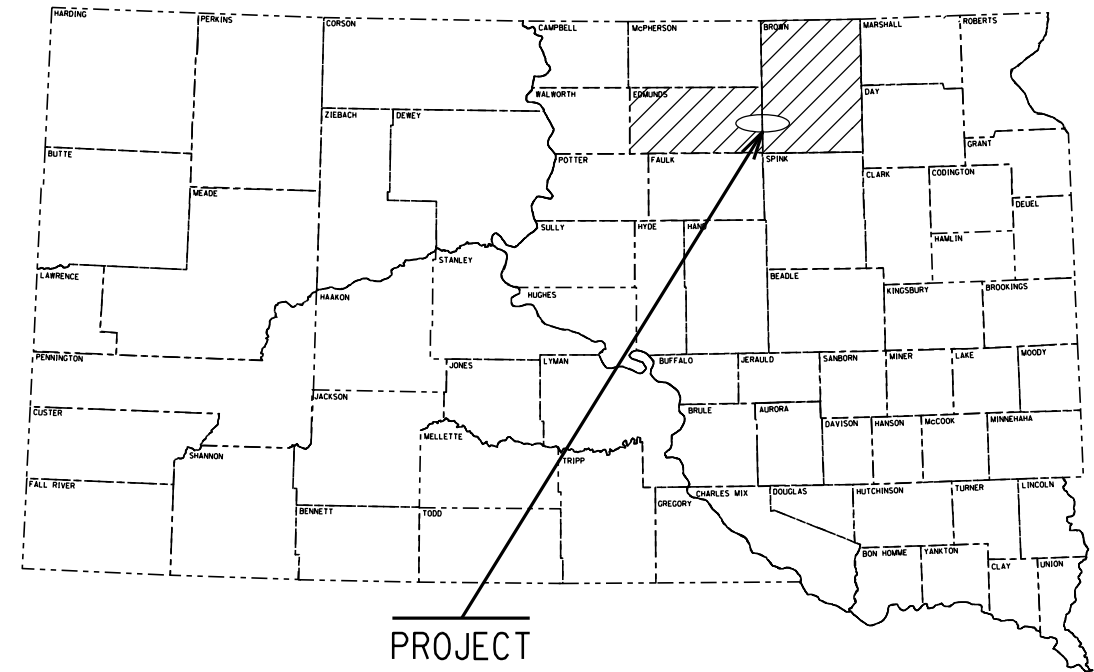


PLOT SCALE - 1:11931.6

PLOTTED FROM - TRABINT01



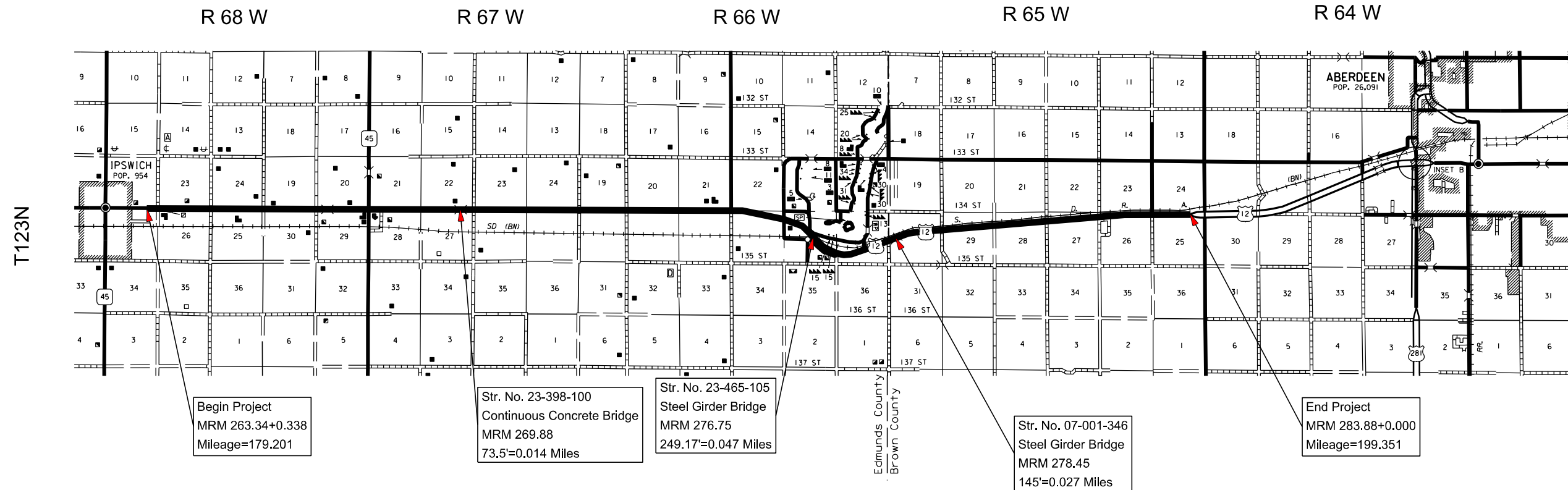
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT PH 0012(209)263
US HIGHWAY 12
BROWN & EDMUNDS COUNTIES
RUMBLE STRIPES/STRIPS
PCN 05NM

STATE OF SOUTH DAKOTA	PROJECT		SHEET NO.	TOTAL SHEETS
	PH	0012(209)263	1	9
Plotting Date:				

INDEX OF SHEETS

Sheet 1	Title Sheet with Layout Map
Sheet 2-3	Estimate of Quantities and Environmental Commitments
Sheet 3	Informational Breakdown of Quantities
Sheet 4-5	Plan Notes
Sheet 6-8	Traffic Control
Sheet 8-9	Detail Drawings



