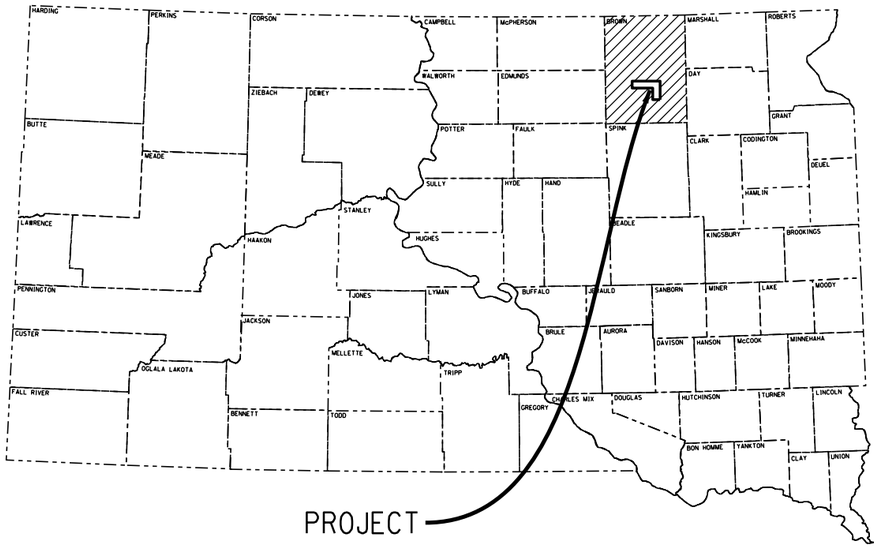


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

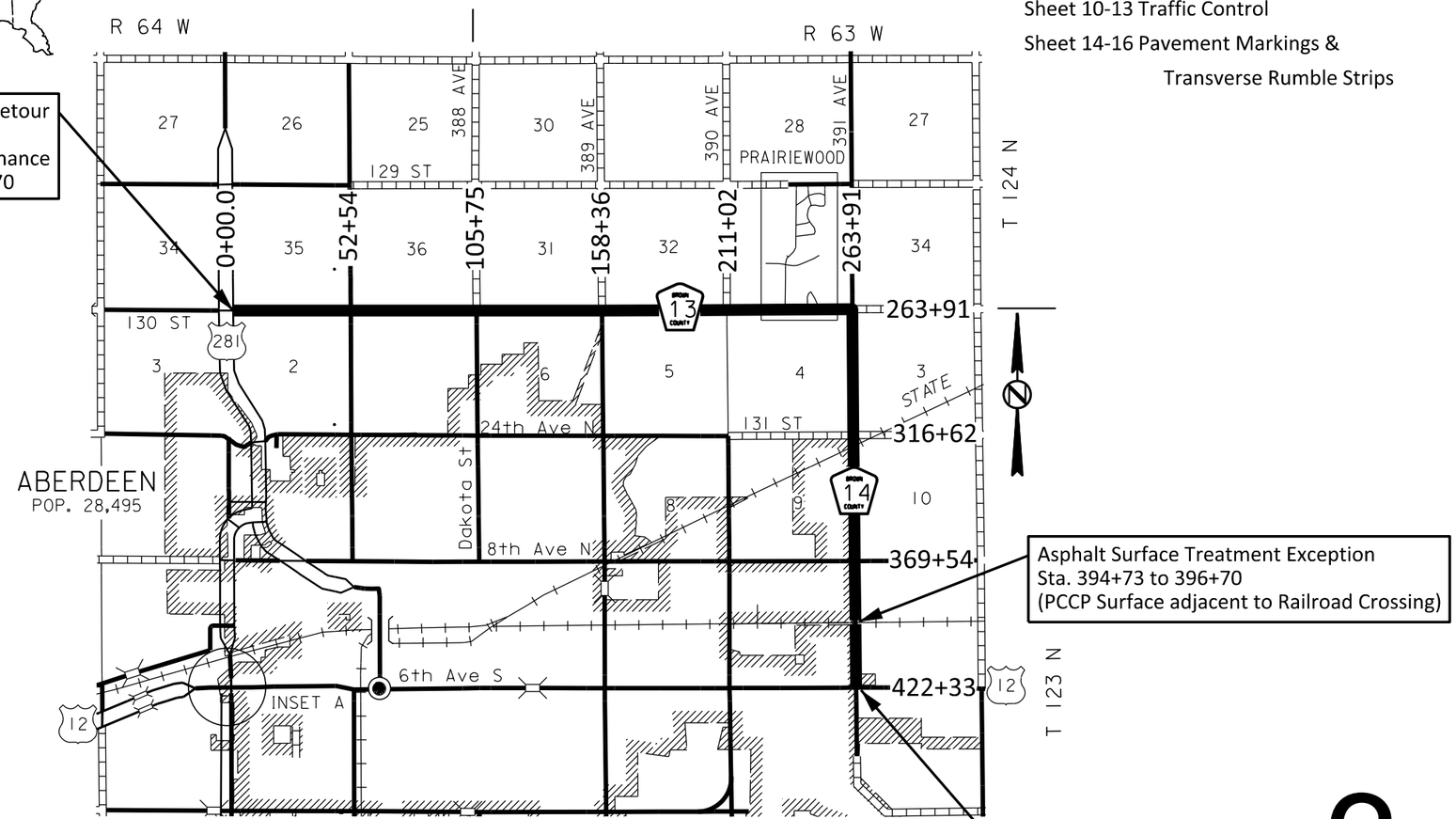
PROJECT NH–B 0012(00)291
COUNTY HWY 13 & 14
BROWN COUNTY

Detour Surface Maintenance
PCN 0ACF

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH–B 0012(00)291	1	16

Plotting Date: 01/07/2026

INDEX OF SHEETS



GROSS LENGTH	42,063.00 FEET	7.966 MILES
LENGTH OF EXCEPTIONS	197.00 FEET	0.037 MILES
NET LENGTH	41,866.00 FEET	7.929 MILES

DESIGN DESIGNATION

BC Hwy 13 AADT (2024) 2240
BC Hwy 14 AADT (2024) 2885

STORM WATER PERMIT

(None Required)

3

March 18, 2026

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-B 0012(00)291	2	16

Rev. 1-9-26 SLS

Estimate of Quantities

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E4100	Construction Schedule, Category I	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	150.0	SqYd
110E7150	Remove Sign for Reset	3	Each
120E0100	Unclassified Excavation, Digouts	100	CuYd
260E1010	Base Course	200.0	Ton
260E3010	Gravel Surfacing	800.0	Ton
320E0402	Asphalt Repair Mastic Type 2	15,900	Lb
320E1200	Asphalt Concrete Composite	900.0	Ton
320E7035	Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete	392.0	SqFt
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	37.0	Ton
330E3000	Sand for Fog Seal	10.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	202.1	Ton
360E1010	Type 1A Cover Aggregate	1,380.0	Ton
632E3500	Reset Sign	3	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	85	Ft
633E1200	High Build Waterborne Pavement Marking Paint, White	453	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	150	Gal
633E1260	High Build Waterborne Pavement Marking Paint, 24" White	30	Ft
633E1262	High Build Waterborne Pavement Marking Paint, 24" Yellow	665	Ft
633E1270	High Build Waterborne Pavement Marking Paint, Area	55	SqFt
633E1272	High Build Waterborne Pavement Marking Paint, Arrow	21	Each
633E1278	High Build Waterborne Pavement Marking Paint, Combination Arrow	11	Each
633E1290	High Build Waterborne Pavement Marking Paint, Railroad Crossing	4	Each
633E5050	Surface Preparation for Pavement Marking	510	Ft
633E6020	Pavement Marking Masking, 25"	80	Ft
634E0010	Flagging	200.0	Hour
634E0020	Pilot Car	70.0	Hour
634E0110	Traffic Control Signs	606.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	23.7	Mile
998E0100	Railroad Protective Insurance	Lump Sum	LS

ENVIRONMENTAL COMMITMENTS

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

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/doing-business/environmental/about-environmental/>

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

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

If a Contractor needs access to state waters for extraction, the Contractor must obtain a water right, through the application of a Temporary Permit to Use Public Waters before work begins.

