

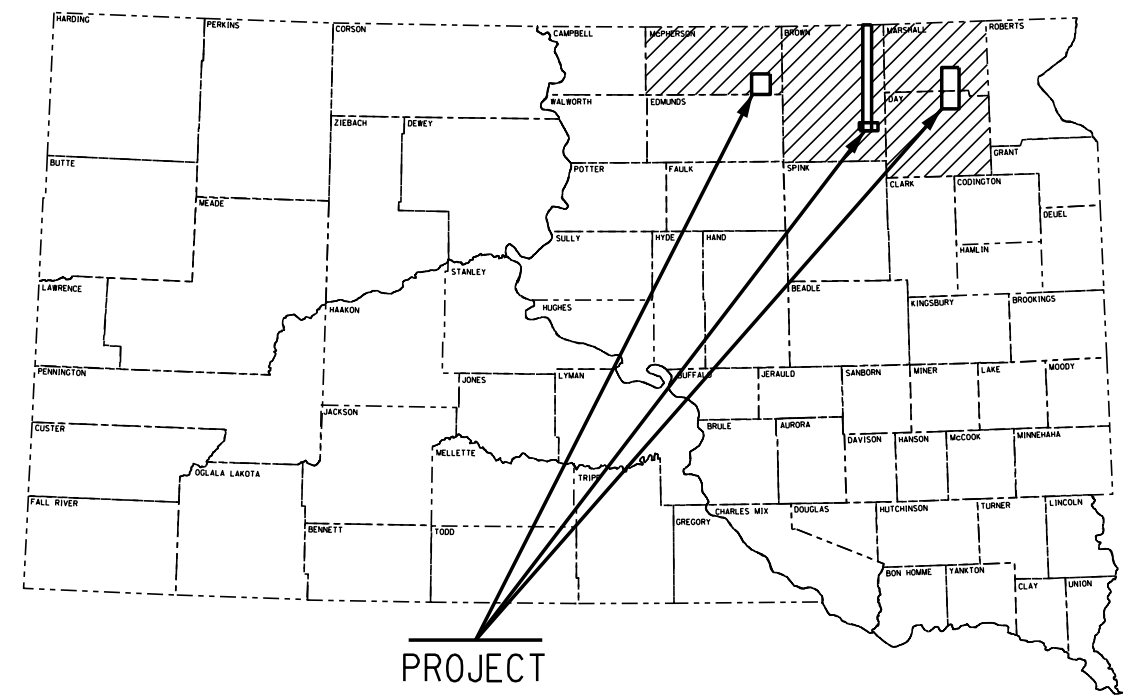
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	1	29
Plotting Date: 01/26/2021			

Revised: 1/26/2021 AT

INDEX OF SHEETS

Sheet 1-4	Title Sheet & Layout Maps
Sheet 5-6	Estimate of Quantities & Environmental Commitments
Sheet 7	Table of Quantities
Sheet 8	Rates of Materials
Sheet 9	Table of Additional Quantities
Sheet 10-13	Plan Notes
Sheet 14-23	Traffic Control
Sheet 24-27	Pavement Marking Detail
Sheet 28-29	Standard Plates

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
**PROJECT NH-P 0011(149)**  
**U.S. HIGHWAY 12**  
**S.D. HIGHWAYS 45, 37 & 25**  
**BROWN, DAY, McPHERSON & MARSHALL COUNTIES**  
ASPHALT SURFACE TREATMENT  
PCN 07KK



PROJECT

R 61 W

R 60 W

End Segment 2  
Sta 7+28.64  
MRM 308.84 +0.112  
Mileage 205.493

Begin Segment 2  
Sta 0+00.0  
MRM 308.81 +0.000  
Mileage 205.355

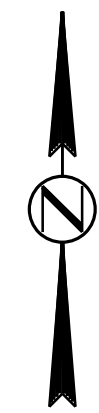
Begin Segment 3  
Sta 0+00.0  
MRM 309.02 +0.067  
Mileage 205.628

End Segment 3  
Sta 17+58.24  
MRM 309.30 +0.099  
Mileage 205.961

Segment 2- HW 12  
Gross Length 728.64 Ft = 0.138 Miles  
Length of Exception 0.0 Ft = 0.000 Miles  
Net Length 728.64 Ft = 0.138 Miles

Segment 3- HW 12  
Gross Length 1758.24 Ft = 0.333 Miles  
Length of Exception 0.0 Ft = 0.000 Miles  
Net Length 1758.24 Ft = 0.333 Miles

GROSS LENGTH	323,495.0 FEET	61.268 MILES
LENGTH OF EXCEPTIONS	222.5 FEET	0.042 MILES
NET LENGTH	323,272.5 FEET	61.226 MILES



**GROTON**  
BROWN COUNTY - SOUTH DAKOTA

**8**  
March 17, 2021

Segment 2 - HW 12 DESIGN DESIGNATION	Segment 3 - HW 12 DESIGN DESIGNATION
ADT (2019) 5338	ADT (2019) 2831
ADT (2039) 6961	ADT (2039) 3692
DHV 772	DHV 409
D 50%	D 50%
T DHV 6.4%	T DHV 11.6%
T ADT 14.1%	T ADT 25.5%
V 50 M.P.H.	V 35 M.P.H.

STORM WATER PERMIT  
None Required

PLOT SCALE - 1:15000

PLOTTED FROM - TRAB11017

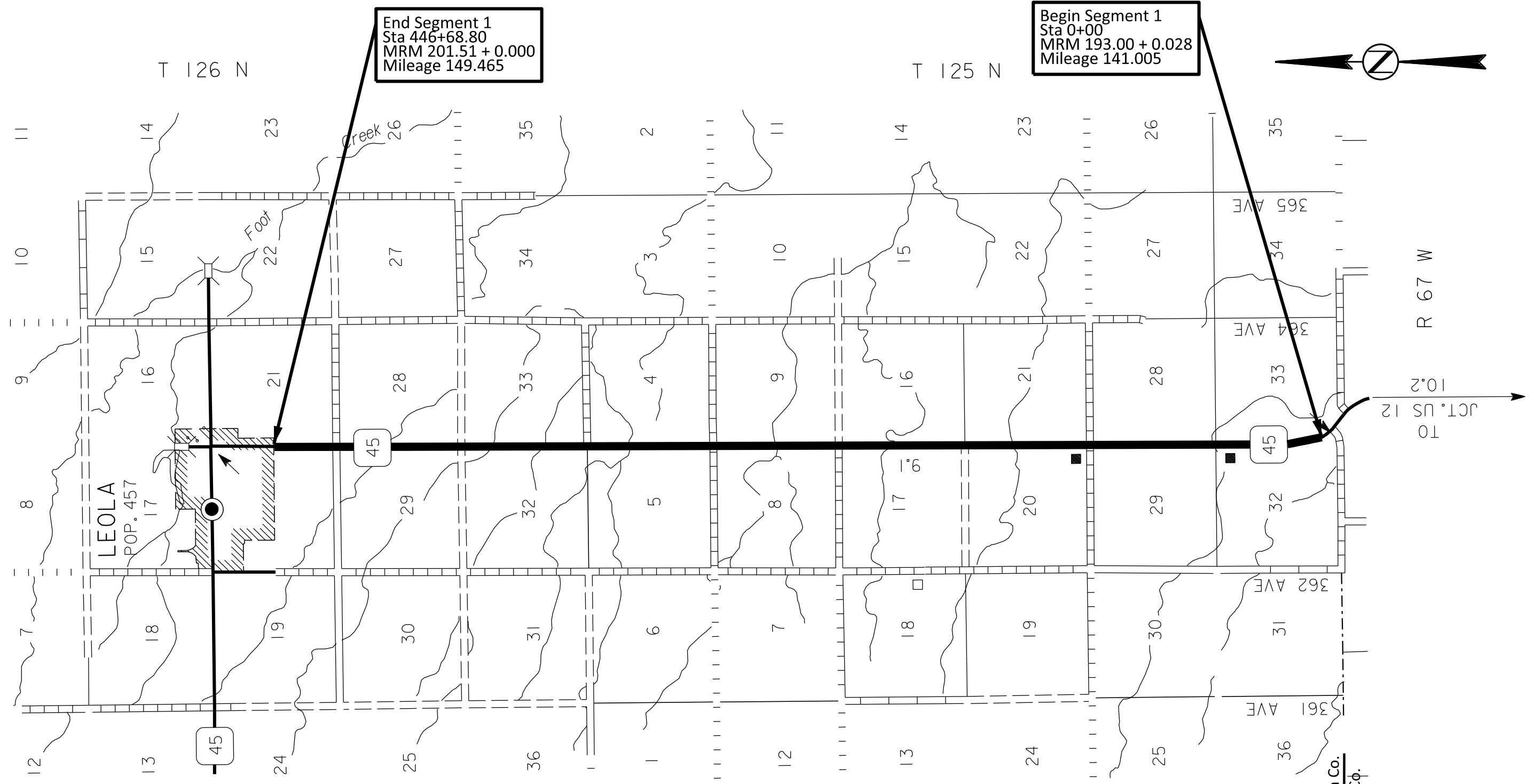
PLOT NAME - 1

FILE - ... \07KK-TITLE SHEET 1.DGN

PLOT SCALE - 1:10780

PLOTTED FROM - TRAB11017

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	2	29
Plotting Date: 01/06/2021			



Segment 1 - SD 45  
DESIGN DESIGNATION

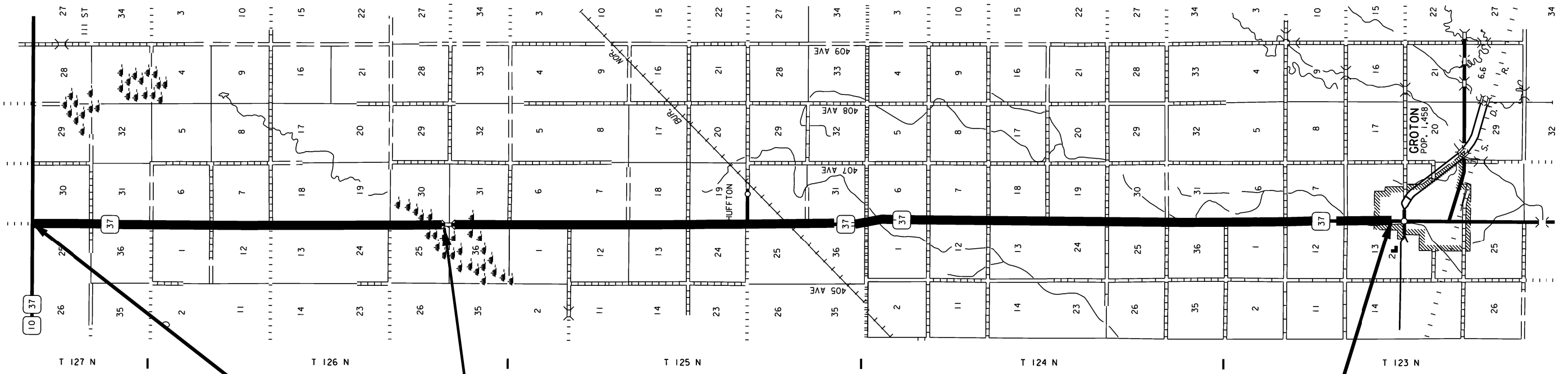
ADT (2019)	405
ADT (2039)	526
DHV	70
D	51%
T DHV	19.1%
T ADT	41.9%
V	65 M.P.H.

Segment 1 - SD 45  
 Gross Length 44,668.80 Ft = 8.460 Miles  
 Length of Exception 0.0 Ft = 0.000 Miles  
 Net Length 44,668.80 Ft = 8.460 Miles

McPherson Co.  
Edmunds Co.

FILE ... \07KK-TITLE SHEET 2.DGN PLOT NAME - 1

PLOT SCALE - 1"=11000'

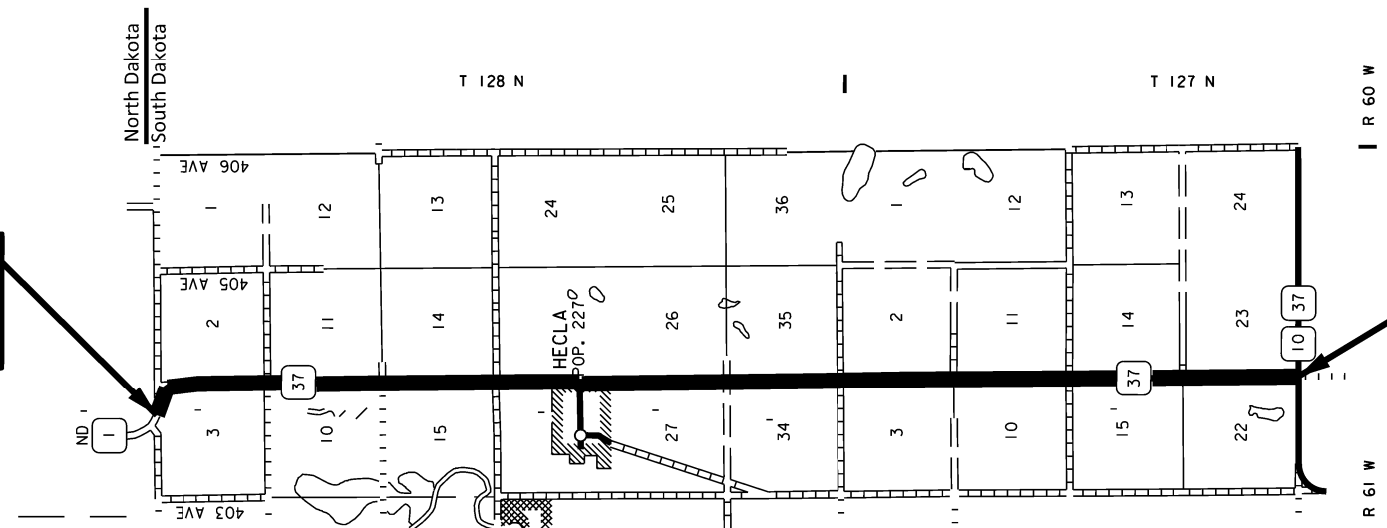


End Segment 4  
Sta 1216+45.9  
MRM 231.51 +0.000  
Mileage 169.517

Str. No. 07-300-169  
Continuous Concrete Bridge  
117.0' = 0.022 Miles  
MRM 224.60

Segment 4 - SD 37  
Gross Length 121,645.9 Ft = 23.039 Miles  
Length of Exception 117.0 Ft = 0.022 Miles  
Net Length 121,528.9 Ft = 23.017 Miles

Begin Segment 4  
Sta 0+00  
MRM 208.43 +0.025  
Mileage 146.478



End Segment 5  
Sta 534+23.04  
MRM 243.63 + 0.000  
Mileage 179.635

Begin Segment 5  
Sta 0+00  
MRM 233.51 + 0.000  
Mileage 169.517

Segment 5 - SD 37  
Gross Length 53,423.6 Ft = 10.118 Miles  
Length of Exception 0.00 Ft = 0.000 Miles  
Net Length 53,423.6 Ft = 10.118 Miles

Segment 4 - SD 37 DESIGN DESIGNATION		Segment 5 - SD 37 DESIGN DESIGNATION	
ADT (2019)	988	ADT (2019)	578
ADT (2039)	1288	ADT (2039)	988
DHV	143	DHV	110
D	50%	D	50%
T DHV	8.8%	T DHV	11.3%
T ADT	19.4%	T ADT	24.8%
V	65 M.P.H.	V	65 M.P.H.