DESIGN DESIGNATION

ADT (2015)	3629
ADT (2035)	4718
DHV	604
D	51%
T DHV	6.3
T ADT	20.5%
V	65 MPH

STORM WATER PERMIT

None Required

GROSS LENGTH	106392 FEET	20.150 MILES
LENGTH OF EXCEPTIONS	11821.92 FEET	2.239 MILES
NET LENGTH	94570.08 FEET	17.911 MILES

PLOT NAME - 1

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PLOT SCALE - 1:8000

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ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
320E7014	Grind 12" Sinusoidal Rumble Strip in Asphalt Concrete	3.6	Mile
320E7030	Grind Sinusoidal Center Line Rumble Stripe in Asphalt Concrete	17.9	Mile
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	3.7	Ton
332E0010	Cold Milling Asphalt Concrete	2,131	SqYd
633E1205	Waterborne Pavement Marking Paint with High Grade Polymer, Yellow	232	Gal
634E0010	Flagging	250.0	Hour
634E0110	Traffic Control Signs	394.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0560	Remove Pavement Marking, 4" or Equivalent	19,287	Ft
634E0650	Temporary Pavement Marking	134	Gal

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0012 (209) 263	2	9
Plotting Date: 02/25/2016			

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 be disposed of within the Public 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:

- 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 Public 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 Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating “No Dumping Allowed”.
- Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

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

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

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

PLOT NAME - 2

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0012 (209) 263	3	9
Plotting Date: 02/25/2016			

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

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

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

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

Informational Breakdown of Quantities

Grind Sinusoidal Center Line Rumble Stripes				
MRM	TO	MRM	Distance (Miles)	Comment
263.34+0.338		283.88+0.00	20.150	From Ipswich to the Divided Highway
Exceptions				
MRM	TO	MRM	Distance (Miles)	Comment
263.625		263.678	0.053	Gore Area
268.010		268.247	0.237	SD 45 Turn Lanes
269.880		269.902	0.022	Bridge
274.846		275.630	0.784	Ethanol Plant Turn Lanes
275.862		276.216	0.354	371st Ave. Turn Lanes
276.702		276.763	0.061	Bridge
277.729		278.019	0.290	Mina Auxiliary Lanes
278.434		278.497	0.063	Bridge
283.186		283.561	0.375	Co. Road Turn Lanes
		Total	2.239	
Total Grind Length (Miles)			17.911	
Total Flush Seal (Tons)			3.7	

Grind Sinusoidal Edge Line Rumble Strips/Remove Rumble Strips				
MRM	TO	MRM	Distance (Miles)	Comment
276.00+0.267		278.00+0.434	2.167	371st Ave to Snake Creek Bridge
Exceptions				
MRM	TO	MRM	Distance (Miles)	Comment
276.702		276.763	0.061	Bridge
277.729		278.019	0.290	Mina Auxiliary Lanes
		Total	0.351	
Total Grind Length (Miles)			3.632	Left and Right
Cold Mill Existing Rumble Strip (Sq. Yd.) (2 inches deep 1 foot wide)			2130.8	Left and Right

PLOT NAME - 2

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PLOT SCALE - 1:8000

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PLOT NAME - 2

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0012 (209) 263	4	9
Plotting Date: 02/25/2016			

SCOPE OF WORK

Work on this project includes but is not limited to Removal of Edge Line Rumble Strips, Installation of Sinusoidal Centerline Rumble Stripes, Installation of Sinusoidal Edge Line Rumble Strips, and Permanent Pavement Markings.

SEQUENCE OF OPERATIONS

1. Install traffic control for 6 mile closure
2. Remove existing conflicting permanent pavement markings
3. Grind sinusoidal rumble stripes
4. Flush seal rumble stripes
5. Place temporary pavement marking paint
6. Repeat 6 mile process
7. Install permanent pavement marking paint

TRAFFIC CONTROL

Traffic for centerline operations shall be maintained on the driving lanes through the work area by use of two sets of flaggers. The first flagger that the traveling public encounters shall stop them and inform them of road machinery and fresh oil on centerline. The second flagger will move with the operation and direct traffic around the operation appropriately. The Contractor Shall be limited to a 6 mile flagger set up, once the 6 mile area is complete the Contractor will be permitted to advance 6 additional miles. Completion of an area consists of grinding rumble stripes, flush sealing and a curing of the flush seal such that it is not picked up by traffic and applying temporary pavement marking paint on centerline.

Traffic for rumble strip removal shall be maintained on the driving lanes through the work area by use of flaggers and a shadow vehicle.

The Contractor shall place shoulder drop off signs in the area where the rumble strips are being removed.

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

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

Work activities during non-daylight hours are subject to prior approval.

Traffic Control signs, as shown in the Itemized List for Traffic Control Signs, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

Non-fixed location signs may be mounted on portable supports. The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas, and one feet above the pavement in rural areas.

REMOVAL OF CENTERLINE PAVEMENT MARKINGS

The Contractor shall remove all existing centerline skips that will conflict with the new pavement markings.

GRIND SINUSOIDAL CENTERLINE RUMBLE STRIPES

Rumble stripes shall be installed in rural areas with posted speeds greater than 50 mph. The Engineer shall provide the exact start and stop locations for the rumble strip installation.

The Engineer shall mark the starting and stopping points noted in the Informational Quantity table. The Contractor shall be responsible for marking minor exceptions, such as approaches, and bridges.

The Contractor is responsible to inspect project locations prior to letting to identify potential problems for installing rumble strips/stripes.

Any damage to the existing shoulders and/or roadway during construction of rumble strips/stripes shall be repaired by the Contractor at no cost to the State of South Dakota.

