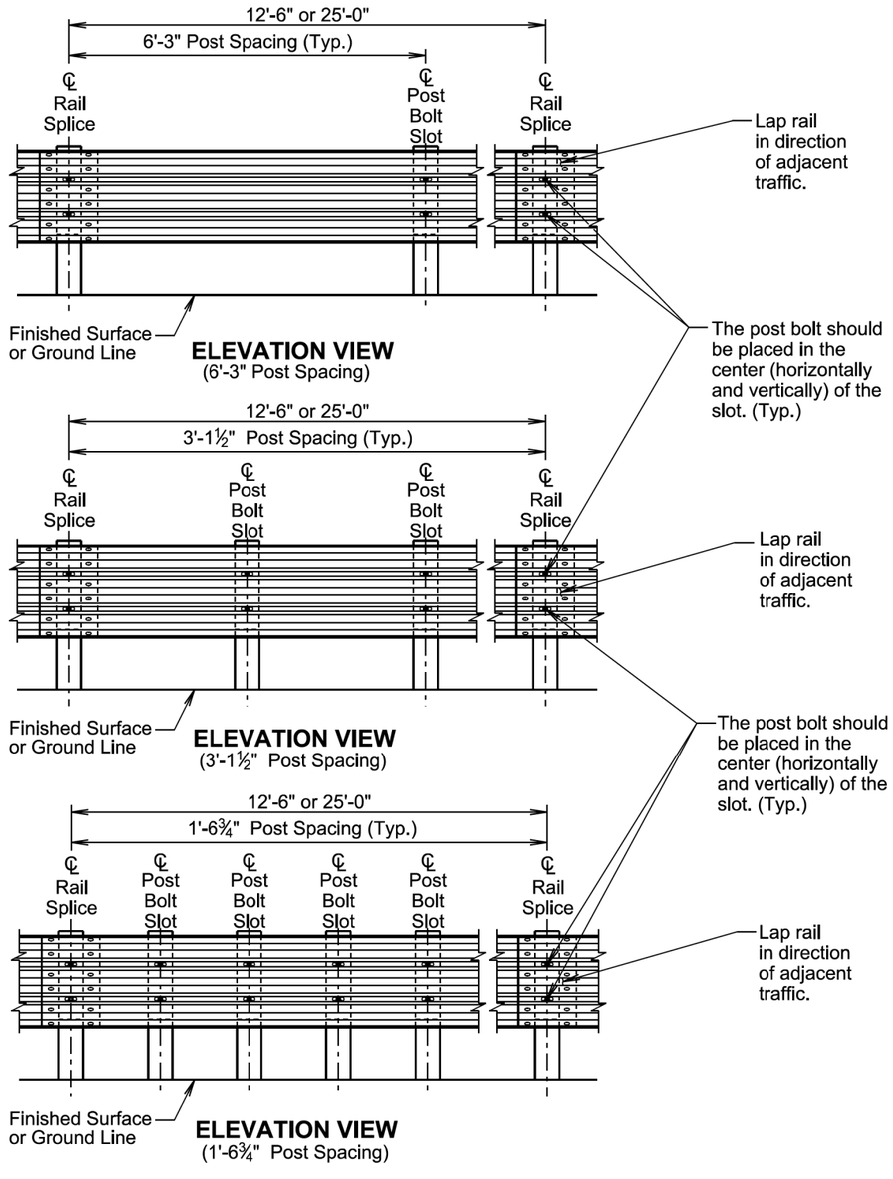


EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

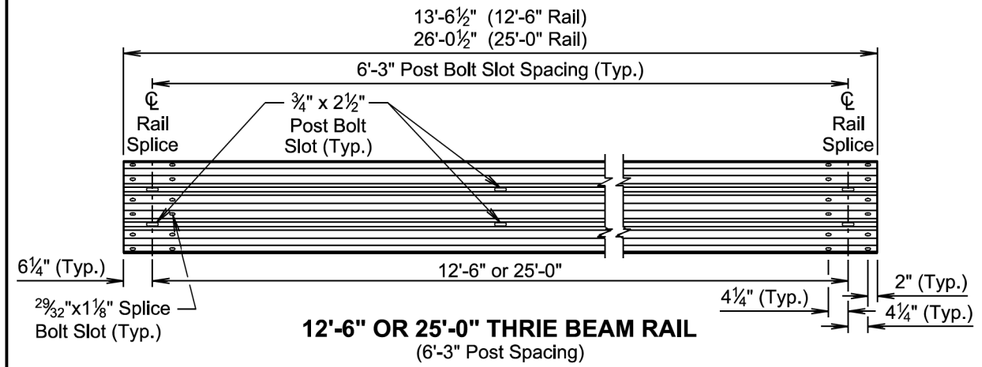
EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) THRIE BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

☑ 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.

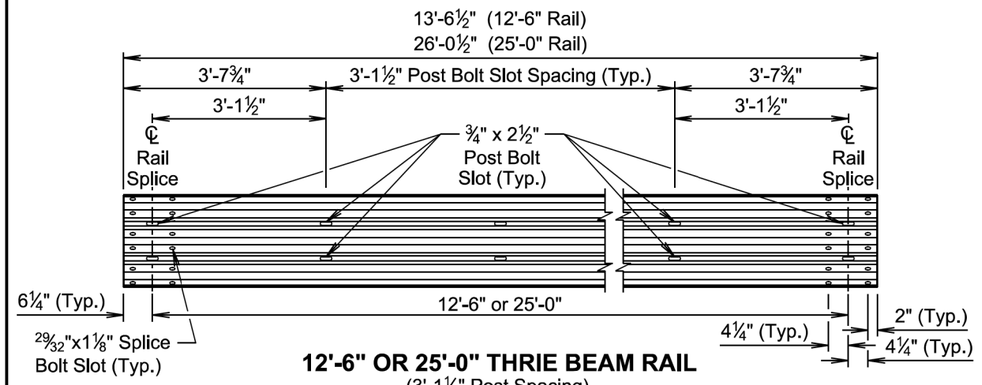
THRIE BEAM GUARDRAIL
Sheet 3 of 5



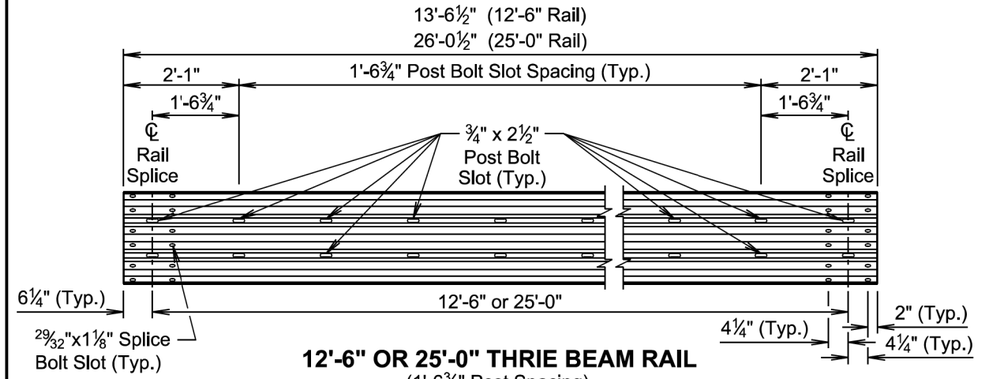
THRIE BEAM GUARDRAIL
Sheet 4 of 5



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



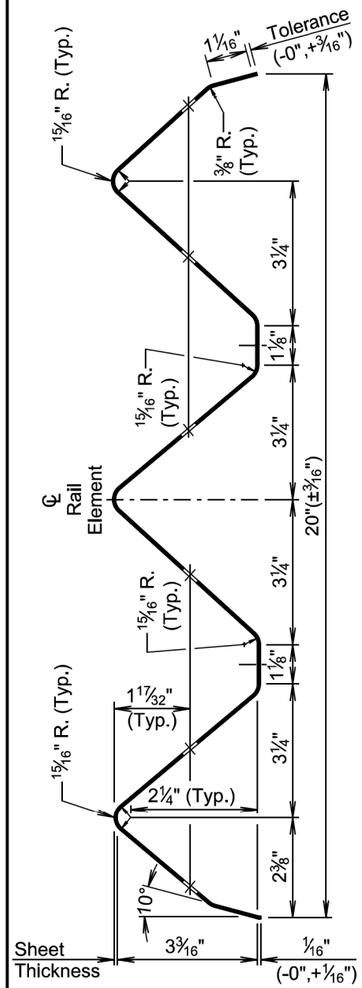
12'-6" OR 25'-0" THRIE BEAM RAIL
(3'-1½" Post Spacing)



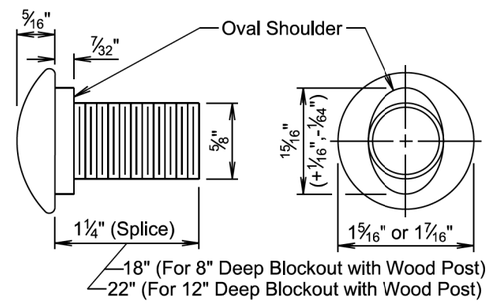
12'-6" OR 25'-0" THRIE BEAM RAIL
(1'-6¾" Post Spacing)

THRIE BEAM GUARDRAIL

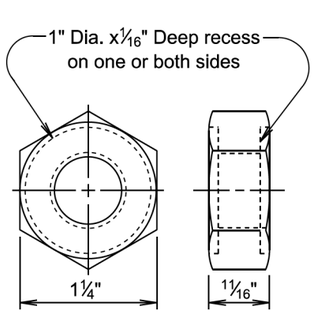
Sheet 5 of 5



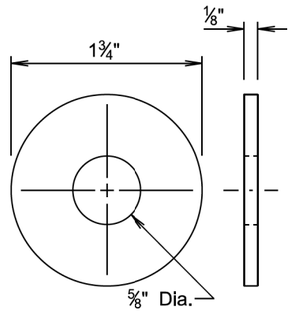
SECTION THROUGH THRIE BEAM RAIL



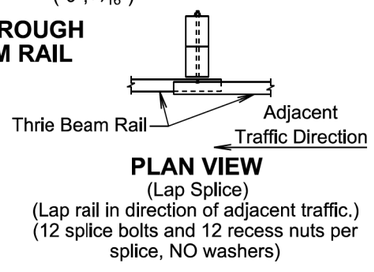
SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)



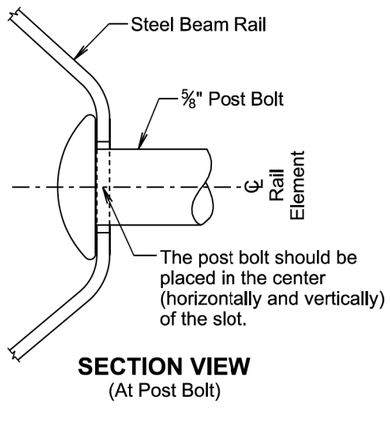
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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

MIDWEST GUARDRAIL SYSTEM (MGS)

Sheet 1 of 6

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.

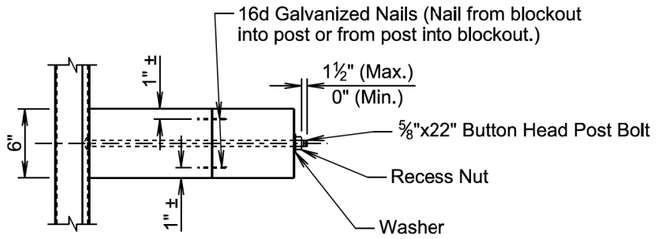
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

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.

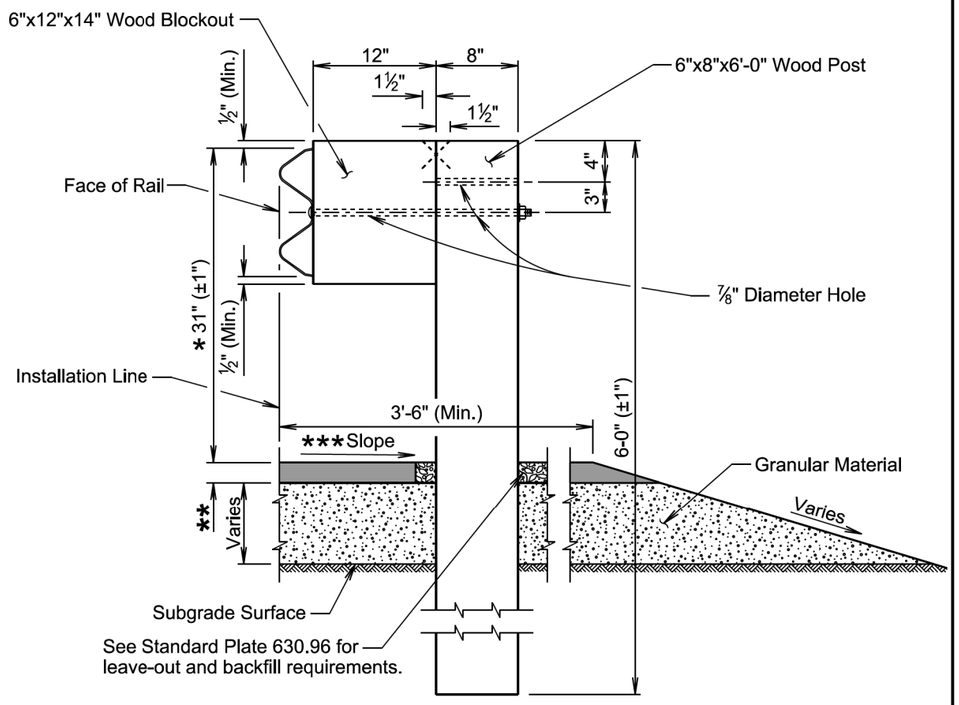
All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

MIDWEST GUARDRAIL SYSTEM (MGS)

Sheet 2 of 6



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



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

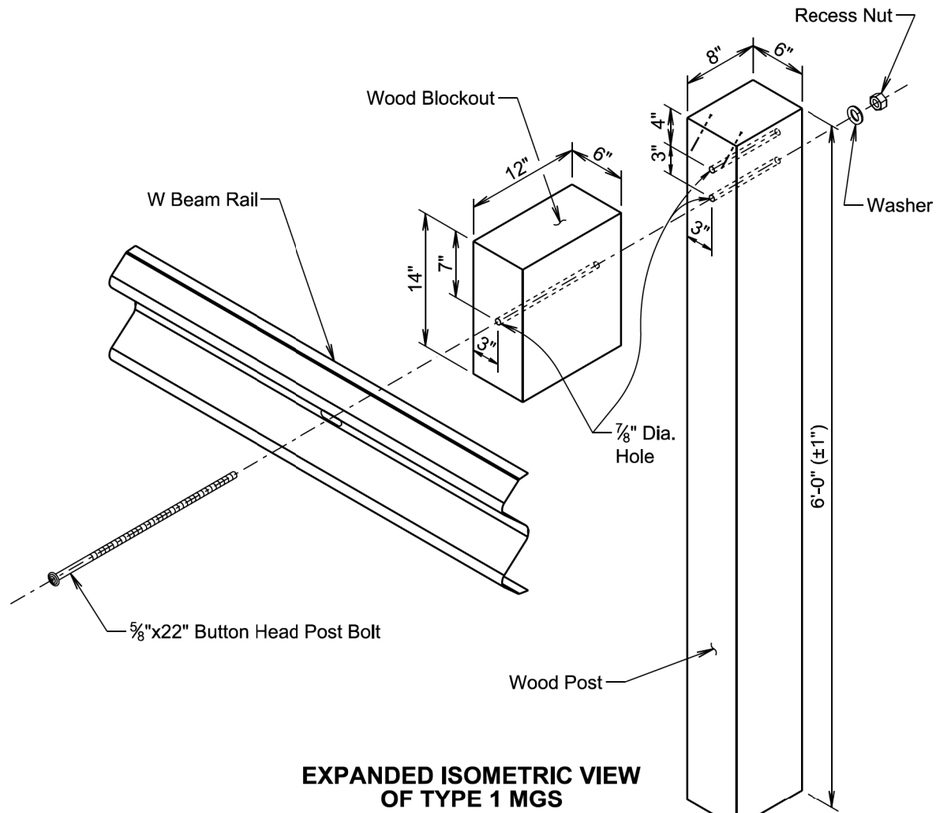
* See Standard Plate 630.99

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

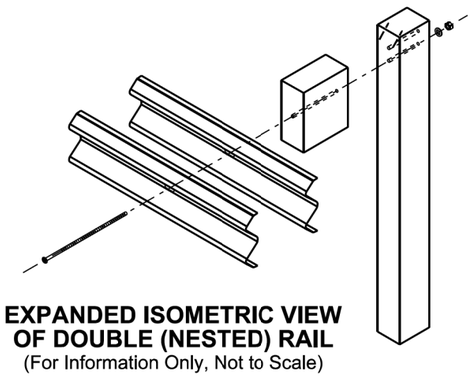
*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

