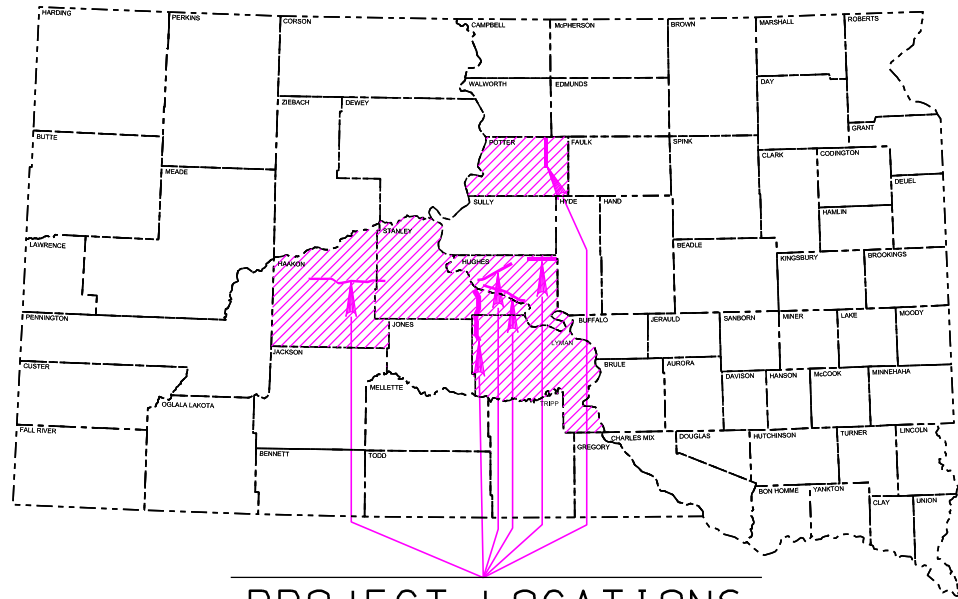


PLANS FOR PROPOSED
PROJECT NH-P 0031(59)
**US HWY 14, SD HWY 20, SD HWY 34,
SD HWY 47, US HWY 83**
**HAAKON, HUGHES, LYMAN, POTTER,
& STANLEY COUNTIES**
ASPHALT SURFACE TREATMENT
PCN 0973

INDEX OF SHEETS

1-6	General Layout w/ Index
7-18	Estimates w/ General Notes and Tables
19-24	Fixed Location Signs
24-29	Standard Plates



PROJECT LOCATIONS

DESIGN DESIGNATION - SEGMENT 1 (SD34)

AADT (2022)	408
AADT (2042)	580
DHV	65
D	50%
DHV T%	7.7%
AADT T%	16.9%
V	65 mph

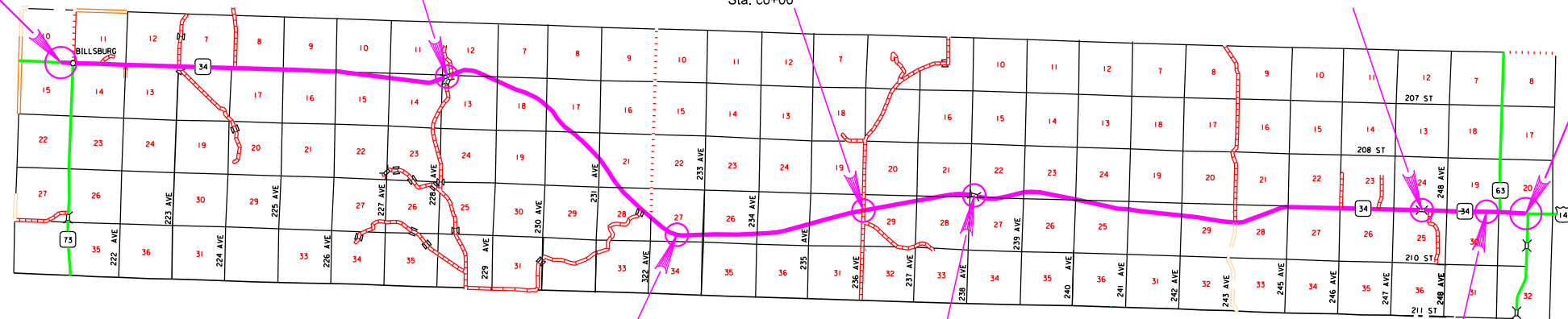
BEGIN SEGMENT 1
SD34
MRM 141.00 + 0.418
Sta. a0+00

EXCEPTION:
Str. No. 28-231-240
MRM 148.77
Sta. a386+16.75 to
Sta. a388+15.25
LENGTH: 198.5 Ft (0.038 Mi)

EQUATION:
Sta. b868+83.40 =
Sta. c0+00

EXCEPTION:
Str. No. 28-415-260
MRM 168.50
Sta. c562+06.50 to
Sta. c563+23.50
LENGTH: 117.0 Ft (0.022 Mi)

END SEGMENT 1
SD34
MRM 170.00 + 0.376
Sta. d21+43.54



EQUATION:
Sta. a681+10.90 =
Sta. b683+09.60

EXCEPTION:
Str. No. 28-331-260
MRM 159.92
Sta. c107+96.75 to
Sta. c110+03.25
LENGTH: 206.5 Ft (0.039 Mi)

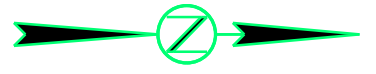
EQUATION:
Sta. c640+17.20 =
Sta. d0+00

SEGMENT 1 GROSS LENGTH:	152,845.44 FT	28.948 MI
LENGTH OF EXCEPTIONS:	522.0 FT	0.099 MI
NET LENGTH:	152,323.44 FT	28.849 MI

***SEGMENT 2 CONSISTS OF FLUSH SEAL OF SHOULDERS ONLY**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	2	29

Plotting Date: 12/05/2023



DESIGN DESIGNATION - SEGMENT 2A (US83N)

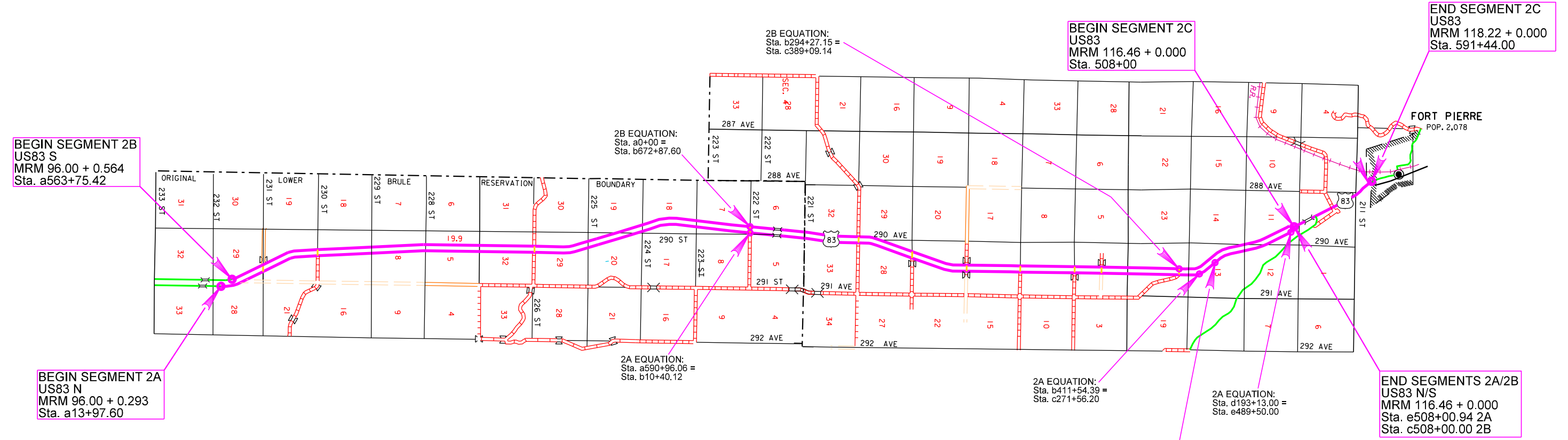
AADT (2022) 1272
 AADT (2042) 1800
 DHV 287
 D 50%
 DHV T% 8.4%
 AADT T% 18.5%
 V 70 mph

DESIGN DESIGNATION - SEGMENT 2B (US83S)

AADT (2022) 1272
 AADT (2042) 1800
 DHV 287
 D 50%
 DHV T% 8.4%
 AADT T% 18.5%
 V 70 mph

DESIGN DESIGNATION - SEGMENT 2C (US83)

AADT (2022) 4217
 AADT (2042) 6098
 DHV 971
 D 50%
 DHV T% 7.1%
 AADT T% 15.6%
 V 65 mph



SEGMENT 2A GROSS LENGTH: 107,189.28 FT 20.301 MI

LENGTH OF EXCEPTIONS: 0.0 FT 0.0 MI

NET LENGTH: 107,189.28 FT 20.301 MI

SEGMENT 2B GROSS LENGTH: 105,869.28 FT 20.051 MI

LENGTH OF EXCEPTIONS: 0.0 FT 0.0 MI

NET LENGTH: 105,869.28 FT 20.051 MI

SEGMENT 2C GROSS LENGTH: 8,875.68 FT 1.681 MI

LENGTH OF EXCEPTIONS: 531.68 FT 0.1 MI

NET LENGTH: 8,344 FT 1.581 MI

PLOT SCALE - 1"=200'

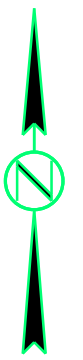
PLOTTED FROM - TRP25584

PLOT NAME - FILE - ... \HAKM0973\0973_TITLESHEETS.DGN

***SEGMENT 3 CONSISTS OF FLUSH SEAL OF SHOULDERS ONLY**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	3	29

Plotting Date: 12/05/2023



PLOT SCALE - 1"=200'

PLOT NAME - 3

FILE - ... \HAKN0973\0973_TITLESHEETS.DGN

DESIGN DESIGNATION - SEGMENT 3A (US14E)

AADT (2022) 2042
 AADT (2042) 3175
 DHV 410
 D 50%
 DHV T% 4.7%
 AADT T% 10.3%
 V 55 mph

DESIGN DESIGNATION - SEGMENT 3B (US14W)

AADT (2022) 2042
 AADT (2042) 3175
 DHV 410
 D 50%
 DHV T% 4.7%
 AADT T% 10.3%
 V 55 mph

DESIGN DESIGNATION - SEGMENT 3C (US14)

AADT (2022) 2910
 AADT (2042) 4525
 DHV 585
 D 50%
 DHV T% 8.0%
 AADT T% 17.5%
 V 65 mph

END SEGMENT 3B
 US14 W
 MRM 233.95 + 0.000
 Sta b58+18.00

BEGIN SEGMENT 3B
 US14 W
 MRM 232.67 + 0.128
 Sta a19+97.29

BEGIN SEGMENT 3A
 US14 E
 MRM 232.58 + 0.221
 Sta a19+97.29

END SEGMENT 3A
 US14 E
 MRM 233.95 + 0.000
 Sta b58+18.00

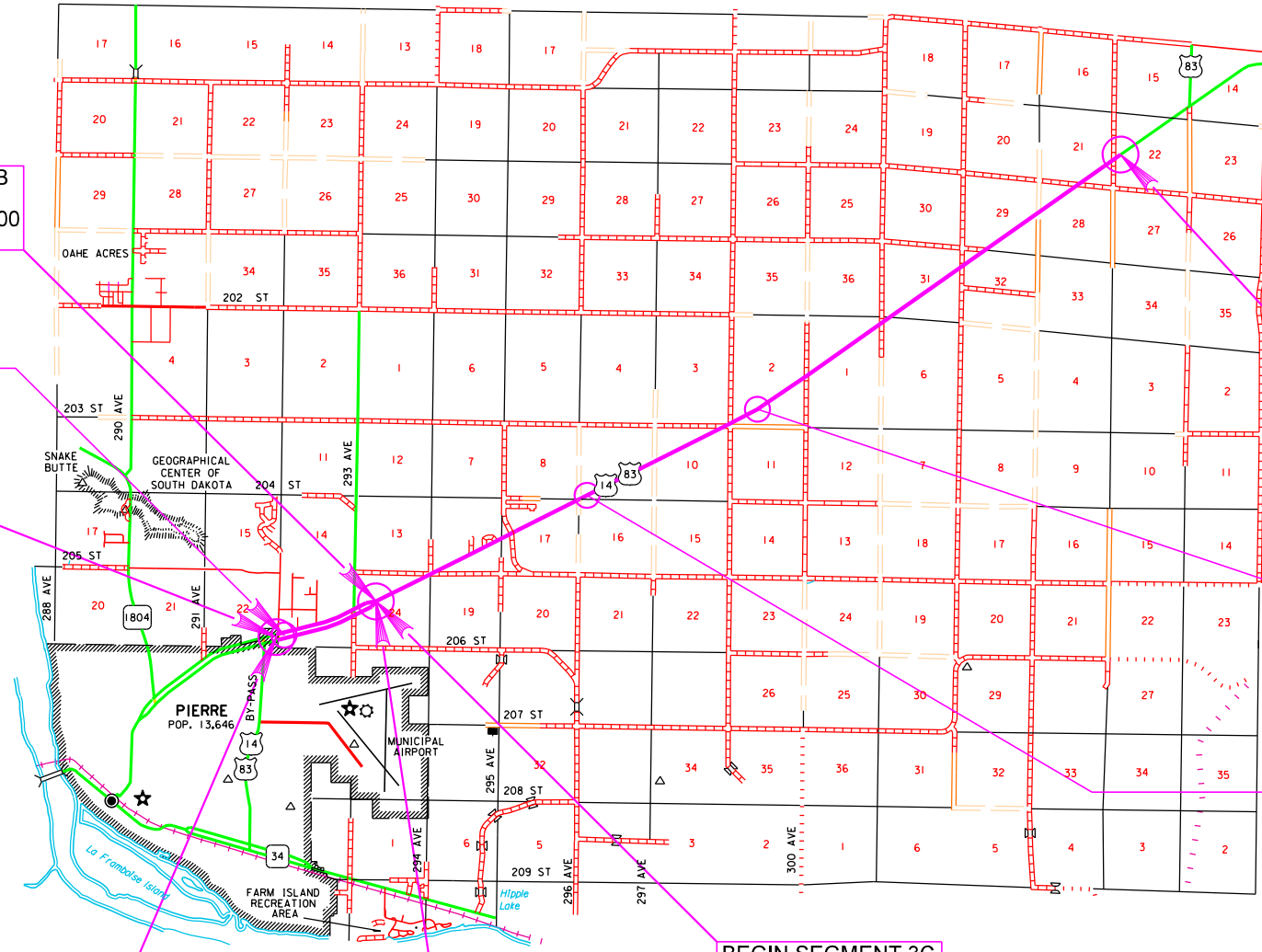
BEGIN SEGMENT 3C
 US14
 MRM 233.95 + 0.000
 Sta a58+18.00

END SEGMENT 3C
 US14
 MRM 245.00 + 0.435
 Sta b307+23.88

EQUATION:
 $a19+89.84 = b0+00.00$

EQUATION:
 $a365+50.00 = b07+17.10$

AUTOMATIC TRAFFIC RECORDER
 SEE NOTES, DO NOT DISTURB
 MRM 237.00 + 0.072



SEGMENT 3A GROSS LENGTH: 5,813.28 FT 1.101 MI
 LENGTH OF EXCEPTIONS: 0 FT 0 MI
 NET LENGTH: 5,813.28 FT 1.101 MI

SEGMENT 3B GROSS LENGTH: 5,781.60 FT 1.095 MI
 LENGTH OF EXCEPTIONS: 0 FT 0 MI
 NET LENGTH: 5,781.60 FT 1.095 MI

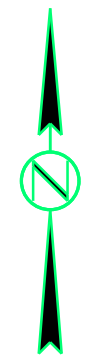
SEGMENT 3C GROSS LENGTH: 60,767.52 FT 11.509 MI
 LENGTH OF EXCEPTIONS: 0 FT 0 MI
 NET LENGTH: 60,767.52 FT 11.509 MI

