

STATE OF SOUTH DAKOTA
 DEPARTMENT OF TRANSPORTATION
 PLANS FOR PROPOSED

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0281(134)194	1	51

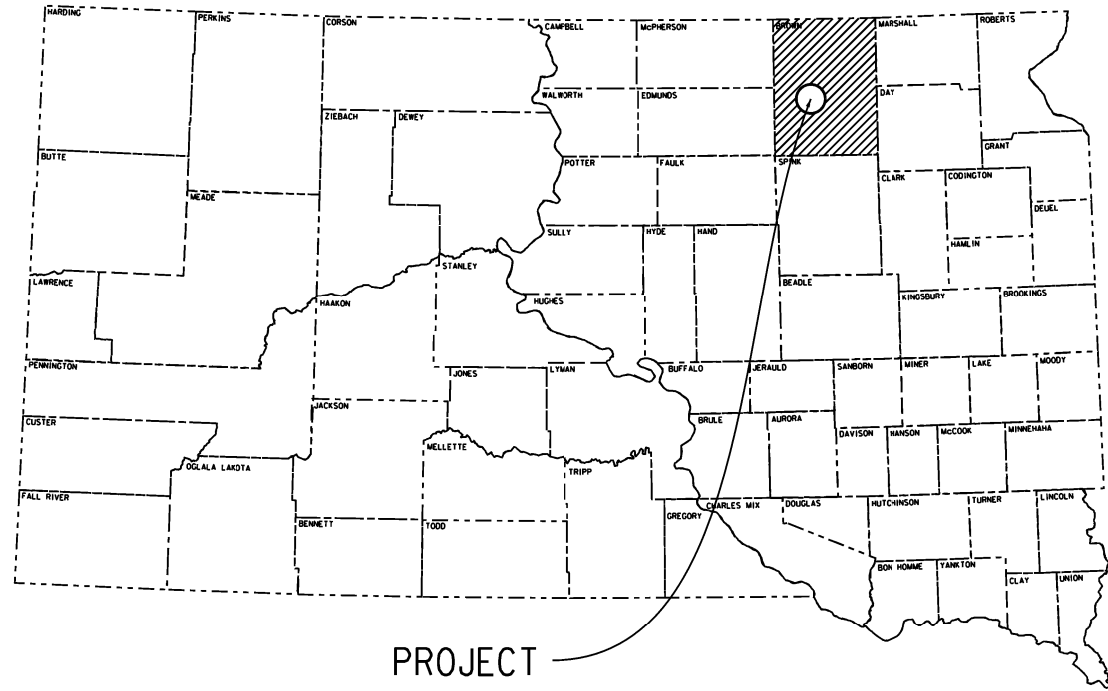
Plotting Date: 01/28/2025

PROJECT NH 0281(134)194
US HIGHWAY 281
BROWN COUNTY

ASPHALT REMOVAL & AC RESURFACING
 OF SHOULDERS
 PCN 090Y

INDEX OF SHEETS

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PROJECT

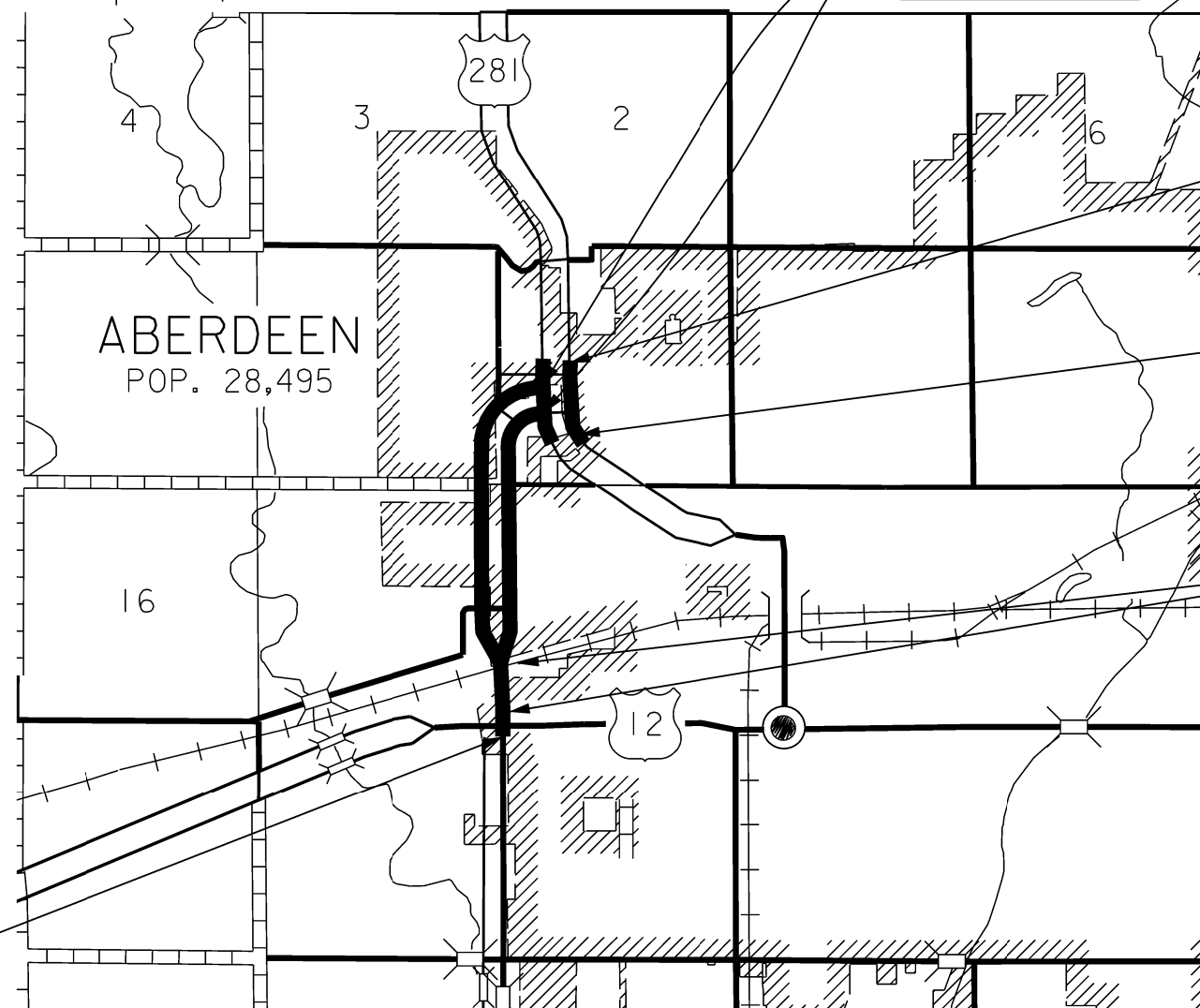
R 64 W

End NH 0281(134)194
 US 281N & US 281S
 MRM 195.74+ 0.000
 Sta. 92+00

End Project
 NB: Sta. 18+65
 NB: MRM 195.00 +0.786
 SB: Sta. 20+09
 SB: MRM 195.00 +0.878

Begin Project
 NB: Sta. 11+67.87
 SB: Sta. 11+67.87

Exception
 Sta. 9+10 to Sta. 26+21.7



ABERDEEN
 POP. 28,495

GROSS LENGTH 9516.12 FEET 1.802 MILES

LENGTH OF EXCEPTIONS 1711.70 FEET 0.324 MILES

NET LENGTH 7804.42 FEET 1.478 MILES

Begin NH 0281(134)194
 US 281 MRM 194.10 + 0.034
 Sta. 5+25

DESIGN DESIGNATION

AADT (2023)	4581
AADT (2043)	7041
DHV	782
D	51%
DHV T%	8.1%
AADT T%	17.8%
V	45 MPH

STORM WATER PERMIT
 None Required

7

April 16, 2025

PLOT SCALE - 1"=4000'

PLOTTED FROM - TRAB10200

PLOT NAME - 1

FILE - ... \090Y TITLE SHEET.DGN

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	2	51

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GENERAL QUANTITIES – 09QY

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0130	Remove Traffic Sign	63	Each
110E1010	Remove Asphalt Concrete Pavement	11,480.4	SqYd
120E0100	Unclassified Excavation, Digouts	38	CuYd
210E1000	Shoulder Preparation	2.931	Mile
260E1010	Base Course	263.3	Ton
320E0005	PG 58-34 Asphalt Binder	115.5	Ton
320E1050	Class E Asphalt Concrete	1,778.7	Ton
320E3000	Compaction Sample	12	Each
320E5010	Saw and Seal Shoulder Joint	15,475	Ft
330E0010	MC-70 Asphalt for Prime	16.5	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	3.3	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	2.6	Ton
330E2000	Sand for Flush Seal	47.4	Ton
600E0300	Type III Field Laboratory	1	Each
632E1320	2.0"x2.0" Perforated Tube Post	406.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	156.0	Ft
632E2000	4"x4" Amber Delineator with 1.12 Lb/Ft Post	5	Each
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	13	Each
632E2510	Type 2 Object Marker Back to Back	14	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	1,027.9	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	221.3	SqFt
633E3000	Durable Pavement Marking, 4" White	13,987	Ft
633E3005	Durable Pavement Marking, 4" Yellow	1,329	Ft
633E5050	Surface Preparation for Pavement Marking	15,316	Ft
634E0010	Flagging	10.0	Hour
634E0110	Traffic Control Signs	625.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	8	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0640	Temporary Pavement Marking	6,000	Ft

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 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 C: WATER SOURCE

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

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

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

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:

< <https://sdeastwanted.sd.gov/maps/default.aspx>>

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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 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.

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	4	51


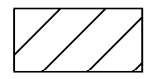
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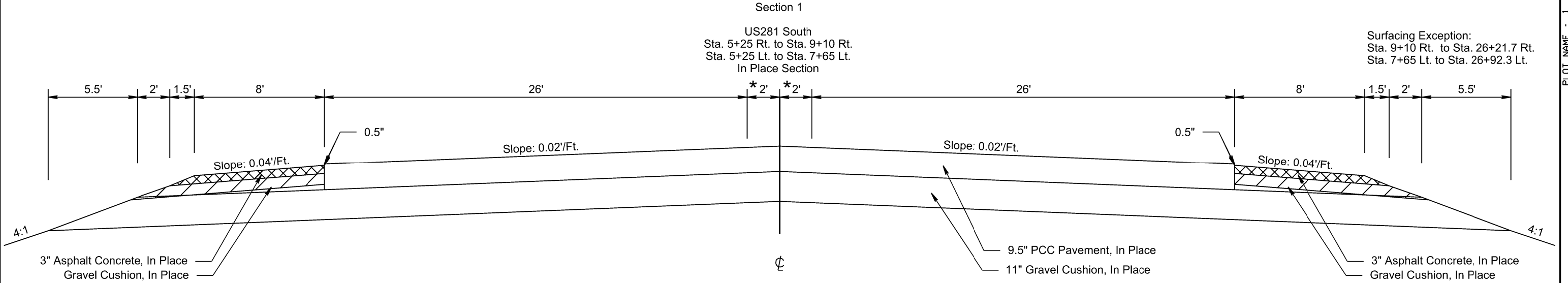
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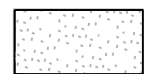

Transitions:
Sta. 5+25 to Sta. 6+85
* 2' to 6'
Sta. 6+85 to Sta. 8+06
* 6'
Sta. 7+65 Lt.
End 8' Shoulder

Surfacing Exception:
Sta. 9+10 Rt. to Sta. 26+21.7 Rt.
Sta. 7+65 Lt. to Sta. 26+92.3 Lt.

PLOT SCALE - 1/8" = 10'-0"

-  Remove Asphalt Concrete Pavement
-  4" Shoulder Preparation @ 0.04'/Ft.

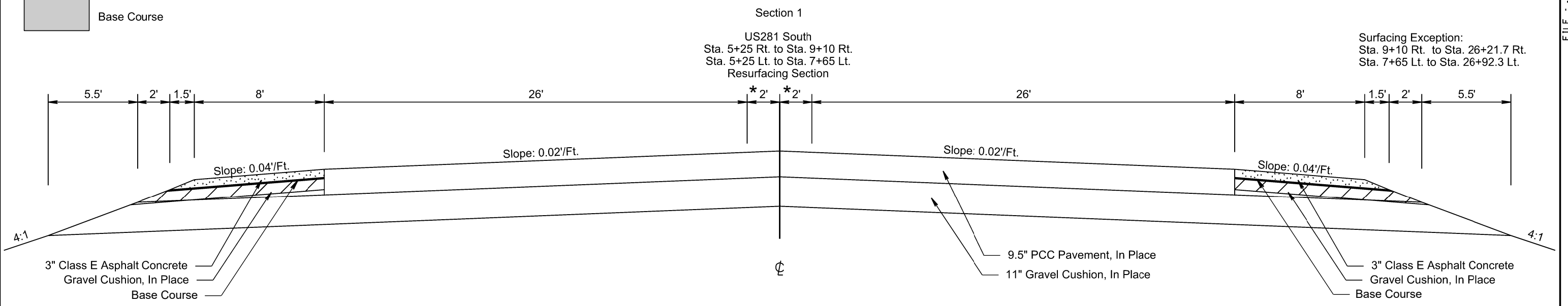


-  3" Class E Asphalt Concrete
-  Base Course

Transitions:
Sta. 5+25 to Sta. 6+85
* 2' to 6'
Sta. 6+85 to Sta. 8+06
* 6'
Sta. 7+65 Lt.
End 8' Shoulder

Surfacing Exception:
Sta. 9+10 Rt. to Sta. 26+21.7 Rt.
Sta. 7+65 Lt. to Sta. 26+92.3 Lt.

PLOTTED FROM - TRAB10200



PLOT NAME - 1

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TYPICAL SURFACING SECTIONS

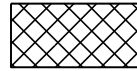
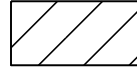
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	5	51

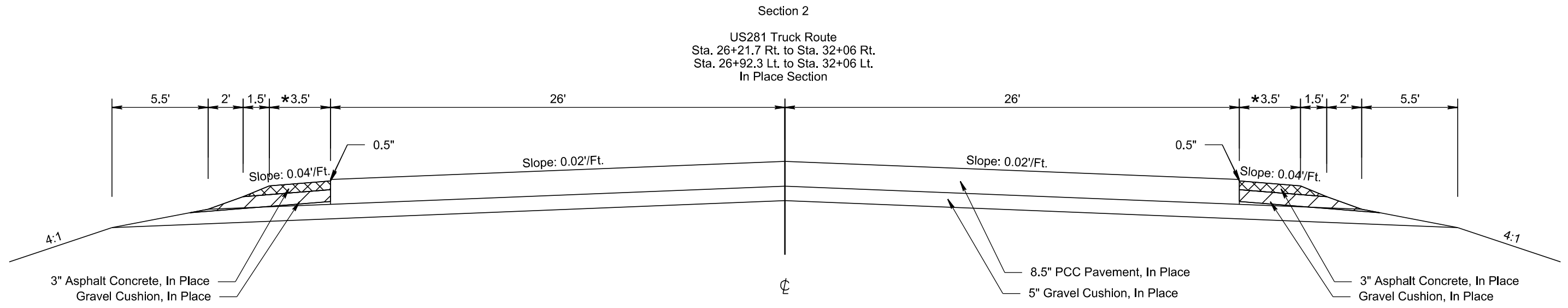
Plotting Date: 09/17/2024



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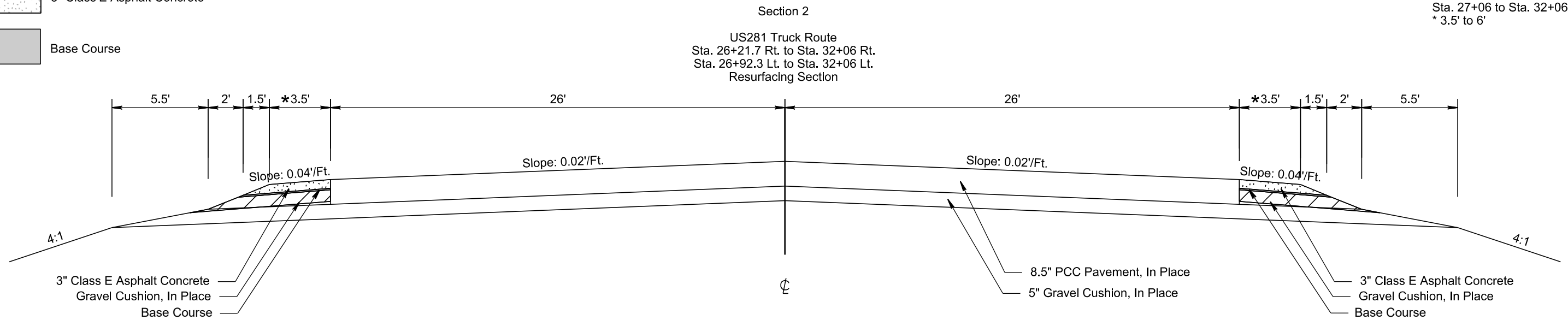
Transition:
Sta. 27+06 to Sta. 32+06
* 3.5' to 6'

PLOT SCALE - 1+6.00001

-  Remove Asphalt Concrete Pavement
-  4" Shoulder Preparation @ 0.04'/Ft.



