

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-NH-P 0012(286)		
Plotting Date: 12/28/2020			

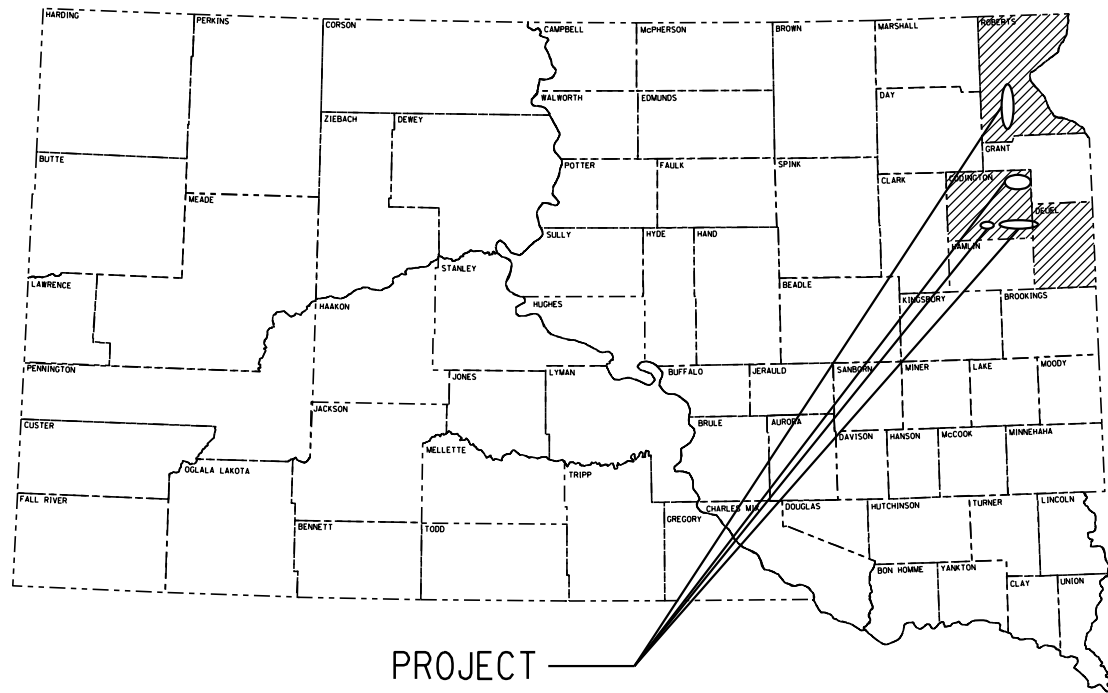
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT IM-NH-P 0012(286)
SD HIGHWAY 20
US HIGHWAY 212
INTERSTATE 29
CODINGTON, DEUEL & ROBERTS COUNTIES

ASPHALT SURFACE TREATMENT AND ASPHALT CONCRETE FLUSH SEAL
PCN 07KR

INDEX OF SHEETS

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PROJECT

SEGMENT 1
US 212 - MRM 367.61 + 0.222 to MRM 369.84
Codington County
Length 1.939 Miles

SEGMENT 2
US 212 E - MRM 369.84 to MRM 375.00 + 0.093
Codington County
Length 5.281 Miles

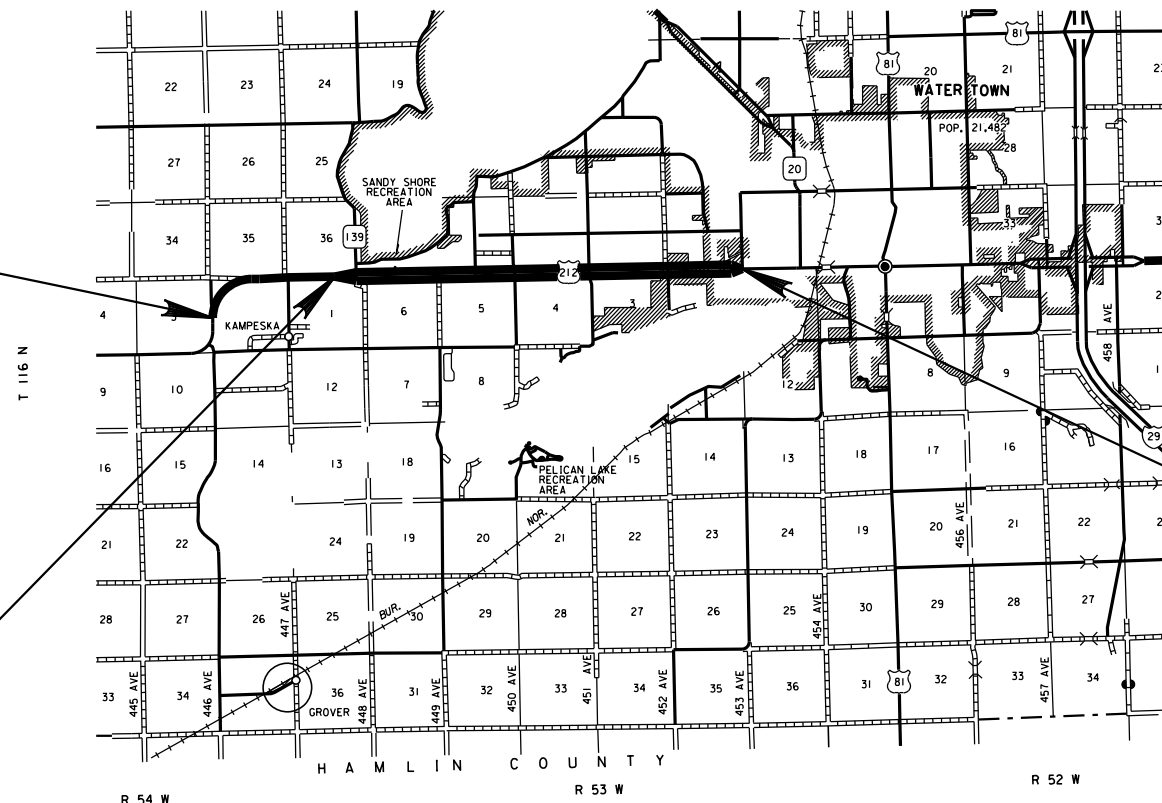
SEGMENT 3
US 212 W - MRM 369.84 to MRM 375.00 + 0.093
Codington County
Length 5.282 Miles

BEGIN SEGMENT 1
STA. 0+00
MRM 367.61 + 0.222
Mileage 367.022

END SEGMENT 1
STA. 102+37.92
MRM 369.84
Mileage 368.961

BEGIN SEGMENT 2
STA. 0+00
MRM 369.84
Mileage 0.121

BEGIN SEGMENT 3
STA. 0+00
MRM 369.84
Mileage 0.128



END SEGMENT 2
STA. 278+83.68
MRM 375.00 + 0.093
Mileage 5.402

END SEGMENT 3
STA. 278+88.96
MRM 375.00 + 0.093
Mileage 5.410

US 212 SEGMENT 1 ADT (2019)	3092
US 212 E SEGMENT 2 ADT (2019)	3120
US 212 W SEGMENT 3 ADT (2019)	3120

STORM WATER PERMIT

None Required

7

March 17, 2021

PLOT SCALE - 1:11967.4

PLOTTED FROM - IRBRINT12

PLOT NAME - 1

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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SEGMENT 4
 US 212 - MRM 380.68 to MRM 397.00 + 0.275
 Codington and Deuel County
 Length 16.693 Miles



BEGIN SEGMENT 4
 STA. 0+00
 MRM 380.68
 Mileage 372.650

END SEGMENT 4
 STA. 881+39.04
 MRM 397.00 + 0.275
 Mileage 389.343

ADT (2019) 2333

PLOT SCALE - 1:11968.9

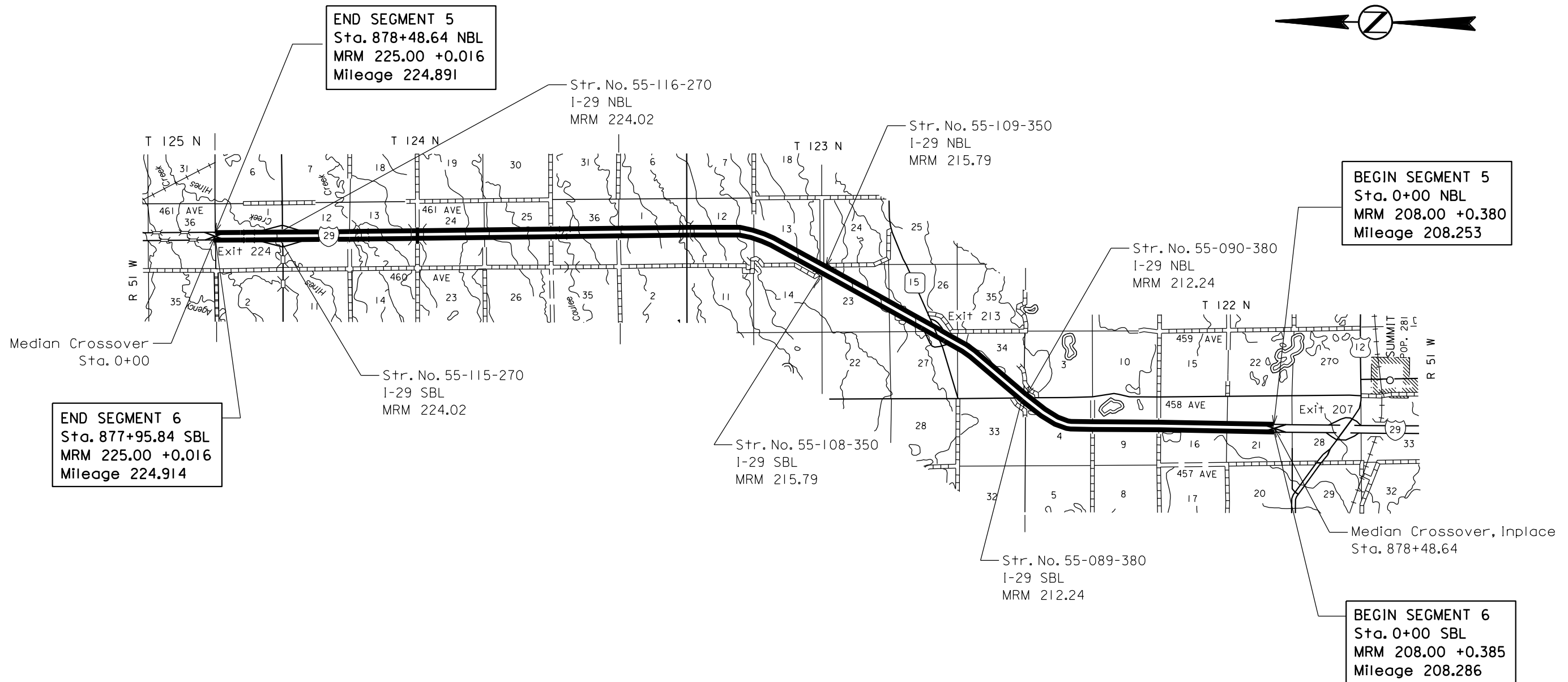
PLOTTED FROM - IRBRINT12

PLOT NAME - 1

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SEGMENT 5
I 29 N - MRM 208.00 + 0.380 to MRM 225.00 + 0.016
Roberts County
Length 16.638 Miles

SEGMENT 6
I 29 S - MRM 208.00 + 0.385 to MRM 225.00 + 0.016
Roberts County
Length 16.628 Miles



ADT (2019) 2700

PLOT SCALE - 1:11968.9

PLOTTED FROM - IRBRINT12

PLOT NAME - 1

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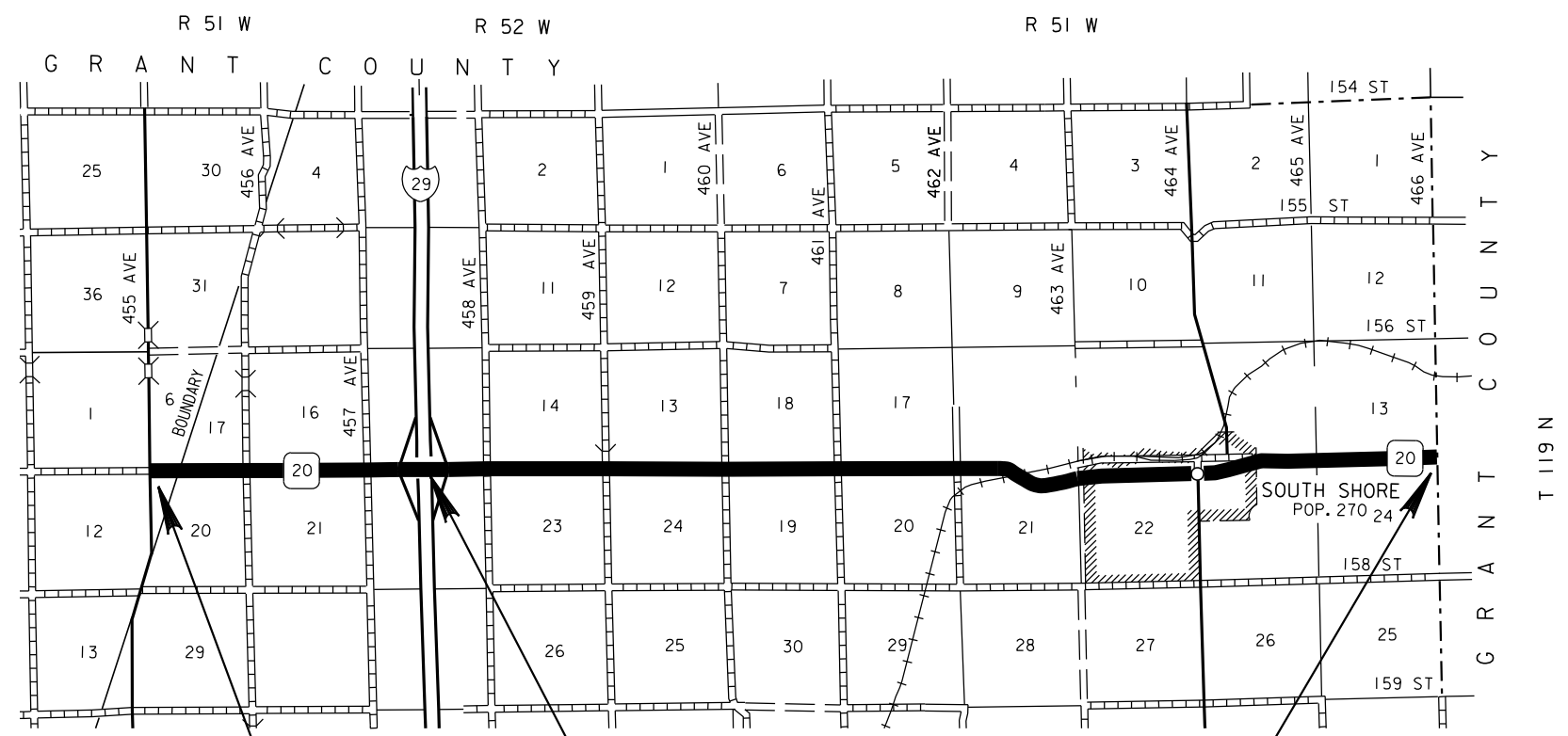
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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PLOT SCALE - 1:11967.4

