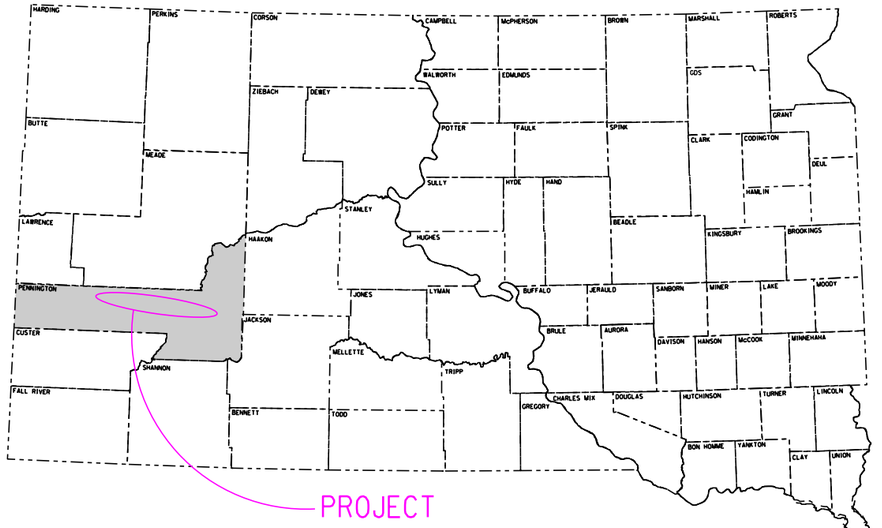
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	1	43

Plotting Date: 04/24/2024 Revised 4/24/24 GDS

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

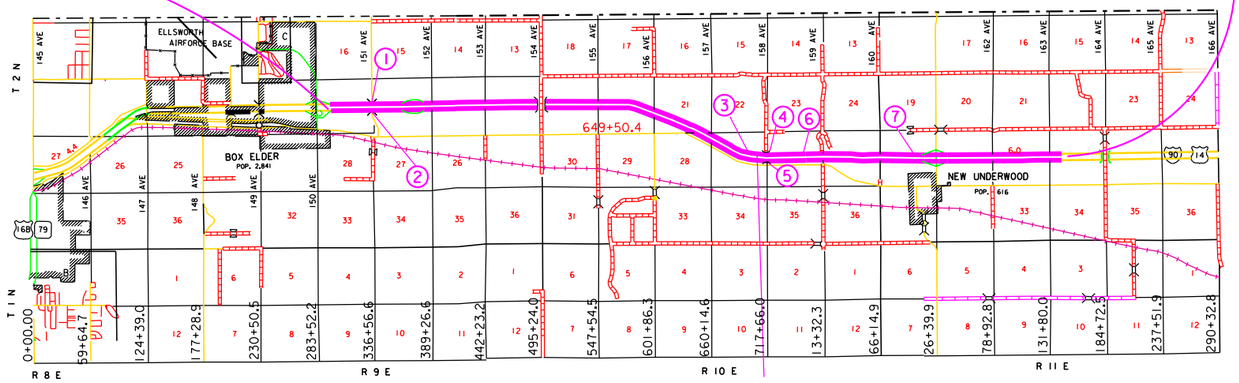
PROJECT IM 0902(188)67
INTERSTATE 90
PENNINGTON COUNTY

MICRO MILLING ASPHALT CONCRETE,
ASPHALT CONCRETE RESURFACING
PCN 09NV



Begin Project
IM 0902(188)67
MRM 67.55+0.316 EB
MRM 67.50+0.357 WB

End Project
IM 0902(188)67
MRM 80.00+0.500 EB
MRM 80.00+0.500 WB



INDEX OF SHEETS

STRUCTURE DATA (INCLUDING APPROACN SLABS) & EQUATIONS

No.	Str. No.	EB/WB	MRM	Sta. to Sta.	Type	Width (ft)	Length (ft)	Length (miles)	Equation Back Station	Equation Ahead Station
1	52-490-274	WB	68.15	335+32.10 to 337+36.10	Concrete Slab	30.0	204	0.0386		
2	52-510-275	EB	68.15	335+32.10 to 337+36.10	Concrete Slab	30.0	204	0.0386		
3									712+91.9 Bk.	713+32.3 Ah.
4	52-580-284	WB	75.31	716+86.5 to 718+45.5	Concrete Slab	37.9	159	0.0301		
5	52-580-285	EB	75.31	716+86.5 to 718+45.5	Concrete Slab	37.9	159	0.0301		
6									757+10.15 Bk.	0+00.00 Ah.
7									98+57.7 Bk.	5+36.6 Ah.

STORM WATER PERMIT

No Permit Required

DESIGN DESIGNATION

ADT (2022)	8178
ADT (2042)	11492
DHV	2124
D	51%
T DHV	9.9%
T ADT	21.9%
V	75 mph

WESTBOUND					EASTBOUND				
GROSS LENGTH	67955.52	FEET	12.731	MILES	GROSS LENGTH	67955.52	FEET	12.731	MILES
LENGTH OF EXCEPTIONS	363.00	FEET	0.069	MILES	LENGTH OF EXCEPTIONS	363.00	FEET	0.069	MILES
NET LENGTH	67592.52	FEET	12.800	MILES	NET LENGTH	67592.52	FEET	12.800	MILES

5

June 26, 2024

PLOT SCALE - 1:200
PLOTTED FROM - TRRC12608
PLOT NAME - 1
FILE - ...\PRJ\PENN09NV\DESIGN\TITLE.DGN

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	972.7	SqYd
110E6000	Remove 3 Cable Guardrail for Reset	720	Ft
110E6006	Remove High Tension 4 Cable Guardrail for Reset	1,850	Ft
110E6200	Remove Double Thrie Beam Guardrail for Reset	75.0	Ft
110E6230	Remove W Beam Guardrail for Reset	875.0	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	6	Each
110E6260	Remove W Beam Guardrail Breakaway Cable Terminal for Reset	6	Each
110E6269	Remove W Beam Guardrail End Terminal for Reset	2	Each
110E6280	Remove W Beam Guardrail Tangent End Terminal for Reset	2	Each
120E0100	Unclassified Excavation, Digouts	640	CuYd
260E1010	Base Course	1,280.0	Ton
320E1200	Asphalt Concrete Composite	332.7	Ton
320E5000	Saw and Seal Joint in Asphalt Concrete	103,056	Ft
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	51.2	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	207.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	125.8	Ton
330E2000	Sand for Flush Seal	2,283.3	Ton
332E0010	Cold Milling Asphalt Concrete	158,654	SqYd
332E4000	Micro-Milling Asphalt Concrete	523,709	SqYd
380E6510	Grinding PCC Pavement	270.0	SqYd
600E0300	Type III Field Laboratory	1	Each
629E0200	Reset 3 Cable Guardrail	720	Ft
629E0211	Reset High Tension 4 Cable Guardrail	1,850	Ft
630E2110	Beam Guardrail Post and Block	192	Each
630E5130	Reset Double Thrie Beam Rail	75.0	Ft
630E5160	Reset W Beam Rail	720.0	Ft
630E5180	Reset W Beam Guardrail Breakaway Cable Terminal	6	Each
630E5190	Reset W Beam to Thrie Beam Guardrail Transition	6	Each
630E5208	Reset W Beam Guardrail Tangent End Terminal	2	Each
630E5209	Reset W Beam Guardrail End Terminal	2	Each
633E0010	Cold Applied Plastic Pavement Marking, 4"	34,331	Ft
633E0025	Cold Applied Plastic Pavement Marking, 12"	1,040	Ft
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	576	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	576	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	34,331	Ft
633E5010	Grooving for Cold Applied Plastic Pavement Marking, 12"	1,040	Ft
633E5100	Grooving for Durable Pavement Marking, 4"	270,370	Ft
634E0010	Flagging	500.0	Hour
634E0110	Traffic Control Signs	1,479.8	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0275	Type 3 Barricade	48	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0630	Temporary Pavement Marking	90.0	Mile
634E1215	Contractor Furnished Portable Changeable Message Sign	6	Each
634E1255	Contractor Furnished Speed Monitoring Radar Trailer	2	Each

Alternate A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0005	PG 58-34 Asphalt Binder	2,488.3	Ton
320E1204	Class Q4R Hot Mixed Asphalt Concrete	54,638.5	Ton
320E4000	Hydrated Lime	537.8	Ton

Alternate B

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0005	PG 58-34 Asphalt Binder	2,055.8	Ton
320E1204	Class Q4R Hot Mixed Asphalt Concrete	56,087.1	Ton
320E4000	Hydrated Lime	563.2	Ton

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

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 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 B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

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.

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 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 or THPO) 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 100 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/THPO 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.

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.

TYPE III FIELD LABORATORY

Substitution of a cellular telephone for the hard-wired touch-tone telephone is not allowed, as state personnel need the ability to download information over direct phone lines. The phone is intended for state personnel usage only. Contractor personnel are prohibited from using this phone unless pre-approved by the Project Engineer. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items will be incidental to the contract unit price per each for “Type II or III Field Laboratory”.

CHECKING SPREAD RATES

The Contractor will be responsible for checking the 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.

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 completed on Section 2 of the typical sections at a depth of 1.25". The Contractor will determine how much cold milling is completed on Section 1, 3, and/or 4 to ensure enough asphalt concrete is available to use as RAP in the Class Q4R Asphalt Concrete. 158654 SqYd is provided to cold mill the Class S to be used as RAP. The depth of cold milling may be adjusted by the Engineer to fully remove the upper lift of Class S Asphalt Concrete. Care will be taken to minimize the amount of salvaged asphalt concrete beneath the in-place Class S Asphalt Concrete for use as RAP.

An estimated 10927.6 tons of cold milled asphalt concrete material will be used on this project as RAP for Alternate A and an estimated 11217.4 tons of cold milled milled asphalt concrete material will be used on this project as RAP for Alternate B in the Class Q4R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q4R Hot Mixed Asphalt Concrete.

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

MICRO-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.

Micro-milling asphalt concrete will be done according to the typical section(s). Prior to the placement of Class Q4R Asphalt Concrete the milled surface of typical sections 1-4 will meet the requirements of the Special Provision for Micro-Milling Asphalt Concrete.

In areas where maintenance patches have raised and/or widened the road, additional asphalt concrete will be milled to provide a uniform typical section. Milling will be daylighted to prevent the containment of water on the milled surfacing. Any additional costs associated with this additional micro-milling will be incidental to the contract unit price per square yard for Micro-Milling Asphalt Concrete.

The Contractor will not be allowed to perform cold milling with micro-milling equipment.

Micro-milling asphalt is estimated to produce 39423.5 tons of milled asphalt concrete material.

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

CLASS Q4R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

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

Virgin mineral aggregate for Class Q4R Hot Mixed Asphalt Concrete - Alternate A will conform to the requirements of Class Q4.

Virgin mineral aggregate for Class Q4R Hot Mixed Asphalt Concrete - Alternate B will consist of a minimum of 80 percent crushed limestone ledgerock and will conform to the requirements of Class Q4.

The Class Q4R 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 Q4R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q4 except as modified by the following:

Gyratory Compactive Effort:

	$N_{initial}$	N_{design}	$N_{maximum}$
Class Q4R	6	50	75

Mix Design Criteria – Alternate B:

Gyratory Controlled QC/QA Mix Design requirements for the Class Q4R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q4 except as modified by the following:

Voids in Mineral Aggregate (VMA):

	Minimum VMA (%):
Class Q4R	13.0

Fine Aggregate Angularity:

	Minimum Uncompacted Void Content (%):
Class Q4R	43.0

Pay Factor Attributes – Alternate B:

Air Voids:

	Air Voids (%):
Class Q4R	3.5 ±1.0

All remaining requirements for Class Q4 will apply.

CLASS Q4R ASPHALT CONCRETE COMPACTION

All Class Q4R Asphalt Concrete will be compacted to specified density.

RATES OF MATERIALS, SURFACING

Section 1

Sta 315+00 to Sta 321+50.56

Sta 526+96.9 to Sta b 13+32.3 (Through Equation)

Sta b 15+85.17 to Sta c 5+36.6 (Through Equation)

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

Section 1 - Mainline Lift - 2'

Class Q4R Hot Mixed Asphalt Concrete		Alt. A	Alt B.	
Basic Quantity of Aggregate	=	1464	1518	Ton/mile
Salvaged Asphalt Concrete	=	366	379	Ton/mile
PG 58-34 Asphalt Binder	=	88	73	Ton/mile
Total Mix	=	1918	1970	Ton/mile
Hydrated Lime	=	19	20	Ton/mile
Total Mix With Hydrated Lime	=	1937	1990	Ton/mile

Laid 2 inches compacted depth; 33' bottom, 26' top.

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at the rate of 7.5 tons applied 34 feet wide per side (Rate = 0.09 gallon per square yard).

Emulsified Asphalt for Flush Seal SS-1h or CSS-1h at the rate of 4.8 tons applied 39.5 feet wide per side (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 89.2 tons applied 38 feet wide per side (Rate = 8 lbs per square yard).

Section 2

Sta 321+50.56 to Sta 526+96.90

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

Section 2 - Mainline Lift - 2"

Class Q4R Hot Mixed Asphalt Concrete		Alt. A	Alt B.	
Basic Quantity of Aggregate	=	1834	1902	Ton/mile
Salvaged Asphalt Concrete	=	459	475	Ton/mile
PG 58-34 Asphalt Binder	=	111	91	Ton/mile
Total Mix	=	2404	2468	Ton/mile
Hydrated Lime	=	24	25	Ton/mile
Total Mix With Hydrated Lime	=	2428	2493	Ton/mile

Laid 2 inches compacted depth; 40' bottom, 34' top.

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at the rate of 9.0 tons applied 41 feet wide per side (Rate = 0.09 gallon per square yard).

Emulsified Asphalt for Flush Seal SS-1h or CSS-1h at the rate of 4.9 tons applied 40 feet wide per side (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 89.2 tons applied 38 feet wide per side (Rate = 8 lbs per square yard).

RATES OF MATERIALS, SURFACING (CONTINUED)

Section 4

Sta c 5+36.6 to Sta c 144+64.77

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

Section 4 - Mainline Lift - 2"

Class Q4R Hot Mixed Asphalt Concrete		Alt. A	Alt B.	
Basic Quantity of Aggregate	=	1464	1518	Ton/mile
Salvaged Asphalt Concrete	=	366	379	Ton/mile
PG 58-34 Asphalt Binder	=	88	73	Ton/mile
Total Mix	=	1918	1970	Ton/mile
Hydrated Lime	=	19	20	Ton/mile
Total Mix With Hydrated Lime	=	1937	1990	Ton/mile

Laid 2 inches compacted depth; 33’ bottom, 26' top.

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at the rate of 7.5 tons applied 34 feet wide per side (Rate = 0.09 gallon per square yard).

Emulsified Asphalt for Flush Seal SS-1h or CSS-1h at the rate of 5.2 tons applied 42.5 feet wide per side (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 89.2 tons applied 38 feet wide per side (Rate = 8 lbs per square yard).

ASPHALT CONCRETE COMPOSITE

Section 324 will apply except that Class Q4R 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.

Table of Vertical Structure Clearances

Location		Existing Vertical Clearances		
MRM	Lane	12’@ R Outside Shoulder	Centerline	12’@ L Inside Shoulder
71.13	EB	16’ – 02”	16’ – 05”	17’ – 00”
71.13	WB	19’ – 04”	18’ – 11”	19’ – 00”
78.29	EB	17’ – 08”	17’ – 09”	18’ – 04”
78.29	WB	20’ – 07”	20’ – 00”	19’ – 11”

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 25 cubic yards of Unclassified Excavation, Digouts and 38 square yards of Remove Asphalt Concrete Pavement per mile in each direction for the removal of asphalt and unstable material throughout the project.

Included in the Estimate of Quantities are 50 tons of Base Course and 13 tons of Asphalt Concrete Composite per mile in each direction 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.

SAW AND SEAL JOINTS IN ASPHALT CONCRETE

Saw and Seal Joints in Asphalt Concrete will consist of marking the existing transverse joint in the PCC Pavement prior to placement of the asphalt concrete, sawing, cleaning, and sealing the transverse joint in the new asphalt concrete for Section 2. The joints will be constructed immediately over and in line with the underlying transverse joint in the PCC Pavement. Use a string line between established markings to determine the saw cut locations. The existing pavement joints are spaced at 15’.

Sawing will be performed after the asphalt concrete has cooled and no more than 36 hours after the asphalt concrete is placed. Sawing will be performed prior to any evidence of reflective cracking. Saw cuts may be made wet or dry and will be accurately located by pins and string line subject to approval of the Engineer.

The dimension of the saw cut on the Class Q4R Asphalt Concrete lift will be 1/8" wide by 1" deep directly above the underlying joint in the PCC Pavement to facilitate cracking. A sealant reservoir 5/8” wide by 5/8” deep will be sawed in and centered directly over the underlying 1/8” saw cut.

The saw cut for the Class Q4R Asphalt Concrete lift will be the full width of the pavement.

Dry sawed joints will be cleaned with high-pressure air. Wet sawed joints will be cleaned with high-pressure water followed by high-pressure air. The air compressor will produce a minimum of 125-CFM output and will be equipped with a 5/8” nozzle. After cleaning and drying and just prior to sealing, a bond breaker tape consisting of masking tape or other suitable bond breaker tape will be placed in the bottom of the reservoir. The tape width will be equal to the reservoir width or 1/8" narrower.

The sealant will meet the requirements of Section 871.B.

Joint sealant material will be from the South Dakota Department of Transportation’s approved products list for Sealants Approved for Asphalt Concrete over Long Jointed Concrete Pavement. The Approved Product List for sealant may be viewed at the following Internet Site:

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

The sealant will be placed in accordance with the manufacturer's recommendations. The sealant will fit the joint such that after cooling, the level of the sealant will not be greater than 1/8" below the pavement surface. Care will be taken so that the joints will not be overfilled. Sealant will not be spread over the pavement surface.

Blotting material such as toilet paper will be placed over the sealant material where traffic is allowed to cross a sealed area before track free status has been achieved.

Payment for sawing and sealing joints will be paid for as Saw and Seal Joints in Asphalt Concrete inclusive of costs for marking existing joints, sawing, cleaning, sealing, equipment, labor, and incidentals necessary complete the work.

Table of Material Quantities (EB and WB Combined)

										Alternate A			Alternate B							
	Station	to	Station	EB and WB Lengths	EB and WB Lengths	Micro-Milling Asphalt Concrete	Unclassified Excavation, Digouts	Asphalt Concrete Composite	Remove Asphalt Concrete Pavement	Base Course	Class Q4R Hot Mixed Asphalt Concrete	PG 58-34 Asphalt Binder	Hydrated Lime	Class Q4R Hot Mixed Asphalt Concrete	PG 58-34 Asphalt Binder	Hydrated Lime	SS-1h or CSS-1h Asphalt for Tack	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal	Saw and Seal Joints in Asphalt Concrete	Grind 12" Rumble Strip or Stripe in Asphalt Concrete
				(Ft)	(Miles)	(SqYd)	(CuYd)	(Ton)	(SqYd)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ft)	(Mile)
Section 1	315+00.00		321+50.56	650.56	0.12	4698.5	6.0	3.1	9.1	12	464.9	21.1	4.6	477.6	17.5	4.8	1.8	1.2	21.4		0.48
Section 2	321+50.56		335+32.10	1381.54	0.26	12126.9	13.0	6.8	19.8	26	1262.6	57.7	12.5	1296.4	47.3	13	4.7	2.5	46.4	6992	1.04
Exception																					
Section 2	337+36.10		526+96.90	18960.80	3.59	166433.7	179.5	93.3	272.8	359	17433	797	172.3	17899.7	653.4	179.5	64.6	35.2	640.5	96064	14.36
Section 1	526+96.90		712+91.90	18595.00	3.52	134297.2	176.0	91.5	267.5	352	13636.5	619.5	133.8	14009.6	513.9	140.8	52.8	33.8	628		14.08
Equation																					
Section 1	713+32.30		716+86.50	354.20	0.07	2558.1	3.5	1.8	5.3	7	271.2	12.3	2.7	278.6	10.2	2.8	1.1	0.7	12.5		0.28
Exception																					
Section 1	718+45.60		757+10.15	3864.55	0.73	27910.6	36.5	19	55.5	73	2828	128.5	27.7	2905.4	106.6	29.2	11	7	130.2		2.92
Equation																					
Section 1 b	0+00.00	b	13+32.30	1332.30	0.25	9622.2	12.5	6.5	19	25	968.5	44	9.5	995	36.5	10	3.8	2.4	44.6		1.00
Section 3 b	13+32.30	b	15+85.17	252.87	0.05	1854.4	2.5	1.3	3.8	5	184.2	8.4	1.8	189.0	7.0	1.8	0.8	0.4	8.6		0.20
Section 1 b	15+85.17	b	98+57.70	8272.53	1.57	59746.1	78.5	40.8	119.3	157	6082.2	276.3	59.7	6248.6	229.2	62.8	23.6	15.1	280.1		6.28
Equation																					
Section 4 c	5+36.60	c	144+64.77	13928.17	2.64	104461.3	132.0	68.6	200.6	264	10227.4	464.6	100.3	10507.2	385.4	105.6	39.6	27.5	471		10.56
Additional Quantities											1280	58.9	12.9	1280	48.8	12.9	3.2				
			Total	67592.52	12.80	523709.0	640.0	332.7	972.7	1280.0	54638.5	2488.3	537.8	56087.1	2055.8	563.2	207.0	125.8	2283.3	103056.0	51.20

Table of Additional Quantities (EB and WB Combined)

						Alternate A			Alternate B			
	Station		to	Station	EB and WB Lengths (Ft)	EB and WB Lengths (Miles)	Class Q4R Hot Mixed Asphalt Concrete (Ton)	PG 58-34 Asphalt Binder (Ton)	Hydrated Lime (Ton)	Class Q4R Hot Mixed Asphalt Concrete (Ton)	PG 58-34 Asphalt Binder (Ton)	Hydrated Lime (Ton)	SS-1h or CSS-1h Asphalt for Tack (Ton)
Spot Leveling Stregthening and Repair													
Section 1		315+00.00		321+50.56	650.56	0.12	12.0	0.6	0.1	12.0	0.5	0.1	
Section 2		321+50.56		335+32.10	1381.54	0.26	26.0	1.2	0.3	26.0	1.0	0.3	
Exception													
Section 2		337+36.10		526+96.90	18960.8	3.59	359.0	16.5	3.6	359.0	13.6	3.6	
Section 1		526+96.90		712+91.90	18595	3.52	352.0	16.2	3.5	352.0	13.4	3.5	
Equation													
Section 1		713+32.30		716+86.50	354.2	0.07	7.0	0.3	0.1	7.0	0.3	0.1	
Exception													
Section 1		718+45.60		757+10.15	3864.55	0.73	73.0	3.4	0.7	73.0	2.8	0.7	
Equation													
Section 1	b	0+00.00	b	13+32.30	1332.3	0.25	25.0	1.2	0.3	25.0	1.0	0.3	
Section 3	b	13+32.30	b	15+85.17	252.87	0.05	5.0	0.2	0.1	5.0	0.2	0.1	
Section 1	b	15+85.17	b	98+57.70	8272.53	1.57	157.0	7.2	1.6	157.0	6.0	1.6	
Equation													
Section 4	c	5+36.60	c	144+64.77	13928.17	2.64	264.0	12.1	2.6	264.0	10.0	2.6	
Repair and Leveling													3.2
				Total	67592.52	12.8	1280.0	58.9	12.9	1280.0	48.8	12.9	3.2

GRINDING PCC PAVEMENT

270 Square Yards of Grinding PCC Pavement have been provided to grin the existing PCC Pavement in the eastbound lanes from MRM 71+0.082 to MRM 71+0.107.

Grinding of PCC pavement will be accomplished using diamond blades mounted on a self-propelled machine designed specifically for diamond grinding and texturing pavement. The equipment will weigh a minimum of 35,000 pounds including the grinding head and be of a size that will grind a strip at least 4 feet wide in a single pass. The effective wheel base of the machine will be no less than 12 feet. The effective wheel base is defined as the distance from the front wheel assembly transverse pivot point to the transverse pivot point of the profile/depth control/ground drive wheels.

The equipment will be such that it will not strain or damage the underlying pavement surface. Grinding equipment that causes raveling, aggregate fractures, spalls, or disturbance of the transverse or longitudinal joints will not be permitted.

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. Residue will not be permitted to flow across lanes being used by public traffic or into gutters or drainage facilities. Residue will be disposed of in a manner that will prevent residue, whether in solid or slurry form, from entering any waterway in a concentrated state.

Residue may continuously flow on adjacent vegetated roadway slopes or ditches within the right-of-way. A flexible drag hose will be attached to the discharge end of the slurry pipe to minimize splashing of slurry placed on roadway slopes or ditches.

If the Engineer determines that the slurry may enter a waterway, drainage facility, or curb and gutter section, the slurry will be placed in storage tanks and deposited in settling basins, spread over flat vegetated areas, or filtered by other means approved by the Engineer at no additional cost.

SEQUENCE OF OPERATIONS

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.