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (SDDANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Temporary permit to use public waters for highway construction purposes application can be found on the SDDANR website:
https://danr.sd.gov/OfficeOfWater/WaterRights/PermitForms/default.aspx

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< https://sdleastwanted.sd.gov/maps/default.aspx >

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:
< https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04 >

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

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

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

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

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

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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

SEQUENCE OF OPERATIONS

Gravel Surfacing, Crack Leveling, transverse rumble strip installation and Asphalt Concrete Composite patching will be completed prior to the application of the Asphalt Surface Treatment.

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

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

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

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

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

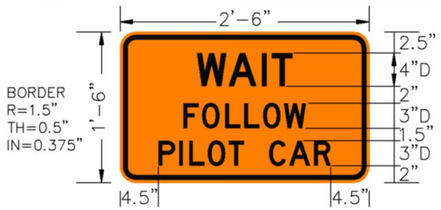
The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location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

A mobile work operation will be allowed provided the pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer.

FLAGGING

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

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.



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

TRAFFIC CONTROL FOR ASPHALT SURFACE TREATMENT

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

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

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

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

> "CONTRACTOR'S LETTERHEAD"
>
> THIS HIGHWAY IS BEING RESURFACED WITH A ROCK CHIP SEAL COAT.
>
> THIS TYPE OF CONSTRUCTION HAS THE POTENTIAL OF CAUSING VEHICLE DAMAGE SUCH AS CHIPPED WINDSHIELDS AND BROKEN HEADLIGHTS DUE TO ROCKS BEING THROWN BY HIGH SPEED ONCOMING OR PASSING TRAFFIC.
>
> YOU MAY WISH TO CONSIDER TAKING AN ALTERNATE ROUTE. IF YOU PROCEED, KEEP TO THE RIGHT AND DRIVE 40 MPH OR LESS. ANOTHER FLAGGER AND A PILOT CAR WILL BE ESCORTING YOU AROUND THE OIL SEAL COAT APPLICATION AREA.
>
> THANK YOU.

ASPHALT REPAIR MASTIC TYPE 2

Only transverse joints in the driving lanes on Brown County Hwy 13 will be repaired. Repairs will be performed on transverse cracks from white line to white line. The top of the road will typically be 24' wide.

The average width of repair locations is 7 inches, but some locations may be wider. The width of repair locations varies throughout the project. The Engineer may specify the width of the squeegee used in order to improve the ride or to control quantities. The use of a 3' squeegee may be required to ensure the entire depression is filled.

The average depth of the repair locations is 1/2", but some locations are over 1/2" deep.

The contract unit price per pound for ASPHALT REPAIR MASTIC TYPE 2 will be nonnegotiable regardless of changes in plan contract quantity.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Asphalt Concrete Composite and Base Course. The depth of asphalt will match the in-place thickness.

Included in the Estimate of Quantities are 100 cubic yards of Unclassified Excavation, Digouts and 150 square yards of Remove Asphalt Concrete Pavement for the removal of asphalt and unstable material throughout the project.

Included in the Estimate of Quantities are 200 tons of Base Course and 50 tons of Asphalt Concrete Composite for backfill of Unclassified Excavation, Digouts.

The digouts will be extended through the shoulder and backfilled with granular material that will daylight to the inslope to allow water to escape the subsurface.

ASPHALT CONCRETE COMPOSITE

An estimated quantity of 850 tons of Asphalt Concrete Composite has been included to spot leveling, strengthening, and repair of the existing surface throughout the project. Most of this work will be on Brown County Hwy 13 including 5 culvert locations with significant dips in the pavement over the culverts and the turn lane on Brown County 13 at the U.S. Hwy 281 intersection.

Asphalt for tack will be applied for the full width plus one-half foot additional on the outside shoulders. A Flush Seal will not be required.

GRIND SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE

Advance intersection warning sinusoidal transverse rumble strips will be constructed on Brown County Hwy 13 for westbound traffic at the U.S. Hwy 281 intersection. Sinusoidal transverse rumble strips will be paid for at the contract unit price square foot for “Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete”. It is estimated that 392 square feet of sinusoidal transverse rumble strips will be required.

Sinusoidal transverse rumble strips will be completed after Asphalt Concrete Composite locations have been determined and prior to application of the asphalt surface treatment. The Contractor will still be required to apply a fog seal to the newly installed sinusoidal transverse rumble strips at a width of 13’ and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Fog Seal will be paid at the contract unit price per ton.

GRAVEL SURFACING

Included in the Estimate of Quantities is 800 tons of Gravel Surfacing for use on Brown County Hwy 13.

The gravel surfacing will be placed as directed to fill low spots adjacent to the pavement edge.

WATER FOR COMPACTION

The cost of water for compaction of the granular material will be incidental to the various other contract items. A minimum of 4% moisture will be required at the time of compaction unless otherwise directed by the Engineer.

EXISTING PAVEMENT CONDITIONS & TRAFFIC VOLUMES

The existing pavement conditions have been checked for each route and factored into the rates of materials. All segments are slightly pocked, porous, and oxidized. Actual rates will be adjusted in the field using test strips during construction by the Engineer.

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

The traffic volumes are:
-Brown County Hwy 13 AADT = 2240
-Brown County Hwy 14 AADT = 2885

ESTIMATED QUANTITIES

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

ASPHALT FOR SURFACE TREATMENT

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

RAILROAD CROSSINGS

Asphalt Surface Treatment will not be placed at the South Dakota owned railroad line crossings located just south of 131st St on Brown County Hwy 14.

There is a 197 Ft exception for asphalt surface treatment for the BNSF Railroad line located ½ mile north of U.S. Hwy 12. This exception is for PCC Pavement located on both sides of the railroad crossing.

TYPE 1A COVER AGGREGATE

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

Application of the cover aggregate will be maintained within 500 feet or have a time limit of 1 minute between the application of the CRS-2P for Asphalt Surface Treatment and the application of the cover aggregate, whichever amounts to the shorter time period.

The Contractor will continue chip spreader progress, forward thru the asphalt application at any end where work will be temporarily shut down for a time greater than 5 minutes, to allow for satisfactory uniform rolling of the placed cover aggregate. The Contractor will not allow chip spreader, trucks, or other equipment to lie dormant on the aggregate while transitioning between asphalt distributor loads and or any other temporary shutdown or production, before uniform rolling is complete.

All passes of the rollers will be completed within 8 minutes application of the CRS-2P Asphalt for Surface Treatment.

FOG SEAL

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

The Contractor will fog seal the entire asphalt surface treatment surface.

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

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

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

Sand will be broomed off the surface of the roadway once the fog seal has sufficiently cured as determined by the Engineer.

Sand for Fog Seal will conform to Section 879.1.B.

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

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 3.2 miles.

DO NOT PASS (R4-1) and PASS WITH CARE (R4-2) signs will not be allowed to be used on this project to mark the no passing zones.

Temporary pavement marking paint will not be allowed on the chip seal, or fog seal. The Contractor may use tabs with covers, uncovering them for the chip seal, or fog seal. As an alternative, the Contractor may install new tabs for the fog seal.

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

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

Quantities of Temporary Pavement Markings consist of:

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

TEMPORARY PAVEMENT MARKING (Cont.)

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

PERMANENT PAVEMENT MARKING

The Contractor will be required to repaint all existing pavement markings including centerline, edge line, lane lines, turn arrows, stop bars, and railroad crossings. This list is approximate; See Table of Permanent Pavement Markings. The Contractor will be required to document and be able to relocate for replacement of the existing turn arrows, stop bars, and railroad crossing. before the markings are obliterated. Additional quantities are included in the estimate of quantities to paint the additional pavement marking. The cost to duplicate the existing marking locations will be incidental to the contract unit prices for the various contract items.

PAVEMENT MARKING PAINT

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

COLD APPLIED PLASTIC PAVEMENT MARKING

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

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

PAVEMENT MARKING MASKING

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

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

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The Department may take retroreflectivity readings on the pavement marking lines after 14 days and within 42 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

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

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

SURFACE PREPARATION FOR PAVEMENT MARKING

The Contractor will prepare the pavement surface prior to applying the durable pavement marking in accordance with the following.

In areas where the existing groove meets the required depth and existing markings are still in place, the Contractor will clean the existing groove without adding additional depth beyond the required depth for the new pavement marking, including reflective media as noted below.

Description	Specification	Tolerance
Depth of Groove	Marking Thickness[1] + 15 mils	+ 5 mils

[1]Marking thickness will include the thickness of marking material and reflective media.

The cleaning will result in the existing pavement marking being adequately scuffed, abraded, and removed by light grinding or abrasive blasting or both to allow proper adhesion of the new durable pavement marking as per the manufacturer's recommendations to comply with product warranties.