PLOTTED FROM - TRP25584

Plotting Date: 12/05/2023

DESIGN DESIGNATION - SEGMENT 4 (US14)

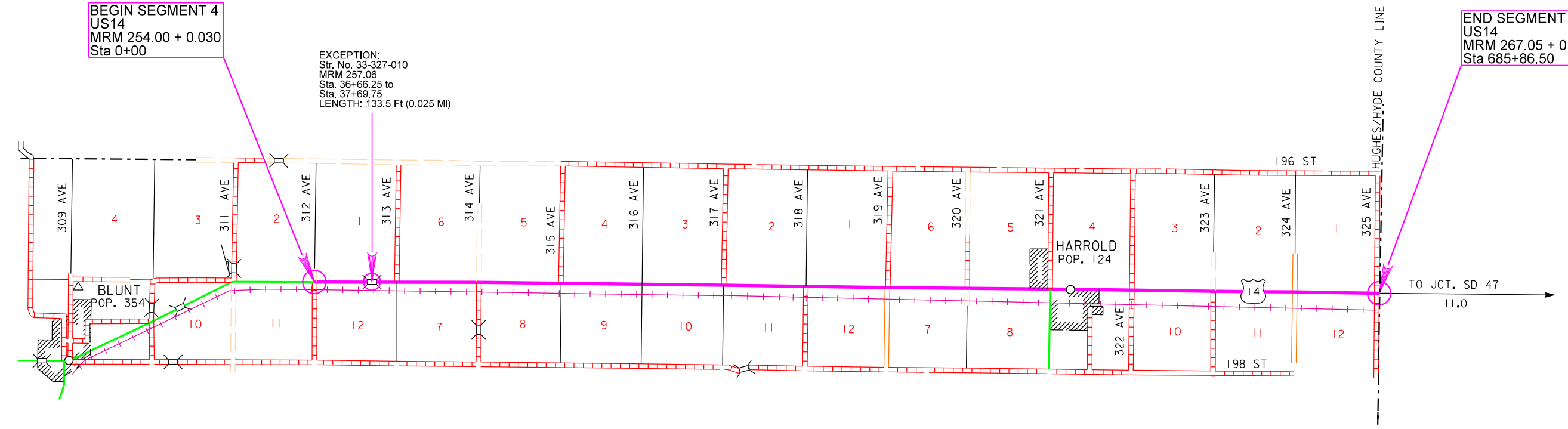
AADT (2022)	1688
AADT (2042)	2625
DHV	339
D	50%
DHV T%	10.2%
AADT T%	22.4%
V	65 mph



BEGIN SEGMENT 4
US14
MRM 254.00 + 0.030
Sta 0+00

EXCEPTION:
Str. No. 33-327-010
MRM 257.06
Sta. 36+66.25 to
Sta. 37+69.75
LENGTH: 133.5 Ft (0.025 MI)

END SEGMENT 4
US14
MRM 267.05 + 0.000
Sta 685+86.50



SEGMENT 4 GROSS LENGTH:	68,586.80 FT	12.990 MI
LENGTH OF EXCEPTIONS:	133.5 FT	0.025 MI
NET LENGTH:	68,453.30 FT	12.965 MI

PLOT SCALE - 1"=200'

PLOTTED FROM - TRPR25584

FILE - ... \HAK\0973\0973-TITLESHEETS.DGN

DESIGN DESIGNATION - SEGMENT 6 (SD34)

AADT (2022) 1501
 AADT (2042) 2166
 DHV 280
 D 50%
 DHV T% 3.4%
 AADT T% 7.4%
 V 65 mph

Revised 01/12/2024 JDC

STATE OF SOUTH DAKOTA

PROJECT

NH-P 0031(59)

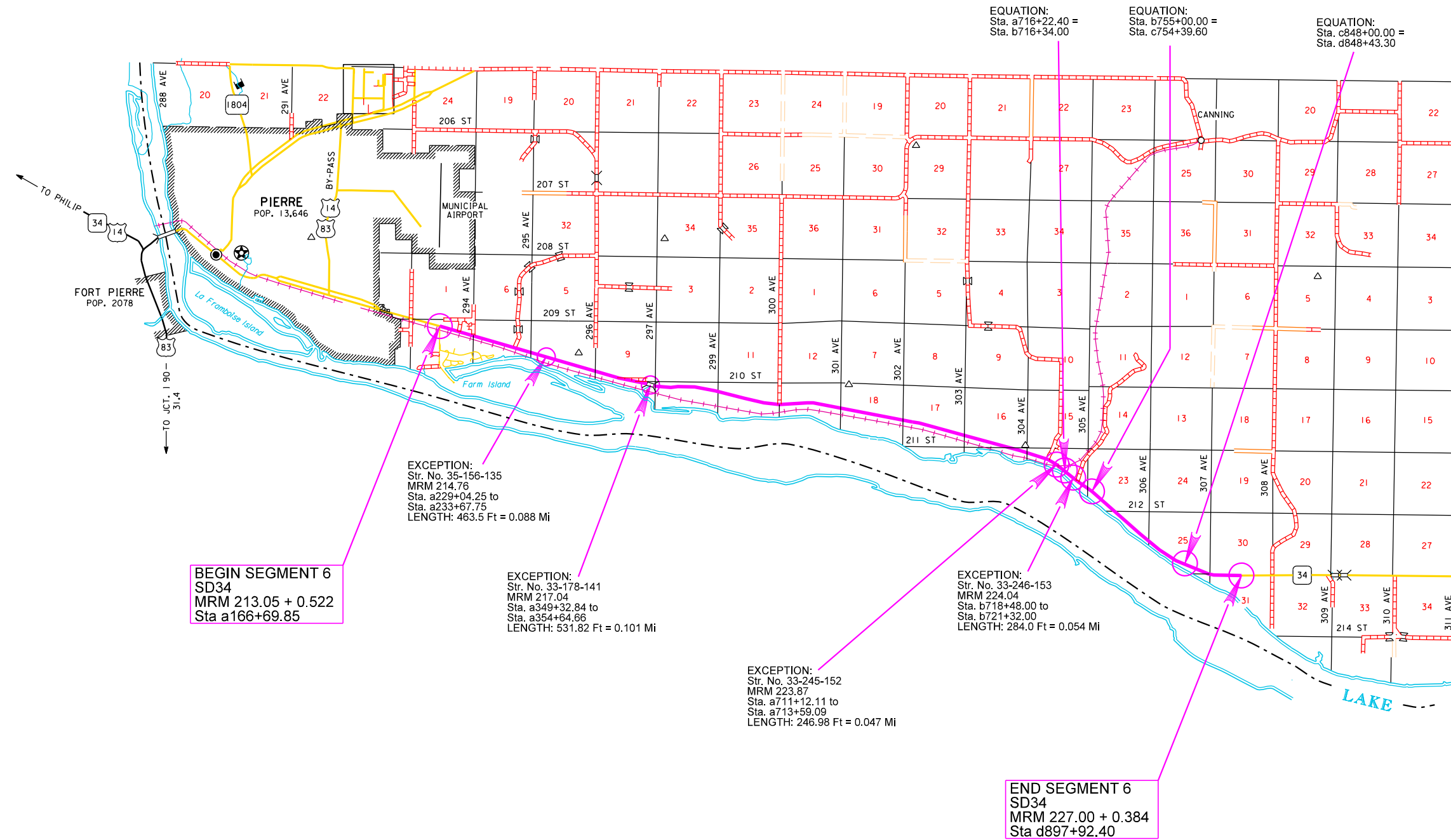
SHEET

6

TOTAL SHEETS

29

Plotting Date: 12/05/2023



SEGMENT 6 GROSS LENGTH:	72,457.44 FT	13.723 MI
LENGTH OF EXCEPTIONS:	1,526.30 FT	0.290 MI
NET LENGTH:	70,931.14 FT	13.433 MI

PLOT SCALE - 1"=200'

PLOTTED FROM - TRPR25584

FILE - ... \HAKN0973\0973_TITLESHEETS.DGN

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	102.8	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	311.8	Ton
330E2000	Sand for Flush Seal	1,922.1	Ton
330E3000	Sand for Fog Seal	70.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	1,483.3	Ton
360E1200	Modified Cover Aggregate	4,324.0	Ton
360E1200	Modified Cover Aggregate	1,899.3	Ton
360E1200	Modified Cover Aggregate	1,838.5	Ton
360E1200	Modified Cover Aggregate	2,012.9	Ton
633E0010	Cold Applied Plastic Pavement Marking, 4"	574	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	312	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	30	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	1	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	5,596	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	2,467	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	574	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	312	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	30	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	1	Each
633E6005	Pavement Marking Masking, 5"	61,347	Ft
633E6010	Pavement Marking Masking, 9"	978	Ft
633E6020	Pavement Marking Masking, 25"	577	Ft
633E6030	Pavement Marking Masking, Arrow	4	Each
634E0010	Flagging	1,976.0	Hour
634E0020	Pilot Car	540.0	Hour
634E0110	Traffic Control Signs	4,712.7	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	202.9	Mile

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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/media/documents/EnvironmentalProceduresManual.pdf>

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 B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor 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

The SDDOT has obtained concurrence with the State Historic 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 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 100 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.

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 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.

COORDINATION BETWEEN CONTRACTS

A separate project, NH-0031(58), PCN 096K is being undertaken by the Department that interferes with this contract. Project NH-0031(58) is a Rout and Seal project that takes place on Segments 3A, 3B, and 3C.

The Contractor will schedule the work so that this project is completed after Project NH-0031(58), so as not to interfere with or hinder the progress of the

work performed by other Contractors on the other project. The Contractor will coordinate with the Department and the 096K contractor to establish the best course of action.

Another separate project, P 0034(208)212, PCN 06T0 is being undertaken by the Department that may interfere with this project. Project P 0034(208)212 is an asphalt concrete mill+overlay project on SD34 immediately west of Segment 6.

The Contractor will coordinate with the 06T0 contractor to establish the best course of action to ensure the traveling public does not drive through both project zones in succession, and that 06T0 work does not interfere with this project.

TRAFFIC RECORDER

The SDDOT Office of Inventory Management & Research has a permanent traffic counter installation located on US14 (Segment 3) at MRM 237.00 + 0.072. The Contractor will not damage the existing loops, pull boxes, conduit, or electronics cabinet. Any pull boxes, conduit, cabinet or loops damaged during the project will be replaced by the Contractor at no expense to the Department. The loops are visible on the roadway; if necessary, SDDOT Office of Inventory Management and Research will aid in locating the loops. Contact (605)773-6644 or (605)773-3278 to notify the office of a request to locate the ATR.

SEQUENCE OF OPERATIONS

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate 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. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

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

1. Install fixed location ground-mounted traffic control devices.
2. Place temporary pavement marking no more than 24 hours prior to the asphalt surface treatment (chip seal).
3. Apply the chip seal. Application of the asphalt and aggregate will cease at least one hour prior to sunset each day. Once it has been verified that the appropriate cover on temporary flexible vertical markers (tabs) are in place where work will begin in a given lane each day, the Contractor will stay in that lane and will not be allowed to place asphalt surface treatment in the adjacent lane unless approved by the Engineer.
4. Remove top plastic covers from the tabs after application of the chip seal and prior to nightfall.
5. Broom chip-sealed areas each morning following chip seal application.
6. Apply the fog seal.
7. Remove plastic covers from tabs after application of the fog seal and prior to nightfall.
8. Immediately prior to application of permanent pavement markings, the areas scheduled for painting will be broomed or blown off with high-

pressure compressed air. If a high-pressure air device is used to clean the pavement surface, it will be capable of sustaining continuous high pressure for the duration of the pavement marking process.

9. Complete permanent pavement marking.
10. Remove tabs within the seven-day time period specified in the Temporary Pavement Marking section of these plans.
11. Remove fixed location ground-mounted traffic control devices.

ENGINEER NOTIFICATION

The Contractor will be required to notify the Pierre Area Engineer (Dean VanDeWiele, (605) 773-5586) at least 10 days prior to beginning asphalt surface treatment operations.

BROOMING

All material will be broomed off bridges and curb & gutter areas adjacent to the bridges. Care will be taken to ensure no material is broomed into the drop inlets. Materials from the curb & gutter areas of the bridges and from drop inlets will be disposed of in a manner satisfactory to the Engineer.

No material will be broomed into the ditches where the adjacent landowner conducts the mowing of the right-of-way. This material will be disposed of in a manner satisfactory to the Engineer.

Material broomed onto the roadway inslopes will not be left in piles or windrows. The material will 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.

BRIDGE ENDS AND APPROACH SLABS

Asphalt surface treatment will not be placed on any bridge, bridge approach slab, or bridge joint. Any emulsion or cover aggregate found to be on bridges or approach slabs after final brooming will be removed by the Contractor at no cost to the Department.

Some bridges on this project have asphalt plug joints at bridge ends that resemble asphalt roadway. The Contractor will ensure these joints are protected prior to any application of asphalt surface treatment.

Material used to cover and protect bridges, approach slabs, and joints will 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 will be cleaned off the road surface.

ASPHALT FOR SURFACE TREATMENT

CRS-2P Asphalt for Surface Treatment will be used on Segments 1, 4, 5, and 6 of this project.

Asphalt for surface treatment delivered for use on this contract will be used in the order that 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 work day.

ASPHALT FOR SURFACE TREATMENT (CONT.)

Asphalt surface treatment will not be applied to transverse rumble strip areas prior to Stop Signs; however, these areas will still be fog sealed.

Application of the asphalt surface treatment will be applied to the widths specified in the plans. The Contractor will have to consider the width of overlap at centerline to obtain the total width specified. A gap at centerline between surface treatment passes will not be allowed.

On routes with an existing surface treatment, the Asphalt for Surface Treatment and Cover Aggregate will be applied only between the white edgelines of the roadway to allow the white edge to be slightly recessed. On first seal routes, the Asphalt for Surface Treatment and Cover Aggregate will be applied the full width of the road and shoulders.

MODIFIED COVER AGGREGATE

Modified Cover Aggregate and CRS-2P Asphalt for Surface Treatment will be used on Segments 1, 4, 5, and 6 of this project. Modified Cover Aggregate will conform to the following gradation requirements:

% Passing 3/8' Sieve	100%
% Passing No. 4 Sieve	0 – 75%
% Passing No. 8 Sieve	0 – 30%
% Passing No. 40 Sieve	0 – 6%
% Passing No. 200 Sieve	0 – 1.5%

Should the material fail the No. 200 sieve requirements, the Contractor 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 Asphalt for Surface Treatment and the application of the Modified Cover Aggregate, whichever amounts to a shorter time period.

The Contractor will continue chip spreader progress, forward, through the asphalt application at any end where work will be temporarily shut down for more than 5 minutes, to allow for satisfactory uniform rolling of the placed aggregate. The Contractor will not allow the chip spreader, trucks, rollers, or other equipment to lie dormant on the aggregate while transitioning between asphalt distributor loads and/or any other temporary shutdown of production before uniform rolling is completed. All passes of the rollers will be completed within 8 minutes of application of the CRS-2P Asphalt for Surface Treatment.

