

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

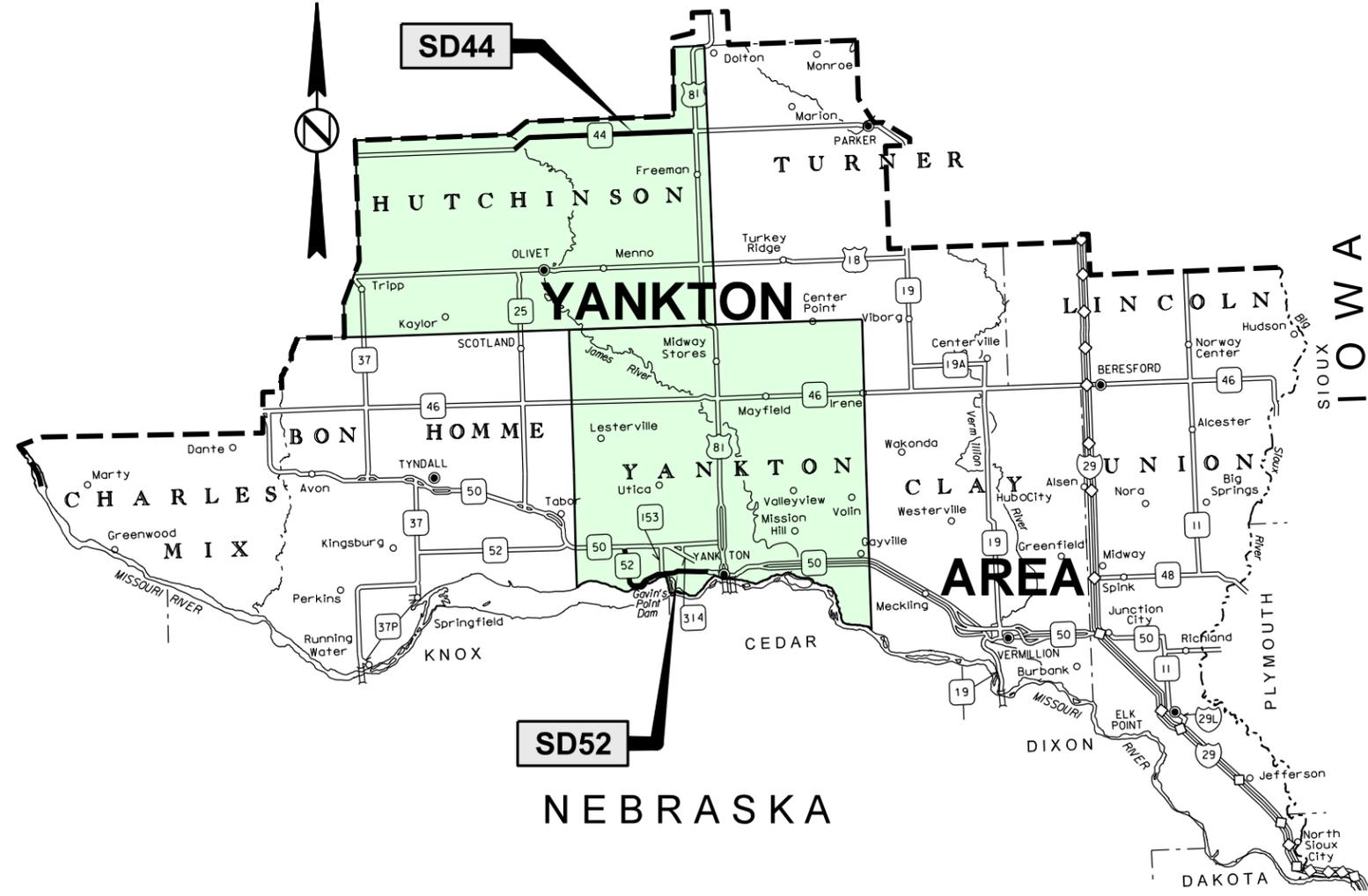
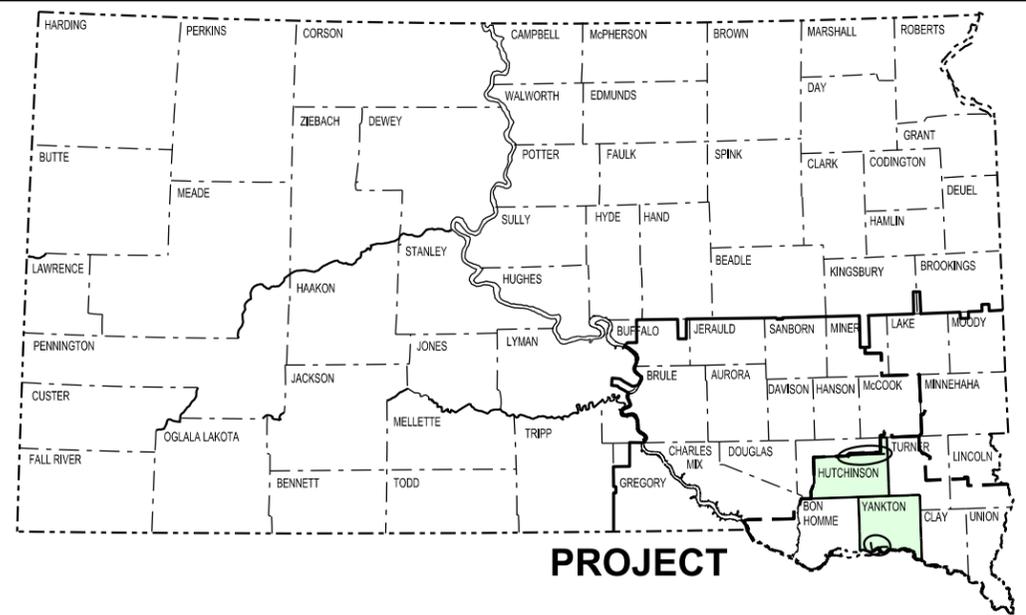
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0023(45)	1	18

PLANS FOR PROPOSED

**PROJECT P 0023(45)
SD HIGHWAYS 44 & 52
HUTCHINSON & YANKTON COUNTIES
YANKTON AREA
ASPHALT SURFACE TREATMENT
PCN 053L**

INDEX OF SHEETS

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Sheets 2 & 3	Layout Maps
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Sheet 6	Environmental Commitments
Sheet 7	Rates of Materials & Additional Quantities
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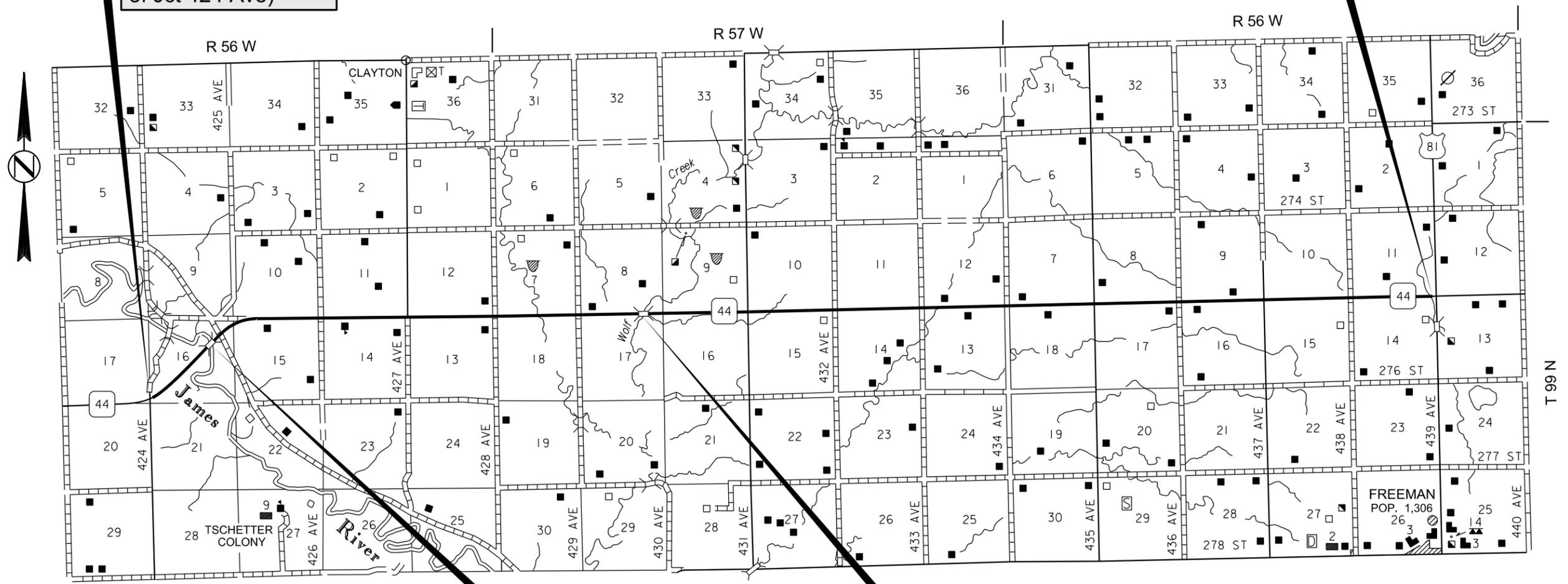
STORM WATER PERMIT
(None required)

**PROJECT P 0023(45)
SD HIGHWAY 44
HUTCHINSON COUNTY
YANKTON AREA
ASPHALT SURFACE TREATMENT
GROSS LENGTH: 15.263 MILES
BRIDGE LENGTH: 0.100 MILE
NET LENGTH: 15.163 MILES
PCN 053L**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0023(45)	2	18

BEGIN SD44
STA. 0+00
MRM 362.00 +0.616
MILEAGE 306.304
(167' E of Centerline
of Jct 424 Ave)