Existing grooves not meeting the required depth will be re-grooved to the required depth for the new pavement marking, including reflective media. Equipment for grooving will be capable of the following:

- Grooving the total width of the groove in one pass or uniform depths with multiple passes.
- Grooving without causing damage to the pavement joints or joint sealant material.
- Provide uniform alignment and depth.
- Moving continuously to permit a mobile traffic work operation.

All costs associated with cleaning of the existing groove, including re-grooving, if needed, will be included in the contract unit price per foot for "Surface Preparation for Pavement Marking". Surface preparation will be measured as 4" equivalent.

HAUL ROAD

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

REMOVE SIGN FOR RESET AND RESET SIGN

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care.

All costs for removing and dismantling of any existing posts will be incidental to the contract unit price per each for "Remove Sign for Reset". All costs for resetting the existing signs will be incidental to the contract unit price per each for "Reset Sign". All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

Signs to be removed and reset are:

- Grade Crossing Advance Warning signs (W10-1) located on both the north and south side of the Railroad Crossing located just south of 131 St on Brown County Hwy 14.
- The Grade Crossing Advance Warning sign (W10-1) located on the north side of the Railroad Crossing located ½ mile north of U.S. Hwy 12.

Each sign is installed on 2 square tube posts.

RATES OF MATERIALS

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

ASPHALT SURFACE TREATMENT:

STA 0+70 to STA 263+91

CRS-2P Asphalt for Surface Treatment at the rate of 24.6 tons applied 26 feet wide.
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 168 tons applied 26 feet wide.
(Rate= 22 Lbs./S.Y.).

CSS-1h or SS-1h for Fog Seal at the rate of 4.5 tons applied 26 feet wide. (Rate = 0.07 Gal./S.Y.)

ASPHALT SURFACE TREATMENT:

STA 263+91 to STA 394+73
STA 396+70 to 421+33

CRS-2P Asphalt for Surface Treatment at the rate of 24.1 tons applied 25.5 feet wide.
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 165 tons applied 25.5 feet wide.
(Rate= 22 Lbs./S.Y.).

CSS-1h or SS-1h for Fog Seal at the rate of 4.4 tons applied 25.5 feet wide.
(Rate = 0.07 Gal./S.Y.)

TABLE OF ADDITIONAL QUANTITIES

Route	Location	CRS-2P Asphalt for Surface Treatment (Ton)	Type 1A Cover Aggregate (Ton)	CSS-1h or SS-1h for Fog Seal (Ton)
BC Hwy 13	US 281 Intersection turn lane	0.6	3.8	0.1
	Roosevelt St turn lane	2.2	15.1	0.4
	turn lane at BC Hwy 14	1	6.6	0.2
BC Hwy 14	132 St (24th Ave) turn lane	2.1	14.3	0.4
	Capital Ave turn lane	1.2	7.8	0.2
	US 12 turn lane	1.4	9.5	0.3
TOTAL		**8.5**	**57.1**	**1.6**

TABLE OF PERMANENT PAVEMENT MARKINGS

Route	Location	High Build Waterborne Pavement Markings: Right Turn Arrow (Each)	Left Turn Arrow (Each)	Str/Left Turn Arrow (Each)	Str/Right Turn Arrow (Each)	24" Yellow (Ft)	24" White (Ft)	RR Crossing (Each)	Area (Bull Nose) (SqFt)	4" White (Gallon)	4" Yellow (Gallon)	Cold Applied Plastic Pavement Marking, 24" White Stop Bar (Ft)	Surface Preparation for Pavement Marking (Ft)	Pavement Marking Masking, 25" (Ft)	Comments
BC Hwy 13	US 281	3	-	3	-	-	-	-	-	4	-	40	240	80	4" White for Island and lane line
	Roosevelt St (West Side)	-	2	-	-	140	-	-	-	1	-	-	-	-	4" White for lane line
	Roosevelt St (East Side)	-	2	-	-	95	-	-	-	1	-	-	-	-	4" White for lane line
	BC Hwy 14	2	-	2	-	-	30	-	-	1	-		-	-	4" White for lane line
BC Hwy 14	Diagonal RR Crossing South of 131st ST	-	-	-	-	-	-	2	-	-	-	-	-	-	
	24th Ave (North Side)	3	-	3	-	-	-	-	-	-	-	-	-	-	
	24th Ave (South Side)	-	3	-	-	170	-	-	-	1	-	-	-	-	4" White for lane line
	Capital Ave NE (North Side)	-	-	-	-	50	-	-	55	-	-	-	-	-	
	Capital Ave NE (South Side) plus RR Crossing	-	3	-	-	70	-	2	-	1	-	-	-	-	4" White for lane line
	US12	-	3	-	3	140	-	-	-	1	-	45	270	-	Stop Bar and last set of arrows are on PCCP. 4" White for lane line
BC Hwy 13 & 14	Mainline CL and Edgeline Sta 0+70 to 421+33	-	-	-	-	-	-	-	-	443	61	-	-	-	
	Mainline CL No Passing Zones	-	-	-	-	-	-	-	-	-	89	-	-	-	
TOTAL		**8**	**13**	**8**	**3**	**665**	**30**	**4**	**55**	**453**	**150**	**85**	**510**	**80**	

All pavement markings shown above are High Build Waterborne Pavement Markings, unless otherwise indicated.

24" White High Build Waterborne Pavement Markings is for a Stop Bar.

24" Yellow High Build Waterborne Pavement Markings is for Diagonal Markings in turn lane islands.

Surface Preparation will be measured as 4” equivalent.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

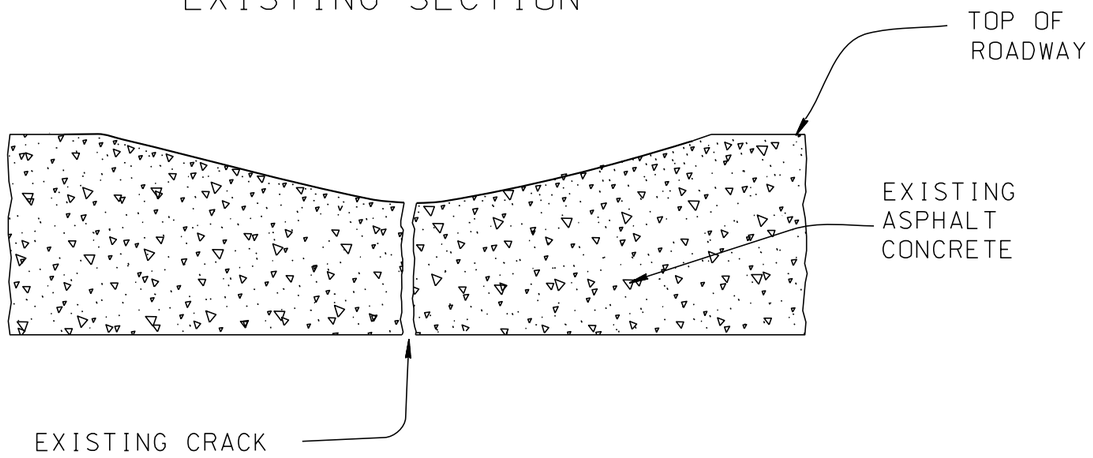
		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	12	48" x 48"	16.0	192.0
W13-1P	ADVISORY SPEED (plaque)	12	30" x 30"	6.3	75.6
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
SPECIAL	WAIT FOLLOW PILOT CAR	4	30" x 18"	3.8	15.2
G20-1	ROAD WORK NEXT 5 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 4 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 3 MILES	4	36" x 18"	4.5	18.0
G20-1	ROAD WORK NEXT 2 MILES	3	36" x 18"	4.5	13.5
G20-1	ROAD WORK NEXT 1 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	3	36" x 18"	4.5	13.5
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			**606.3**

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-B 0012(00)291	9	16
Plotting Date: 01/07/2026			