PLOT NAME - 1

SEGMENT 7
SD 20 - MRM 416.45 to MRM 427.24
Codington County
Length 10.834 Miles



BEGIN SEGMENT 7
STA. 0+00
MRM 416.45 + 0.000
Mileage 345.937

Str. No. 15-215-030
Cont. Comp. Girder Viaduct
293' = 0.055 Miles
MRM 418.77

END SEGMENT 7
STA. 572+19.36
MRM 427.24 + 0.000
Mileage 356.771

ADT (2019) 698

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ESTIMATE OF QUANTITIES AND SPECIFICATIONS

Project No. IM-NH-P 0012(286) PCN 07KR

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	99.4	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	61.8	Ton
330E2000	Sand for Flush Seal	82.2	Ton
330E3000	Sand for Fog Seal	10.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	334.2	Ton
360E1010	Type 1A Cover Aggregate	2,277.8	Ton
633E0010	Cold Applied Plastic Pavement Marking, 4"	216	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	68	Ft
633E0055	Cold Applied Plastic Pavement Marking, Railroad Crossing	2	Each
633E0255	Preformed Thermoplastic Pavement Marking, Symbol	1	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	658	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	376	Gal
633E6005	Pavement Marking Masking, 5"	432	Ft
633E6020	Pavement Marking Masking, 25"	136	Ft
633E6045	Pavement Marking Masking, Railroad Crossing	4	Each
633E6050	Pavement Marking Masking, Symbol	2	Each
634E0010	Flagging	360.0	Hour
634E0020	Pilot Car	75.0	Hour
634E0110	Traffic Control Signs	2,394.1	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0630	Temporary Pavement Marking	23.4	Mile
998E0100	Railroad Protective Insurance	Lump Sum	LS

SPECIFICATIONS

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

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ENVIRONMENTAL COMMITMENTS

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. 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: <http://www.sddot.com/resources/Manuals/EnvironProcManual.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 Office at 605-773-3098 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the State 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 Environment 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 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 completely 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 State 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 State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste 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 review of cultural resources impacts. 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 cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view on which the proposed 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 records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for historic or cultural resources is uncovered during project construction activities, then such activities will cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for 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 provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

TABLE OF QUANTITIES - PROJECT IM-NH-P 0012(286) PCN 07KR

(For Information Only)

BID ITEM	DESCRIPTION	SEGMENT 1	SEGMENT 2	SEGMENT 3	SEGMENT 4	SEGMENT 5	SEGMENT 6	SEGMENT 7	TOTAL QUANTITY	UNITS
		US 212	US 212 E	US 212 W	US 212	I 29 N	I 29 S	SD 20		
009E0010	MOBILIZATION	MRM 367.61 + 0.222 to 369.84	MRM 369.84 to 375.00 + 0.093	MRM 369.84 to 375.00 + 0.093	MRM 380.68 to 397.00 + 0.275	MRM 208.00 + 0.380 to 225.00 + 0.016	MRM 208.00 + 0.385 to 225.00 + 0.016	MRM 416.45 to 427.24	LUMP SUM	LS
		LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
330E0210	SS-1H OR CSS-1H ASPHALT FOR FLUSH SEAL	3.1	6.9	6.9	26.5	28.0	28.0	-	99.4	TON
330E0300	SS-1H OR CSS-1H ASPHALT FOR FOG SEAL	-	-	-	-	-	-	61.8	61.8	TON
330E2000	SAND FOR FLUSH SEAL	-	-	-	-	41.1	41.1	-	82.2	TON
330E3000	SAND FOR FOG SEAL	-	-	-	-	-	-	10.0	10.0	TON
360E0042	CRS-2P ASPHALT FOR SURFACE TREATMENT	-	-	-	-	-	-	334.2	334.2	TON
360E1010	TYPE 1A COVER AGGREGATE	-	-	-	-	-	-	2277.8	2277.8	TON
633E0010	COLD APPLIED PLASTIC PAVEMENT MARKING, 4"	-	-	-	-	-	-	216	216	FT
633E0030	COLD APPLIED PLASTIC PAVEMENT MARKING, 24"	-	-	-	-	-	-	68	68	FT
633E0055	COLD APPLIED PLASTIC PAVEMENT MARKING, RAILROAD CROSSING	-	-	-	-	-	-	2	2	EACH
633E0255	PREFORMED THERMOPLASTIC PAVEMENT MARKING, SYMBOL	-	-	-	-	-	-	1	1	EACH
633E1200	HIGH BUILD WATERBORNE PAVEMENT PAINT, WHITE	-	-	-	-	28	28	602	658	GAL
633E1205	HIGH BUILD WATERBORNE PAVEMENT PAINT, YELLOW	-	-	-	-	28	28	320	376	GAL
633E6005	PAVEMENT MARKING MASKING, 5"	-	-	-	-	-	-	432	432	FT
633E6020	PAVEMENT MARKING MASKING, 25"	-	-	-	-	-	-	136	136	FT
633E6045	PAVEMENT MARKING MASKING, RAILROAD CROSSING	-	-	-	-	-	-	4	4	EACH
633E6050	PAVEMENT MARKING MASKING, SYMBOL	-	-	-	-	-	-	2	2	EACH
634E0010	FLAGGING	8.0	8.0	8.0	16.0	10.0	10.0	300.0	360.0	HOURL
634E0020	PILOT CAR	-	-	-	-	-	-	75.0	75.0	HOURL
634E0110	TRAFFIC CONTROL SIGNS	153.0	228.0	228.0	468.5	391.6	391.6	533.4	2394.1	SQFT
634E0120	TRAFFIC CONTROL, MISCELLANEOUS	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LS
634E0275	TYPE 3 BARRICADE	-	-	-	-	-	-	4	4	EACH
634E0630	TEMPORARY PAVEMENT MARKING	-	-	-	-	0.9	0.9	21.6	23.4	MILE
998E0100	RAILROAD PROTECTIVE INSURANCE	-	-	-	-	-	-	LUMP SUM	LUMP SUM	LS

SEGMENT	ROUTE	STATION	to	STATION
1	US 212	0+00		102+37.92
4	US 212	0+00		304+37.59
4	US 212	307+44.09		881+39.04

Mainline Shoulders – Rates Are For One Shoulder Only
Note: Seg. 4: Sta. 301+65.09 to 304+37.59 and Sta. 307+44.09 to 311+86.09 (One Shoulder Only)

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 0.8 tons applied 6 feet wide.
(Rate = 0.05 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
5	Exit 213 I29 N Off-Ramp	0+00		16+39
5	Exit 213 I29 N On-Ramp	0+00		8+44
5	Exit 224 I29 N Off-Ramp	0+00		10+63
5	Exit 224 I29 N On-Ramp	0+00		10+92
6	Exit 213 I29 S Off-Ramp	0+00		16+39
6	Exit 213 I29 S On-Ramp	0+00		8+71
6	Exit 224 I29 S Off-Ramp	0+00		10+63
6	Exit 224 I29 S On-Ramp	0+00		10+92

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 3.0 tons applied 24 feet wide.
(Rate = 0.05 Gal./S.Y.).

Sand for Flush Seal at the rate of 42.2 tons applied 18 feet wide.
(Rate= 8 Lbs./S.Y.).

TABLE OF ADDITIONAL QUANTITIES:

SEGMENT	ROUTE	LOCATION	CSS-1H or SS-1H	FLUSH SAND
5	Exit 213 I29 N Off-Ramp	Sta. 16+39 Rt. & Lt. Radii	0.1	1.0
5	Exit 213 I29 N On-Ramp	Sta. 0+00 Rt. & Lt. Radii	0.1	1.0
5	Exit 224 I29 N Off-Ramp	Sta. 10+63 Rt. & Lt. Radii	0.1	1.0
5	Exit 224 I29 N On-Ramp	Sta. 0+00 Rt. & Lt. Radii	0.1	1.0
6	Exit 213 I29 S Off-Ramp	Sta. 16+39 Rt. & Lt. Radii	0.1	1.0
6	Exit 213 I29 S On-Ramp	Sta. 0+00 Rt. & Lt. Radii	0.1	1.0
6	Exit 224 I29 S Off-Ramp	Sta. 10+63 Rt. & Lt. Radii	0.1	1.0
6	Exit 224 I29 S On-Ramp	Sta. 0+00 Rt. & Lt. Radii	0.1	1.0

Application rate of SS-1h or CSS-1h Emulsified Asphalt for Flush Seal and Sand for Flush Seal will be as indicated in the Rates of Materials for the appropriate segment, or as directed by the Engineer in the field.

RATE OF MATERIALS

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

FLUSH SEAL:

SEGMENT	ROUTE	STATION	to	STATION
5	I 29 N	0+00		878+48.64
6	I 29 S	0+00		877+95.84

Median Shoulders

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 0.5 tons applied 4 feet wide.
(Rate = 0.05 Gal./S.Y.).

Outside Shoulders

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 1.0 tons applied 8 feet wide.
(Rate = 0.05 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
2	US 212 E	0+00		278+83.68
3	US 212 W	0+00		278+88.96

Median Shoulders

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 0.5 tons applied 4 feet wide.
(Rate = 0.05 Gal./S.Y.).

Outside Shoulders

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 0.8 tons applied 6 feet wide.
(Rate = 0.05 Gal./S.Y.).

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RATE OF MATERIALS, (CONTINUED)

ASPHALT SURFACE TREATMENT:

SEGMENT	ROUTE	STATION	to	STATION
7	SD 20	0+00		433+70.78
7	SD 20	454+27.18		572+19.36

CRS-2P Asphalt for Surface Treatment at the rate of 30.3 tons applied 32 feet wide.

(Rate = 0.38 Gal./S.Y.)

Type 1A Cover Aggregate at the rate of 206.5 tons applied 32 feet wide.

(Rate = 22 Lbs./S.Y.)

CSS-1H or SS-1H for Fog Seal at the rate of 5.6 tons applied 32 feet wide.

(Rate = 0.07 Gal./S.Y.)

SEGMENT	ROUTE	STATION	to	STATION
7	SD 20	433+70.78		454+27.18

CRS-2P Asphalt for Surface Treatment at the rate of 45.5 tons applied 48 feet wide.

(Rate = 0.38 Gal./S.Y.)

Type 1A Cover Aggregate at the rate of 309.8 tons applied 48 feet wide.

(Rate = 22 Lbs./S.Y.)

CSS-1H or SS-1H for Fog Seal at the rate of 8.4 tons applied 48 feet wide.

(Rate = 0.07 Gal./S.Y.)

PLOT SCALE - 1:11680.4

PLOT NAME - 1

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SEQUENCE OF OPERATIONS

The below sequence is for **Segment 7 (Asphalt Surface Treatment)**:

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. Install cold applied plastic pavement marking.
4. Place temporary pavement marking and pavement marking masking not more than 24 hours prior to chip seal.

5. Apply chip seal.

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.

The application of the asphalt and aggregate will cease at least one hour prior to sunset each day.

Remove cover from tabs and remove masking.

6. Broom chip sealed areas each morning following 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.

Install Masking.

8. Apply fog seal.
Remove cover from tabs and remove masking.

9. Complete the pavement marking. Immediately prior to application of the permanent pavement marking, the areas 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.)

10. Remove temporary pavement marking within the seven day time period specified elsewhere in the plans.

11. Remove traffic control devices.

The below sequence is for **Segments 1-6 (Flush Seal)**:

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 flush seal.
4. Apply flush seal.

The brooming operation will be immediately in front of the asphalt distributor.

The application of the asphalt and sand will cease at least one hour prior to sunset each day.

Remove cover from tabs.

5. Broom flush sealed areas each morning following flush seal application.
6. Complete the pavement marking paint (I29 Exit 213 & 224 Ramps). Immediately prior to application of the permanent pavement marking, the areas 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.)
7. Remove temporary pavement marking within the 7 day time period specified elsewhere in the plans.
8. Remove traffic control devices.

SEQUENCE OF OPERATIONS FOR I29 N & I29 S RAMPS

In addition to the previous sequence of operations, the following sequence of operations will be followed for I29 N and I29 S ramps unless an alternate plan is submitted by the Contractor a minimum of 5 days in advance of operations and approved by the Engineer.

1. Work activities will be conducted so as to maintain a single lane of one-way traffic on ramps with a width of: 8' (1/2 driving width) + 3' shoulder = 11' minimum. Ramp traffic will be controlled by flaggers, as shown in the details.
2. Any ramp sealing started during the day will be completed in the same day.

TRAFFIC CONTROL

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.

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 bid items.

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

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

"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.

Traffic Control Signs, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used. Traffic Control Signs will be paid for separately for each segment.

On Segments 1-6 (Flush Seal), the Contractor will furnish, install and maintain "FRESH OIL" signs with "ON SHOULDER" signs upon start of flush seal operations at each end of the project. In addition, "FRESH OIL" signs with "ON SHOULDER" signs will be installed at 3 mile intervals throughout each project and at other location(s) determined in the field by the Engineer. The aforementioned signs will be removed 3 days following application of flush seal.

Traffic Control for Segments 1-6 will conform to Standard Plate 634.04. Segment 7 will conform to Standard Plate 634.23. I29 N and I29 S Ramps will conform to Standard Plate 634.69.

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TRAFFIC CONTROL, CONTINUED

On Segment 7 (Asphalt Surface Treatment), the Contractor will furnish, install and maintain "LOOSE GRAVEL" signs with "40 MPH" advisory speed plates signs upon start of surface treatment operations at each end of the project. In addition, "LOOSE GRAVEL" signs with "40 MPH" advisory speed plates will be installed at 3 mile intervals throughout each project and at other location(s) determined in the field by the Engineer. The aforementioned signs will be removed after the final brooming has been completed.

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.

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 flaggers 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.