END SD44
STA. 805+88
MRM 377.00 +0.854
MILEAGE 321.567
(At Begin Concrete
153' W of Jct US81)



STR. NO. 34-207-073
Sta. 29+42 to Sta. 33+20
I Beam Bridge
378'-0"=0.071 Mile
MRM 363.56

STR. NO. 34-258-070
Sta. 248+91 to Sta. 250+42
I Beam Bridge
151'-0"=0.029 Mile
MRM 368.66

PROJECT P 0023(45)
SD HIGHWAY 52
YANKTON COUNTY
YANKTON AREA
ASPHALT SURFACE TREATMENT
GROSS LENGTH: 4.626 MILES
BRIDGE LENGTH: 0.064 MILE
NET LENGTH: 4.562 MILES
PCN 053L

PROJECT P 0023(45)
SD HIGHWAY 52
YANKTON COUNTY
YANKTON AREA
ASPHALT SURFACE TREATMENT OF SHOULDERS
LENGTH: 5.447 MILES
PCN 053L

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0023(45)	3	18

BEGIN SD52
 STA. 0+00
 MRM 332.24 +0.000
 MILEAGE 12.273

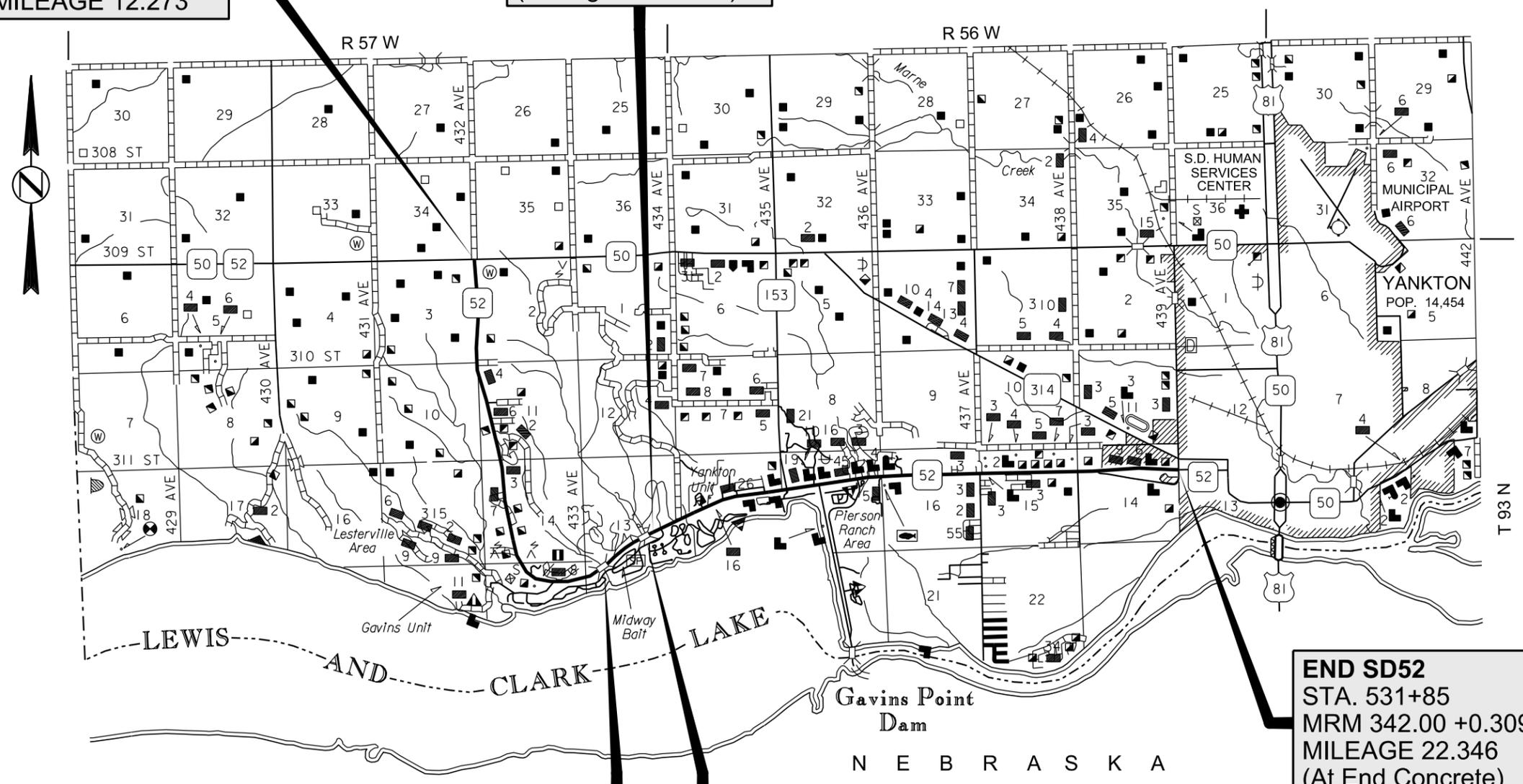
**END MAINLINE
 BEGIN SHOULDERS**
 STA. 244+25
 MRM 336.80 +0.081
 MILEAGE 16.899
 (At Begin Concrete)

END SD52
 STA. 531+85
 MRM 342.00 +0.309
 MILEAGE 22.346
 (At End Concrete)

STR. NO. 68-052-212
 Sta. 211+91.5 to Sta. 213+58.5
 Continuous I Beam Bridge
 167'-0"=0.032 Mile
 MRM 336.30

STR. NO. 68-057-208
 Sta. 238+29.5 to Sta. 239+96.5
 Continuous I Beam Bridge
 167'-0"=0.032 Mile
 MRM 336.80

SD52 ASPHALT SECTION ADT (2014) 1,532
SD52 CONCRETE SECTION ADT (2014) 4,648



ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT P 0023(45)	SHEET 4	TOTAL SHEETS 18
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BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	92.1	Ton
330E3000	Sand for Fog Seal	20.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	475.4	Ton
360E1040	Type 2B Cover Aggregate	2,223.9	Ton
360E1040	Type 2B Cover Aggregate	1,152.9	Ton
633E1300	Pavement Marking Paint, White	899	Gal
633E1305	Pavement Marking Paint, Yellow	281	Gal
634E0010	Flagging	240.0	Hour
634E0020	Pilot Car	60.0	Hour
634E0110	Traffic Control Signs	906	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	39.4	Mile

SPECIFICATIONS

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

ESTIMATE OF QUANTITIES (FOR INFORMATION ONLY)

STATE OF SOUTH DAKOTA	PROJECT P 0023(45)	SHEET 5	TOTAL SHEETS 18
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BID ITEM NUMBER		SD HWY 44	SD HWY 52	TOTAL QUANTITY
009E0010	Mobilization	<----- Lump Sum ----->		Lump Sum
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	64.0	28.1	92.1 Ton
330E3000	Sand for Fog Seal	10.0	10.0	20.0 Ton
360E0042	CRS-2P Asphalt for Surface Treatment	303.4	172.0	475.4 Ton
360E1040	Type 2B Cover Aggregate	2223.9	-	2223.9 Ton
360E1040	Type 2B Cover Aggregate	-	1152.9	1152.9 Ton
633E1300	Pavement Marking Paint, White	688	211	899 Gal
633E1305	Pavement Marking Paint, Yellow	163	118	281 Gal
634E0010	Flagging	160	80	240.0 Hour
634E0020	Pilot Car	40	20	60.0 Hour
634E0110	Traffic Control Signs	432	474	906 SqFt
634E0120	Traffic Control, Miscellaneous	<----- Lump Sum ----->		Lump Sum
634E0630	Temporary Pavement Marking	30.3	9.1	39.4 Mile

ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0023(45)	6	18

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 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 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 proposed site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor 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 historic or 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.

RATE OF MATERIALS

ADDITIONAL QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0023(45)	7	18

Revised 12/30/15 GAP

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

SD HWY 44		
Mainline	0+00 to 29+42	0.557 miles
	33+20 to 248+91	4.085 miles
	250+42 to 805+88	<u>10.521 miles</u>
		15.163 miles

CRS-2P Asphalt for Surface Treatment at the rate of 20.01 tons applied 25 feet wide (Rate = 0.32 gallon per square yard).

Type 2B Cover Aggregate at the rate of 146.67 tons applied 25 feet wide (Rate = 20 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 4.22 tons applied 34 feet wide (Rate = 0.05 gallons per square yard).

SD HWY 52		
Mainline	0+00 to 211+91.5	4.013 miles
	213+58.5 to 238+29.5	0.468 miles
	239+96.5 to 244+25	<u>0.081 miles</u>
		4.563 miles

CRS-2P Asphalt for Surface Treatment at the rate of 28.02 tons applied 32 feet wide (Rate = 0.35 gallon per square yard).

Type 2B Cover Aggregate at the rate of 187.73 tons applied 32 feet wide (Rate = 20 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 4.22 tons applied 34 feet wide (Rate = 0.05 gallons per square yard).

Eastbound Shoulders	244+25 to 311+75	1.278 miles
Westbound Shoulders	244+25 to 315+75	<u>1.354 miles</u>
		2.632 miles

CRS-2P Asphalt for Surface Treatment at the rate of 5.25 tons applied 6 feet wide (Rate = 0.35 gallon per square yard).

Type 2B Cover Aggregate at the rate of 35.20 tons applied 6 feet wide (Rate = 20 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.99 tons applied 8 feet wide (Rate = 0.05 gallons per square yard).

Eastbound Shoulders	311+75 to 531+85	4.169 miles
Westbound Shoulders	315+75 to 531+85	<u>4.093 miles</u>
		8.262 miles

CRS-2P Asphalt for Surface Treatment at the rate of 3.50 tons applied 4 feet wide (Rate = 0.35 gallon per square yard).

Type 2B Cover Aggregate at the rate of 23.47 tons applied 4 feet wide (Rate = 20 pounds per square yard).