PLOTTED FROM - TR6B12222

FILE - ... \07KK-TITLE SHEET 3TEST.DGN

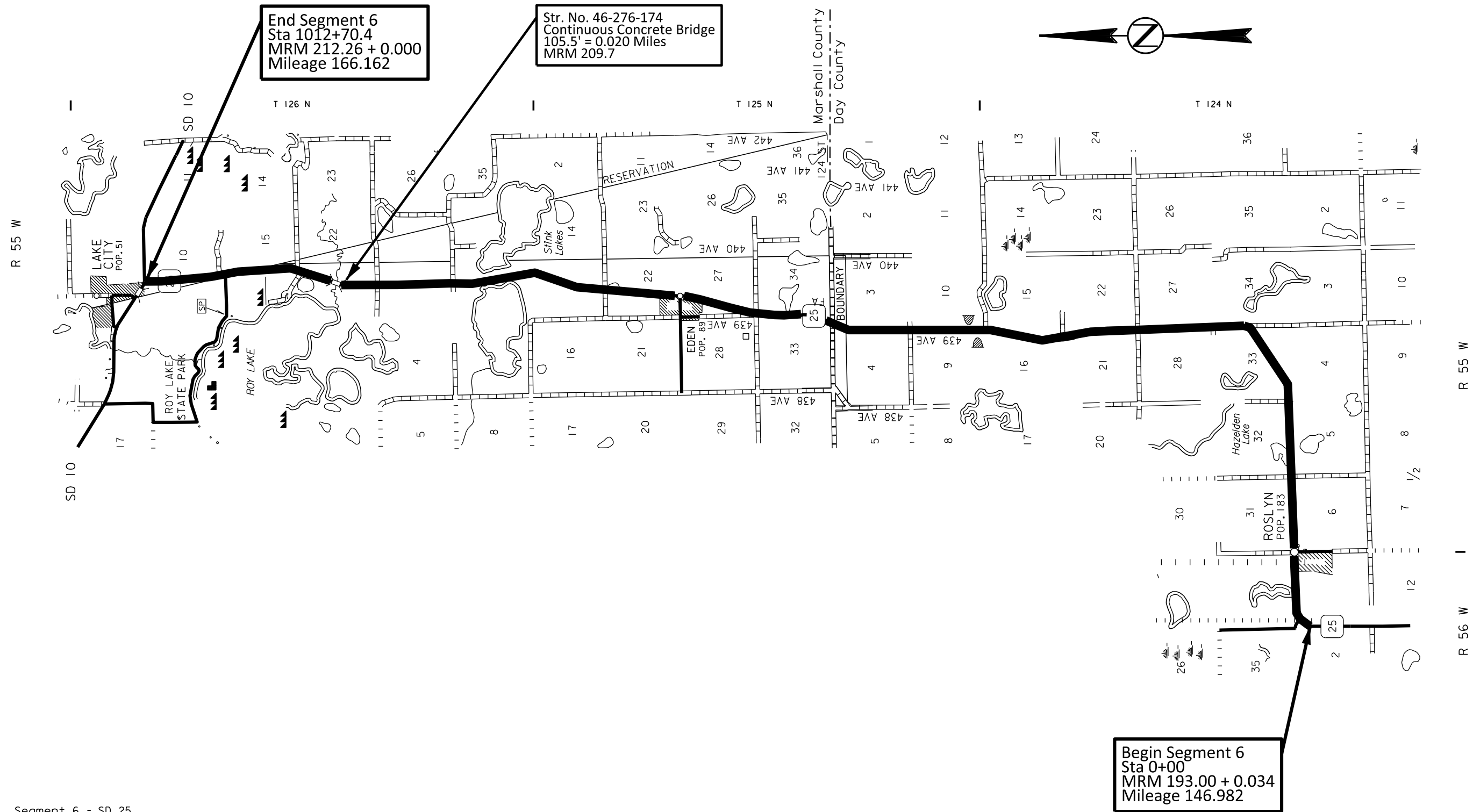
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	4	29
Plotting Date: 01/11/2021			

PLOT SCALE - 1:10780

PLOTTED FROM - TRAB11017

PLOT NAME - 1

FILE - ... \07KK-TITLE SHEET 4.DGN



End Segment 6  
Sta 1012+70.4  
MRM 212.26 + 0.000  
Mileage 166.162

Str. No. 46-276-174  
Continuous Concrete Bridge  
105.5' = 0.020 Miles  
MRM 209.7

Begin Segment 6  
Sta 0+00  
MRM 193.00 + 0.034  
Mileage 146.982

Segment 6 - SD 25  
DESIGN DESIGNATION

ADT (2019)	620
ADT (2039)	777
DHV	86
D	50%
T DHV	10.4%
T ADT	22.9%
V	65 M.P.H.

Segment 6 - SD 25  
Gross Length 101,270.4 Ft = 19.180 Miles  
Length of Exception 105.5 Ft = 0.020 Miles  
Net Length 101,164.9 Ft = 19.160 Miles

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(149)	5	29

## ESTIMATE OF QUANTITIES for NH-P 0011(149), PCN 07KK

Revised: 1/27/2021 AT  
Revised: 2/16/2021 SLS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	303.1	Ton
330E3000	Sand for Fog Seal	30.0	Ton
360E0042	CRS-2P Asphalt for Surface Treatment	1,675.2	Ton
360E1010	Type 1A Cover Aggregate	1,362.1	Ton
360E1010	Type 1A Cover Aggregate	44.9	Ton
360E1010	Type 1A Cover Aggregate	119.9	Ton
360E1010	Type 1A Cover Aggregate	4,847.0	Ton
360E1010	Type 1A Cover Aggregate	1,637.2	Ton
360E1010	Type 1A Cover Aggregate	3,130.8	Ton
633E0030	Cold Applied Plastic Pavement Marking, 24"	24	Ft
633E1200	High Build Waterborne Pavement Marking Paint, White	3,399	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	1,040	Gal
633E5100	Grooving for Durable Pavement Marking, 4"	2,607	Ft
633E6020	Pavement Marking Masking, 25"	1,590	Ft
633E6030	Pavement Marking Masking, Arrow	8	Each
633E6045	Pavement Marking Masking, Railroad Crossing	4	Each
634E0010	Flagging	1,408.0	Hour
634F0020	Pilot Car	308.0	Hour
634E0110	Traffic Control Signs	2,181.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	16	Each
634E0420	Type C Advance Warning Arrow Board	4	Each
634E0630	Temporary Pavement Marking	125.1	Mile
998E0100	Railroad Protective Insurance	Lump Sum	LS

### 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. 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 Office at 605-773-3098 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

### 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 Environment 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 completely 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 of time 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: 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 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 of 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 will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office 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.

**TABLE OF QUANTITIES**  
(for information only)

SBI Description	Seg. 1 - SD 45	Seg. 2 - US 12	HW 12 - PCC Pavement in Groton	Seg. 3 - US 12	Seg. 4 - SD 37	Seg. 5 - SD 37	Seg. 6 - SD 25	Total Quantity	Unit
Mobilization	Lump Sum	Lump Sum		Lump Sum	Lump Sum	Lump Sum	Lump Sum	<b>Lump Sum</b>	<b>LS</b>
SS-1h or CSS-1h Asphalt for Fog Seal	37.2	1.3		3.2	131.2	44.7	85.5	<b>303.1</b>	<b>Ton</b>
Sand for Fog Seal	5.0	5.0		5.0	5.0	5.0	5.0	<b>30.0</b>	<b>Ton</b>
CRS-2P Asphalt for Surface Treatment	200.5	6.6		17.6	748.6	241.0	460.9	<b>1675.2</b>	<b>Ton</b>
Type 1A Cover Aggregate	1362.1							<b>1362.1</b>	<b>Ton</b>
Type 1A Cover Aggregate		44.9						<b>44.9</b>	<b>Ton</b>
Type 1A Cover Aggregate				119.9				<b>119.9</b>	<b>Ton</b>
Type 1A Cover Aggregate					4847.0			<b>4847.0</b>	<b>Ton</b>
Type 1A Cover Aggregate						1637.2		<b>1637.2</b>	<b>Ton</b>
Type 1A Cover Aggregate							3130.8	<b>3130.8</b>	<b>Ton</b>
Cold Applied Plastic Pavement Marking, 24"				24.0				<b>24</b>	<b>Ft</b>
High Build Waterborne Pavement Marking Paint, White	470	1	2	13	1281	563	1069	<b>3399</b>	<b>Gal</b>
High Build Waterborne Pavement Marking Paint, Yellow	72	11	9	29	246	123	550	<b>1040</b>	<b>Gal</b>
Grooving for Durable Pavement Marking, 4"			2607					<b>2607</b>	<b>Ft</b>
Pavement Marking Masking, 25"		64		984	56	24	462	<b>1590</b>	<b>Ft</b>
Pavement Marking Masking, Arrow					2		6	<b>8</b>	<b>Each</b>
Pavement Marking Masking, Railroad Crossing					4			<b>4</b>	<b>Each</b>
Flagging	186.0	24.0		24.0	520.0	224.0	430.0	<b>1408.0</b>	<b>Hour</b>
Pilot Car	47.0	0.0		0.0	100.0	56.0	105.0	<b>308.0</b>	<b>Hour</b>
Traffic Control Signs	375.8	176.0		176.0	581.2	384.8	487.5	<b>2181.3</b>	<b>Sq. Ft.</b>
Traffic Control, Miscellaneous	Lump Sum	Lump Sum		Lump Sum	Lump Sum	Lump Sum	Lump Sum	<b>Lump Sum</b>	<b>LS</b>
Type 3 Barricade	4				4	4	4	<b>16</b>	<b>Each</b>
Type C Advance Warning Arrow Board		2		2				<b>4</b>	<b>Each</b>
Temporary Pavement Marking	16.9	0.9		2.4	46.0	20.2	38.7	<b>125.1</b>	<b>Mile</b>
Railroad Protective Insurance					Lump Sum			<b>Lump Sum</b>	<b>LS</b>

PLOT SCALE - 1:1000

PLOT NAME - 1

FILE - ... \PDF\FIXED SIGNS\BORDER.DGN

PLOTTED FROM - TRAB18004

**RATES OF MATERIALS**

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

**ASPHALT SURFACE TREATMENT:**

SEGMENT	ROUTE	STATION	to	STATION
1	SD 45	0+00.00		446+68.80

CRS-2P Asphalt for Surface Treatment at the rate of 23.7 tons applied 25 feet wide.  
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 161 tons applied 25 feet wide.  
(Rate= 22 Lbs./S.Y.).

CSS-1H or SS-1H for Fog Seal at the rate of 4.4 tons applied 25 feet wide.  
(Rate = 0.07 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
2	US 12	0+00.00		7+28.64

CRS-2P Asphalt for Surface Treatment at the rate of 45.5 tons applied 48 feet wide.  
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 310 tons applied 48 feet wide.  
(Rate= 22 Lbs./S.Y.).

CSS-1H or SS-1H for Fog Seal at the rate of 8.4 tons applied 48 feet wide.  
(Rate = 0.07 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
3	US 12	0+00.00		17+58.24

CRS-2P Asphalt for Surface Treatment at the rate of 45.5 tons applied 48 feet wide.  
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 310 tons applied 48 feet wide.  
(Rate= 22 Lbs./S.Y.).

CSS-1H or SS-1H for Fog Seal at the rate of 8.4 tons applied 48 feet wide.  
(Rate = 0.07 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
4	SD 37	0+00.00		851+65.98
4	SD 37	852+82.98		1216+45.92

CRS-2P Asphalt for Surface Treatment at the rate of 32 tons applied 32 feet wide.  
(Rate = 0.40 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 207 tons applied 32 feet wide.  
(Rate= 22 Lbs./S.Y.).

CSS-1H or SS-1H for Fog Seal at the rate of 5.6 tons applied 32 feet wide.  
(Rate = 0.07 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
5	SD 37	0+00.00		534+23.04

CRS-2P Asphalt for Surface Treatment at the rate of 23.7 tons applied 25 feet wide.  
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 161 tons applied 25 feet wide.  
(Rate= 22 Lbs./S.Y.).

CSS-1H or SS-1H for Fog Seal at the rate of 4.4 tons applied 25 feet wide.  
(Rate = 0.07 Gal./S.Y.).

SEGMENT	ROUTE	STATION	to	STATION
6	SD 25	0+00.00		877+16.69
6	SD 25	878+22.19		1012+70.40

CRS-2P Asphalt for Surface Treatment at the rate of 23.7 tons applied 25 feet wide.  
(Rate = 0.38 Gal./S.Y.).

Type 1A Cover Aggregate at the rate of 161 tons applied 25 feet wide.  
(Rate= 22 Lbs./S.Y.).

CSS-1H or SS-1H for Fog Seal at the rate of 4.4 tons applied 25 feet wide.  
(Rate = 0.07 Gal./S.Y.).



### TABLE OF ADDITIONAL QUANTITIES

Segment	Route	Description	CRS-2P Asphalt for Surface Treatment	Type 1A Cover Aggregate	SS-1h or CSS-1h Asphalt Fog Seal
			(Ton)	(Ton)	(Ton)
2	HW 12	Gored Area (Between Intersection of SD 37 & North 2nd Street)	0.3	2.1	0.1
3	HW 12	Gored Area (Between Intersection of SD 37 & North 2nd Street)	0.2	1.7	0
		Gored Area (East of North 3rd Street)	0.9	6.3	0.2
		Intersecting Radius at HW 10	1.3	8.7	0.2
		Total Segment 3:	2.4	16.7	0.4
4	SD 37	Turning Lane & Gored Area (Intersection of HW 12)	0.3	2.2	0.1
		Paved to ROW Line	1.8	12.1	0.3
		MRM 208.506 Lt Groton Ford			
		MRM 208.542 Lt Groton Ford			
		MRM 213.787 Rt			
		MRM 214.152 Lt			
		18 Intersecting Roads (w/pads to Radius Point)	4.8	32.7	0.9
		4 Intersecting Roads (Paved to ROW Line)	1.8	12.1	0.3
		MRM 211.444 130th/ Brown Cnty Hwy 13 Rt			
		MRM 215.459 127th/Brown Cnty Hwy 13 LT & Rt			
		MRM 219.538 122nd/Brown Cnty Hwy 11 Rt			
		MRM 222.498 119th St Rt			
		Cemetery Pullout	3.1	21.4	0.6
		3 Mailbox Turnouts	0.3	2.0	0.1
Total Segment 4:	12.1	82.5	2.3		
5	SD 37	Intersecting Radius at HW 10	1.2	8.2	0.2
6	SD 25	Gored Area (Intersection of SD 17)	3.4	23.0	0.6
		Intersecting Radius at HW 10	3.4	23.0	0.6
		Total Segment 6:	6.8	46.0	1.2
<b>Total:</b>			21.6	147.3	4.0

Application rate of CRS-2P, Type 1A Cover Aggregate, and Fog Seal will be as indicated in the Rates of Materials for the appropriate Segment, or as directed by the Engineer in the field.

The above Quantities are included in the Estimate of Quantities.

**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 temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports. Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

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.

Traffic Control Signs, as shown in the Estimate of Quantities, 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.

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 bid 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.

Lane closures will be limited to 3 miles in length. The distance between the closest points of any two-lane closures will be at least 3 miles, excluding tapers.

**TRAFFIC CONTROL FOR ASPHALT SURFACE TREATMENT**

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

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

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

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

"CONTRACTOR'S LETTERHEAD"

THIS HIGHWAY IS BEING RESURFACED WITH A ROCK CHIP SEAL COAT.

THIS TYPE OF CONSTRUCTION HAS THE POTENTIAL OF CAUSING VEHICLE DAMAGE SUCH AS CHIPPED WINDSHIELDS AND BROKEN HEADLIGHTS DUE TO ROCKS BEING THROWN BY HIGH SPEED ONCOMING OR PASSING TRAFFIC.