Milling shall be the only acceptable method of constructing the sinusoidal rumble strips. Construct rumble strips within 2 inches of the specified alignment. The milling equipment must be equipped with a sighting device enabling the operator to maintain the rumble strip alignment. Indentations must comply with the specified dimensions in the Plan within 0.06 inch in depth and 10 percent in length and width. Do not construct rumble strips on structures or approach slabs.

TEMPORARY PAVEMENT MARKINGS

Maintaining size, shape, and dimension of existing pavement markings shall be the responsibility of the Contractor.

Temporary pavement markings shall maintain the length and alignment of the permanent pavement markings. Pavement markings shall not be applied until the flush seal has sufficiently cured as directed by the Engineer. The rates of the paint may need to be adjusted to provide adequate visibility of the paint. Payment for this work will be incidental to the contract unit price per gallon for Temporary Pavement Marking

The temporary pavement markings shall be waterborne yellow paint applied at the following rates, unless the Engineer gives direction to increase the rates:

Skip 4" Line=4.3 Gals/Mile
Solid 4" Line = 16.9 Gals/Mile
Glass Beads – 8 Lbs/Gal

The total length of no passing zone on this project is estimated to be **3.3** miles.

GRIND SINUSOIDAL EDGE LINE RUMBLE STRIPS/REMOVE RUMBLE STRIPS

The Contractor shall install sinusoidal edge line rumble strips according to the detail drawings in these plans, at the locations noted in the Informational Quantity Table. The exact start and stop locations of rumble strips shall be marked in the field by the Engineer. The offset location shall be 2 feet outside of the existing rumble strips.

The gaps for the rumble strip installation as detailed on the detail drawings shall be included with the measurement and payment.

The Contractor shall remove rumble strips at the locations noted in the Informational Quantity Table. Removal of Rumble Strips shall consist of milling 1 foot wide and 2 inches deep, over the designated rumble strips.

The material produced from the milling operation shall be broomed off of the roadway to the satisfaction of the Engineer.

SD DOT OBLIGATIONS

The South Dakota Department of Transportation maintenance forces will complete the following items at no cost to the Contractor:

1. Fill in the 1 foot by 2 inch area of removed rumble strips with Asphalt Concrete Composite
2. Flush Seal the newly placed Asphalt Concrete and Sinusoidal Edge Line Rumble Strips.
3. Paint the Edge Line Pavement Markings in the rumble strip removal area.

PLOT SCALE - 1:8000

PLOTTED FROM - TRABINT01

PLOT NAME - 2

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0012 (209) 263	5	9
Plotting Date: 02/25/2016			

SINUSOIDAL RUMBLE STRIP/STRIPE ROADWAY CLEANING

The Contractor shall be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. Loose material may be broomed to the edge of shoulders and it shall be the Contractor's responsibility to ensure the loose material does not enter any vegetated areas and/or waterways.

All costs associated with the work shall be incidental to the contract unit price per mile for grinding Rumble Strips or Stripes.

FLUSH SEAL

All newly ground Centerline Sinusoidal Rumble Stripes shall be flush sealed.

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal shall be applied 20 inches wide for rumble stripes at the rate of 0.05 gallons per square yard.

PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

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

Application of permanent pavement marking paint shall be completed within 14 calendar days following the completion of the flush seal for the 4" rumble stripes. A minimum 5 day cure time shall be required for the Flush Seal prior to pavement marking paint application.

This material shall consist of a durable high build, low VOC, fast drying, waterborne traffic paint with an acrylic polymer emulsion and with reflective media adhered to the paint. The reflective media shall consist of glass beads for yellow lane lines. Yellow lane lines reflective media shall also consist of a bonded core reflective elements.

The bonded core reflective elements shall contain yellow tinted microcrystalline ceramic beads bonded to the outer surface. All microcrystalline ceramic beads bonded to reflective elements shall have a minimum index of refraction of 1.8 when tested using the liquid oil immersion method.

The Department will take retro-reflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retro-reflectometer conforming to 30-meter geometry. Retro-reflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

Pavement markings not conforming to the retro-reflectivity requirements shall be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor shall schedule subject work to be completed no later than June 15th in the following year. Upon replacement, the retro-reflectivity testing process will be done again requiring new readings.

Department will randomly select one test location per mile of each line. Three retro-reflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial Readings (within 3 - 30 days of the line application):

<u>Pavement Marking Color</u>	<u>Minimum Value</u>
Yellow	180 mcd/m2/lux

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and shall be removed and replaced. Additional retro-reflectivity readings will be taken by the Department to determine the limits of removal. The removal shall be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process shall remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width shall be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings shall be at Contractor's expense, with no cost incurred by the State.

All cost for materials, labor, and equipment necessary to furnish and install the pavement markings shall be incidental to the contract unit price per gallon for Waterborne Pavement Marking Paint with High Grade Polymer, Yellow.

RATES OF MATERIALS FOR HIGH GRADE POLYMER PAINT

Yellow Lines

Solid 4" Line = 27.8 Gals/Mile
Glass Beads – 5.3 Lbs/Gal
Composite Reflective Elements – 2.1 Lbs/Gal

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 FASTRACKTM XSRTTM manufactured by Dow, or an approved equal.