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.74 tons applied 6 feet wide (Rate = 0.05 gallons per square yard).

LOCATION	CRS-2P		
	ASPHALT SURFACE TREATMENT TON	TYPE 2B COVER AGGREGATE TON	CSS-1h ASPH. FOR FOG SEAL TON
<u>SD HWY 52</u>			
Sta.0+00 – Rt. & Lt. 2 Radii	982 SqYd	1.5	9.8
Rates = 0.35 gal/SqYd, 20 lbs/SqYd & 0.05 gal/SqYd			0.2

The above quantities are included in the Estimate of Quantities.

RIDE ACROSS SOUTH DAKOTA BIKE TOUR

The Ride Across South Dakota bike tour may be on routes that are in this contract to have an asphalt surface treatment applied to them. The routes of the tour can be found at www.RASDAK.com. The Contractor shall schedule his work so as to complete the affected routes after the bike tour is completed.

COORDINATION BETWEEN CONTRACTORS

A separate contract for Project IM-P 0023(44) PCN 052V has been awarded to another Contractor for PCC Pavement Repair on SD HWY 52.

The Contractor shall schedule work so as not to interfere with or hinder the progress of the work performed by other Contractors on the PCC Pavement Repair project.

SHOULDER WORK

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

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

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

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

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

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.

ESTIMATED QUANTITIES FOR ASPHALT SURFACE TREATMENT

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

ASPHALT FOR SURFACE TREATMENT

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.

COVER AGGREGATE

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 project. This is to allow the Area Office time to run tests on the material and enter the results into the mix design spreadsheets.

ROADWAY ADT AND CONDITION

SD HWY 44 ADT: 1242 vehicles Road Condition: Slightly Pourous
SD HWY 52 ADT: 1532 vehicles Road Condition: Badly Pocketed

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.

Anticipated areas, other than the bridge areas stated above, that will require either removal of the chips with a pickup sweeper or additional dispersal of the chips with the rotary powered broom are:

ROUTE	LOCATION
SD HWY 52	Residential and GF&P area

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

FOG SEAL

Fog Seal will be placed on all the routes.

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. A SS-1h or CSS-1h emulsion shall be used for the fog seal application. An emulsion-to-water rate of 2:1 should be used for the binder application.

Blotting Sand for Fog Seal shall conform to Section 879.1 B of the specifications except for the following requirements:

The shale content or other particles of low specific gravity (less than 1.95) passing the No. 4 sieve shall not exceed 4.5%. Prior to hauling, Blotting Sand shall be screened to minimize segregation, eliminate oversize and effectively breakup or discard material bonded into chunks.

Blotting Sand shall be furnished by the Contractor. A rate of application for the Blotting Sand will not be given. 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.

TEMPORARY PAVEMENT MARKING

Paint will not be allowed for Temporary Pavement Marking, except after the placement of the fog seal.

The total length of no passing zones on this contract is estimated to be 15.2 miles.

It is estimated that 30 DO NOT PASS and 30 PASS WITH CARE signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Use of DO NOT PASS and PASS WITH CARE signs will be allowed for a two week duration.

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.

TABLES OF DO NOT PASS AND PASS WITH CARE SIGNS

ROUTE	DO NOT PASS	PASS WITH CARE
SD HWY 44	15	15
SD HWY 52	15	15
TOTAL	30	30

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 edgelines. However, the Contractor shall place temporary flexible vertical markers (tabs) on the edgeline of all transition areas such as turn lanes and climbing lanes and on all dashed edgelines. 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 marker shall be replaced with a new marker. Any markers that are non-reflective shall be cleaned.

Where the asphalt surface treatment has been applied, the tab covers shall be removed prior to nightfall each day.

The tab covers are considered construction debris and shall be disposed of properly by the Contractor.

The Contractor shall remove and dispose of the markers 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 1/4" 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.

TEMPORARY PAVEMENT MARKING (CONTINUED)

In the absence of a signed lane closure or pilot car operation, Flagger symbol signs (W20-7) 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 (W20-1), a Workers symbol sign (W21-1) or a BE PREPARED TO STOP (W3-4) 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.

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

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.

PERMANENT PAVEMENT MARKING

The application of permanent pavement marking may not begin until 7 calendar days following completion of the fog seal and shall be completed within 14 calendar days following completion of the fog 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, turn arrows, messages, etc.

Stop lines are to be located a minimum of 10' and a maximum of 30' back from the edge of the intersecting roadway. The stop line is to be located to provide the best sight distance for a stopped motorist to view intersecting traffic. The Project Engineer is to be notified prior to the installation of the stop lines to verify their location. Adjustments of the location of the existing stop lines, if needed, shall be made prior to the placement of the new stop lines.

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.

PERMANENT PAVEMENT MARKING (CONTINUED):

TABLE OF HAND PAINTED PAVEMENT MARKING

ROUTE	LOCATION
SD HWY 44	Word Messages at JCT SD HWY 44 & SD HWY 81 (1 – STOP & 1 – AHEAD)
SD HWY 52	Stop Line at JCT SD HWY 52 & SD HWY 50
SD HWY 52	Word Messages at the JCT SD HWY 52 & SD HWY 50 (2 – STOP & 1 – AHEAD)

TABLES OF PERMANENT PAVEMENT MARKING

SD HWY 44	White	Yellow
Yellow Centerline Dashes = 15.042 miles @ 6.2 Gal/Mile	-	94
Solid Yellow Centerline = 3.043 miles @ 22.5 Gal/Mile	-	69
4" Solid White Edgeline = 30.526 miles @ 22.5 Gal/Mile	687	-
White Word Messages = 74 SqFt = 0.0420 miles @ 22.5 Gal/Mile	1	-
TOTAL GALLONS	688	163

SD HWY 52 from Sta. 0+00 to Sta. 244+25	White	Yellow
Yellow Centerline Dashes = 3.865 miles @ 6.2 Gal/Mile	-	24
Solid Yellow Centerline = 4.161 miles @ 22.5 Gal/Mile	-	94
4" Solid White Edgeline = 9.252 miles @ 22.5 Gal/Mile	209	-
24" White Stop Line = 0.005 miles @ 135 Gal/Mile	1	-
White Word Messages = 74 SqFt = 0.0420 miles @ 22.5 Gal/Mile	1	-
TOTAL GALLONS	211	118

SEQUENCE OF OPERATIONS

The below sequence is per route:

1. Install fixed location "ground mounted" traffic control devices.
2. Install and remove temporary traffic control devices as needed for each type of work.
3. Place temporary pavement marking not more than 24 hours prior to chip seal.
4. Apply chip seal. (See workspace note under General Maintenance of Traffic notes.)

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

The Contractor shall begin sealing operations at the farthest point from the stockpile site and work towards the stockpile site to eliminate unnecessary driving and turning on the fresh seal.

The application of the asphalt and aggregate 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. Pick up cover aggregate in curb & gutter areas and other areas as stated in the plans and directed by the Engineer.
8. Apply fog seal.
9. Remove plastic covers from temporary flexible vertical markers (tabs) or apply temporary pavement marking paint after application of the fog seal and prior to nightfall.
10. 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.)
11. Complete the pavement marking.
12. Complete required hand painted pavement marking areas within the 14 day time period specified elsewhere in the plans.
13. Remove temporary flexible vertical markers (tabs) within the seven day time period specified elsewhere in the plans.
14. Remove traffic control devices.

GENERAL MAINTENANCE OF TRAFFIC

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 location, ground mounted supports.

The actual workspace for the chip seal shall be limited to two mile segments. A sufficient buffer space shall be installed so as not to cause congestion at the workspace. The traveling public shall not have to wait longer than 15 minutes at the flagger station. The pilot car shall travel no faster than 20 mph on the fresh seal.

GENERAL MAINTENANCE OF TRAFFIC (CONTINUED)

In addition to the traffic control shown in the layouts contained in these plans, the Contractor shall provide the following:

Until initial brooming, additional flagger(s) and Flagger symbol sign(s) shall be provided during daylight hours to alert the traveling public entering completed portions of the project to the potential of airborne chips.

Flagger(s) shall provide each motorist with a printed notice on the Contractor's letterhead similar to the one shown. Cost for the notice shall be incidental to the contract unit prices for the various 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 40 MPH Advisory Speed Plaque should not be installed with the LOOSE GRAVEL sign in areas where the posted speed limit is less than 40 MPH. LOOSE GRAVEL and 40 MPH Advisory Speed Plaques or LOOSE GRAVEL and ON SHOULDER signs shall be covered or removed from view when they are not applicable.

The Contractor shall furnish, install and maintain 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.

Sufficient traffic control devices have been included in these plans to sign one workspace on each route. If the Contractor elects to work on additional locations simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

The size of some signs to be used on construction projects shall be larger than the minimum sizes shown in the Manual on Uniform Traffic Control Devices. Sign sizes shown in the itemized list for traffic control signs shall be the minimum sizes used on this contract.

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.

REFLECTORIZED SHEETING REQUIREMENTS FOR TEMPORARY TRAFFIC CONTROL DEVICES

Delete the first paragraph of Section 984.1 and replace with the following:

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels and direction indicator barricades shall be reflectORIZED with sheeting applied to a satisfactory backing. For all temporary traffic control warning signs, the reflective sheeting shall meet or exceed the standards of Type VII, Type VIII, Type IX or Type XI as defined by AASHTO M 268 (ASTM D4956). For all other temporary traffic control signs, the reflective sheeting shall meet or exceed the standards of Type IV, Type V, Type VII, Type VIII, Type IX or Type XI as defined by AASHTO M 268 (ASTM D4956). For barricades, vertical panels and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type III as defined by AASHTO M 268 (ASTM D4956). Round surfaced temporary traffic control devices including, but not limited to; drums, cones and tubular markers shall be reflectORIZED with reflectORIZED sheeting meeting or exceeding the standards of Type IV as defined by AASHTO M 268 (ASTM D4956). All orange colored material shall be fluorescent.

