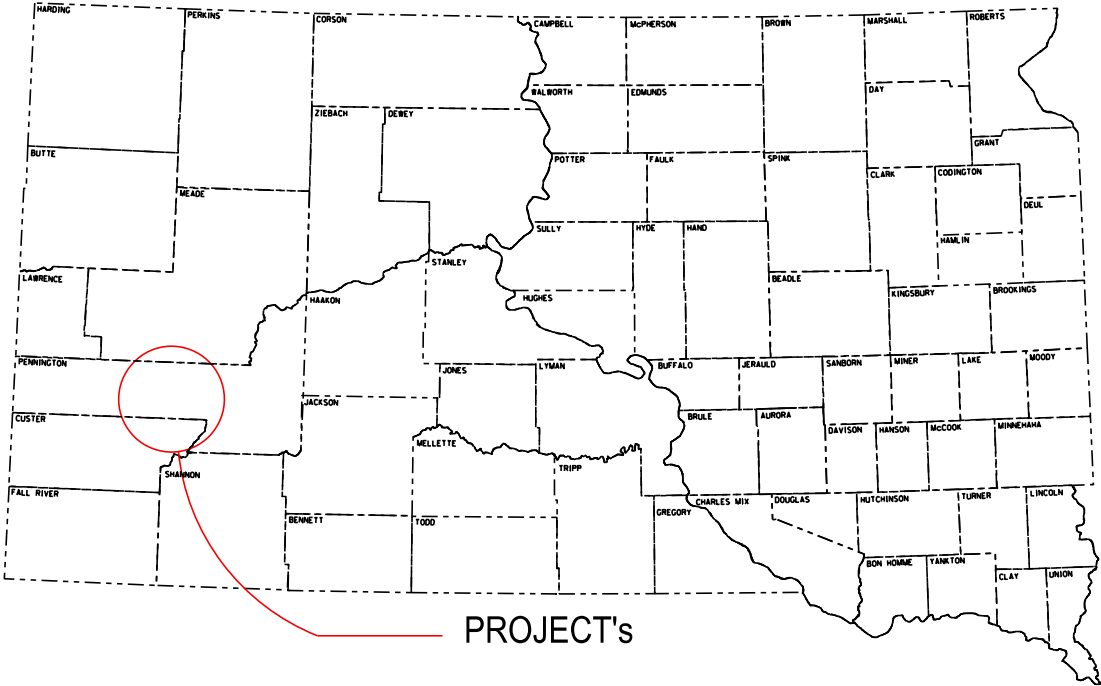


Plot Scale - 1:200

Plotted From - TRR011640



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT's 016EB-452 & 016WB-452
US HIGHWAY 16B
PENNINGTON COUNTY

ASPHALT PAVEMENT REPAIR
PCN's I7K1 & I7K2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016EB-452 & 016WB-452	1	8

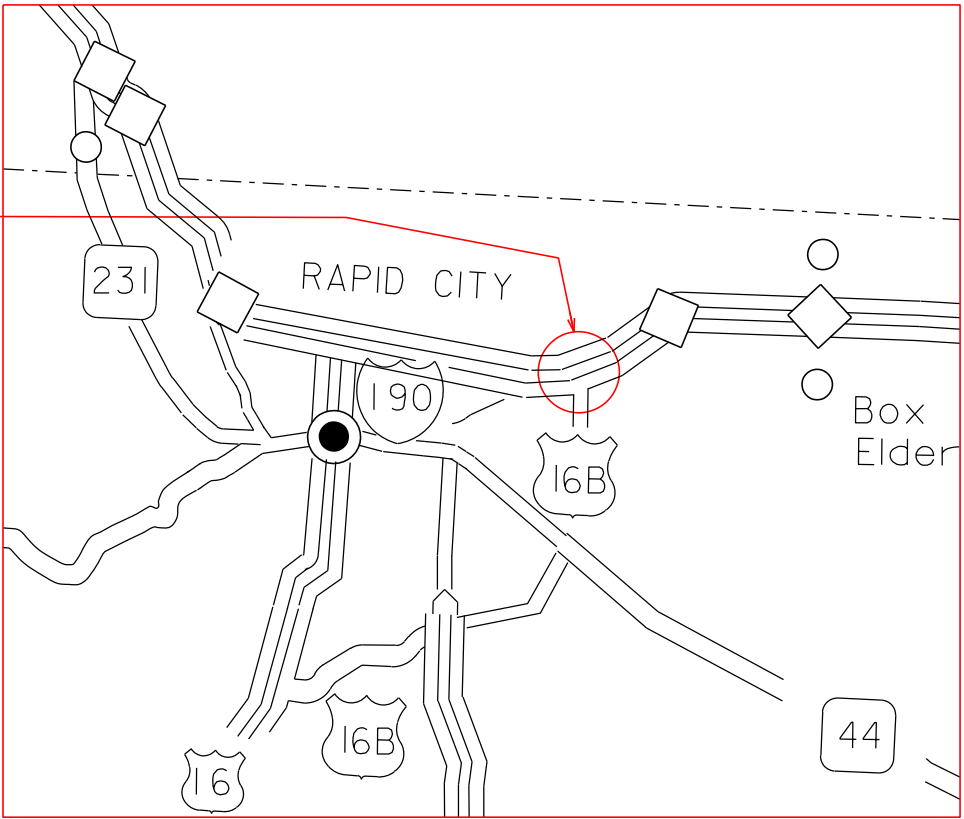
Plotting Date: 04/24/2024



INDEX OF SHEETS

- Sheet 1: Title Sheet
- Sheets 2-3: Estimate of Quantities & Plan Notes
- Sheet 4: Typical Section
- Sheet 5: Phase Layout
- Sheet 6: AC Surfacing & Pavement Marking Layout
- Sheets 7-8: Standard Plates