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

Quality testing on the Modified Cover Aggregate for abrasion and soundness conforming to Type 1B Cover Aggregate are required by specification. The Contractor will notify the Pierre Area Office prior to sampling and a representative from the Pierre Area Office will witness all sampling of aggregates to be submitted to the Central Testing Laboratory for quality assurance. Satisfactory test results for the Modified Cover Aggregate will be obtained prior to its use on the project.

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. The Asphalt for Fog Seal used will be compatible with the aggregate used.

The Contractor will fog seal the entirety of the asphalt surface treatment surface, including the sluff.

SAND FOR FOG SEAL

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 used to accelerate the Contractor's schedule. Sand that is applied 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".

STOCKPILE SITE RELEASES

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

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.

All construction operations will be conducted in the general direction of traffic movement.

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."

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for each segment. Payment will only be for those signs used on each segment.

Segment 1

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	15	48" x 48"	16.0	240.0
W13-1P	ADVISORY SPEED (40 MPH) (plaque)	15	30" x 30"	6.3	94.5
W16-2P	1000 FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	12	48" x 48"	16.0	192.0
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	2	30" x 18"	3.8	7.6
G20-1	ROAD WORK NEXT 29 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 22 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 15 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 7 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
				CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 717.1	

Segment 2

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 70	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 55	4	36" x 48"	12.0	48.0
W3-5	SPEED REDUCTION AHEAD (55 MPH)	4	48" x 48"	16.0	64.0
W4-2	LEFT or RIGHT LANE ENDS (two each) (symbol)	4	48" x 48"	16.0	64.0
W7-3aP	NEXT ___ MILES (plaque)	4	36" x 30"	7.5	30.0
W8-7	LOOSE GRAVEL	12	48" x 48"	16.0	192.0
W16-2P	1000 FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	24	48" x 48"	16.0	384.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD (two each)	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-5a	LEFT or RIGHT SHOULDER CLOSED (two each)	4	48" x 48"	16.0	64.0
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD (two each)	4	48" x 48"	16.0	64.0
SPECIAL	WAIT FOLLOW PILOT CAR	2	30" x 18"	3.8	7.6
G20-1	ROAD WORK NEXT 20 MILES	2	48" x 24"	8.0	16.0
G20-1	ROAD WORK NEXT 15 MILES	2	48" x 24"	8.0	16.0
G20-1	ROAD WORK NEXT 10 MILES	2	48" x 24"	8.0	16.0
G20-1	ROAD WORK NEXT 5 MILES	2	48" x 24"	8.0	16.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT 1231.6					

Segment 3

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 55	4	24" x 30"	5.0	20.0
R2-1	SPEED LIMIT 40	4	24" x 30"	5.0	20.0
W3-5	SPEED REDUCTION AHEAD (40 MPH)	4	48" x 48"	16.0	64.0
W4-2	LEFT or RIGHT LANE ENDS (two each) (symbol)	4	48" x 48"	16.0	64.0
W7-3aP	NEXT ___ MILES (plaque)	4	36" x 30"	7.5	30.0
W8-7	LOOSE GRAVEL	8	48" x 48"	16.0	128.0
W16-2P	1000 FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	26	48" x 48"	16.0	416.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD (two each)	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-5a	LEFT or RIGHT SHOULDER CLOSED (two each)	4	48" x 48"	16.0	64.0
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD (two each)	4	48" x 48"	16.0	64.0
SPECIAL	WAIT FOLLOW PILOT CAR	2	30" x 18"	3.8	7.6
G20-1	ROAD WORK NEXT 12 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 8 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 1 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 1083.6					

Segment 4

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	8	48" x 48"	16.0	128.0
W13-1P	ADVISORY SPEED (40 MPH) (plaque)	8	30" x 30"	6.3	50.4
W16-2P	1000 FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	15	48" x 48"	16.0	240.0
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	2	30" x 18"	3.8	7.6
G20-1	ROAD WORK NEXT 13 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 6 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 591.0					

Segment 5

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W13-1P	ADVISORY SPEED (40 MPH) (plaque)	6	30" x 30"	6.3	37.8
W16-2P	1000 FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	17	48" x 48"	16.0	272.0
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	2	30" x 18"	3.8	7.6
G20-1	ROAD WORK NEXT 12 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 6 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 578.4					

Segment 6

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	8	48" x 48"	16.0	128.0
W13-1P	ADVISORY SPEED (40 MPH) (plaque)	8	30" x 30"	6.3	50.4
W16-2P	1000 FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	10	48" x 48"	16.0	160.0
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	2	30" x 18"	3.8	7.6
G20-1	ROAD WORK NEXT 14 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 7 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 511.0					

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. 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 will 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.

Once asphalt surface treatment (AST) placement operations begin in any lane each day, operations will continue in that same lane the entire day unless otherwise approved by the Engineer. Flaggers and work zone signing are approved to be moved as needed to shorten work zones and keep the pilot car cycle times in compliance with 15 minutes or less.

"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.

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be **25.382** miles. No passing zones in Segments 2 and 3 are not included in this estimate since only shoulder work will be performed.

It is estimated that **142 DO NOT PASS (R4-1) and 140 PASS WITH CARE (R4-2)** signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Temporary Flexible Vertical Markers (tabs) will be used on the top lift of asphalt surfacing for centerline delineation, lane lines, skips, and as directed by the Engineer. Tabs will be offset 6-inches from the location shown for permanent pavement markings. Centerline will be double yellow lines with tabs spaced at 5' the entire project length.

Tabs will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking.

Prior to asphalt surface treatment, the Contractor will mark the location of all existing pavement marking, excluding edgelines. The Contractor will only place tabs on the edgeline of transition areas such as turn lanes, climbing lanes, and dashed edgelines. Prior to installation of permanent pavement marking, the

Engineer will be given ample notification so that placement of tabs can be checked.

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.

Any temporary flexible vertical markers (tabs) with covers removed before the fog seal will be replaced prior to application of the fog seal. 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 at no additional cost to the State.

Quantities of Temporary Pavement Markings represent one application prior to the chip seal, one application following the chip seal, and one application following the fog seal as needed. No markings will be placed on Segments 2 and 3 (divided highway, flush seal of shoulders only).

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.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

TABLE OF DO NOT PASS/PASS WITH CARE SIGNS

ROUTE	DO NOT PASS	PASS WITH CARE	LENGTH OF NO PASSING ZONES (MI)
Seg 1 – SD34	90	90	17.317
Seg 2 – US83	-	-	-
Seg 3 – US14	-	-	-
Seg 4 – US14	5	5	0.765
Seg 5 – SD47/SD20	10	9	1.556
Seg 6 – SD34	37	36	5.744
TOTAL	142	140	25.382

PAVEMENT MARKING PAINT

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

The application of permanent pavement marking 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.

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 the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads.

RETROREFLECTIVITY FOR PAVEMENT MARKING

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

If the Department chooses to take retroreflectivity readings, the three readings will be averaged and become the reading for that test location. Readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and dashed 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 retroreflectivity readings, the minimum retroreflectivity values will be 275 mc/m²/lux for white and 170 mc/m²/lux for yellow.

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 costs 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.

PAVEMENT MARKING MASKING

Any existing pavement marking that is to be salvaged on this contract will be covered with an approved pavement marking masking immediately prior to sealing to preserve the various markings. The masking material will be sturdy enough to avoid being punctured by the cover aggregate when traffic drives over it.

All pavement marking to be masked will be cleaned with a high-pressure air blast device immediately prior to the application of the Pavement Marking Masking. The width of this masking will be one inch wider than the existing marking. The various items needed for Pavement Marking Masking will include material, labor, and equipment to satisfactorily install the masking prior to sealing and remove and dispose of the masking after the completion of the work and will be incidental to the contract unit price per foot or each for Pavement Marking Masking.

If the pavement marking is damaged due to improper masking, it will be replaced or repaired at the Contractor's expense.

When the masking is removed, the asphalt surface treatment that does not stay adhered to the masking will be cleaned off the road surface.

Masking of the required areas on these routes may need to be completed twice due to the required placement of the Fog Seal on these routes. One application will be done prior to the placement of the chip seal, and the second will be done prior to the fog seal application. Each masking application will be paid for separately. If the Contractor can achieve satisfactory results by leaving the masking in place for both the chip seal and fog seal applications, this procedure will be allowed, and masking will only be paid for once.

TABLE OF PAVEMENT MARKING MASKING

ROUTE	LOCATION	DESCRIPTION	QUANTITY
Seg 1 – SD34	SD63/SD34 intersection	4" yellow solid median and gore markings	9552 ft 5" masking
Seg 1 – SD34	SD63/SD34 intersection	8" white solid free right/turn lane markings	192 ft 9" masking
Seg 1 – SD34	SD63/SD34 intersection	24" yellow solid gore crosshatches	577 ft 25" masking
Seg 1 – SD34	SD63/SD34 intersection	LT turn arrow	2 arrow maskings
Seg 1 – SD34	SD63/SD34 intersection	RT turn arrow	2 arrow maskings
Seg 2A/2B/2C – US83 N/S	From end of undivided section to end of project in Fort Pierre	4" white solid edgeline markings	38954 ft 5" masking
Seg 3A/3B – US14 E/W	Turn lane to Windsor Place (14E), turn lane to Butler Machinery (14W)	4" yellow solid edgeline markings	1884 ft 5" masking
Seg 5A – SD47	US212/SD47 intersection	4" yellow solid/dashed median markings	1495 ft 5" masking
Seg 5A – SD47	US212/SD47 intersection	4" white solid turn lane markings	336 ft 5" masking
Seg 5A – SD47	US212/SD47 intersection	8" white solid free right/turn lane markings	786 ft 9" masking
Seg 5A/5B – SD20/SD47	SD20/SD47 intersection	4" yellow solid median markings	8056 ft 5" masking
Seg 5A/5B – SD20/SD47	SD20/SD47 intersection	4" white dashed lane markings	1070 ft 5" masking

TABLE OF COLD APPLIED PLASTIC PAVEMENT MARKING

ROUTE	LOCATION	DESCRIPTION	QUANTITY
Seg 1 – SD34	SD63/SD34 intersection – east side	4" yellow on gore termination	294 ft
Seg 1 – SD34	SD63/SD34 intersection – west side	4" yellow on median markings on LT turn lane	200 ft
Seg 1 – SD34	SD63/SD34 intersection – west side	4" white on EB LT turn lane	80 ft
Seg 1 – SD34	SD63/SD34 intersection	8' white on both free right lanes	312 ft
Seg 1 – SD34	SD63/SD34 intersection – east side	24" yellow on gore median	30 ft
Seg 1 – SD34	SD63/SD34 intersection – west side	LT arrow at end of EB LT turn lane	1 arrow

EXISTING PAVEMENT CONDITIONS

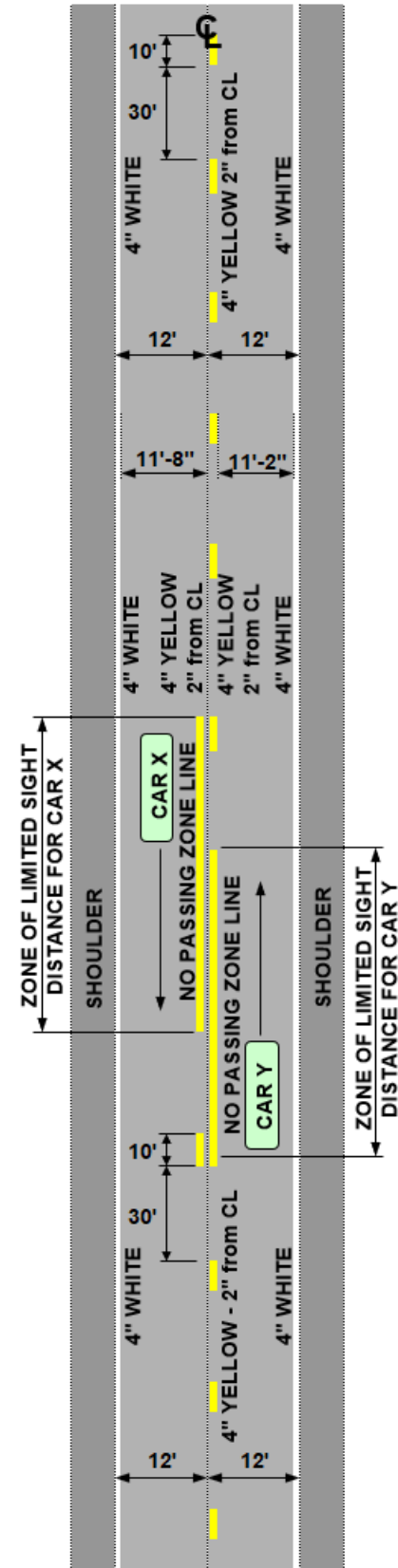
ROUTE	MRM TO MRM	EXISTING PAVEMENT CONDITION
Segment 1 – SD34	141.00 + 0.418 to 170.00 + 0.376	Slightly pocked and in overall good condition
Segment 2 – US83 (N/S)	96.00 + 0.293 to 116.46 + 0.000 (N)	Slightly pocked and in overall good condition
	96.00 + 0.564 to 116.46 + 0.000 (S)	
	116.46 + 0.000 to 118.22 + 0.000	
Segment 3 – US14 (E/W)	232.58 + 0.221 to 233.95 + 0.000 (E)	Slightly pocked and in overall good condition
	232.67 + 0.128 to 233.95 + 0.000 (W)	
	233.95 + 0.000 to 245.00 + 0.435	
Segment 4 – US14	254.00 + 0.030 to 267.05 + 0.000	Slightly pocked and in overall good condition
Segment 5 – SD20/SD47	189.91 + 0.000 to 199.94 + 0.000 (SD47)	Slightly pocked and in overall good condition
	257.56 + 0.000 to 255.17 + 0.038 (SD47)	
Segment 6 – SD34	213.05 + 0.522 to 227.00 + 0.384	Moderately pocked/cracked and in overall fair condition

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

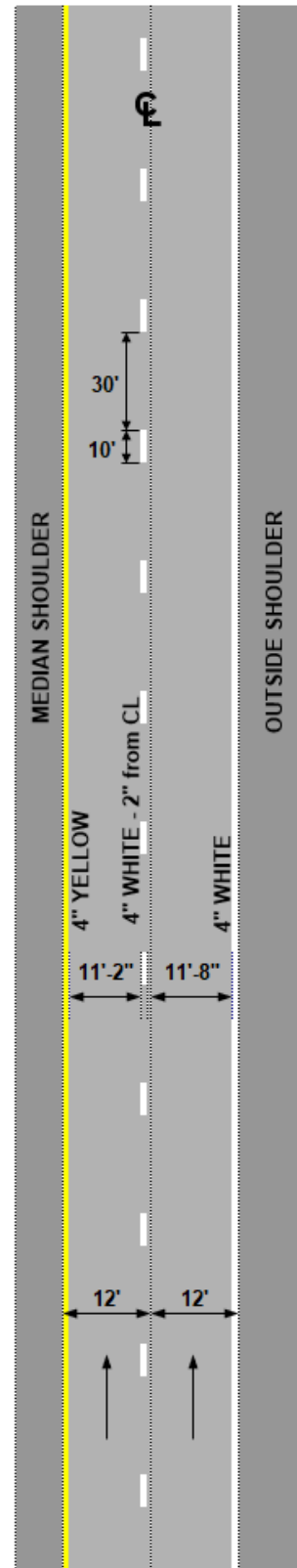
The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. The cleaning of the residue for grooving will be to the satisfaction of the Engineer and may require more than one pass to adequately remove material. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot or each for "Grooving for Cold Applied Plastic Pavement Marking" contract items.