MIDWEST GUARDRAIL SYSTEM (MGS)

Sheet 3 of 6



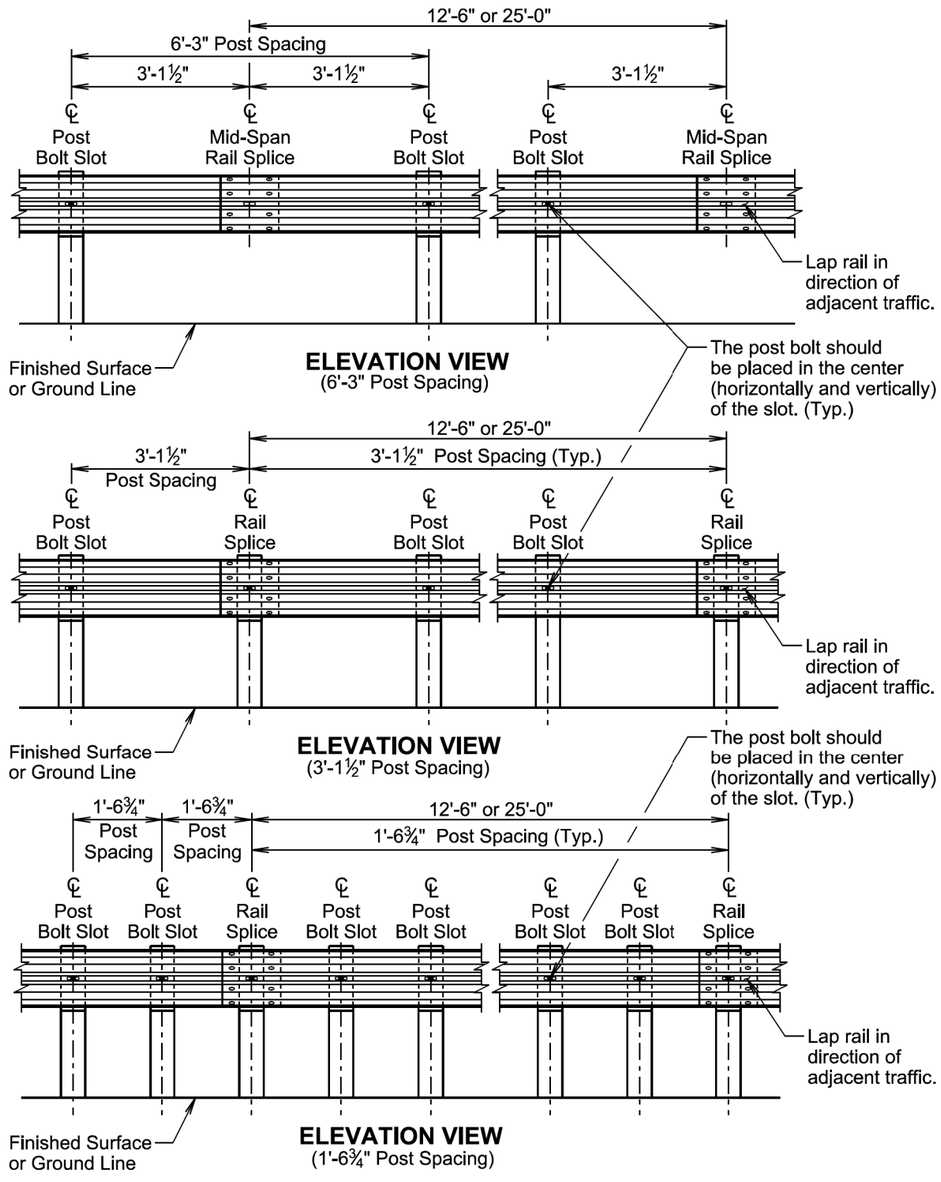
EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS



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

MIDWEST GUARDRAIL SYSTEM (MGS)

Sheet 4 of 6



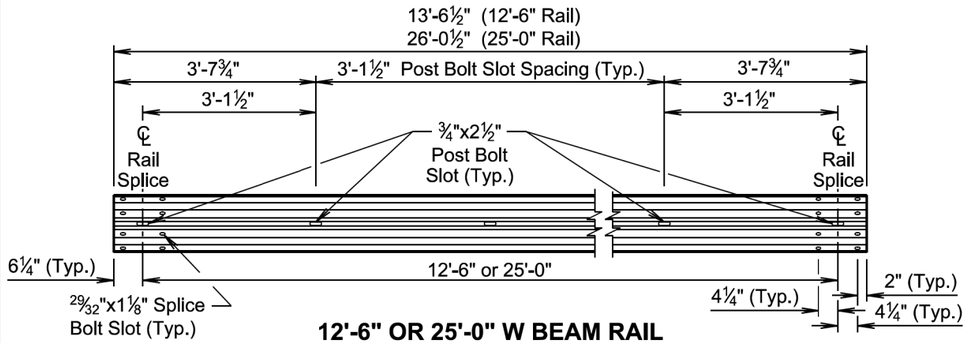
ELEVATION VIEW
(6'-3" Post Spacing)

ELEVATION VIEW
(3'-1½" Post Spacing)

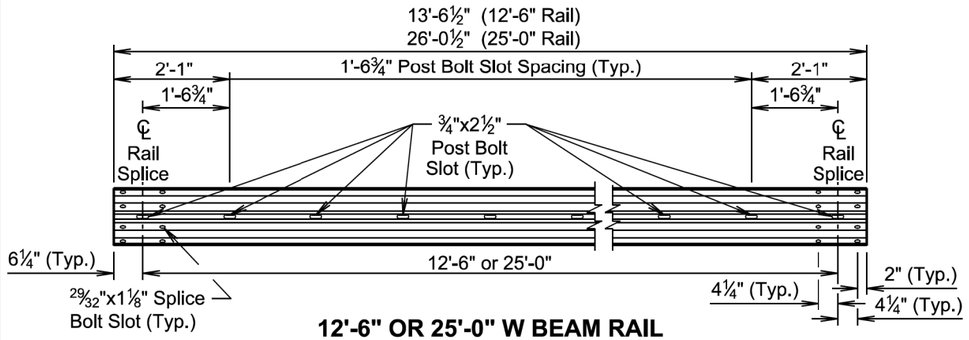
ELEVATION VIEW
(1'-6¾" Post Spacing)

MIDWEST GUARDRAIL SYSTEM (MGS)

Sheet 5 of 6



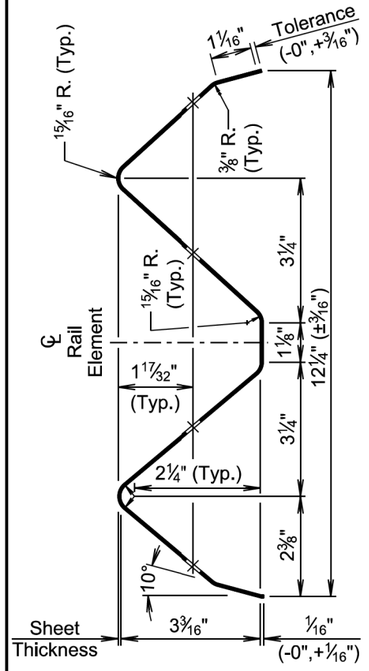
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



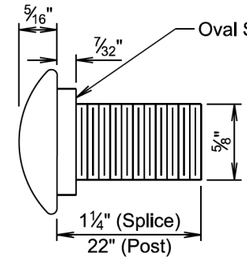
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

MIDWEST GUARDRAIL SYSTEM (MGS)

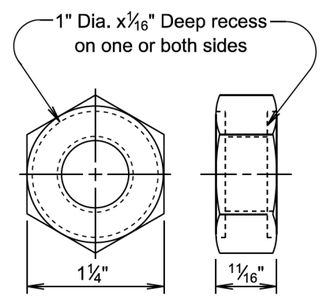
Sheet 6 of 6



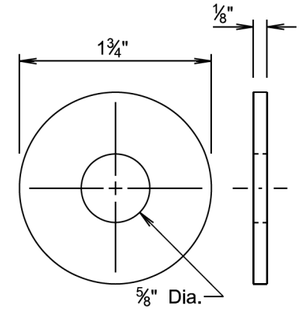
SECTION THROUGH W BEAM RAIL



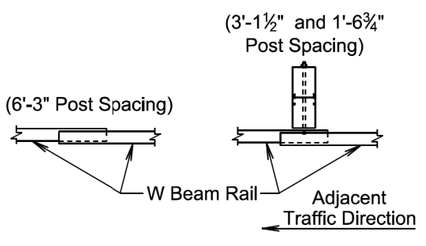
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



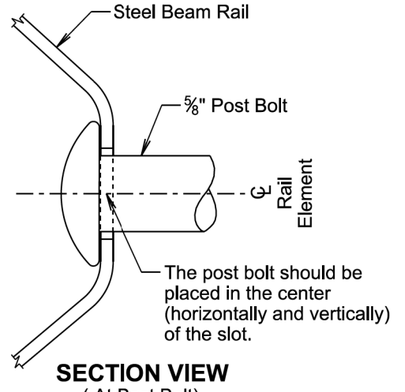
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



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



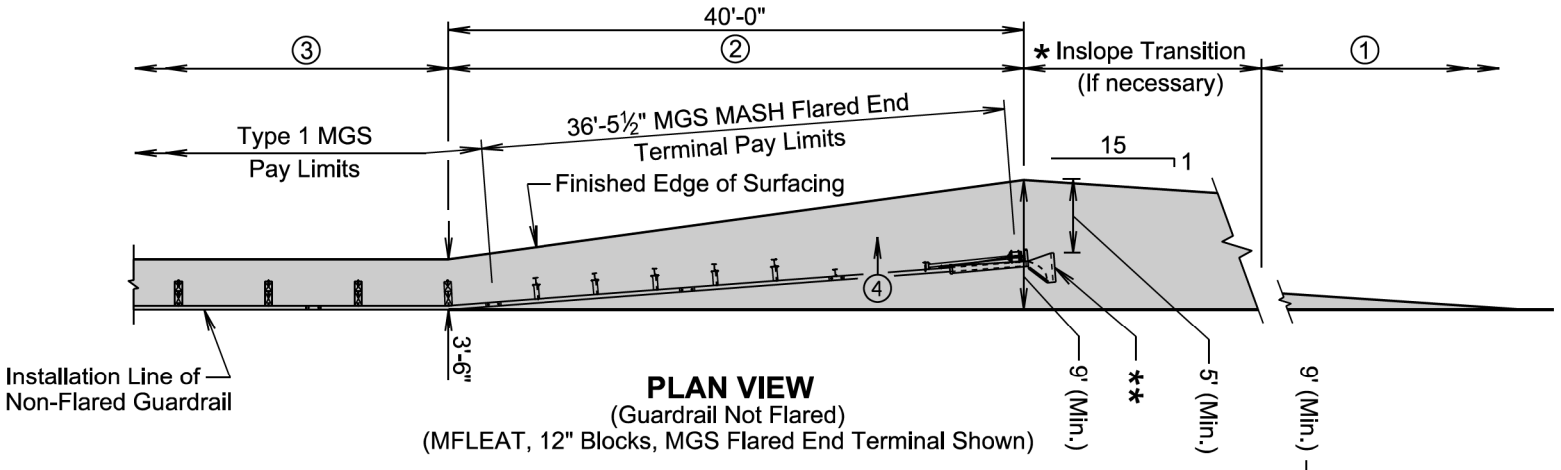
PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



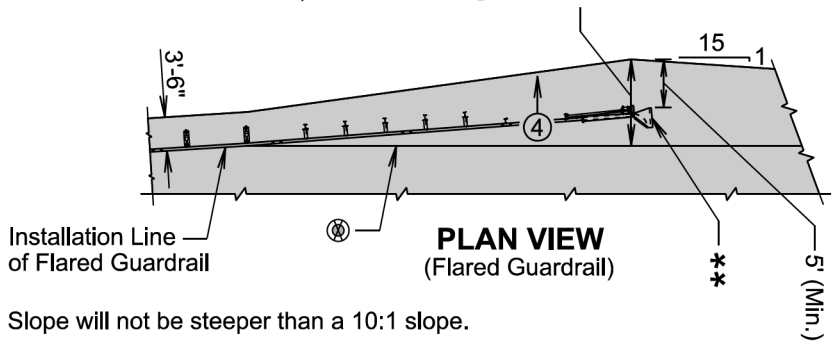
SECTION VIEW
(At Post Bolt)

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

Sheet 1 of 2



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.

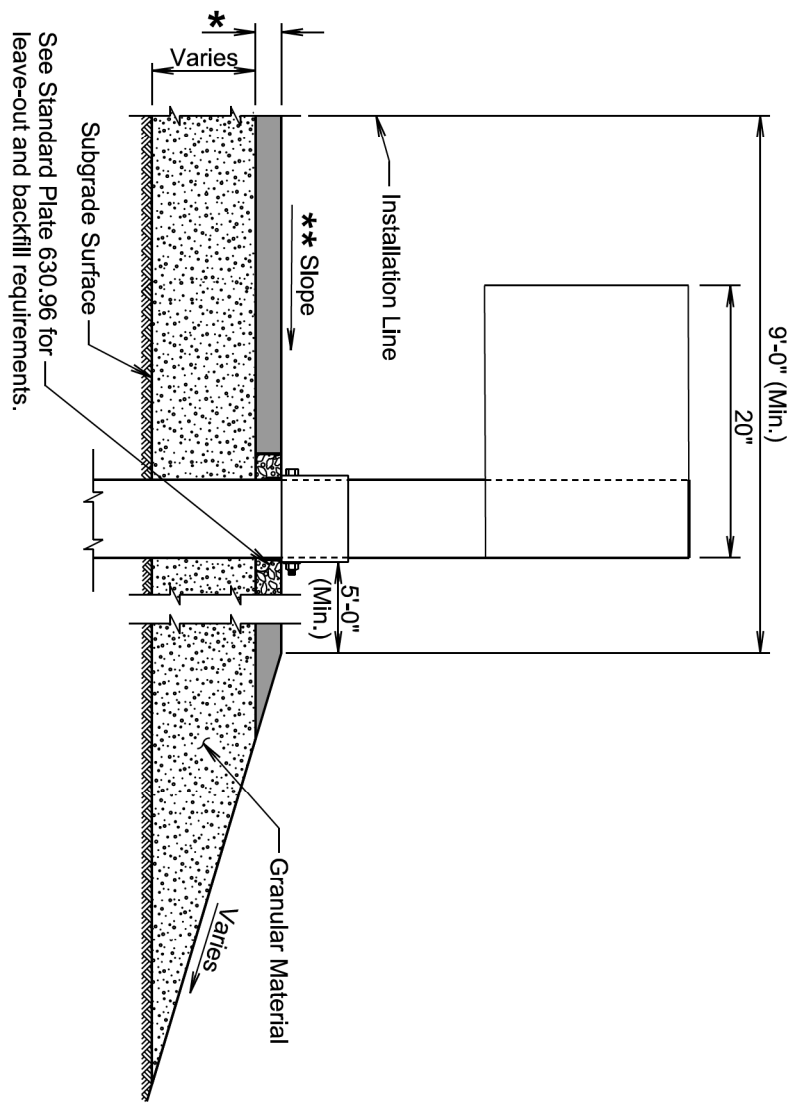
Ⓜ The installation reference line for flared guardrail end terminals will always be parallel to the roadway.