"CONTRACTOR'S LETTERHEAD"

THIS HIGHWAY IS BEING RESURFACED WITH A 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

Work zones for the various construction operations that utilize a pilot car will not exceed 3 miles in length. Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Additional flagger warning signs and additional flagger hours have been included in the Estimate of Quantities for use on intersecting roads on Segment 7. 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 ONE LANE ROAD WAIT FOR PILOT CAR signs for use on intersecting roads. These signs will be mounted on a Type 3 Barricade and placed at 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".

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.

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 will be removed by the Contractor to the satisfaction of the Engineer prior to asphalt flush seal.

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

BRIDGES, APPROACH SLABS, SLEEPER SLABS, STRIP SEALS, RAILROAD CROSSINGS, MANHOLES, WATER VALVES AND CONCRETE

Flush Seal and Asphalt Surface Treatment 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 on these projects.

Loose aggregate will not be swept onto bridge decks or into drop inlets. Aggregate will be removed from neoprene joints located on approach slabs or bridge decks.

ESTIMATED QUANTITIES

The quantities of SS-1h or CSS-1h Asphalt for Flush Seal and Sand for Flush Seal are based off the rates shown in the Rates of Materials. This is only an estimate. The contract unit prices for the Flush Seal contract items will be nonnegotiable regardless of changes in contract quantities.

The quantities of asphalt for surface treatment and cover aggregate are based off the rates shown in the Rates of Materials. This is only an estimate. The actual application rates of materials will be determined in the field during construction based upon the surface condition, aggregate type, aggregate gradation and flakiness index. The contract unit prices for the Asphalt Surface Treatment contract items will be nonnegotiable regardless of changes in contract quantities.

FLUSH SEAL

The Contractor will maintain traffic control on the flush sealing area until the flush seal is cured enough to prevent pickup on vehicles. Sand will be applied at intersections or other locations as directed by the Engineer.

FLUSH SEAL ON US 212 E, US 212 W, I29 N & I29 S MEDIAN & WIDE SHOULDER & US 212 SHOULDER

The Contractor will take care not to get asphalt on the existing epoxy pavement marking. The distributors used during the flush seal will be equipped with guards to prevent the emulsified asphalt from coming in contact with the existing pavement marking. The existing pavement marking on the concrete is approximately two inches from the asphalt shoulder on the median side.

The Contractor will use guides (wheels, cameras, etc.) installed on the distributors to follow the alignment of the concrete during sealing operations. The tracking of asphalt materials onto existing markings will not be acceptable.

Any damage to the existing epoxy pavement marking on the shoulders will be replaced with waterborne paint at the Contractor's expense with no additional costs to the State.

TYPE 1A COVER AGGREGATE

Failure on the #200 sieve will shut down operations until the Engineer determines if changes or corrections are required.

EXISTING PAVEMENT CONDITIONS & TRAFFIC VOLUMES

The existing pavement conditions have been checked for each project and factored into the rates of materials. Segment 7 is slightly pocked, porous, and oxidized. Actual rates will be adjusted in the field during construction by the Engineer.

The descriptions used were from the McLeod procedure for seal coat design.

The traffic volumes are shown on the title sheets.

PLOT SCALE - 1:11680.4

PLOTTED FROM - TRBRINT12

PLOT NAME

FILE - ... \07KR_TITLESHEET.DGN

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ASPHALT FOR SURFACE TREATMENT

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 work day. The material that is placed in storage will be the first material used the following day.

FOG SEAL

The fog seal will begin within 7 calendar days following the completion of the chip seal on each segment. Prior to the application of the fog seal the Contractor will be required to broom the chip seal. A CSS-1h or SS-1h emulsion shall be used for the fog seal application. A water-to-emulsion ratio of 1:1 should be used for the binder application.

The Contractor will avoid placing the Fog Seal over any newly placed Cold Applied Permanent Pavement Markings. The Contractor will be responsible for removing any CSS-1h or SS-1h that is on the markings. All costs associated with cleaning the pavement markings will be incidental to the contract unit price per ton for CSS-1h or SS-1h Asphalt for Fog Seal.

Blotting Sand for Fog Seal will conform to the Specifications Section 879.1 B.

Prior to hauling, Blotting Sand will be screened to minimize segregation, eliminate oversize and effectively breakup or discard material bonded into chunks.

The Contractor will maintain traffic control on the fog sealing area until the fog seal is cured enough to prevent pickup on vehicles. Sand will be applied at intersections or other locations as directed by the Engineer.

TEMPORARY PAVEMENT MARKINGS

Temporary flexible vertical markers (tabs) with covers will be used to mark edgelines on I 29 ramps Segments 5 & 6 and centerline on SD 20 Segment 7. Paint will not be allowed for Temporary Pavement Marking.

The temporary flexible vertical markers (tabs) will have secure covers. The Contractor will be required to remove the covers manually after completion of the flush seal. Any markers that are non-reflective will be cleaned. Cleaning of temporary flexible vertical markers (tabs) will be incidental to the contract unit price per mile for Temporary Pavement Marking. Petroleum products will not be used to clean markers. The tab covers are considered construction debris and will be disposed of properly by the Contractor.

Any temporary flexible vertical markers (tabs) with covers removed before the flush seal will be replaced prior to application of the flush seal. 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 at no additional cost to the State.

The Contractor will remove and dispose of the temporary flexible vertical markers (tabs) after Permanent Pavement Marking is applied. Method of removal will be nondestructive to the road surface and will result in the marker being separated from the adhesive (the adhesive will remain on the road surface and the marker is discarded) or the marker will be cut in such a manner that no more than 1/4" of the vertical portion of the marker remains on the road surface. Removal will be accomplished within 7 days of completion of the permanent pavement marking.

Cost for furnishing, applying, uncovering, cleaning, removing and disposing of the temporary flexible vertical markers (tabs) will be included in the contract unit price per mile for Temporary Pavement Marking.

The total length of no passing zone on this project is estimated to be as follows:

Segment 7 (SD 20): 9.2 miles

The Contractor is allowed to use DO NOT PASS and PASS WITH CARE signs for a period of 2 weeks to mark no passing zones on roads with an average daily traffic of 2500 vehicles or less, should the Contractor elect to use these signs. It is estimated that the following signs will be required to mark the no passing zones:

Location	DO NOT PASS	PASS WITH CARE
Segment 7 (SD 20)	32	32

Cost for furnishing, installing and removing the DO NOT PASS and PASS WITH CARE signs will be incidental to the contract unit price per mile for Temporary Pavement Marking.

Flagger Symbol signs (W20-7) and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights, will be positioned on the roadway shoulder in advance of workers for both directions of traffic during the installation of temporary flexible vertical markers (tabs). The traffic control device used will be moved to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1) sign, a Workers symbol sign (W21-1), 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.

Cost for traffic control to install and remove the temporary flexible vertical markers (tabs) will be incidental to the contract unit price per mile for Temporary Pavement Marking.

Quantities of Temporary Pavement Markings Segments 1-6 consist of:
One pass on top of the Flush Seal.

Quantities of Temporary Pavement Markings Segment 7 consist of:
One pass on top of the Seal Coat.
One pass on top of the Fog Seal.

PERMANENT PAVEMENT MARKINGS

The Contractor will be required to repaint the edgelines on the flush sealed ramps Segments 5 & 6 along with both centerline and edgelines on SD 20 Segment 7 with High Build Waterborne Pavement Marking Paint.

The application of Permanent Pavement Marking Paint will begin no sooner than 7 calendar days following completion of Flush Sealing or Fog Sealing and will be completed within 14 calendar days following completion of Flush Sealing or Fog Sealing.

For each working day the application of permanent pavement marking paint remains uncompleted after the previously stated time requirements, the Contractor will be assessed liquidated damages at the rate of \$250.00 per day.

This provision applies up to the Contract Completion Date, as extended. After the completion date, liquidated damages will be assessed in accordance with section 8.8, until the Permanent Pavement Marking is completed, even though the project may be open to traffic.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

This material will consist of a durable high build, low VOC, fast drying, waterborne traffic paint with a 100% acrylic polymer (Arkema DT-400, Dow HD-21A, or equivalent). The Contractor will provide certification that the material is one of the following products or an equivalent as approved by the Operations Traffic Engineer:

- Diamond Vogel's Waterborne High Build Polymer Marking Paint
- Ennis-Flint's High Build Polymer Marking Paint

No further testing of this material will be required. Reflective media will consist of glass beads.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

- Solid 4" line = 27.8 Gals/Mile
- Dashed 4" line = 7.6 Gals/Mile
- Glass Beads = 8 Lbs/Gal.

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

REMOVE EXISTING PAVEMENT MARKINGS

The existing pavement markings consist of cold applied plastic pavement marking and paint.

Existing cold applied plastic pavement marking being replaced will be removed in their entirety. It will be the Contractor's responsibility to visit the project site to determine what type of material(s) are present and the extent of the work required to remove the existing pavement markings.

Payment for removal of the existing lines and other miscellaneous payment markings as necessary will be included in the contract unit price 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 Marking will be placed prior to asphalt surface treatment as noted in the plans and as directed by the Engineer.

Cold Applied Plastic Pavement Marking will be placed in the same location as existing markings, unless otherwise directed by the Engineer.

Cold Applied Plastic Pavement Markings will be installed as follows:

ITEM	LOCATION	QUANTITY
RR-Xing	Segment 7/SD 20	2 Each
X-Walk (24" White)	Segment 7/SD 20 South Shore	56 Ft.
Parking (4" White)	Segment 7/SD 20 South Shore	216 Ft.
ADA Parking Symbol (PreformedThermoplastic)	Segment 7/SD 20 South Shore	1 Each
Stop Bar (24" White)	Segment 7/SD 20 455 th Ave.	12 Ft.

New pavement markings will be provided and applied by the Contractor.

PAVEMENT MARKING MASKING

Immediately prior to placement of asphalt surface treatment, and prior to the fog seal, durable markings will be covered with an approved pavement marking masking. All cost for furnishing, installing, removing, and disposing of masking will be incidental to the various contract unit prices for Pavement Marking Masking.

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

PREFORMED THERMOPLASTIC PAVEMENT MARKING

General

- Made of prefabricated retroreflective, resilient thermoplastic material;
- Contains glass beads uniformly distributed through the entire cross-sectional area;
- Capable of being affixed to bituminous or concrete pavement by heating;
- Resistant to deterioration due to exposure to sunlight, water, salt, and adverse weather conditions;
- Under traffic wear, shows no appreciable fading in accordance with the color requirements, lifting, or shrinkage throughout the life of the marking;
- Capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures;
- Possesses resealing characteristics, such that it is capable of fusing with itself and previous thermoplastic markings when heated; and
- Protected during shipment and in storage.

Apply the preformed thermoplastic pavement marking as recommended by the manufacturer to provide a neat, durable marking that will not flow, distort, or crack due to temperature if the pavement surface remains stable. Use equipment and application methods specified by the manufacturer. Primer as required by the manufacturer will be provided with the material.

Application of the markings will include the use of any manufacturer recommended sealers. Sealers may be required on concrete pavements, inside grooves, or on older asphalt pavements. Prior to placing any markings on new concrete, the Contractor will remove any curing compounds. Removal will be by sandblasting or other standard industry methods.

Any required primers or sealers will be included in the contract unit price for the various preformed thermoplastic pavement marking items.

Provide precut messages and symbols meeting the requirements of the MUTCD and the Standard Signs Manual in custom kits. Use separate pieces or segments to form individual letters or symbols only to the extent supplied by the manufacturer. Provide shapes, sizes, and colors as required by the contract.

Color

- Will meet the color specification limits and luminance factors for Cold Applied Plastic Pavement Marking and Legends (Section 983.2 D, Tables 1 and 2).

Glass Beads

- Ensure the preformed thermoplastic pavement marking contains a minimum 30% intermixed glass beads by weight and a minimum 80% true spheres.
- Ensure preformed thermoplastic pavement markings contain only clear beads.

Skid Resistance

- Ensure the surface of the preformed thermoplastic pavement marking provides a skid resistance value of at least 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

Retroreflectivity

- Provide preformed thermoplastic pavement marking meeting the minimum initial pavement marking retroreflectivity values using 30 m geometry and meeting the testing procedures of ASTM E1710:

Minimum Initial Pavement Marking Retroreflectivity		
	White	Yellow
Thermoplastic	400 mcd/sq. ft./ft.	250 mcd/sq. ft./ft.
Thermoplastic, enhanced skid resistance (ESR)	250 d/sq. ft./ft.	150 d/sq. ft./ft.

Thickness

- A longitudinal marking is a minimum 90 mils thick at the edges, and a maximum 125 mils thick at the center of the stripe.
- Transverse markings and symbols are a minimum 125 mils thick at the edges, and a maximum 160 mils thick at the center.

Sample

- Prior to application, the Contractor will provide a sample of the preformed thermoplastic pavement marking to be used on the project to the Region Traffic Engineer for inspection and approval.
- Do not begin application of the preformed thermoplastic pavement marking prior to obtaining the Region Traffic Engineer's approval of the preformed thermoplastic pavement marking material. The Region Traffic Engineer's approval of the preformed thermoplastic pavement marking does not void other preformed thermoplastic pavement marking requirements specified.