YOU MAY WISH TO CONSIDER TAKING AN ALTERNATE ROUTE. IF YOU PROCEED, KEEP TO THE RIGHT AND DRIVE 40 MPH OR LESS. ANOTHER FLAGGER AND A PILOT CAR WILL BE ESCORTING YOU AROUND THE OIL SEAL COAT APPLICATION AREA.

THANK YOU.

### 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 ONE LANE ROAD WAIT FOR PILOT CAR signs for use on intersecting roads. These signs will be mounted on a Type 3 Barricade and placed at the stop sign. This assembly 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.



3.0" Radius, 1.0" Border, White on, Orange;  
 "ONE LANE ROAD" Black, C 2K;  
 "WAIT FOR" Black, C 2K;  
 "PILOT CAR" Black, C 2K;

### MOBILE WORK OPERATION

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

### HAUL ROAD

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

### ESTIMATED QUANTITIES

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

### TYPE 1A COVER AGGREGATE

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

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

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

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

### BRIDGES, APPROACH SLABS, SLEEPER SLABS, STRIP SEALS, RAILROAD CROSSINGS, MANHOLES, WATER VALVES, CONCRETE AND BUILDINGS

Asphalt Surface Treatment will not be placed on any of the bridges, approach slabs, sleeper slabs, strip seals, railroad crossings, manholes, water valves or any type of concrete on these projects.

A blocking median such as roofing paper will be placed over the manhole cover and valve boxes to prevent an application of Asphalt on the top of the manhole covers and valve boxes.

Loose aggregate will not be swept onto bridge decks or into drop inlets. Aggregate will be removed from neoprene joints located on approach slabs or bridge decks.

### EXISTING PAVEMENT CONDITIONS & TRAFFIC VOLUMES

Actual rates will be adjusted in the field during construction by the Engineer. The traffic volumes are shown on the title sheets.

### US 12 Segment 2 & 3

Segments 2 and 3 on US 12 in Groton have solid double yellow centerlines. Paint quantities were calculated using this information.

### TEMPORARY PAVEMENT MARKINGS

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking.

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

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

Any markers that are non-reflective will be cleaned. Cleaning of temporary flexible vertical markers will be incidental to the contract unit price per mile for TEMPORARY PAVEMENT MARKINGS. Petroleum products will not be used to clean markers.

Any temporary flexible vertical markers (tabs) with covers removed before the application of the seal will be replaced prior to application of the seal.

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.

The Contractor is allowed to use DO NOT PASS and PASS WITH CARE signs for a period of 2 weeks to mark no passing zones on roads with an average daily traffic of 2500 vehicles or less.

Quantities of Temporary Pavement Markings consist of:

- One pass on top of the Seal Coat.
- One pass on top of the Fog Seal.

### TABLE OF TEMPORARY PAVEMENT MARKING ITEMS

SEGMENT	(N.A.B.I.) DO NOT PASS signs (Each)	(N.A.B.I.) PASS WITH CARE Signs (Each)	Total Length of No Passing Zones (Miles)
1 (SD 45)	2	1	0.324
4 (SD 37)	7	6	2.68
5 (US 37)	9	9	1.72
6 (SD 25)	54	53	10.95

### PROJECT BROOMING

All material will be broomed off of bridges and curb & gutter areas adjacent to the bridges. Bridges are indicated on the various layout maps. No material will be broomed under the guardrail, including the 3 cable guardrail or into the drop inlets. This material from the curb & gutter areas of the bridges, the guardrail areas of the bridges and the drop inlets will be disposed of in a manner satisfactory to the Engineer.

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

Material that is 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.

The following locations have curb & gutter, which will require a pickup broom:

Segment	Comments
2	All
3	MRM 309.02 + 0.067 to MRM 309.30

### HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

This material will consist of a durable high build, low VOC, fast drying, waterborne traffic paint with a 100% acrylic polymer (Arkema DT-400, Dow HD-21A, or equivalent). The Contractor will provide certification that the material is one of the following products or an equivalent as approved by the Operations Traffic Engineer:

- Diamond Vogel's Waterborne High Build Polymer Marking Paint
- Ennis-Flint's High Build Polymer Marking Paint

Reflective media will consist of glass beads.

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

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 Contractor will be required to inventory and mark, with appropriate colored tabs, the extent and location of the existing lane tapers. The cost of the tabs will be incidental to the contract unit prices for the various items.

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.

For each working day the application of permanent pavement marking paint remains uncompleted beyond the time limits described in the preceding paragraph, the Contractor will be assessed liquidated damages at the rate of \$250.00 per day.

The liquidated damages shall apply up to the expiration of the contract time requirement in which the permanent pavement markings are required to be completed, including any formally approved time extensions. Following the expiration of the contract time requirement in which the permanent pavement markings are required to be completed, including any formally approved time extensions, liquidated damages will be assessed in accordance with Section 8.8 of the specifications.

This provision applies up to the Contract Completion Date, as extended. After the completion date, liquidated damages will be assessed in accordance with section 8.8, until the Permanent Pavement Marking is completed, even though the project may be open to traffic

### RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

### RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

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

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

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



**PAVEMENT MARKINGS ON US 12 & SD 37: SEGMENTS 2, 3 & 4 IN GROTON**

Segments 2 and 3 in Groton. Mask the present 24" yellow diagonals and crosswalk markings that are tape.

Between Segment 2 Station 7+28.64 and Segment 3 Station 0+00.00 the Contractor will perform Grooving for Durable Pavement Marking, 4" on HW 12 PCC Pavement. Application of a high build waterborne pavement marking will be for white and yellow long lines.

Segment 4 in Groton. Mask the present 24" yellow diagonals and white left turn arrow that are tape.

**REMOVE EXISTING PAVEMENT MARKINGS**

The existing pavement markings in Segments 2 and 3 consist of cold applied plastic pavement markings and paint.

Existing cold applied plastic pavement markings, 4" in Segments 2 and 3 will be removed in their entirety prior to application of the Asphalt Surface Treatment. It will be the Contractor's responsibility to visit the project site to determine what type of material(s) are present and the extent of the work required to remove the existing markings.

Payment for removal of the existing pavement markings will be incidental to the contract unit prices for the various asphalt surface treatment contract items.

**GROOVING FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT**

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 for "Grooving for Durable Pavement Marking" contract items.

Unless otherwise specified in the plans, the Contractor will groove the surface for High Build Waterborne Pavement Marking Paint as specified in these plans and as per the manufacturer's instructions.

The grooving will be completed within the following tolerances:

Description	Specification	Tolerance
Depth of Groove	Marking Thickness <sup>1</sup> + 15 mils	+ 5 mils
Width of Groove	5 to 6 inches	
Length of Skip Lines <sup>2</sup>	10 foot 6 inches	± 3 inch
Tapers at ends of lines	6 to 9 inches	
Between Double Lines	4 inches	± 1/2 inch

<sup>1</sup> Marking thickness will include the thickness of marking material and reflective media.

<sup>2</sup> Additional length may be required as specified in the plans.

The equipment will be capable of the following:

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

If damage occurs, including, but not limited to, joints, joint sealant material, and backer rod, the grooving operation will be stopped and modifications will be made to the grooving operation to prevent further damage. The Contractor will be required to use specially prepared circular diamond blade cutting heads to prevent damage at the joints. Damage caused will be repaired or replaced by the Contractor, as directed by the Engineer. No additional payment will be made for the repair work or any reapplication of the pavement marking in the area of the repair.

**COLD APPLIED PLASTIC PAVEMENT MARKING**

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

Locations for installation of Cold Applied Plastic Pavement Markings are indicated on the Pavement Marking Details for SD37 in Groton for Segment 3 detail sheet. Existing markings require full removal, surface preparation, and installation of new markings incidental to the cost for Cold Applied Plastic Pavement Marking.

Markings will be replaced prior to chip seal to the satisfaction of the Engineer.

Three 8' long Cold Applied Plastic Pavement Markings, 24" White will be installed at the following location:

ITEM	LOCATION	QUANTITY
*Crosswalk	Segment 3 US 12 East of Main Street	24 Ft

**PAVEMENT MARKING MASKING**

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

The following items will be masked:

ITEM	LOCATION	QUANTITY
*Goring	Segment 2, US 12 West of US 12 Intersection	32 Ft
*Goring	Segment 3, US 12 intersection with North 1 <sup>st</sup> Street	30 Ft
*Cross Walk	Segment 3 US 12 East of Main Street	112 Ft
*Goring	Segment 3, US 12 East of North 3 <sup>rd</sup> Street	350 Ft
*Left Turn Arrow	Segment 4 SD37 intersection with US 12	1 Each
*Goring	Segment 4 SD37 intersection with US 12	16 Ft
*RR Crossing	Segment 4 SD 37	2 Each
Stop Bar	Segment 4 SD 37 at SD10 Jct	12 Ft
Stop Bar	Segment 5 SD 37 at SD10 Jct	12 Ft
*Goring	Segment 6 SD 25 Intersecting SD 17	219 Ft
*Left Turn Arrow	Segment 6 SD 25 Intersecting SD 17	3 Each
Stop Bar	Segment 6 SD 25 at SD 10 Jct.	12 Ft

\*The above noted items are further shown on the various pavement marking detail sheets.

Masking of pavement marking will be measured and paid for once for the application prior to the Asphalt Surface Treatment and once for the application of the Fog Seal. The above quantities are doubled in the Estimate of Quantities to account for the payment for 2 applications.

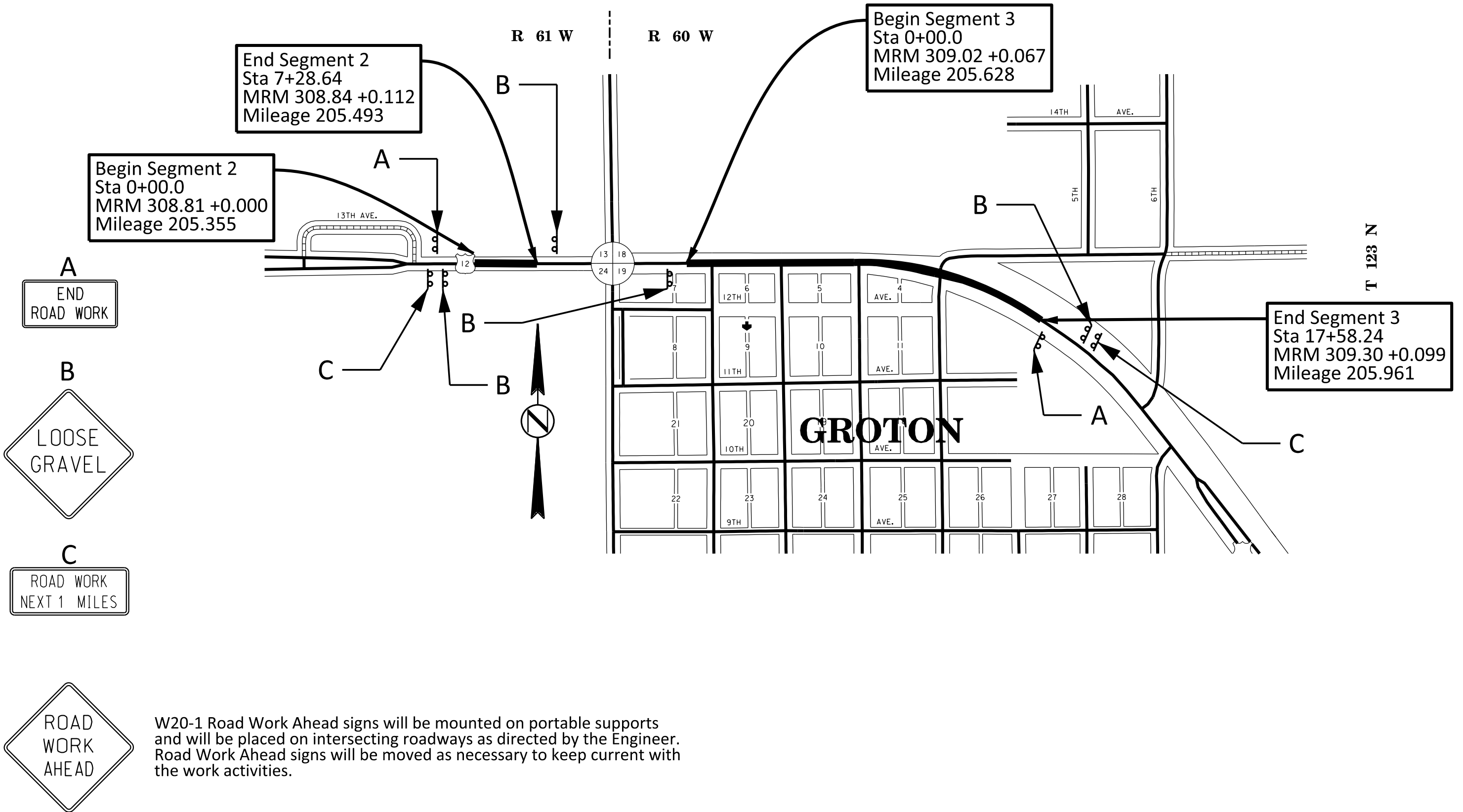
# FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	14	29
Plotting Date: 01/07/2021			

PLOT SCALE - 1:5000

PLOT NAME - 1

FILE - ...FIXED SIGN SHEET1.DGN



W20-1 Road Work Ahead signs will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. Road Work Ahead signs will be moved as necessary to keep current with the work activities.