US 16B MRM 73.0 TO 73.1



DESIGN DESIGNATION

	AADT (2020)	AADT (2040)	DHV	D%	DHV T%	AADT T%	V (mph)
16B	7355	11318	1854	51	1.9	4.2	65

STORM WATER PERMIT
None Required

ESTIMATE OF QUANTITIES

I7K2

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
320E1200	Asphalt Concrete Composite	243.0	Ton
332E0010	Cold Milling Asphalt Concrete	2,185	SqYd
633E0010	Cold Applied Plastic Pavement Marking, 4"	582	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	398	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	227	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	2	Each
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	582	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	398	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	227	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	2	Each
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	150.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0640	Temporary Pavement Marking	1,654	Ft

I7K1

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
320E1200	Asphalt Concrete Composite	247.0	Ton
332E0010	Cold Milling Asphalt Concrete	2,224	SqYd
633E0010	Cold Applied Plastic Pavement Marking, 4"	609	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	358	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	219	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	2	Each
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	609	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	358	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	219	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	2	Each
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	150.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0640	Temporary Pavement Marking	1,696	Ft

SPECIFICATIONS

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

SURFACING THICKNESS DIMENSIONS

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

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

COLD MILLING ASPHALT CONCRETE

Cold milling asphalt will be done according to the plans. The milled asphalt concrete material will become the property of the Contractor.

The Contractor shall provide temporary asphalt ramps with a 50:1 transition at all locations where traffic is transitioning from a milled to a paved surface and vice versa. All costs associated with this work shall be incidental to the various bid items on the project.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate will be produced from a ledge rock source.

Mineral aggregate for the Asphalt Concrete Composite will conform to the requirements for Class E, Type 1.

Asphalt for Prime and Flush Seal will not be required.

Asphalt for tack SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for tack will be applied at a rate of 0.09 gallons per square yard on existing pavement or milled asphalt concrete surfaces.

The asphalt binder used in the mixture shall be PG 76-22 Asphalt Binder. This is to help reduce the rutting in this area.

All other requirements in the Standard Specifications for Asphalt Concrete Composite will apply.

SEQUENCE OF OPERATIONS

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

Notes:

- All work shall be completed between the hours of 7:00pm and 6:00am. A day of work shall be defined as 7:00pm to 6:00am.
- All traffic control shall be removed from the roadway and all traffic lanes open to unimpeded traffic prior to 6:00am.
- At the end of the work day, uneven lanes will not be allowed during the cold milling or asphalt resurfacing process.
- All of the cold milling for each phase shall be completed in one day so that there will not be any uneven lanes when the traffic control is removed and all traffic lanes are opened to unimpeded traffic at the end of the day of work.
- All of the asphalt paving for each phase shall be completed in one day so that there will not be any uneven lanes when the traffic control is removed and all traffic lanes are opened to unimpeded traffic at the end of the day of work.
- After the asphalt surfacing has been completed in a traffic lane, the asphalt shall cool for a minimum of 2 hours before switching traffic control and putting traffic on the new asphalt pavement. The temporary pavement markings shall be installed during this time prior

- to traffic control being switched and traffic being put on the new asphalt.
- The Contractor may do more than one phase of work in a day so long as once a phase of work is started the entire work in that phase is completed that day, but only one phase of work can be worked on at a time.
- Setup traffic control for the phase of work being completed and complete the cold milling and paving.
 - Install temporary pavement markings (tabs).
 - Remove traffic control and repeat steps 1 and 2 for remaining phases of work.
 - Setup traffic control for the phase of work being completed and complete the permanent pavement markings. Repeat for remaining phases of work.

GENERAL TRAFFIC CONTROL

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

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

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

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

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

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

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

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

TEMPORARY PAVEMENT MARKING

Temporary Flexible Vertical Markers (Tabs) will be used on the milled surface and on the top lift of asphalt surfacing for all pavement marking lines and as directed by the Engineer. Tabs will be spaced at 5' the entire length of the repairs.

PERMANENT PAVEMENT MARKING

The Contractor will be required to replace all disturbed pavement markings. The Contractor will be required to document and be able to relocate for replacement of the existing markings before the markings are obliterated.

Application of permanent pavement marking will be completed within 3 calendar days following completion of the final surfacing. The cost to duplicate the existing marking locations will be incidental to the contract unit prices for the various contract items.

COLD APPLIED PLASTIC PAVEMENT MARKING

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

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

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

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

LIGHTING FOR NIGHTTIME WORK

Flagger stations, working construction equipment and active workspaces will be lighted between sunset and sunrise. Non-glare light sources will be provided.

Light levels are as defined in Section 2.9.2 of NCHRP 476.

Light in conformance with Level I will be provided at the active workspaces.

