

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

**PROJECT P 014A(13)11
US HIGHWAY 14A
LAWRENCE COUNTY**

ASPHALT CONCRETE RESURFACING,
GUARDRAIL UPDATES, & PIPE REPAIR
PCN 03RV

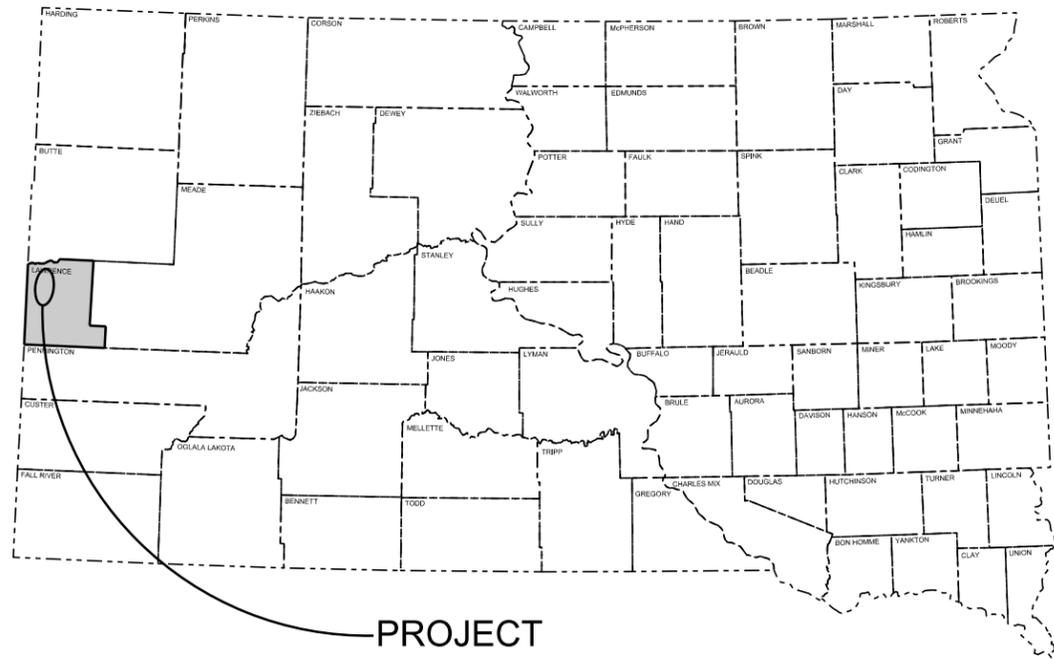
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	1	59

Plotting Date: 11/12/2015

INDEX OF SHEETS

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Plot Scale - 1:200



PROJECT

STRUCTURE NO. 41-099-096
MRM 11.80
CONT. CONCRETE BRIDGE
105.9' = 0.020 mi

STRUCTURE NO. 41-077-137
MRM 17.74
SIMPLE SPAN GIRDER BRIDGE
39.7' = 0.007 mi

MRM 22.03
REIN. CONCRETE BOX CULVERT
19' X 9'-35"

BEGIN PROJECT P 014A(13)11
MRM 11.00+0.800

END PROJECT P 014A(13)11
MRM 23.00+ 0.970

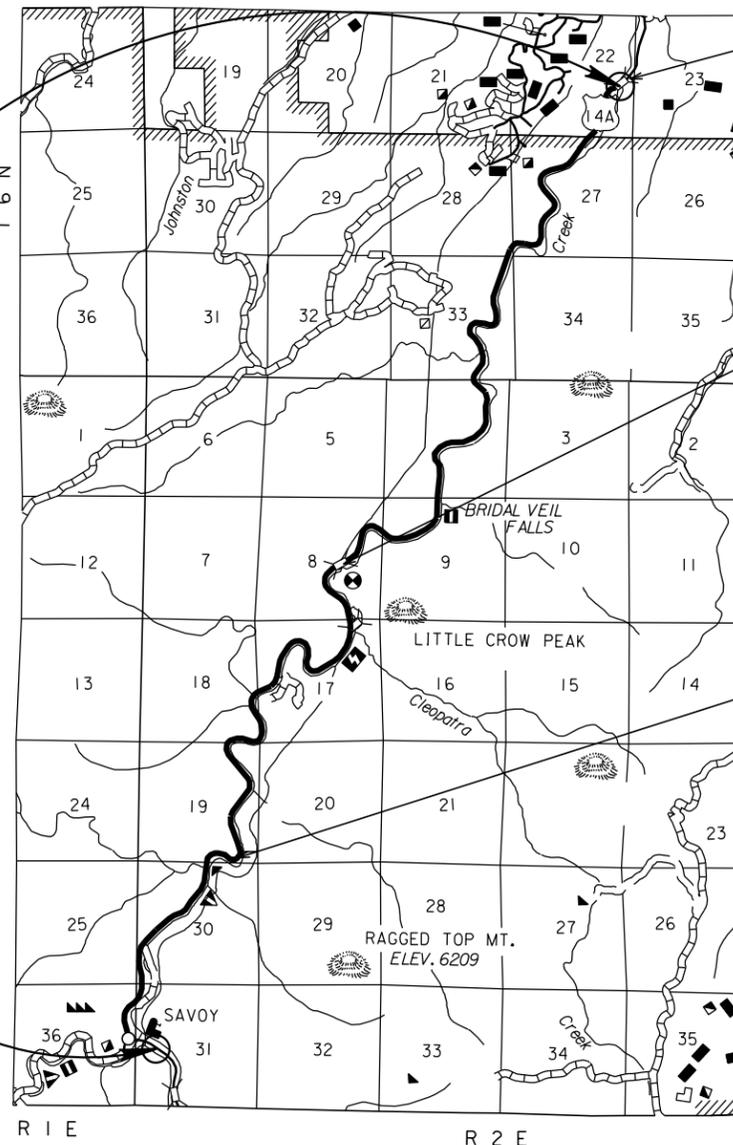
DESIGN DESIGNATION

ADT (2014)	1179
ADT (2034)	1595
DHV	242
D	51%
T DHV	1.9%
T ADT	4.3%
V	35 MPH

STORM WATER PERMIT

None required

GROSS LENGTH	64099.2 FEET	12.140 MILES
LENGTH OF EXCEPTIONS	145.6 FEET	0.030 MILES
NET LENGTH	63953.6 FEET	12.110 MILES



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Plotted From - TRRC12608

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E0022	Remove Thrie Beam Bridge Rail for Reset	250.0	Ft
110E0340	Remove Asphalt Concrete Curb	898	Ft
110E0500	Remove Pipe Culvert	10	Ft
110E1700	Remove Silt Fence	37	Ft
110E4380	Salvage W Beam Guardrail Tangent End Terminal	9	Each
110E5020	Salvage Traffic Sign	79	Each
110E6200	Remove Double Thrie Beam Guardrail for Reset	100.0	Ft
110E6220	Remove Double W Beam Guardrail for Reset	25.0	Ft
110E6230	Remove W Beam Guardrail for Reset	2,700.0	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	8	Each
110E6270	Remove W Beam Guardrail Flared End Terminal for Reset	2	Each
110E6280	Remove W Beam Guardrail Tangent End Terminal for Reset	1	Each
110E6300	Remove Rubrail for Reset	25.0	Ft
120E0010	Unclassified Excavation	311	CuYd
120E0100	Unclassified Excavation, Digouts	612	CuYd
120E0600	Contractor Furnished Borrow Excavation	58	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	1,957.0	Ton
320E0008	PG 64-34 Asphalt Binder	948.6	Ton
320E1080	Class S Asphalt Concrete	16,429.8	Ton
320E1200	Asphalt Concrete Composite	4,250.8	Ton
320E3100	Stabilizing Additive for Asphalt Concrete	47.9	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	96.2	Ton
332E0010	Cold Milling Asphalt Concrete	1,874	SqYd
450E4769	24" CMP 16 Gauge, Furnish	6	Ft
450E4770	24" CMP, Install	6	Ft
450E5215	24" CMP Flared End, Furnish	1	Each
450E5216	24" CMP Flared End, Install	1	Each
470E0460	Reset Thrie Beam Bridge Rail	250.0	Ft
600E0200	Type II Field Laboratory	1	Each
630E1010	Straight Class A W Beam Guardrail with Wood Posts	112.5	Ft
630E2015	W Beam Guardrail Flared End Terminal	9	Each
630E2110	Beam Guardrail Post and Block	960	Each
630E5130	Reset Double Thrie Beam Rail	100.0	Ft
630E5160	Reset W Beam Rail	2,700.0	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
630E5170	Reset Double W Beam Rail	25.0	Ft
630E5190	Reset W Beam to Thrie Beam Guardrail Transition	8	Each
630E5207	Reset W Beam Guardrail Flared End Terminal	2	Each
630E5208	Reset W Beam Guardrail Tangent End Terminal	1	Each
630E5220	Reset Rubrail	25.0	Ft
632E1320	2.0"x2.0" Perforated Tube Post	384.0	Ft
632E2220	Guardrail Delineator	92	Each
632E2510	Type 2 Object Marker Back to Back	144	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	60.5	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	356.0	SqFt
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	86	Each
633E0010	Cold Applied Plastic Pavement Marking, 4"	4,738	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	658	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	160	SqFt
633E0040	Cold Applied Plastic Pavement Marking, Arrow	6	Each
633E1200	Waterborne Pavement Marking Paint with High Grade Polymer, White	675	Gal
633E1205	Waterborne Pavement Marking Paint with High Grade Polymer, Yellow	675	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	4,738	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	658	Ft
633E5020	Grooving for Cold Applied Plastic Pavement Marking, Area	160	SqFt
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	6	Each
634E0010	Flagging	2,000.0	Hour
634E0020	Pilot Car	500.0	Hour
634E0110	Traffic Control Signs	578	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	12.0	Mile
634E0640	Temporary Pavement Marking	1,000	Ft
634E0806	Groove 4" Wide Rumble Strip	836	Ft
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
650E4360	Type D46 Concrete Curb and Gutter	898	Ft
720E1015	Bank and Channel Protection Gabion	9.0	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	24	Ft
734E0602	Low Flow Silt Fence	37	Ft

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived 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. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

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 pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and 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 shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

COMMITMENT C: WATER SOURCE (CONTINUED)

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

Spearfish Creek is classified as a cold water permanent fishery with a total suspended solids standard of 30 milligrams/liter.

Spearfish Creek is classified as fish and wildlife propagation, recreation, irrigation, and stock watering waters. Because of these beneficial uses, special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

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 F: SEASONAL WORK RESTRICTION

The State of South Dakota has designated a cold water fishery associated with this project.

Action Taken/Required:

Construction or demolition activities should not take place during the Seasonal Work Restriction listed in the below table to avoid conflicts with spawning fish. If flows during this time are nonexistent or extremely low, the seasonal use restriction may not be applicable. The Contractor shall not conduct in-stream work during the Seasonal Work Restriction without prior approval from the SDDOT Environmental Office.

Stream Name	Stream Classification	Seasonal Work Restriction
Spearfish Creek	Cold Water	October 1 to April 1

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall 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 State ROW.

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

The waste disposal site(s) shall 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 Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of 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 of time not to exceed the duration of the project. Prior to project completion, the waste shall 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) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. 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; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on 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 shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). 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.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order 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 staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

COMMITMENT R: FIRE PREVENTION IN THE BLACK HILLS AREA

This project is located within the confines of the Black Hills Forest Fire Protection Boundary.

Action Taken/Required:

The Contractor shall adhere to the "Special Provision for Fire Plan".

UTILITIES

The Contractor shall be responsible for locating and protecting any utility that would conflict with any work. Utilities are not planned to be affected on this project. 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 shall contact the project engineer to determine modifications that will be necessary to avoid utility impacts.

Any damage done to a utility will be the Contractor's responsibility to repair.

Utilities within the limits of the proposed construction shall be adjusted by the owner unless otherwise indicated in these plans.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor shall provide a suitable site for Contractor Furnished Borrow Excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer. The plans quantity for Contractor Furnished Borrow Excavation as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor Furnished Borrow Excavation site shall be the responsibility of the Contractor.

SAWING EXISTING ASPHALT CONCRETE

Where new PCC pavement or new AC pavement is placed adjacent to existing AC or PCC pavement, the existing pavement shall be sawed full depth to a true line with a vertical face.

No separate payment shall be made for sawing and shall be incidental to the various asphalt concrete bid items on the project

SURFACING THICKNESS DIMENSIONS

Plans tonnage shall be applied even though the thickness may vary from that shown in the plans. At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

INTERSECTING ROADS AND ENTRANCES

Intersecting roads and entrances shall be satisfactorily cleared of vegetation, shaped, milled and compacted prior to placement of mainline surfacing. This work shall be considered incidental to the various bid items on the project.

EXCAVATION OF UNSTABLE MATERIAL

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Dugouts per mile for necessary removal of unstable material.

Backfill shall be 8" of Base Course and 2-3" lifts of Asphalt Concrete Composite paid for at the contract unit price per ton.

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 200 tons per mile Asphalt Concrete Composite for spot leveling, strengthening, and repair of the existing surface.

Included in the Estimate of Quantities are 100 tons per mile Base Course for backfilling dugouts.

COLD MILLING

Cold Milling is provided for matching existing surfacing elevations on the ends of the project.

Table of Cold Milling Asphalt Concrete	
MRM	Cold Miling Asphalt Concrete (SqYd)
11.80	472.0
17.74	944.0
23.94	458.0
Total	1874.0

TYPE II FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer.

The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. 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 shall be incidental to the contract unit price per each for Type II Field Laboratory.

CLASS S ASPHALT CONCRETE

Mineral aggregate for the Class S shall conform to the requirements for Class S, Type 1.

CHECKING SPREAD RATES

The Contractor shall be responsible for checking the Asphalt Concrete Surfacing and Base Course spread rates and take the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor shall 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 shall be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each day's shift, the Contractor shall 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 shall 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 shall 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 shall 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 ±1/4" of the plan shown depth, the Contractor shall 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 shall 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%. Payment for the CHECKER shall then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

RATES OF MATERIALS, SURFACING

Section 1

MRM 11.80 to 14.55	MRM 21.22 to 21.36
MRM 14.63 to 14.64	MRM 21.44 to 21.48
MRM 14.76 to 15.15	MRM 21.52 to 21.68
MRM 15.21 to 15.44	MRM 21.75 to 21.87
MRM 15.49 to 19.86	MRM 21.92 to 21.95
MRM 20.08 to 20.49	MRM 21.99 to 23.05
MRM 20.53 to 20.58	MRM 23.11 to 23.20
MRM 20.78 to 21.14	MRM 23.29 to 23.47

CLASS S ASPHALT CONCRETE

Crushed Aggregate	1268 Tons
PG 64-34 Asphalt Binder	78 Tons
Total Mix	1346 Tons
Stabilizing Additive	4 Tons
TOTAL	1350 Tons

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at a rate of 7.9 tons applied 35 feet wide (Rate = 0.09 gallons per square yard).

Section 2

MRM 14.55 to 14.63	MRM 21.36 to 21.44
MRM 14.64 to 14.76	MRM 21.48 to 21.52
MRM 15.15 to 15.21	MRM 21.68 to 21.75
MRM 15.44 to 15.49	MRM 21.87 to 21.92
MRM 19.86 to 20.08	MRM 21.95 to 21.99
MRM 20.49 to 20.53	MRM 23.05 to 23.11
MRM 20.58 to 20.78	MRM 23.20 to 23.29
MRM 21.14 to 21.22	

CLASS S ASPHALT CONCRETE

Crushed Aggregate	24.08 Tons
PG 64-34 Asphalt Binder	1.48 Tons
Total Mix	25.56 Tons
Stabilizing Additive	0.07 Tons
TOTAL	25.63 Tons

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at a rate of 0.15 tons applied 35 feet wide (Rate = 0.09 gallons per square yard).

Section 3

MRM 23.47 to 23.64

CLASS S ASPHALT CONCRETE

Crushed Aggregate	24.08 Tons
PG 64-34 Asphalt Binder	1.48 Tons
Total Mix	25.56 Tons
Stabilizing Additive	0.07 Tons
TOTAL	25.63 Tons

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at a rate of 0.15 tons applied 35 feet wide (Rate = 0.09 gallons per square yard).

Section 4

MRM 23.92 to 23.94

CLASS S ASPHALT CONCRETE

Crushed Aggregate	24.01 Tons
PG 64-34 Asphalt Binder	1.48 Tons
Total Mix	25.49 Tons
Stabilizing Additive	0.07 Tons
TOTAL	25.56 Tons

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at a rate of 0.15 tons applied 35 feet wide (Rate = 0.09 gallons per square yard).

Section 5

MRM 23.71 to 23.85

CLASS S ASPHALT CONCRETE

Crushed Aggregate	30.21 Tons
PG 64-34 Asphalt Binder	1.86 Tons
Total Mix	32.07 Tons
Stabilizing Additive	0.09 Tons
TOTAL	32.16 Tons

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

Emulsified Asphalt for Tack SS-1h or CSS-1h at a rate of 0.19 tons applied 44 feet wide (Rate = 0.09 gallons per square yard).

Table of Material Quantities

Section	MRM to MRM		L/R	Length (Ft)	Exceptions (Ft)	Net Length (Ft)	Unclassified Excavation (CuYd)	Unclassified Excavation Digouts (CuYd)	Contractor Furnished Borrow Excavation (CuYd)	Base Course (Ton)	Class S Asphalt Concrete (Ton)	PG 64- 34 Asphalt Binder (Ton)	Stabilizing Additive for Asphalt Concrete (Ton)	SS-1h or CSS-1h Asphalt for Tack (Ton)	Asphalt Concrete Composite (Ton)
1	11.80	14.55		14520.0	105.9	14414.1		136		273	3685.4	212.9	10.9	21.57	218
	14.63	14.64		52.8		52.8		1		1	13.5	0.8	0.1	0.08	1
	14.76	15.15		2059.2		2059.2		20		39	526.5	30.4	1.6	3.08	31
	15.21	15.44		1214.4		1214.4		12		23	310.5	17.9	0.9	1.82	18
	15.49	19.86		23073.6	39.7	23033.9		218		436	5889.3	340.3	17.4	34.46	349
	20.08	20.49		2164.8		2164.8		21		41	553.5	32.0	1.6	3.24	33
	20.53	20.58		264.0		264.0		3		5	67.5	3.9	0.2	0.40	4
	20.78	21.14		1900.8		1900.8		18		36	486.0	28.1	1.4	2.84	29
	21.22	21.36		739.2		739.2		7		14	189.0	10.9	0.6	1.11	11
	21.44	21.48		211.2		211.2		2		4	54.0	3.1	0.2	0.32	3
	21.52	21.68		844.8		844.8		8		16	216.0	12.5	0.6	1.26	13
	21.75	21.87		633.6		633.6		6		12	162.0	9.4	0.5	0.95	10
	21.92	21.95		158.4		158.4		2		3	40.5	2.3	0.1	0.24	2
	21.99	23.05		5596.8		5596.8		53		106	1431.0	82.7	4.2	8.37	85
	23.11	23.20		475.2		475.2		5		9	121.5	7.0	0.4	0.71	7
	23.29	23.47		950.4		950.4		9		18	243.0	14.0	0.7	1.42	14
2	14.55	14.63	L	422.4		422.4		4		8	108.3	6.3	0.3	0.63	6
	14.64	14.76	L	633.6		633.6		6		12	162.4	9.4	0.4	0.95	10
	15.15	15.21	L	316.8		316.8		3		6	81.2	4.7	0.2	0.48	5
	15.44	15.49	R	264.0		264.0		3		5	67.7	3.9	0.2	0.40	4
	19.86	20.08	L	1161.6		1161.6		11		22	297.7	17.2	0.8	1.74	18
	20.49	20.53	L	211.2		211.2		2		4	54.1	3.1	0.1	0.32	3
	20.58	20.78	L	1056.0		1056.0		10		20	270.7	15.6	0.7	1.58	16
	21.14	21.22	L	422.4		422.4		4		8	108.3	6.3	0.3	0.63	6
	21.36	21.44	L	422.4		422.4		4		8	108.3	6.3	0.3	0.63	6
	21.48	21.52	R	211.2		211.2		2		4	54.1	3.1	0.1	0.32	3
	21.68	21.75	R	369.6		369.6		4		7	94.7	5.5	0.3	0.55	6
	21.87	21.92	R	264.0		264.0		3		5	67.7	3.9	0.2	0.40	4
	21.95	21.99	L	211.2		211.2		2		4	54.1	3.1	0.1	0.32	3
	23.05	23.11	L	316.8		316.8		3		6	81.2	4.7	0.2	0.48	5
	23.20	23.29	R	475.2		475.2		5		9	121.8	7.0	0.3	0.71	7
3	23.47	23.64	L	897.6		897.6		9		17	230.1	13.3	0.6	1.35	14
4	23.92	23.94		105.6		105.6		1		2	27.0	1.6	0.1	0.16	2
Transition	23.64	23.71		369.6		369.6		4		7	106.8	5.5	0.3	0.63	6
5	23.71	23.85		739.2		739.2		7		14	237.7	13.7	0.7	1.40	11
Transition	23.85	23.92		369.6		369.6		4		7	106.7	6.2	0.3	0.63	6
Additional Quantities							311		58	746					3281.8
TOTAL				64099.2	145.6	63953.6	311	612	58	1957	16429.8	948.6	47.9	96.2	4250.8

Table of Additional Quantities					
			Contractor Furnished Borrow	Base Course	Asphalt Concrete Composite
	Length (Ft)	Unclassified Excavation (CuYd)	Excavation (CuYd)	(Ton)	(Ton)
LOCATION					
17 Parking Areas					
MP 12.72 to 12.74-R	143				20
MP 13.20 to 13.27-R	322				40
MP 13.64 to 13.67-L	148			270	65
MP 14.64 to 14.68-R	227				25
MP 15.77 to 15.81-R	185				15
MP 16.14 to 16.15-R	84				50
MP 16.42 to 16.51-R	417				80
MP 16.97 to 16.99-L	174				35
MP 17.77 to 17.80-R	158				15
MP 19.25 to 19.29-L	185				60
MP 19.91 to 19.93-L	106			70	15
MP 20.09 to 20.11-L	127				15
MP 20.89 to 20.91-L	111				15
MP 21.77 to 21.79-L	106				15
MP 22.02 to 22.03-R	53				25
MP 23.18 to 23.19-L	53				7
MP 23.40 to 23.46-R	311				37
MP 23.85 to 23.97-L - Excavate 6" deep and backfill with 3" Base Course and 3" Asphalt Concrete Composite	300	67		63	67
Intersecting Roads and Public Areas - Pave to ROW					
Rimrock Pl.					5
Cleopatra Pl.					5
Victoria Ln.					5
Clamity Gulch Rd.					5
Roughlock Falls Rd.					125
MP 17.99-L (Fishing area)					10
MP 21.42-L (Picnic area)					10
Spot Leveling (200 Ton/mi)					2422
Pipe Repair Area MRM 20.312		20		4.7	3.7
Guardrail End Treatment Embankments		224.3	58.0	338.7	90.1
	TOTAL	311.3	58.0	746.4	3281.8

TABLE OF REMOVE ASPHALT CURB

Table of Remove Asphalt Concrete Curb			
MRM	to	MRM	Remove Asphalt Concrete Curb (Ft)
23.47		23.64	L 898
Total			898

CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 3/8-inch X 1/2-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch X 1-inch or 5-inch X 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

The gauge of the corrugated metal ends shall match the thickest gauge of corrugated metal pipe it is connected to.

REPAIR OF CULVERT AT MRM 20.312 R

Prior to overlaying the roadway, approximately 10 feet of 24" CMP shall be replaced at MRM 20.312.

The existing asphalt above the culvert shall be sawcut five feet from either side of the culvert and 10 feet from the edge of pavement.

Material shall be removed to expose the in-place culvert.

The pipe shall be cut 10 feet from the pipe end.

The cut pipe shall be covered in a galvanizing paint.

A new length of 6' of 24" CMP and one 24" CMP Flared End Section shall be connected to the remaining in-place pipe.

Material excavated from the trench shall be used to backfill the trench. Eight inches of Base Course and 6" (2-3" lifts) of asphalt Concrete Composite shall be used to repair the surfacing.

Compaction shall be to the satisfaction of the Engineer.

TABLE OF PIPE REPAIR QUANTITIES

Table of Pipe Repair Quantities									
MRM	L/R	Remove Pipe Culvert	24" CMP 16 Gauge, Furnish	24" CMP, Install	24" CMP Flared End, Furnish	24" CMP Flared End, Install	Unclassified Excavation	Base Course	Asphalt Concrete Composite
		Ft	Ft	Ft	Each	Each	CuYd	Ton	Each
20.312	R	10	6	6	1	1	20.0	4.7	3.7
Total		10	6	6	1	1	20.0	4.7	3.7

TABLE OF TYPE D CURB AND GUTTER

The Contractor shall note where current curb drains occur and shall make provisions in the cub and gutter to allow for positive drainage.

Table of Type D Curb and Gutter			
MRM to	MRM	L/R	Type D46 Concrete Curb and Gutter (Ft)
23.47	23.64	L	898
Total			898

SALVAGE BEAM GUARDRAIL

Steel beam rail, end terminals, and hardware items shall become the property of the State and shall be removed, hauled, and neatly stacked at Spearfish Maintenance Yard as approved by the Engineer. Posts and blocks shall become the property of the Contractor and shall be removed from the project limits.

Payment for removing, hauling, and stacking the guardrail items shall be incidental to the contract unit price per each for Salvage W Beam Guardrail Tangent End Terminal.

BEAM GUARDRAIL

The new guardrail shall be AASHTO M180-00 Type 4 Weathering Steel.

The end terminals shall be powder coated the same color as the adjacent weathering steel rails as approved by the Engineer.

All costs for powder coating the end terminals shall be incidental to the contract unit price per each for W Beam Guardrail Flared End Terminal.

RESET BEAM RAIL

The Contractor shall furnish new galvanized steel hardware for resetting beam rail in accordance with the details provided in these plans. All costs associated with this work shall be incidental to the contract unit price per foot for the rail being reset.

For the guardrail run from MRM 23.19 to MRM 23.70 the guardrail posts shall be 7' long. The guardrail post shall be placed at the break point of the inslope to maintain the shoulder width as per the typical sections. The Engineer will stake out the limits of installation during construction.

TABLE OF GUARDRAIL

Table of Guardrail																													
		Offset from Centerline to Face of Guardrail	Remove W Beam Guardrail for Reset	Remove Double W Beam Guardrail for Reset	Remove Rubrail for Reset	Remove Thrie Beam Bridge Rail for Reset	Remove Double Thrie Beam Guardrail for Reset	Remove W Beam to Thrie Beam Guardrail Transition for Reset	Remove W Beam Guardrail Flared End Terminal for Reset	Remove W Beam Guardrail Tangent End Terminal for Reset	Salvage W Beam Guardrail Tangent End Terminal	Reset W Beam Rail	Reset Double W Beam Guardrail	Reset Rubrail	Reset Thrie Beam Bridge Rail	Reset Double Thrie Beam Guardrail	Reset W Beam to Thrie Beam Guardrail Transition	Reset W Beam Guardrail Flared End Terminal	Reset W Beam Guardrail Tangent End Terminal	Straight Class A W Beam Guardrail with Wood Posts	Beam Guard. Post and Block	W Beam Guard. Flared End Term.	Guard. Deline.	Uncl. Exc.	Base Course	Asphalt Concrete Composite	Contractor Furnished Borrow Excavation	Comment	
		(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)	(Each)	(Each)	(Each)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)	(Each)	(Each)	(Ft)	(Each)	(Each)	(Each)	(CuYd)	(Ton)	(Ton)	(CuYd)		
Srr. No. 41-099-096																													
MRM 11.80																													
			25.0	12.5	12.5						1	25.0	12.5	12.5						12.5	16.0	1	4	19.4	29.3	7.8	3.0		
			37.5	12.5	12.5						1	37.5	12.5	12.5						12.5	14.0	1	4	19.4	29.3	7.8	3.0		
Srr. No. 41-077-137																													
MRM 17.74																													
			12.5			12.5	1	1			12.5				12.5	1	1				20.0		4	19.4	29.3	7.8			
			12.5			12.5	1			1	12.5				12.5	1				12.5	11.0	1	4	19.4	29.3	7.8	10.0		
						100.0								100.0															
						100.0								100.0															
			12.5			12.5	1			1	12.5				12.5	1				12.5	11.0	1	4	19.4	29.3	7.8	10.0		
			12.5			12.5	1			1	12.5				12.5	1				12.5	11.0	1	4	19.4	29.3	7.8	5.0		
Box Culvert																													
MRM 22.03																													
						12.5	1	1							12.5	1	1				18.0		4	19.4	29.3	7.8			
			12.5			12.5	1			1	12.5				12.5	1				12.5	11.0	1	4	19.4	29.3	7.8	20.0		
						25.0								25.0															
						25.0								25.0															
			12.5			12.5	1			1	12.5				12.5	1				12.5	11.0	1	4	19.4	29.3	7.8			
			12.5			12.5	1			1	12.5				12.5	1				12.5	16.0	1	4	19.4	29.3	7.8			
MRM to MRM																													
23.19	23.70	L/R	17	2550.0						1	1	2550.0								1	12.5	825.0	1	53	30.3	45.7	12.1	7.0	7' post, 3'-1 1/2" spacing
		Totals:		2700.0	25.0	25.0	250.0	100.0	8	2	1	9	2700.0	25.0	25.0	250.0	100.0	8	2	1	112.5	964	9	92	224.3	338.7	90.1	58.0	

TRAFFIC CONTROL – GENERAL NOTES

1. Requests to deviate from the sequence of operations shall 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 shall be submitted for review a minimum of one week prior to potential implementation.
2. Unless otherwise stated in these plans, no work will be allowed during hours of darkness.
3. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage of the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.
4. Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.
5. Non-applicable traffic control devices shall be completely covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 48 hours.
6. Construction signing mounted on portable supports shall not be used for a duration of more than 3 days, unless approved by the Engineer. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted, breakaway supports.
7. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.
8. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.
9. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
10. All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.
11. All construction operations shall be conducted in the general direction of traffic movement.
12. If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD – whichever is more stringent shall be used, as determined by the Engineer.

13. Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.
14. During S-Mix overlay operations, traffic shall not be delayed more than 5 minutes while crossing intersections.
15. The pilot car shall be a 4 wheeled vehicle with the Contractor's name prominently displayed on both sides of the vehicle. A 36" x 18" black on orange sign G20-4, PILOT CAR (top line) FOLLOW ME (bottom line) shall be mounted in a conspicuous position on the rear of the vehicle. The pilot car will be equipped with a flashing amber light.
16. The Contractor shall place Grooved Pavement (W8-15) with Motorcycle plaque (W8-15P) at each end of the project.
17. Traffic shall not be delayed for a period longer than 10 minutes.
18. Bump Signs (W8-1, black on orange - 48"x48") with appropriate Advisory Speed Plaque (W13-1P, black on orange - 24"x24") shall be placed 500' in advance of the bump or as approved by the Engineer for adequate sight distance. Type I Object Markers (orange - 18"x18") shall be placed at the bump location.
19. Road Work Ahead (W20-1) signs shall be placed at applicable intersecting roads and as directed by the Engineer.
20. The Contractor shall not allow mainline traffic to run on a milled surface at any location on the project for more than 14 calendar days.
21. The Contractor shall place Uneven Lane (W8-11) signs where appropriate.
22. Milling operations shall be conducted in a manner that keeps uneven lane exposure to minimum, i.e. - mill one lane then drop back the same day and mill adjacent lane(s).
23. Paving operations shall be conducted in a manner that keeps uneven lanes exposure to a minimum, i.e. – pave one lane one day then drop back and pave the adjacent lane the next day.
24. The Contractor shall cover the no passing zone signing as work progresses and Temporary Pavement Markings are placed.
25. Guardrail replacement shall be completed during paving and milling operations. Section 630.3 F of the Specifications shall be adhered to.

SEQUENCE OF OPERATIONS

Standard Plates No.'s 634.03, 634.22, 634.23, and 634.31 shall be used to complete the work.

TEMPORARY PAVEMENT MARKING (PAINT)

Temporary pavement marking paint shall be used on cold milled surfaces. Temporary pavement marking paint shall be used to mark a double yellow centerline and any lane lines for the milled surface. Temporary pavement marking paint shall not be used on the top lift of asphalt concrete.

The Contractor shall be responsible for maintaining a visible and reflective centerline throughout the project. Any marking covered or damaged shall be replaced prior to the end of the day at no cost to the State.

All costs for furnishing, applying, and maintaining the temporary pavement marking paint shall be included in the contract unit price per mile for Temporary Pavement Marking.

Quantity of Temporary Pavement Marking (Paint) consists of:

1. Begin project – 500' End project – 500'

TEMPORARY FLEXIBLE VERTICAL MARKERS (TABS)

Temporary Flexible Vertical Markers shall be used on the top lift of asphalt surfacing for centerline delineation, any lane lines, and as directed by the Engineer. Tabs shall be offset 6" from the location shown for permanent pavement markings. Tabs shall be installed by the end of each day. Tabs shall be removed the same day that permanent pavement marking is installed.

The Contractor shall be responsible for maintaining a visible and reflective centerline throughout the project. Any marking covered or damaged shall be replaced prior to the end of the day at no cost to the State.

All costs for furnishing, installing, and removing the tabs when no longer needed shall be included in the contract unit price per mile for Temporary Pavement Marking.

Quantity of Temporary Flexible Vertical Markers (Tabs) consists of:

1. Tabs installed on top lift of asphalt -- 12 miles

OVERWIDTH TRAFFIC

The Contractor shall maintain a minimum width of 16' at all times, except when milling and paving equipment is working directly adjacent to centerline. The Contractor shall notify the Engineer 5 days prior to the paving and milling operations.

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 shall provide the Engineer with pertinent information 7 days prior to any phase change or any other major changes that affect traffic flow.

ITEMIZED LIST FOR TRAFFIC CONTROL DEVICES

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	4	48" x 48"	16	64
W7-3aP	NEXT ___ MILES (plaque)	3	36" x 30"	8	24
W8-1	BUMP	4	48" x 48"	16	64
W8-6	TRUCK CROSSING	2	48" x 48"	16	32
W8-11	UNEVEN LANES	2	48" x 48"	16	32
W8-15	GROOVED PAVEMENT	2	48" x 48"	16	32
W8-15P	MOTORCYCLE (plaque)	2	24" x 18"	3	6
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6	24
W20-1	ROAD WORK AHEAD	8	48" x 48"	16	128
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	5	48" x 48"	16	80
W21-5	SHOULDER WORK	2	48" x 48"	16	32
OM1-3	TYPE I OBJECT MARKER	4	18" x 18"	2	8
G20-1	ROAD WORK NEXT ___ MILES	2	36" x 18"	5	10
G20-2	END ROAD WORK	2	36" x 18"	5	10
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					578

COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor shall apply the Cold Applied Plastic Pavement Marking material as per manufacturer's instructions.

Cold applied plastic pavement markings shall be placed into recessed grooves on the surface.

GROOVE PAVEMENT FOR PAVEMENT MARKING

The grooving shall be completed within the following tolerance:

Depth of Groove: 100 mils, tolerance of + 10 mils.

