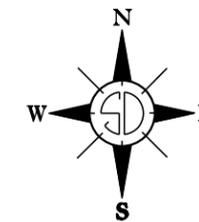
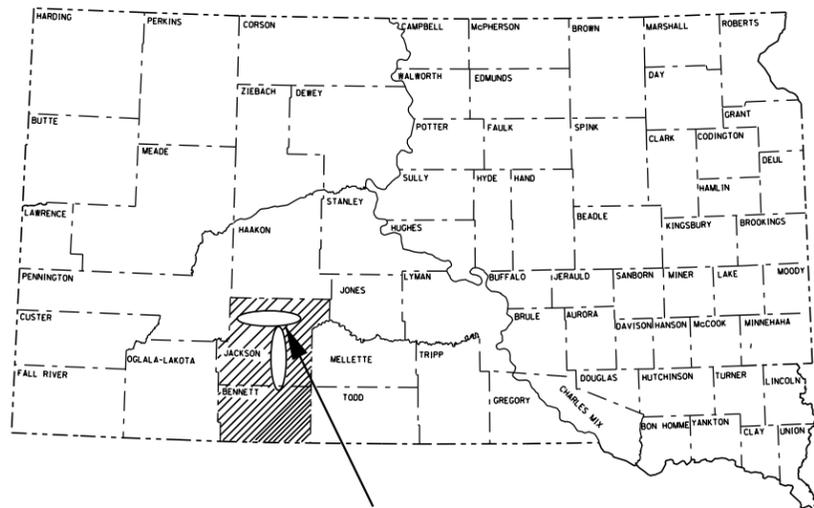


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-0033(23)	1	32

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
**PROJECT IM-NH 0033(23)**  
**INTERSTATE 90 SHOULDERS &**  
**SD HIGHWAY 73**  
**BENNETT & JACKSON COUNTIES**



ASPHALT SURFACE TREATMENT  
PCN 053K

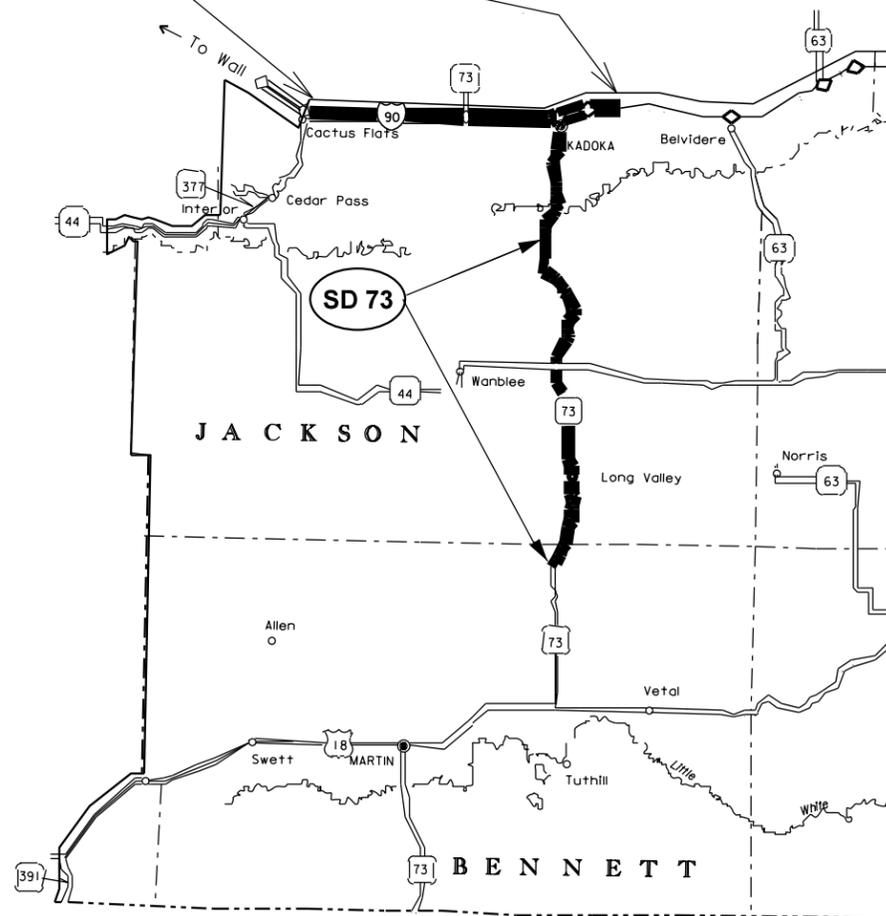


PROJECT

INDEX OF SHEETS

Sheet No. 1	Title Sheet
Sheet Nos. 2-4	Project Layout Maps
Sheet No. 5	Estimate of Quantities
Sheet Nos. 6-7	Environment Commitments
Sheet No. 8-13	Plan Notes
Sheet Nos. 14-16	Rates of Materials
Sheet NoS. 17-19	Typical Sections
Sheet No. 20	Sign Tabulation
Sheet Nos. 21-22	Permanent Pavement Markings
Sheet Nos. 23-26	Fixed Location Sign Layout
Sheet Nos. 27-32	Standard Plates

190 EB & WB SHOULDERS

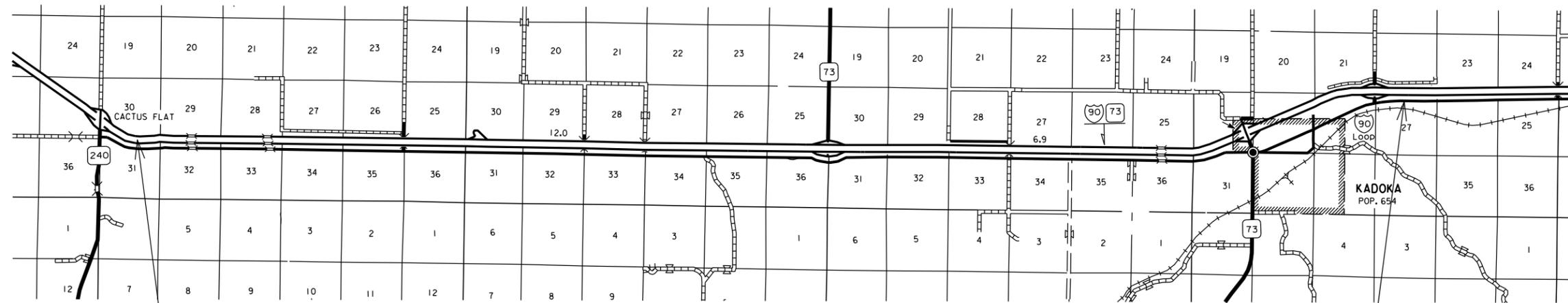


PROJECT IM-NH 0033(23)  
INTERSTATE 90 EASTBOUND - MRM 131.59+0.37 TO MRM 153.00+0.01  
INTERSTATE 90 WESTBOUND - MRM 131.60+0.35 TO MRM 153.00+0.06  
SD HIGHWAY 73 - MRM 37.00+0.48 TO MRM 71.00+0.19

STORM WATER PERMIT  
NO PERMIT REQUIRED

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-0033(23)	2	32

# PROJECT LAYOUT ASPHALT SURFACE TREATMENT INTERSTATE 90 SHOULDERS EASTBOUND JACKSON COUNTY



**BEGIN I90 EB SHOULDERS**  
**STA. 0+00**  
**MRM 131.59 + 0.365**  
**MILEAGE = 132.261**

**END I90 EB SHOULDERS**  
**STA. 1112+13**  
**MRM 153.00 + 0.006**  
**MILEAGE = 153.324**

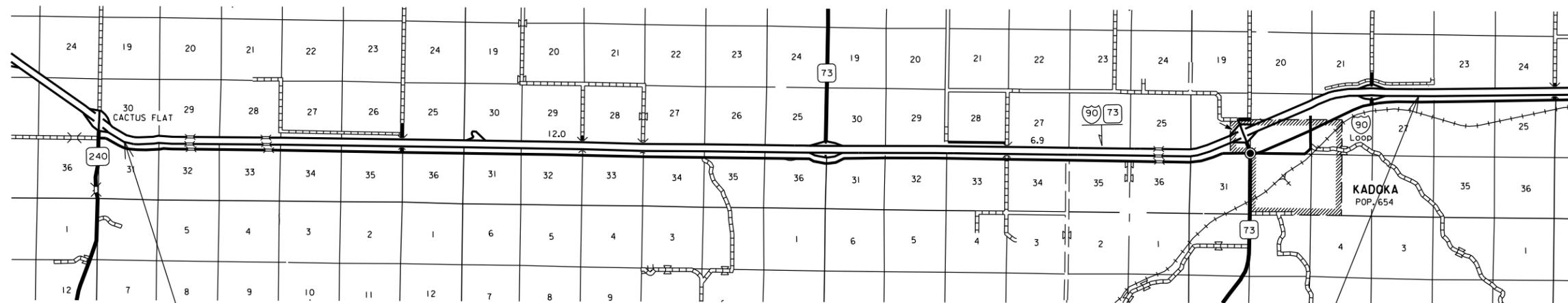
### DESIGN DESIGNATION

ADT (2015) 2816  
ADT (2035) 3241  
DHV 619  
D 51%  
T DHV 11.9%  
T ADT 26.1%  
V 80 MPH

GROSS LENGTH: 111,212.64 FT = 21.063 MILES  
LENGTH OF EXCEPTIONS: 11,853.00 FT = 2.245 MILES  
NET LENGTH: 99,359.64 FT = 18.818 MILES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-0033(23)	3	32

# PROJECT LAYOUT ASPHALT SURFACE TREATMENT INTERSTATE 90 SHOULDERS WESTBOUND JACKSON COUNTY



**BEGIN I90 WB SHOULDERS**  
**STA. 0+00**  
**MRM 131.60+0.350**  
**MILEAGE = 132.420**

**END I90 WB SHOULDERS**  
**STA. 114+87.20**  
**MRM 153.00+0.060**  
**MILEAGE = 153.535**

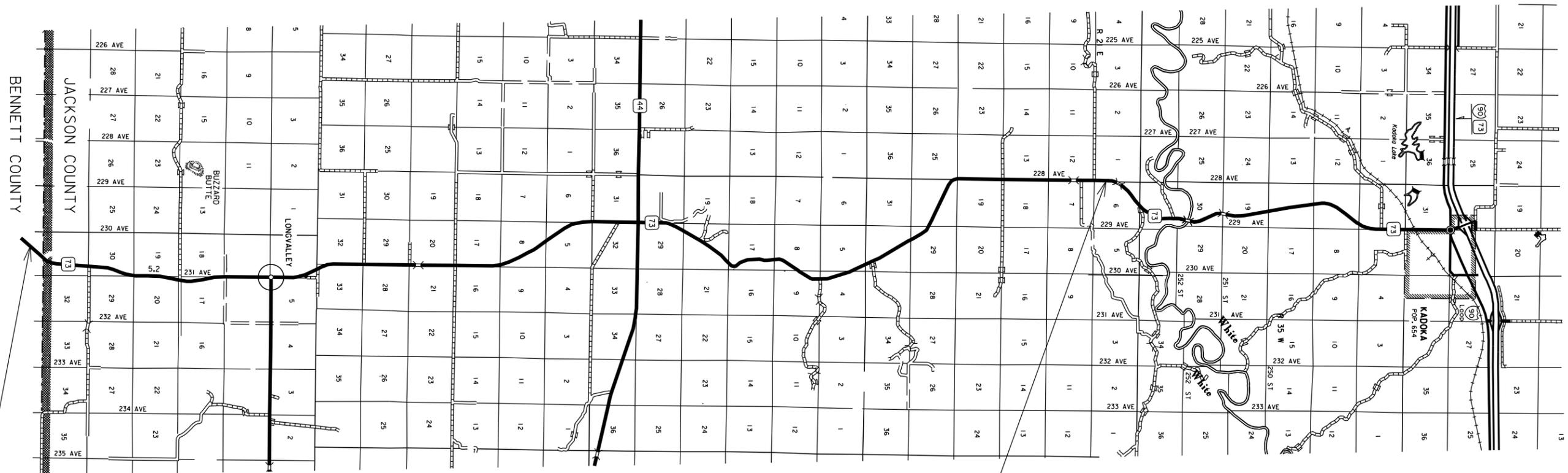
### DESIGN DESIGNATION

ADT (2015) 2816  
ADT (2035) 3241  
DHV 619  
D 51%  
T DHV 11.9%  
T ADT 26.1%  
V 80 MPH

**GROSS LENGTH:** 111,487.20 FT = 21.115 MILES  
**LENGTH OF EXCEPTIONS:** 12,455.00 FT = 2.359 MILES  
**NET LENGTH:** 99,032.20 FT = 18.756 MILES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-0033(23)	4	32

# PROJECT LAYOUT ASPHALT SURFACE TREATMENT SD 73 – JACKSON & BENNETT COUNTIES



**BEGIN SD73**  
**STA. 0+00**  
**MRM 37.00+0.480**  
**MILEAGE = 24.750**

**END SD73**  
**STA. 1314+77.28**  
**MRM 62.00+0.495**  
**MILEAGE = 24.901**

**DESIGN DESIGNATION**

ADT (2015) 600  
 ADT (2035) 673  
 DHV 83  
 D 52%  
 T DHV 9.2%  
 T ADT 20.3%  
 V 70 MPH

**GROSS LENGTH: 131,477.28 FT = 24.901 MILES**  
**LENGTH OF EXCEPTIONS: 0.00 FT = 0.000 MILES**  
**NET LENGTH: 131,477.28 FT = 24.901 MILES**

Revised 12-30-2015 JDH

### ESTIMATE OF QUANTITIES

The quantities of asphalt for surface treatment and cover aggregate are based on the rates shown in the Rates of Materials. This is only an estimate. The actual application rates of materials will be determined by mix design as stated in these plans. The mix design rates may vary from the estimated rates stated in the Rates of Materials depending on the aggregate source and the variation in gradation and flakiness index. The application rates may also be adjusted in the field due to results of gradations, flakiness index, and differing surface conditions. Pay quantities will be those actually used even though they may vary significantly from plans estimates.