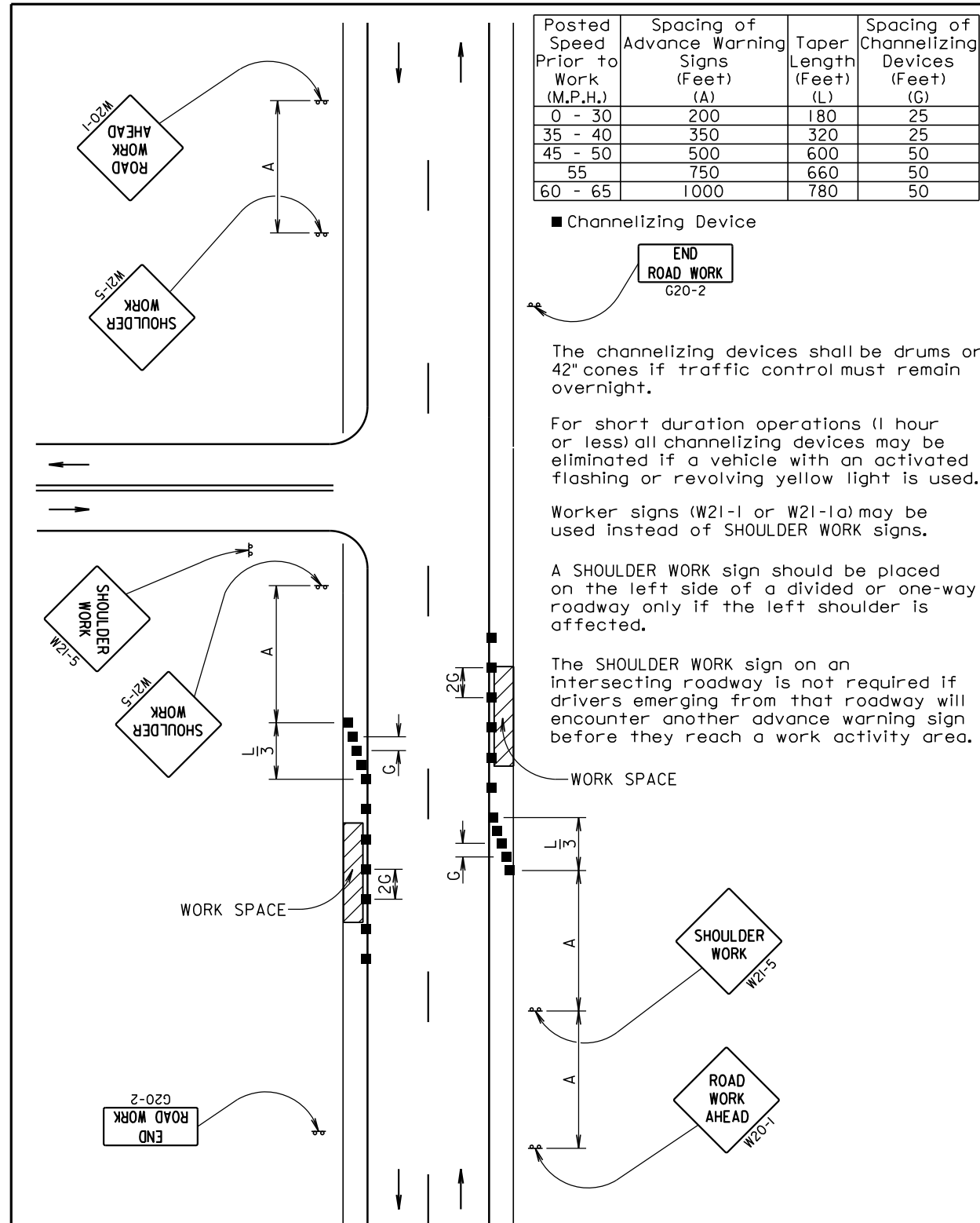
980.1 A. Quantitative Requirements:

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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0012(209)263	6	9
Plotting Date: 02/25/2016			