Micro-Milling:

1. Install Traffic Control using Standard Plates 634.63 and the Ramp Entrance and Exit Signing Detail #1 to close the driving lane with speed reduction as described below. It will be permissible to work on both the westbound and eastbound lanes simultaneously. Traffic will not be allowed on the shoulder.
    - The work will be performed in three sections, for each lane, in each direction:
        - Westbound
            - MRM 67.50 – MRM 71.50
            - MRM 71.50 – MRM 75.30 (Bridge End)
            - MRM 75.30 (Bridge End) – MRM 80.00
        - Eastbound
            - MRM 80.00 – MRM 75.30 (Bridge End)
            - MRM 75.30 (Bridge End) – MRM 71.50
            - MRM 71.50 – MRM 67.55
    - Speed Limit will be reduced to 65 MPH in the work zone, 45 MPH when workers are present.
2. Perform the micro-milling operation in the closure.
3. Install temporary pavement markings in the driving lane.
4. Switch the traffic control to close the passing lane. Use the Ramp Entrance and Exit Signing Detail #2 at the Exits.
5. Perform the micro-milling operation in the closure.
6. Repeat the described process in the sections identified above until all micro-milling is complete.

Surfacing:

1. Surfacing work can begin in the first section of the Passing Lane once the milling has been completed in the second section and begun in the third section.
2. Prior to paving, perform digouts and spot leveling, as directed by the Engineer, in the closure.
3. Install the asphalt pavement overlay, obtain the necessary cores, and flush seal the passing lane.
4. Install temporary pavement markings in the passing lane.
5. Switch traffic to the passing lane. Use the Ramp Entrance and Exit Signing Detail #1 at the Exits.
6. Repeat, performing digout and spot leveling as directed by the Engineer.
7. Install the asphalt pavement overlay, obtain cores, and flush seal within the closure.
8. Install temporary pavement markings within the closure.
9. Move the Traffic Control to the next section of roadway, as identified above, and repeat the above process until completion of the overlay.

Permanent Striping and Rumble Strips:

1. Install permanent pavement markings using Standard Plate 634.08.
2. Grind 12" Rumble Strip along the shoulders using Standard Plate 634.08.

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.

All temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

All construction operations will be conducted in the general direction of traffic movement.

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. Hours of darkness are defined as ½ hour after sunset until ½ hour before sunrise.

Lane closures will be limited to the section lengths identified. There will be a minimum of 3 miles between closures.

The Contractor will not allow traffic to run on a milled surface at any location on the project for more than 21 calendar days.

Milling operations will be conducted in a manner that keeps uneven lane exposure to a minimum.

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.

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way. 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.

GENERAL TRAFFIC CONTROL (CONTINUED)

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.

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 unit price per foot for "Remove Pavement Marking, 4" or equivalent". 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".

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades will be installed facing traffic within the closed lane at a spacing of ¼ mile.

Construction vehicles will exit or enter the construction work zone at locations identified by the Engineer. At no time will construction vehicles utilize the maintenance crossovers or the Interstate median to exit or enter Interstate traffic.

The Contractor's employee vehicles will not be allowed to park on the interstate median at any time.

Interstate 90 traffic will not be stopped at any time. The interstate will be kept open with one lane of traffic in each direction at all times.

Slow moving equipment that operates at a speed less than 40 MPH may not operate on open lanes of interstate or the shoulder.

LANE CLOSURES

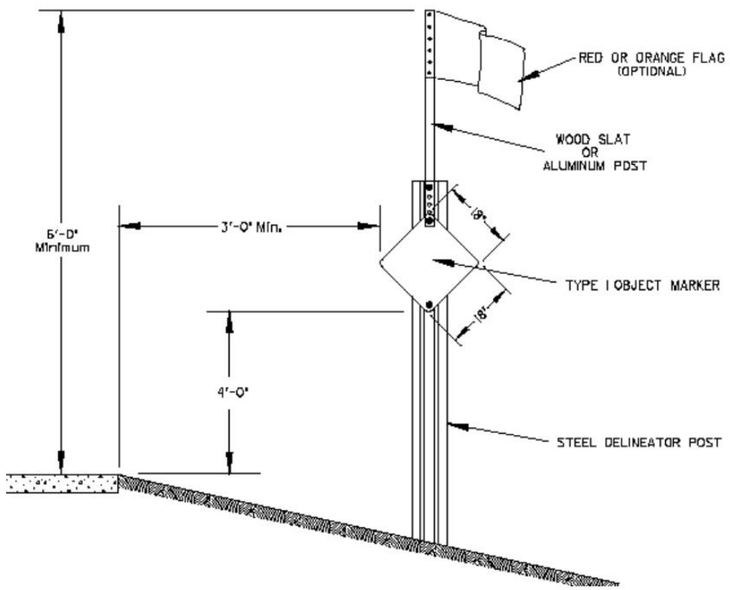
Interstate lane closures shorter than 5 miles will be used if 5 miles is greater than the length of work that can be accomplished in one day's production. More than one lane closure may be permitted; however, there will be a minimum of a three-mile section between lane closures, excluding the tapers. Interstate lane closures will be removed when work will not be occurring for a period of 3 or more calendar days. Activities that do not involve workers being present, such as curing time for concrete, constitute work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

BUMP MARKERS

Orange bump markers will be placed adjacent to the bump location. The bump marker details are shown in the following drawing. The steel delineator post will be a 1.12 lb/ft flanged channel steel post for ground mounted installation. If the duration is less than 3 days, the Type 1 Object Marker can be installed on temporary supports.

BUMP (W8-1) signs with appropriate ADVISORY SPEED (W13-1P) plaques will be placed 500 feet in advance of the bump or as approved by the Engineer for adequate sight distance.

All costs for bump markers, bump signs, and advisory speed plaques will be incidental to the contract unit price per square foot for "Traffic Control Signs".



OVERWIDTH RESTRICTION

Traffic control will be placed so a 16' wide load can pass through the project during all hours. A 14' wide restriction during working hours will be allowed provided flaggers are used and traffic control is adjusted to allow a 16' wide load to pass. Payment for moving traffic control to allow for 16' wide load shall be paid for at the contract lump sum price for Traffic Control, Miscellaneous.

WORK ZONE SPEED REDUCTION

Within the lane closures with active work and construction workers present, traffic may be restricted to 45 MPH. During non-work hours when construction workers are not present, the speed limit will be returned to 65 MPH.
Speed Limit 65 MPH signs will be installed immediately after the occupied work area. The WORK AREA, FINES DOUBLED, SPEED ZONE AHEAD, and the SPEED LIMIT 45 MPH signs will be posted only during the hours when the associated work is actually being performed. The removal or covering of the signs is required when related work activity is curtailed for whatever reason. If the work activity is periodically moved or relocated within the project, the speed zone will be moved with the related activity.

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63 To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

TEMPORARY PAVEMENT MARKING

Temporary Pavement Marking Paint will be used on milled surfaces for centerlines, lane lines, skips, and as directed by the Engineer. The Temporary Pavement Marking Paint will be placed at the location of the existing pavement markings. It will be the Contractor's responsibility to determine which direction to offset so that the markings do not get covered up when the first half of the roadway is paved. Any markings that get covered by the paving operation will be reestablished as directed by the Engineer at the Contractor's expense. The Contractor will be responsible for marking out those exact locations.

Quantities of Temporary Pavement Markings consist of:

- One pass on top of the milled surface in the driving lane.
- One pass on top of the final flush seal in the passing lane.
- One pass after the final flush seal in the driving lane.

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 4" 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, temporary pavement markings will be required to mark centerline and lane lines on segments of roadway where existing centerline markings have been removed.

PERMANENT PAVEMENT MARKING

The Contractor will be required to repaint all existing pavement markings including centerline and edge lines. The cost to duplicate the existing marking locations will be incidental to the contract unit prices for the various contract items.

CONTRACTOR FURNISHED SPEED MONITORING RADAR TRAILER

The Contractor will provide 2 radar speed feedback trailers to monitor traffic speeds on designated routes at locations specified in the field by the Engineer.

The radar speed feedback sign assembly will include a speed limit sign mounted in conjunction with the radar speed feedback display. The speed display will not flash vehicle speeds exceeding the speed limit or any other messages.

All costs associated with furnishing, maintaining, transporting, relocating if necessary, and removing the radar speed feedback trailers from locations specified by the Engineer will be incidental to the contract unit price per each for "Contractor Furnished Speed Monitoring Radar Trailer".

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations identified by the project engineer to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages as directed by the Engineer.

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous materials spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the Pennington County Sheriff, and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered and additional portable signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

PRESS RELEASE ANNOUNCEMENTS

The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

TRAFFIC CONTROL SIGNS

		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-2	YIELD	2	36"	3.9	7.8
R2-1	SPEED LIMIT __	26	36" x 48"	12.0	312.0
R2-6aP	FINES DOUBLE (plaque)	6	36" x 24"	6.0	36.0
W3-2	YIELD AHEAD (symbol)	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (__ MPH)	12	48" x 48"	16.0	192.0
W4-1	MERGE (symbol)	4	48" x 48"	16.0	64.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	8	48" x 48"	16.0	128.0
W8-1	BUMP	4	48" x 48"	16.0	64.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-15	GROOVED PAVEMENT	4	48" x 48"	16.0	64.0
W8-15P	MOTORCYCLE (plaque)	4	30" x 24"	5.0	20.0
W20-1	ROAD WORK AHEAD	14	48" x 48"	16.0	224.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	8	48" x 48"	16.0	128.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
E5-2a	EXIT CLOSED	2	36" x 32"	8.0	16.0
G20-1	ROAD WORK NEXT __ MILES	4	48" x 24"	8.0	32.0
G20-2	END ROAD WORK	8	48" x 24"	8.0	64.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			1479.8

COLD APPLIED PLASTIC PAVEMENT MARKING

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

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

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 consisting of glass beads as well as bonded core reflective elements will be adhered to the paint.

The bonded core reflective elements will contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. The bonded core reflective elements will provide a 50/50 blend of dry to wet ratio of reflective element. All microcrystalline ceramic beads bonded to reflective elements will have a minimum index of refraction of 1.8 for dry retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

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

The Department will take retroreflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retroreflectometer conforming to 30-meter geometry. Retroreflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

Pavement markings not conforming to the retroreflectivity requirements will be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor will schedule subject work to be completed no later than June 15th in the following year. Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edge line including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retroreflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial readings:

Pavement Marking Color	Minimum Value
White	350 mc/m^2/lux
Yellow	275 mc/m^2/lux

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and will be removed and replaced. Additional retroreflectivity readings will be taken by the Department to determine the limits of removal. The removal will be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process will remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width will be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings will be at the Contractor's expense, with no cost incurred by the State.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 27.8 Gals/Mile
Dashed 4" line = 7.6 Gal/Mile
Glass Beads = 5.3 Lbs/Gal.
Composite Reflective Elements = 2.1 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.

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 items.

GROOVING FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot, for Grooving for Durable Pavement Marking contract item.

Unless otherwise specified in the plans, the Contractor will groove the surface for High Build Waterborne Pavement Marking Paint as specified in these plans and as per the manufacturer's instructions.

The grooving will be completed within the following tolerances:

Description	Specification	Tolerance
Depth of Groove	Marking Thickness[1] + 15 mils	+ 5 mils
Width of Groove	5 to 6 inches	
Length of Skip Lines[2]	10 foot 6 inches	± 3 inch
Tapers at ends of lines	6 to 9 inches	
Between Double Lines	4 inches	± 1/2 inch

[1] Marking thickness will include the thickness of marking material and reflective media.
[2] Additional length may be required as specified in the plans.

The equipment will be capable of the following:

- Grooving the total width of the groove in one pass or uniform depths with multiple passes.
- Grooving without causing damage to the pavement joints or joint sealant material.
- Provide uniform alignment and depth.
- Moving continuously to permit a mobile traffic work operation.

If damage occurs, including, but not limited to, joints, joint sealant material, and backer rod, the grooving operation will be stopped, and modifications will be made to the grooving operation to prevent further damage. The Contractor will be required to use specially prepared circular diamond blade cutting heads to prevent damage at the joints. Damage caused will be repaired or replaced by the Contractor, as directed by the Engineer. No additional payment will be made for the repair work or any reapplication of the pavement marking in the area of the repair.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	12	43

Revised 5/30/24 GDS

Table of Pavement Marking

Direction	MRM	to	MRM	Cold Applied Plastic Pavement Marking, 4"	Cold Applied Plastic Pavement Marking, 12"	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	Grooving for Cold Applied Plastic Pavement Marking, 4"	Grooving for Cold Applied Plastic Pavement Marking, 12"	Grooving for Durable Pavement Marking, 4"
				Ft	Ft	Gal	Gal	Ft	Ft	Ft
EB	67.55+0.316		80.00+0.500	16898.0		288.0	288.0	16898.0		135185.0
	78+0.118		78+0.173	120.0	290.0			120.0	290.0	
	78+0.413		78+0.473	155.0	290.0			155.0	290.0	
WB	67.50+0.357		80.00+0.500	16898.0		288.0	288.0	16898.0		135185.0
	78+0.047		78+0.910	155.0	230.0			155.0	230.0	
	78+0.480		78+0.519	105.0	230.0			105.0	230.0	
				34331.0	1040.0	576.0	576.0	34331.0	1040.0	270370.0

Table of Guardrail

MRM	Location	Remove 3 Cable Guardrail for Reset	Remove High Tension 4 Cable Guardrail for Reset	Remove Double Thrie Beam Guardrail for Reset	Remove W Beam Guardrail for Reset	Remove W Beam Guardrail Tangent End Terminal for Reset	Remove W Beam Guardrail End Terminal for Reset	Remove W Beam Guardrail Breakaway Cable Terminal for Reset	Remove W Beam to Thrie Beam Guardrail Transition for Reset	Beam Guardrail Post and Block	Reset 3 Cable Guardrail	Reset High Tension 4 Cable Guardrail	Reset Double Thrie Beam Guardrail	Reset W Beam Guardrail	Reset W Beam Guardrail Tangent End Terminal	Reset W Beam Guardrail End Terminal	Reset W Beam Guardrail Breakaway Cable Terminal	Reset W Beam to Thrie Beam Guardrail Transition
		(Ft)	(Ft)	(Ft)	(Ft)	(Each)	(Each)	(Each)	(Each)	(Each)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)	(Each)	(Each)	(Each)
68.15	EB inside lane	80		12.5	62.5			1	1	18	80		12.5	62.5			1	1
	EB Outside lane	200		12.5	62.5			1	1	18	200		12.5	62.5			1	1
	WB Inside lane	80		12.5	62.5			1	1	18	80		12.5	62.5			1	1
	WB Outside lane	200		12.5	62.5			1	1	18	200		12.5	62.5			1	1
71.13	EB inside lane		450									450						
	EB Outside lane				250	1	1			42				250	1	1		
	WB Inside lane		450									450						
	WB Outside lane				250	1	1			42				250	1	1		
75.31	EB inside lane	80		12.5	62.5			1	1	18	80		12.5	62.5			1	1
	WB Inside lane	80		12.5	62.5			1	1	18	80		12.5	62.5			1	1
78.29	EB inside lane		475									475						
	WB Inside lane		475									475						
	Total	720	1850	75	875	2	2	6	6	192	720	1850	75	875	2	2	6	6

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	14	43

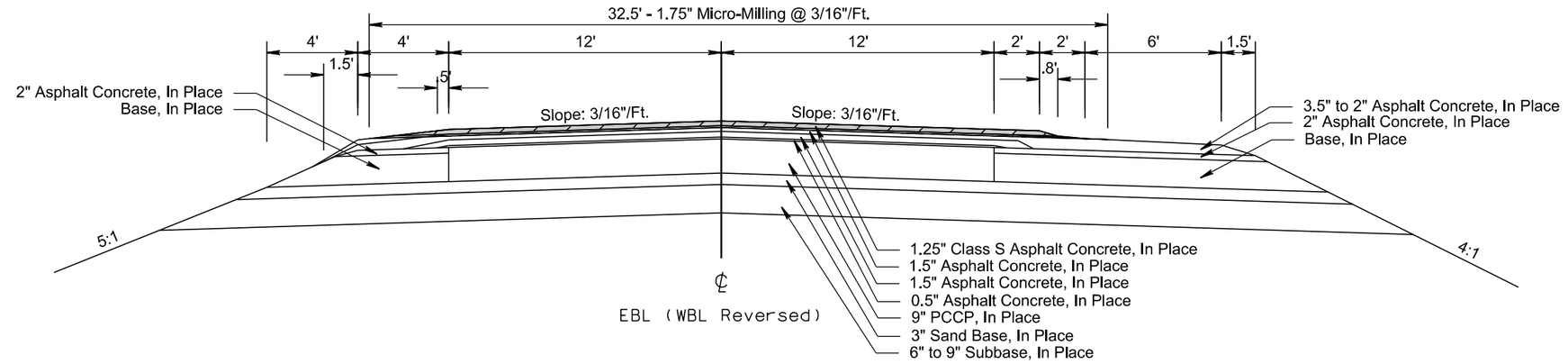
Plotting Date: 05/09/2024 Revised 5/9/24 GDS

Micro-Milling Asphalt Concrete

1.25" Cold Milling Asphalt Concrete for RAP (where needed)

Section 1

Sta. 315+00 to Sta. 321+50.56
Sta. 526+96.9 to Sta. b 13+32.3 (Thru Equation)
Sta. b 15+85.17 to Sta. c 5+36.6 (Thru Equation)
In Place & Cold Milling Section



Equations:

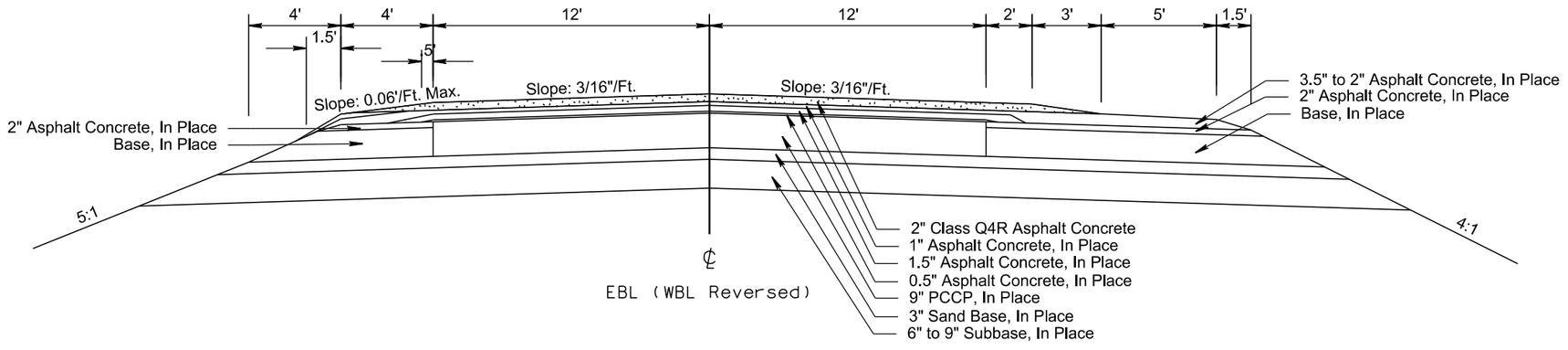
Sta. 712+91.9 Bk =
Sta. a 713+32.3 Ah

Sta. a 757+10.15 Bk =
Sta. b 0+00.00 Ah

Sta. b 98+57.7 Bk =
Sta. c 5+36.6 Ah

Section 1

Sta. 315+00 to Sta. 321+50.56
Sta. 526+96.9 to Sta. b 13+32.3 (Thru Equation)
Sta. b 15+85.17 to Sta. c 5+36.6 (Thru Equation)
Resurfacing Section



TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	15	43

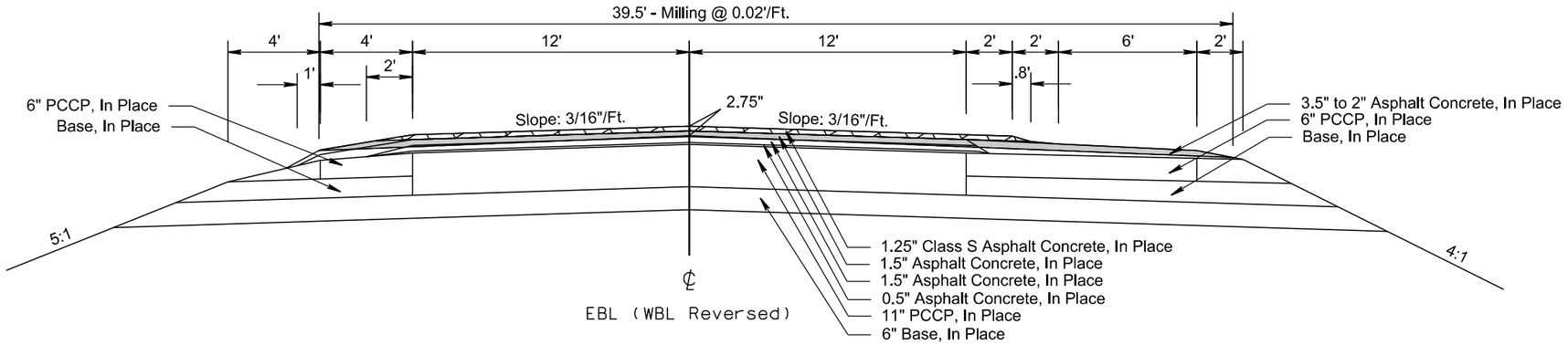
Plotting Date: 05/09/2024 Revised 5/9/24 GDS

Micro-Milling Asphalt Concrete

1.25" Cold Milling Asphalt Concrete

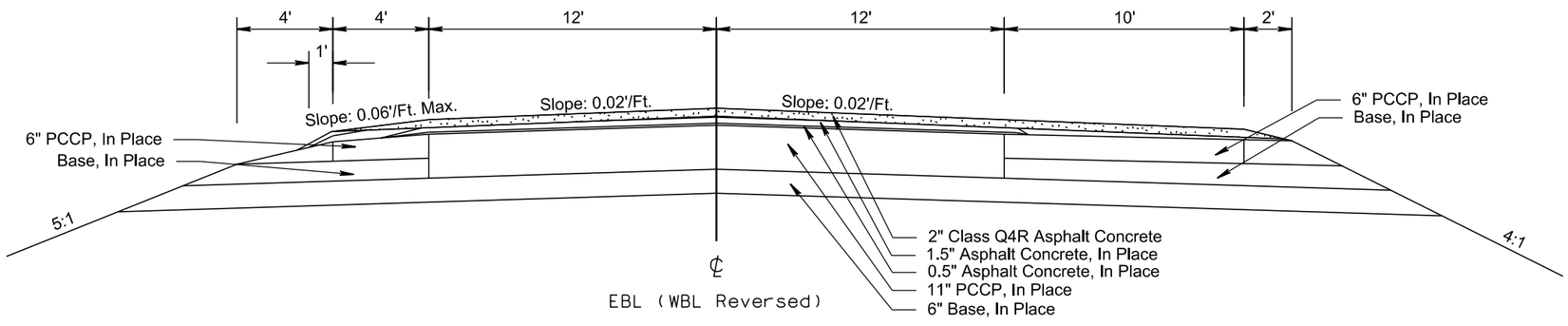
Section 2

Sta. 321+50.56 to Sta. 526+96.90
In Place & Cold Milling Section



Section 2

Sta. 321+50.56 to Sta. 526+96.90
Resurfacing Section



PLOT SCALE - 1:6.00001

PLOT NAME - 2

FILE - ...\09NV_TYPSECT_TJ02_MEET4RSTANDARDS2.DGN

PLOTTED FROM - TRRC12608

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	16	43

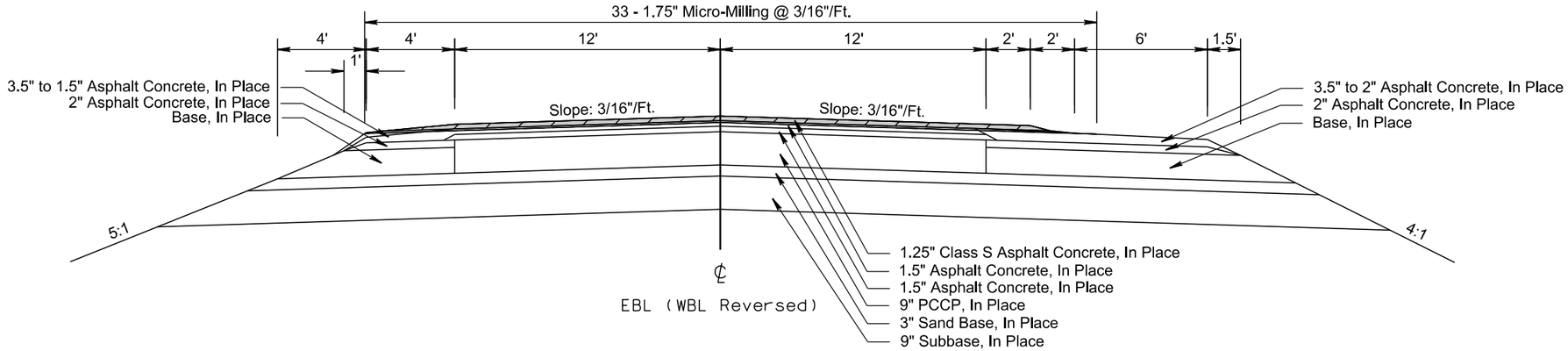
Plotting Date: 05/09/2024 Revised 5/9/24 GDS