TABLE OF ASPHALT REPAIRS

I7K2

Highway	MRM	Description	Area	Depth	Asphalt Concrete Composite	Cold Milling Asphalt Concrete	Temporary Pavement Marking	Cold Applied Plastic Pavement Marking, 4"	Cold Applied Plastic Pavement Marking, 8"	Cold Applied Plastic Pavement Marking, 24"	Cold Applied Plastic Pavement Marking, Arrow
			(SqFt)	(Inches)	(Tons)	(SqYd)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)
US 16B	72.9 to 73.1	Westbound, Mainline	10,415	2	128.6	1,157	1,364	437	398	48	2
US 16B	72.9 to 73.1	Ramp B	5,529	2	68.3	614	80	40	-	72	
US 16B	72.9 to 73.1	Ramp C	3,724	2	46.0	414	210	105	-	107	-
				Totals	242.8	2,185	1,654	582	398	227	2

I7K1

Highway	MRM	Description	Area	Depth	Asphalt Concrete Composite	Cold Milling Asphalt Concrete	Temporary Pavement Marking	Cold Applied Plastic Pavement Marking, 4"	Cold Applied Plastic Pavement Marking, 8"	Cold Applied Plastic Pavement Marking, 24"	Cold Applied Plastic Pavement Marking, Arrow
			(SqFt)	(Inches)	(Tons)	(SqYd)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)
US 16B	72.9 to 73.1	Eastbound, Mainline	10,382	2	128.2	1,154	1,376	449.0	358	48	2
US 16B	72.9 to 73.1	Ramp D	5,388	2	66.5	599	80	40.0	-	64	-
US 16B	72.9 to 73.1	Ramp A	4,245	2	52.4	472	240	120.0	-	107	-
				Totals	247.1	2,223.9	1,696	609.0	358	219	2

TRAFFIC CONTROL SIGNS

I7K2

		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R3-20	BEGIN TURN LANE	1	24" x 36"	6.0	6.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			

I7K1

		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R3-20	BEGIN TURN LANE	1	24" x 36"	6.0	6.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016EB-452 & 016WB-452	3	8