September 22, 2014

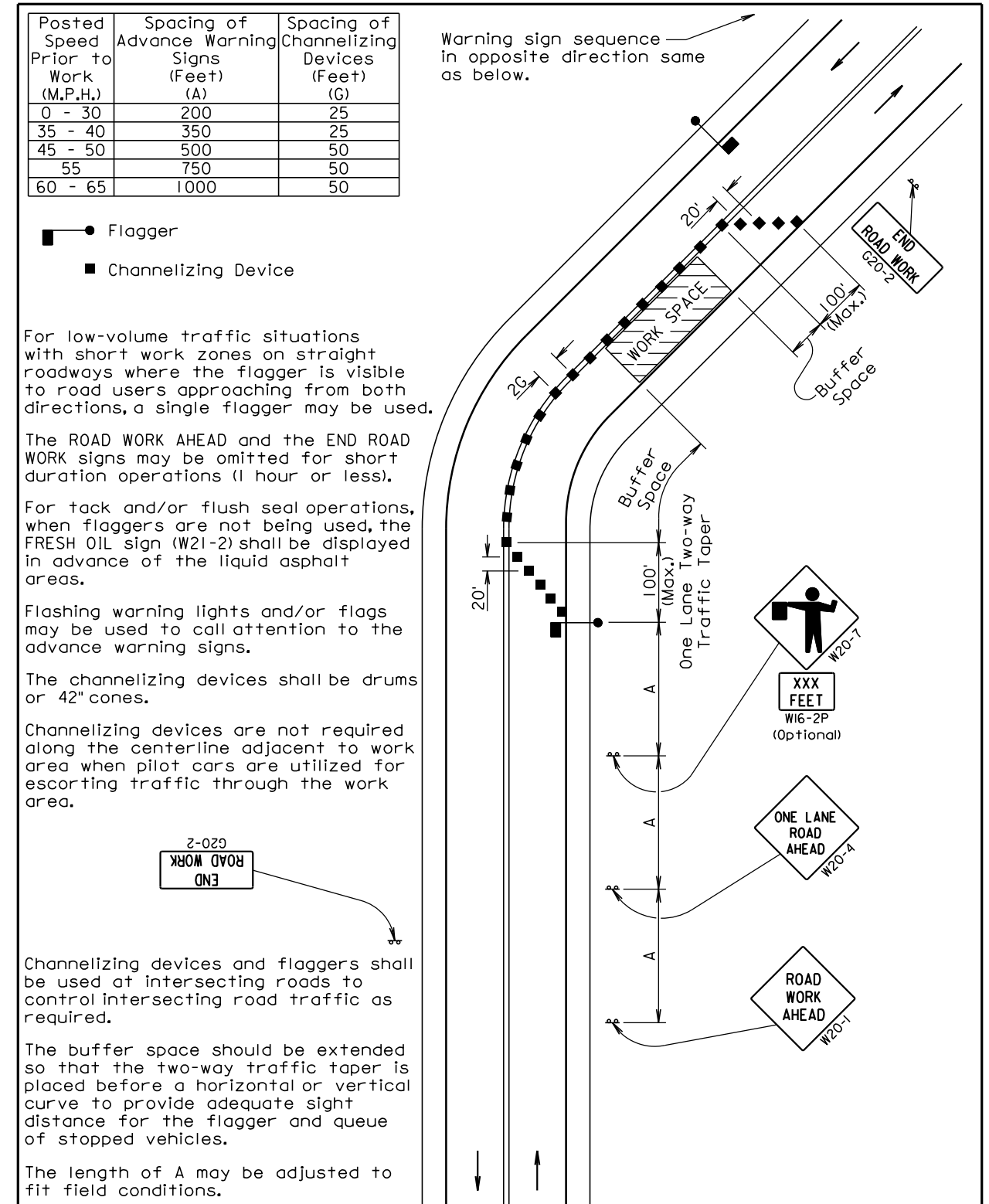
Published Date: 1st Qtr. 2016

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GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS

PLATE NUMBER
634.03

Sheet 1 of 1



September 22, 2014

Published Date: 1st Qtr. 2016

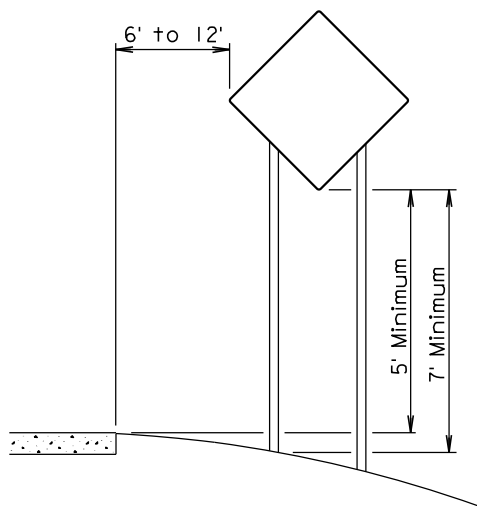
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GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED

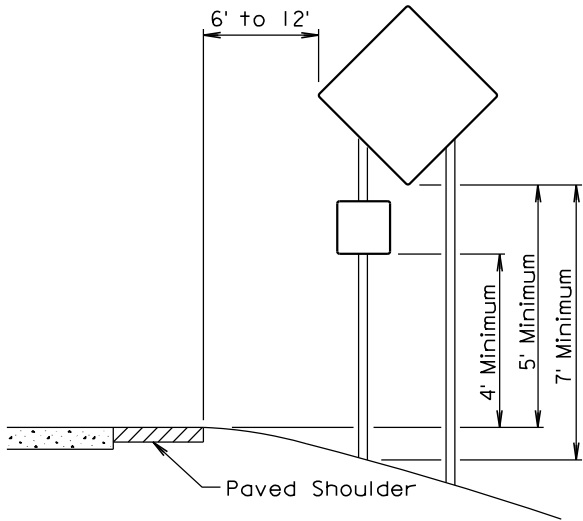
PLATE NUMBER
634.23

Sheet 1 of 1

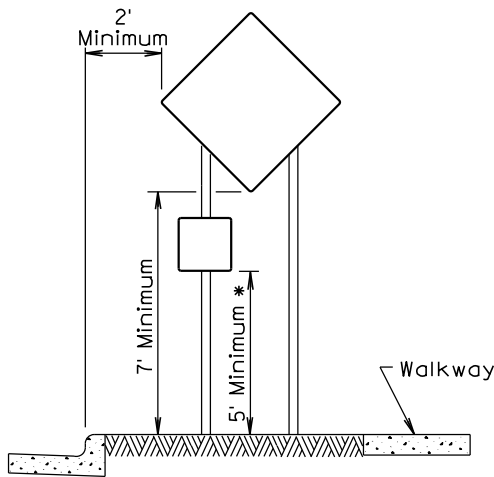
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	PH 0012(209)263	7	9
Plotting Date: 02/25/2016			