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.

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

Sheet 2 of 2



TRANSVERSE SECTION
(MFLEAT MGS Flared End Terminal Shown)

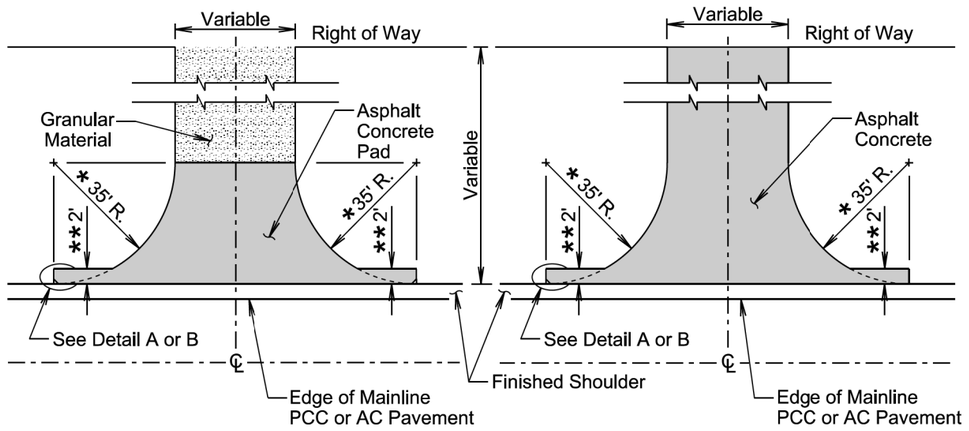
* 2" asphalt concrete or as specified in the plans.

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

Revised 06/11/25- PB

Plotting Date: 06/11/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0020(221)331	51	69



PLAN VIEW
(Intersecting Road)
(No Asphalt Concrete Surfacing Beyond Right of Way)

PLAN VIEW
(Intersecting Road)
(Asphalt Concrete Surfacing Beyond Right of Way)

GENERAL NOTES:

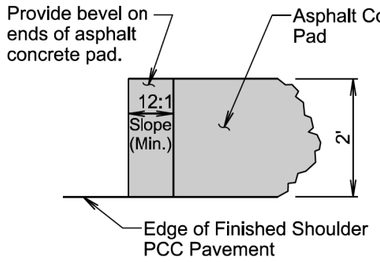
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

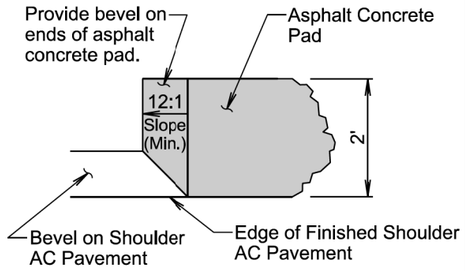
** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete pads if the Engineer, in the Engineer's sole discretion, determines the pads are infeasible to construct due to site specific reasons including, but not limited to; existing inslope configuration, borrow and material availability, and right-of-way constraints.

August 27, 2020

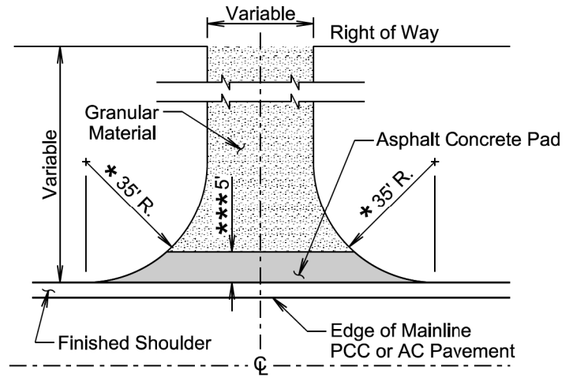
Published Date: 2026	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 1 of 2



DETAIL A
(Typ. for Projects with PCC Pavement on Shoulder)



DETAIL B
(Typ. for Projects with AC Pavement on Shoulder)

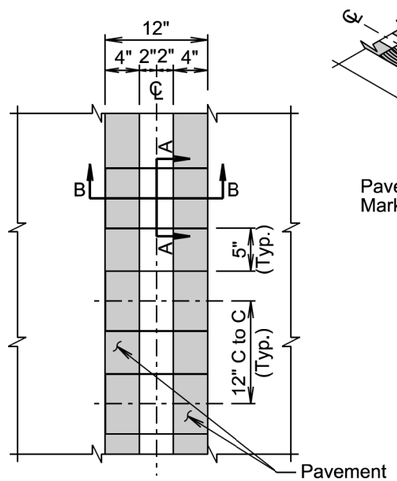


PLAN VIEW
(Entrance)

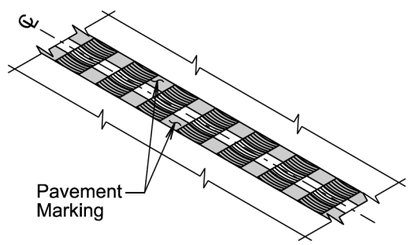
*** Not required if finished shoulder width is 4' or greater.

August 27, 2020

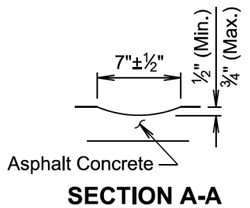
Published Date: 2026	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 2 of 2



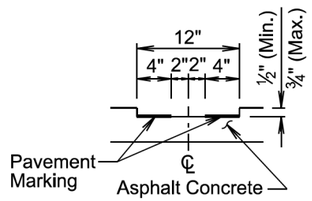
PLAN VIEW
(Typical Rumble Stripe in Asphalt Concrete)



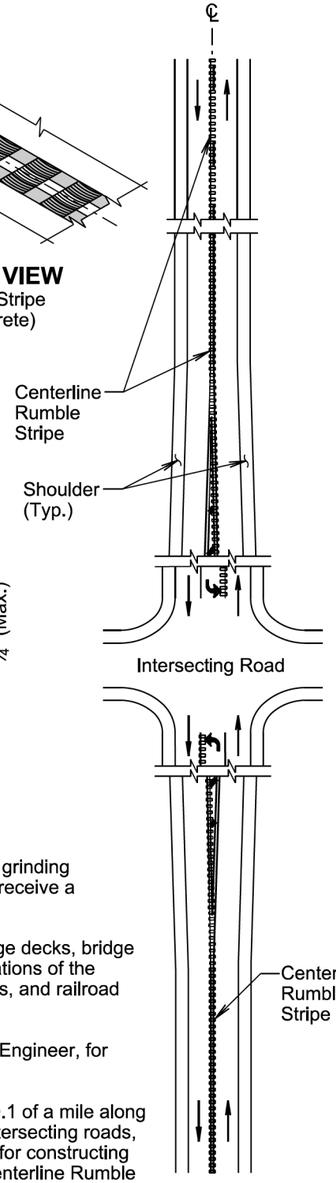
PERSPECTIVE VIEW
(Typical Rumble Stripe in Asphalt Concrete)



SECTION A-A



SECTION B-B



PLAN VIEW

GENERAL NOTES:

A rumble stripe will be constructed on the centerline of the roadway by grinding continuous indentations in the asphalt concrete. The rumble stripe will receive a flush seal or asphalt surface treatment as specified in the plans.

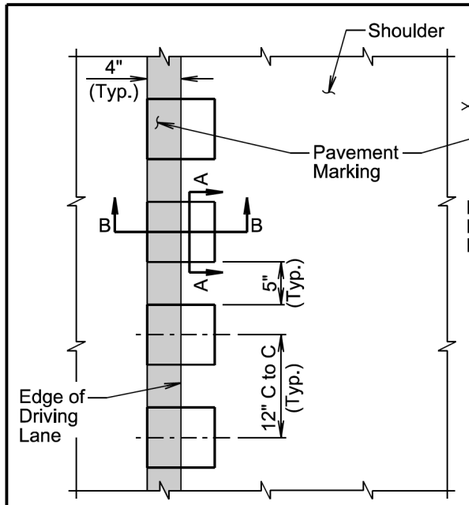
A rumble stripe will not be constructed through intersecting roads, bridge decks, bridge approach slabs, and railroad crossings. The beginning and ending locations of the rumble stripe at intersecting roads, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

Prior to constructing the rumble stripe the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

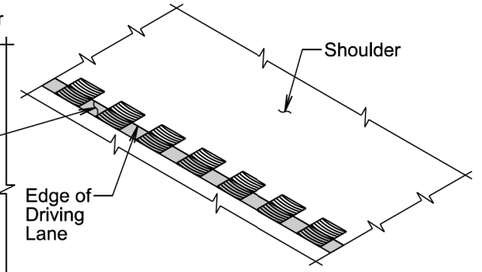
Measurement and payment of the rumble stripe will be to the nearest 0.1 of a mile along the centerline and will include segments without the rumble stripe at intersecting roads, bridge decks, bridge approach slabs, and railroad crossings. Payment for constructing the rumble stripe will be at the contract unit price per mile for "Grind Centerline Rumble Stripe in Asphalt Concrete".

November 19, 2020

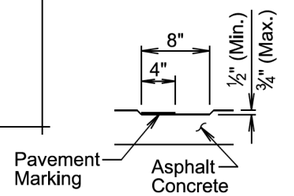
Published Date: 2026	SDDOT	12" CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE	PLATE NUMBER 320.18
			Sheet 1 of 1



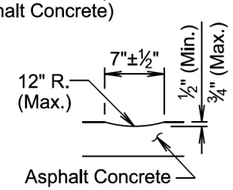
PLAN VIEW
(Typical Rumble Stripe in Asphalt Concrete)



PERSPECTIVE VIEW
(Typical Rumble Stripe in Asphalt Concrete)



SECTION B-B



SECTION A-A

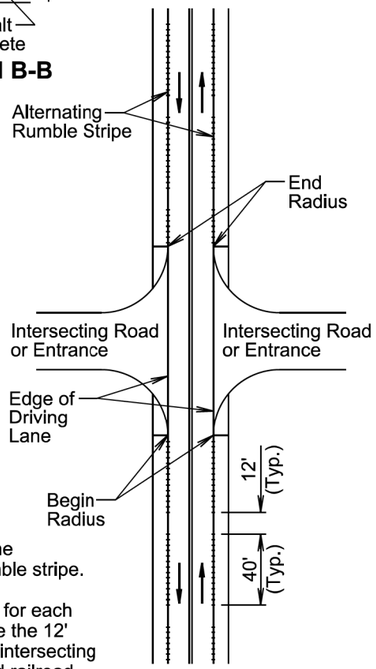
GENERAL NOTES:

A rumble stripe will be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble stripe will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble stripe will not be constructed through intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble stripe adjacent to the intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

Prior to constructing the rumble stripe the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

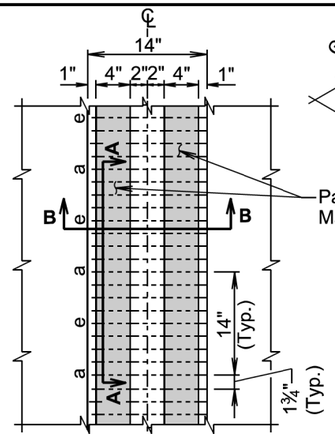
Measurement of the rumble stripe will be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble stripe will include the 12' long segments without rumble stripes and the segments adjacent to intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings without rumble stripes. Payment for constructing the rumble stripe will be at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete".



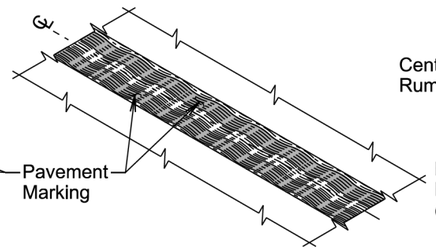
PLAN VIEW

September 14, 2019

Published Date: 2026	SDDOT	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1

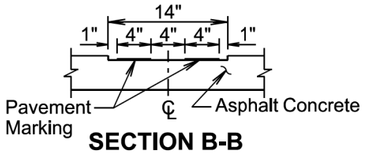


PLAN VIEW
(Typical Rumble Strip in Asphalt Concrete)



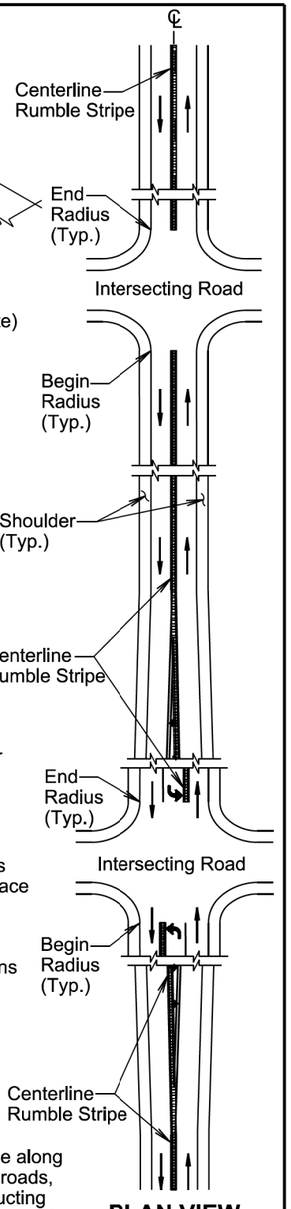
PERSPECTIVE VIEW
(Typical Rumble Strip in Asphalt Concrete)

SINUSOIDAL GRINDING	
Location	* Depth (In.)
a	1/16
b	5/32
c	9/32
d	7/16
e	1/2



SECTION B-B

SECTION A-A



PLAN VIEW

GENERAL NOTES:

A rumble stripe will be constructed by grinding continuous sinusoidal indentations in the asphalt concrete. The rumble stripe will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble stripe will not be constructed through intersecting roads, bridge decks, bridge approach slabs, and railroad crossings. The beginning and ending locations of the rumble stripe at intersecting roads, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

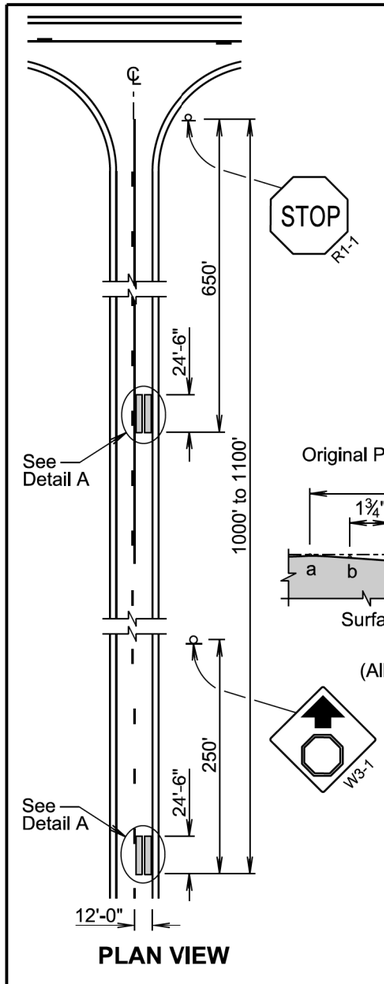
Prior to constructing the rumble stripe the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

* The sinusoidal rumble stripe construction grinding tolerance will be ± 1/16 inch.

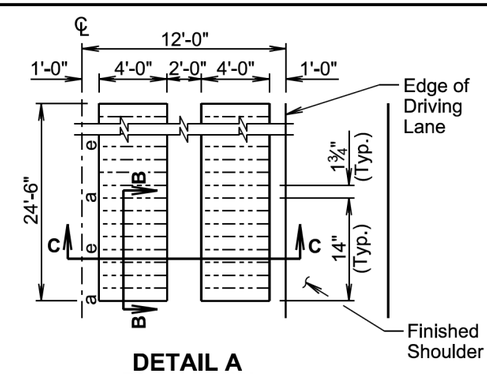
Measurement and payment of the rumble stripe will be to the nearest 0.1 of a mile along the centerline and will include segments without the rumble stripe at intersecting roads, bridge decks, bridge approach slabs, and railroad crossings. Payment for constructing the rumble stripe will be at the contract unit price per mile for "Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete".