PLOT SCALE - 1+6.25

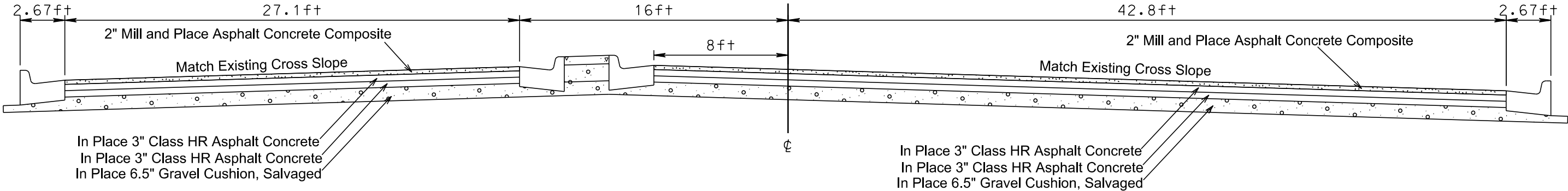
PLOTTED FROM - TRRC11640

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016EB-452 & 016WB-452	4	8

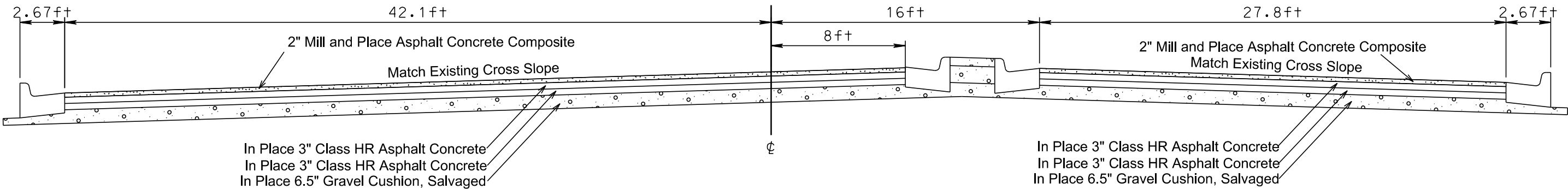
Plotting Date: 04/22/2024

TYPICAL SECTIONS

US 16B
Elk Vale Road
I-90 Exit 61
Sta. 284+50 to Sta. 285+80

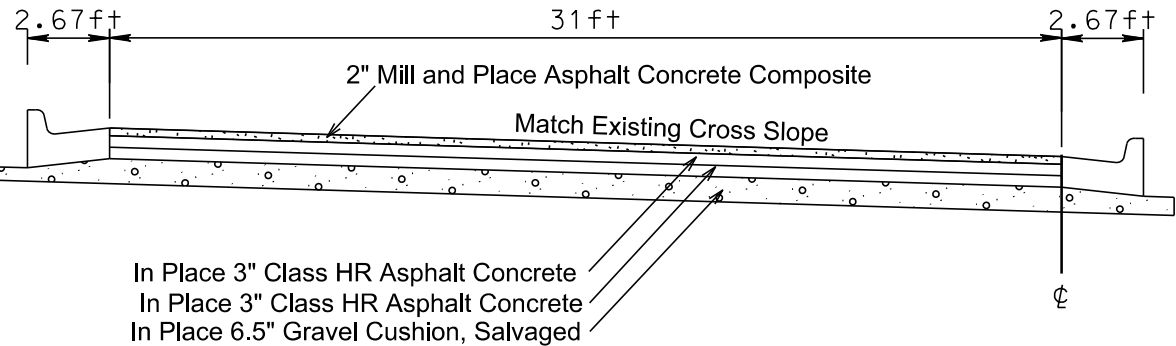


US 16B
Elk Vale Road
I-90 Exit 61
Sta. 287+68 to Sta. 289+00



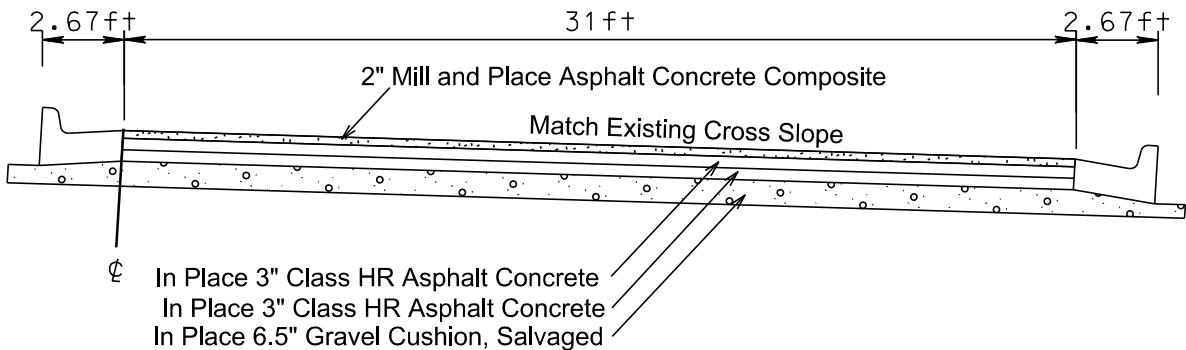
Ramp A and D

Ramp A Sta. 13+05 to Sta. 14+25
Ramp D Sta. 42+00 to Sta. 43+58



Ramp B and C

Ramp B Sta. 12+39 to Sta. 14+00
Ramp C Sta. 29+50 to Sta. 30+55



PLOT NAME - 1

FILE - ...EXIT 61 MILL & FILL.TYP.DGN

TRAFFIC CONTROL

EXIT 61 - PHASE LAYOUT

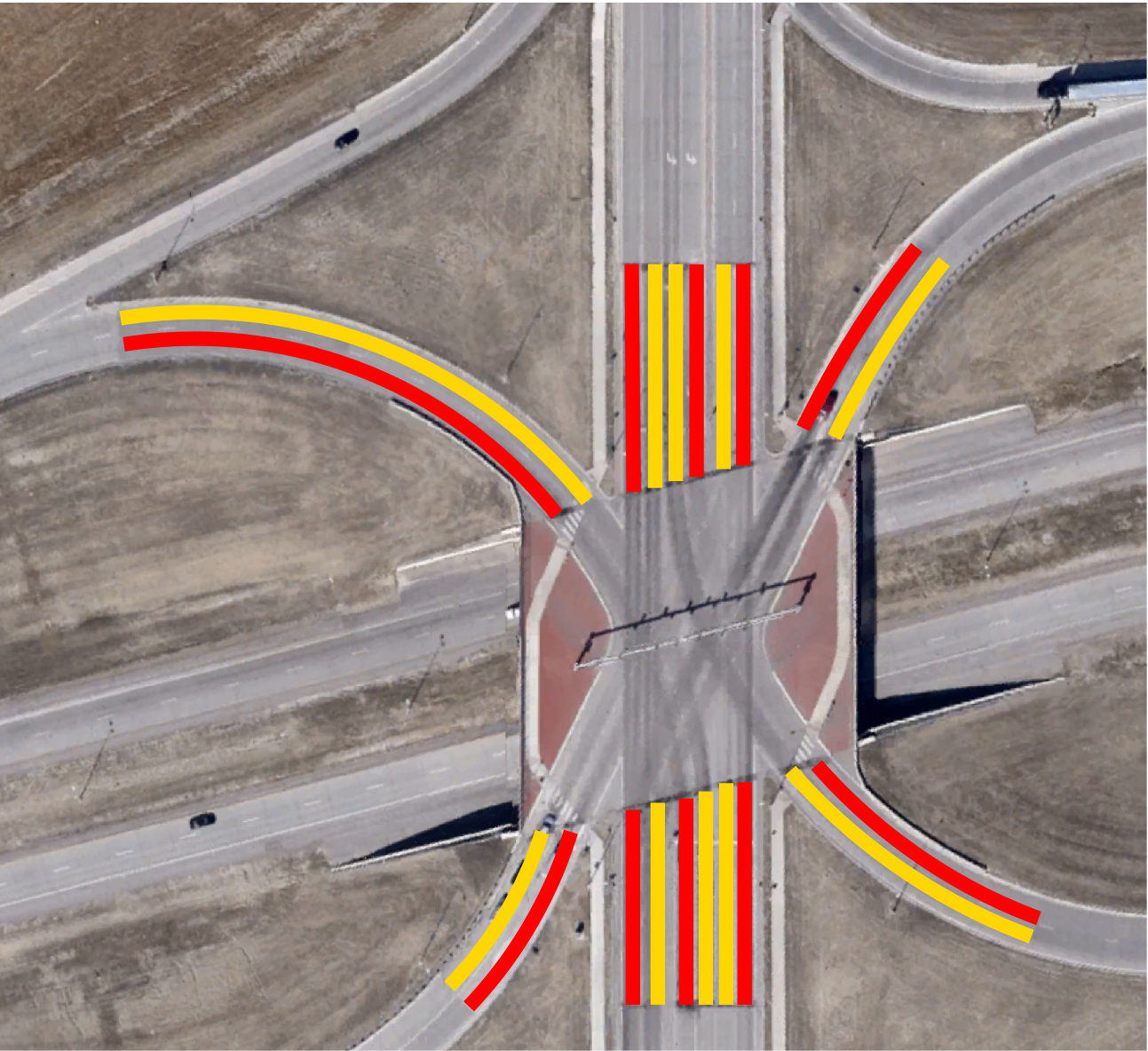
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016EB-452 & 016WB-452	5	8