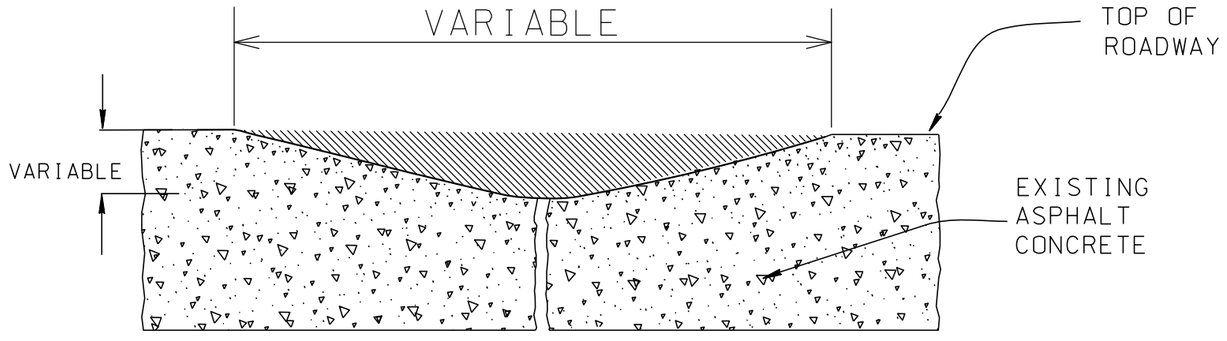
TYPICAL RESERVOIR SECTION WITHOUT MILLING

BC Hwy 13

EXISTING SECTION



REPAIRED SECTION



ASPHALT REPAIR MASTIC

PLOT SCALE - 1:6000

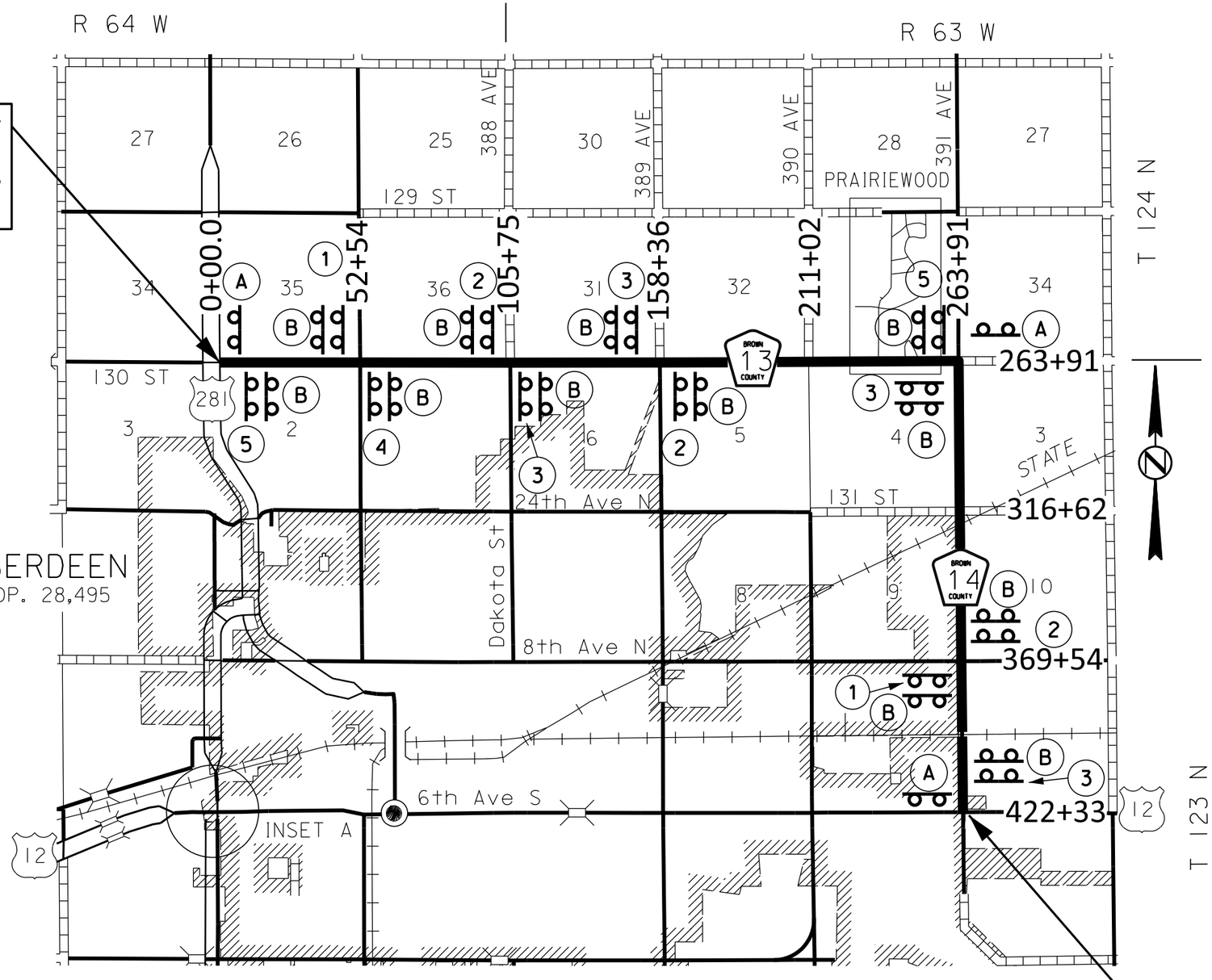
PLOTTED FROM - SD10805

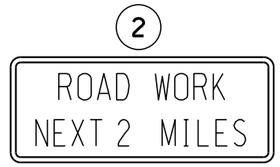
PLOT NAME - 2

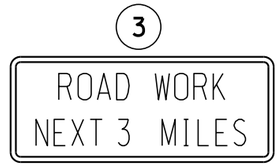
FILE ...\ASPHALT CONCRETE CRACK LEVELING.DGN

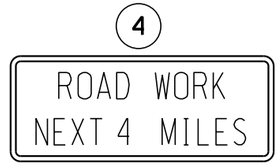
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-B 0012(00)291	10	16
Plotting Date: 01/07/2026			

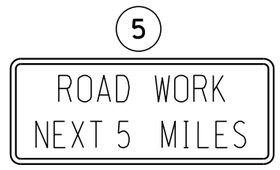
FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

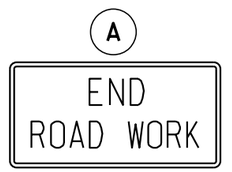


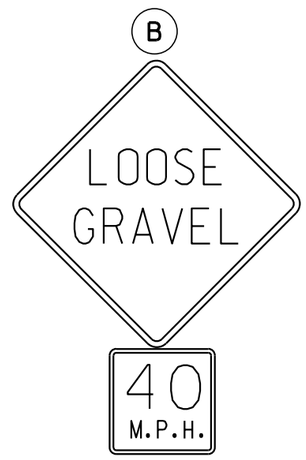












W2O-1 ROAD WORK AHEAD signs will be mounted on portable supports, and will be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs will be moved as necessary to keep current with the work activities.