PAVEMENT MARKING

Application rates shall be as follows:

DIVIDED ROADWAY	UNDIVIDED ROADWAY		
	Four Lane Roadway	Two Lane Roadway	
(Rates for one line)	(Rates for one line)	(Rate for one line)	
Solid Yellow Edgeline Rate = 22.5 Gals./Pass-Mile	Solid Yellow Centerline Rate = 22.5 Gals./Pass-Mile	Dashed Yellow Centerline Rate = 6.2 Gals./Pass-Mile	
Dashed White Centerline Rate = 6.2 Gals./Pass-Mile	Dashed White Laneline Rate = 6.2 Gals./Pass-Mile	Solid Yellow Centerline Rate = 22.5 Gals./Pass-Mile	
Solid White Edgeline (Not applicable in curb and gutter) Rate = 22.5 Gals./Pass-Mile	Solid White Edgeline (Not applicable in curb and gutter) Rate = 22.5 Gals./Pass-Mile	Solid White Edgeline - 4" Rate = 22.5 Gals./Pass-Mile	Solid White Edgeline - 8" Rate = 45 Gals./Pass-Mile
Glass Beads = 8 Lbs./Gal.	Glass Beads = 8 Lbs./Gal.	Glass Beads = 8 Lbs./Gal.	

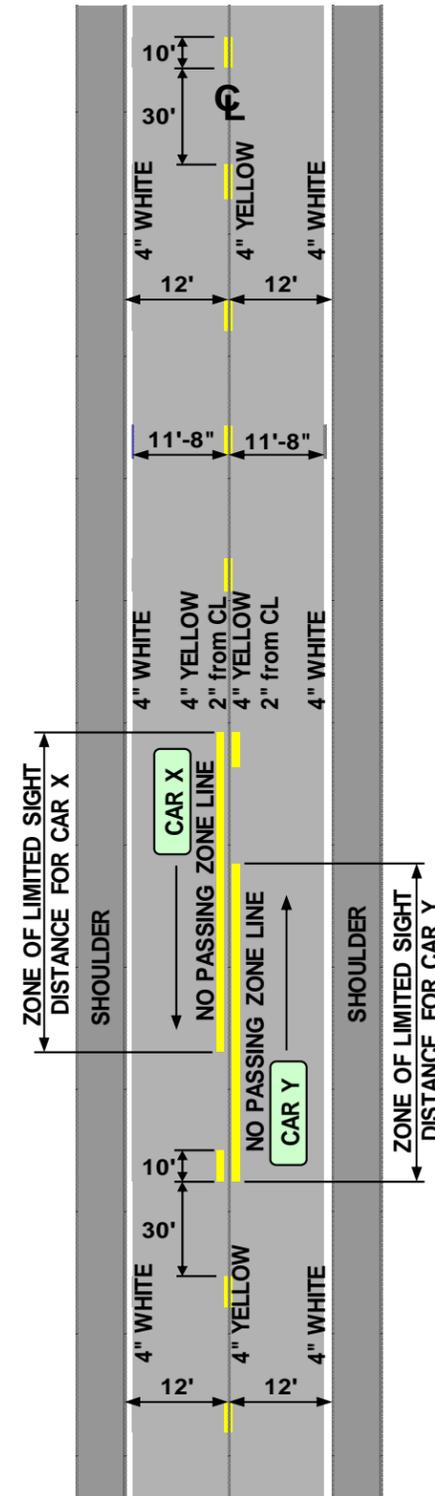
Typical pavement marking shall be applied throughout the applicable sections of roadway.

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.

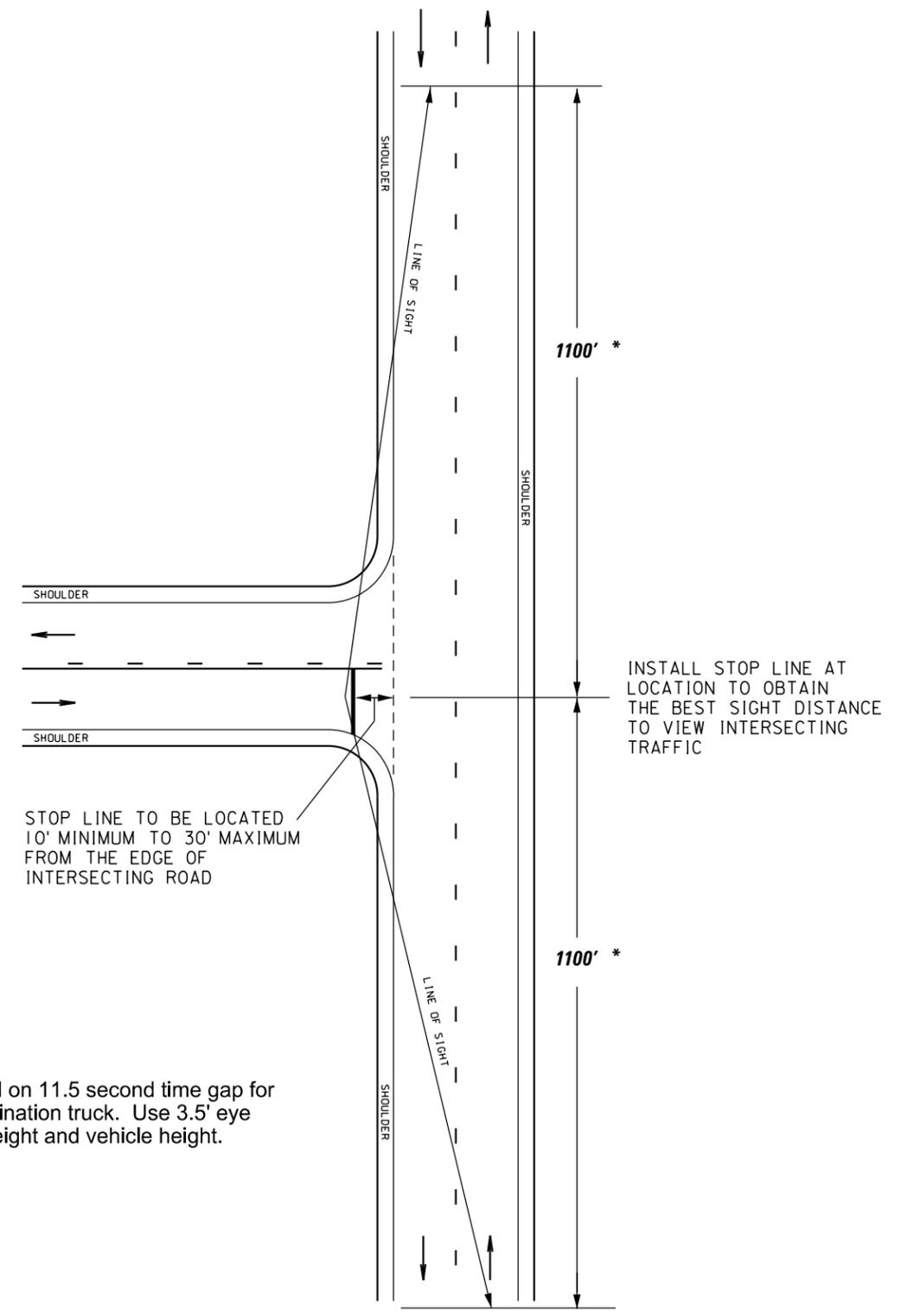
Pavement marking at On Ramps and at Off Ramps shall be applied as detailed in these plans.

