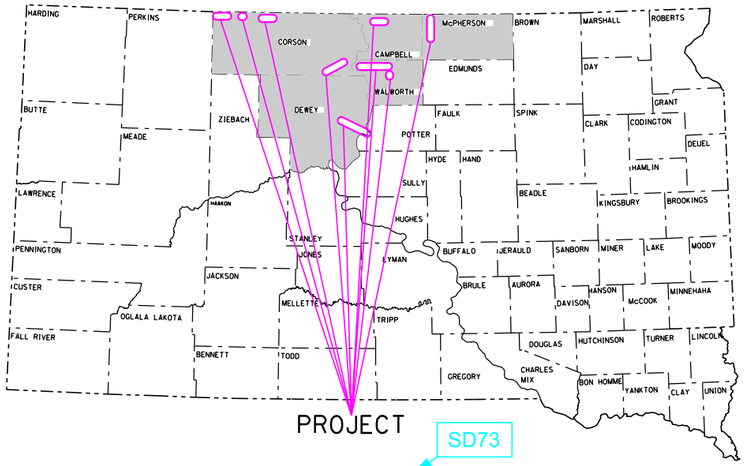
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	1	27

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

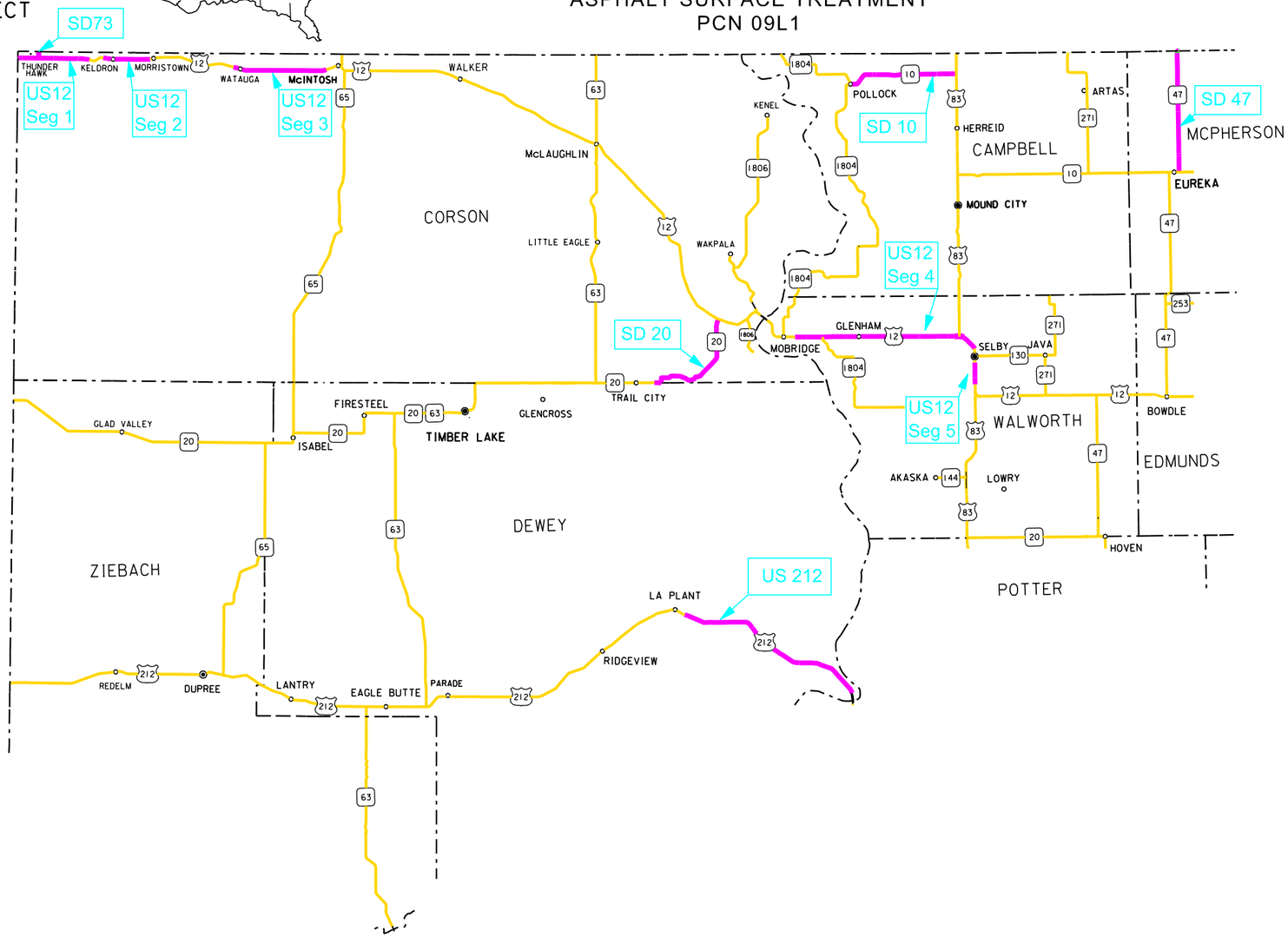
PLANS FOR PROPOSED

PROJECT NH-P 0032(46)

US HIGHWAYS 212 & 12
SD HIGHWAYS 10, 20, 47 & 73
CAMPBELL, CORSON, DEWEY,
McPHERSON & WALWORTH COUNTIES



ASPHALT SURFACE TREATMENT
PCN 09L1



INDEX OF SHEETS

STORM WATER PERMIT

None Required

8

March 5, 2025

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	2	27

US HIGHWAY 12
SEGMENT 1
CORSON COUNTY
GROSS LENGTH 7.371 MILES
NET LENGTH 7.346 MILES

SD HIGHWAY 73
CORSON COUNTY
GROSS LENGTH 0.674 MILES
NET LENGTH 0.636 MILES

US HIGHWAY 12
SEGMENT 2
CORSON COUNTY
LENGTH 4.580 MILES

DESIGN DESIGNATION US HWY 12 SEG. 1

ADT (2023)	523
ADT (2043)	723
DHV	115
D	50%
T DHV	11.7%
T ADT	25.8%
V	65 MPH

DESIGN DESIGNATION SD HIGHWAY 73

ADT (2023)	295
ADT (2043)	385
DHV	61
D	50%
T DHV	10.1%
T ADT	22.1%
V	65 MPH

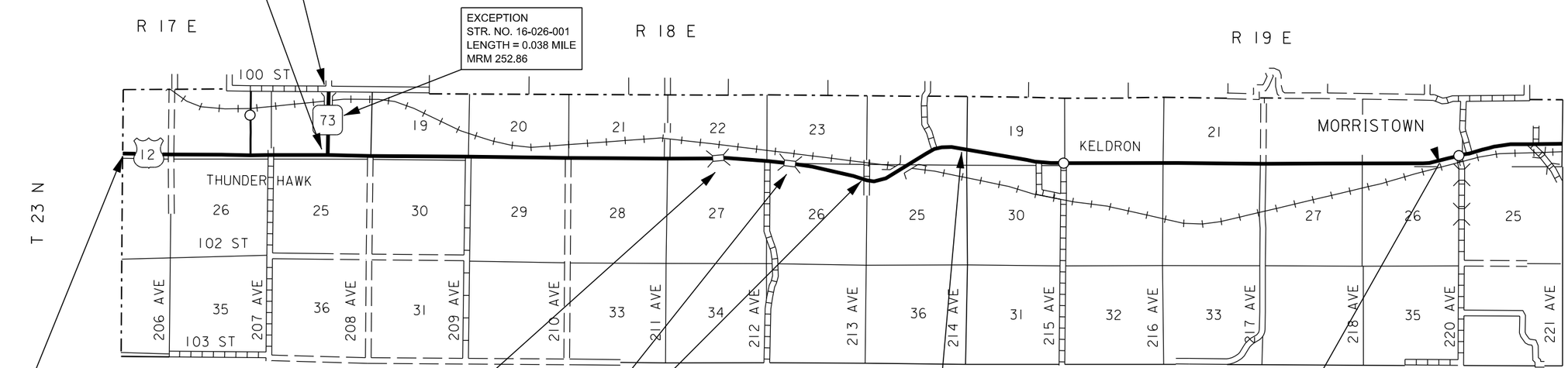
DESIGN DESIGNATION US HWY 12 SEG. 2

ADT (2023)	436
ADT (2043)	569
DHV	91
D	50%
T DHV	12.3%
T ADT	27.0%
V	65 MPH

BEGIN SD HIGHWAY 73
MRM 252.25 + 0.000
STA. 0+00
MILEAGE 184.021

END SD HIGHWAY 73
MRM 252.97 + 0.000
STA. 35+58.72
MILEAGE 184.695

EXCEPTION
STR. NO. 16-026-001
LENGTH = 0.038 MILE
MRM 252.86



BEGIN US HIGHWAY 12
SEGMENT 1
MRM 99.60 + 0.000
STA. 0+00
MILEAGE 19.089

EXCEPTION
STR. NO. 16-066-010
LENGTH = 0.010 MILE
MRM 105.64

EXCEPTION
STR. NO. 16-072-011
LENGTH = 0.015 MILE
MRM 106.34

END US HIGHWAY 12
SEGMENT 1
MRM 106.34 + 0.648
STA. 389+18.88
MILEAGE 26.460

BEGIN US HIGHWAY 12
SEGMENT 2
MRM 108.00 + 0.116
STA. 0+00
MILEAGE 27.587

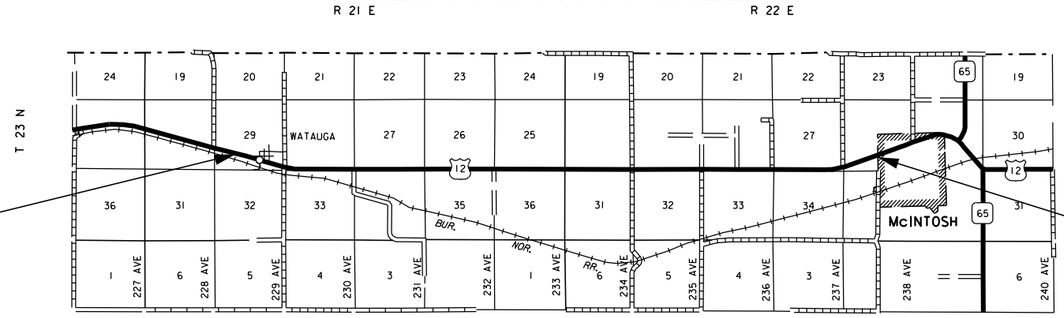
END US HIGHWAY 12
SEGMENT 2
MRM 112.00 + 0.714
STA. 241+82.40
MILEAGE 32.167

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	3	27

US HIGHWAY 12
SEGMENT 3
CORSON COUNTY
LENGTH 8.809 MILES

DESIGN DESIGNATION
US HWY 12 SEG. 3

ADT (2023)	436
ADT (2043)	569
DHV	91
D	50%
T DHV	12.3%
T ADT	27.1%
V	65 MPH



BEGIN US HIGHWAY 12
SEGMENT 3
MRM 121.36 + 0.408
STA. 0+00
MILEAGE 41.202

END US HIGHWAY 12
SEGMENT 3
MRM 130.00 + 0.750
STA. 465+11.52
MILEAGE 50.011

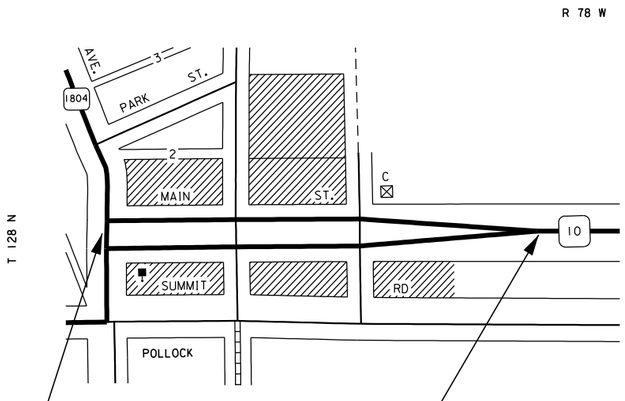
SD HIGHWAY 10 E & W
CAMPBELL COUNTY
GROSS LENGTH 0.242 MILES
EAST & 0.242 MILES WEST

DESIGN DESIGNATION
SD HIGHWAY 10 E & W

ADT (2023)	202
ADT (2043)	246
DHV	33
D	51%
T DHV	10.8%
T ADT	23.8%
V	65 MPH

DESIGN DESIGNATION
SD HIGHWAY 10

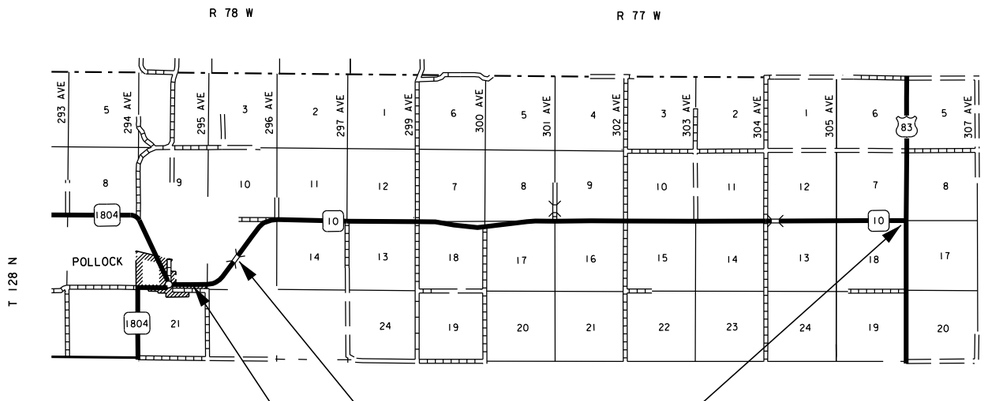
ADT (2023)	404
ADT (2043)	492
DHV	65
D	51%
T DHV	11.6%
T ADT	25.5%
V	65 MPH