Existing grooves that do not meet the 100 mil depth requirement shall be re-grooved. In areas where the existing groove depth meets the 100 mil depth requirements and portions of the existing markings are still in place, the existing markings shall be removed. All costs for materials, labor, and equipment necessary to remove the existing markings shall be incidental to the contract unit price per foot for Grooving for Cold Applied Plastic Marking, 4"; Grooving for Cold Applied Plastic Marking, 24", per each for Grooving for Cold Applied Plastic Marking, Arrow, and per square foot for Grooving for Cold Applied Plastic Pavement Marking, Area.

Markings that fall outside of the groove shall be removed (at least 90%) using additional methods approved by the Engineer. All costs for materials, labor, and equipment necessary to remove the existing markings shall be incidental to the contract unit price per foot for Grooving for Cold Applied Plastic Marking, 4"; Grooving for Cold Applied Plastic Marking, 24", per each for Grooving for Cold Applied Plastic Marking, Arrow, and per square foot for Grooving for Cold Applied Plastic Pavement Marking, Area.

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving shall be vacuumed. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue from wet grooving shall 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, shall 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 shall be included in the contract unit price per foot for Grooving for Cold Applied Plastic Pavement Marking.

The Contractor shall dispose of grooving residue in accordance with Federal, State and Local regulations. No payment will be made for disposal of residue. Disposal of residue shall be incidental to the associated Grooving Pavement bid item.

WATERBORNE PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

All materials shall be applied as per manufacturer's recommendations.

This material shall consist of a durable high build, low VOC, fast drying, waterborne traffic paint with 100% acrylic polymer (DOW DT-400 or DOW HD-21A or equivalent) and with reflective media adhered to the paint. The reflective media shall consist of glass beads as well as bonded core reflective elements.

The bonded core reflective elements shall contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. All microcrystalline ceramic beads bonded to reflective elements shall have a minimum index of refraction of 1.8 when tested using the liquid oil immersion method.

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 shall be removed and replaced. If replacement of markings cannot be applied within the same year, the contractor shall 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 (within 3 - 30 days of the line application):

<u>Pavement Marking Color</u>	<u>Minimum Value</u>
White	350 mcd/m ² /lux
Yellow	275 mcd/m ² /lux

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

RATES OF MATERIALS WATERBORNE PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

Solid 4" Line = 27.8 Gals/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 shall be incidental to the contract unit price per gallon for Waterborne Pavement Marking Paint with High Grade Polymer, White or Yellow.

	Cold Applied Plastic Pavement Marking, 4"	Cold Applied Plastic Pavement Marking, 24"	Cold Applied Plastic Pavement Marking, Area	Cold Applied Plastic Pavement Marking, Arrow	Grooving for Cold Applied Plastic Pavement Marking, 4"	Grooving for Cold Applied Plastic Pavement Marking, 24"	Grooving for Cold Applied Plastic Pavement Marking, Area	Grooving for Cold Applied Plastic Pavement Marking, Arrow	Waterborne Pavement Marking Paint with High Grade Polymer, White	Waterborne Pavement Marking Paint with High Grade Polymer, Yellow
	Ft	Ft	SqFt	Each	Ft	Ft	SqFt	Each	Gallon	Gallon
Total	4738	658	160	6	4738	658	160	6	675	675

TYPE 2 OBJECT MARKERS

All Type 2 Object Markers listed in these plans shall be used to mark pipe and box culverts throughout this project. All costs for materials, labor, and equipment necessary to furnish and install object markers shall be incidental to the contract unit price per each for Type 2 Object Marker Back to Back.

All cost for materials, labor, and equipment necessary to remove existing Type 2 Object Markers shall be incidental to the contract unit price per each for Type 2 Object Marker Back to Back.

All existing Type 2 Object Markers, posts, and hardware removed as per these plans remain property of the State of South Dakota and shall be transported to the Rapid City South maintenance yard by the Contractor. The Contractor shall notify the Engineer two days prior to time of delivery to the maintenance yard so correct placement for storage and inventory of materials can be made upon receipt.

TABLE OF TYPE 2 OBJECT MARKERS

Table of Type 2 Object Markers		
MRM	Side (L/R)	Type 2 Object Marker Back to Back
Each		
12.629	L/R	2
12.799	L/R	2
14.192	L/R	2
14.692	L/R	2
14.774	L/R	2
14.891	L/R	2
14.909	L/R	2
15.098	L/R	2
15.884	L/R	2
16.003	L/R	2
16.088	L/R	2
16.124	L/R	2
16.148	L/R	2
16.161	L/R	2
16.323	L/R	2
16.419	L/R	2
16.424	L/R	2
16.582	L/R	2
16.606	L/R	2
16.771	L/R	2
16.873	L/R	2
16.970	L/R	2
17.119	L/R	2
17.206	L/R	2
17.308	L/R	2
17.494	L/R	2
17.957	L/R	2
18.062	L/R	2
18.110	L/R	2
18.235	L/R	2
18.453	L/R	2
18.466	L/R	2
18.490	L/R	2
18.565	L/R	2
18.711	L/R	2
18.794	L/R	2
Subtotal		72

Table of Type 2 Object Markers (Continued)

MRM	Side (L/R)	Type 2 Object Marker Back to Back
Each		
18.876	L/R	2
19.022	L/R	2
19.242	L/R	2
19.360	L/R	2
19.569	L/R	2
19.716	L/R	2
19.915	L/R	2
19.917	L/R	2
20.048	L/R	2
20.312	L/R	2
20.383	L/R	2
20.510	L/R	2
20.690	L/R	2
20.735	L/R	2
20.806	L/R	2
20.868	L/R	2
20.896	L/R	2
21.034	L/R	2
21.145	L/R	2
21.270	L/R	2
21.404	L/R	2
21.468	L/R	2
21.725	L/R	2
21.953	L/R	2
22.198	L/R	2
22.301	L/R	2
22.484	L/R	2
22.628	L/R	2
22.905	L/R	2
23.057	L/R	2
23.120	L/R	2
23.300	L/R	2
23.329	L/R	2
23.391	L/R	2
23.454	L/R	2
23.594	L/R	2
Subtotal		72
Total		144

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 014A(13)11	13	59

PERMANENT SIGNING

The Contractor shall furnish all signs, posts, stiffeners, bases, hardware, and labor for installation of permanent signs in size, type, and quantity as shown in these plans and/or as required by the Engineer.

The Contractor shall provide all labor and equipment necessary to install permanent signing, remove existing signs, and reset existing signs as detailed in these plans and/or as required by the Engineer. Payment for furnishing and installing permanent signs will be paid for at the contract unit price per square foot for each type of sign based on sheeting requirements. All signs shall have ASTM D4956 Type IV (High Intensity) or ASTM D4956 Type XI (Super /Very High Intensity) sheeting as noted on the sign detail sheets. Payment for new signposts, hardware, bases, and labor will be made at the contract unit price per foot for the associated size Perforated Tube Post. Breakaway post details regarding posts, hardware, and bases shall be followed as per the manufacturer's recommendations. The sign post contract items shall include post bases and all hardware. The lengths of the posts in the sign tables are approximate lengths only. The post lengths shall be verified by the Contractor. The Contractor is urged to cut posts to length on job site after site by site verification of post length.

The Contractor shall use Telespar brand (or equivalent) posts and bases on all new standard highway signs as approved by the Engineer. All post materials shall conform to Section 982 of the Specifications, and be in accordance with ASTM specifications. The height of the post shall not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign shall be cut off. No separate payment will be made for cutting the post or for that length cut off. All posts and bases shall be accompanied by Certificates of Compliance and shall meet all safety standards as set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

The Contractor shall stake the signs and the Engineer will verify the location prior to installation. The lateral distance from the roadway and the height of the sign shall be established by the Contractor according to the Permanent Signing Typical, as well as the Standard Plates in the plans and the MUTCD.

The Contractor shall coordinate the removal of signs with the temporary traffic control portion of these plans. Existing signing shall be replaced, left in place, or temporarily covered as needed to safely direct traffic through the project or as directed by the Engineer.

HARDWARE

Aluminum U-Channel stiffeners shall be used on all standard highway signs greater than or equal to 36" in width and shall conform to Alloy 6063-T6 or 6061-T6. The U-Channel shall be 2 inches in width and free of holes. The U-Channel stiffeners shall also be used to connect various signs and perforated tube posts together so that an entire sign can be erected as a single installation. Stiffeners may be fastened to signs by use of 1/4" drive rivets with a minimum of one on each end and one centered between each post. Installation of the stiffeners shall be incidental to other contract items.

All perforated tube signpost base material shall be fastened with 5/16" diameter corner bolts (Grade 2).

All perforated tube signposts shall have a soil stabilizer attached to the base. Soil stabilizers shall be MPJ sign wedge style or equivalent.

REMOVE, SALVAGE, RELOCATE & RESET TRAFFIC SIGN

The Contractor shall remove signs, posts, and bases for remove and stockpile as shown in the table for Permanent Signing. All existing signs, posts, and hardware removed as per these plans remain property of the State of South Dakota and shall be transported to the SDDOT Spearfish maintenance yard by the Contractor. The Contractor shall notify the Engineer two days prior to time of delivery to the maintenance yard so correct placement for storage and inventory of materials can be made upon receipt.

All bolts, nuts, and washers shall be placed in individual 5-gallon pails. Backing materials shall be separated from the signs and may be reused at the Contractor's discretion. Non-threaded connections (rivets) shall be cut when necessary to reduce sign sections to a 4' x 6' maximum size.

Any post assembly including sign, post, or bases that call for being removed, relocated or reset in the remarks column in the table for Permanent Signing shall be included in the contract unit price per each for "Remove, Salvage, Relocate & Reset Traffic sign". All other signs, posts, and bases that call for removal and stockpile shall be included in the contract unit price per each for "Salvage Traffic Sign". These payments shall include all cost for labor and equipment necessary to remove, dismantle, backfill holes (wooden posts only) and deliver signs to the SDDOT Spearfish maintenance yard.

SIGN LEGEND, BORDER, BACKGROUND, AND MOUNTING

All sign material shall comply with Section 982 of the Specifications.

All W-series warning signs and plaques shall be fluorescent yellow.

All other sign colors shall be as stipulated in the MUTCD.

When signs are vertically mounted in succession, they shall be 1-2 inches apart. Lateral placement of signs shall be determined by the Engineer.

PERMANENT SIGNING - US Hwy 14A - MRM: 11.80 To 24.00

EXISTING MRM (Approx.)	NEW MRM (Approx.)	SIGN								POST					SIGN DESCRIPTION	WORK TO BE DONE
		Number	Width (in)	Height (in)	Facing Traffic	New Sign	Remove Existing	Square Footage	Sheeting Type	New Post	Length (ft)	Size (in)	# of Posts	Shear Slip Base		
11.80+0.023	SAME	SS1-1	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPECIAL SERVICES	LEAVE AS IS
11.80+0.023	SAME	SS1-1	48	48	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPECIAL SERVICES	LEAVE AS IS
11.80+0.030	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
11.80+0.127	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
12.00+0.074	SAME	SS1-1	48	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPECIAL SERVICES	LEAVE AS IS
12.00+0.528	SAME	W8-2C	36	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
12.00+0.703	SAME	W1-5L	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	LEFT WINDING ROAD ARROW	SALVAGE EXISTING "LEFT REVERSE TURN ARROW" SIGN & INSTALL NEW "LEFT WINDING ROAD ARROW" SIGN ON EXISTING POST
12.00+0.703	SAME	W13-1P	18	18	EASTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
12.00+0.820	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
12.00+0.936	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
13.00+0.115	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
13.00+0.164	SAME	W1-6	48	24	WESTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
13.00+0.256	N/A	W1-3L	30	30	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	LEFT REVERSE TURN ARROW	SALVAGE EXISTING SIGN
13.00+0.256	N/A	W13-1P	18	18	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN
13.00+0.276	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
13.00+0.333	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
13.00+0.355	N/A	W1-1R	30	30	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	RIGHT TURN ARROW	SALVAGE EXISTING SIGN
13.00+0.355	N/A	W13-1P	18	18	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN
13.00+0.462	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
13.00+0.574	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
13.00+0.600	N/A	W1-1L	30	30	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	LEFT TURN ARROW	SALVAGE EXISTING SIGN
13.00+0.605	N/A	W1-2L	30	30	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	LEFT CURVE ARROW	SALVAGE EXISTING SIGN
13.00+0.605	N/A	W13-1P	18	18	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN
13.00+0.744	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
13.00+0.786	SAME	W14-3	48	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
13.00+0.786	SAME	W8-2C	48	48	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
13.00+0.857	SAME	W1-5R	30	30	WESTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	RIGHT WINDING ROAD ARROW	SALVAGE EXISTING "RIGHT CURVE ARROW" SIGN & INSTALL NEW "RIGHT WINDING ROAD ARROW" SIGN ON EXISTING POST
N/A	13.00+0.857	W13-1P	18	18	WESTBOUND	FLAT ALUM	N/A	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	INSTALL NEW "ADVISORY SPEED PLATE" SIGN BELOW NEW "RIGHT WINDING ROAD ARROW" SIGN
13.00+0.864	SAME	R2-1	24	30	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPEED LIMIT 35	LEAVE AS IS
14.00+0.136	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
14.00+0.145	N/A	W1-5L	30	30	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	LEFT WINDING ROAD ARROW	SALVAGE EXISTING SIGN
14.00+0.212	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
14.00+0.246	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
14.00+0.272	SAME	W1-3R	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	RIGHT REVERSE TURN ARROW	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.272	SAME	W13-1P	18	18	EASTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.370	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.499	SAME	W1-6	48	24	WESTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.610	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.694	SAME	W1-6	48	24	WESTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.774	SAME	W1-3R	30	30	WESTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	RIGHT REVERSE TURN ARROW	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
14.00+0.774	SAME	W13-1P	18	18	WESTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
N/A	14.00+0.820	W1-1R	30	30	EASTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT TURN ARROW	INSTALL NEW SIGN & POST
14.00+0.861	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
15.00+0.002	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
N/A	15.00+0.040	W1-1L	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	LEFT TURN ARROW	INSTALL NEW SIGN & POST
15.00+0.041	SAME	W1-3L	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	LEFT REVERSE TURN ARROW	SALVAGE EXISTING "LEFT CURVE ARROW" SIGN & INSTALL NEW "LEFT REVERSE TURN ARROW" SIGN ON EXISTING POST
15.00+0.041	SAME	W13-1P	18	18	EASTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
N/A	15.00+0.080	W1-6	48	24	EASTBOUND	FLAT ALUM	N/A	8.0	XI	YES	12	2.0	1	NO	ARROW - SINGLE HEAD	INSTALL NEW SIGN & POST
15.00+0.100	N/A	W1-5R	30	30	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	RIGHT WINDING ROAD ARROW	SALVAGE EXISTING SIGN
N/A	15.00+0.160	W1-6	48	24	WESTBOUND	FLAT ALUM	N/A	8.0	XI	YES	12	2.0	1	NO	ARROW - SINGLE HEAD	INSTALL NEW SIGN & POST
15.00+0.228	N/A	W1-2R	30	30	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	RIGHT CURVE ARROW	SALVAGE EXISTING SIGN
15.00+0.266	N/A	W1-1R	30	30	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	RIGHT TURN ARROW	SALVAGE EXISTING SIGN
15.00+0.266	N/A	W13-1P	18	18	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN
15.00+0.303	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
15.00+0.369	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
15.00+0.400	SAME	D9-10F	72	18	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	RIM ROCK LODGE TOD SIGN	LEAVE AS IS
15.00+0.430	SAME	W1-3L	30	30	WESTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	LEFT REVERSE TURN ARROW	SALVAGE EXISTING "LEFT CURVE ARROW" SIGN & INSTALL NEW "LEFT REVERSE TURN ARROW" SIGN ON EXISTING POST
15.00+0.552	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
15.00+0.739	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
15.00+0.797	SAME	W8-2C	36	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
15.00+0.828	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
15.00+0.829	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
15.00+0.925	SAME	W14-3	48	36	WESTBOUND	FLAT ALUM	YES	5.6	XI	NO	-	-	-	-	NO PASSING ZONE	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
15.00+0.939	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
15.00+0.939	SAME	SS1-1	36	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPECIAL SERVICES	LEAVE AS IS
15.00+0.974	SAME	W1-3L	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	LEFT REVERSE TURN ARROW	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
15.00+0.974	SAME	W13-1P	18	18	EASTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
16.00+0.062	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST

PERMANENT SIGNING - US Hwy 14A - MRM: 11.80 To 24.00

EXISTING MRM (Approx.)	NEW MRM (Approx.)	SIGN								POST					SIGN DESCRIPTION	WORK TO BE DONE
		Number	Width (in)	Height (in)	Facing Traffic	New Sign	Remove Existing	Square Footage	Sheeting Type	New Post	Length (ft)	Size (in)	# of Posts	Shear Slip Base		
16.00+0.111	SAME	W1-6	48	24	WESTBOUND	FLAT ALUM	YES	8.0	XI	YES	12	2.0	1	NO	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
16.00+0.111	N/A	D5-5A	24	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	PICNIC AREA (ROADSIDE TABLE SYMBOL)	SALVAGE EXISTING SIGN
16.00+0.118	SAME	W1-6	48	24	EASTBOUND	FLAT ALUM	YES	8.0	XI	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
16.00+0.199	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
16.00+0.199	SAME	R8-3A	24	24	NORTHBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PARKING (SYM)	LEAVE AS IS
16.00+0.311	SAME	W1-3L	30	30	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	LEFT REVERSE TURN ARROW	LEAVE AS IS
16.00+0.311	SAME	W13-1P	18	18	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	LEAVE AS IS
16.00+0.414	SAME	D1-1L	48	18	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	DESTINATION - 1 LINE W/ARROW-LEFT	LEAVE AS IS
16.00+0.414	SAME	RS-NS1	38	40	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	Recreation Destination Text Only	LEAVE AS IS
16.00+0.508	SAME	W11A-2	36	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	PEDESTIAN CROSSING - SYMBOL	LEAVE AS IS
16.00+0.508	SAME	W16-7P	24	12	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	DOWN AND LEFT ARROW	LEAVE AS IS
16.00+0.510	SAME	W11A-2	36	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	PEDESTIAN CROSSING - SYMBOL	LEAVE AS IS
16.00+0.510	SAME	W16-7P	24	12	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	DOWN AND LEFT ARROW	LEAVE AS IS
16.00+0.599	SAME	W11-2	36	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ADVANCE PEDESTIAN CROSSING SYMBOL	LEAVE AS IS
16.00+0.599	SAME	W16-9P	24	12	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	AHEAD PLAQUE	LEAVE AS IS
N/A	17.00+0.050	W1-3R	30	30	EASTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT REVERSE TURN ARROW	INSTALL NEW SIGN & POST
17.00+0.093	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
17.00+0.112	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
N/A	17.00+0.380	W1-3R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT REVERSE TURN ARROW	INSTALL NEW SIGN & POST
17.00+0.459	SAME	R2-1	24	30	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPEED LIMIT 35	LEAVE AS IS
17.00+0.465	SAME	R2-1	24	30	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPEED LIMIT 35	LEAVE AS IS
17.00+0.519	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
17.00+0.588	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
17.00+0.710	SAME	W14-3	48	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
17.00+0.710	SAME	W8-2C	48	48	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
17.74+0.017	SAME	W8-2C	48	48	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
17.74+0.017	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
17.74+0.031	SAME	W1-1L	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	LEFT TURN ARROW	SALVAGE EXISTING "LEFT REVERSE CURVE ARROW" SIGN & INSTALL NEW "LEFT TURN ARROW" SIGN ON EXISTING POST
18.00+0.136	SAME	W8-1	30	30	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	BUMP (HINGED)	LEAVE AS IS
N/A	18.00+0.200	W1-1L	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	LEFT TURN ARROW	INSTALL NEW SIGN & POST
18.00+0.333	N/A	W1-4L	30	30	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	LEFT REVERSE CURVE ARROW	SALVAGE EXISTING SIGN
18.00+0.450	SAME	R8-3A	24	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PARKING (SYM)	LEAVE AS IS
18.00+0.450	SAME	R7-1B	12	18	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PARKING ANY TIME	LEAVE AS IS
18.00+0.456	SAME	R1-1	30	30	SOUTHBOUND	FLAT ALUM	YES	5.2	XI	NO	-	-	-	-	STOP	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
18.00+0.460	SAME	R7-1B	12	18	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PARKING ANY TIME	LEAVE AS IS
18.00+0.460	SAME	R8-3A	24	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PARKING (SYM)	LEAVE AS IS
18.00+0.805	SAME	W1-3R	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	RIGHT REVERSE TURN ARROW	SALVAGE EXISTING "RIGHT CURVE ARROW" SIGN & INSTALL NEW "RIGHT REVERSE TURN ARROW" SIGN ON EXISTING POST
18.00+0.912	SAME	W1-6	48	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
19.00+0.009	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
19.00+0.112	SAME	W1-6	48	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
19.00+0.369	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
N/A	19.00+0.400	W1-3R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT REVERSE TURN ARROW	INSTALL NEW SIGN & POST
19.00+0.423	SAME	W8-2C	36	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
19.00+0.423	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
19.00+0.428	N/A	W1-5L	30	30	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	LEFT WINDING ROAD ARROW	SALVAGE EXISTING SIGN
19.00+0.428	SAME	W14-3	48	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
N/A	19.00+0.630	W1-3R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT REVERSE TURN ARROW	INSTALL NEW SIGN & POST
19.00+0.671	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
19.00+0.704	SAME	R1-1	30	30	SOUTHBOUND	FLAT ALUM	YES	5.2	XI	NO	-	-	-	-	STOP	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
19.00+0.715	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
19.00+0.868	N/A	W1-6	48	24	EASTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
20.00+0.070	N/A	W1-6	48	24	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	SALVAGE EXISTING SIGN
N/A	20.00+0.100	W1-5R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT WINDING ROAD ARROW	INSTALL NEW SIGN & POST
20.00+0.335	SAME	W1-6	48	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
20.00+0.451	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
N/A	20.00+0.680	W1-6	48	24	EASTBOUND	FLAT ALUM	N/A	8.0	XI	YES	12	2.0	1	NO	ARROW - SINGLE HEAD	INSTALL NEW SIGN & POST
N/A	20.00+0.740	W1-6	48	24	WESTBOUND	FLAT ALUM	N/A	8.0	XI	YES	12	2.0	1	NO	ARROW - SINGLE HEAD	INSTALL NEW SIGN & POST
20.00+0.825	SAME	W1-5R	30	30	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	RIGHT WINDING ROAD ARROW	LEAVE AS IS
N/A	20.00+0.825	W13-1P	18	18	EASTBOUND	N/A	NO	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	INSTALL NEW "ADVISORY SPEED PLATE" SIGN BELOW "RIGHT WINDING ROAD ARROW" SIGN
20.00+0.858	SAME	W14-3	48	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
20.00+0.947	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
N/A	21.00+0.010	W1-1R	30	30	EASTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT TURN ARROW	INSTALL NEW SIGN & POST
N/A	21.00+0.010	W13-1P	18	18	EASTBOUND	FLAT ALUM	N/A	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	INSTALL NEW SIGN ON NEW "RIGHT TURN ARROW" POST
21.00+0.097	SAME	W1-6	48	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
21.00+0.147	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
N/A	21.00+0.190	W1-1R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	LEFT TURN ARROW	INSTALL NEW SIGN & POST
N/A	21.00+0.190	W13-1P	18	18	WESTBOUND	FLAT ALUM	N/A	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	INSTALL NEW SIGN ON NEW "LEFT TURN ARROW" POST
21.00+0.259	SAME	W14-3	48	36	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
21.00+0.311	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
N/A	21.00+0.400	W1-1L	30	30	EASTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	LEFT TURN ARROW	INSTALL NEW SIGN & POST

PERMANENT SIGNING - US Hwy 14A - MRM: 11.80 To 24.00

EXISTING MRM (Approx.)	NEW MRM (Approx.)	SIGN								POST					SIGN DESCRIPTION	WORK TO BE DONE
		Number	Width (in)	Height (in)	Facing Traffic	New Sign	Remove Existing	Square Footage	Sheeting Type	New Post	Length (ft)	Size (in)	# of Posts	Shear Slip Base		
21.00+0.450	SAME	D5-5A	24	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	PICNIC AREA (ROADSIDE TABLE SYMBOL)	LEAVE AS IS
21.00+0.450	SAME	RS-NS1	32	40	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	Recreation Destination Text Only	LEAVE AS IS
N/A	21.00+0.500	W1-1R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT TURN ARROW	INSTALL NEW SIGN & POST
21.00+0.503	SAME	R1-1	30	30	SOUTHBOUND	FLAT ALUM	YES	5.2	XI	NO	-	-	-	-	STOP	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
21.00+0.551	SAME	D5-5A	24	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	PICNIC AREA (ROADSIDE TABLE SYMBOL)	LEAVE AS IS
21.00+0.551	SAME	RS-NS1	32	40	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	Recreation Destination Text Only	LEAVE AS IS
21.00+0.676	SAME	W1-1R	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	NO	-	-	-	-	RIGHT TURN ARROW	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
21.00+0.676	SAME	W13-1P	18	18	EASTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
21.00+0.741	SAME	W1-6	48	24	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
21.00+0.849	SAME	W1-6	48	24	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	ARROW - SINGLE HEAD	LEAVE AS IS
N/A	21.00+0.912	W1-1L	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	LEFT TURN ARROW	INSTALL NEW SIGN & POST
N/A	21.00+0.912	W13-1P	18	18	WESTBOUND	FLAT ALUM	N/A	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (30 MPH)	INSTALL NEW SIGN ON NEW "LEFT TURN ARROW" POST
N/A	21.00+0.915	W1-1L	30	30	EASTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	LEFT TURN ARROW	INSTALL NEW SIGN & POST
22.00+0.033	SAME	I-3E	24	18	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	IRON CREEK	LEAVE AS IS
22.00+0.040	SAME	I-3E	24	18	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	IRON CREEK	LEAVE AS IS
N/A	22.00+0.060	W1-1R	30	30	WESTBOUND	FLAT ALUM	N/A	6.3	XI	YES	12	2.0	1	NO	RIGHT TURN ARROW	INSTALL NEW SIGN & POST
22.00+0.312	SAME	W14-3	48	36	WESTBOUND	FLAT ALUM	YES	5.6	XI	NO	-	-	-	-	NO PASSING ZONE	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
22.00+0.334	SAME	W14-3	48	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	NO PASSING ZONE	LEAVE AS IS
22.00+0.334	SAME	W8-2C	30	30	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	FALLING ROCK	LEAVE AS IS
22.00+0.710	SAME	W14-3	48	36	EASTBOUND	FLAT ALUM	YES	5.6	XI	NO	-	-	-	-	NO PASSING ZONE	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
22.00+0.822	SAME	W14-3	48	36	WESTBOUND	FLAT ALUM	YES	5.6	XI	NO	-	-	-	-	NO PASSING ZONE	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
23.00+0.182	SAME	R2-1	24	30	WESTBOUND	FLAT ALUM	YES	5.0	IV	NO	-	-	-	-	SPEED LIMIT 35	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
23.00+0.620	SAME	W13-1P	18	18	EASTBOUND	FLAT ALUM	YES	2.3	XI	NO	-	-	-	-	ADVISORY SPEED PLATE (20MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW "RIGHT REVERSE TURN ARROW" POST
23.00+0.620	SAME	W1-3R	30	30	EASTBOUND	FLAT ALUM	YES	6.3	XI	YES	12	2.0	1	NO	RIGHT REVERSE TURN ARROW	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW POST
23.00+0.628	SAME	W11-2	36	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ADVANCE PEDESTIAN CROSSING SYMBOL	LEAVE AS IS
23.00+0.628	SAME	W16-9P	24	12	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	AHEAD PLAQUE	LEAVE AS IS
23.00+0.647	SAME	D1-1D	36	18	EASTBOUND	FLAT ALUM	YES	4.5	IV	YES	12	2.0	2	NO	TOWN BOARD (SIGN 1)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW POST
23.00+0.661	SAME	W11-6	30	30	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ADVANCE SNOWMOBILE CROSSING SYMBOL (HINGED)	LEAVE AS IS
23.00+0.665	N/A	W1-3R	30	30	WESTBOUND	N/A	YES	-	-	NO	-	-	-	-	RIGHT REVERSE TURN ARROW	SALVAGE EXISTING SIGN
23.00+0.703	SAME	SS1-1	24	30	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPECIAL SERVICES	LEAVE AS IS
23.00+0.703	SAME	M3-4	24	12	WESTBOUND	FLAT ALUM	YES	2.0	IV	NO	-	-	-	-	DIRECTIONAL MARKER - WEST	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
23.00+0.703	SAME	M1-4	30	24	WESTBOUND	FLAT ALUM	YES	5.0	IV	NO	-	-	-	-	ROUTE MARKER (US HIGHWAYS) 16A	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
23.00+0.738	SAME	D1-2A	108	30	EASTBOUND	FLAT ALUM	YES	22.5	IV	NO	-	-	-	-	DESTINATION - 2 LINES W/ARROW/MILEAGE (SIGN 2)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON EXISTING POST
23.00+0.753	SAME	RS-NS1C	24	36	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	SNOWMOBILE PARKING	LEAVE AS IS
23.00+0.765	SAME	W11A-2	30	30	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	PEDESTIAN CROSSING - SYMBOL	LEAVE AS IS
23.00+0.765	SAME	W16-7P	24	12	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	DOWN AND LEFT ARROW	LEAVE AS IS
23.00+0.770	SAME	R1-1	30	30	NORTHBOUND	N/A	NO	-	-	NO	-	-	-	-	STOP	LEAVE AS IS
23.00+0.775	SAME	W11A-2	30	30	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	PEDESTIAN CROSSING - SYMBOL	LEAVE AS IS
23.00+0.775	SAME	W16-7P	24	12	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	DOWN AND LEFT ARROW	LEAVE AS IS
23.00+0.775	23.00+0.785	SS1-1	60	12	WESTBOUND	N/A	YES	-	-	YES	12	2.0	1	NO	RV & TRAILER PARKING	REMOVE FROM EXISTING POSTS & RESET ON NEW POSTS AT NEW LOCATION
23.00+0.796	SAME	SS1-1	24	31	WESTBOUND	N/A	NO	-	-	NO	-	-	-	-	SPECIAL SERVICES	LEAVE AS IS
23.00+0.813	SAME	D1-1AL	96	18	WESTBOUND	FLAT ALUM	YES	12.0	IV	YES	12	2.0	2	NO	DESTINATION - 1 LINE W/ARROW/MILEAGE-LEFT (SIGN 3)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW POST
23.00+0.847	SAME	D4-1	30	24	EASTBOUND	FLAT ALUM	YES	5.0	IV	YES	12	2.0	2	NO	PARKING W/ LEFT ARROW	SALVAGE EXISTING "VISITOR PARKING" SIGN; INSTALL NEW "PARKING" SIGN ON NEW POST
23.00+0.862	SAME	W1-3R	30	30	WESTBOUND	FLAT ALUM	YES	6.3	XI	YES	12	2.0	1	NO	RIGHT REVERSE TURN ARROW	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW POST
23.00+0.862	SAME	W13-1P	18	18	WESTBOUND	FLAT ALUM	YES	2.3	XI	YES	12	2.0	1	NO	ADVISORY SPEED PLATE (20MPH)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW "RIGHT REVERSE TURN ARROW" POST
23.00+0.897	SAME	M3-2	24	12	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	DIRECTIONAL MARKER - EAST	LEAVE AS IS
23.00+0.897	SAME	M1-4	30	30	EASTBOUND	N/A	NO	-	-	NO	-	-	-	-	ROUTE MARKER (US HIGHWAYS)	LEAVE AS IS
23.00+0.931	SAME	D1-1D	36	18	WESTBOUND	FLAT ALUM	YES	4.5	IV	YES	12	2.0	2	NO	TOWN BOARD (SIGN 1)	SALVAGE EXISTING SIGN; INSTALL NEW SIGN ON NEW POST

GUARDRAIL DELINEATORS

The Contractor shall place guardrail delineators on all portions of guardrail as per standard plate 632.40. All costs for furnishing and installing guardrail delineation shall be incidental to the contract unit price per each for "Guardrail Delineator".

The Contractor shall use aluminum delineators and the use of flexible plastic will not be allowed as shown on standard plate 632.40.

TRANSVERSE RUMBLE STRIPS

The Contractor shall install transverse lane rumble strips as per the details provided in these plans.

The rumble strips shall be grooved into the pavement.

A flush seal shall be applied in accordance with section 324 of the specifications.

Plans quantity shall be the basis of payment and no field measurement will be required..

All costs associated with this work shall be incidental to the contract unit price per foot for Groove 4" Wide Rumble Strip.

BANK AND CHANNEL PROTECTION GABIONS

An area of failed in-place Bank and Channel Protection Gabions at MRM 12.75-L at the toe of the slope adjacent to Spearfish Creek shall be repaired.

The repair shall consist of 27 feet (9.0 CuYd) of Bank and Channel Protection Gabions to be placed where the original gabions are missing.

The new Bank and Channel Protection Gabions shall be securely connected to the in-place gabions.

The exact location for the repair shall be verified by the Engineer.

Table of Bank and Channel Protection Gabions		
MRM	L/R	Quantity
		(CuYd)
12.75	L	9.0

REMOVE AND REPLACE TOPSOIL

Prior to beginning guardrail and pipe, a 4" depth of topsoil shall be salvaged and left in a windrow at the perimeter of the work areas. Following completion of this work, topsoil shall be bladed back to cover the disturbed areas as directed by the Engineer.

For informational purposes only, the estimated amount of topsoil to be removed and replaced is 74 CuYd.

All cost associated with removing and replacing the topsoil along areas to be resurfaced shall be incidental to the lump sum price for Remove and Replace Topsoil.

EROSION CONTROL

Areas disturbed for guardrail end terminal installation and other areas disturbed or damaged during construction shall be seeded and mulched.

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

Fiber mulch shall be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier shall be added to the fiber mulch product selected from the list below. If the product selected has guar gum tackifier included, then the additional 2% of tackifier shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier shall be synthetic.

Fiber mulch shall be applied at the rate of 2000 pounds per acre.

The Contractor shall allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials shall be incidental to the contract lump sum price for Erosion Control.

The fiber mulch used on this project shall be one from the list below:

<u>Product</u>	<u>Manufacturer</u>
Mat-Fiber Plus	Mat, Inc. Floodwood, MN Phone: 1-888-477-3028 www.matinc.biz
Conwed Hydro Mulch 2000	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 www.conwedfibers.com
EcoFibre Plus Tackifier	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 www.profile-eco.com
Terra Wood with Tacking Agent 3	Profile Products LLC Buffalo Grove, IL Phone: 1-800-726-6371 www.terra-mulch.com
Bindex Wood WT	American Excelsior Co. Arlington, TX Phone: 1-800-777-7645 www.curlex.com
Second Nature Wood Fiber Mulch Plus	Central Fiber LLC Canton, OH Phone: 1-888-452-2630 www.centralfiber.com

Approximately 6000 square feet will require permanent seeding. The Engineer may adjust this quantity up or down depending on damage to the area surrounding the project.

All costs associated with permanent seeding and fiber mulching shall be incidental to the contract lump sum price for Erosion Control.