PROJECTS	ESTIMATED QUANTITIES	
	WHITE	YELLOW
SD HWY 44	688	163
SD HWY 52	211	118
TOTALS:	899 GALLONS	281 GALLONS

TWO LANE ROADWAY

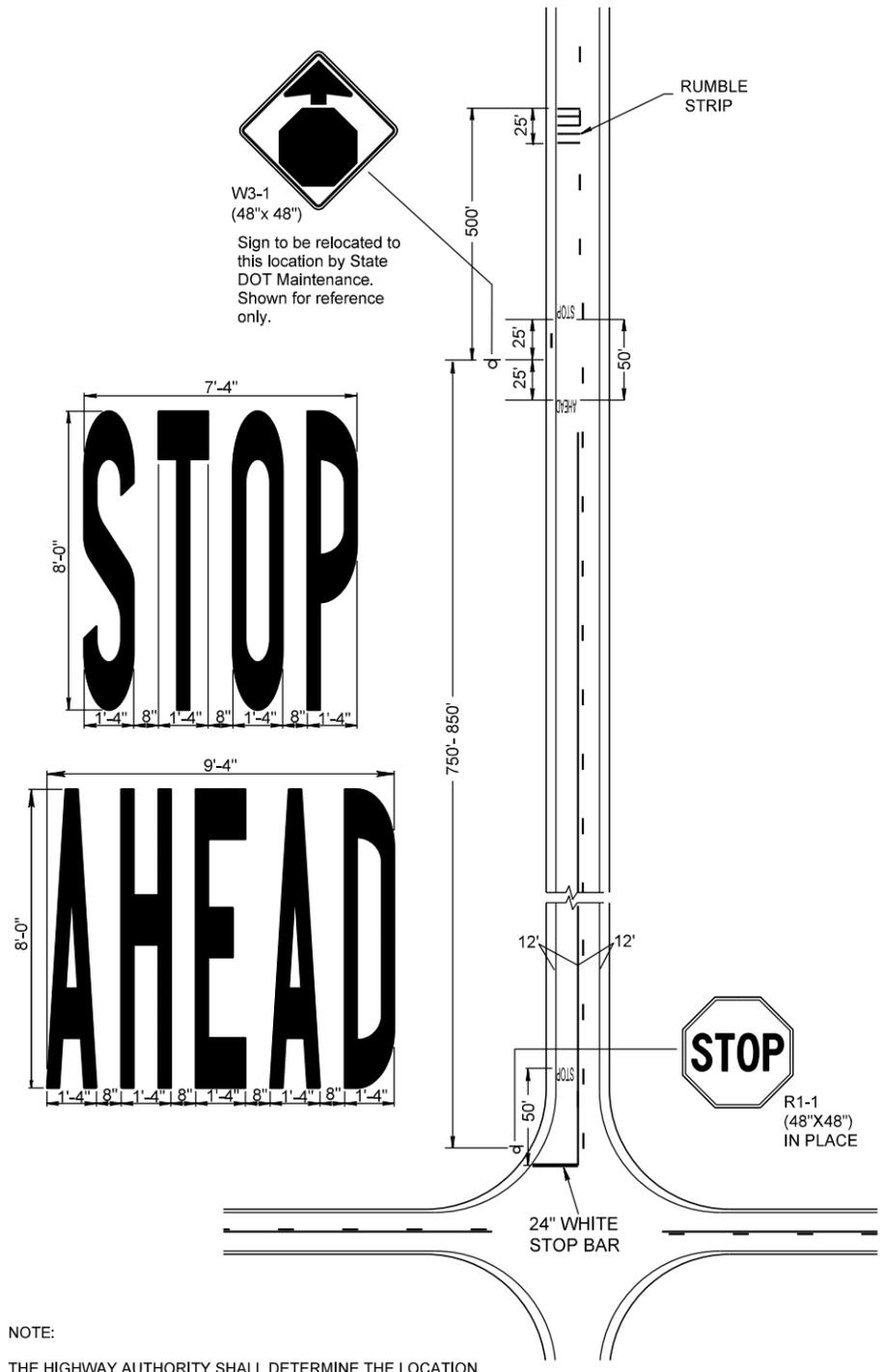


INTERSECTION APPROACH PAVEMENT MARKING (Typical)



* - Based on 11.5 second time gap for combination truck. Use 3.5' eye height and vehicle height.

STOP LINE PAVEMENT MARKING INSTALLATION



NOTE:
THE HIGHWAY AUTHORITY SHALL DETERMINE THE LOCATION OF THE STOP LINE.

ITEMIZED LIST FOR TRAFFIC CONTROL

SD HWY 44

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16	32
W8-7	LOOSE GRAVEL	10	48" x 48"	16	160
W13-1P	ADVISORY SPEED (plaque)	10	30" x 30"	6	60
W20-1	ROAD WORK AHEAD	4	48" x 48"	16	64
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
G20-1	ROAD WORK NEXT 15 MILES	2	36" x 18"	5	10
G20-2	END ROAD WORK	2	36" x 18"	5	10
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					432

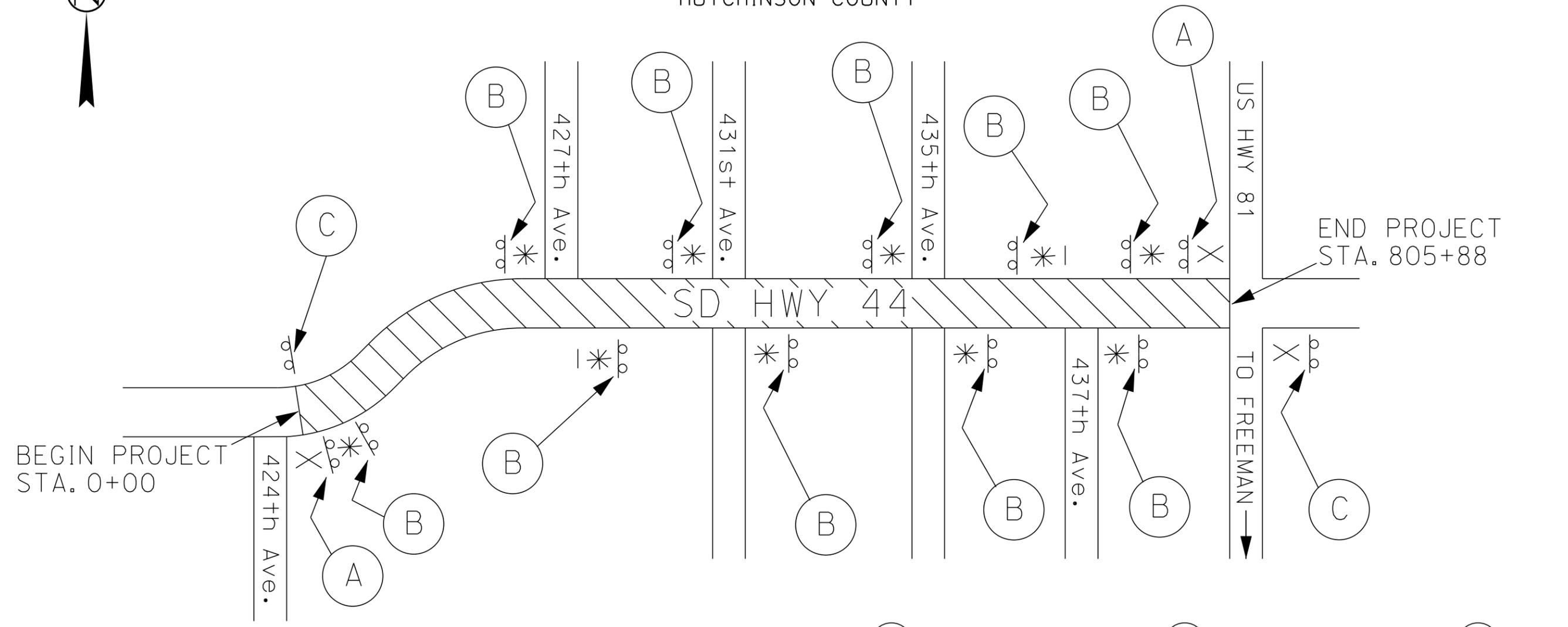
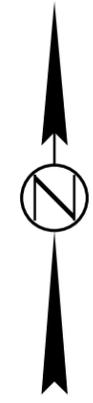
SD HWY 52

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16	32
W8-7	LOOSE GRAVEL	10	48" x 48"	16	160
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6	24
W20-1	ROAD WORK AHEAD	4	48" x 48"	16	64
SPECIAL	ON SHOULDER	6	30" x 30"	6	36
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
W21-5	SHOULDER WORK	2	48" x 48"	16	32
G20-1	ROAD WORK NEXT 10 MILES	2	36" x 18"	5	10
G20-1	ROAD WORK NEXT 6 MILES	1	36" x 18"	5	5
G20-1	ROAD WORK NEXT 4 MILES	1	36" x 18"	5	5
G20-2	END ROAD WORK	2	36" x 18"	5	10
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					474

When the same stockpile is used for more than one project the TRUCK CROSSING signs shall be paid on one project only.

TRAFFIC CONTROL
FIXED LOCATION SIGNS
(GROUND MOUNTED SUPPORTS)

SD HWY 44
HUTCHINSON COUNTY



BEGIN PROJECT
STA. 0+00

END PROJECT
STA. 805+88

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (*)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

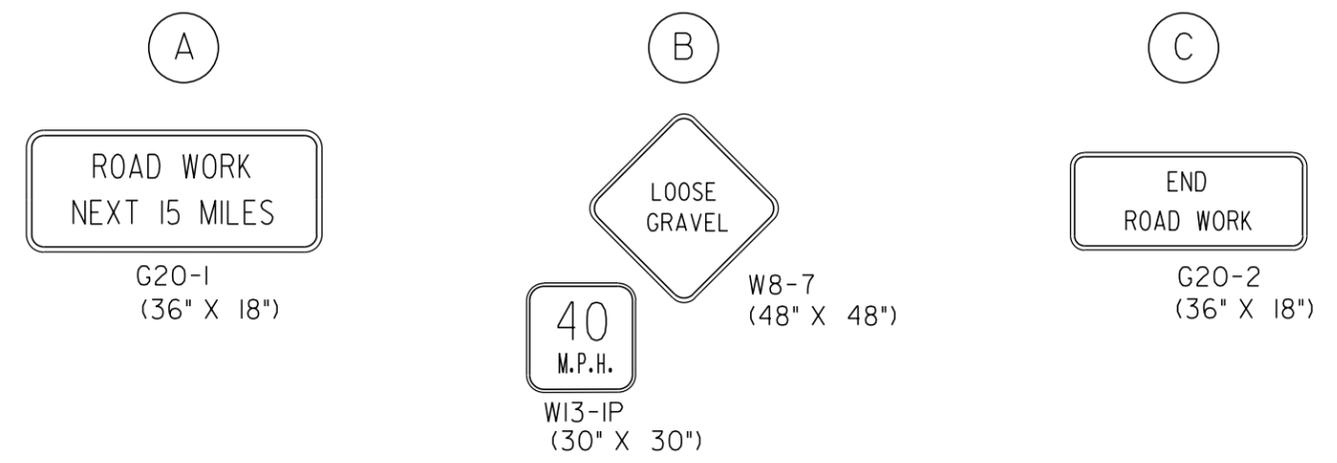
NOTES:

All fixed location signs shall remain in place until pavement marking is complete.

X- Signs shall be placed 50' to 150' from Intersection. Exact location to be approved by the Engineer.