September 14, 2019

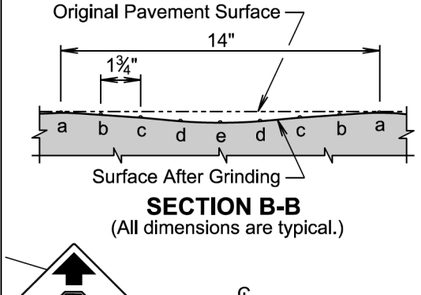
Published Date: 2026	SDDOT	SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE	PLATE NUMBER 320.40
			Sheet 1 of 1



PLAN VIEW

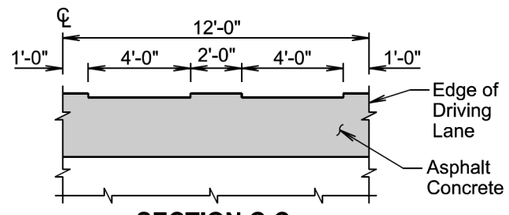


DETAIL A
PLAN VIEW
(Not to Scale)



SECTION B-B
(All dimensions are typical.)

SINUSOIDAL GRINDING	
Location	⧄ Depth (In.)
a	1/16
b	5/32
c	9/32
d	7/16
e	1/2



SECTION C-C
(All dimensions are typical.)

GENERAL NOTES:

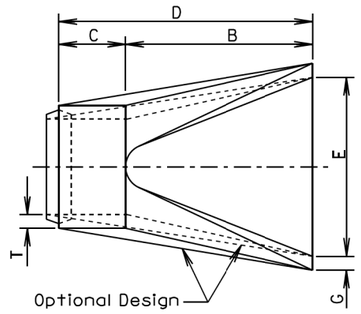
Transverse rumble strips will be constructed by grinding continuous sinusoidal indentations in the asphalt concrete pavement as approved by the Engineer. The transverse rumble strips will receive a flush seal or fog seal as specified in the plans.

⧄ The sinusoidal transverse rumble strips construction grinding tolerance will be ± 1/16 inch.

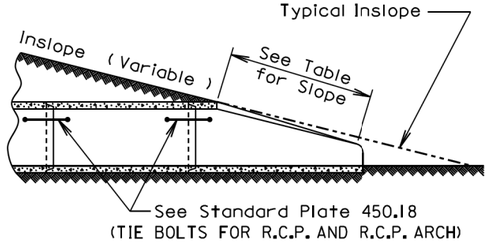
Measurement of the sinusoidal transverse rumble strips will be to the nearest square foot. Payment for constructing the sinusoidal transverse rumble strips will be at the contract unit price per square foot for "Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete Pavement".

January 22, 2021

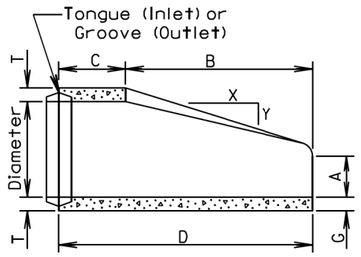
Published Date: 2026	SDDOT	SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE HIGHWAY ADJACENT TO STOP CONTROLLED INTERSECTION	PLATE NUMBER 320.46
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

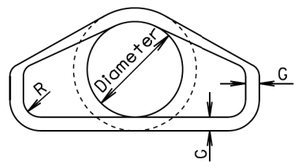


LONGITUDINAL SECTION

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: 2026	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1

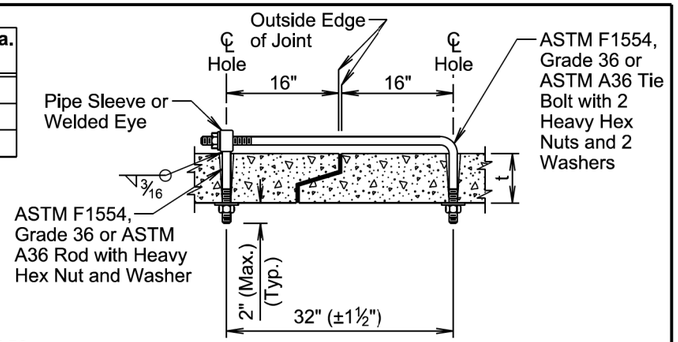
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3 1/4	5/8	3/4
3 1/2-6 1/2	3/4	1
≥ 7	1	1 1/4

GENERAL NOTES:

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

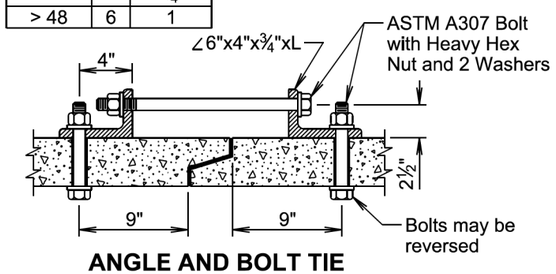
Pipe Sleeve will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

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



ADJUSTABLE EYE BOLT TIE

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



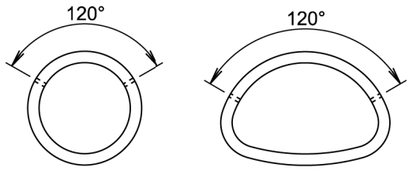
ANGLE AND BOLT TIE

GENERAL NOTES:

Angles will conform to ASTM A36.

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

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



END VIEW (Circular)

END VIEW (Arch)

GENERAL NOTES:

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

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

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

April 8, 2025

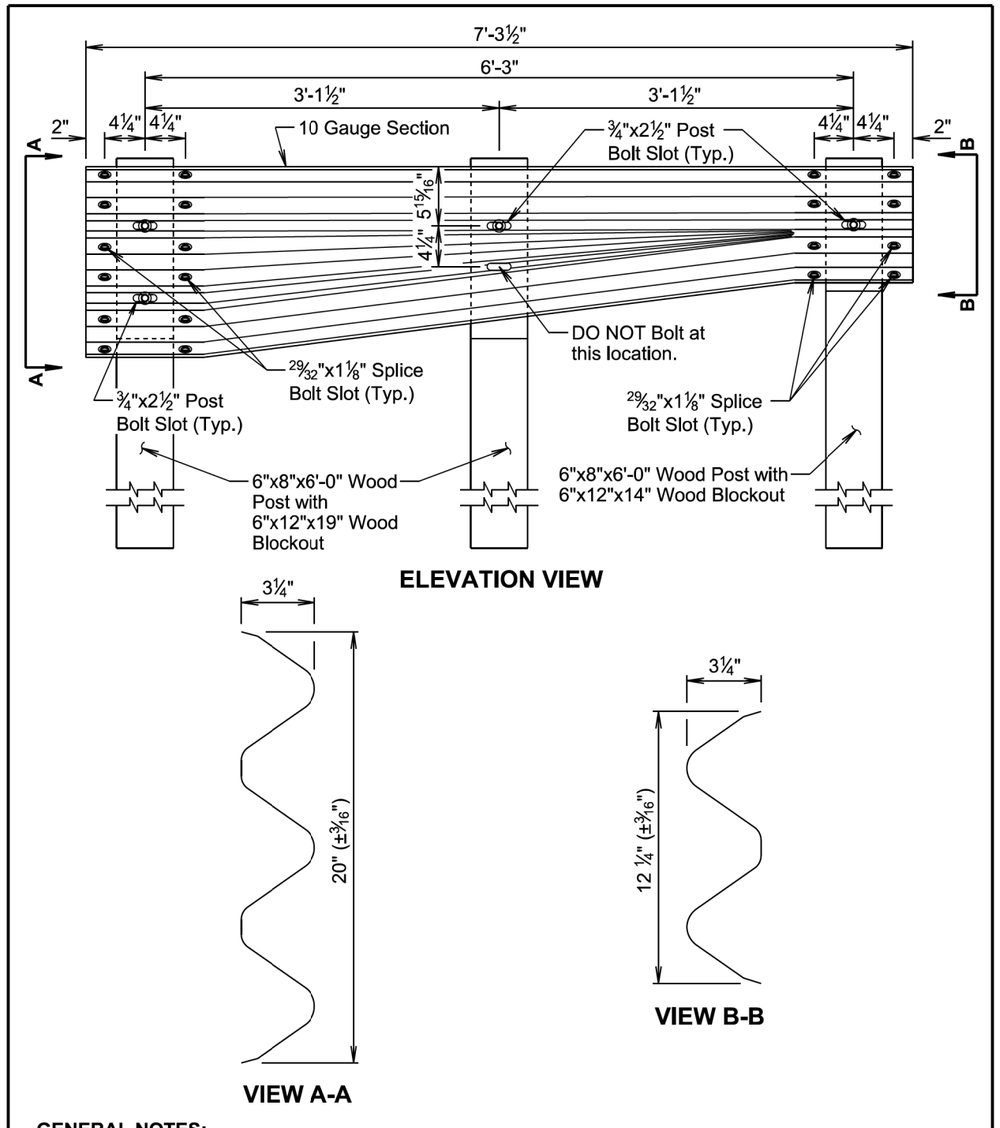
Published Date: 2026	SDDOT	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRAB17901

PLOT NAME - 13

FILE - ...\REGION DESIGN\STD PLATES.DGN

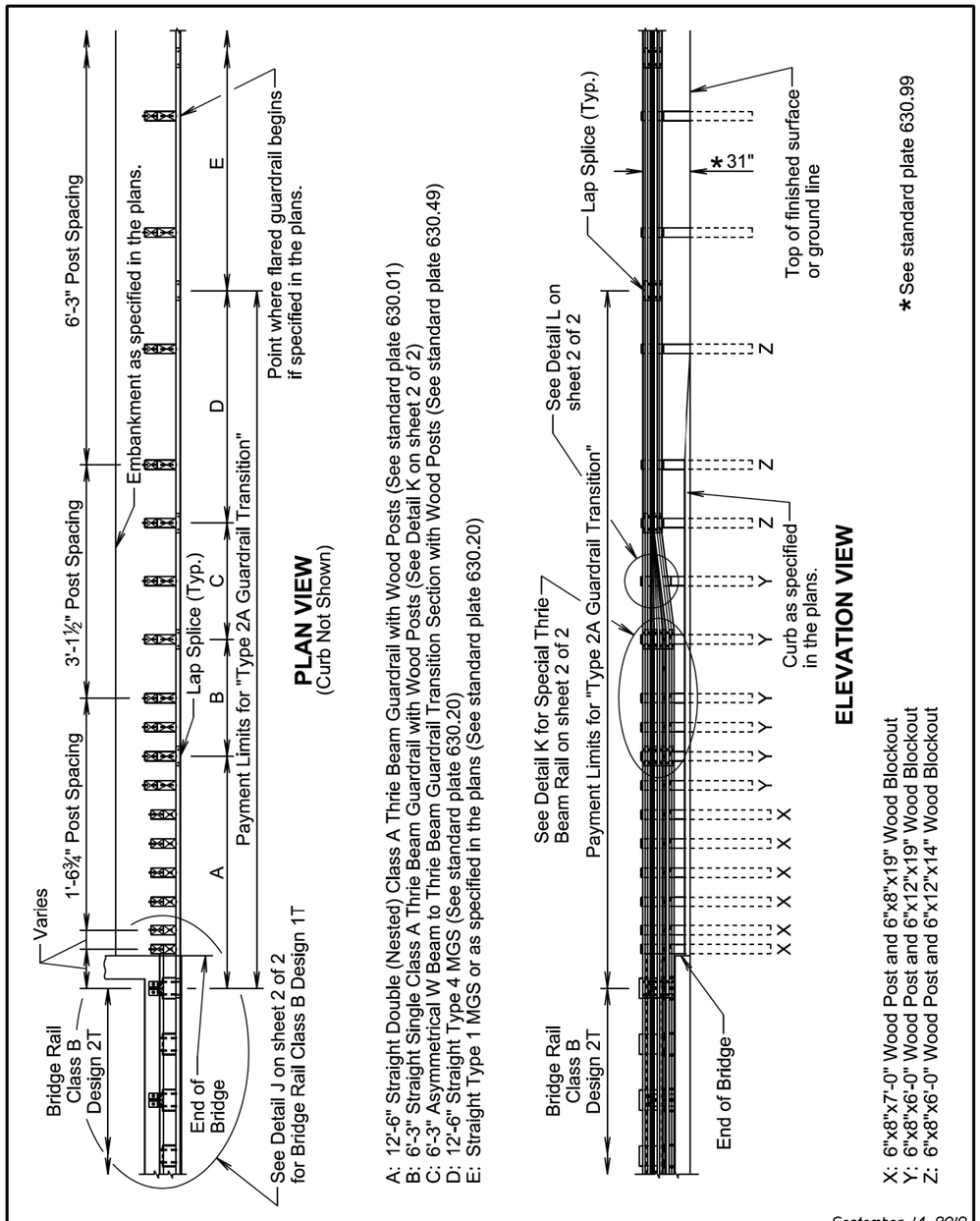


GENERAL NOTES:

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.

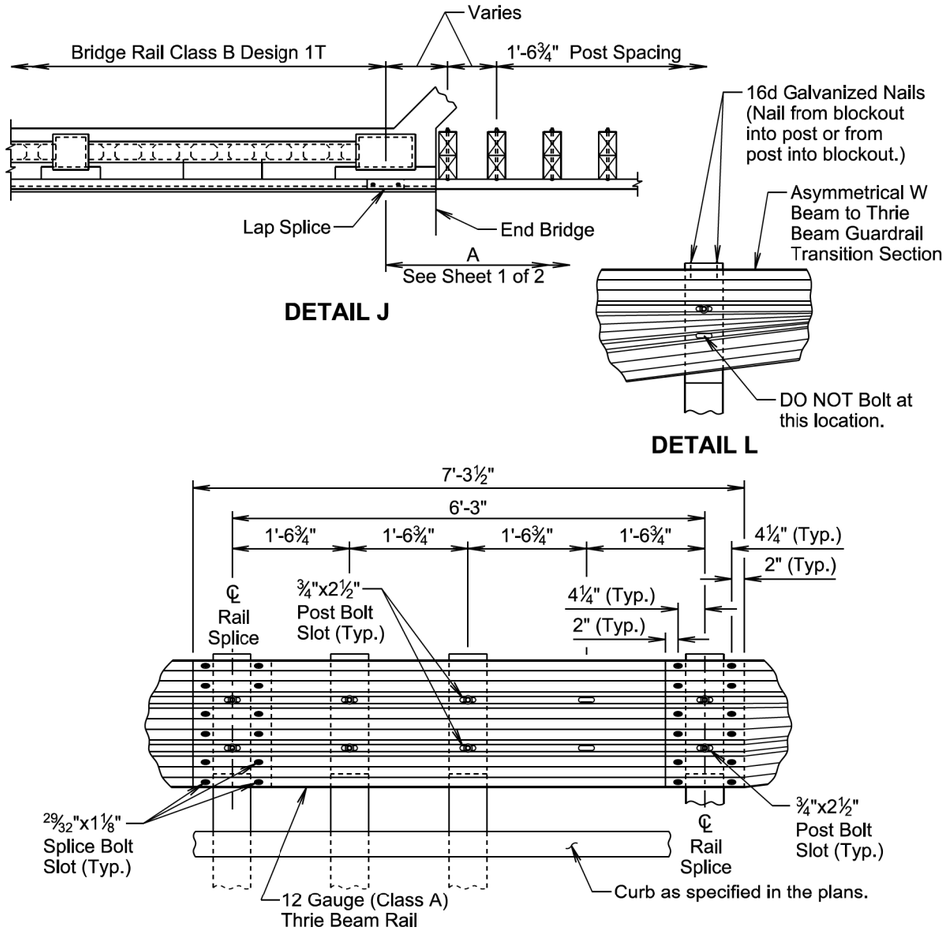
September 14, 2019

Published Date: 2026	SDDOT	ASYMMETRICAL W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.49 Sheet 1 of 1



September 14, 2019

Published Date: 2026	SDDOT	TYPE 2A GUARDRAIL TRANSITION (BRIDGE RAIL CLASS B DESIGN 1T OR 2T TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.54 Sheet 1 of 2



