

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	1	19

Plotting Date: 11/18/2015

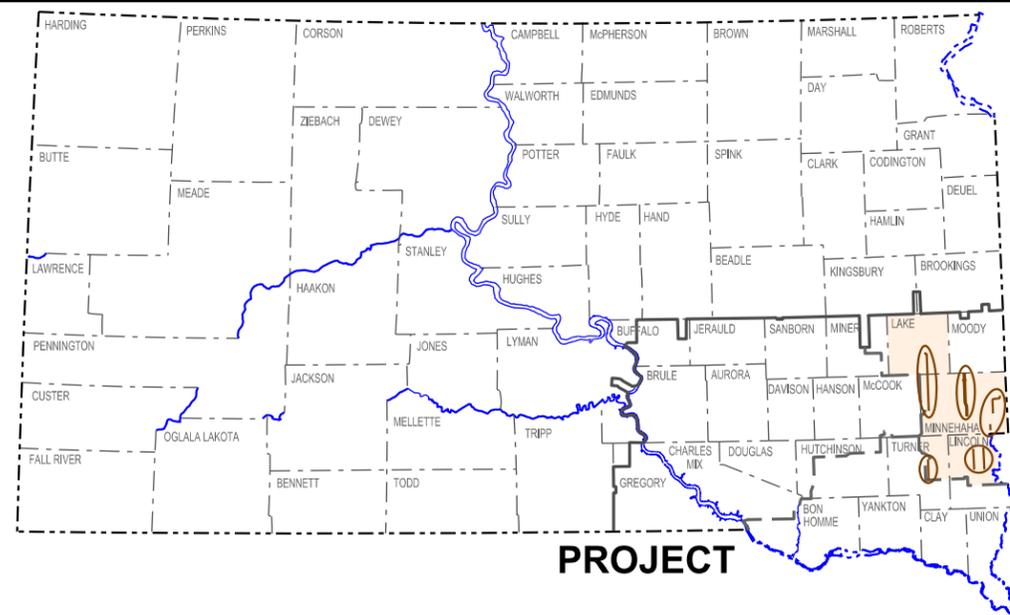
PLANS FOR PROPOSED

PROJECT IM-NH-P 0022(55)  
INTERSTATE 29 & SD HIGHWAYS 11, 19 & 115  
MINNEHAHA, LAKE, LINCOLN & TURNER COUNTIES  
SIOUX FALLS AREA  
ASPHALT CONCRETE CRACK SEALING &  
ASPHALT CONCRETE CRACK SEALING OF  
SHOULDERS & CROSSROAD  
PCN 056J

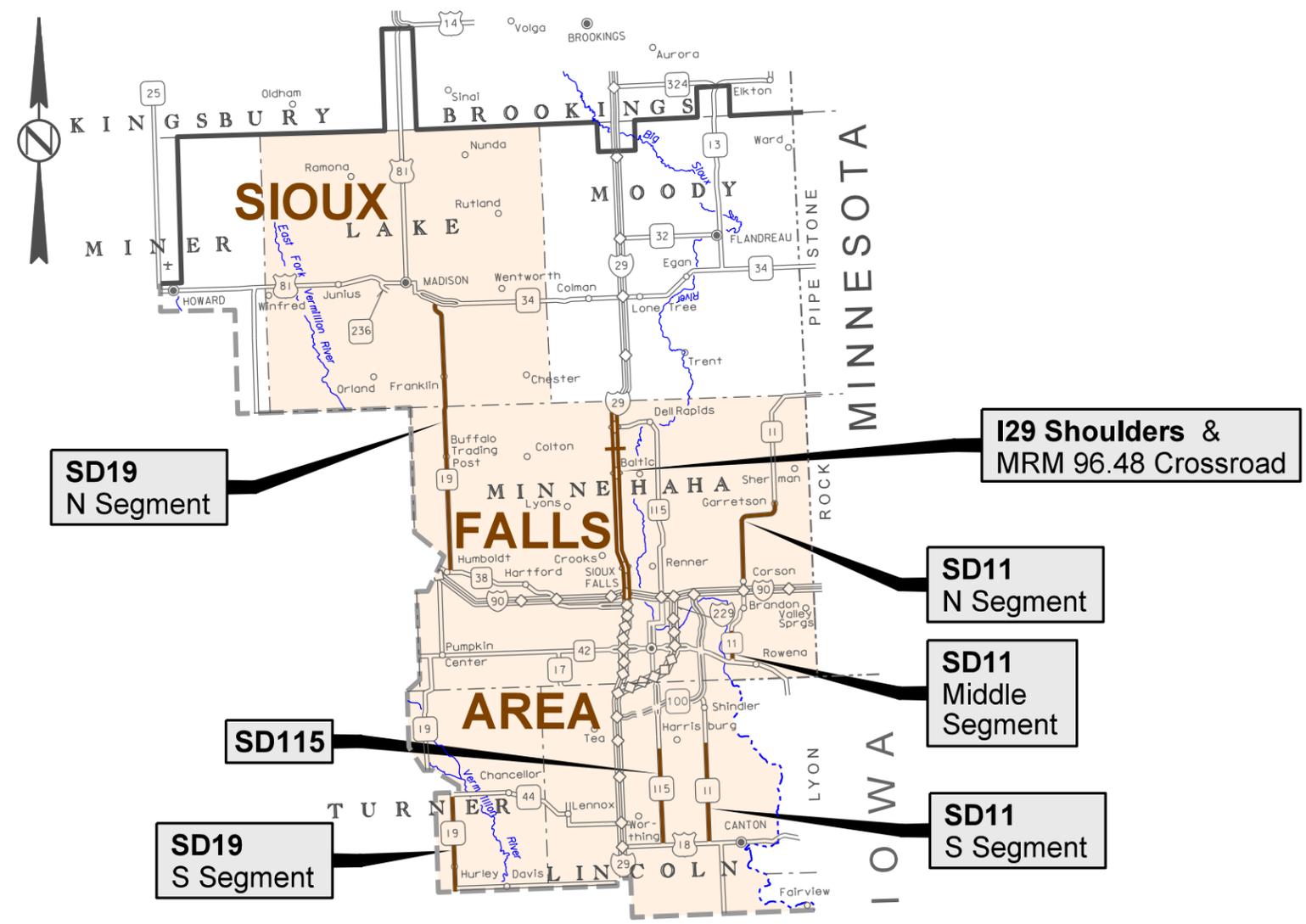
INDEX OF SHEETS

Sheet 1	Title Sheet
Sheets 2 - 7	Layout Maps
Sheet 8	Estimate of Quantities
Sheet 9	Environmental Commitments
Sheet 10 & 11	Plan Notes
Sheets 12 & 13	Pavement Marking
Sheets 14 & 15	Details
Sheets 16 - 19	Traffic Control

PLOT SCALE - 1" = 7000'



PROJECT



**STORM WATER PERMIT**  
(None required)

PLOTTED FROM - TRSF12115

FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN

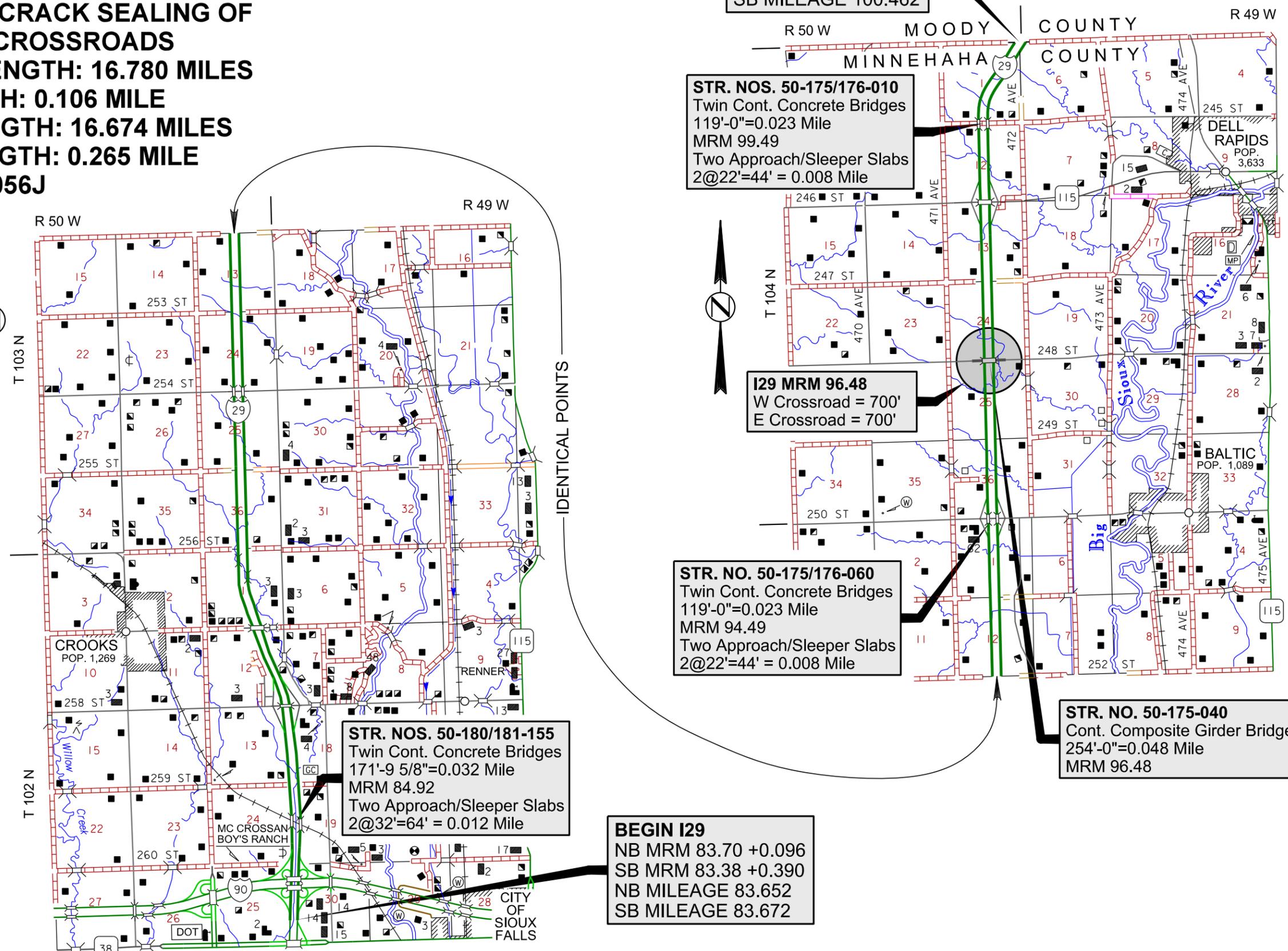
PLOT NAME - 1

Plotting Date: 11/18/2015

**IM-NH-P 0022(55)**  
**INTERSTATE 29**  
**MINNEHAHA COUNTY**  
**SIOUX FALLS AREA**  
**ASPHALT CONCRETE CRACK SEALING OF**  
**SHOULDERS & CROSSROADS**  
**GROSS SHOULDER LENGTH: 16.780 MILES**  
**BRIDGE LENGTH: 0.106 MILE**  
**NET SHOULDER LENGTH: 16.674 MILES**  
**CROSSROAD LENGTH: 0.265 MILE**  
**PCN 056J**