-  3" Class E Asphalt Concrete
-  Base Course



PLOTTED FROM - TRPR12283

PLOT NAME - 2

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TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	6	51

Plotting Date: 09/17/2024

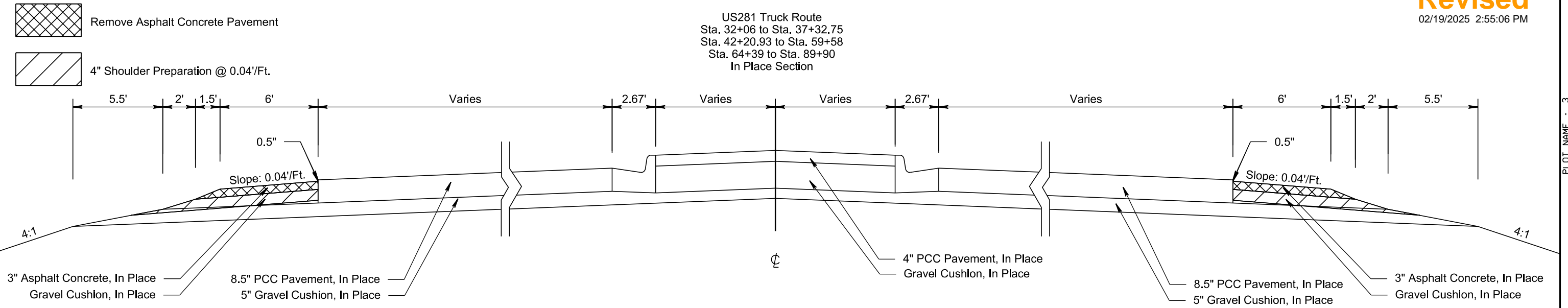
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Section 3

US281 Truck Route
Sta. 32+06 to Sta. 37+32.75
Sta. 42+20.93 to Sta. 59+58
Sta. 64+39 to Sta. 89+90
In Place Section

PLOT SCALE - 1+6.00001

PLOT NAME - 3

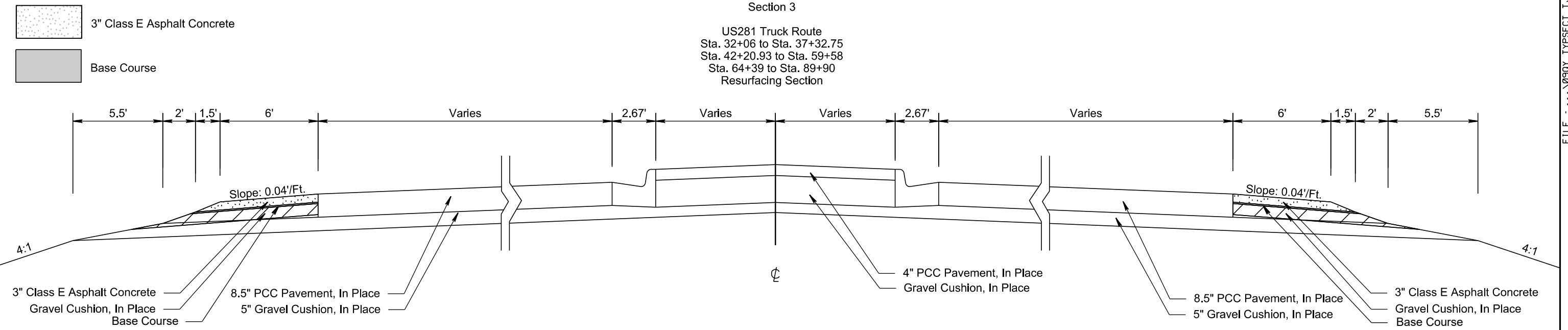


Section 3

US281 Truck Route
Sta. 32+06 to Sta. 37+32.75
Sta. 42+20.93 to Sta. 59+58
Sta. 64+39 to Sta. 89+90
Resurfacing Section

PLOTTED FROM - TRPR12283

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TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	7	51

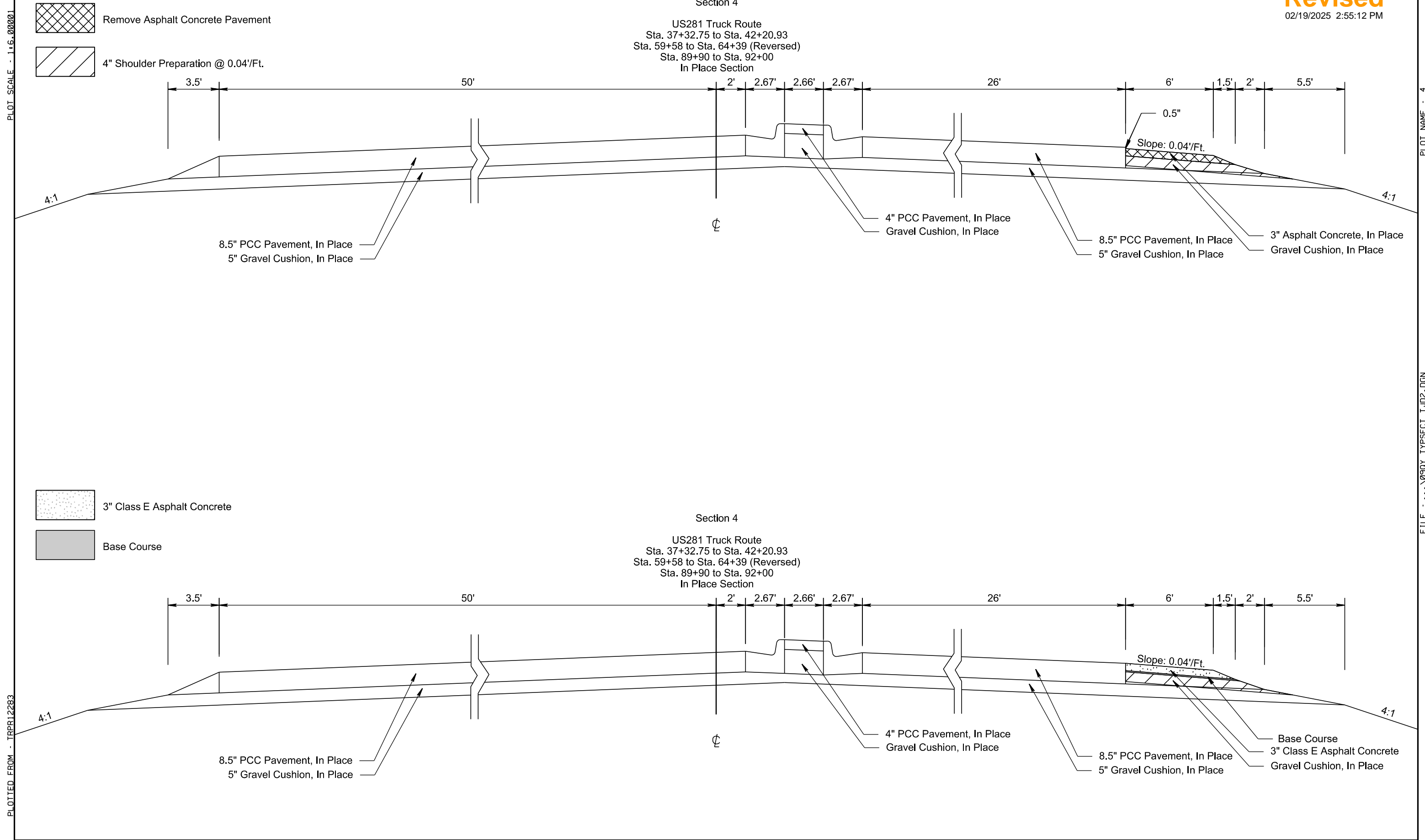
Plotting Date: 09/17/2024

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PLOT SCALE - 1+6.00001

PLOT NAME - 4

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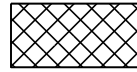
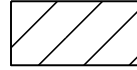
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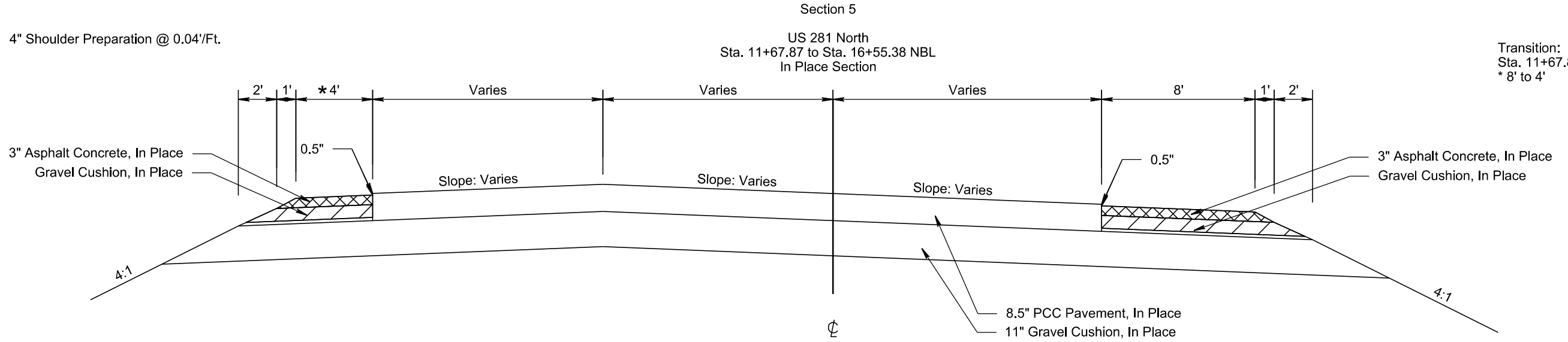
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	NH 0281(134)194	8	51

Plotting Date: 09/17/2024

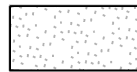

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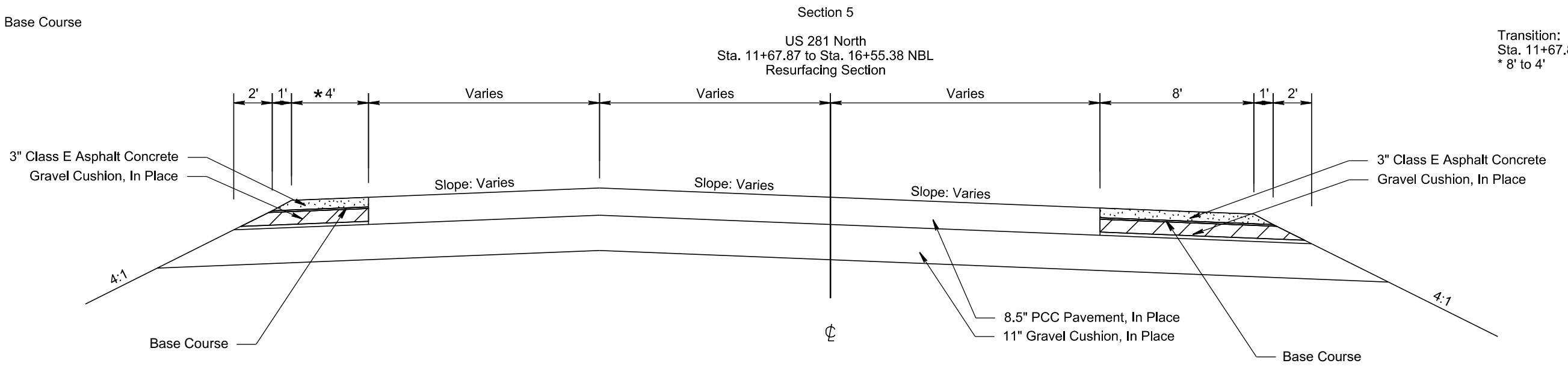
PLOT SCALE - 1+6.00001

-  Remove Asphalt Concrete Pavement
-  4" Shoulder Preparation @ 0.04'/Ft.



Transition:
Sta. 11+67.87 to Sta. 13+27.88 NBL
* 8' to 4'

-  3" Class E Asphalt Concrete
-  Base Course



Transition:
Sta. 11+67.87 to Sta. 13+27.88 NBL
* 8' to 4'

PLOTTED FROM - TRPR12283

PLOT NAME - 5

FILE - ... \090Y_TYPSECT - T.J02.DGN

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	9	51

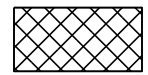
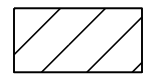
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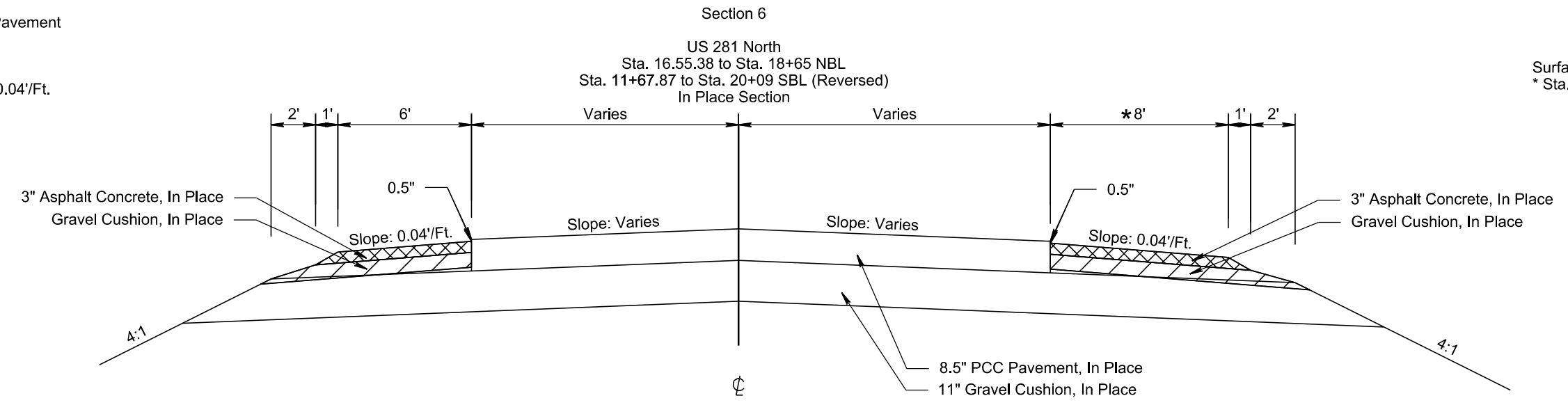
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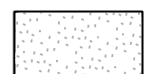

Surfacing Exception:
* Sta. 16+30 to Sta. 19+23.60 SBL

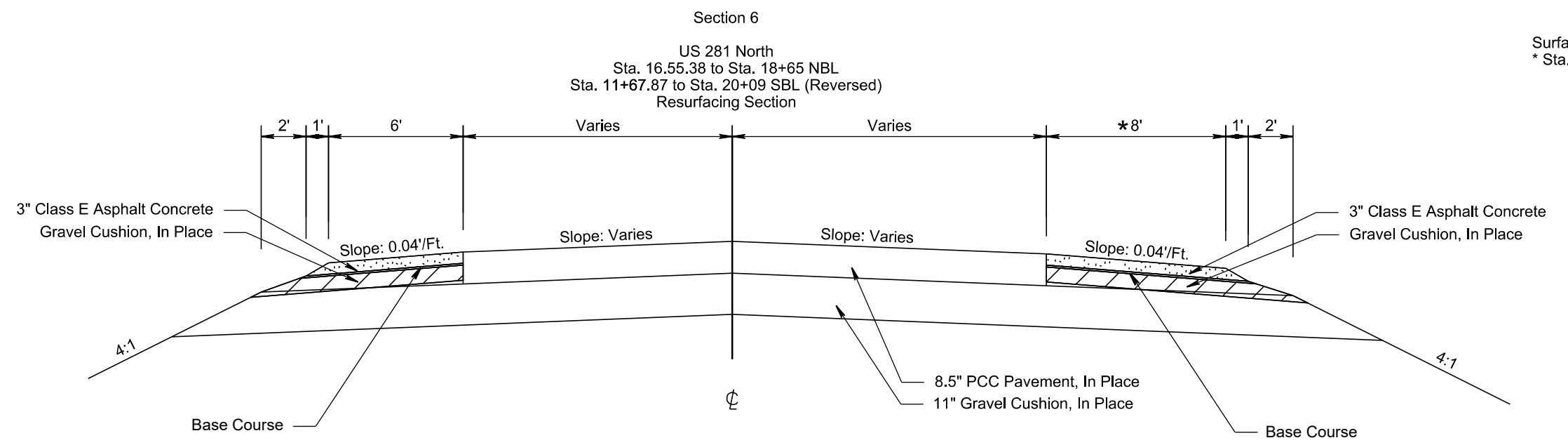
PLOT SCALE - 1+6.00001

PLOT NAME - 6

-  Remove Asphalt Concrete Pavement
-  4" Shoulder Preparation @ 0.04'/Ft.



-  3" Class E Asphalt Concrete
-  Base Course



Surfacing Exception:
* Sta. 16+30 to Sta. 19+23.60 SBL

PLOTTED FROM - TRPR12283

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RATES OF MATERIALS

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

Rates of application will not be provided for Section 1, 2, or 5L due to their short lengths and transitions.

Sections are named with the abbreviation "L" (Left) or "R" (Right) to describe which shoulder the following rates apply to.

Section 3L, 3R, 4R

Sta. 32+06 to Sta. 37+32.75	(3L, 3R)
Sta. 42+20.93 to Sta. 59+58	(3L, 3R)
Sta. 64+39 to Sta. 89+90	(3L, 3R)
Sta. 37+32.75 to Sta. 42+20.93	(4R)
Sta. 59+58 to Sta. 64+39 (Reversed)	(4L)
Sta. 89+90 to Sta. 92+00	(4R)

CLASS E HOT MIXED ASPHALT CONCRETE

Crushed Aggregate.....	619 Tons
PG 58-34 Asphalt Binder.....	40 Tons
Total	659 Tons

The exact proportion of these materials will be determined on construction.

MC-70 for prime at the rate of will be at the rate of **11.6** tons applied **8.5** feet wide.
(Rate = 0.30 gal./sq.yd.)

SS-1h or CCS-1h Emulsified Asphalt for Tack will at the rate of **2.3** tons applied **8.0** feet wide.
(Rate = 0.06 gal./sq.yd.)

Flush Seal

SS-1h or CCS-1h Emulsified Asphalt for Flush Seal will be at the rate of **1.8** tons applied **7.5** feet wide.
(Rate = 0.05 gal./sq.yd.)

Sand for Flush Seal will be at the rate of **27.5** tons applied **6.0** feet wide.
(Rate = 8 lb./sq.yd.)

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

Section 5R, 6R

Sta. 11+67.87 to Sta. 16+55.38 NBL	(5R)
Sta. 16+55.38 to Sta. 18+65 NBL	(6R)
Sta. 11+67.87 to Sta. 20+09 SBL (Reversed)	(6R)

CLASS E HOT MIXED ASPHALT CONCRETE

Crushed Aggregate.....	14.78 Tons
PG 58-34 Asphalt Binder.....	0.96 Tons
Total	14.74 Tons

The exact proportion of these materials will be determined on construction.

MC-70 for prime at the rate of will be at the rate of **1.7** tons applied **10.0** feet wide.
(Rate = 0.30 gal./sq.yd.)

SS-1h or CCS-1h Emulsified Asphalt for Tack will at the rate of **0.3** tons applied **9.5** feet wide.
(Rate = 0.06 gal./sq.yd.)

Flush Seal

SS-1h or CCS-1h Emulsified Asphalt for Flush Seal will be at the rate of **0.3** tons applied **9.0** feet wide.
(Rate = 0.05 gal./sq.yd.)

Sand for Flush Seal will be at the rate of **9.9** tons applied **8.0** feet wide.
(Rate = 8 lb./sq.yd.)

Section 6L

Sta. 11+67.87 to Sta. 16+55.38 NBL
Sta. 16+55.38 to Sta. 18+65 NBL
Sta. 11+67.87 to Sta. 20+09 SBL (Reversed)

CLASS E HOT MIXED ASPHALT CONCRETE

Crushed Aggregate.....	11.30 Tons
PG 58-34 Asphalt Binder.....	0.73 Tons
Total	12.03 Tons

The exact proportion of these materials will be determined on construction.

MC-70 for prime at the rate of will be at the rate of **1.1** tons applied **8.8** feet wide.
(Rate = 0.30 gal./sq.yd.)

SS-1h or CCS-1h Emulsified Asphalt for Tack will at the rate of **0.2** tons applied **7.5** feet wide.
(Rate = 0.06 gal./sq.yd.)

Flush Seal

SS-1h or CCS-1h Emulsified Asphalt for Flush Seal will be at the rate of **0.2** tons applied **7.0** feet wide.
(Rate = 0.05 gal./sq.yd.)

Sand for Flush Seal will be at the rate of **2.8** tons applied **6.0** feet wide.
(Rate = 8 lb./sq.yd.)