DETAIL J

DETAIL L

DETAIL K
(Special Thrie Beam Rail)

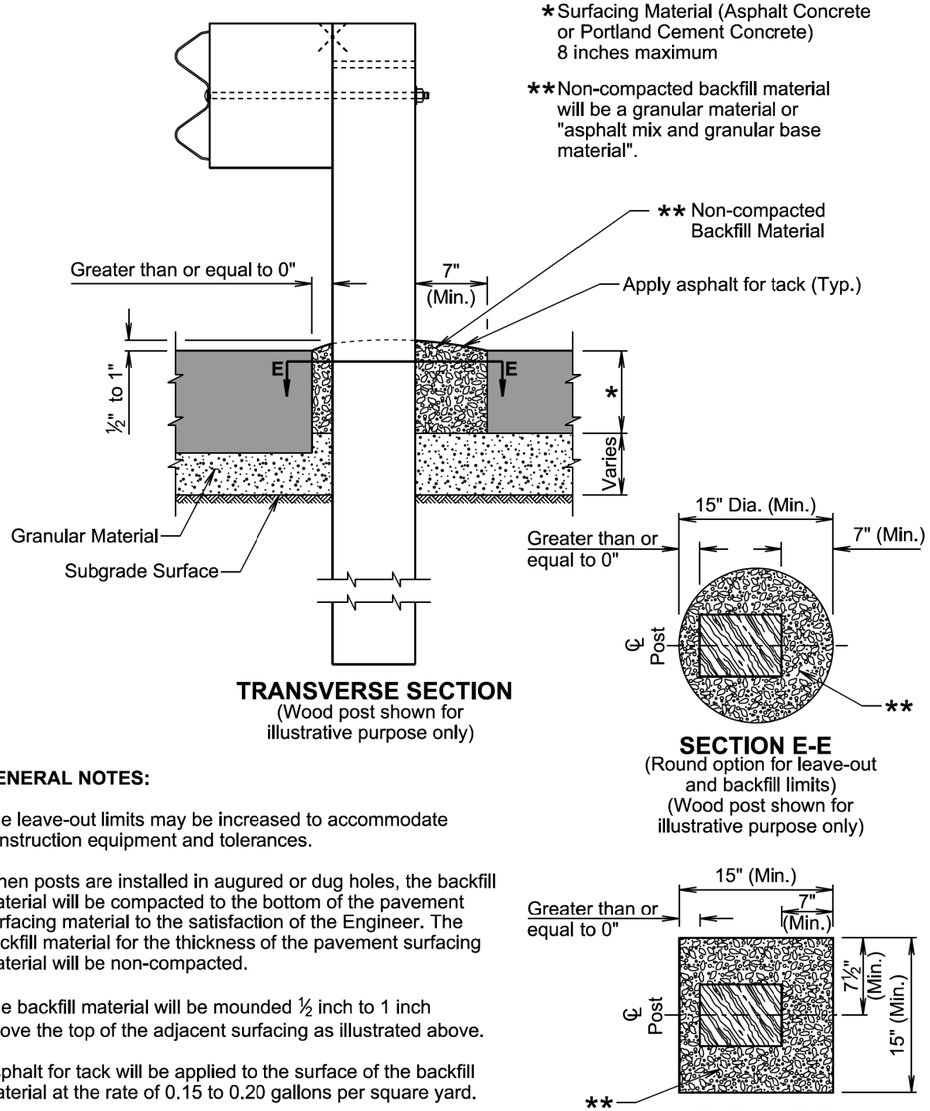
GENERAL NOTES:

Throughout the type 2A 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 2A guardrail transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, hardware, and incidentals will be included in the contract unit price per each for "Type 2A Guardrail Transition".

September 14, 2019

Published Date: 2026	SDDOT	*TYPE 2A GUARDRAIL TRANSITION (BRIDGE RAIL CLASS B DESIGN 1T OR 2T TO MIDWEST GUARDRAIL SYSTEM (MGS))*	*PLATE NUMBER 630.54*
			Sheet 2 of 2



GENERAL NOTES:

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

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

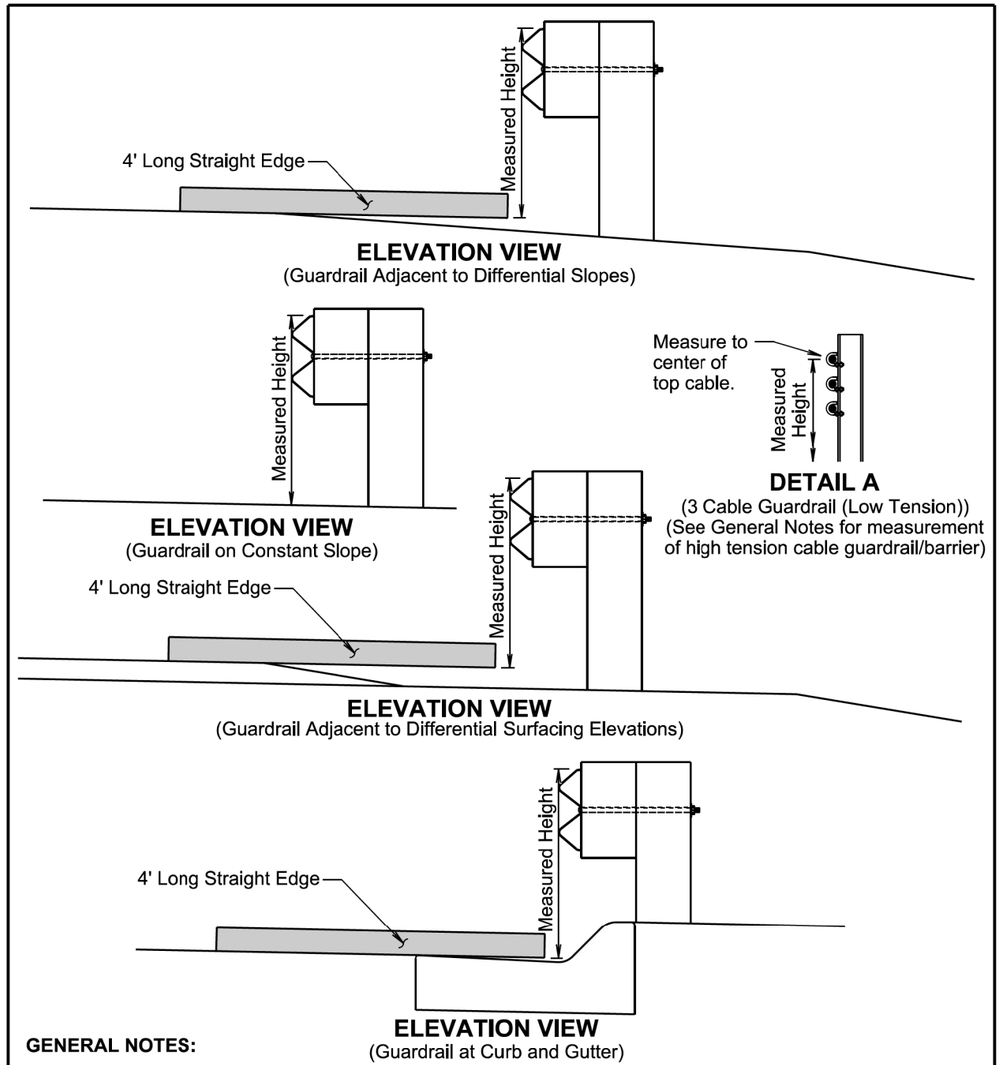
The backfill material will be mounded ½ inch to 1 inch above the top of the adjacent surfacing as illustrated above.

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

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

November 19, 2021

Published Date: 2026	SDDOT	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96
			Sheet 1 of 1



GENERAL NOTES:

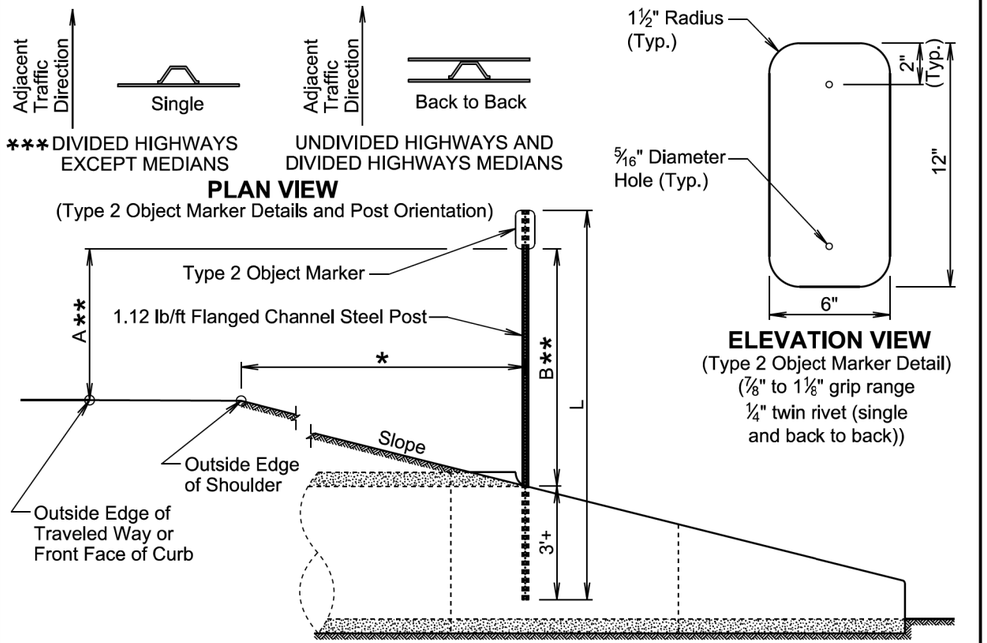
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

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

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

September 14, 2019

Published Date: 2026	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99
			Sheet 1 of 1



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

ELEVATION VIEW
(Type 2 Object Marker Detail)
(⅞" to 1⅛" grip range
¼" twin rivet (single
and back to back))

ELEVATION VIEW
(Pipe culvert shown for illustrative purpose.)

TYPE 2 OBJECT MARKER POST LENGTHS									
OFFSET (*)		1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'
		POST LENGTH (L)								
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

GENERAL NOTES:

*** The type 2 object marker may be installed back to back when specified in the plans.

Post Length L was calculated based on a shoulder width of 6 feet at a crosslope of 4 percent and L was rounded up to the nearest 3 inches.

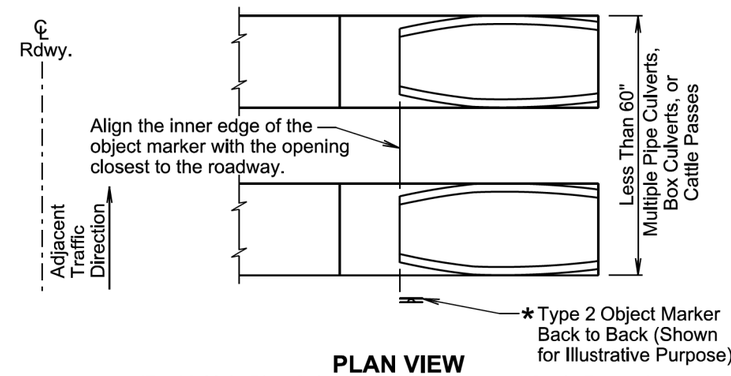
** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.

The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.

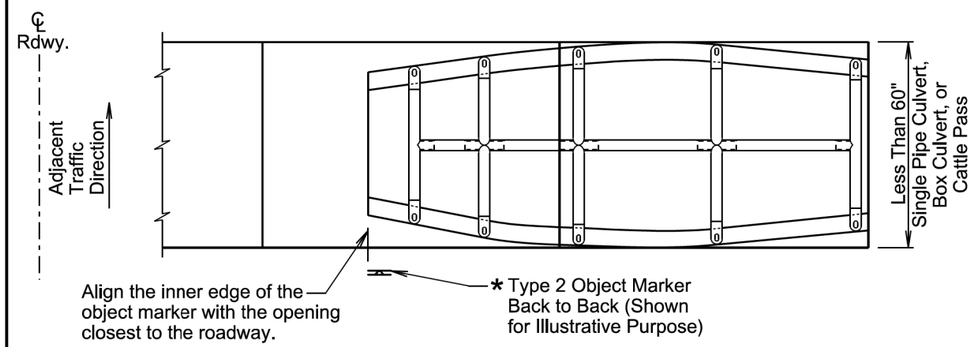
Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER (DIRECT DRIVE)	PLATE NUMBER 632.01 Sheet 1 of 1



PLAN VIEW
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)
(Pipe culverts shown for illustrative purpose.)
(Embankment is not shown.)



PLAN VIEW
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)
(Pipe culvert shown for illustrative purpose.)
(Embankment is not shown.)

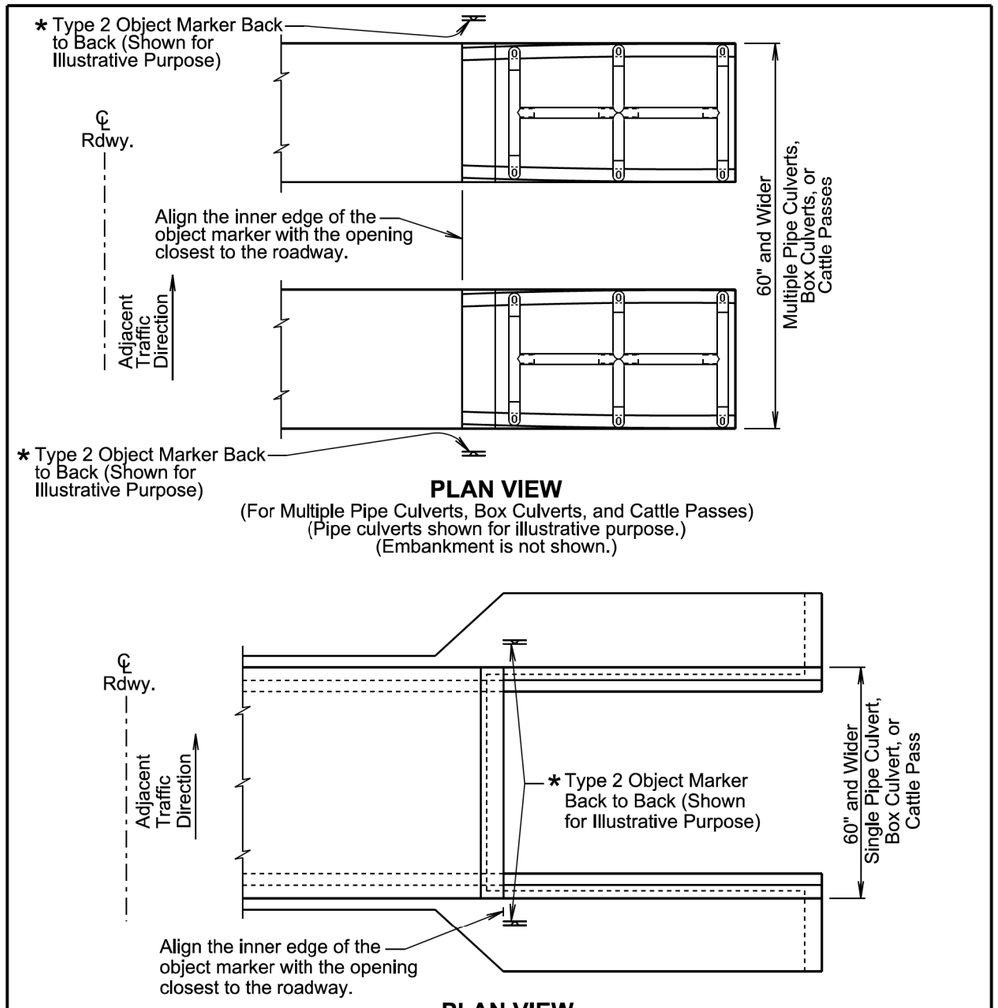
GENERAL NOTES:

This standard plate will be used in conjunction with standard plate 632.01.

* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)	PLATE NUMBER 632.03 Sheet 1 of 1



PLAN VIEW
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)
(Pipe culverts shown for illustrative purpose.)
(Embankment is not shown.)