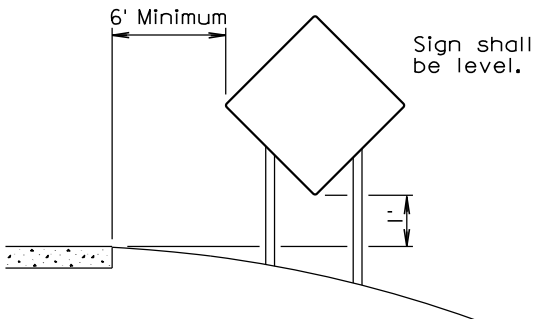
RURAL DISTRICT



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

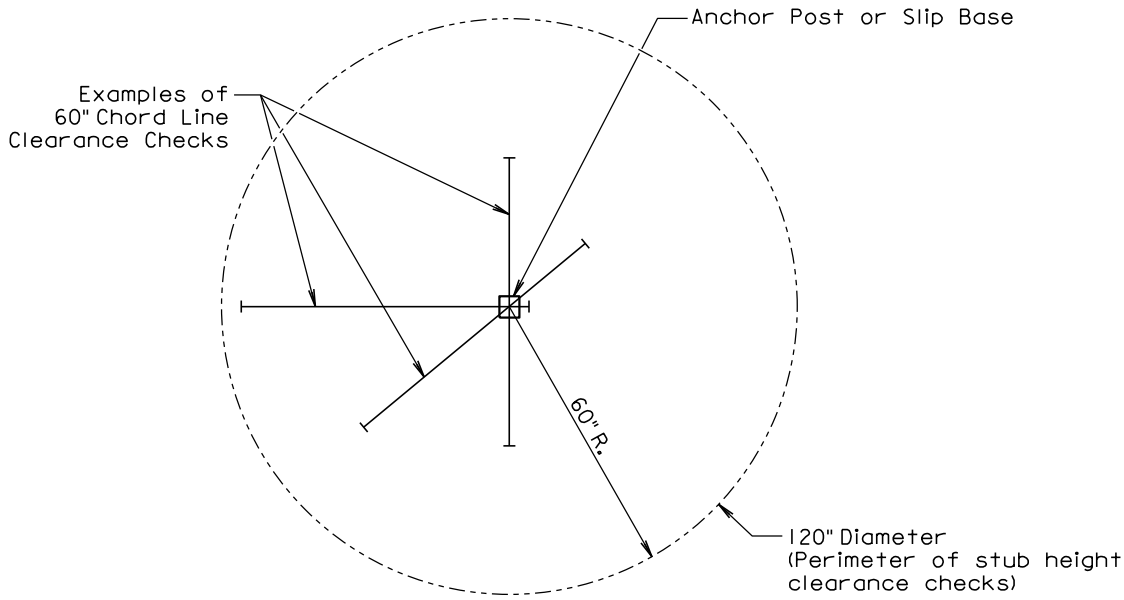
Published Date: 1st Qtr. 2016

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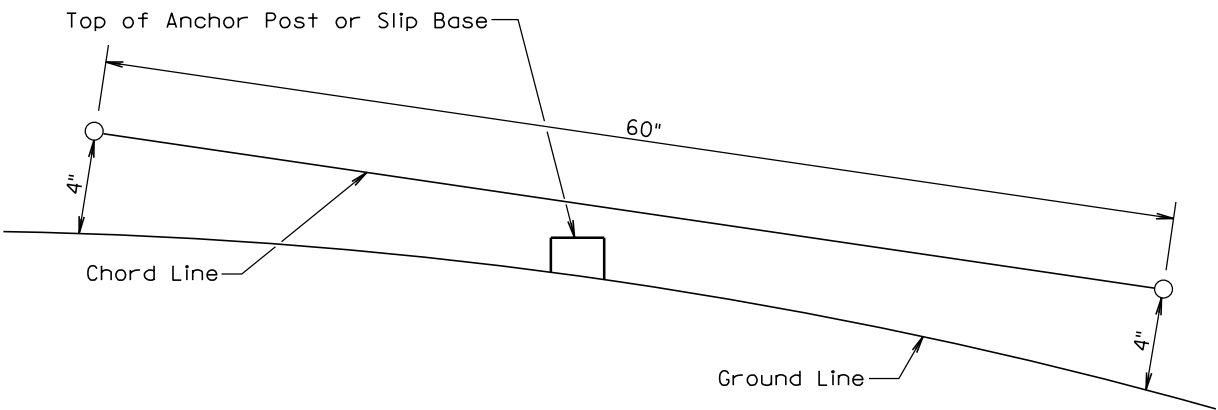
CRASHWORTHY SIGN SUPPORTS
(Typical Construction Signing)

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: 1st Qtr. 2016

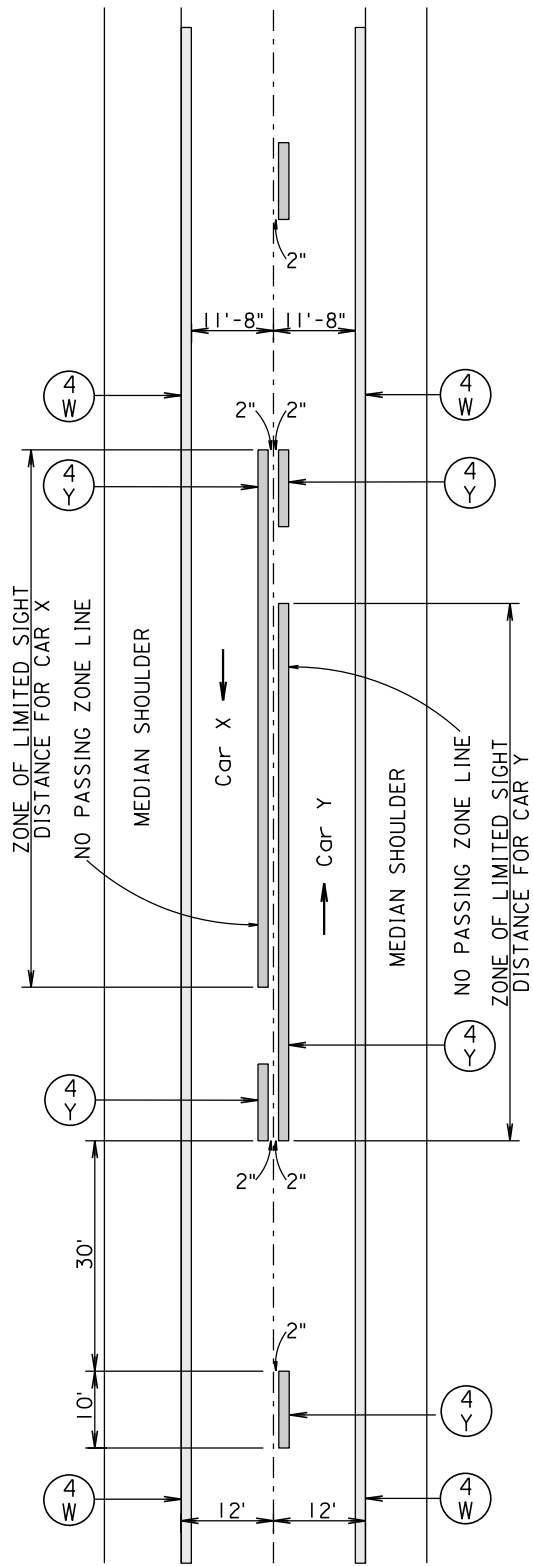
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BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER
634.99