Micro-Milling Asphalt Concrete

1.25" Cold Milling Asphalt Concrete for RAP (where needed)

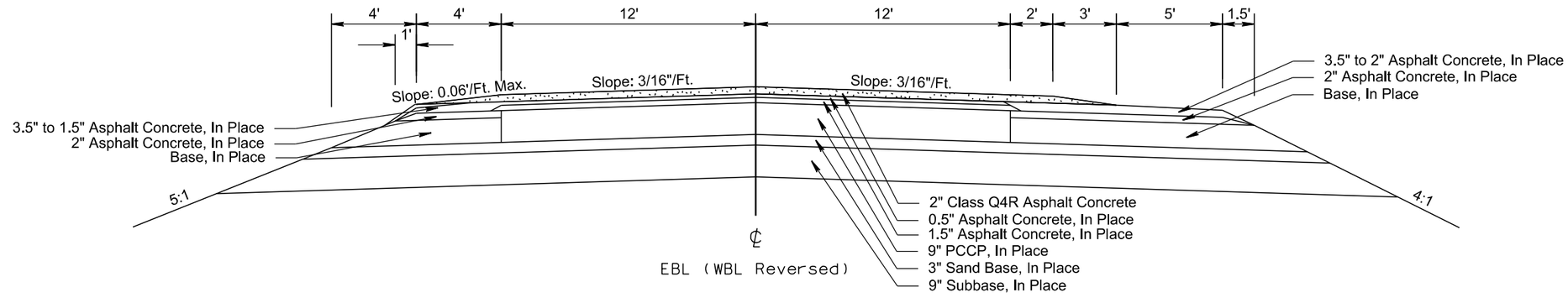
Section 3

Sta. b 13+32.3 to Sta. b 15+85.17
In Place & Cold Milling Section



Section 3

Sta. b 13+32.3 to Sta. b 15+85.17
Resurfacing Section



PLOT SCALE - 1:6.00001

PLOT NAME - 3

FILE - ...\09NV_TYPSECT_TJ02_MEET4RSTANDARDS2.DGN

PLOTTED FROM - TRRC12608

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	17	43

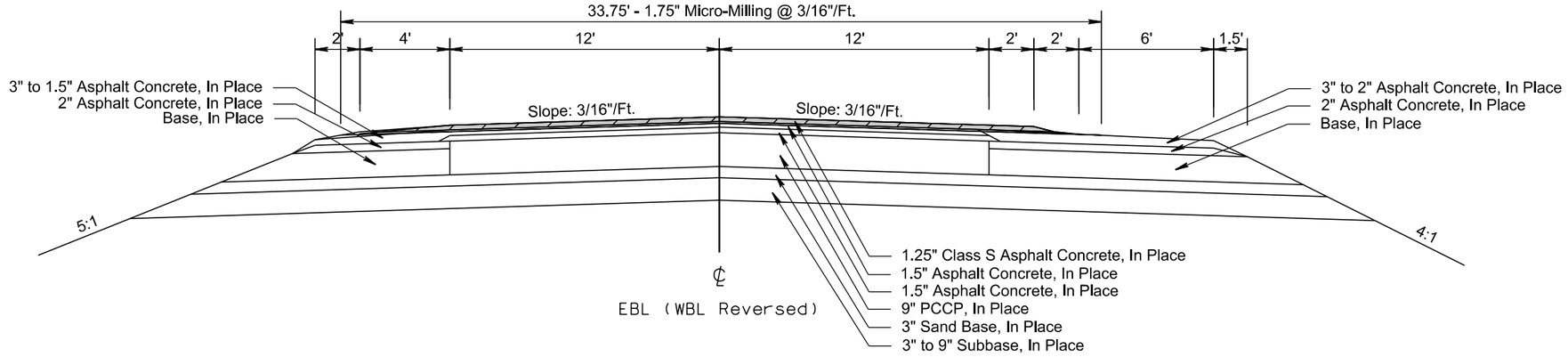
Plotting Date: 05/09/2024 Revised 5/9/24 GDS

Micro-Milling Asphalt Concrete

1.25" Cold Milling Asphalt Concrete for RAP (where needed)

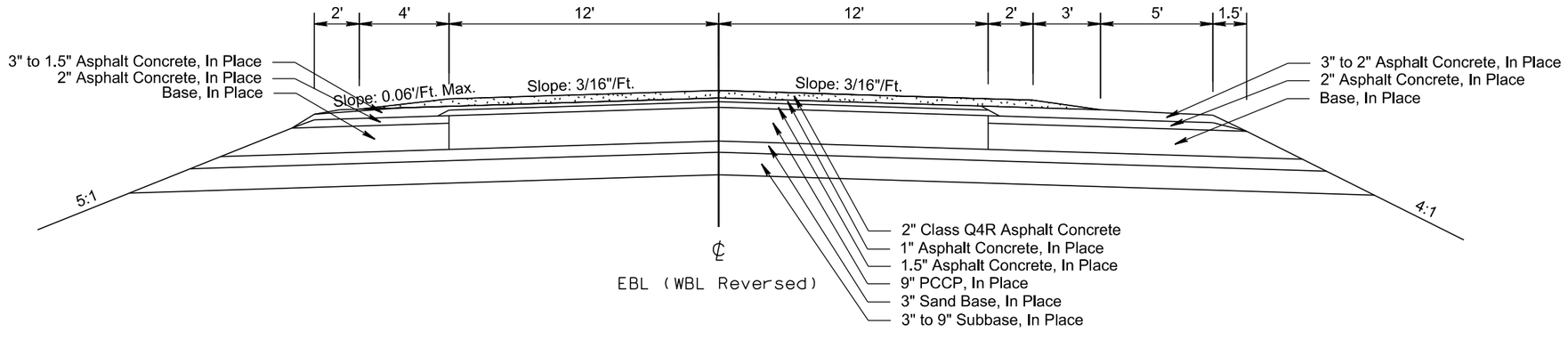
Section 4

Sta. c 5+36.6 to Sta. c 144+64.77
In Place & Cold Milling Section



Section 4

Sta. c 5+36.6 to Sta. c 144+64.77
Resurfacing Section



PLOT SCALE - 1:6.00001

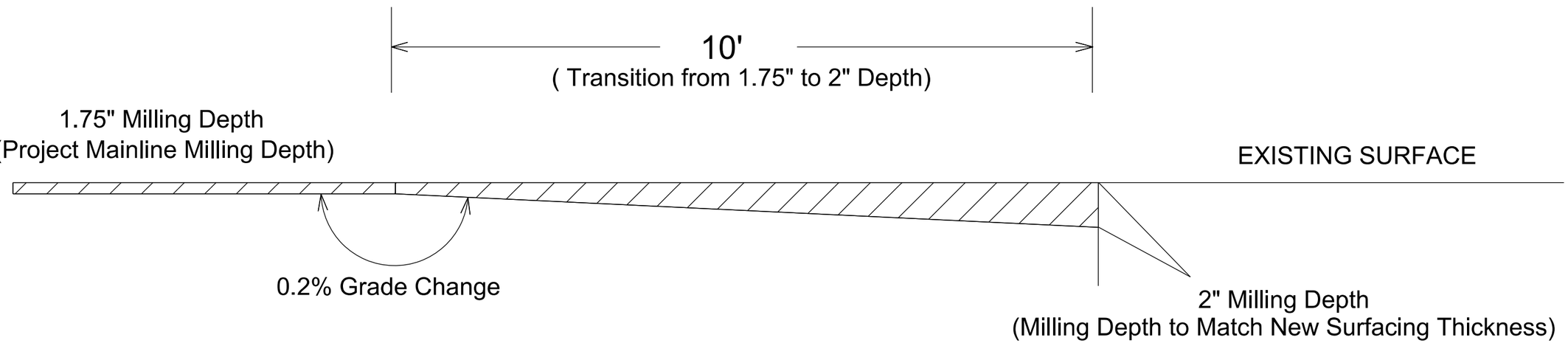
PLOT NAME - 4

FILE ...\09NV_TYPSECT_TJ02_MEET4RSTANDARDS2.DGN

PLOTTED FROM - TRRC12608

MICRO MILLING ASPHALT CONCRETE PROFILE TO MATCH EXISTING SURFACES AT BEGINNING AND END OF PROJECT, AND STRUCTURE ENDS

MICRO MILLING DEPTH TRANSITION LENGTH
(40' per 1" milling depth change)

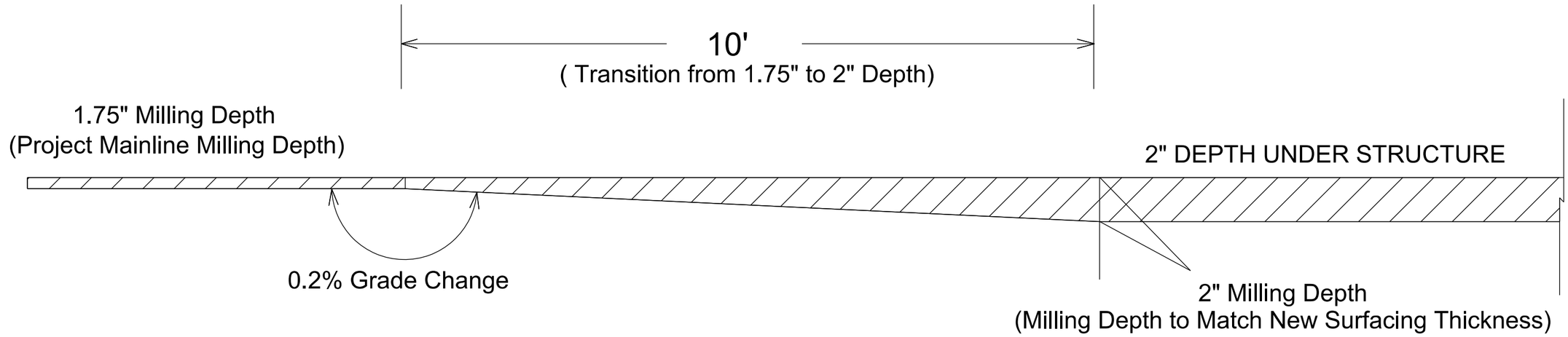


Micro Milling

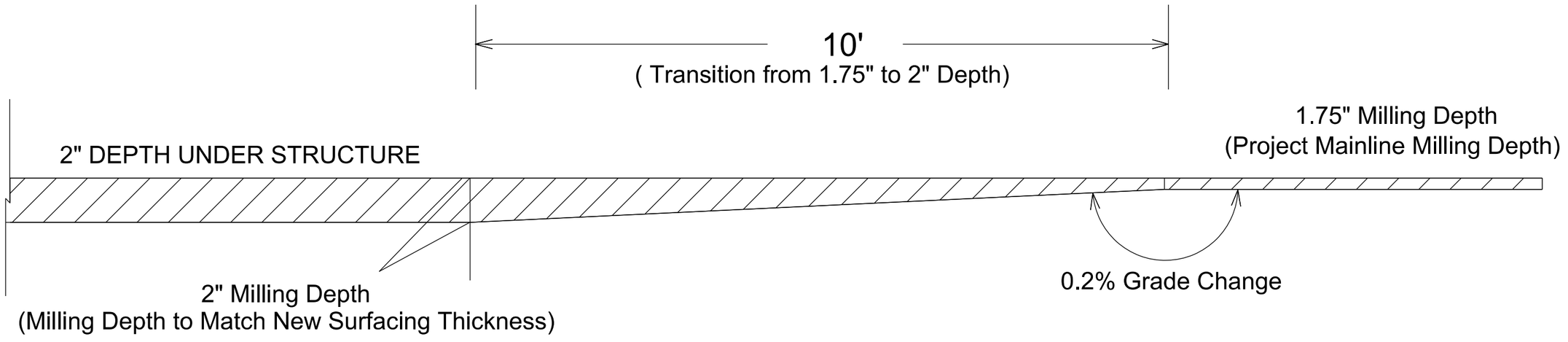
MICRO MILLING ASPHALT CONCRETE TO MAINTAIN VERTICAL CLEARANCE UNDER STRUCTURES AT MRM 71.13 WB, 78.29 WB, & 78.29 EB

Micro Milling

MICRO MILLING DEPTH TRANSITION LENGTH
(40' per 1" milling depth change)



MICRO MILLING DEPTH TRANSITION LENGTH
(40' per 1" milling depth change)



PLOT SCALE - 1:200

PLOTTED FROM - TRRC12608

PLOT NAME - 3

FILE -...\VAC COLD MILLING PROFILE TO MATCH EXISTING SURFACES.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	20	43

Plotting Date: 05/09/2024 Revised 5/9/24 GDS

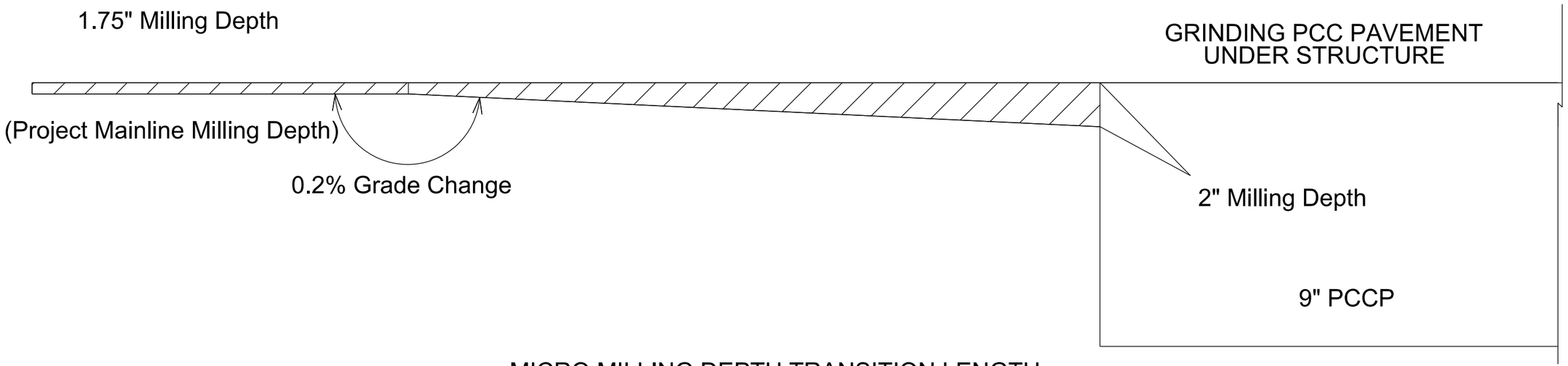
MICRO MILLING ASPHALT CONCRETE TO MAINTAIN VERTICAL CLEARANCE UNDER STRUCTURE AT MRM 71.13 EB

Micro Milling

MICRO MILLING DEPTH TRANSITION LENGTH
(40' per 1" milling depth change)

10'

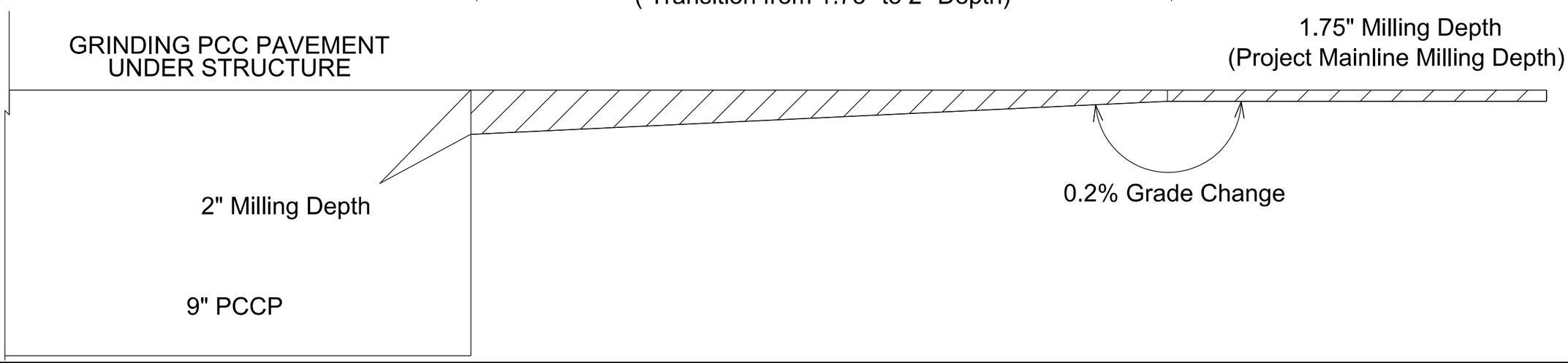
(Transition from 1.75" to 2" Depth)



MICRO MILLING DEPTH TRANSITION LENGTH
(40' per 1" milling depth change)

10'

(Transition from 1.75" to 2" Depth)



PLOT SCALE - 1:200

PLOTTED FROM - TRRC12608

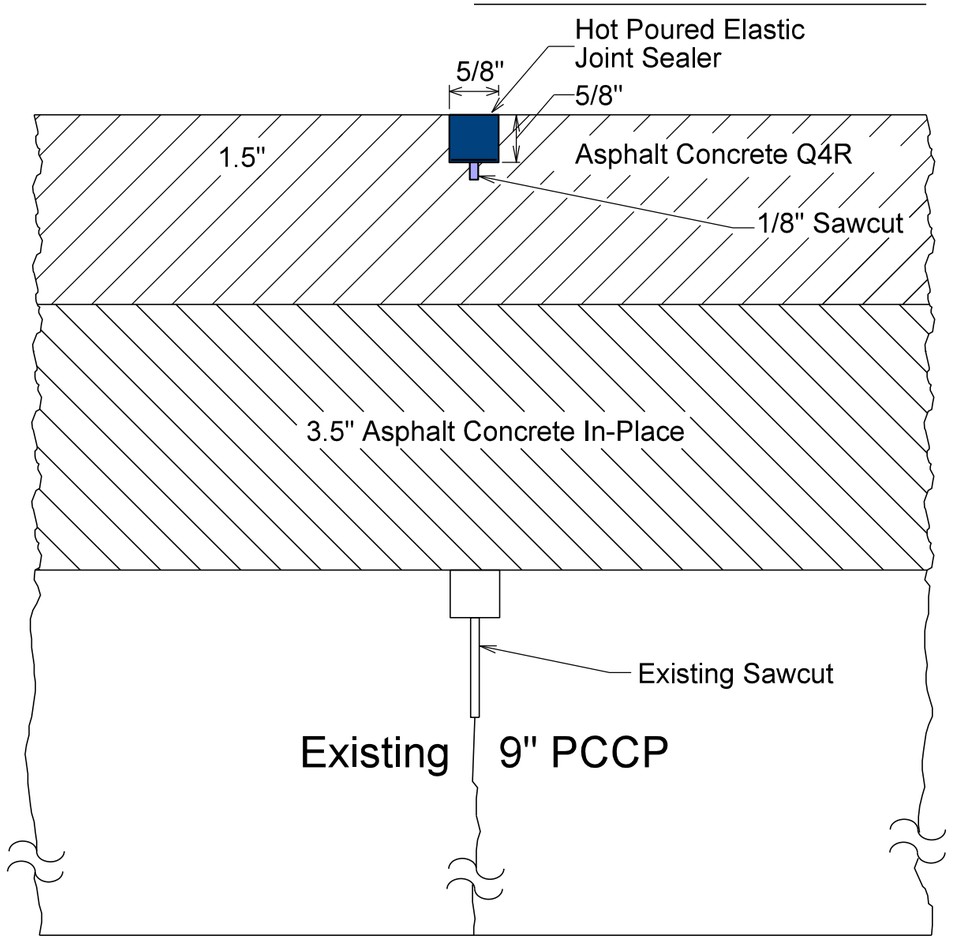
PLOT NAME - 4

FILE - ...\AC COLD MILLING PROFILE TO MATCH EXISTING SURFACES.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	21	43

Plotting Date: 04/16/2024

SAW AND SEAL TRANSVERSE JOINT IN ASPHALT CONCRETE AFTER MAINLINE RESURFACING



Plot Scale - 1:200

Plotted From - TRRC12608

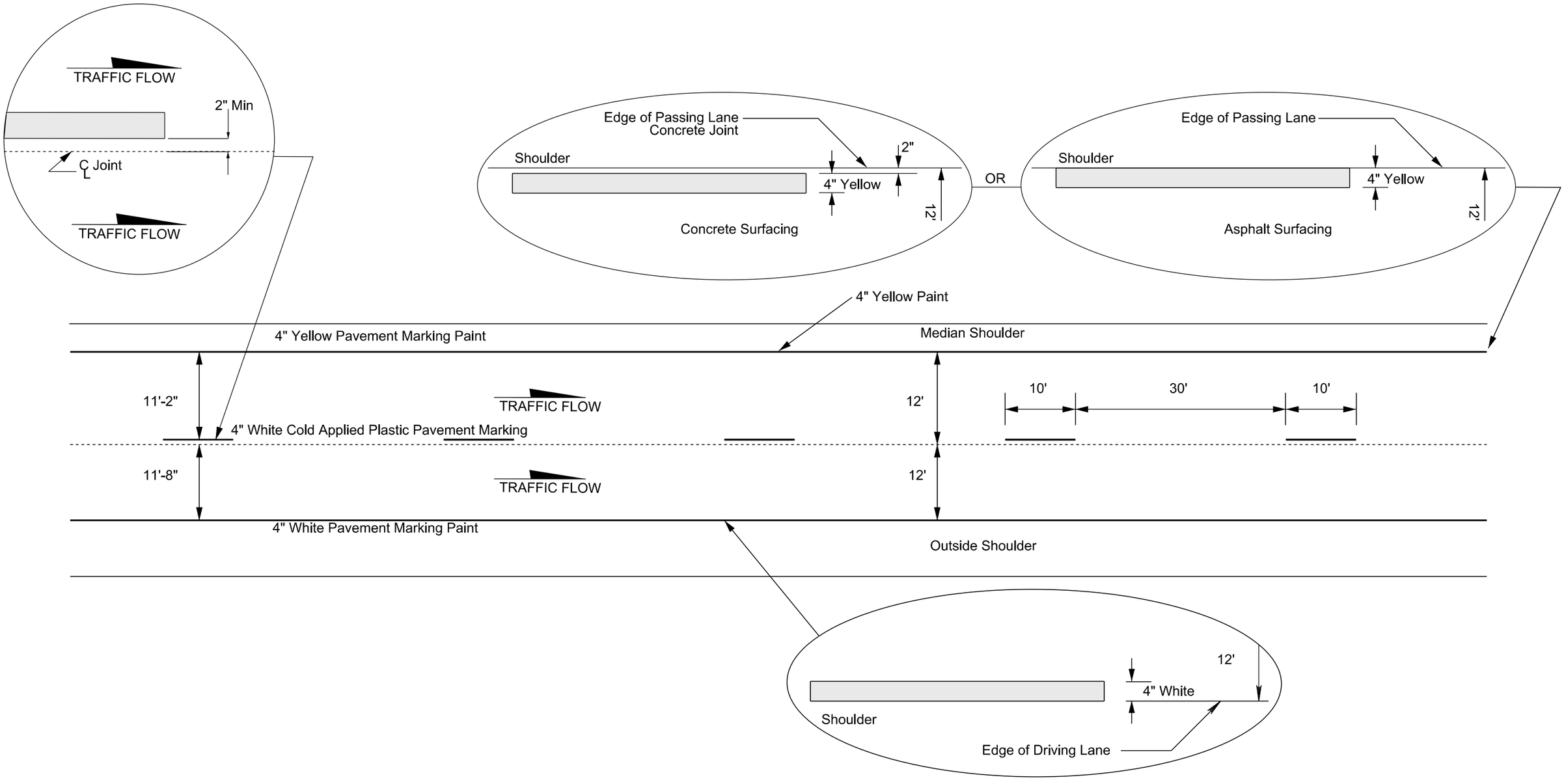
File - ...\Penn09NV\Design\SawSeal.dgn

SD DOT	PROJECT	SECTION	SHEET
	IM 090-2(188)67	22	43

Plotting Date: 04/16/2024

TYPICAL PAVEMENT MARKING LAYOUT

4 LANE DIVIDED HIGHWAY (4" Marking)



PLOT SCALE - 1:200

PLOT NAME - 6

FILE - ...\3D PAVEMENT MARKING DETAILS.DGN

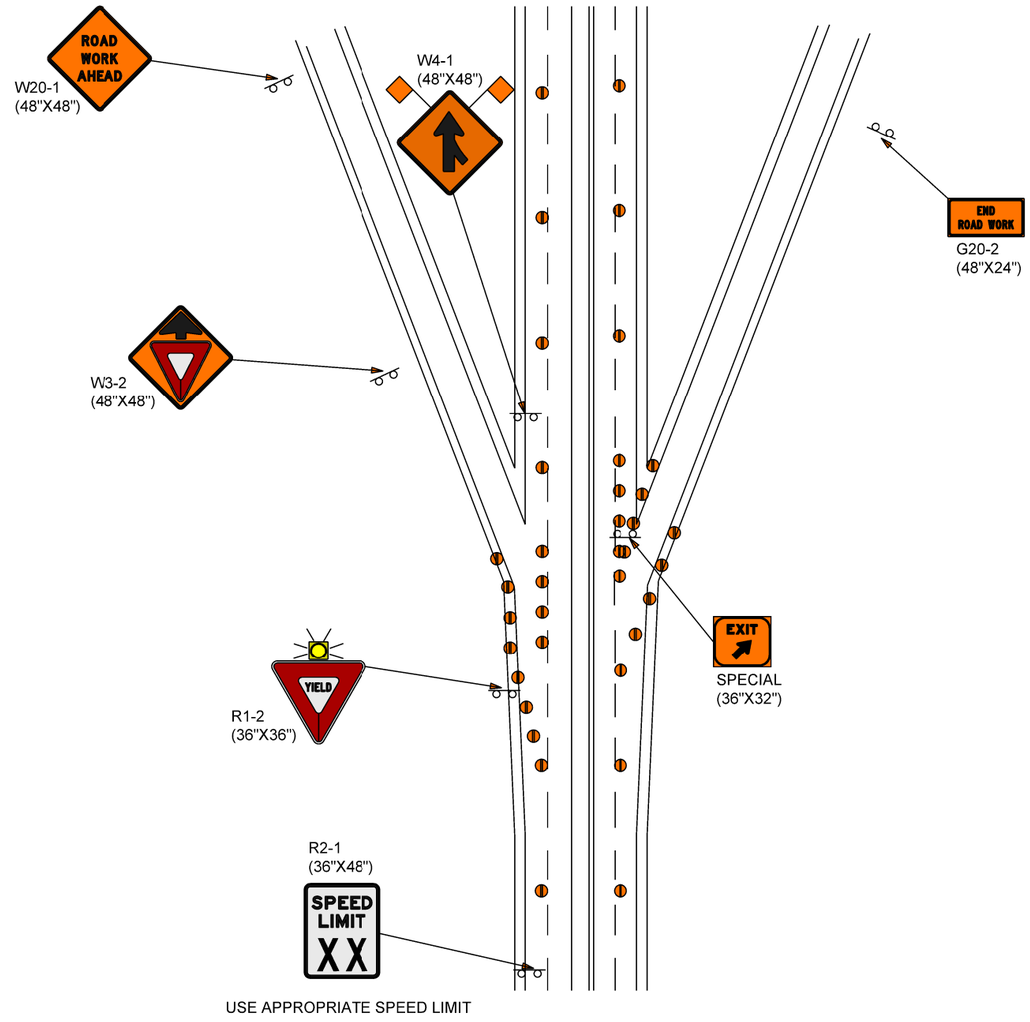
PLOTTED FROM - TRRC12608

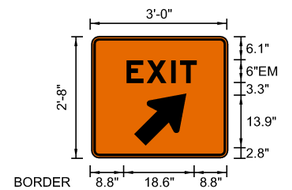
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	23	43