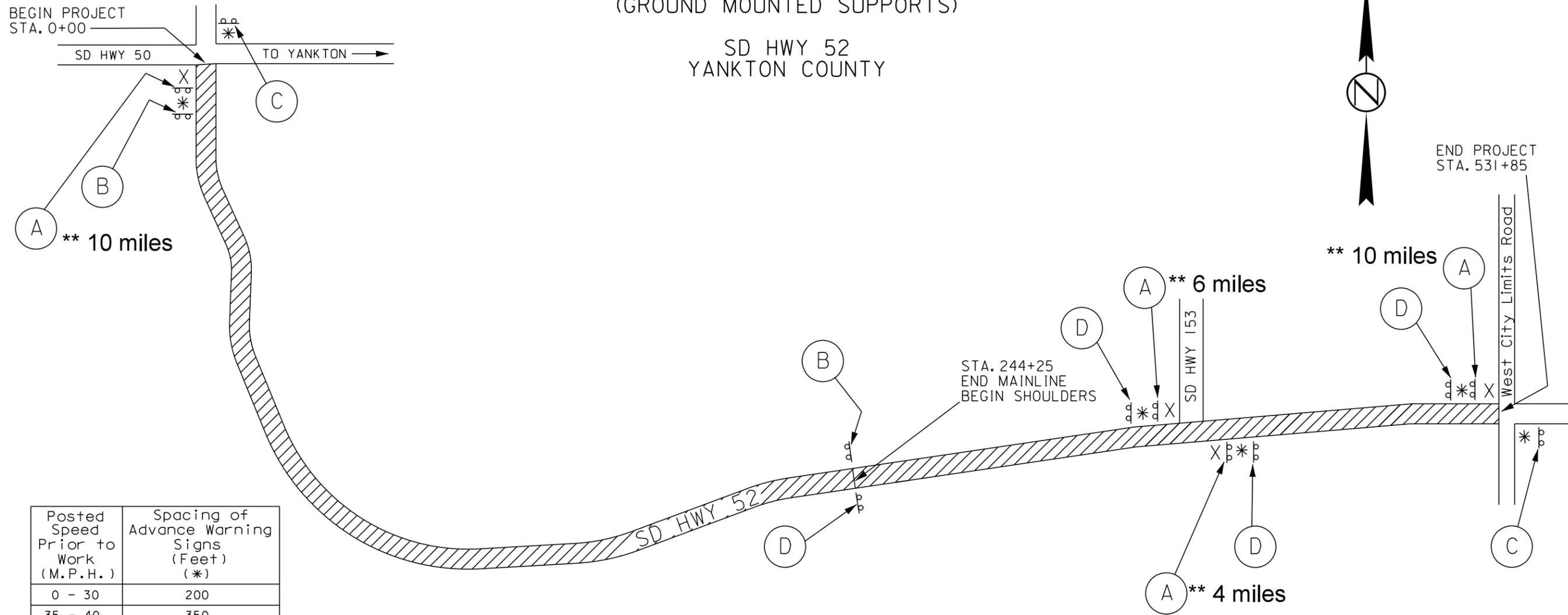
Construction signs shall not obscure existing signs and must be located a minimum of 100' from an existing sign.

Chip Seal Location. (Work Space)



TRAFFIC CONTROL
FIXED LOCATION SIGNS
(GROUND MOUNTED SUPPORTS)

SD HWY 52
YANKTON COUNTY



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (*)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

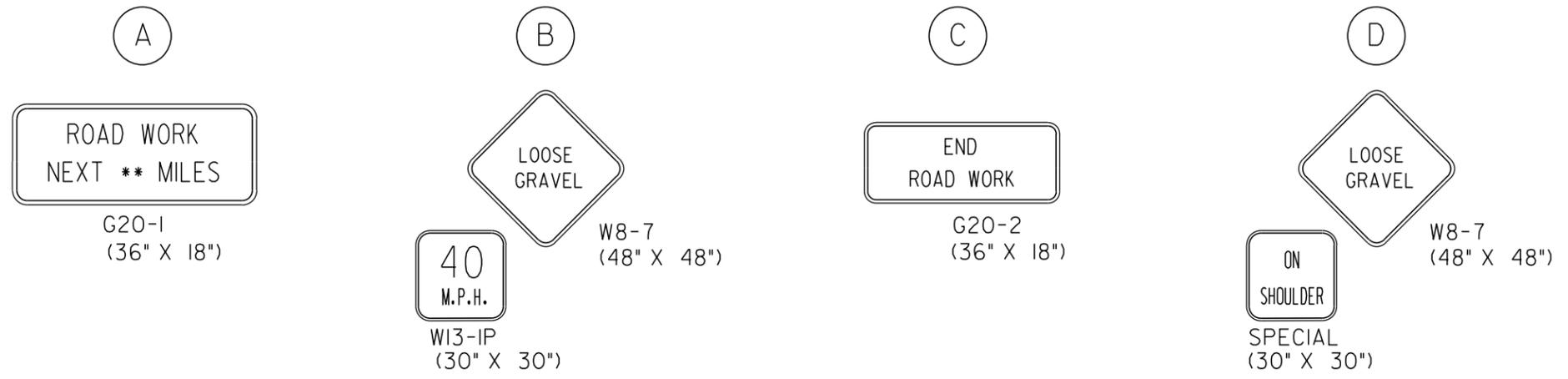
NOTES:

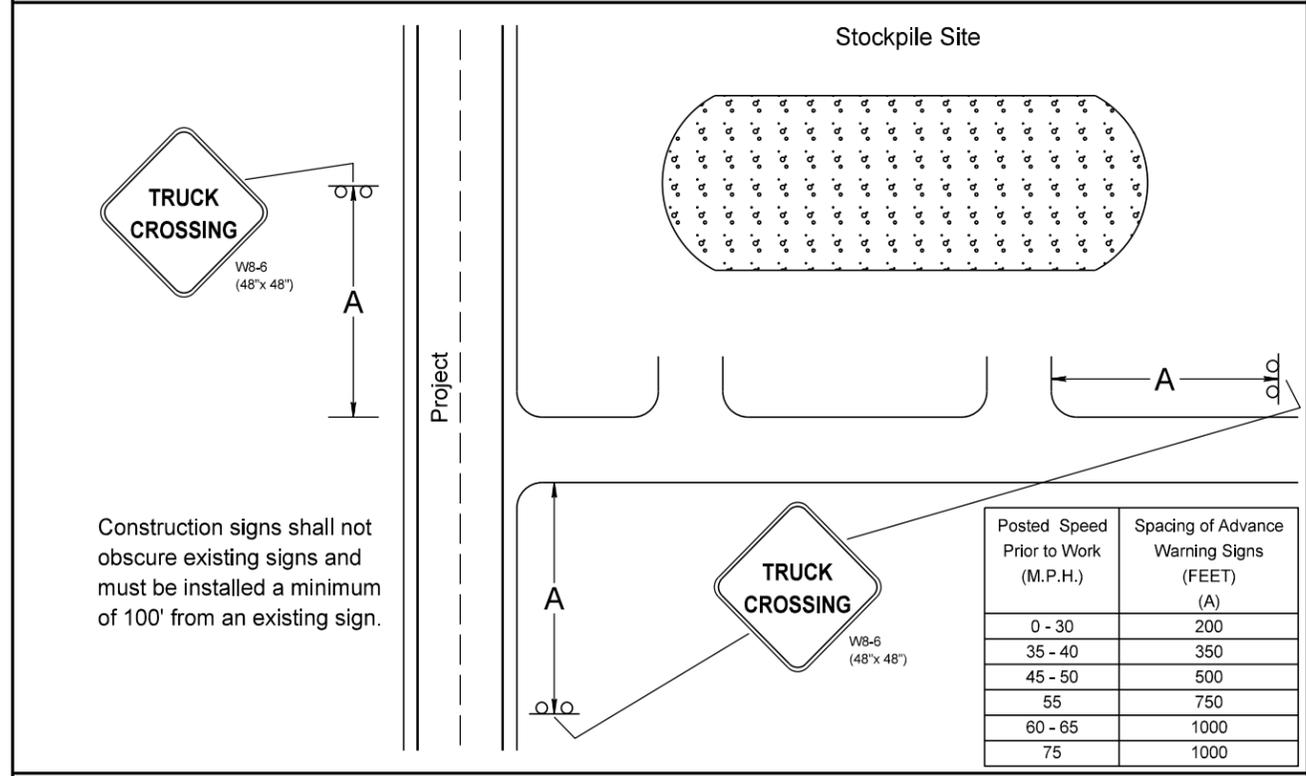
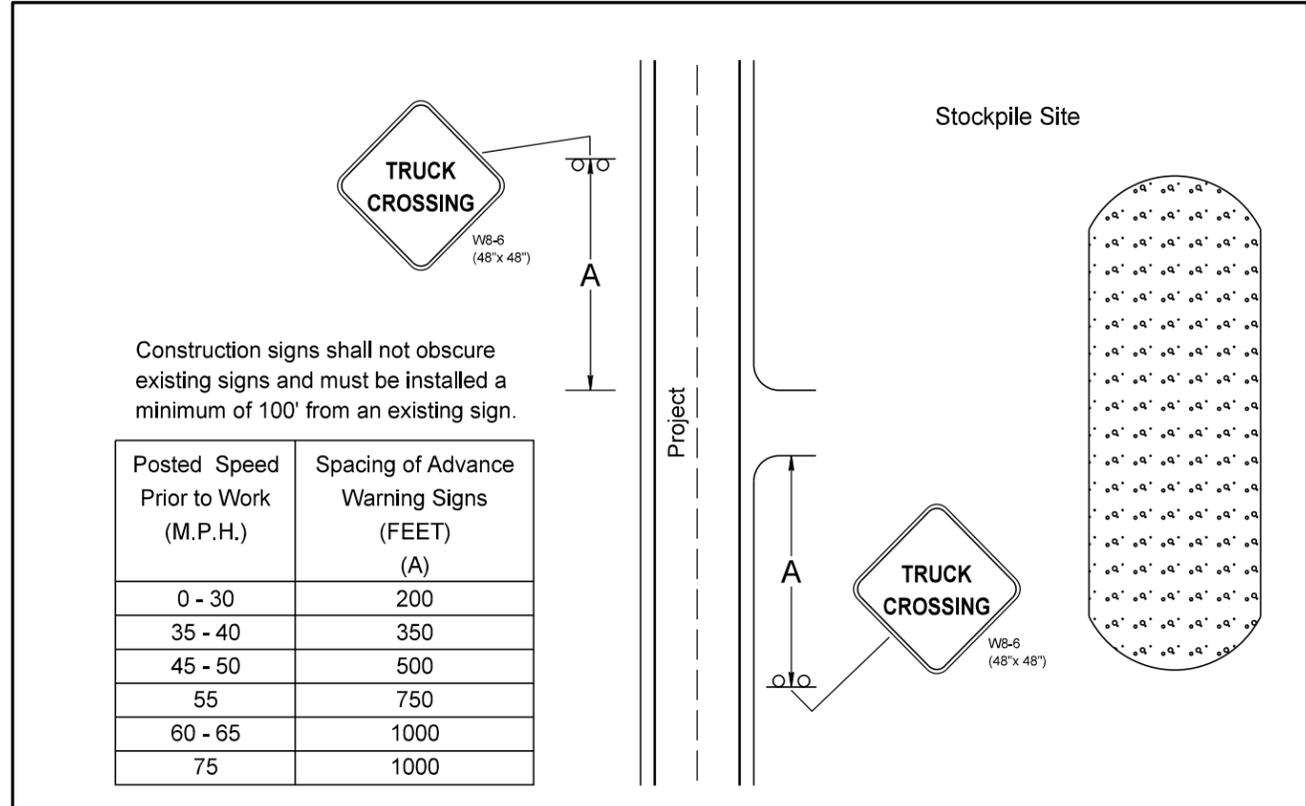
All fixed location signs shall remain in place until pavement marking is complete.