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	132.3	Ton
330E3000	Sand for Fog Seal	15.0	Ton
360E0020	AE150S Asphalt for Surface Treatment	534.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	210.2	Ton
360E1020	Type 1B Cover Aggregate	4,937.0	Ton
360E1200	Modified Cover Aggregate	1,571.8	Ton
633E0010	Cold Applied Plastic Pavement Marking, 4"	6,470	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	184	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	6	Each
633E1300	Pavement Marking Paint, White	1,244	Gal
633E1305	Pavement Marking Paint, Yellow	378	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	6,470	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	184	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	6	Each
634E0010	Flagging	350.0	Hour
634E0020	Pilot Car	90.0	Hour
634E0110	Traffic Control Signs	2,409	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	2	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0630	Temporary Pavement Marking	49.8	Mile

### SPECIFICATIONS

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

## **ENVIRONMENTAL COMMITMENTS**

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

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

#### **COMMITMENT B2: WHOOPING CRANE**

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

#### **Action Taken/Required:**

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

### **COMMITMENT B4: BALD EAGLE**

Bald eagles are known to occur in this area.

#### **Action Taken/Required:**

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

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

#### **Action Taken/Required:**

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

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

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

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

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

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

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

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

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

**COMMITMENT I: HISTORICAL PRESERVATION OFFICE  
CLEARANCES**

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all 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: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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

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

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

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

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

## SCOPE OF WORK

The work required for this project includes, but is not limited to the following items, not listed in order of execution.

Interstate 90 Eastbound outside shoulders (MRM 131.00+0.960, centerline of median crossover, to MRM 153.00+0.010): CRS-2P Asphalt for Surface Treatment shall be applied to the outside shoulder from the bottom of the slough of the Class S asphalt concrete to the top of the class Q2 asphalt concrete shoulder slough. Modified Cover Aggregate shall be applied from the bottom of the slough of the Class S asphalt concrete to the top of the class Q2 asphalt concrete shoulder slough. SS-1h or CSS-1h for Fog Seal shall be applied to the bottom six inches of Class S asphalt concrete to six inches down the slope of the class Q2 asphalt concrete shoulder slough.

Interstate 90 Westbound outside shoulders (MRM 131.00+0.950, centerline of median crossover, to MRM 153.00+0.060): CRS-2P Asphalt for Surface Treatment shall be applied to the outside shoulder from the bottom of the slough of the Class S asphalt concrete to the top of the class Q2 asphalt concrete shoulder slough. Modified Cover Aggregate shall be applied from the bottom of the slough of the Class S asphalt concrete to the top of the class Q2 asphalt concrete shoulder slough. SS-1H OR CSS-1H for Fog Seal shall be applied to the bottom six inches of Class S asphalt concrete to six inches down the slope of the class Q2 asphalt concrete shoulder slough.

SD Highway 73 (MRM 37.00+0.480, approximately 650 feet south of the Bennett/Jackson County line to MRM 62.00+0.495, approximately 2.5 miles south of the White River): AE150S Asphalt for Surface Treatment shall be applied the full width of existing class Q2 asphalt concrete pavement, excluding slough. Type 1B Cover Aggregate shall be applied the full width of existing class Q2 asphalt concrete pavement, excluding slough. SS-1H OR CSS-1H for Fog Seal shall be applied the full width of class Q2 asphalt concrete pavement. The class Q2 asphalt concrete shoulder slough will have six inches of fog seal applied and the base course shoulder slough will be excluded.

## ENGINEER NOTIFICATION

The Contractor is required to notify the Area Engineer at least 10 days prior to beginning asphalt surface treatment operations.

## STURGIS MOTORCYCLE RALLY

The Contractor will not be allowed to work on the Interstate 90 shoulders or have any lane closures present during the Sturgis Motorcycle Rally from August 3, 2016 through August 14, 2016.

## SEQUENCE OF OPERATIONS

The Contractor shall modify the sequence of operation during the application of the asphalt surface treatment if any unforeseen circumstances occur that affect the installation or quality of the asphalt surface treatment. Circumstances that may affect the installation include, but are not limited to, weather, 24 hour temperatures, and traffic. These modifications shall be accomplished by the Contractor at no expense to the State and to the satisfaction of the Engineer.

The Contractor will submit a detailed schedule and sequence to the Engineer prior to the preconstruction meeting as described in the provisions.

The following sequence is provided, and is intended as a guide only, to the Contractor to aid in planning their sequence of operations and is not inclusive of all work activities.

1. Install fixed location "ground mounted" traffic control devices.
2. Install and remove temporary traffic control devices as needed for each type of work.
3. Place temporary pavement marking not more than 24 hours prior to chip seal.
4. Apply chip seal. The application of the asphalt and aggregate shall cease at least one hour prior to sunset each day.

5. Remove plastic covers from temporary flexible vertical markers (tabs) after application of the chip seal and prior to nightfall.
6. Broom chip sealed areas each morning following chip seal application.
7. Apply fog seal.
8. Remove plastic covers from temporary flexible vertical markers (tabs) after application of the fog seal and prior to nightfall.
9. Immediately prior to application of the permanent pavement marking, the areas to be painted shall be broomed or blown off with high pressure compressed air. (If a high pressure air device is used to clean the pavement surface, it shall be capable of sustaining continuous high pressure for the duration of the pavement marking process.)
10. Complete the pavement marking.
11. Remove temporary flexible vertical markers (tabs) within the seven day time period specified elsewhere in the plans.
12. Remove traffic control devices.

## ASPHALT FOR SURFACE TREATMENT

AE150S Asphalt for Surface Treatment and Type 1B Cover Aggregate shall be used for the SD73 portion of the project. CRS-2P Asphalt for Surface Treatment and Modified Cover Aggregate shall be used for the Interstate 90 shoulders portion of the project.

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

**BRIDGE ENDS AND APPROACH SLABS**

Asphalt surface treatment shall not be placed on any bridge and/or bridge approach slabs. Any emulsion or cover aggregate found to be on bridges or approach slabs after final brooming shall be removed by the Contractor as directed by the Engineer at no cost to the Department.

Material used to cover and protect these areas shall be removed and disposed of properly after the application of the asphalt surface treatment. When the material is removed, the asphalt surface treatment that does not stay adhered to the material shall be removed from the road surface.

All joints at bridge ends including asphalt plug joints, membrane sealant, and strip seal glands along the project shall be masked and/or protected the entire length prior to Asphalt Surface Treatment operations. This protection shall remain in place until completion of the fog seal and any final brooming operations. The protection shall then be removed and any loose material cleaned out of each of the gland areas. Any damage to the glands caused by the asphalt surface treatment operations shall be repaired at no expense to the State. All costs related to this work shall be incidental to the various contract items.

The anticipated bridge joint locations are listed in the table below.

Mile Reference Marker	
MRM 132.86+0.000	EB & WB
MRM 134.09+0.000	EB & WB
MRM 136.35+0.000	EB & WB
MRM 139.30+0.000	EB & WB
MRM 143.30+0.000	EB & WB
MRM 146.26+0.000	EB & WB
MRM 148.74+0.000	EB & WB
MRM 150.20+0.000	EB & WB
MRM 152.42+0.000	EB & WB

**PROJECT BROOMING**

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

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

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

**TYPE 1B COVER AGGREGATE**

Type 1B Cover Aggregate and AE150S Asphalt for Surface Treatment shall be used for the SD73 portion of the project.

After the aggregate stockpile has been produced, the Contractor shall submit an aggregate sample to the asphalt supplier a minimum of 14 days prior to starting the project to allow time to evaluate the compatibility and design of the surface treatment. A copy of the test results shall be submitted to the Engineer and Bituminous Engineer for approval prior to starting the asphalt surface treatment work.

Quality tests on the Cover Aggregate for abrasion and soundness are required by specification. The Contractor shall notify the Winner Area Office prior to sampling and a representative from the Winner Area Office shall witness all sampling of aggregates to be submitted to the Central Testing Laboratory for quality testing. Satisfactory test results for the Cover Aggregate shall be obtained prior to its use on the project.

**MODIFIED COVER AGGREGATE**

Modified Cover Aggregate and CRS-2P Asphalt for Surface Treatment shall be used for the Interstate 90 shoulders portion of the project.

Aggregate for Modified Cover Aggregate shall conform to the following gradation requirements:

Passing a 3/8 Inch Sieve	100%
Passing a No. 4 Sieve	0-75%
Passing a No. 8 Sieve	0-30%
Passing a No. 40 Sieve	0-6%
Passing a No. 200 Sieve	0-1.3%

All other requirements of the Standard Specifications Section 881.2 for Type 1B Cover Aggregate shall apply.

At least 50% of the aggregate shall be stockpiled at each stockpile site, adjacent to or near the routes on this contract, at least one week prior to work beginning on that route.

After the aggregate stockpile has been produced, the Contractor shall submit an aggregate sample to the asphalt supplier a minimum of 14 days prior to starting the project to allow time to evaluate the compatibility and design of the surface treatment. A copy of the test results shall be submitted to the Engineer and Bituminous Engineer for approval prior to starting the asphalt surface treatment work.

Quality tests on the Cover Aggregate for abrasion and soundness are required by specification. The Contractor shall notify the Winner Area Office prior to sampling and a representative from the Winner Area Office shall witness all sampling of aggregates to be submitted to the Central Testing Laboratory for quality testing. Satisfactory test results for the Cover Aggregate shall be obtained prior to its use on the project.

## FOG SEAL

Fog Seal will be placed on all the routes on this contract. It shall be applied to the entire width of SD Highway 73 and the Interstate 90 Eastbound and Westbound shoulders. The fog seal shall be placed following the completion of the asphalt surface treatment and prior to the placement of the permanent pavement marking.

Application of the fog seal shall begin no earlier than the morning following application of the chip seal but no later than four days after the application of each day's chip seal.

Immediately prior to the applications of the fog seal the Contractor will be required to broom the entire width of the chip seal. In addition, the rumble strips shall be thoroughly broomed clean prior to the application of the fog seal.

A CSS-1h or SS-1h emulsion shall be used for the fog seal application. A water-to-emulsion rate of 1:1 should be used for the Fog Seal application.

The Contractor shall fog seal the entire asphalt concrete surface including slough.

## SAND FOR FOG SEAL

The Contractor shall plan the fog seal operation to allow adequate cure time for the fog seal and to minimize/eliminate the need to apply blotting sand to the fog seal.

A small quantity of Blotting Sand is set up, for each respective route to be Fog Sealed, to be used as directed by the Engineer at locations of high traffic volumes, such as intersecting state or county highways, that traffic cannot be stopped from crossing. The Contractor will be required to keep traffic off all other areas until the Fog Seal has cured sufficiently as to not stick to tires.

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

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

Blotting sand that is applied shall be broomed off the surface of the roadway once the fog seal has sufficiently cured as determined by the Engineer.

Blotting sand for fog seal shall conform to Specification Section 879.1 B.

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

All costs for supplying, hauling, placing, and brooming the blotting sand shall be incidental to the contract unit price per ton for "Sand for Fog Seal".

## TRAFFIC CONTROL

The sign quantities were calculated planning on two each single lane closure setups to be used for the Interstate 90 work. This will allow the Contractor to work on both the I90 eastbound and I90 westbound shoulders simultaneously for a length not exceeding one day's work production. The Contractor will be paid for two lane closure setups to be used for the SD73 work. The traffic control signs will be paid once, regardless of the number of times moved within each roadway segment. If the Contractor elects to use additional lane closures, with approval from the Engineer, no additional payment will be made.

The Contractor will be allowed to set up one lane closure in the Interstate 90 eastbound lanes and one lane closure in the Interstate 90 westbound lanes simultaneously. The length of these lane closures will be based on the Contractor's anticipated work production. The lengths will be planned for the length of one day's production and will not exceed 11 miles.

All traffic control sign fixed locations shall be marked in the field by the Contractor and verified by the Engineer prior to installation.

Work activities will be conducted during daylight hours only.

Fixed location signing placed more than two days prior to the start of construction shall be covered until the time of construction. The covers shall be a hard cover and no plastic bags or soft covers will be allowed. The covers must be approved by the Engineer prior to installation. The cost of materials, labor and equipment necessary to complete this work shall be incidental to other contract items. No separate payment will be made.

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall furnish, install, and maintain LOOSE GRAVEL signs with 40 MPH advisory speed plaques placed approximately every 3 miles throughout the project. These signs shall be removed after the fog seal has been completed.

If operations exist where the traveling public will be delayed at a flagging station more than 5 minutes, it is required that the flaggers and pilot car operators all have radio or telephone contact with one another. This equipment is to be used to assist with traffic movement in the event that an emergency vehicle such as ambulance, police or fire vehicles need to pass through the project in an expedient manner.