PLOTTED FROM - TRAB11017

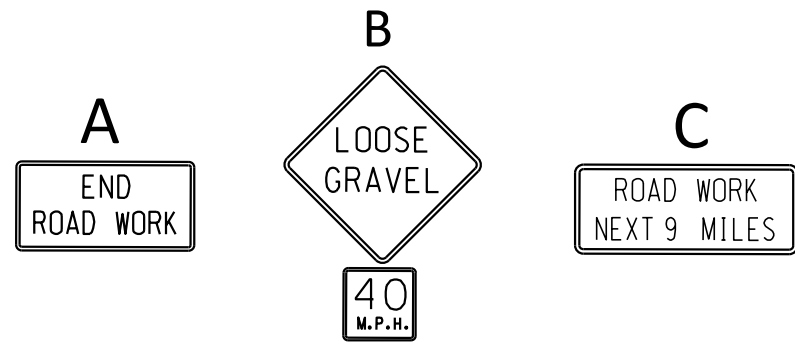
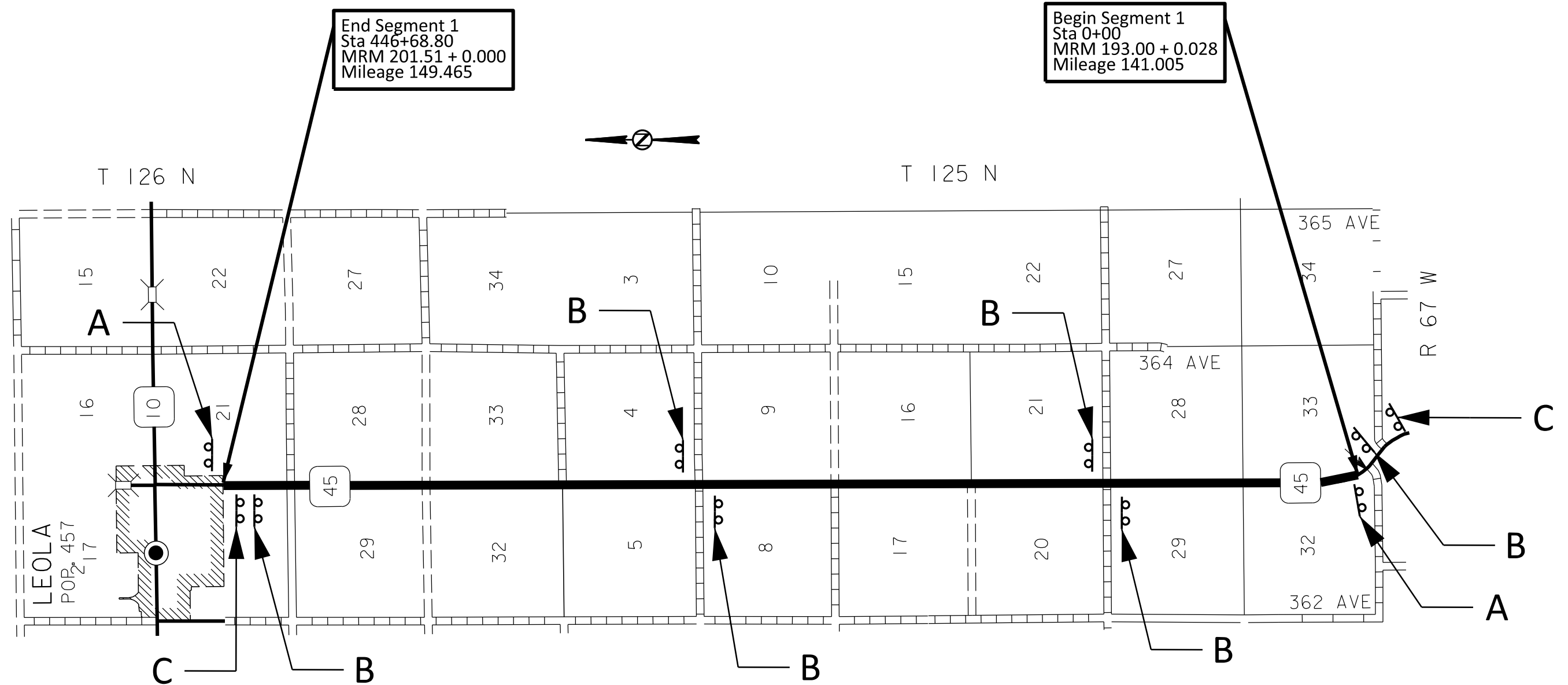
# FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	15	29
Plotting Date: 01/06/2021			

PLOT SCALE - 1:10780

PLOT NAME - 1

FILE - ...FIXED SIGN SHEET2.DGN



W20-1 Road Work Ahead signs will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. Road Work Ahead signs will be moved as necessary to keep current with the work activities.

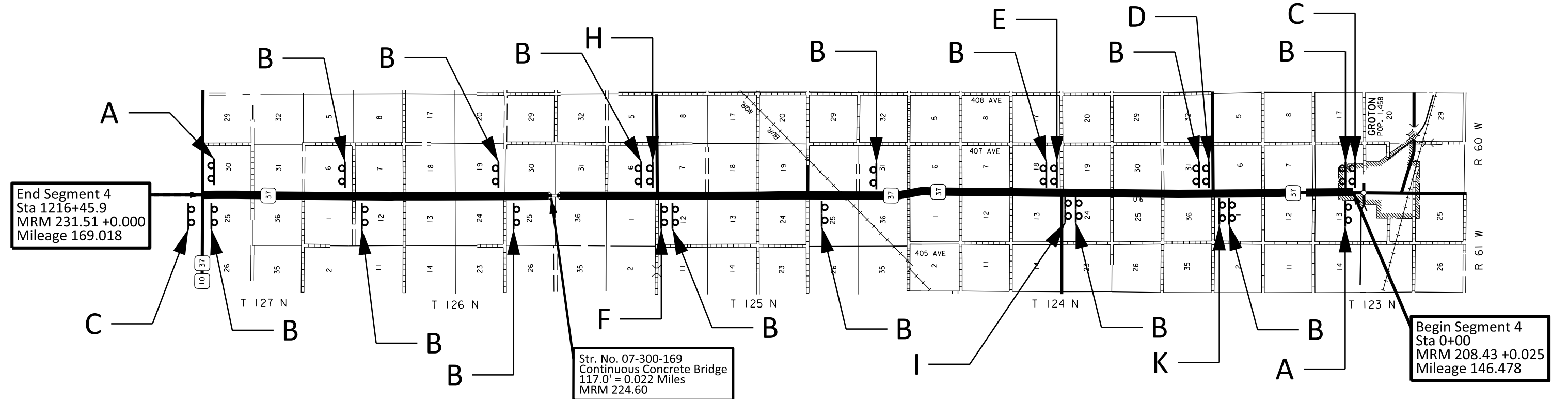
PLOTTED FROM - TRAB11017

# FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	16	29
Plotting Date: 01/07/2021			

PLOT SCALE - 1:12000

PLOT NAME - 1



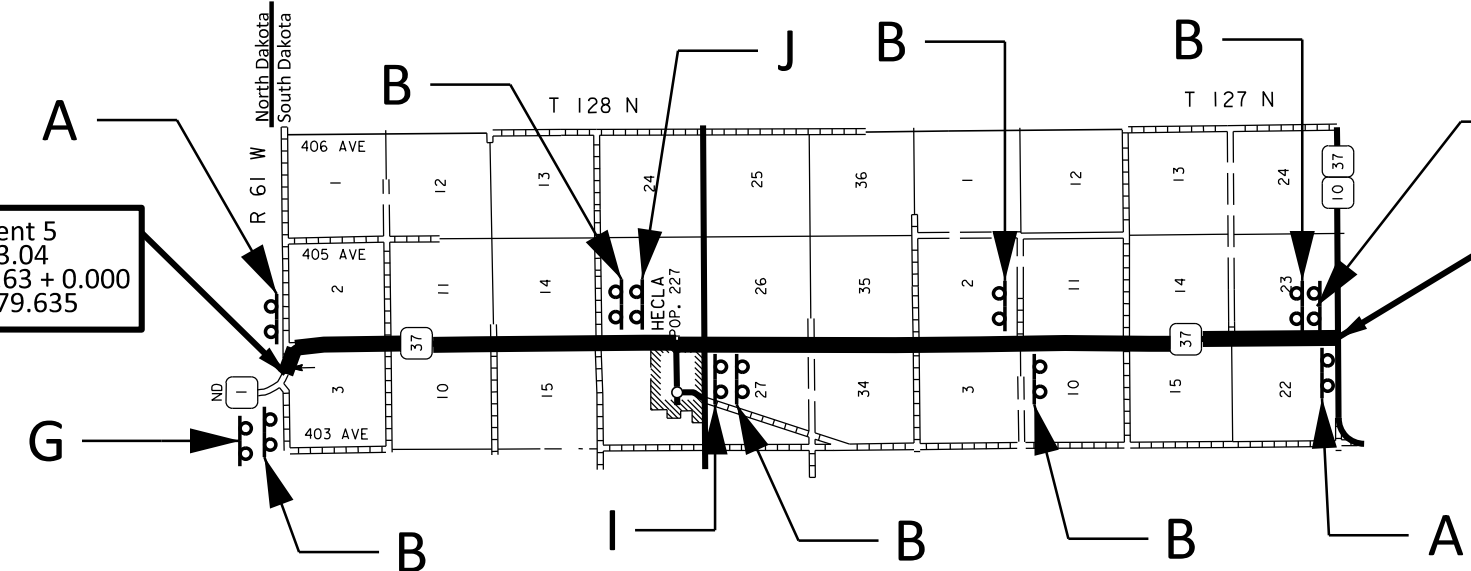
End Segment 4  
Sta 1216+45.9  
MRM 231.51 +0.000  
Mileage 169.018

Begin Segment 4  
Sta 0+00  
MRM 208.43 +0.025  
Mileage 146.478

Str. No. 07-300-169  
Continuous Concrete Bridge  
117.0' = 0.022 Miles  
MRM 224.60

End Segment 5  
Sta 534+23.04  
MRM 243.63 + 0.000  
Mileage 179.635

Begin Segment 5  
Sta 0+00  
MRM 233.51 + 0.000  
Mileage 169.517



**A**  
END ROAD WORK

**B**  
LOOSE GRAVEL  
40 M.P.H.

**C**  
ROAD WORK NEXT 23 MILES

**D**  
ROAD WORK NEXT 20 MILES

**E**  
ROAD WORK NEXT 17 MILES

**F**  
ROAD WORK NEXT 14 MILES

**G**  
ROAD WORK NEXT 10 MILES

**H**  
ROAD WORK NEXT 9 MILES

**I**  
ROAD WORK NEXT 6 MILES

**J**  
ROAD WORK NEXT 4 MILES

**K**  
ROAD WORK NEXT 3 MILES

ROAD WORK AHEAD

W20-1 Road Work Ahead signs will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. Road Work Ahead signs will be moved as necessary to keep current with the work activities.

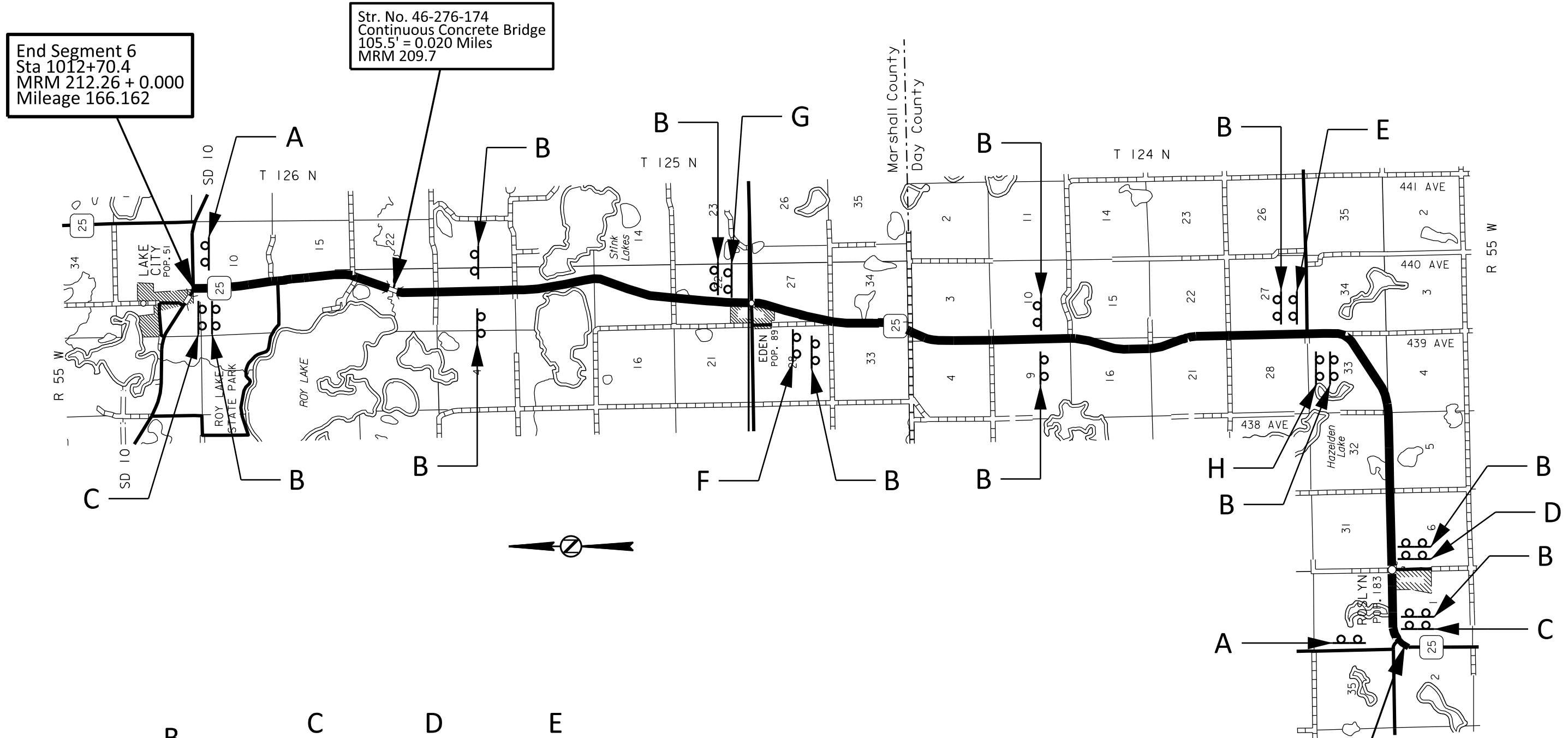
PLOTTED FROM - TRAB11017

FILE - ...FIXED SIGN SHEET3.DGN



# FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	17	29
Plotting Date: 01/11/2021			



End Segment 6  
Sta 1012+70.4  
MRM 212.26 + 0.000  
Mileage 166.162

Str. No. 46-276-174  
Continuous Concrete Bridge  
105.5' = 0.020 Miles  
MRM 209.7

Begin Segment 6  
Sta 0+00  
MRM 193.00 + 0.034  
Mileage 146.982

A END ROAD WORK	B LOOSE GRAVEL 40 M.P.H.	C ROAD WORK NEXT 19 MILES	D ROAD WORK NEXT 18 MILES	E ROAD WORK NEXT 14 MILES
		F ROAD WORK NEXT 11 MILES	G ROAD WORK NEXT 7 MILES	H ROAD WORK NEXT 5 MILES



W20-1 Road Work Ahead signs will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. Road Work Ahead signs will be moved as necessary to keep current with the work activities.