TABLE OF ASPHALT REMOVAL AND ASPHALT CONCRETE QUANTITIES

STATION START	STATION STOP	L/R	SECTION	LENGTH	WIDTH	REMOVE ASPHALT	ESTIMATED RAP	ASPHALT CONCRETE CLASS E	ASPHALT BINDER PG 58-34	ASPHALT FOR TACK	MC-70 FOR PRIME	ASPHALT FOR FLUSH SEAL	SAND FOR FLUSH SEAL
				Ft	Ft	SqYds	CY	TON	TON	GAL	GAL	GAL	TON
5+25	9+10	right	1	385	8.75	374.3	31.2	58.0	3.8	22.5	112.3	18.7	1.5
5+25	7+65	left	1	240	8.75	233.3	19.4	36.2	2.3	14.0	70.0	11.7	0.9
26+21.7	32+06	right	2	584.3	4.75	308.4	25.7	47.8	3.1	18.5	92.5	15.4	1.2
26+92.3	32+06	left	2	513.7	4.75	271.1	22.6	42.0	2.7	16.3	81.3	13.6	1.1
32+06	37+32.75	left	3	526.75	6.75	395.1	32.9	61.2	4.0	28.1	149.2	21.9	1.4
32+06	37+32.75	right	3	526.75	6.75	395.1	32.9	61.2	4.0	28.1	149.2	21.9	1.4
42+20.93	59+58	left	3	1737.07	6.75	1302.8	108.6	201.8	13.1	92.6	492.2	72.4	4.6
42+20.93	59+58	right	3	1737.07	6.75	1302.8	108.6	201.8	13.1	92.6	492.2	72.4	4.6
64+39	89+90	left	3	2551	6.75	1913.3	159.4	296.4	19.3	136.1	722.8	106.3	6.8
64+39	89+90	right	3	2551	6.75	1913.3	159.4	296.4	19.3	136.1	722.8	106.3	6.8
37+32.75	42+20.93	right	4	488.18	6.75	366.1	30.5	56.7	3.7	26.0	138.3	20.3	1.3
59+58	64+39	left	4	481	6.75	360.8	30.1	55.9	3.6	21.6	108.2	18.0	1.4
89+90	92+00	right	4	210	6.75	157.5	13.1	24.4	1.6	11.2	59.5	8.8	0.6
11+67.87	16+55.38	right NB	5	487.51	8.5	460.4	38.4	71.3	4.6	30.9	162.5	24.4	1.7
11+67.87	13+27.88	left NB	5	160.01	6	106.7	8.9	16.5	1.1	6.4	32.0	5.3	0.4
13+27.88	16+55.38	left NB	5	327.5	4	145.6	12.1	22.6	1.5	8.7	43.7	7.3	0.6
16+55.38	18+65	right NB	6	209.62	8.5	198.0	16.5	30.7	2.0	13.3	69.9	10.5	6.2
16+55.38	18+65	left NB	6	209.62	6.5	151.4	12.6	23.5	1.5	10.5	55.9	8.2	0.6
11+67.88	16+30	right SB	6	462.13	8.5	436.5	36.4	67.6	4.4	29.3	154.0	23.1	1.6
19+23.6	20+09	right SB	6	85.4	8.5	80.7	6.7	12.5	0.8	5.4	28.5	4.3	0.3
11+67.88	20+09	left SB	6	841.13	6.5	607.5	50.6	94.1	6.1	42.1	224.3	32.7	2.2

Totals: **11480.4** **956.7** **1778.7** **115.5** ***790.2** ****4161.3** ***623.4** **47.4**

*CSS-1H with a density of 8.3 lbs/gal

**MC-70 with a density of 7.9 lbs/gal

3.3 Tons

16.5 Tons

2.6 Tons

PLOT SCALE - 1:200

PLOT NAME - 1

FILE - ... QUANTITY TABLE.DGN

-PLOTTED FROM - TRAB10200

Pipe Object Marker Table		
Station	Type 2 Object Marker Back-to- Back (Each)	Description
8+50	1	1 Right Side of Road
15+31	2	1 Each Side of Road
24+59	2	1 Each Side of Road
41+74	2	1 Each Side of Road
67+67	1	1 Left Side of Road
67+71	1	1 Right Side of Road
73+20	1	1 Left Side of Road
74+25	1	1 Left Side of Road
91+60	2	1 Each Side of US 281 SB Slip Lane
92+89	1	1 Right Side of US 281 SBL
Total	14	

US 281 Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
194	0.118	Lt.	Speed Limit 45	R2-1	30	36	7.5		12		1		1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post at Existing Location
194	0.15	Lt.	Adopt A Highway	ADO-5	36	36								N	Telespar	Leave in Place
			NSU Science Club	ADO-1	36	12										
			Litter Crew Ahead	ADO-6	30	30										
194	0.160	Rt.	^ To SD10 <--Ipswich Groton -->	D1-3	90	60	37.5			26		2	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Posts at Existing Location
194	0.161	Lt.	Stop	R1-1	36	36		7.5					1	W	Telespar	Replace Existing Sign with New Sign on Existing Post
194	0.184	Rt.	Hospital	D9-2	24	24	4.0		13		1		1	S	4" X 6" Wood	Replace Existing Signs with New Signs on New Post at Existing Location
			Horizontal Arrow (Right)	M6-1P	21	15	2.2									
194	0.184	Lt.	SOUTH	M3-3P	24	12	2.0						1	N	Telespar	Replace Existing Signs with New Signs on Existing Post
			US 281	M1-4	30	24	5.0									
194	0.215	Overhead	US 281	M1-4	30	24	5.0						1	N	Mastarm	Replace Existing Signs with New Signs on Existing Mastarm
			Vertical Single Arrow	M6-3P	21	15	2.2									
			US 12	M1-4	24	24	4.0									
			Horizontal Double Head Arrow	M6-4P	21	15	2.2									
			SW 6th Ave	D3-1	84	24	14.0									Place New Sign on Mastarm
194.23	0.000	Lt.	Mile Marker 194.23 (Two Signs)	D10-6	4.5	21	1.3		7		1			S		Place New Sign at Existing MRM Location
194.23	0.004	Lt.	Speed Limit 30	R2-1	30	36	7.5		11		1		1	W	4"X6" Wood	Replace Existing Sign with New Sign on New Post at Existing Location
194.23	0.009	Overhead Rt.	US 12	M1-4	24	24	4.0						1	W	Mastarm	Replace Existing Signs with New Signs on Existing Mastarm
			Vertical Single Arrow	M6-3P	21	15	2.2									
			US 281	M1-4	30	24	5.0									
			Horizontal Double Head Arrow	M6-4P	21	15	2.2									
194.23	0.015	Overhead Lt.	US 12	M1-4	24	24	4.0						1	E	Mastarm	Replace Existing Signs with New Signs on Existing Mastarm
			Vertical Single Arrow	M6-3P	21	15	2.2									
			US 281	M1-4	30	24	5.0									
			Horizontal Double Head Arrow	M6-4P	21	15	2.2									
194.23	0.018	Lt.	Speed Limit 45	R2-1	30	36	7.5					1	E	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole	

PLOT SCALE - 1:1200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

US 281 Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
194.23	0.030	Overhead	US 281	M1-4	30	24	5.0						1	S	Mastarm	Replace Existing Signs with New Signs on Existing Mastarm
			Vertical Single Arrow	M6-3P	21	15	2.2									
			US 12	M1-4	24	24	4.0									
			Horizontal Double Head Arrow	M6-4P	21	15	2.2									
			SW 6th Ave	D3-1	84	24	14.0								Place New Sign on Mastarm	
194.23	0.064	Rt.	NORTH	M3-1P	24	12	2.0		13		1	1	S	4" X 6" Wood	Replace Existing Signs with New Signs on New Post at Existing Location	
			US 281	M1-4	30	24	5.0									
194.23	0.067	Lt.	Hospital	D9-2	24	24	4.0					1	N	Luminaire Pole	Replace Existing Signs with New Signs on Existing Luminaire Pole	
			Horizontal Arrow (Left)	M6-1P	21	15	2.2									
194.23	0.080	Lt.	^ Redfield <--Groton Ipswich -->	D1-3	96	60	40.0					1	N	Telespar	Replace Existing Sign with New Sign on Existing Posts	
194.23	0.100	Rt.	Speed Limit 45	R2-1	30	36	7.5					1	S	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole	
194.23	0.118	Lt.	US 12	M1-4	24	24	4.0		25		2	1	N	4" X 6" Wood	Replace Existing Signs with New Signs on New Posts at Existing Location	
			Horizontal Double Head Arrow	M6-4P	21	15	2.2									
			US 281	M1-4	30	24	5.0									
			Vertical Single Arrow	M6-3P	21	15	2.2									
194.23	0.125	Rt.	Bridge Ices Before Road (Hinged)	W8-13	36	36							S	Telespar	Leave in Place	
194.23	0.140	Lt.	Signal Ahead	W3-3	30	30		6.3				1	N	Luminaire Pole with Flashing Amber Light	Replace Existing Sign with New Sign on Existing Luminaire Pole	
194.47	0.000	Lt.	Mile Marker 194.47 (Two Signs)	D10-6	4.5	21	1.3						S		Place New Sign at Existing MRM Location	
194.47	0.012	Lt.	JCT	M2-1P	21	15	2.2					1	N	Luminaire Pole	Replace Existing Signs with New Signs on Existing Luminaire Pole	
			US 12	M1-4	24	24	4.0									
TOTAL							237.6	13.8	81.0	26.0	7	2	18			

Sign Summary US 281

Sign Code	Description	Width (Inches)	Height (Inches)	Sq. Ft.	No.	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	Text / Background
D1-3	^ To SD10 <--Ipswich Groton -->	90	60	37.5	1	37.5		White on Green
D1-3	^ Redfield <--Groton Ipswich -->	96	60	40.0	1	40.0		White on Green
D3-1	Street Sign SW 6th Ave	84	24	14.0	2	28.0		White on Green
D3-1	Street Sign N Main St	42	12	3.5		0.0		White on Green
D3-1	Street Sign N Wayland St	54	12	4.5		0.0		White on Green
D3-1	Street Sign W Lakeshore Dr	54	12	4.5		0.0		White on Green
D3-1	Street Sign Bartelt Blvd	42	12	3.5		0.0		White on Green
D3-1	Street Sign E Lakeshore Dr	54	12	4.5		0.0		White on Green
D9-2	Hospital	24	24	4.0	2	8.0		White on Blue/White Border
D10-6	Mile Markers 194.23	4.5	21	0.7	2	1.3		White on Green
D10-6	Mile Markers 194.47	4.5	21	0.7	2	1.3		White on Green
M1-4	US 12	24	24	4.0	6	24.0		Black on White Shield/Black Border
M1-5	US 281	30	24	5.0	7	35.0		Black on White Shield/Black Border
M2-1P	Junction Marker	21	15	2.2	1	2.2		Black on White/Black Border
M3-1P	North	24	12	2.0	1	2.0		Black on White/Black Border
M3-3P	South	24	12	2.0	1	2.0		Black on White/Black Border
M6-1P	Horizontal Arrow	21	15	2.2	2	4.4		White on Blue/White Border
M6-3P	Vertical Single Arrow	21	15	2.2	5	10.9		Black on White/Black Border
M6-4P	Horizontal Double Head Arrow	21	15	2.2	5	10.9		Black on White/Black Border
R1-1	Stop	36	36	7.5	1		7.5	White on Red
R2-1	Speed Limit 30	30	36	7.5	1	7.5		Black on White
R2-1	Speed Limit 45	30	36	7.5	3	22.5		Black on White
W3-3	Signal Ahead	30	30	6.3	1		6.3	Black on Fluorescent Yellow
Totals						237.6	13.8	

PLOT SCALE - 1:200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

US 281 North Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
194.53	0.000	Rt.	Mile Marker 194.53	D10-6	4.5	21	0.7						1	S	Telespar	Replace Existing Sign with New Sign on Existing Post
194.53	0.000	Rt.	Divided Highway Begins symbol	W6-1	48	48		16					1	S	Telespar	Replace Existing Sign with New Sign on Existing Posts
194.53	0.044	Median	Keep Right (symbol)	R4-7	36	48	12						1	S	Telespar	Replace Existing Signs with New Signs on Existing Posts
			Conspicuity Marker		4	8	0.2			N						
			Conspicuity Marker		4	8	0.2			S						
194.53	0.118	Rt.	WRONG WAY	R5-1A	36	24		6					1	N	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole
194.53	0.157	Rt.	DO NOT ENTER	R5-1	36	36		9					1	NW	Telespar	Replace Existing Sign with New Sign on Existing Post
194.53	0.175	Rt.	Brown 12W County	M1-6	45	36	11.3						1	S	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole
			Horizontal Arrow-County (Left)	M6-1P	30	21	4.4									
194.53	0.199	Rt.	ONE WAY ON LEFT ARROW	R6-1L	48	18	6						1	W	Telespar	Replace Existing Sign with New Sign on Existing Post
194.53	0.206	Rt.	133 St (Two Signs)	D3-1	42	18	11						1	N/S	Telespar	Replace Existing Signs with New Signs on Existing Post
			US 281 (Two Signs)	D3-1	42	18	11			E/W						
194.53	0.209	Median	Keep Right (symbol)	R4-7	36	48							1	S	Telespar	Leave In Place
			Conspicuity Marker		4	8				N						
			Conspicuity Marker		4	8				S						
194.53	0.221	Median	UNMUFFLED DYNAMIC ENGINE BRAKING PROHIBITED By City Ordinance		30	36								S	Telespar	Leave In Place
195	0.000	Rt.	Mile Marker 195	D10-6	4.5	18	0.6		7		1			S	Telespar	Place New Sign on New Post at Existing MRM Location
195	0.076	Rt.	NW 8th Ave NEXT INTERSECTION	D3-2	78	36	19.5		26		2		1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Posts
195	0.199	Rt.	NORTH	M3-1P	36	18	4.5						1	S	Telespar	Replace Existing Sign with New Sign on Existing Post
			US 281	M1-4	45	36	11.3									
			DO NOT ENTER	R5-1	36	36		9			N					
195	0.236	Rt.	ONE WAY ON RIGHT ARROW	R6-1R	48	18	6						1	N	Telespar	Replace Existing Signs with New Signs on New Posts at Existing Location
			ONE WAY ON LEFT ARROW	R6-1L	48	18	6					S				
			Stop	R1-1	36	36		7.5		26.0		2		N		
			Divided Highway Crossing	R6-3	36	30		7.5						N		
195	0.237	Rt.	NW 8th Ave (Two Signs)	D3-1	60	18	15							N/S		Place New Signs on New Post
			US 281 (Two Signs)	D3-1	42	18	11			13		1		E/W		

PLOT SCALE - 1:1200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

US 281 North Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
195	0.242	Median	Keep Right (symbol)	R4-7	36	48	12						1	S	Telespar	Replace Existing Signs with New Signs on Existing Posts
			Conspicuity Marker		4	8	0.2					N				
			Conspicuity Marker		4	8	0.2					S				
195	0.251	Rt.	DYNAMIC ENGINE BRAKING PROHIBITED	R-NS1	30	36							1	E	4" X 6" Wood	Remove Existing Signs
			By City Ordinance	R-NS5	24	12										
			UNMUFFLED DYNAMIC ENGINE BRAKING PROHIBITED By City Ordinance		36	48	12		12.0		1					Place New Sign on New Post at Existing Location
195	0.270	Rt.	Speed Limit 45	R2-1	36	48								S	Luminaire Pole	Leave In Place
195	0.385	Rt.	Right Curve Arrow	W1-2R	48	48								S	Luminaire Pole	Leave In Place
195	0.459	Rt.	WRONG WAY	R5-1A	36	24		6	12.0		1		1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post at Existing Location
195	0.478	Rt.	N 19th St NEXT LEFT	D3-2	60	36	15		24		2				SW	Place New Sign on New Posts
			N 19th St	D3-2	60	36							1	SW	Luminaire Pole	Remove Existing Sign
195	0.497	Rt.	DO NOT ENTER	R5-1	36	36		9						N	Luminaire Pole	Replace Existing Sign with New Sign on Luminaire Pole
195	0.527	Rt.	N 19th St (Two Signs)	D3-1	54	18	14		14		1			SW/NE	4" X 6" Wood	Place New Sign on New Post
			US 281 (Two Signs)	D3-1	42	18	11					NW/SE				
195	0.538	Rt.	ONE WAY ON RIGHT ARROW	R6-1R	48	18	6		26.0		2		1	SE	4" X 6" Wood	Replace Existing Signs with New Signs on New Posts at Existing Location
			ONE WAY ON LEFT ARROW	R6-1L	48	18	6			NW						
			Stop	R1-1	36	36	7.5			SE						
			Divided Highway Crossing	R6-3	36	30	7.5			SE						
195	0.543	Median	Keep Right (symbol)	R4-7	36	48	12						1	SW	Telespar	Replace Existing Signs with New Signs on Existing Post
			Conspicuity Marker		4	8	0.2				NE					
			Conspicuity Marker		4	8	0.2				SW					
195	0.567	Rt.	<-- Wylie Park <-- Storybook Land <-- Fairgrounds	D1-3	138	60	58		26		2			S	Place New Sign on New Posts	
195	0.586	Rt.	<-- To SD 10 <-- Ellendale ND	D1-3	114	42	33.3		26		2			S	Place New Sign on New Posts	
195	0.587	Rt.	<-- To SD 10 Aberdeen -->	D1-3	114	60						1	S	4" X 6" Wood	Remove Existing Sign	
195	0.607	Rt.	RIGHT LANE MUST TURN RIGHT	R3-7R	48	48								SW	Luminaire Pole	Leave In Place
195	0.662	Rt.	Signal Ahead	W3-3	48	48		16					1	W	Luminaire Pole with Flashing Amber Luminaire	Replace Existing Sign with New Sign on Existing Luminaire Pole

PLOT SCALE - 1:200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

US 281 North Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
195	0.732	Rt.	ONE WAY ON RIGHT ARROW	R6-1R	48	18	6							W	Luminaire Pole	Place New Sign on Existing Luminaire Pole
195	0.754	N Median	Left on Green Arrow Only	R10-5	30	36	7.5						1	S	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole with Signals
195	0.764	Rt. in SE Quadrant	NW 5th Ave -->	D3-1	102	24	17.0							W	Signal Pole with Mast Arm and Luminaire Extension	Place New Sign on Existing Mast Arm of Signal Pole
			WYLIE PARK -->								1	Remove Existing Sign				
195	0.765	Rt.	NORTH	M3-1P	36	18	4.5						1	W	Telespar	Place New Sign on Existing Post with Extension
			US 281	M1-4	45	36	11.3					Replace Existing Signs with New Signs on Existing Post				
			Horizontal Arrow (Left)	M6-1P	30	21	4.4									
			ONE WAY ON LEFT ARROW	R6-1L	48	18	6									
195	0.781	Overhead	SOUTH	M3-3P	36	18	4.5		13		1		S	Signal Pole with Mast Arm	Place New Signs on Existing Signal Pole Mast Arm	
			US 281	M1-4	45	36	11.3									
			Horizontal Arrow (Left)	M6-1P	30	21	4.4									
			NORTH	M3-1P	36	18	4.5									
			US 281	M1-4	45	36	11.3									
			Vertical Single Arrow	M6-3P	30	21	4.4									
195	0.791	Rt.	Adopt A Highway	ADO-5	36	36							N	Telespar	Leave In Place	
			NSU Science Club	ADO-1	36	12										
			Litter Crew Ahead	ADO-6	30	30										
195	0.836	Rt.	NORTH	M3-1P	36	18	4.5		13		1		S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post at Existing Location	
			US 281	M1-4	45	36	11.3									
TOTAL							434.0	87.3	186.0	52.0	15	4	24			

PLOT SCALE - 1:1200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

5th Ave NW Permanent Sign Installation Table

Lane	Displacement (South of US 281 MRM 195.74)	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
SBL		Overhead in SW Quadrant	SOUTH	M3-3P	36	18	4.5							N	Signal Pole with Mast Arm and Luminaire Extension	Place New Signs on Existing Mast Arm of Signal Pole
			US 281	M1-4	45	36	11.3									
			Horizontal Arrow (Right)	M6-1P	30	21	4.4									
			5th Ave NW ^	D3-1	96	24	16.0									
NBL	Approximately 130 feet	Rt.	WRONG WAY	R5-1A	36	24		6				1	N	Telespar	Replace Existing Sign with New Sign on Existing Post	
NBL	Approximately 350 feet	Rt.	DO NOT ENTER	R5-1	36	36		9.0					1	NW	Telespar	Replace Existing Signs with New Signs on Existing Post
			JCT	M2-1P	21	15	2.2					SSE				
			US 281	M1-4	45	36	11.3									
TOTAL							49.7	15.0	0.0	0.0	0	0	2			