PLOT SCALE - 1:7000

PLOT NAME - 2  
FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN



**END I29**  
 MRM 100.62 +0.000  
 NB MILEAGE 100.422  
 SB MILEAGE 100.462

**STR. NOS. 50-175/176-010**  
 Twin Cont. Concrete Bridges  
 119'-0"=0.023 Mile  
 MRM 99.49  
 Two Approach/Sleeper Slabs  
 2@22'=44' = 0.008 Mile

**I29 MRM 96.48**  
 W Crossroad = 700'  
 E Crossroad = 700'

**STR. NO. 50-175/176-060**  
 Twin Cont. Concrete Bridges  
 119'-0"=0.023 Mile  
 MRM 94.49  
 Two Approach/Sleeper Slabs  
 2@22'=44' = 0.008 Mile

**STR. NO. 50-175-040**  
 Cont. Composite Girder Bridge  
 254'-0"=0.048 Mile  
 MRM 96.48

**STR. NOS. 50-180/181-155**  
 Twin Cont. Concrete Bridges  
 171'-9 5/8"=0.032 Mile  
 MRM 84.92  
 Two Approach/Sleeper Slabs  
 2@32'=64' = 0.012 Mile

**BEGIN I29**  
 NB MRM 83.70 +0.096  
 SB MRM 83.38 +0.390  
 NB MILEAGE 83.652  
 SB MILEAGE 83.672

**I29 MRM 96.48**  
**ADT (2013)**  
**Crossroad N/A**

**I29 ADT (2013) 17,722**

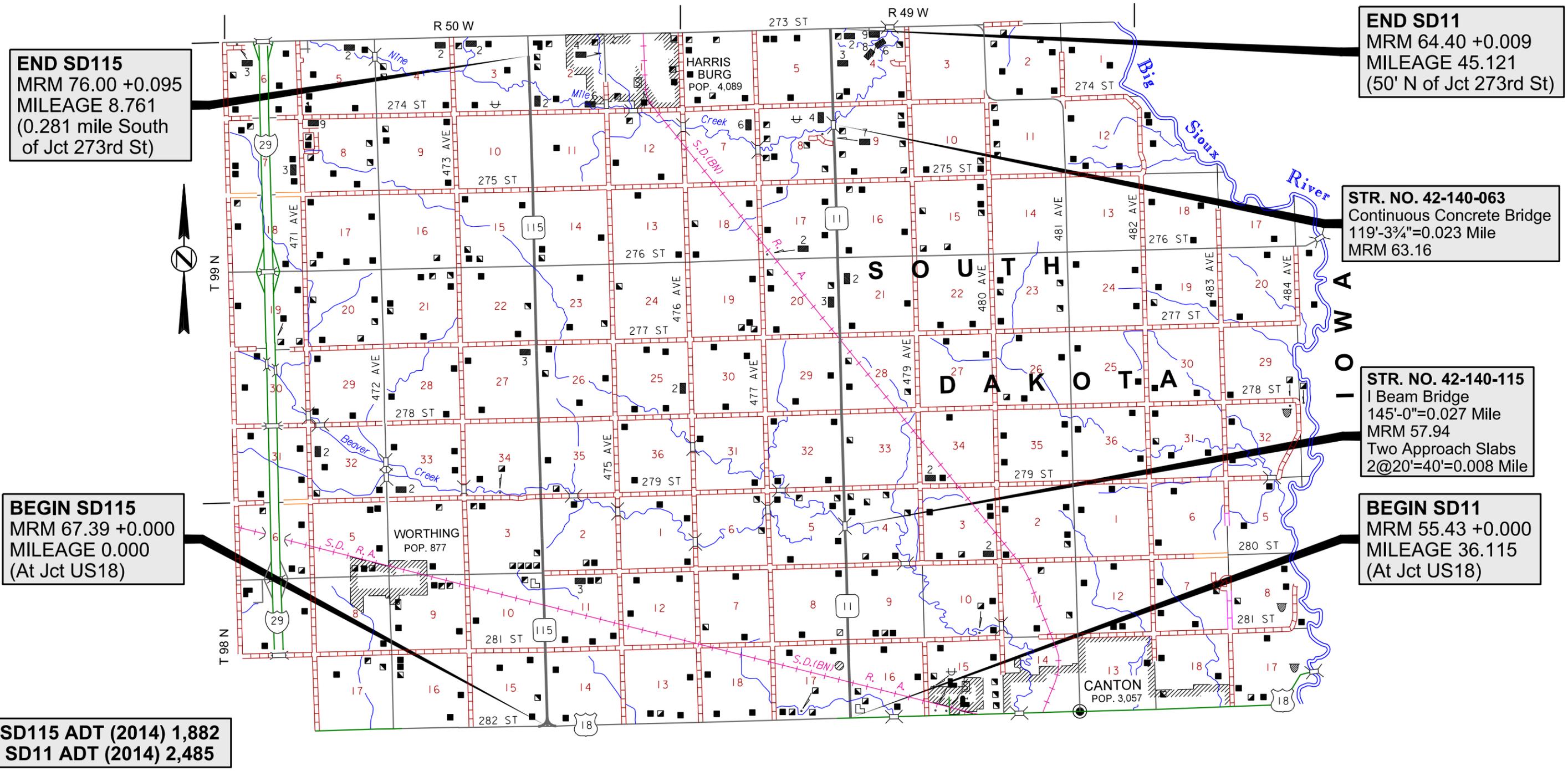
IDENTICAL POINTS

**PROJECT IM-NH-P 0022(55)**  
**SD HIGHWAY 115**  
**LINCOLN COUNTY**  
**SIOUX FALLS AREA**  
**ASPHALT CONCRETE CRACK SEALING**  
**GROSS LENGTH: 8.761 MILES**  
**RAILROAD CROSSING LENGTH: 0.002 MILE**  
**NET LENGTH: 8.759 MILES**  
**PCN 056J**

**PROJECT IM-NH-P 0022(55)**  
**SD HIGHWAY 11 (SOUTH SEGMENT)**  
**LINCOLN COUNTY**  
**SIOUX FALLS AREA**  
**ASPHALT CONCRETE CRACK SEALING**  
**GROSS LENGTH: 9.006 MILES**  
**BRIDGE & APPROACH SLABS LENGTH: 0.058 MILE**  
**RAILROAD CROSSINGS LENGTH: 0.005 MILE**  
**NET LENGTH: 8.943 MILES**  
**PCN 056J**

STATE OF SOUTH DAKOTA	PROJECT IM-NH-P 0022(55)	SHEET 3	TOTAL SHEETS 19
-----------------------	-----------------------------	------------	--------------------

Plotting Date: 11/18/2015



**END SD115**  
 MRM 76.00 +0.095  
 MILEAGE 8.761  
 (0.281 mile South of Jct 273rd St)

**END SD11**  
 MRM 64.40 +0.009  
 MILEAGE 45.121  
 (50' N of Jct 273rd St)

**STR. NO. 42-140-063**  
 Continuous Concrete Bridge  
 119'-3/4"=0.023 Mile  
 MRM 63.16

**STR. NO. 42-140-115**  
 I Beam Bridge  
 145'-0"=0.027 Mile  
 MRM 57.94  
 Two Approach Slabs  
 2@20'=40'=0.008 Mile

**BEGIN SD115**  
 MRM 67.39 +0.000  
 MILEAGE 0.000  
 (At Jct US18)

**BEGIN SD11**  
 MRM 55.43 +0.000  
 MILEAGE 36.115  
 (At Jct US18)

**SD115 ADT (2014) 1,882**  
**SD11 ADT (2014) 2,485**

PLOT SCALE - 1"=7000'

PLOTTED FROM - TRSF12115

FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN PLOT NAME - 3

**PROJECT IM-NH-P 0022(55)**  
**SD HIGHWAY 11 (MIDDLE SEGMENT)**  
**MINNEHAHA COUNTY**  
**SIOUX FALLS AREA**  
**ASPHALT CONCRETE CRACK SEALING**  
**GROSS LENGTH: 2.186 MILES**  
**BRIDGE LENGTH: 0.075 MILE**  
**NET LENGTH: 2.111 MILES**  
**PCN 056J**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	4	19

Plotting Date: 11/18/2015

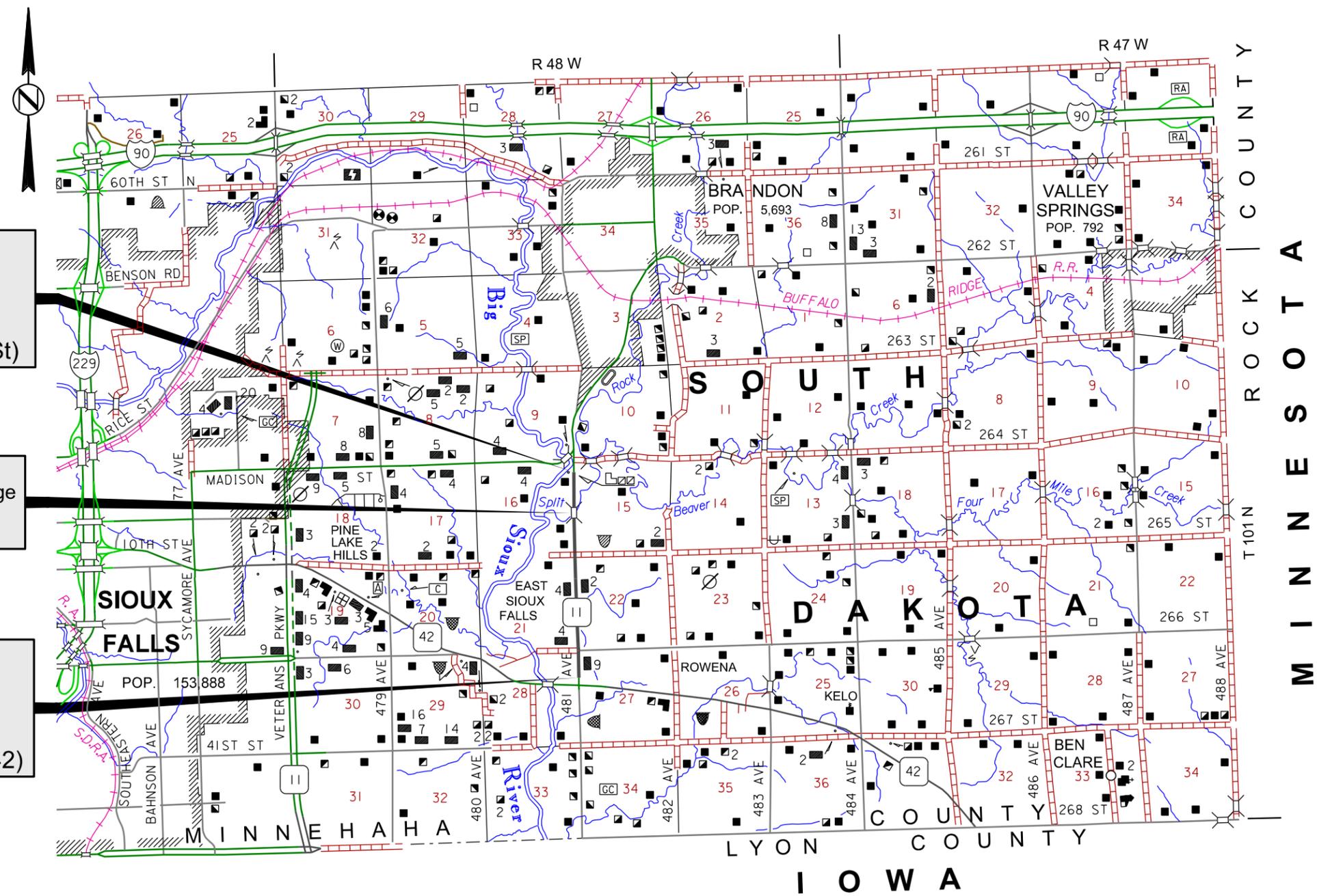
PLOT SCALE - 1:7000

PLOT NAME - 4

**END SD11**  
 MRM 77.00 +0.002  
 MILEAGE 52.226  
 (At Begin Concrete  
 965' S of Jct Madison St)

**STR. NO. 50-270-205**  
 Cont. Conc. Steel Girder Bridge  
 394'-9<sup>3</sup>/<sub>4</sub>"=0.075 Mile  
 MRM 76.58

**BEGIN SD11**  
 MRM 74.74 +0.071  
 MILEAGE 50.040  
 (At End Concrete  
 500' N of E Jct SD42)



ADT (2014) 3,807

PLOTTED FROM - TRSF12115

FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN

**PROJECT IM-NH-P 0022(55)**  
**SD HIGHWAY 11 (NORTH SEGMENT)**  
**MINNEHAHA COUNTY**  
**SIOUX FALLS AREA**  
**ASPHALT CONCRETE CRACK SEALING**  
**GROSS LENGTH: 9.165 MILES**  
**BRIDGE & APPROACH SLABS LENGTH: 0.208 MILE**  
**RAILROAD CROSSING LENGTH: 0.009 MILE**  
**NET LENGTH: 8.948 MILES**  
**PCN 056J**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	5	19