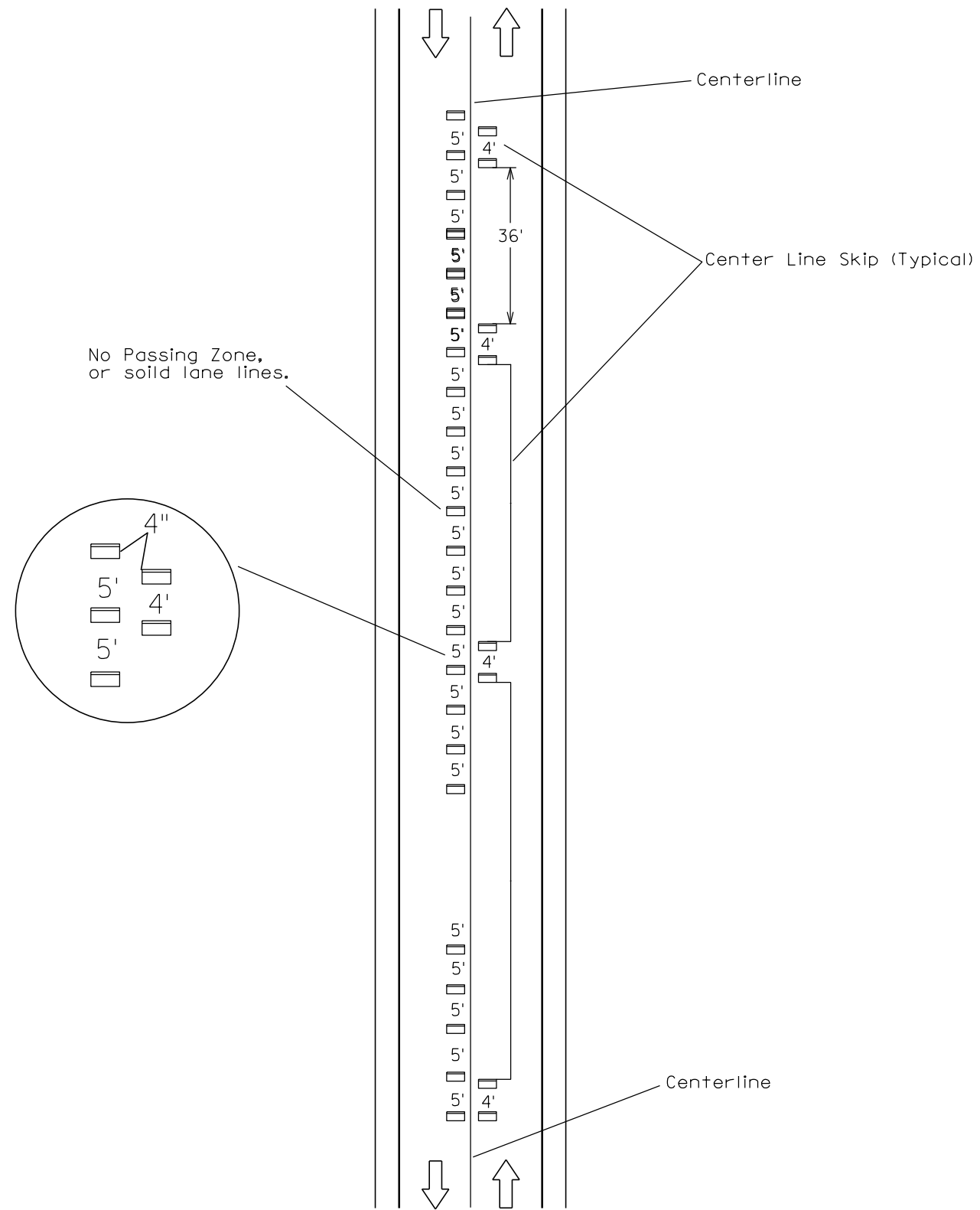
PLOT SCALE - 1:7000

PLOTTED FROM - TRAB11017

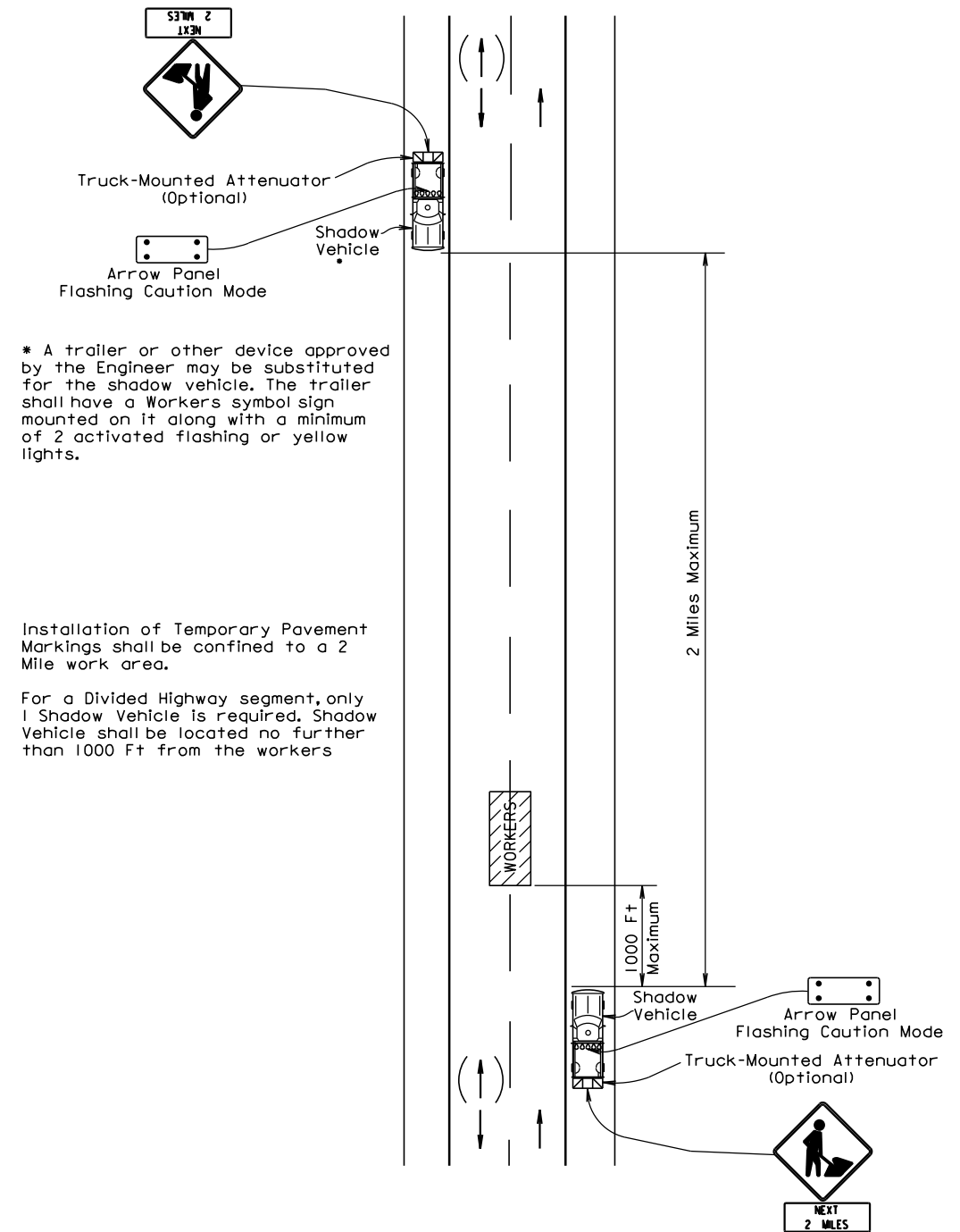
PLOT NAME - 1

FILE - ...FIXED SIGN SHEET4.DGN

### GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD MARKER INSTALLATION



### GUIDES FOR TRAFFIC CONTROL DEVICES APPLICATION OF TEMPORARY PAVEMENT MARKING TABS



PLOT SCALE - 1:1000

\* 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.

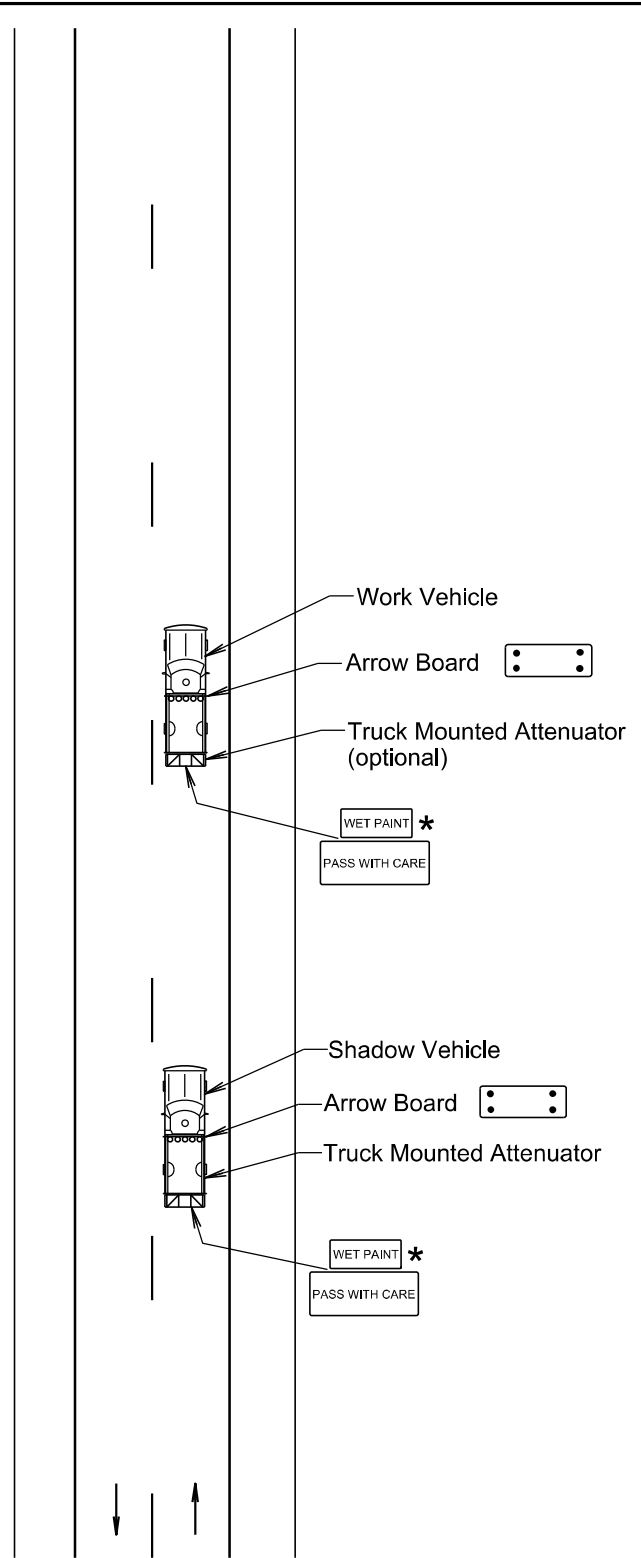
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

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".



May 9, 2020

PLOT NAME - 1

FILE - ... \PDF\FIXED SIGNS\BORDER.DGN

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

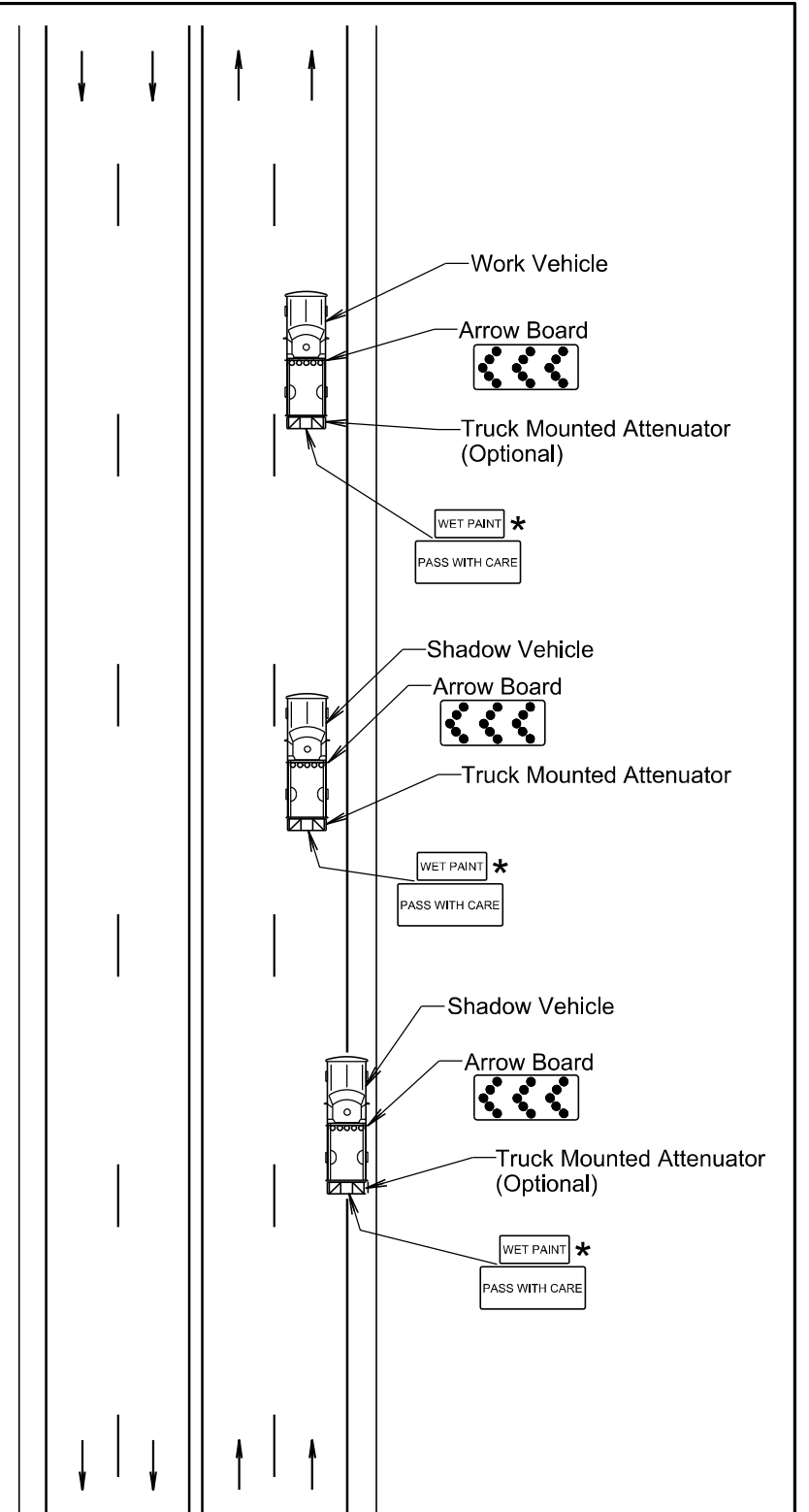
Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

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".

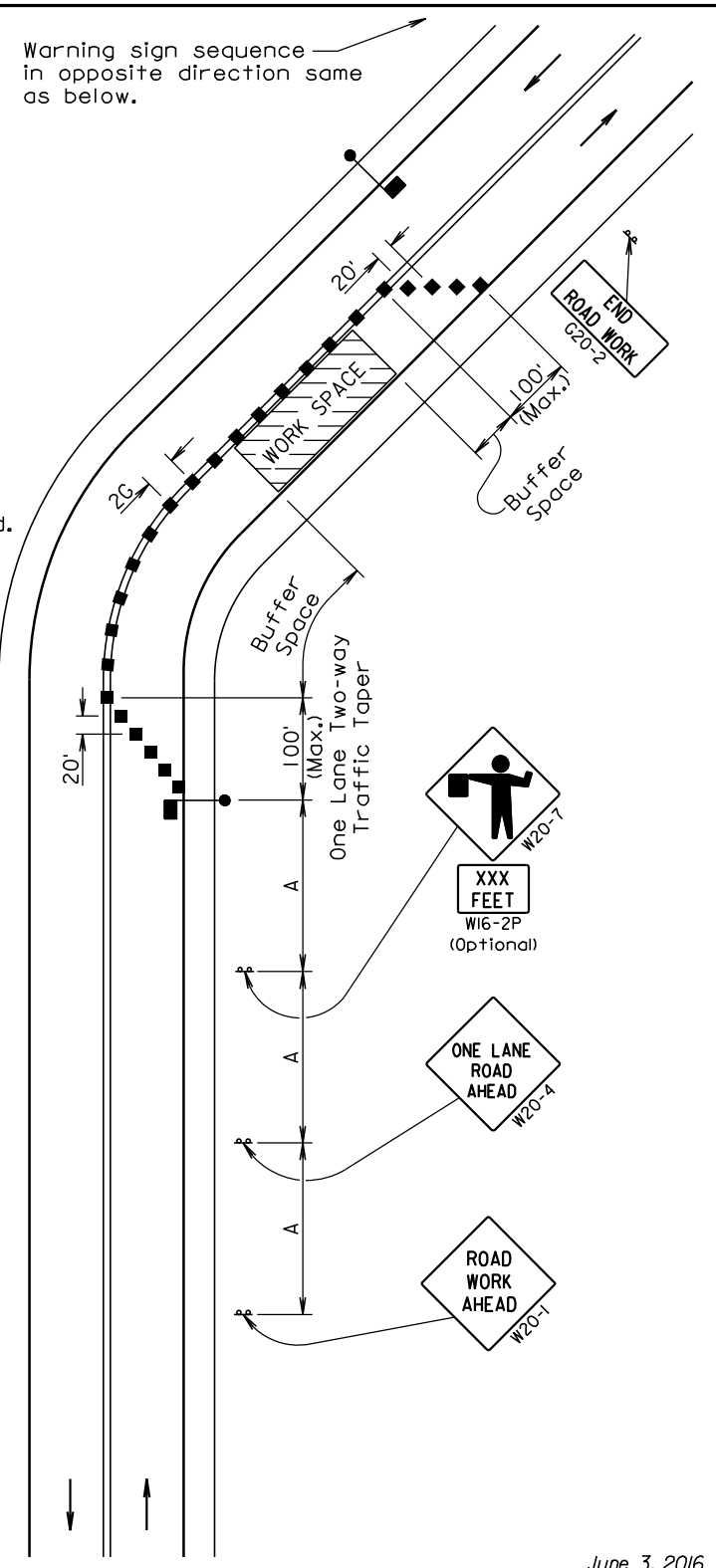
All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".