PLOT SCALE - 1:200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

Sign Summary US 281 North & NW 5th Ave

Sign Code	Description	Width (Inches)	Height (Inches)	Sq. Ft.	No.	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	Text / Background
	Conspituity Marker	4	8	0.2	6		1.3	
	UNMUFFLED DYNAMIC ENGINE BRAKING PROHIBITED By City Ordinance	36	48	12.0	1	12.0		Black on White/Black Border
D1-3	<-- Wylie Park <-- Storybook Land <-- Fairgrounds	138	60	57.5	1	57.5		White on Green
D2-3	<-- To SD10 <-- Ellendale ND	114	42	33.3	1	33.3		White on Green
D3-1	Street Signs US 281, 133 St (Two Signs for Each)	42	18	5.3	8	42.0		White on Green
D3-1	Street Signs NW 5th Ave -->	102	24	17.0	1	17.0		White on Green
D3-1	Street Signs NW 5th Ave ^	96	24	16.0	1	16.0		White on Green
D3-1	Street Sign NW 8th Ave (Two Signs for Each)	60	18	7.5	2	15.0		White on Green
D3-1	Street Sign N 19th St	54	18	6.8	2	13.5		White on Green
D3-2	Advanced Street Sign NW 8th Ave NEXT INTERSECTION	78	36	19.5	1	19.5		White on Green
D3-2	Advanced Street Sign N 19th St Next Left	60	36	15.0	1	15.0		White on Green
D10-6	Mile Markers 194.53	4.5	21	0.7	1	0.7		White on Green
D10-6	Mile Markers 195	4.5	18	0.6	1	0.6		White on Green
M1-4	US 281	45	36	11.3	7	78.8		Black on White Shield/Black Border
M1-6	Brown 12W County	45	36	11.3	1	11.3		Yellow on Blue/Yellow Border
M2-1P	Junction Marker	21	15	2.2	1	2.2		Black on White/Black Border
M3-1P	North	36	18	4.5	4	18.0		Black on White/Black Border
M3-3P	South	36	18	4.5	2	9.0		Black on White/Black Border
M6-1P	Horizontal Arrow	30	21	4.4	3	13.1		Black on White/Black Border
M6-1P	Horizontal Arrow	30	21	4.4	1	4.4		Yellow on Blue/Yellow Border
M6-3P	Vertical Single Arrow	30	21	4.4	1	4.4		Black on White/Black Border
R1-1	Stop	36	36	7.5	2		15.0	White on Red
R4-7	Keep Right (symbol)	36	48	12.0	3	36.0		Black on White
R5-1a	WRONG WAY	36	24	6.0	3		18.0	Red on White
R5-1	DO NOT ENTER	36	36	9.0	4		36.0	Red on White
R6-1L	ONE WAY ON LEFT ARROW	48	18	6.0	4	24.0		Black on White
R6-1R	ONE WAY ON RIGHT ARROW	48	18	6.0	3	18.0		Black on White
R6-3	Divided Highway Crossing	36	30	7.5	2	15.0		Black on Fluorescent Yellow
R10-5	Left on Green Arrow Only	30	36	7.5	1	7.5		Black on Fluorescent Yellow
W3-3	Signal Ahead	48	48	16.0	1		16.0	Black on Fluorescent Yellow
W6-1	Divided Highway Begins (symbol)	48	48	16.0	1		16.0	Black on Fluorescent Yellow
					Totals	483.7	102.3	

PLOT SCALE - 1:200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEVEL\0507\TITLEM.DGN

US 281 South Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
194.53	0.000	Rt.	Mile Marker 194.53	D10-6	4.5	21	0.7		8		1			N	Telespar	Place New Sign on New Post
194.53	0.015	Rt.	Bridge Ices Before Road (Hinged)	W8-13	36	36								N	Telespar	Leave in Place
194.53	0.173	Median	Keep Right symbol	R4-7	36	48	12						1	N	Telespar	Replace Existing Signs with New Signs on Existing Post
			Conspicuity Marker		4	8	0.2			N						
			Conspicuity Marker		4	8	0.2			S						
194.53	0.181	Rt.	133 St (Two Signs)	D3-1	42	18	10.5					1	N/S	Telespar	Replace Existing Signs with New Signs on Existing Post	
			US 281 (Two Signs)	D3-1	42	18	10.5			E/W						
194.53	0.181	Rt.	ONE WAY ON RIGHT ARROW	R6-1R	48	18	6			26		2	1	W	Telespar	Replace Existing Signs with New Signs on New Posts at Existing Location
			ONE WAY ON LEFT ARROW	R6-1L	48	18	6		E							
			Stop	R1-1	36	36	7.5		W							
			Divided Highway Crossing	R6-3	36	30	7.5		W							
194.53	0.209	Rt.	DO NOT ENTER	R5-1	36	36		9						SE	Telespar	Place New Sign on Existing Luminaire Pole
			Brown County 12W		36	42					1	N	Luminaire Pole	Remove Existing Signs		
			Horizontal Arrow	M6-1P	30	21										
194.53	0.215	Rt.	DO NOT ENTER	R5-1	36	36							1	SE	Telespar	Remove Existing Sign
194.53	0.239	Rt.	Brown 12W County	M1-6	45	36	11.3		12.0		1			S	Luminaire Pole	Place New Signs on New Post
			Horizontal Arrow-County (Left)	M6-1P	30	21	4.4									
195	0.000	Rt.	Mile Marker 195	D10-6	4.5	18	0.6		7		1			N	Telespar	Place New Sign on New Post at Existing MRM Location
195	0.166	Rt.	UNMUFFLED DYNAMIC ENGINE BRAKING PROHIBITED By City Ordinance		30	36								N	Telespar	Leave In Place
195	0.188	Rt.	Speed Limit 45	R2-1	36	48	12						1	N	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole
195	0.216	Median	Keep Right symbol	R4-7	36	48	12						1	N	Telespar	Replace Existing Signs with New Signs on Existing Post
			Conspicuity Marker		4	8	0.2			N						
			Conspicuity Marker		4	8	0.2			S						
195	0.224	Rt.	NW 8th Ave (Two Signs)	D3-1	60	18	15		12		1			N/S		Place New Sign on Existing Luminaire Post
			US 281 (Two Signs)	D3-1	42	18	10.5							E/W		
195	0.225	Rt.	ONE WAY ON RIGHT ARROW	R6-1R	48	18	6		26.0			2	1	W	Telespar	Replace Existing Signs with New Signs on New Posts
			ONE WAY ON LEFT ARROW	R6-1L	48	18	6							E		
			Stop	R1-1	36	36	7.5							W		
			Divided Highway Crossing	R6-3	36	30	7.5							W		

PLOT SCALE - 1:200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEJEL0507\TITLEM.DGN

US 281 South Permanent Sign Installation Table

MRM	Displacement	Side Of Road	Description	Sign Code	Width	Height	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
195	0.260	Rt.	DO NOT ENTER	R5-1	36	36		9	12.0		1		1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
195	0.369	Rt.	NW 8th Ave	D3-1	54	12							1	N	4" X 6" Wood	Remove Existing Sign
			NW 8th Ave NEXT INTERSECTION	D3-1	78	36	19.5		26		1					Place New Sign on New Post in Existing Location
195	0.526	Median	Keep Right symbol	R4-7	36	48	12						1	NE	Telespar	Replace Existing Signs with New Signs on Existing Post
			Conspicuity Marker		4	8	0.2				SW					
			Conspicuity Marker		4	8	0.2									
195	0.535	Rt.	N 19th St (Two Signs)	D3-1									1	SW/NE	Telespar	Remove Existing Sign
			ONE WAY ON RIGHT ARROW	R6-1R	48	18	6					NW		Replace Existing Signs with New Signs on New Posts		
			ONE WAY ON LEFT ARROW	R6-1L	48	18	6			26.0		2				SE
			Stop	R1-1	36	36	7.5					NW				
			Divided Highway Crossing	R6-3	36	30	7.5					NW				
195	0.543	Rt.	N 19th St (Two Signs)	D3-1	54	18	13.5		14		1		SW/NE		Place New Sign on New Post	
			US 281 (Two Signs)	D3-1	42	18	10.5					NW/SE				
195	0.562	Rt.	DO NOT ENTER	R5-1	36	36		9					1	SW	Telespar	Replace Existing Sign with New Sign on Existing Post
			SOUTH	M3-3P	36	18	4.5					NE				
			US 281	M1-4	45	36	11.3									
195	0.584	Rt.	WRONG WAY	R5-1A	36	24		6					1	SW	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole
			Speed Limit 45	R2-1	36	48	12					NE				
195	0.639	Rt.	N 19th St -->	D3-1									1	E	Luminaire Pole	Remove Existing Sign
			Left Curve Arrow	W1-2L	48	48	16							Replace Existing Sign with New Sign on Existing Luminaire Pole		
195	0.658		N 19th St NEXT RIGHT	D3-1	60	36	15.0		24		2					Place New Sign on New Posts
195	0.706	Rt.	Yield	R1-2	48X48X48			6.9					1	E	Luminaire Pole	Replace Existing Sign with New Sign on Existing Luminaire Pole
195	0.745	Median	Keep Right symbol	R4-7	36	48	12						1	E	Telespar	Replace Existing Signs with New Signs on Existing Post
			Conspicuity Marker		4	8	0.2					E				
			Conspicuity Marker		4	8	0.2					W				
195	0.788	Rt.	South US 281 45 right arrow	D2-3	66	84	39						1	N	Telespar	Replace Existing Sign with New Sign on Existing Post
			DO NOT ENTER	R5-1	36	36	9					S				
195	0.815	Rt.	Signal Ahead	W3-3	48	48		16	24		2		1	N	Luminaire Pole with Flashing Amber Luminaire	Replace Existing Sign with New Sign on New Posts at Existing Location
TOTAL							306.6	105.2	139.0	78.0	11	6	19			

PLOT SCALE - 1:200

PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

Sign Summary US 281 South

Sign Code	Description	Width (Inches)	Height (Inches)	Sq. Ft.	No.	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	Text / Background
	Conspicuity Marker	4	8	0.2	8		1.8	
D2-3	South US 281 45 right arrow	66	84	38.5	1	38.5		White on Green
D3-1	Street Signs US 281, 133 St (Two Signs for Each)	42	18	5.3	8	42.0		White on Green
D3-1	Street Sign NW 8th Ave (Two Signs for Each)	60	18	7.5	2	15.0		White on Green
D3-2	Advanced Street Sign NW 8th Ave NEXT INTERSECTION	78	36	19.5	1	19.5		White on Green
D3-1	Street Sign N 19th St	54	18	6.8	2	13.5		White on Green
D3-2	Advanced Street Sign N 19th St NEXT RIGHT	60	36	15.0	1	15.0		White on Green
D10-6	Mile Markers 194.53	4.5	21	0.7	1	0.7		White on Green
D10-6	Mile Markers 195	4.5	18	0.6	1	0.6		White on Green
M1-4	US 281	45	36	11.3	1	11.3		Black on White Shield/Black Border
M1-6	Brown 12W County	45	36	11.3	1	11.3		Yellow on Blue/Yellow Border
M3-3P	South	36	18	4.5	1	4.5		Black on White/Black Border
M6-1P	Horizontal Arrow	30	21	4.4	1	4.4		Yellow on Blue/Yellow Border
R1-1	Stop	36	36	7.5	3		22.5	White on Red
R1-2	Yield	48X48X48		6.9	1		6.9	White on Red
R2-1	Speed Limit 45	36	48	12.0	2	24.0		Black on White
R4-7	Keep Right (symbol)	36	48	12.0	4	48.0		Black on White
R5-1a	WRONG WAY	36	24	6.0	1		6.0	Red on White
R5-1	DO NOT ENTER	36	36	9.0	4		36.0	Red on White
R6-1L	ONE WAY ON LEFT ARROW	48	18	6.0	3	18.0		Black on White
R6-1R	ONE WAY ON RIGHT ARROW	48	18	6.0	3	18.0		Black on White
R6-3	Divided Highway Crossing	36	30	7.5	3	22.5		Black on Fluorescent Yellow
W1-2L	Left Curve Arrow	48	48	16.0	1		16.0	Black on Fluorescent Yellow
W3-3	Signal Ahead	48	48	16.0	1		16.0	Black on Fluorescent Yellow
Totals						306.6	105.2	

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(134)194	25	51

SCOPE OF WORK

Work on this project involves removing and resurfacing of asphalt concrete shoulders, permanent signing, and pavement markings on US 281.

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 Contractor shall perform the work as follows:

1. Install Temporary Traffic Control Signs
2. Remove Asphalt Shoulders
3. Unclassified Excavation for Digouts and Backfill
4. Pave Asphalt Shoulders
5. Install Permanent Signing
6. Apply Permanent Pavement Markings
7. Remove Temporary Traffic Control Signs

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.

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

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.

A Type 3 Barricade will be installed at the beginning and end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades will be installed facing traffic within the closed lane at a spacing of ¼ mile.

Work on the outside shoulders of the 4-lane divided section of US 281 will be completed prior to shoulder work on the center median shoulders.

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

Near the signalized intersections of US281/US12 and US281/5th Ave NW there is potential impact between the shoulder work and traffic signal loop detection wiring. If shoulder work does impact signalized intersection in any manner, Region Traffic should be consulted as to preferred mitigation.

TYPE III FIELD LABORATORY

The Contractor will provide high-speed broadband internet connection to the field lab. The multiport internet connection may be hardwired, through a cellular method, or other approved service that allows Wi-Fi connection. Prior to obtaining the internet connection, the Contractor will submit the internet connection's technical data to the Area Office to check for compatibility with the state's computer equipment. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. The internet service will be incidental to the contract unit price per each for "Type III Field Laboratory".

FLAGGING

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

All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

REMOVE ASPHALT CONCRETE PAVEMENT

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was unknown.

An estimated 957 Cubic Yards of the in-place asphalt concrete surfacing will be removed from the existing highway according to the in-place surfacing typical sections and wasted as directed by the Engineer. Care will be taken not to waste the in-place granular material. The remaining in-place granular material will be reshaped and compacted according to the Shoulder Preparation plan note.

The quantity of removed asphalt material is estimated from the in-place surfacing typical sections. This estimated quantity is not included in the unclassified excavation quantities. All removed asphalt will become the property of the contractor.

TEMPORARY PAVEMENT MARKING

Cost of temporary pavement markings will be incidental to the contract unit price per foot for "Temporary Pavement Marking".

Temporary pavement markings will be applied according to the standard plates shown in the plans. Markings will not be permitted without the corresponding closure. Removal of Temporary Pavement Markings is incidental to the bid item "Temporary Pavement Marking".

All Temporary Pavement Marking Tape, Temporary Pavement Markings, and Temporary flexible vertical markers (tabs) will be clean at all times.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Base Course.

Included in the Estimate of Quantities are 13 cubic yards of Unclassified Excavation, Digouts per mile per shoulder for the removal of unstable material throughout the project.

Included in the Estimate of Quantities are 25 tons of Base Course per mile per shoulder for backfill of Unclassified Excavation, Digouts.

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

SHOULDER PREPARATION

It is anticipated that the Contractor will be required to add approximately 190 tons of Base Course to the existing shoulders to meet the cross slope and inslope requirements shown in the typical sections. The Contractor will scarify, rework, shape, and blend the upper 4 inches of existing granular material with the Base Course material. The blended granular material will be shaped and compacted with 4% moisture or as directed by the Engineer, to the typical sections, and in accordance with Section 260.3 D.

All costs associated with blending, scarifying, reworking, shaping, and compacting the granular material and Base Course, will be incidental to the contract unit price per mile for "Shoulder Preparation".

CLASS E ASPHALT CONCRETE

Mineral Aggregate for Class E Asphalt Concrete will conform to the requirements for Class E, Type 1.

When directed by the Engineer, the Contractor will saw and remove a total of three undamaged compaction cores per asphalt concrete lift from designated area(s) and repair the hole(s) to the satisfaction of the Engineer. All costs associated with the compaction cores will be incidental to the contract unit price per each for "Compaction Sample".

All other requirements for Class E will apply.

FLUSH SEAL

Application of flush seal will be completed within 10 working days following completion of the asphalt concrete surfacing.

Application of flush seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer will notify the Contractor as soon as possible that the flush seal is unnecessary.

SAW AND SEAL JOINTS

Longitudinal joints will be sawed and sealed with Hot Poured Elastic Joint Sealer after paving operations in accordance with the details shown in these plans. The joint will conform to the detail provided in this plan set: Standard Plate 320.15.

Cost for sawing and sealing longitudinal joints will be included in the contract unit price per foot for "Saw and Seal Joints".

GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

REMOVE TRAFFIC SIGN

Existing signs that are shown as being removed in the Permanent Signing Table will become the property of the Contractor. Existing signposts and bases will be removed in their entirety. All existing signs, posts, and/or hardware removed will not be reused. Holes remaining from the removal of wood posts will be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, hardware, and backfilled holes will be incidental to the contract unit price per each for "Remove Traffic Sign". Quantities will be per assembly at the contract unit price per each.

NEW PERMANENT SIGNING

All signs will be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All Flat Aluminum Signs, Nonremovable Copy High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type IV. All Flat Aluminum Signs, Nonremovable Copy Super/Very High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type XI.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will be incidental to the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy High Intensity" or "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

DIGITALLY PRINTED SIGNS

Digitally printed signs will be allowed on this project. If the Contractor elects to provide digitally printed signs, such signs will adhere to the following specifications.

PROTECTIVE OVERLAY FILM

Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlamine will comply with the retroreflective sheeting manufacturer's recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in Table 1.

Table 1: Retroreflective Film Minimum Durability Requirements

ASTM D4956 Type	Full Sign Replacement Term (years)	Sheeting Replacement Term (years)
I	0	7
III	7	10
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

FABRICATION

Retroreflective sheeting will be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Sign legend will be applied using digital print technologies and systems in accordance with the retroreflective sheeting manufacturer's recommendations and the requirements of these plans.

Finished signs will be free of ragged edges and must be supplied clean and free of scratches, grease, oil, lubricants or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from 30 feet or greater.

After application of the retroreflective sheeting, sign blanks will be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations. Finished signs will be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

DIGITALLY PRINTED SIGNS

TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified, traffic control signs will be warranted for the duration shown in Table 1. Full product terms and conditions are as established by each sheeting manufacturer and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. A copy of the warranty document with complete details of terms and conditions will be supplied if requested by the Engineer.

CERTIFIED DIGITAL SIGN FABRICATOR

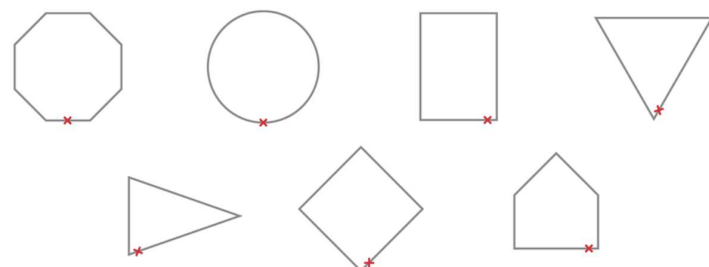
Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

DATE TAGGING SIGNS WITH PERTINENT INFORMATION

All digitally printed signs are required to be date-tagged with the following 2 components:

1. Date tags on the back of signs
Tags will have the following information and be fabricated with material and printing system that are as durable as the warranted sign.
 - Name of Sign Fabricator
 - Date the sign was fabricated (month and year)
 - Process that was used for sign fabrication (digitally printed)
 - Supplier of sheeting that was used for fabricating the sign.

2. Border date
The month and year (mm/yyyy) of sign fabrication will be printed in the border of the sign in 3/8" sans serif font. Border date will be printed with the same warranted printed system as the sign face. The date should be printed in the locations indicated below.



SQUARE TUBE ANCHOR SLEEVE

The Contractor will furnish and install new 2.5" x 2.5" x 18", 12 Gauge square tube anchor sleeve or equivalent components as approved by the Engineer for 2.0" x 2.0" perforated tube posts. A 2.25" x 2.25" x 4', 12 Gauge perforated tube post will be used as the anchor post for installation with the square tube anchor sleeve.

SQUARE TUBE POST SLEEVE

All 2.5" x 2.5", 10 Gauge perforated tube post will be sleeved with a 2-3/16" x 2-3/16" x 4', 10 Gauge perforated tube post.

WINGED SLIP BASE ANCHOR

The Contractor will furnish and install new winged slip base anchors for 2.5" x 2.5" perforated tube posts as required in the Permanent Signing Table. Winged slip base anchors will be installed using the direct drive method.

Winged slip base anchors will consist of a slip base (upper), a 48-inch long winged anchor (lower), and a hardware kit.