LOW FLOW SILT FENCE

Low Flow Silt Fence is provided for isolation of the work area from Spearfish Creek. The Low Flow Silt Fence shall be placed adjacent to the gabion repair area. All costs for the installation and removal of the Low Flow Silt Fence shall be incidental to the contract unit price per foot for Low Flow Silt Fence and the contract unit price per foot for Remove Silt Fence.

The low flow silt fence fabric provided shall be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

Low flow silt fence shall be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

TABLE OF LOW FLOW SILT FENCE

MRM	L/R	Location	Quantity (Ft)
12.75	L	Bank and Channel gabion repair area	37
Total:			37

EROSION CONTROL WATTLE

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

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

Erosion control wattles shall remain on the project to decompose.

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

<http://sddot.com/business/certification/products/Default.aspx>

TABLE OF EROSION CONTROL WATTLE

MRM	L/R	Diameter (Inch)	Location	Quantity (Ft)
20.312	R	12	Around inlet	24
Total:				24

TYPICAL SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	19	59

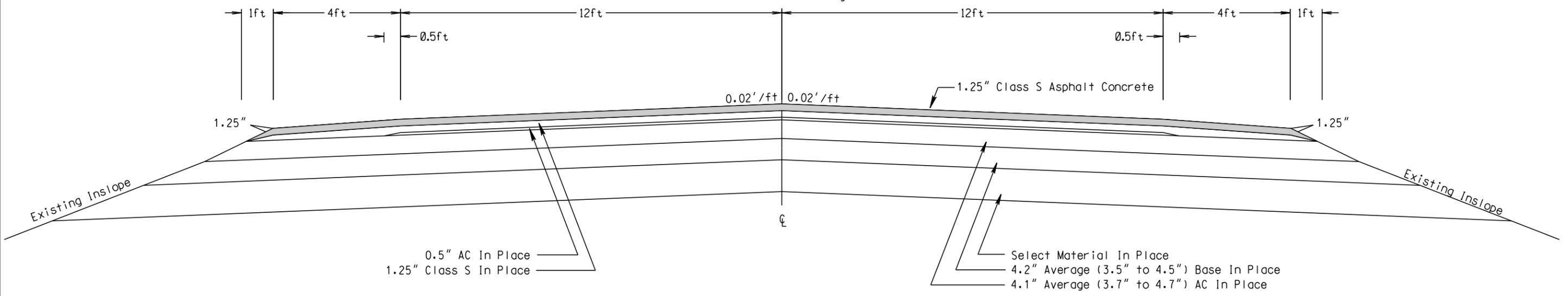
Plotting Date: 11/12/2015

PLOT SCALE - 1:3.12

PLOT NAME - 2

Section 1 - Rural Section
 MRM 11.80 to MRM 14.55 MRM 21.22 to MRM 21.36
 MRM 14.63 to MRM 14.64 MRM 21.44 to MRM 21.48
 MRM 14.76 to MRM 15.15 MRM 21.52 to MRM 21.68
 MRM 15.21 to MRM 15.44 MRM 21.75 to MRM 21.87
 MRM 15.49 to MRM 19.86 MRM 21.92 to MRM 21.95
 MRM 20.08 to MRM 20.49 MRM 21.99 to MRM 23.05
 MRM 20.53 to MRM 20.58 MRM 23.11 to MRM 23.20
 MRM 20.78 to MRM 21.14 MRM 23.29 to MRM 23.47

In Place & Resurfacing Section



PLOTTED FROM - ITRC12508

FILE - ... \PRJ\LAWR03RV\DESIGN\TYP.DGN

TYPICAL SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	20	59

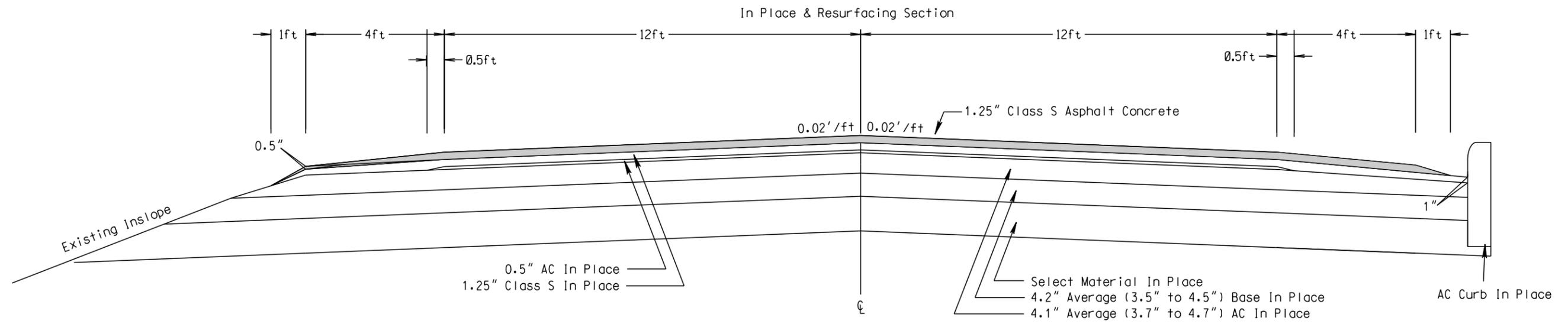
Plotting Date: 11/12/2015

PLOT SCALE - 1:2.12

PLOT NAME - 3

Section 2 - Rural with Asphalt Curb on Right Side (Left Reversed)

MRM 14.55 to MRM 14.63 L	MRM 21.36 to MRM 21.44 L
MRM 14.64 to MRM 14.76 L	MRM 21.48 to MRM 21.52 R
MRM 15.15 to MRM 15.21 L	MRM 21.68 to MRM 21.75 R
MRM 15.44 to MRM 15.49 R	MRM 21.87 to MRM 21.92 R
MRM 19.86 to MRM 20.08 L	MRM 21.95 to MRM 21.99 L
MRM 20.49 to MRM 20.53 L	MRM 23.05 to MRM 23.11 L
MRM 20.58 to MRM 20.78 L	MRM 23.20 to MRM 23.29 R
MRM 21.14 to MRM 21.22 L	



PLOTTED FROM - IPRC12608

FILE - ... \PRJ\AWR03RV\DESIGN\TYP.DGN

TYPICAL SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	21	59

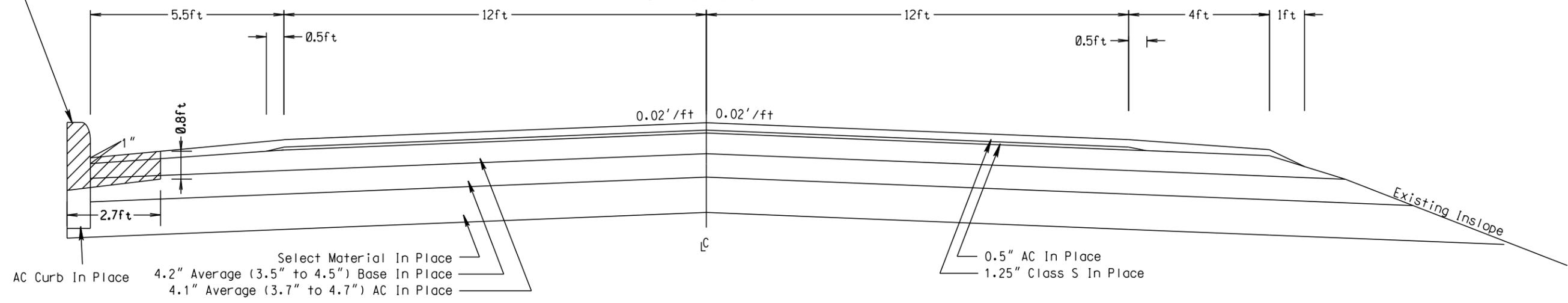
Plotting Date: 11/12/2015

PLOT SCALE - 1:3.12

Remove Material from hatched area. All material removed including asphalt curb, asphalt surfacing, and base shall be incidental to the contract price per foot for Remove Asphalt Concrete Curb.

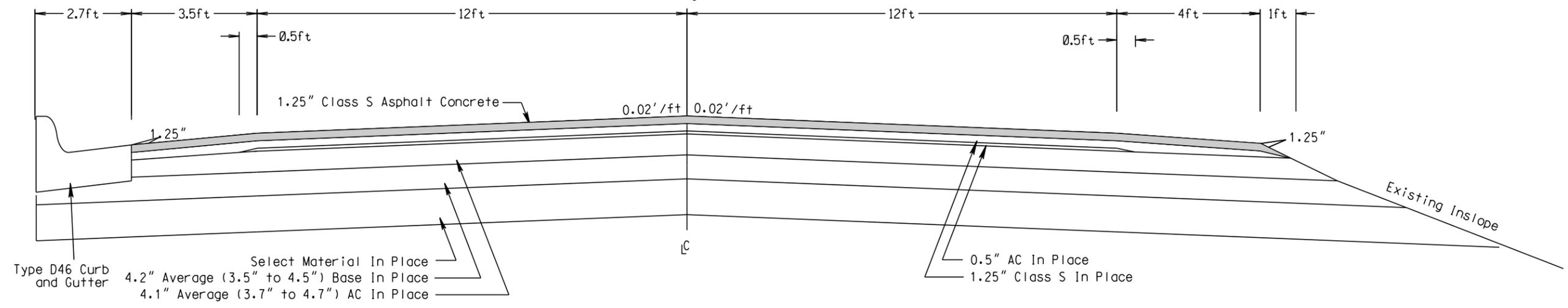
Section 3 - Rural with Asphalt Curb on Left Side

MRM 23.47 to MRM 23.64 L
In Place Section



Section 3 - Rural Replacing Asphalt Curb on Left Side

MRM 23.47 to MRM 23.64 L
Resurfacing Section



PLOTTED FROM - ITRC12508

PLOT NAME - 4

FILE - ... \PRJ\AWR03RV\DESIGN\TYP.DGN

TYPICAL SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	22	59

Plotting Date: 11/12/2015

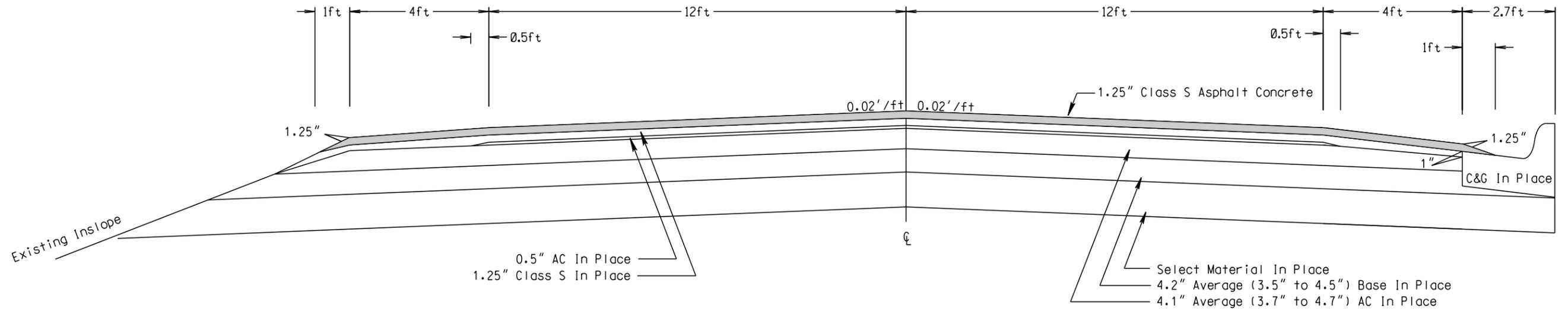
PLOT SCALE - 1:3.12

PLOT NAME - 5

Section 4 - Rural with Curb & Gutter on Right Side

MRM 23.92 to MRM 23.94

In Place & Resurfacing Section



PLOTTED FROM - ITRC12508

FILE - ... \PRJ\LAWR03RV\DESIGN\TYP.DGN

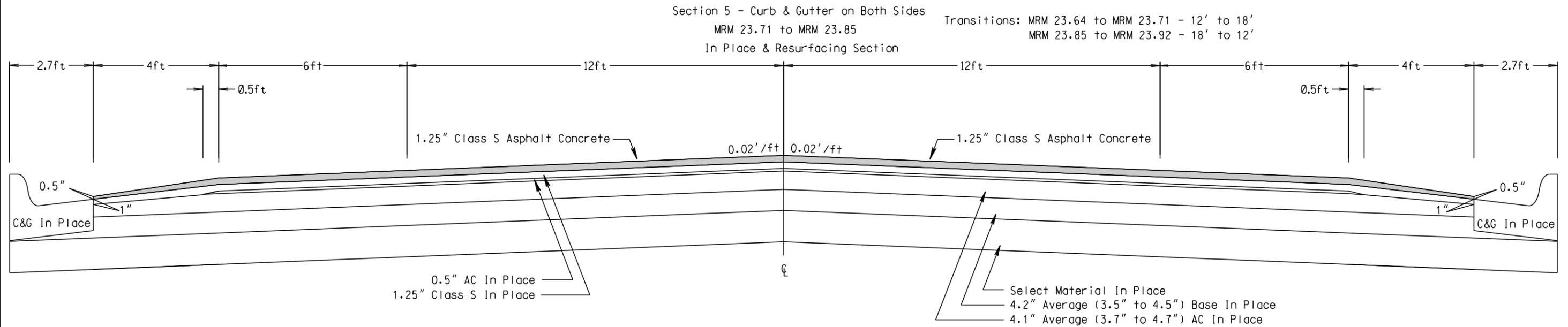
TYPICAL SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	23	59

Plotting Date: 11/12/2015

PLOT SCALE - 1:2.12

PLOT NAME - 6



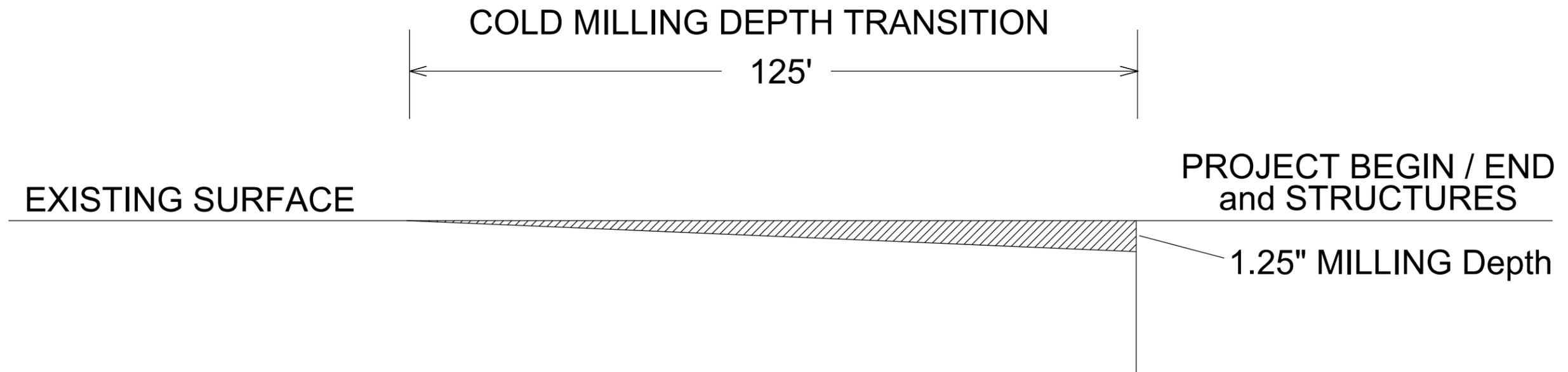
PLOTTED FROM - IPRC12608

FILE - ... \PRJ\LA#\03RV\DESIGN\TYP.DGN

STATE OF SOUTH DAKOTA	PROJECT P 014A(13)11	SHEET 24	TOTAL SHEETS 59
-----------------------------	-------------------------	-------------	-----------------------

Plotting Date: 11/09/2015

COLD MILLING ASPHALT CONCRETE TO MATCH EXISTING SURFACING ELEVATIONS



PLOT SCALE - 1:200

PLOTTED FROM - TRRC12508

PLOT NAME - 7

FILE - ... \LAWR03R\DESIGN\COLDMILL.DGN

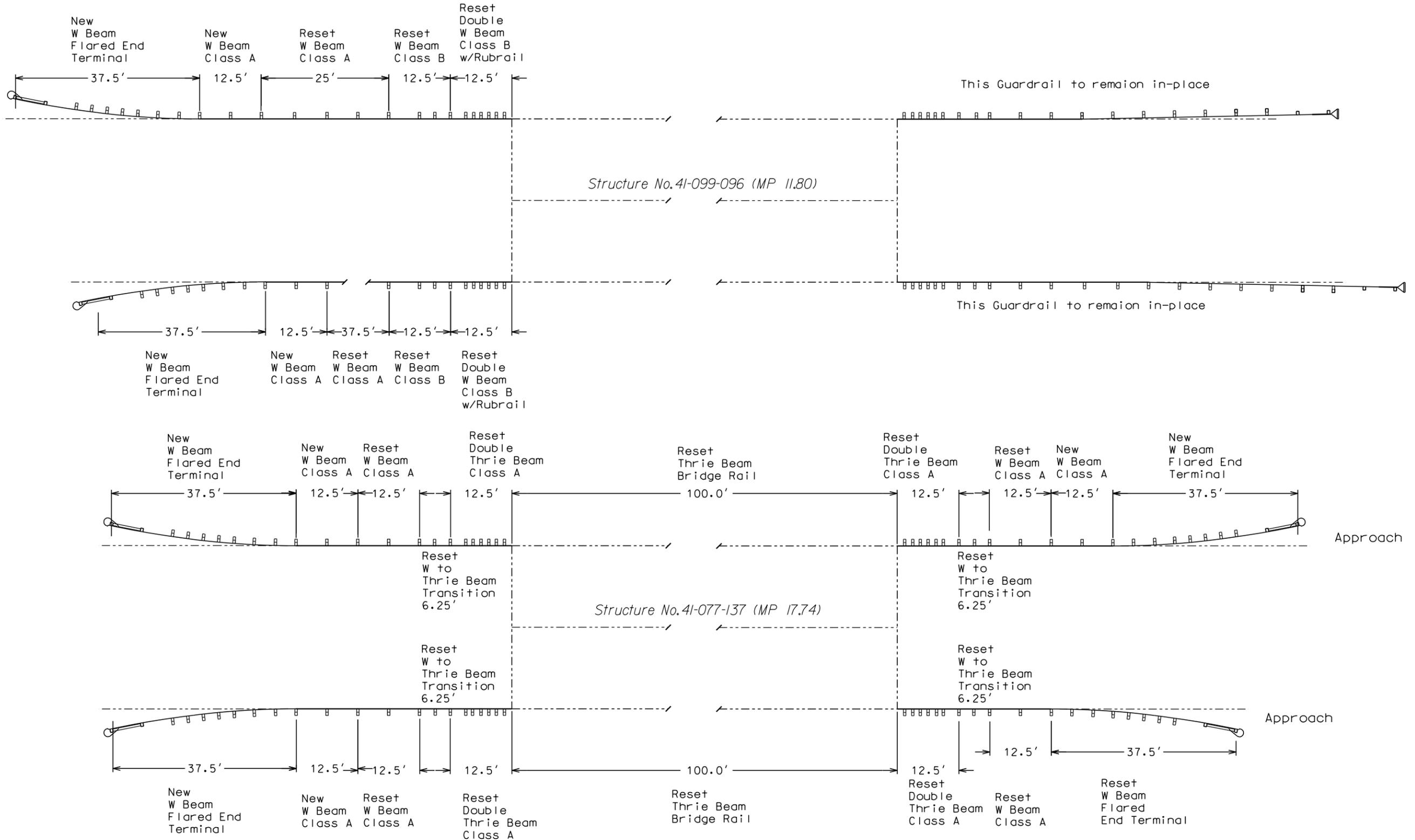
GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 014A(13)11	25	59
Plotting Date: 11/16/2015			
Revise Date: 11-16-15			
Initials: GDS			



PLOT SCALE - 1:40

PLOT NAME - 8



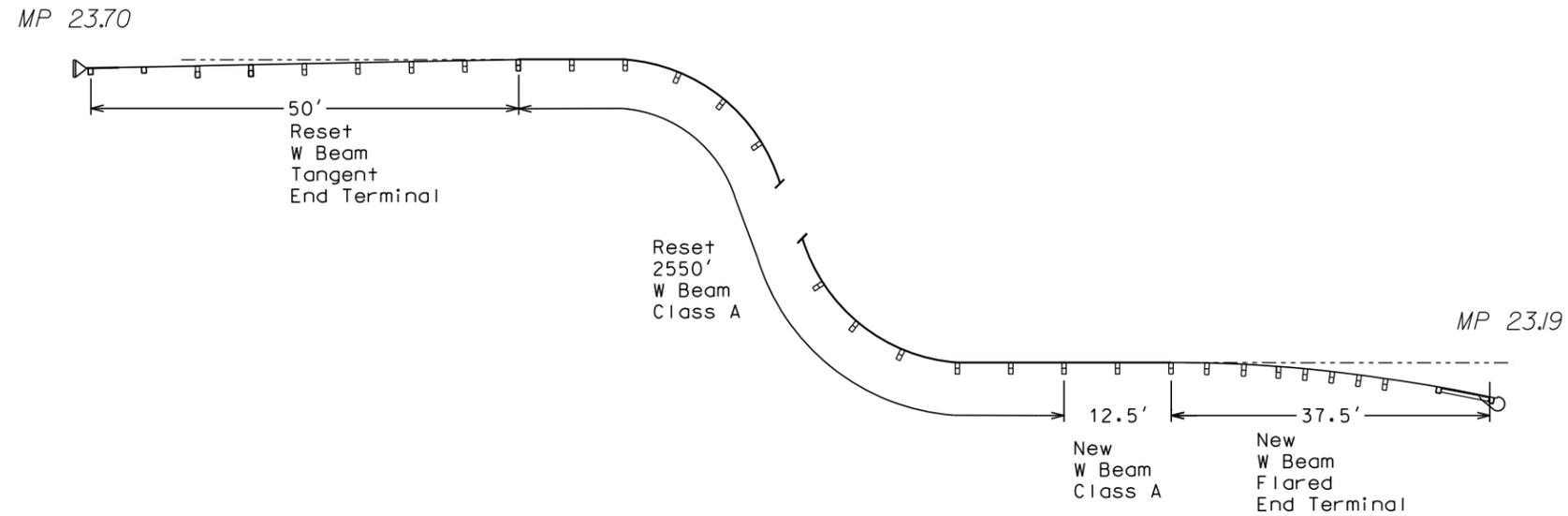
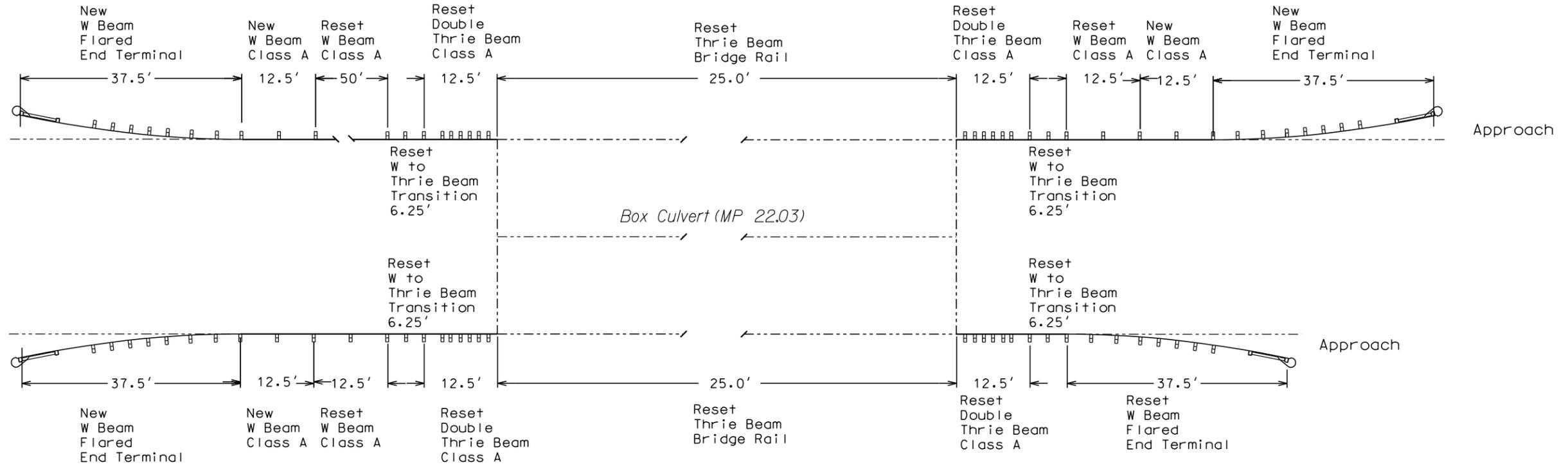
PLOTTED FROM - IRRCL2608

FILE - ... \DESIGN\GUARDRAIL\5976.DGN

SHEET OF SHEETS

GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 014A(13)11	26	59
Plotting Date: 11/16/2015			
Revise Date: 11-16-15			
GD initials:			



PLOT SCALE - 1:40

PLOT NAME - 9

PLOTTED FROM - IRRC12608

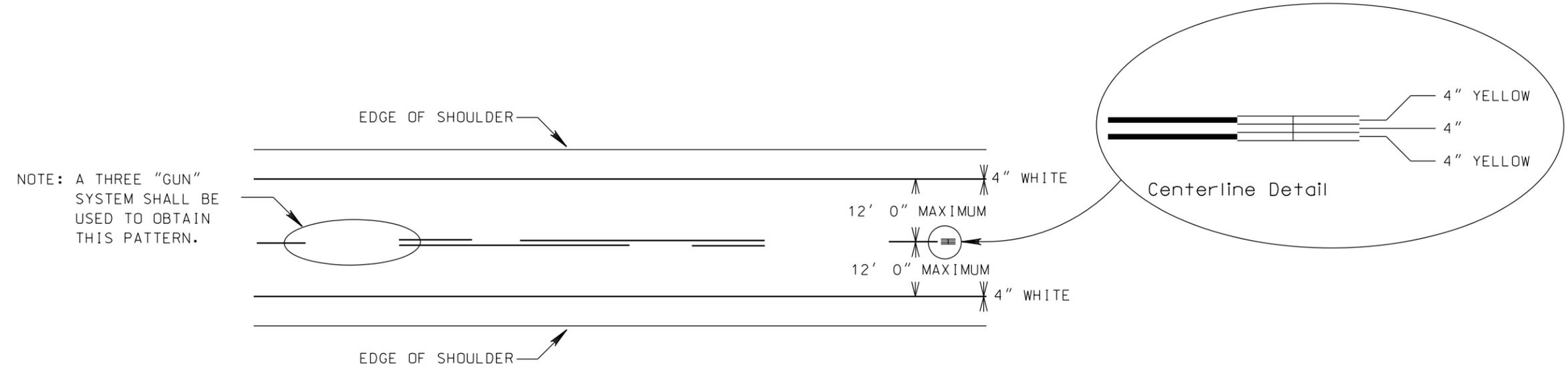
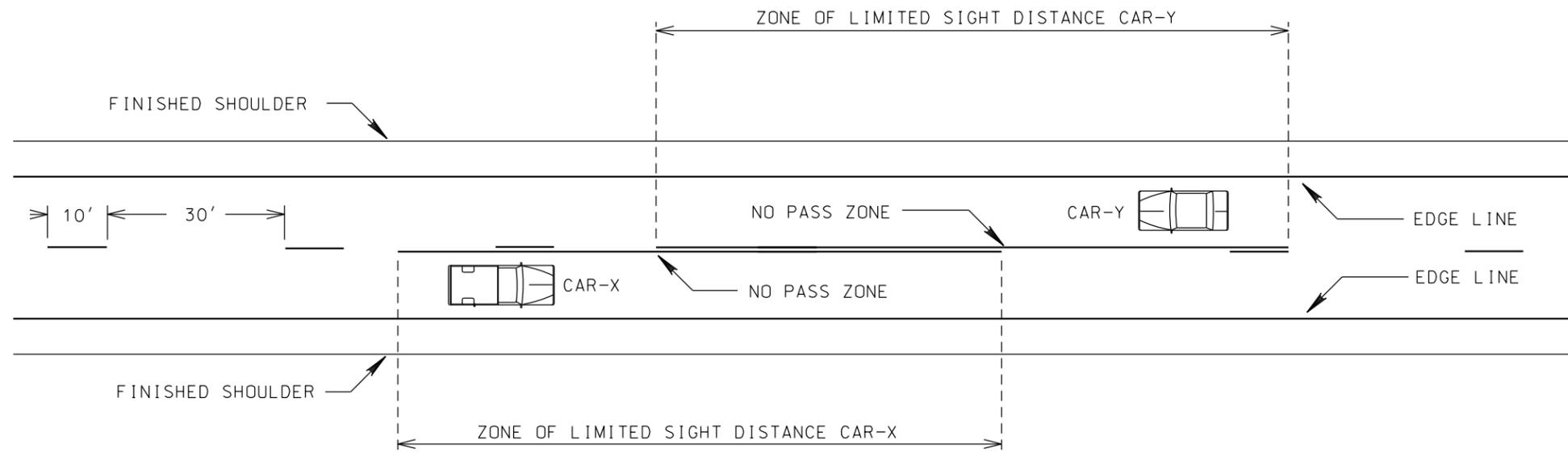
FILE - ... \DESIGN\GUARDRAIL\5976.DGN

SHEET OF SHEETS

GENERAL PAVEMENT MARKING LAYOUT

STATE OF SOUTH DAKOTA	PROJECT P 014A(13)11	SHEET 27	TOTAL SHEETS 59
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Plotting Date: 11/09/2015



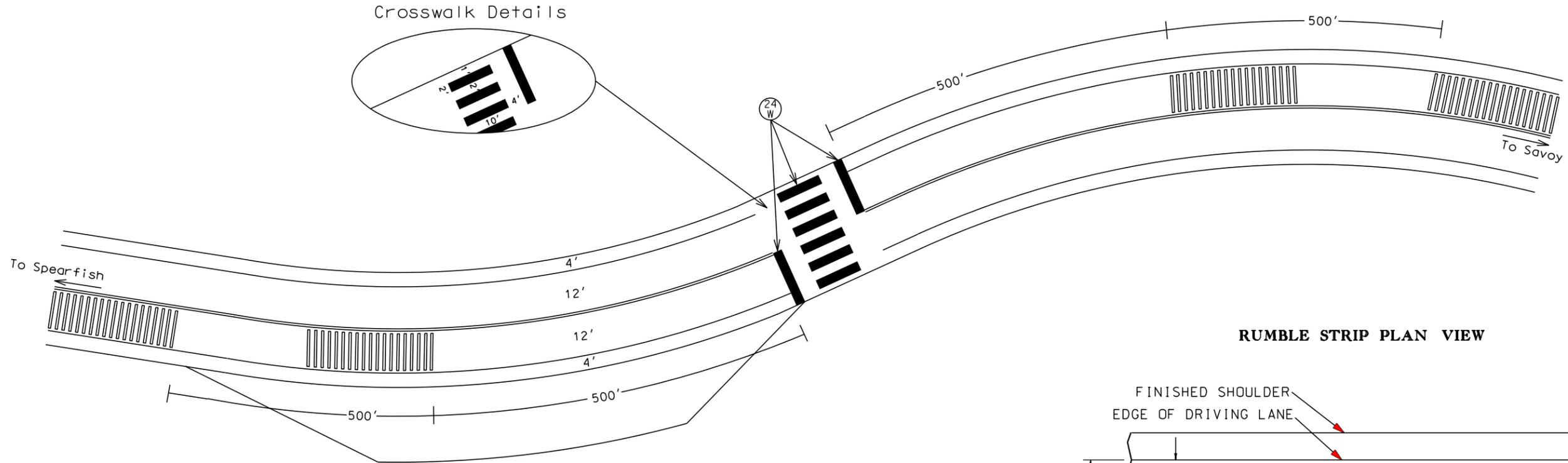
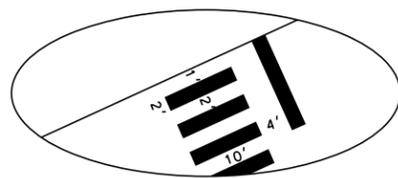
PAVEMENT MARKING LAYOUT WITH RECESSED RUMBLE STRIPS FOR BRIDAL VEIL FALLS



PLOT SCALE - 1:200

PLOT NAME - 11

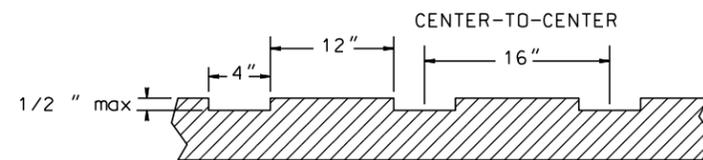
Crosswalk Details



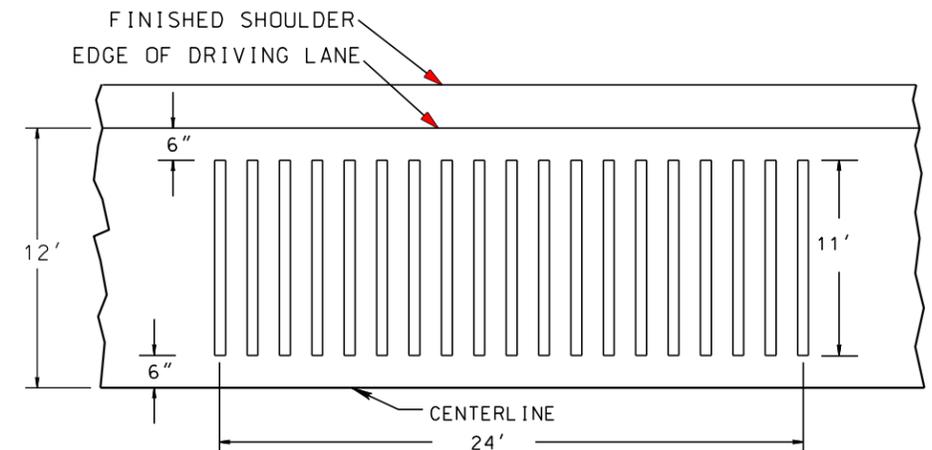
RUMBLE STRIP PLAN VIEW

NOTE: All pavement markings shall be paint except the crosswalk and stop bars.

RUMBLE STRIP PROFILE (TYPICAL)



THE RUMBLE STRIPS SHALL BE GROOVED INTO THE ASPHALT CONCRETE SURFACE.