BEGIN SD HIGHWAY 10 E & W
MRM 182.37 + 0.000
STA. 0+00
MILEAGE 0.000

END SD HIGHWAY 10 E & W
MRM 182.63 + 0.000
STA. 12+77.76
MILEAGE 0.242

SD HIGHWAY 10
CAMPBELL COUNTY
GROSS LENGTH 10.724 MILES
NET LENGTH 10.706 MILES



BEGIN SD HIGHWAY 10
MRM 182.63 + 0.000
STA. 0+00
MILEAGE 0.000

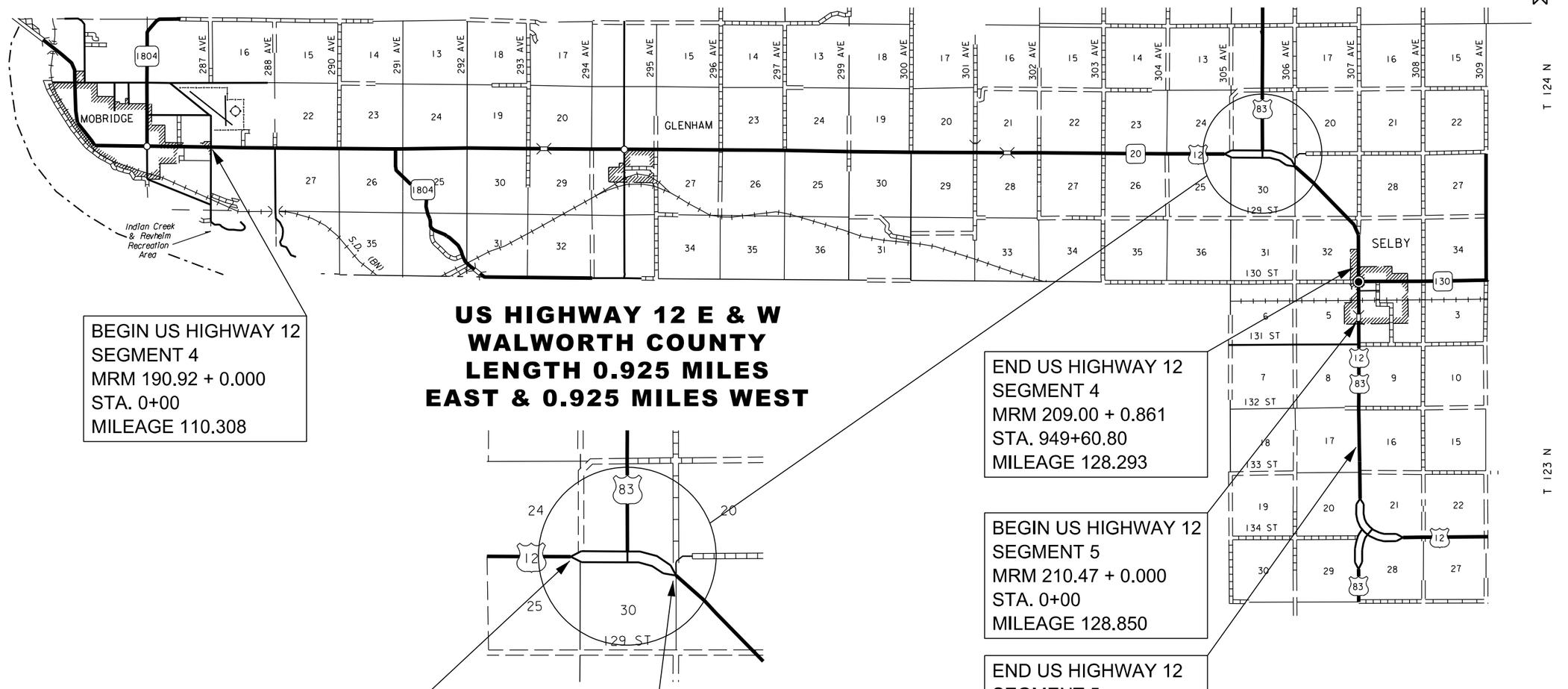
EXCEPTION
STR. NO. 11-104-026
LENGTH = 0.018 MILE
MRM 183.36

END SD HIGHWAY 10
MRM 193.21 + 0.000
STA. 566+22.72
MILEAGE 10.724

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	4	27

US HIGHWAY 12
WALWORTH COUNTY
SEGMENT 4
LENGTH 17.985 MILES

US HIGHWAY 12
WALWORTH COUNTY
SEGMENT 5
LENGTH 2.195 MILES



US HIGHWAY 12 E & W
WALWORTH COUNTY
LENGTH 0.925 MILES
EAST & 0.925 MILES WEST

BEGIN US HIGHWAY 12
SEGMENT 4
MRM 190.92 + 0.000
STA. 0+00
MILEAGE 110.308

END US HIGHWAY 12
SEGMENT 4
MRM 209.00 + 0.861
STA. 949+60.80
MILEAGE 128.293

BEGIN US HIGHWAY 12
SEGMENT 5
MRM 210.47 + 0.000
STA. 0+00
MILEAGE 128.850

END US HIGHWAY 12
SEGMENT 5
MRM 212.00 + 0.613
STA. 115+89.60
MILEAGE 131.045

BEGIN US HIGHWAY 12 E & W
MRM 206.94+ 0.000
STA. 0+00
MILEAGE 0.000

END US HIGHWAY 12 E & W
MRM 207.83 + 0.000
STA. 48+84.00
MILEAGE 0.925

DESIGN DESIGNATION
US HWY 12 Seg. 4

ADT (2023)	1816
ADT (2043)	2867
DHV	381
D	51%
T DHV	10%
T ADT	21.9%
V	65 MPH

DESIGN DESIGNATION
US HWY 12 E & W

ADT (2023)	779
ADT (2043)	1230
DHV	164
D	51%
T DHV	15.5%
T ADT	34.0%
V	65 MPH

DESIGN DESIGNATION
US HWY 12 Seg. 5

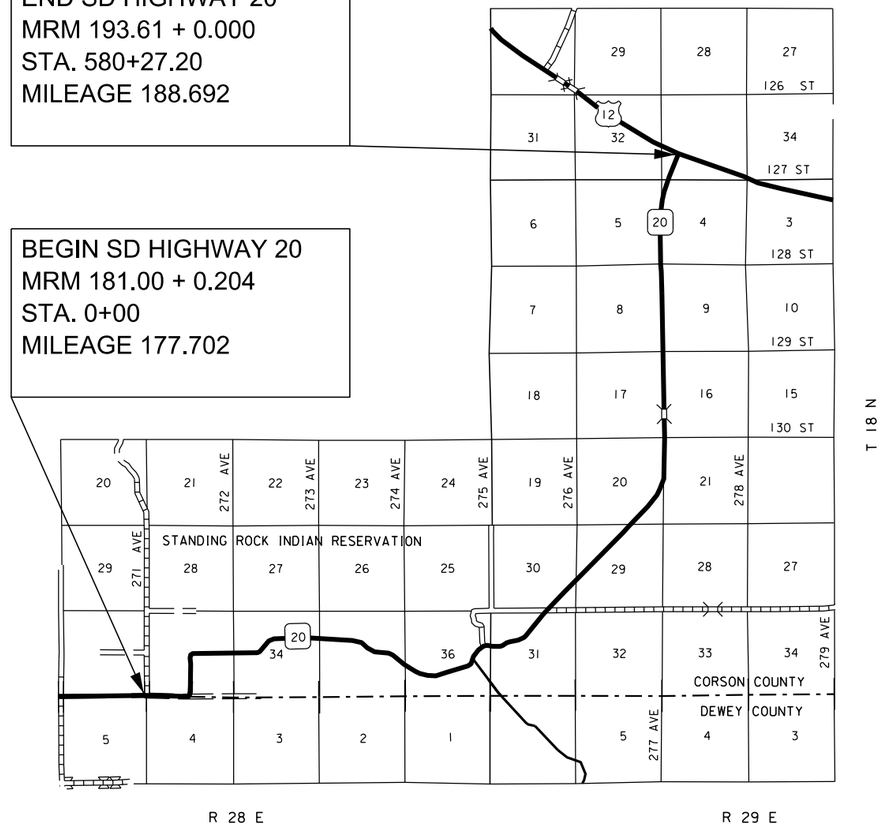
ADT (2023)	1900
ADT (2043)	3000
DHV	399
D	51%
T DHV	11.9%
T ADT	26.2%
V	65 MPH

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	5	27

SD HIGHWAY 20
CORSON COUNTY
LENGTH 10.990 MILES

END SD HIGHWAY 20
MRM 193.61 + 0.000
STA. 580+27.20
MILEAGE 188.692

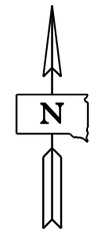
BEGIN SD HIGHWAY 20
MRM 181.00 + 0.204
STA. 0+00
MILEAGE 177.702



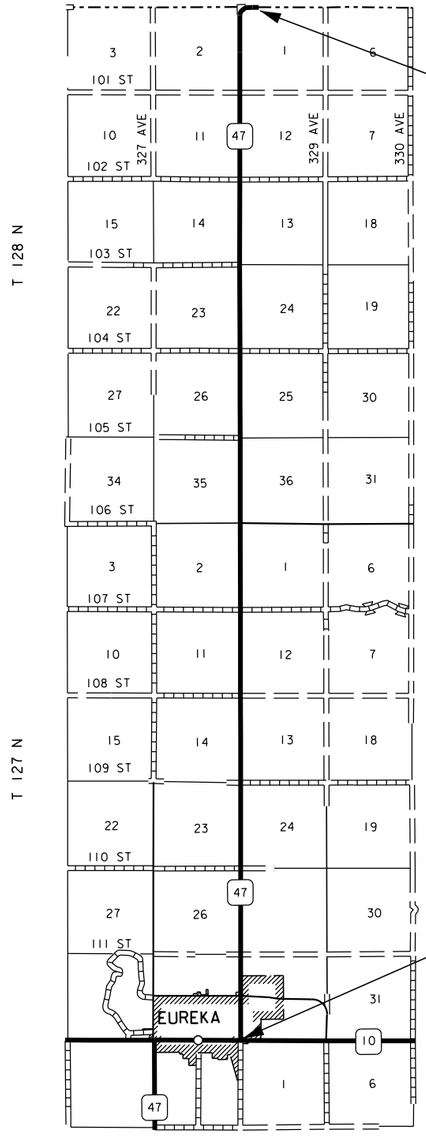
DESIGN DESIGNATION
SD HIGHWAY 20

ADT (2023)	696
ADT (2043)	1015
DHV	123
D	50%
T DHV	6.6%
T ADT	14.4%
V	65 MPH

SD HIGHWAY 47
McPHERSON COUNTY
LENGTH 12.094 MILES



END SD HIGHWAY 47
MRM 260.38 + 0.000
STA. 638+56.32
MILEAGE 196.730



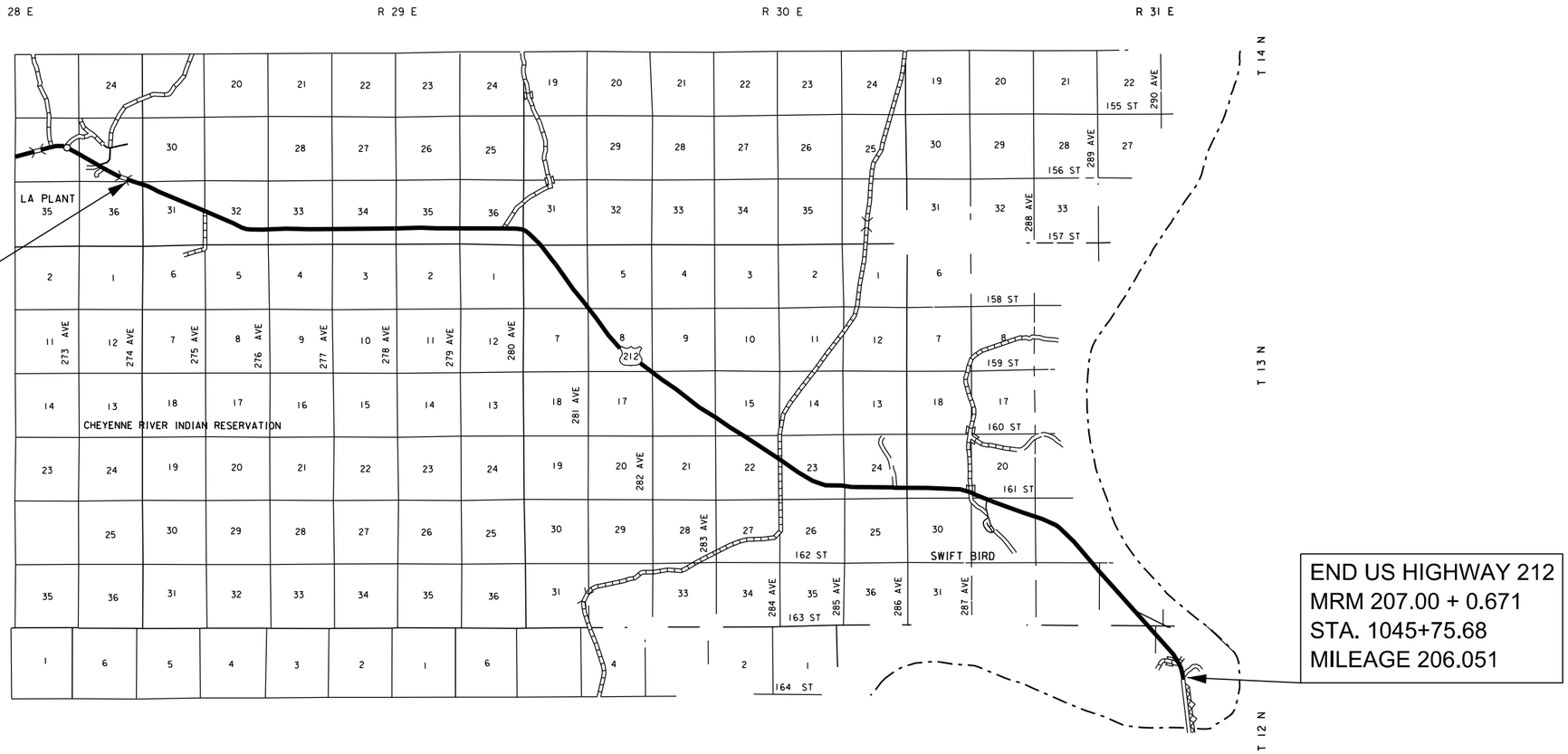
BEGIN SD HIGHWAY 47
MRM 248.28 + 0.000
STA. 0+00
MILEAGE 184.636