Plotting Date: 11/18/2015



**STR. NO. 50-288-100**  
 Continuous Concrete Bridge  
 117'-0"=0.022 Mile  
 MRM 88.18

**STR. NO. 50-280-113**  
 Continuous Concrete Bridge  
 151'-6"=0.029 Mile  
 MRM 86.08

**STR. NO. 50-280-136**  
 Continuous Concrete Bridge  
 186'-0"=0.035 Mile  
 MRM 83.89

**STR. NO. 50-280-139**  
 I Beam Bridge  
 314'-6"=0.060 Mile  
 MRM 83.65  
 Bridge Deck to be sealed)

**STR. NO. 50-280-152**  
 Prestressed Girder Bridge  
 327'-0"=0.062 Mile  
 MRM 82.22  
 Two Approach/Sleeper Slabs  
 (App/Slpr Slabs to be sealed)

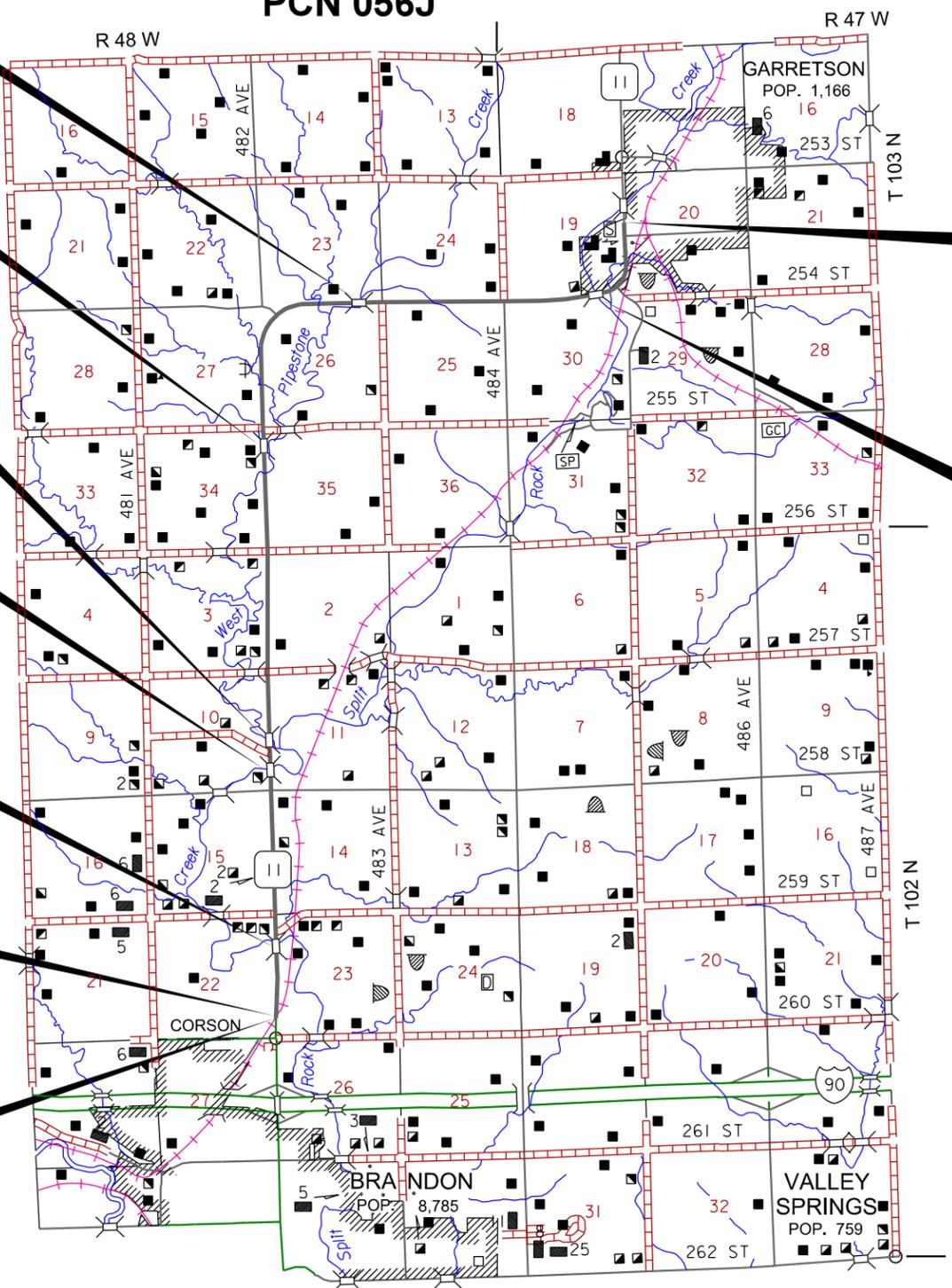
**RR CROSSING**  
 MRM 81.56  
 (50' along C)

**BEGIN SD11**  
 MRM 81.39 +0.157  
 MILEAGE 56.794  
 (At End Concrete)

**END SD11**  
 MRM 90.15 +0.697  
 MILEAGE 65.959  
 (620' N of Centerline  
 Dows St in Garretson)

**STR. NO. 50-308-100**  
 Prestressed Girder Bridge  
 267'-1½"=0.051 Mile  
 MRM 90.15  
 Two Approach/Sleeper Slabs  
 2@25'=50'=0.009 Mile

**ADT (2014) 4,256**



PLOT SCALE - 1:7000

PLOTTED FROM - TRSF12115

FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN PLOT NAME - 5

**PROJECT IM-NH-P 0022(55)**  
**SD HIGHWAY 19 (SOUTH SEGMENT)**  
**TURNER COUNTY**  
**SIOUX FALLS AREA**  
**ASPHALT CONCRETE CRACK SEALING**  
**LENGTH: 8.107 MILES**  
**PCN 056J**

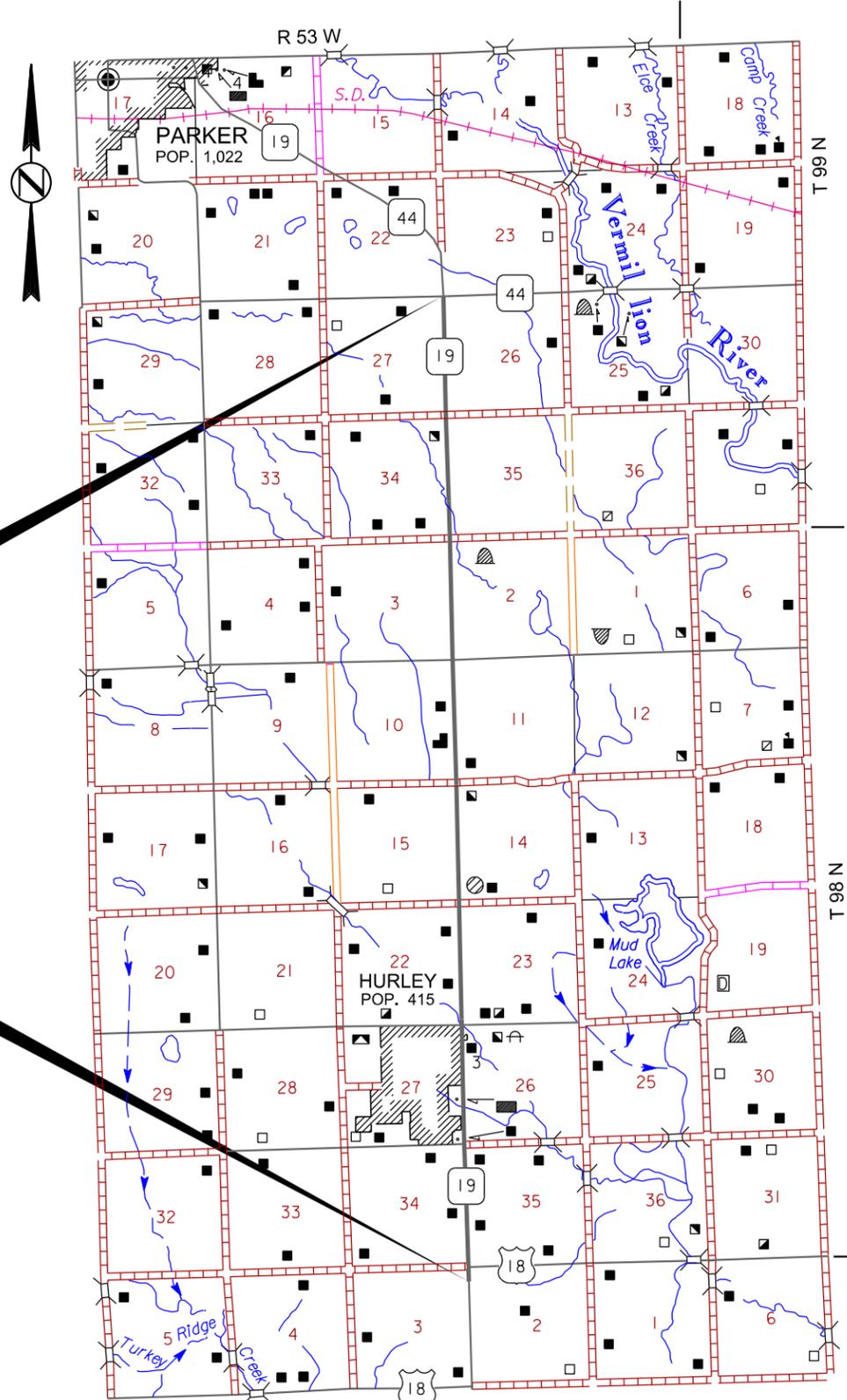
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	6	19

Plotting Date: 11/18/2015

PLOT SCALE - 1:7000

PLOT NAME - 6

FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN



**END SD19**  
 MRM 51.26 +0.000  
 MILEAGE 46.078  
 (At East Jct SD44)

**BEGIN SD19**  
 565' South of  
 MRM 43.26  
 MILEAGE 37.971

**ADT (2014) 1,130**

PLOTTED FROM - TRSF12115

**PROJECT IM-NH-P 0022(55)  
SD HIGHWAY 19 (NORTH SEGMENT)  
MINNEHAHA & LAKE COUNTIES  
SIOUX FALLS AREA  
ASPHALT CONCRETE CRACK SEALING  
LENGTH: 23.445 MILES  
PCN 056J**