APPLICATIONS OF PAVEMENT MARKING PAINT

TWO LANE ROADWAY



**DIVIDED ROADWAY
(ONE DIRECTION SHOWN)**



ESTIMATE OF QUANTITIES		
ROUTE	HIGH GRADE POLYMER PAINT	
	WHITE	YELLOW
Segment 1	1595 Gals.	763 Gals.
Segment 2	1122 Gals.	1122 Gals.
Segment 3	701 Gals.	38 Gals.
Segment 4	726 Gals.	125 Gals.
Segment 5	688 Gals.	145 Gals.
Segment 6	764 Gals.	274 Gals.
TOTALS	5,596 Gals.	2,467 Gals.

RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT NH-0031(59)	SHEET 14	TOTAL SHEETS 29
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SEGMENT 1 – SD34 MRM 141.00 + 0.418 to 170.00 + 0.376, Sta a0+00 to d21+43.54

32 ft asphalt surface w/ 2 ft sluff, stations:

a0+00 to a386+16.75
a388+15.25 to a681+10.90
b683+09.60 to b868+83.40
c0+00 to c107+96.75
c110+03.25 to c562+06.50
c563+23.50 to c587+86.90

NET LENGTH: 144,949.6 FT = 27.453 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **598.3 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **4074.8 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 36 feet wide = **123.3 TON**

36 ft asphalt surface w/ 2 ft sluff, stations:

c587+86.90 to c640+17.20
d0+00 to d21+43.54

NET LENGTH: 7,373.84 FT = 1.397 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **30.5 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **207.4 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 38 feet wide = **6.6 TON**

SEGMENT 2A – US83 N MRM 96.00 + 0.293 to 116.46 + 0.000, Sta a13+97.60 to e508+00.94

RT: 6 ft shoulder w/ 2.5 ft sluff, LT: 4 ft shoulder w/2.5 ft sluff

c262+05.20 to c259+27.74
d259+35.18 to d245+45.10
e489+50 to e495+00

NET LENGTH: 2,217.5 FT = 0.420 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 15 feet wide = **0.8 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 15 feet wide = **14.8 TON**

RT: 6 ft shoulder w/ 2 ft sluff, LT: 4 ft shoulder w/ 2.5 ft sluff

a13+97.60 to a590+96.06
b10+40.12 to b411+54.39

NET LENGTH: 97,812.7 FT = 18.525 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 14.5 feet wide = **33.5 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 14.5 feet wide = **630.4 TON**

RT: 6 ft shoulder w/ 1.5 ft sluff, LT: 4 ft shoulder w/ 1.5 ft sluff

c271+56.20 to c262+05.20
d245+45.10 to d222+84.90
d208+26 to d193+13

NET LENGTH: 4,724.2 FT = 0.895 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 13 feet wide = **1.5 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 13 feet wide = **27.3 TON**

RT: 6 ft shoulder w/ 1.5 ft sluff, LT: 3 ft shoulder w/ 2.5 ft sluff

d222+84.90 to d206+26

NET LENGTH: 1,858.9 FT = 0.352 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 13 feet wide = **0.6 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 13 feet wide = **10.8 TON**

RT/LT: 6 ft shoulder w/ 2 ft sluff, beginning undivided section (2A/2B)

e495+00 to e508+00.94 (2A)
c495+00 to c508+00 (2B)

NET LENGTH: 1,300.9 FT = 0.246 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 16 feet wide = **0.5 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 16 feet wide = **9.2 TON**

SEGMENT 2B – US83 S MRM 96.00 + 0.564 to 116+46 + 0.000, Sta a563+75.42 to c508+00

RT: 6 ft shoulder w/ 2.5 ft sluff, LT: 4 ft shoulder w/2.5 ft sluff

a25+86 to a27+86
a157+00 to a159+00
b477+34.40 to b480+34.34
b663+87.77 to b667+47.73

NET LENGTH: 1,059.9 FT = 0.201 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 15 feet wide = **0.4 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 15 feet wide = **7.1 TON**

RT: 6 ft shoulder w/ 2 ft sluff, LT: 4 ft shoulder w/ 2.5 ft sluff

c389+09.14 to c495+00

NET LENGTH: 10,590.9 FT = 2.006 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 14.5 feet wide = **3.7 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 14.5 feet wide = **68.3 TON**

RT: 6 ft shoulder w/ 1.5 ft sluff, LT: 4 ft shoulder w/ 1.5 ft sluff

a0+00 to a25+86
a27+86 to a124+09.30
a142+93.70 to a157+00
a159+00 to a223+28.60
a244+40.30 to a373+83.20
a385+26.50 to a496+17.30
a513+69 to a556+23.30
b294+27.15 to b477+34.40
b480+34.34 to b517+82.50
b536+10.80 to b597+60.30
b615+85.90 to b641+80.60
b646+10.60 to b663+87.77
b667+47.73 to b672+87.60

NET LENGTH: 81,448.9 FT = 15.426 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 13 feet wide = **25.0 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 13 feet wide = **470.6 TON**

RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT NH-0031(59)	SHEET 15	TOTAL SHEETS 29
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RT: 6 ft shoulder w/ 1.5 ft sluff, LT: 3 ft shoulder w/ 2.5 ft sluff

a124+09.30 to a142+93.70
a223+28.60 to a244+40.30
a373+83.20 to a385+26.50
a496+17.30 to a513+69
a556+23.30 to a563+75.42
b517+82.50 to b536+10.80
b597+60.30 to b615+85.90
b641+80.60 to b646+10.60

NET LENGTH: 11,727.1 FT = 2.221 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 13 feet wide = **3.6 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 13 feet wide = **67.8 TON**

SEGMENT 2C – US83 MRM 116.46 + 0.000 to 118.22 + 0.000, Sta 508+00 to 591+44

RT/LT: 6 ft shoulder w/ 2.5 ft sluff

508+00 to 591+44

NET LENGTH: 8,344 FT = 1.581 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 17 feet wide = **3.4 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 17 feet wide = **63.1 TON**

SEGMENT 3A – US14 E MRM 232.58 + 0.221 to 233.95 + 0.000, Sta a19+97.29 to b58+18 (ext. to 60+00 for div)

RT: 5 ft shoulder w/2 ft sluff, LT: 3 ft shoulder w/2.5 ft sluff

a19+97.29 to a19+89.84

NET LENGTH: 7.5 FT = 0.002 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 12.5 feet wide = **0.1 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 12.5 feet wide = **0.1 TON**

RT: 7 ft shoulder w/ 2 ft sluff, LT: 4 ft shoulder w/ 2 ft sluff

b0+00 to b44+00

NET LENGTH: 4,400 FT = 0.833 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 15 feet wide = **1.6 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 15 feet wide = **29.3 TON**

RT: 7 ft shoulder w/2 ft sluff, LT: 3 ft shoulder (ending @ composite)

b44+00 to b60+00

NET LENGTH: 1,600 FT = 0.303 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 12 feet wide = **0.5 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 12 feet wide = **8.6 TON**

SEGMENT 3B – US14 W MRM 232.67 + 0.128 to 233.95 + 0.000, Sta a19+97.29 to b58+18 (ext. to 60+00 for div)

RT: 5 ft shoulder w/2 ft sluff, LT: 3 ft shoulder w/2.5 ft sluff

a19+97.29 to a19+89.84

NET LENGTH: 7.5 FT = 0.002 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 12.5 feet wide = **0.1 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 12.5 feet wide = **0.1 TON**

RT: 7 ft shoulder w/ 2 ft sluff, LT: 4 ft shoulder w/ 2 ft sluff

b0+00 to b44+00

NET LENGTH: 4,400 FT = 0.833 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 15 feet wide = **1.6 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 15 feet wide = **29.3 TON**

RT: 7 ft shoulder w/2 ft sluff, LT: 3 ft shoulder (ending @ composite)

b44+00 to b60+00

NET LENGTH: 1,600 FT = 0.303 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 12 feet wide = **0.5 TON**

- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 12 feet wide = **8.6 TON**

SEGMENT 3C – US14 MRM 233.95 + 0.000 to 245.00 + 0.435, Sta a58+18 to b307+23.88

RT/LT: 7 ft shoulder w/ 2 ft sluff

a60+00 to a125+66.48
a153+61.55 to a365+50
b7+17.10 to b307+23.88

NET LENGTH: 57,761.7 FT = 10.940 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 18 feet wide = **24.6 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 18 feet wide = **462.1 TON**

TURN LANE TRANSITION - RT: 5.5 ft avg shoulder w/ 2 ft sluff, LT: 3' shoulder (ending @ turn lane)

a125+66.48 to a133+10
a146+20 to a153+61.55

NET LENGTH: 1,485.1 FT = 0.281 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 10.5 feet wide = **0.4 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 10.5 feet wide = **7.0 TON**

TURN LANE AREA – RT: 4 ft shoulder w/1 ft sluff, LT: 6 ft shoulder w/ 2 ft sluff

a133+10 to a146+20

NET LENGTH: 1,310 FT = 0.248 MI

- SS-1h or CSS-1h Asphalt for Flush Seal applied at the rate of 0.05 gallons per square yard at 13 feet wide = **0.4 TON**
- Sand for Flush Seal applied at the rate of 8 pounds per square yard at 13 feet wide = **7.6 TON**

RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT NH-0031(59)	SHEET 16	TOTAL SHEETS 29
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SEGMENT 4 – US14 MRM 254.00 + 0.030 to 267.05 + 0.000, Sta 0+00 to 685+86.50

38 ft asphalt surface w/ 1 ft sluff, stations:

0+00 to 36+66.25
37+69.75 to 474+77.40

NET LENGTH: 47,373.9 FT = 8.972 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **195.6 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **1331.7 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 40 feet wide = **44.8 TON**

37 ft asphalt surface w/ 1 ft sluff, stations:

474+77.40 to 685+86.50

NET LENGTH: 21,109.1 FT = 3.998 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **87.2 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **567.6 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 39 feet wide = **19.5 TON**

SEGMENT 5A – SD47 MRM 189.91 + 0.000 to 199.94 + 0.000, Sta 0+00 to 528+58.08

31 ft asphalt shoulders w/ 2 ft sluff, stations:

09+50 to 523+56.30

NET LENGTH: 51,406.3 FT = 9.736 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **212.2 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **1445.1 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 35 feet wide = **42.5 TON**

SEGMENT 5B – SD20 MRM 257.56 + 0.000 to 255.17 + 0.038, Sta 37+64.36 to 159+53

31 ft asphalt shoulders w/ 2 ft sluff, stations:

37+64.36 to 149+04

NET LENGTH: 11,139.7 FT = 2.110 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **46.0 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **313.2 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 35 feet wide = **9.2 TON**

SEGMENT 6 – SD34 MRM 213.05 + 0.5422 to 227.00 + 0.384, Sta a166+69.85 to d897+92.40

32 ft asphalt surface w/ 2 ft sluff, stations:

a166+69.85 to a229+04.25
a233+67.75 to a349+32.84
a354+64.66 to a648+00
b733+83.20 to b755+00
c754+39.60 to c783+00

NET LENGTH: 52,112.1 FT = 9.870 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **215.1 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **1465.0 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 36 feet wide = **44.3 TON**

36 ft asphalt surface w/2 ft sluff, stations:

a648+00 to a711+12.11
a713+59.09 to a716+22.40
b716+34 to b718+48
b721+32 to b733+83.20

NET LENGTH: 8,040.6 FT = 1.523 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **33.2 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **226.1 TON**

- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 40 feet wide = **7.6 TON**

36 ft asphalt surface w/3 ft sluff, stations:

c783+00 to c848+00
d848+43.30 to d897+92.40

NET LENGTH: 11,449.1 FT = 2.168 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 23 feet wide = **47.3 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 23 feet wide = **321.8 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 42 feet wide = **11.4 TON**

ADDITIONAL SURFACING AREAS

• SEGMENT 1

SD34/SD73 intersection, SD73 radius:

420.5 SqYd

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard = **0.7 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard = **4.7 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard = **0.1 TON**

SD34/SD63 intersection, SD63 radius:

874.8 SqYd

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard = **1.4 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard = **9.7 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard = **0.2 TON**

RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-0031(59)	17	29

SD34/SD63 intersection, RT/LT turn lanes:

NET LENGTH OF LANES: 1861 FT = 0.353 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 12 feet wide = **4.0 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 12 feet wide = **27.4 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 12 feet wide = **0.6 TON**

• **SEGMENT 5**

US212/SD47 intersection, RT turn lane, stations:

523+56.30 to 528+58.08 (5A)

NET LENGTH: 501.8 FT = 0.095 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 35 feet wide = **3.2 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 35 feet wide = **21.5 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 47 feet wide = **1.1 TON**

SD47/SD20 intersection, four-lane undivided, stations:

0+00 to a9+50 (5A)
149+04 to 159+53 (5B)

NET LENGTH: 1,999 FT = 0.379 MI

- CRS-2P Asphalt for Surface Treatment applied at the rate of 0.38 gallons per square yard at 24 feet wide = **8.6 TON**
- Modified Cover Aggregate applied at the rate of 22 pounds per square yard at 24 feet wide = **58.7 TON**
- SS-1h or CSS-1h Asphalt for Fog Seal applied at the rate of 0.05 gallons per square yard at 24 feet wide = **0.6 TON**

SUMMARY OF PROJECT QUANTITIES

Revised 01/12/2024 JDC

STATE OF
SOUTH
DAKOTA

PROJECT

NH-0031(59)

SHEET

18

TOTAL
SHEETS

29

BID ITEM NUMBER	ITEM	SEGMENT 1 - SD34	SEGMENT 2 - US83	SEGMENT 3 - US14	SEGMENT 4 - US14	SEGMENT 5 - SD20/SD47	SEGMENT 6 - SD34	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	1.0	LS
330E0210	SS-1h/CSS-1h Asphalt for Flush Seal	-	73.0	29.8	-	-	-	102.8	Ton
330E0300	SS-1h/CSS-1h Asphalt for Fog Seal	130.8	-	-	64.3	53.4	63.3	311.8	Ton
330E2000	Sand for Flush Seal	-	1369.4	552.7	-	-	-	1922.1	Ton
330E3000	Sand for Fog Seal	25	-	-	15	15	15	70	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	634.9	-	-	282.8	270.0	295.6	1483.3	Ton
360E1200	Modified Cover Aggregate	4324.0	-	-	1899.3	1838.5	2012.9	10074.7	Ton
633E0010	Cold Applied Plastic Pavement Marking, 4"	574	-	-	-	-	-	574	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	312	-	-	-	-	-	312	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	30	-	-	-	-	-	30	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	1	-	-	-	-	-	1	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	1595	1122	701	726	688	764	5596	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	763	1122	38	125	145	274	2467	Gal
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	574	-	-	-	-	-	574	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	312	-	-	-	-	-	312	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	30	-	-	-	-	-	30	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	1	-	-	-	-	-	1	Each
633E6005	Pavement Marking Masking, 5"	9552	38954	1884	-	10957	-	61,347	Ft
633E6010	Pavement Marking Masking, 9"	192	-	-	-	786	-	978	Ft
633E6020	Pavement Marking Masking, 25"	577	-	-	-	-	-	577	Ft
633E6030	Pavement Marking Masking, Arrow	4	-	-	-	-	-	4	Each
634E0010	Flagging	624	288	240	288	268	268	1976	Hour
634E0020	Pilot Car	144	120	96	60	60	60	540	Hour
634E0110	Traffic Control Signs	717.1	1231.6	1083.6	591.0	578.4	511.0	4712.7	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	1.0	LS
634E0630	Temporary Pavement Marking	86.6	-	-	38.9	37.1	40.3	202.9	Mile