X- Signs shall be placed 50' to 150' from Intersection. Exact location to be approved by the Engineer.

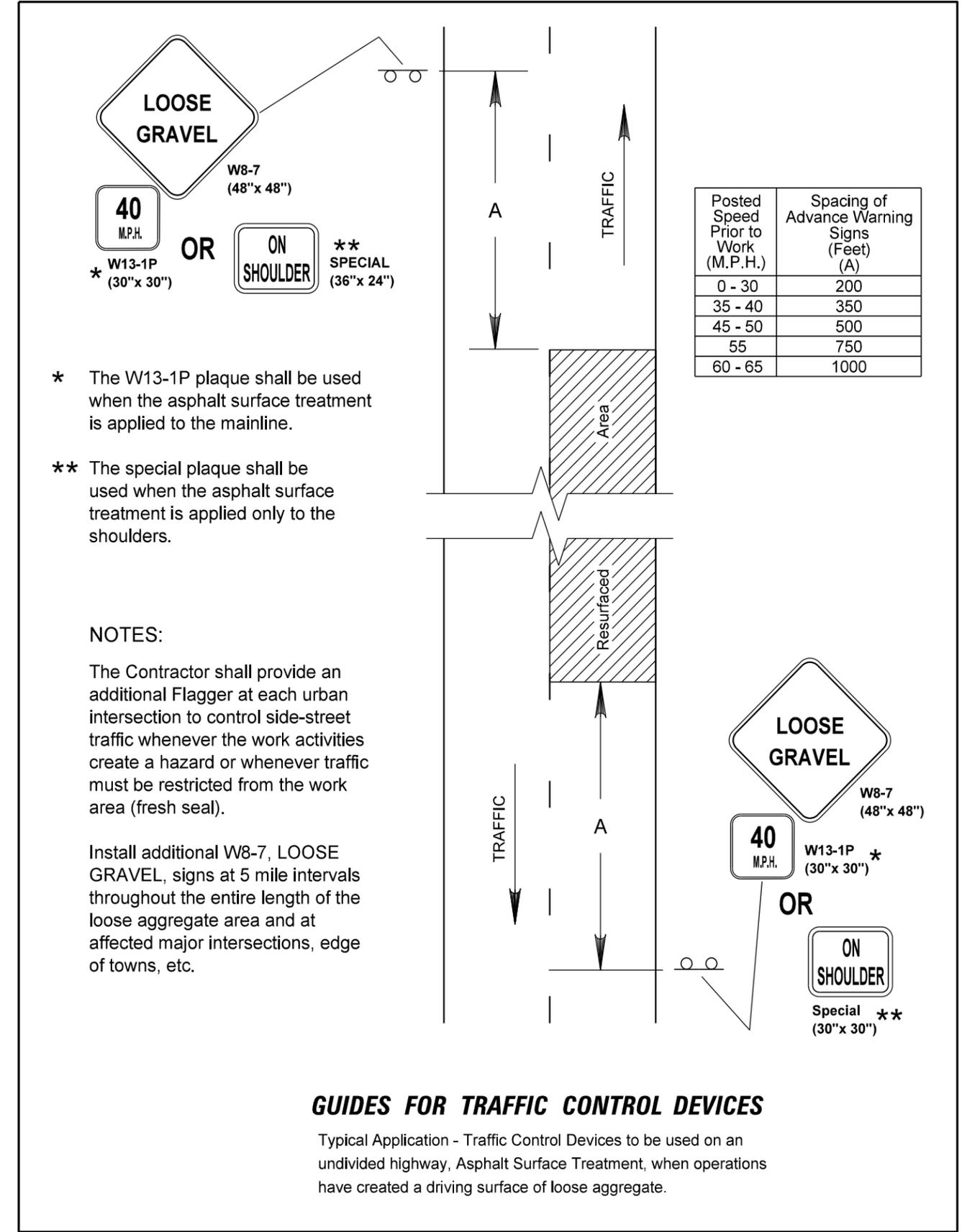
Construction signs shall not obscure existing signs and must be located a minimum of 100' from an existing sign.

Chip Seal Location. (Work Space)



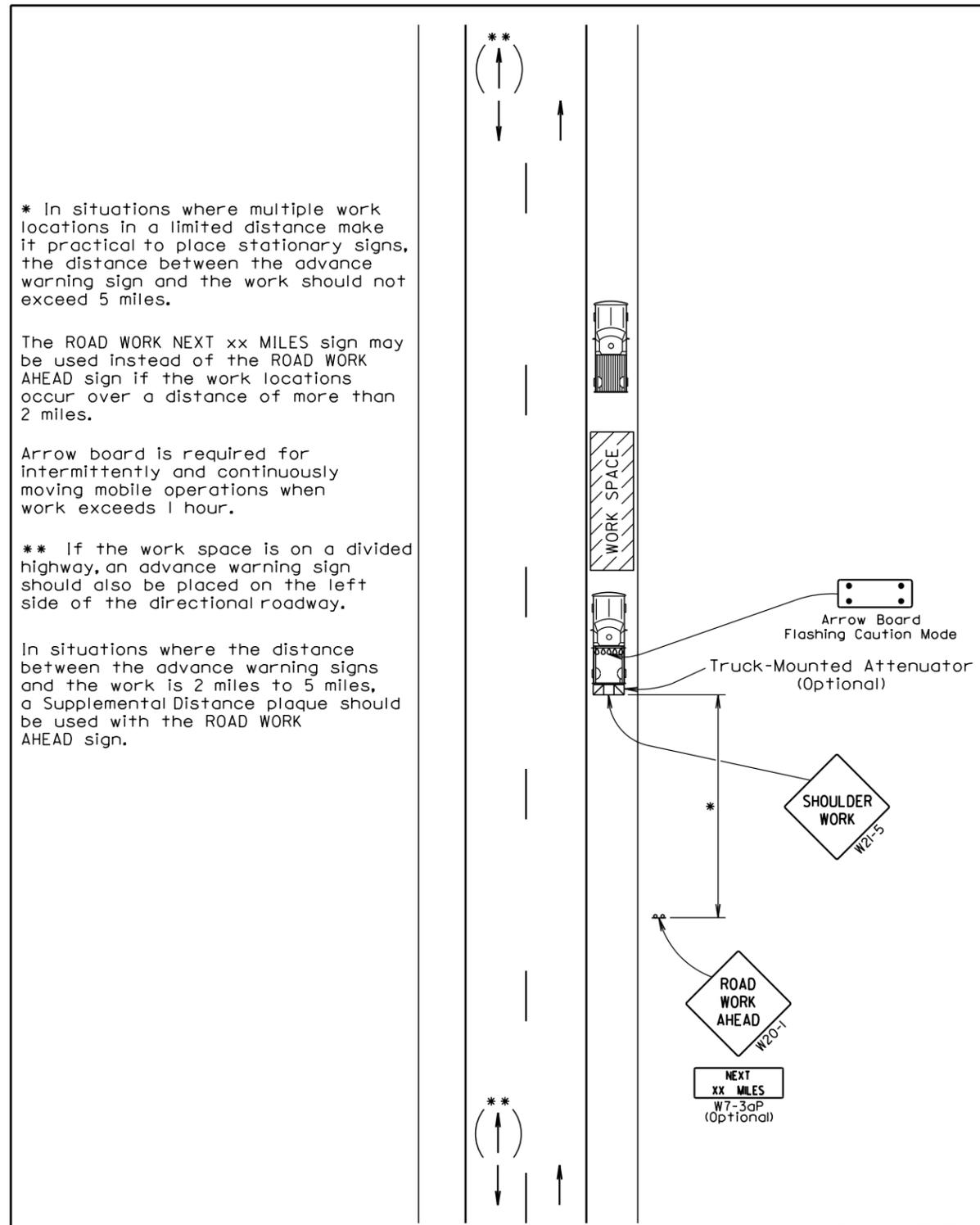


GUIDES FOR TRAFFIC CONTROL DEVICES TRUCK CROSSING SIGN INSTALLATION



GUIDES FOR TRAFFIC CONTROL DEVICES

Typical Application - Traffic Control Devices to be used on an undivided highway, Asphalt Surface Treatment, when operations have created a driving surface of loose aggregate.



* 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.