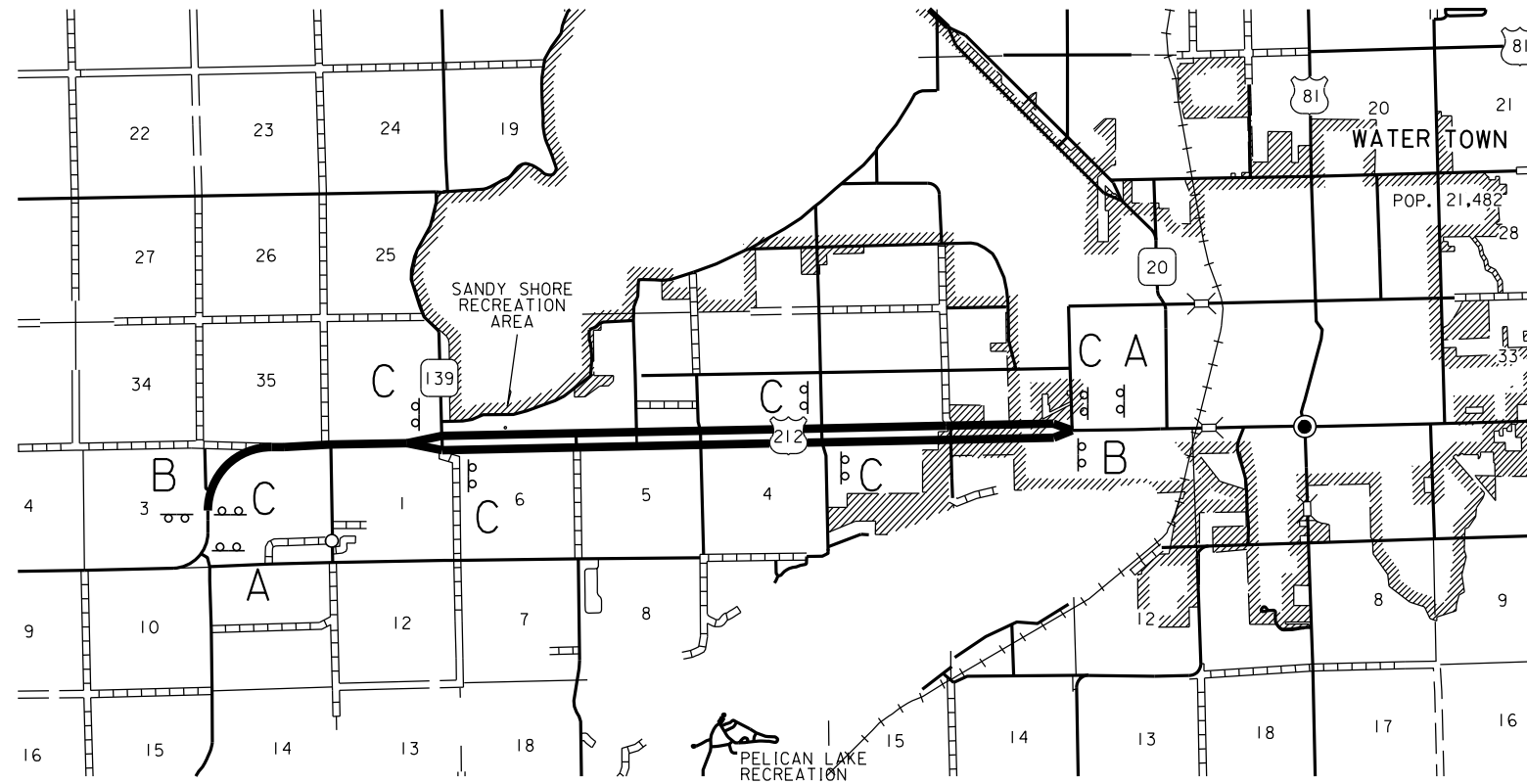
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-NH-P 0012 (286)	14	28
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FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

SEGMENT 1
US 212 - MRM 367.61 + 0.222 to MRM 369.84
Codington County
Length 1.939 Miles

SEGMENT 2
US 212 E - MRM 369.84 to MRM 375.00 + 0.093
Codington County
Length 5.281 Miles

SEGMENT 3
US 212 W - MRM 369.84 to MRM 375.00 + 0.093
Codington County
Length 5.282 Miles



ROAD WORK
NEXT 8 MILES

A

END
ROAD WORK

B

FRESH
OIL

ON
SHOULDER

C

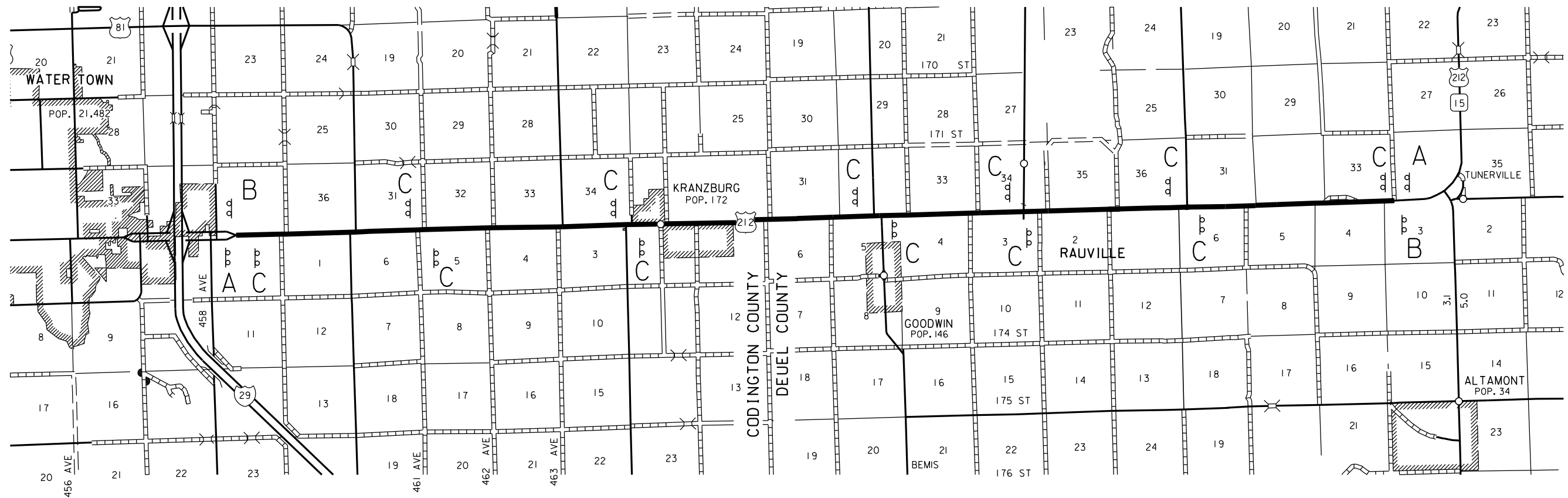
ROAD
WORK
AHEAD

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

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FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

SEGMENT 4
US 212 - MRM 380.68 to MRM 397.00 + 0.275
Codington and Deuel County
Length 16.693 Miles



ROAD WORK
NEXT 17 MILES

A

END
ROAD WORK

B

FRESH
OIL

ON
SHOULDER

C

ROAD
WORK
AHEAD

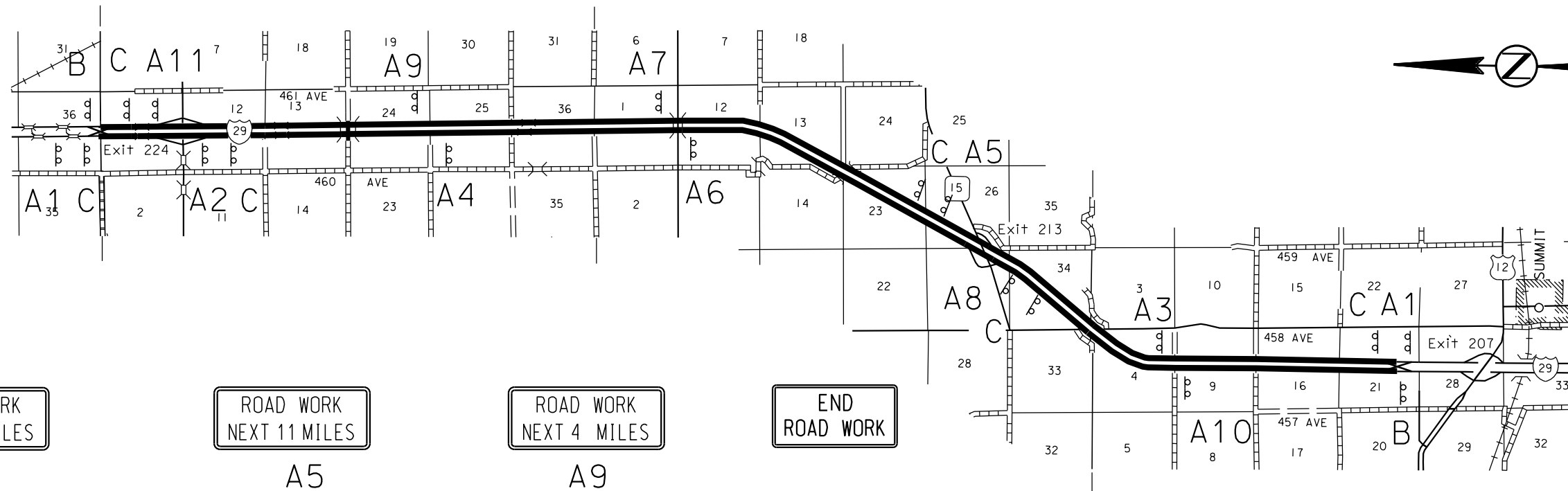
W20-1 ROAD WORK AHEAD signs will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs will be moved as necessary to keep current with the work activities.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

SEGMENT 5
I 29 N - MRM 208.00 + 0.380 to MRM 225.00 + 0.016
Roberts County
Length 16.638 Miles

SEGMENT 6
I 29 S - MRM 208.00 + 0.385 to MRM 225.00 + 0.016
Roberts County
Length 16.628 Miles



ROAD WORK
NEXT 17 MILES

A1

ROAD WORK
NEXT 11 MILES

A5

ROAD WORK
NEXT 4 MILES

A9

END
ROAD WORK

B

ROAD WORK
NEXT 16 MILES

A2

ROAD WORK
NEXT 10 MILES

A6

ROAD WORK
NEXT 3 MILES

A10



ON
SHOULDER

C

ROAD WORK
NEXT 14 MILES

A3

ROAD WORK
NEXT 7 MILES

A7

ROAD WORK
NEXT 1 MILES

A11

ROAD WORK
NEXT 13 MILES

A4

ROAD WORK
NEXT 6 MILES

A8

PLOT SCALE - 1:11959.9

PLOTTED FROM - IRBRI112

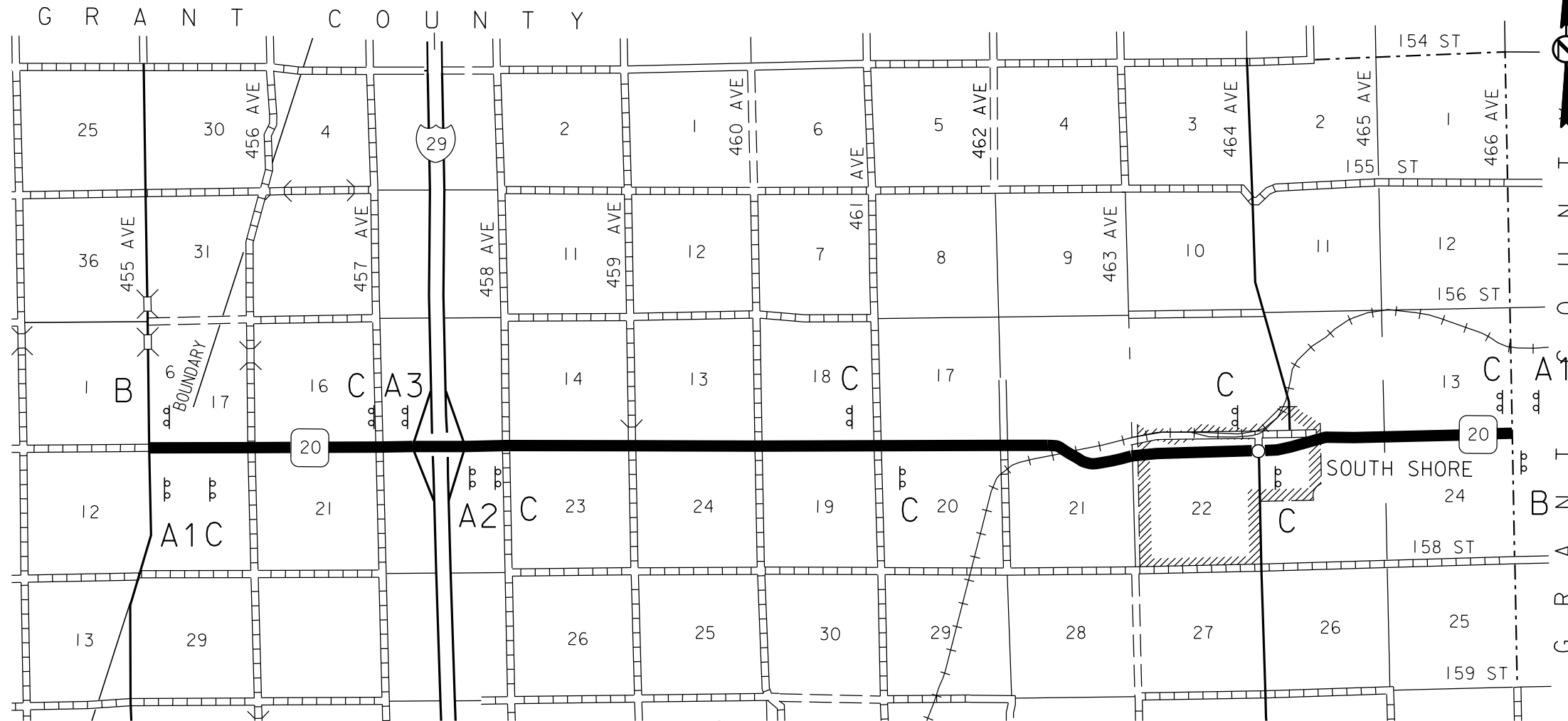
PLOT NAME - 1

FILE - ... \07KR_TITLESHEET.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