May 9, 2020

PLOT SCALE - 1:1000

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) shall be displayed in advance of the liquid asphalt areas.

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

The channelizing devices shall be drums or 42" cones.

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

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

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

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

June 3, 2016

<b>SDOT</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER <b>634.23</b>
	<i>Published Date: 1st Qtr. 2021</i>	Sheet 1 of 1

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

\* Spacing is 40' for 42" cones.

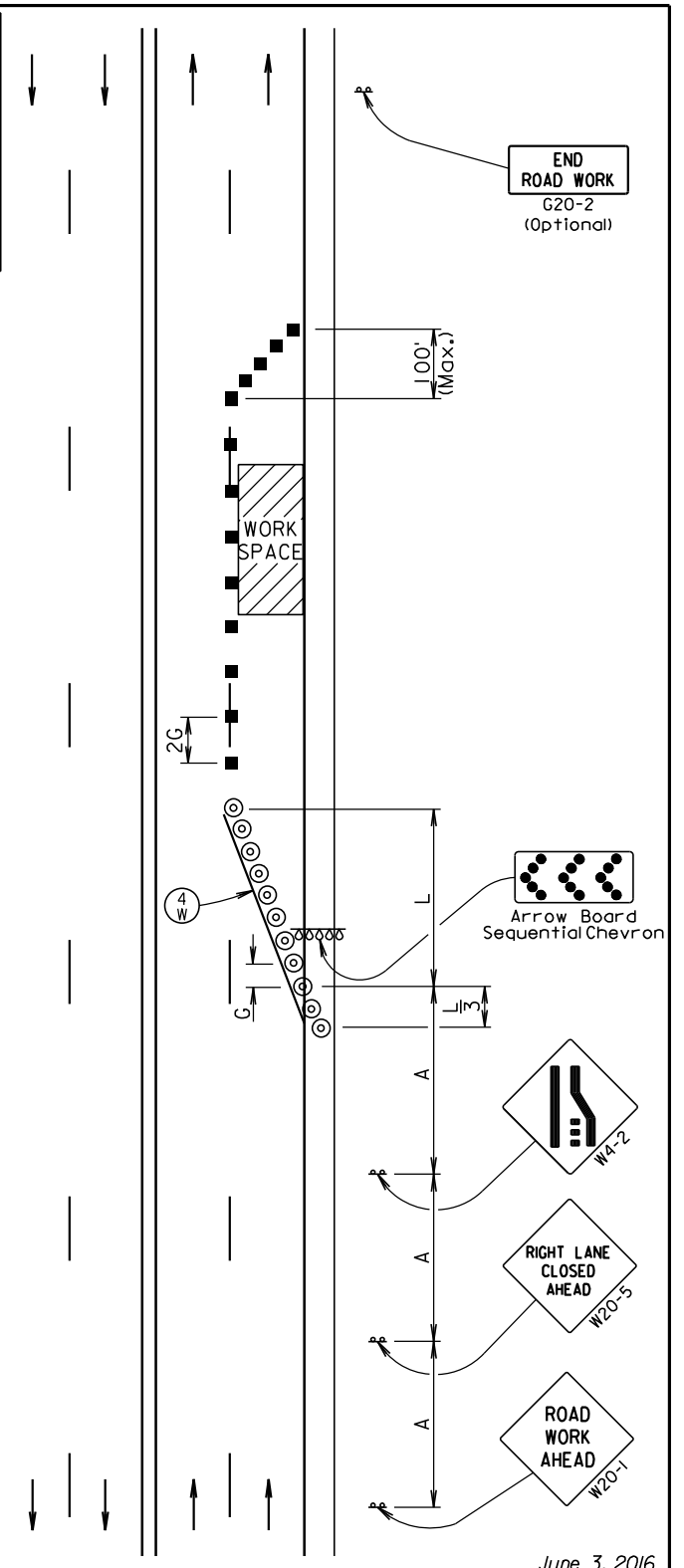
⊙ Reflectorized Drum  
■ Channelizing Device  
④ 4" White Temporary Pavement Marking

The channelizing devices shall be 42" cones or drums.

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

Temporary pavement markings shall be used if traffic control must remain overnight.

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



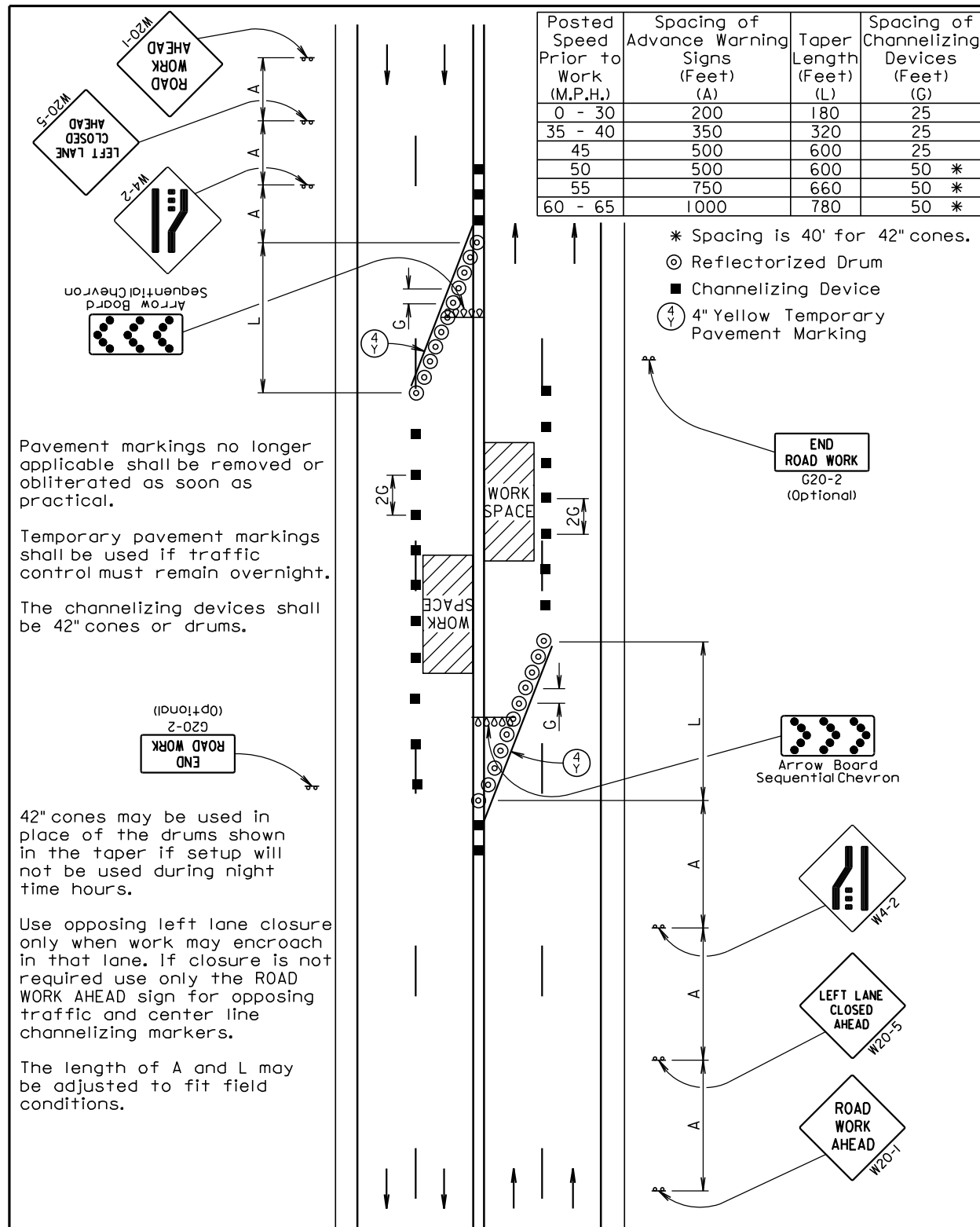
June 3, 2016

<b>SDOT</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED</b>	PLATE NUMBER <b>634.47</b>
	<i>Published Date: 1st Qtr. 2021</i>	Sheet 1 of 1

PLOTTED FROM - TRAB18004

FILE - ... \PDF\FIXED SIGNS\BORDER.DGN PLOT NAME - 1

PLOT SCALE - 1:1000



Pavement markings no longer applicable shall be removed or obliterated as soon as practical.

Temporary pavement markings shall be used if traffic control must remain overnight.

The channelizing devices shall be 42" cones or drums.

END ROAD WORK  
G20-2  
(Optional)

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

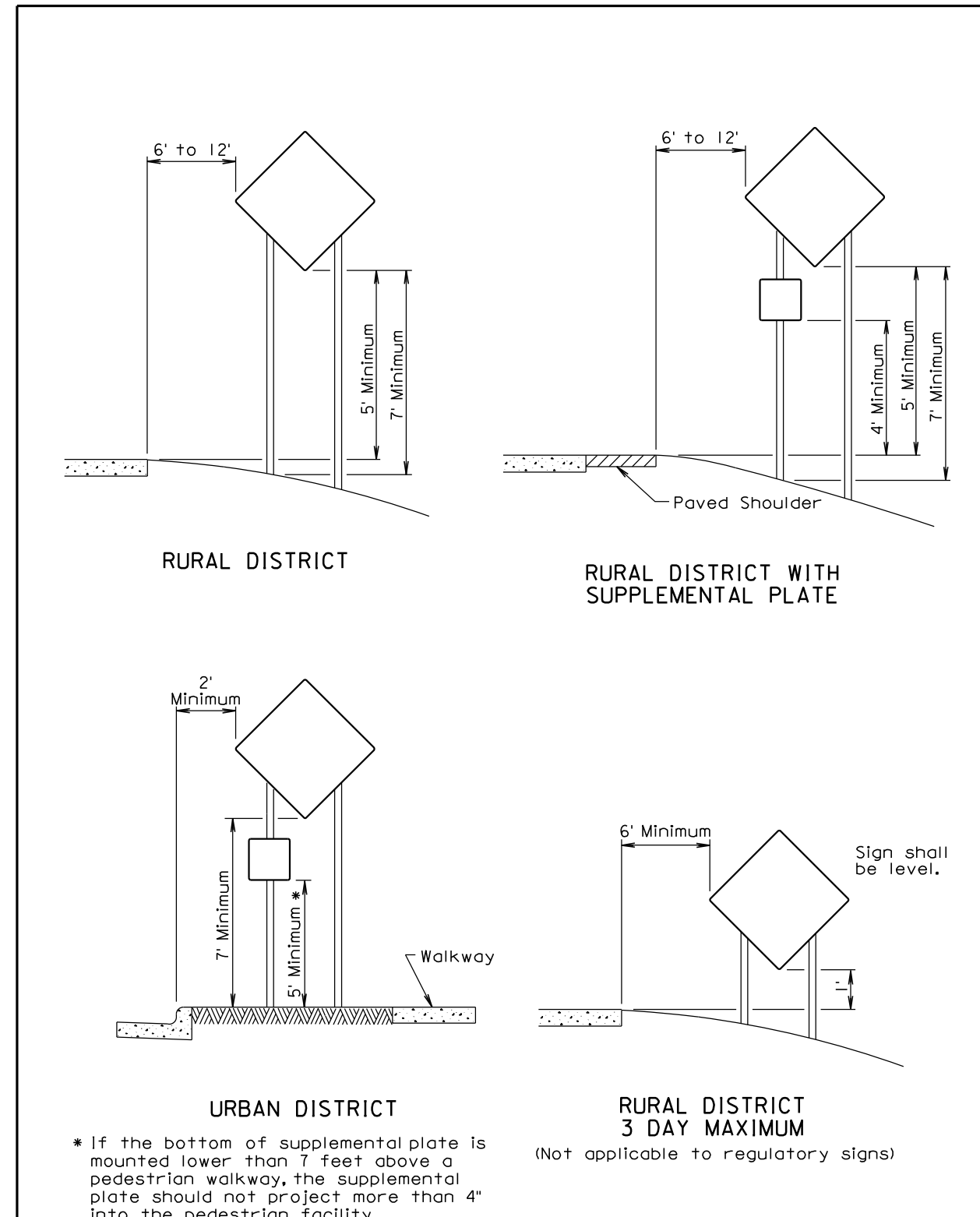
Use opposing left lane closure only when work may encroach in that lane. If closure is not required use only the ROAD WORK AHEAD sign for opposing traffic and center line channelizing markers.