PLAN VIEW
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)
(Box culvert shown for illustrative purpose.)
(Embankment is not shown.)

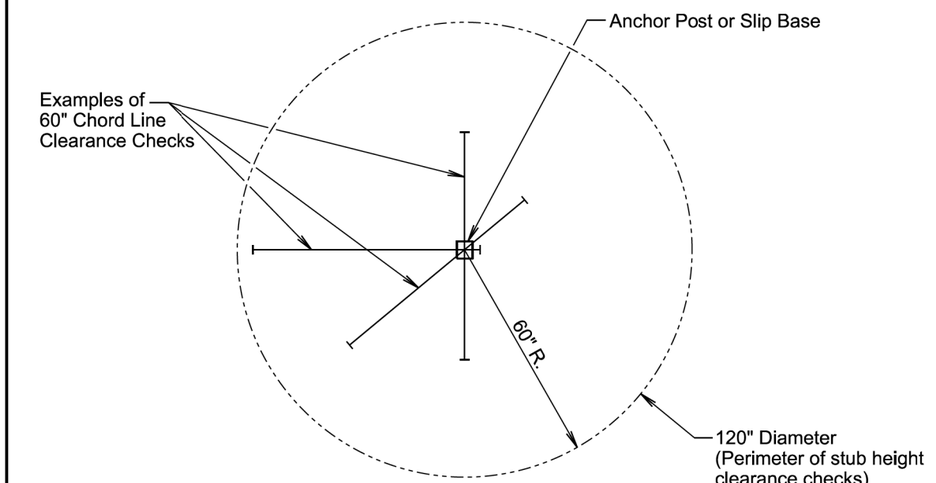
GENERAL NOTES:

This standard plate will be used in conjunction with standard plate 632.01.

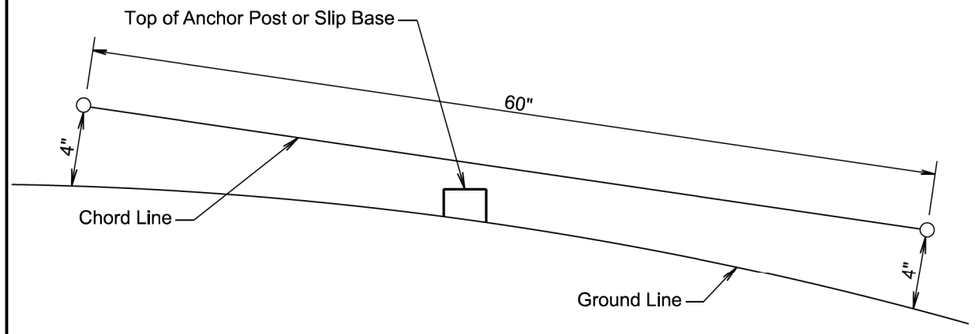
* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (60" and Greater Overall Width)	PLATE NUMBER 632.04 Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

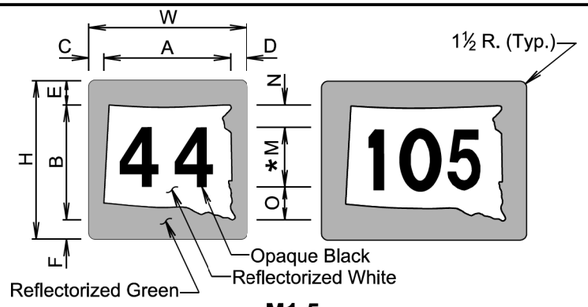
GENERAL NOTES:

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

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

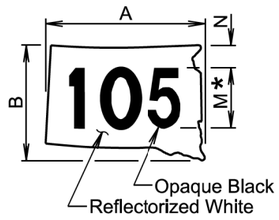
January 22, 2021

Published Date: 2026	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 632.18 Sheet 1 of 1



M1-5

SIGN CODE	WxH	A	B	C	D	E	F	M*	N	O
M1-5	24x24	20½	18	2	1½	3½	2½	12D	2	4
M1-5 **	30x24	24	18	2¼	1¾	3½	2½	12D	2	4
M1-5	30x30	25⅝	22½	2½	1⅞	4⅜	3⅛	15D	2½	5
M1-5	36x36	30¾	27	3	2¼	5¼	3¾	18D	3	6

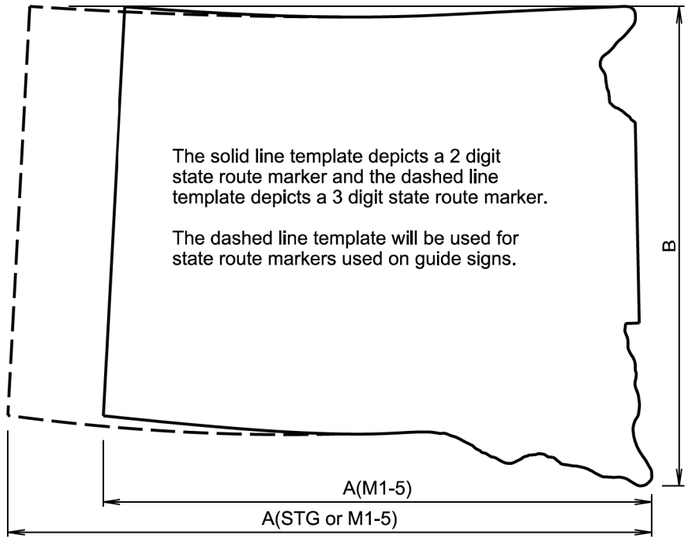


STG

SIGN CODE	AxB	M*	N
STG-24	24x18	10D	4
STG-32	32x24	12D	4¾
STG-48	48x36	18D	7
STG-64	64x48	24D	9½

* In the few cases where there is not enough space for the numerals, the standard D series font may be replaced with C series font if approved by the Engineer.

** 3 Digits



TEMPLATE FOR STATE ROUTE MARKER

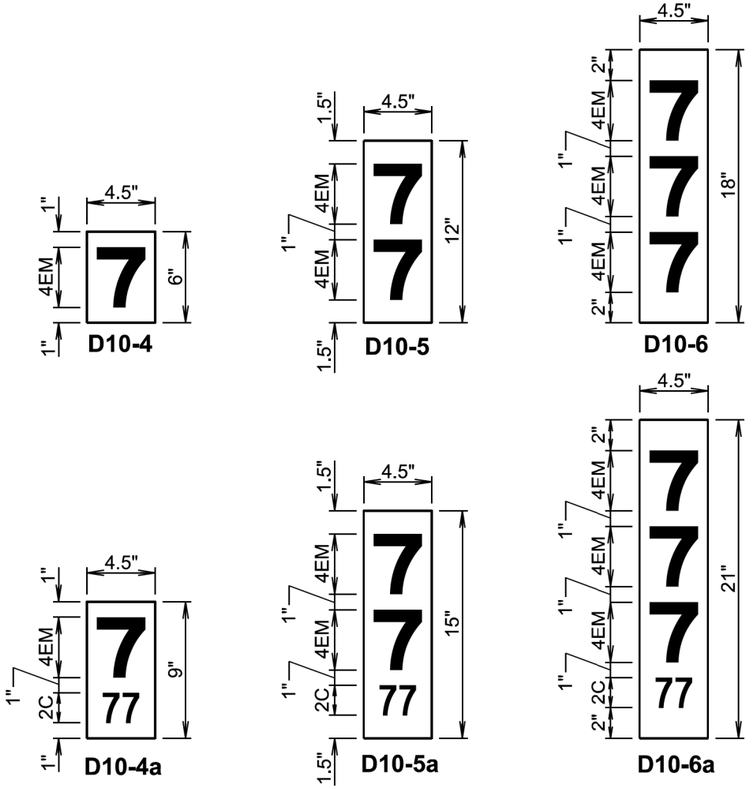
GENERAL NOTES:

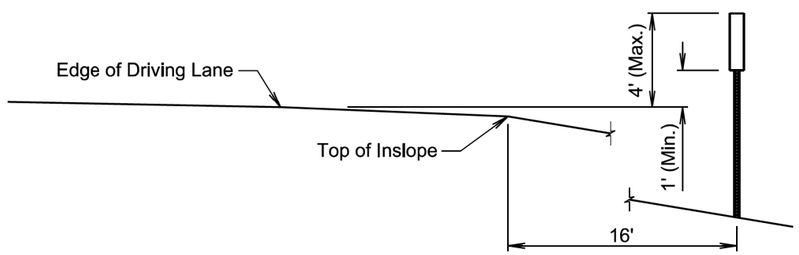
The unit for all dimensions shown is inches.

Numerals will be D series font for all state route markers except as noted above.

December 23, 2019

Published Date: 2026	SDDOT	STATE ROUTE MARKERS	PLATE NUMBER 632.20 Sheet 1 of 1





ELEVATION VIEW

GENERAL NOTES:

Background will be high intensity green.

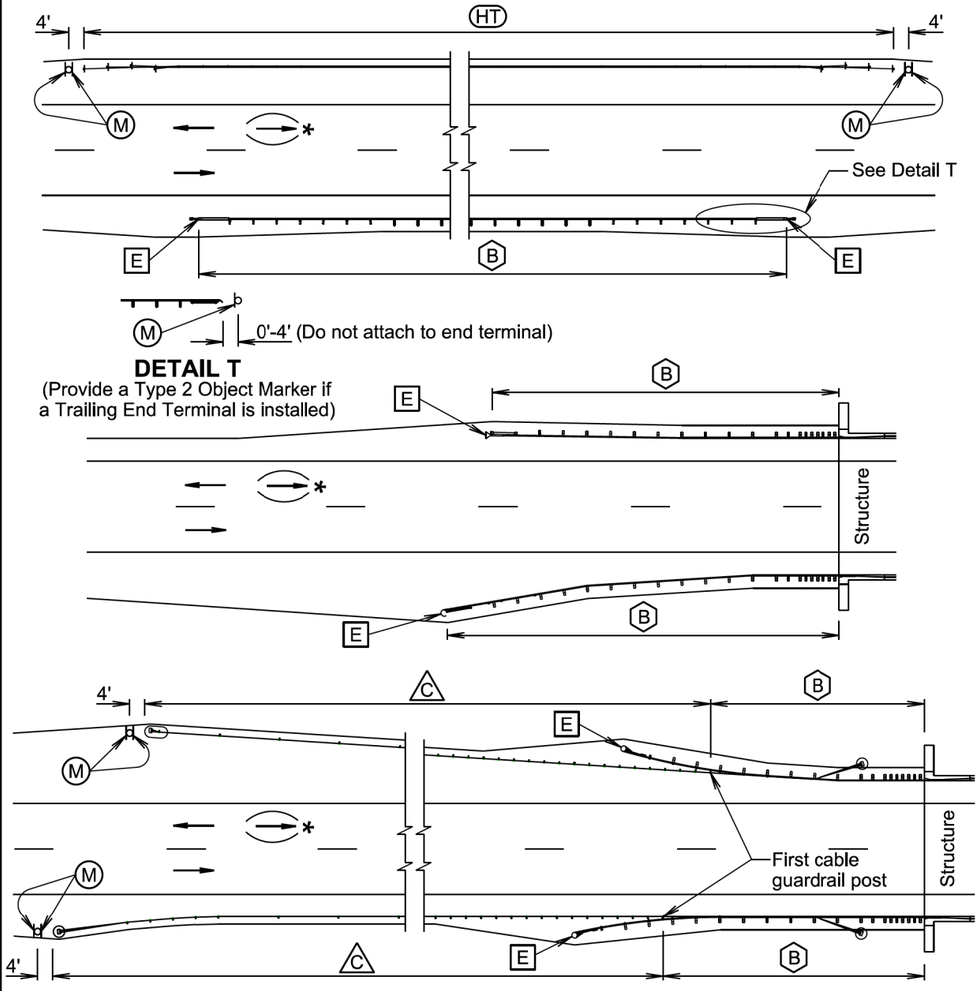
Legend will be high intensity white.

Signs will have squared corners with no border.

Sign locations will be staked by the Engineer.

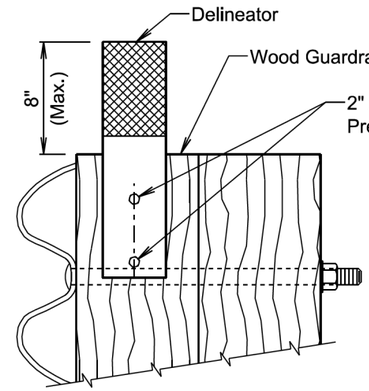
December 23, 2019

Published Date: 2026	SDDOT	NON-INTERSTATE MILEAGE REFERENCE MARKERS	PLATE NUMBER 632.30 Sheet 1 of 1

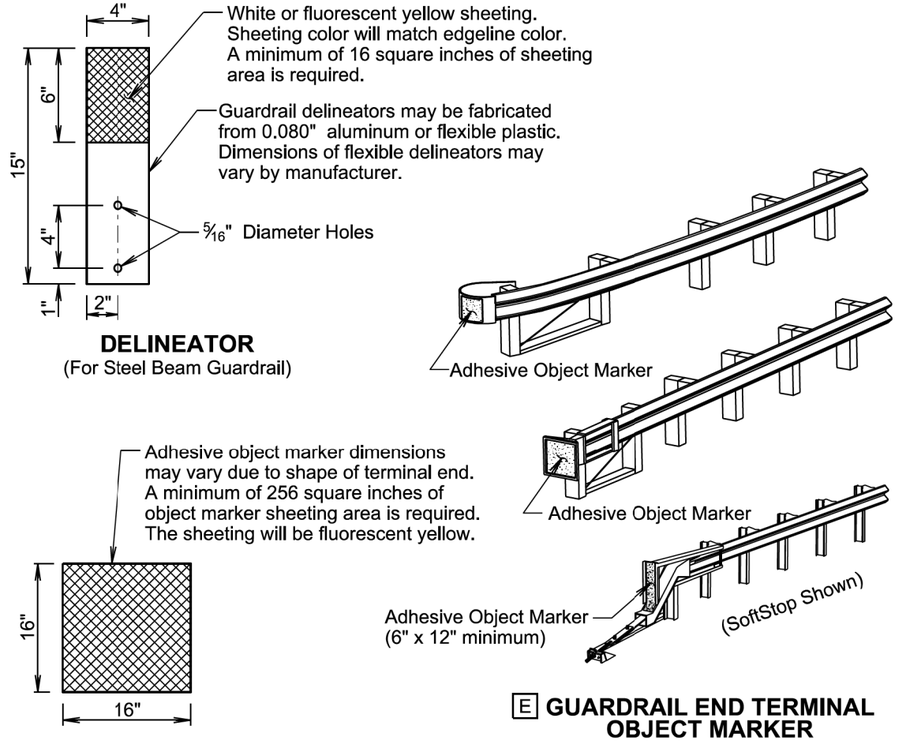


April 8, 2025

Published Date: 2026	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



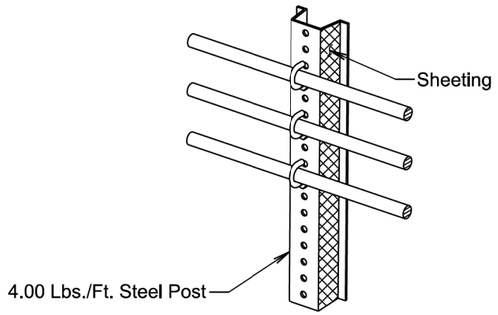
B **STEEL BEAM GUARDRAIL DELINEATION**



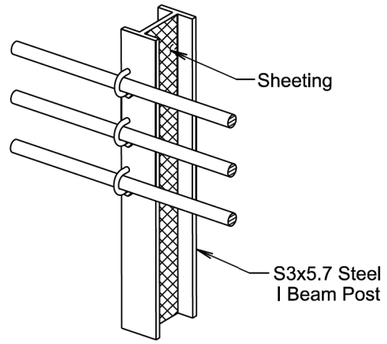
April 8, 2025

Published Date: 2026	SDDOT	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4