SEGMENT 7
SD 20 - MRM 416.45 to MRM 427.24
Codington County
Length 10.834 Miles



ROAD WORK
NEXT 11 MILES

A1

ROAD WORK
NEXT 8 MILES

A2

ROAD WORK
NEXT 2 MILES

A3

END
ROAD WORK

B

LOOSE
GRAVEL

SPEED
LIMIT
40

C

ROAD
WORK
AHEAD

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

PLOT SCALE - 1:11954.9

PLOTTED FROM - IRBRINT12

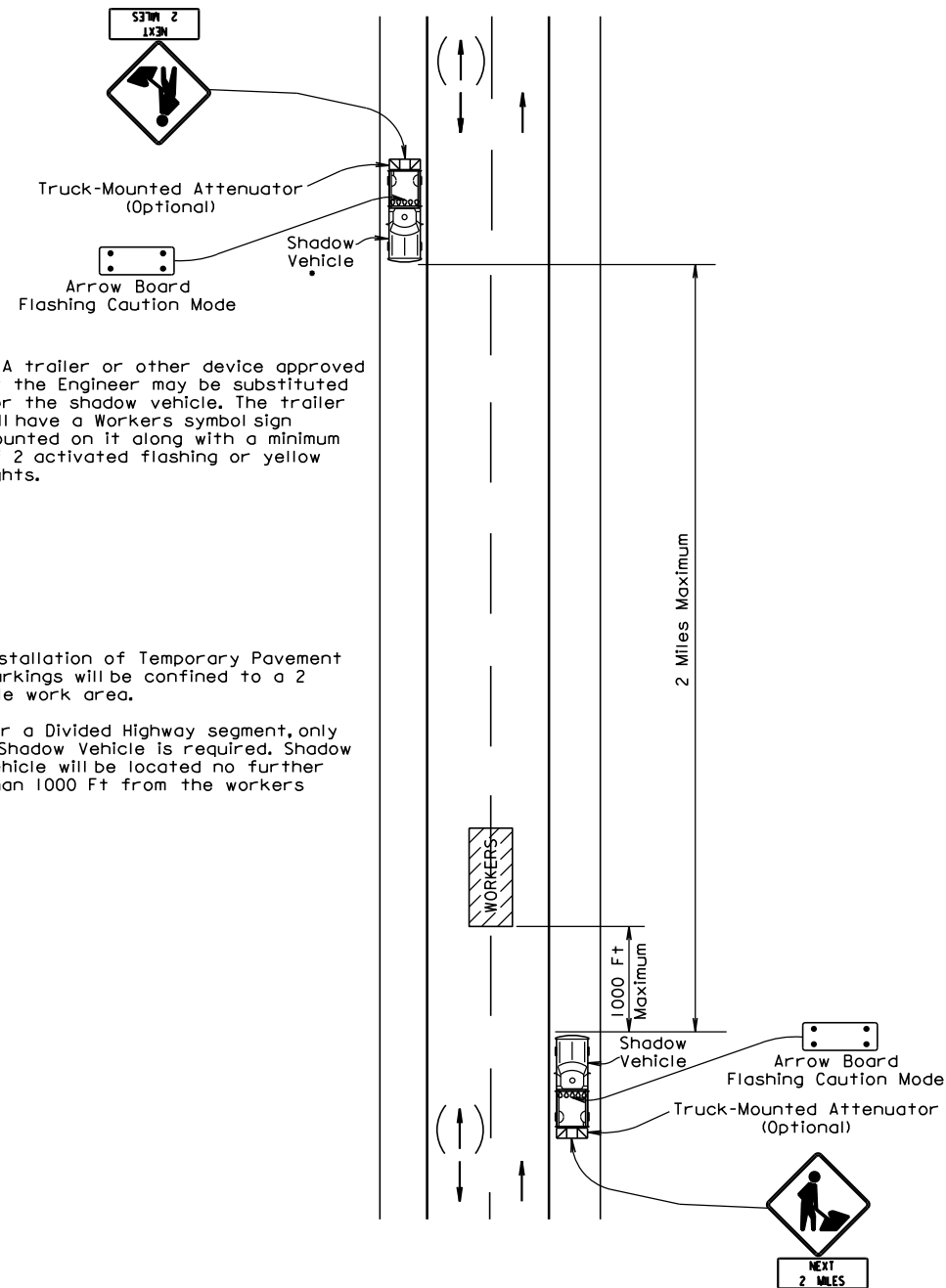
PLOT NAME - 1

FILE - ... \07KR_TITLESHEET.DGN

PLOT SCALE - 1:249,338

PLOTTED FROM - IRBRINT12

**GUIDES FOR TRAFFIC CONTROL DEVICES
APPLICATION OF TEMPORARY FLEXIBLE VERTICAL MARKERS**

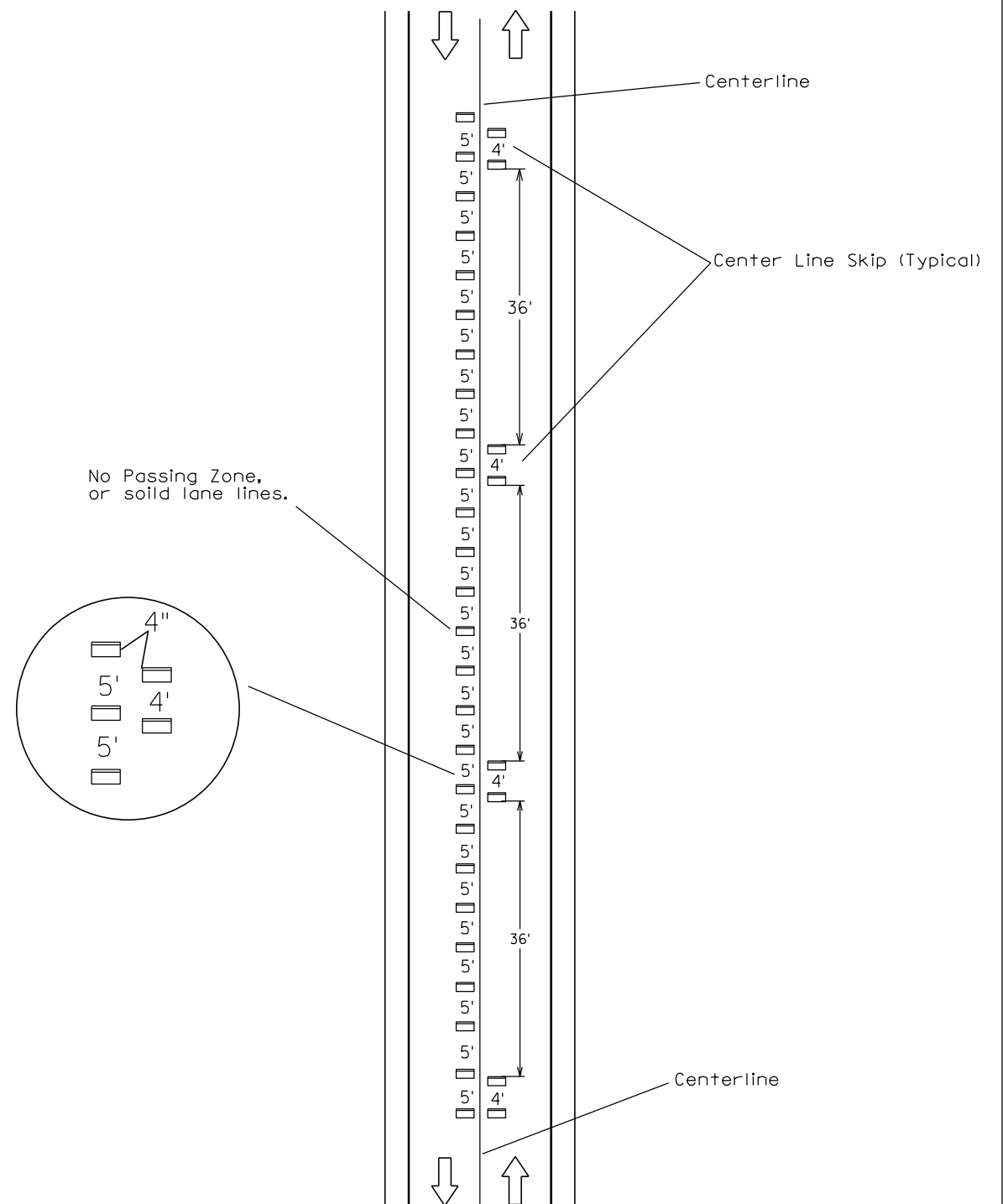


* A trailer or other device approved by the Engineer may be substituted for the shadow vehicle. The trailer will have a Workers symbol sign mounted on it along with a minimum of 2 activated flashing or yellow lights.

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

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

**DETAILS FOR TRAFFIC CONTROL DEVICES
TEMPORARY ROAD MARKER INSTALLATION**



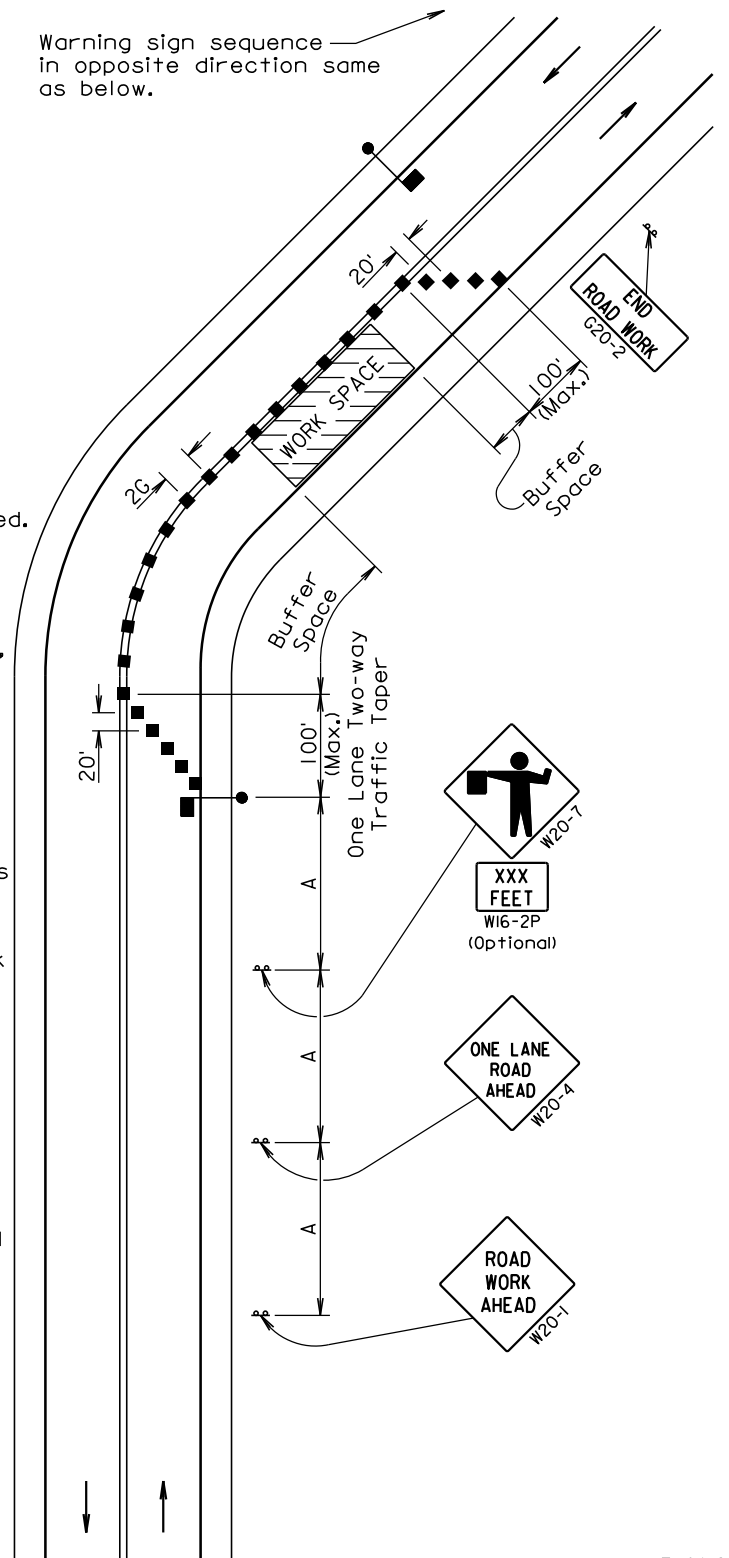
PLOT NAME - 1

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PLOT SCALE - 1:11680.4

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

Warning sign sequence in opposite direction same as below.



- Flagger
- Channelizing Device

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

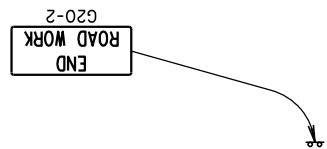
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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

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

The channelizing devices shall be drums or 42" cones.

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



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

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

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

June 3, 2016

SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
	Published Date: 4th Qtr. 2020	Sheet 1 of 1

PLOTTED FROM - TRBRINT12

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B)	L (Feet)
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B)	
70 - 80	1000 1500	1125

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 80	50 *

* Spacing is 40' for 42" cones.

- Channelizing Device

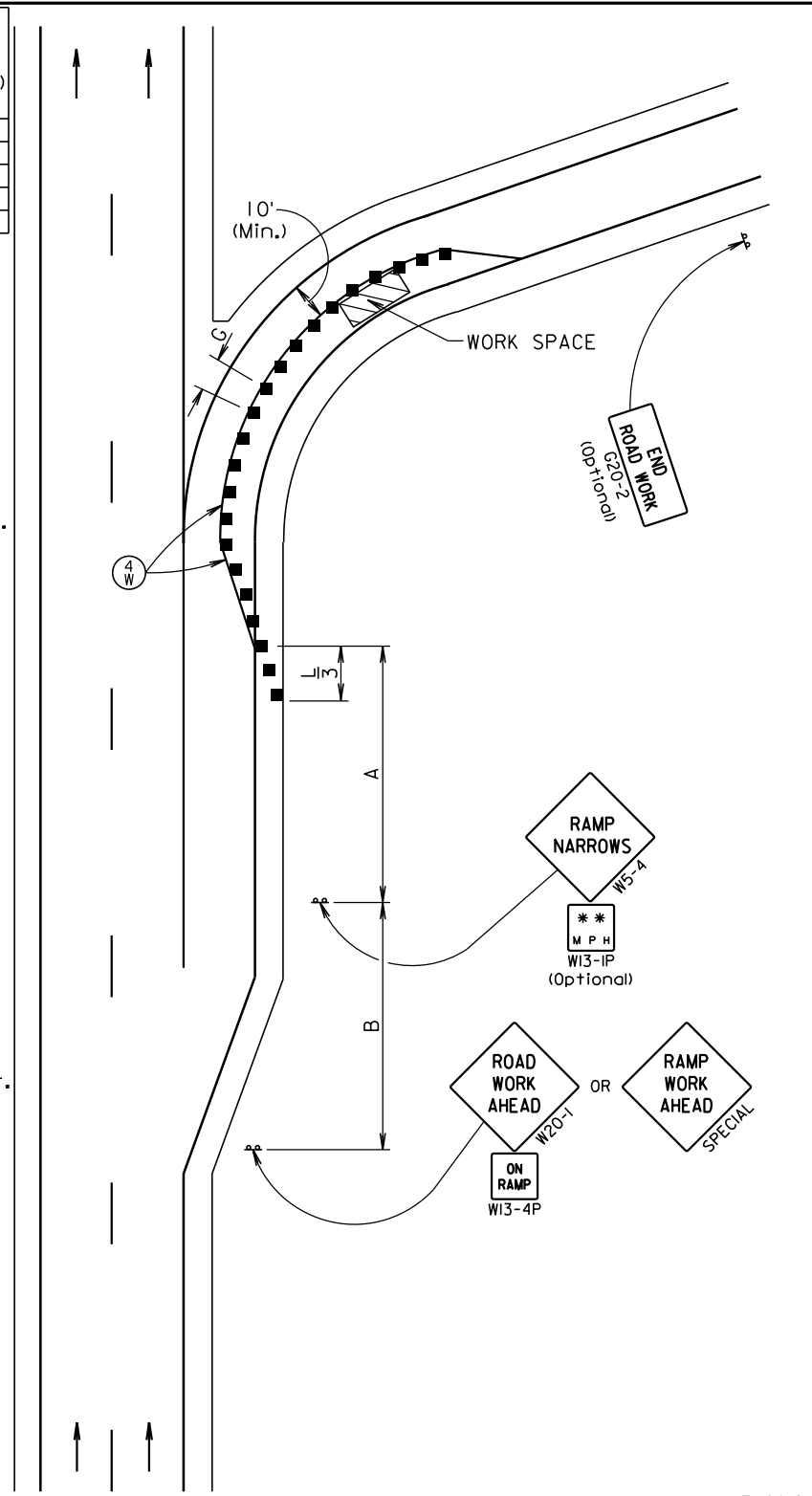
④ 4" White Temporary Pavement Marking

** Need and safe speed to be determined by the Highway Authority.

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

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

Truck off-tracking should be considered when determining whether the 10-foot minimum lane width is adequate.