DESIGN DESIGNATION
SD HIGHWAY 47

ADT (2023)	105
ADT (2043)	144
DHV	19
D	51%
T DHV	7.7%
T ADT	16.9%
V	55 MPH

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	6	27

US HIGHWAY 212
DEWEY COUNTY
LENGTH 19.806 MILES



BEGIN US HIGHWAY 212
MRM 187.76 + 0.058
STA. 0+00
MILEAGE 186.245

END US HIGHWAY 212
MRM 207.00 + 0.671
STA. 1045+75.68
MILEAGE 206.051

DESIGN DESIGNATION
US HIGHWAY 212

ADT (2023)	634
ADT (2043)	925
DHV	147
D	50%
T DHV	8%
T ADT	17.5%
V	65 MPH

SPECIFICATIONS

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

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	432.4	Ton
330E3000	Sand for Fog Seal	120.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	3,077.0	Ton
360E1200	Modified Cover Aggregate	2,244.4	Ton
360E1200	Modified Cover Aggregate	1,669.2	Ton
360E1200	Modified Cover Aggregate	208.5	Ton
360E1200	Modified Cover Aggregate	2,355.9	Ton
360E1200	Modified Cover Aggregate	1,307.3	Ton
360E1200	Modified Cover Aggregate	4,927.0	Ton
360E1200	Modified Cover Aggregate	470.1	Ton
360E1200	Modified Cover Aggregate	100.7	Ton
360E1200	Modified Cover Aggregate	1,039.7	Ton
360E1200	Modified Cover Aggregate	1,838.9	Ton
360E1200	Modified Cover Aggregate	545.6	Ton
360E1200	Modified Cover Aggregate	4,244.6	Ton
633E1200	High Build Waterborne Pavement Marking Paint, White	5,376	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	1,951	Gal
633E1272	High Build Waterborne Pavement Marking Paint, Arrow	2	Each
633E1288	High Build Waterborne Pavement Marking Paint, Symbol	8	Each
633E6005	Pavement Marking Masking, 5"	53,054	Ft
633E6010	Pavement Marking Masking, 9"	7,574	Ft
633E6020	Pavement Marking Masking, 25"	2,570	Ft
633E6030	Pavement Marking Masking, Arrow	14	Each
634E0010	Flagging	2,192.0	Hour
634E0020	Pilot Car	497.0	Hour
634E0110	Traffic Control Signs	5,138.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	292.2	Mile

QUANTITY SUBTOTALS

Bid Item Number	Item	Quantity													Unit
		SD 10 E & W	SD 10	US 12 Seg. 1	US 12 Seg. 2	US 12 Seg. 3	US 12 Seg. 4	US 12 E & W	US 12 Seg. 5	SD 20	SD 47	SD 73	US 212	Total	
009E0010	Mobilization	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	LS
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	4.1	44.6	33.3	20.7	40.5	97.6	9.4	10.9	46.9	38.3	2.3	83.8	432.4	Ton
330E3000	Sand for Fog Seal	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	120.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	30.8	329.4	245.3	152.9	192.0	723.3	69.0	80.1	345.7	270.1	14.8	623.6	3077.0	Ton
360E1200	Modified Cover Aggregate	208.5	2244.4	1669.2	1039.7	1307.3	4927.0	470.1	545.6	2355.9	1838.9	100.7	4244.6	20951.9	Ton
633E1200	High Build Waterborne Pavement Marking Paint, White	41	597	408	255	490	1041	0	122	612	673	36	1101	5376	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	47	160	101	66	126	440	0	40	251	393	22	305	1951	Gal
633E1272	High Build Waterborne Pavement Marking Paint, Arrow	0	2	0	0	0	0	0	0	0	0	0	0	2	Each
633E1288	High Build Waterborne Pavement Marking Paint, Symbol	8	0	0	0	0	0	0	0	0	0	0	0	8	Each
633E6005	Pavement Marking Masking, 5"	0	0	0	0	0	12180	40874	0	0	0	0	0	53054	Ft
633E6010	Pavement Marking Masking, 9"	0	0	0	0	0	0	7574	0	0	0	0	0	7574	fT
633E6020	Pavement Marking Masking, 25"	0	0	0	0	0	340	2230	0	0	0	0	0	2570	Ft
633E6030	Pavement Marking Masking, Arrow	0	0	0	0	0	8	6	0	0	0	0	0	14	Each
634E0010	Flagging	22	234	176	110	137	511	49	58	247	194	14	440	2192.0	Hour
634E0020	Pilot Car	5	53	40	25	31	116	11	13	56	44	3	100	497.0	Hour
364E0110	Traffic Control Signs	0.0	583.0	451.4	451.4	474.4	687.0	0.0	413.8	496.0	679.0	371.0	531.6	5138.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	LS
634E0630	Temporary Pavement Marking	1.230	32.118	22.038	13.740	26.427	53.955	5.550	6.585	32.970	36.282	1.908	59.418	292.221	Mile

ENVIRONMENTAL COMMITMENTS

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

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

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

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

COMMITMENT I: 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 department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

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

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

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

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

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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

RATES OF MATERIALS

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

SD Highway 10 E & W

MRM 182.37 to 182.37+0.0.132 (Sta. 0+00 to 6+98) Each Lane

CRS-2P Asphalt for Surface Treatment at the rate of 62.5 tons applied 66 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 425.9 tons applied 66 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 8.2 tons applied 66 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 182.37+0.132 to 182.37+0.205 (Sta. 6+98 to 10+84) Each Lane

CRS-2P Asphalt for Surface Treatment at the rate of 69.2 tons applied 73 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 471.1 tons applied 73 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 9.1 tons applied 73 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 182.37+0.205 to 182.63 (Sta. 10+84 to 12+77.76) Transition

See Table of Additional Quantities

SD Highway 10

MRM 182.63 to 183.36+0.462 (Sta. 0+00 to 71+54.4)

CRS-2P Asphalt for Surface Treatment at the rate of 32.2 tons applied 34 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 219.4 tons applied 34 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.4 tons applied 35 feet wide.
(Rate= 0.05 Gal./S.Y.).

SD Highway 10 (continued)

MRM 183.36+0.462 to 193.21 (Sta. 71+54.4 to 566+22.72)

CRS-2P Asphalt for Surface Treatment at the rate of 30.3 tons applied 32 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 206.5 tons applied 32 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.1 tons applied 33 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 Segment 1

MRM 99.60 to 106+34+0.648 (Sta. 0+00 to 389+18.88)

CRS-2P Asphalt for Surface Treatment at the rate of 33.2 tons applied 35 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 225.9 tons applied 35 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.5 tons applied 36 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 Segment 2

MRM 108.00+0.116 to 112.00+0.714 (Sta. 0+00 to 241+82.40)

CRS-2P Asphalt for Surface Treatment at the rate of 33.2 tons applied 35 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 225.9 tons applied 35 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.5 tons applied 36 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 Segment 3

MRM 121.36+0.408 to 130.00+0.750 (Sta. 0+00 to 465+11.52)

CRS-2P Asphalt for Surface Treatment at the rate of 21.8 tons applied 23 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 148.4 tons applied 23 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.6 tons applied 37 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 Segment 4

MRM 190.92 to 191.00+0.906 (Sta. 0+00 to 52+06.08)

CRS-2P Asphalt for Surface Treatment at the rate of 58.7 tons applied 62 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 400.1 tons applied 62 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 7.9 tons applied 63 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 191.00+0.906 to 193.00+0.417 (Sta. 52+06.08 to 131+90.16)
MRM 193.78+0.003 to 195.00+0.975 (Sta. 153+49.68 to 266+80.56)
MRM 197.00+0.531 to 198.00+0.189 (Sta. 349+01.52 to 383+81.04)

CRS-2P Asphalt for Surface Treatment at the rate of 40.7 tons applied 43 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 277.5 tons applied 43 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 5.5 tons applied 44 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 193.00+0.417 to 193.78+0.003 (Sta. 131+90.16 to 153+49.68)

CRS-2P Asphalt for Surface Treatment at the rate of 49.3 tons applied 52 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 335.6 tons applied 52 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 6.6 tons applied 53 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 Segment 4 (continued)

MRM 195.00+0.975 to 197.00+0.531 (Sta. 266+80.56 to 349+01.52)
MRM 198.00+0.189 to 198.00+0.880 (Sta. 383+81.04 to 420+29.52)
MRM 207.83 to 209.00+0.861 (Sta. 843+32.88 to 949+60.80)

CRS-2P Asphalt for Surface Treatment at the rate of 36.0 tons applied 38 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 245.2 tons applied 38 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.9 tons applied 39 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 198.00+0.880 to 206.94 (Sta. 420+29.52 to 843+32.88)

CRS-2P Asphalt for Surface Treatment at the rate of 37.9 tons applied 40 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 258.1 tons applied 40 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 5.1 tons applied 41 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 E & W

MRM 206.94 to 207.83 (Sta. 0+00 to 48+84) Each Lane

CRS-2P Asphalt for Surface Treatment at the rate of 32.2 tons applied 34 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 219.4 tons applied 34 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.4 tons applied 35 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 12 Segment 5

MRM 210.47 to 212.00+0.613 (Sta. 0+00 to 115+89.60)

CRS-2P Asphalt for Surface Treatment at the rate of 36.0 tons applied 38 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 245.2 tons applied 38 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.9 tons applied 39 feet wide.
(Rate= 0.05 Gal./S.Y.).

SD Highway 20

MRM 181.00+0.204 to 187.00+0.809 (Sta. 0+00 to 276+20.16)

CRS-2P Asphalt for Surface Treatment at the rate of 30.3 tons applied 32 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 206.5 tons applied 32 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.1 tons applied 33 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 187.00+0.809 to 193.61 (Sta. 276+20.16 to 580+27.20)

CRS-2P Asphalt for Surface Treatment at the rate of 32.2 tons applied 34 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 219.4 tons applied 34 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.4 tons applied 35 feet wide.
(Rate= 0.05 Gal./S.Y.).

SD Highway 47

MRM 248.28 to 249.00+1.00 (Sta. 0+00 to 91+06.30)
MRM 250.00+0.207 to 260.38 (Sta. 102+12.30 to 638+56.32)

CRS-2P Asphalt for Surface Treatment at the rate of 21.8 tons applied 23 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 148.4 tons applied 23 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 3.1 tons applied 25 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 249.00+1.000 to 250.00+0.207 (Sta. 91+06.30 to 102+12.30)

CRS-2P Asphalt for Surface Treatment at the rate of 30.3 tons applied 32 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 206.5 tons applied 32 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.1 tons applied 33 feet wide.
(Rate= 0.05 Gal./S.Y.).

SD Highway 73

MRM 252.25 to 252.97 (Sta. 0+00 to 35+58.72)

CRS-2P Asphalt for Surface Treatment at the rate of 21.8 tons applied 23 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 148.4 tons applied 23 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 3.4 tons applied 27 feet wide.
(Rate= 0.05 Gal./S.Y.).

US Highway 212

MRM 187.76+0.058 to 205.00+0.917 (Sta. 0+00 to 955+70.00)

CRS-2P Asphalt for Surface Treatment at the rate of 31.3 tons applied 33 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 213.0 tons applied 33 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.2 tons applied 34 feet wide.
(Rate= 0.05 Gal./S.Y.).

MRM 205.00+0.917 to 207.00+0.671(Sta. 955+70.00 to 1045+75.68)

CRS-2P Asphalt for Surface Treatment at the rate of 32.2 tons applied 34 feet wide.
(Rate = 0.38 Gal./S.Y.).