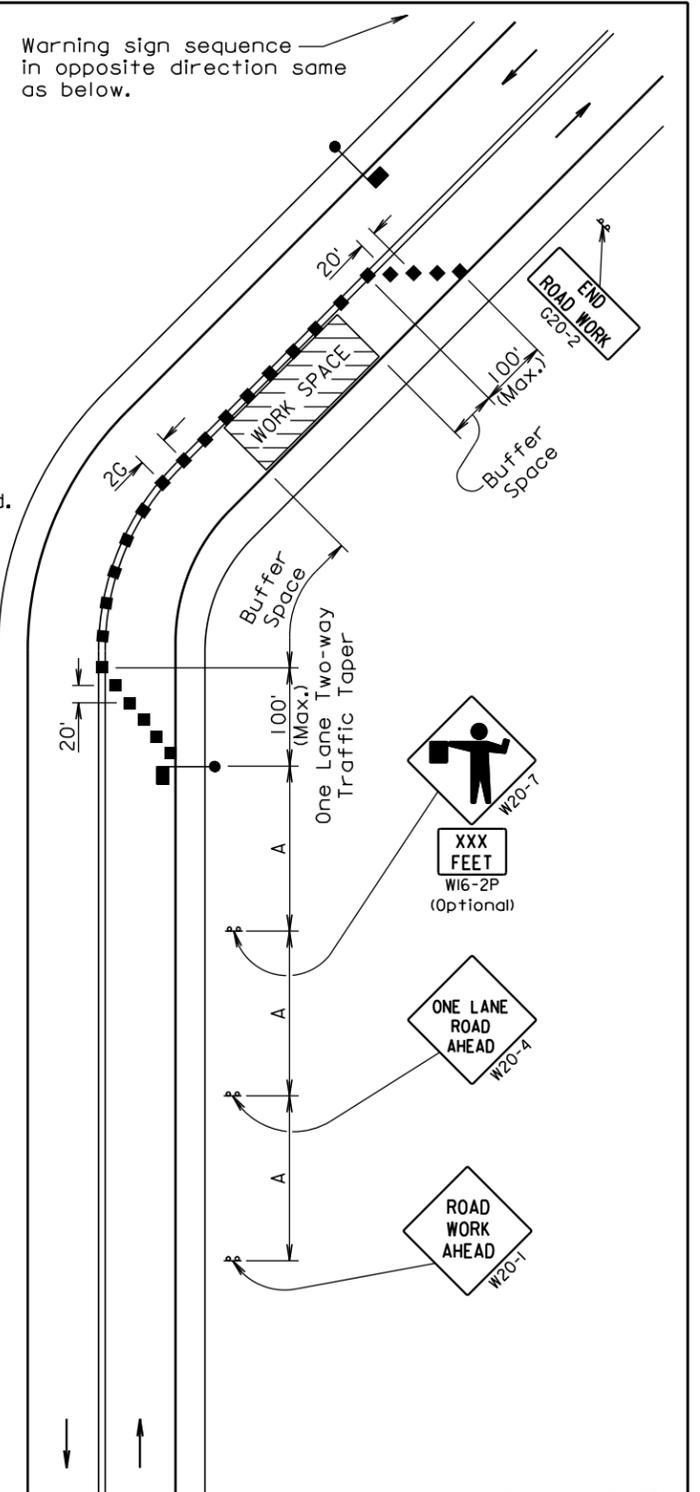
The channelizing devices shall be drums or 42" cones.

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

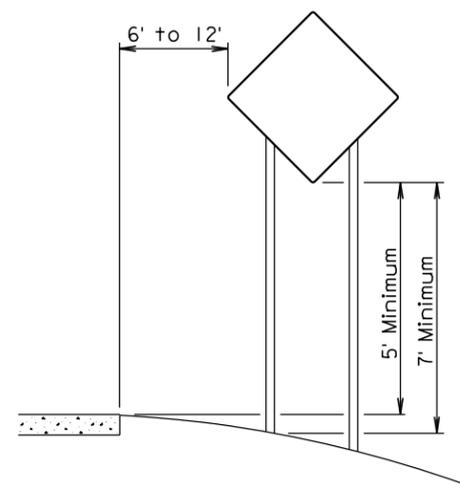
Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

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.

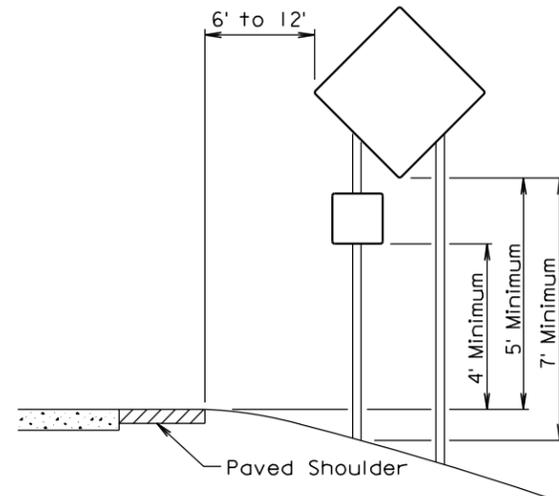
The length of A may be adjusted to fit field conditions.



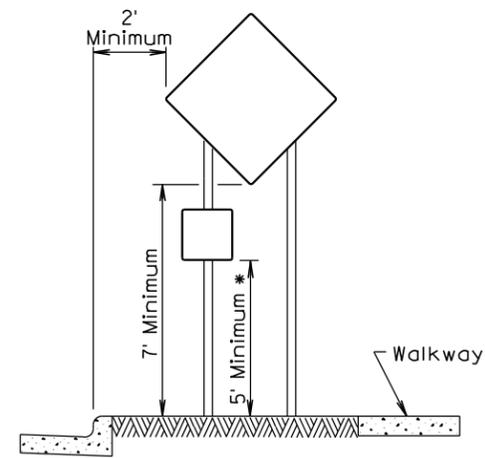
Warning sign sequence in opposite direction same as below.



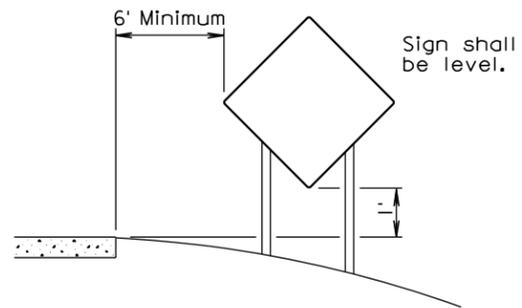
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

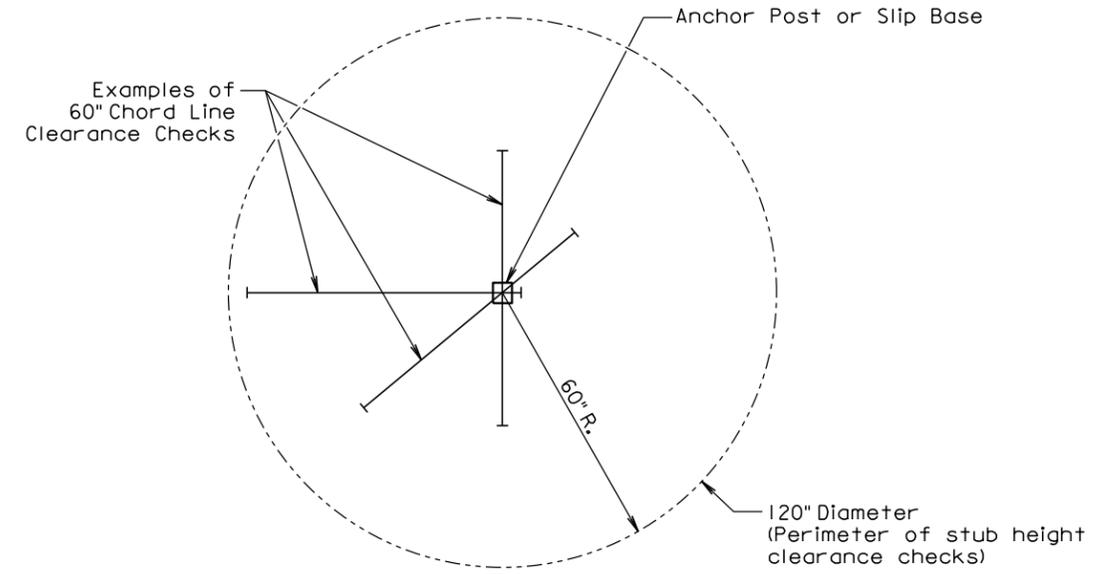


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

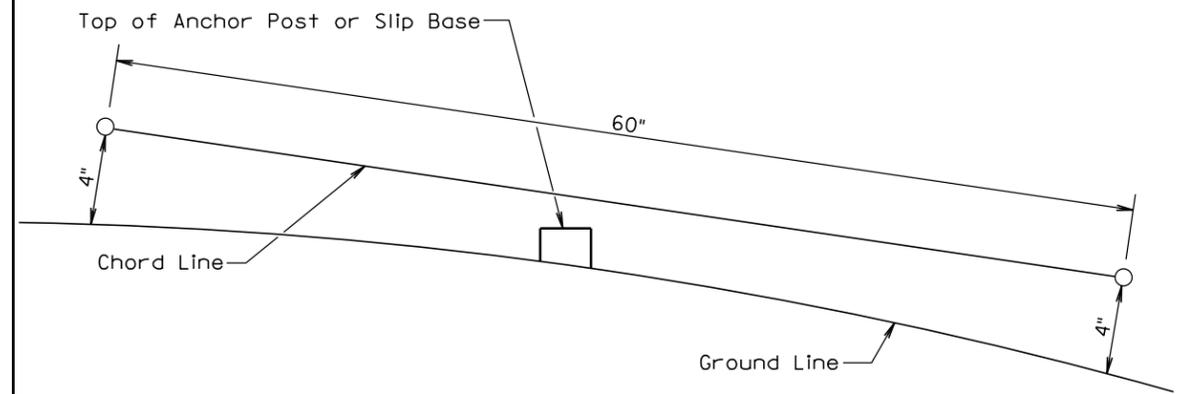
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

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