FIXED LOCATION SIGN LAYOUT (SEGMENT 1)

NOT TO SCALE

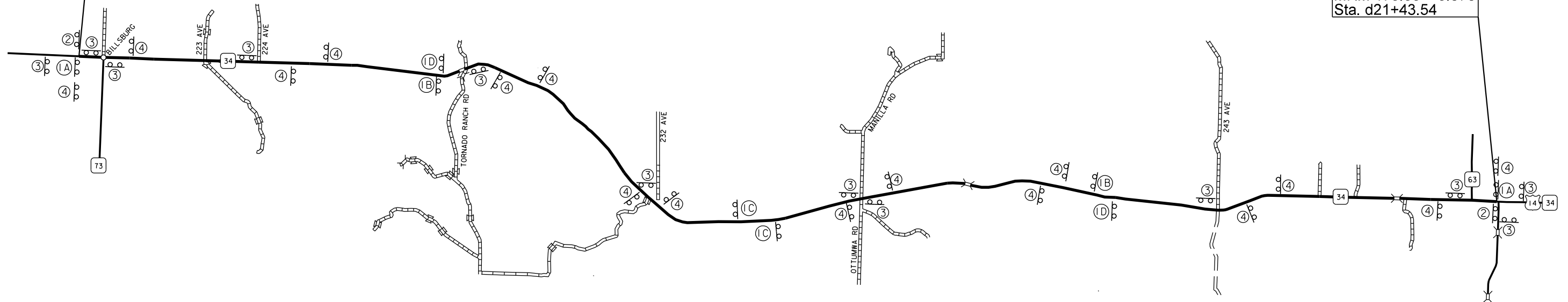
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	19	29

Plotting Date: 12/05/2023



BEGIN SEGMENT 1
SD34
MRM 141.00 + 0.418
Sta. a0+00

END SEGMENT 1
SD34
MRM 170.00 + 0.376
Sta. d21+43.54



1A — ROAD WORK
NEXT 29 MILES
G20-1 (36" x 18")

1B — ROAD WORK
NEXT 22 MILES
G20-1 (36" x 18")

1C — ROAD WORK
NEXT 15 MILES
G20-1 (36" x 18")

1D — ROAD WORK
NEXT 7 MILES
G20-1 (36" x 18")

2 — END
ROAD WORK
G20-2 (36" x 18")

3 — ROAD
WORK
AHEAD
W20-1 (48" x 48")

4 — LOOSE
GRAVEL
W8-7 (48" x 48")

40
M.P.H.
W13-1P (30" x 30")

PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

FILE - ... \0973_FIXEDSIGN.DGN

PLOT NAME - 1

FIXED LOCATION SIGN LAYOUT (SEGMENT 2)

NOT TO SCALE

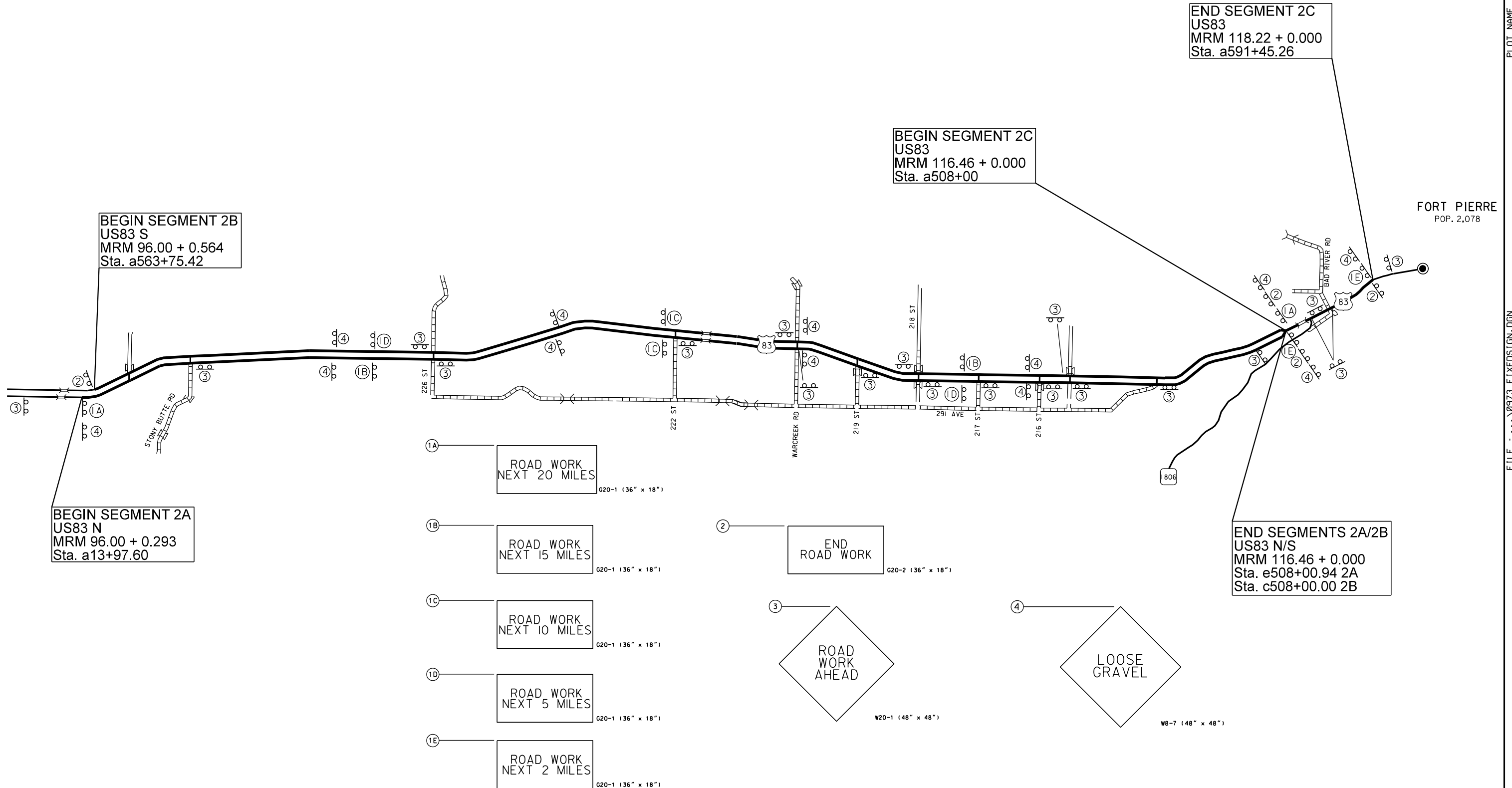
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	20	29

Plotting Date: 12/05/2023



PLOT SCALE - 1:200

PLOT NAME - 2



BEGIN SEGMENT 2B
US83 S
MRM 96.00 + 0.564
Sta. a563+75.42

BEGIN SEGMENT 2A
US83 N
MRM 96.00 + 0.293
Sta. a13+97.60

BEGIN SEGMENT 2C
US83
MRM 116.46 + 0.000
Sta. a508+00

END SEGMENT 2C
US83
MRM 118.22 + 0.000
Sta. a591+45.26

FORT PIERRE
POP. 2,078

1A — ROAD WORK
NEXT 20 MILES
G20-1 (36" x 18")

1B — ROAD WORK
NEXT 15 MILES
G20-1 (36" x 18")

1C — ROAD WORK
NEXT 10 MILES
G20-1 (36" x 18")

1D — ROAD WORK
NEXT 5 MILES
G20-1 (36" x 18")

1E — ROAD WORK
NEXT 2 MILES
G20-1 (36" x 18")

2 — END
ROAD WORK
G20-2 (36" x 18")

3 — ROAD
WORK
AHEAD
W20-1 (48" x 48")

4 — LOOSE
GRAVEL
W8-7 (48" x 48")

END SEGMENTS 2A/2B
US83 N/S
MRM 116.46 + 0.000
Sta. e508+00.94 2A
Sta. c508+00.00 2B

PLOTTED FROM - TRPR25584

FILE - ... \0973_FIXEDSIGN.DGN

FIXED LOCATION SIGN LAYOUT (SEGMENT 3)

NOT TO SCALE

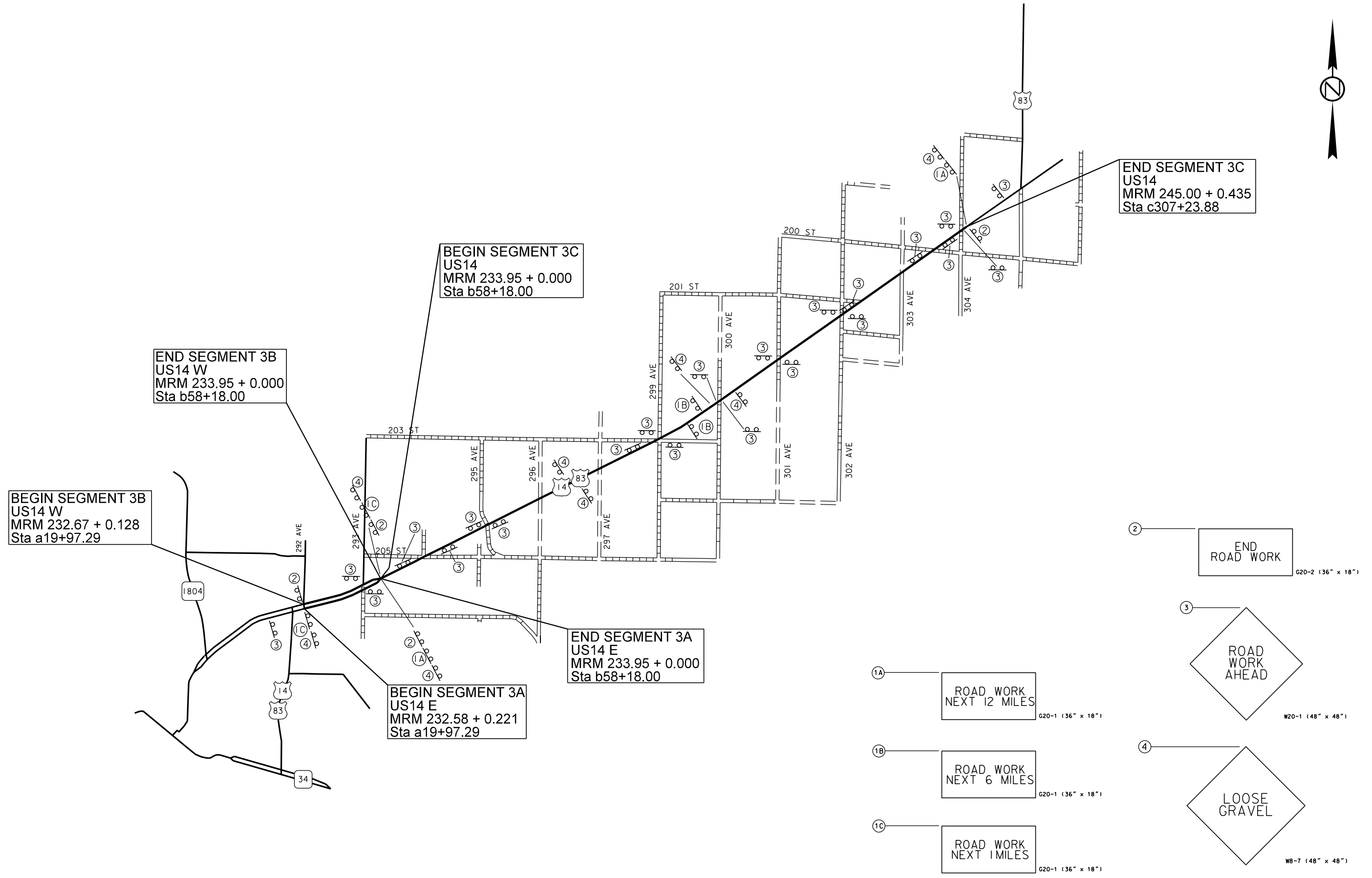
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	21	29

Plotting Date: 12/05/2023

PLOT SCALE - 1:200

PLOT NAME - 3

FILE - ... \0973_FIXEDSIGN.DGN



BEGIN SEGMENT 3B
US14 W
MRM 232.67 + 0.128
Sta a19+97.29

END SEGMENT 3B
US14 W
MRM 233.95 + 0.000
Sta b58+18.00

BEGIN SEGMENT 3A
US14 E
MRM 232.58 + 0.221
Sta a19+97.29

BEGIN SEGMENT 3C
US14
MRM 233.95 + 0.000
Sta b58+18.00

END SEGMENT 3A
US14 E
MRM 233.95 + 0.000
Sta b58+18.00

END SEGMENT 3C
US14
MRM 245.00 + 0.435
Sta c307+23.88

1A ROAD WORK
NEXT 12 MILES
G20-1 (36" x 18")

1B ROAD WORK
NEXT 6 MILES
G20-1 (36" x 18")

1C ROAD WORK
NEXT 1 MILES
G20-1 (36" x 18")

2 END
ROAD WORK
G20-2 (36" x 18")

3 ROAD
WORK
AHEAD
W20-1 (48" x 48")

4 LOOSE
GRAVEL
W8-7 (48" x 48")

PLOTTED FROM - TRPR25584

FIXED LOCATION SIGN LAYOUT (SEGMENT 4)

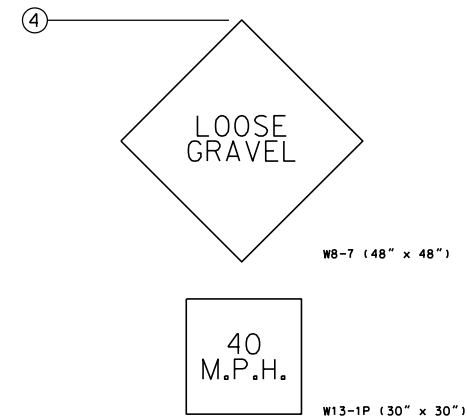
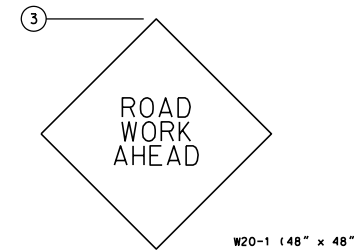
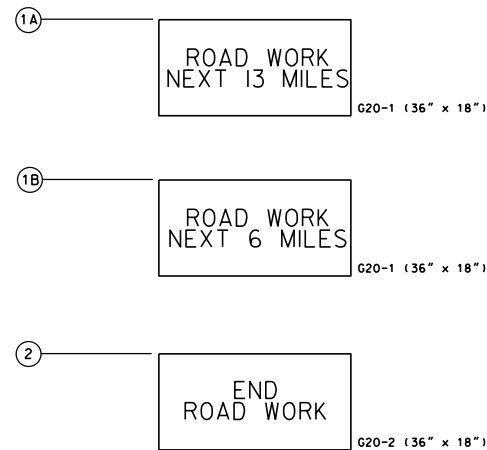
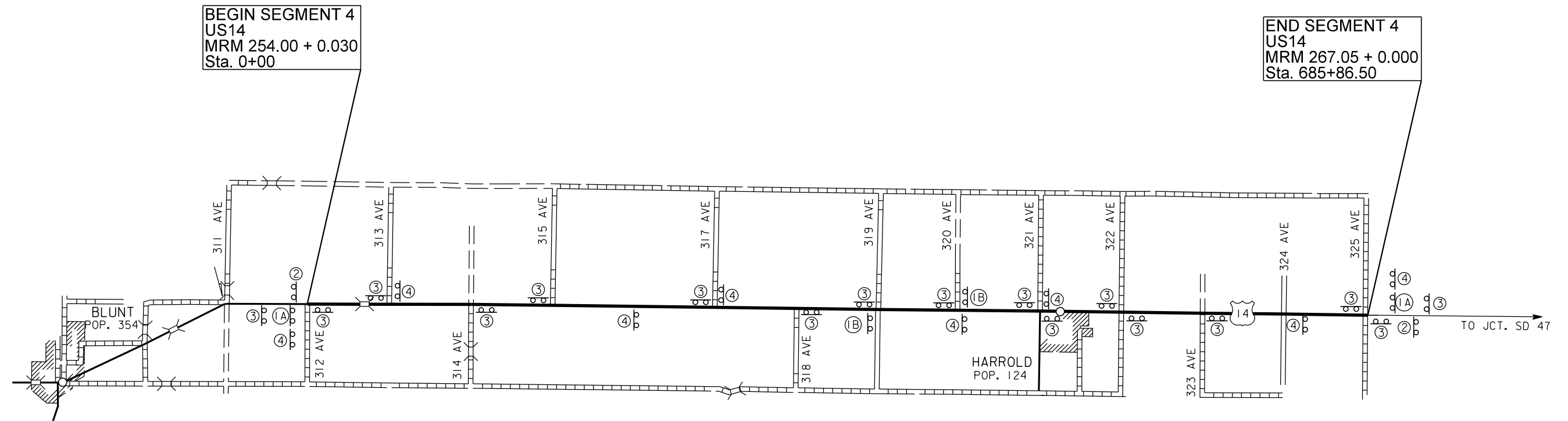
NOT TO SCALE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	22	29