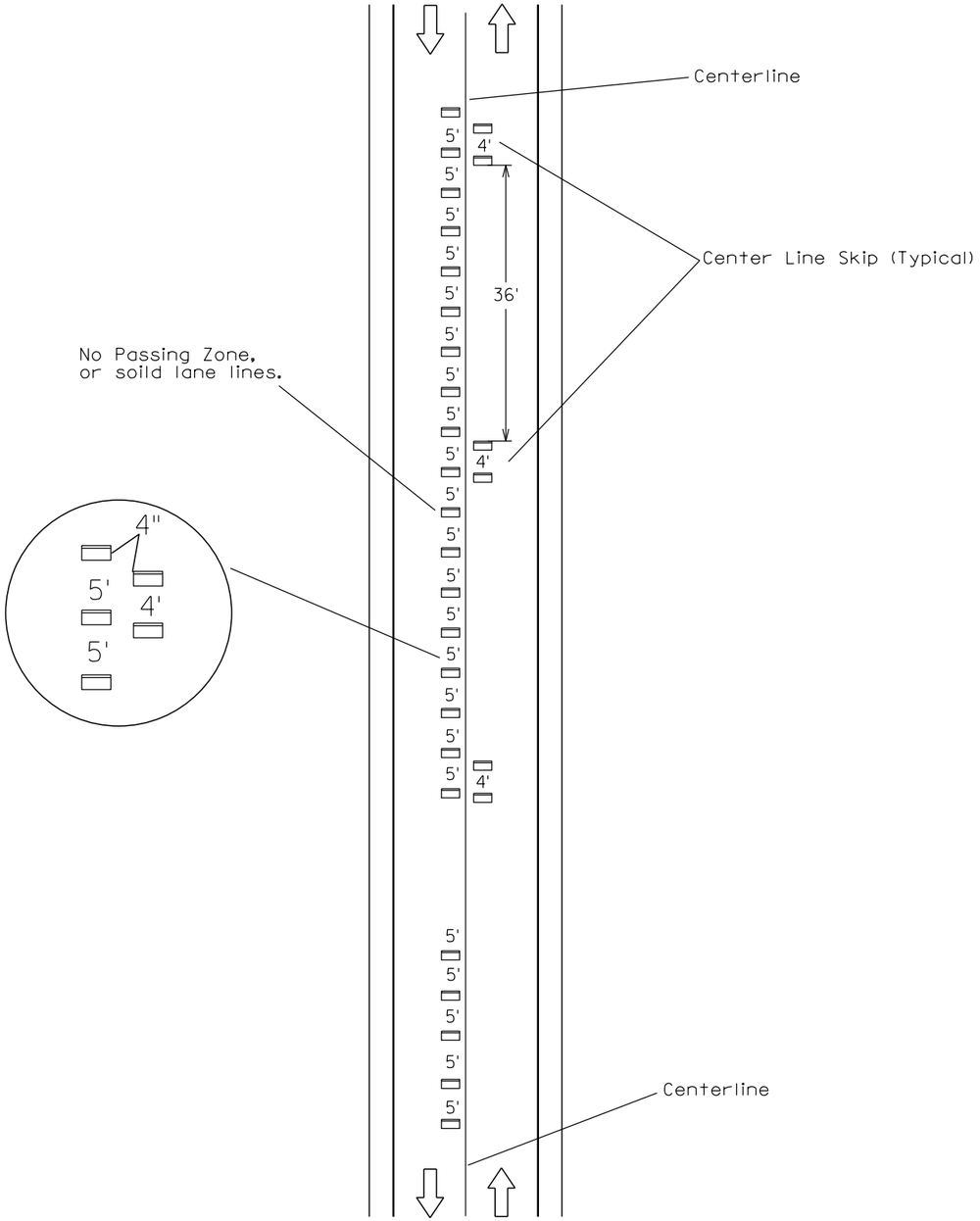
PLOT SCALE - 1:4320

PLOTTED FROM - SD10805

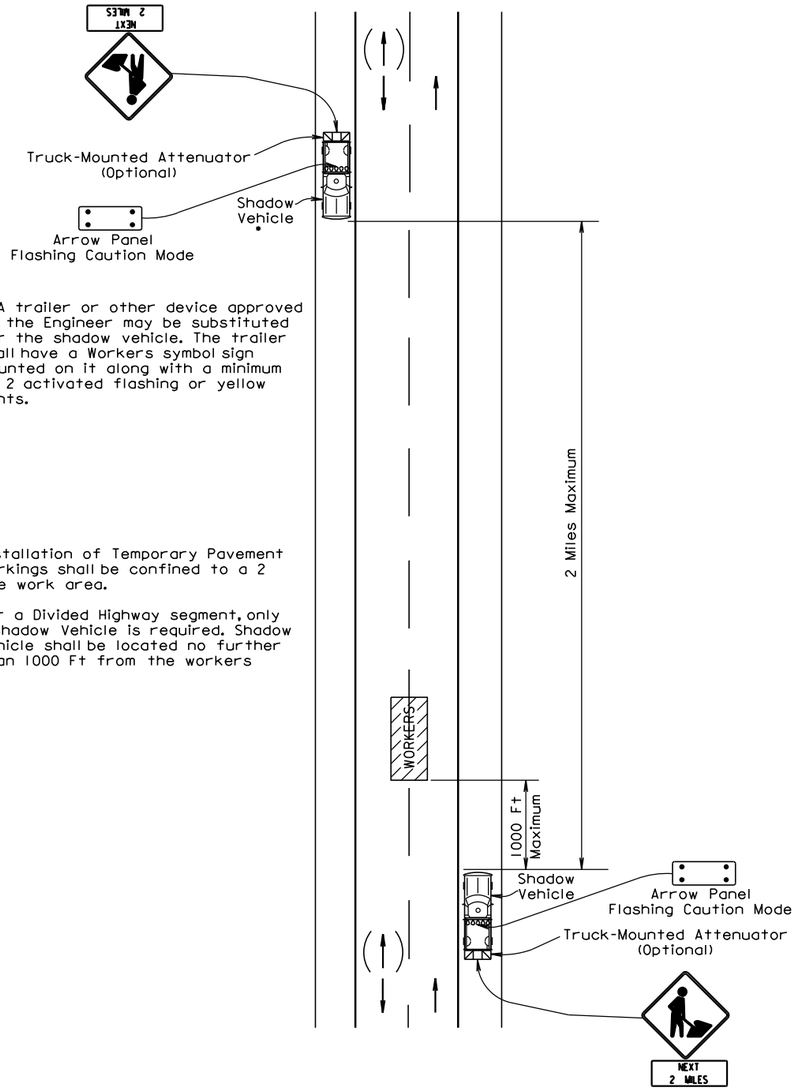
PLOT NAME - 3

FILE - ...\FIXED SUPPORT SIGNING LAYOUT.DGN

GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD MARKER INSTALLATION



GUIDES FOR TRAFFIC CONTROL DEVICES APPLICATION OF TEMPORARY PAVEMENT MARKING TABS



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

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

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

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

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

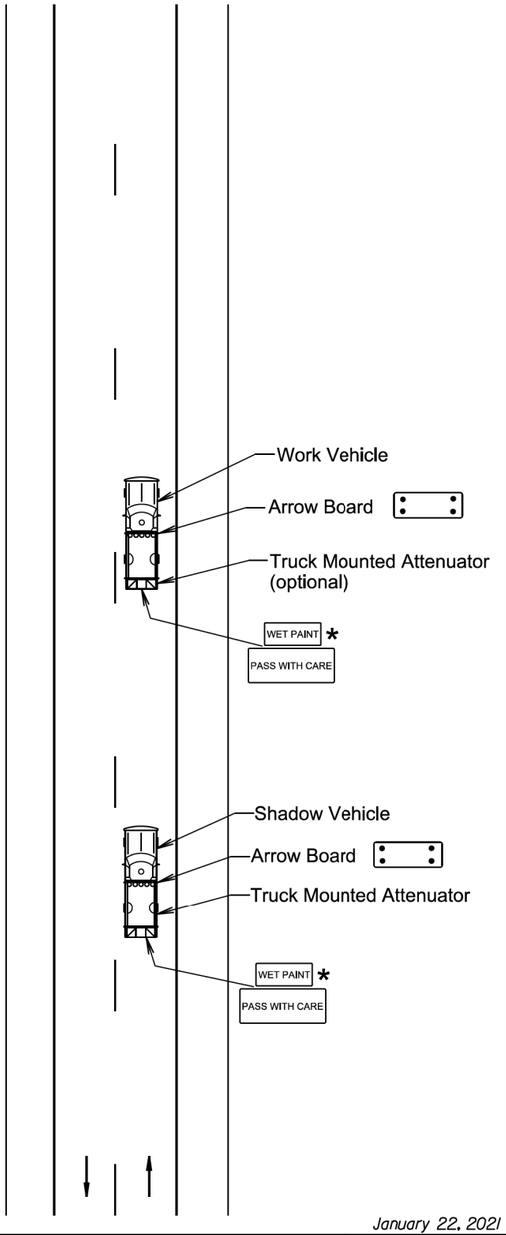
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

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

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

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

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



January 22, 2021

Published Date: 2026	SDDOT	MOBILE OPERATIONS ON 2-LANE ROAD	PLATE NUMBER 634.06
			Sheet 1 of 1

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

Flagger

Channelizing Device

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

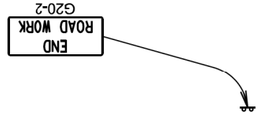
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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

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

The channelizing devices will be drums or 42" cones.