Plotting Date: 04/23/2024



 = PHASE 1

 = PHASE 2



ASPHALT RESURFACING & PAVEMENT MARKING

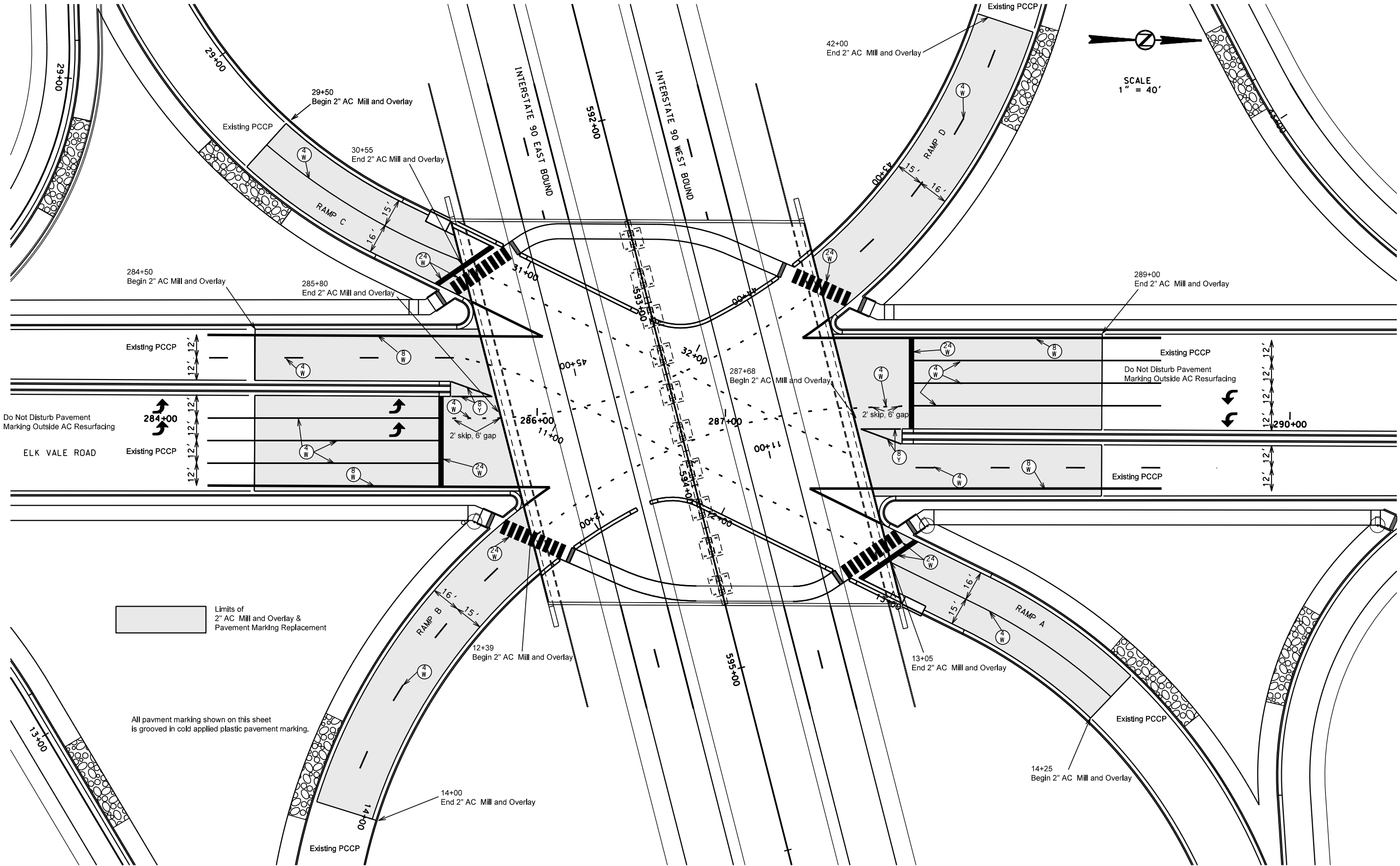
US 16B (ELK VALE RD.) - MRM 72.9 to MRM 73.1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016EB-452 & 016WB-452	6	8

Plotting Date: 04/23/2024

Plot Scale - 1"=50'

Plotted From - TRRC1640



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

* Spacing is 40' for 42" cones.