Plotting Date: 12/05/2023

PLOT SCALE - 1:200

PLOT NAME - 4



PLOTTED FROM - TRPR25584

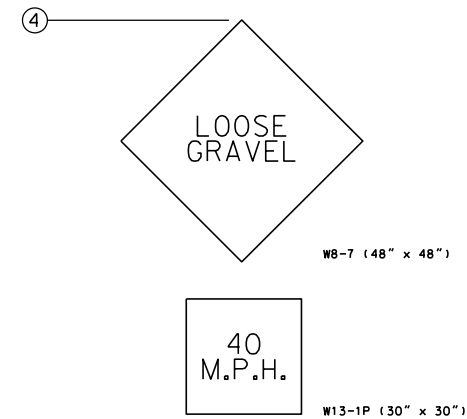
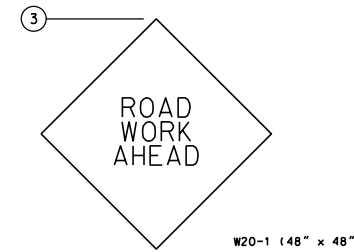
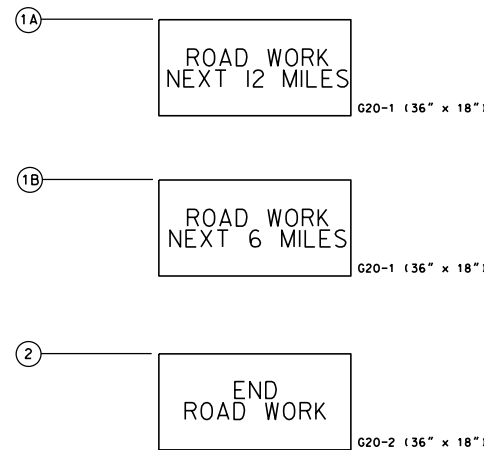
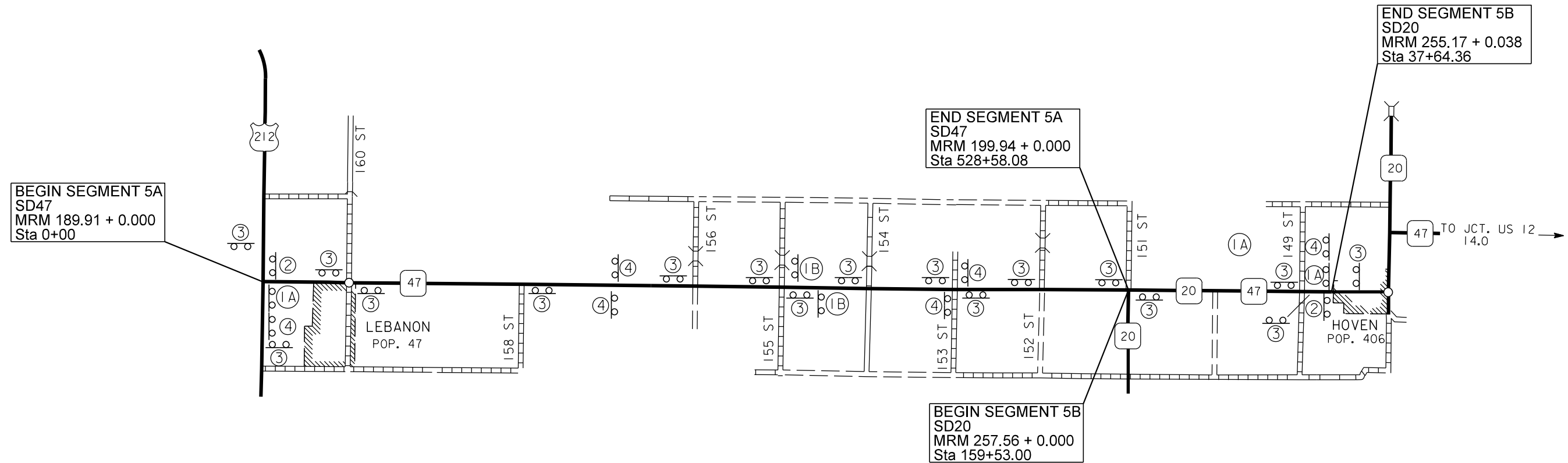
FILE - ... \0973_FIXEDSIGN.DGN

FIXED LOCATION SIGN LAYOUT (SEGMENT 5)

NOT TO SCALE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	23	29

Plotting Date: 12/05/2023



PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

PLOT NAME - 5

FILE - ... \0973_FIXEDSIGN.DGN

FIXED LOCATION SIGN LAYOUT (SEGMENT 6)

NOT TO SCALE

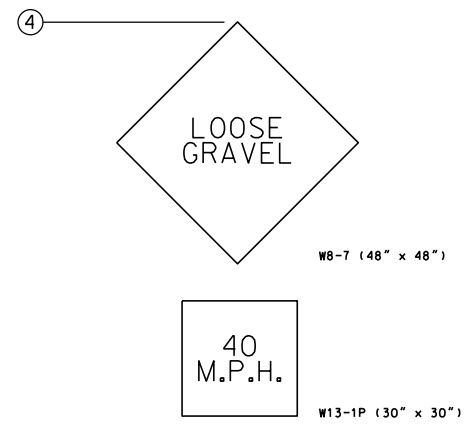
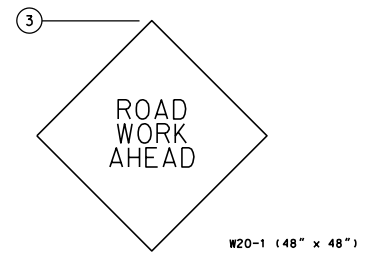
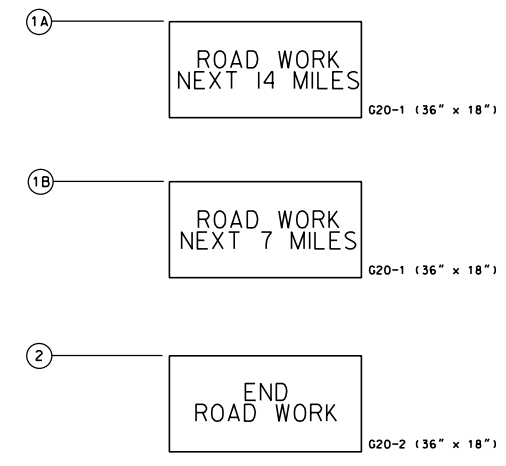
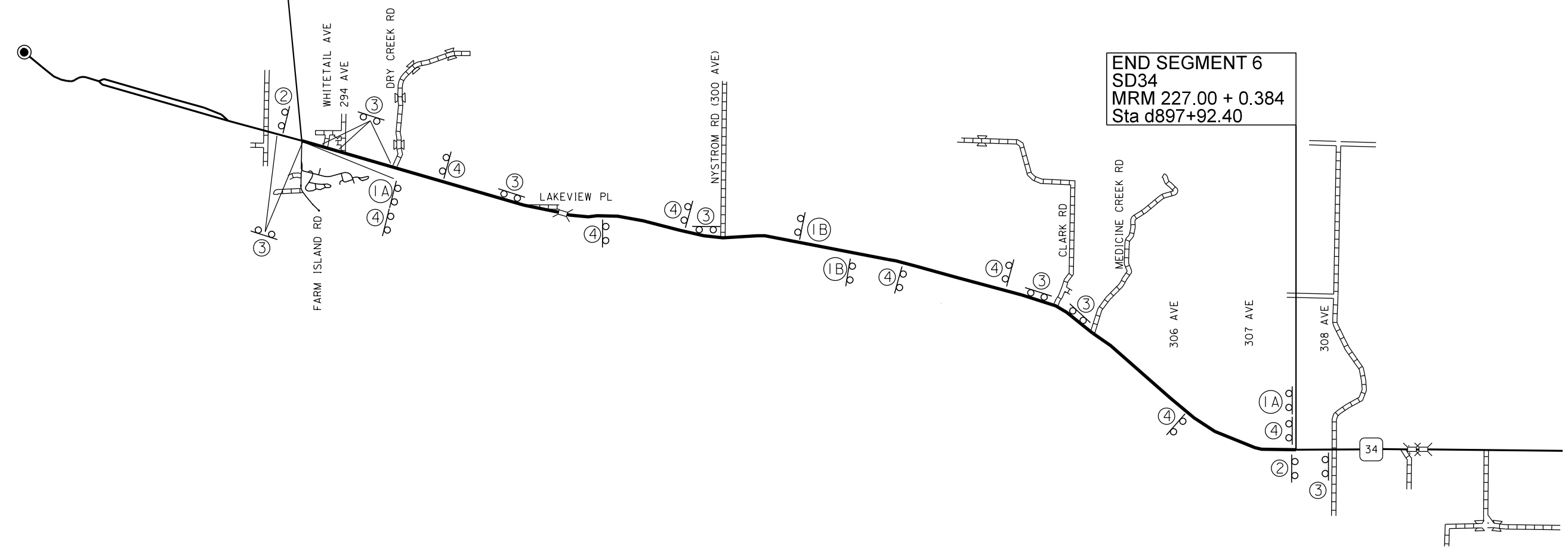
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0031(59)	24	29

Plotting Date: 12/05/2023



BEGIN SEGMENT 6
SD34
MRM 213.05 + 0.522
Sta a166+69.85

END SEGMENT 6
SD34
MRM 227.00 + 0.384
Sta d897+92.40



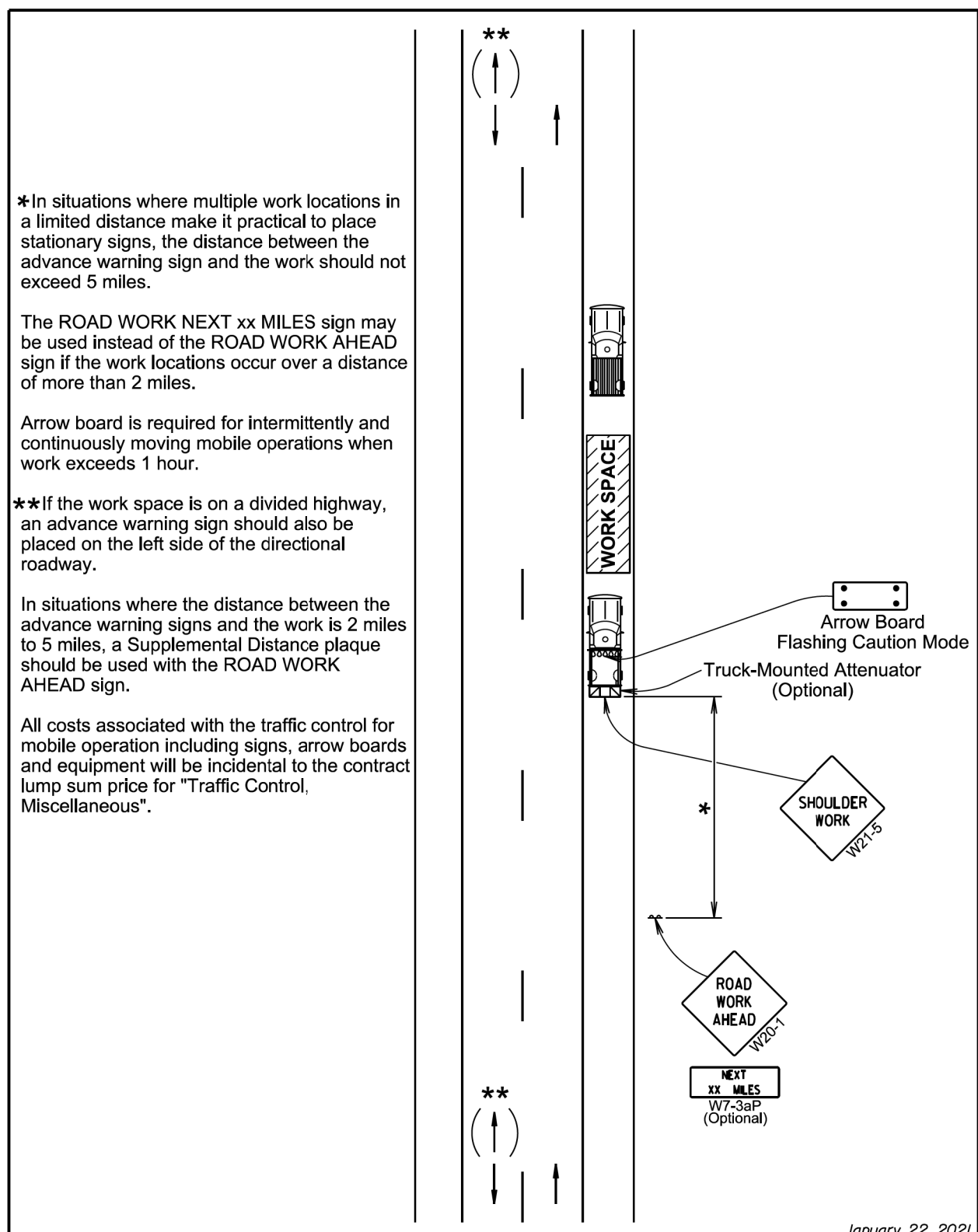
PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

PLOT NAME - 6

FILE - ... \0973_FIXEDSIGN.DGN

PLOT SCALE - 1:200



* 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.