Plotting Date: 05/13/2021

TRAFFIC CONTROL

RAMP ENTRANCE AND EXIT SIGNING DETAILS #1





BORDER
R=1.5"
TH=0.63"
IN=0.47"

Panel Style: construction_guide.ssi
M.U.T.C.D.: 2009 Edition

-- TYPE B SHIELDED WARNING LIGHT

Plot Scale - 1:40

Plotted From - TRRC11640

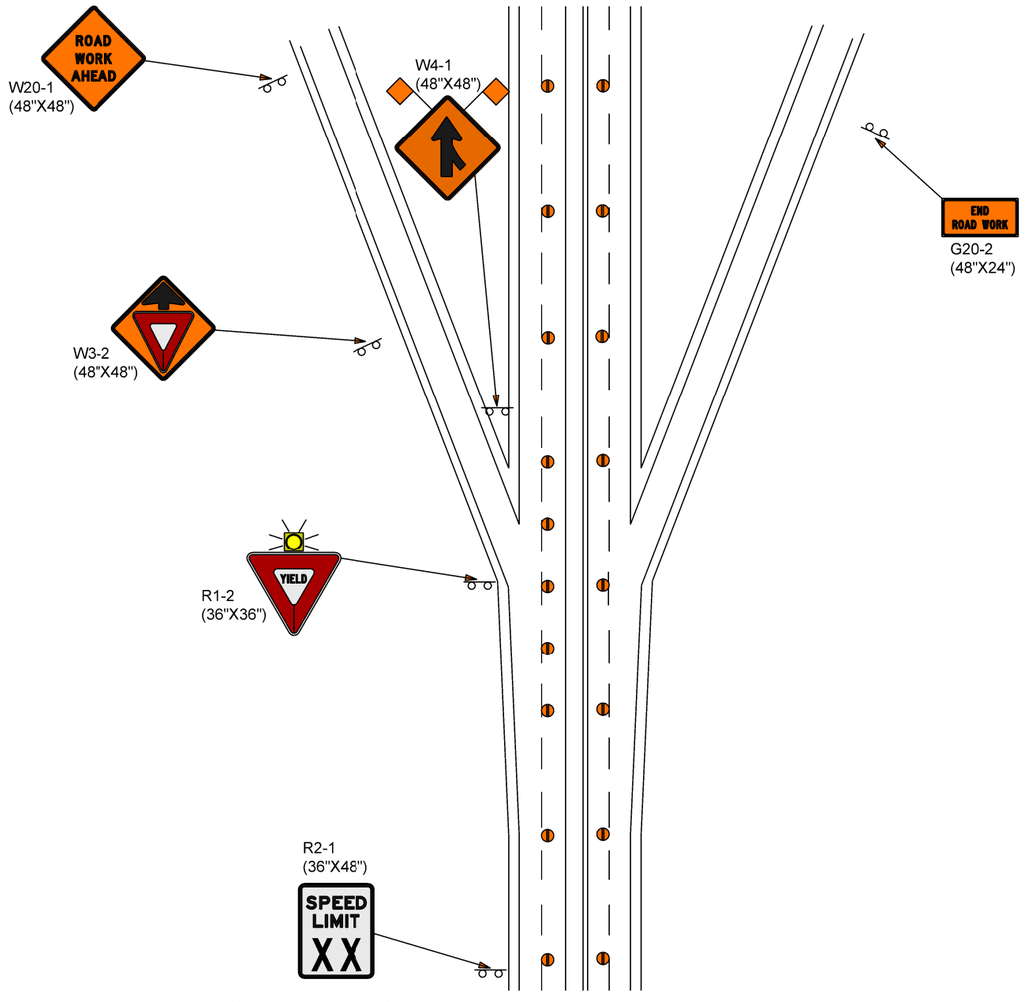
File - ...\Typical ramp signing details.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	24	43

Plotting Date: 05/13/2021

TRAFFIC CONTROL

RAMP ENTRANCE AND EXIT SIGNING DETAILS #2



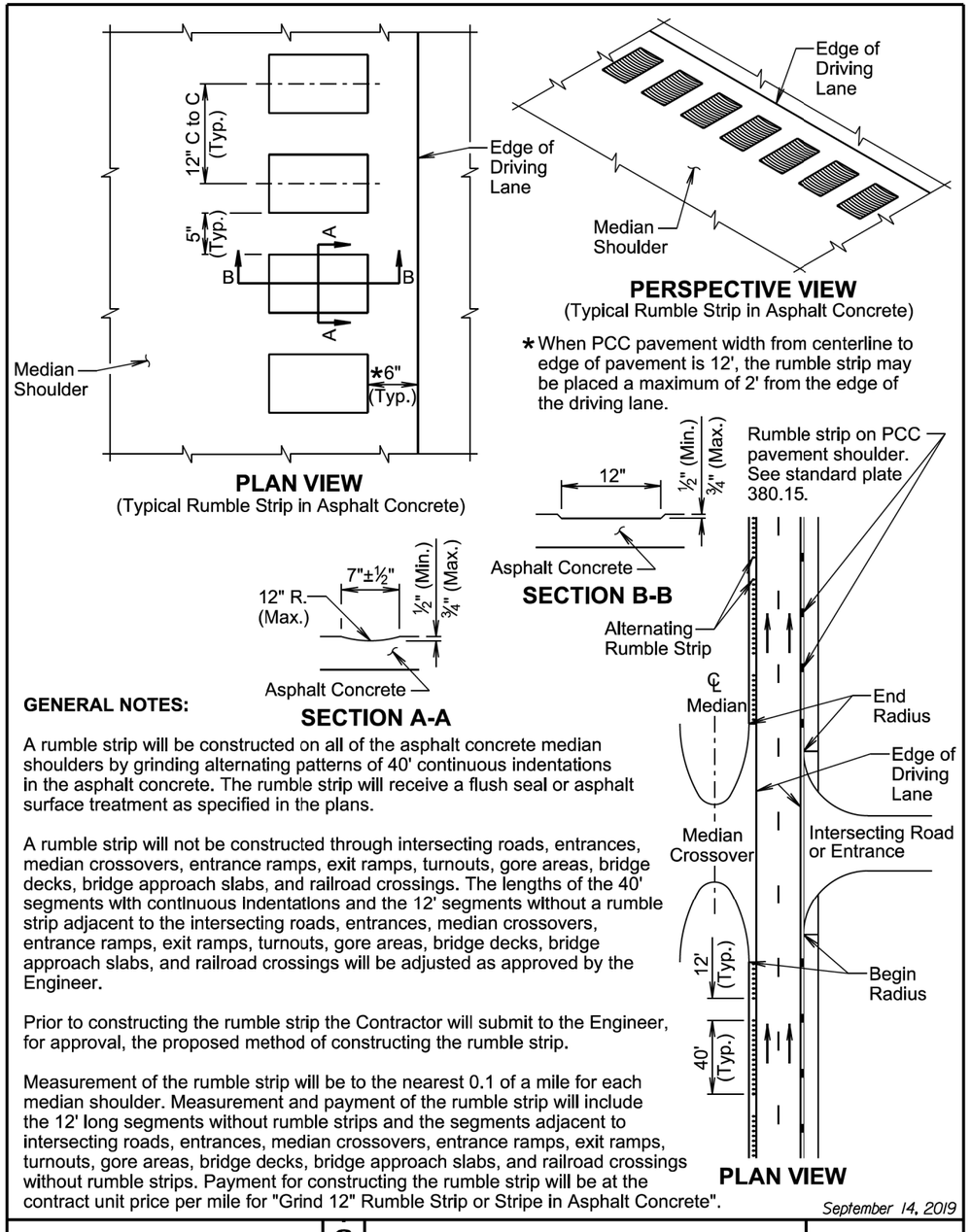
USE APPROPRIATE SPEED LIMIT

-- TYPE B SHIELDED WARNING LIGHT

Plot Scale - 1:40

Plotted From - TRRC11640

File - ...\Typical ramp signing details.dgn



PERSPECTIVE VIEW
(Typical Rumble Strip in Asphalt Concrete)

PLAN VIEW
(Typical Rumble Strip in Asphalt Concrete)

* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.

SECTION B-B

SECTION A-A

PLAN VIEW

GENERAL NOTES:

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

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

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

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

September 14, 2019

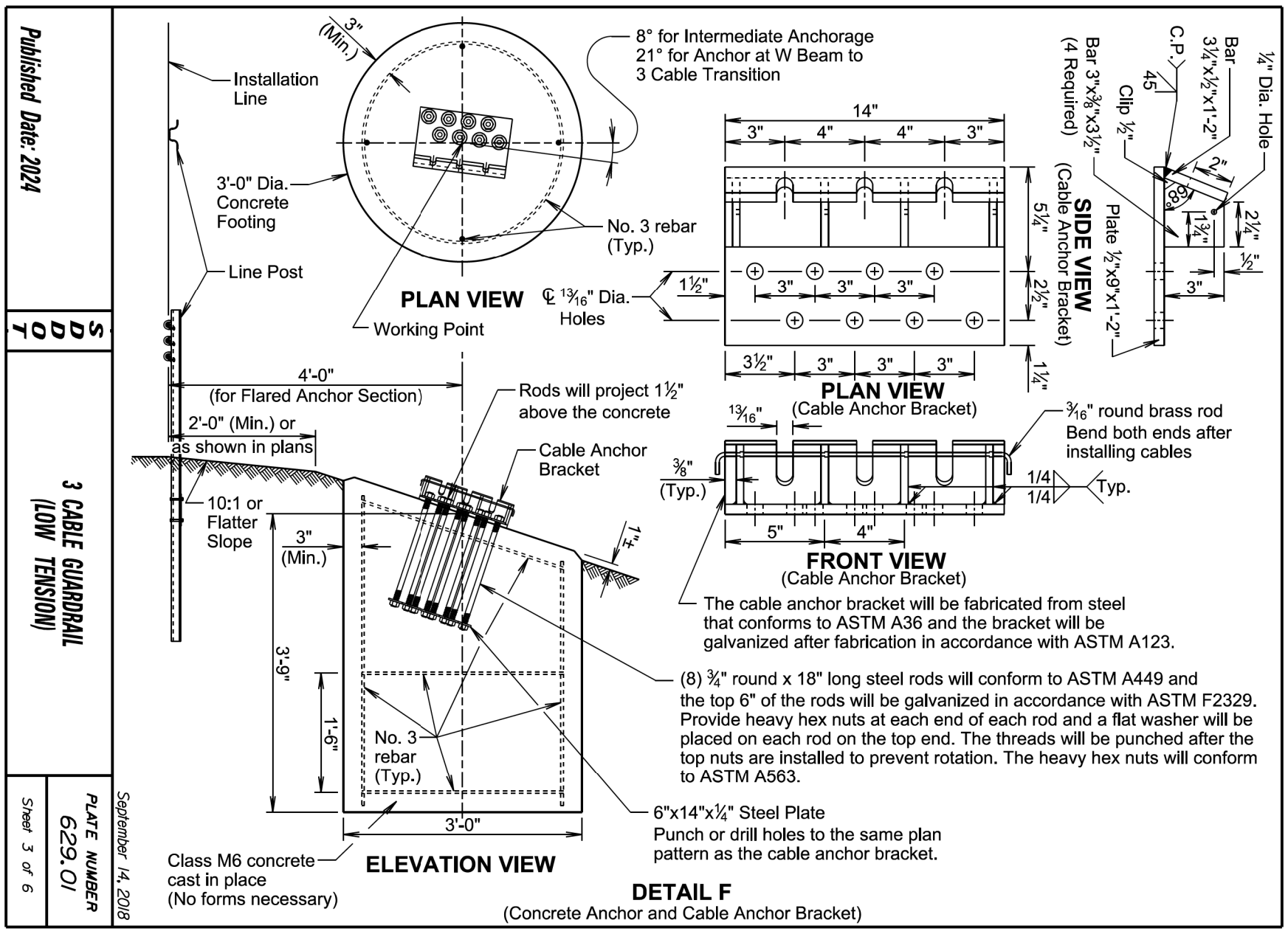
Published Date: 2024

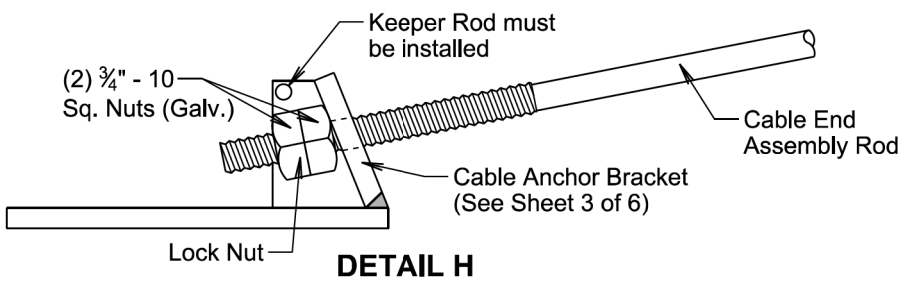
SDDOT

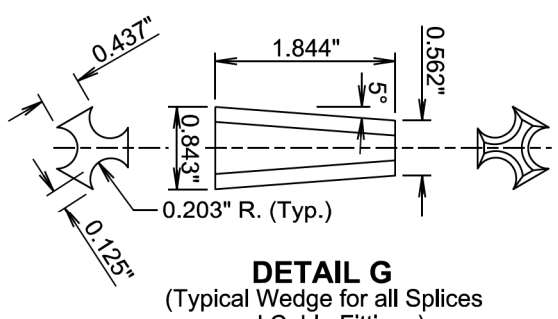
12" RUMBLE STRIP IN ASPHALT CONCRETE ON DIVIDED HIGHWAY MEDIAN SHOULDER

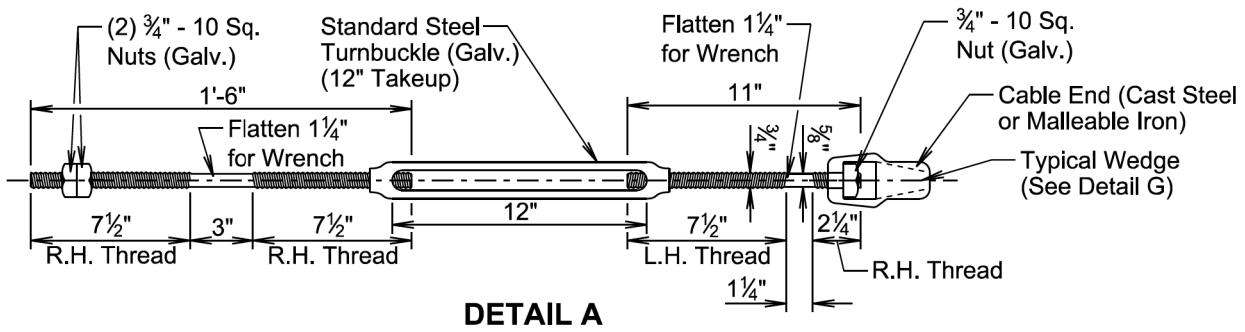
PLATE NUMBER 320.26

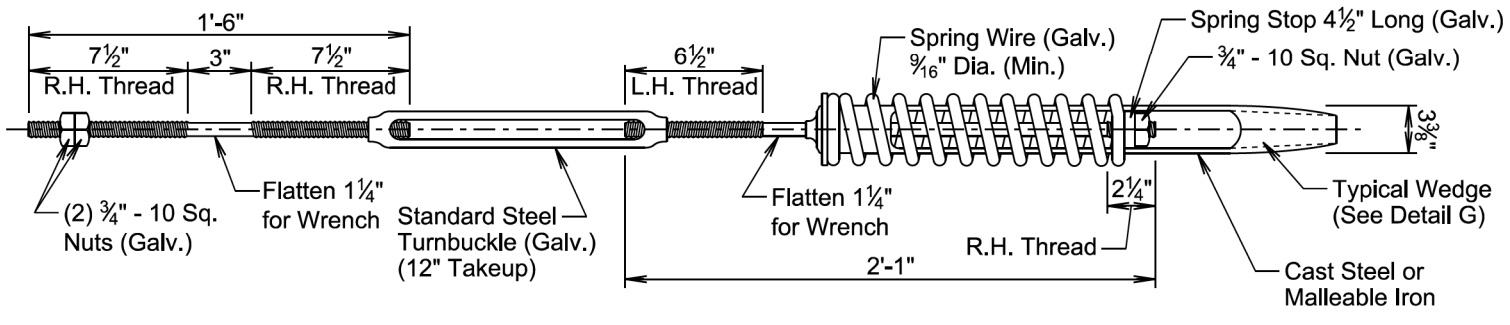
Sheet 1 of 1











Published Date: 2024

SDDOT

3 CABLE GUARDRAIL (LOW TENSION)

PLATE NUMBER 629.01

Sheet 3 of 6

September 14, 2018

Sheet 4 of 6

Published Date: 2024

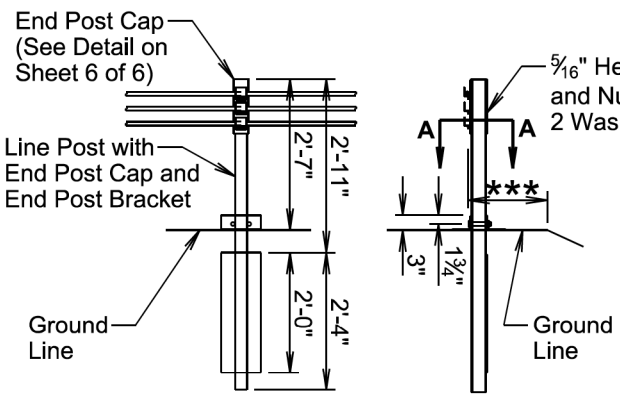
STD

3 CABLE GUARDRAIL
(LOW TENSION)

PLATE NUMBER
629.01

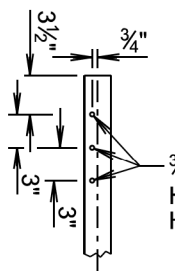
Sheet 5 of 6

September 14, 2018

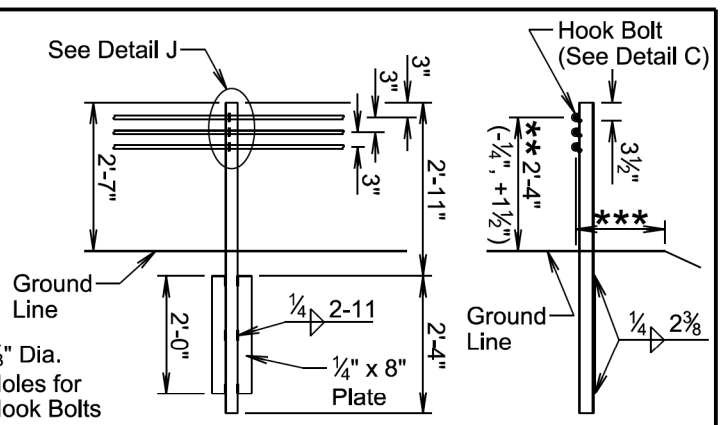


FRONT VIEW SIDE VIEW

DETAIL D
(End Post)



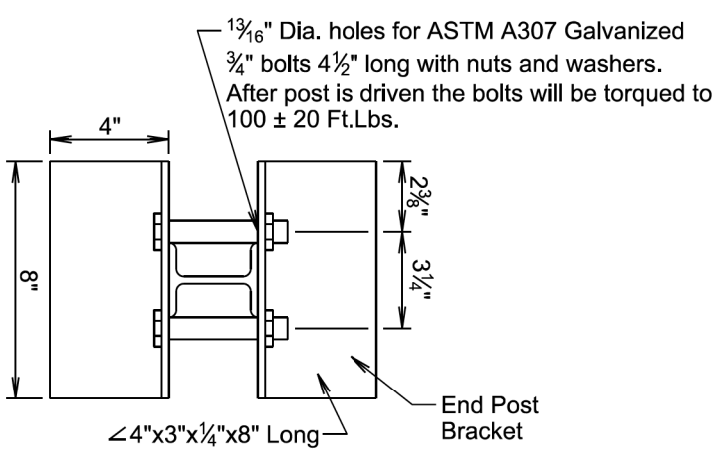
DETAIL J



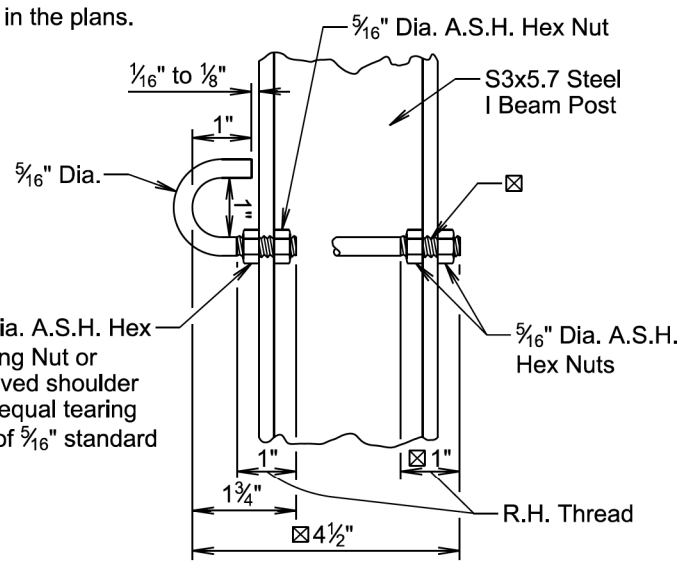
FRONT VIEW SIDE VIEW

DETAIL E
(Line Post)

** See Standard Plate 630.99
*** 2' (Min.) or as shown in the plans.



SECTION A-A



DETAIL C
(Hook Bolt)

☒ Alternate Type
Hook Bolt

S3x5.7 STEEL I BEAM POST
FOR 3 CABLE GUARDRAIL

Published Date: 2024

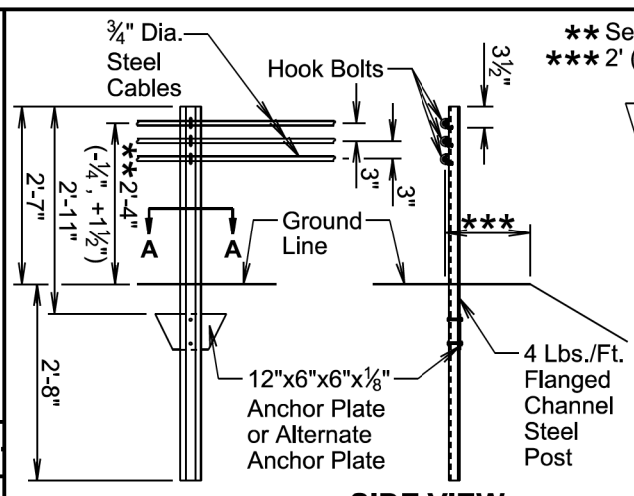
STD

3 CABLE GUARDRAIL
(LOW TENSION)

PLATE NUMBER
629.01

Sheet 6 of 6

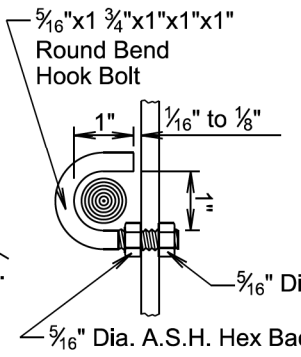
September 14, 2018



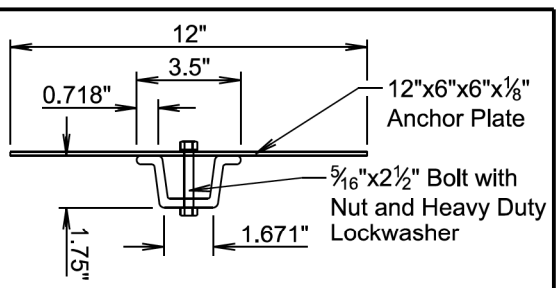
FRONT VIEW SIDE VIEW

DETAIL E
(Alternate Line Post)

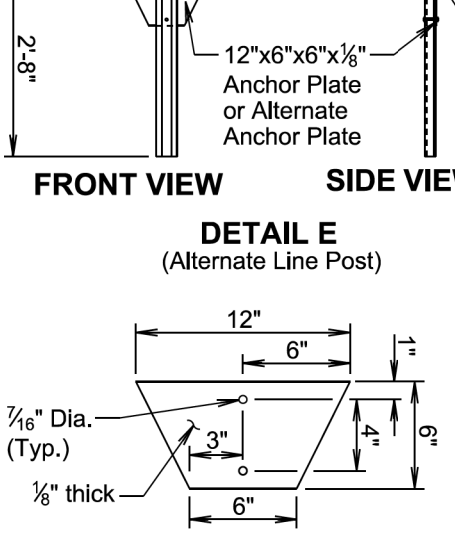
** See Standard Plate 630.99
*** 2' (Min.) or as shown in the plans.