Modified Cover Aggregate at the rate of 219.4 tons applied 34 feet wide.
(Rate= 22 Lbs./S.Y.).

Asphalt for Fog Seal CSS-1h or SS-1h at the rate of 4.4 tons applied 35 feet wide.
(Rate= 0.05 Gal./S.Y.).

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.

The below sequence is per route:

1. Install fixed location ground mounted traffic control devices.
2. Install and remove temporary traffic control devices as needed for each type of work.
3. Place temporary pavement marking not more than 24 hours prior to chip seal.
4. Apply asphalt surface treatment. The application of the asphalt and aggregate will cease at least one hour prior to sunset each day. The brooming operation will be immediately in front of the asphalt distributor. The Contractor will begin sealing operations at the farthest point from the stockpile site and work towards the stockpile site to eliminate unnecessary driving and turning on the fresh seal. Only one distributor will be allowed to apply the chip seal oil at a time for each chip seal crew. If the Contractor wants to propose to use more than one distributor at a time, their process will need to be approved by the Engineer in writing two weeks prior to the start of chip seal operations.
5. Remove plastic covers from temporary flexible vertical markers (tabs) after application of the chip seal and prior to nightfall.
6. Broom chip sealed areas the next morning following the chip seal application.
7. Pick up cover aggregate in curb & gutter areas and other areas as stated in the plans and directed by the Engineer.
8. Apply fog seal.
9. Remove plastic covers from temporary flexible vertical markers (tabs) after application of the fog seal and prior to nightfall.
10. Complete pavement marking. Immediately prior to application of the permanent pavement marking, the area to be painted will be broomed or blown off with high pressure compressed air. If a high-pressure air device is used to clean the pavement surface, it will be capable of sustaining continuous high pressure for the duration of the pavement marking process.
11. Remove temporary flexible vertical markers (tabs) within the seven-day time period specified elsewhere in the plans.
12. Remove traffic control devices.

ENGINEER NOTIFICATION

The Contractor will be required to notify the Mobridge Area Engineer John Villbrandt, (605) 845-3844 at least 10 days prior to beginning Asphalt Surface Treatment operations.

ASPHALT FOR SURFACE TREATMENT

CRS-2P asphalt for surface treatment will be used.

The asphalt for surface treatment that is delivered for use on this contract will be used in the order it is received. Storage of asphalt for surface treatment will only be allowed at the end of the workday. The material that is placed in storage will be the first material used the following day.

Asphalt Surface Treatment will not be applied to transverse rumble strip areas prior to Stop Signs; however, these areas will be fog sealed.

Application of the Asphalt Surface Treatment will be applied to the widths specified in the plans. The Contractor will have to consider the width of overlap at centerline to obtain the total width specified. A gap at centerline between surface treatment passes will not be allowed.

On routes with an existing surface treatment, the asphalt for surface treatment and cover aggregate will be applied only between the white edgelines of the roadway to allow the white edgeline to be slightly recessed. On first seal routes, the asphalt for surface treatment and Cover Aggregate will be applied the full width of the road and shoulders.

BRIDGES, APPROACH SLABS, SLEEPER SLABS, BRIDGE JOINTS, RAILROAD CROSSINGS, MANHOLES, WATER VALVES, MAINLINE RUMBLE STRIPS AND CONCRETE

Asphalt Surface Treatment and Fog Seal will not be placed on any of the bridges, approach slabs, sleeper slabs, strip seals, railroad crossings, manholes, water valves or any type of concrete. It also will not be placed on the rumble strips in the mainline driving lane prior to a Stop sign.

It may be necessary to use special methods and equipment to remove/place materials as close as practical to structure appurtenances. The Contractor will mask all expansion joints prior to any removal/placement of material near the joints. The joints will be protected throughout completion of the work. Once the masking has been removed, any loose material contained within the joint will be cleaned from the joint. Any damage to the expansion joints along with any existing structure appurtenances will be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Department. All costs related to this work will be incidental to the various contract items.

Material used to cover and protect these areas will be removed and disposed of properly upon the completion of the final brooming operation. When the material is removed, the asphalt surface treatment that does not stay adhered to the material will be removed from the road surface.

Any emulsion or cover aggregate found to be on any of the above listed items after final brooming will be removed by the Contractor as directed by the Engineer at no cost to the state.

COVER AGGREGATE

Cover Aggregate will be Modified Cover Aggregate. Modified Cover Aggregate will conform to the following gradation requirements:

% Passing 3/8' Sieve	100%
% Passing No. 4 Sieve	0 – 75%
% Passing No. 8 Sieve	0 – 30%
% Passing No. 40 Sieve	0 – 6%
% Passing No. 200 Sieve	0 – 1.5%

All other requirements of the Standard Specifications for Type 1B Aggregate will apply. Should the material fail the No. 200 sieve requirements, the Contractor will shut down operations until the Engineer determines if changes or corrections are required. Application of the cover aggregate will be maintained within 500 feet or have a time limit of 1 minute between the application of the CRS-2P Asphalt for Surface Treatment and the application of the Modified Cover Aggregate, whichever amounts to a shorter time period.

The Contractor will continue chip spreader progress, forward, through the asphalt application at any end where work will be temporarily shut down for more than 5 minutes, to allow for satisfactory uniform rolling of the placed aggregate. The Contractor will not allow the chip spreader, trucks, rollers, or other equipment to lie dormant on the aggregate while transitioning between asphalt distributor loads and/or any other temporary shutdown of production before uniform rolling is completed. All passes of the rollers will be completed within 8 minutes of application of the CRS-2P Asphalt for Surface Treatment.

BROOMING

All material will be broomed off bridges and curb & gutter areas adjacent to the bridges. No material will be broomed under the guardrail, including the 3-cable guardrail or into any drop inlets along the project. Material from the curb & gutter areas of bridges and cities, from guardrail areas of bridges, and from drop inlets will be disposed of in a manner satisfactory to the Engineer.

No material will be broomed into the ditches or on the boulevards in residential and commercial areas where the adjacent landowner conducts the mowing of the right-of-way. This material will be disposed of in a manner satisfactory to the Engineer.

Material that is broomed onto the roadway inslopes will not be left in piles or windrows. The material will be evenly distributed at a height that will not hinder mowing operations or cause dispersion of the material into the traveling roadway when passed over with a mower.

Anticipated areas, other than bridge areas stated above, that will require removal of the chips with a pickup broom are listed in the table below.

Route	Location
SD 47	Residential & commercial areas in the City of Eureka
SD 10 E & W	Curb & gutter in the City of Pollock

This list may not be complete. Additional areas may need attention as directed by the Engineer.

FOG SEAL

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

The Contractor will fog the entire asphalt surface treatment surface, including the sluff.

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

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

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

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

Sand for Fog Seal will conform to Section 879.1 B of the specifications.

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

ESTIMATED QUANTITIES FOR ASPHALT SURFACE TREATMENT

The quantities of asphalt for surface treatment and cover aggregate are based on the rates shown in the Rates of Materials. This is only an estimate. The actual application rates of materials will be determined by the mix design as stated in the Special Provisions for Asphalt Surface Treatment Design. The mix design rates may vary from the estimated rates in the Rates of Materials depending on the aggregate source and the variation in gradation and flakiness index. The application rates may also be adjusted in the field due to results of gradation, flakiness index, sweep tests and differing surface conditions as encountered. Pay quantities will be based on the actual target rates the inspectors use even though they may vary significantly from plans estimates.

EXISTING PAVEMENT CONDITIONS

The existing pavement conditions for each project are listed in the table below. The descriptions are from the McLeod procedure for seal coat design.

PROJECT	EXISTING PAVEMENT CONDITION
SD 10 E & W	Smooth, non-porous
SD 10	Smooth, non-porous
US 12 Segment 1	Smooth, non-porous
US 12 Segment 2	Smooth, non-porous
US 12 Segment 3	Slightly pocked, porous and oxidized
US 12 Segment 4	Smooth, non-porous
US 12 E & W	Smooth, non-porous
US 12 Segment 5	Smooth, non-porous
SD 20	Smooth, non-porous
SD 47	Smooth, non-porous
SD 73	Smooth, non-porous
US 212	Smooth, non-porous

The traffic volumes are shown on the title sheet for each project.

SHOULDER WORK

Prior to construction, Department of Transportation Maintenance Forces will spray the shoulders to kill existing vegetation. It will be the Contractor's responsibility to notify the State a minimum of thirty days prior to starting work on the shoulders of the highway. The State assumes no responsibility for the effectiveness of the herbicide applied.

Vegetation and accumulated material on or adjacent to the existing roadway edge will be removed to the satisfaction of the Engineer prior to asphalt surface treatment.

Shoulder work will be incidental to other contract items. Separate measurement and payment will not be made.

HAUL ROAD

The Contractor will be responsible for any haul roads used to transport material to the project site. The State will not participate in the cost of restoration of any haul roads used by the Contractor.

GENERAL TRAFFIC CONTROL

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

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

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

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.

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

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

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for each route. Payment will only be for those signs used on each route.

SD HIGHWAY 10

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	12	48" x 48"	16.0	192.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 11 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			583.0

US HIGHWAY 12 Segment 1

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	4	48" x 48"	16.0	64.0
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6.3	25.2
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 8 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 6 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 3 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			451.4

US HIGHWAY 12 Segment 2

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	4	48" x 48"	16.0	64.0
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6.3	25.2
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 5 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 4 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 1 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			451.4

US HIGHWAY 12 Segment 3

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	4	48" x 48"	16.0	64.0
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6.3	25.2
W20-1	ROAD WORK AHEAD	8	48" x 48"	16.0	128.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 9 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			474.4

US HIGHWAY 12 Segment 4

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	11	48" x 48"	16.0	176.0
W13-1P	ADVISORY SPEED (plaque)	11	30" x 30"	6.3	69.3
W20-1	ROAD WORK AHEAD	9	48" x 48"	16.0	144.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 19 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 16 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 12 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 11 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 8 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 7 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 3 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 2 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	3	36" x 18"	4.5	13.5
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			687.0

US HIGHWAY 12 Segment 5

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	7	48" x 48"	16.0	112.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 2 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			413.8

SD HIGHWAY 20

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 11 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 7 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 4 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			496.0

SD HIGHWAY 47

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	18	48" x 48"	16.0	288.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 12 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			679.0

SD HIGHWAY 73

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	1	48" x 48"	16.0	16.0
W13-1P	ADVISORY SPEED (plaque)	1	30" x 30"	6.3	6.3
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 1 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	1	36" x 18"	4.5	4.5
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			371.0

US HIGHWAY 212

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	8	48" x 48"	16.0	128.0
W13-1P	ADVISORY SPEED (plaque)	8	30" x 30"	6.3	50.4
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 20 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			531.6

TRAFFIC CONTROL FOR ASPHALT SURFACE TREATMENT

Any delineators and signs damaged or oil sprayed will be replaced or cleaned 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.

The Contractor will furnish, install, and maintain LOOSE GRAVEL (W8-7) signs with 40 MPH (W13-1P) advisory speed plaques upon start of surface treatment operations at each end of the segment and on either side of intersecting asphalt roads and major intersections as determined by the Engineer. In addition, LOOSE GRAVEL signs with 40 MPH advisory speed plaques will be installed at no more than 4 mile intervals throughout each segment. The 40 MPH advisory speed plaque should not be installed with LOOSE GRAVEL signs in areas where the posted speed limit is less than 40 MPH. LOOSE GRAVEL signs and 40 MPH advisory speed plaques will be covered or removed from view when they are not applicable.

ROAD WORK NEXT XX MILES (G20-1), LOOSE GRAVEL (W8-7), and END ROAD WORK (G20-2) signs are the only signs that need to be mounted on fixed location breakaway sign supports, as shown on the plan layout. ROAD WORK AHEAD (W20-1), FLAGGER (W20-7), ONE LANE ROAD AHEAD (W20-4), and TRUCK CROSSING (W8-6) signs may be mounted on portable supports. Signs mounted on portable supports will be moved as necessary to keep current with the work activities.

Until the end of each day's chip seal operations, at the discretion of the Contractor, additional flaggers and FLAGGER (W20-7) symbol signs will be provided to alert the traveling public entering completed portions of the project to the potential of airborne chips.

The flagger will provide each motorist with a printed notice on the Contractor's letterhead similar to the one shown below. Cost of the notice will be incidental to other contract bid items.

"CONTRACTORS LETTERHEAD"

THIS HIGHWAY IS BEING RESURFACED WITH A ROCK CHIP SEAL COAT.

THIS TYPE OF CONSTRUCTION HAS THE POTENTIAL OF CAUSING VEHICLE DAMAGE SUCH AS CHIPPED WINDSHIELDS AND BROKEN HEADLIGHTS DUE TO ROCKS BEING THROWN BY HIGH SPEED ONCOMING OR PASSING TRAFFIC.

YOU MAY WISH TO CONSIDER TAKING AN ALTERNATE ROUTE. IF YOU PROCEED, KEEP TO THE RIGHT AND DRIVE 40 MPH OR LESS. ANOTHER FLAGGER AND A PILOT CAR WILL BE ESCORTING YOU AROUND THE SEAL COAT APPLICATION AREA.

THANK YOU.

FLAGGING

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

Additional Road Work Ahead, Flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours.

Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on intersecting roads. These signs will have a black legend and border on a fluorescent orange background. These signs will be mounted on portable supports and placed at the stop sign. This assembly will not block the view of the stop sign.