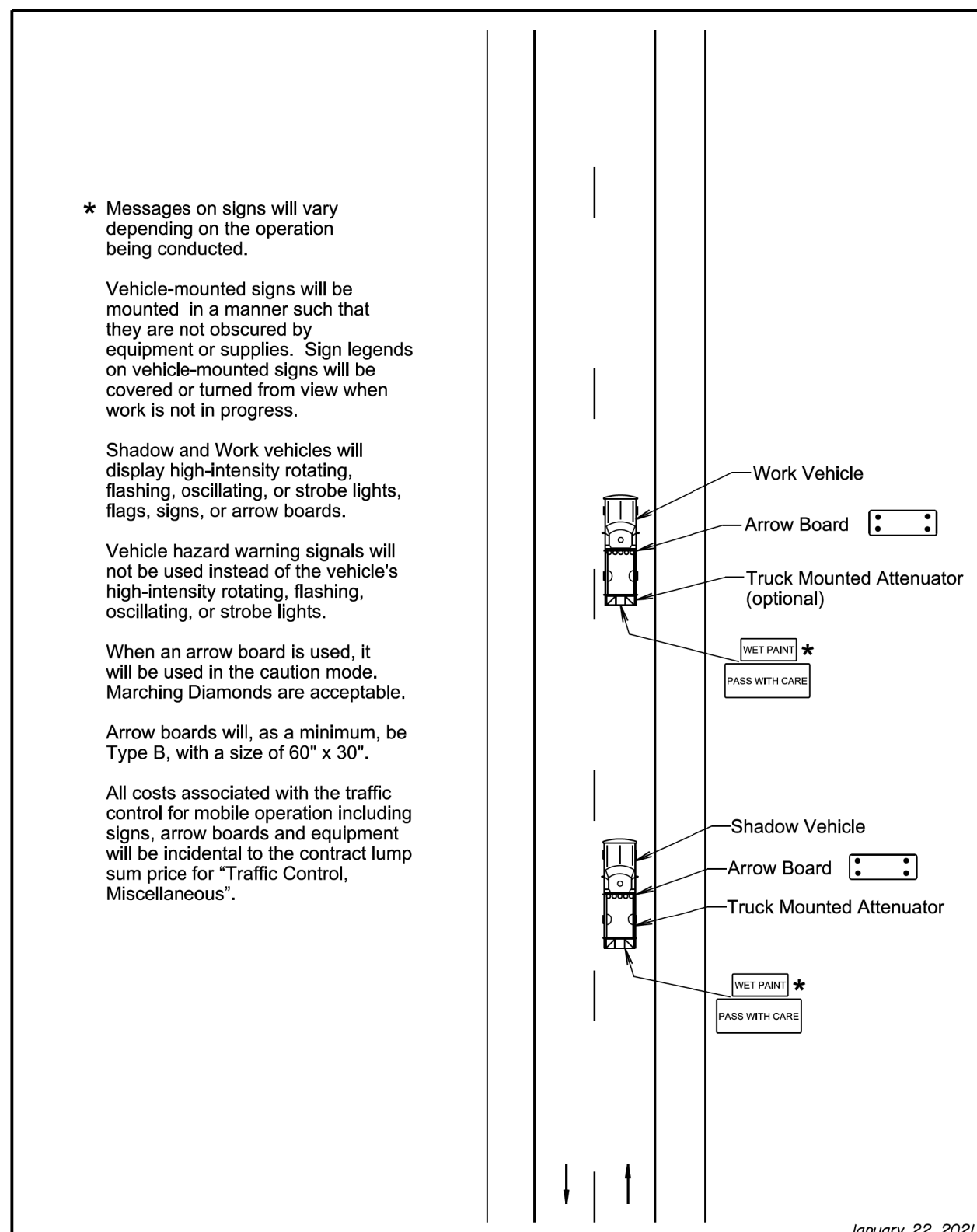
In situations where the distance between the advance warning signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign.

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: 2024	S D D O T	MOBILE OPERATIONS ON SHOULDERS	PLATE NUMBER 634.04
			Sheet 1 of 1

PLOT NAME - 7



* 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".

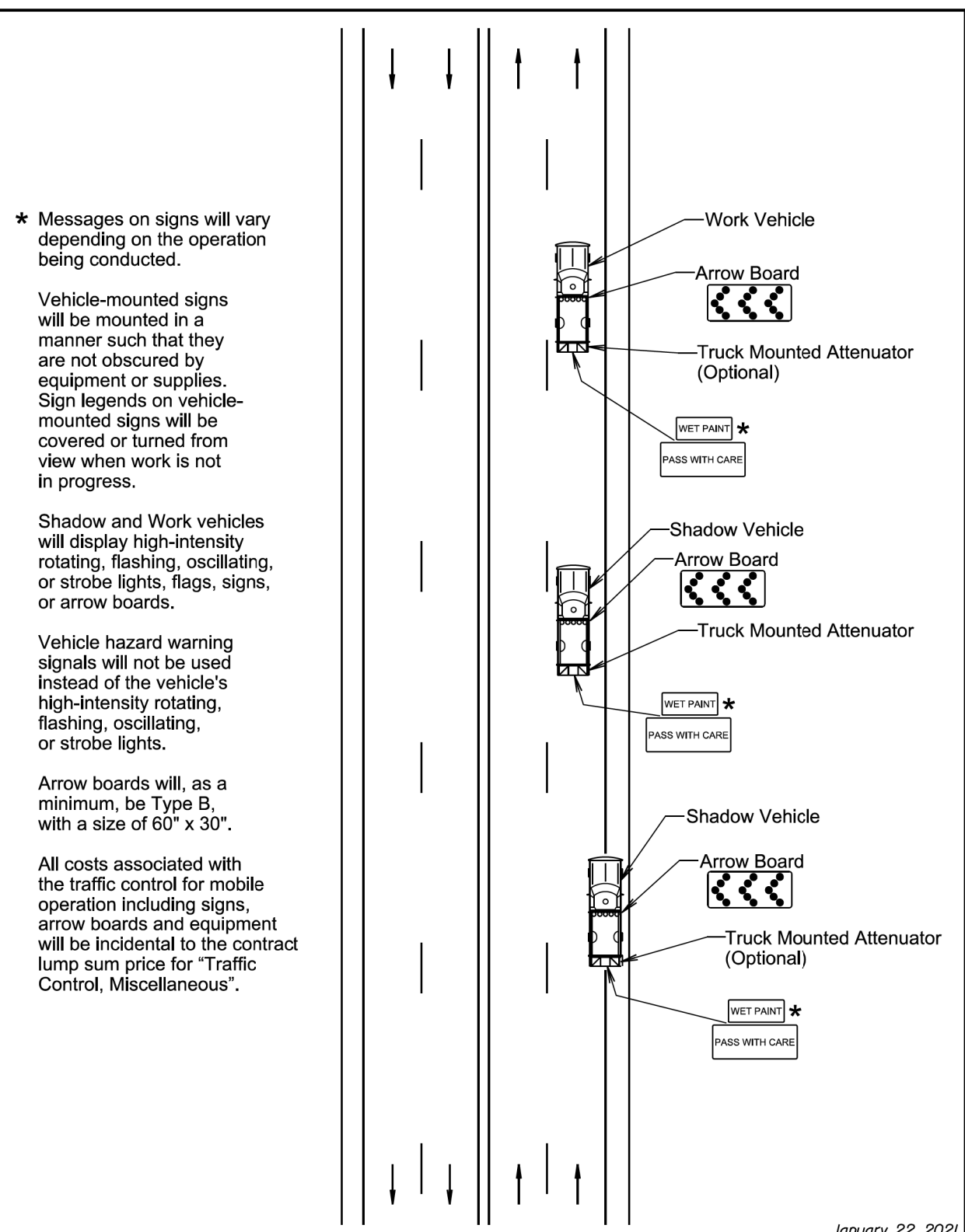
January 22, 2021

Published Date: 2024	S D D O T	MOBILE OPERATIONS ON 2-LANE ROAD	PLATE NUMBER 634.06
			Sheet 1 of 1

PLOTTED FROM - TRPR25584

FILE - ... \0973-STANDARDPLATES.DGN

PLOT SCALE - 1:200



* 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.

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

S D D O T	MOBILE OPERATIONS ON MULTI-LANE HIGHWAYS	PLATE NUMBER 634.08
		Sheet 1 of 1

Published Date: 2024

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.

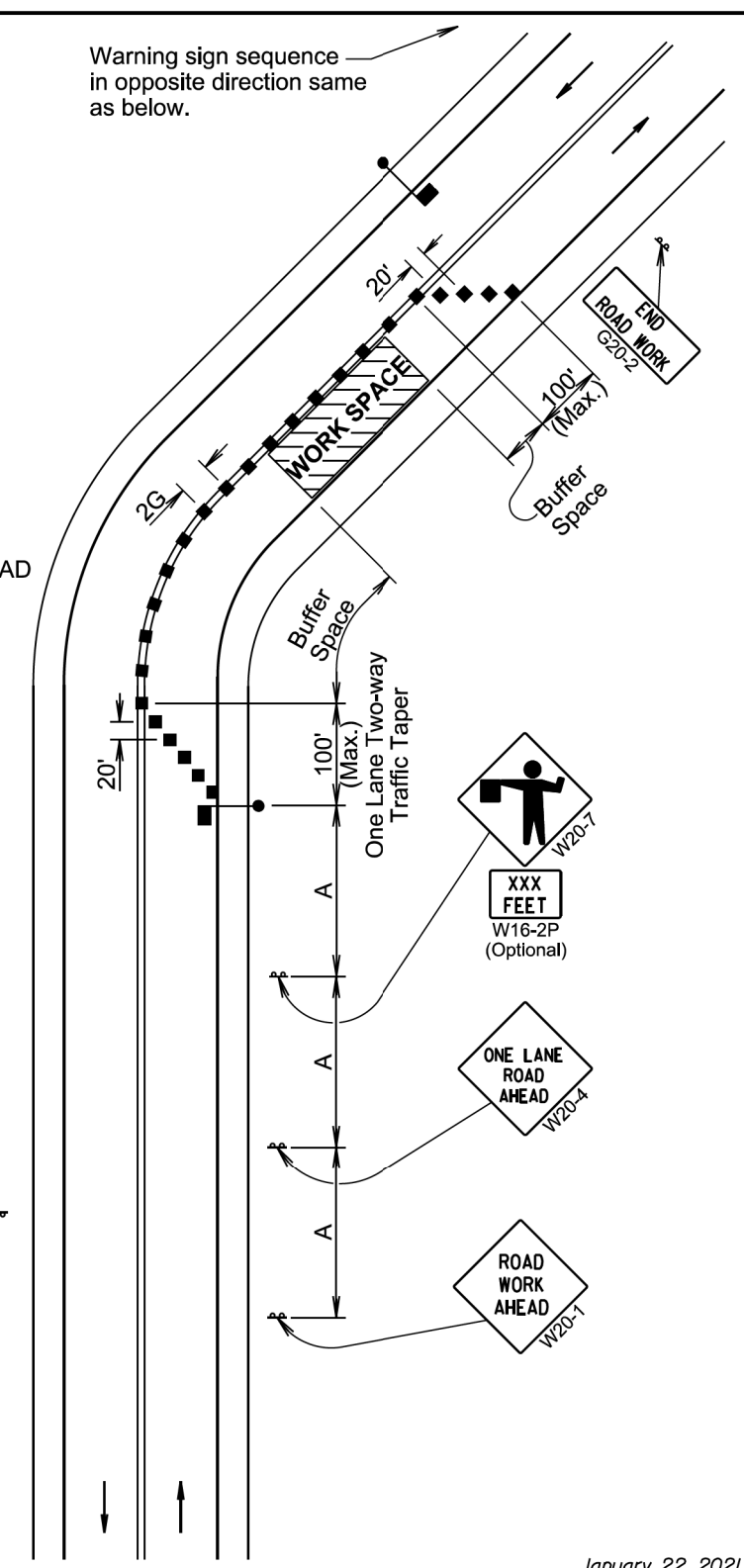
Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

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.

S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
		Sheet 1 of 1

Published Date: 2024

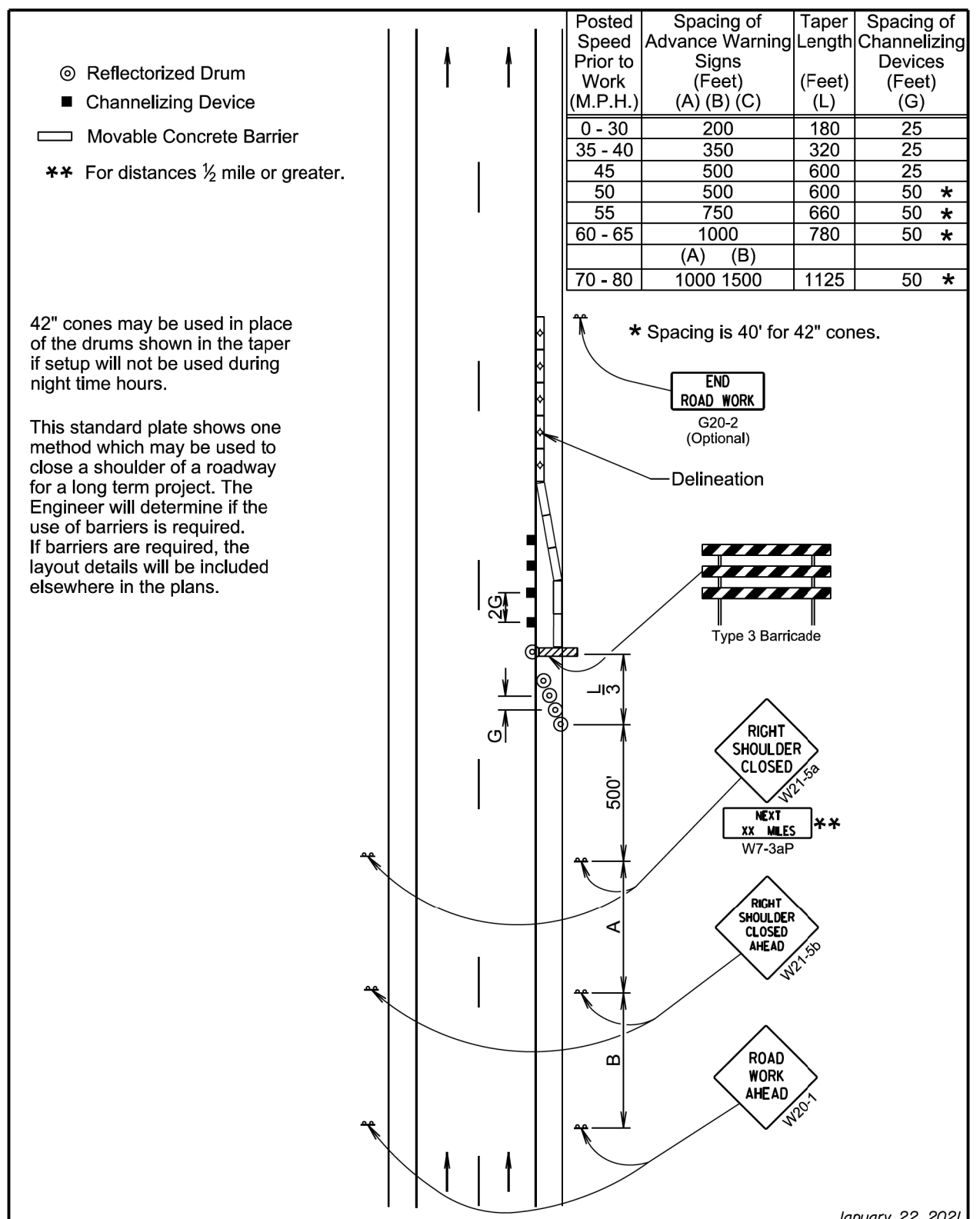


Warning sign sequence in opposite direction same as below.