### TRAFFIC CONTROL (CONTINUED)

Until completion of initial brooming, additional flagger(s) and FLAGGER symbol sign(s) shall be provided to alert the traveling public entering completed portions of the project to the potential of airborne chips. These flaggers shall be located at the nearest reasonable State Highway junction, in which the traveling public may consider an alternate State Highway route. Location of these advance warning flaggers shall be determined at the preconstruction meeting.

The flagger(s) shall provide each motorist with a printed notice on the Contractor's letterhead similar to the one shown. Cost of the notice shall be incidental to various contract 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.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days, the signs shall be on fixed support; ground mounted supports and shall meet the minimum mounting heights of 5 foot for rural areas and 7 foot for urban areas.

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

FRESH OIL signs with ON SHOULDER signs shall be used on the Interstate 90 route when the condition exists. The signs shall be mounted on temporary supports and placed at five mile intervals. The signs shall be removed no later than the day following the application of the fog seal. The signs are included in the Itemized List for Traffic Control Signs for these two routes.

A YIELD sign shall be used between the ROAD WORK AHEAD and ADDED LANE (SYMBOL) sign shown on standard plate 634.70 as needed to control traffic.

### TEMPORARY PAVEMENT MARKING

Temporary pavement markings shall be as per the Specifications. Temporary pavement marking will be measured once for the asphalt surface treatment and once for the fog seal on each route, for a total of two applications.

No temporary pavement marking paint will be allowed on the asphalt surface treatment or fog seal applications.

The Contractor will be allowed to use DO NOT PASS and PASS WITH CARE fixed location signs for a period of two (2) weeks to mark no passing zones on this contract. The total length of "No Passing Zones" on this contract is estimated to be 15.2 miles. It is estimated that 64 DO NOT PASS and 64 PASS WITH CARE signs will be used in conjunction with a dashed centerline to mark the no passing zones. The cost for furnishing, installing, and removing the DO NOT PASS and PASS WITH CARE signs shall be incidental to the contract unit price per mile for "Temporary Pavement Marking".

All costs for each application of the temporary pavement marking; including labor, material, maintenance, etc. shall be incidental to the contract unit price per mile for "Temporary Pavement Marking".

Prior to asphalt surface treatment the Contractor shall mark, with appropriately colored temporary flexible vertical markers (tabs), the location of all existing pavement marking, except edge lines. However, the Contractor shall place temporary flexible vertical markers (tabs) on the edge line of all transition areas such as turn lanes and climbing lanes and on all dashed edge lines. Prior to installation of the permanent pavement marking, the Engineer is to be notified. The Contractor shall give the Engineer ample notification to verify and check the placement of the temporary flexible vertical markers (tabs) that are to be used for placement of the permanent pavement marking.

If the Contractor uses the DO NOT PASS and PASS WITH CARE signs, the beginning and ending of no passing zones shall be marked with temporary flexible vertical markers (tabs).

The temporary flexible vertical markers (tabs) shall have secure covers. If the covers become detached, prior to sealing, the temporary flexible vertical markers (tabs) shall be replaced with a new temporary flexible vertical marker (tab). Any temporary flexible vertical markers (tabs) that are non-reflective shall be cleaned.

**TEMPORARY PAVEMENT MARKING (CONTINUED)**

Where the asphalt surface treatment has been applied, the temporary flexible vertical marker (tab) covers shall be removed prior to nightfall each day.

The temporary flexible vertical marker (tab) covers are considered construction debris and shall be disposed of properly by the Contractor.

The Contractor shall remove and dispose of the temporary flexible vertical markers (tabs) after Permanent Pavement Marking is applied. Method of removal shall be nondestructive to the road surface and shall result in the marker being separated from the adhesive (the adhesive shall remain on the road surface and the marker is discarded) or the marker shall be cut in such a manner that no more than ¼" of the vertical portion of the marker remains on the road surface. Removal shall 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) shall be included in the contract unit price per mile for Temporary Pavement Marking.

At the end of each day the temporary pavement markings shall be in place and visible. No separate payment will be made at the end of the next day for remarking a stretch that was not evened up with surface treatment on the previous day.

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

**STOCKPILE SITE RELEASES**

Upon completion of the contract, the Contractor shall supply the Engineer a copy of all stockpile site releases to place in the Department's file.

**EXISTING PAVEMENT CONDITIONS AND TRAFFIC VOLUMES**

The existing pavement conditions for each highway segment are listed in the table below.

ROUTE	EXISTING PAVEMENT CONDITION
I90 EB Shoulders – MRM 131.59+0.365 to MRM 153.00+0.006	Slightly porous and oxidized
I90 WB Shoulders – MRM 131.60+0.350 to MRM 153.00+0.060	Slightly porous, and oxidized
SD73 – MRM 37.00+0.480 to MRM 71.00+0.190	Slightly porous and oxidized

The traffic volumes are shown on the project layout sheet for each highway segment.

**PERMANENT PAVEMENT MARKING PAINT**

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

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

The application of permanent pavement marking paint may not begin until 7 calendar days following completion of fog seal and shall be completed within 14 days following completion of fog seal; and be completed no more than 21 days following the completion of the asphalt surface treatment.

For each working day the application of permanent pavement marking paint remains uncompleted after the 14 calendar days, the Contractor will be assessed \$250 liquidated damages.

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.

The Contractor will be required to inventory and mark, with appropriate colored tabs, the extent and location of the existing word messages, turn arrows, stop bars, railroad crossings, pedestrian crossings, etc. before the markings are obliterated. The Engineer will be provided a copy of the pavement marking inventory.

**RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT**

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

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

If the Department chooses to take readings, the minimum retroreflectivity values shall be 230 mc/m<sup>2</sup>/lux for white and 140 mc/m<sup>2</sup>/lux for yellow.

**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.

**COLD APPLIED PLASTIC PAVEMENT MARKINGS**

Cold Applied Plastic Pavement Markings shall be 3M Series 380 AW or an approved equal.

**GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING**

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving shall be vacuumed. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue from wet grooving shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state.

All costs for removal of grinding and/or grooving residue shall be included in the contract unit price per foot for "Grooving for Cold Applied Plastic Pavement Marking".

PERMANENT PAVEMENT MARKING LAYOUT (TAPE)					
Location	Cold Applied Plastic Pavement Marking, 4" (Feet)		Cold Applied Plastic Pavement Marking, 24" (Feet)		Cold Applied Plastic Pavement Marking, Arrow (Each)
	White	Yellow	White	Yellow	
Jct SD73/US44	2550	3920	--	184	6
Total	6470		184		6

**RATES OF MATERIALS**

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

**I90 Eastbound OutsideShoulder - MRM 131.00+0.960 to MRM 141.00+0.953**  
**(Station 0+00 to 527+63) Exception = 892 feet:**

Sta. 0+00 to Sta. 45+30  
 Sta. 48+36 to Sta. 229+63  
 Sta. 232+48 to Sta. 385+55  
 Sta. 388+56 to Sta. 527+63

CRS-2P Asphalt for Surface Treatment at the rate of 3.8 tons applied 5.5 feet wide (Rate = 0.28 gallon per square yard).

Modified Cover Aggregate at the rate of 35.5 tons applied 5.5 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.7 tons applied 6 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

**I90 Eastbound OutsideShoulder - MRM 141.00+0.953 to MRM 153.00.+0.010**  
**(Station 527+63 to Station 1111+44) Exception = 10,961 feet:**

Sta. 527+63 to Sta. 578+79  
 Sta. 586+50 to Sta. 595+48  
 Sta. 598+80 to Sta. 609+15  
 Sta. 619+56 to Sta. 752+61  
 Sta. 756+31 to Sta. 883+56  
 Sta. 887+36 to Sta. 907+26  
 Sta. 932+71 to Sta. 943+22  
 Sta. 951+14 to Sta. 960+06  
 Sta. 984+46 to Sta. 1060+80  
 Sta. 1068+51 to Sta. 1077+44  
 Sta. 1082+40 to Sta. 1090+80  
 Sta. 1101+04 to Sta. 1111+44

CRS-2P Asphalt for Surface Treatment at the rate of 4.5 tons applied 6.5 feet wide (Rate = 0.28 gallon per square yard).

Modified Cover Aggregate at the rate of 41.9 tons applied 6.5 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.9 tons applied 7 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

**I90 Westbound Outside Shoulder - MRM 131.00+0.950 to MRM 141.00+0.953**  
**(Station 0+00 to 528+16) Exception = 2,645 feet:**

Sta. 0+00 to Sta. 45+62  
 Sta. 48+58 to Sta. 230+16  
 Sta. 232+95 to Sta. 275+56  
 Sta. 285+86 to Sta. 306+72  
 Sta. 314+37 to Sta. 372+24  
 Sta. 372+24 to Sta. 386+02  
 Sta. 388+77 to Sta. 427+47  
 Sta. 427+47 to Sta. 528+16

CRS-2P Asphalt for Surface Treatment at the rate of 3.8 tons applied 5.5 feet wide (Rate = 0.28 gallon per square yard).

Modified Cover Aggregate at the rate of 35.5 tons applied 5.5 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.7 tons applied 6 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

**I90 Westbound OutsideShoulder - MRM 141.00+0.953 to MRM 153.00+0.060**  
**(Station 528+16 to Station 1114+87) Exception = 9,810 feet:**

Sta. 528+16 to Sta. 578+79  
 Sta. 586+50 to Sta. 595+48  
 Sta. 598+80 to Sta. 609+15  
 Sta. 619+56 to Sta. 752+61  
 Sta. 756+31 to Sta. 883+56  
 Sta. 887+36 to Sta. 907+26  
 Sta. 932+71 to Sta. 943+22  
 Sta. 951+14 to Sta. 960+06  
 Sta. 984+46 to Sta. 1060+80  
 Sta. 1068+51 to Sta. 1077+44  
 Sta. 1082+40 to Sta. 1090+80  
 Sta. 1101+04 to Sta. 1114+87

CRS-2P Asphalt for Surface Treatment at the rate of 4.5 tons applied 6.5 feet wide (Rate = 0.28 gallon per square yard).

Modified Cover Aggregate at the rate of 41.9 tons applied 6.5 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.9 tons applied 7 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

**SD73 – 28 ft asphalt surface w/4 ft base course shoulders**

Sta. 0+00 to Sta. 5+37  
 Sta. 23+13 to Sta. 75+33  
 Sta. 91+20 to Sta. 96+78  
 Sta. 120+48 to Sta. 137+67  
 Sta. 151+00 to Sta. 166+34  
 Sta. 190+89 to Sta. 204+37  
 Sta. 218+26 to Sta. 259+50  
 Sta. 280+00 to Sta. 294+57  
 Sta. 316+43 to Sta. 332+39  
 Sta. 354+36 to Sta. 531+04  
 Sta. 554+30 to Sta. 578+62  
 Sta. 589+43 to Sta. 625+82  
 Sta. 658+78 to Sta. 708+99  
 Sta. 720+85 to Sta. 743+66  
 Sta. 757+51 to Sta. 790+39  
 Sta. 800+83 to Sta. 822+50

AE150S Asphalt for Surface Treatment at the rate of 19.5 tons applied 28 feet wide (Rate = 0.28 gallon per square yard).

Type 1B Cover Aggregate at the rate of 180.7 tons applied 28 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 3.5 tons applied 29 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate use

**SD73 – 36 ft asphalt surface w/1.5 ft. slough**

Sta. 5+37 to Sta. 23+13  
 Sta. 75+33 to Sta. 91+20  
 Sta. 96+78 to Sta. 120+48  
 Sta. 137+67 to Sta. 151+00  
 Sta. 166+34 to Sta. 190+89  
 Sta. 204+37 to Sta. 218+26  
 Sta. 259+50 to Sta. 274+00  
 Sta. 278+50 to Sta. 280+00  
 Sta. 294+57 to Sta. 316+43  
 Sta. 332+39 to Sta. 354+36  
 Sta. 531+04 to Sta. 554+30  
 Sta. 578+62 to Sta. 589+43  
 Sta. 625+82 to Sta. 658+78  
 Sta. 743+66 to Sta. 757+51  
 Sta. 790+39 to Sta. 800+83

AE150S Asphalt for Surface Treatment at the rate of 25.1 tons applied 36 feet wide (Rate = 0.28 gallon per square yard).

Type 1B Cover Aggregate at the rate of 70.4 tons applied 36 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 4.6 tons applied 37 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

**SD73 – 24 ft asphalt surface w/1.5 ft. asphalt slough**

Sta. 274+00 to Sta. 278+50

AE150S Asphalt for Surface Treatment at the rate of 16.8 tons applied 24 feet wide (Rate = 0.28 gallon per square yard).

Type 1B Cover Aggregate at the rate of 154.9 tons applied 24 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 3.1 tons applied 25 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-0033(23)	16	32

**SD73 – Variable asphalt surface w/4 ft base course shoulders @ SD44/SD73 Intersection**

Sta. 708+99 to Sta. 720+85

AE150S Asphalt for Surface Treatment at the rate of 26.4 tons applied variable width (Rate = 0.28 gallon per square yard).