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

TEMPORARY PAVEMENT MARKINGS

The total length of no passing zone on this project is estimated to be 44.7 miles.

ROUTE	LENGTH
SD 10	3.0 Miles
US 12 Segment 1	1.6 Miles
US 12 Segment 2	1.2 Miles
US 12 Segment 3	2.2 Miles
US 12 Segment 4	11.7 Miles
US 12 Segment 5	0.9 Miles
SD 20	6.2 Miles
SD 47	11.6 Miles
SD 73	0.6 Miles
US 212	5.7 Miles

TEMPORARY PAVEMENT MARKINGS (Continued)

It is estimated that 165 DO NOT PASS(R4-1) and 160 PASS WITH CARE(R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs. It is estimated that the following signs will be required to mark the no passing zones:

Route	DO NOT PASS	PASS WITH CARE
SD 10	13	12
US 12 Segment 1	8	8
US 12 Segment 2	6	6
US 12 Segment 3	8	8
US 12 Segment 4	19	19
US 12 Segment 5	4	3
SD 20	31	30
SD 47	45	43
SD 73	3	3
US 212	28	28

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course or after application of the flush seal.

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

Prior to Asphalt Surface Treatment, the Contractor will mark the location of all existing pavement marking, excluding edgelines. The Contractor will only place tabs on the edgeline of transition areas such as turn lanes, climbing lanes, and dashed edgelines.

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

TEMPORARY PAVEMENT MARKINGS (Continued)

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

Quantities of Temporary Pavement Markings consist of:

One pass prior to the chip seal
One pass after the chip seal
One pass after the fog seal

No adjustment in the contract unit price for "Temporary Pavement Marking" will be made because of a variation in quantities.

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

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

PERMANENT PAVEMENT MARKINGS

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

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

The Contractor will be required to repaint all existing pavement markings including centerline, edge lines, dashed edge lines, lane lines, word messages, turn arrows, stop bars, railroad crossings, gore areas and pedestrian crossings. This list is approximate.

PERMANENT PAVEMENT MARKINGS (Continued)

The following table containing locations of existing pavement markings to be hand painted is approximate.

ROUTE	LOCATION
SD 10 E & W	Accessibility Parking Space Marking (8) in Pollock
SD 10 E & W	Parking Lines in Pollock
SD 10 E & W	Stop Bar in Pollock
SD 10 E & W	24" Yellow in gore area
SD 10	Stop Bar at US 83 Jct
SD 10	Turn Arrow (2) at US 83 Jct
SD 20	Stop Bar at US 12 Jct
SD 47	Stop Bar at SD 10 Jct
SD 73	Stop Bar at US 12 Jct

TABLES OF PERMANENT PAVEMENT MARKING

SD 10 E & W	White	Yellow
4" Yellow Solid around gore = 0.229 Miles @ 27.8 Gal/Mile		6.4
24" Yellow Hatch = 0.244 Miles @ 166.8 Gal/Mile		40.7
4" White Solid Edgeline = 0.188 Miles @ 27.8 Gal/Mile	5.2	
4" White Dashed Lane Lines = 0.255 Miles @ 7.6 Gal/Mile	1.9	
4" White Solid Parking Lines = 0.961 Miles @ 27.8 Gal/Mile	26.7	
4" White Accessible Parking Hash Lines = 0.167 Miles @ 27.8 Gal/Mile	4.6	
24" White Stop Bar = 0.013 Miles @ 166.8 Gal/Mile	2.1	
TOTAL GALLONS	40.5	47.1

SD 10	White	Yellow
4" Yellow Solid Centerline = 2.977 Miles @ 27.8 Gal/Mile		82.8
4" Yellow Dashed Centerline = 10.186 Miles @ 7.6 Gal/Mile		77.4
4" White Solid Edgeline = 21.412 Miles @ 27.8 Gal/Mile	595.3	
4" White Turn Lane Lines = 0.032 Miles @ 7.6 Gal/Mile	0.9	
24" White Stop Bar = 0.005 Miles @ 166.8 Gal/Mile	0.8	
TOTAL GALLONS	597.0	160.2

US 12 Segment 1	White	Yellow
4" Yellow Dashed Centerline = 7.312 Miles @ 7.6 Gal/Mile		55.6
4" Yellow Solid Centerline = 1.640 Miles @ 27.8 Gal/Mile		45.6
4" White Solid Edgeline = 14.692 Miles @ 27.8 Gal/Mile	408.4	
TOTAL GALLONS	408.4	101.2

US 12 Segment 2	White	Yellow
4" Yellow Dashed Centerline = 4.450 Miles @ 7.6 Gal/Mile		33.8
4" Yellow Solid Centerline = 1.165 Miles @ 27.8 Gal/Mile		32.4
4" White Solid Edgeline = 9.160 Miles @ 27.8 Gal/Mile	254.6	
TOTAL GALLONS	254.6	66.2

US 12 Segment 3	White	Yellow
4" Yellow Dashed Centerline = 8.520 Miles @ 7.6 Gal/Mile		64.8
4" Yellow Solid Centerline = 2.200 Miles @ 27.8 Gal/Mile		61.2
4" White Solid Edgeline = 17.618 Miles @ 27.8 Gal/Mile	489.8	
TOTAL GALLONS	489.8	126.0

US 12 Segment 4	White	Yellow
4" Yellow Dashed Centerline = 14.929 Miles @ 7.6 Gal/Mile		113.5
4" Yellow Solid Centerline = 11.740 Miles @ 27.8 Gal/Mile		326.4
4" White Dashed Lane Line = 7.007 Miles @ 7.6 Gal/Mile	53.3	
4" White Solid Edgeline = 35.536 Miles @ 27.8 Gal/Mile	987.9	
TOTAL GALLONS	1041.2	439.9

US 12 Segment 5	White	Yellow
4" Yellow Dashed Centerline = 2.137 Miles @ 7.6 Gal/Mile		16.2
4" Yellow Solid Centerline = 0.856 Miles @ 27.8 Gal/Mile		23.8
4" White Solid Edgeline = 4.390 Miles @ 27.8 Gal/Mile	122.0	
TOTAL GALLONS	122.0	40.0

SD 20	White	Yellow
4" Yellow Dashed Centerline = 10.454 Miles @ 7.6 Gal/Mile		79.5
4" Yellow Solid Centerline = 6.164 Miles @ 27.8 Gal/Mile		171.4
4" White Solid Edgeline = 21.980 Miles @ 27.8 Gal/Mile	611.0	
24" White Stop Bar = 0.005 Miles @ 166.8 Gal/Mile	0.9	
TOTAL GALLONS	611.9	250.9

SD 47	White	Yellow
4" Yellow Dashed Centerline = 9.415 Miles @ 7.6 Gal/Mile		71.6
4" Yellow Solid Centerline = 11.557 Miles @ 27.8 Gal/Mile		321.3
4" White Solid Edgeline = 24.188 Miles @ 27.8 Gal/Mile	672.4	
24" White Stop Bar = 0.004 Miles @ 166.8 Gal/Mile	0.6	
TOTAL GALLONS	673.0	392.9

SD 73	White	Yellow
4" Yellow Dashed Centerline = 0.579 Miles @ 7.6 Gal/Mile		4.4
4" Yellow Solid Centerline = 0.639 Miles @ 27.8 Gal/Mile		17.8
4" White Solid Edgeline = 1.272 Miles @ 27.8 Gal/Mile	35.4	
24" White Stop Bar = 0.002 Miles @ 166.8 Gal/Mile	0.4	
TOTAL GALLONS	35.8	22.2

US 212	White	Yellow
4" Yellow Dashed Centerline = 19.323 Miles @ 7.6 Gal/Mile		146.9
4" Yellow Solid Centerline = 5.689 Miles @ 27.8 Gal/Mile		158.5
4" White Solid Edgeline = 39.612 Miles @ 27.8 Gal/Mile	1101.2	
TOTAL GALLONS	1101.2	305.1

HIGH BUILD WATERBORNE PERMANENT PAVEMENT MARKINGS

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

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

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PERMANENT PAVEMENT MARKINGS

Solid 4" line = 27.8 Gal/Mile
Dashed 4" line = 7.6 Gal/Mile
Glass Beads = 8 Lb/Gal

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

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

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

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

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

PAVEMENT MARKING SYMBOL FOR ACCESSIBLE PARKING SPACES

The International Symbol of Accessibility Parking Space Marking with blue background and white border, meeting the minimum dimensions shown in Part 3 of the MUTCD will be placed in accessible parking spaces having the required regulatory signing. The blue background and white border symbol will be required for all accessible parking spaces for persons with disabilities.

Traffic paint will be furnished in white and blue. The blue paint will meet the color specification limits and luminance factors listed in the table below for Daytime Color Specification Limits and Luminance Factors for Pavement Marking Material with CIE 2o Standard Observer and 45/0 (0/45) Geometry and

CIE Standard Illuminant D65 when tested in accordance with ASTM E1347 or ASTM E1349.

Color	**Chromaticity Coordinates (corner points)**								**Min. Luminance Factor**
	X	**Y**	**X**	**Y**	**X**	**Y**	**X**	**Y**	**(Y%)**
Blue	0.105	0.1	0.22	0.18	0.2	0.26	0.06	0.22	5

All costs for furnishing and installing the International Symbol of Accessibility Parking Space Marking will be incidental to the contract unit price per each for "High Build Pavement Marking Paint, Symbol"

PAVEMENT MARKING MASKING

Immediately prior to the placement of the asphalt surface treatment, and prior to the fog seal, all durable pavement markings will be covered with an approved pavement marking masking material. Tabs will be placed at the beginning of each paper liner to provide a guide for locating the masking material after the seal has been applied. The masking material will be placed to the length of that day's seal run. Upon the completion of that day's run, all masking and seal coat material will be removed and disposed of by the Contractor.

If durable pavement markings are damaged due to masking failure, they will be replaced at the Contractor's expense.

When the masking is removed, the asphalt surface treatment that does not stay adhered to the masking will be cleaned of the road surface.

All costs for furnishing, installing, removing, and disposing of the masking materials will be incidental to the contract unit price per foot for the "Pavement Marking Masking" items.

PAVEMENT MARKING MASKING TABLE

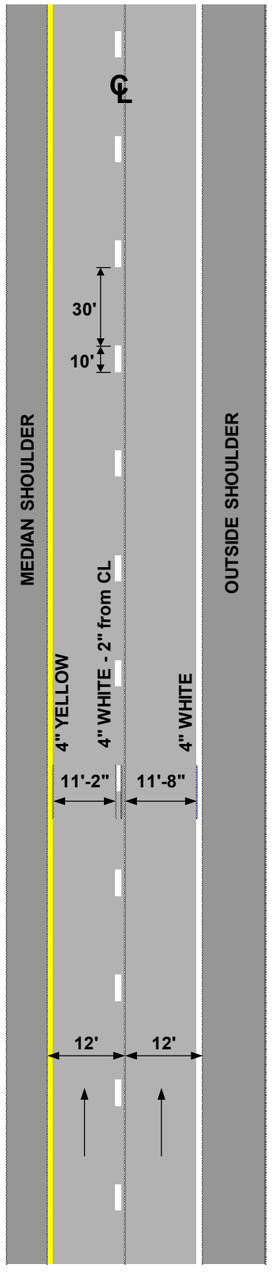
	US 12 Segment 4 Glenham	US12 E&W US 83 Junction	TOTAL
5" Masking	6090 x 2	20437 x 2	53054 Ft
9" Masking		3787 x 2	7574 Ft
25" Masking	170 x 2	1115 x 2	2570 Ft
Arrow	4 x 2	3 x 2	14 Each

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0032(46)	18	27

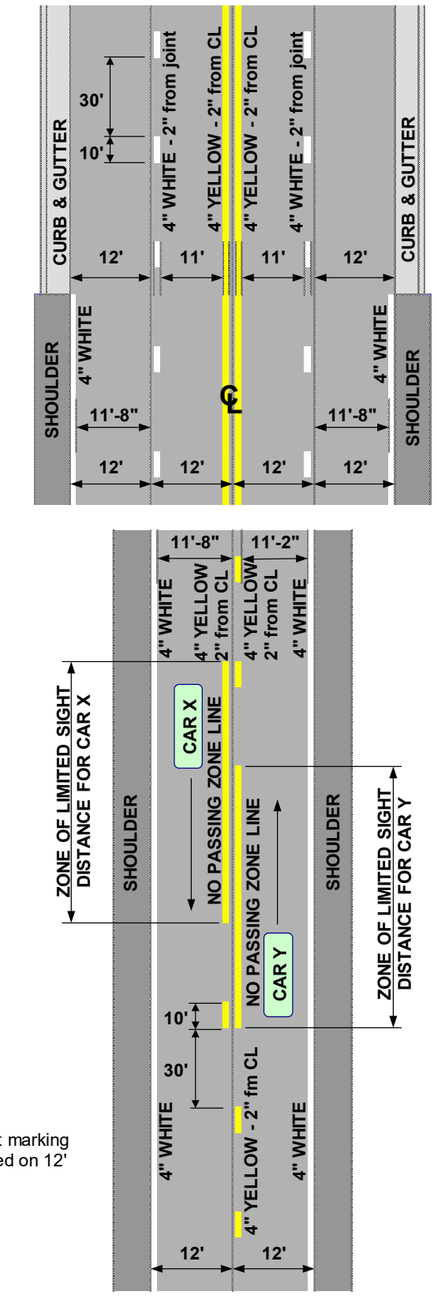
Revised 01/14/2025 CDV

PERMANENT PAVEMENT MARKING PAINT

DIVIDED ROADWAY
(ONE DIRECTION SHOWN)



UNDIVIDED ROADWAY



NOTE: All pavement marking dimensions are based on 12' driving lanes.