Each rumble strip location = 209' of Groove 4" Wide Rumble Strip

Table of Cold Applied Pavement Marking Items			
Item	Quantity	Unit	
(24 W) Cold Applied Plastic Pavement Marking, 24" White	92	Ft	
Grooving For Cold Applied Plastic Pavement Marking, 24"	92	Ft	
Groove 4" Wide Rumble Strip	836	Ft	

PLOTTED FROM - IRRCL2608

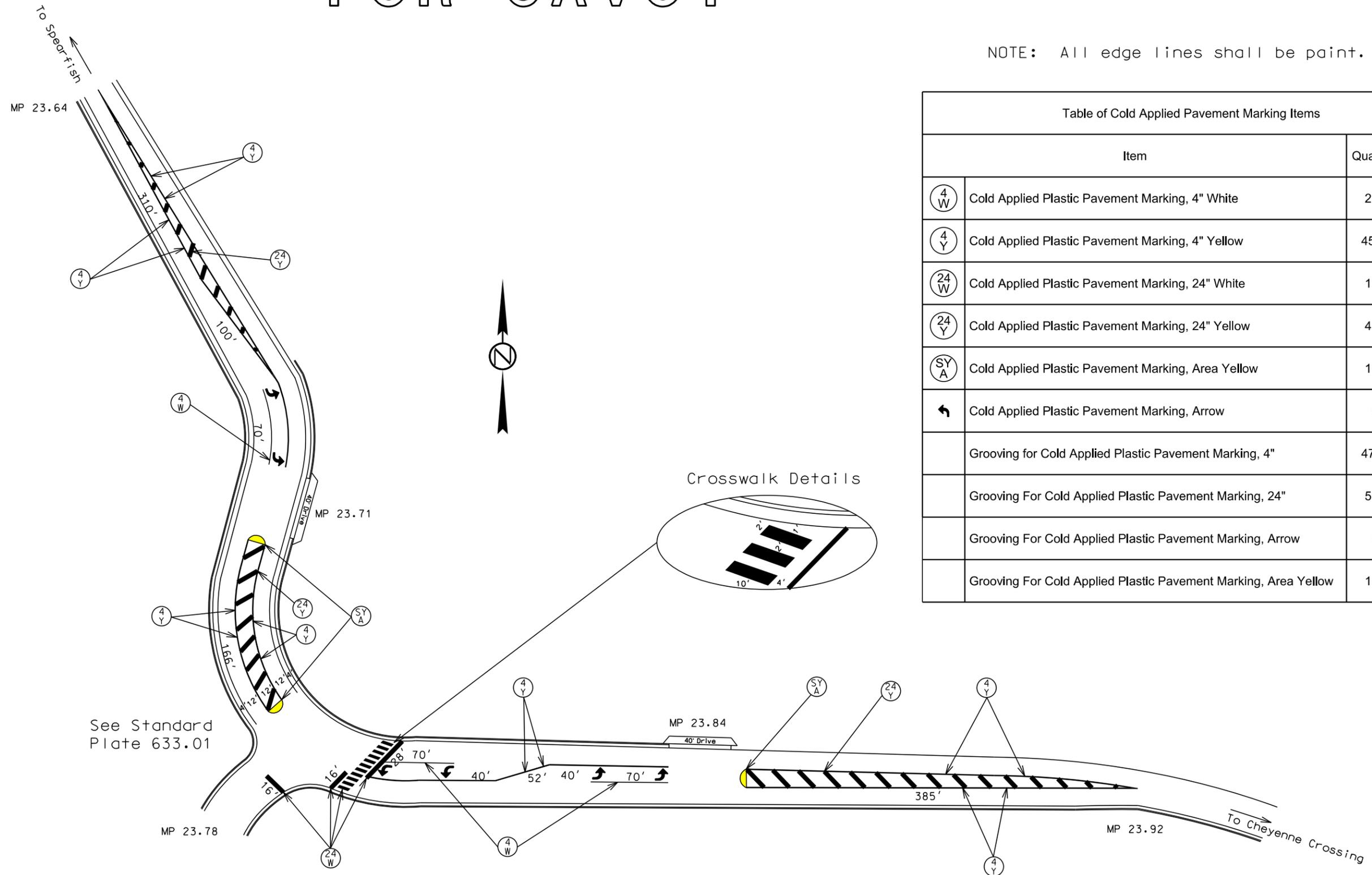
FILE - ... \LAWR03RV\DESIGN\RUMBLE5976.DGN

SHEET OF SHEETS

PAVEMENT MARKING LAYOUT FOR SAVOY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	29	59
Plotting Date: 11/09/2015			

NOTE: All edge lines shall be paint.



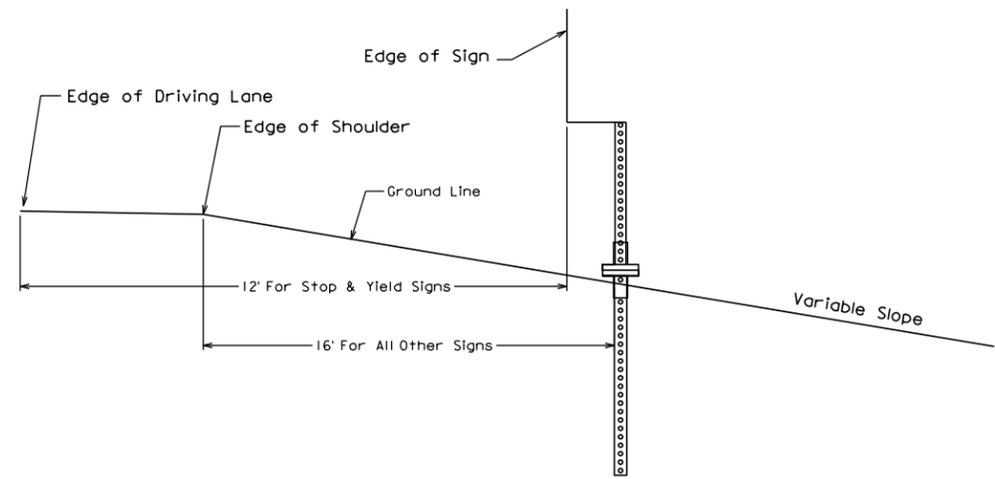
Item	Quantity	Unit
(4 W) Cold Applied Plastic Pavement Marking, 4" White	210	Ft
(4 Y) Cold Applied Plastic Pavement Marking, 4" Yellow	4528	Ft
(24 W) Cold Applied Plastic Pavement Marking, 24" White	154	Ft
(24 Y) Cold Applied Plastic Pavement Marking, 24" Yellow	412	Ft
(SY A) Cold Applied Plastic Pavement Marking, Area Yellow	160	SqFt
↖ Cold Applied Plastic Pavement Marking, Arrow	6	Each
Grooving for Cold Applied Plastic Pavement Marking, 4"	4738	Ft
Grooving For Cold Applied Plastic Pavement Marking, 24"	566	Ft
Grooving For Cold Applied Plastic Pavement Marking, Arrow	6	Each
Grooving For Cold Applied Plastic Pavement Marking, Area Yellow	160	SqFt

Plot Scale - 1:200

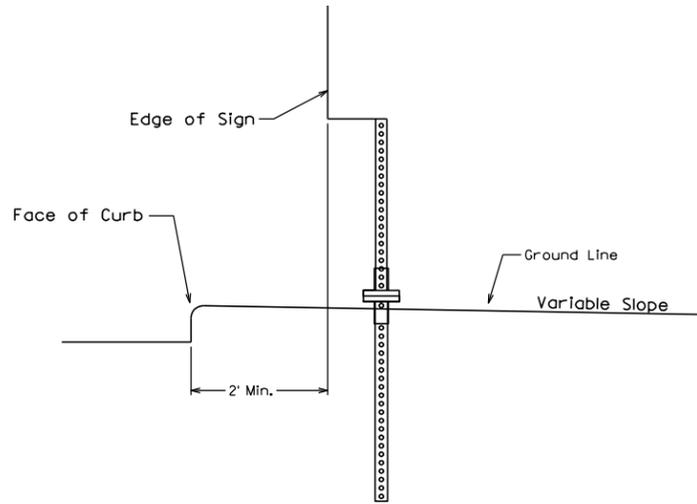
Plotted From - TRRC12608

File - ...Law03RV\Designs\savoy\5976.dgn

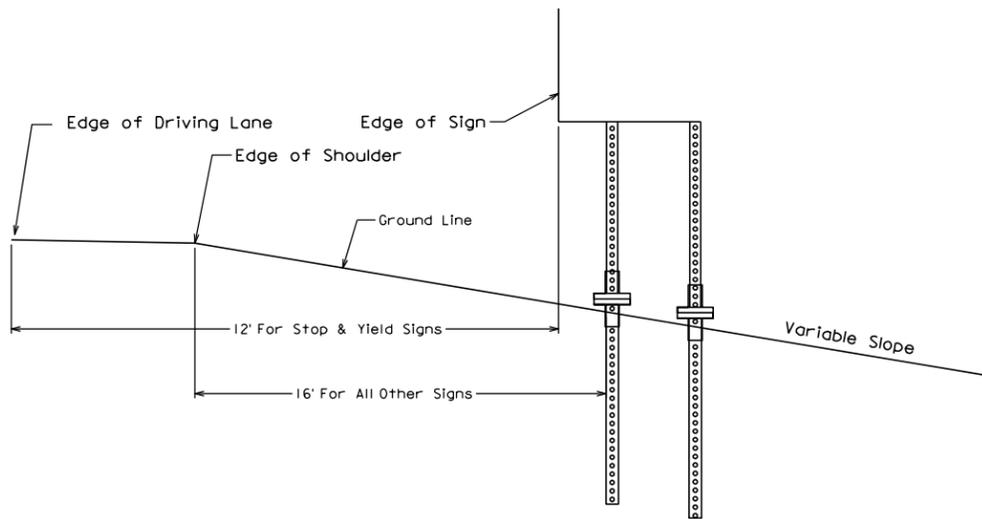
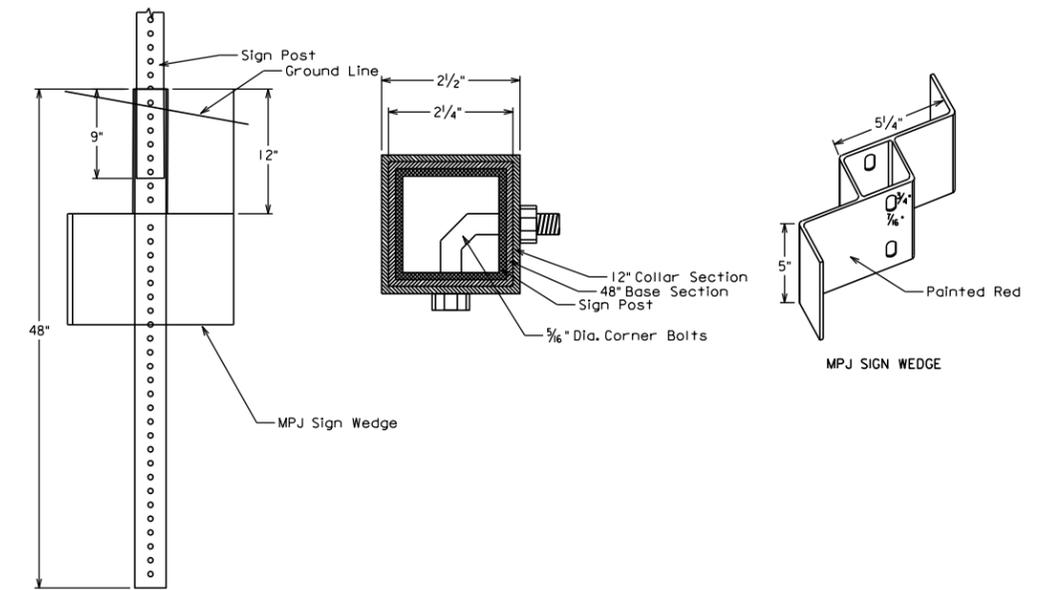
SIGN BASE DETAILS FOR A 2" SIGN POST



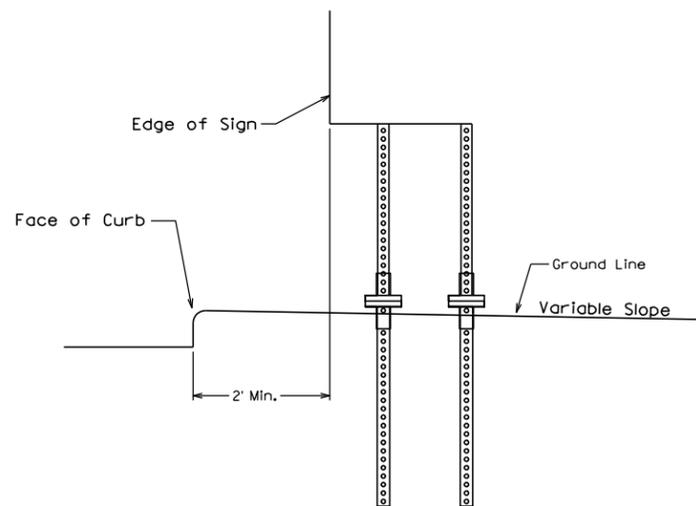
RURAL LOCATION WITH 1 POST
(Drawing shown from face of sign)



URBAN LOCATION WITH 1 POST
(Drawing shown from face of sign)



RURAL LOCATION WITH 2 POSTS
(Drawing shown from face of sign)



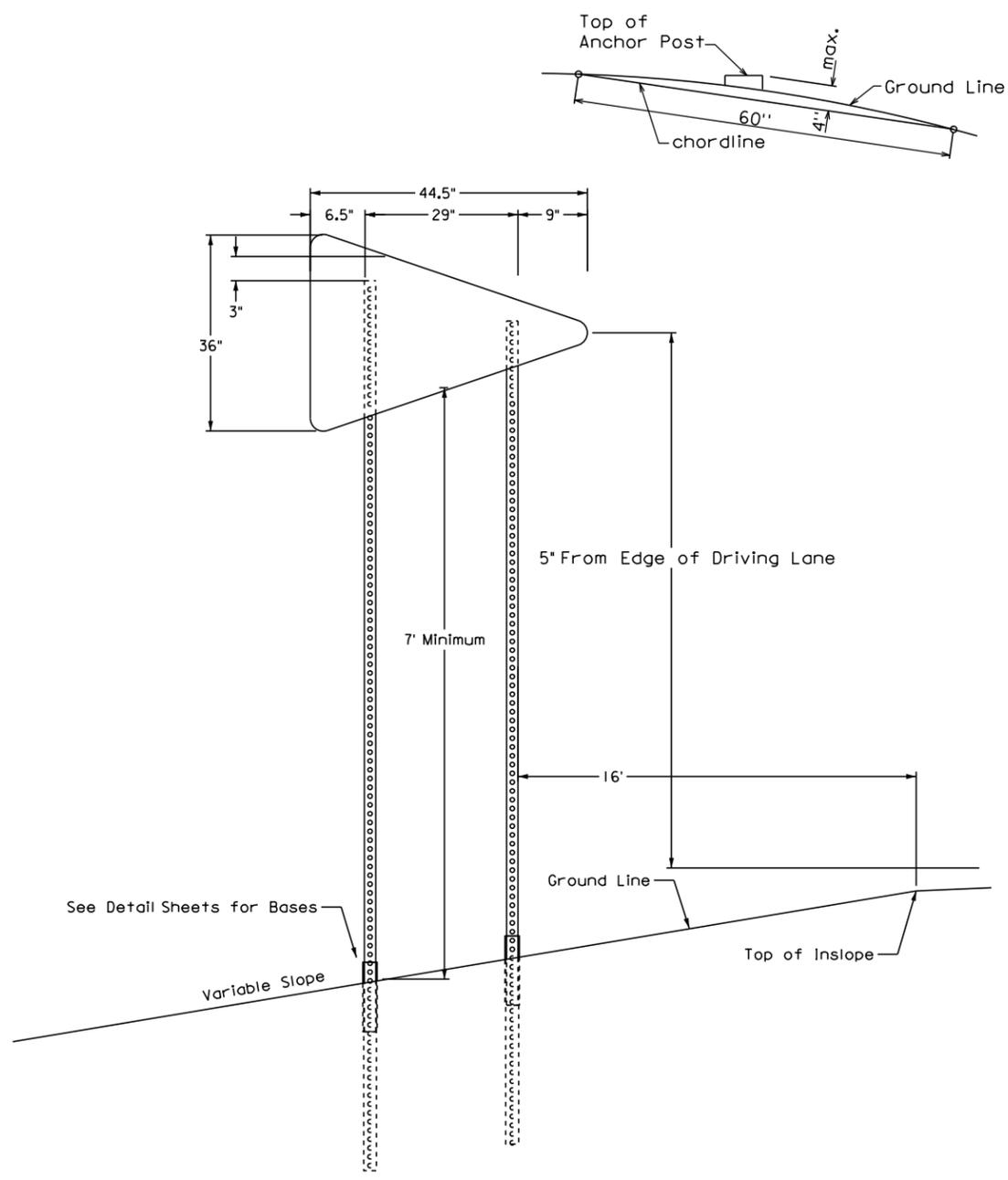
URBAN LOCATION WITH 2 POSTS
(Drawing shown from face of sign)

LATERAL LOCATION FOR
RURAL SIGNS

LATERAL LOCATION FOR
URBAN SIGNS

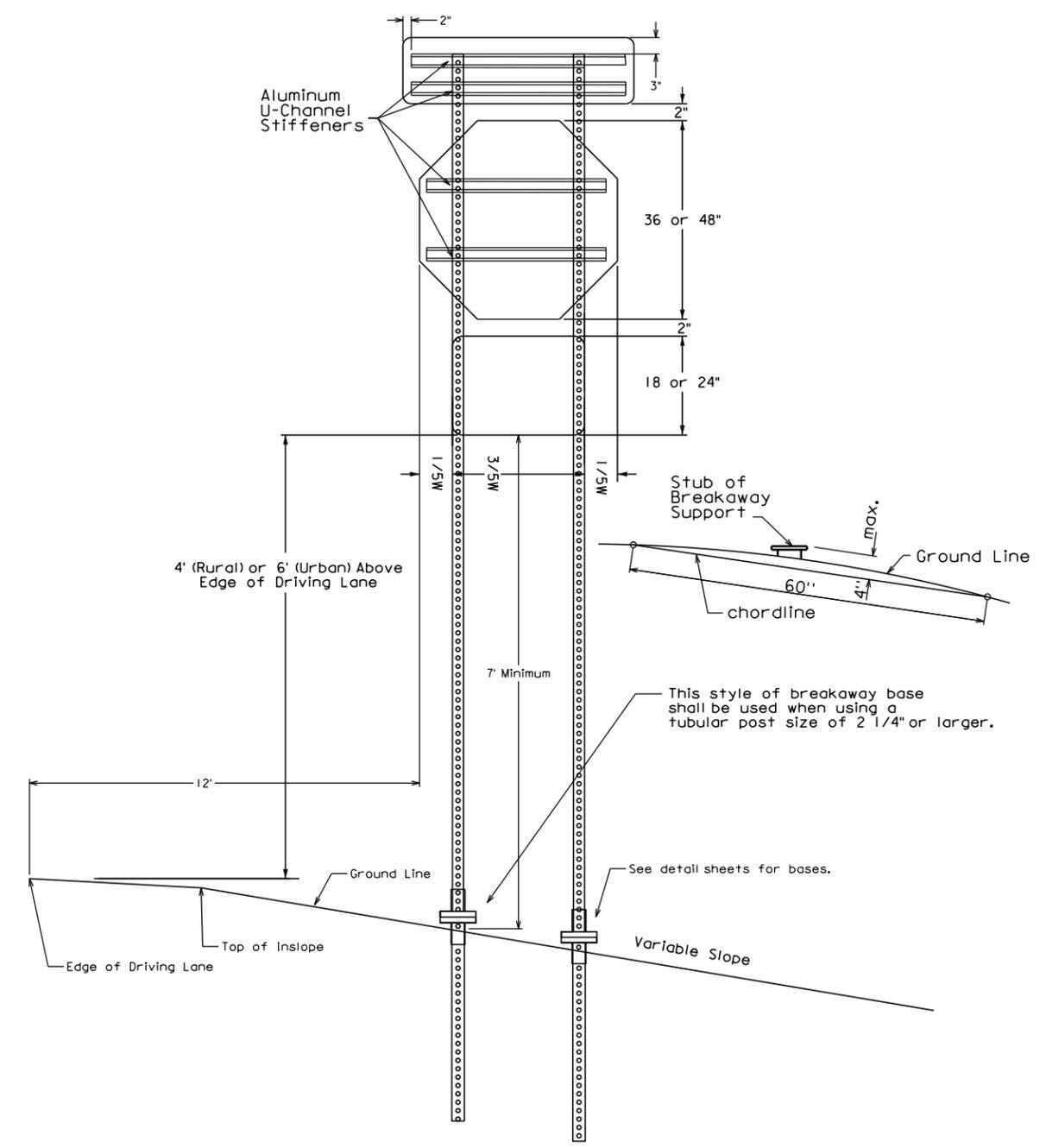
Plot Scale - 1:200

Plotted From - trcs12695



(Drawing shown from face of sign)

**TYPICAL ERECTION DETAILS FOR
NO PASSING ZONE PENNANT**

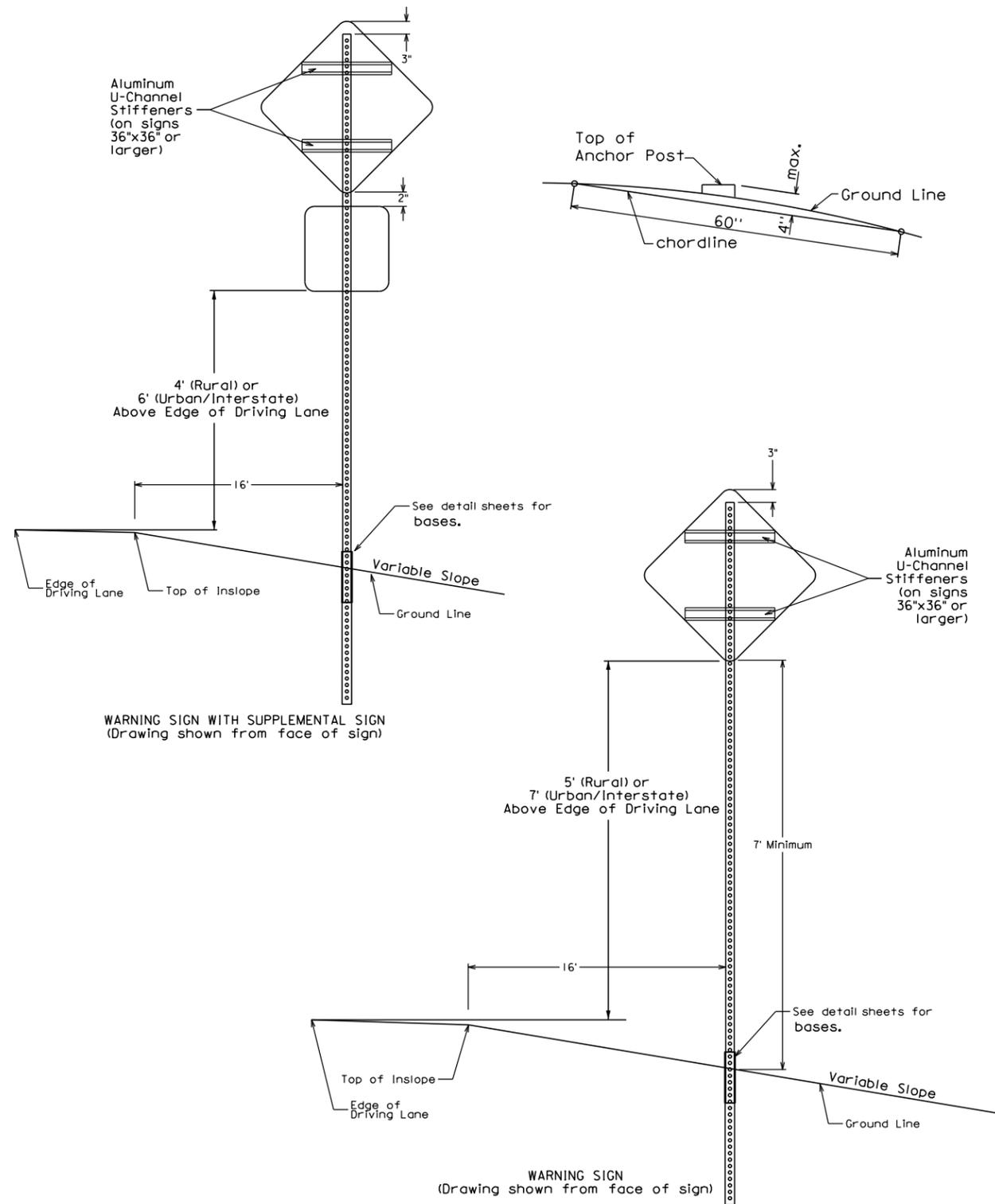


STOP SIGN WITH DIVIDED HIGHWAY SIGN AND ONE WAY SIGNS
(Drawing shown from face of sign)

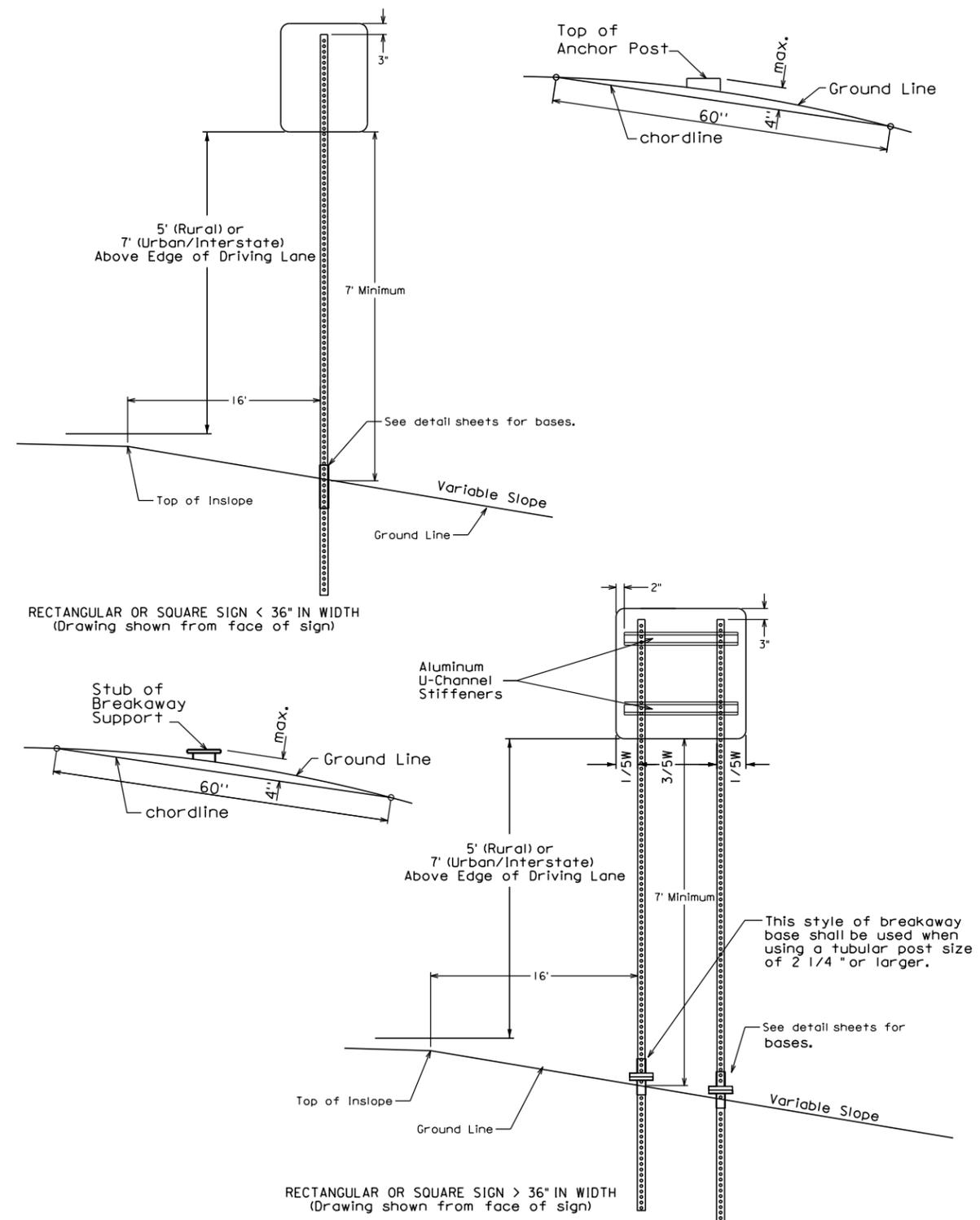
**TYPICAL ERECTION DETAILS FOR STOP SIGNS
ON DIVIDED HIGHWAYS**

File - ...lawr03rv-Sign Support Standards.dgn

Plot Scale - 1:200



TYPICAL ERECTION DETAILS FOR WARNING SIGNS



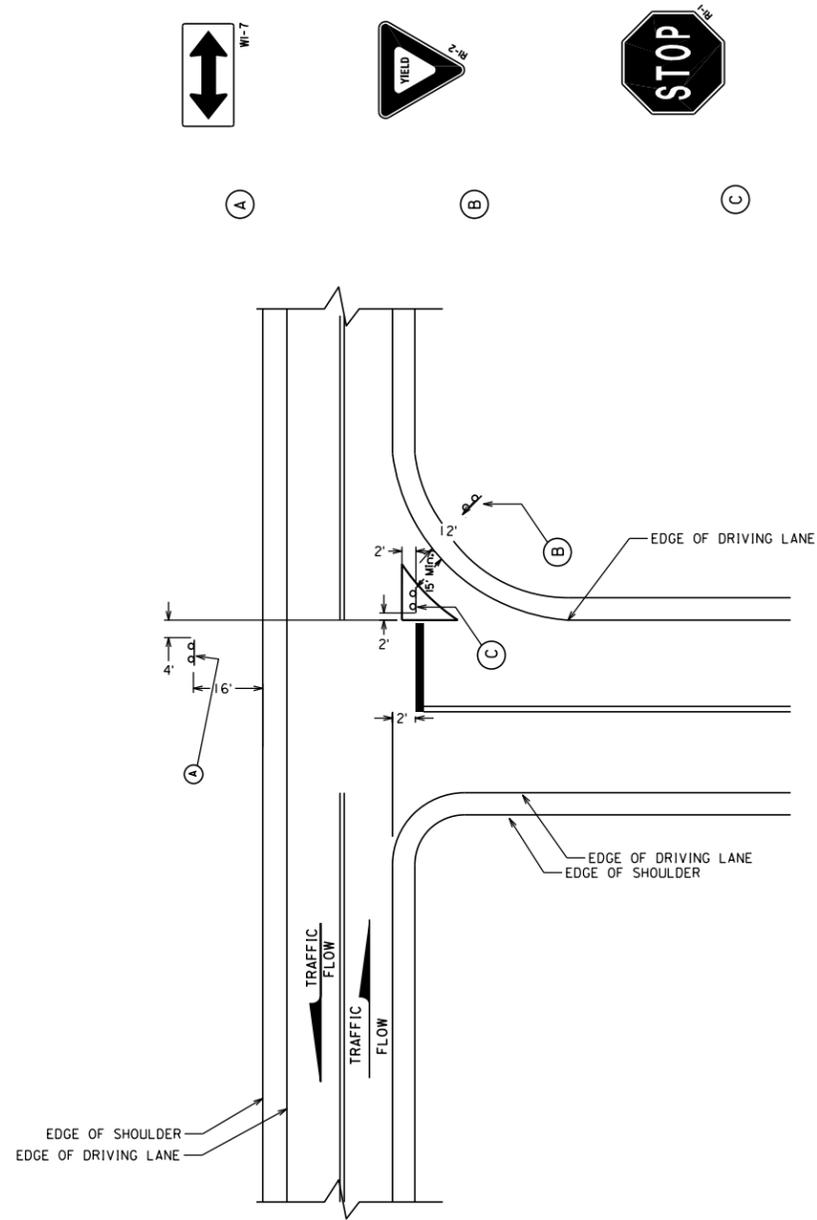
TYPICAL ERECTION DETAILS FOR SQUARE OR RECTANGULAR SIGNS

Plotted From - trcs12695

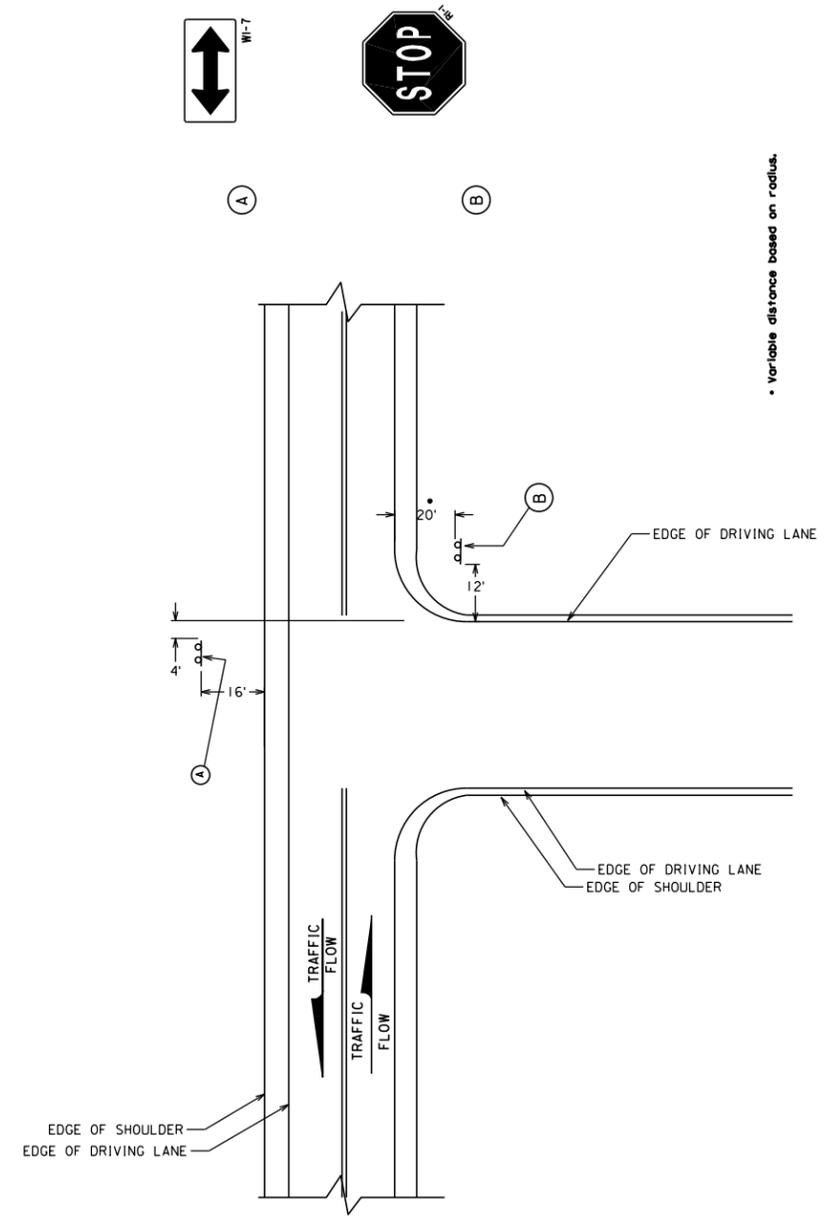
File - ...lawr03rv-Sign Support Standards.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 014A(13)11	33	59