Type 1B Cover Aggregate at the rate of 55.2 tons applied variable width (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 4.7 tons applied variable width (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

**SD73 – 30 ft asphalt surface w/2 ft. slough**

Sta. 822+50 to Sta. 1314+77

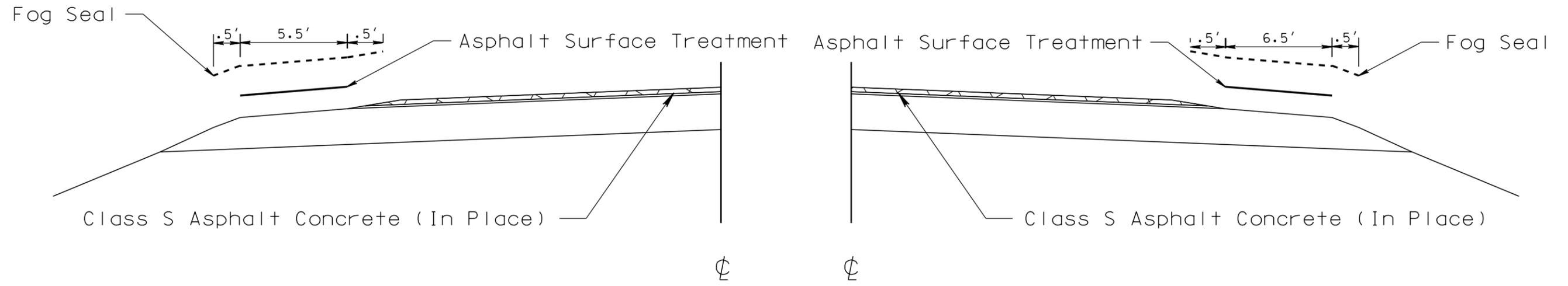
AE150S Asphalt for Surface Treatment at the rate of 20.9 tons applied 30 feet wide (Rate = 0.28 gallon per square yard).

Type 1B Cover Aggregate at the rate of 193.6 tons applied 30 feet wide (Rate = 22 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 3.9 tons applied 31 feet wide (Rate = 0.05 gallon per square yard). The oil applied shall be dependent on the type of aggregate used.

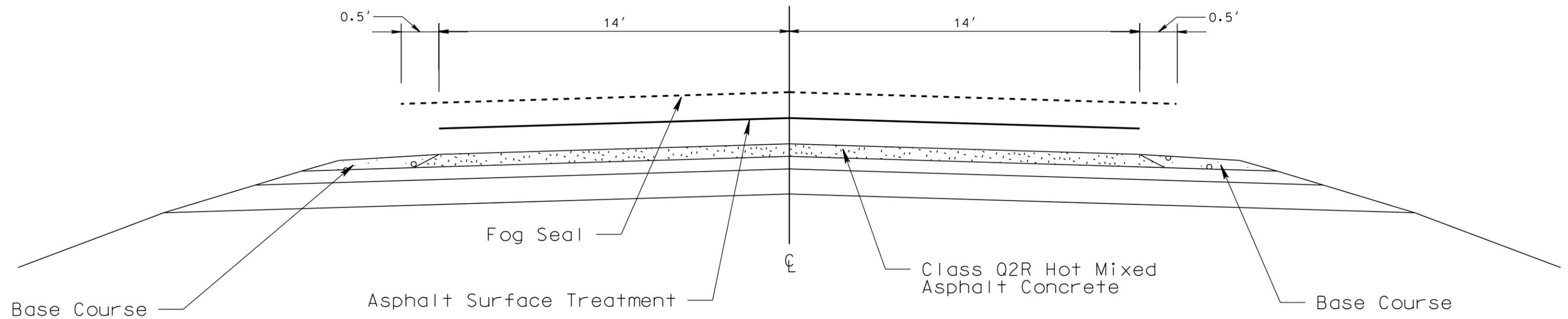
# TYPICAL SECTION

## Interstate 90 Shoulders



**NOTE: It is the Contractor's responsibility to verify the width for application in the field.  
 AST shall be applied from bottom of Class S slough to top of Class Q2 slough.  
 Fog Seal shall be applied 6" onto Class S slough and 6" onto Class Q2 slough.**

## SD 73 - 28' Asphalt w/4' Base Shoulders



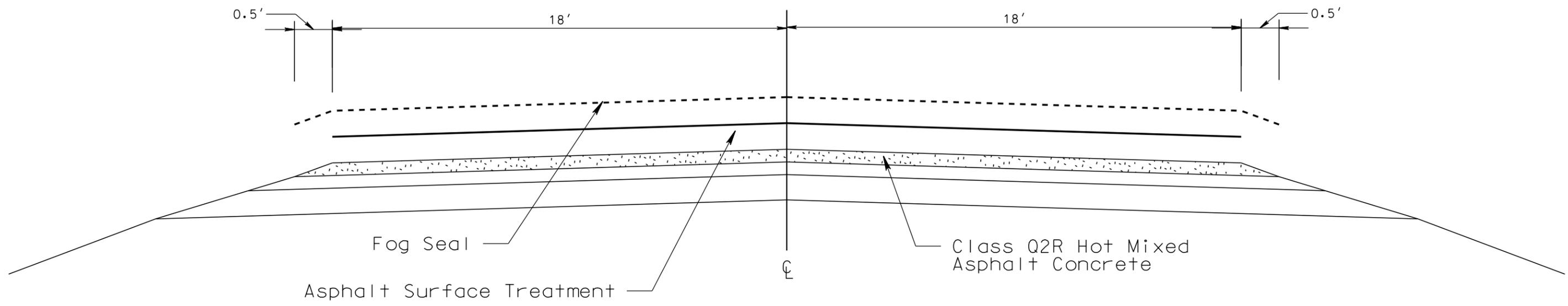
**NOTE: It is the Contractor's responsibility to verify the width for application in the field.  
 AST shall be applied to edge of asphalt and fog seal shall be applied 6" past edge of asphalt.**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-0033(23)	18	32

Plotting Date: 12/23/2015

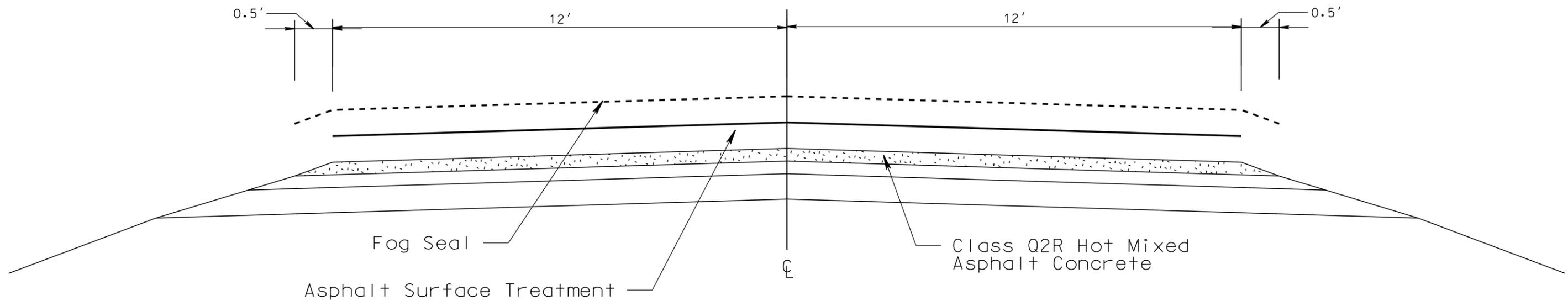
# TYPICAL SECTION

## SD 73 - 36' Asphalt w/1.5' Asphalt Slough



**NOTE: It is the Contractor's responsibility to verify the width for application in the field. AST shall be applied to top of slough and fog seal shall be applied 6" past top of slough**

## SD 73 - 24' Asphalt w/1.5' Asphalt Slough



PLOT SCALE - 1:6

PLOTTED FROM - TRW11INT23

PLOT NAME - 2

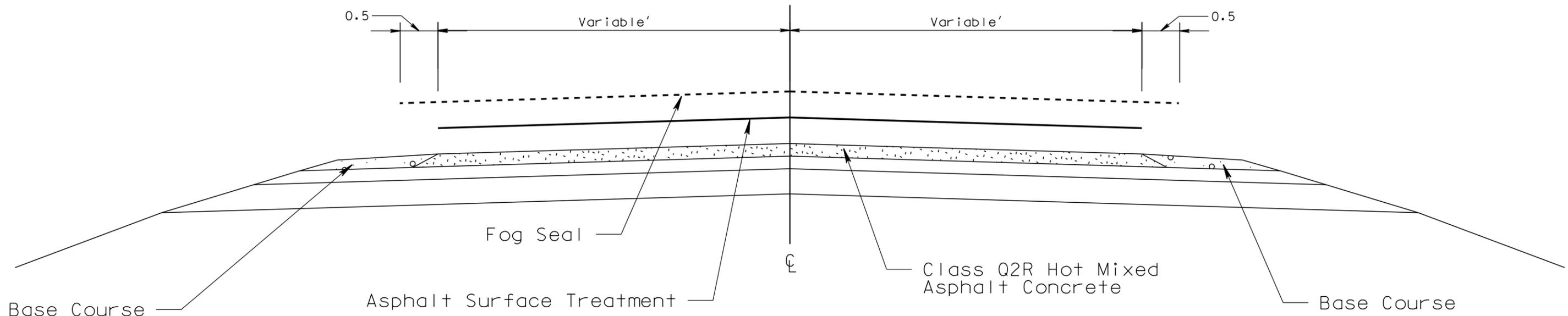
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-0033(23)	19	32

Plotting Date: 12/23/2015

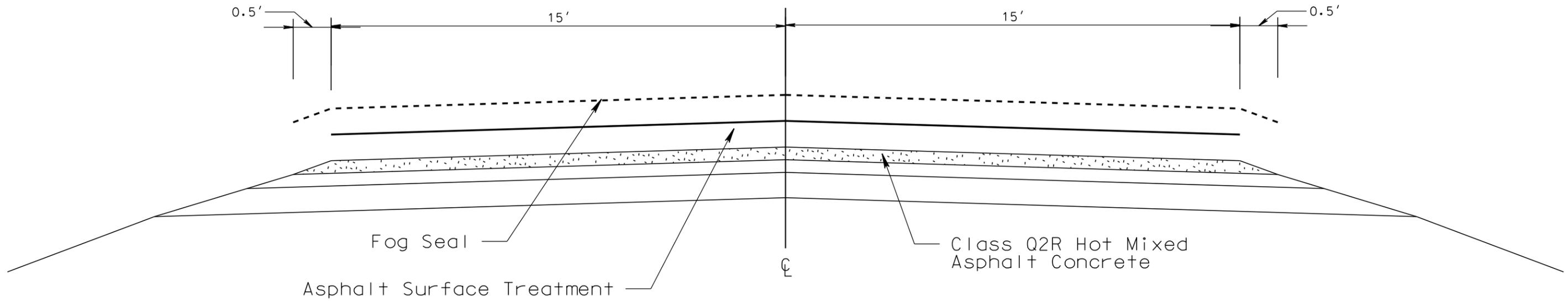
# TYPICAL SECTION

## SD44/SD73 Intersection - Variable Asphalt Surface w/4' Base Shoulders



**NOTE: It is the Contractor's responsibility to verify the width for application in the field. AST shall be applied to edge of asphalt/top of slough and fog seal shall be applied 6" past edge of asphalt/top of slough**

## SD 73 - 30' Asphalt w/2' Asphalt Slough



PLOT SCALE - 1:6

PLOT NAME - 3

FILE - ... \MICROSTATION\053 TYPICALS.DGN

PLOTTED FROM - TRW11INT23

Revised 12-30-2015 JDH

### ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	SD Highway 73				Interstate 90 EB/WB Shoulders					
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT		
R1-2	YIELD		36" x 36"	9		4	60" x 60"	25	100		
R2-1	SPEED LIMIT 45		24" x 30"	5		4	36" x 48"	12	48		
R2-1	SPEED LIMIT 65		24" x 30"	5		6	36" x 48"	12	72		
R2-1	SPEED LIMIT 80		24" x 30"	5		2	36" x 48"	12	24		
R2-6aP	FINES DOUBLE (plaque)		24" x 18"	3		6	36" x 24"	6	36		
W3-5	SPEED REDUCTION AHEAD (45 MPH)		48" x 48"	16		2	48" x 48"	16	32		
W3-5	SPEED REDUCTION AHEAD (65 MPH)		48" x 48"	16		4	48" x 48"	16	64		
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	16		4	48" x 48"	16	64		
W4-3	ADDED LANE (symbol)		48" x 48"	16		3	48" x 48"	16	48		
W7-3aP	NEXT __ MILES (plaque)		36" x 30"	8		2	36" x 30"	8	16		
W8-6	TRUCK CROSSING	4	48" x 48"	16	64	2	48" x 48"	16	32		
W8-7	LOOSE GRAVEL	16	48" x 48"	16	256		48" x 48"	16			
W13-1P	ADVISORY SPEED 40 MPH (plaque)	16	30" x 30"	6	96		30" x 30"	6			
W20-1	ROAD WORK AHEAD	15	48" x 48"	16	240	15	48" x 48"	16	240		
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16	64		48" x 48"	16			
W20-5	LEFT or RIGHT LANE CLOSED AHEAD		48" x 48"	16		8	48" x 48"	16	128		
W20-7	FLAGGER (symbol)	6	48" x 48"	16	96	2	48" x 48"	16	32		
W21-2	FRESH OIL		48" x 48"	16		16	48" x 48"	16	256		
W21-5	SHOULDER WORK		48" x 48"	16		1	48" x 48"	16	16		
W21-5a	LEFT or RIGHT SHOULDER CLOSED		48" x 48"	16		2	48" x 48"	16	32		
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD		48" x 48"	16		2	48" x 48"	16	32		
G20-1	ROAD WORK NEXT 21 MILES		36" x 18"	5		2	48" x 24"	8	16		
G20-1	ROAD WORK NEXT 25 MILES	2	36" x 18"	5	10		48" x 24"	8			
G20-2	END ROAD WORK	15	36" x 18"	5	75	13	48" x 24"	8	104		
SPECIAL	ON SHOULDER		24" x 18"	3		16	36" x 24"	6	96		
SPECIAL	EXIT W/ARROW		12" x 36"	3		1	60" x 48"	20	20		
		<b>SD Highway 73 TRAFFIC CONTROL SIGNS SQFT</b>				<b>901</b>	<b>Interstate 90 EB/WB Shoulders TRAFFIC CONTROL SIGNS SQFT</b>				<b>1508</b>

#### TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	2 Each

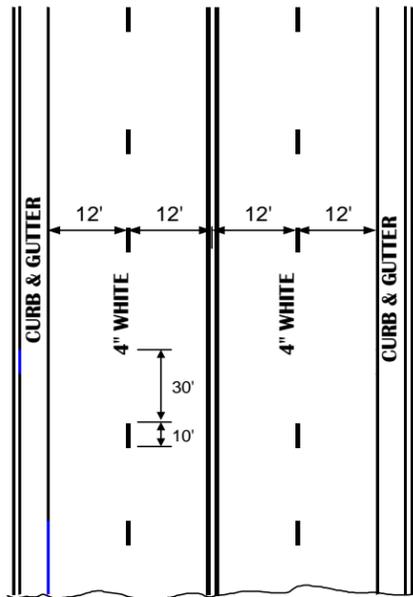
#### ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Arrow Board	2 Each

Standard traffic control signs, not listed in the above table, ordered by the Engineer will be paid at that sign's respective "square feet" value as listed in the Department's complete Standard Sign List. A copy of the Standard Sign list is available upon request from the Winner Area Office.

**FURNISHING AND APPLYING PAVEMENT MARKING PAINT**

**UNDIVIDED ROADWAY**



1. Approximate paint application rates shall be as follows:

Four Lane Roadway (Rates for one line)	Two Lane Roadway
<u>Solid Yellow Centerline</u> Rate = 24.7 Gals./Pass-Mile	<u>Yellow Centerline</u> (Includes No Passing Zones) Rate = 15± Gals./Pass-Mile
<u>Dashed White Laneline</u> Rate = 6.7 Gals./Pass-Mile	<u>Solid White Edgeline</u> (Rate for one line) Rate = 24.7 Gals./Pass-Mile
<u>Solid White Edgeline</u> (Not applicable in curb & gutter section) Rate = 24.7 Gals./Pass-Mile	

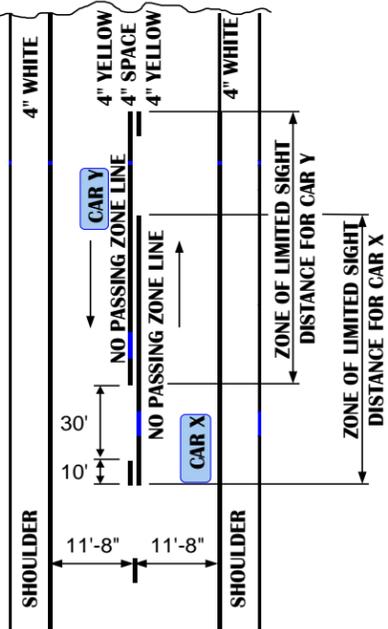
2. Typical pavement marking as shown on this sheet shall be applied throughout the entire length of undivided roadway.

3. Exact location of NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, shall not be used as the beginning and ending of NO PASSING ZONE lines.

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

ESTIMATED QUANTITIES		
PAVEMENT MARKING PAINT	PCN	
WHITE	1244	Gal.
YELLOW	378	Gal.
TOTAL	1622	Gal.

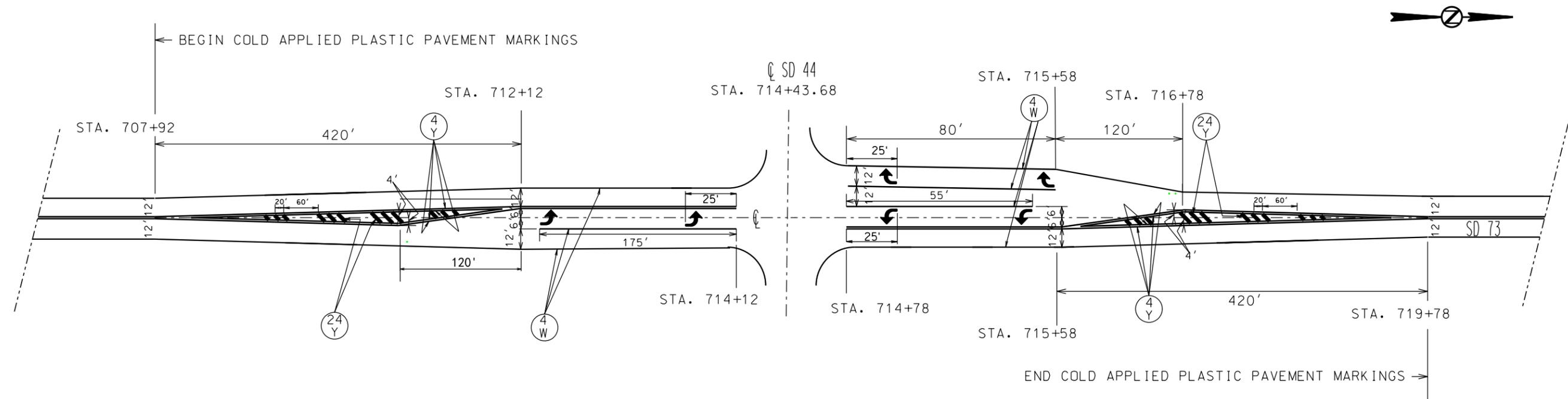
NOTE: ONLY DASHED WHITE LINES EXTEND THROUGH INTERSECTIONS.



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-9038(23)	22	32

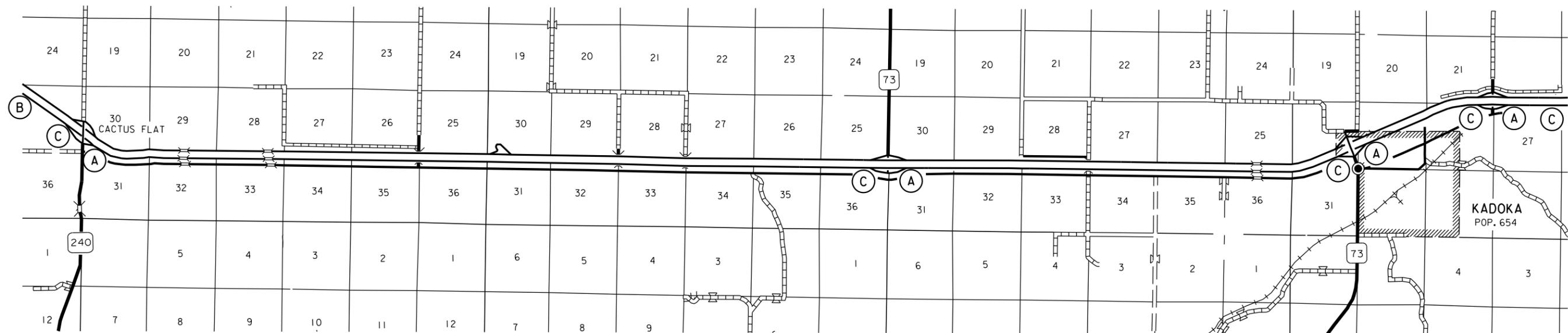
# PERMANENT PAVEMENT MARKING LAYOUT

## JCT SD 44 & SD 73



Revised 12-30-2015 JDH

# FIXED LOCATION SIGN LAYOUT INTERSTATE 90 SHOULDERS EASTBOUND JACKSON COUNTY

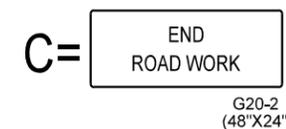
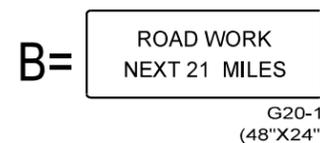
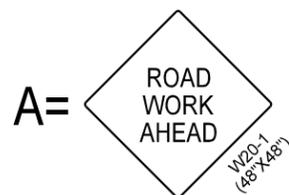


**NOTES:**

All Fixed Location signs shall remain in place until the permanent pavement marking is complete.

The exact location and spacing of the signs shown will be determined in the field by the Engineer.

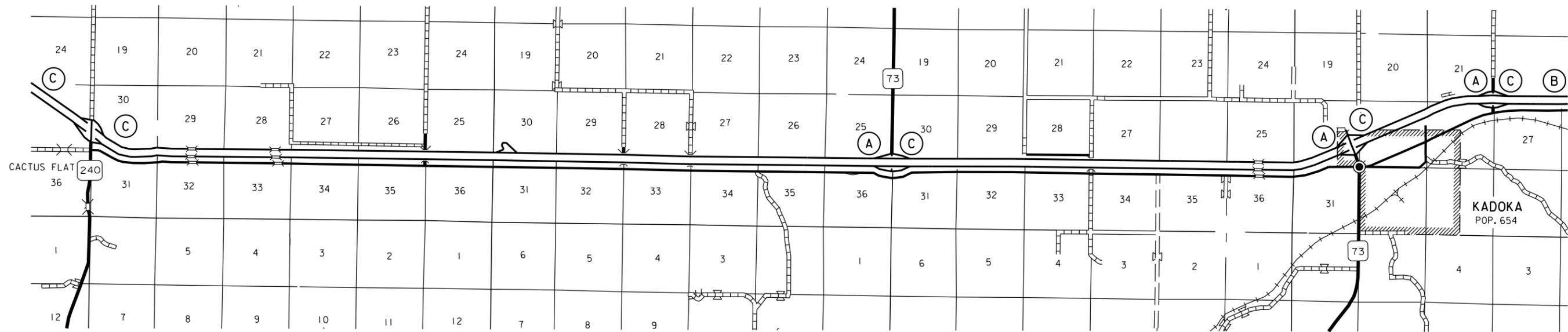
Construction signs shall not obscure existing signs. Signs shall be installed 200' to 300' from any intersections and 200' from any existing signs.



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-0033(23)	24	32

Revised 12-30-2015 JDH

# FIXED LOCATION SIGN LAYOUT INTERSTATE 90 SHOULDERS WESTBOUND JACKSON COUNTY

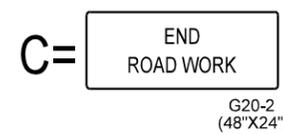
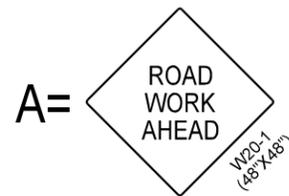


**NOTES:**

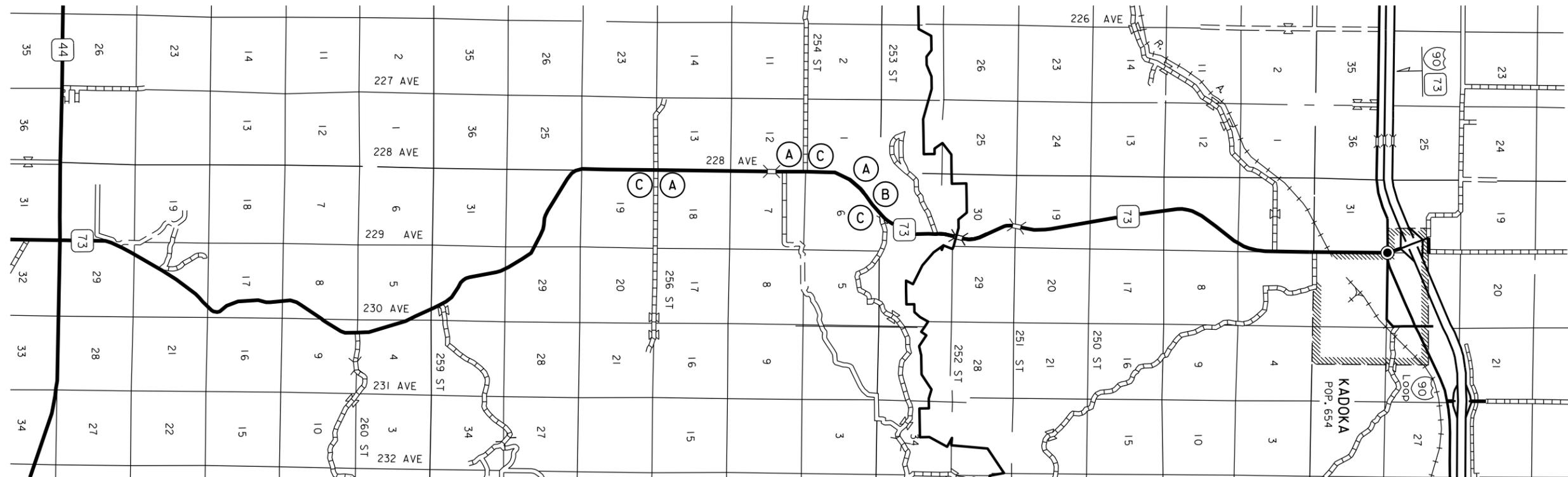
All Fixed Location signs shall remain in place until the permanent pavement marking is complete.