PAVEMENT MARKING

Typical pavement marking as shown on this sheet will be applied throughout the entire length of undivided roadway.

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

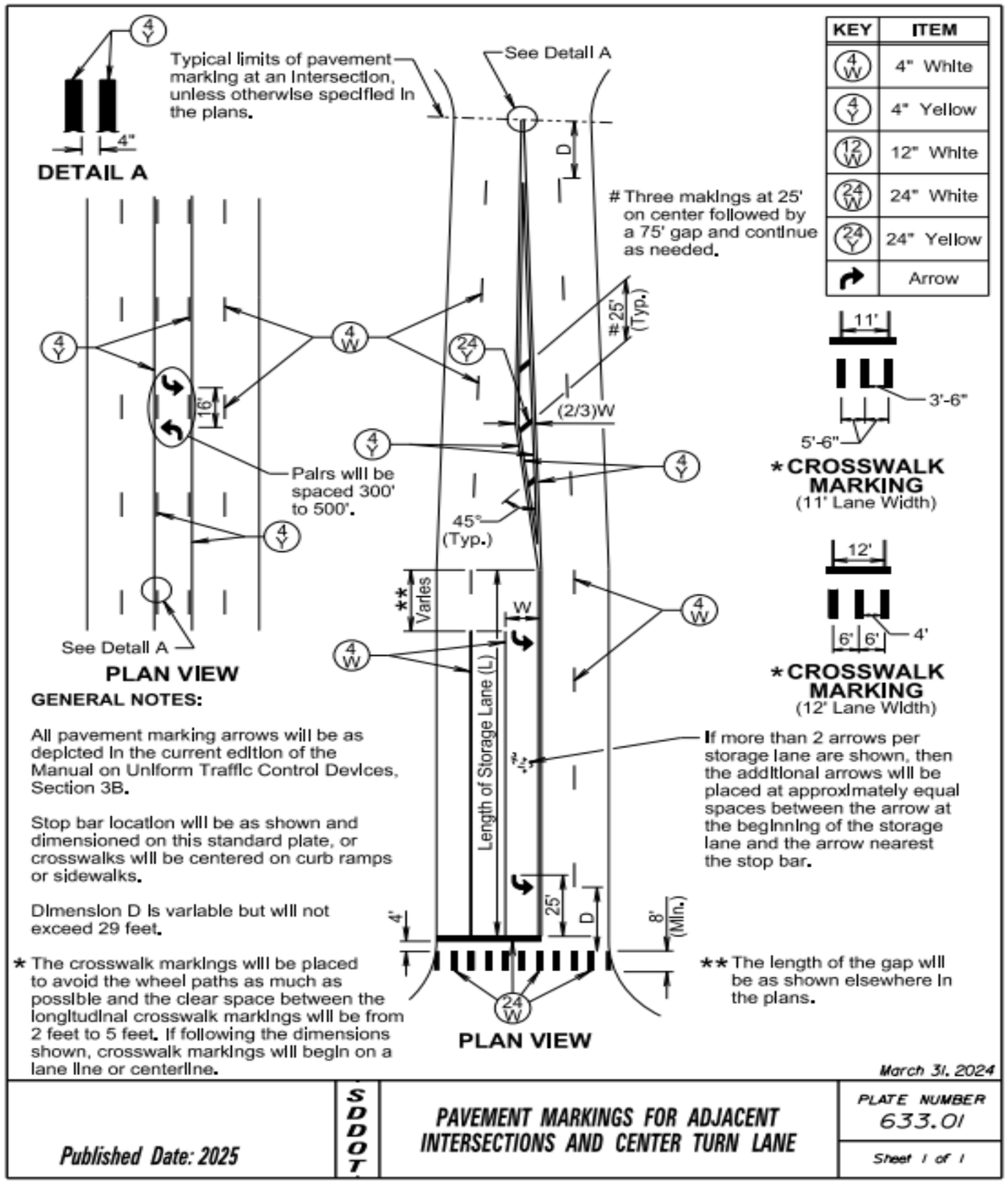
Application rates will be as follows:

Four Lane Roadway (Rates for one line)	Two Lane Roadway (Rates for one line)
Solid Yellow Centerline Rate = 27.8 Gals./Pass-Mile	Dashed Yellow Centerline Rate = 7.6 Gals./Pass-Mile
Dashed White Laneline Rate = 7.6 Gals./Pass-Mile	Solid Yellow Centerline Rate = 27.8 Gals./Pass-Mile
Solid White Edgeline (Not applicable in curb and gutter) Rate = 27.8 Gals./Pass-Mile	Solid White Edgeline Rate = 27.8 Gals./Pass-Mile

4" Yellow Skip Centerline (when not adjacent to a 4" Yellow No Passing Zone) will be placed consistently to the south or east side of centerline.

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)	
PAINT	QUANTITY
WHITE	5376 GALLONS
YELLOW	1951 GALLONS

PERMANENT PAVEMENT MARKING PAINT



GENERAL NOTES:

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

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

Dimension D is variable but will not exceed 29 feet.

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

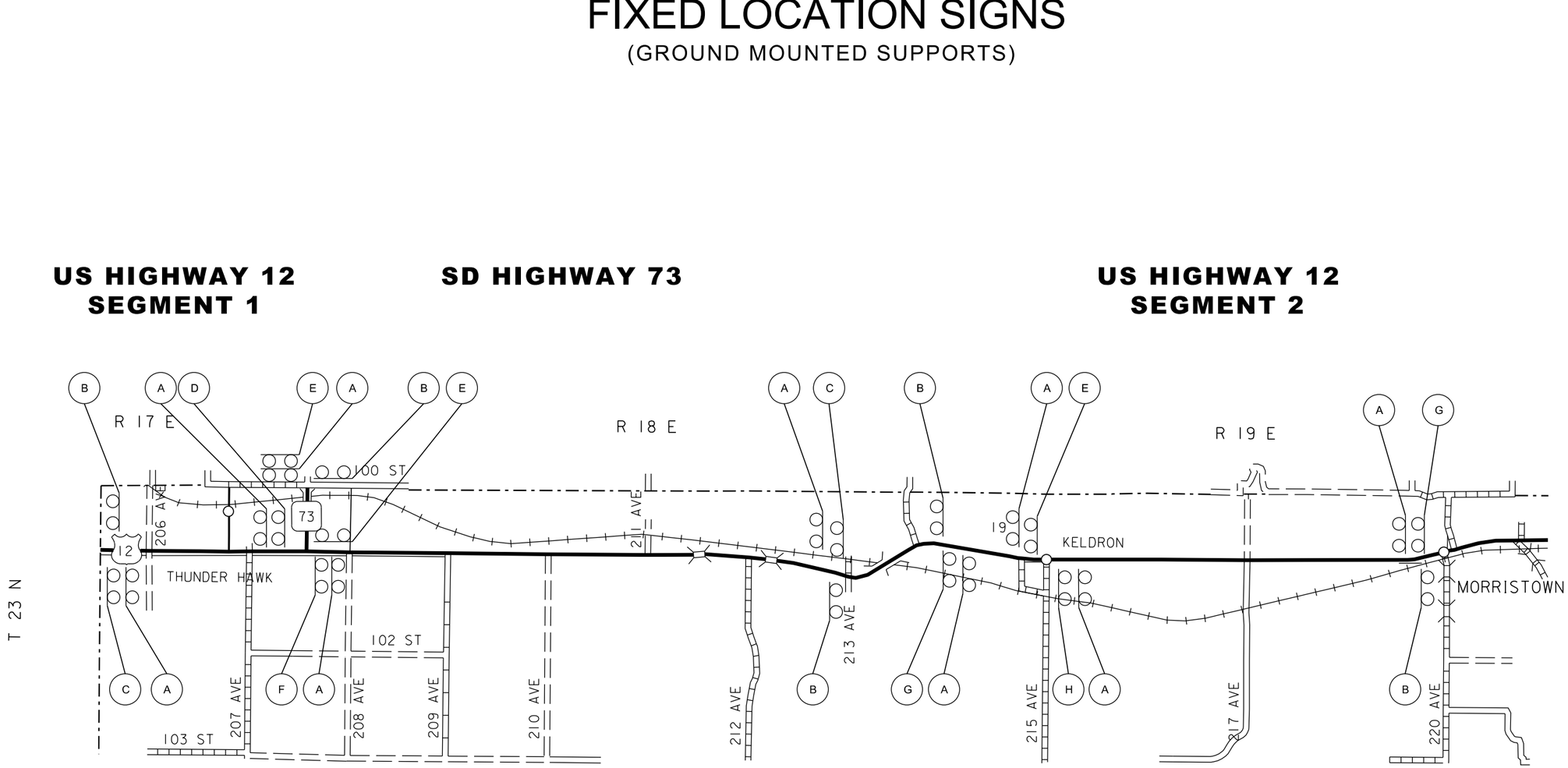
March 31, 2024

Published Date: 2025	SDDOT	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01 Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	20	27

FIXED LOCATION SIGNS

(GROUND MOUNTED SUPPORTS)



Notes:

All Fixed Location Signs will remain in place until the permanent pavement marking is complete.

The exact location and spacing of the signs shown will be marked in the field by the Contractor, and verified by the Engineer prior to installation.

Construction signs will not obscure existing signs. Signs will be installed 200' to 300' from any intersections and 200' from any existing signs.

A

LOOSE GRAVEL

W8-7 (48"x48")

40 M. P. H.

W13-1P (30"x30")

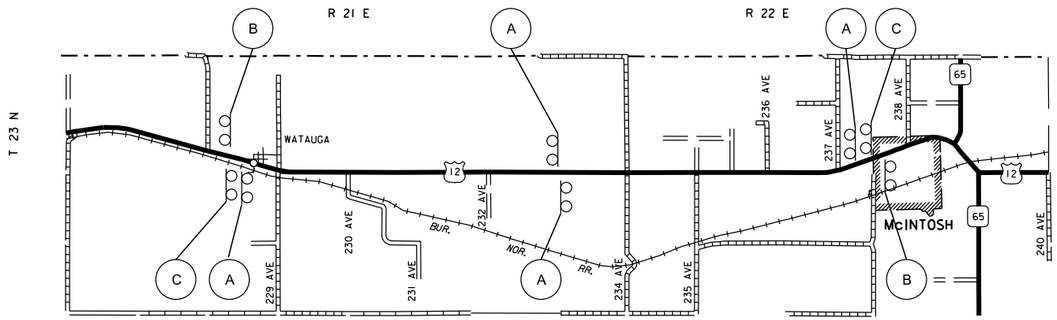
B	C	D	E	F	G	H
END ROAD WORK	ROAD WORK NEXT 8 MILES	ROAD WORK NEXT 3 MILES	ROAD WORK NEXT 1 MILES	ROAD WORK NEXT 6 MILES	ROAD WORK NEXT 5 MILES	ROAD WORK NEXT 4 MILES
G20-2 (36"X18")	G20-1 (36"X18")	G20-1 (36"X18")	G20-1 (36"X18")	G20-1 (36"X18")	G20-1 (36"X18")	G20-1 (36"X18")

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	21	27

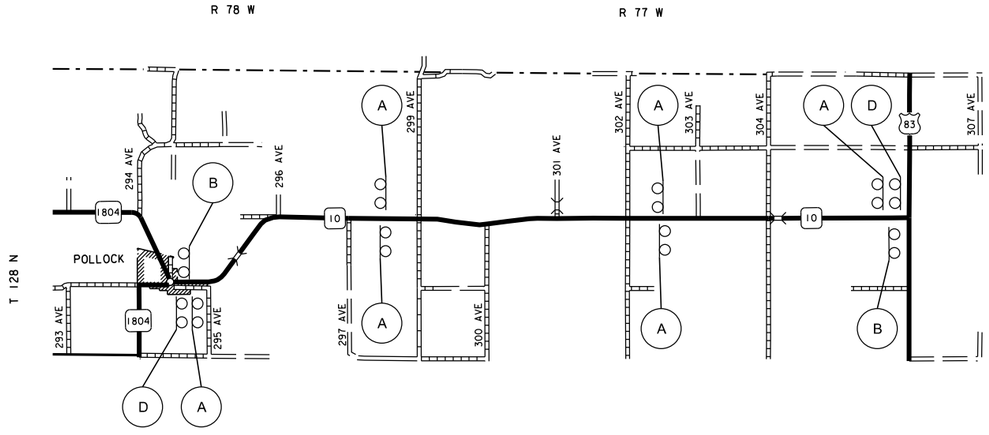
FIXED LOCATION SIGNS

(GROUND MOUNTED SUPPORTS)

US HIGHWAY 12
SEGMENT 3



SD HIGHWAY 10



Notes:

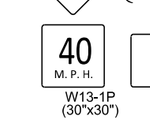
All Fixed Location Signs will remain in place until the permanent pavement marking is complete.

Portable "ROAD WORK AHEAD" signs shall be placed on all side streets in Watauga Hwy 12 (4) and Pollock Hwy 10 (6).

The exact location and spacing of the signs shown will be marked in the field by the Contractor, and verified by the Engineer prior to installation.