STATE OF SOUTH DAKOTA	PROJECT IM-NH-P 0022(55)	SHEET 7	TOTAL SHEETS 19
-----------------------	-----------------------------	------------	--------------------

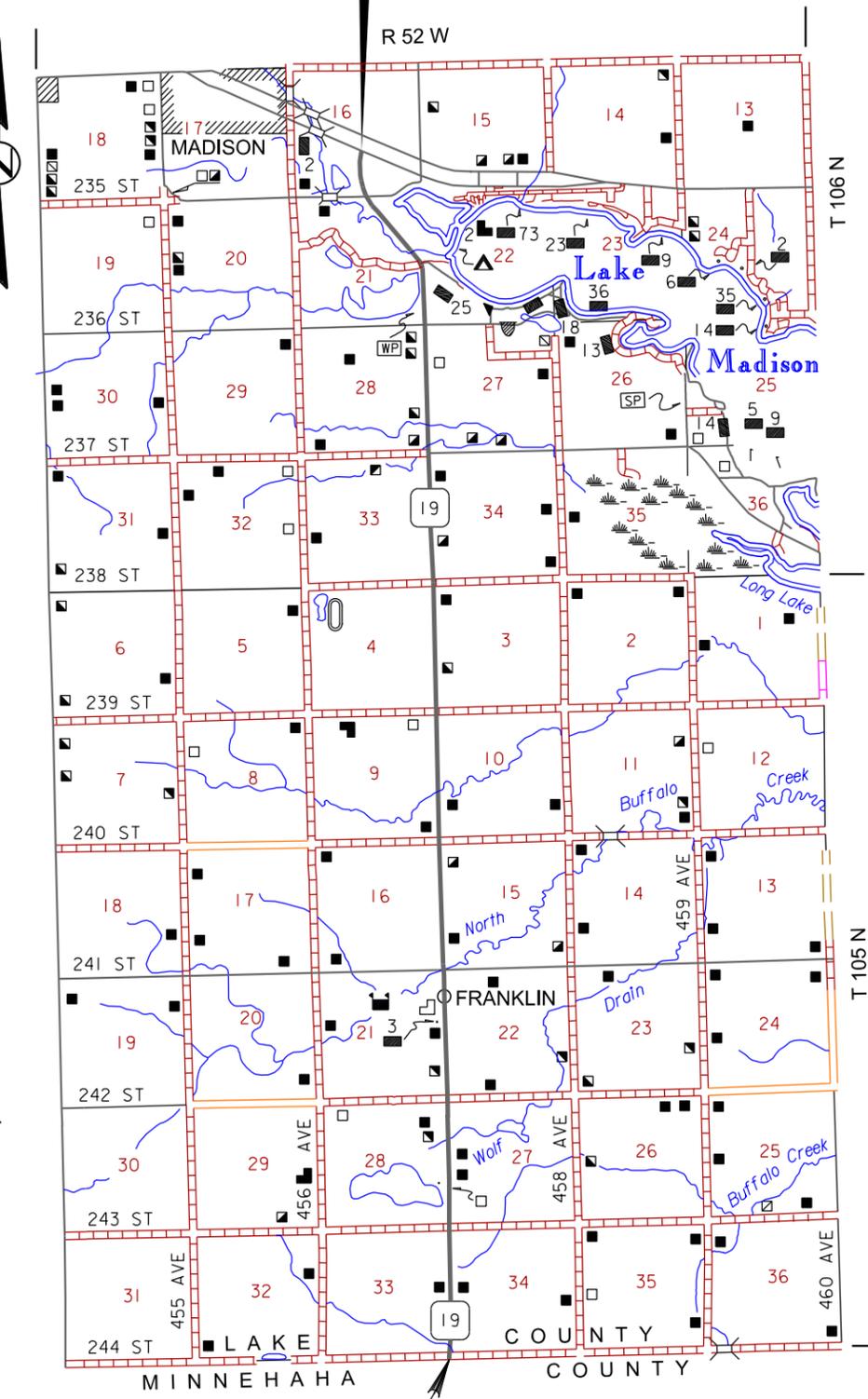
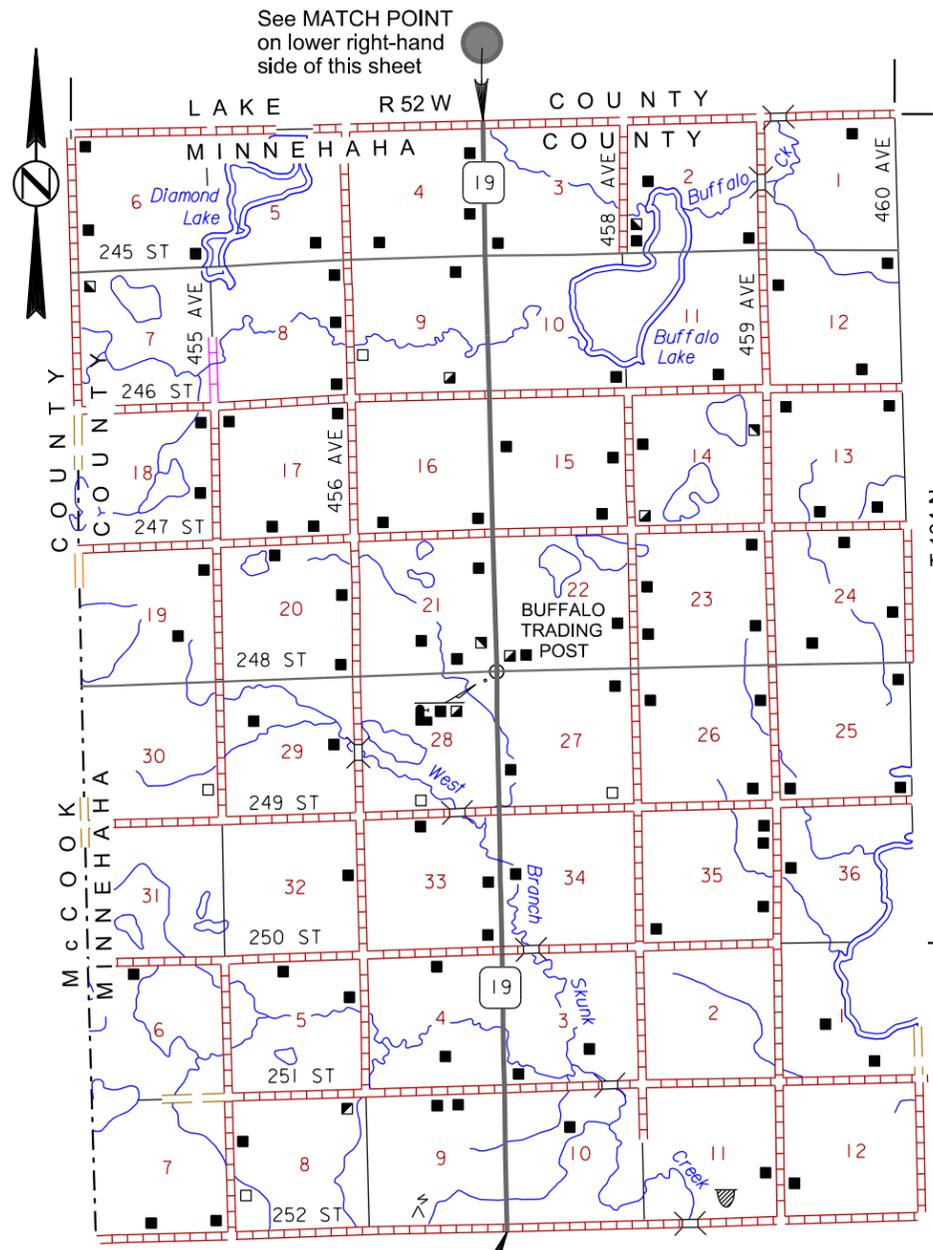
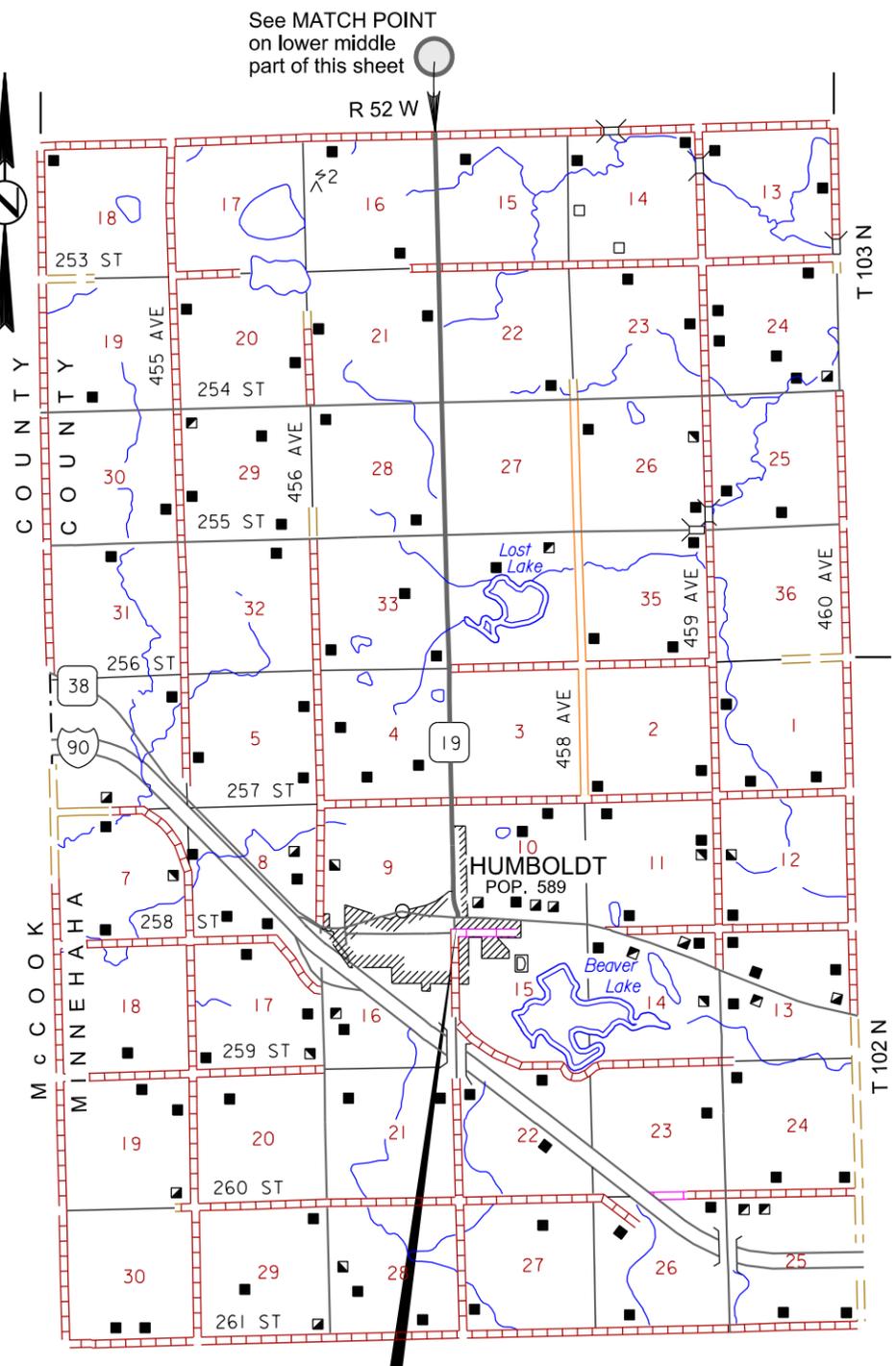
Plotting Date: 11/18/2015