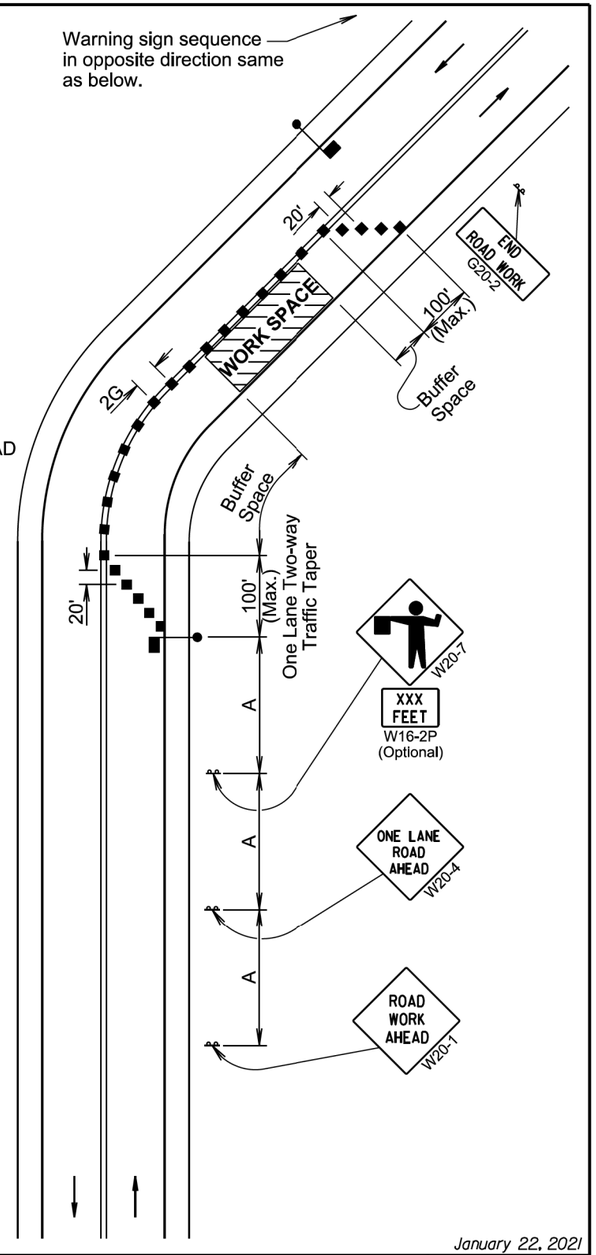
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

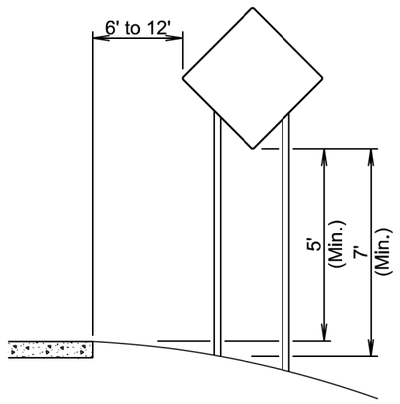
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

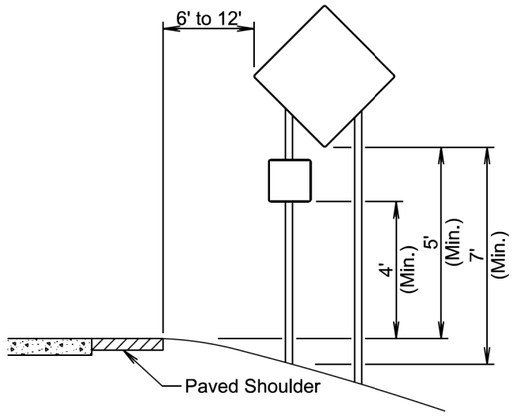


January 22, 2021

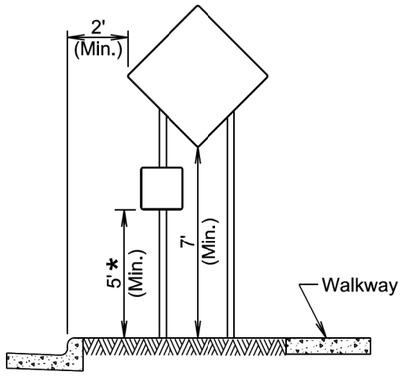
Published Date: 2026	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



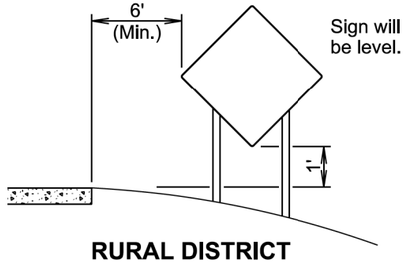
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

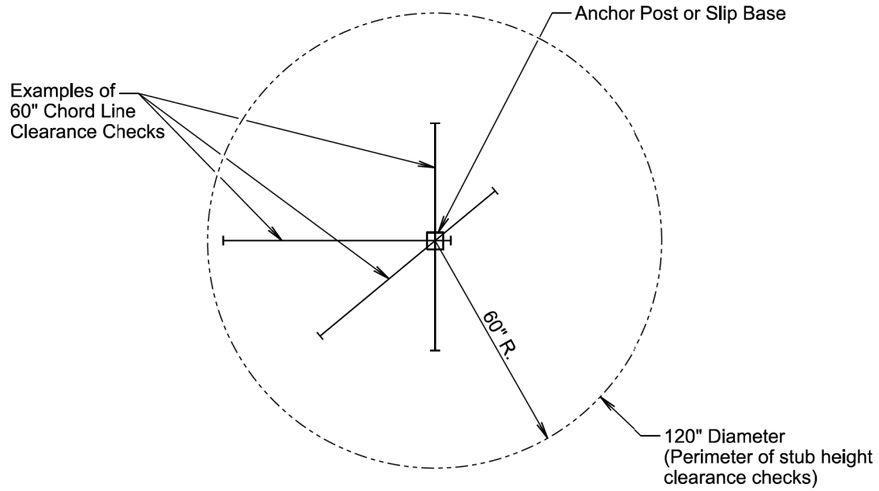


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

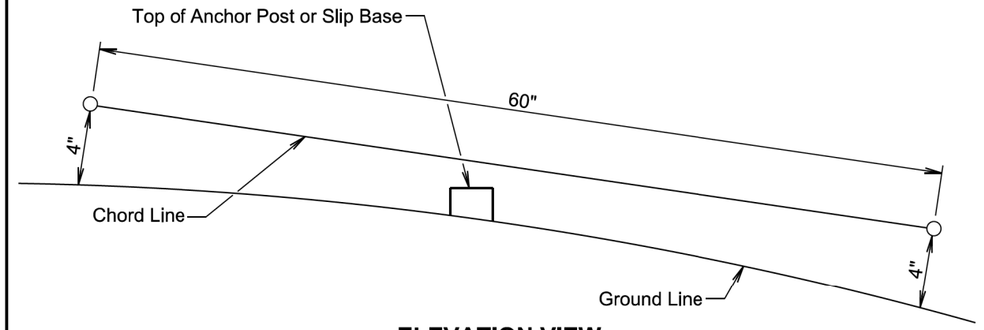
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

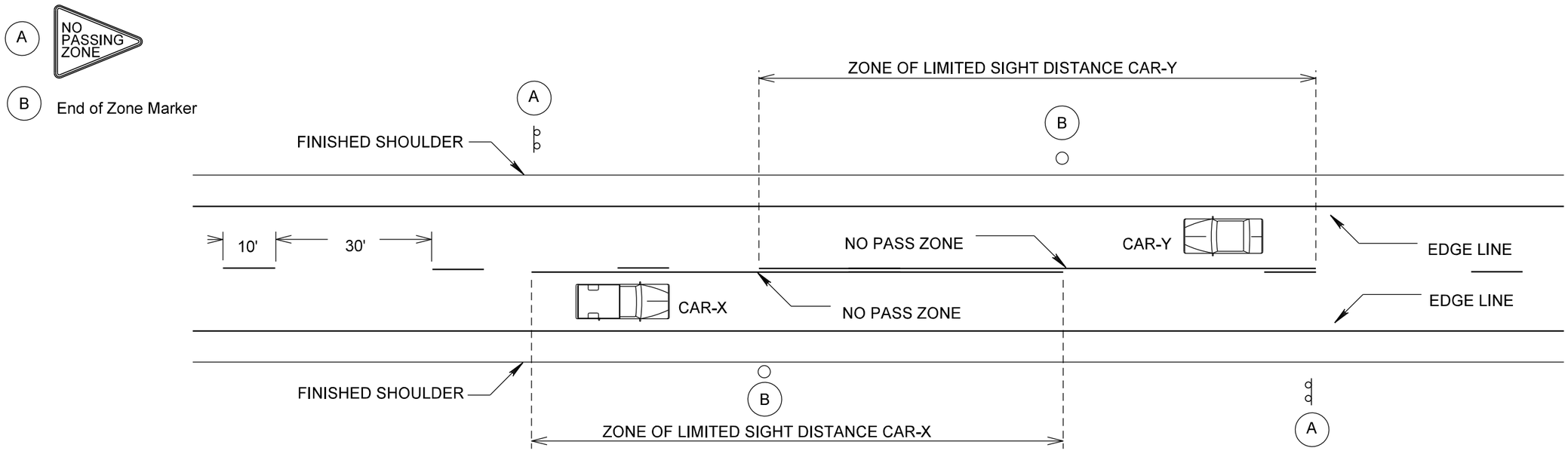
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