Plotting Date: 11/03/2015



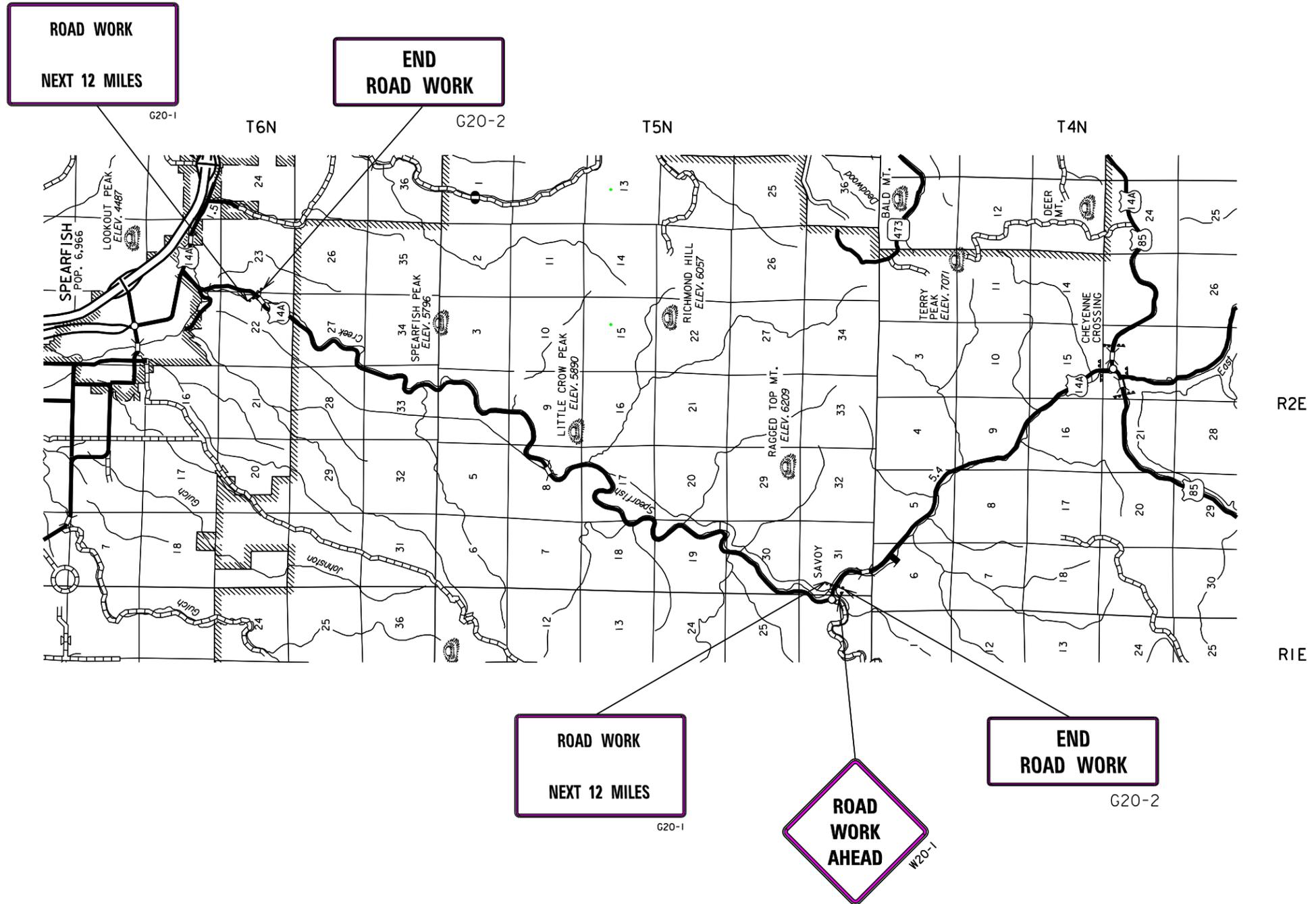
TYPICAL SIGN LAYOUT FOR HIGHWAYS WITH IMPROVED SIDEROAD



TYPICAL SIGN LAYOUT FOR HIGHWAYS WITH UNIMPROVED SIDEROAD

FIXED LOCATION SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	35	59
Plotting Date: 11/09/2015			
Revise Date: - -			
Initials:			



PLOT SCALE - 1:200

PLOTTED FROM - IRRC12608

PLOT NAME - 13

FILE - ...FIXED LOCATION SIGNS.DGN

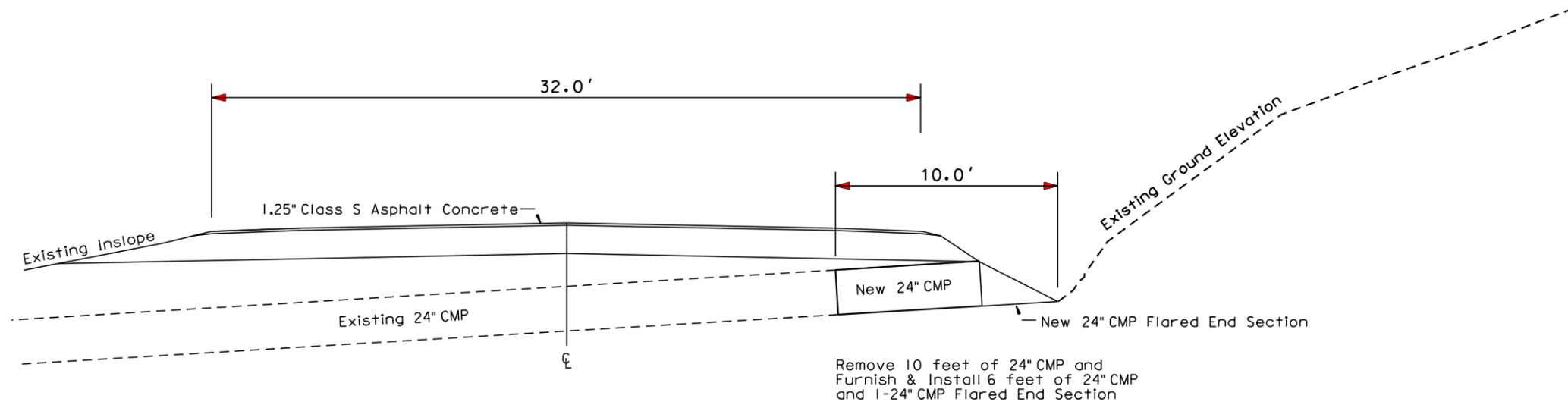
SHEET OF SHEETS

PIPE REPAIR DETAILS

US 14A MRM 20.312

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	36	59

Plotting Date: 11/09/2015



PLOT SCALE - 1:6.25

PLOTTED FROM - TRRC12508

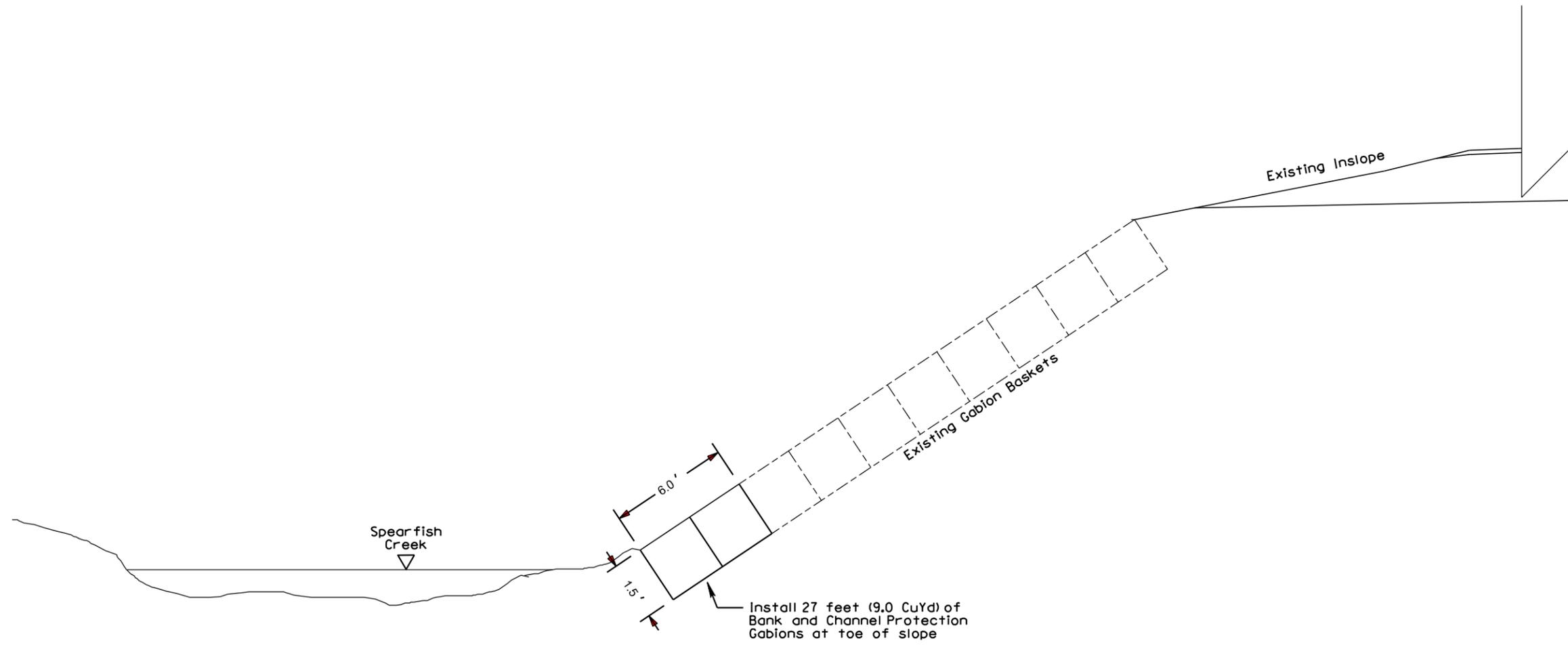
PLOT NAME - 14

FILE - ... \PRJ\AWR03RV\DESIGN\TYP.DGN

BANK AND CHANNEL PROTECTION GABION REPAIR DETAILS US 14A MRM 12.75

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 014A(13)11	37	59

Plotting Date: 11/16/2015
Revised 11/16/2015 GDS

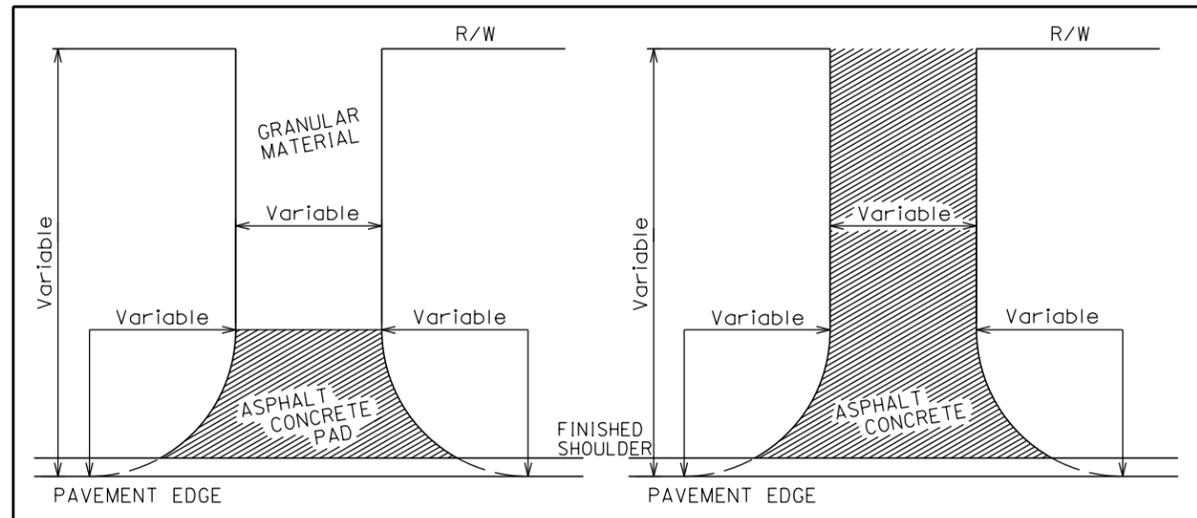


PLOT SCALE - 1:6.25

PLOTTED FROM - TRRC12508

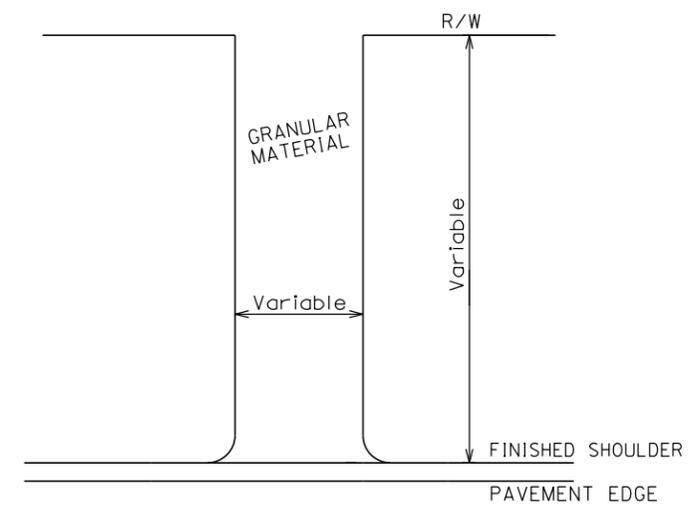
PLOT NAME - 15

FILE - ... \PRJ\AWR03RV\DESIGN\TYP.DGN



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



ENTRANCE

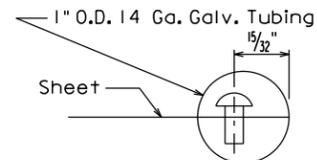
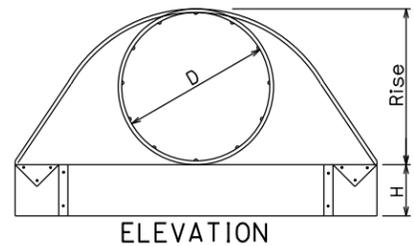
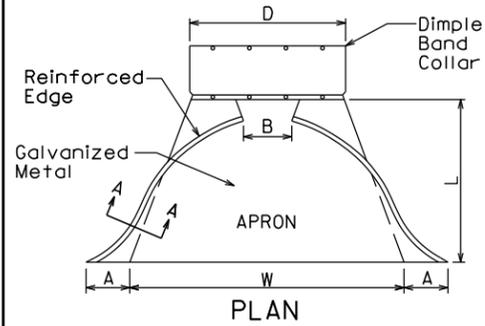
The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH SHOULDER

March 31, 2000

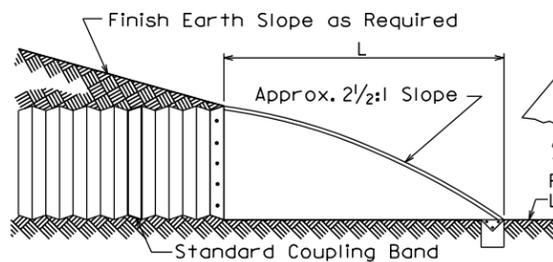
Published Date: 4th Qtr. 2015	S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
			Sheet 1 of 1

Alternate Type Connector Sections may be used with approval of the Engineer.



3/8" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

TUBING ATTACHMENT DETAILS SECTION A-A



TYPICAL CROSS-SECTION

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

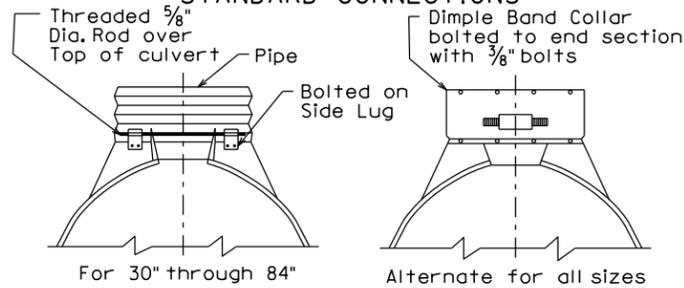
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2 1/2:1	1 Pc.
15	16	7	8	6	26	30	2 1/2:1	1 Pc.
18	16	8	10	6	31	36	2 1/2:1	1 Pc.
21	16	9	12	6	36	42	2 1/2:1	1 Pc.
24	16	10	13	6	41	48	2 1/2:1	1 Pc.
30	14	12	16	8	46	60	2 1/2:1	1 Pc.
36	14	14	19	9	51	72	2 1/2:1	2 Pc.
42	12	16	22	11	60	84	2 1/2:1	2 Pc.
48	12	18	27	12	69	90	2 1/4:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1 3/4:1	3 Pc.
66	12	18	36	12	87	120	1 1/2:1	3 Pc.
72	12	18	39	12	87	126	1 1/3:1	3 Pc.
78	12	18	42	12	87	132	1 1/4:1	3 Pc.
84	12	18	45	12	87	138	1 1/6:1	3 Pc.

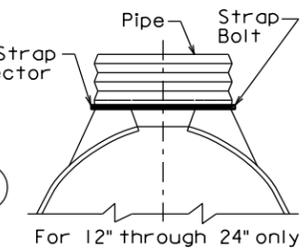
STANDARD CONNECTIONS



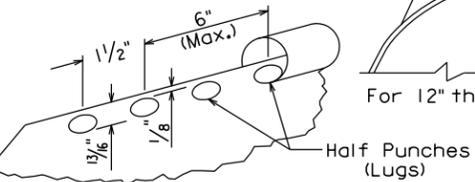
For 30" through 84"

Alternate for all sizes

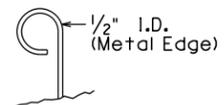
NOTE: Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



For 12" through 24" only



SECTION A-A (alternate)



SECTION A-A (alternate)

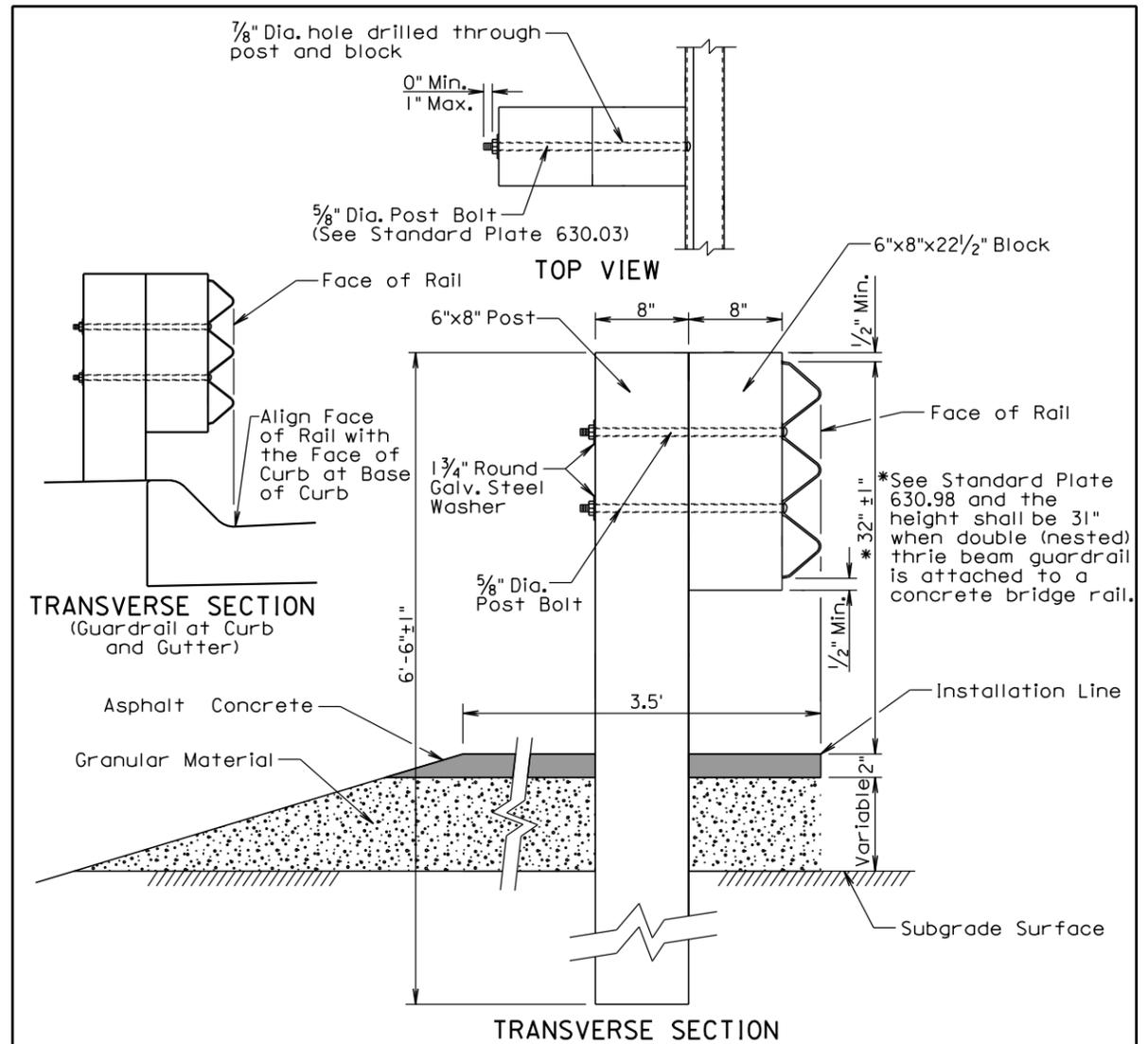
Published Date: 4th Qtr. 2015

**S
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C.M.P. FLARED ENDS

PLATE NUMBER
450.35

Sheet 1 of 1



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

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

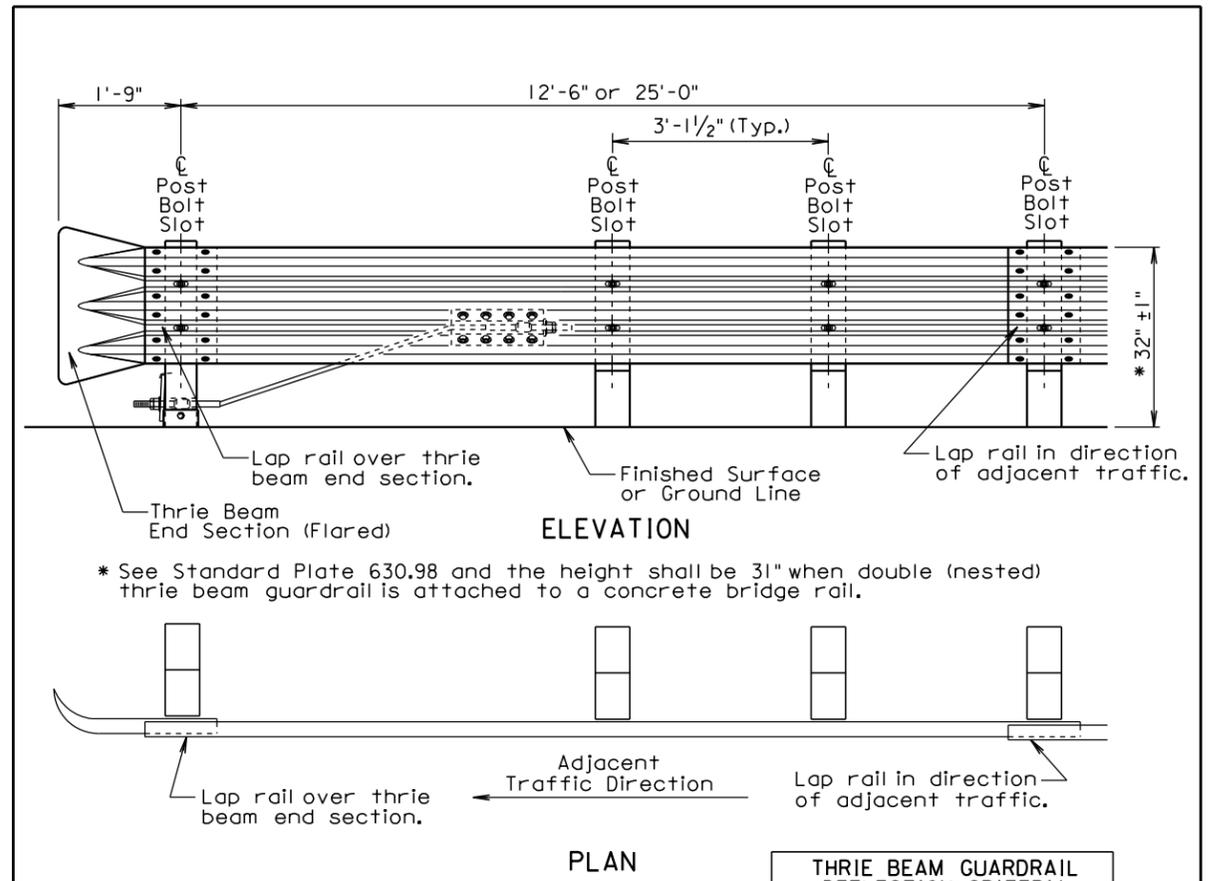
The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of post and top of block shall have a true square cut. The top of block shall be ±1 inch from the top of the post.

June 26, 2015

S D D O T	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
		Sheet 1 of 1

Published Date: 4th Qtr. 2015



THRIE BEAM GUARDRAIL DEFLECTION CRITERIA

POST SPACING	MAXIMUM DEFLECTION
6'-3"	2'-6"
3'-1 1/2"	1'-9"

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type 1.

There will be no separate payment for furnishing and installing Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors. All costs for the Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

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

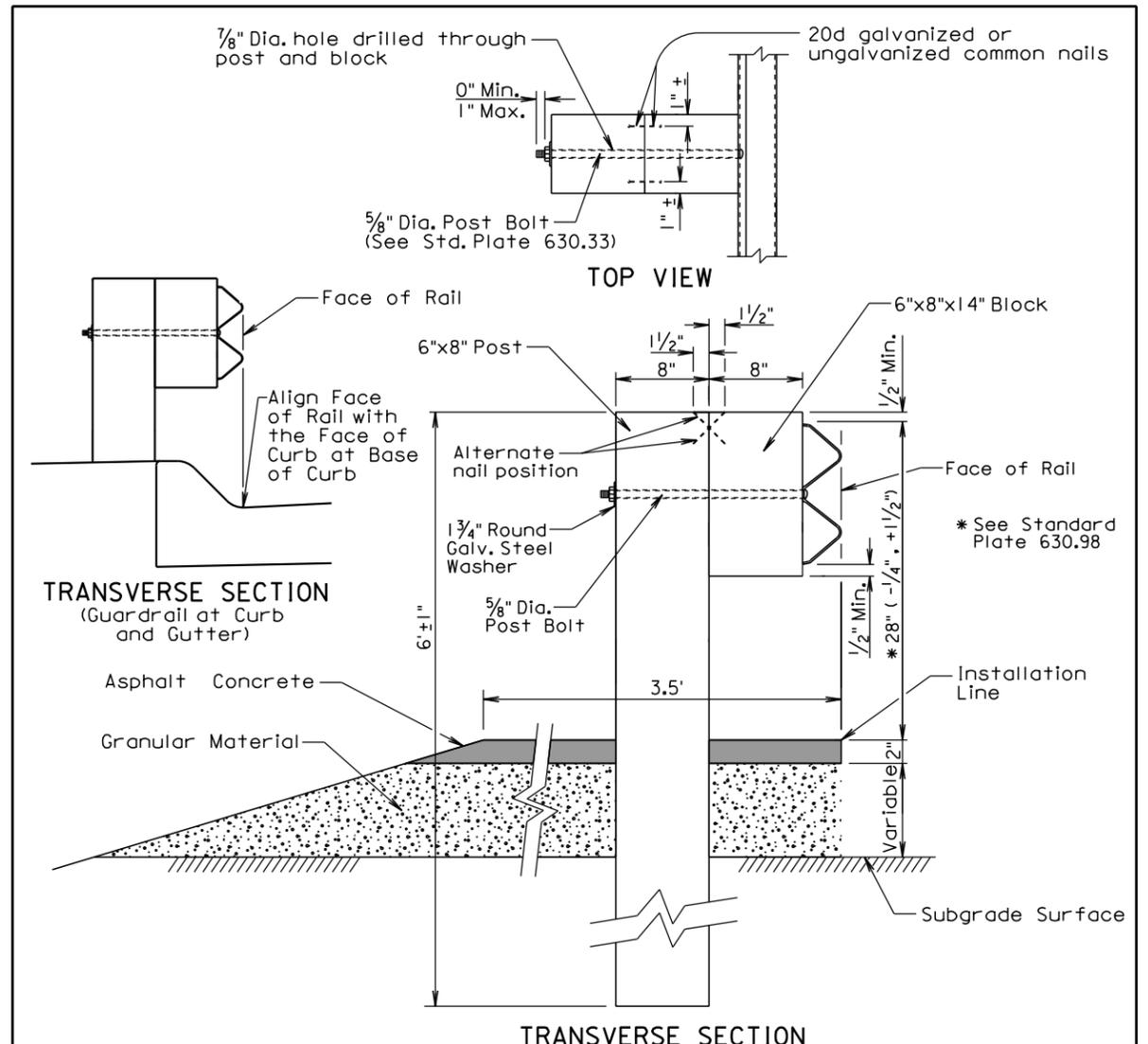
Thrie Beam End Sections (Flared) shall only be used in a one-way traffic situation. See Standard Plate 630.80 for Thrie Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing thrie beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

June 26, 2015

S D D O T	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
		Sheet 1 of 1

Published Date: 4th Qtr. 2015



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

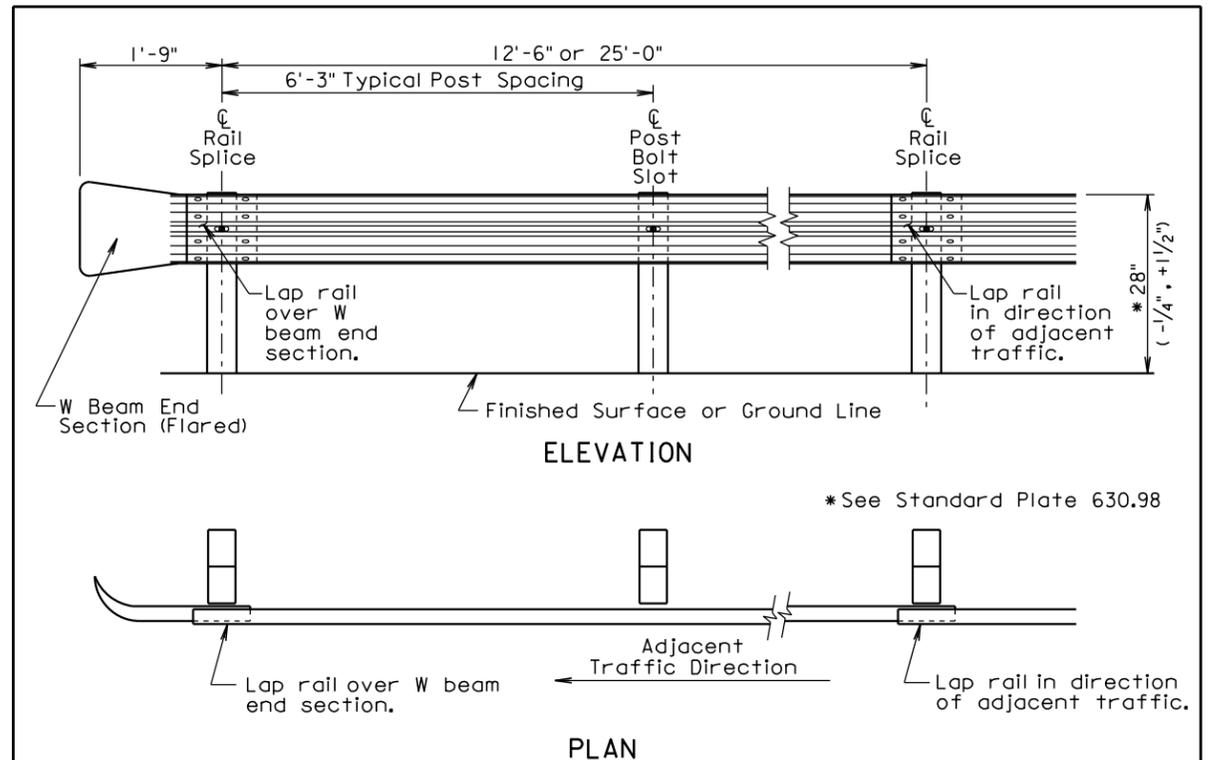
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline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

The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of post and top of block shall have a true square cut. The top of block shall be ±1 inch from the top of the post.

June 26, 2015

Published Date: 4th Qtr. 2015	S D D O T	W BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.31
			Sheet 1 of 1



W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	5'-0"
3'-1 1/2"	3'-9"

For Informational Purposes Only

GENERAL NOTES:

All W beam rail shall be Type I.

There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

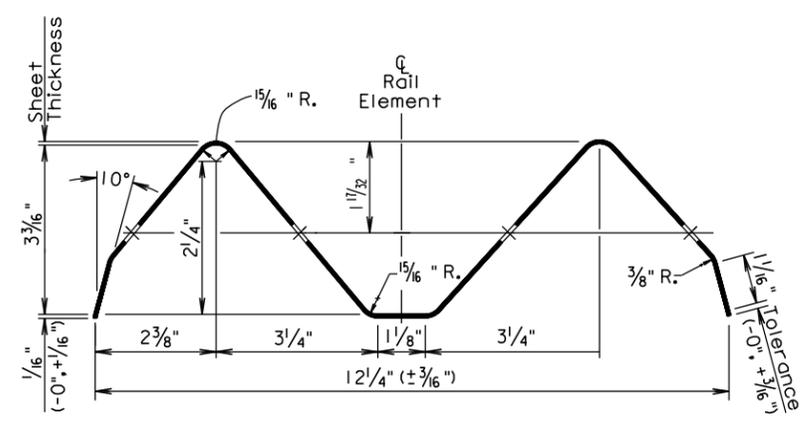
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

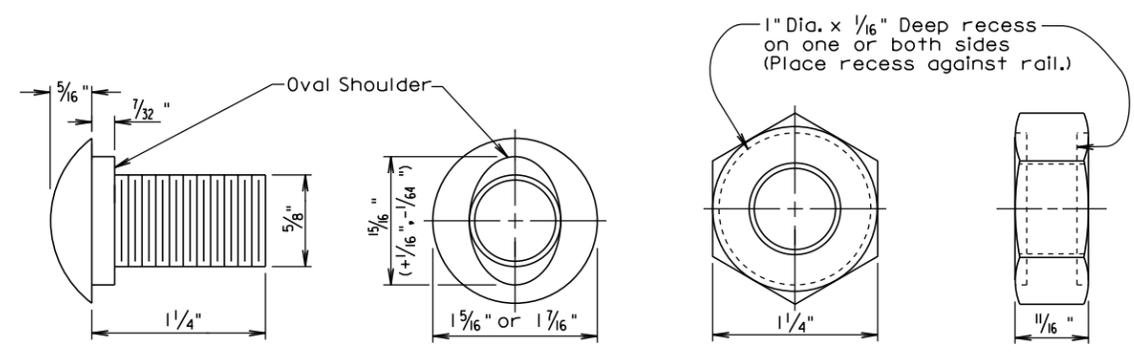
All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

June 26, 2015

Published Date: 4th Qtr. 2015	S D D O T	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
			Sheet 1 of 1

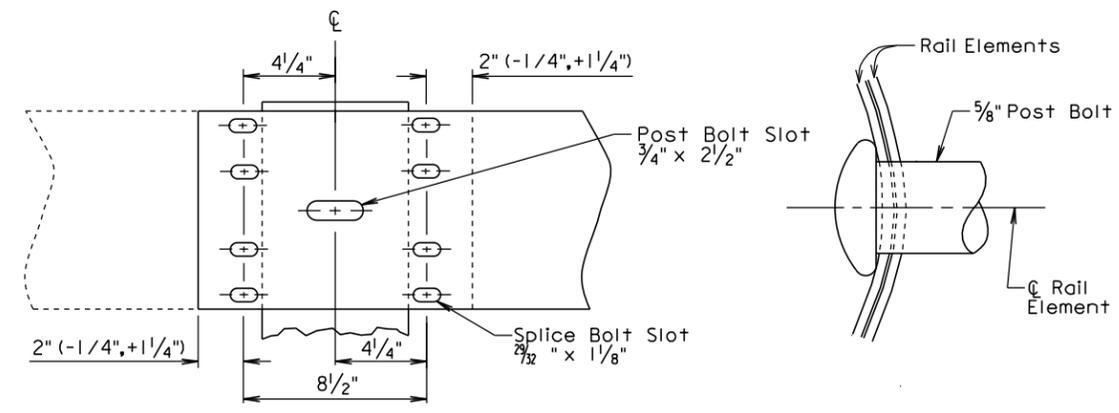


SECTION THROUGH W BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)

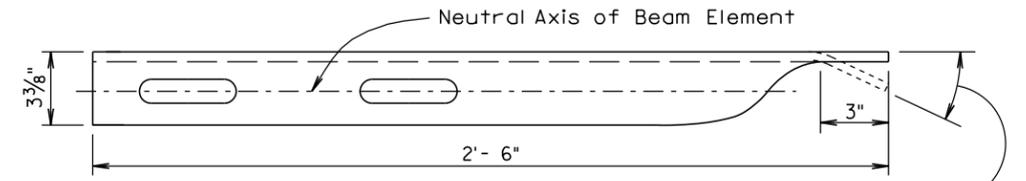


Lap in direction of traffic.