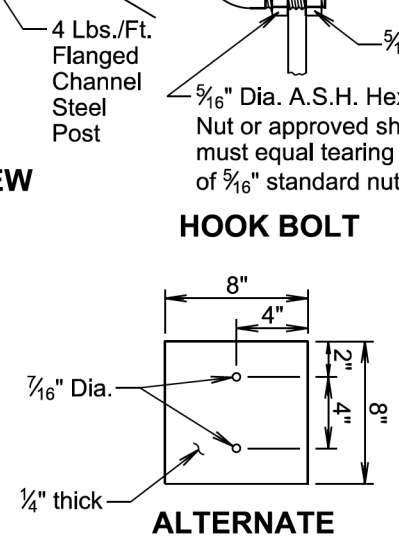
HOOK BOLT



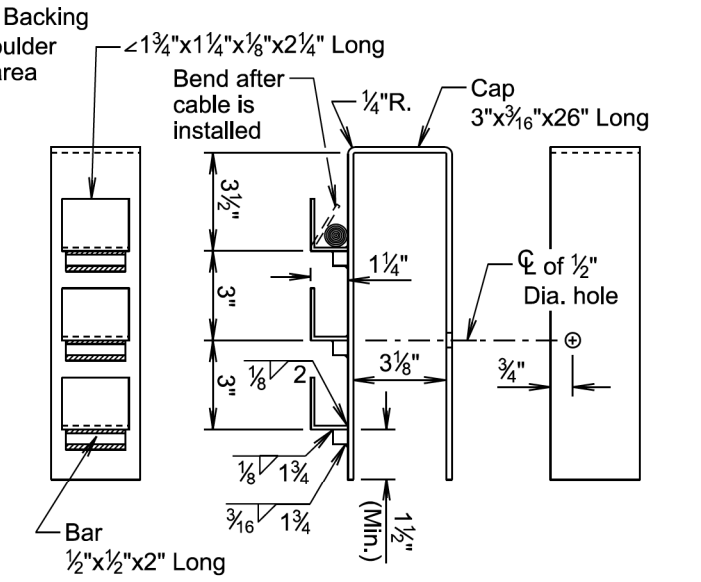
SECTION A-A



ANCHOR PLATE



ALTERNATE
ANCHOR PLATE



FRONT VIEW SIDE VIEW BACK VIEW

END POST CAP

FLANGED CHANNEL STEEL POST
FOR 3 CABLE GUARDRAIL

GENERAL NOTES:

Flanged channel steel posts will be produced from high strength steel in accordance with ASTM A499, Grade 60.
Anchor plates will be in conformance with ASTM A709, Grade 36.
Bolt will be in conformance with ASTM A307. Nut will be in conformance with ASTM A563, Grade DH.
Bolt will be galvanized in accordance with ASTM F2329.
Finish for the post and anchor plate will be a baked on high quality dark green enamel.
Alternate anchor plate may be unfinished.

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STATE OF SOUTH DAKOTA

PROJECT
IM 090-2(188)67

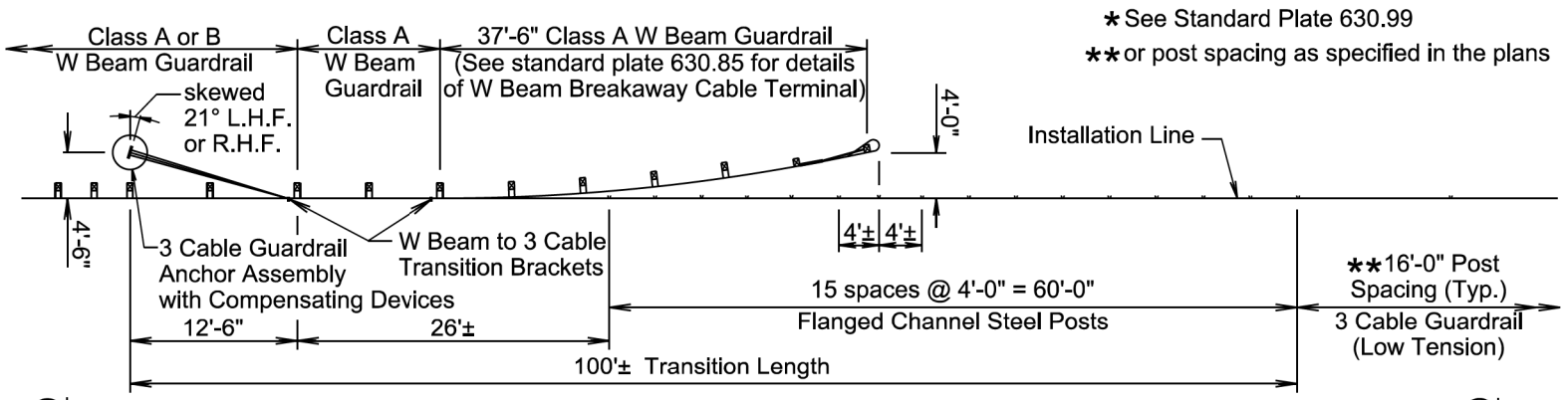
SHEET 27

TOTAL SHEETS 43

Published Date: 2024

SDDOT

W BEAM TO 3 CABLE TRANSITION



* See Standard Plate 630.99

** or post spacing as specified in the plans

GENERAL NOTES:

Flanged channel steel posts are shown on this standard plate, however, S3x5.7 steel I beam posts may be substituted for the flanged channel steel posts.

All costs associated with furnishing and installing the W Beam to 3 Cable Transition Bracket will be incidental to the contract unit price per foot for "3 Cable Guardrail", "Reset 3 Cable Guardrail", or "Reset 3 Cable Guardrail, Cable Only".

See standard plate 630.10 for details of W Beam Guardrail.

See standard plate 629.01 for details and payment information for 3 Cable Guardrail.

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PLATE NUMBER 629.05

Sheet 1 of 1

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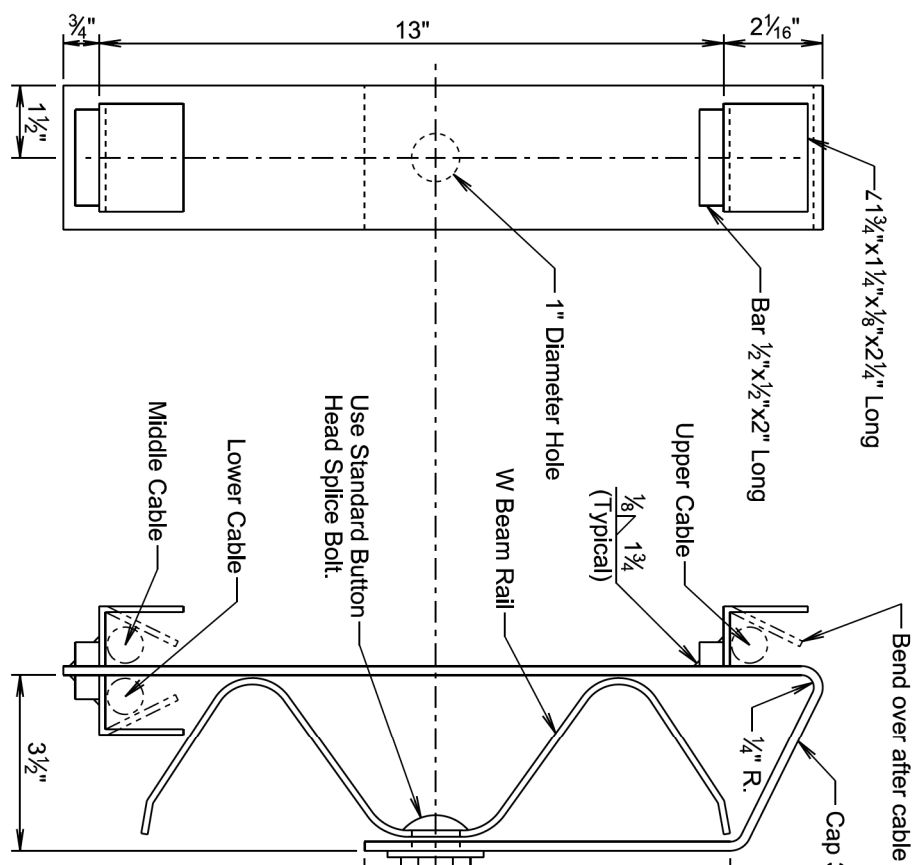
SDDOT

W BEAM TO 3 CABLE TRANSITION BRACKET



GENERAL NOTES:

Steel used in the fabrication of the bracket will conform to ASTM A36 and the bracket will be galvanized after fabrication in accordance with ASTM A123.

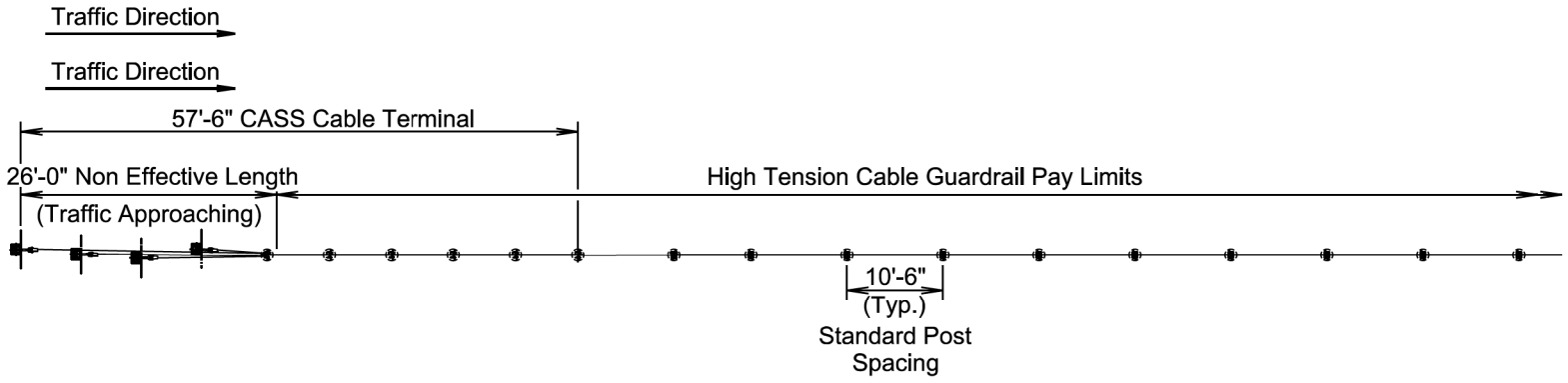
September 14, 2018

PLATE NUMBER 629.15

Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
Plotting Date: 04/16/2024	IM 090-2(188)67	28	43

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

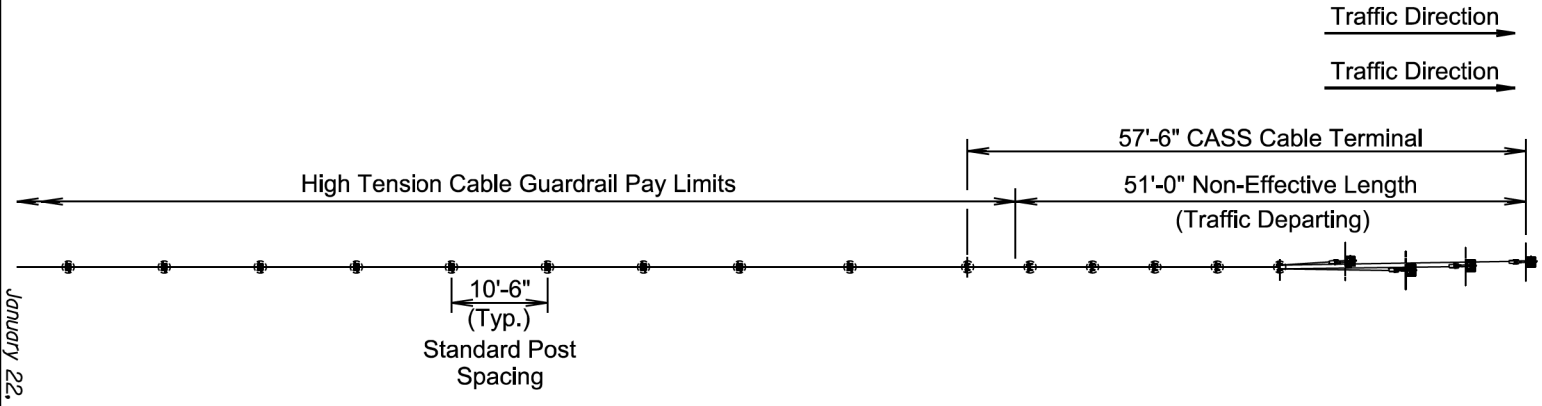


GENERAL NOTES:

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

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

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



Published Date: 2024

SDDOT

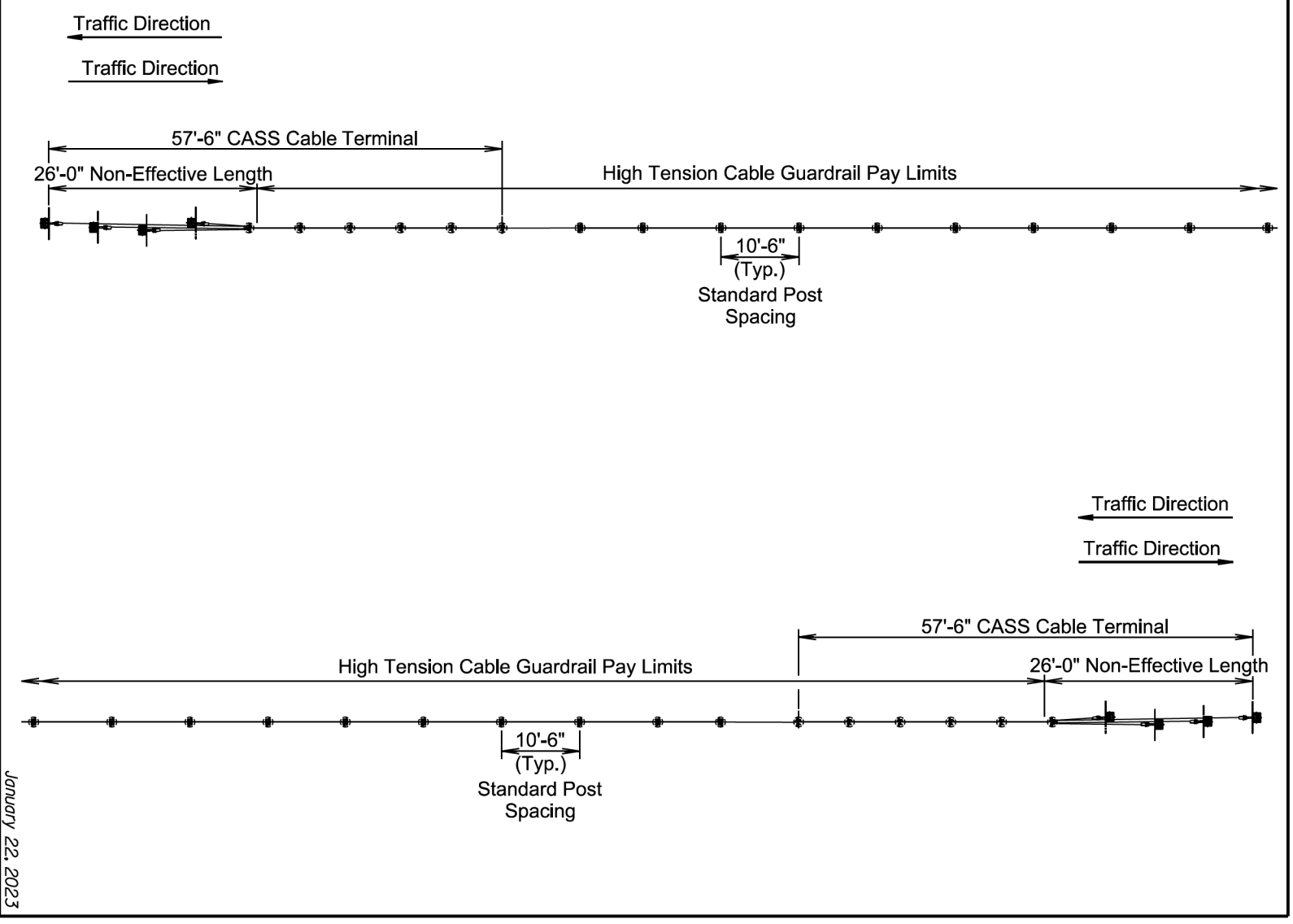
HIGH TENSION CABLE GUARDRAIL

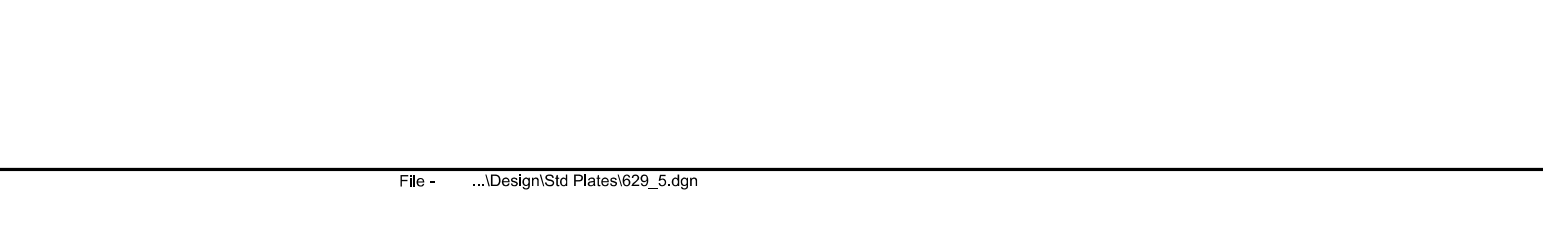
PLATE NUMBER 629.50

Sheet 1 of 3

January 22, 2023

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





Published Date: 2024

SDDOT

HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER 629.50

Sheet 2 of 3

January 22, 2023

STATE OF SOUTH DAKOTA

PROJECT IM 090-2(188)67

SHEET 29

TOTAL SHEETS 43

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SDDOT

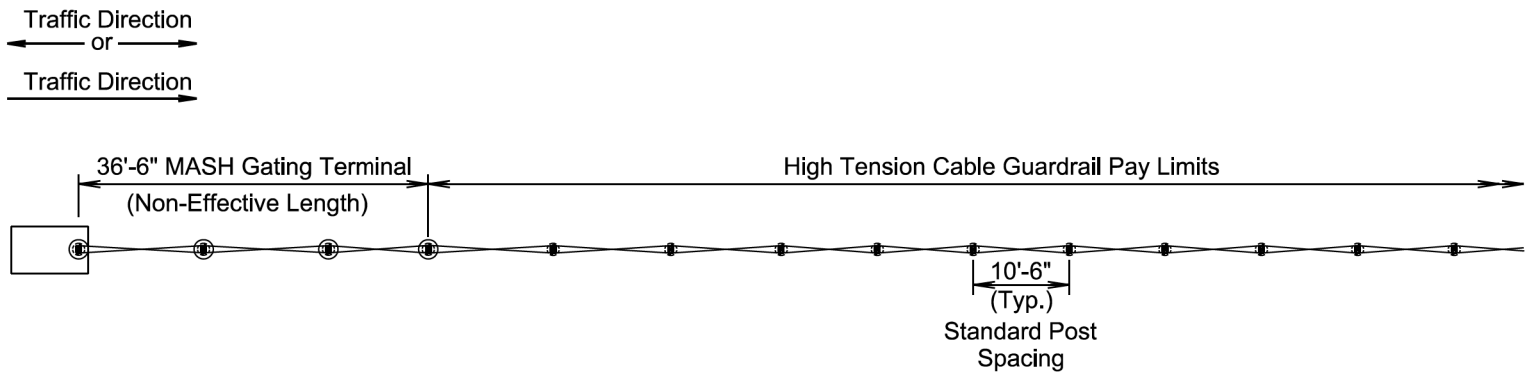
HIGH TENSION CABLE GUARDRAIL

PLATE NUMBER 629.50

Sheet 3 of 3

January 22, 2023

Pay Limits for One-Way and Two-Way Traffic Roadway
Brifen System

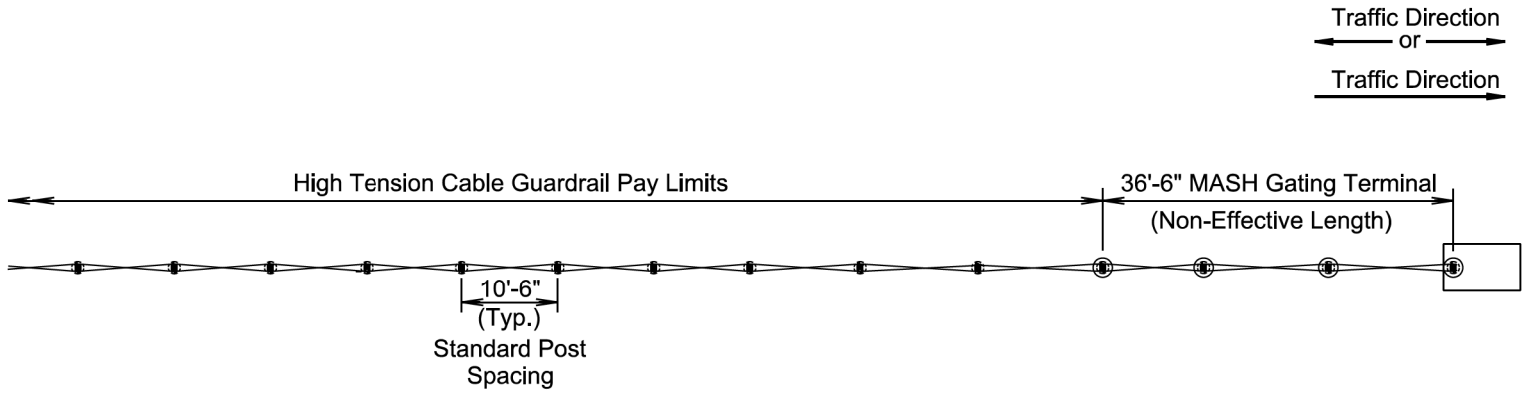


GENERAL NOTES:

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

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

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



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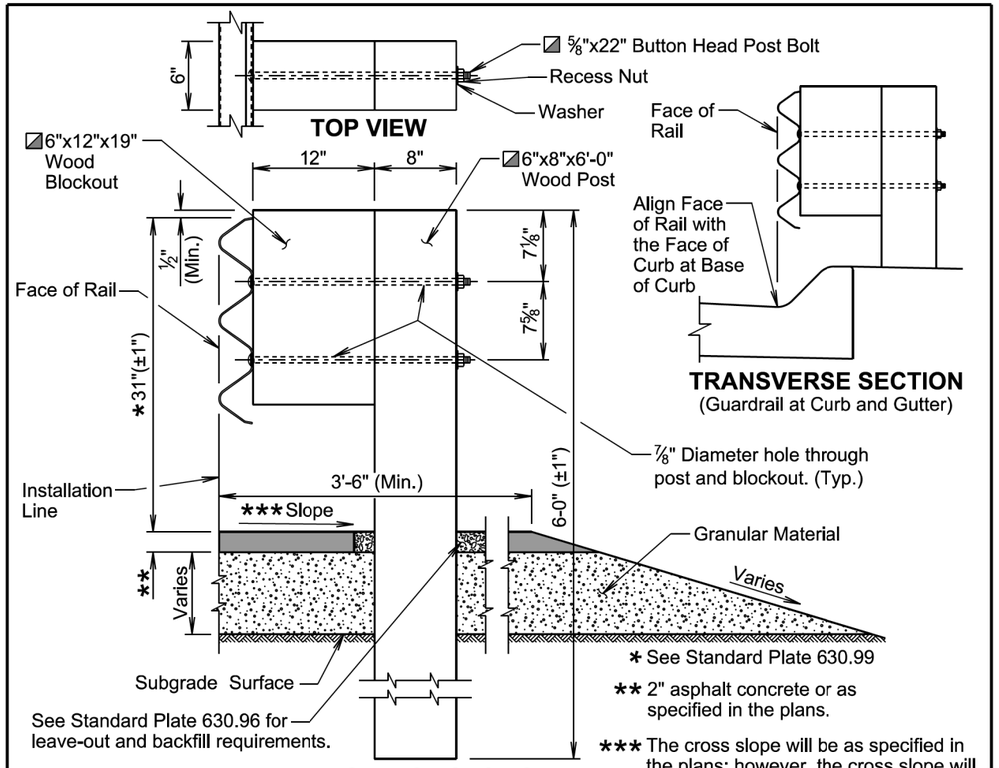
Plotting Date: 04/16/2024



∗ See Standard Plate 630.99

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

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

GENERAL NOTES:

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

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

Topsoil is not shown in the transverse section drawing.