**END SD19**  
MRM 96.00 +0.888  
MILEAGE 86.962  
(At Jct SD34)

PLOT SCALE - 1:7000

PLOTTED FROM - TRSF12115

FILE - ... \2016 SF AREA CRACK SEAL TITL056J.DGN



**BEGIN SD19**  
MRM 73.73 +0.005  
MILEAGE 63.517  
(26' N of Jct SD38)

**ADT (2014) 1,163**

See MATCH POINT  
on upper left-hand  
side of this sheet

See MATCH POINT  
on upper middle  
part of this sheet

# ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	8	19

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
350E0010	Asphalt Concrete Crack Sealing	271,000	Lb
633E1300	Pavement Marking Paint, White	878	Gal
633E1305	Pavement Marking Paint, Yellow	190	Gal
634E0010	Flagging	344.0	Hour
634E0020	Pilot Car	97.0	Hour
634E0110	Traffic Control Signs	386	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	13	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
998E0100	Railroad Protective Insurance	Lump Sum	LS

## ESTIMATE OF QUANTITIES (FOR INFORMATION ONLY)

BID ITEM NUMBER	ITEM	IM-NH-P 0022(55) - PCN 056J							TOTAL QUANTITY
		I29 Minnehaha County	SD11 South Segment Lincoln County	SD11 Middle Segment Minnehaha County	SD11 North Segment Minnehaha County	SD19 South Segment Turner County	SD19 North Segment Minn. & Lake Counties	SD115 Lincoln County	
009E0010	Mobilization	←----- Lump Sum -----→							Lump Sum
350E0010	Asphalt Concrete Crack Sealing	154,000	28,000	2,000	33,000	28,000	18,000	8,000	271,000 Lb
633E1300	Pavement Marking Paint, White	----	304	----	----	278	----	296	878 Gal
633E1305	Pavement Marking Paint, Yellow	----	66	----	----	60	----	64	190 Gal
634E0010	Flagging	150	50	6	48	48	30	12	344 Hcur
634E0020	Pilot Car	----	25	3	24	24	15	6	97 Hcur
634E0110	Traffic Control Signs	270	←----- 116 -----→					----	386 SqFt
634E0120	Traffic Control, Miscellaneous	←----- Lump Sum -----→							Lump Sum
634E0280	Type 3 Barricade, 8' Single Sided	13	----	----	----	----	----	----	13 Each
634E0420	Type C Advanced Warning Arrow Board	1	----	----	----	----	----	----	1 Each
998E0100	Railroad Protective Insurance	----	Lump Sum	----	Lump Sum	----	----	Lump Sum	Lump Sum

### SPECIFICATIONS

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

# ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	9	19

## ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

### COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

#### COMMITMENT B2: WHOOPING CRANE

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

#### Action Taken/Required:

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

## COMMITMENT H: WASTE DISPOSAL SITE

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

#### Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating No Dumping Allowed.
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

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

## COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all 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 shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

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

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

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

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

**COORDINATION BETWEEN CONTRACTORS**

A separate contract for Project P 0022(53) - PCN 053J will be awarded to another Contractor for asphalt surface treatment on SD11 from MRM 74.71 +0.095 to MRM 76.00 + 0.991, SD 11 from MRM 82.22 +0.050 to MRM 90.77 +0.077 and on SD19 from MRM 73.73 + 0.005 to MRM 87.35 +0.000. The crack sealing shall be done on these routes prior to July 1, 2016.

The Contractor shall schedule his work so as not to interfere with or hinder the progress of the work performed by other Contractors on the asphalt surface treatment project.

**ASPHALT CONCRETE CRACK SEALING –I29**

Only the top of the road shall be routed and sealed on the crossroad on I29 at MRM 96.48 +0.000. Both shoulders shall be routed and sealed on I-29. No crack sealing shall be performed in areas where pavement is distressed; these areas will be identified by Engineer and repaired at a later date. No routing or crack sealing shall be performed on the level.

**ASPHALT CONCRETE CRACK SEALING**

Only the top of the road shall be routed and sealed. No routing and sealing shall be done on the Asphalt Concrete level.

The width of crack sealing will vary but the typical roadway widths for information only are as follows:

Project	Width
Interstate 29	See Detail
SD Hwy 11 South Segment	28 Feet
SD Hwy 11 Middle Segment	40 Feet
SD Hwy 11 North Segment	40 Feet
SD Hwy 19 South Segment	28 Feet
SD Hwy 19 North Segment	28 Feet
SD Hwy 115	32 Feet

All other requirements stated in Section 350 shall apply.

The crack sealant material for this project shall be from one of the listed below:

<u>Product</u>	<u>Manufacturer</u>
Deery 101 ELT Hot Poured Elastic Joint Sealer ASTM D-6690 Type IV	Crafco, Inc. Chandler, AZ 602-276-0406 <a href="http://www.crafco.com">http://www.crafco.com</a>
	Notes: Crafco, Inc. purchased Deery American Corp. on December 29, 2010
W.R. Meadows 3405-M Hot Poured Elastic Joint Sealer ASTM D-6690 Type IV	W.R. Meadows Hampshire, IL 800-342-5976 <a href="http://www.wrmeadows.com">http://www.wrmeadows.com</a>

**TABLE OF LONGITUDINAL AND TRANSVERSE CRACKS**

PROJECT	LONGITUDINAL	TRANSVERSE
Interstate 29	5%	95%
SD Hwy 11 South Segment	75%	25%
SD Hwy 11 Middle Segment	5%	95%
SD Hwy 11 North Segment	5%	95%
SD Hwy 19 South Segment	30%	70%
SD Hwy 19 North Segment	5%	95%
SD Hwy 115	70%	30%

**PERMANENT PAVEMENT MARKING**

The application of permanent pavement marking may not begin until 7 calendar days following completion of the crack seal and shall be completed within 14 calendar days following completion of the crack seal.

Marking eight inch edgelines and gore areas shall require the use of two spray nozzles to achieve the required width. Marking twelve inch gore lines shall require the use of three spray nozzles to achieve the required width.

The Contractor will be required to repaint all existing pavement marking including centerline, edgeline, dashed edgelines, dashed lane lines, lane lines, turn lanes, gore areas, etc.

Flush sealing shall not be allowed as an option for correction of markings that are not within tolerance due to the occurrence of shadow through.

The following table contains locations of existing pavement marking to be painted by hand.

PROJECT	LOCATION
SD Hwy 19 S Segment	Turn Lanes at the following Junctions: US18\285 <sup>th</sup> Street & SD44
SD Hwy 115	24" Stop line at US18

**COLD WEATHER WATERBORNE PAINT**

Waterborne paint applied after October 15 shall be formulated as cold-weather waterborne paint and shall be applied in accordance with the manufacturer's recommendations, including minimum temperature requirements.

Cold-weather waterborne paint shall conform to Section 980 of the Specifications except for the following:

980.1: Resin Binder shall be FASTRACK™ XSR™ manufactured by Dow, or an approved equal.

980.1 A. Quantitative Requirements:

Pigment, percent by weight: 60.0 to 63.0 for white and 58.5 to 61.5 for yellow.

Pigment, percent by weight; tested in accordance with ASTM D3723: 60.0 to 63.0 for white and 56.1 to 59.2 for yellow.

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 41.5 minimum for yellow.

**TABLES OF PERMANENT PAVEMENT MARKING**

SD11 South Segment	White	Yellow
Yellow Centerline Dashes = 9.006 miles @ 4.6 Gal/Mile		41.4
Solid Yellow Centerline = 1.489 miles @ 16.9 Gal/Mile		25.2
Solid White Edgelines = 1 (4" line) X 18.012 miles @ 16.9 Gal/Mile	304.4	
<b>TOTAL GALLONS</b>	<b>304</b>	<b>66</b>

SD19 South Segment	White	Yellow
Yellow Centerline Dashes = 7.553 miles @ 4.6 Gal/Mile		34.7
Solid Yellow Centerline = 1.263 miles @ 16.9 Gal/Mile		21.3
Solid Yellow for Gore Areas = 93 SqFt = 0.106 miles (4" equivalent) @ 16.9 Gal/Mile		1.8
Solid Yellow for 24" cross hatching in turn lanes = 127 SqFt = 0.144 miles (4" equivalent) @ 16.9 Gal/Mile		2.4
Left Turn Arrows = 6 @ .5 gallons each	3.0	
Solid White lane divider lines = 1 (4" line) X 0.060 miles @ 16.9 Gal/Mile	1.0	
Solid White Edgelines = 1 (4" line) X 16.214 miles @ 16.9 Gal/Mile	274.0	
<b>TOTAL GALLONS</b>	<b>278</b>	<b>60</b>

SD115	White	Yellow
Yellow Centerline Dashes = 8.630 miles @ 4.6 Gal/Mile		39.7
Solid Yellow Centerline = 1.435 miles @ 16.9 Gal/Mile		24.3
Solid White for 24" Stop line = 26.0 SqFt = .015 miles (4" equivalent) @ 16.9 miles per gallon	0.3	
Solid White Edgelines = 1 (4" line) X 17.522 miles @ 16.9 Gal/Mile	296.1	
<b>TOTAL GALLONS</b>	<b>296</b>	<b>64</b>

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	11	19

**GENERAL MAINTENANCE OF TRAFFIC**

Flaggers and a pilot car shall be used when traffic must be routed out of its normal lane for a distance greater than the two flaggers are able to communicate with each other.

Routing traffic onto gravel or asphalt shoulders during any phase of the construction will not be allowed. Damage to the shoulders due to the Contractor's operation shall be repaired by the Contractor, to the satisfaction of the Engineer, at no expense to the State.

Overnight lane closures will not be allowed.

Sufficient traffic control devices have been included in these plans to sign one workspace on a 2 lane road, and one on the Interstate. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

**MAINTENANCE OF TRAFFIC (INTERSTATE HIGHWAYS)**

A Type 3 Barricade shall be installed at the end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades shall be installed facing traffic within the closed lane at a spacing of 1/4 mile.

Work activities shall not be conducted simultaneously on the median and outside shoulders of the same directional set of lanes.

The use of interstate maintenance crossovers will not be permitted.

Traffic will be permitted on the ramp shoulders when necessary to allow traffic around a workspace.