The exact location and spacing of the signs shown will be determined in the field by the Engineer.

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



# FIXED LOCATION SIGN LAYOUT SD HIGHWAY 73 JACKSON COUNTY

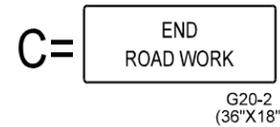
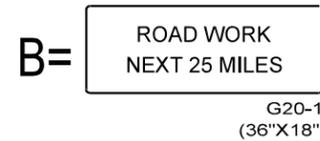
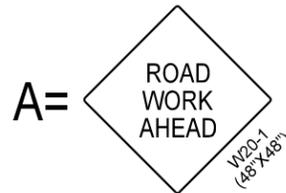


**NOTES:**

All Fixed Location signs shall remain in place until the permanent pavement is complete.

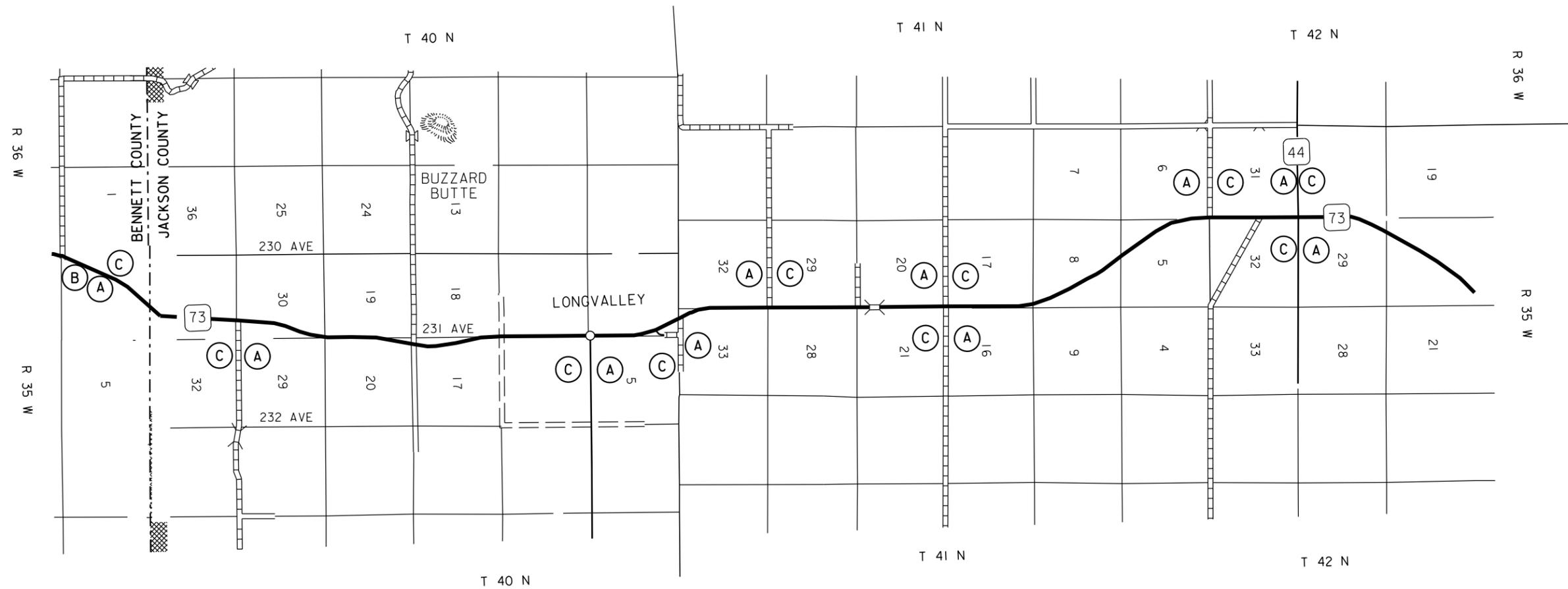
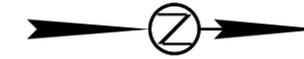
The exact location and spacing of the signs shown will be determined in the field by the Engineer.

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



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-0033(23)	26	32

# FIXED LOCATION SIGN LAYOUT SD HIGHWAY 73 BENNETT & JACKSON COUNTIES

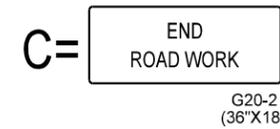
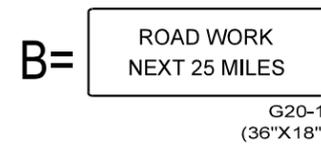
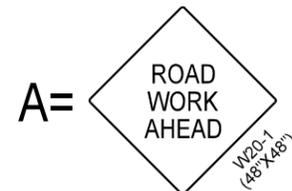


**NOTES:**

All Fixed Location signs shall remain in place until the permanent pavement marking is complete.

The exact location and spacing of the signs shown will be determined in the field by the Engineer.

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





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

Warning sign sequence in opposite direction same as below.

- Flagger
- Channelizing Device

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

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

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

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

The channelizing devices shall be drums or 42" cones.

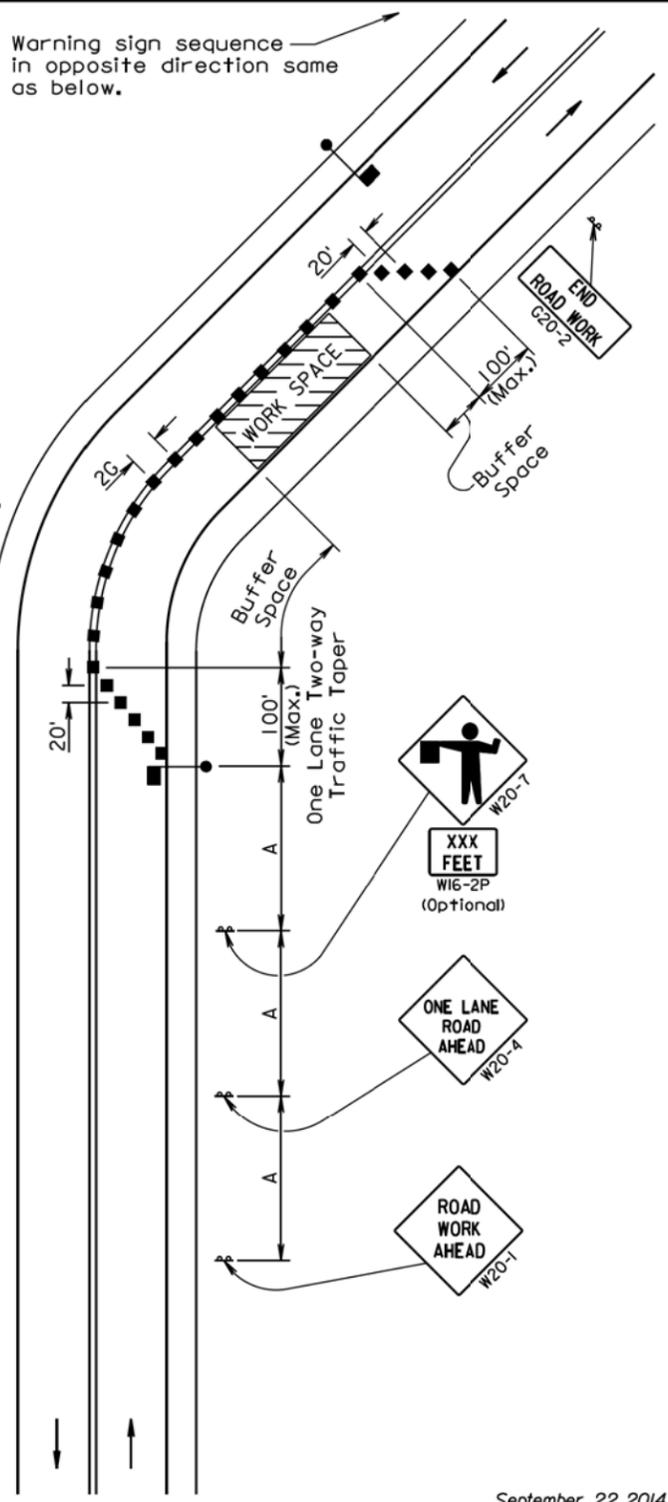
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

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

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



September 22, 2014

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER 634.23
		Sheet 1 of 1

Published Date: 4th Qtr. 2015

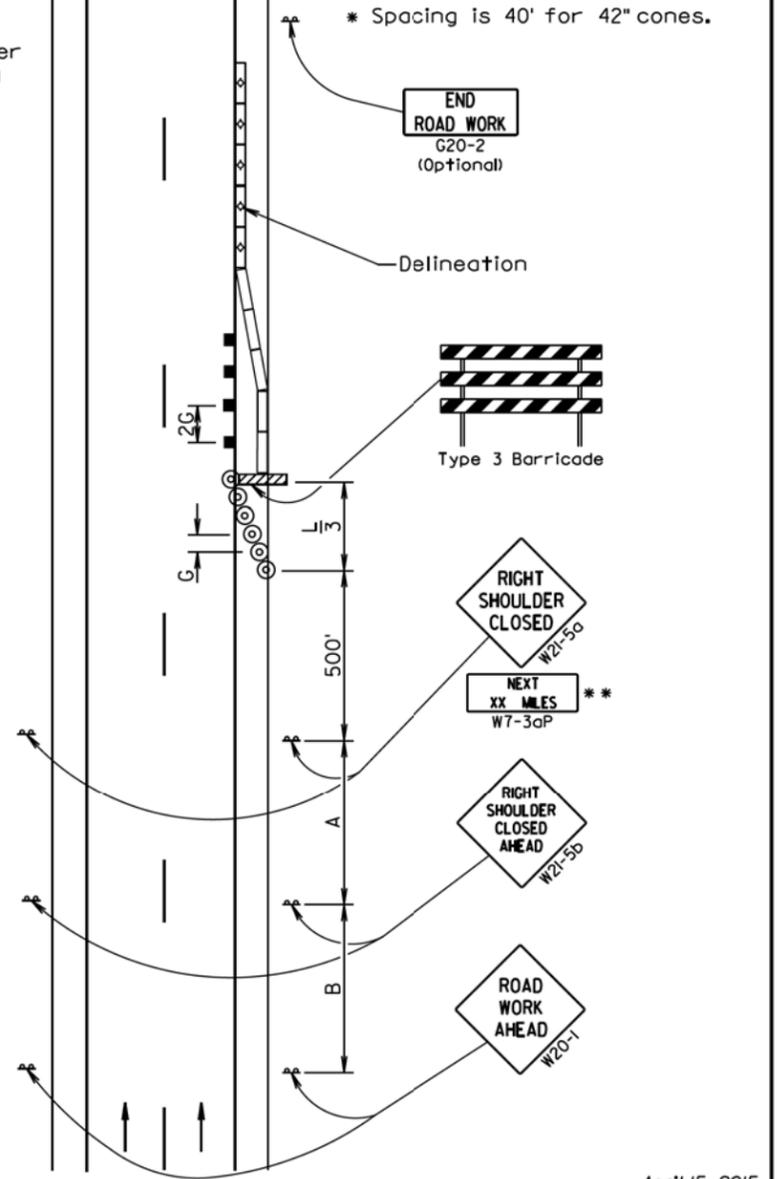
- ⊙ Reflectorized Drum
  - Channelizing Device
  - ▭ Movable Concrete Barrier
- \*\* For distances 1/2 mile or greater.

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

This standard plate shows one method which may be used to close a shoulder of a roadway for a long term project. The Highway Authority will determine if the use of barriers is required. If barriers are required, the layout details will be included elsewhere in the plans.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *
70 - 80	(A) (B) 1000 1500	1125	50 *

\* Spacing is 40' for 42" cones.