RAIL SPLICE

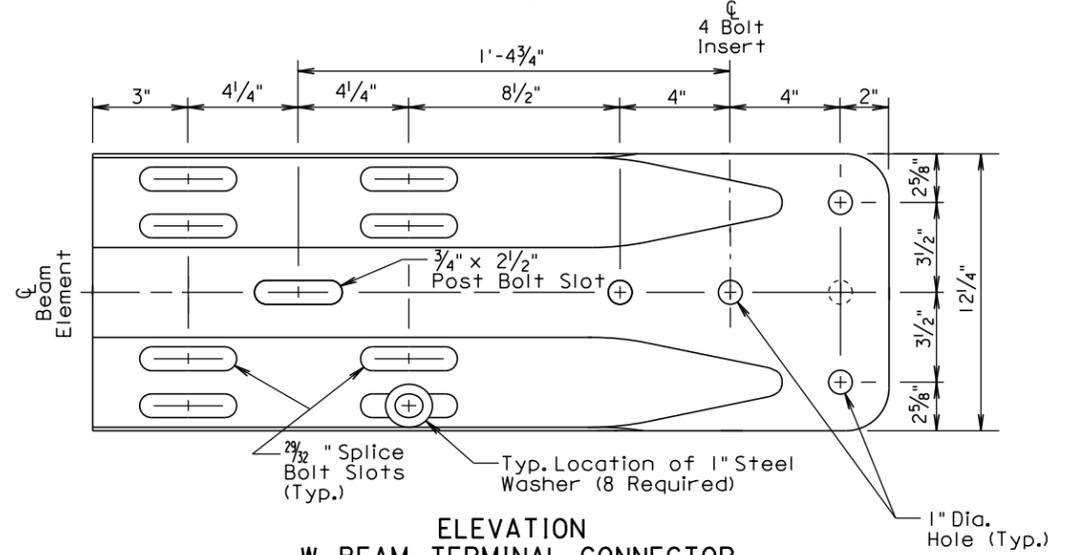
December 23, 2004

Published Date: 4th Qtr. 2015	S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
			Sheet 1 of 1

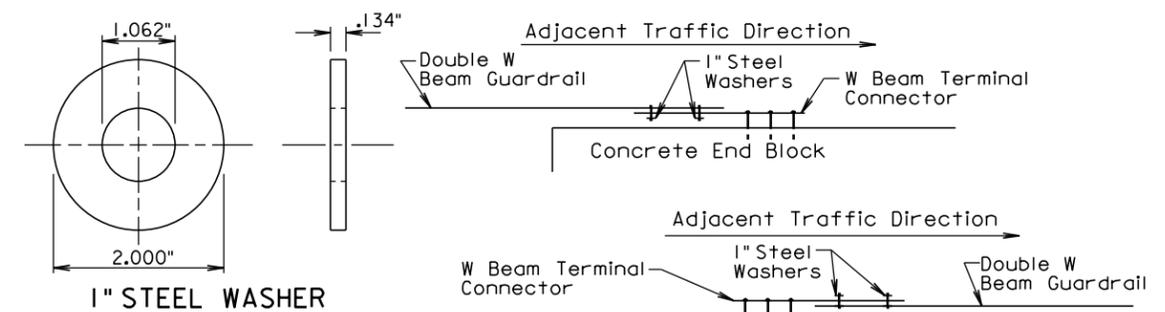


An extra hole and an approximate 26° bend shall be required only for the Breakaway Cable Terminal. The Modified W Beam Terminal Connector placement detail is shown on Standard Plate 630.47.

TOP VIEW



ELEVATION
W BEAM TERMINAL CONNECTOR

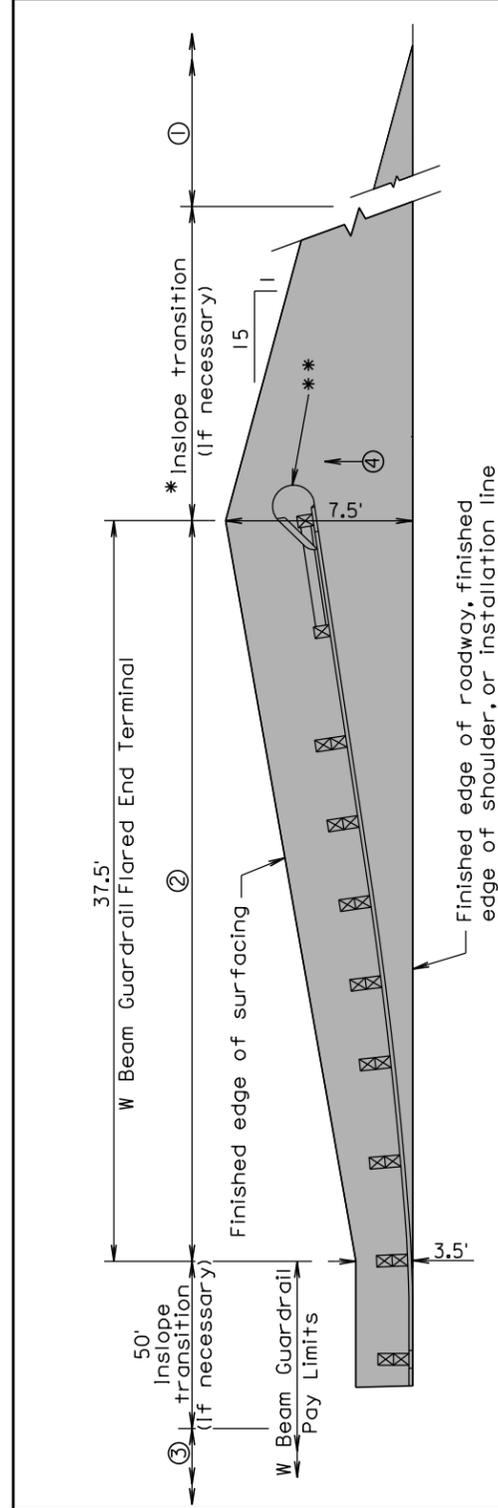


GENERAL NOTES:

- W Beam Terminal Connectors shall be 10 gauge.
- When the W beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the W 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 W Beam Terminal Connector. All costs for the W Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

September 14, 2001

Published Date: 4th Qtr. 2015	S D D O T	W BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.35
			Sheet 1 of 1



- 2" Asphalt concrete surfacing with variable thickness granular material
 - ① Same inslope as mainline inslope
 - ② 4:1 inslope
 - ③ 2:1 inslope or flatter, or inslope as specified in plans
 - ④ Same slope as roadway cross slope
- PLAN**
- * The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

GENERAL NOTES:

The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions.

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

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

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

December 16, 2014

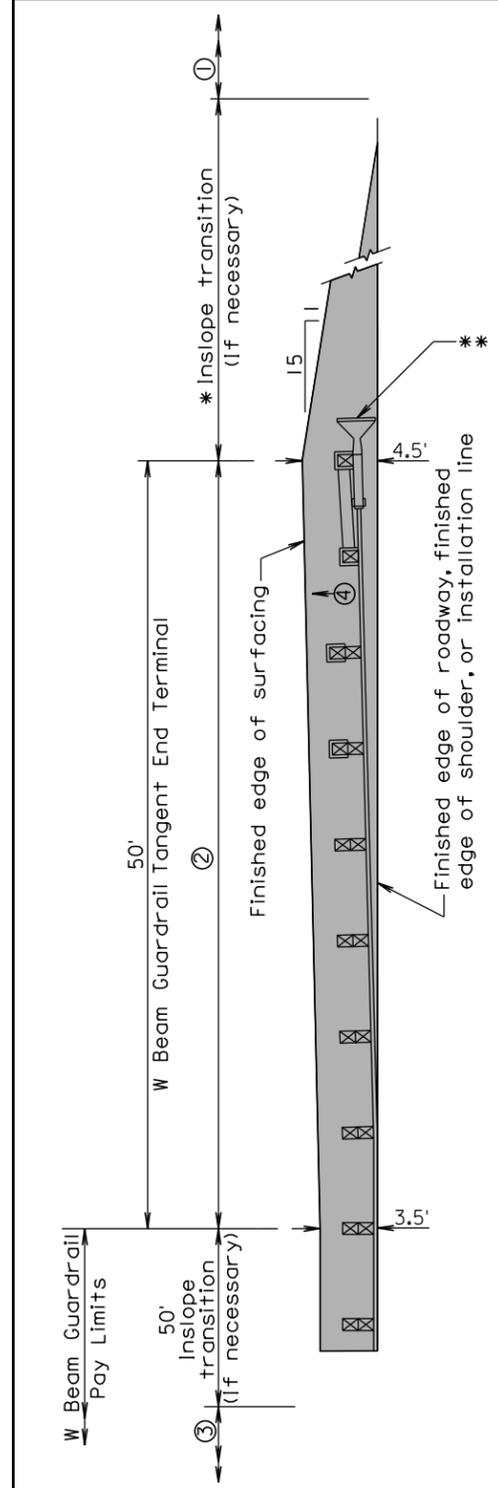
Published Date: 4th Qtr. 2015

SDOT

**EMBANKMENT AND SURFACING FOR
W BEAM GUARDRAIL FLARED END TERMINAL**

PLATE NUMBER
630.45

Sheet 1 of 1



- 2" Asphalt concrete surfacing with variable thickness granular material
 - ① Same inslope as mainline inslope
 - ② 4:1 inslope
 - ③ 2:1 inslope or flatter, or inslope as specified in plans
 - ④ Same slope as roadway cross slope
- PLAN**
- * The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

GENERAL NOTES:

The W beam guardrail tangent end terminal shall be installed according to the manufacturer's installation instructions.

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

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

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

December 16, 2014

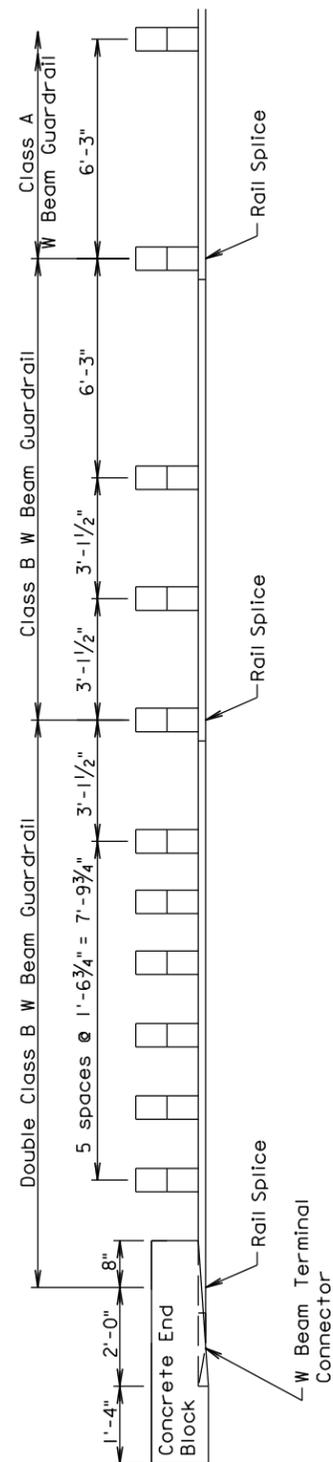
Published Date: 4th Qtr. 2015

SDOT

**EMBANKMENT AND SURFACING FOR
W BEAM GUARDRAIL TANGENT END TERMINAL**

PLATE NUMBER
630.46

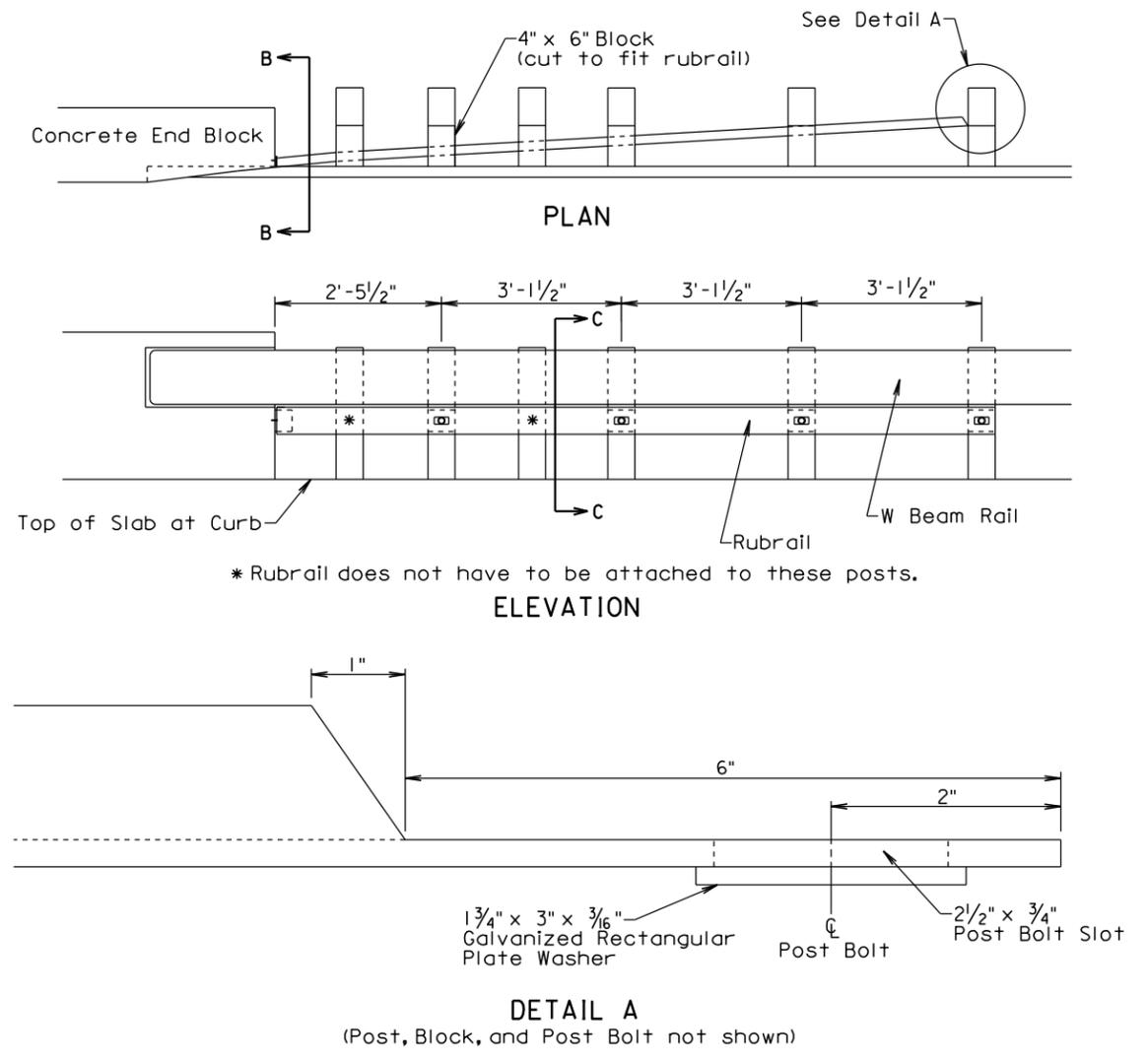
Sheet 1 of 1



POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END

March 31, 2000

Published Date: 4th Qtr. 2015	S D D O T	POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END	PLATE NUMBER 630.50
			Sheet 1 of 1



GENERAL NOTES:

The steel shall be in conformance with ASTM A 36 and shall be galvanized after fabrication in conformance with ASTM A 123. If pre-galvanized steel members are used, all cuts and welds shall be coated with an approved galvanizing paint.

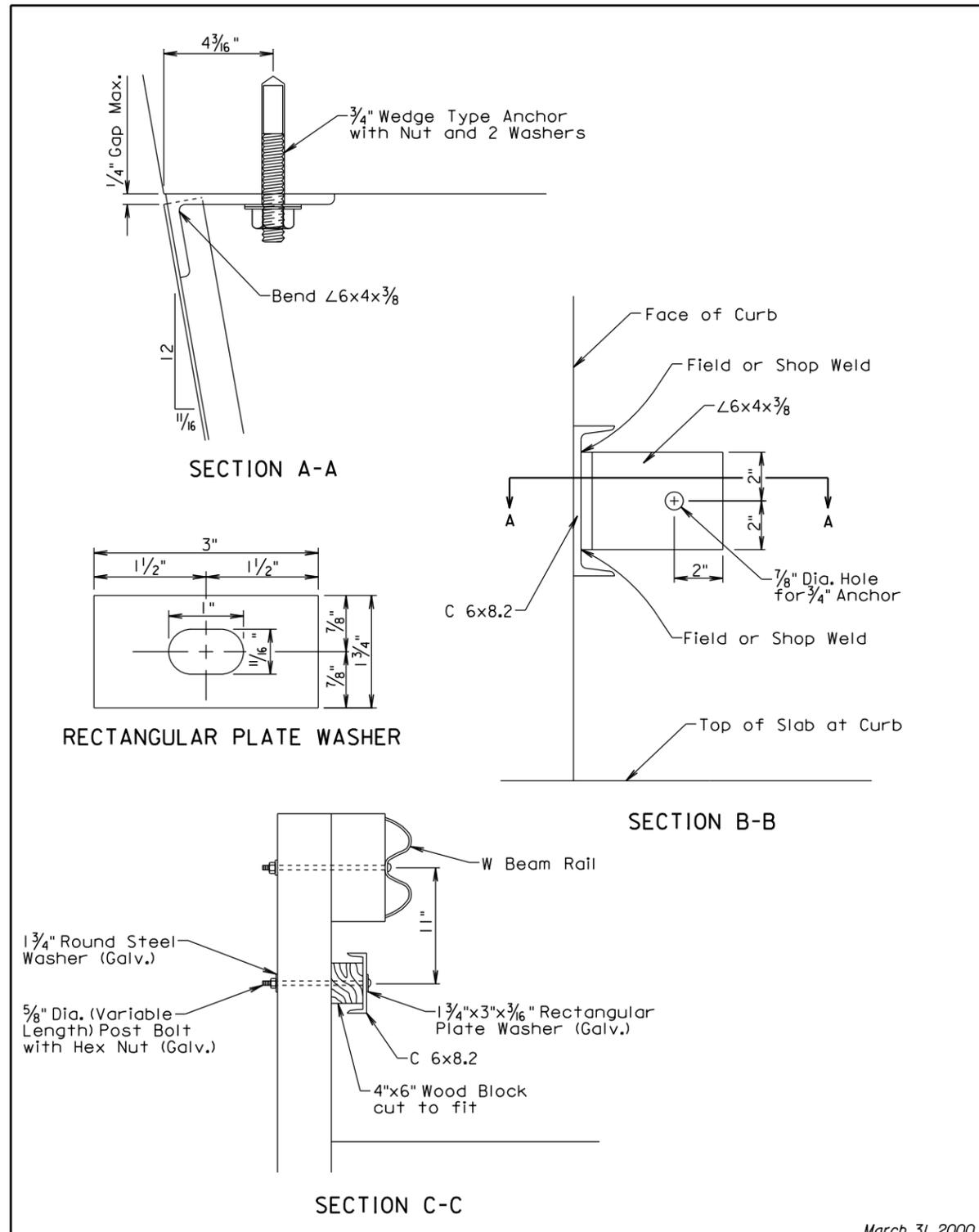
Offset blocks shall be in conformance with section 630 of the Standard Specifications.

All hardware shall be in conformance with the requirements of AASHTO M 180.

The wedge type anchor bolt, nut, and washer shall be hot dipped galvanized or made of a corrosion resistant material. The wedge type anchor shall be capable of sustaining an ultimate load in tension or shear of 17,000 pounds when the anchor is set in 4,500 psi compressive strength concrete. The anchor shall be installed according to the manufacturer's recommendations. The Contractor shall obtain certification from the manufacturer that the anchor meets the tensile and shear requirements and shall submit the certification to the Engineer. The cost for furnishing and installing the wedge type anchor, nut, and washer shall be incidental to the contract unit price per foot for "Rubrail".

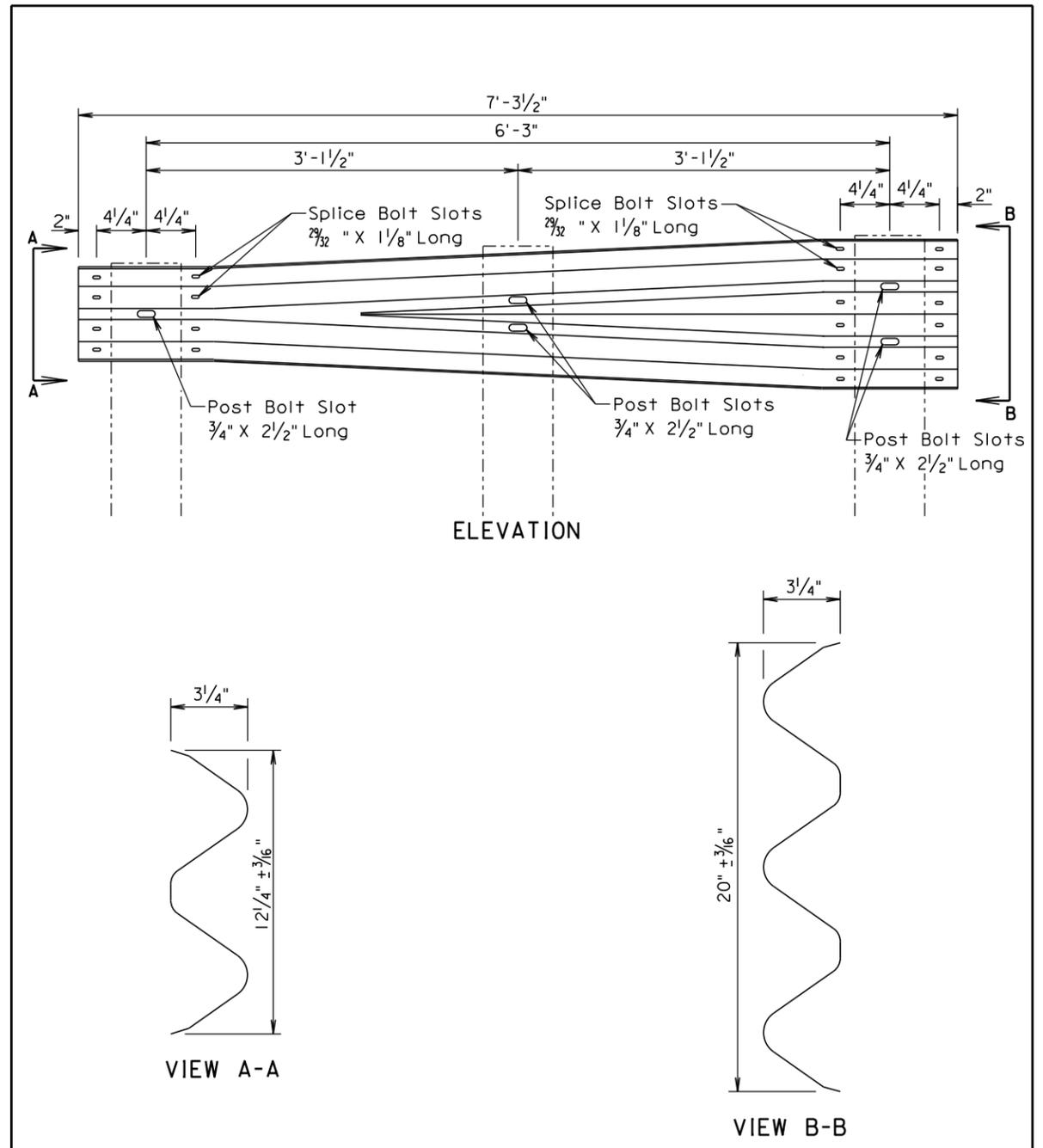
March 31, 2000

Published Date: 4th Qtr. 2015	S D D O T	RUBRAIL AT BRIDGE END (W BEAM RETROFIT AND DRILLED IN ANCHOR)	PLATE NUMBER 630.76
			Sheet 1 of 2



March 31, 2000

Published Date: 4th Qtr. 2015	S D D O T	RUBRAIL AT BRIDGE END (W BEAM RETROFIT AND DRILLED IN ANCHOR)	PLATE NUMBER 630.76
			Sheet 2 of 2

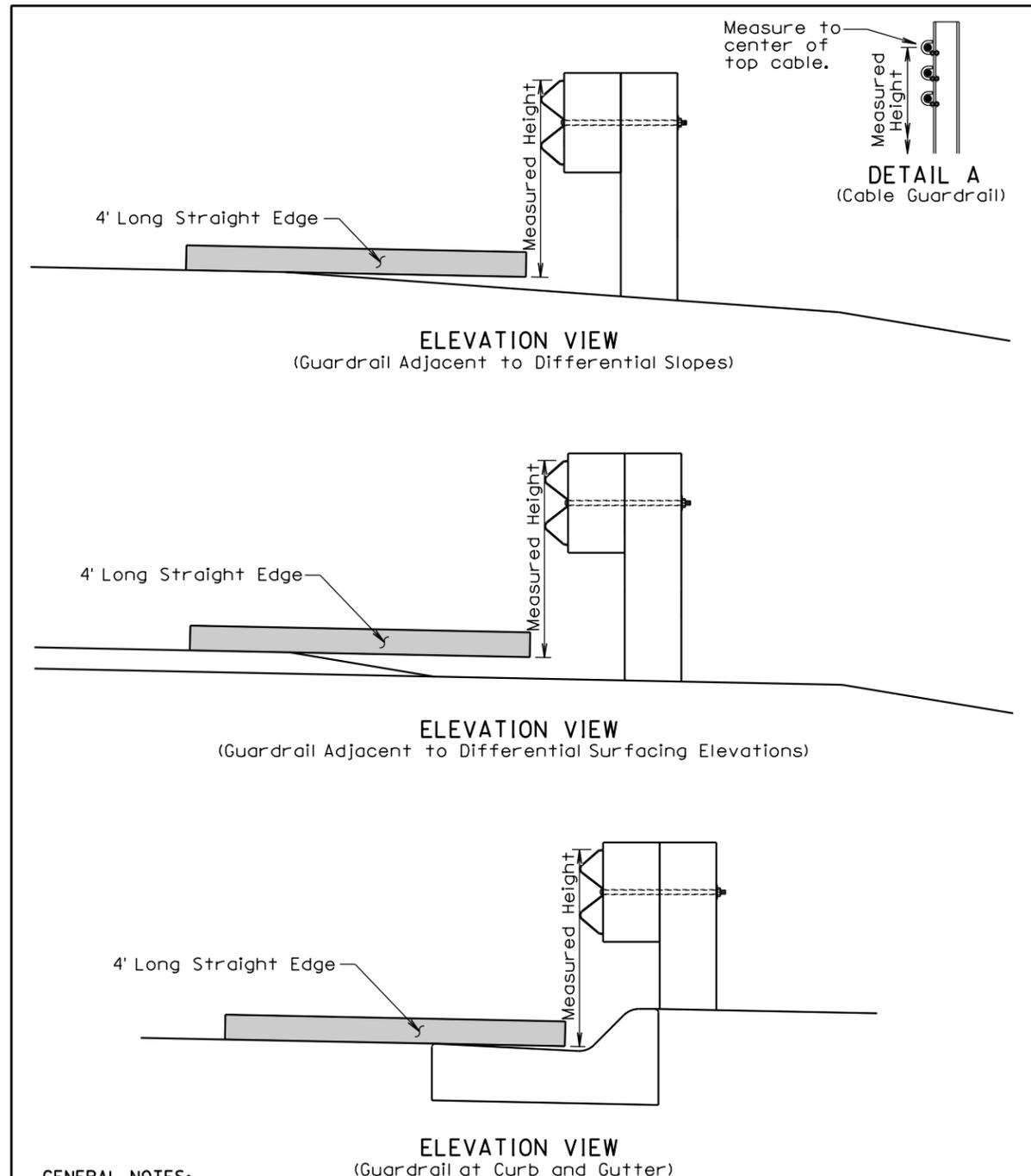


GENERAL NOTE:

All costs for constructing the W Beam to Thrie Beam Guardrail Transition including labor, equipment, and materials including two posts, two blocks, W beam to thrie beam transition section, and hardware shall be incidental to the contract unit price per each for "W Beam to Thrie Beam Guardrail Transition".

March 31, 2000

Published Date: 4th Qtr. 2015	S D D O T	W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.82
			Sheet 1 of 1



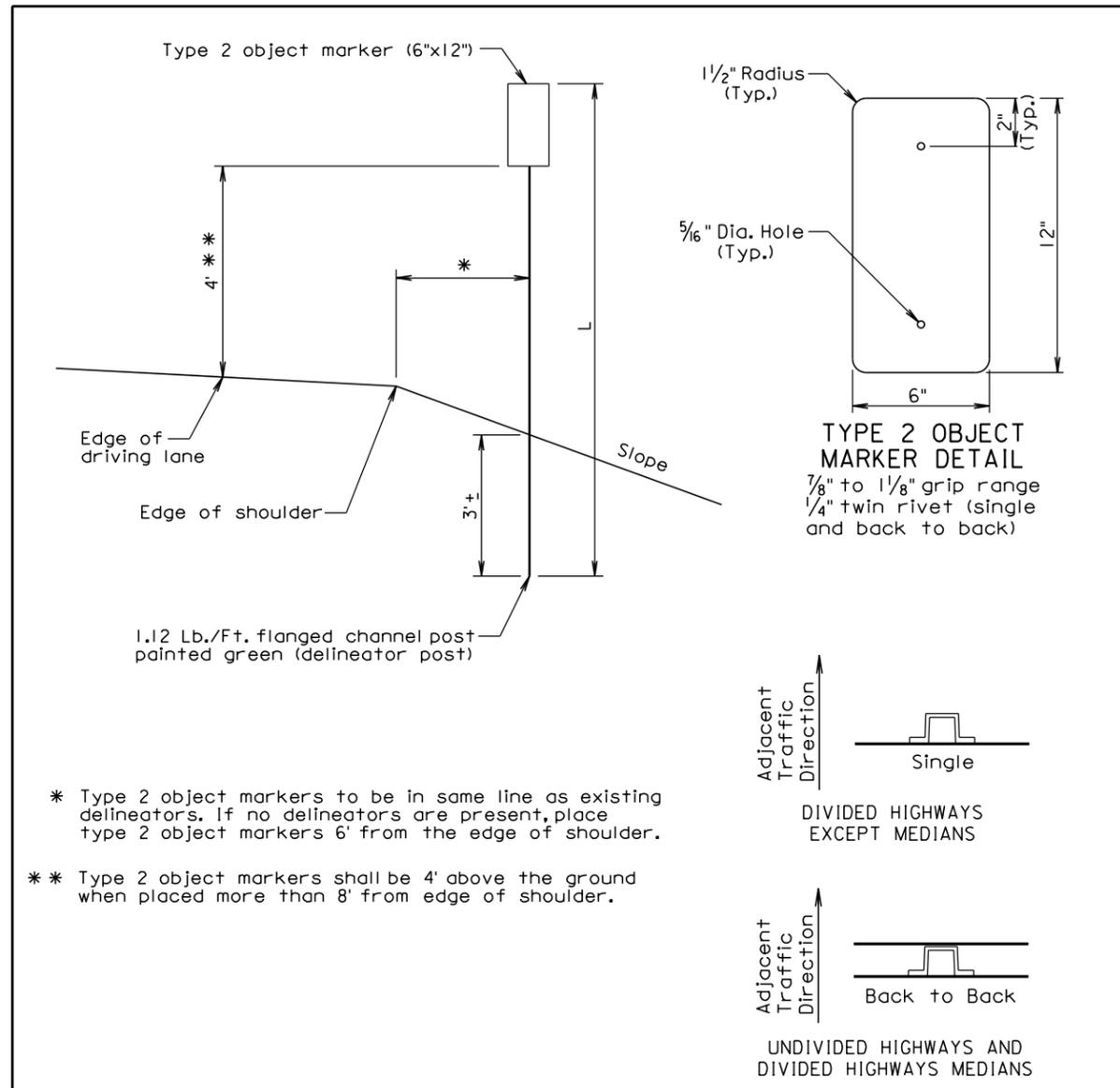
GENERAL NOTES:

The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.