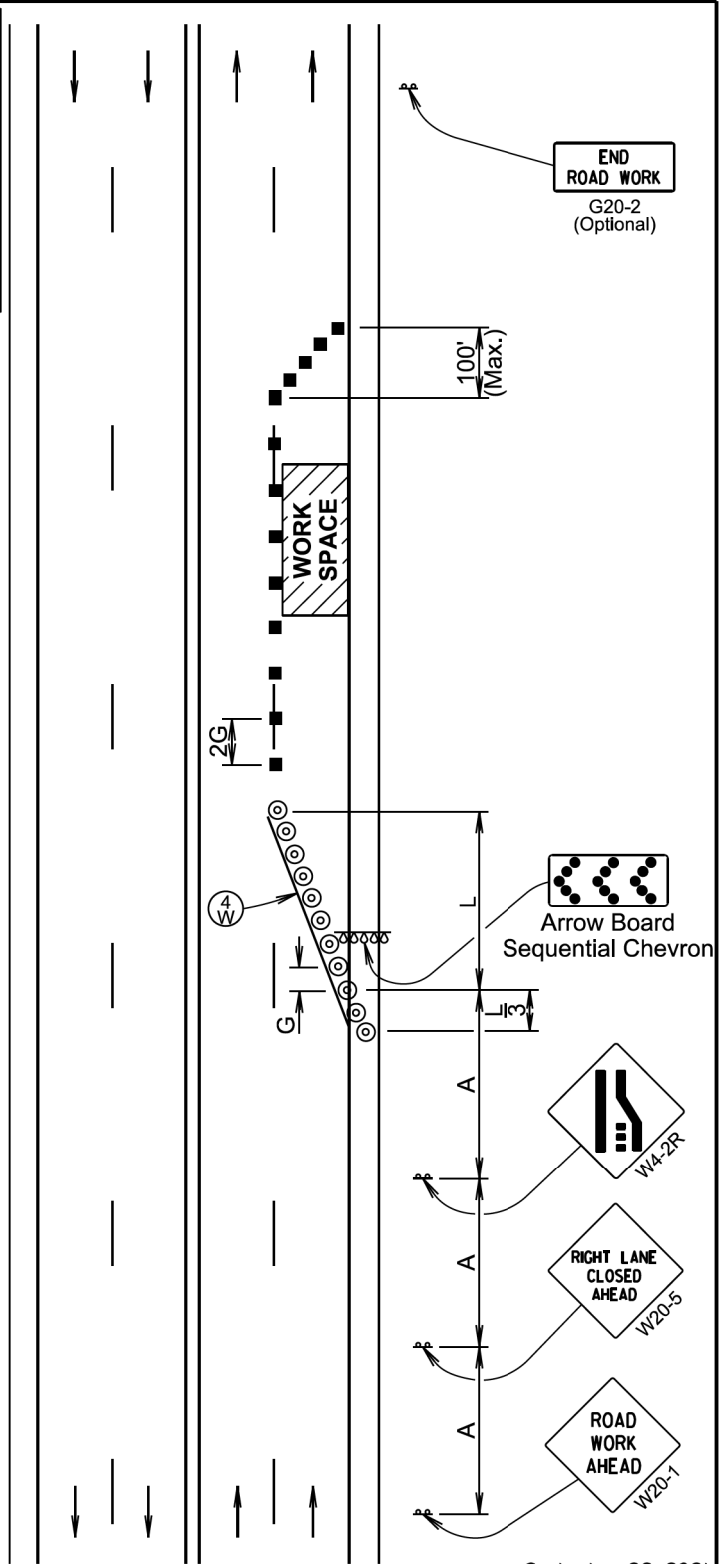
- ⊙ Reflectorized Drum
- Channelizing Device
- ④ W 4" White Temporary Pavement Marking

The channelizing devices will be 42" cones or drums.