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

June 3, 2016

Published Date: 1st Qtr. 2021	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, LEFT LANE CLOSED	PLATE NUMBER 634.48
			Sheet 1 of 1

PLOT NAME - 1



September 22, 2014

Published Date: 1st Qtr. 2021	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1

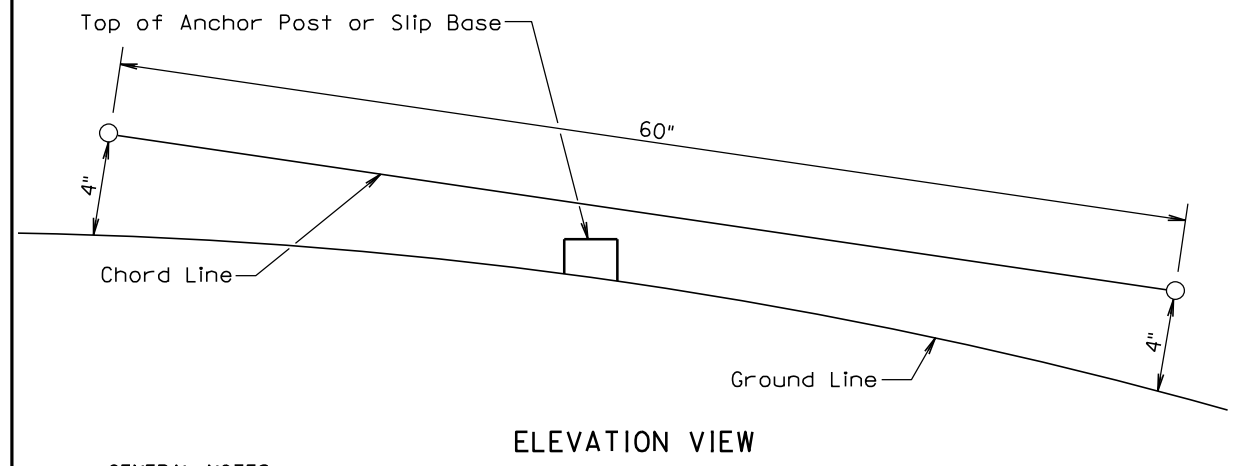
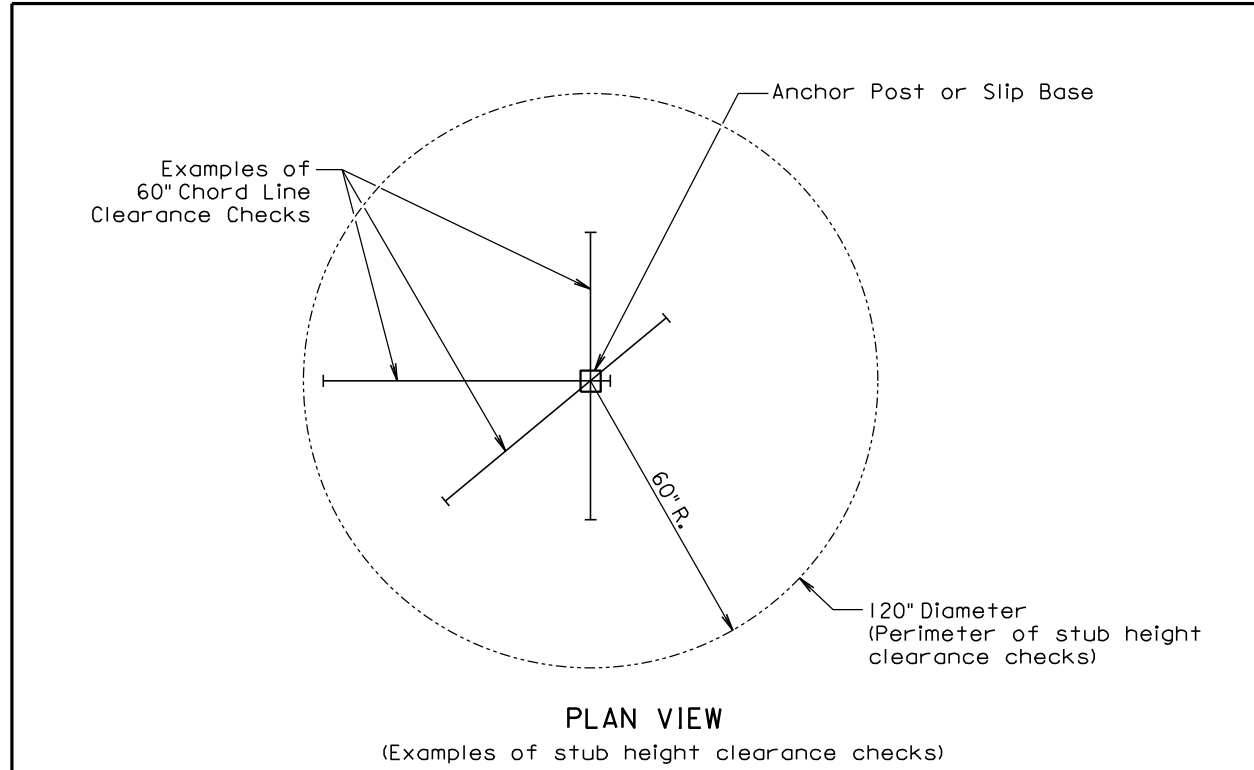
PLOTTED FROM - TRAB18004

FILE - ... \PDF\FIXED SIGNS\BORDER.DGN

PLOT SCALE - 1:1000

PLOT NAME - 1

FILE - ... \PDF\FIXED SIGNS\BORDER.DGN



**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

<i>Published Date: 1st Qtr. 2021</i>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER <b>634.99</b>
			Sheet 1 of 1

PLOT SCALE - 1:1000

PLOT NAME - 1

FILE - ... \PDF\FIXED SIGNS\BORDER.DGN

PLOTTED FROM - TRAB18004

### 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	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 9 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	ONE LANE ROAD WAIT FOR PILOT CAR	4	48" x 24"	8.0	32.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>375.8</b>

### SEGMENT 2 ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>176.0</b>

### SEGMENT 3 ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>176.0</b>

### 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	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	14	48" x 48"	16.0	224.0
W13-1P	ADVISORY SPEED (plaque)	14	30" x 30"	6.3	88.2
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 23 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 20 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 17 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 14 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 9 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 6 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 3 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	ONE LANE ROAD WAIT FOR PILOT CAR	4	48" x 24"	8.0	32.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>581.2</b>

### 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	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 10 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 6 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 4 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	ONE LANE ROAD WAIT FOR PILOT CAR	4	48" x 24"	8.0	32.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>384.8</b>

### 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	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	10	48" x 48"	16.0	160.0
W13-1P	ADVISORY SPEED (plaque)	10	30" x 30"	6.3	63.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 19 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 18 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 14 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 11 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 7 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 5 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	ONE LANE ROAD WAIT FOR PILOT CAR	4	48" x 24"	8.0	32.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>487.5</b>

# PAVEMENT MARKING LAYOUT US 12 - GROTON

STATE OF SOUTH DAKOTA	PROJECT NH-P 0011(149)	SHEET NO. 24	TOTAL SHEETS 29
-----------------------	---------------------------	-----------------	--------------------

Plotting Date: 02/16/2021

Revised: 1/27/2021 AT  
Revised: 2-16-21 SLS

Sheet 1 of 3



PLOT SCALE - 1:150

PLOT NAME - 1

FILE - ... \IPM.DGN

PLOTTED FROM - TRAB17882

Begin Segment 2  
Match Existing Marking

Mask In Place 24" Yellow Diagonal Lines

Grooving for Durable Pavement  
Marking, 4" on the PCC Pavement

Present U.S. Hwy 12

125'

End Segment 2  
Asphalt Surface Treatment

### ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
(4)W	Hign Build Waterborne Pavement Marking Paint, 4" White	16	GAL
(4)Y	Hign Build Waterborne Pavement Marking Paint, 4" Yellow	49	GAL
(24)W	Cold Applied Plastic Pavement Marking, 24" White	24	FT
	Grooving for Durable Pavement Marking, 4"	2,607	FEET
	Pavement Marking Masking 25"	1,048	FT

Identical Points

SD 37

24" markings for Stop Bars and  
Crosswalk within intersection  
do not require any work.  
Turn Arrows do not require  
any work.

152'

125'

Present U.S. Hwy 12

161'

Begin Segment 3  
Asphalt Surface Treatment

N. 1st St.

Grooving for Durable Pavement  
Marking, 4" on the PCC Pavement



# PAVEMENT MARKING LAYOUT US 12 - GROTON

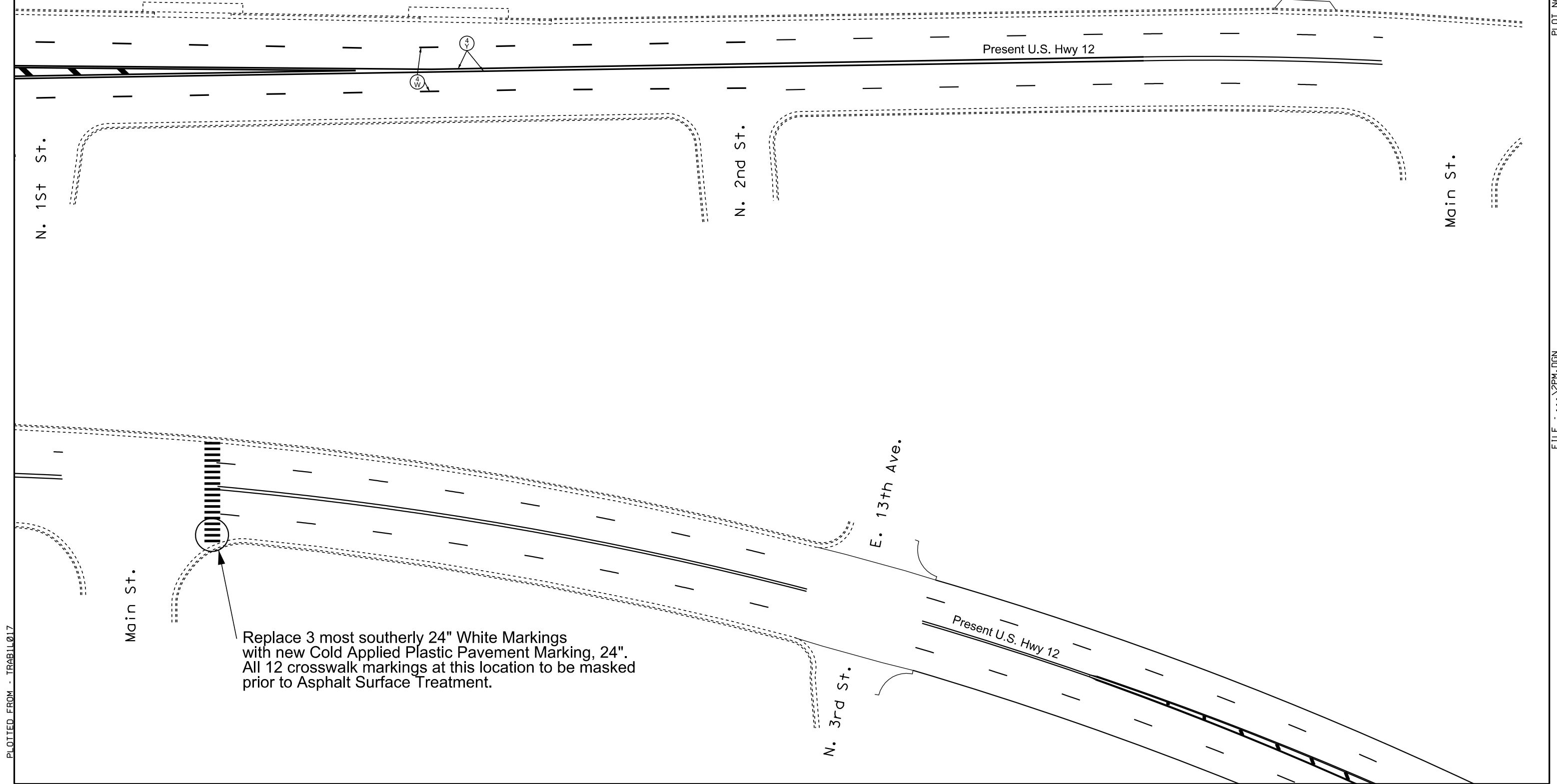
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	25	29
Plotting Date: 01/08/2021			

Sheet 2 of 3



PLOT SCALE - 1:50

PLOT NAME - 1



Replace 3 most southerly 24" White Markings with new Cold Applied Plastic Pavement Marking, 24". All 12 crosswalk markings at this location to be masked prior to Asphalt Surface Treatment.

PLOTTED FROM - TRAB11017

FILE - ... \2PM.DGN

# PAVEMENT MARKING LAYOUT US 12 - GROTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(149)	26	29
Plotting Date: 01/08/2021			

Sheet 3 of 3



PLOT SCALE - 1:50

PLOTTED FROM - TRAB11017

PLOT NAME - 1

FILE - ... \3PM.DGN

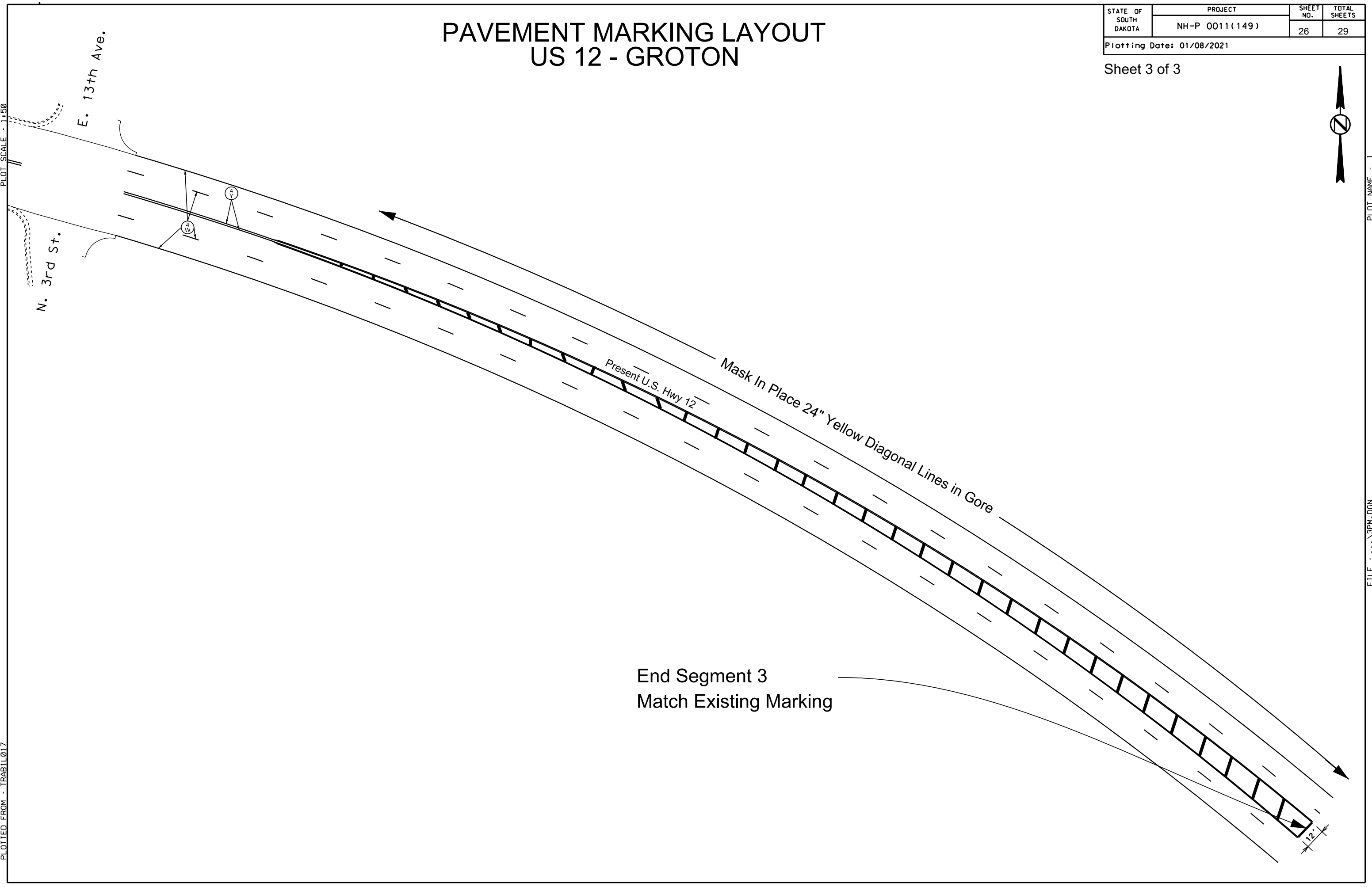
E. 13th Ave.  
N. 3rd St.