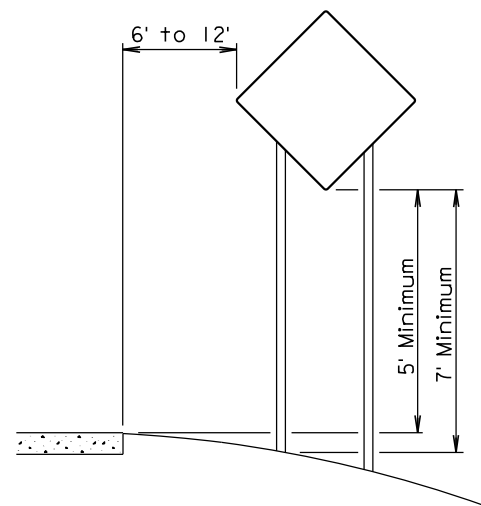


June 3, 2016

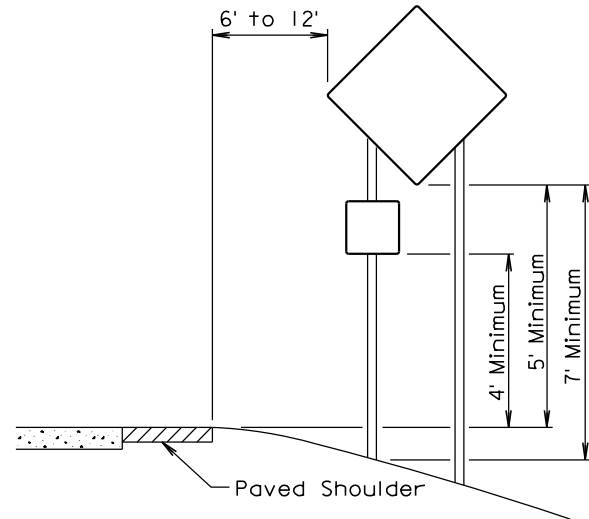
SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES PARTIAL EXIT RAMP CLOSURE	PLATE NUMBER 634.69
	Published Date: 4th Qtr. 2020	Sheet 1 of 1

PLOT NAME - 1

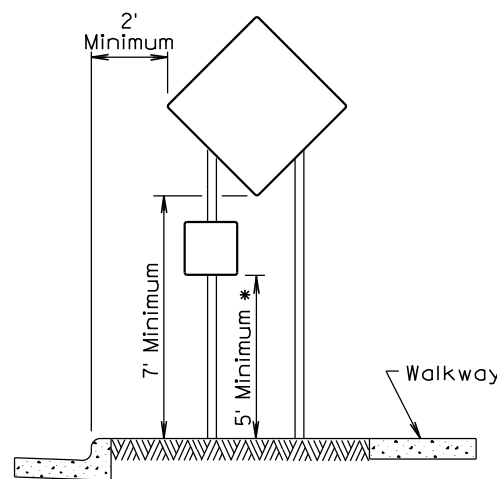
FILE - ... \07KR_TITLESHEET.DGN



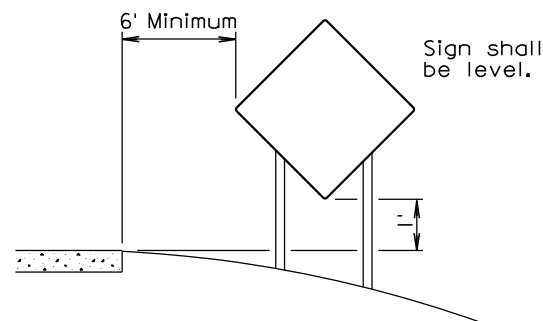
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

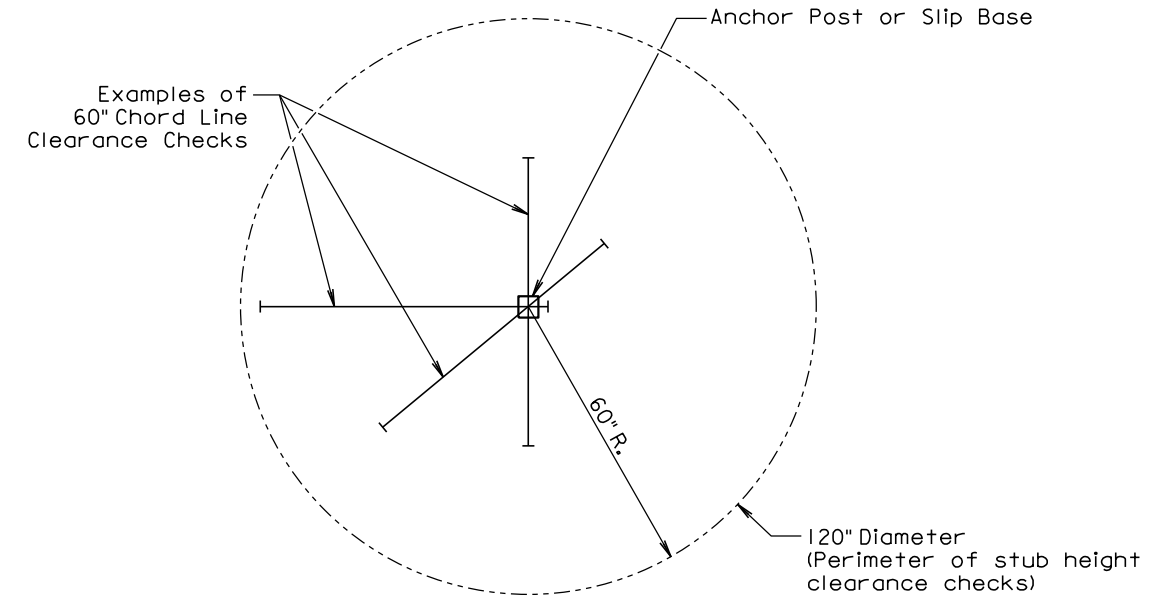


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

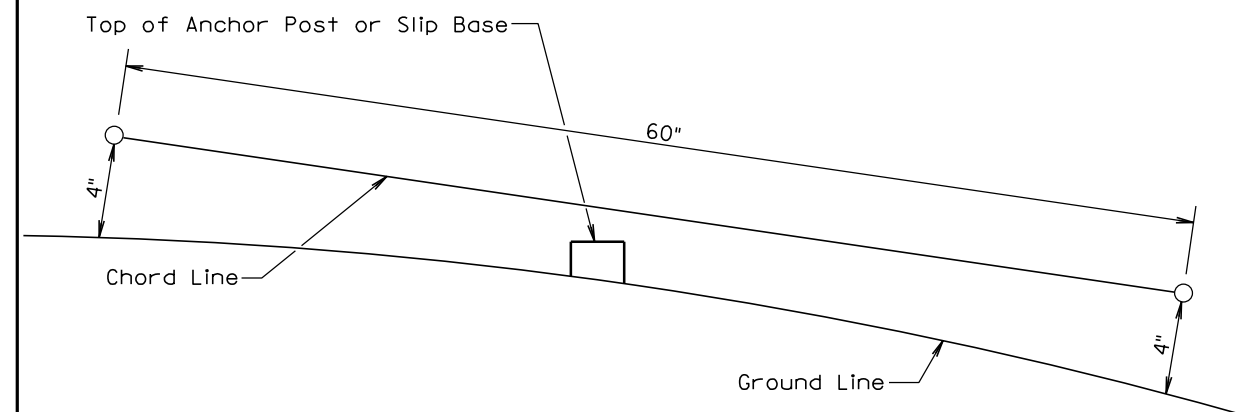
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

Published Date: 4th Qtr. 2020	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 4th Qtr. 2020	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

SPECIAL SIGN DETAIL



3.0" Radius, 1.0" Border, White on, Orange;
 "ONE LANE ROAD" Black, C 2K;
 "WAIT FOR" Black, C 2K;
 "PILOT CAR" Black, C 2K;

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SEGMENT 1 US 212

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
SPECIAL	ON SHOULDER	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	1	48" x 48"	16.0	16.0
G20-1	ROAD WORK NEXT 8 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	1	36" x 18"	4.5	4.5
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					153.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SEGMENT 2/3 US 212

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W21-2	FRESH OIL	6	48" x 48"	16.0	96.0
SPECIAL	ON SHOULDER	6	36" x 24"	6.0	36.0
W21-5	SHOULDER WORK	1	48" x 48"	16.0	16.0
G20-1	ROAD WORK NEXT 8 MILES	1	48" x 24"	8.0	8.0
G20-2	END ROAD WORK	1	48" x 24"	8.0	8.0
EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT					228.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SEGMENT 4 US 212

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W21-2	FRESH OIL	12	48" x 48"	16.0	192.0
SPECIAL	ON SHOULDER	12	48" x 48"	16.0	192.0
W21-5	SHOULDER WORK	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	1	36" x 18"	4.5	4.5
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					468.5

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SEGMENT 5 I29 N

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W5-4	RAMP NARROWS	1	48" x 48"	16.0	16.0
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
W13-4P	ON RAMP (plaque)	1	36" x 36"	9.0	9.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-2	FRESH OIL	7	48" x 48"	16.0	112.0
SPECIAL	ON SHOULDER	7	36" x 24"	6.0	42.0
W21-5	SHOULDER WORK	1	48" x 48"	16.0	16.0
G20-1	ROAD WORK NEXT 17 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 14 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 11 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 7 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 4 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 1 MILES	1	48" x 24"	8.0	8.0
G20-2	END ROAD WORK	1	48" x 24"	8.0	8.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			391.6

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SEGMENT 7 SD 20

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R8-3	NO PARKING (symbol)	2	24" x 24"	4.0	8.0
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	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	8	48" x 48"	16.0	128.0
G20-1	ROAD WORK NEXT 11 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 8 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	2	36" x 18"	4.5	9.0
SPECIAL	ONE LANE ROAD WAIT FOR PILOT CAR	4	48" x 24"	8.0	32.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			533.4

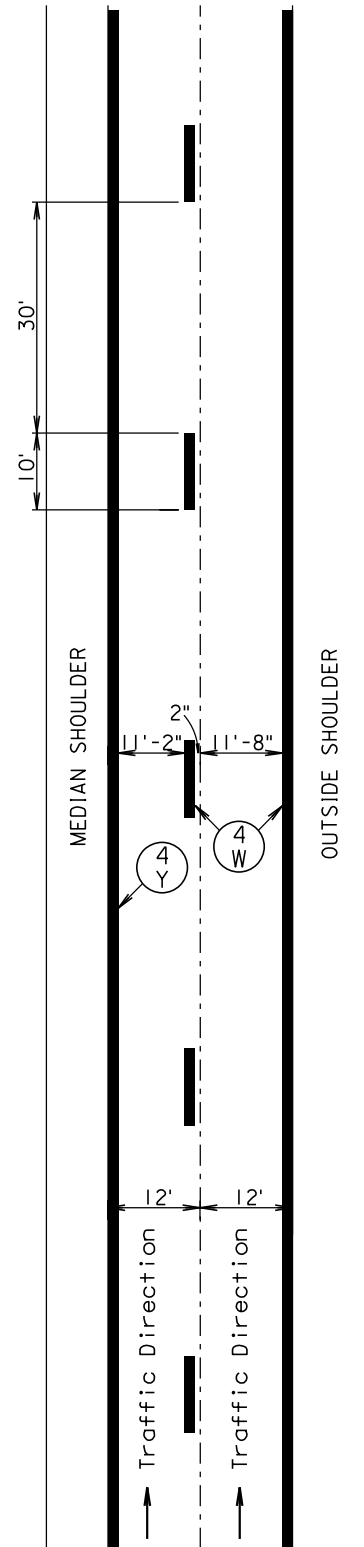
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SEGMENT 6 I29 S

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W5-4	RAMP NARROWS	1	48" x 48"	16.0	16.0
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
W13-4P	ON RAMP (plaque)	1	36" x 36"	9.0	9.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-2	FRESH OIL	7	48" x 48"	16.0	112.0
SPECIAL	ON SHOULDER	7	36" x 24"	6.0	42.0
W21-5	SHOULDER WORK	1	48" x 48"	16.0	16.0
G20-1	ROAD WORK NEXT 17 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 16 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 13 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 10 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 6 MILES	1	48" x 24"	8.0	8.0
G20-1	ROAD WORK NEXT 3 MILES	1	48" x 24"	8.0	8.0
G20-2	END ROAD WORK	1	48" x 24"	8.0	8.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			391.6