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

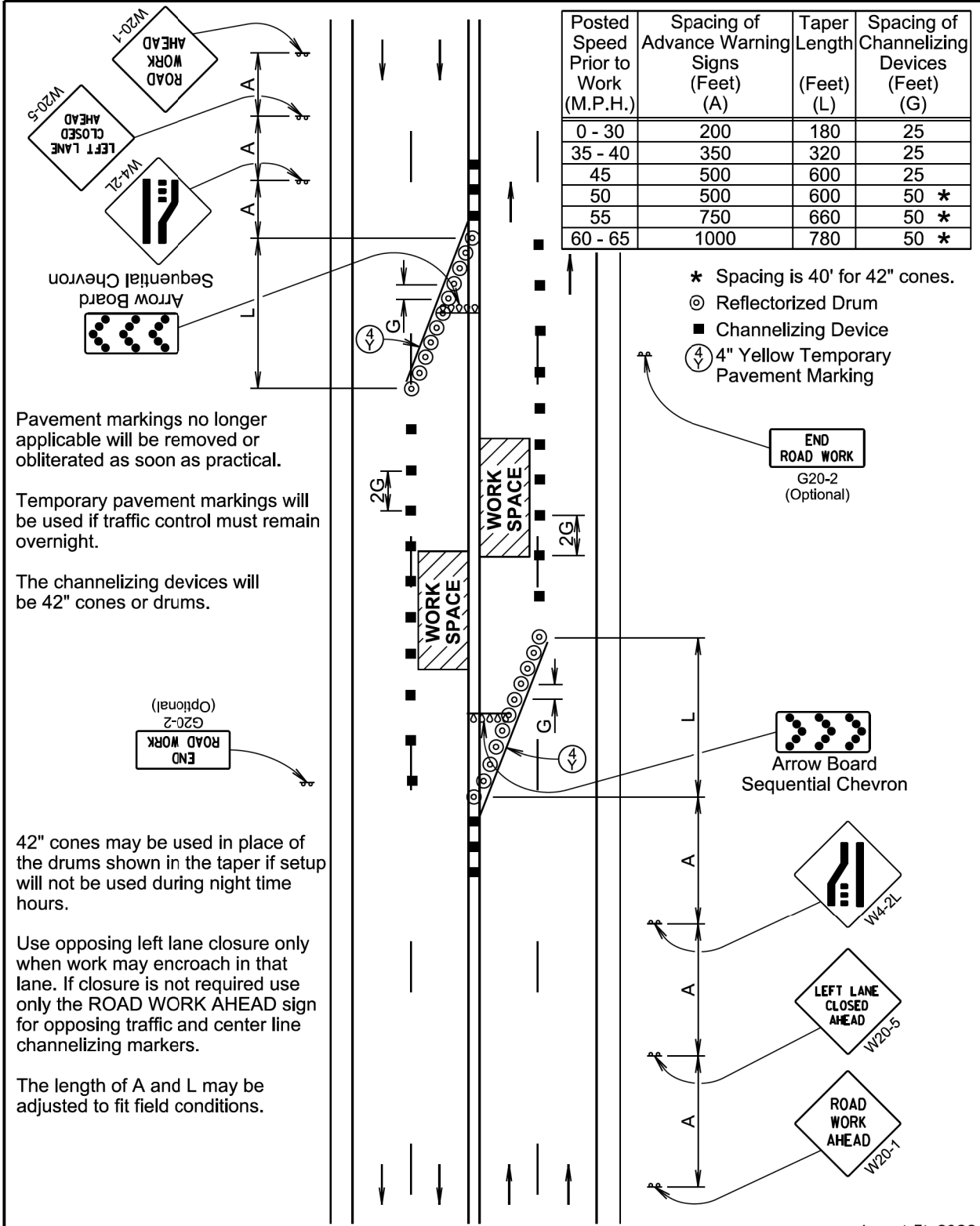
Temporary pavement markings will be used if traffic control must remain overnight.

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



September 22, 2021

Published Date: 2024	S D D O T	4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
			Sheet 1 of 1

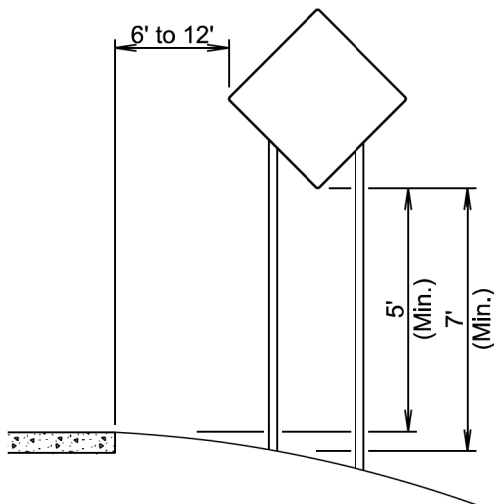


August 31, 2022

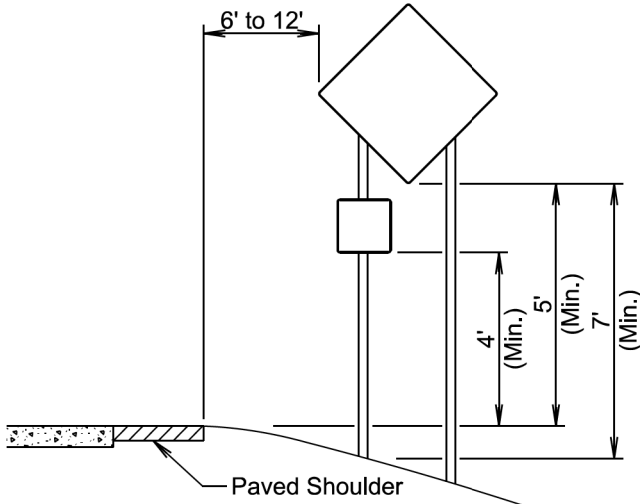
Published Date: 2024	S D D O T	4-LANE UNDIVIDED, LEFT LANE CLOSED	PLATE NUMBER 634.48
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016EB-452 & 016WB-452	8	8