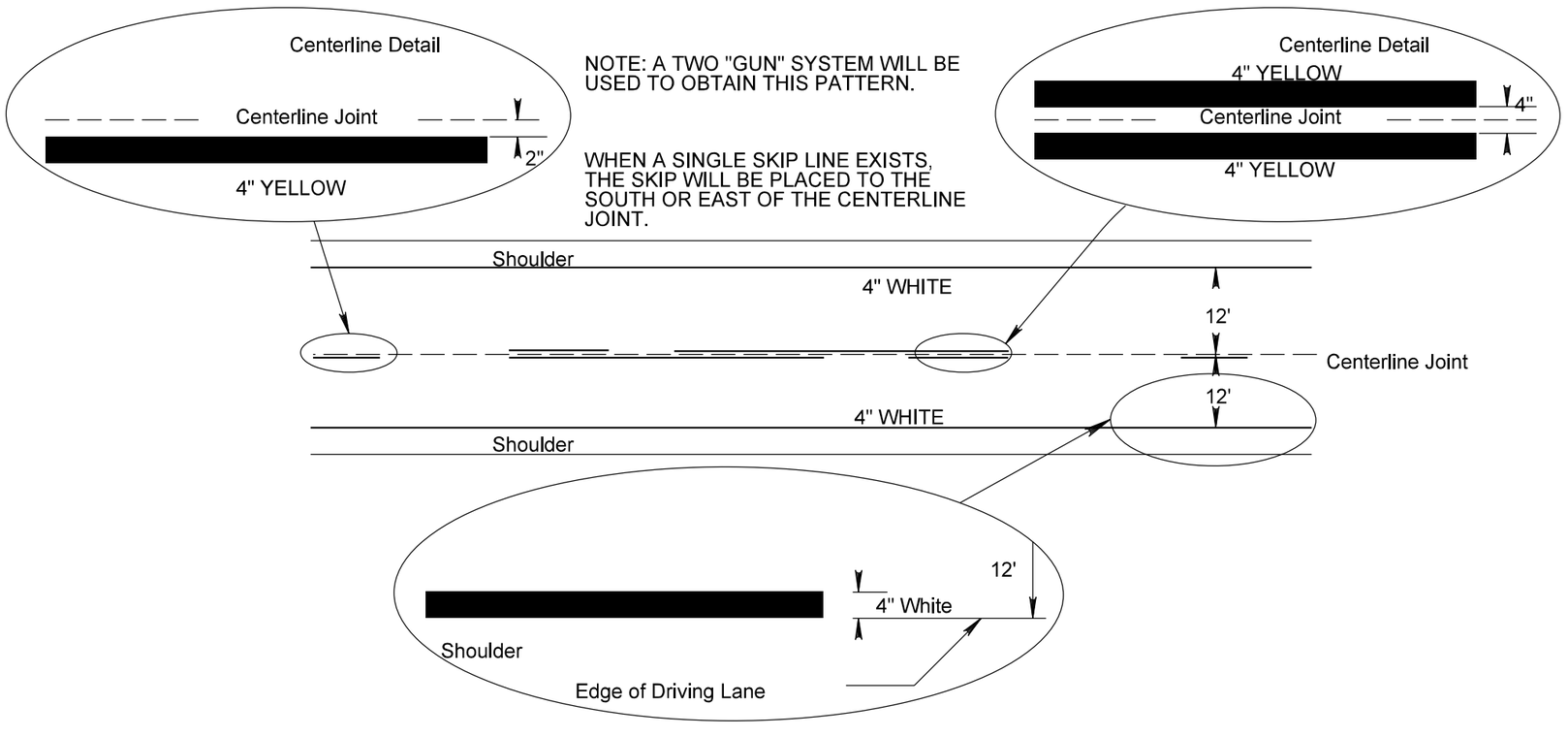
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2026	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

TYPICAL PAVEMENT MARKING LAYOUT





FURNISHING AND APPLYING HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

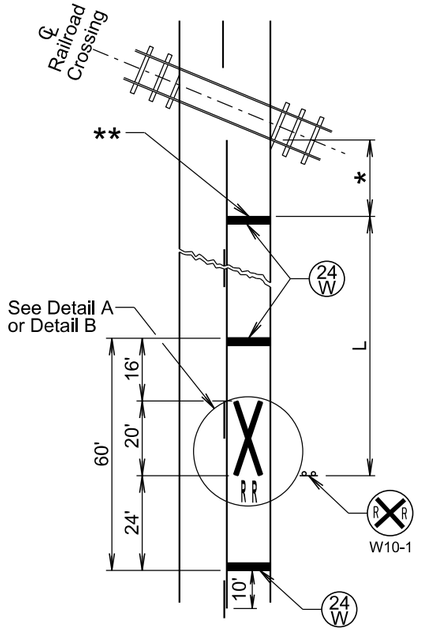
1. The typical pavement markings as shown on this sheet will be applied throughout the entire length of the project.

2. Exact location of the 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, will not be used as the beginning and ending NO PASSING ZONE lines.

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

PAVEMENT MARKINGS AT RAILROAD CROSSING

Sheet 1 of 2



PLAN VIEW

KEY	ITEM
24 W	24" White
RR	White

Posted Speed Limit (M.P.H.)	L (Ft.)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

* Stop line will be no closer than 15' in advance of the nearest rail when no gate or flashing-light signal is present.

** Stop line will be approximately 8' in advance of gate or flashing-light signal (if present), whichever is furthest from the tracks, but no closer than 15' in advance of the nearest rail.

GENERAL NOTES:

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

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

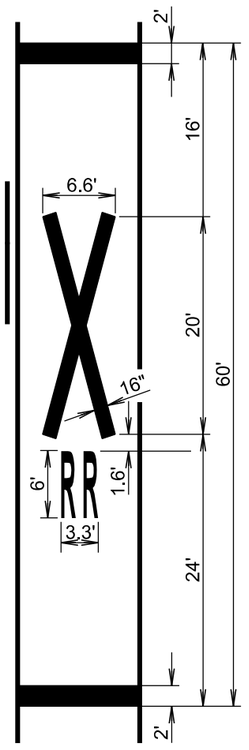
On multi-lane roads the transverse bands will extend across all approach lanes and individual RXR symbols will be placed in each approach lane.

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

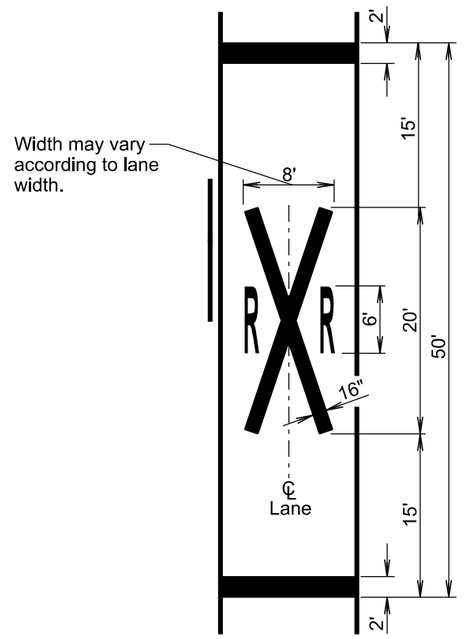
All costs for furnishing and installing the markings, materials, labor, and necessary equipment for the railroad crossing markings will be paid for at the contract unit price per gallon or per each for the type of marking material specified in the plans.