**FURNISHING AND APPLYING PAVEMENT MARKING PAINT**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	12	19

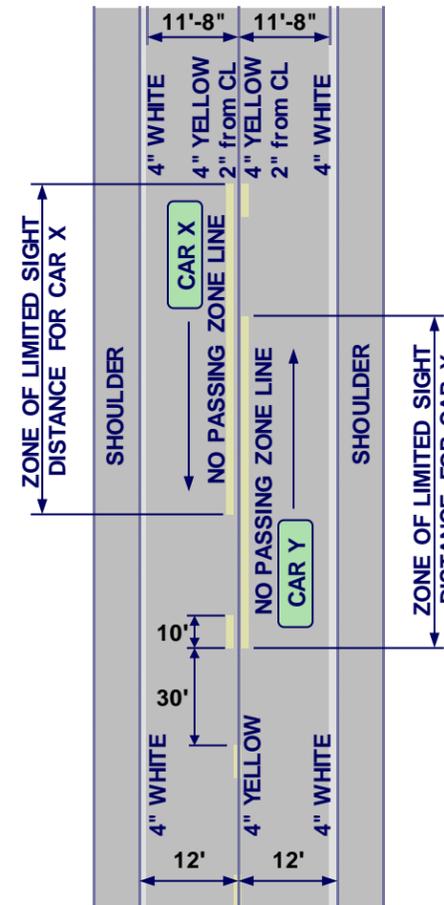
Application rates shall be as follows:

UNDIVIDED ROADWAY	
PROJECT NOS.:	
SD11 South Segment	
SD 19 South Segment	
SD115	
Two Lane Roadway	
(Rate for one line)	
Dashed Yellow Centerline	
Rate = 4.6 Gals./Pass-Mile	
Solid Yellow Centerline	
Rate = 16.9 Gals./Pass-Mile	
Solid White Edgeline - 4"	Solid White Edgeline - 8"
Rate = 16.9 Gals./Pass-Mile	#N/A
Gals./Pass-Mile	Gals./Pass-Mile
Glass Beads = 8 Lbs./Gal.	

ESTIMATED QUANTITIES		
PROJECTS	-	
	WHITE	YELLOW
SD11 S Segment	304	66
SD19 S Segment	278	60
SD Hwy 34	296	64
<b>TOTALS:</b>	<b>878 GALLONS</b>	<b>190 GALLONS</b>

Typical pavement marking as shown on the following sheet shall be applied throughout the applicable sections of roadway.

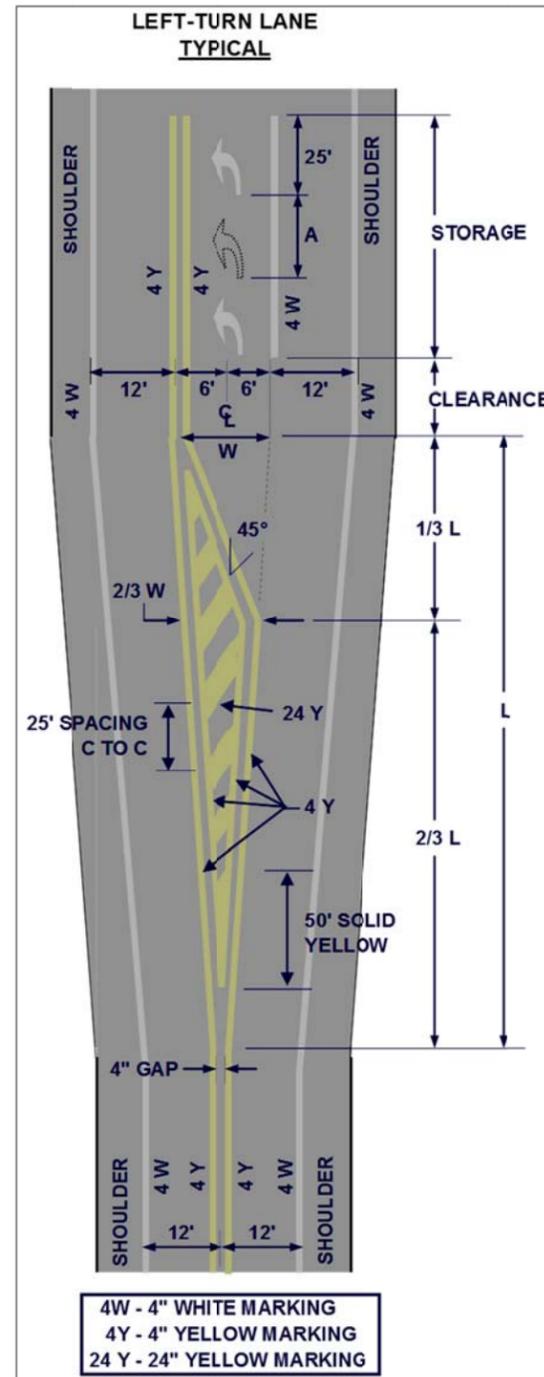
Traffic Control shall be incidental to the cost of application. The striper and advance trailing warning vehicle shall be equipped with flashing amber lights or advanced warning panel.



**FURNISHING AND APPLYING PAVEMENT MARKING PAINT**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	13	19

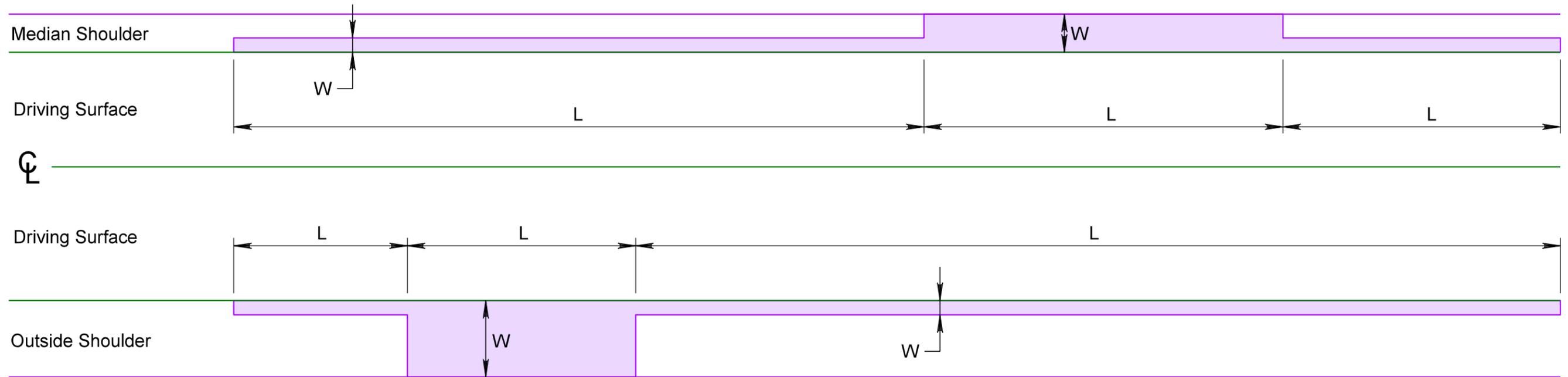
**PAINTED TWO LANE ROADWAY FOR PROJECT SD HWY 19 SOUTH SEGMENT**



# I29 PLAN VIEW (IN PLACE)

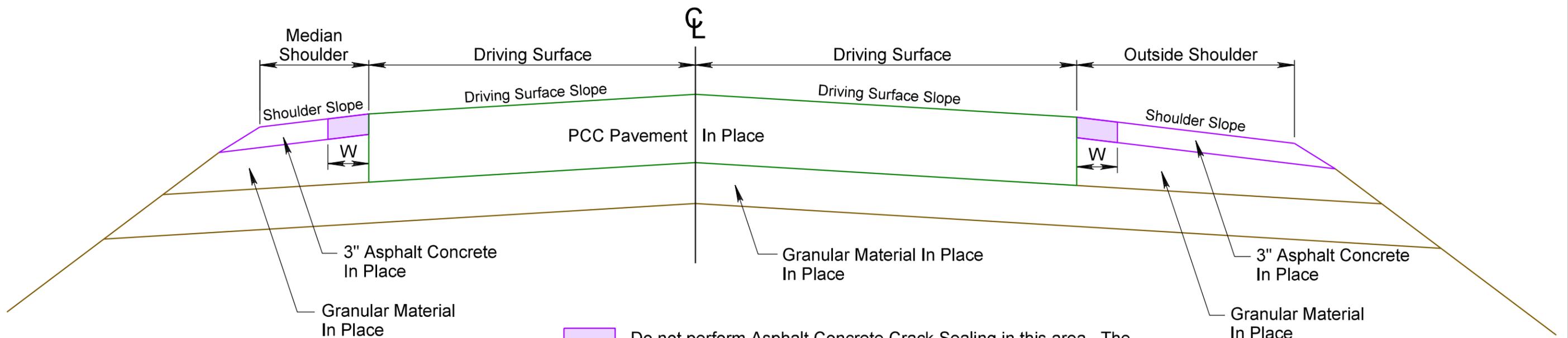
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-NH-P 0022(55)	14	19

Plotting Date: 11/17/2015



Do not perform Asphalt Concrete Crack Sealing in this area. The Engineer will identify Exception Lengths (L) and Widths (W) on construction.

# I29 TYPICAL SECTION (IN PLACE)



Do not perform Asphalt Concrete Crack Sealing in this area. The Engineer will identify Exception Widths (W) on construction.