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

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

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

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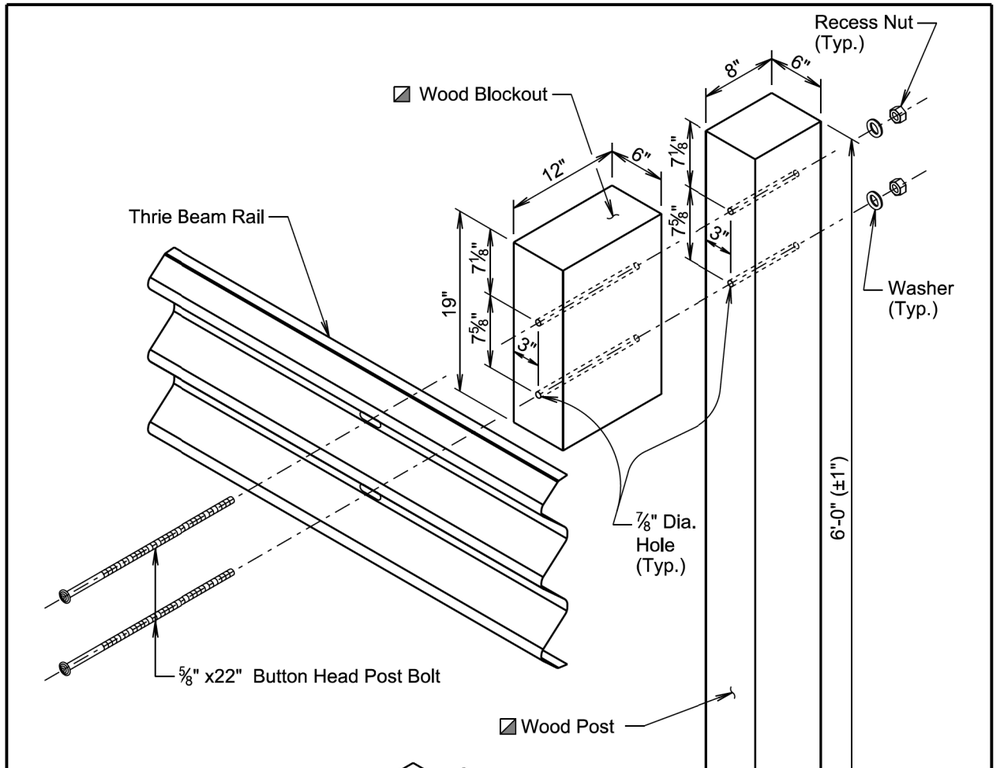
Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 1 of 5



EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

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

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

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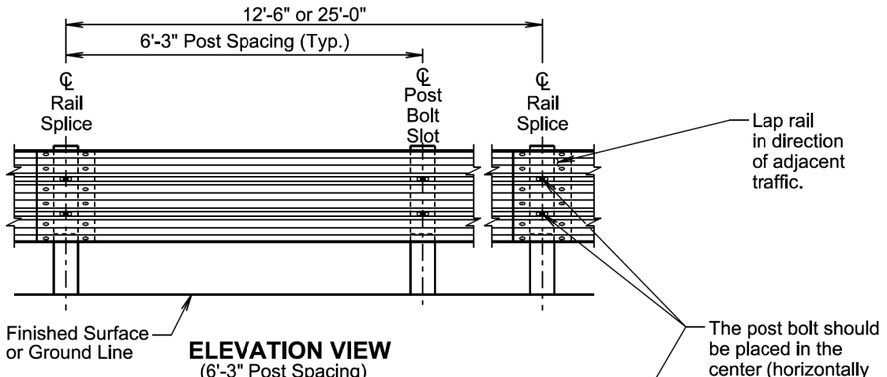
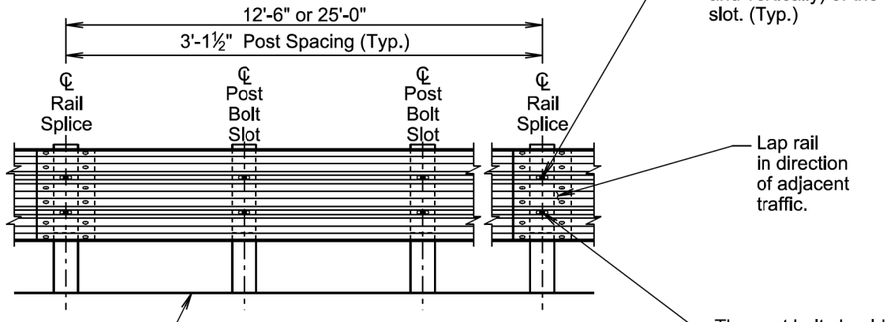
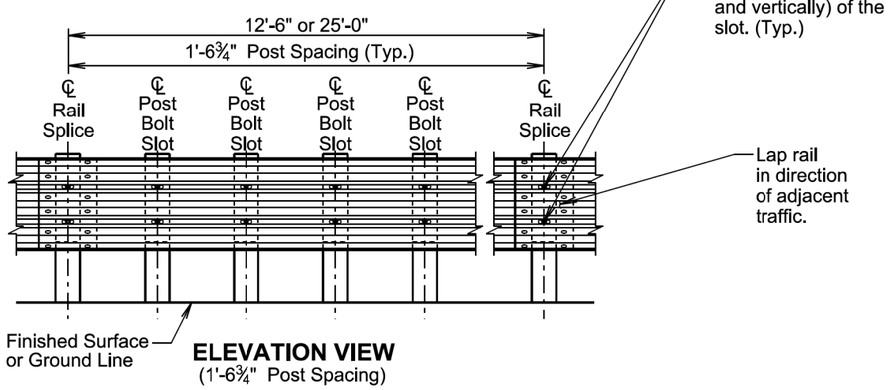
Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 2 of 5



ELEVATION VIEW
(6'-3" Post Spacing)



ELEVATION VIEW
(3'-1½" Post Spacing)



ELEVATION VIEW
(1'-6¾" Post Spacing)

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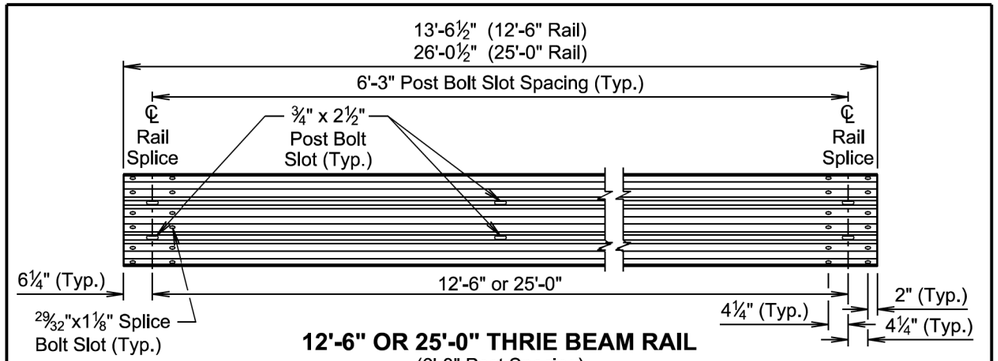
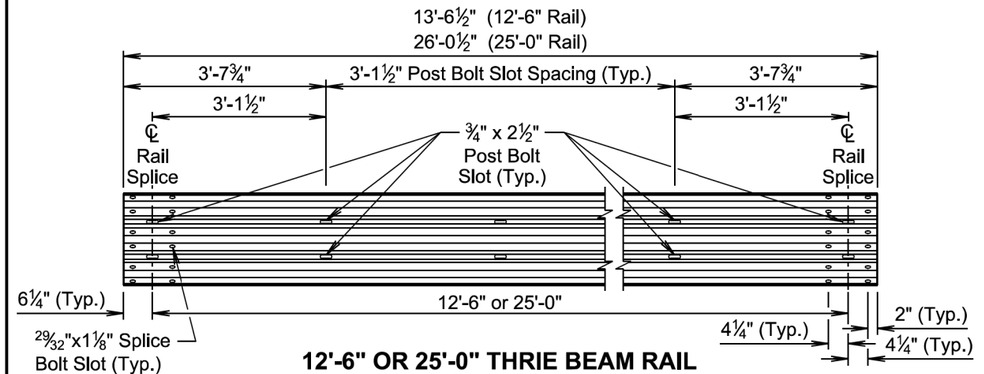
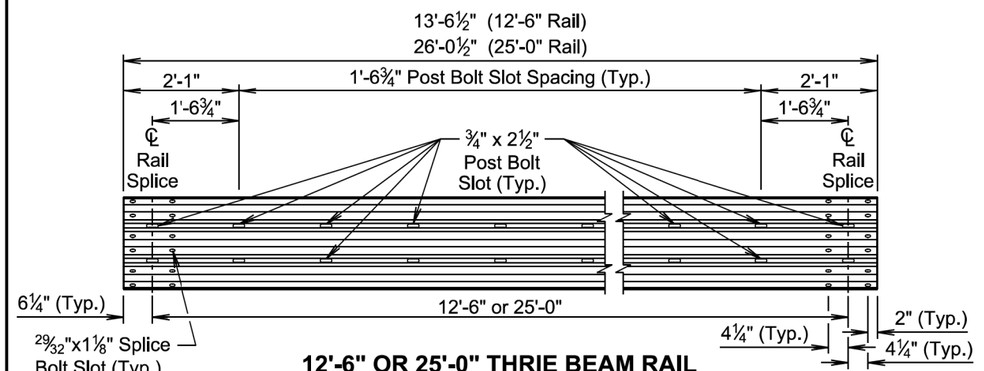
Published Date: 2024	SDDOT	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 3 of 5



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



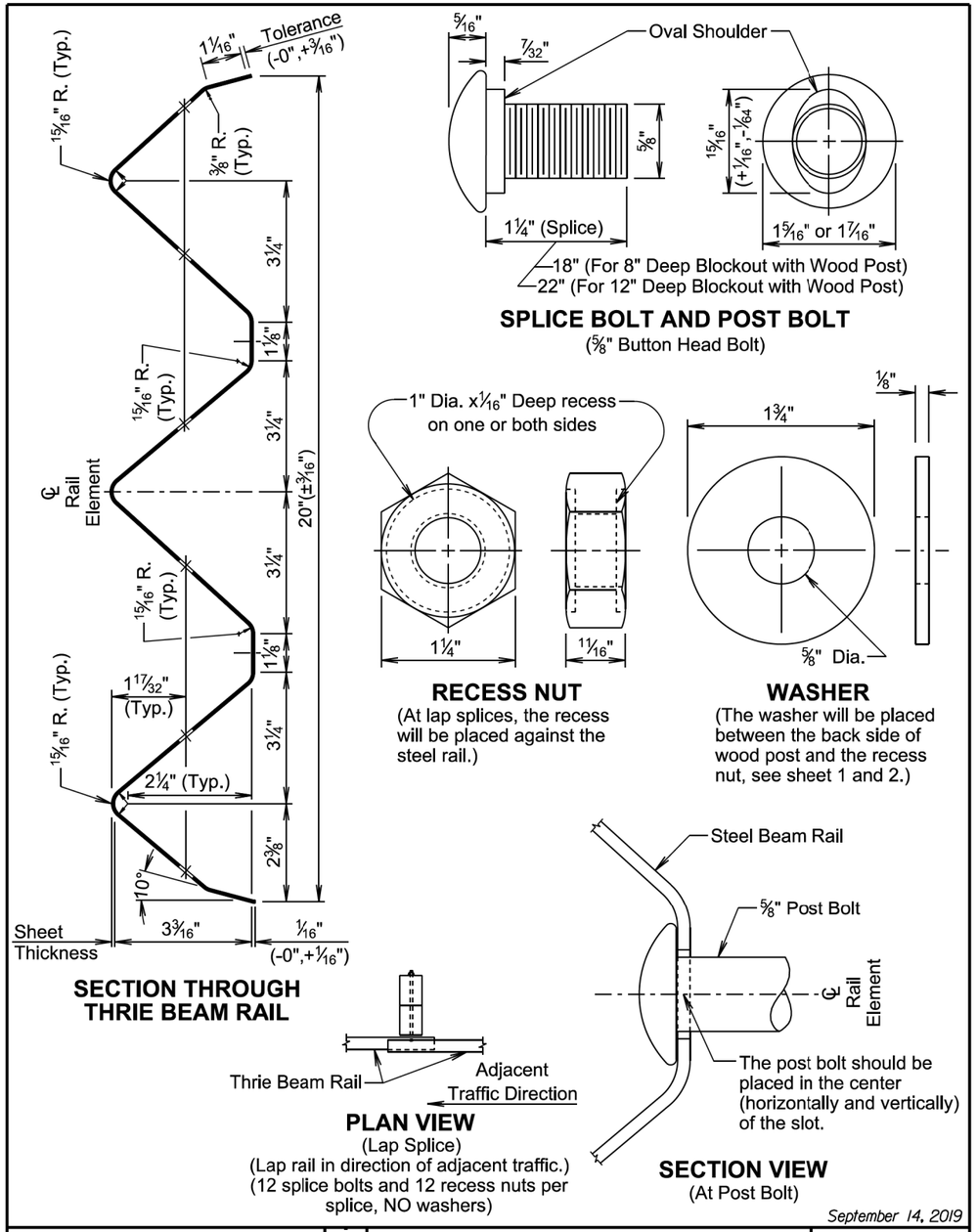
12'-6" OR 25'-0" THRIE BEAM RAIL
(3'-1½" Post Spacing)



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

September 14, 2019

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



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.)

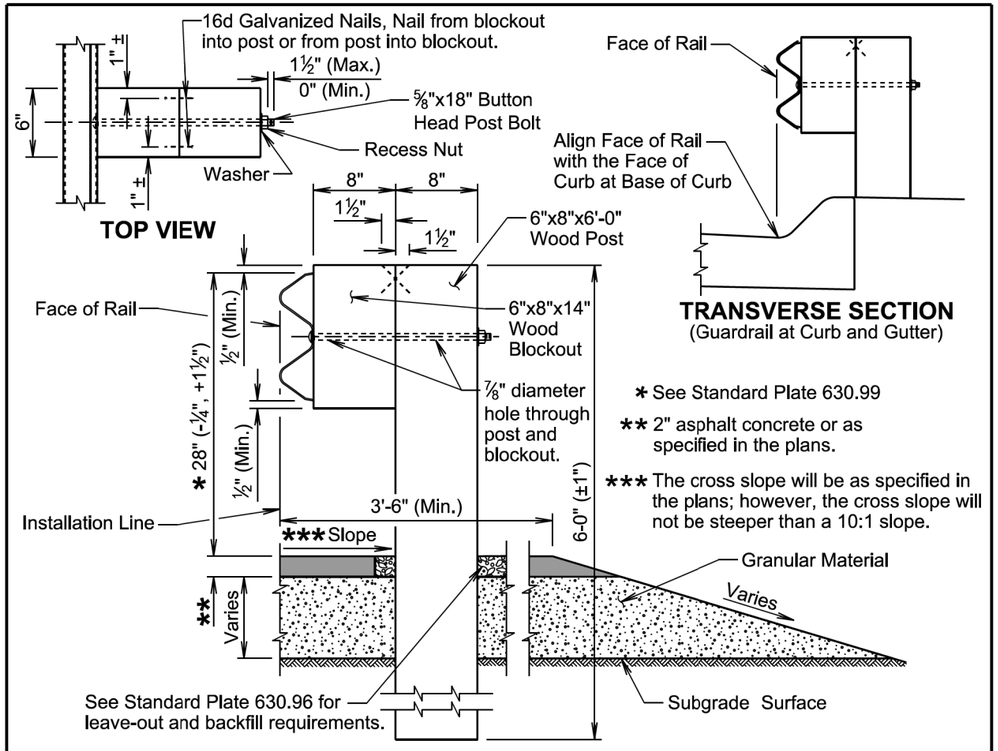
SECTION THROUGH THRIE BEAM RAIL

PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(12 splice bolts and 12 recess nuts per splice, NO washers)

SECTION VIEW
(At Post Bolt)

September 14, 2019

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



TRANSVERSE SECTION

GENERAL NOTES:

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

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

Topsoil is not shown in the transverse section drawing.

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.

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.

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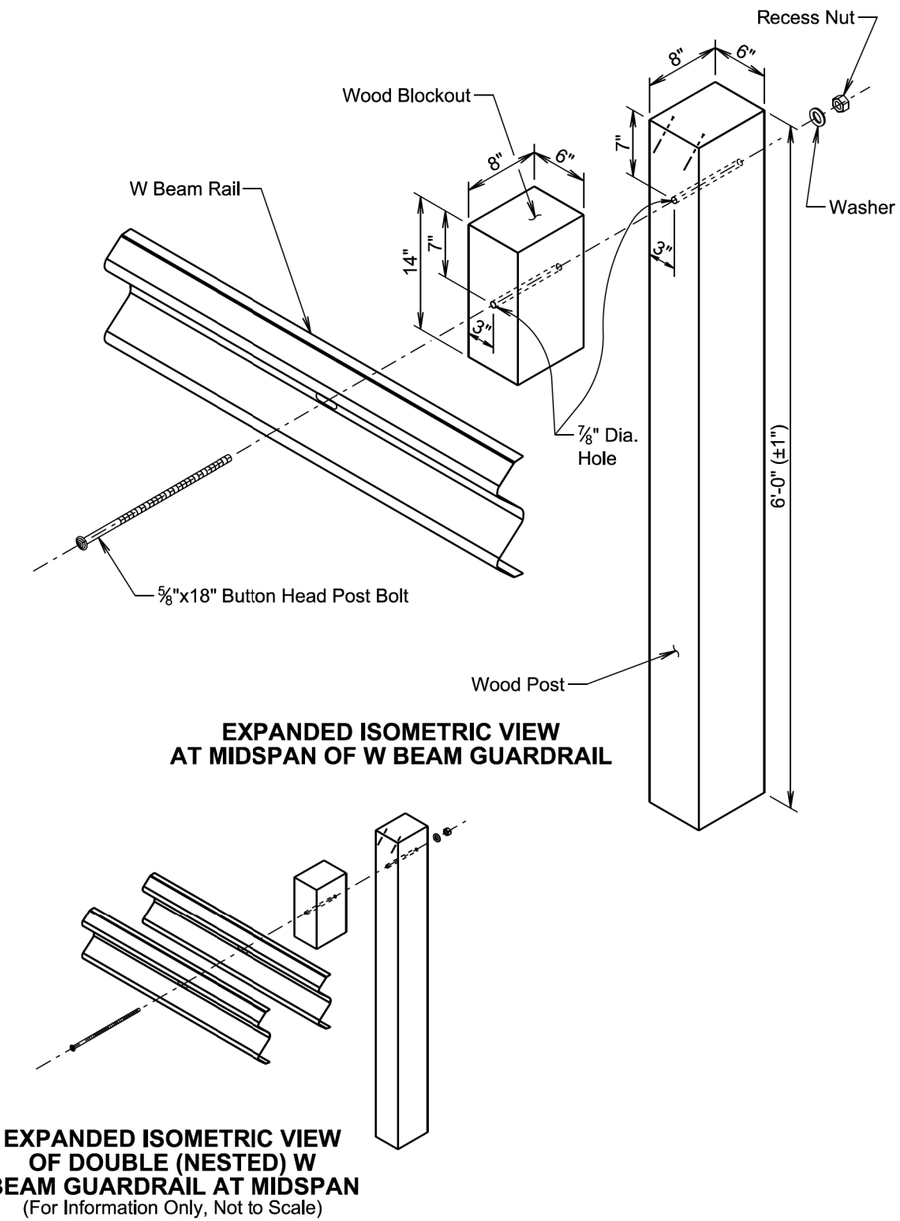
Published Date: 2024	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 1 of 5

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	34	43

Plotting Date: 04/16/2024

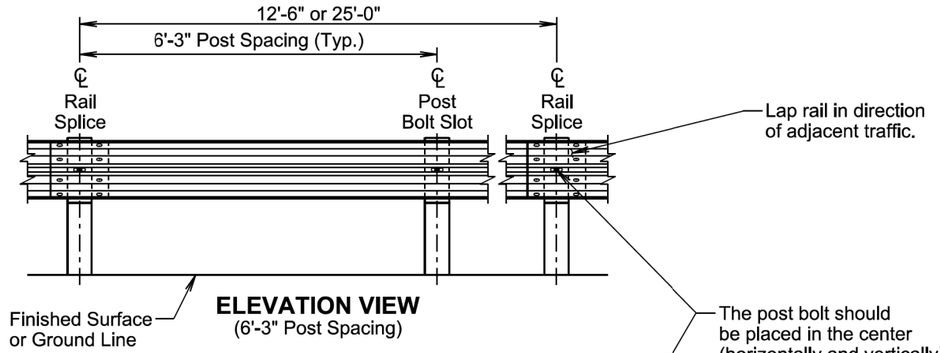


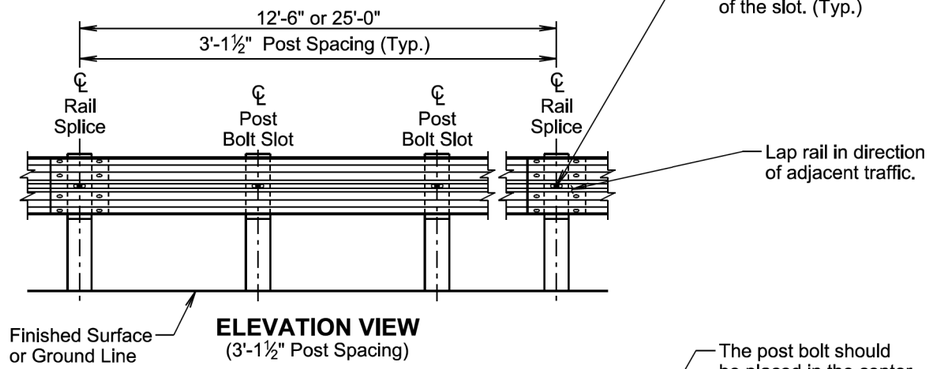
EXPANDED ISOMETRIC VIEW AT MIDSPAN OF W BEAM GUARDRAIL

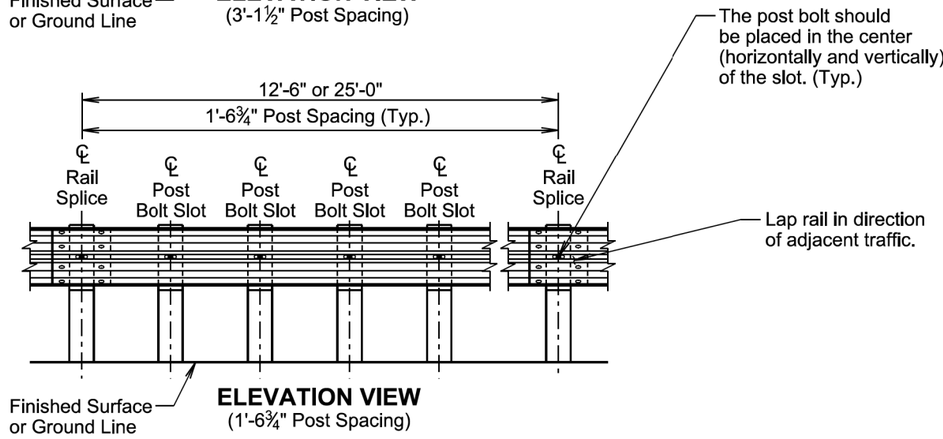
EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) W BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

September 14, 2019

Published Date: 2024	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 2 of 5







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Published Date: 2024	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 3 of 5