OVERHEAD AND POLE MOUNTED SIGNS

The Contractor will install the new overhead signs with new connection hardware and mast arm mounting hardware.

Signs that are mounted on luminaire, utility, and signal poles and on signal mast arms will be attached with high strength stainless steel bands or galvanized pole clamps. Signs will be attached as recommended by the manufacturer. All sign mounting hardware will be stainless steel or galvanized steel.

Pole mounted signs will be mounted a minimum of 7 ft above the ground. Mounting heights are measured to the bottom of the signs.

All costs for pole and mast arm sign mounting hardware will be incidental to the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy High Intensity" or "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

MILEAGE REFERENCE MARKERS

If moved from original placement, SDDOT will be notified to do Mileage Reference Markers (MRMs) locates prior to project completion by calling the Aberdeen Region Traffic Engineer at (605)626-2245. Payment for this work will be incidental to the various signing contract items.

DELINEATION

Installation of delineators will be along US 281 South slip lane. Any removal of delineators will be incidental to bid items "4"x4" Amber Delineator with 1.12 Lb/Ft Post" and "4"x4" White Delineator with 1.12 Lb/Ft Post".

TYPE 2 OBJECT MARKER BACK TO BACK

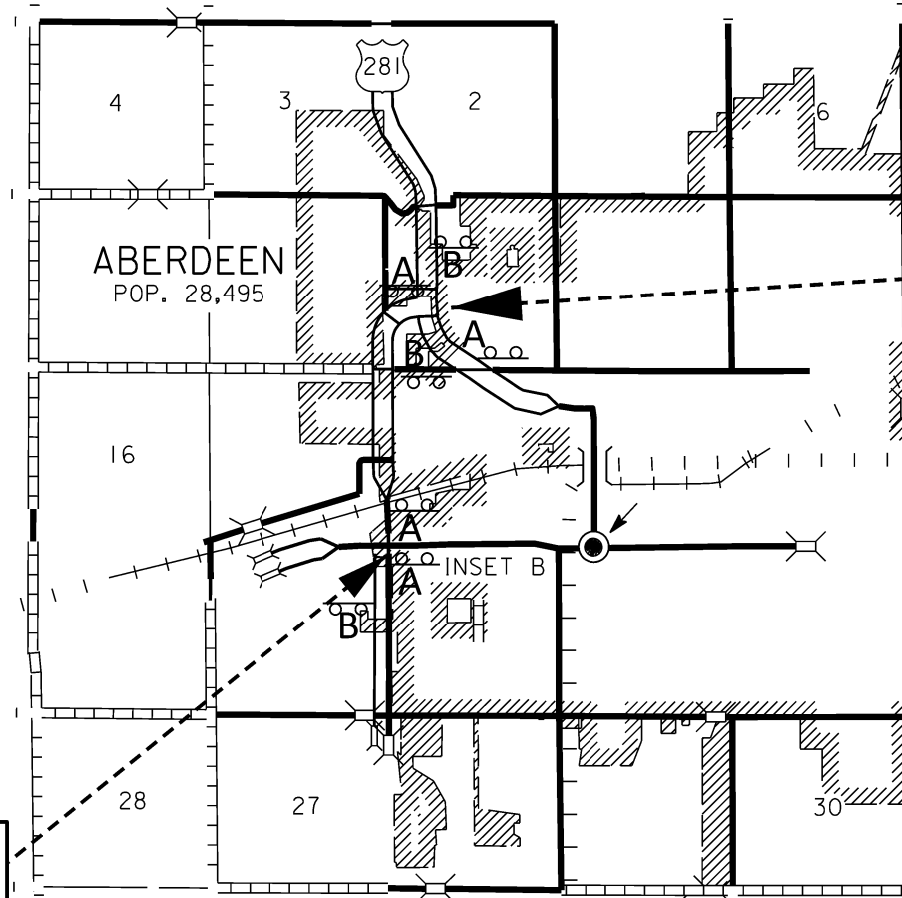
Removal and disposal of in place object markers is incidental to the contract unit price per each for "Type 2 Object Marker Back to Back".

FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0281(134)194	28	51
Plotting Date: 01/28/2025			

Revised
02/19/2025 1:59:57 PM

PLOT SCALE - 1:15850.36



Begin Project
Sta. 5+25.00
MRM 194.10 +0.034

End Project
Sta. 90+04.68
MRM 195.74 +0.000

A
ROAD WORK
NEXT 2 MILES

G20-1

B
END
ROAD WORK

G20-2

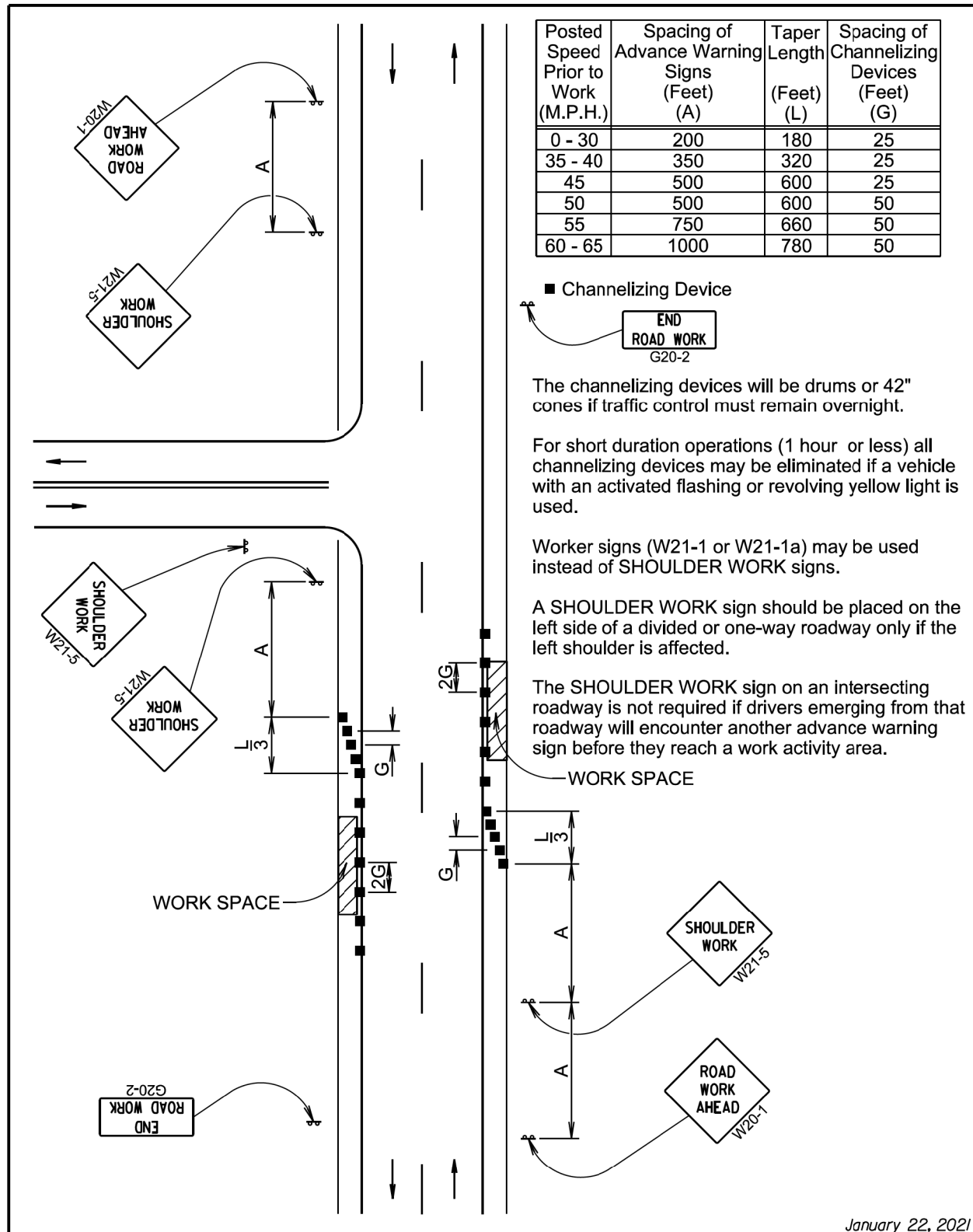


W20-1 ROAD WORK AHEAD signs will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs will be moved as necessary to keep current with the work activities.

EXACT LOCATION OF SIGNS TO BE DETERMINED
IN THE FIELD BY THE ENGINEER

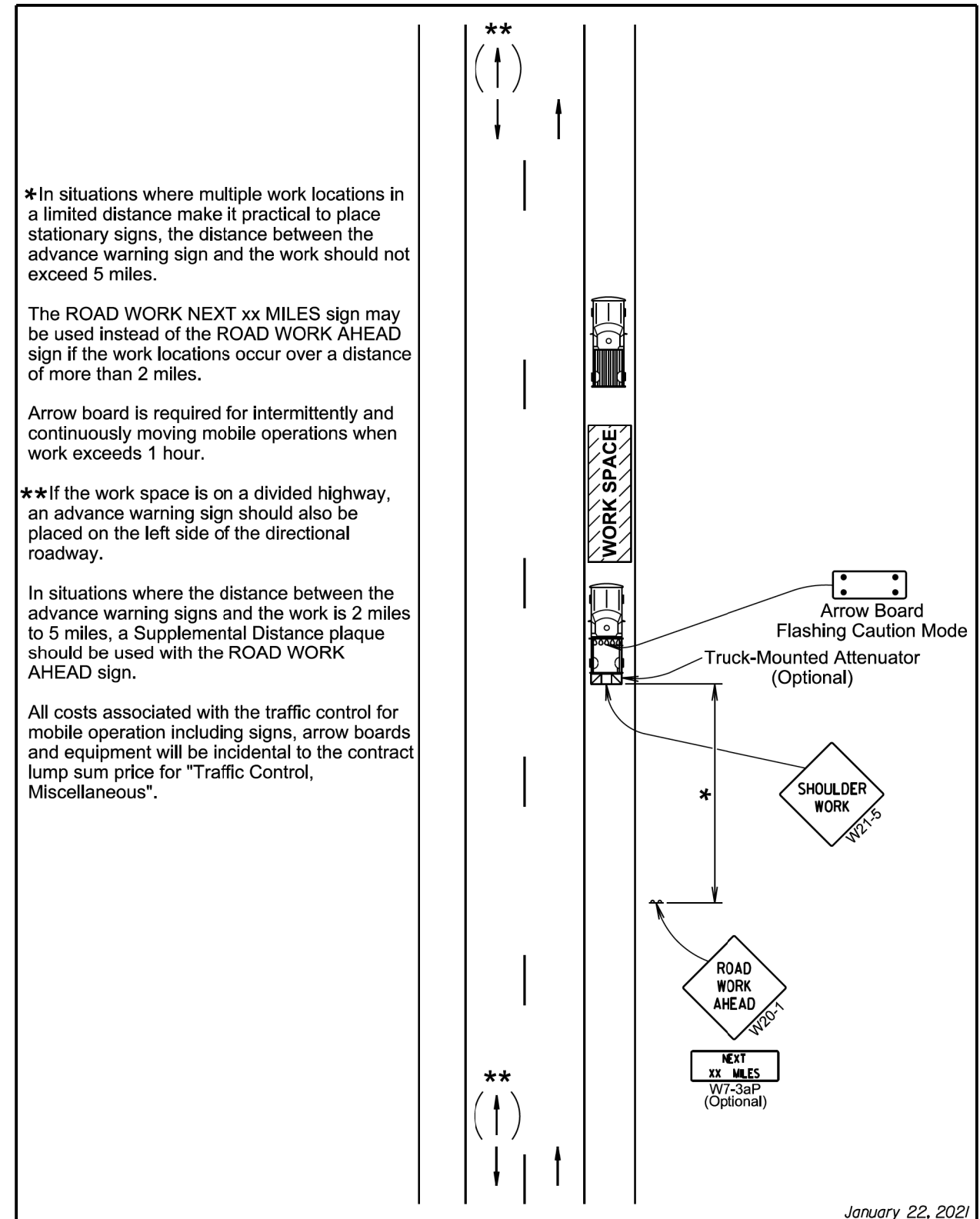
PLOTTED FROM - TRAB10200

PLOT NAME - 1
FILE - ... \FIXED LOCATION SIGNS - COPY.DGN



January 22, 2021

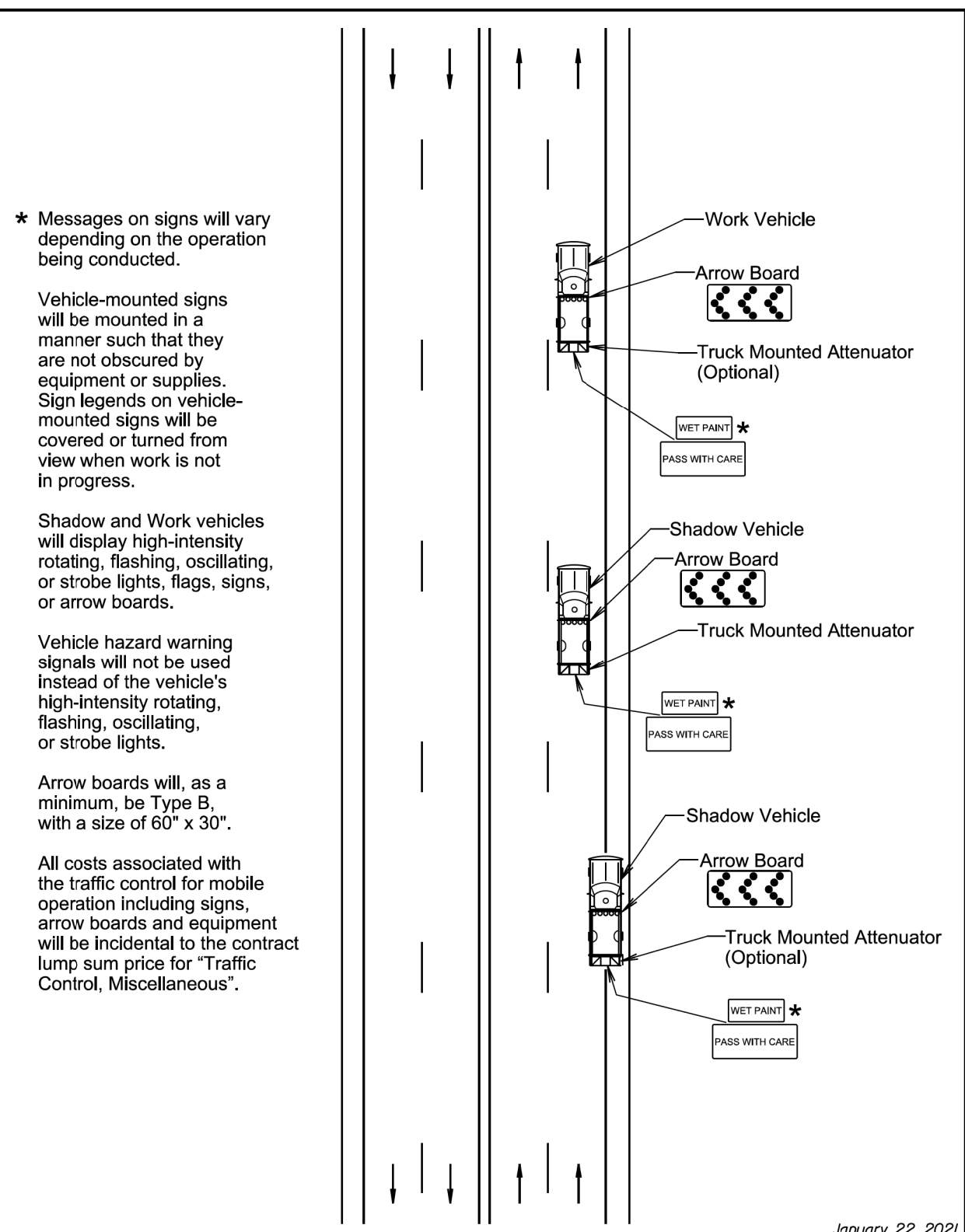
S D D O T	WORK ON SHOULDERS	PLATE NUMBER 634.03
	Published Date: 2025	Sheet 1 of 1



January 22, 2021

S D D O T	MOBILE OPERATIONS ON SHOULDERS	PLATE NUMBER 634.04
	Published Date: 2025	Sheet 1 of 1

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
	Published Date: 2025	Sheet 1 of 1

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

Flagger
 Channelizing Device

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

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

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

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

The channelizing devices will be drums or 42" cones.

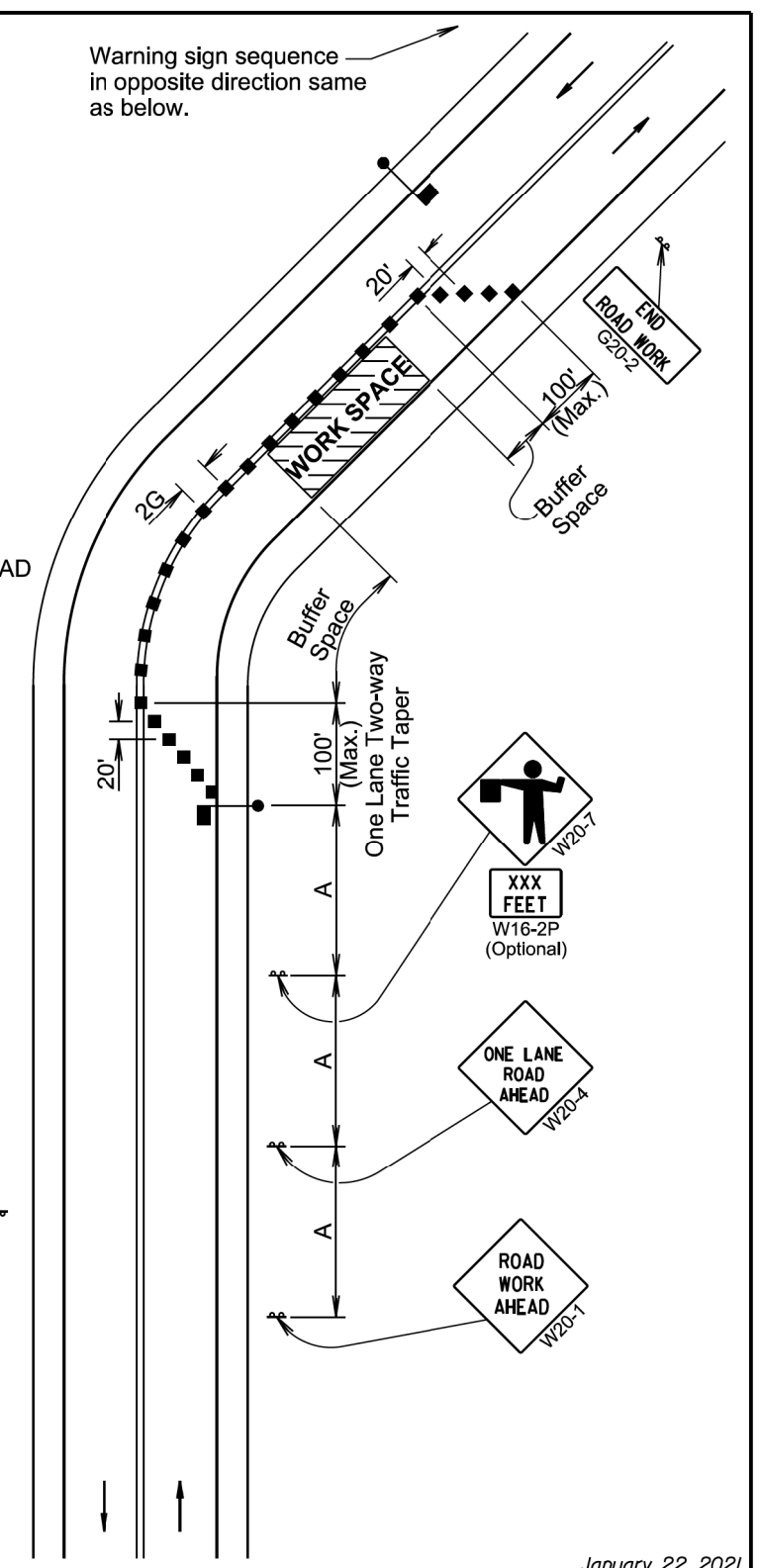
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

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

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

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

S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
	Published Date: 2025	Sheet 1 of 1



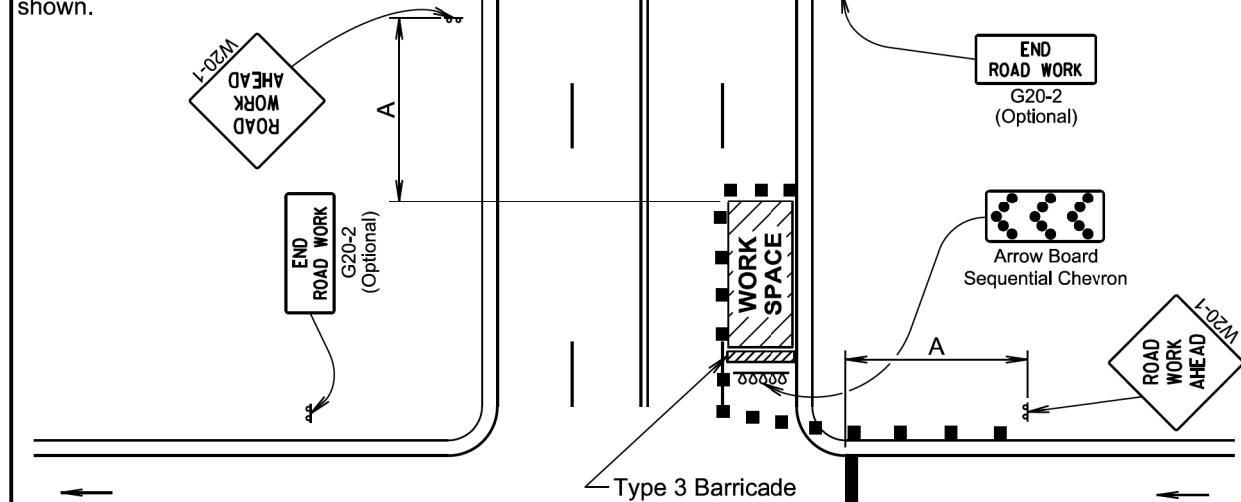
January 22, 2021

-PLOTTED FROM - TRAB10200

PLOT NAME - 1
FILE ... \REGION DESIGN\63408.63442.DGN

For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through traffic.