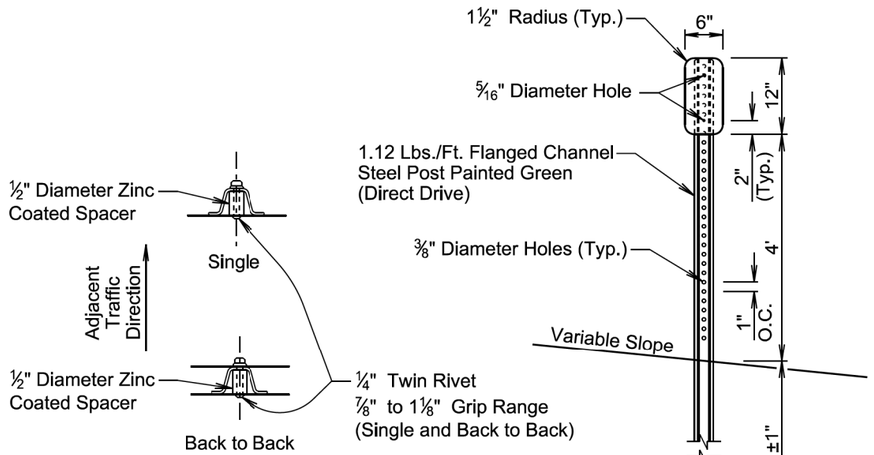
PLOT SCALE - 1:200
PLOT NAME - 12
FILE ...\REGION DESIGN\STD PLATES.DGN
-PLOTTED FROM - TRAB17901



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



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



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

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

April 8, 2025

Published Date: 2026	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

GENERAL NOTES:

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

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

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

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

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

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

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

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

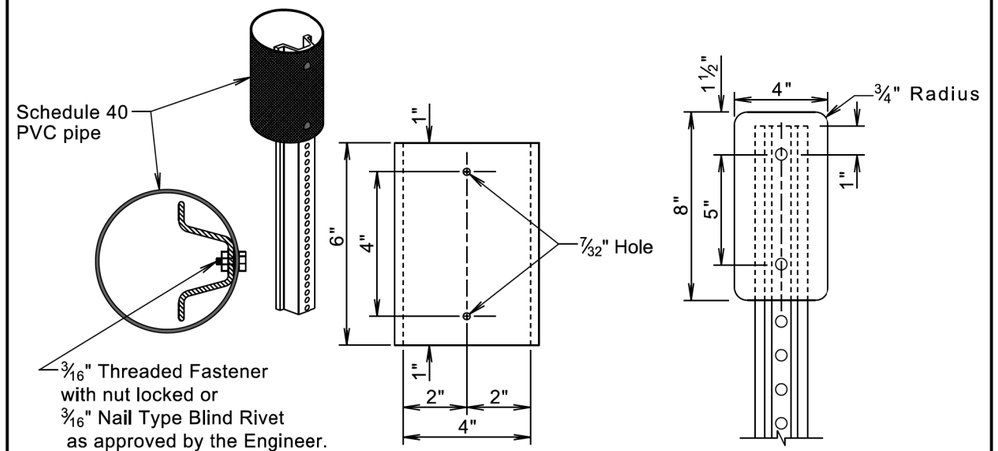
All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

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

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

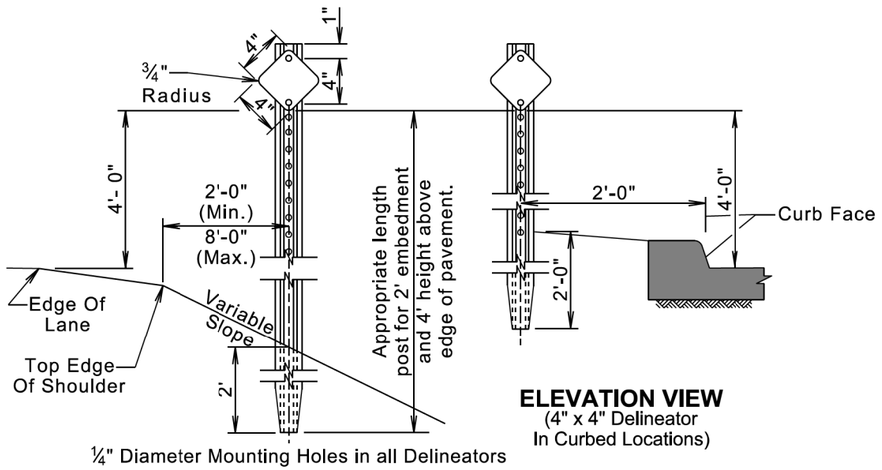
April 8, 2025

Published Date: 2026	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4



ELEVATION VIEW
(4" Tubular delineator
mounted on post)

ELEVATION VIEW
(4" x 8" Delineator)



ELEVATION VIEW
(4" x 4" Delineator
In Curbed Locations)

¼" Diameter Mounting Holes in all Delineators

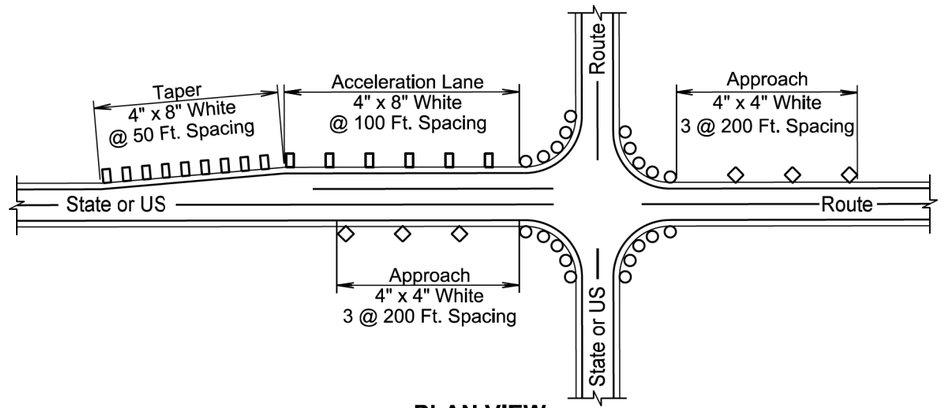
ELEVATION VIEW
(4" x 4" Delineators)

GENERAL NOTES:

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

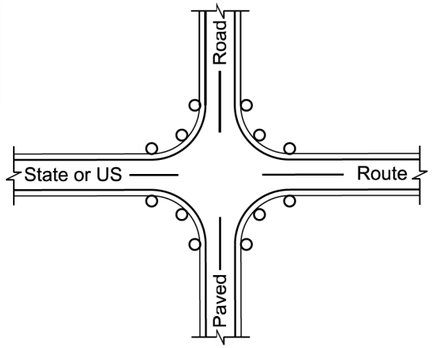
March 31, 2024

Published Date: 2026	SDDOT	DELINEATOR INSTALLATION DETAIL	PLATE NUMBER 632.42
			Sheet 1 of 1



PLAN VIEW
(State or US Highway Intersection)

LEGEND
◇ 4" x 4" White Delineator
▯ 4" x 8" White Delineator
○ 4" x 6" White Tubular Delineator



PLAN VIEW
(Paved County Crossroad)

GENERAL NOTES:

At all intersections with State or US highways and paved county roads:

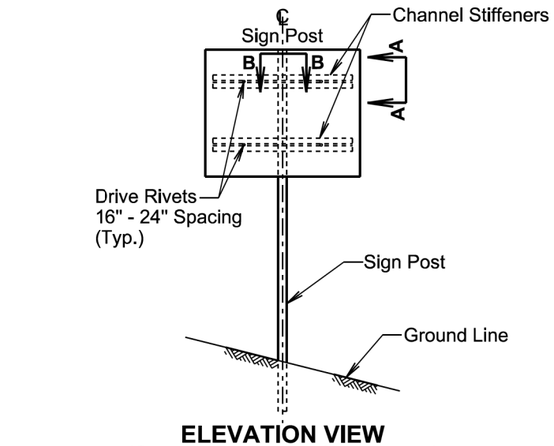
For radii greater than 100 feet, place 5 tubular white delineators on equally spaced posts around the turning radius.

For radii greater than 50 feet up to 100 feet, place 4 tubular white delineators on equally spaced posts around the turning radius.

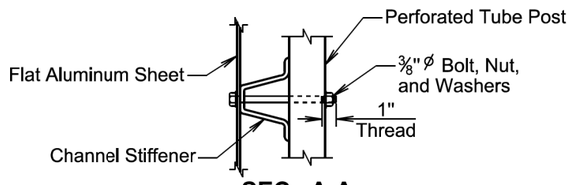
For radii of 50 feet or less, place 3 tubular white delineators on equally spaced posts around the turning radius.

November 19, 2020

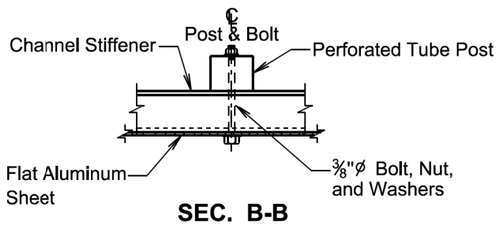
Published Date: 2026	SDDOT	DELINEATOR AT INTERSECTIONS	PLATE NUMBER 632.44
			Sheet 1 of 1



ELEVATION VIEW
(One post breakaway sign supports.)



SEC. A-A

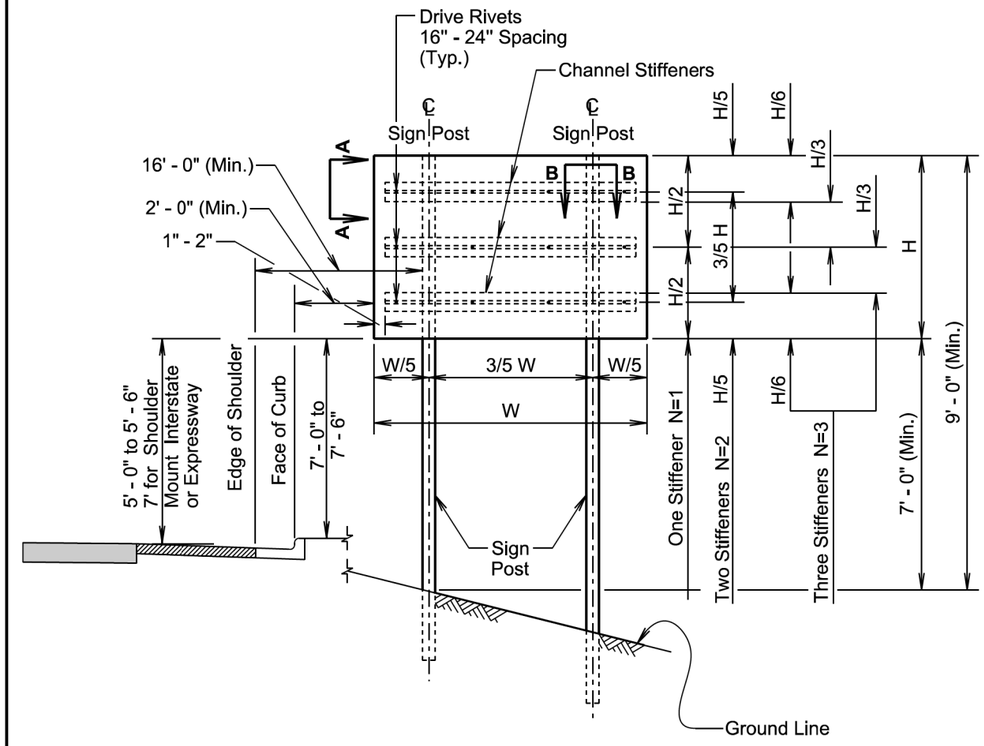


SEC. B-B
(Typical sign and stiffener details.)

ø A plastic washer, as recommended by the sheeting manufacturer, will be installed between the sign face and the metal washer shown.

November 19, 2020

Published Date: 2026	SDDOT	SIGN STIFFENER DETAILS	PLATE NUMBER 632.60
			Sheet 1 of 2



TWO POST BREAKAWAY SIGN SUPPORTS

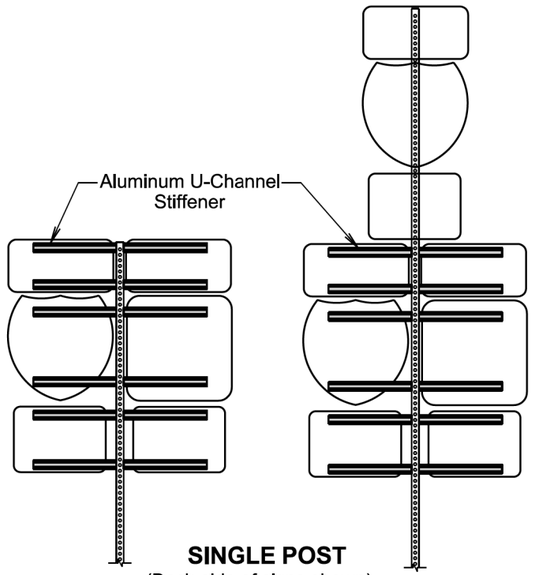
GENERAL NOTES:

The number of stiffeners used (N) will be as follows:
If H < = 2' - 0" then N = 1
if 2' - 0" < H < = 8' - 0" then N = 2
if 8' - 0" < H < = 15' - 0" then N = 3
where H is the vertical dimension of the sign.

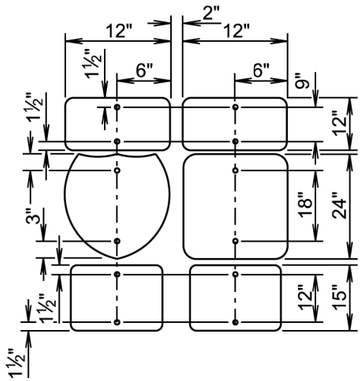
A minimum of two bolts will be required to fasten the sign to each post.

November 19, 2020

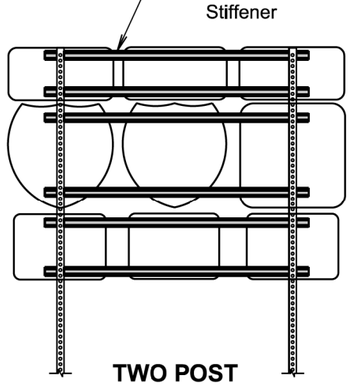
Published Date: 2026	SDDOT	SIGN STIFFENER DETAILS	PLATE NUMBER 632.60
			Sheet 2 of 2



SINGLE POST
(Back-side of signs shown)



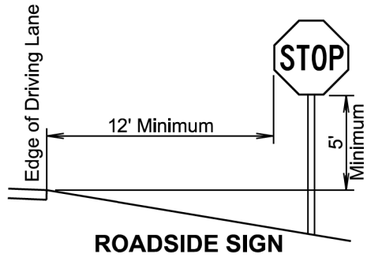
TYPICAL ROUTE MARKER BOLT HOLE LOCATIONS



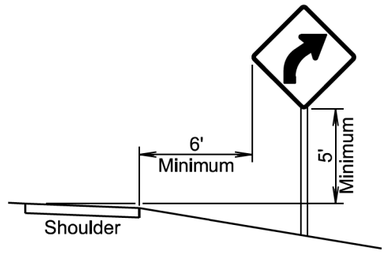
TWO POST
(Back-side of signs shown)

November 19, 2020

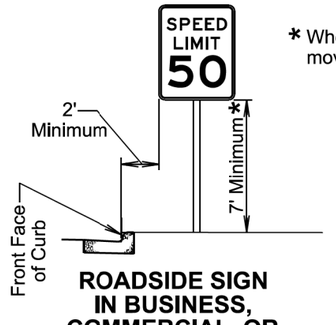
Published Date: 2026	SDDOT	MULTIPLE ROUTE MARKER SIGN STIFFENER INSTALLATION DETAILS	PLATE NUMBER 632.62
			Sheet 1 of 1



ROADSIDE SIGN IN RURAL AREA

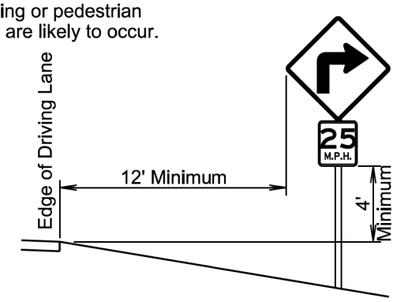


ROADSIDE SIGN IN RURAL AREA
(If shoulder width is greater than 6 foot)

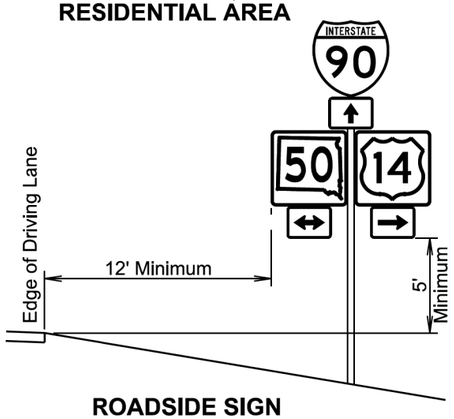


ROADSIDE SIGN IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREA

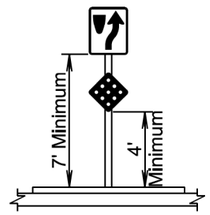
* Where parking or pedestrian movements are likely to occur.