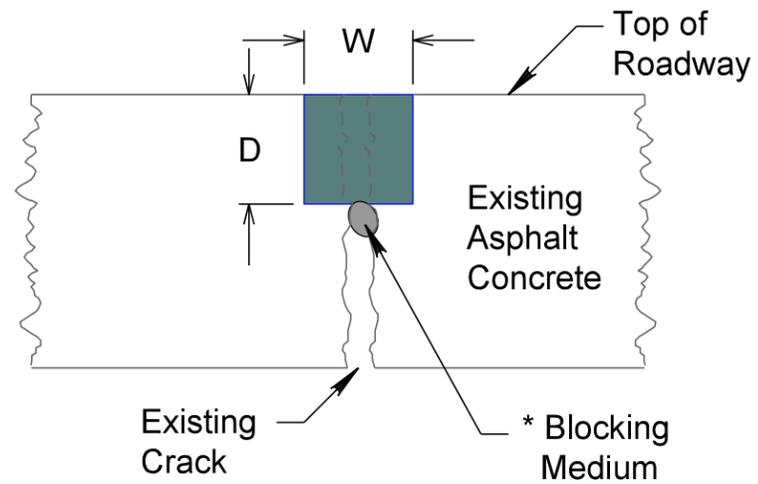
PLOT SCALE - 1:3.75

PLOTTED FROM - IRSE12115

PLOT NAME - 1

FILE - ... \2016\CRACK SEAL\TSEC056J.DGN

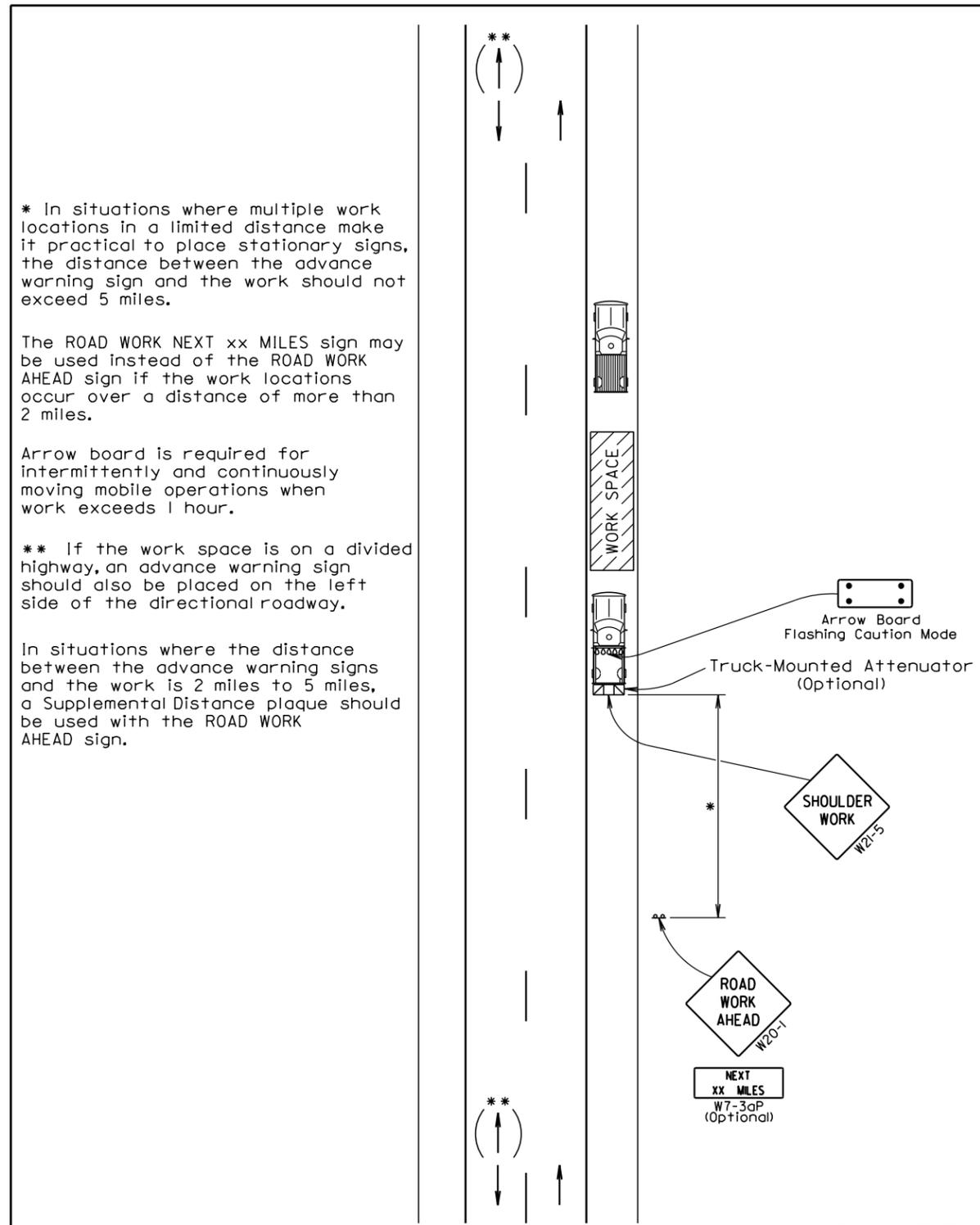
### TYPICAL RESERVOIR SECTION



\* Inert compressible material required for cracks 3/8" or more in width. The backer rod shall be a nonmoisture absorbing, resilient material approximately 25 percent larger in diameter than the width of the joint to be sealed. The backer rod shall be compatible with the sealant and no bond or reaction shall occur between the rod and the sealant.

D & W = 3/4"

Recommended Backer Rod Diameter for Joint Width	
Joint Width	Rod Diameter
3/16" - 1/4"	3/8"
1/4" - 3/8"	1/2"
3/8" - 1/2"	5/8"
5/8" - 3/4"	7/8"
3/4" - 7/8"	1"
7/8" - 1"	1 1/4"
1" - 1 1/4"	1 1/2"
1 1/4" - 1 1/2"	2"



\* In situations where multiple work locations in a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

The ROAD WORK NEXT xx MILES sign may be used instead of the ROAD WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.

Arrow board is required for intermittently and continuously moving mobile operations when work exceeds 1 hour.

\*\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

In situations where the distance between the advance warning signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign.

September 22, 2014

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (C)
0 - 30	200	25
35 - 40	350	25
45 - 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) 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.

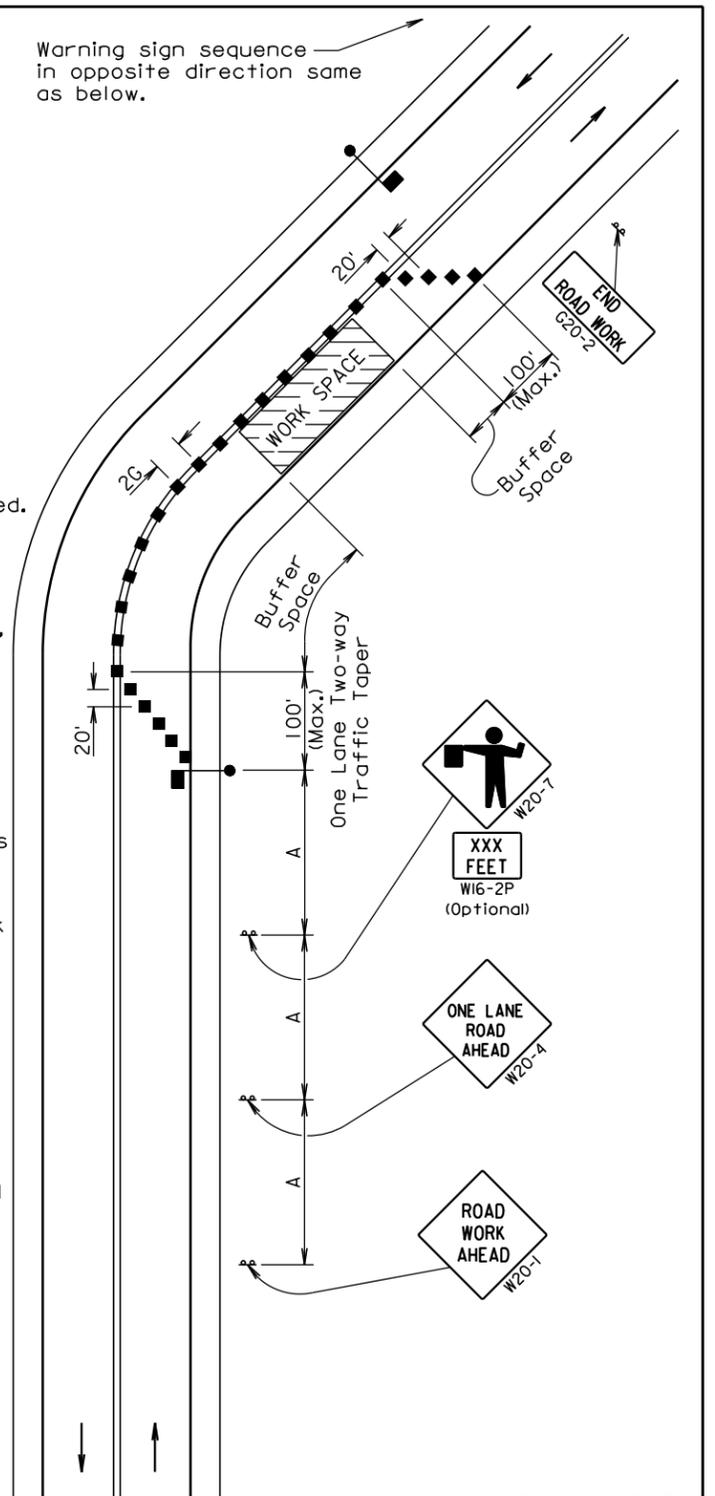
The channelizing devices shall be drums or 42" cones.

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.



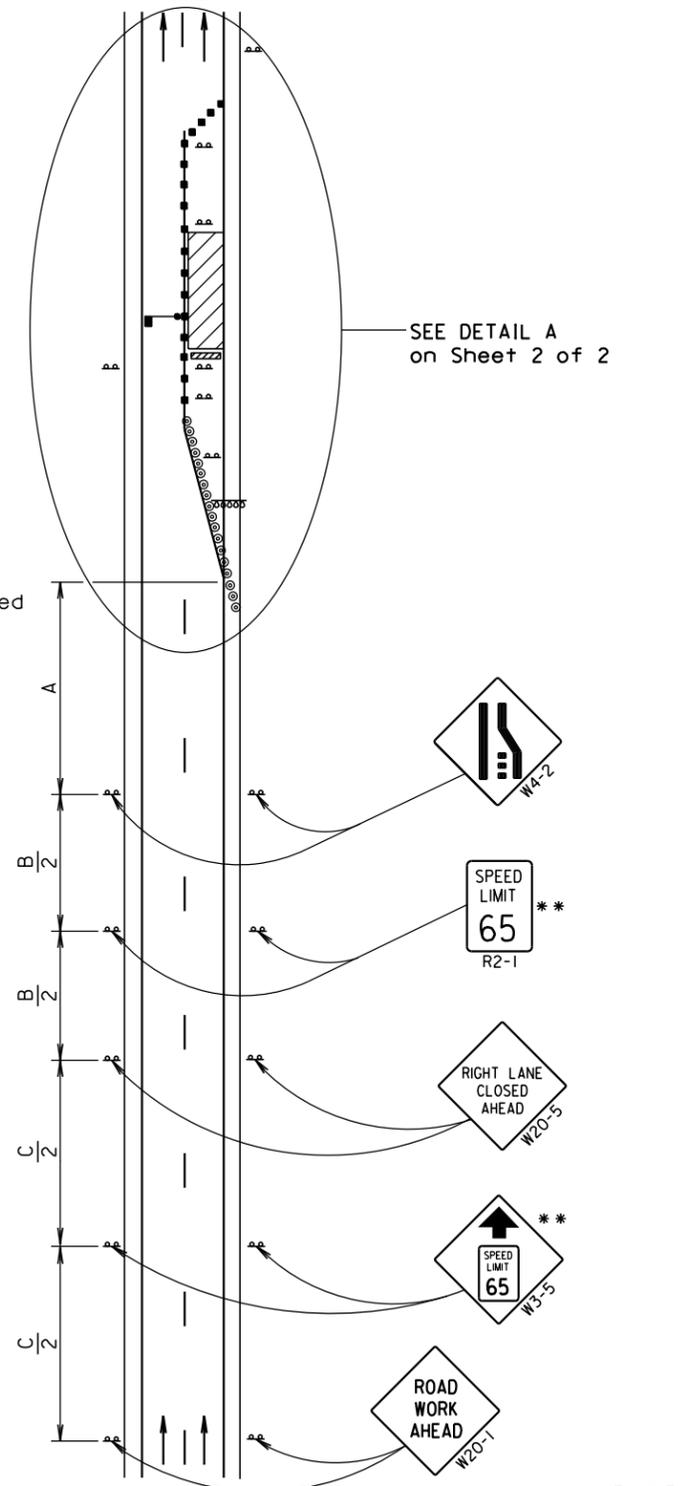
Warning sign sequence in opposite direction same as below.

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

- \*\* Speed appropriate for location.
- ⊙ Reflectorized Drum
- Channelizing Device

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

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



April 15, 2015

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

- \* Spacing is 40' for 42" cones.
- \*\* Speed appropriate for location.
- \*\*\* Use speed limit designated for the condition when workers are present in the work space. Signs shall be covered or removed when workers are not present.