Plot Scale - 1:200

- Plotted From - TRRC12608

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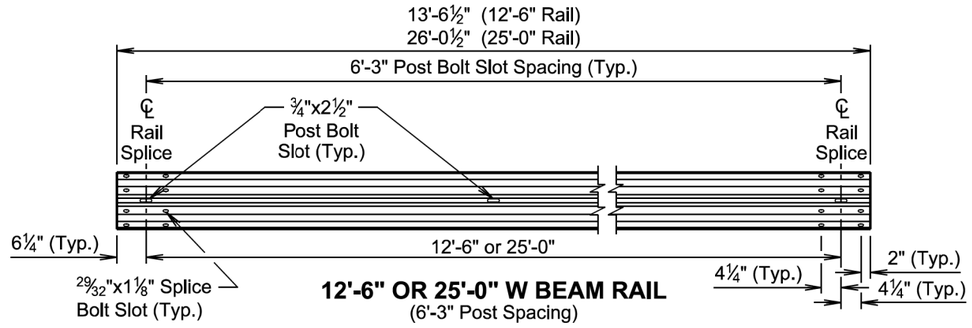
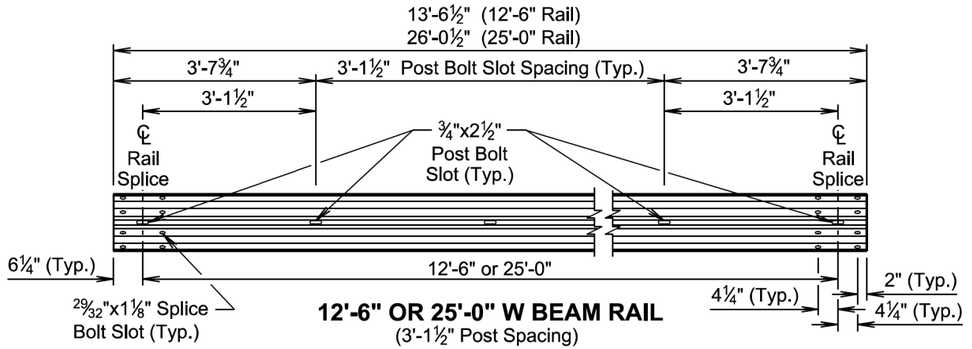
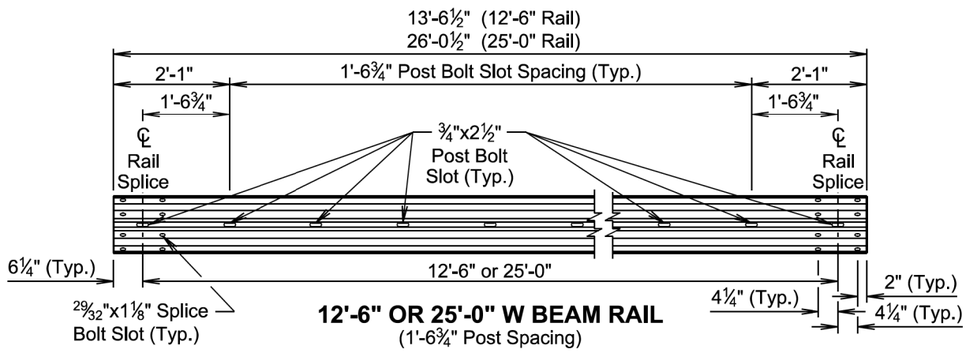


12'-6" OR 25'-0" W BEAM RAIL
(6'-3" Post Spacing)



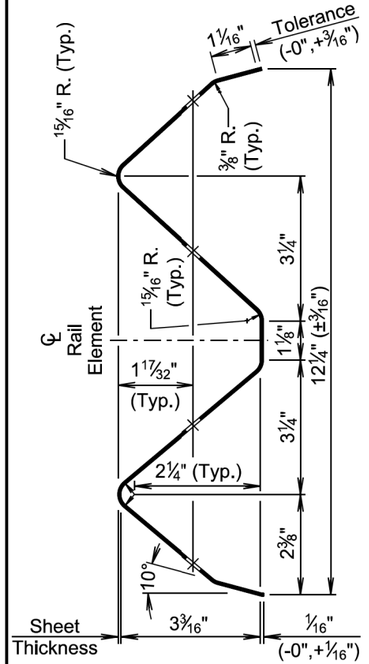
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" Post Spacing)



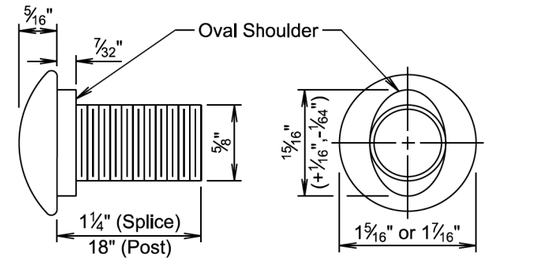
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

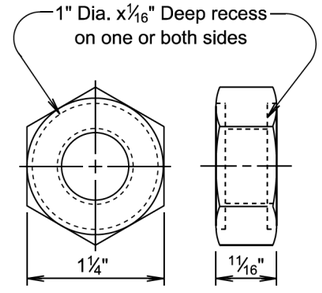
Published Date: 2024	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 4 of 5



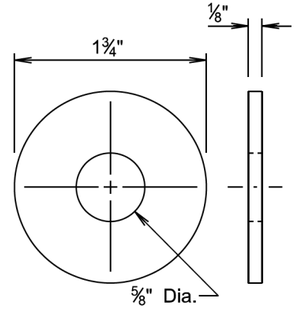
SECTION THROUGH W BEAM RAIL



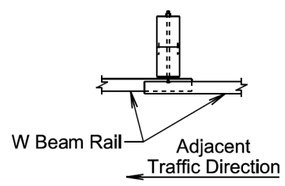
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



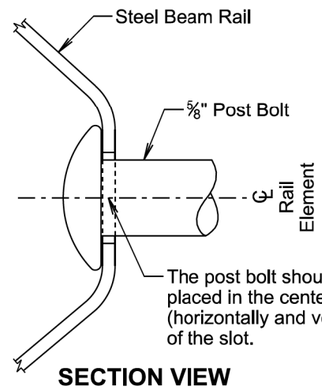
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 1 and 2.)



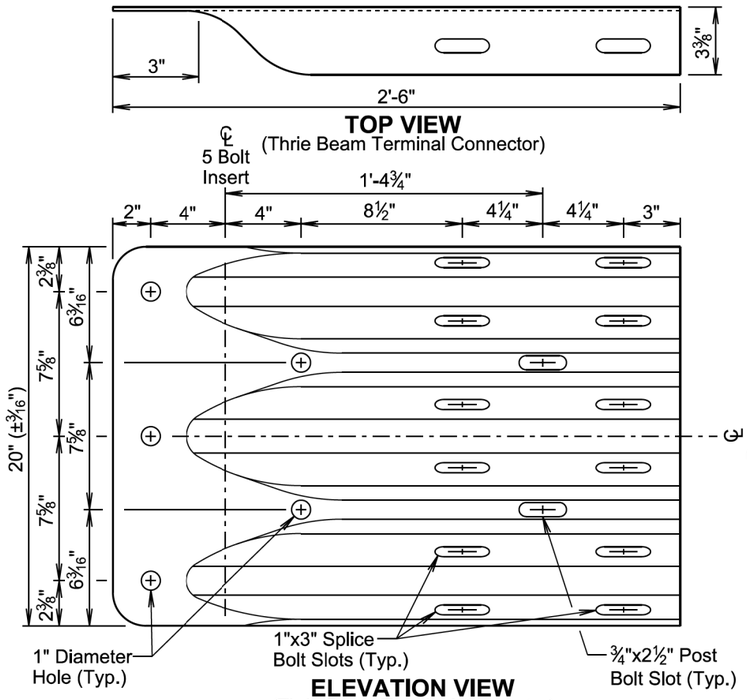
PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

September 14, 2019

Published Date: 2024	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 5 of 5



GENERAL NOTES:

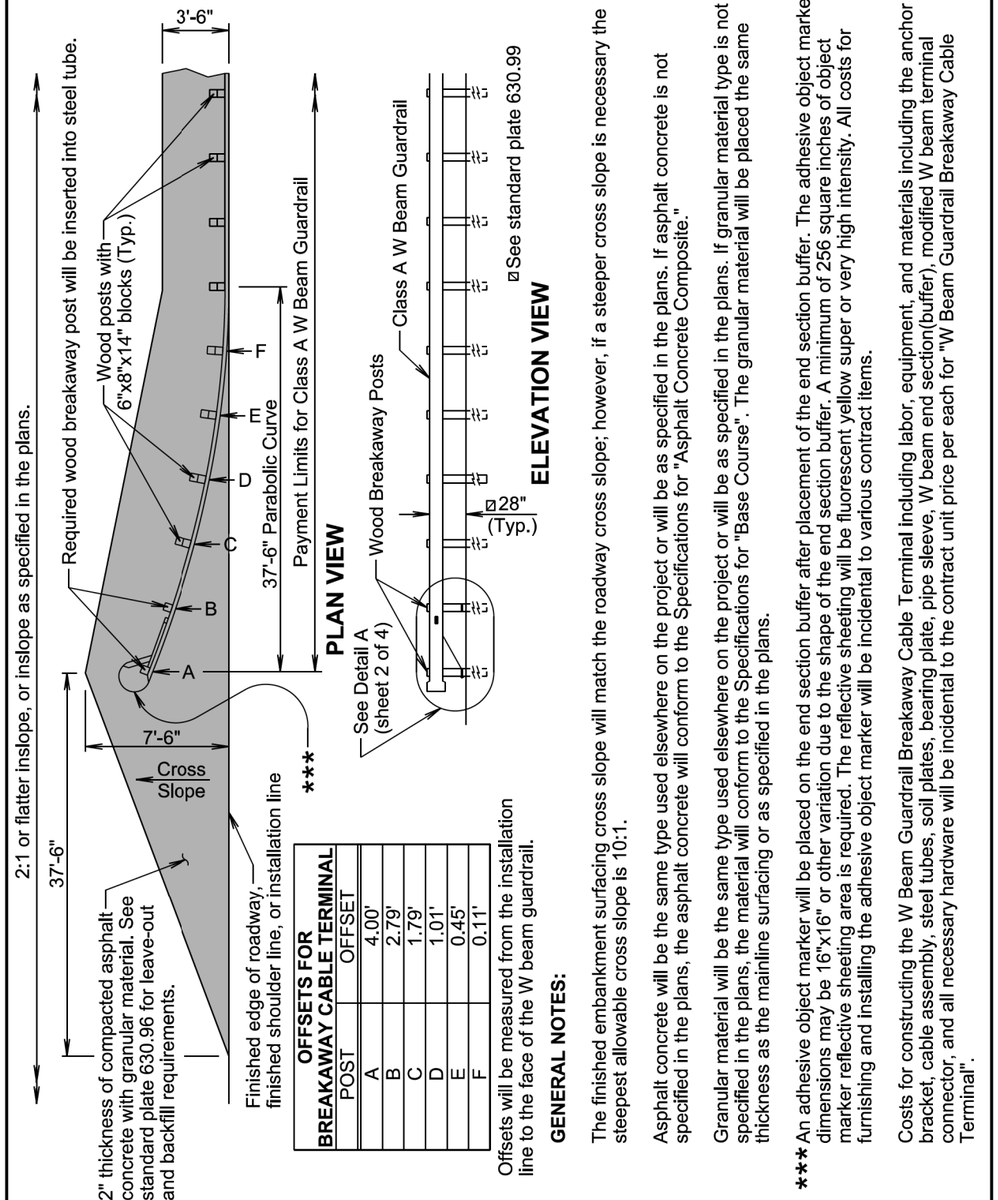
Thrie Beam Terminal Connectors will be 10 gauge.

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

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

September 14, 2019

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



OFFSETS FOR BREAKAWAY CABLE TERMINAL

POST	OFFSET
A	4.00'
B	2.79'
C	1.79'
D	1.01'
E	0.45'
F	0.11'

GENERAL NOTES:

The finished embankment surfacing cross slope will match the roadway cross slope; however, if a steeper cross slope is necessary the steepest allowable cross slope is 10:1.

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."

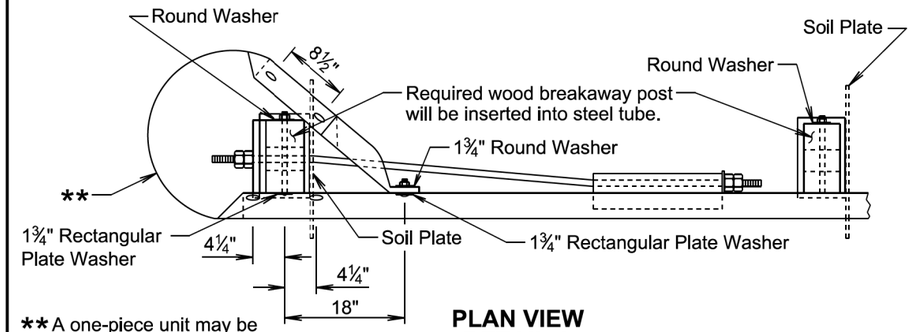
Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline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

*** An adhesive object marker will be placed on the end section buffer after placement of the end section buffer. The adhesive object marker dimensions may be 16"x16" or other variation due to the shape of the end section buffer. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting will be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

Costs for constructing the W Beam Guardrail Breakaway Cable Terminal including labor, equipment, and materials including the anchor bracket, cable assembly, steel tubes, soil plates, bearing plate, pipe sleeve, W beam end section(buffer), modified W beam terminal connector, and all necessary hardware will be incidental to the contract unit price per each for "W Beam Guardrail Breakaway Cable Terminal".

September 14, 2019

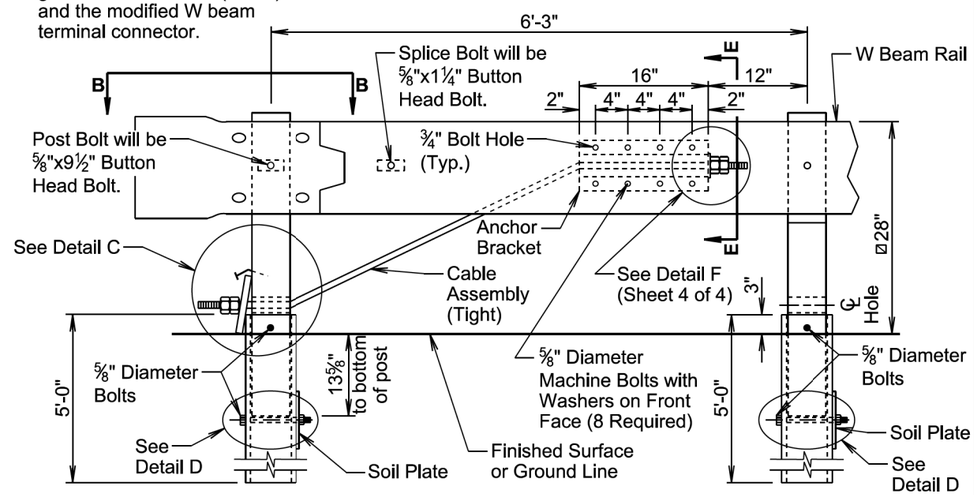
Published Date: 2024	SDDOT	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.85
			Sheet 1 of 4



PLAN VIEW
DETAIL A

** A one-piece unit may be substituted for the W beam guardrail end section (buffer) and the modified W beam terminal connector.

⧄ See standard plate 630.99



ELEVATION VIEW
DETAIL A

GENERAL NOTES:

All hardware will be galvanized in accordance with ASTM A153.

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

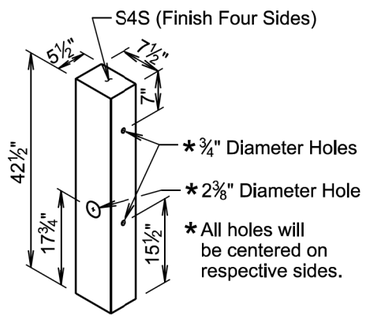
The anchor bracket, soil plate, and bearing plate will be fabricated from steel that meets ASTM A36 Specifications. They will be galvanized after fabrication in accordance with ASTM A123.

The W Beam End Section (Buffer) will be 12 gage galvanized steel.

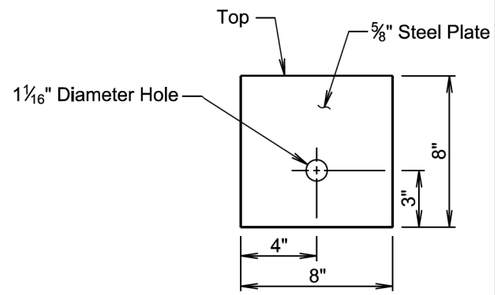
The cable will be ¾", Type II, with Class A coating in conformance with AASHTO M30.

September 14, 2019

Published Date: 2024	SDDOT	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.85
			Sheet 2 of 4

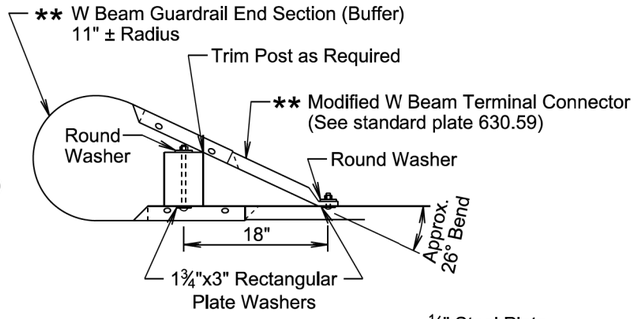


WOOD BREAKAWAY POST

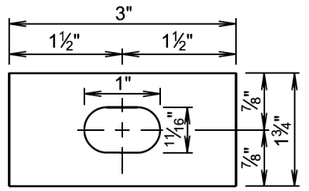


BEARING PLATE

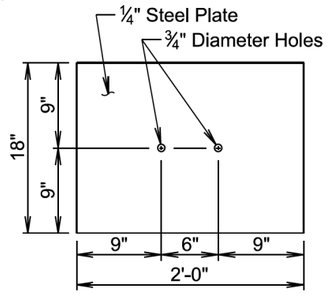
** A one-piece unit may be substituted for the W beam guardrail end section (buffer) and the modified W beam terminal connector.



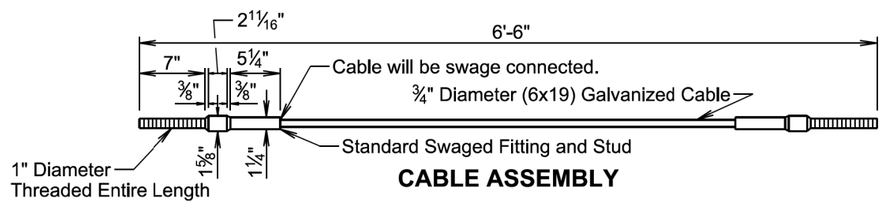
VIEW B-B



RECTANGULAR PLATE WASHER



SOIL PLATE



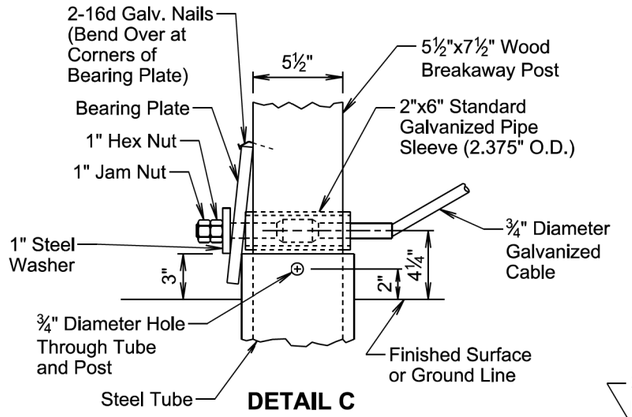
CABLE ASSEMBLY

September 14, 2019

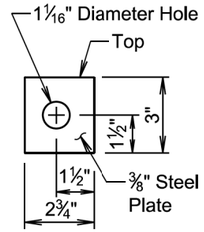
Published Date: 2024	SDDOT	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.85
			Sheet 3 of 4

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	38	43

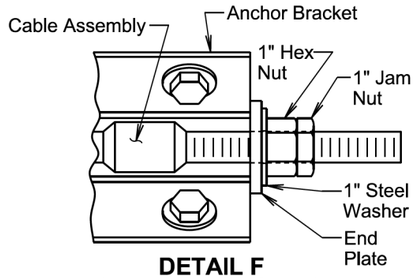
Plotting Date: 04/16/2024



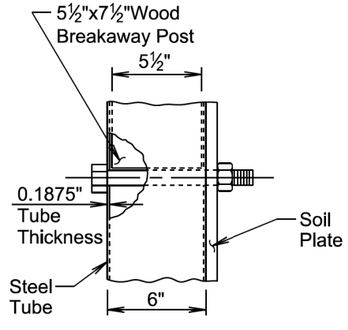
DETAIL C



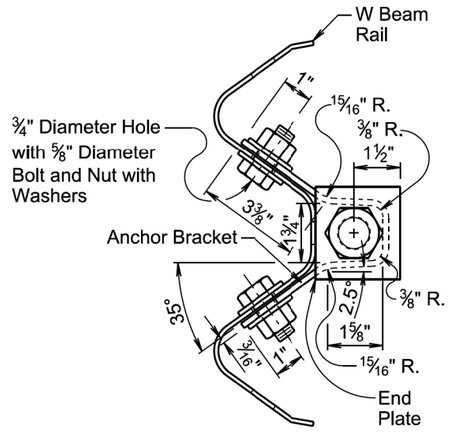
END PLATE FOR ANCHOR BRACKET



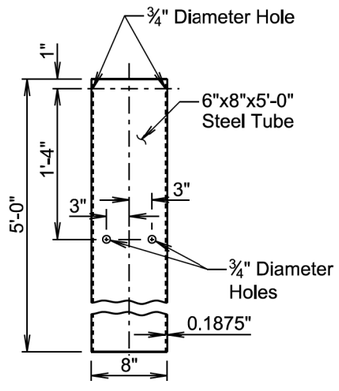
DETAIL F
(W Beam Rail Not Shown)



DETAIL D



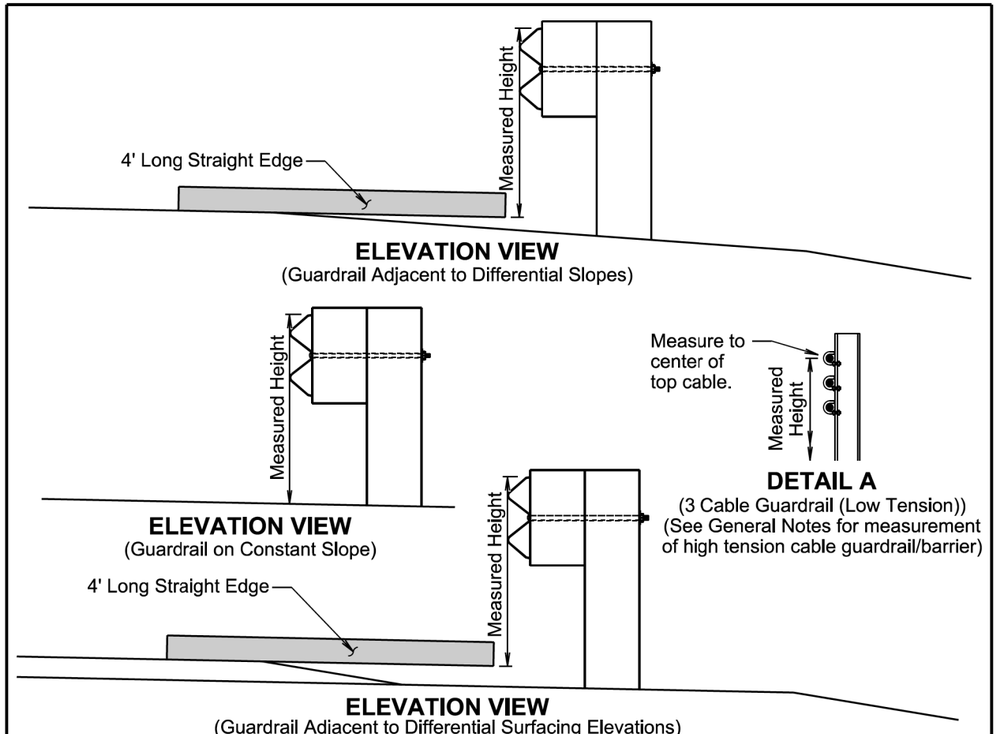
SECTION E-E



STEEL TUBE

September 14, 2019

Published Date: 2024	SDDOT	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.85
			Sheet 4 of 4

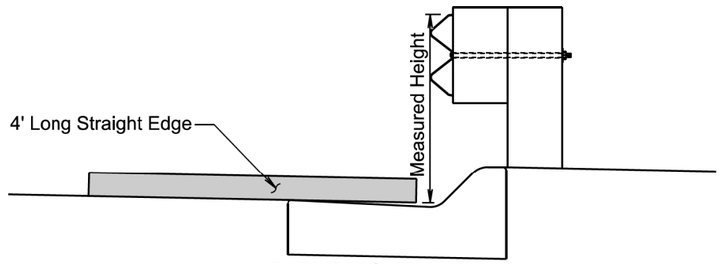


ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)

ELEVATION VIEW
(Guardrail on Constant Slope)

DETAIL A
(3 Cable Guardrail (Low Tension))
(See General Notes for measurement of high tension cable guardrail/barrier)

ELEVATION VIEW
(Guardrail Adjacent to Differential Surfacing Elevations)



ELEVATION VIEW
(Guardrail at Curb and Gutter)

GENERAL NOTES:

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

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

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

September 14, 2019

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

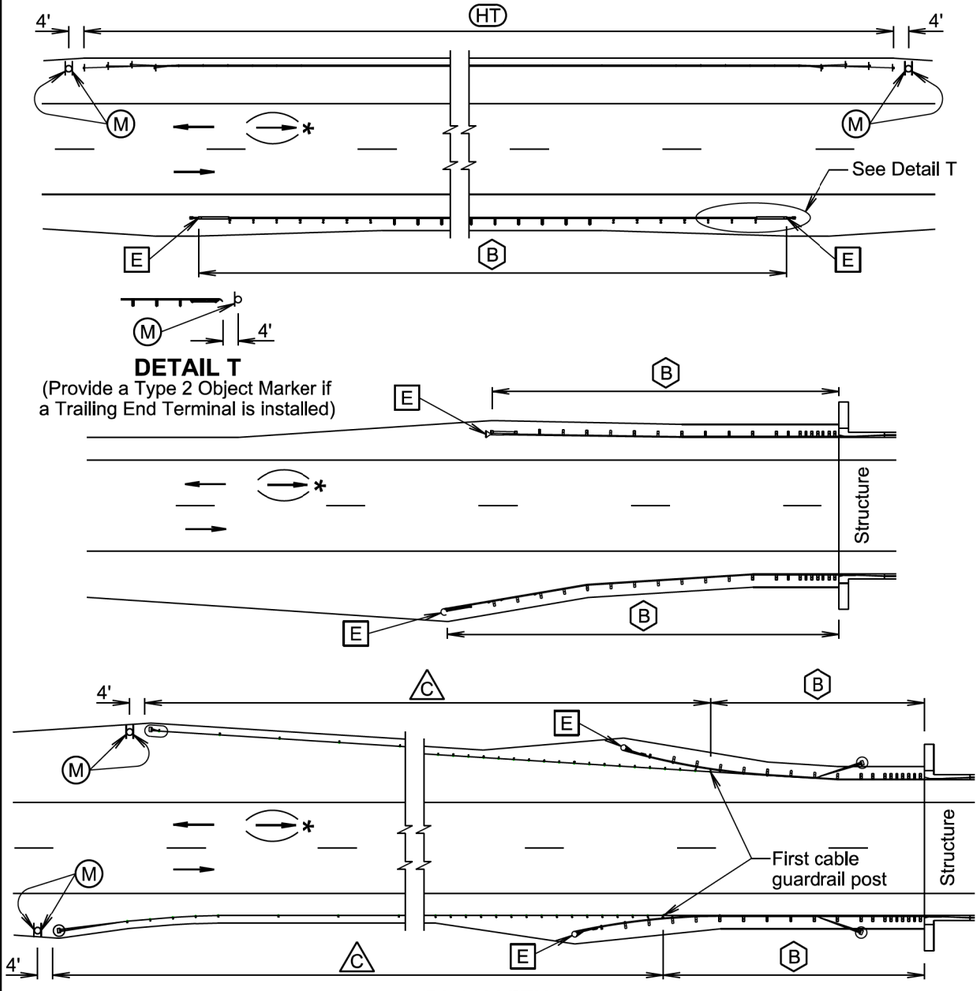
Plot Scale - 1:200

- Plotted From - TRRC12608

File - ...\Design\Std Plates\630_8.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 090-2(188)67	39	43

Plotting Date: 04/16/2024



DETAIL T
(Provide a Type 2 Object Marker if a Trailing End Terminal is installed)

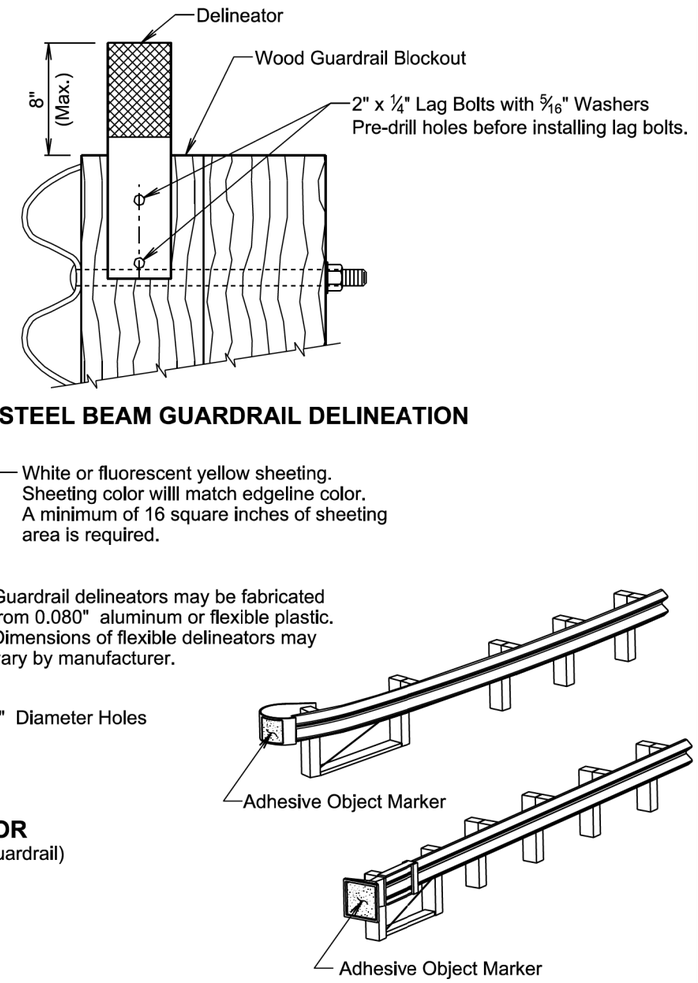
PLAN VIEW
(Typical Guardrail Layouts)

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

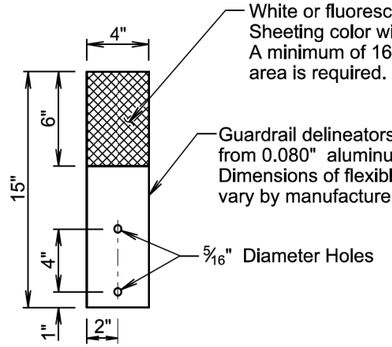
* For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

December 23, 2019

Published Date: 2024	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4

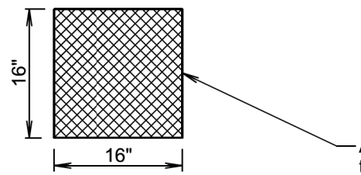


(B) STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)

[E] GUARDRAIL END TERMINAL OBJECT MARKER



ADHESIVE OBJECT MARKER

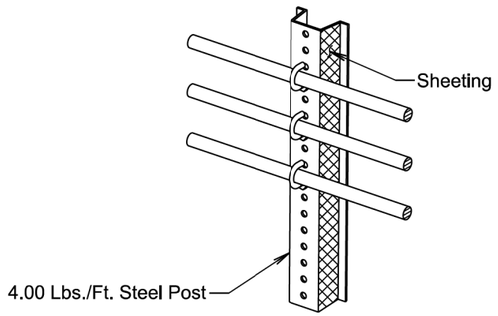
December 23, 2019

Published Date: 2024	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4

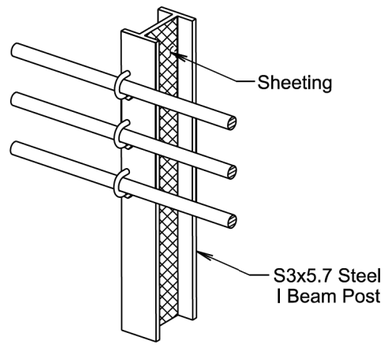
Plot Scale - 1:200

- Plotted From - TRRC12608

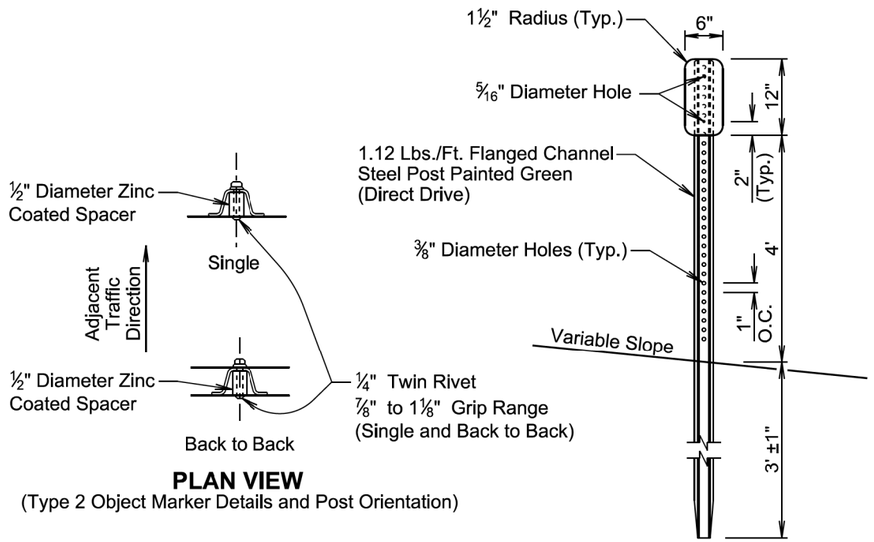
File - ...\Design\Std Plates\632_1.dgn



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



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



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

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

December 23, 2019

Published Date: 2024	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 other post cap or cable spacer. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting shall 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".

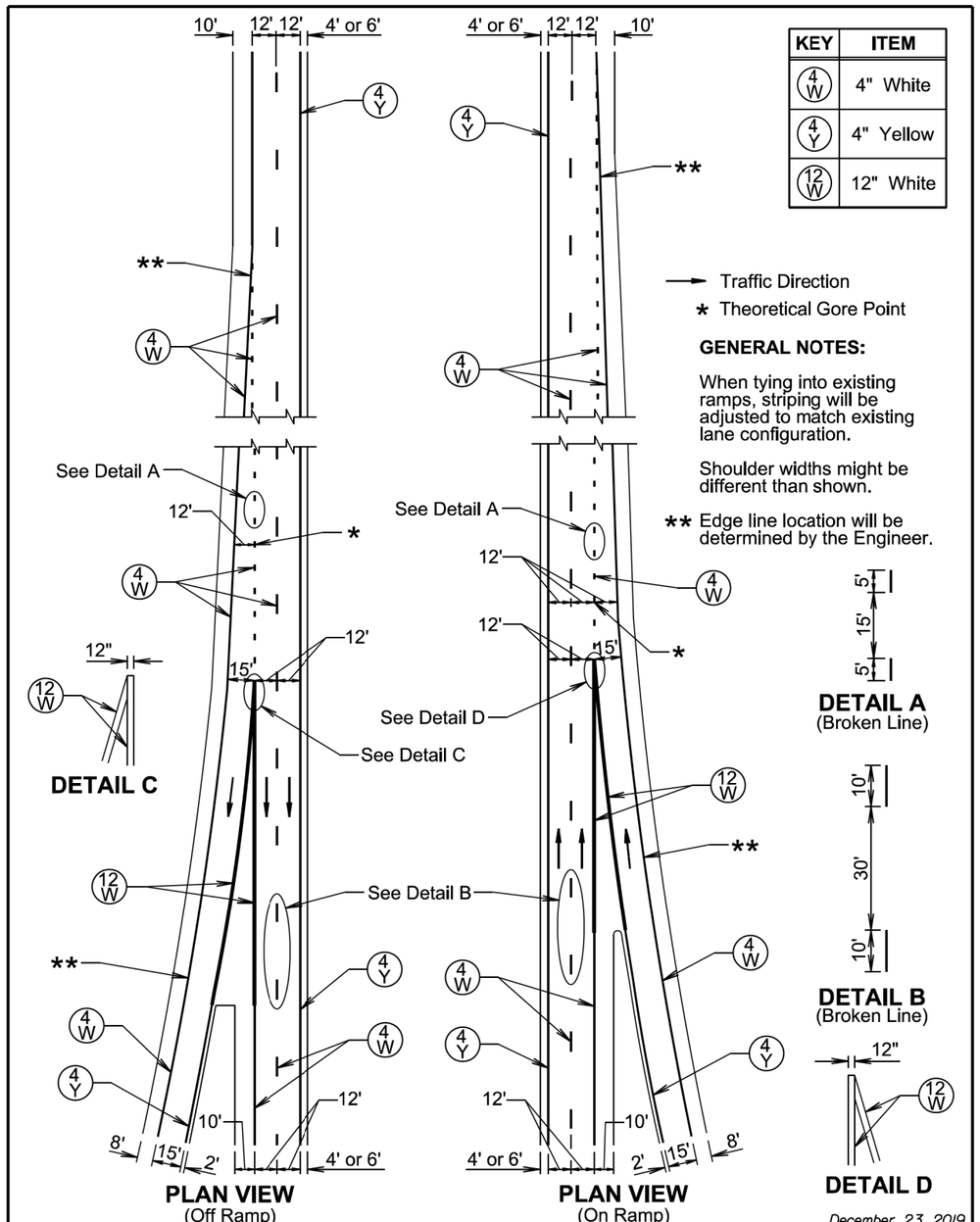
All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

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. The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

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

December 23, 2019

Published Date: 2024	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4



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

GENERAL NOTES:

When tying into existing ramps, striping will be adjusted to match existing lane configuration.

Shoulder widths might be different than shown.

December 23, 2019

Published Date: 2024

SDDOT

PAVEMENT MARKING LAYOUT FOR TAPERED INTERSTATE RAMPS

PLATE NUMBER 633.05

Sheet 1 of 1

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

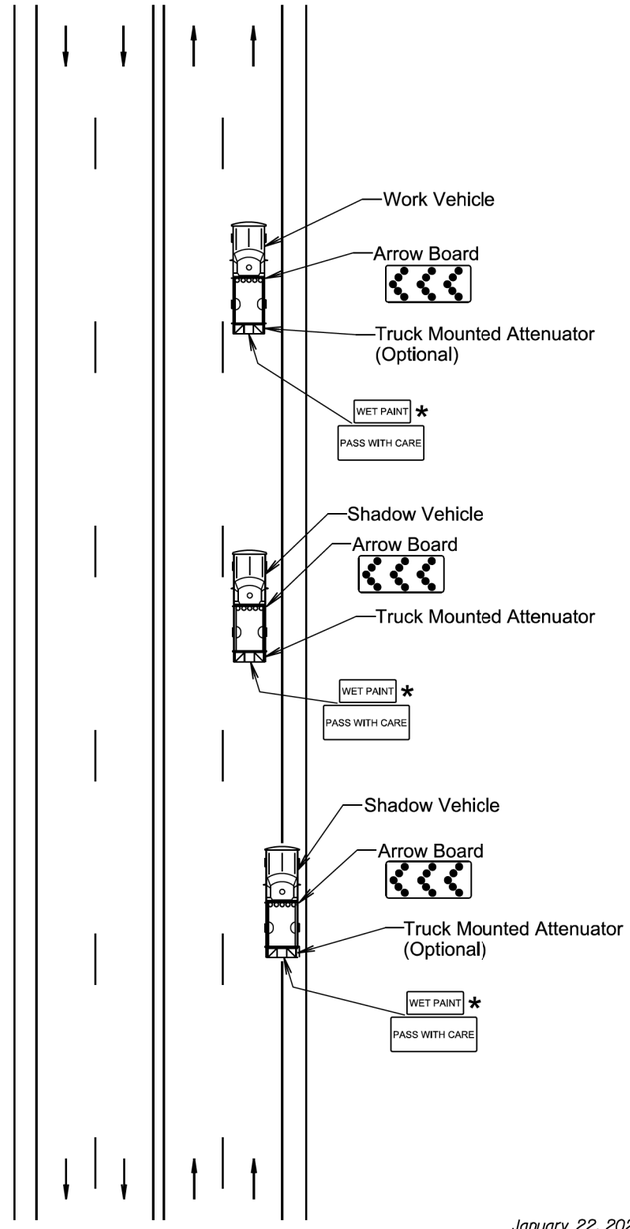
Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

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.

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".



January 22, 2021

Published Date: 2024

SDDOT

MOBILE OPERATIONS ON MULTI-LANE HIGHWAYS

PLATE NUMBER 634.08

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000
	(A) (B) (C)
70 - 80	1000 1500 2640

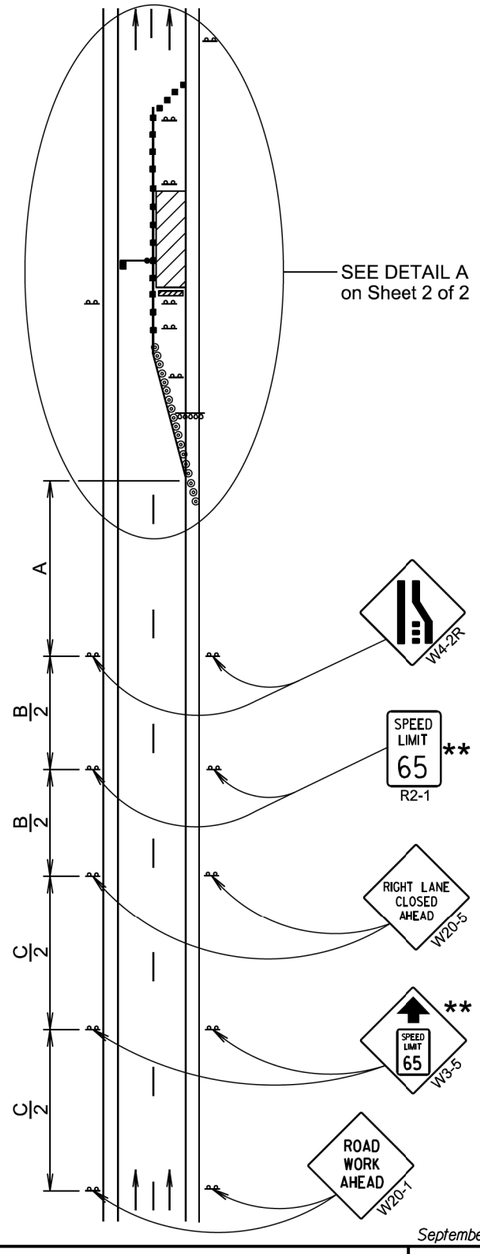
** Speed appropriate for location.

◎ Reflectorized Drum

▪ Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



September 22, 2021

Published Date: 2024	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 -30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

*** Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.

▪● Flagger (As Necessary)

◎ Reflectorized Drum

▪ Channelizing Device

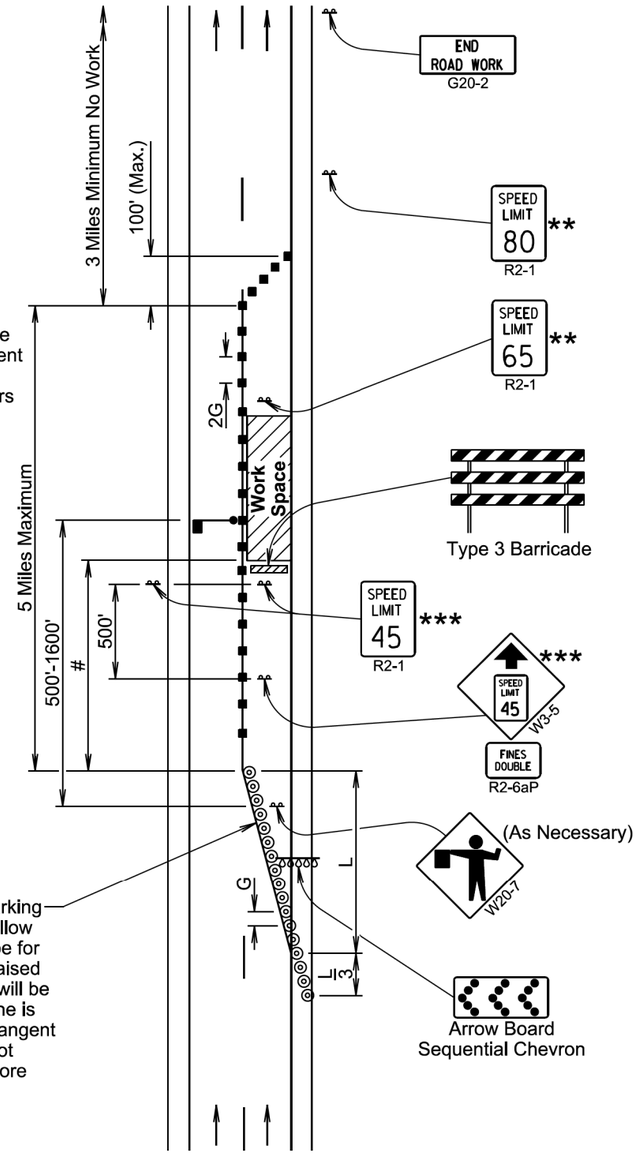
The Work Space will be a minimum of 500' from the end of the taper.

The FLAGGER sign will be used whenever there is a Flagger present.

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

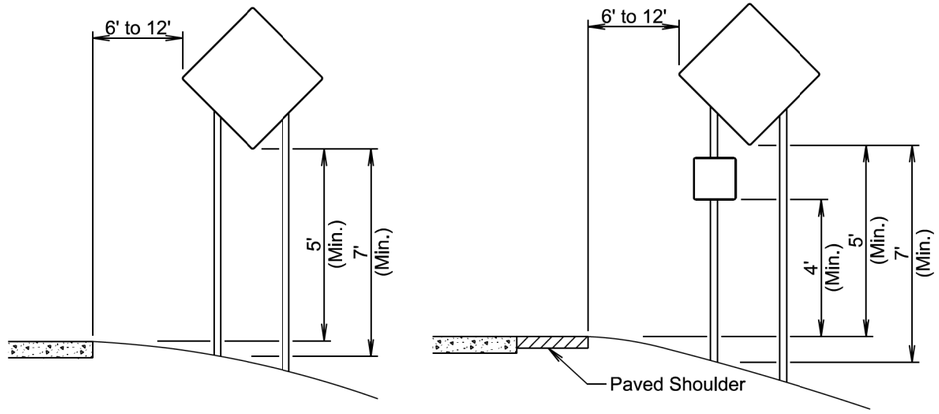
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



DETAIL A

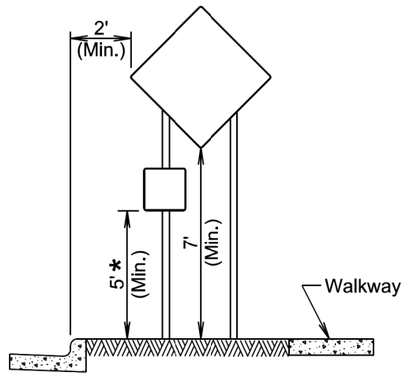
September 22, 2021

Published Date: 2024	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2

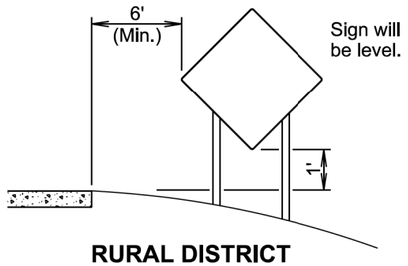


RURAL DISTRICT

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.

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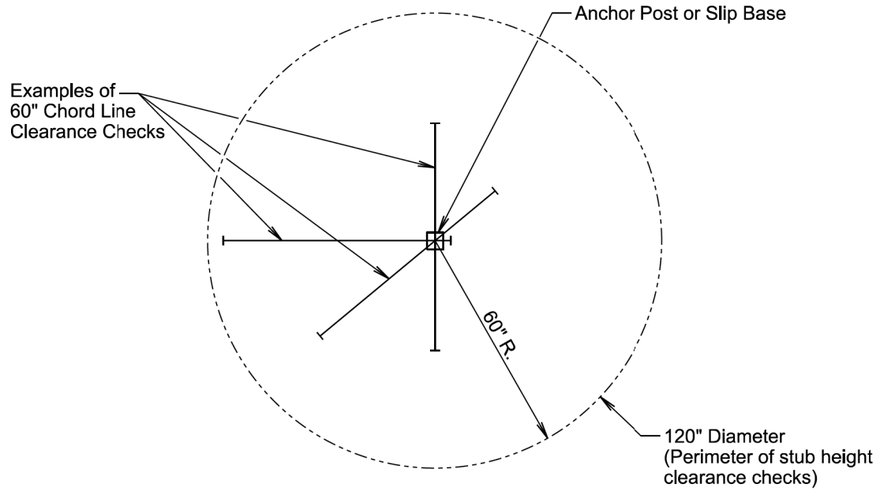
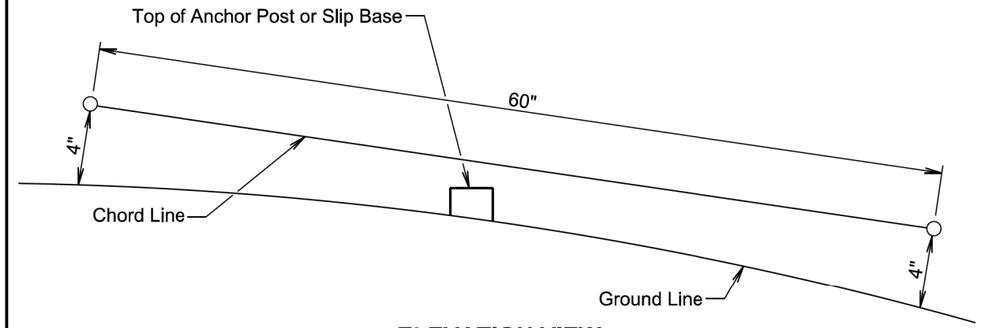


PLAN VIEW
(Examples of stub height clearance checks)



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.

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