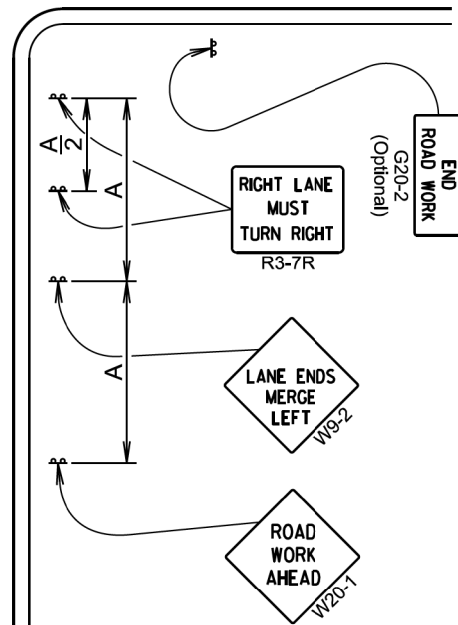
The standard procedure is to close on near side of the intersection any lane that is not carried through the intersection. However, when this results in the closing of a right lane having significant right-turning movements, then the right lane may be restricted to right turns only, as shown.



Where the turning radius is large, it may be possible to create a right turn island using channelizing devices, as shown. This procedure reinforces the nature of the temporary exclusive right-turn lane and enables a second RIGHT LANE MUST TURN RIGHT sign to be placed in the island.

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

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.



January 22, 2021

Published Date: 2025	S D D O T	RIGHT LANE CLOSURE FAR SIDE OF INTERSECTION	PLATE NUMBER 634.42
			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

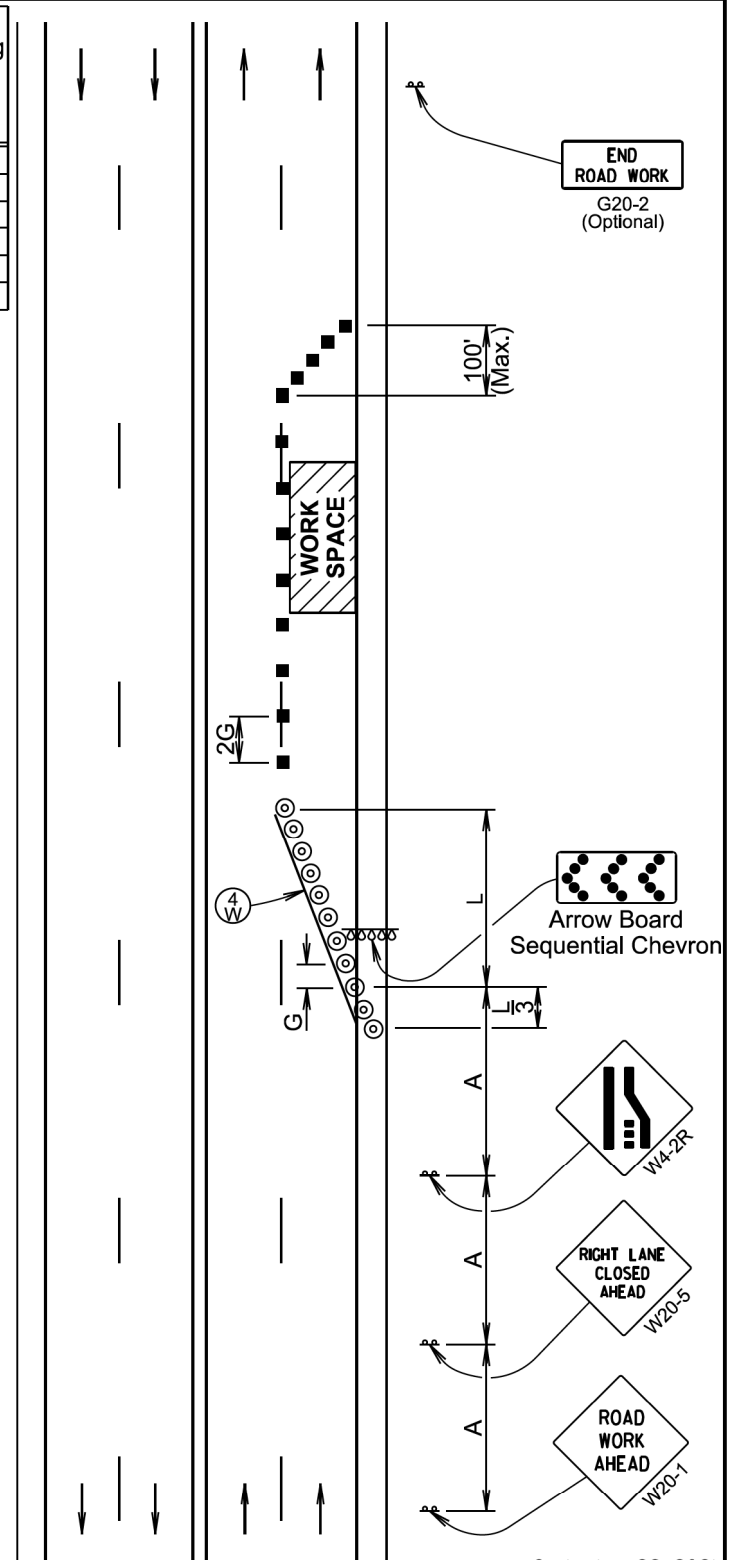
Ⓞ 4" White Temporary Pavement Marking

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.

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

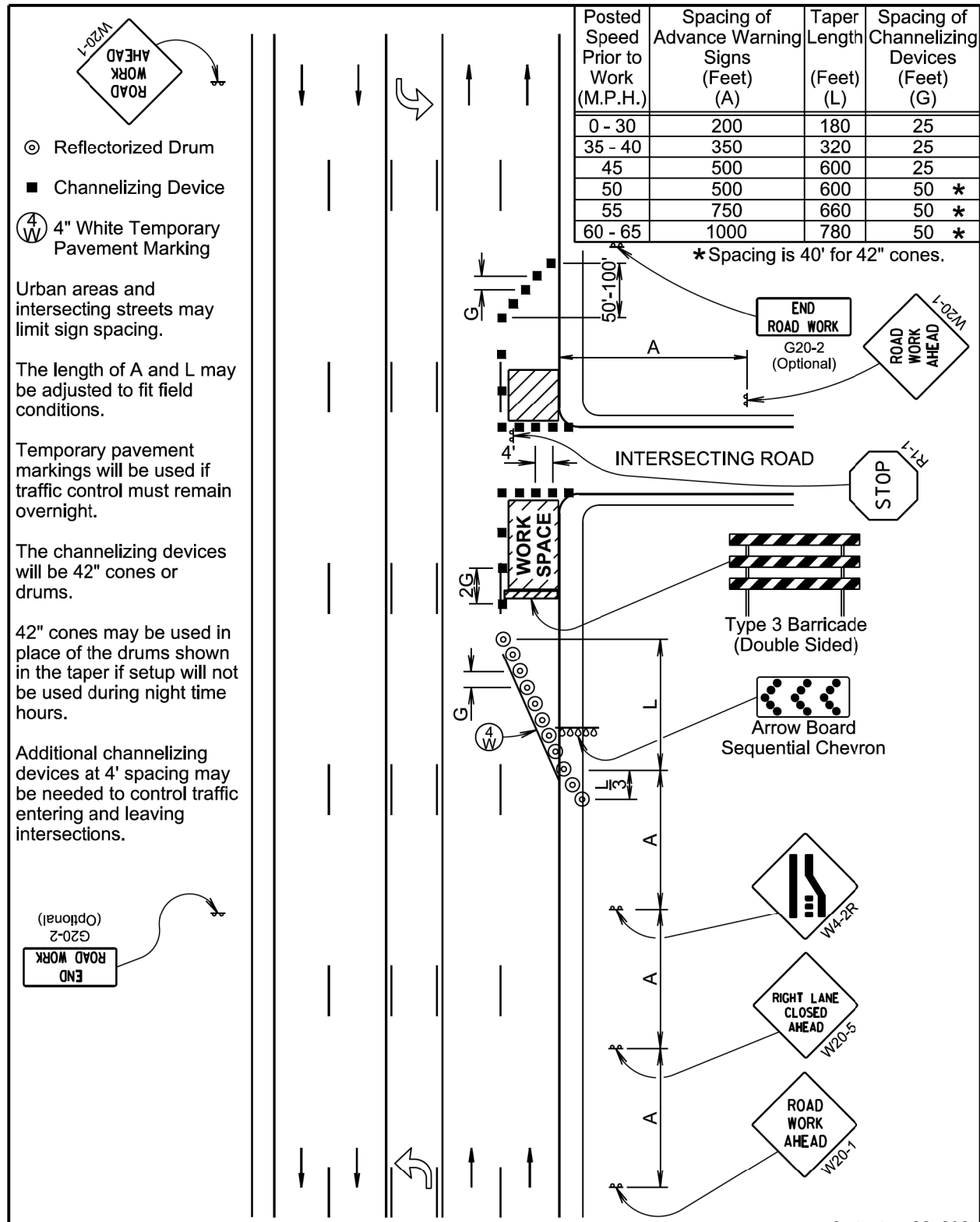
The length of A and L may be adjusted to fit field conditions.



September 22, 2021

Published Date: 2025	S D D O T	4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
			Sheet 1 of 1

PLOT SCALE - 1:200



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) W 4" White Temporary Pavement Marking

Urban areas and intersecting streets may limit sign spacing.

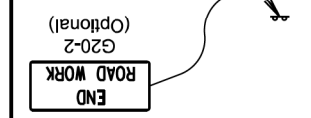
The length of A and L may be adjusted to fit field conditions.

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

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.

Additional channelizing devices at 4' spacing may be needed to control traffic entering and leaving intersections.



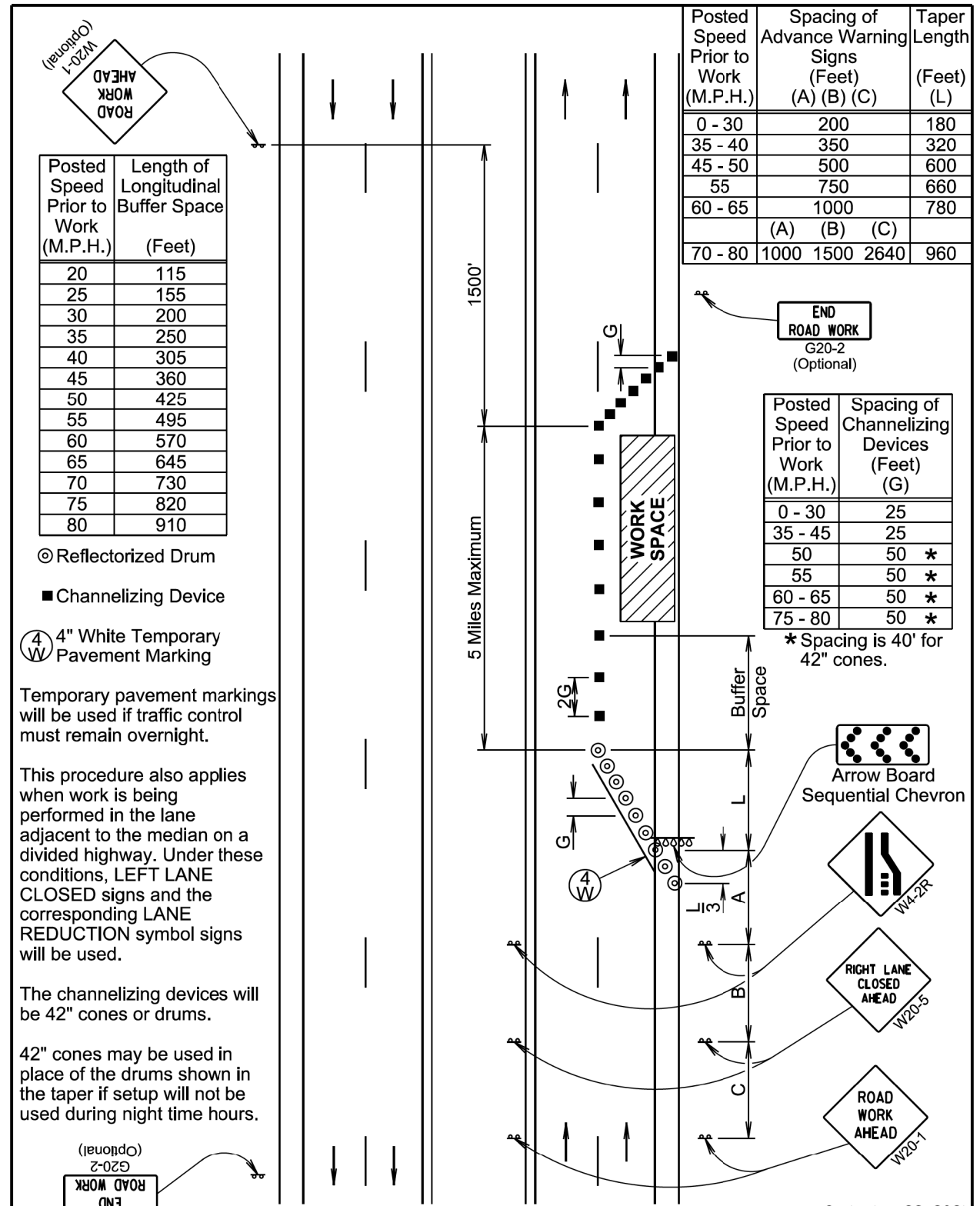
September 22, 2021

S D D O T	5-LANE, OUTSIDE LANE CLOSED	PLATE NUMBER 634.60
	Published Date: 2025	Sheet 1 of 1

PLOT NAME - 1

FILE - ... \REGION DESIGN\63460.63464.DGN

-PLOTTED FROM - TRAB10200



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)
	(A)	(B)	(C)	
0 - 30	200			180
35 - 40	350			320
45 - 50	500			600
55	750			660
60 - 65	1000			780
	(A)	(B)	(C)	
70 - 80	1000	1500	2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
75 - 80	50 *

* Spacing is 40' for 42" cones.

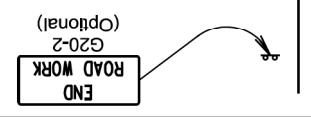
◎ Reflectorized Drum
 ■ Channelizing Device
 (4) W 4" White Temporary Pavement Marking

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

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs will be used.

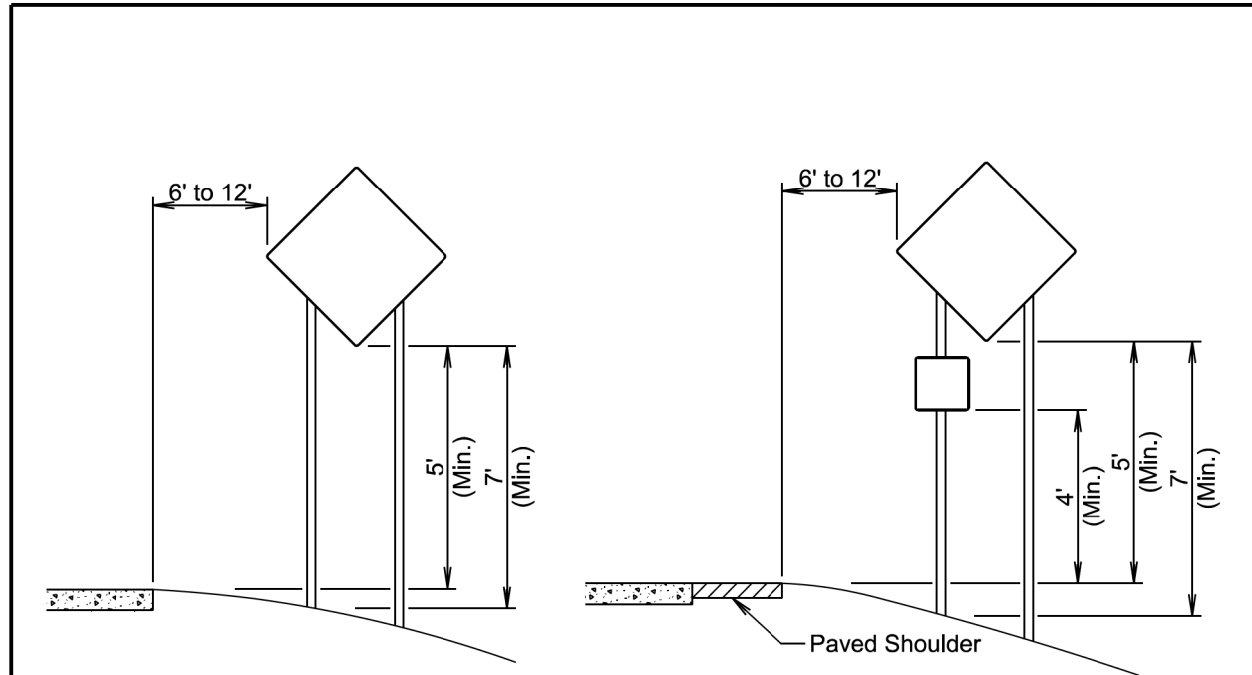
The channelizing devices will be 42" cones or drums.