When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

June 26, 2010

<i>Published Date: 4th Qtr. 2015</i>	S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
			Sheet 1 of 1



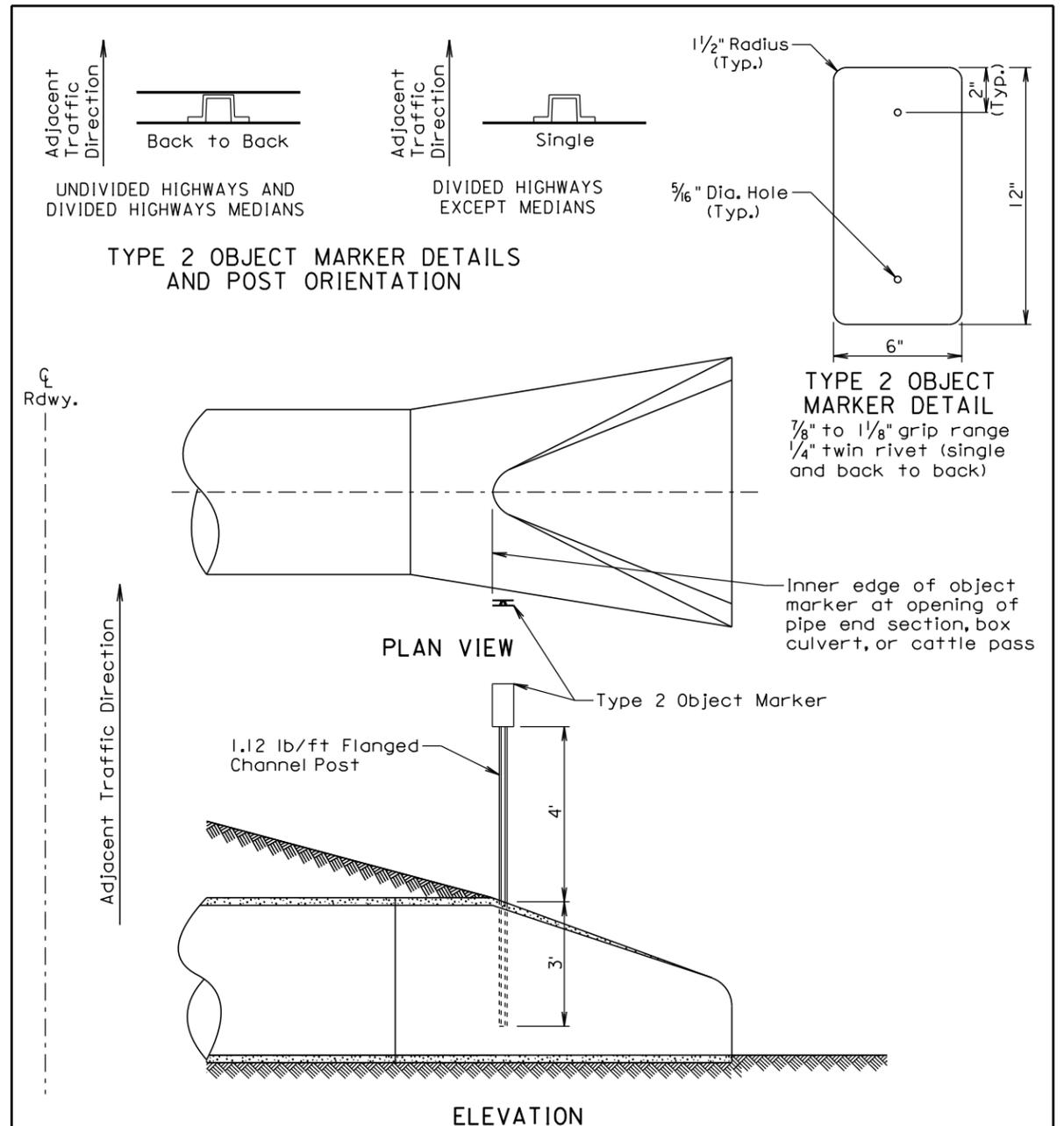
* Type 2 object markers to be in same line as existing delineators. If no delineators are present, place type 2 object markers 6' from the edge of shoulder.

** Type 2 object markers shall be 4' above the ground when placed more than 8' from edge of shoulder.

Distance To Marker (Ft.) *	2	3	4	5	6	7	8
	Post Length L (Ft.)						
Slope	4:1	9	9	9	9	10	10
	3:1	9	9	9	10	10	11

TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

June 26, 2006

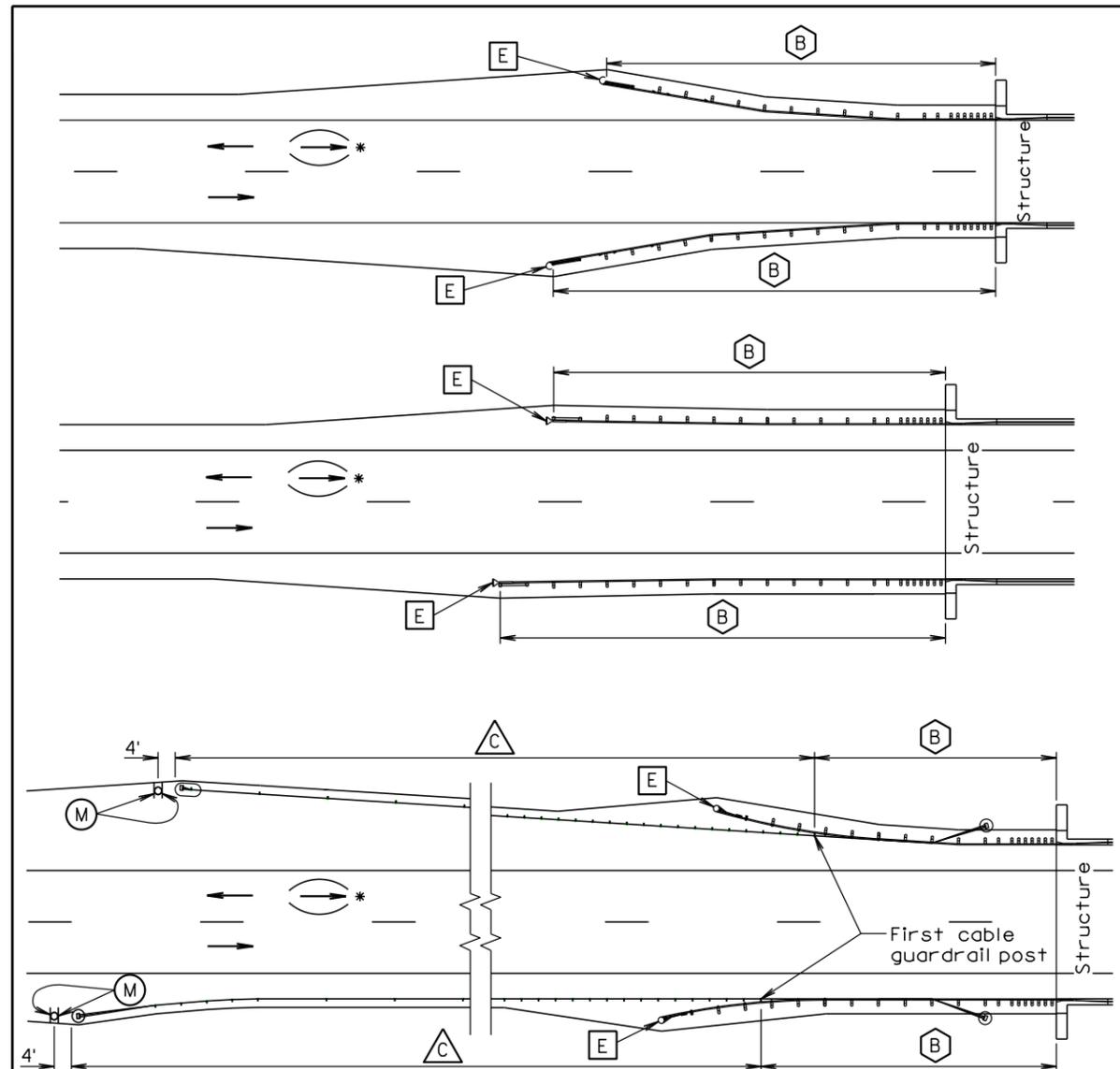


GENERAL NOTES:

The type 2 object markers and the 1.12 lb/ft flanged channel posts shall be in conformance with Specifications Section 982.2 J.

Payment for the type 2 object markers shall be in conformance with Specification Section 632.5 B.

June 26, 2015



TYPICAL GUARDRAIL LAYOUTS

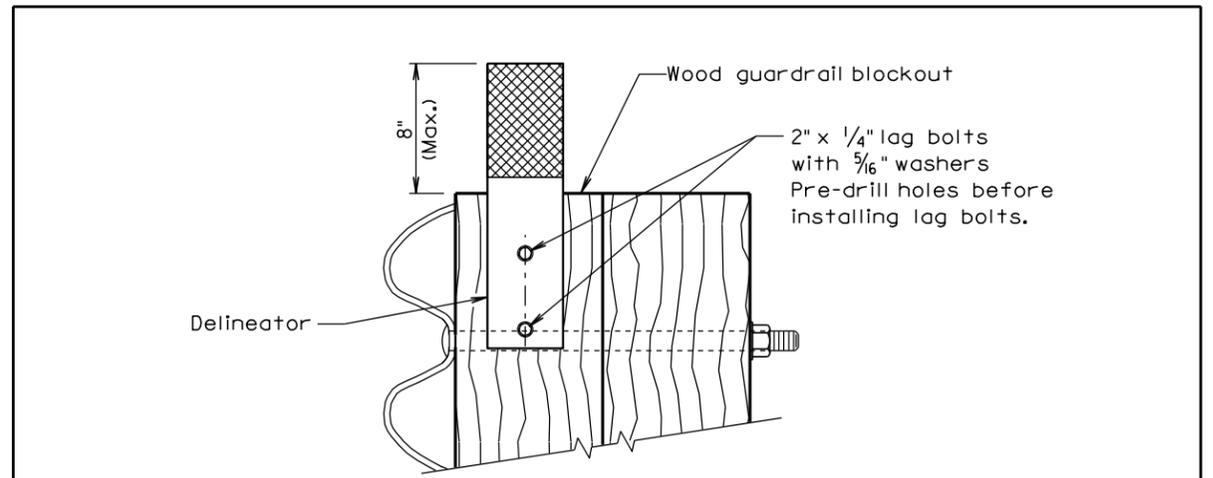
- Steel Beam Guardrail Delineation
- Guardrail Terminal End Object Marker
- 3 Cable Guardrail Delineation
- Type 2 Object Marker

*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.

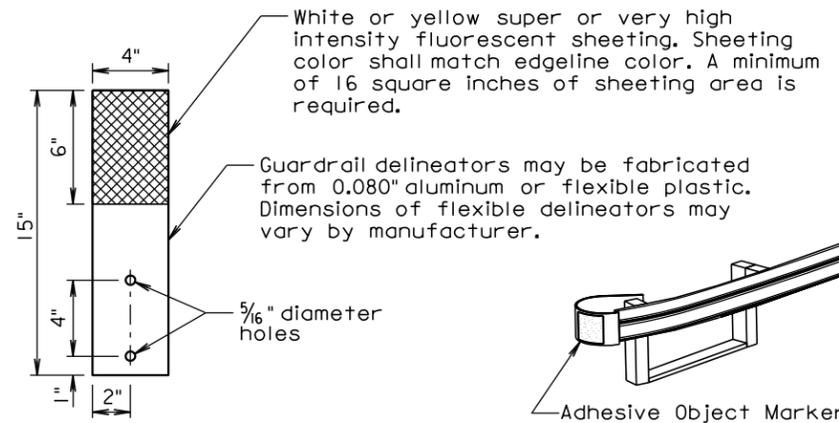
June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 1 of 4

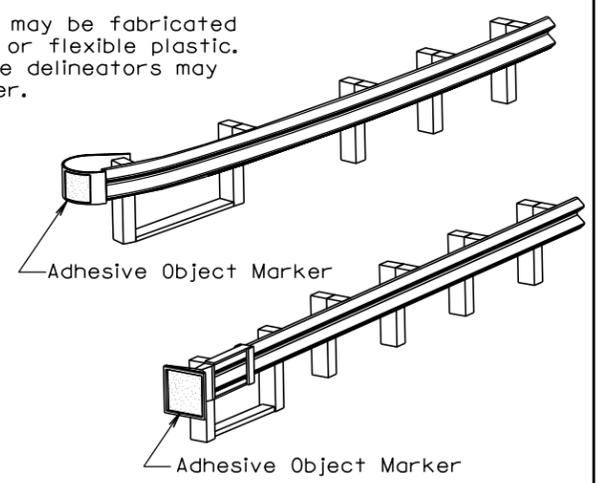
Published Date: 4th Qtr. 2015



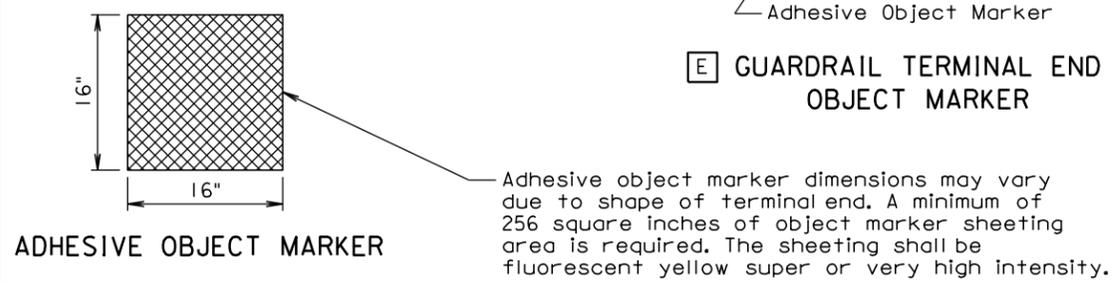
STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



GUARDRAIL TERMINAL END OBJECT MARKER



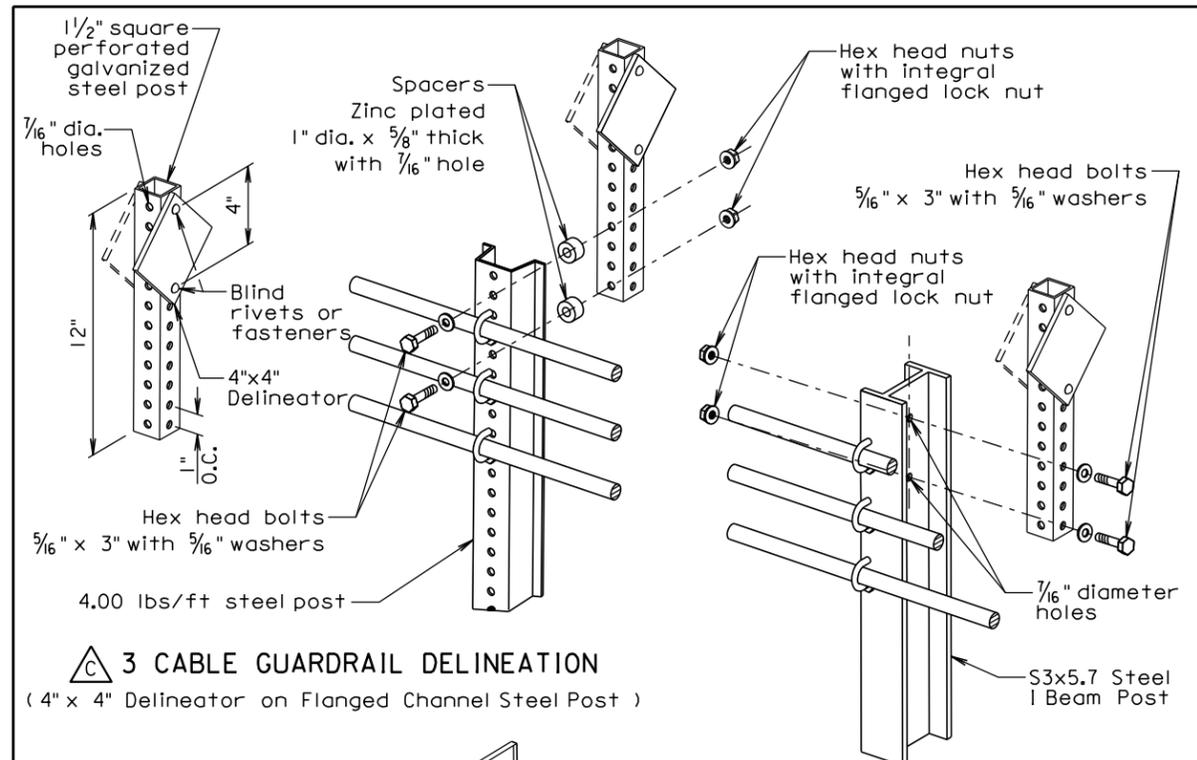
ADHESIVE OBJECT MARKER

Adhesive object marker dimensions may vary due to shape of terminal end. A minimum of 256 square inches of object marker sheeting area is required. The sheeting shall be fluorescent yellow super or very high intensity.

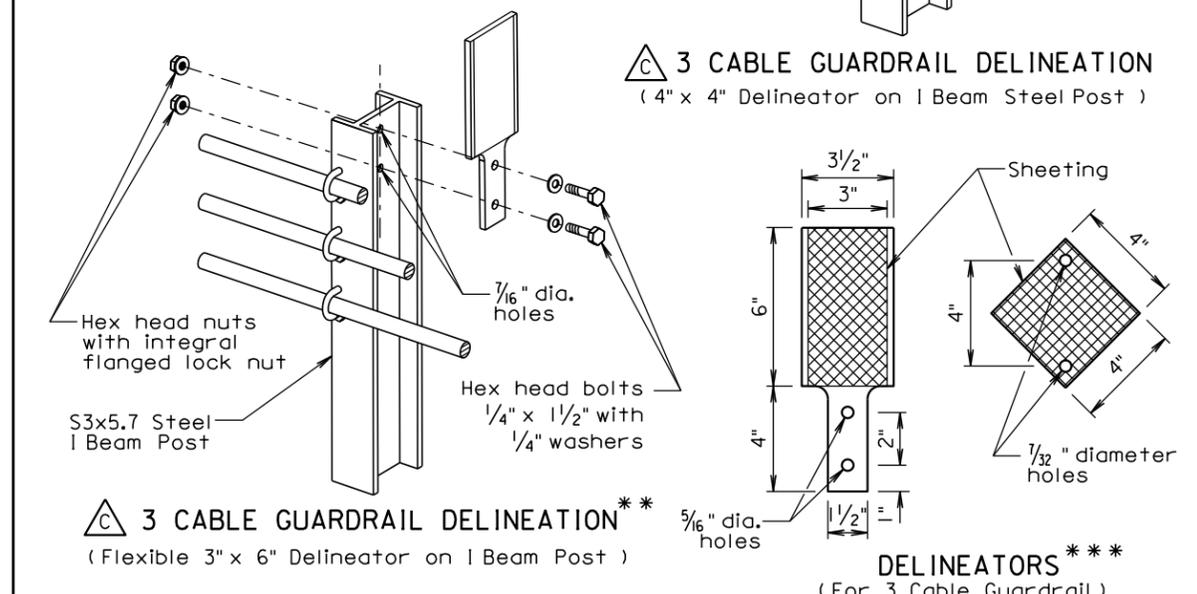
June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 2 of 4

Published Date: 4th Qtr. 2015



C 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on Flanged Channel Steel Post)



C 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on I Beam Steel Post)

C 3 CABLE GUARDRAIL DELINEATION**
(Flexible 3" x 6" Delineator on I Beam Post)

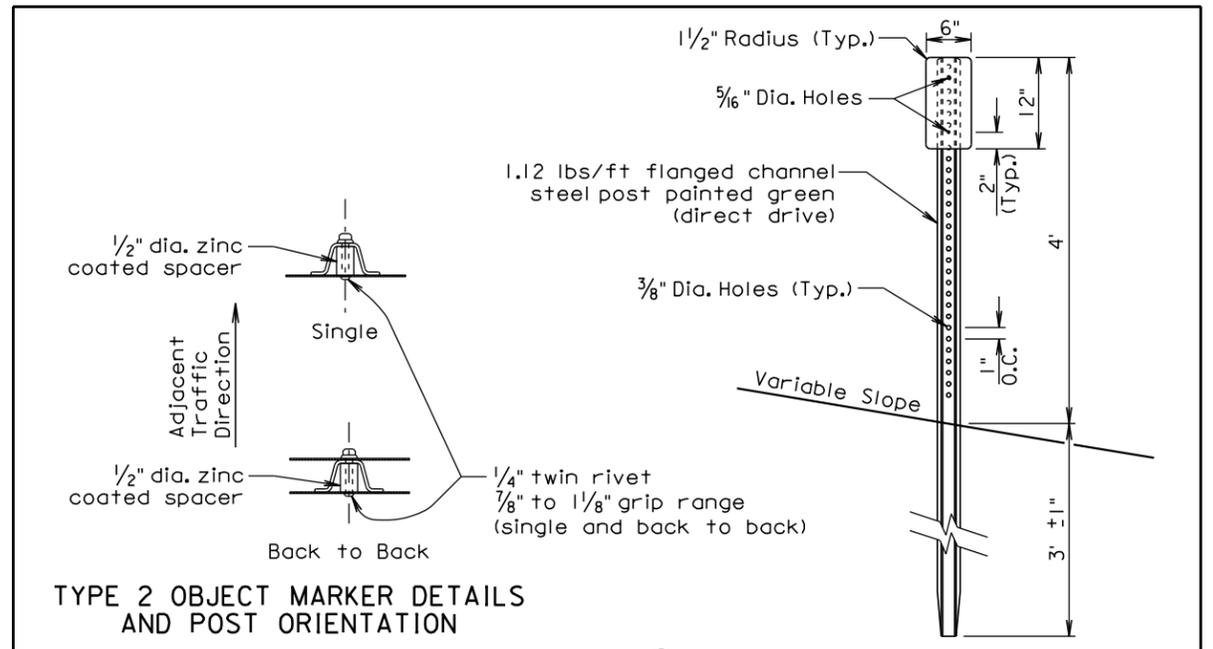
DELINEATORS***
(For 3 Cable Guardrail)

** Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.

*** Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

June 26, 2011

Published Date: 4th Qtr. 2015	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 3 of 4



TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

M TYPE 2 OBJECT MARKER
(For Marking 3 Cable Guardrail Anchor)

GENERAL NOTES:

The delineators shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be of either very high intensity or super high intensity material. For bridges along two-way roadways the sheeting shall be on both sides of the delineator and shall 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.

The first delineator shall be attached to the post nearest the bridge with additional delineators spaced in advance of the bridge at approximately 50 foot intervals. At bridges with short lengths of guardrail, less than 200 feet, a minimum of 4 delineators shall be placed in addition to the yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail. This will provide for a shorter spacing. At bridges with longer lengths of guardrail, greater than 200 feet, including bridges that have cable guardrail transitioning into the steel beam guardrail, the delineators will be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

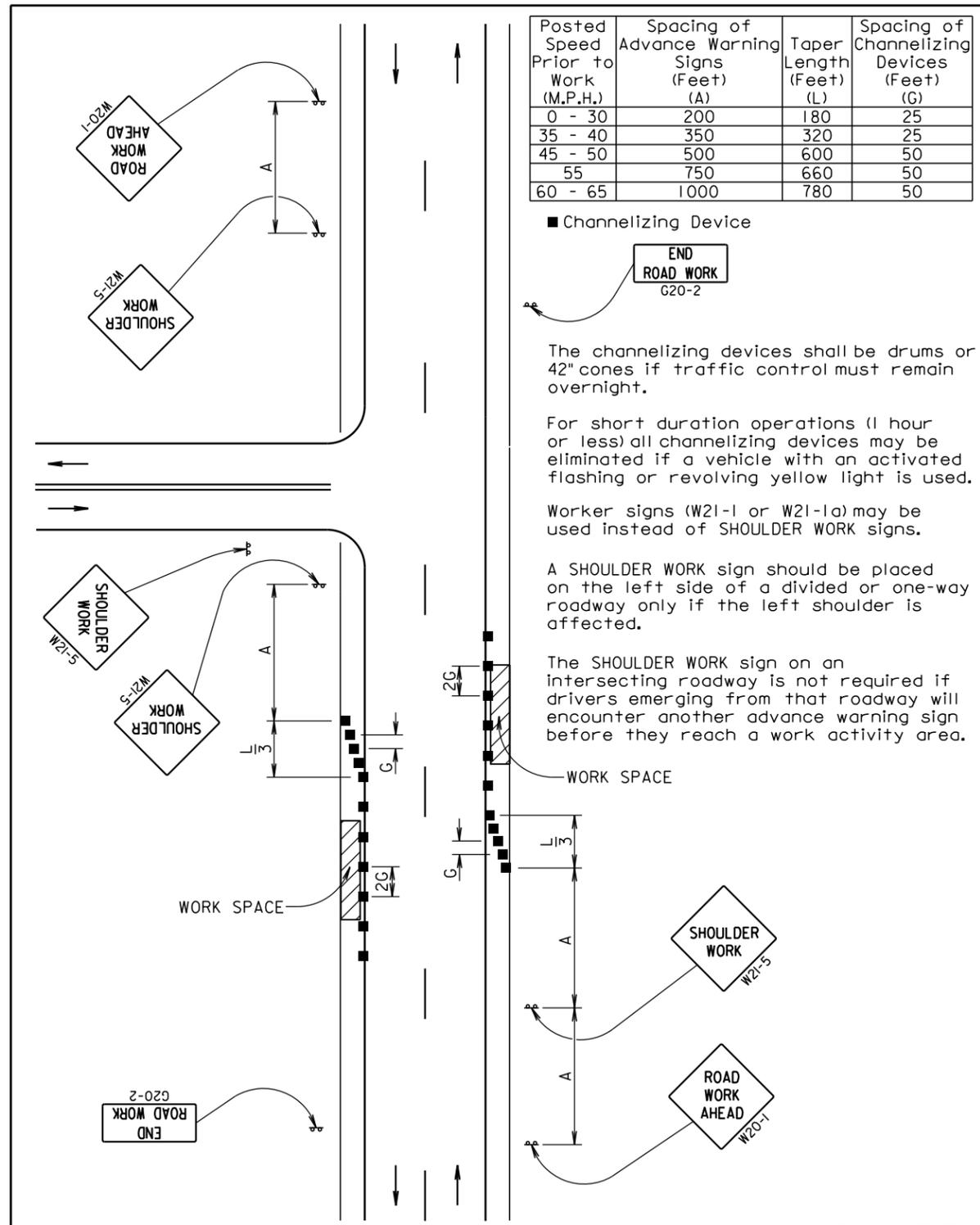
All costs for furnishing and installing single or back to back guardrail delineation shall be included in the contract unit price per each for "Guardrail Delineator".

An adhesive object marker shall be placed on the end of the W beam guardrail 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 shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

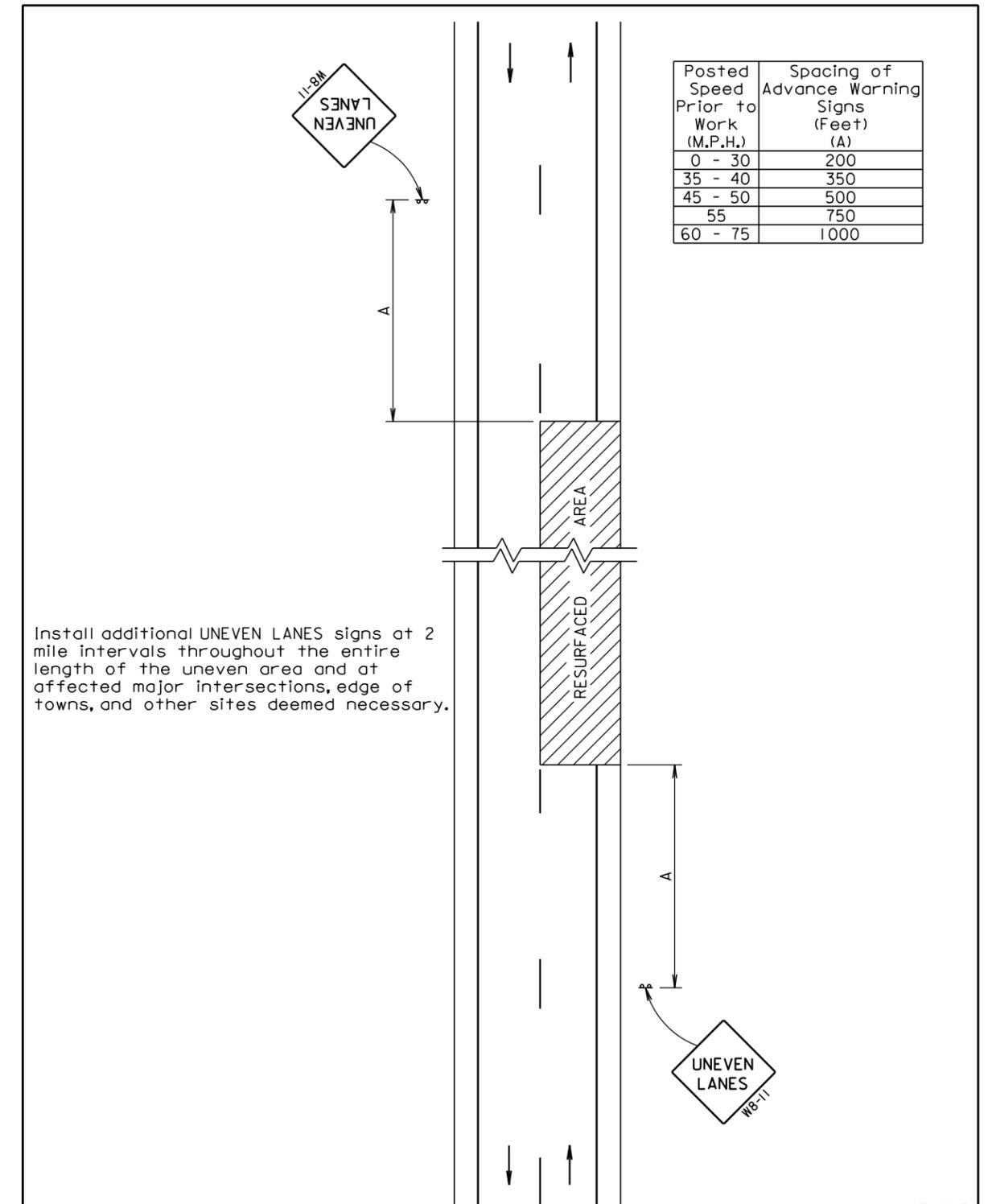
A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have a fluorescent yellow very high or super high intensity reflective sheeting. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall 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.

June 26, 2011

Published Date: 4th Qtr. 2015	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 4 of 4



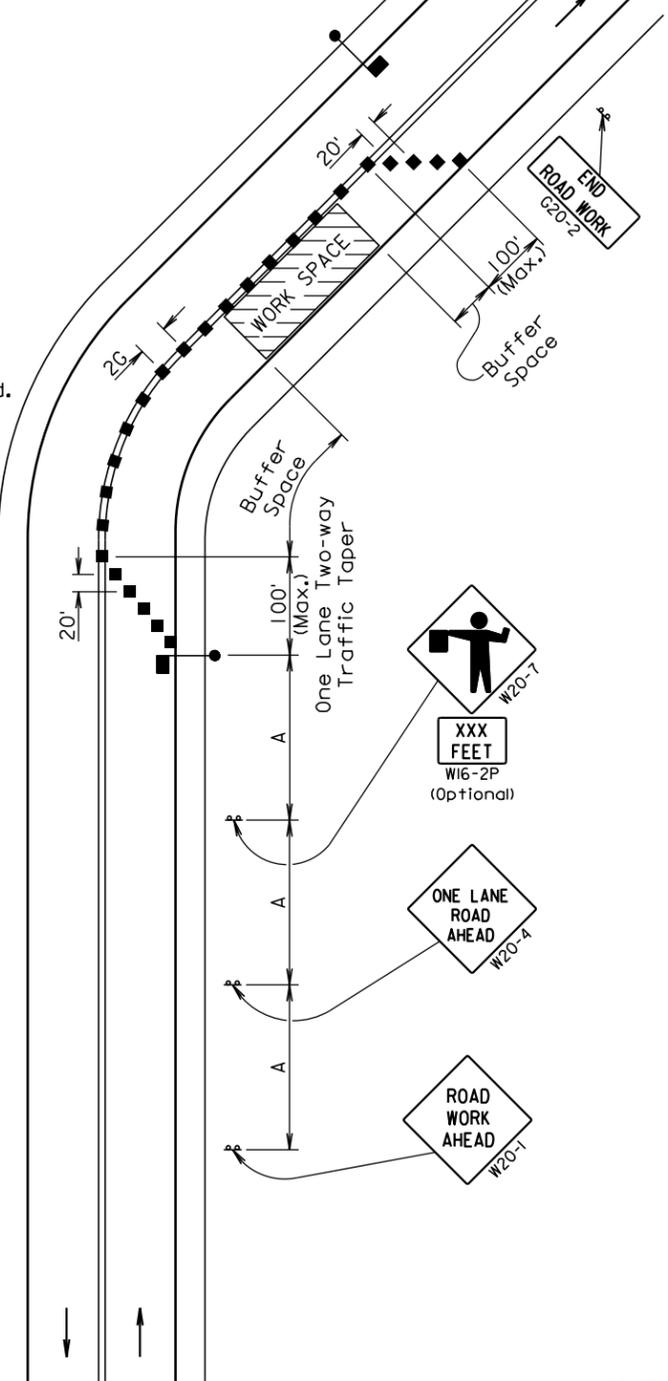
September 22, 2014



April 15, 2015

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

Warning sign sequence in opposite direction same as below.



- Flagger
- Channelizing Device

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

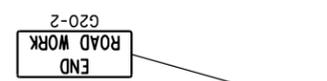
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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

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

The channelizing devices shall be drums or 42" cones.

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

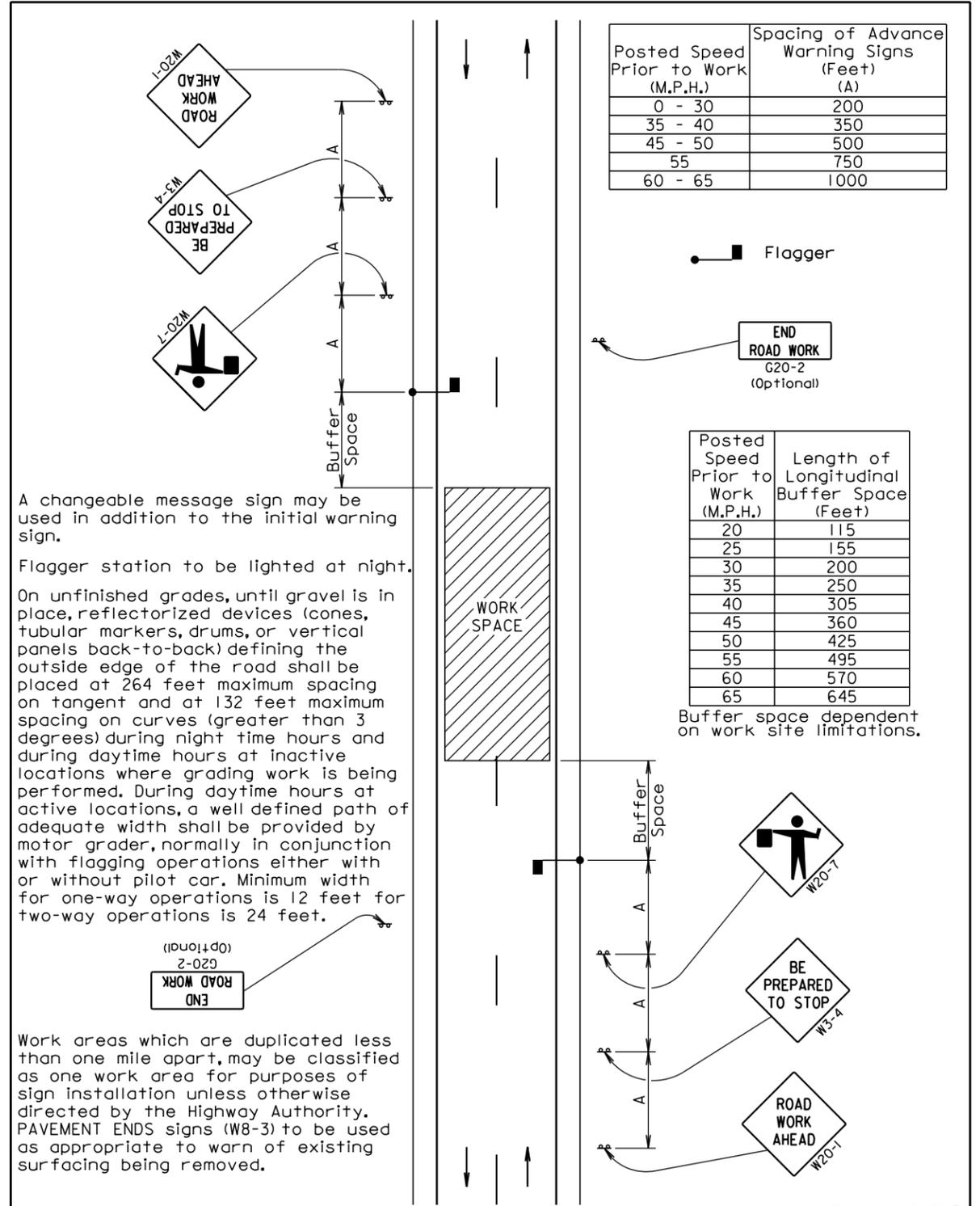


Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

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

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

September 22, 2014



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

- Flagger



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

Buffer space dependent on work site limitations.