■ Flagger (As Necessary)

⊙ Reflectorized Drum

■ Channelizing Device

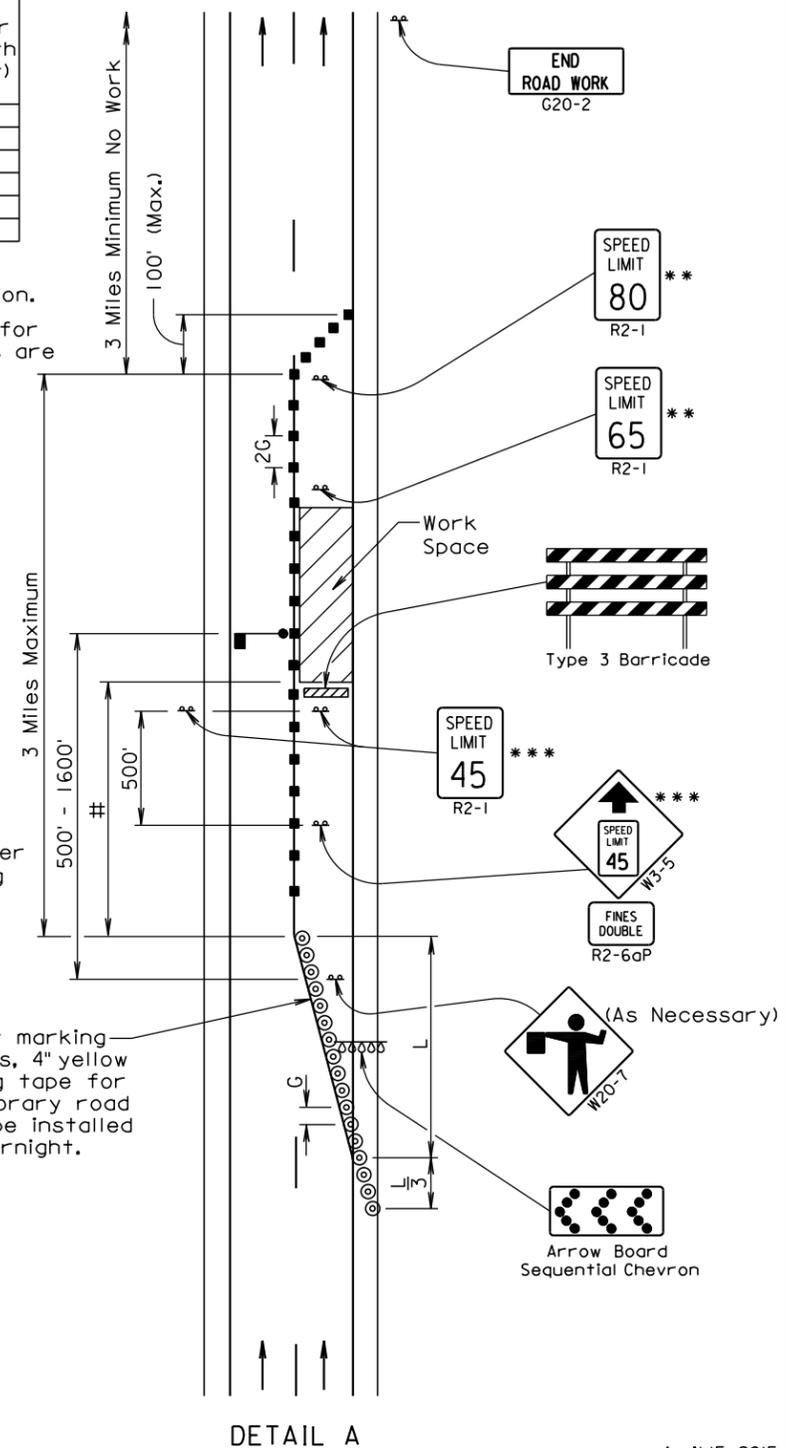
# The Work Space shall be a minimum of 500' from the end of the taper.

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

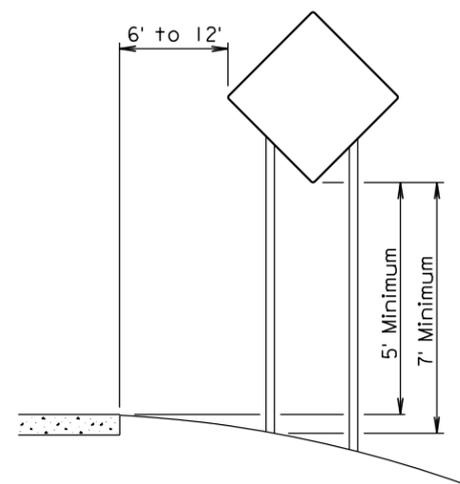
The channelizing devices shall be 42" cones or drums.

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

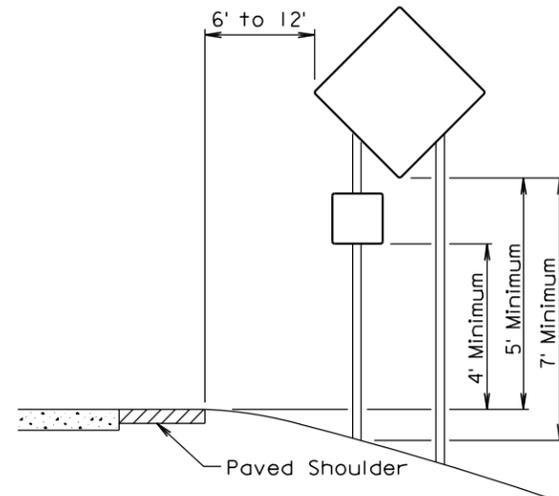
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary road markers at 5' spacing shall be installed when the lane is closed overnight.



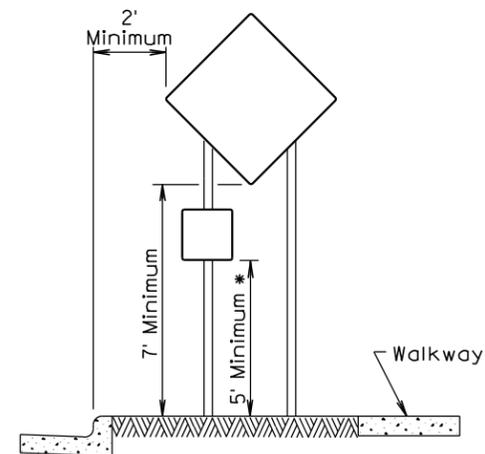
April 15, 2015



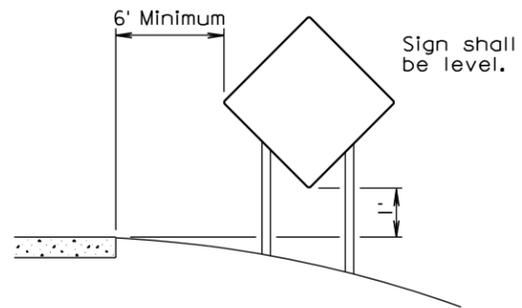
RURAL DISTRICT



RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT

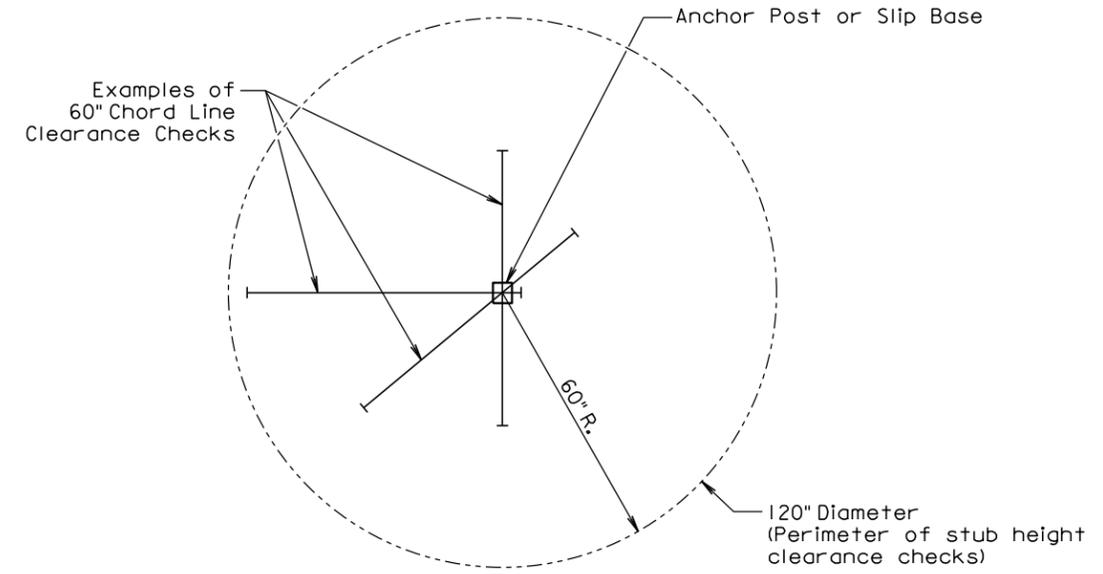


RURAL DISTRICT  
3 DAY MAXIMUM

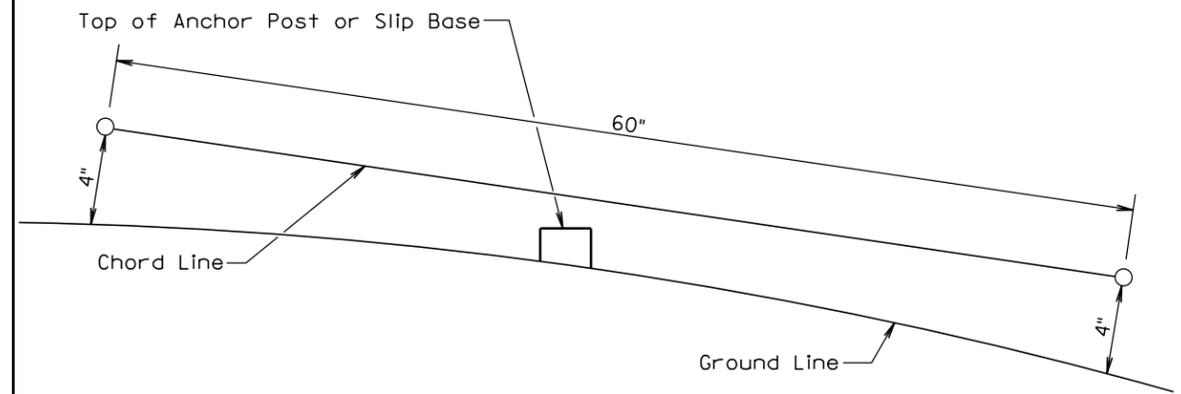
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

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



PLAN VIEW  
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.  
 At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.  
 The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

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

**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD				EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65		24" x 30"	5		3	36" x 48"	12	36
R2-1	SPEED LIMIT 45		24" x 30"	5		2	36" x 48"	12	24
R2-1	SPEED LIMIT 80		24" x 30"	5		1	36" x 48"	12	12
R2-6aP	FINES DOUBLE (plaque)		24" x 18"	3		1	36" x 24"	6	6
W3-5	SPEED REDUCTION AHEAD (___ MPH)		48" x 48"	16		3	48" x 48"	16	48
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	16		2	48" x 48"	16	32
W7-3aP	NEXT ___ MILES (plaque)		36" x 30"	8		1	36" x 30"	8	8
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5	10		30" x 24"	5	
W20-1	ROAD WORK AHEAD	2	48" x 48"	16	32	2	48" x 48"	16	32
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32		48" x 48"	16	
W20-5	LEFT or RIGHT LANE CLOSED AHEAD		48" x 48"	16		2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	2	48" x 48"	16	32	1	48" x 48"	16	16
W21-5	SHOULDER WORK		48" x 48"	16		1	48" x 48"	16	16
G20-2	END ROAD WORK	2	36" x 18"	5	10	1	48" x 24"	8	8
<b>TRAFFIC CONTROL SIGNS TOTAL 386 SQFT</b>		<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 116</b>				<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT 270</b>			

**TYPE 3 BARRICADES**

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	13 Each

**ARROW BOARDS**

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	1 Each