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



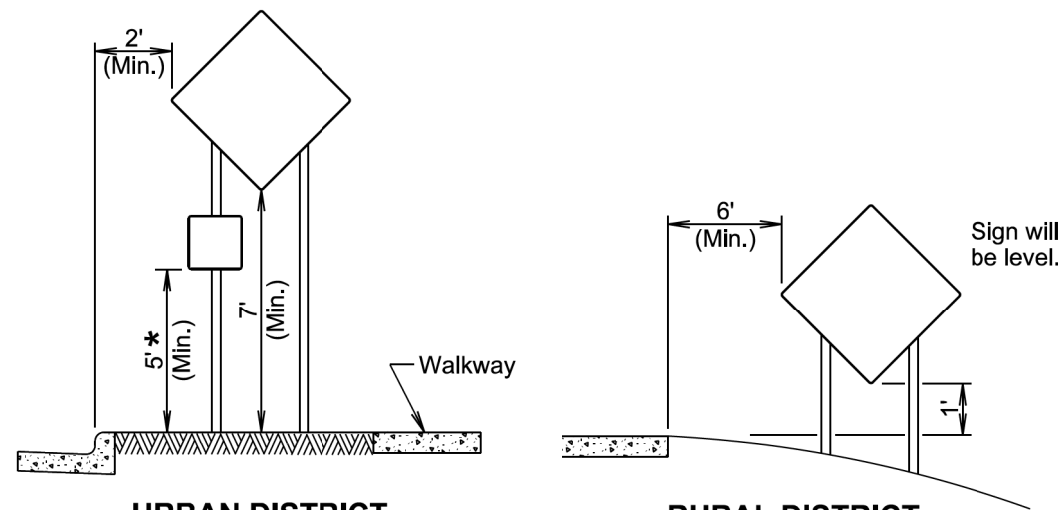
September 22, 2021

S D D O T	LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
	Published Date: 2025	Sheet 1 of 1



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



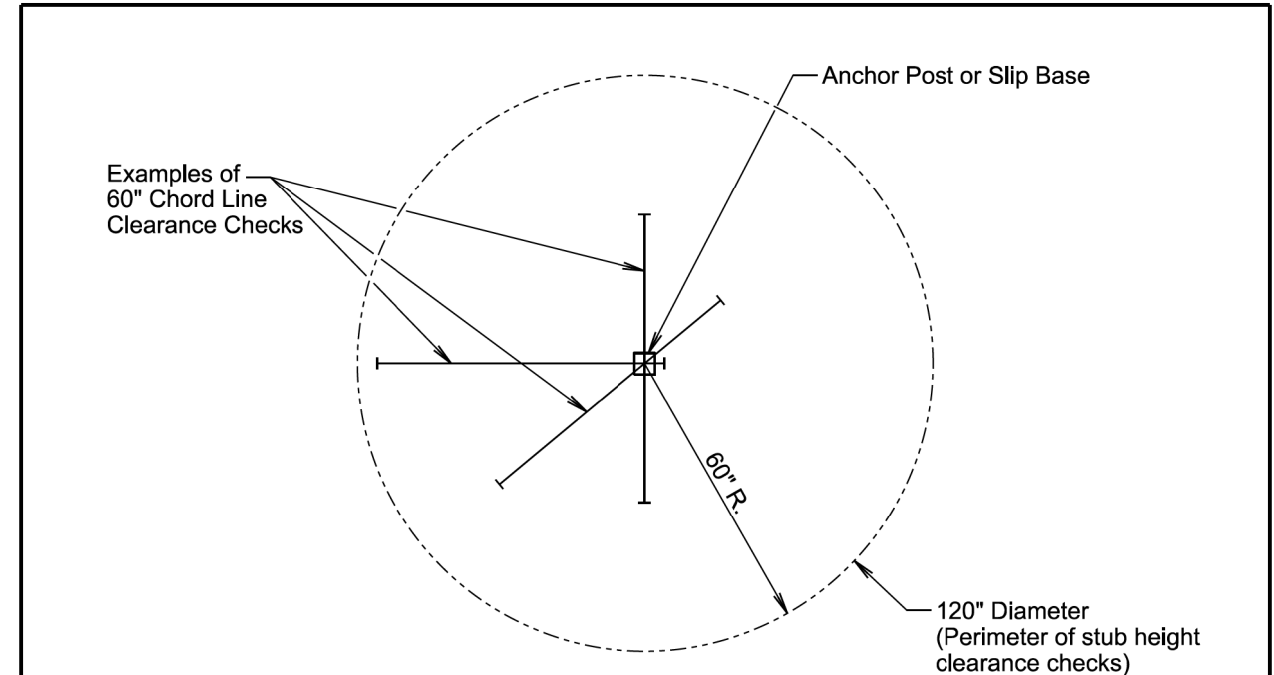
URBAN DISTRICT

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

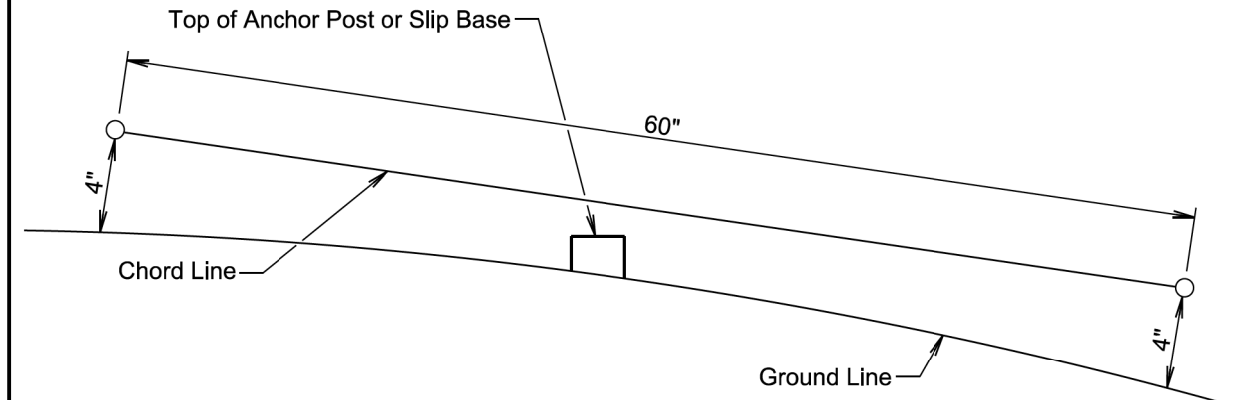
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

January 22, 2021

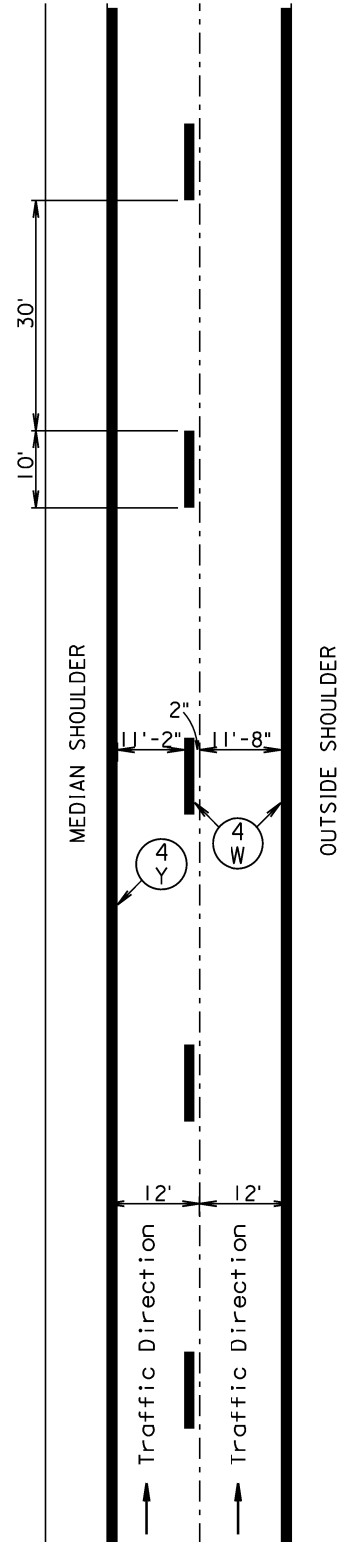
Published Date: 2025	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

ITEMIZED LIST FOR 09QY TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
R3-7R	RIGHT LANE MUST TURN RIGHT	2	30" x 30"	6.3	12.6
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	4	48" x 48"	16.0	64.0
W9-2	LANE ENDS MERGE LEFT	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	11	48" x 48"	16.0	176.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-1	ROAD WORK NEXT 2 MILES	4	36" x 18"	4.5	18.0
G20-2	END ROAD WORK	9	36" x 18"	4.5	40.5
		CONVENTIONAL ROAD			
		TRAFFIC CONTROL SIGNS SQFT			625.5

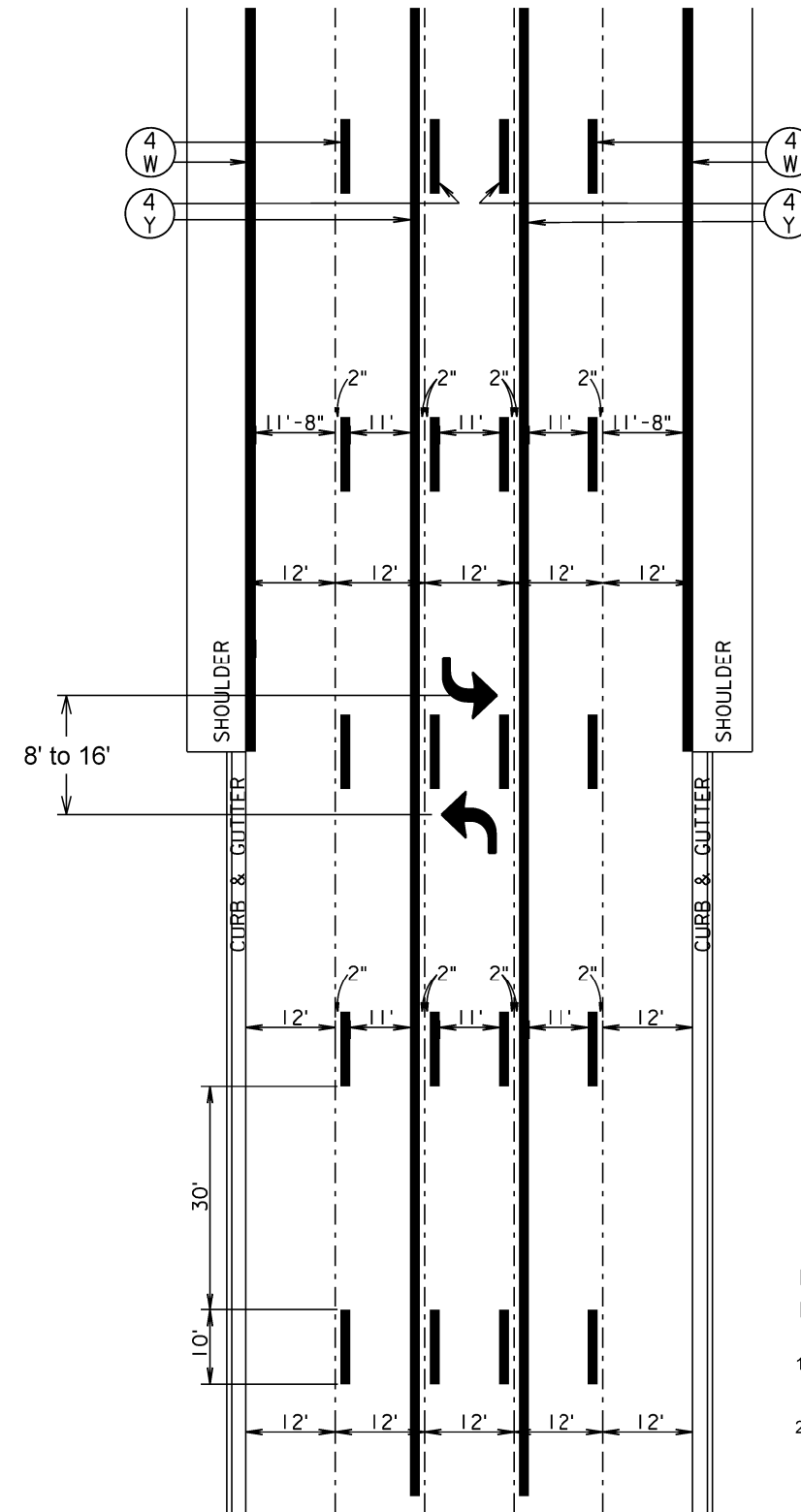
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0281(134)194	35	51
Plotting Date: 01/24/2025			

**FOUR LANE
PAVEMENT MARKING
ONLY ONE DIRECTION SHOWN**



KEY	ITEM
(4 W)	4" White
(4 Y)	4" Yellow

**FIVE LANE ROADWAY
WITH CENTER TURN LANE**



KEY	ITEM
(4 W)	4" White
(4 Y)	4" Yellow
↷	Arrow

**FURNISHING AND APPLYING DURABLE
PAVEMENT MARKING PAINT**

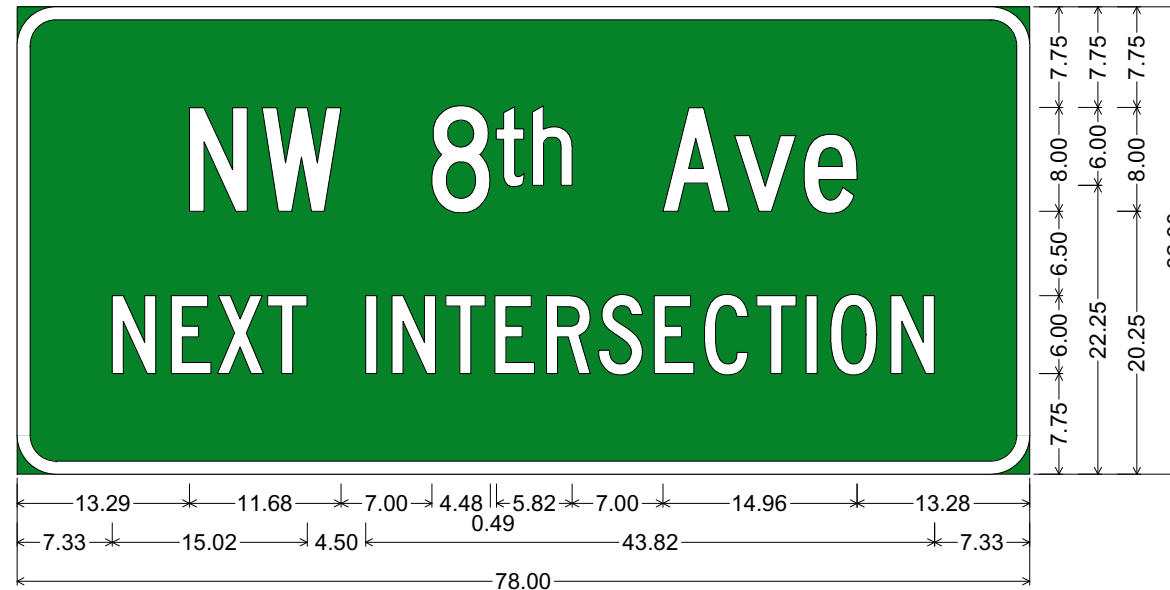
1. The typical pavement markings as shown on this sheet shall be applied throughout the entire length of the project.
2. Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

SPECIAL SIGN LAYOUT

PLOT SCALE - 1:200



6.00" Radius, 1.50" Border, White on Green;
"SOUTH", E 2K; Standard Arrow 4.5 20.00" X 12.13" 45°;



3.00" Radius, 1.00" Border, White on Green;
"NW", C 2K; "8th", C 2K; "Ave", C 2K; "NEXT INTERSECTION", C 2K 90% spacing;



3.00" Radius, 1.00" Border, White on Green;
"N", C 2K; "19th", C 2K; "St", C 2K; "NEXT RIGHT", C 2K;



3.00" Radius, 1.00" Border, White on Green;
"N", C 2K; "19th", C 2K; "St", C 2K; "NEXT LEFT", C 2K;

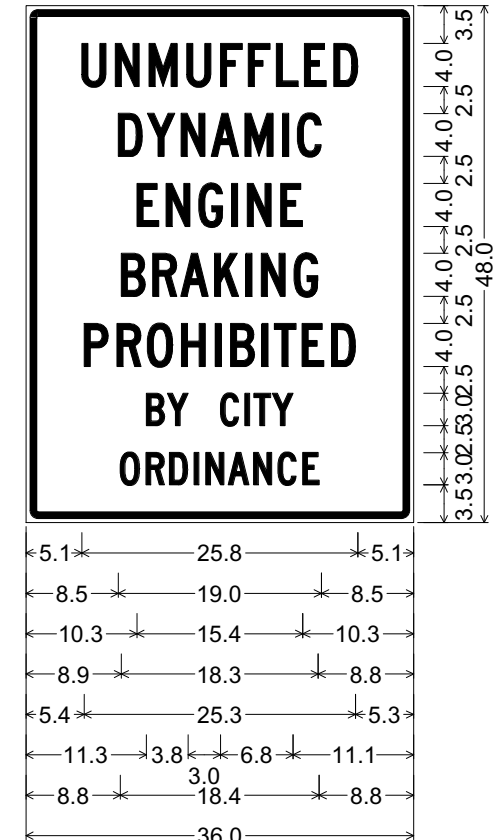
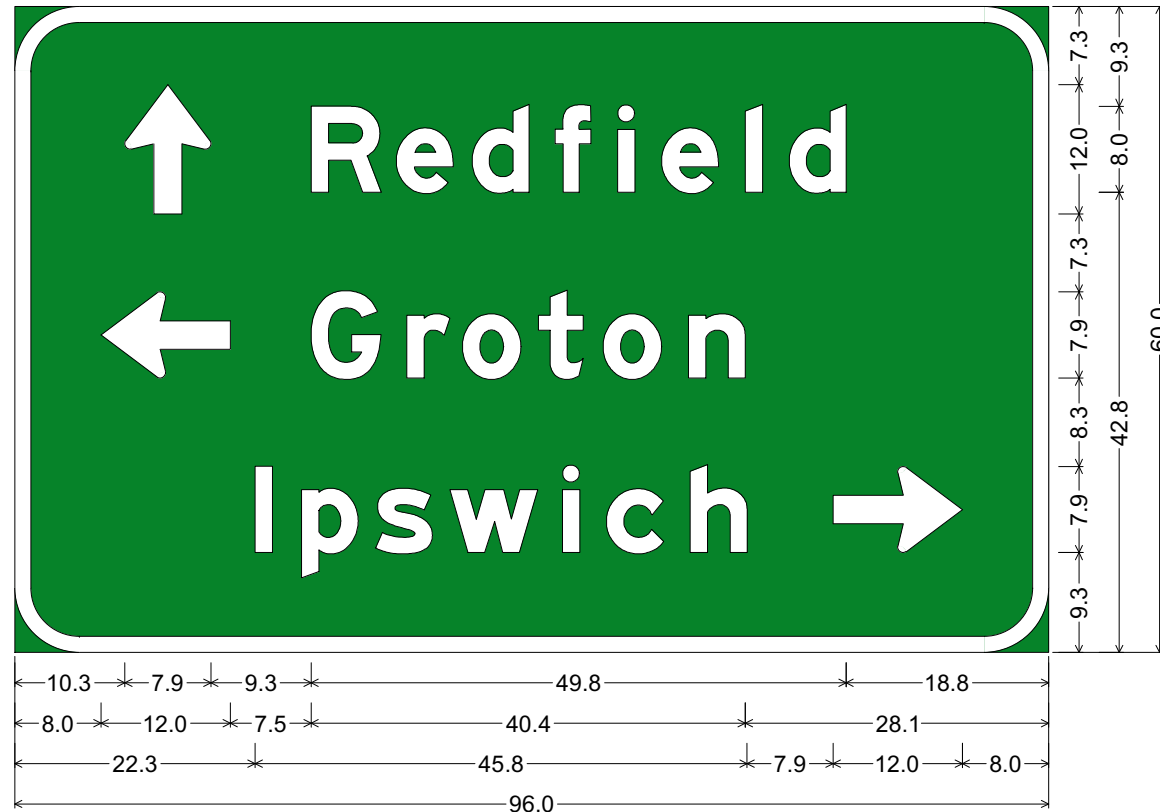
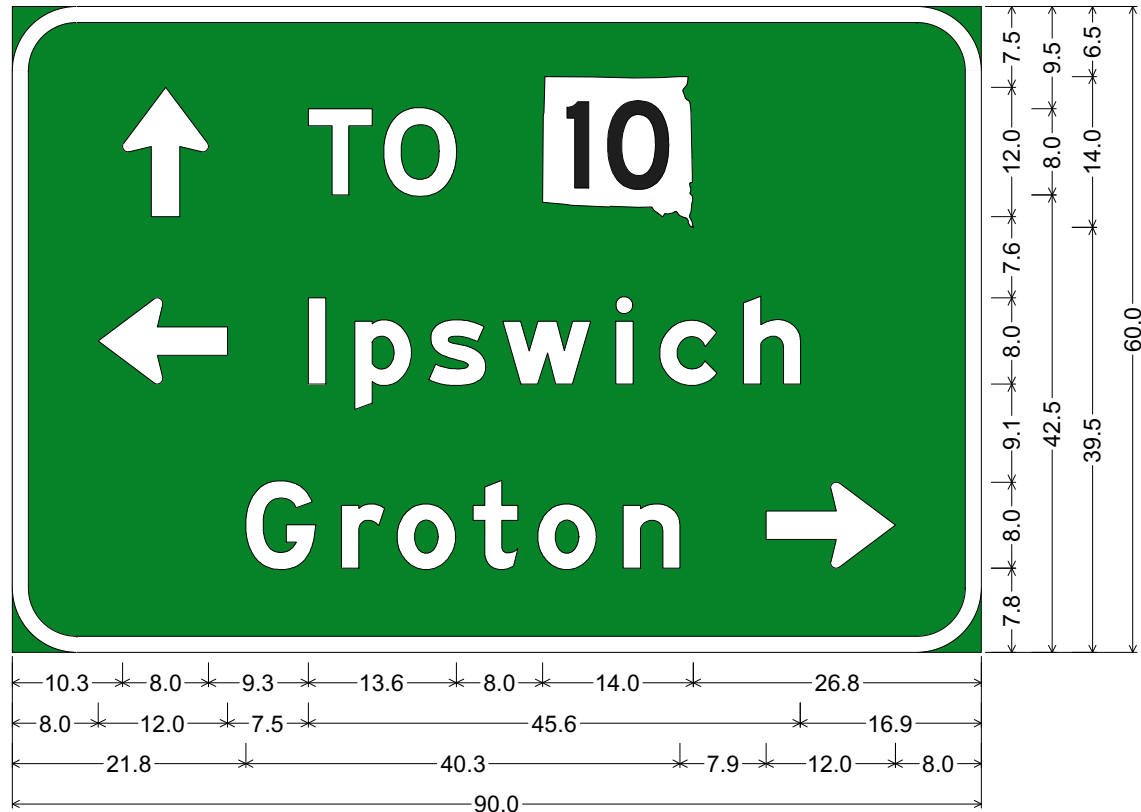
-PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \SIGNING-STANDARD PLATES.DGN