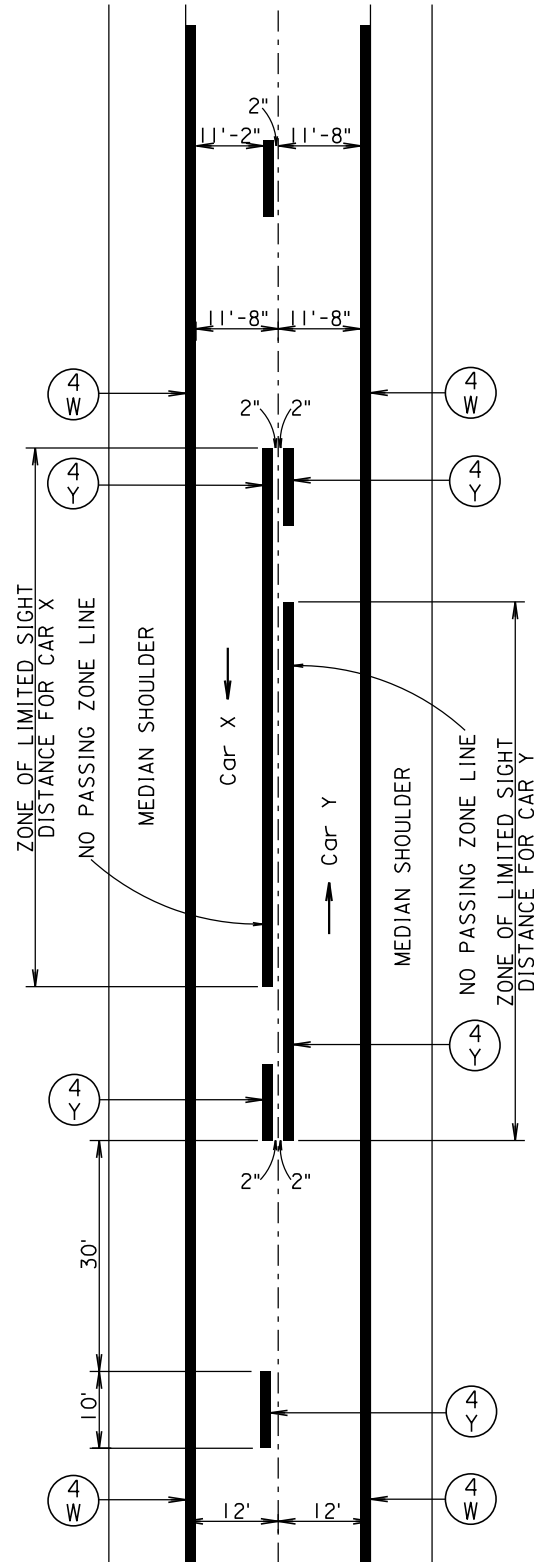
FURNISHING AND APPLYING PAVEMENT MARKING PAINT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-NH-P 0012(286)	24	28
Plotting Date: 12/28/2020			

FOUR LANE DIVIDED ROADWAY ONLY ONE DIRECTION SHOWN



TWO LANE UNDIVIDED ROADWAY



1. The approximate paint application rates will be as follows:

Undivided Roadway	Divided Roadway
4" Solid Yellow Centerline/White Edgeline 27.8 Gallons/Pass-Mile (Solid Line)	Yellow or White Edgeline 27.8 Gallons/Pass-Mile (Solid Line)

2. The typical pavement markings as shown on this sheet will be applied throughout the entire length of the project.

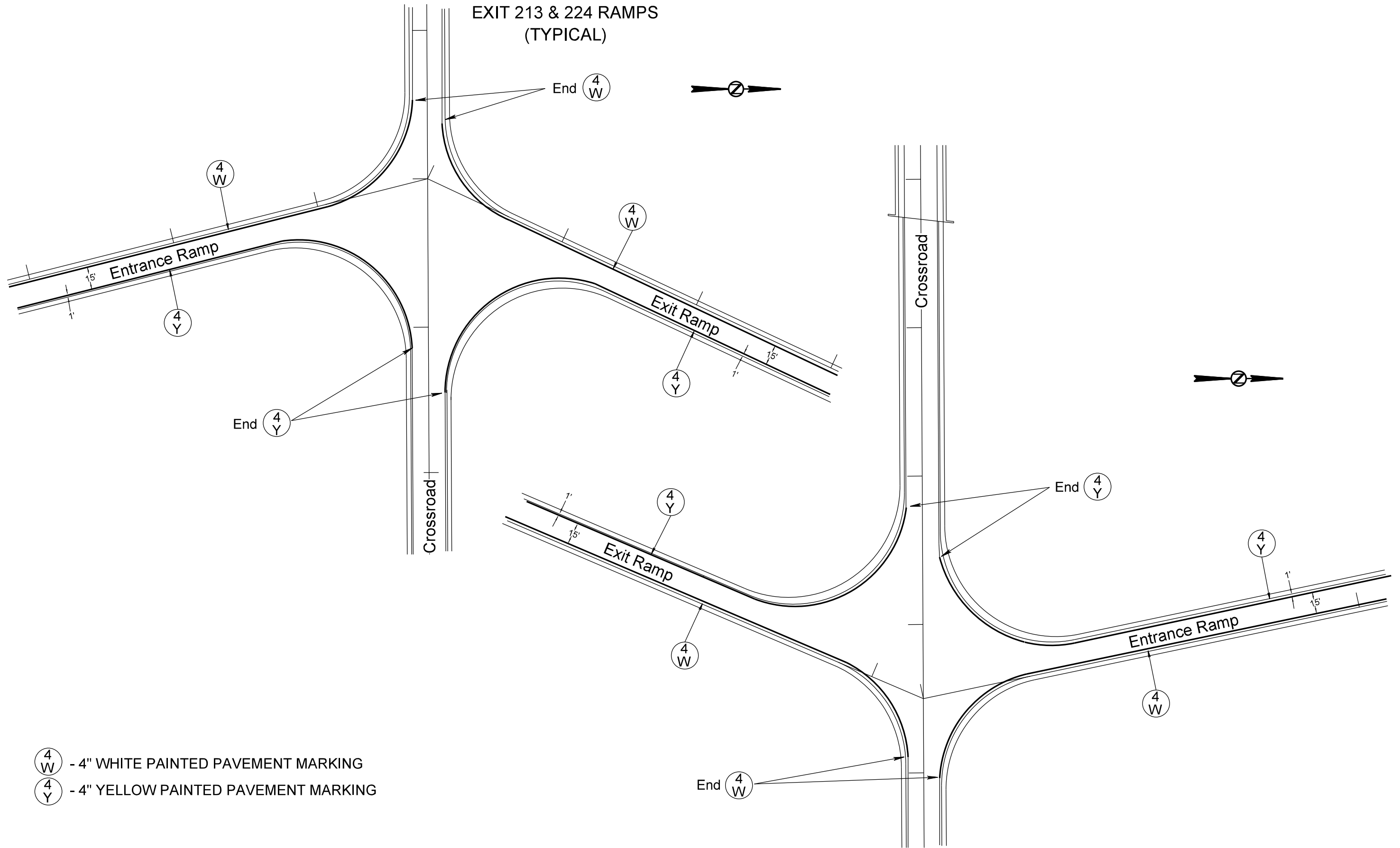
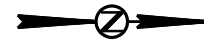
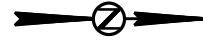
3. Traffic Control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights or advance warning arrow panel.



ROUTE	ESTIMATED QUANTITIES	
	PAVEMENT MARKING PAINT	
	WHITE	YELLOW
SEGMENT 5 I 29 N (EXIT 213/224 RAMPS)	28	28
SEGMENT 6 I 29 S (EXIT 213/224 RAMPS)	28	28
SEGMENT 7 SD 20	602	320
TOTALS:	658 GALLONS	376 GALLONS

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-NH-P 0012 (286)	25	28
Plotting Date: 12/04/2020		Revised 12/31/2020	

PAVEMENT MARKING
EXIT 213 & 224 RAMPS
(TYPICAL)



-  - 4" WHITE PAINTED PAVEMENT MARKING
-  - 4" YELLOW PAINTED PAVEMENT MARKING

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-NH-P 0012(286)	26	28
Plotting Date: 12/28/2020			

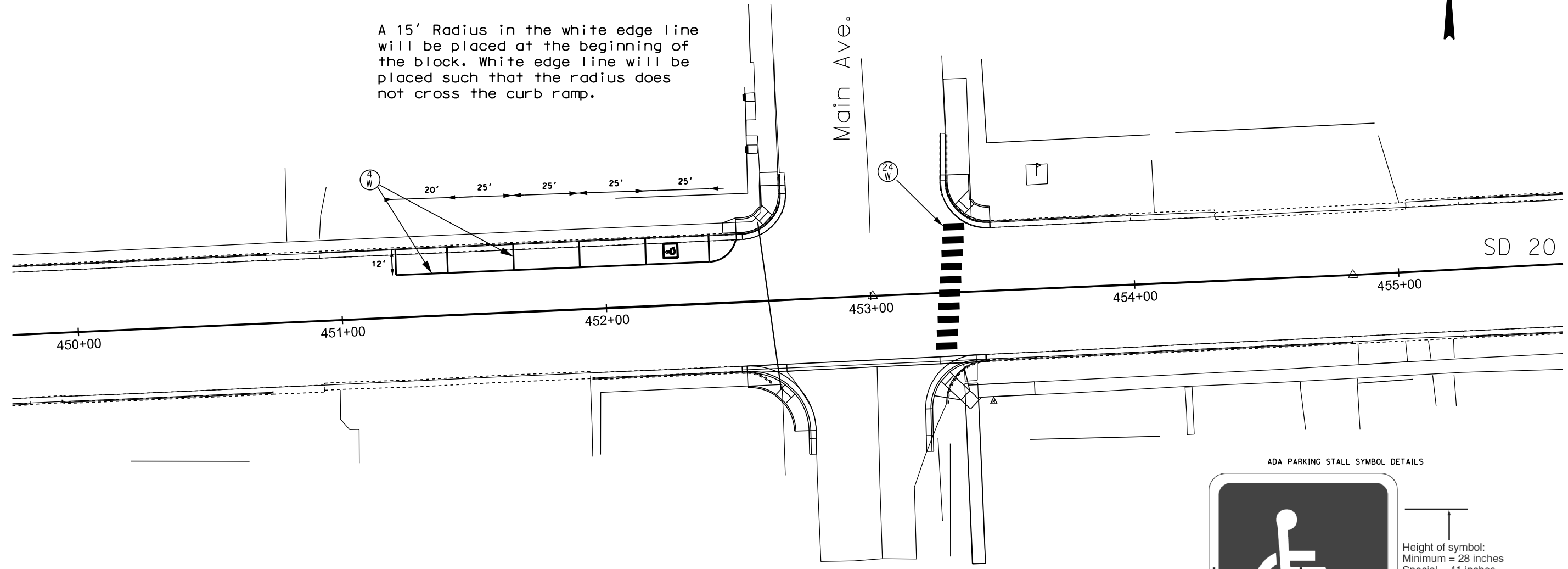
Pavement Marking Layout

(Parking Stalls and Crosswalk in South Shore)

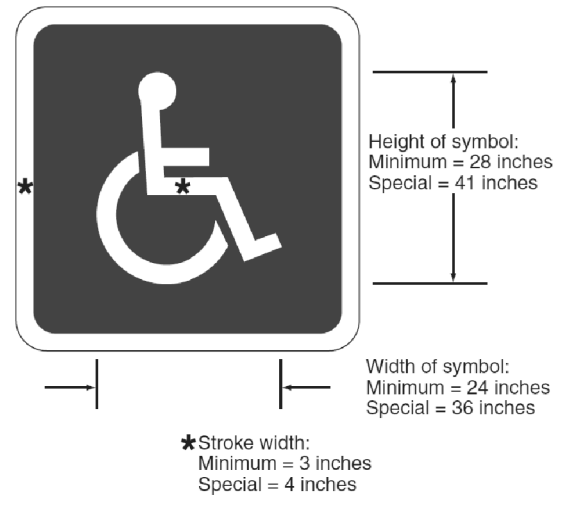
PLOT SCALE - 1:39.8509

PLOT NAME - 1

A 15' Radius in the white edge line will be placed at the beginning of the block. White edge line will be placed such that the radius does not cross the curb ramp.



ADA PARKING STALL SYMBOL DETAILS



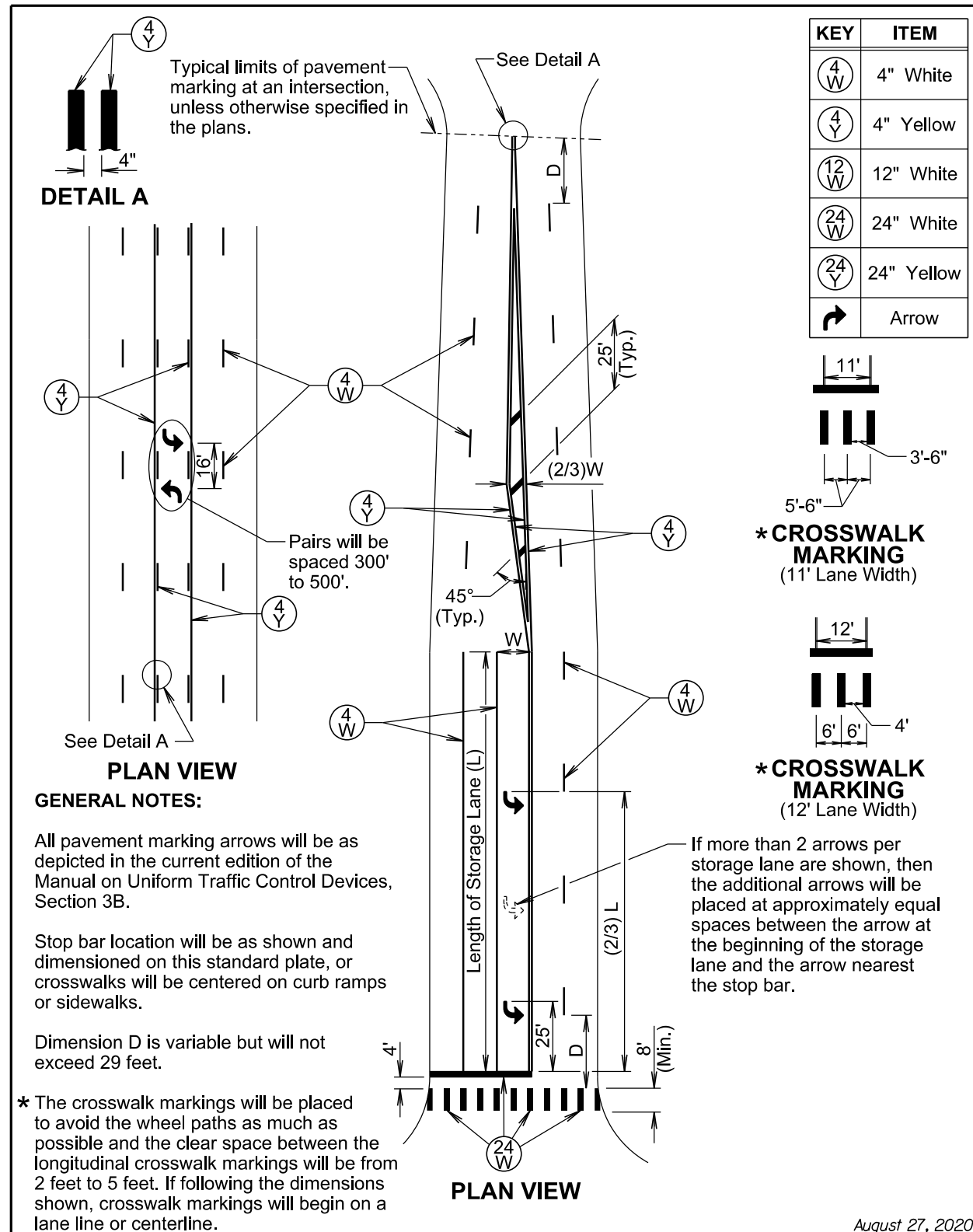
- : COLD APPLIED PLASTIC PAVEMENT MARKING, 4" (WHITE)
- : COLD APPLIED PLASTIC PAVEMENT MARKING, 24" (WHITE)
- : PREFORMED THERMOPLASTIC PAVEMENT MARKING, SYMBOL

- Notes:
1. Size will at least meet the minimum requirements listed above.
 2. Blue Background and White Border on Symbol are required.