WARNING SIGN ADVISORY SPEED PLAQUE IN RURAL AREA



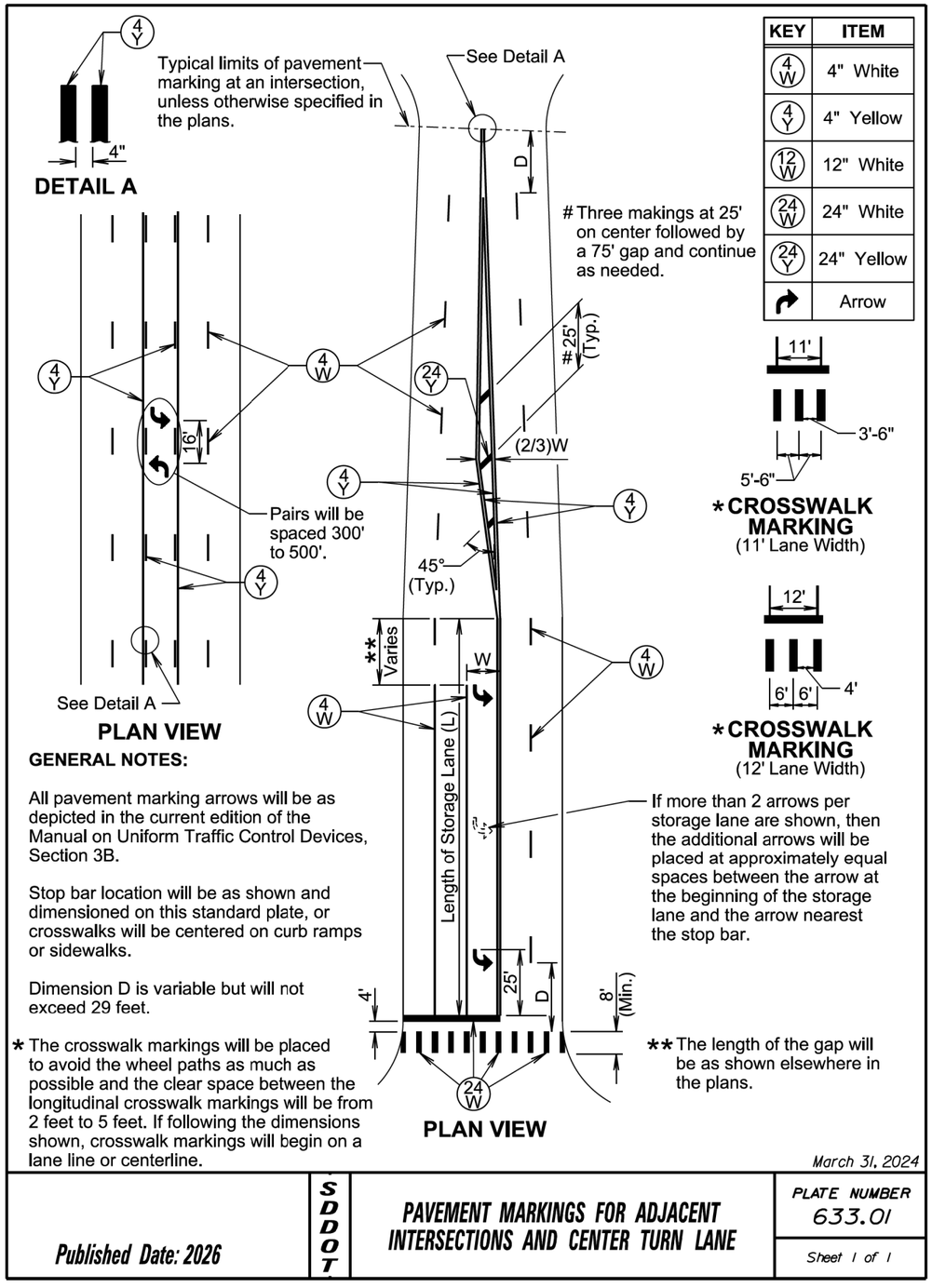
ROADSIDE SIGN IN RURAL AREA



SIGN ON NOSE OF MEDIAN

April 8, 2025

Published Date: 2026	SDDOT	OFFSETS FOR SIGN INSTALLATION	PLATE NUMBER 632.90
			Sheet 1 of 1



KEY	ITEM
4W	4" White
4Y	4" Yellow
12W	12" White
24W	24" White
24Y	24" Yellow
	Arrow

GENERAL NOTES:

All pavement marking arrows will be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location will be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but will not exceed 29 feet.

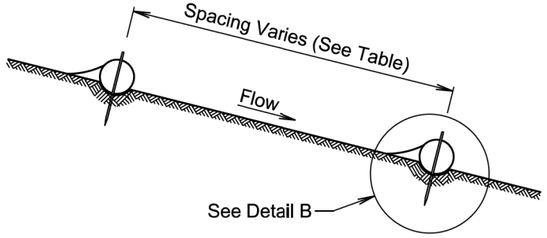
* The crosswalk markings will be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings will be from 2 feet to 5 feet. If following the dimensions shown, crosswalk markings will begin on a lane line or centerline.

If more than 2 arrows per storage lane are shown, then the additional arrows will be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

** The length of the gap will be as shown elsewhere in the plans.

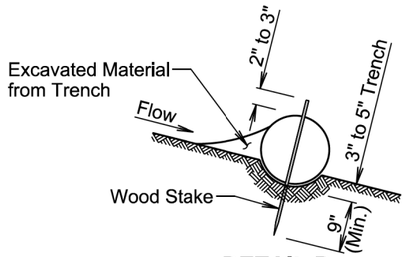
March 31, 2024

Published Date: 2026	SDDOT	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01
			Sheet 1 of 1

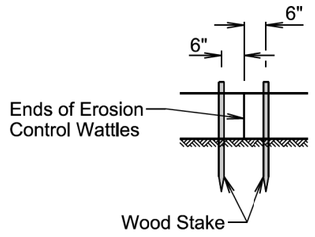


ELEVATION VIEW
(Cut or Fill Slope Installation)

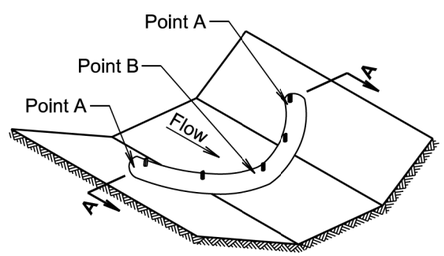
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



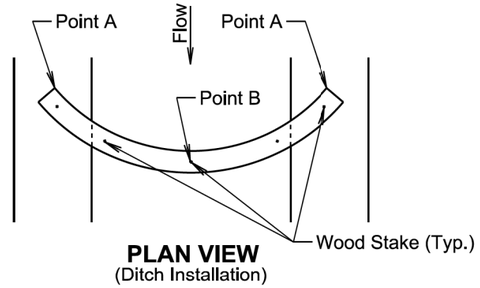
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

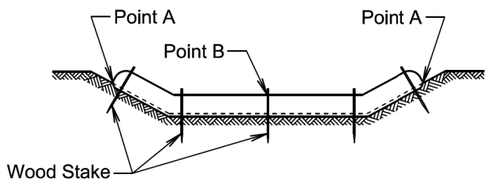


ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)

DITCH INSTALLATION	
Grade	Spacing (Ft.)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

February 14, 2020

Published Date: 2026	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

At cut or fill slope installations, wattles will be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor will dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes will be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

Where installing running lengths of wattles, the Contractor will butt the second wattle tightly against the first and will not overlap the ends. See Detail C.

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

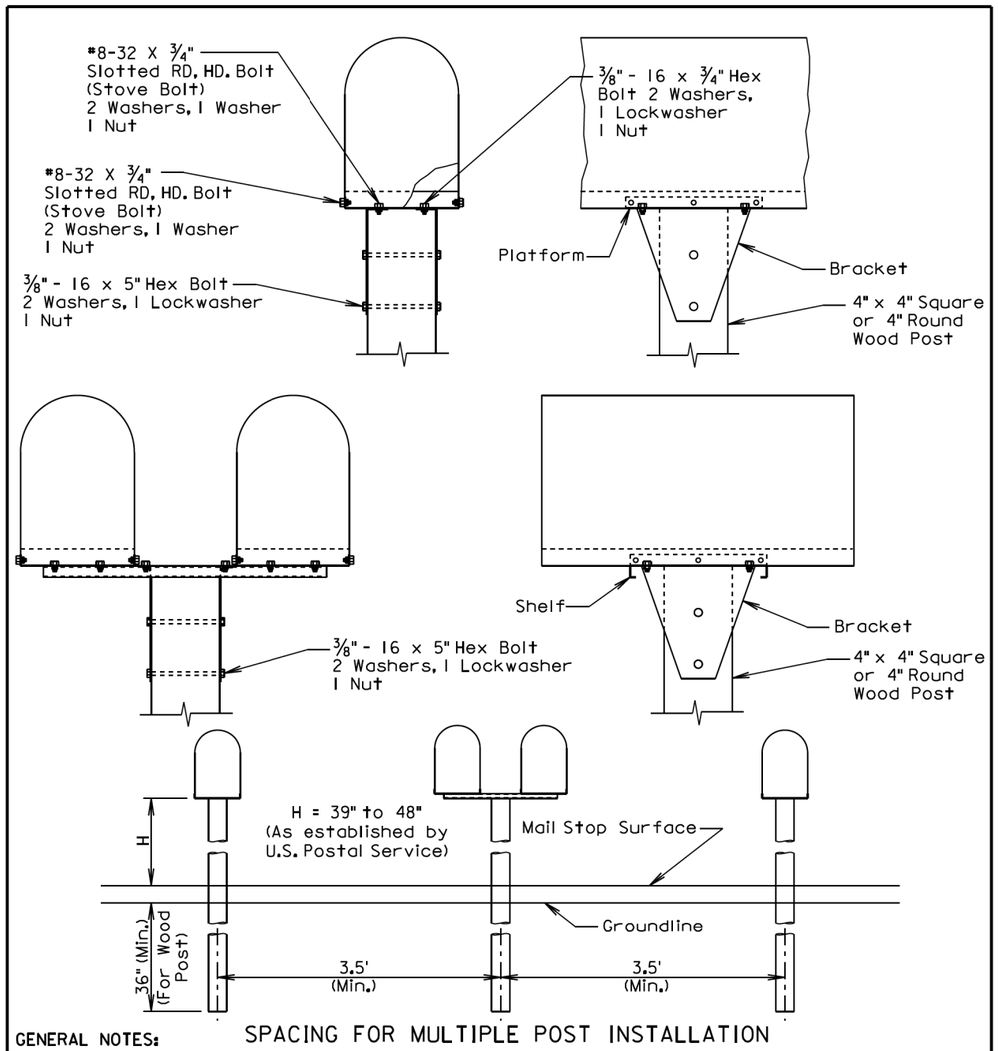
Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

February 14, 2020

Published Date: 2026	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2



SPACING FOR MULTIPLE POST INSTALLATION

GENERAL NOTES:

The post support assemblies provided should be consistant throughout the project. Single and double mailboxes may be in any sequence.

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

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

September 6, 2013

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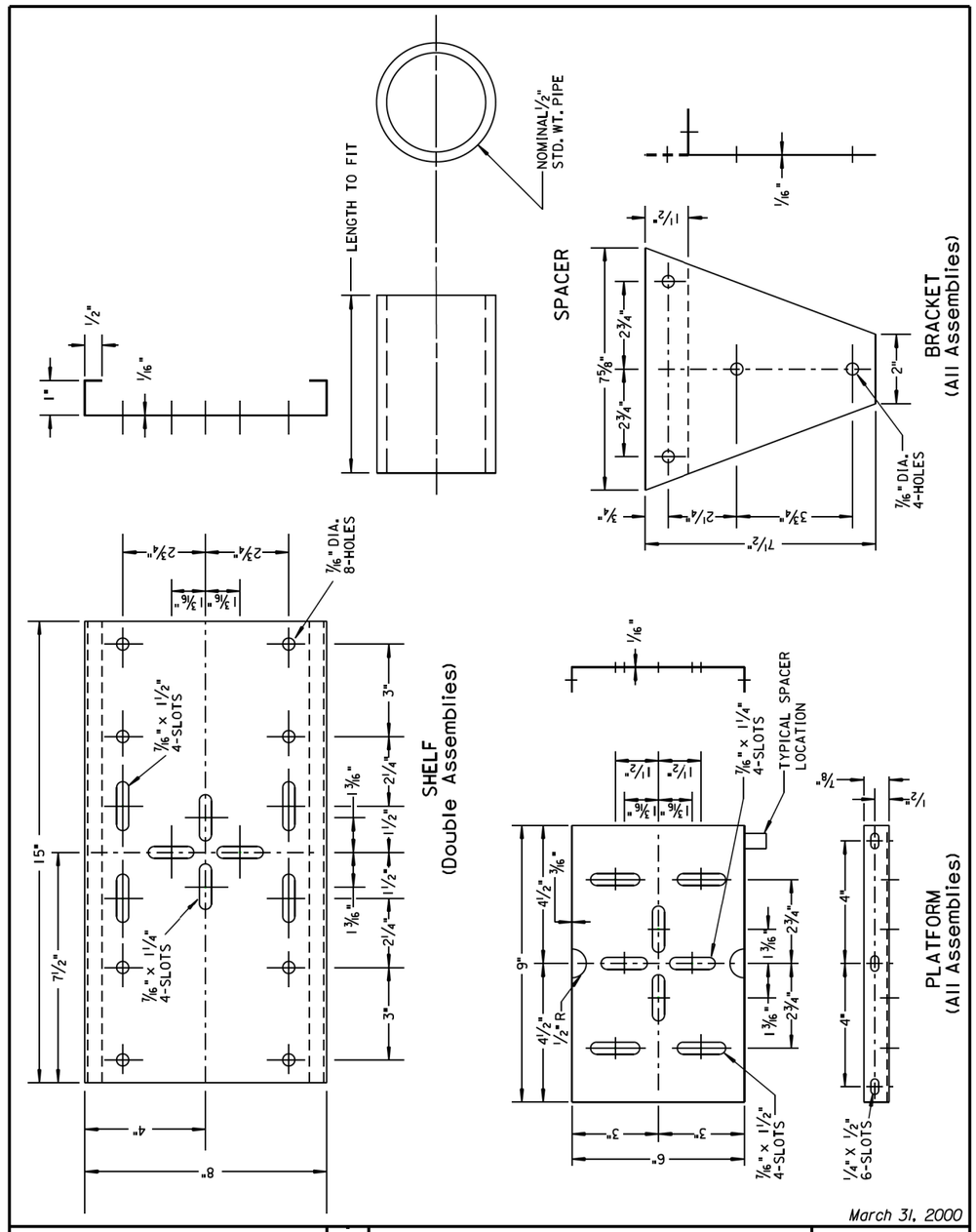

March 31, 2000

Published Date: 2026	SDDOT	***MAILBOX SUPPORT HARDWARE***	***PLATE NUMBER*** 900.03 *Sheet 1 of 1*