Sheet 1 of 1

TWO LANE
UNDIVIDED ROADWAY



KEY	ITEM
<div>4 W</div>	4" White
<div>4 Y</div>	4" Yellow

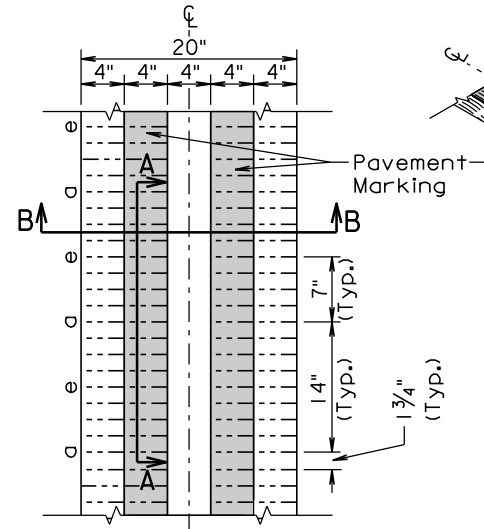
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-17	SHOULDER DROP-OFF (symbol)	6	48" x 48"	16	96
W20-1	ROAD WORK AHEAD	6	48" x 48"	16	96
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	2	48" x 48"	16	32
W21-2	FRESH OIL	4	48" x 48"	16	64
W21-5	SHOULDER WORK	4	48" x 48"	16	64
G20-2	END ROAD WORK	2	36" x 18"	5	10
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		394			

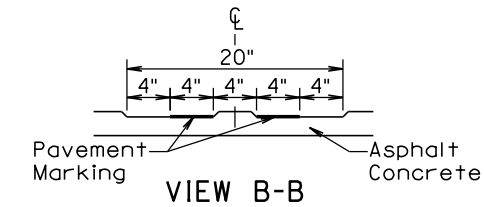
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0012(209)263	8	9
Plotting Date: 03/30/2016			

SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE

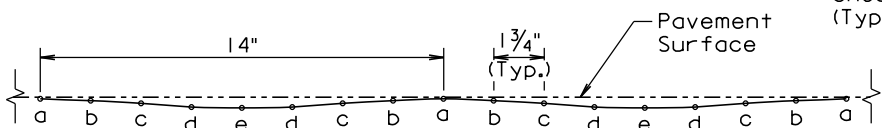
Sheet 1 of 1



**PLAN VIEW
TYPICAL RUMBLE STRIPE
IN ASPHALT CONCRETE**



VIEW B-B



SECTION A-A

GENERAL NOTES:

A rumble stripe shall be constructed by grinding continuous sinusoidal indentations in the asphalt concrete. The rumble stripe shall receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble stripe shall not be constructed through intersecting roads. The lengths of the rumble stripe at the intersecting road shall be adjusted as approved by the Engineer.

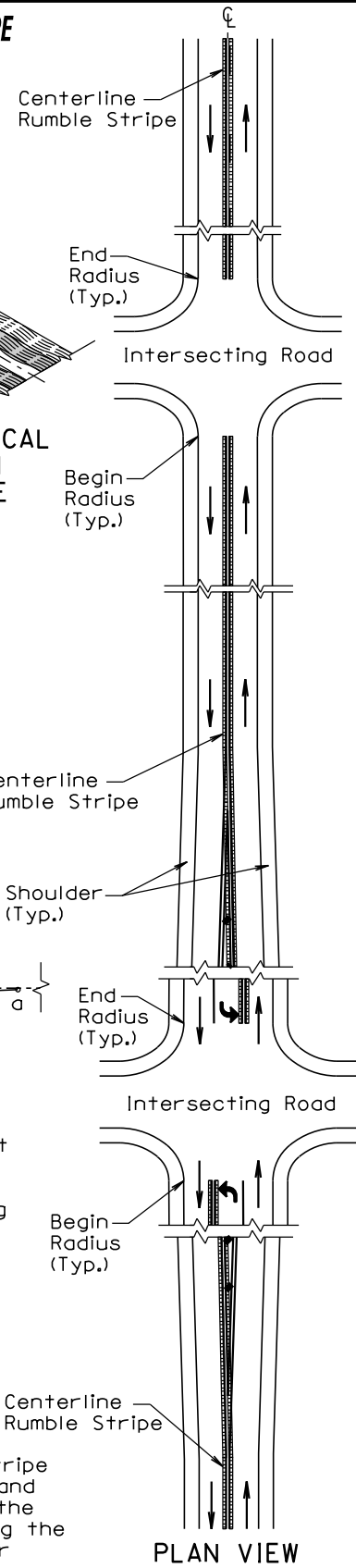
Prior to constructing the rumble stripe the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

▣ The sinusoidal rumble stripe construction grinding tolerance shall be $\pm 1/16$ inch.

Measurement of the rumble stripe shall be to the nearest 0.1 of a mile along the centerline and shall include the rumble stripe on both sides of the centerline as one length. Measurement and payment of the rumble stripe shall include segments without the rumble stripe at intersecting roads. Payment for constructing the rumble stripe shall be at the contract unit price per mile for "Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete".