PAVEMENT MARKINGS AT RAILROAD CROSSING

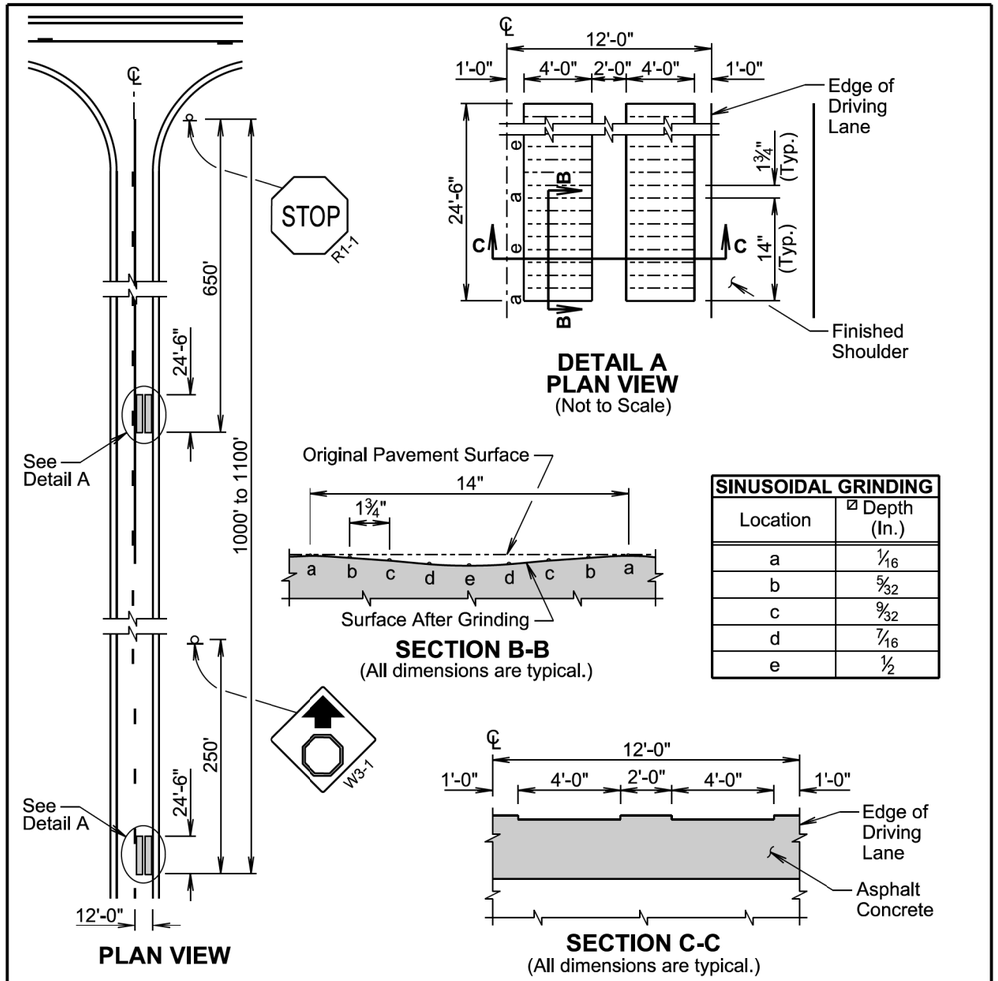
Sheet 2 of 2



DETAIL A



DETAIL B



DETAIL A
PLAN VIEW
(Not to Scale)

SECTION B-B
(All dimensions are typical.)

PLAN VIEW

SECTION C-C
(All dimensions are typical.)

SINUSOIDAL GRINDING	
Location	⧄ Depth (In.)
a	1/16
b	5/32
c	9/32
d	7/16
e	1/2

GENERAL NOTES:

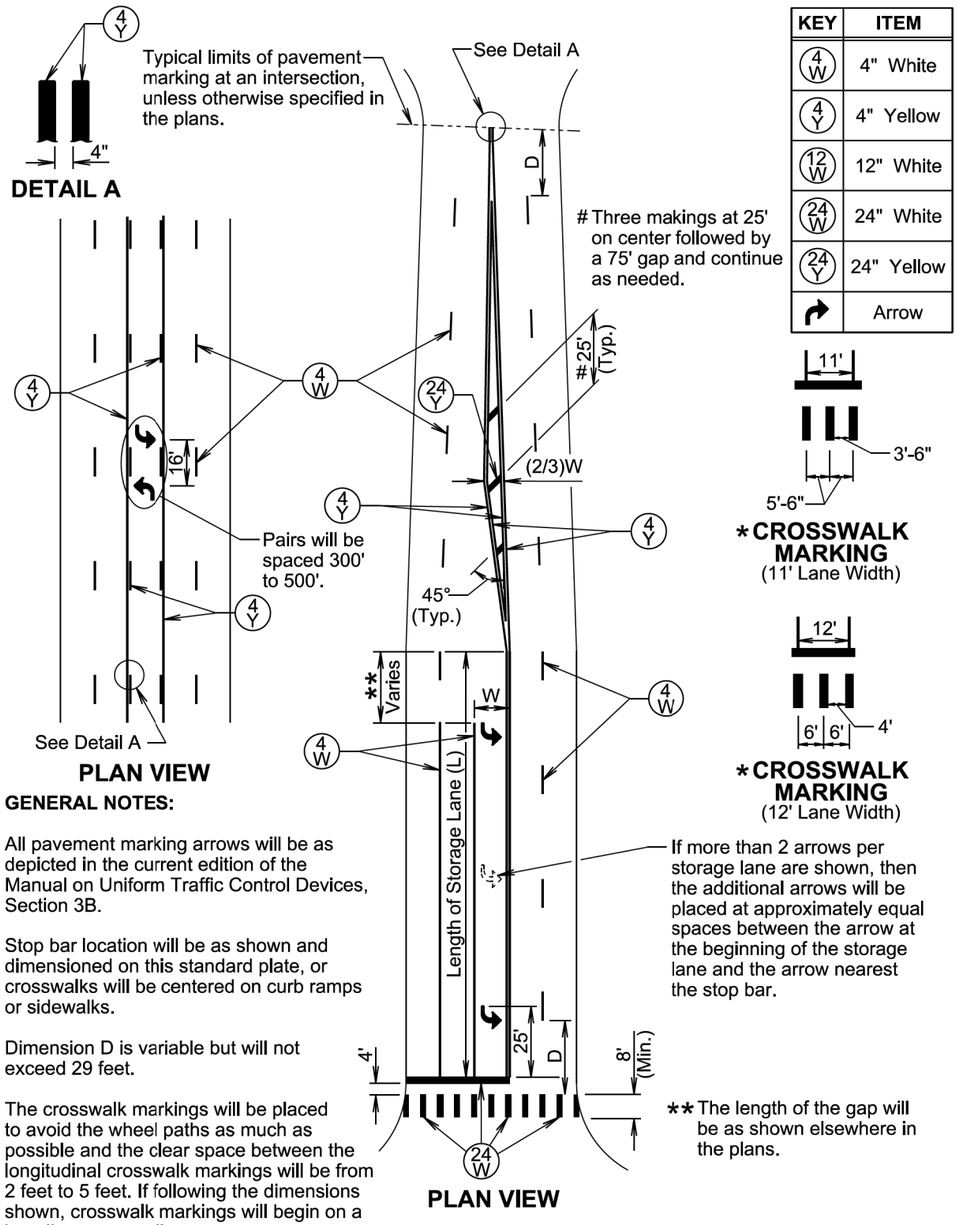
Transverse rumble strips will be constructed by grinding continuous sinusoidal indentations in the asphalt concrete pavement as approved by the Engineer. The transverse rumble strips will receive a flush seal or fog seal as specified in the plans.

⧄ The sinusoidal transverse rumble strips construction grinding tolerance will be ± 1/16 inch.

Measurement of the sinusoidal transverse rumble strips will be to the nearest square foot. Payment for constructing the sinusoidal transverse rumble strips will be at the contract unit price per square foot for "Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete Pavement".

January 22, 2021

Published Date: 2026	SDDOT	SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE HIGHWAY ADJACENT TO STOP CONTROLLED INTERSECTION	PLATE NUMBER 320.46 Sheet 1 of 1



KEY	ITEM
4W	4" White
4Y	4" Yellow
12W	12" White
24W	24" White
24Y	24" Yellow
↱	Arrow

***CROSSWALK MARKING**
(11' Lane Width)

***CROSSWALK MARKING**
(12' Lane Width)

DETAIL A
PLAN VIEW

GENERAL NOTES:

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

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

Dimension D is variable but will not exceed 29 feet.

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

If more than 2 arrows per storage lane are shown, then the additional arrows will be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

** The length of the gap will be as shown elsewhere in the plans.

March 31, 2024

Published Date: 2026	SDDOT	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01 Sheet 1 of 1