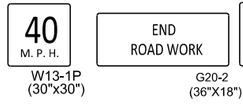
Construction signs will not obscure existing signs. Signs will be installed 200' to 300' from any intersections and 200' from any existing signs.

A



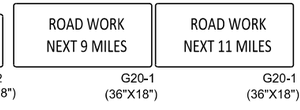
W8-7
(48"x48")

B



G20-2
(36"X18")

C



G20-1
(36"X18")

D

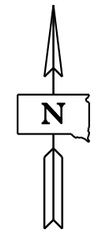
G20-1
(36"X18")

W13-1P
(30"x30")

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	22	27

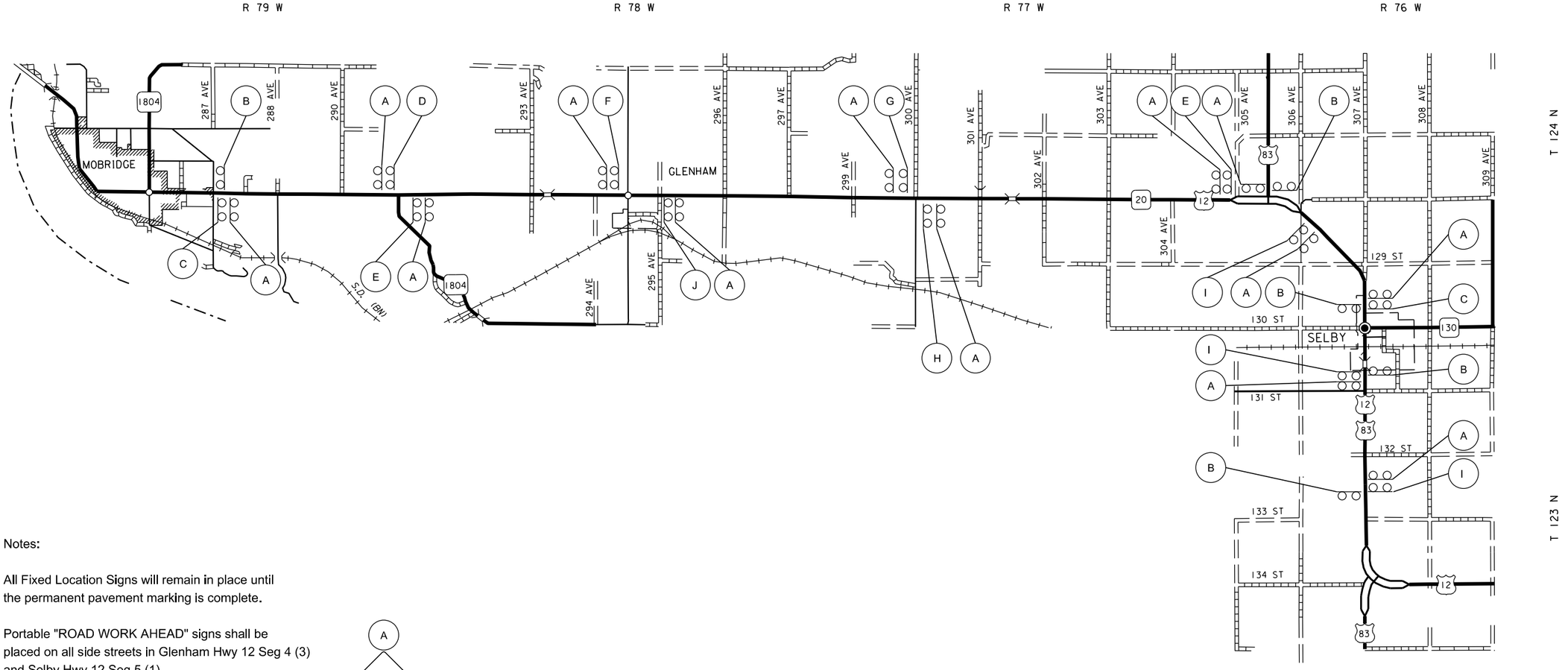
FIXED LOCATION SIGNS

(GROUND MOUNTED SUPPORTS)



US HIGHWAY 12 SEGMENT 4

US HIGHWAY 12 SEGMENT 5



Notes:

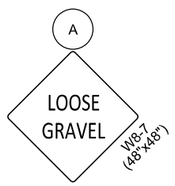
All Fixed Location Signs will remain in place until the permanent pavement marking is complete.

Portable "ROAD WORK AHEAD" signs shall be placed on all side streets in Glenham Hwy 12 Seg 4 (3) and Selby Hwy 12 Seg 5 (1).

The exact location and spacing of the signs shown will be marked in the field by the Contractor, and verified by the Engineer prior to installation.

Construction signs will not obscure existing signs. Signs will be installed 200' to 300' from any intersections and 200' from any existing signs.

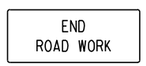
A



W8-7 (48"X48")

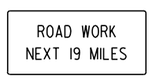
W13-1P (30"X30")

B



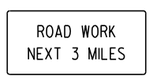
G20-2 (36"X18")

C



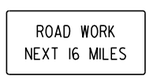
G20-1 (36"X18")

D



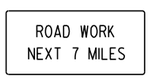
G20-1 (36"X18")

E



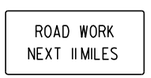
G20-1 (36"X18")

F



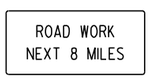
G20-1 (36"X18")

G



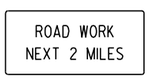
G20-1 (36"X18")

H



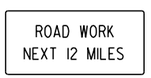
G20-1 (36"X18")

I



G20-1 (36"X18")

J

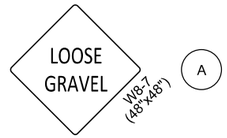


G20-1 (36"X18")

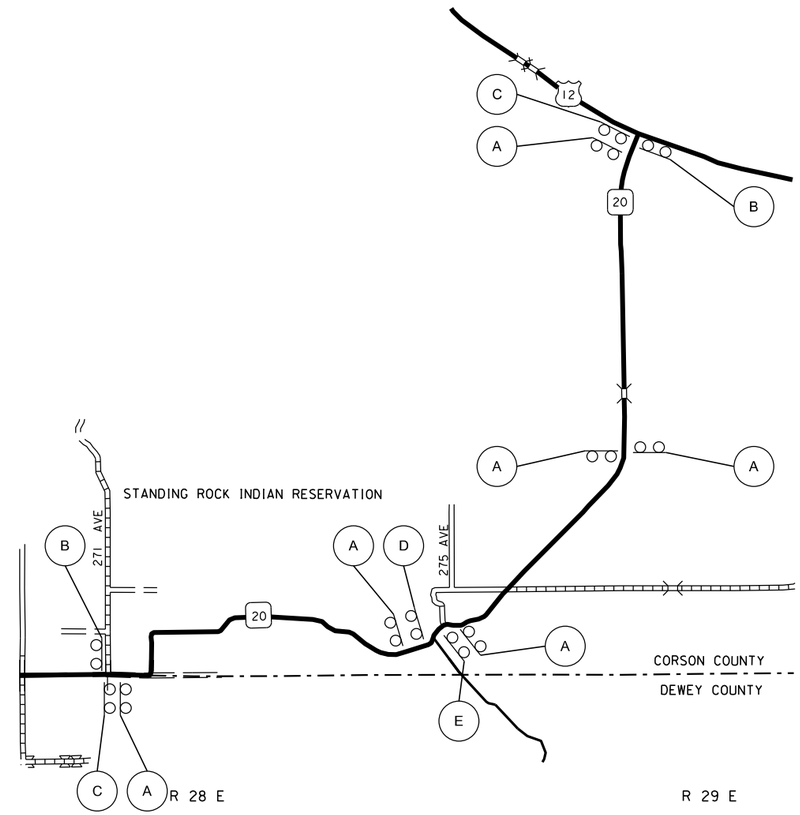
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	23	27

FIXED LOCATION SIGNS

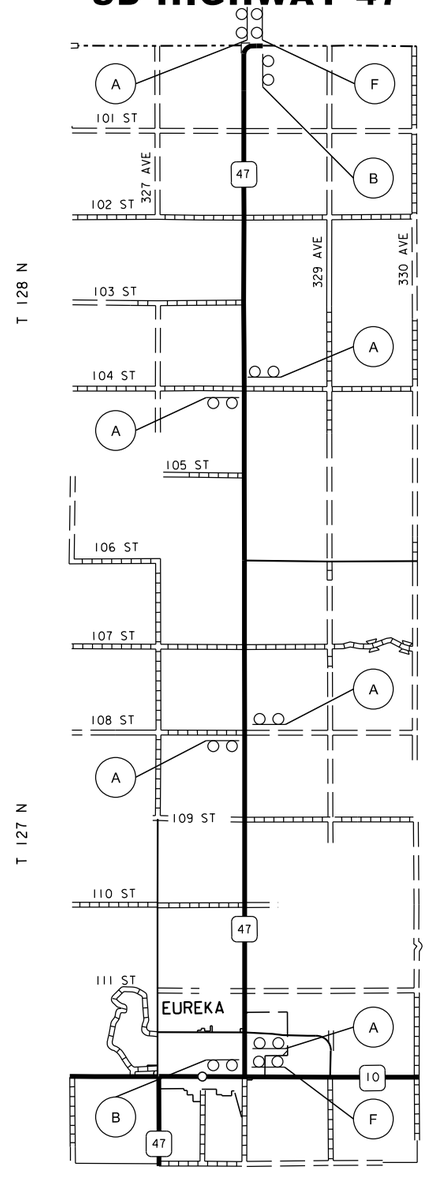
(GROUND MOUNTED SUPPORTS)



SD HIGHWAY 20



SD HIGHWAY 47



Notes:

All Fixed Location Signs will remain in place until the permanent pavement marking is complete.

Portable "ROAD WORK AHEAD" signs shall be placed on all side streets in Eureka Hwy 47 (12).

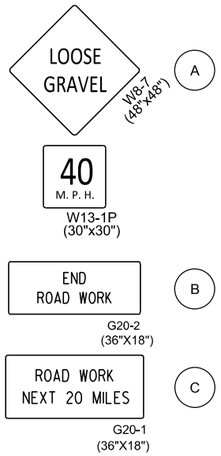
The exact location and spacing of the signs shown will be marked in the field by the Contractor, and verified by the Engineer prior to installation.

Construction signs will not obscure existing signs. Signs will be installed 200' to 300' from any intersections and 200' from any existing signs.

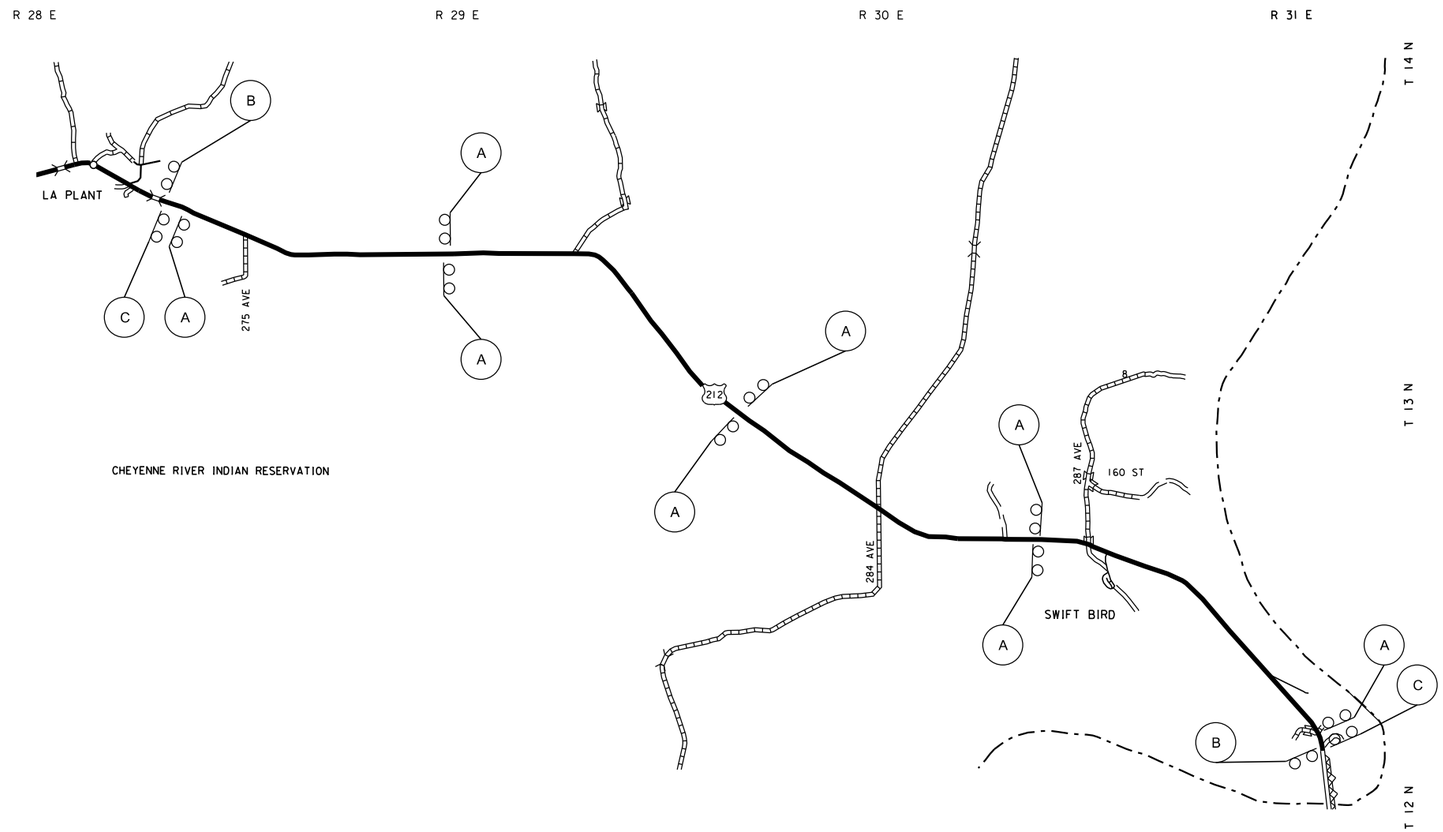
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0032(46)	24	27

FIXED LOCATION SIGNS

(GROUND MOUNTED SUPPORTS)



US HIGHWAY 212



Notes:

All Fixed Location Signs will remain in place until the permanent pavement marking is complete.