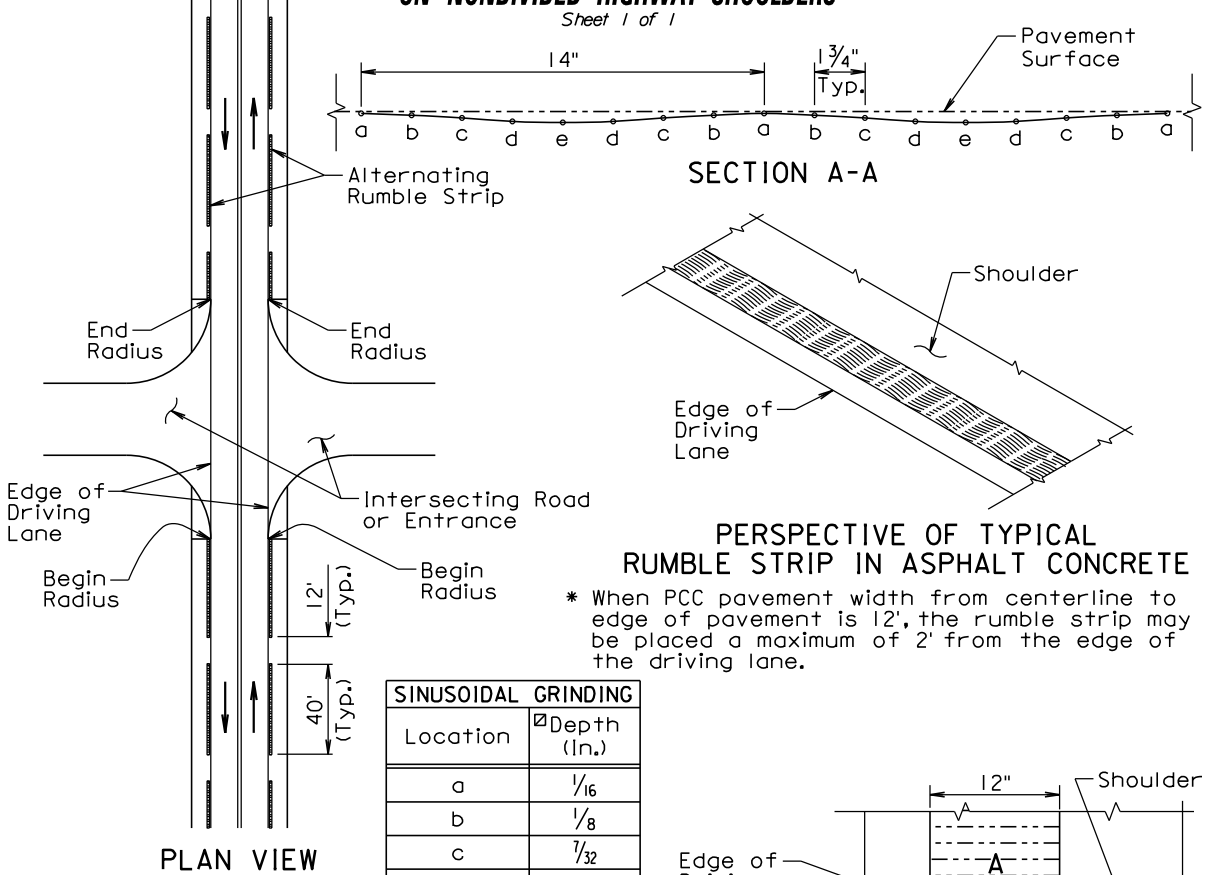
PERSPECTIVE OF TYPICAL RUMBLE STRIPE IN ASPHALT CONCRETE

SINUSOIDAL GRINDING	
Location	Depth (In.)
a	1/16
b	1/8
c	7/32
d	11/32
e	3/8



12" SINUSOIDAL RUMBLE STRIPS IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS

Sheet 1 of 1



PLAN VIEW

SINUSOIDAL GRINDING	
Location	Depth (In.)
a	1/16
b	1/8
c	7/32
d	11/32
e	3/8

GENERAL NOTES:

A rumble strip shall be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous sinusoidal indentations in the asphalt concrete. The rumble strip shall receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble strip shall not be constructed through intersecting roads, entrances, and turnouts. The lengths of the 40' segments with continuous sinusoidal indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, and turnouts shall be adjusted as approved by the Engineer.

Prior to constructing the rumble strip the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

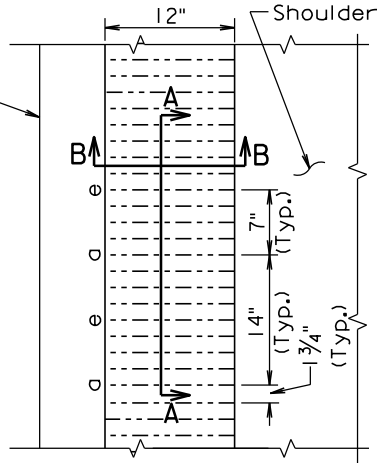
▣ The sinusoidal rumble stripe construction grinding tolerance shall be $\pm 1/16$ inch.

Measurement of the rumble strip shall be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip shall include the 12' long segments without rumble strips and the segments adjacent to the intersecting roads, entrances, and turnouts without rumble strips. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 12" Sinusoidal Rumble Strip in Asphalt Concrete".

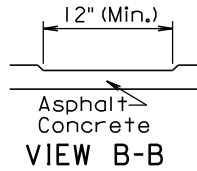
PERSPECTIVE OF TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE

* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.

Edge of Driving Lane



**PLAN VIEW
TYPICAL RUMBLE STRIP
IN ASPHALT CONCRETE**



VIEW B-B