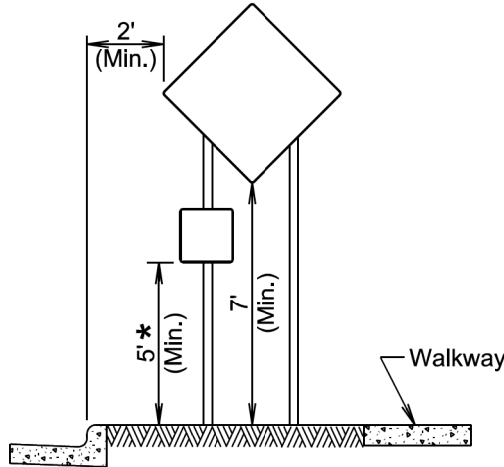
Plotting Date: 04/24/2024



RURAL DISTRICT

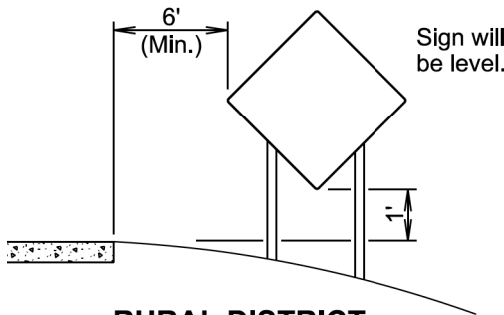


RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

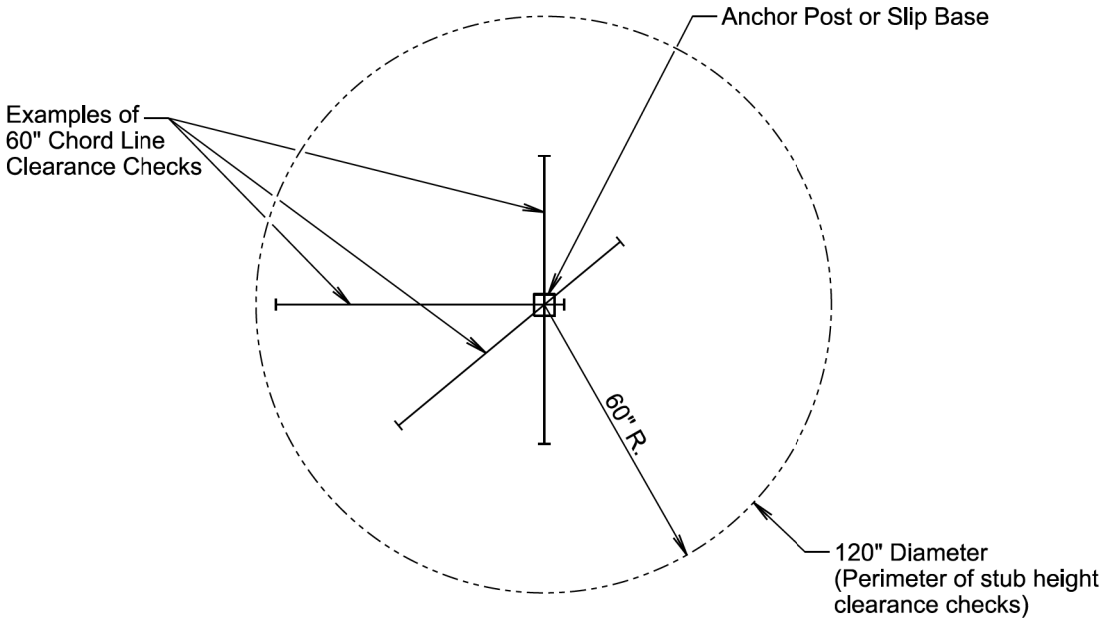
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



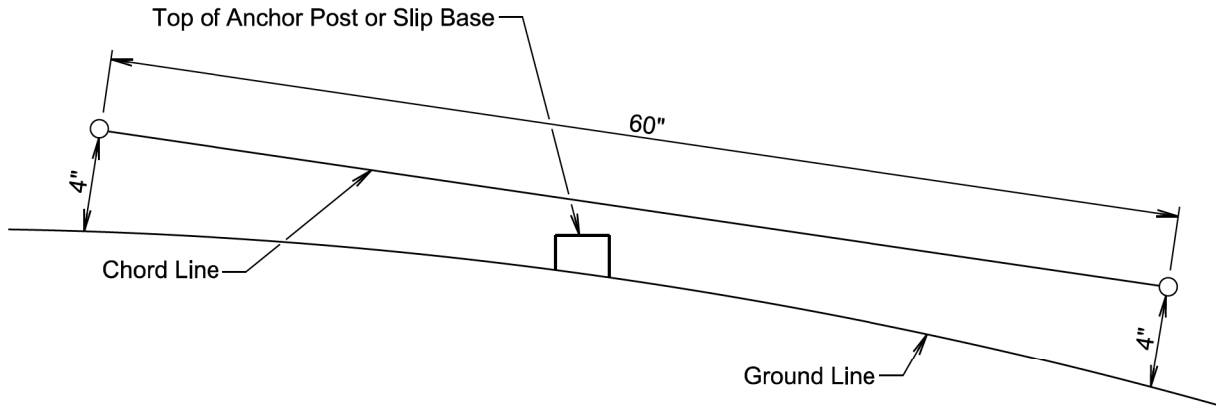
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

January 22, 2021

Published Date: 2024	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 WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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

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

January 22, 2021

Published Date: 2024	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1