April 15, 2015

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES SHOULDER CLOSED</b>	PLATE NUMBER 634.61
		Sheet 1 of 1

Published Date: 4th Qtr. 2015

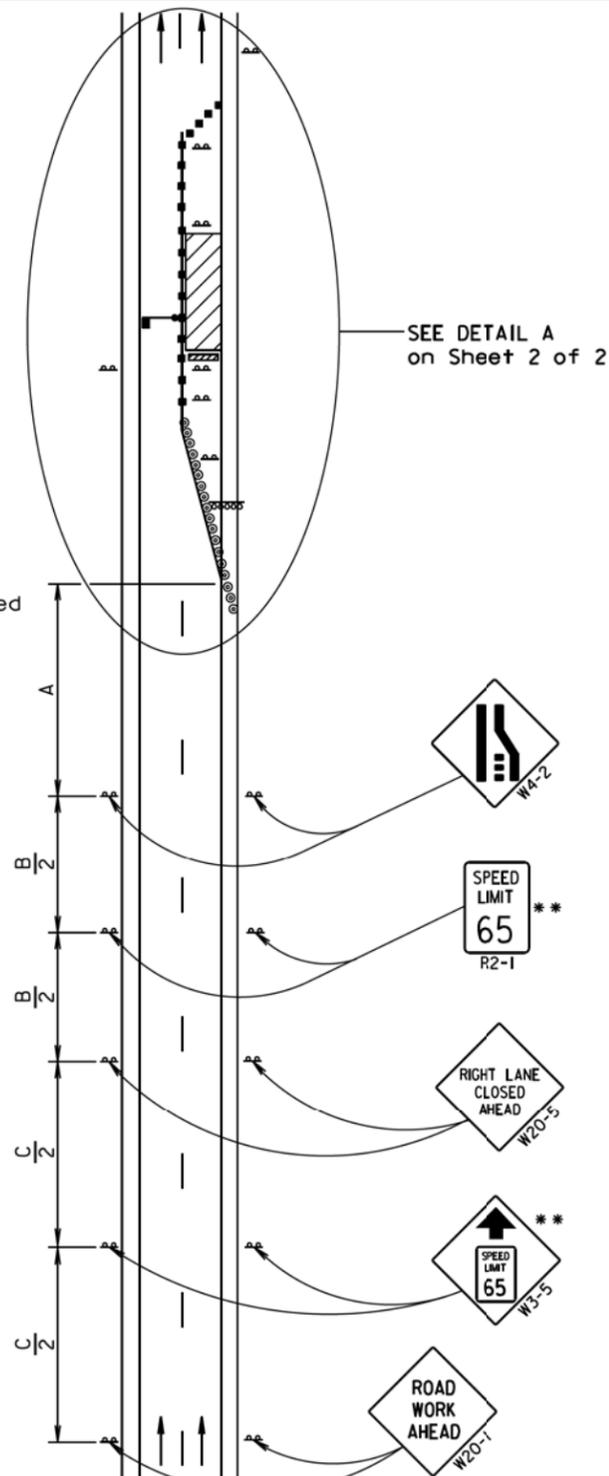
Plot Scale - 1:200

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

<b>S D D O T</b>	<b>WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS</b>	PLATE NUMBER <b>634.63</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
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

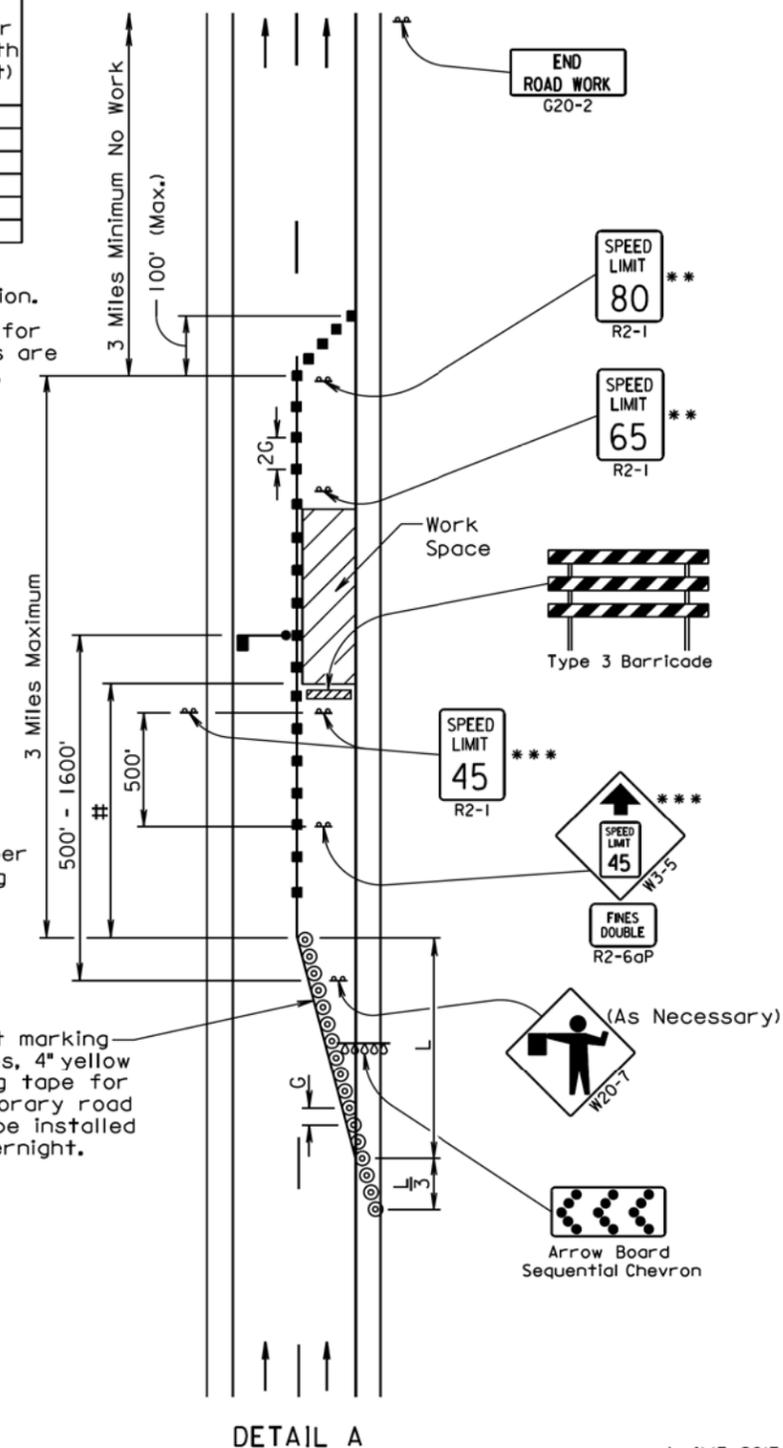
# The Work Space shall be a minimum of 500' from the end of the taper.

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.



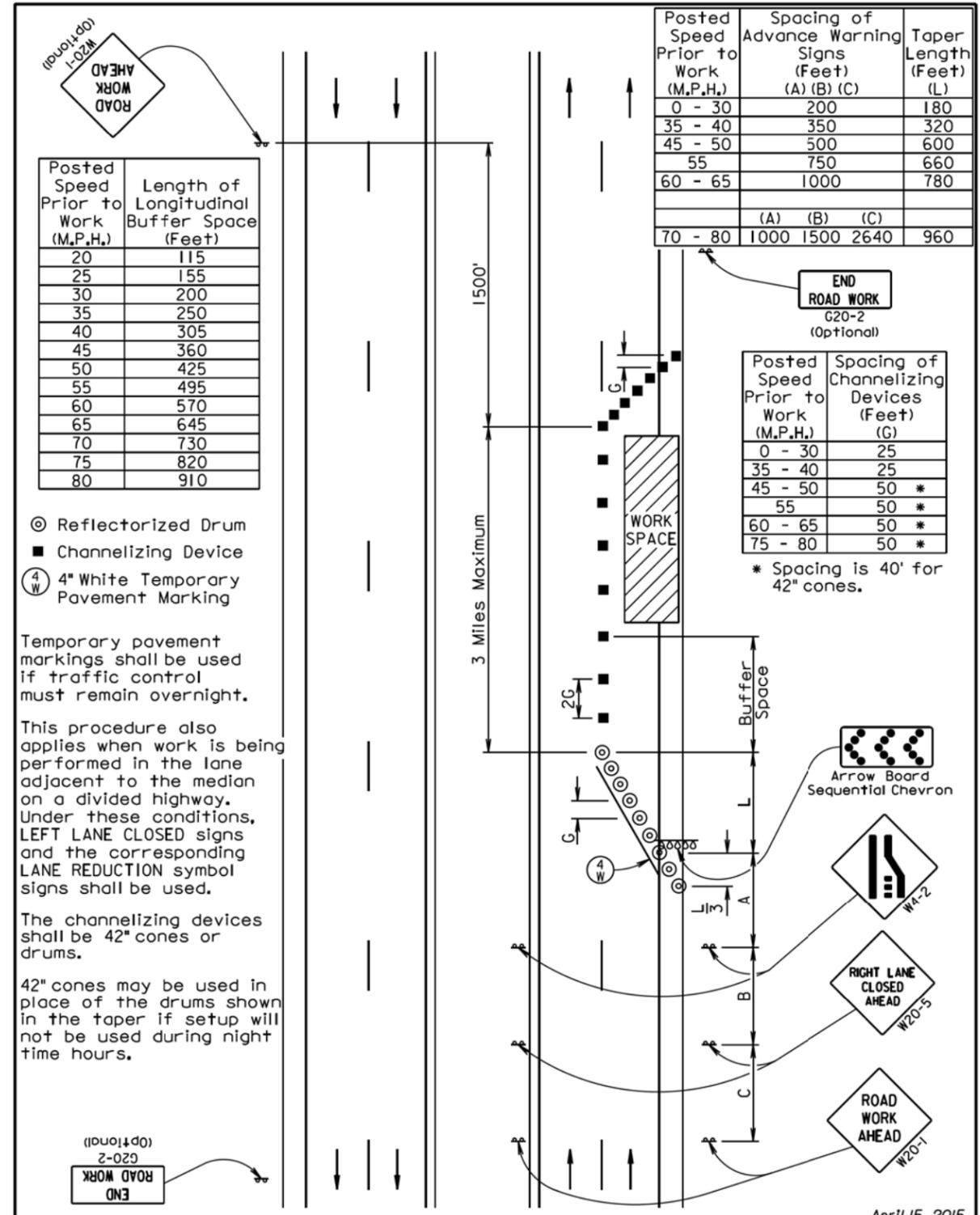
April 15, 2015

<b>S D D O T</b>	<b>WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS</b>	PLATE NUMBER <b>634.63</b>
	Published Date: 4th Qtr. 2015	Sheet 2 of 2

- Plotted From - tw11m23

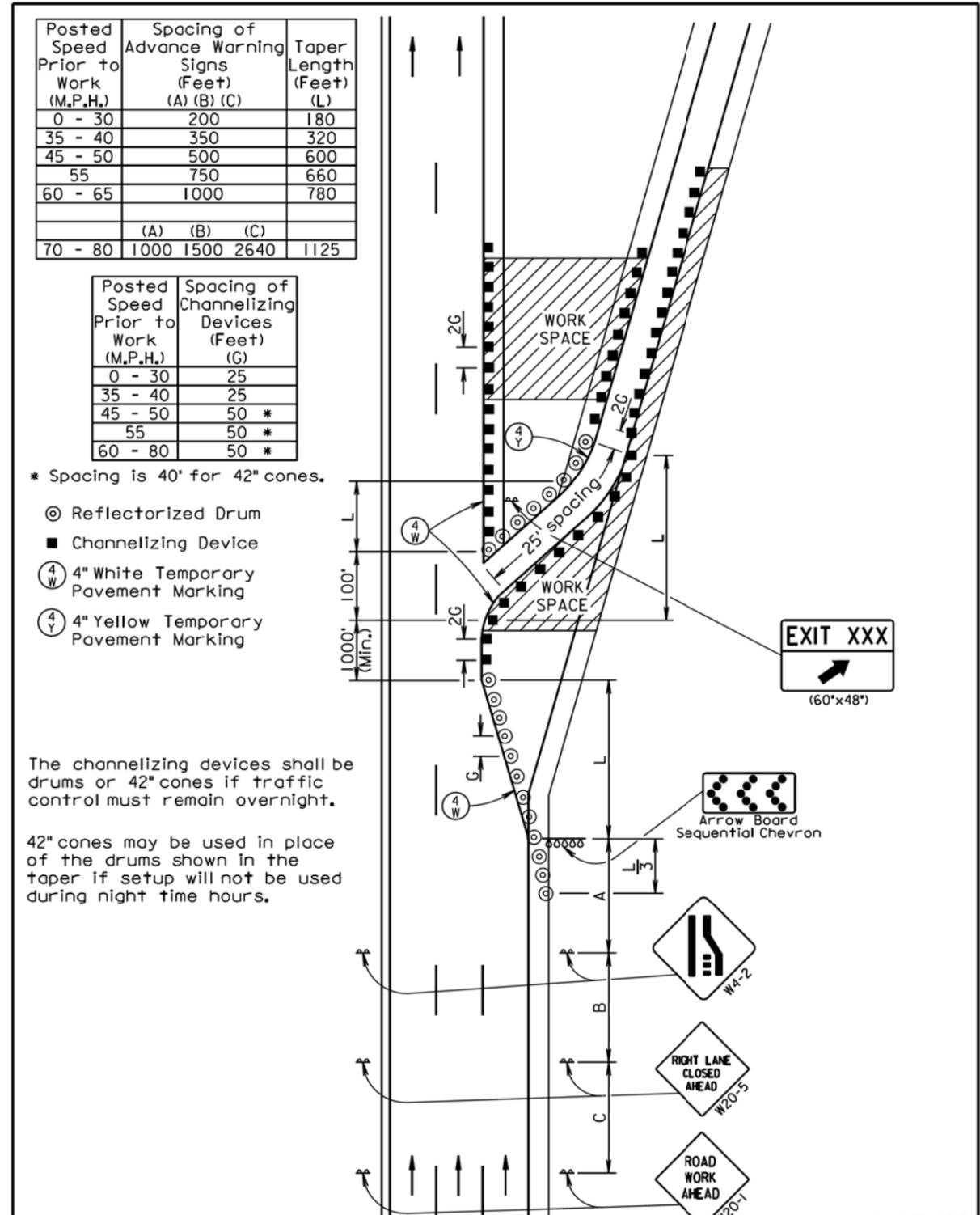
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Plot Scale - 1:200



S D D O T  Published Date: 4th Qtr. 2015	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
		Sheet 1 of 1

April 15, 2015



S D D O T  Published Date: 4th Qtr. 2015	GUIDES FOR TRAFFIC CONTROL DEVICES WORK IN VICINITY OF EXIT RAMP	PLATE NUMBER 634.68
		Sheet 1 of 1