The exact location and spacing of the signs shown will be marked in the field by the Contractor, and verified by the Engineer prior to installation.

Construction signs will not obscure existing signs. Signs will be installed 200' to 300' from any intersections and 200' from any existing signs.

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

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

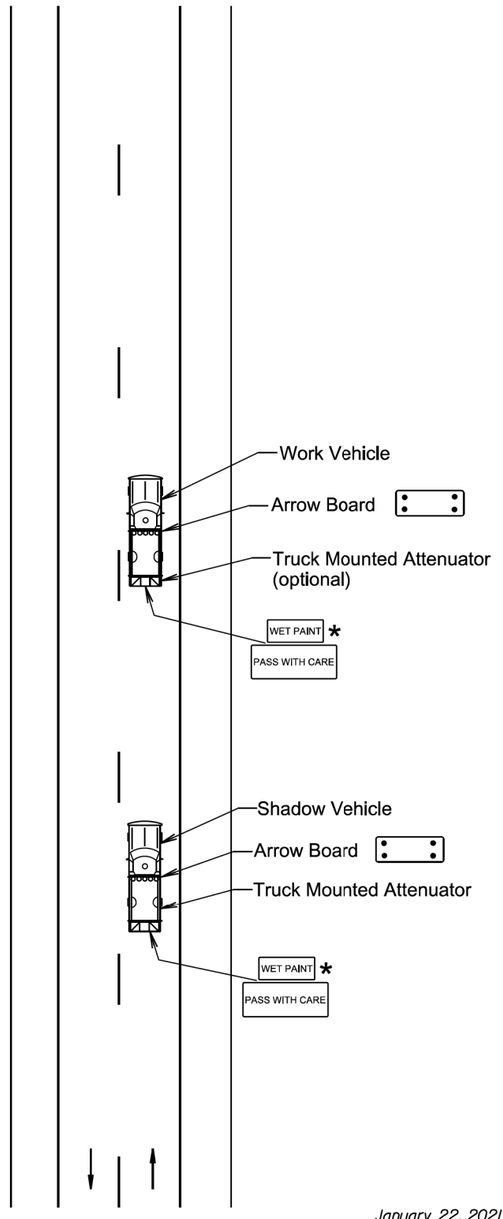
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

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

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

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

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



January 22, 2021

Published Date: 2025	SDDOT	MOBILE OPERATIONS ON 2-LANE ROAD	PLATE NUMBER 634.06
			Sheet 1 of 1

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

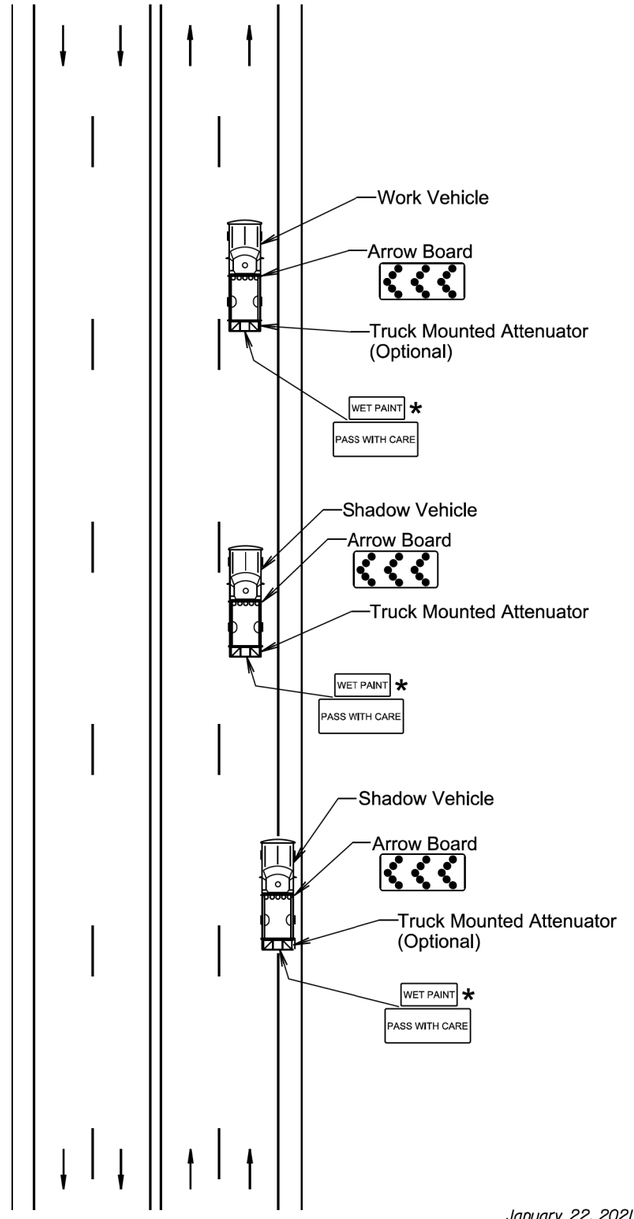
Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

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

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

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

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



January 22, 2021

Published Date: 2025	SDDOT	MOBILE OPERATIONS ON MULTI-LANE HIGHWAYS	PLATE NUMBER 634.08
			Sheet 1 of 1

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

Flagger

Channelizing Device

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

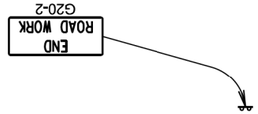
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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

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

The channelizing devices will be drums or 42" cones.

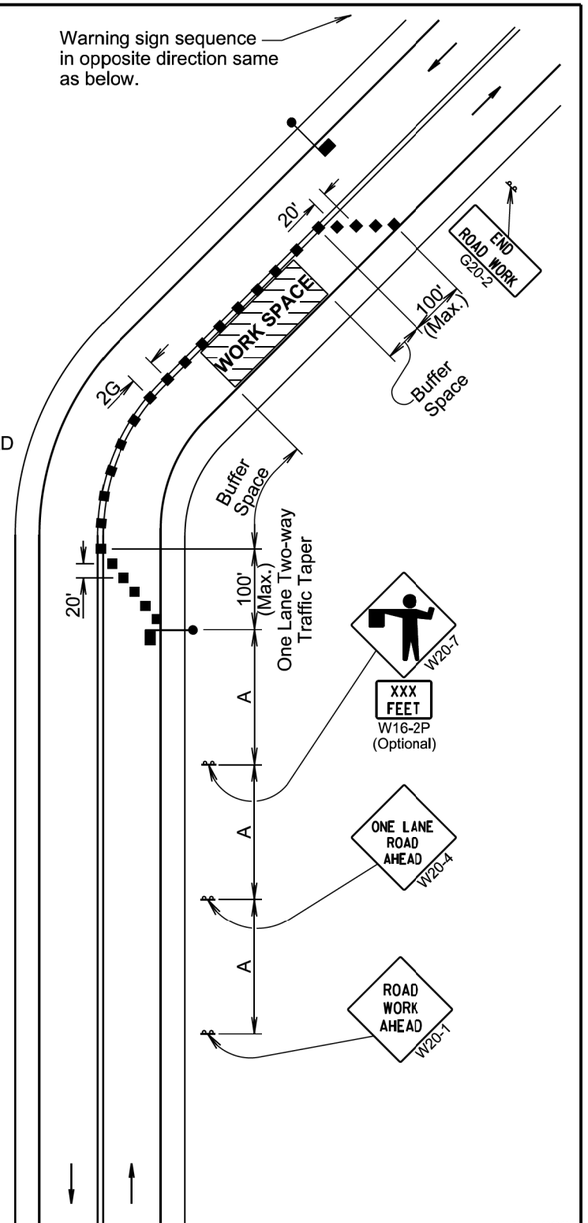
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

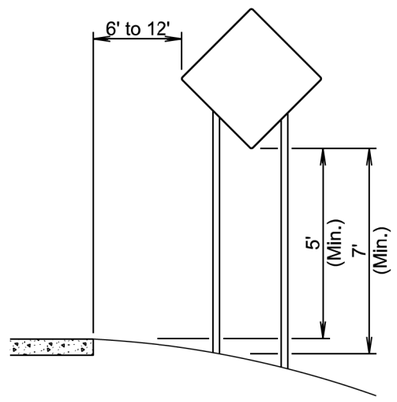
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

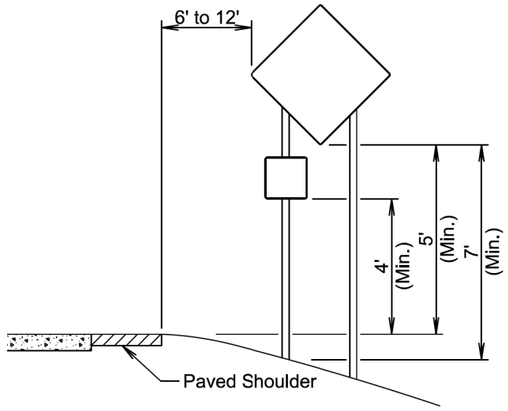


January 22, 2021

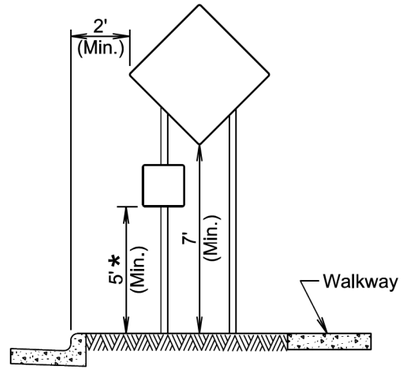
Published Date: 2025	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



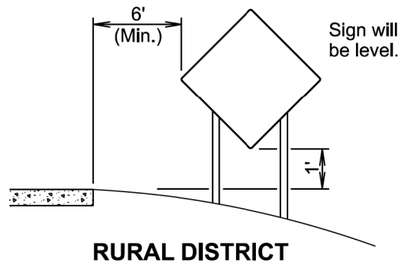
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

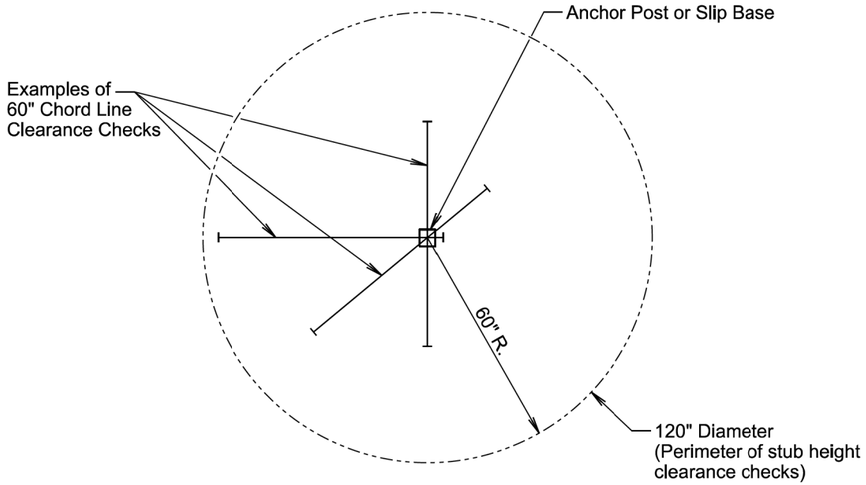


RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

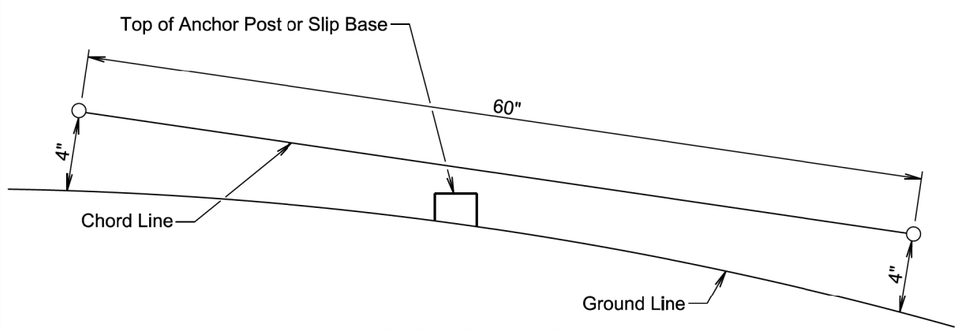
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

January 22, 2021

Published Date: 2025	SDDOT	*BREAKAWAY SUPPORT STUB CLEARANCE*	*PLATE NUMBER* 634.99
			Sheet 1 of 1