January 22, 2021

FILE ... \0973-STANDARDPLATES.DGN PLOT NAME - 8

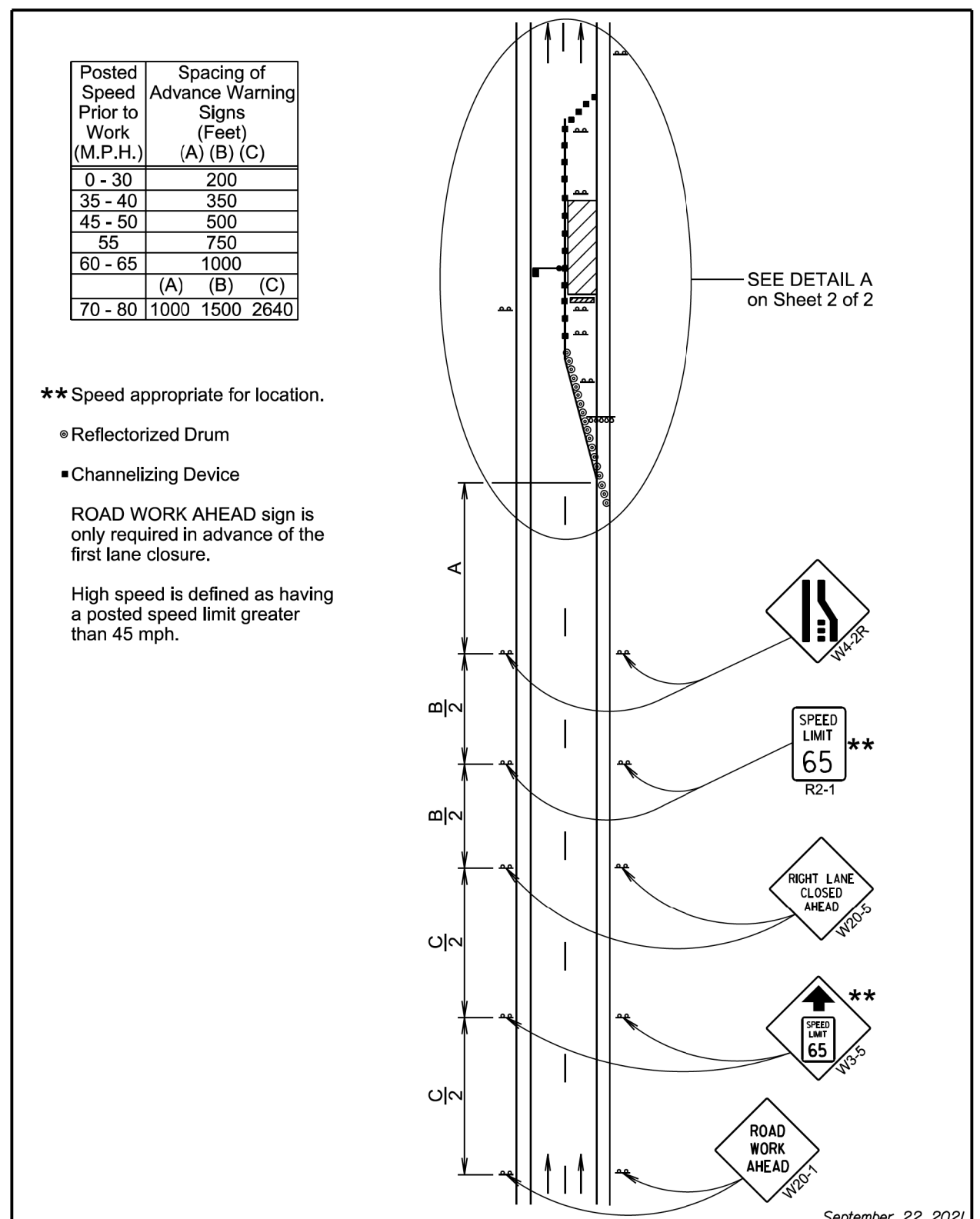
PLOT SCALE - 1:200



January 22, 2021

S D D O T	SHOULDER CLOSED	PLATE NUMBER 634.61
		Sheet 1 of 1

Published Date: 2024



September 22, 2021

S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
		Sheet 1 of 2

Published Date: 2024

PLOT NAME - 9
FILE - ... \0973_STANDARDPLATES.DGN

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

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

*** Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.

● Flagger (As Necessary)

⊙ Reflectorized Drum

■ Channelizing Device

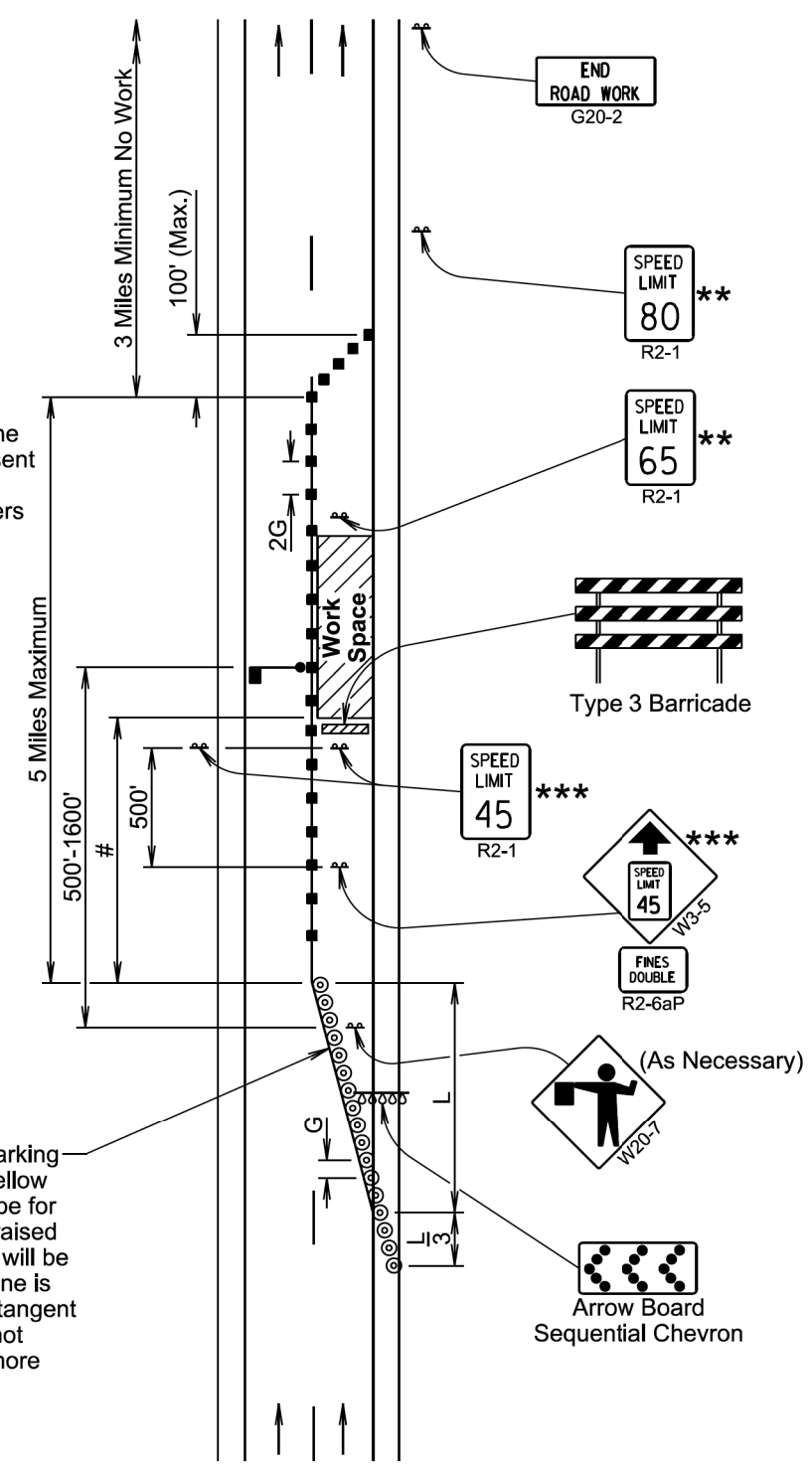
The Work Space will be a minimum of 500' from the end of the taper.

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

The channelizing devices will be 42" cones or drums.

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

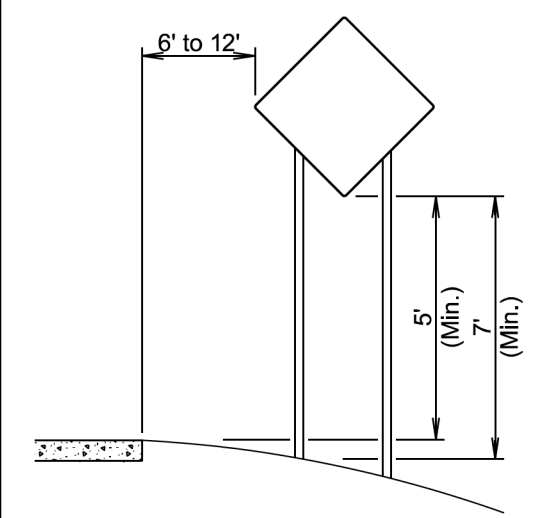
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



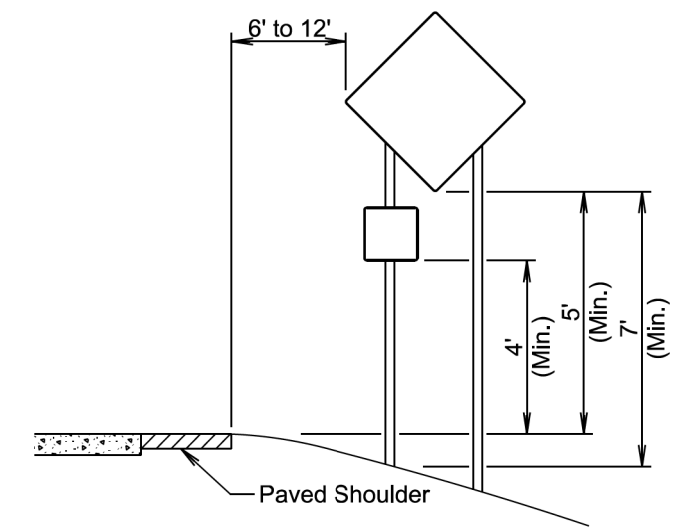
DETAIL A

September 22, 2021

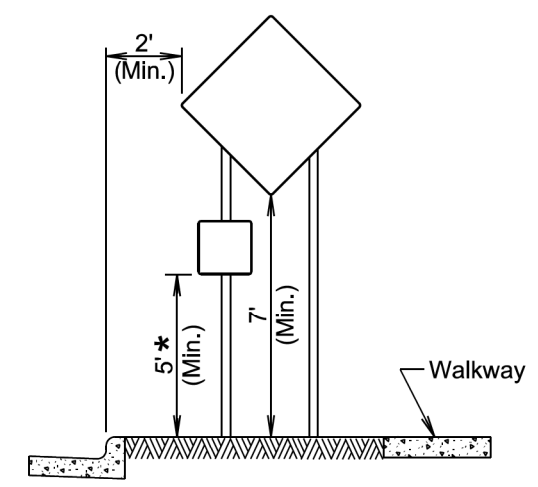
S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
	Published Date: 2024	Sheet 2 of 2



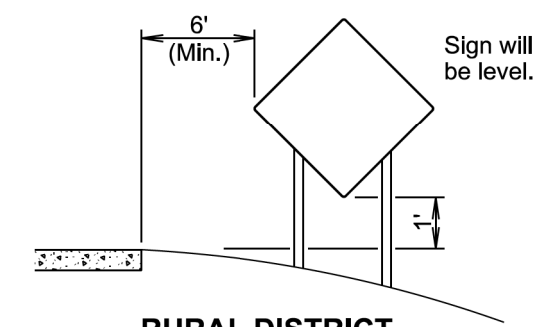
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

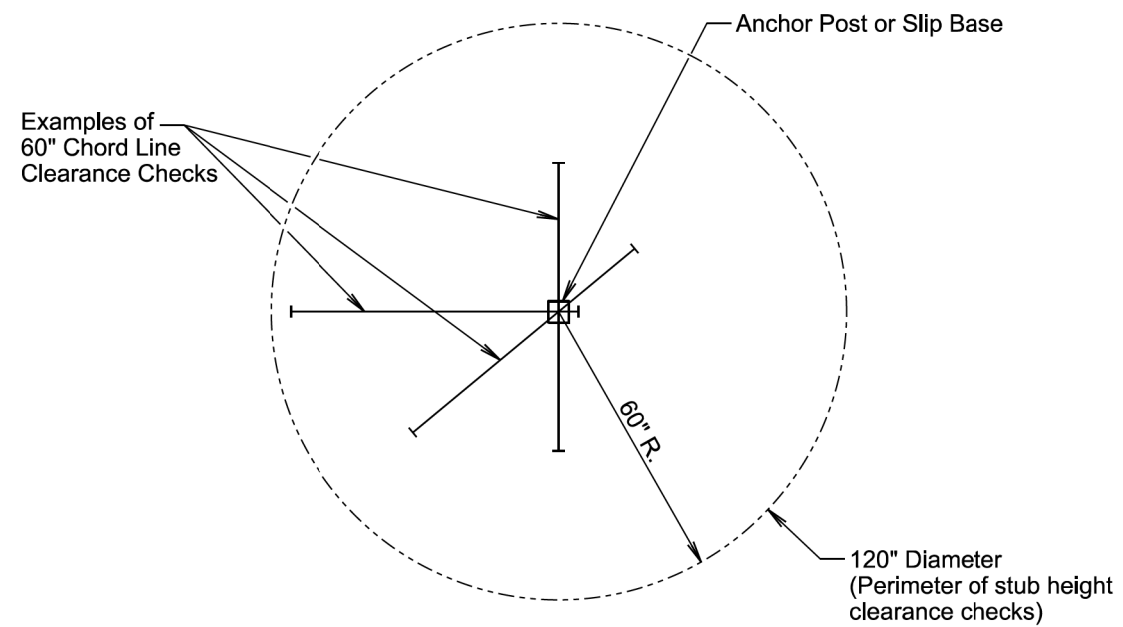


RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

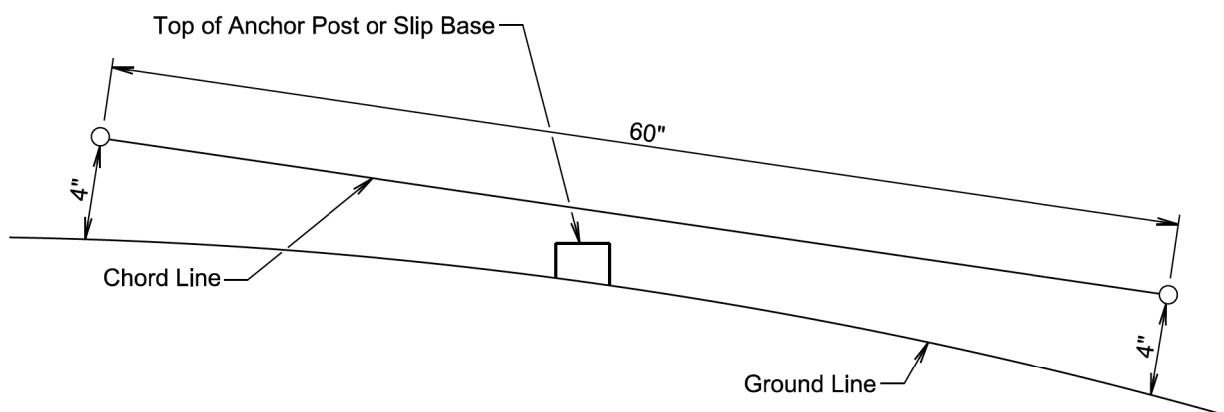
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
	Published Date: 2024	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

<i>Published Date: 2024</i>	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1