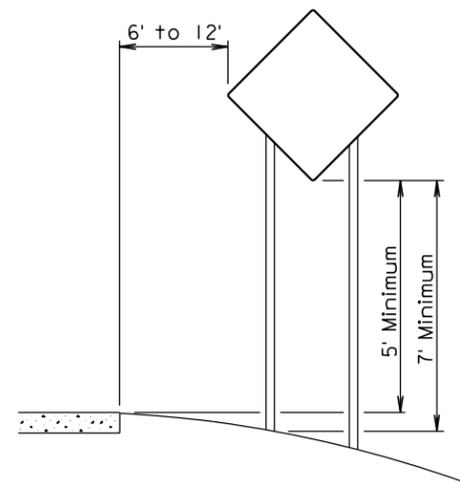
A changeable message sign may be used in addition to the initial warning sign.

Flagger station to be lighted at night.

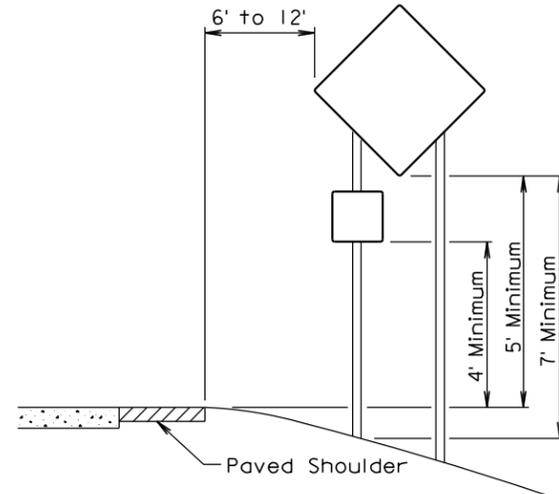
On unfinished grades, until gravel is in place, reflectorized devices (cones, tubular markers, drums, or vertical panels back-to-back) defining the outside edge of the road shall be placed at 264 feet maximum spacing on tangent and at 132 feet maximum spacing on curves (greater than 3 degrees) during night time hours and during daytime hours at inactive locations where grading work is being performed. During daytime hours at active locations, a well defined path of adequate width shall be provided by motor grader, normally in conjunction with flagging operations either with or without pilot car. Minimum width for one-way operations is 12 feet for two-way operations is 24 feet.

Work areas which are duplicated less than one mile apart, may be classified as one work area for purposes of sign installation unless otherwise directed by the Highway Authority. PAVEMENT ENDS signs (W8-3) to be used as appropriate to warn of existing surfacing being removed.

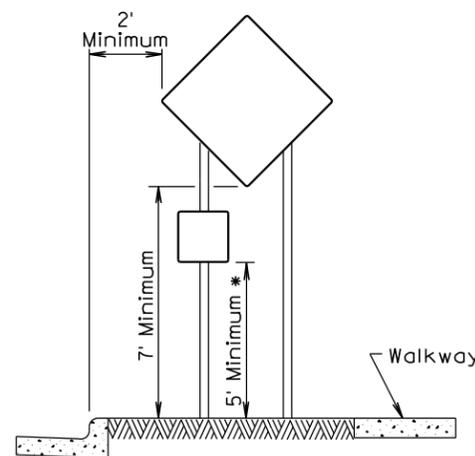
September 6, 2015



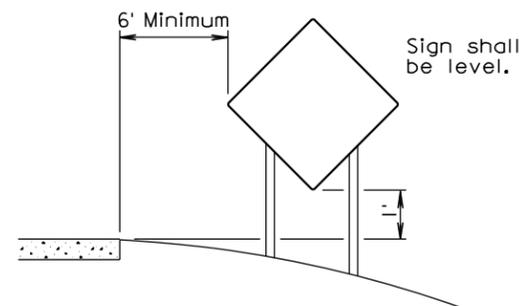
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

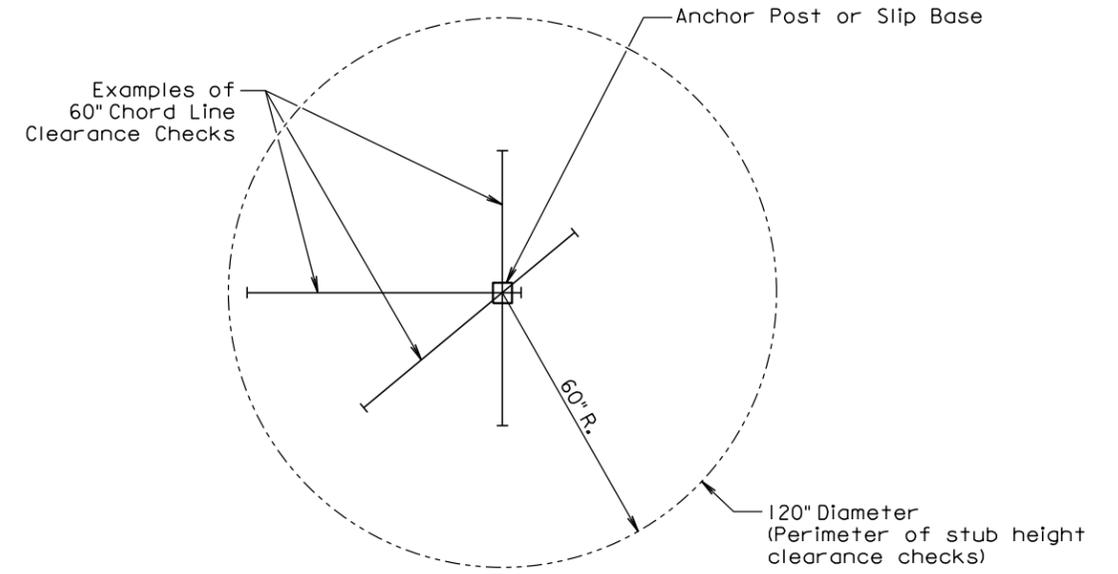


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

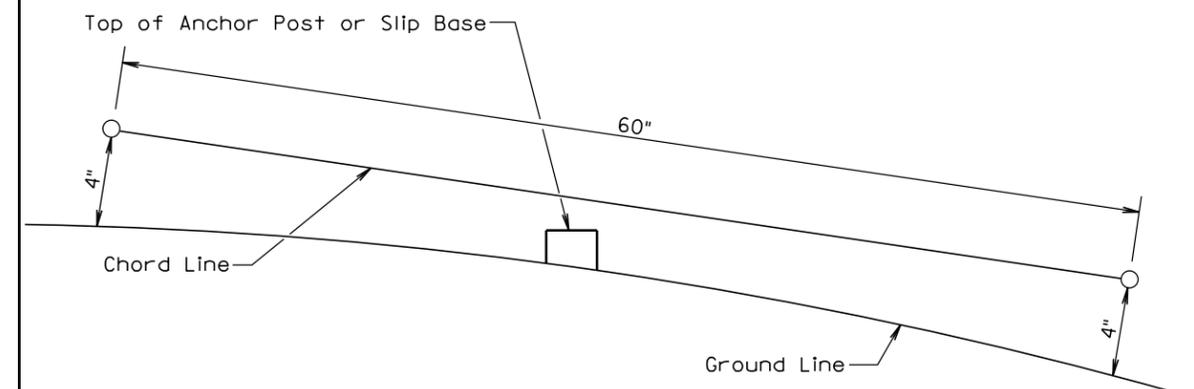
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

Published Date: 4th Qtr. 2015	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

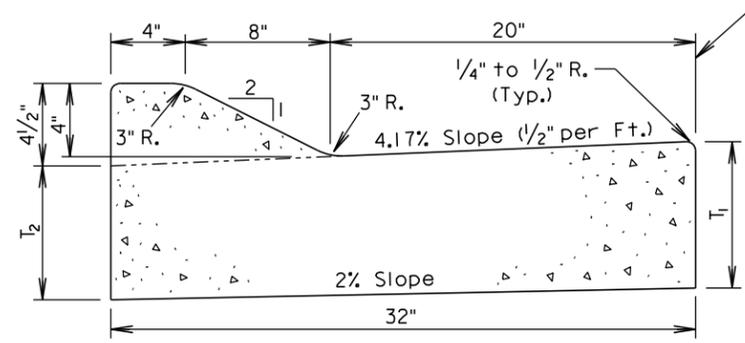
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall 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.

July 1, 2005

Published Date: 4th Qtr. 2015	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



The stated radii on the plans and cross sections refer to this line and it shall also be the basis for horizontal linear foot measurement and payment.

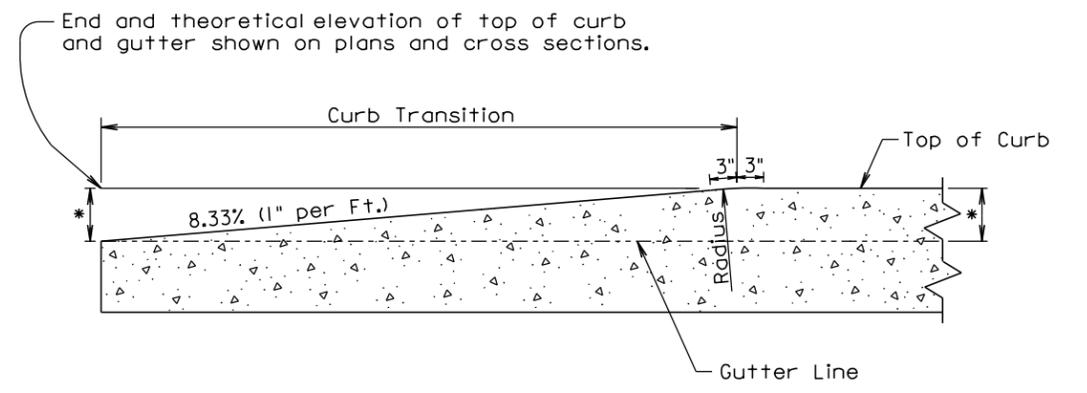
Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
D46	6	5 ⁵ / ₁₆	0.056	18.0
D47	7	6 ⁵ / ₁₆	0.064	15.7
D48	8	7 ⁵ / ₁₆	0.072	13.9
D48.5	8.5	7 ¹³ / ₁₆	0.076	13.1
D49	9	8 ⁵ / ₁₆	0.080	12.5
D49.5	9.5	8 ¹³ / ₁₆	0.084	11.9
D410	10	9 ⁵ / ₁₆	0.088	11.3
D410.5	10.5	9 ¹³ / ₁₆	0.093	10.8
D411	11	10 ⁵ / ₁₆	0.097	10.3
D411.5	11.5	10 ¹³ / ₁₆	0.101	9.9
D412	12	11 ⁵ / ₁₆	0.105	9.5

GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.
See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

September 6, 2006

<i>Published Date: 4th Qtr. 2015</i>	S D D O T	TYPE D CONCRETE CURB AND GUTTER	PLATE NUMBER 650.15
			Sheet 1 of 1

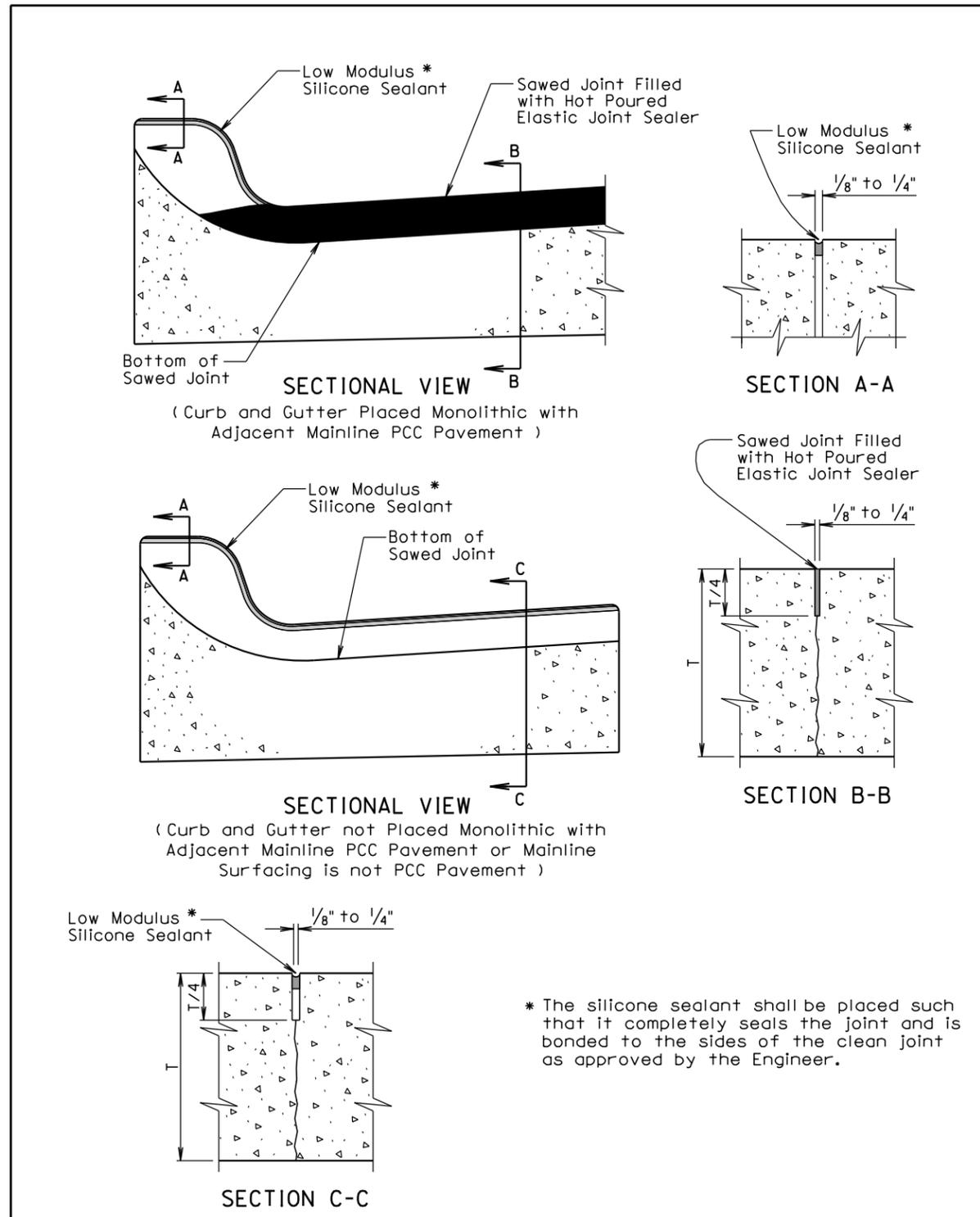


* Height of Curb

LONGITUDINAL SECTION OF CONCRETE CURB TAPER

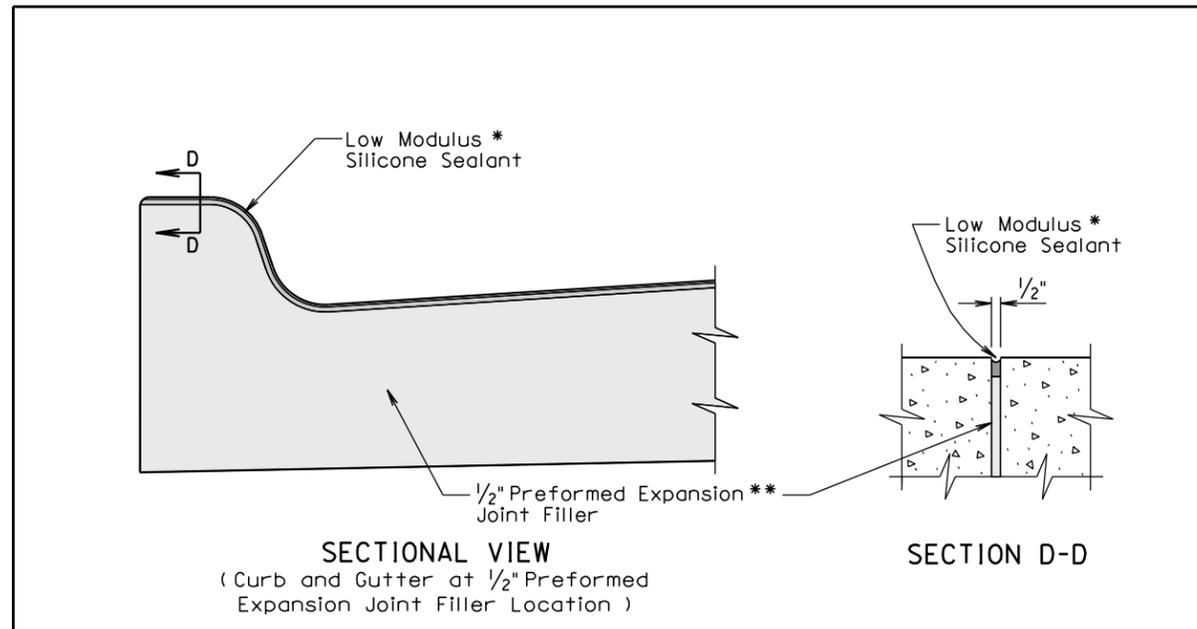
September 14, 2005

<i>Published Date: 4th Qtr. 2015</i>	S D D O T	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



September 6, 2013

Published Date: 4th Qtr. 2015	S D D O T	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 1 of 2



* The silicone sealant shall be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

GENERAL NOTES:

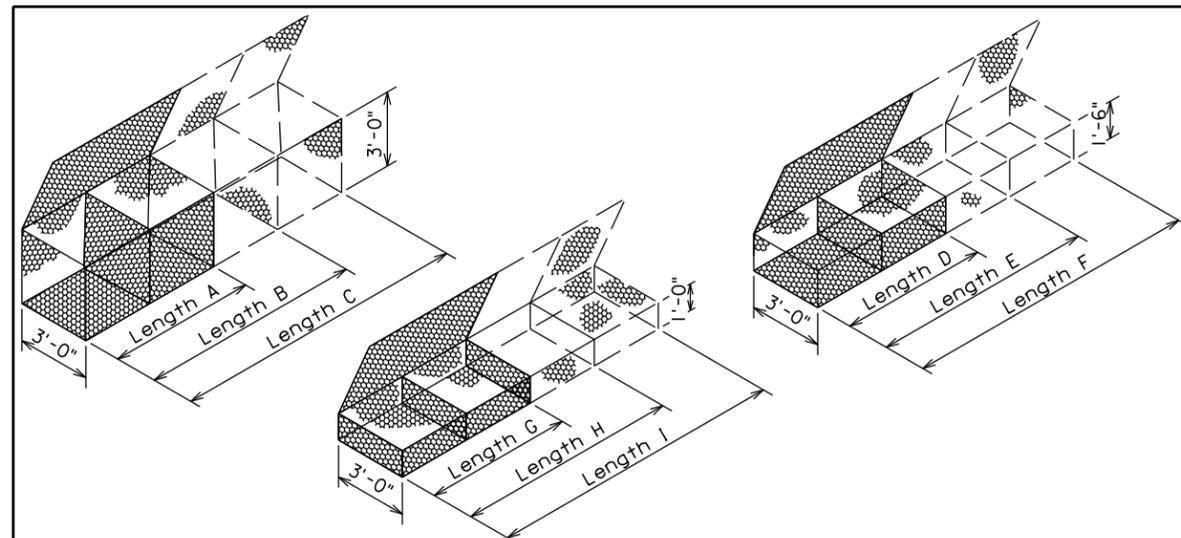
- For illustrative reason, only the type B curb and gutter is shown.
- ** A 1/2" preformed expansion joint filler shall be placed transversely in the curb and gutter at the following locations:
- At each junction between the radius return of curb and gutter and curb and gutter which is parallel to the project centerline.
 - At each junction between new curb and gutter and existing curb and gutter.

Transverse contraction joints shall be constructed at 10' intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint shall be constructed in the concrete curb and gutter at each mainline PCC pavement transverse contraction joint location.

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement or when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter shall be 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint shall be at least 1/4 the thickness of the concrete and the joint shall be sealed in accordance with the details shown above.

September 6, 2013

Published Date: 4th Qtr. 2015	S D D O T	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 2 of 2



**GABION DETAILS
STANDARD SIZES**

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

Above Dimensions subject to mill tolerances.

GENERAL NOTES:

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

The lacing procedure is as follows:

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

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

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

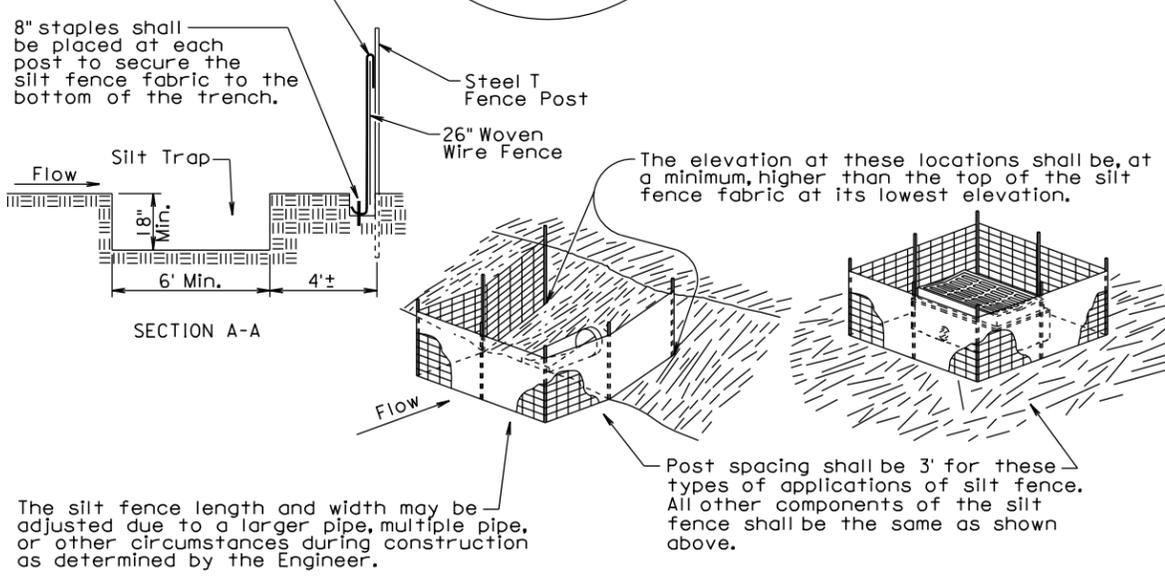
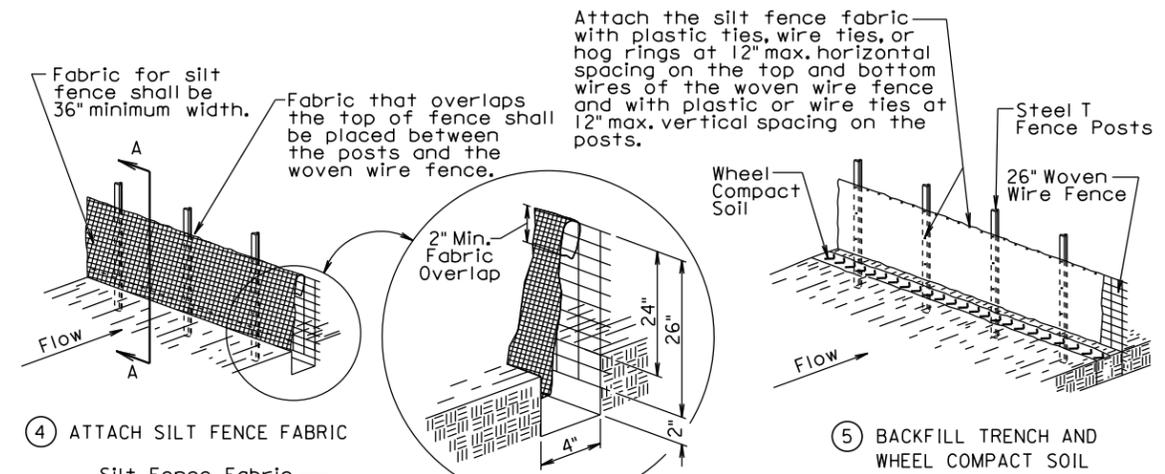
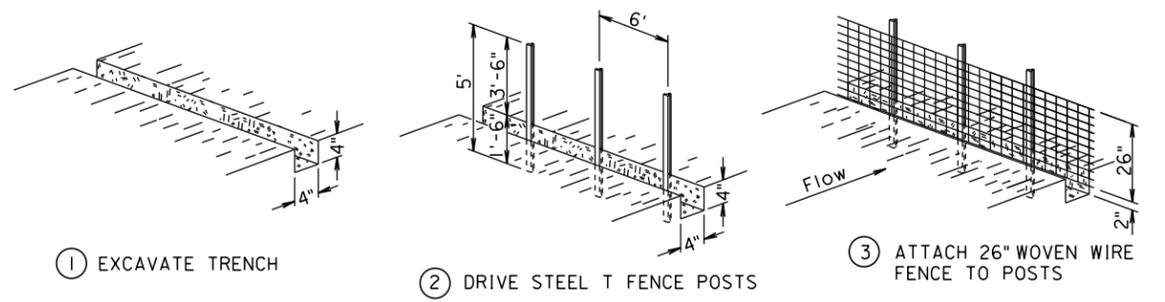
All fasteners shall be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

June 26, 2001

S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
		Sheet 1 of 1

Published Date: 4th Qtr. 2015

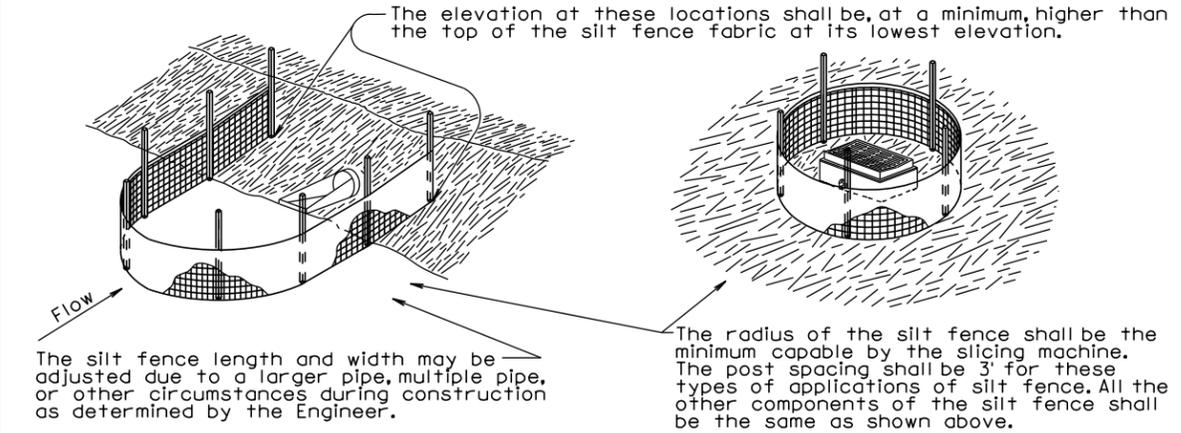
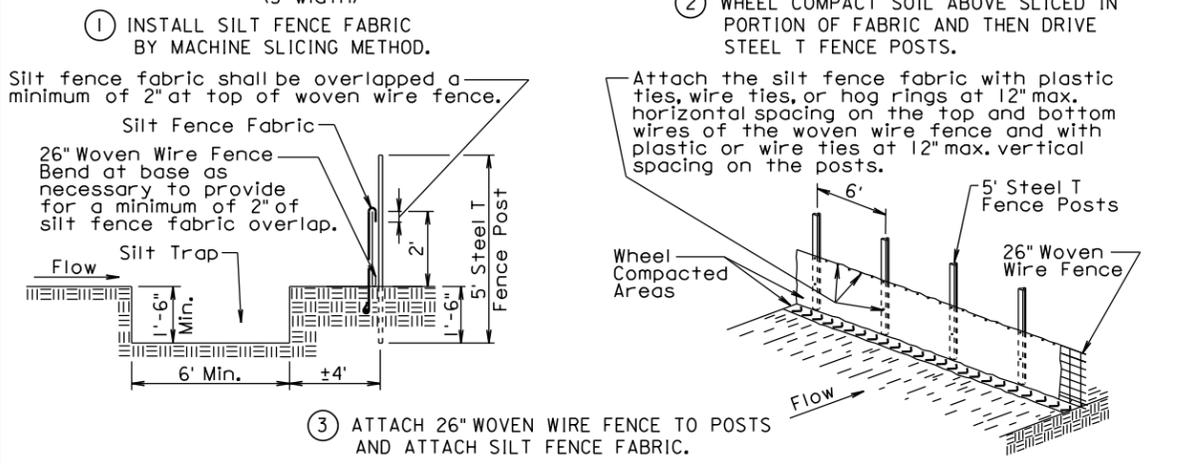
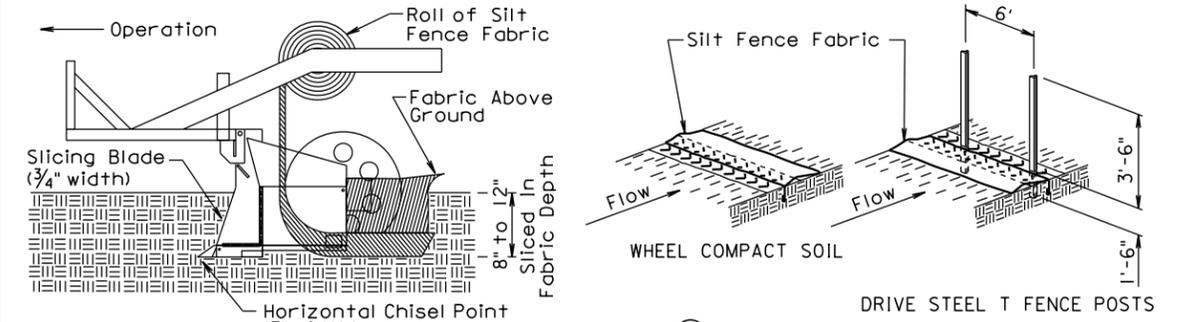
MANUAL LOW FLOW SILT FENCE INSTALLATION



December 23, 2003

Published Date: 4th Qtr. 2015	S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



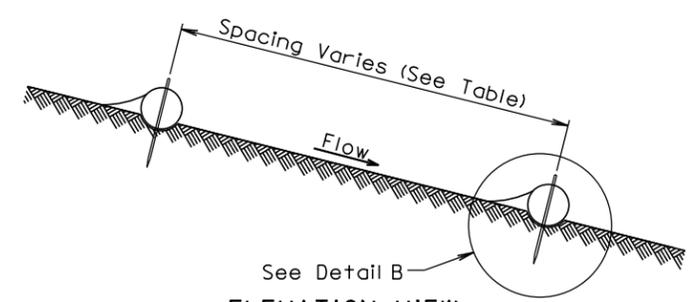
GENERAL NOTES:

A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

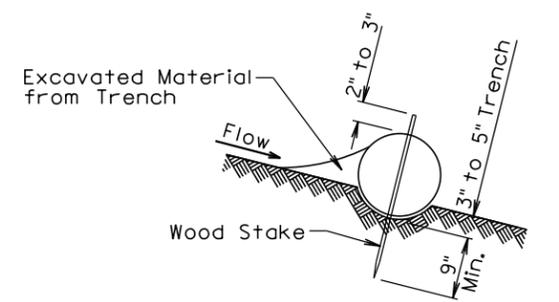
December 23, 2003

Published Date: 4th Qtr. 2015	S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 2 of 2

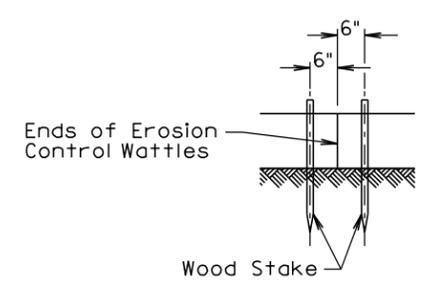


CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40

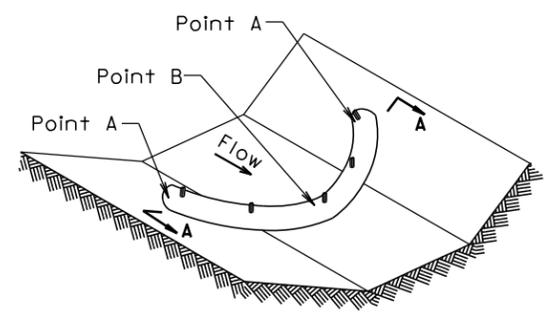
ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION



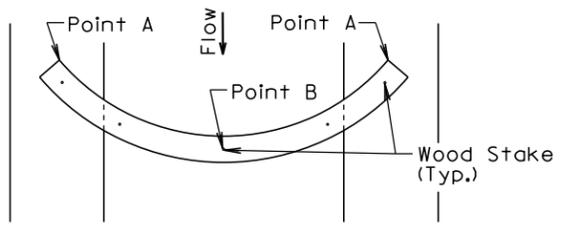
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

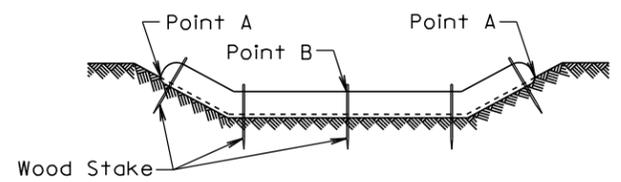


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 4th Qtr. 2015	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

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

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

December 23, 2004

Published Date: 4th Qtr. 2015	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2