Present U.S. Hwy 12

Mask In Place 24" Yellow Diagonal Lines in Gore

End Segment 3  
Match Existing Marking

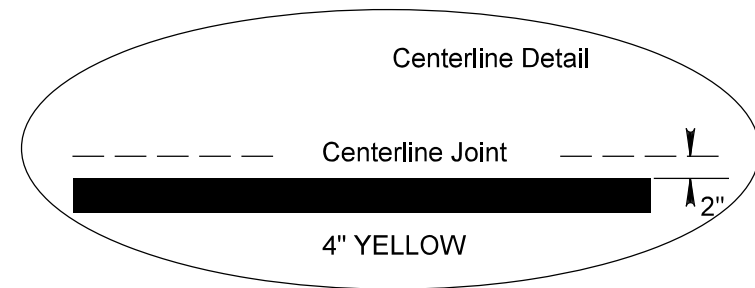
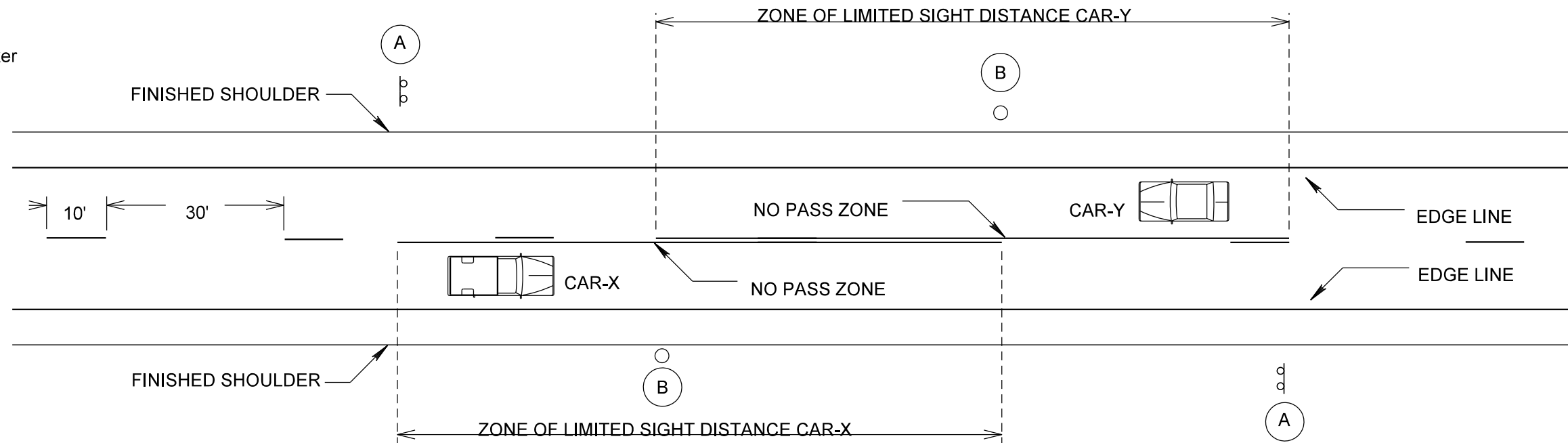
12.1



# TYPICAL PAVEMENT MARKING LAYOUT

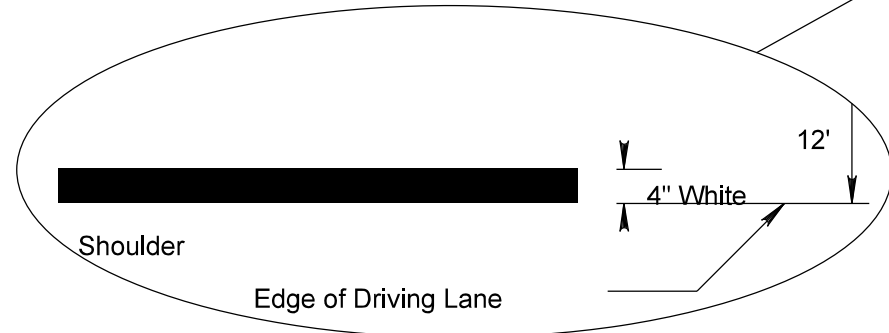
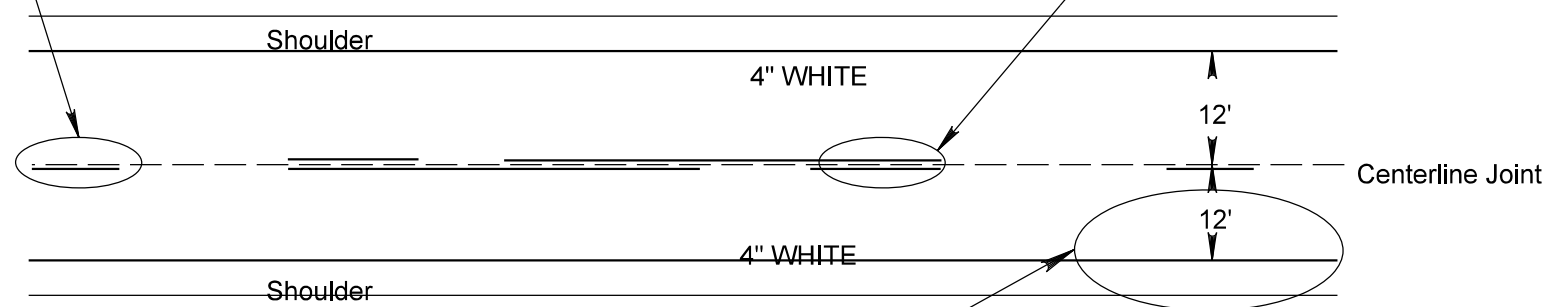
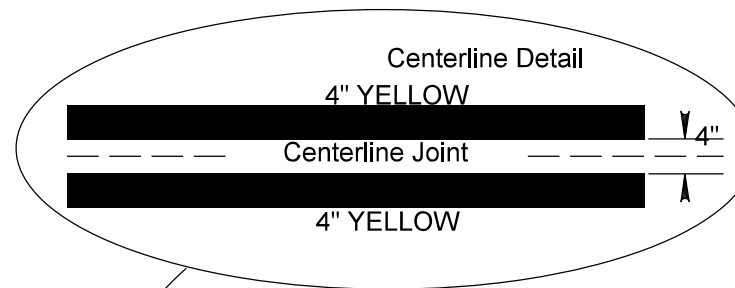


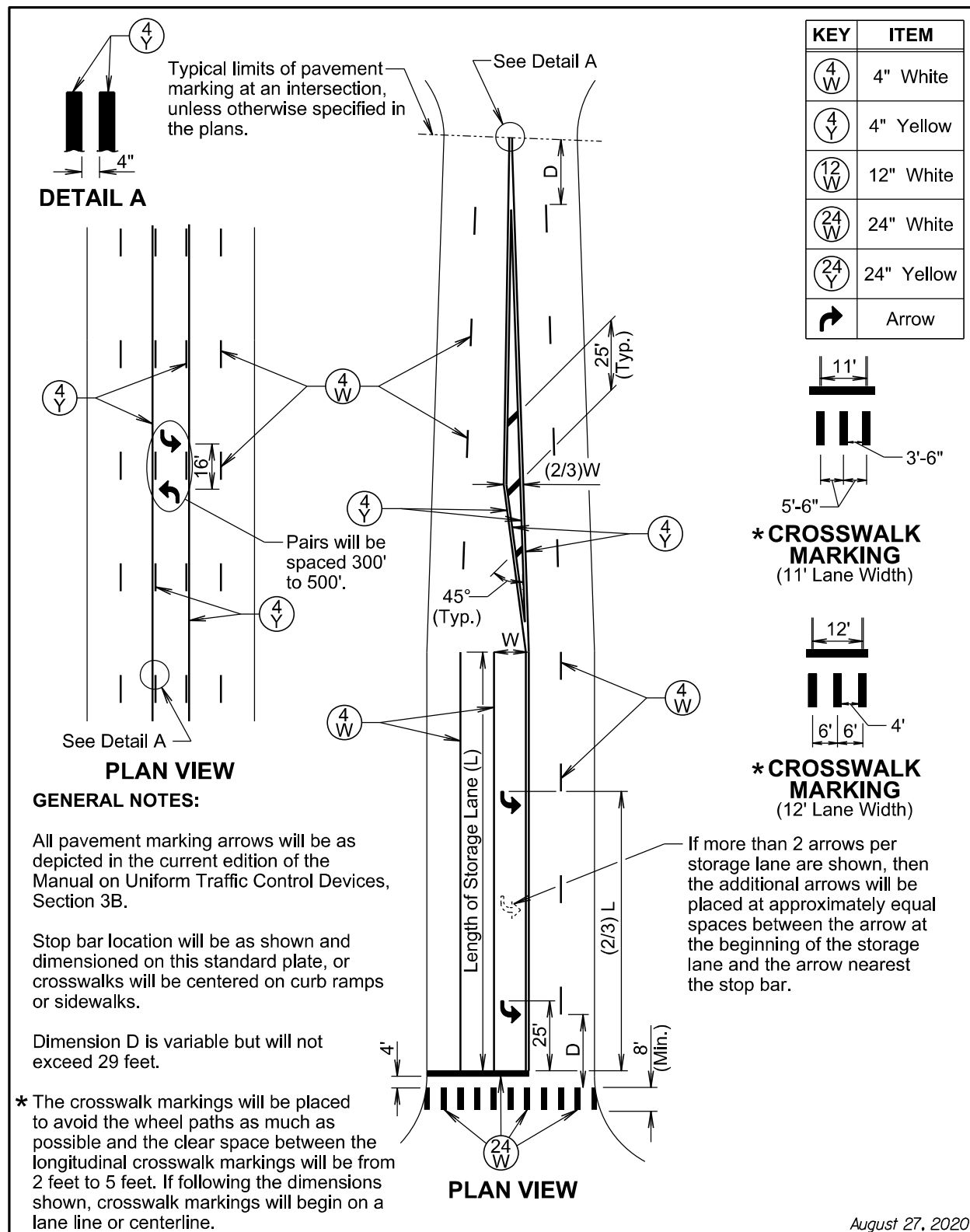
B End of Zone Marker



NOTE: A TWO "GUN" SYSTEM WILL BE USED TO OBTAIN THIS PATTERN.

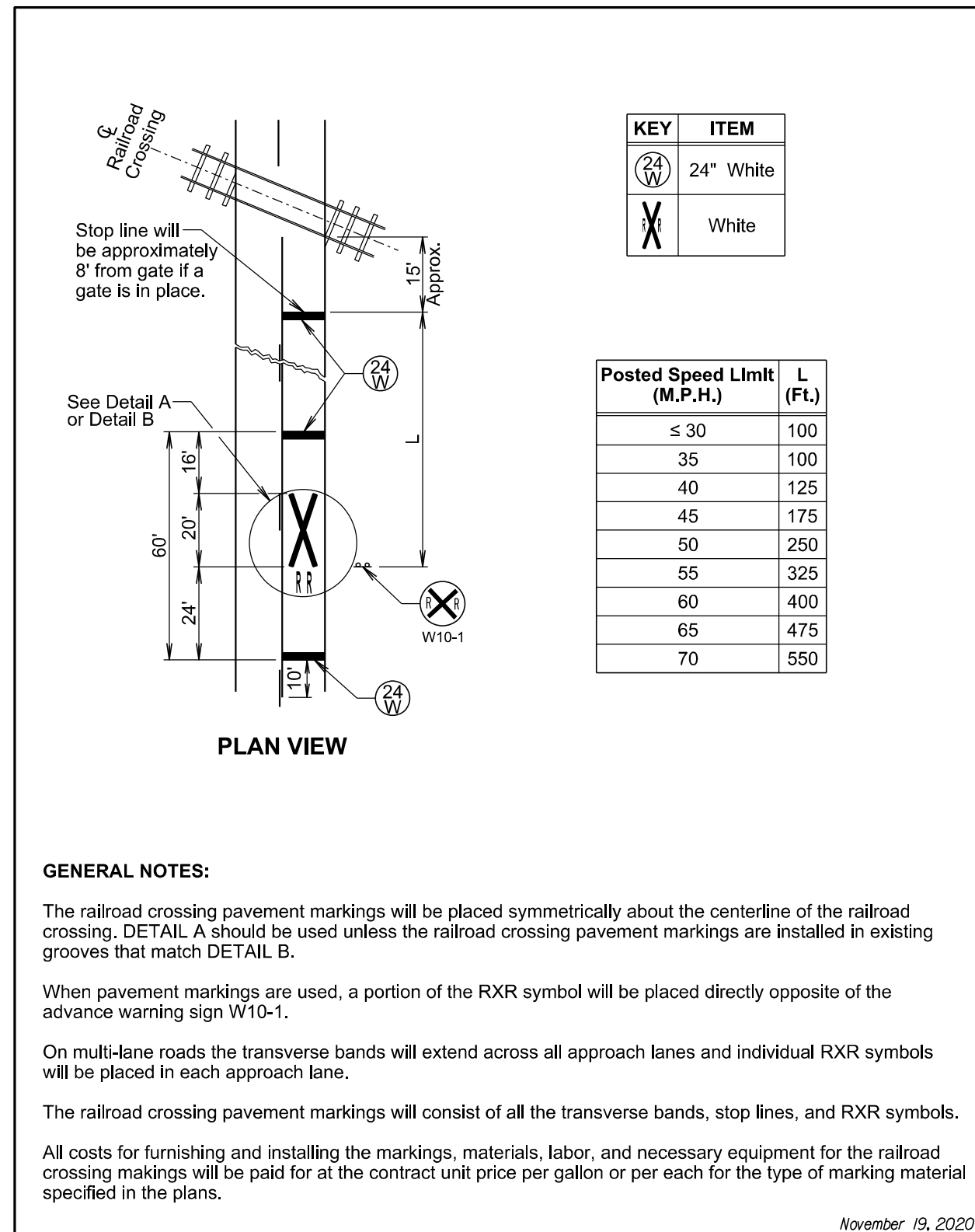
WHEN A SINGLE SKIP LINE EXISTS, THE SKIP WILL BE PLACED TO THE SOUTH OR EAST OF THE CENTERLINE JOINT.





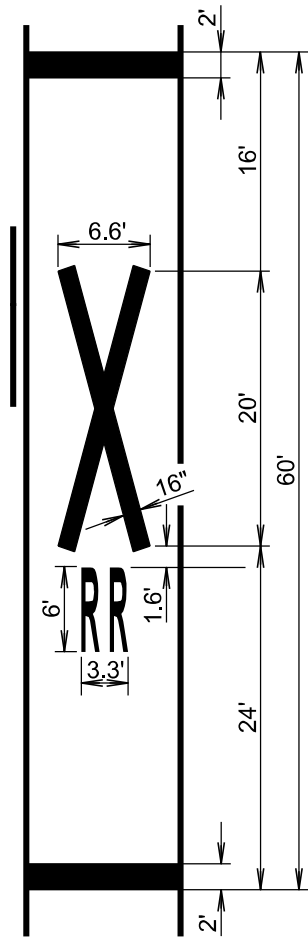
August 27, 2020

Published Date: 1st Qtr. 2021	S D D O T	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01
			Sheet 1 of 1



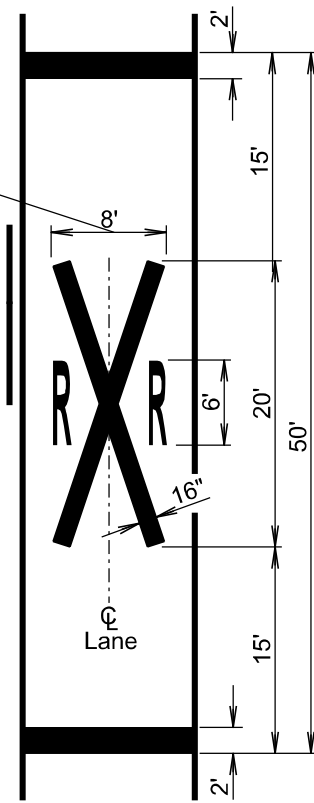
November 19, 2020

Published Date: 1st Qtr. 2021	S D D O T	PAVEMENT MARKINGS AT RAILROAD CROSSING	PLATE NUMBER 633.10
			Sheet 1 of 2



DETAIL A

Width may vary according to lane width.



DETAIL B

November 19, 2020

Published Date: 1st Qtr. 2021

**SD DOT**

**PAVEMENT MARKINGS AT RAILROAD CROSSING**

PLATE NUMBER  
633.10

Sheet 2 of 2