PLOTTED FROM - IRBBRINT12

FILE - ...PARKING LAYOUT.DGN

PLOT SCALE - 1:11680.4



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.

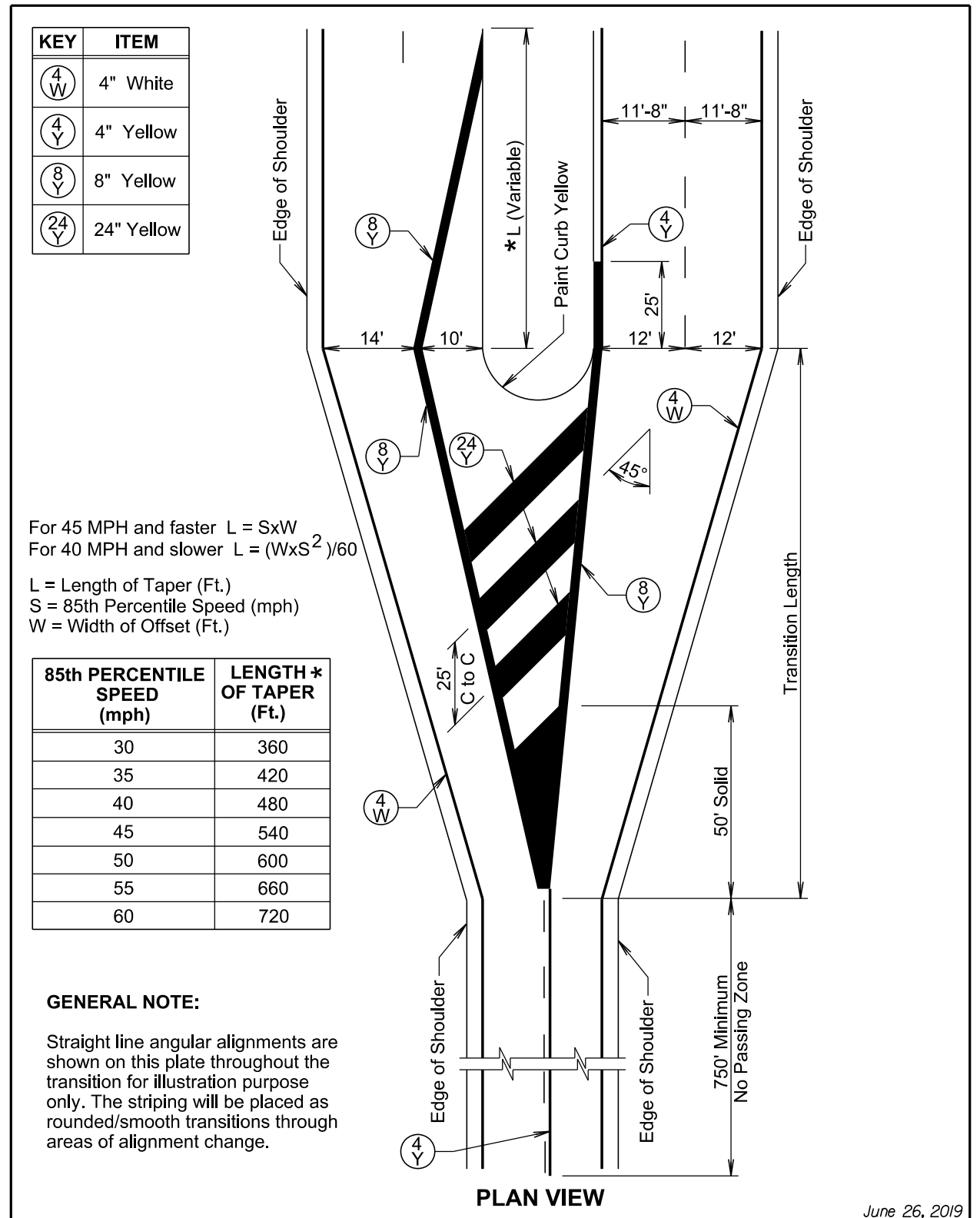
Dimension D is variable but will not exceed 29 feet.

* 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.

August 27, 2020

Published Date: 4th Qtr. 2020	S D D O T	PLATE NUMBER	633.01
		Sheet 1 of 1	

PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE



For 45 MPH and faster $L = SxW$
 For 40 MPH and slower $L = (WxS^2)/60$
 L = Length of Taper (Ft.)
 S = 85th Percentile Speed (mph)
 W = Width of Offset (Ft.)

85th PERCENTILE SPEED (mph)	LENGTH * OF TAPER (Ft.)
30	360
35	420
40	480
45	540
50	600
55	660
60	720

GENERAL NOTE:

Straight line angular alignments are shown on this plate throughout the transition for illustration purpose only. The striping will be placed as rounded/smooth transitions through areas of alignment change.

June 26, 2019

Published Date: 4th Qtr. 2020	S D D O T	PLATE NUMBER	633.03
		Sheet 1 of 1	

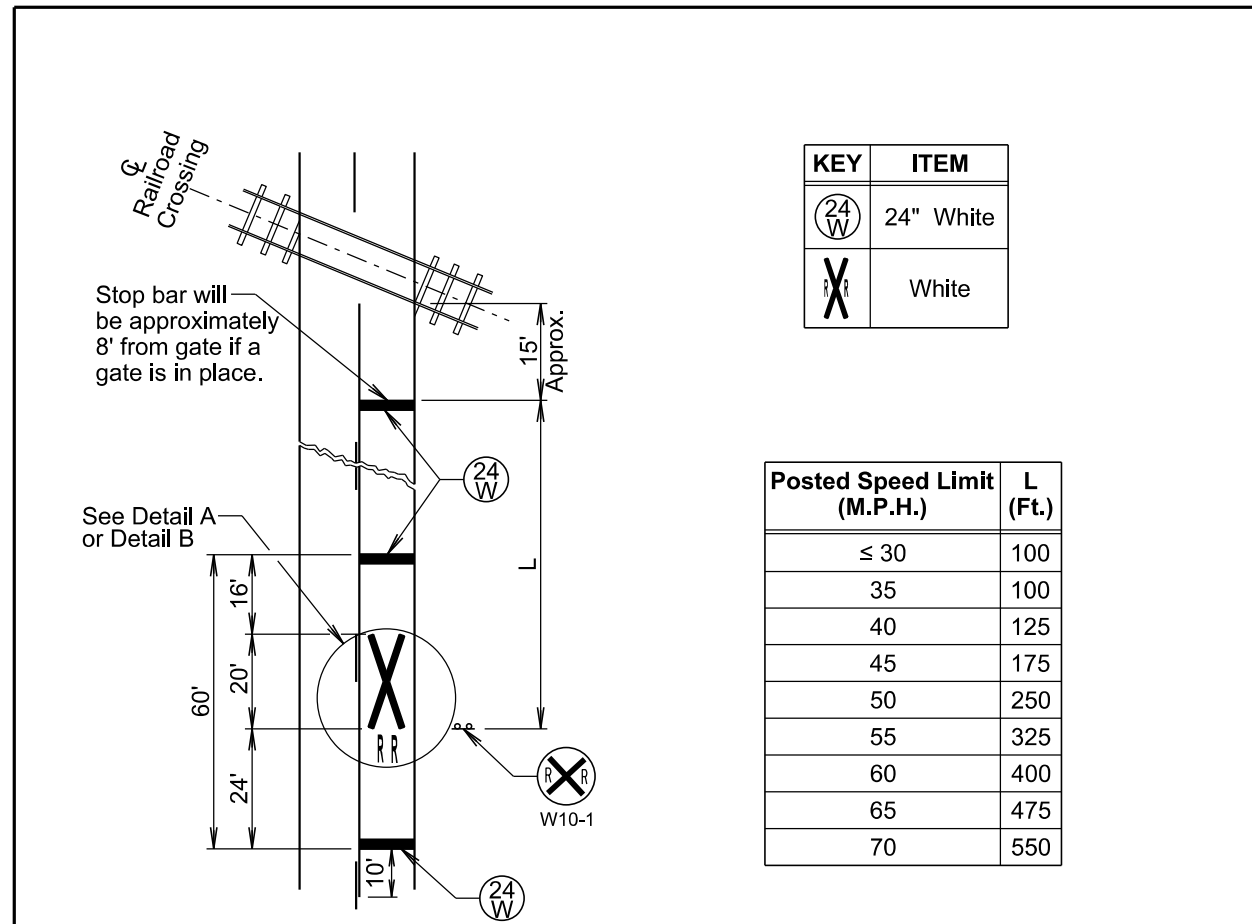
APPROACH PAVEMENT MARKINGS FOR TWO-LANE TO FOUR-LANE DIVIDED HIGHWAYS

PLOTTED FROM - TRBRINT12

PLOT NAME - 1

FILE - ... \07KR_TITLESHEET.DGN

PLOT SCALE - 1:11680.4



KEY	ITEM
(24 W)	24" White
X	White

Posted Speed Limit (M.P.H.)	L (Ft.)
≤ 30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550

PLAN VIEW

GENERAL NOTES:

The railroad crossing pavement markings will be placed symmetrically about the centerline of the railroad crossing. DETAIL A should be used unless the railroad crossing pavement markings are installed in existing grooves that match DETAIL B.

When pavement markings are used, a portion of the RXR symbol will be placed directly opposite of the advance warning sign W10-1.

On multi-lane roads the transverse bands will extend across all approach lanes and individual RXR symbols will be placed in each approach lane.

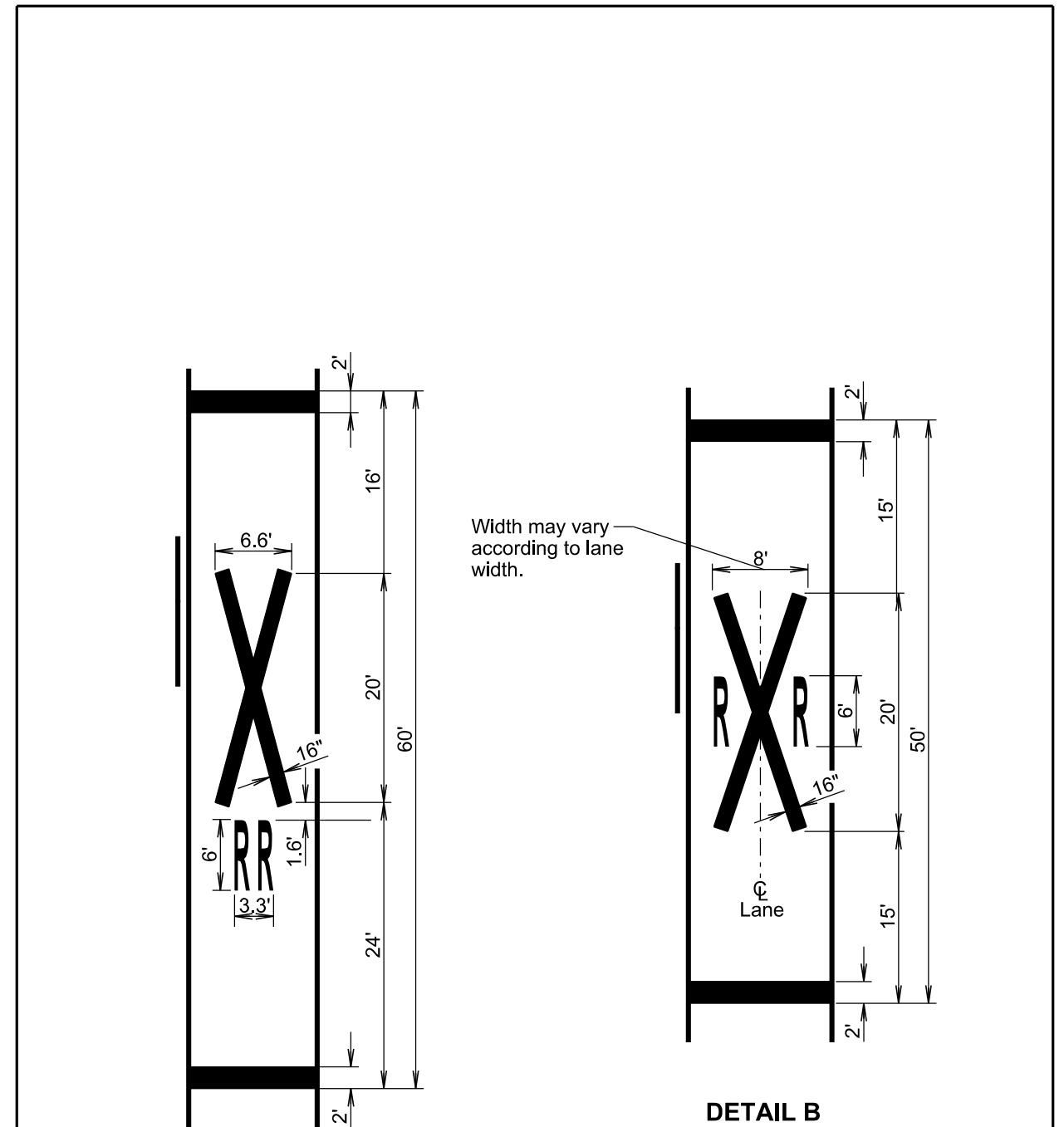
The railroad crossing pavement markings will consist of all the transverse bands, stop bars, and RXR symbols.

All costs for furnishing and installing the markings, materials, labor, and necessary equipment for the railroad crossing markings will be paid for at the contract unit price per gallon or per each for the type of marking material specified in the plans.

May 9, 2020

Published Date: 4th Qtr. 2020	S D D O T	PAVEMENT MARKINGS AT RAILROAD CROSSING	PLATE NUMBER 633.10
			Sheet 1 of 2

PLOT NAME - 1



DETAIL A

DETAIL B

May 9, 2020

Published Date: 4th Qtr. 2020	S D D O T	PAVEMENT MARKINGS AT RAILROAD CROSSING	PLATE NUMBER 633.10
			Sheet 2 of 2

FILE - ... \07KR_TITLESHEET.DGN

PLOTTED FROM - TRBRINT12