April 15, 2015

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Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)
	(A)	(B)	(C)	
0 - 30	200			180
35 - 40	350			320
45 - 50	500			600
55	750			660
60 - 65	1000			780
	(A)	(B)	(C)	
70 - 80	1000	1500	2640	1125

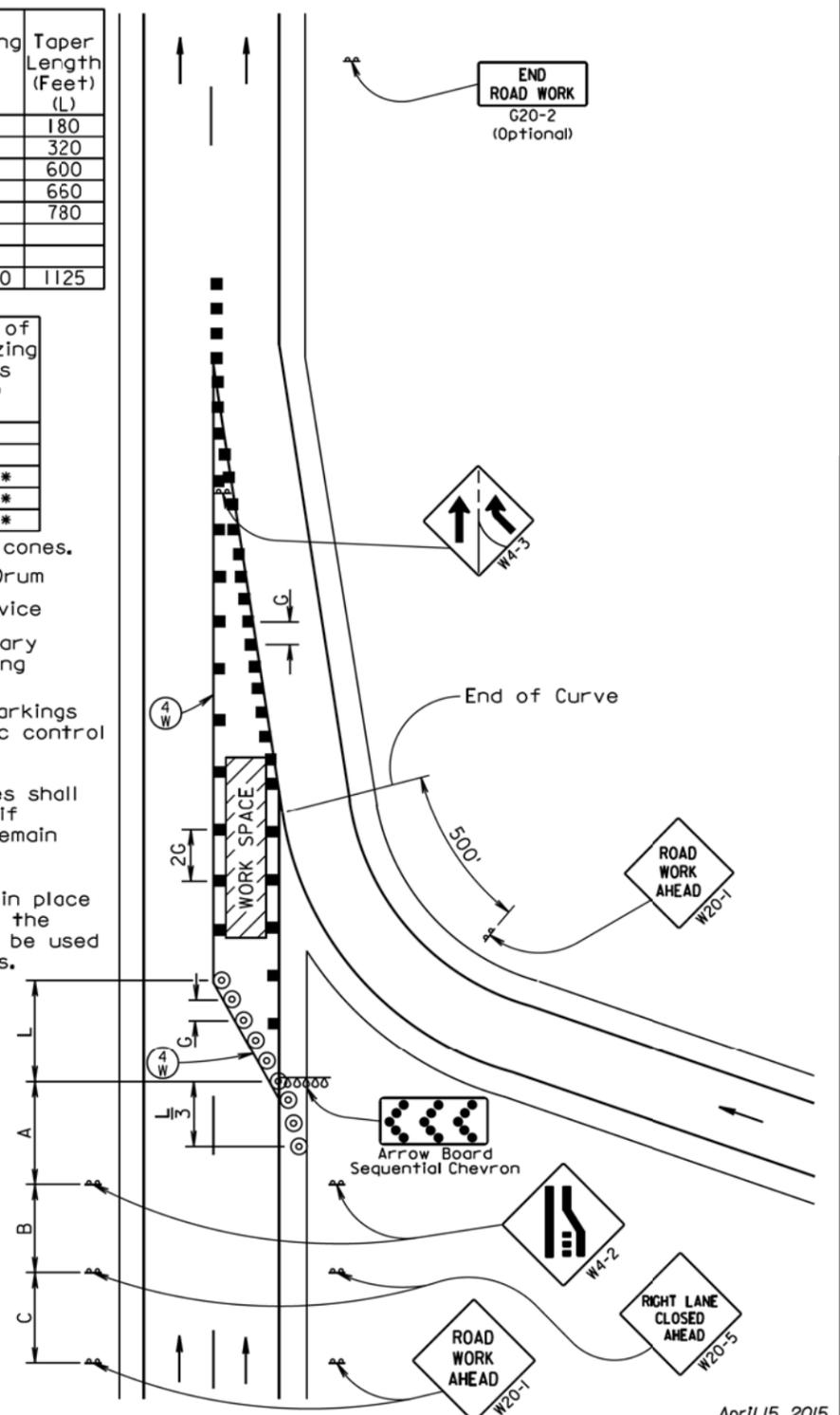
Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet)	
	(G)	(H)
0 - 30	25	
35 - 40	25	
45 - 50	50 *	
55	50 *	
60 - 80	50 *	

- \* Spacing is 40' for 42" cones.
- ⊙ Reflectorized Drum
- Channelizing Device
- Ⓞ 4" White Temporary Pavement Marking

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.

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



April 15, 2015

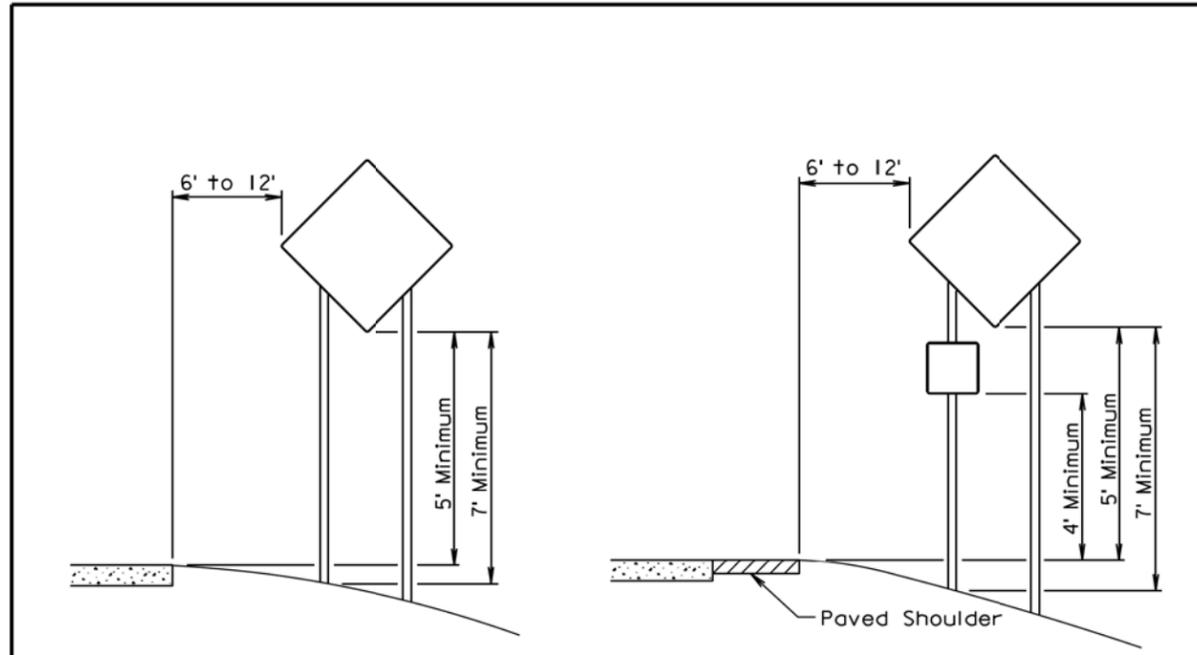
<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK IN VICINITY OF ENTRANCE RAMP</b>	PLATE NUMBER <b>634.70</b>
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

Plot Scale - 1:200

- Plotted From - tw11m23

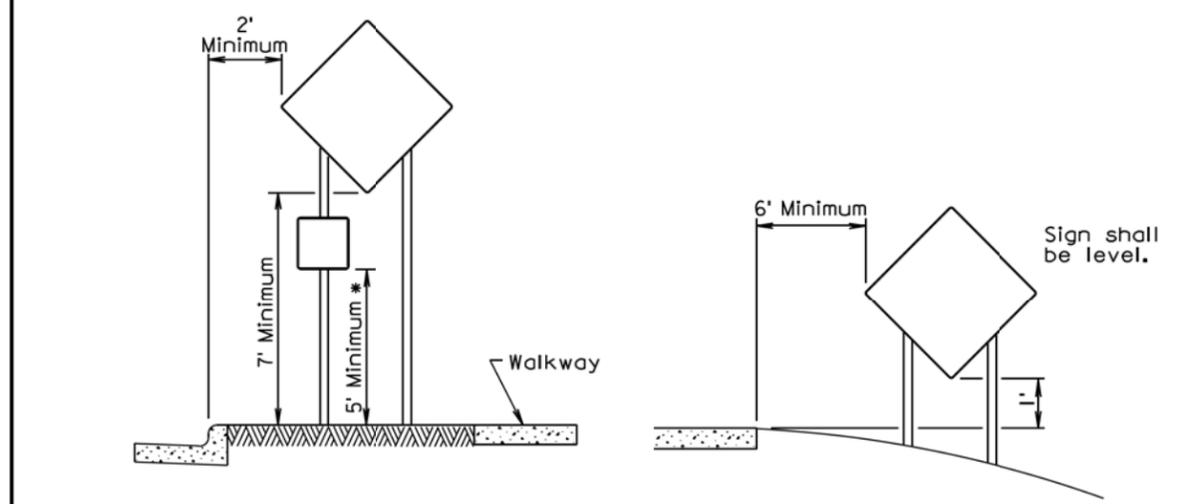
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Plot Scale - 1:200



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



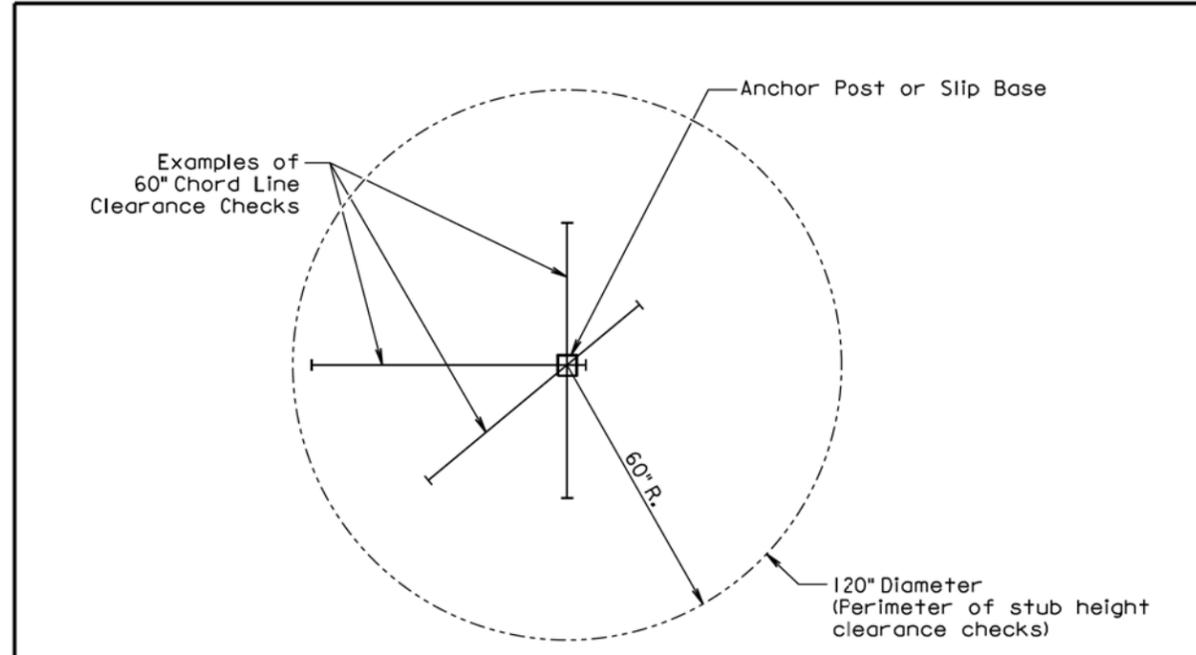
URBAN DISTRICT

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

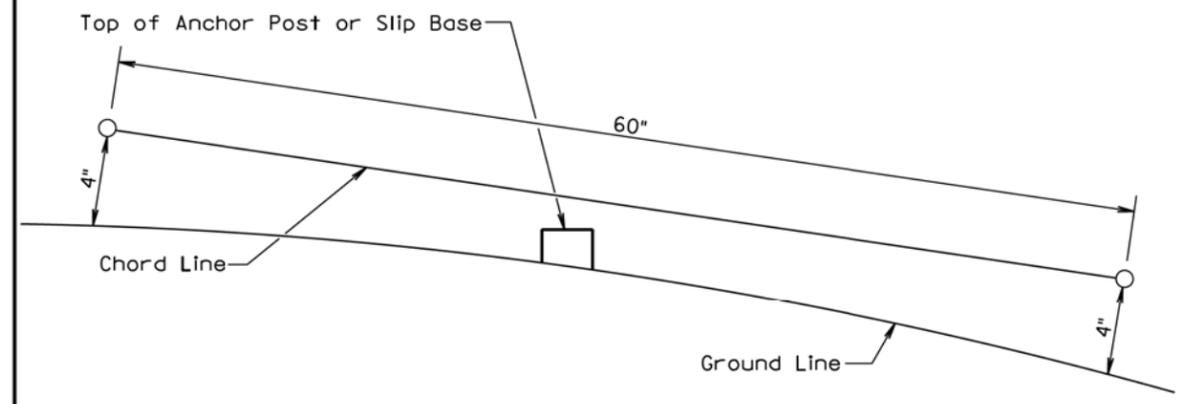
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

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



PLAN VIEW  
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

July 1, 2005

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

- Plotted From - tw11m23

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