SPECIAL SIGN LAYOUT

PLOT SCALE - 1:200



6.0" Radius, 1.5" Border, White on Green;
Standard Arrow Custom 12.0" X 8.0" 90°; "TO", E Mod 2K;
Standard Arrow Custom 12.0" X 8.0" 180°; "Ipswich", E Mod 2K;
"Groton", E Mod 2K; Standard Arrow Custom 12.0" X 8.0" 0°;

Table of letter and object lefts

↑	T	O	10				
10.3	27.5	34.5	49.3				
←	I	p	s	w	i	c	h
8.0	27.5	31.8	38.8	45.6	56.0	60.1	67.9
G	r	o	t	o	n	→	
21.8	30.6	35.8	42.8	48.8	56.8	70.0	

6.0" Radius, 1.5" Border, White on Green;
Standard Arrow Custom 12.0" X 8.0" 90°; "Redfield", E Mod 2K;
Standard Arrow Custom 12.0" X 8.0" 180°; "Groton", E Mod 2K; "Ipswich", E Mod 2K;
Standard Arrow Custom 12.0" X 8.0" 0°;

Table of letter and object lefts

↑	R	e	d	f	i	e	l	d
10.3	27.5	35.4	42.5	50.1	56.0	60.1	67.9	71.9
←	G	r	o	t	o	n		
8.0	27.5	36.4	41.6	48.6	54.6	62.5		
I	p	s	w	i	c	h	→	
22.3	26.6	33.5	40.4	50.9	55.0	62.8	76.0	

1.1" Radius, 0.6" Border, 0.4" Indent, Black on White;
"UNMUFFLED", C 2K;
"DYNAMIC", C 2K;
"ENGINE", C 2K;
"BRAKING", C 2K;
"PROHIBITED", C 2K;
"BY CITY", C 2K;
"ORDINANCE", C 2K;

Table of letter and object lefts

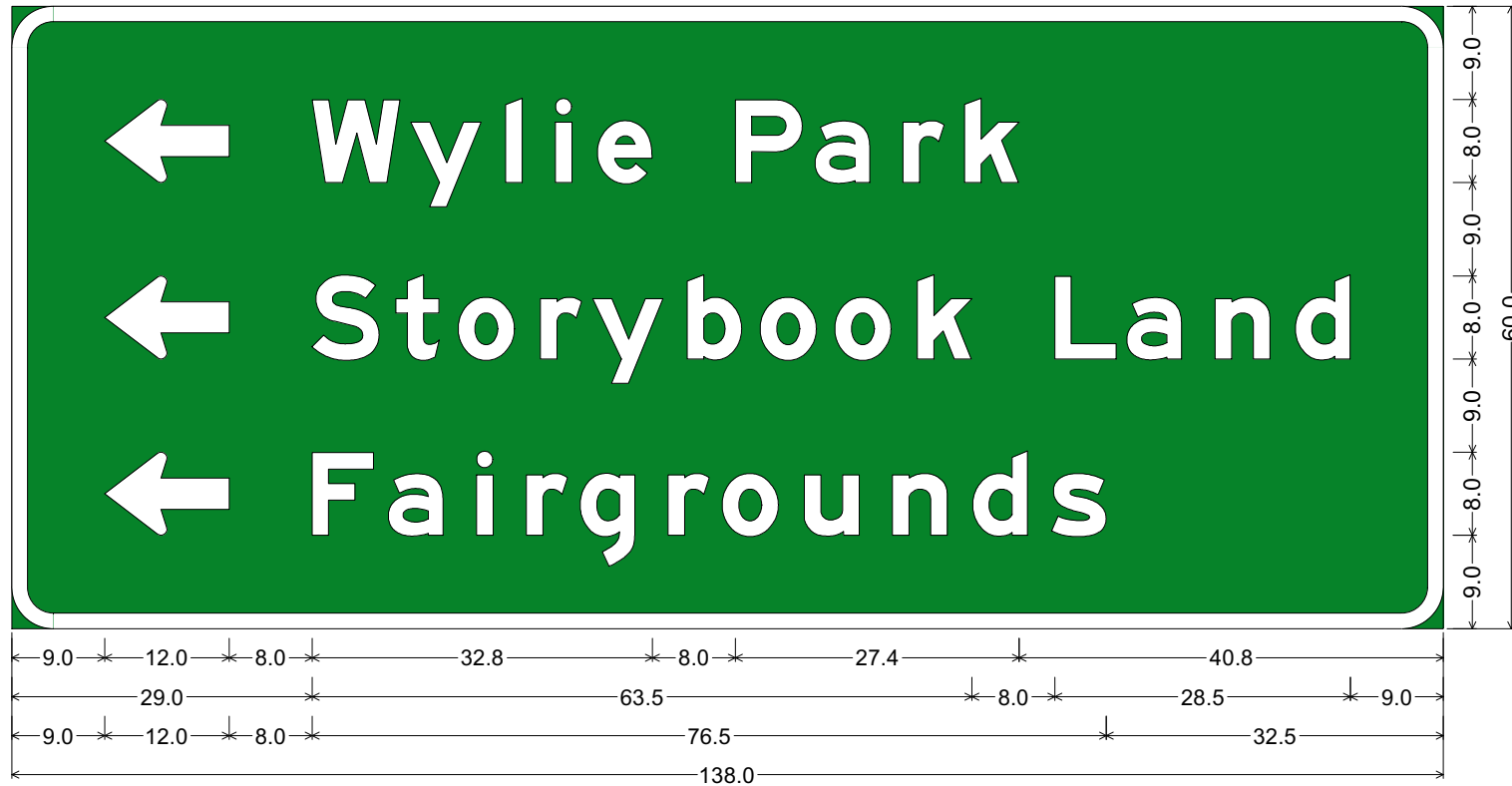
U	N	M	U	F	F	L	E	D	
5.1	8.3	11.4	15.0	18.0	20.6	23.3	25.9	28.6	
D	Y	N	A	M	I	C			
8.5	11.3	14.4	17.3	20.4	23.9	25.3			
E	N	G	I	N	E				
10.3	13.0	16.0	19.1	20.5	23.6				
B	R	A	K	I	N	G			
8.9	11.8	14.4	17.5	20.4	21.9	24.9			
P	R	O	H	I	B	I	T	E	D
5.4	8.5	11.3	14.5	17.5	19.0	21.9	23.0	25.6	28.4
B	Y	C	I	T	Y				
11.3	13.1	18.0	20.4	21.1	22.9				
O	R	D	I	N	A	N	C	E	
8.8	11.1	13.4	15.6	16.8	18.8	21.1	23.4	25.8	

-PLOTTED FROM - TRAB10100

PLOT NAME - 1

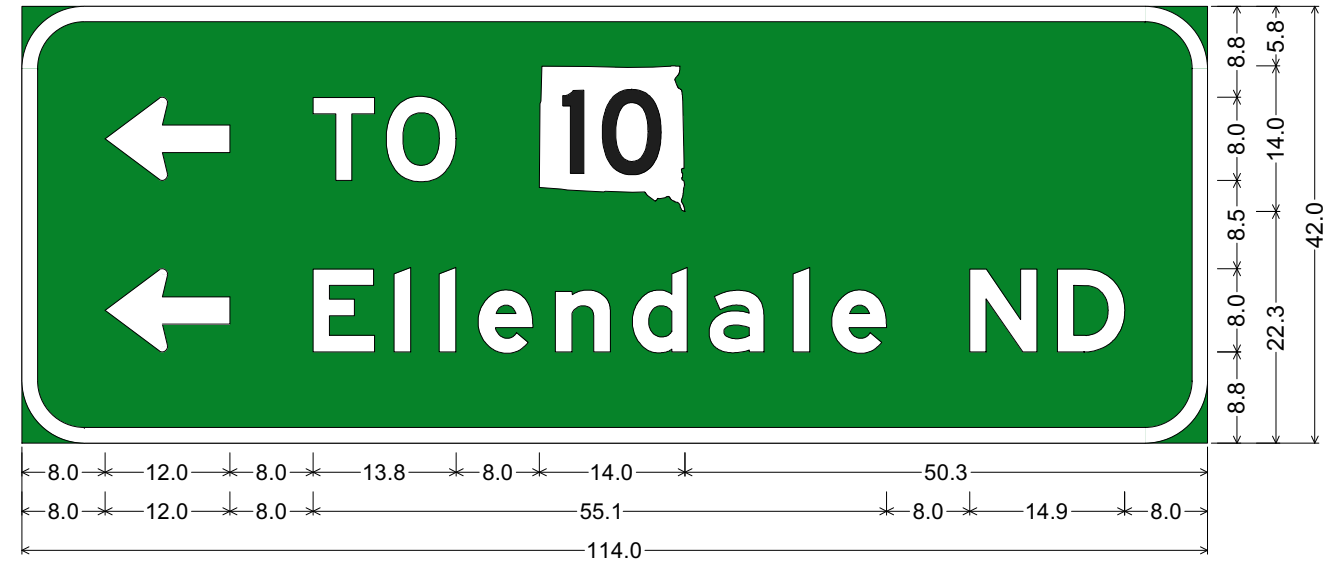
FILE - ... \SIGNING-STANDARD PLATES.DGN

SPECIAL SIGN LAYOUT



4.0" Radius, 1.5" Border, White on Green;
 Standard Arrow Custom 12.0" X 8.0" 180°; "Wylie Park", E Mod 2K; Standard Arrow Custom 12.0" X 8.0" 180°;
 "Storybook Land", E Mod 2K; Standard Arrow Custom 12.0" X 8.0" 180°; "Fairgrounds", E Mod 2K;
 Table of letter and object lefts

←	W	y	i	e	P	a	r	k					
9.0	29.0	38.5	47.6	52.4	56.5	69.8	77.5	85.9	91.9				
←	S	t	o	r	y	b	o	o	k	L	a	n	d
9.0	29.0	37.0	43.0	51.0	56.0	65.1	72.1	79.4	87.3	100.5	107.5	116.0	123.8
←	F	a	i	r	g	r	o	u	n	d	s		
9.0	29.0	36.4	44.8	49.6	54.8	63.3	68.5	76.4	84.9	92.6	100.3		



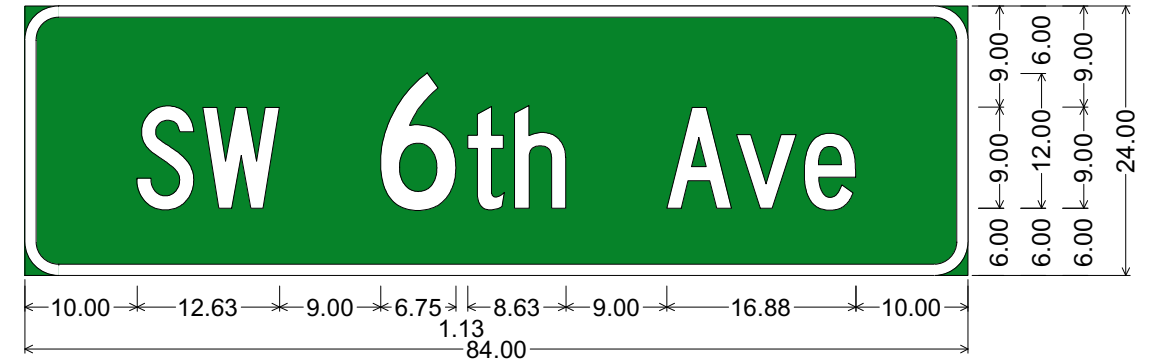
6.0" Radius, 1.5" Border, White on Green;
 Standard Arrow Custom 12.0" X 8.0" 180°; "TO", E Mod 2K; Standard Arrow Custom 12.0" X 8.0" 180°;
 "Ellendale ND", E Mod 2K 86% spacing;
 Table of letter and object lefts

←	T	O	10								
8.0	28.0	35.0	49.8								
←	E	l	i	e	n	d	a	i	e	N	D
8.0	28.0	35.8	40.1	43.9	51.3	58.8	66.1	74.1	77.9	91.1	99.5

SPECIAL SIGN LAYOUT

PLOT SCALE - 1:1200

PLOT NAME - 1

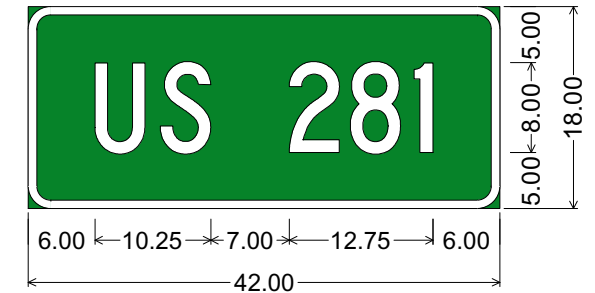
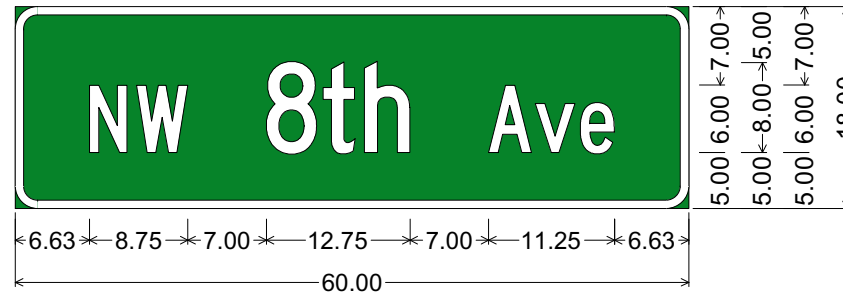
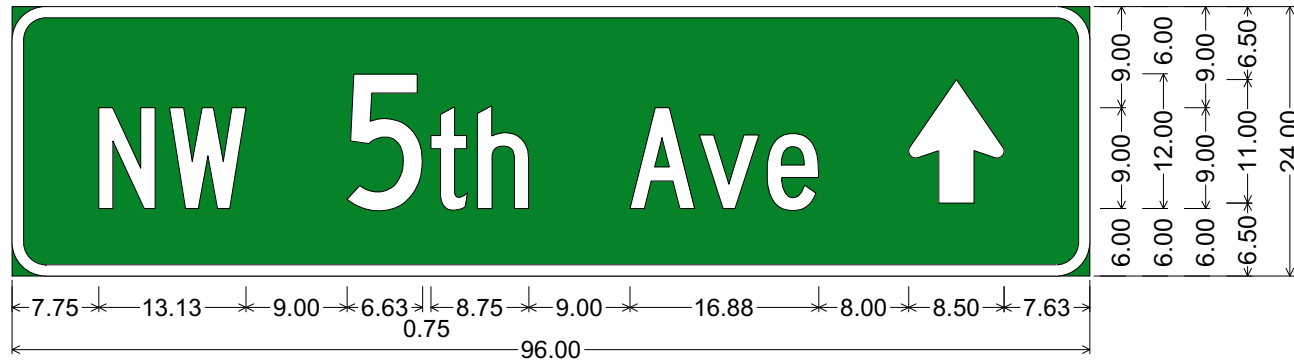


3.00" Radius, 1.00" Border, White on Green;
 "NW 5th Ave", C 2K; Standard Arrow Custom 11.00" X 8.50" 0°;
 Table of letter and object lefts

N	W	5	t	h	A	v	e	➔
9.88	16.25	32.13	39.50	43.63	57.25	63.50	69.50	82.13

3.00" Radius, 1.00" Border, White on Green;
 "SW 6th Ave", C 2K;
 Table of letter and object lefts

S	W	6	t	h	A	v	e
10.00	15.88	31.63	39.50	43.63	57.13	63.38	69.38



3.00" Radius, 1.00" Border, White on Green;
 "NW 5th Ave", C 2K; Standard Arrow Custom 11.00" X 8.50" 90°;
 Table of letter and object lefts

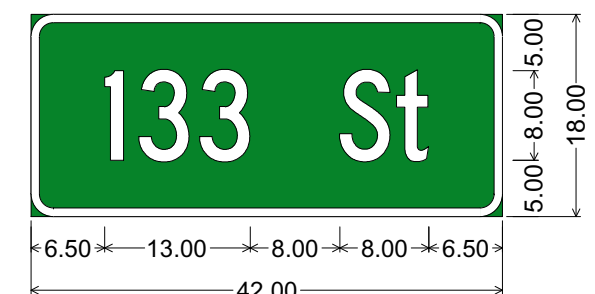
N	W	5	t	h	A	v	e	⬆
7.75	14.00	29.88	37.25	41.38	55.00	61.25	67.25	79.88

2.00" Radius, 0.75" Border, White on Green;
 "NW 8th Ave", C 2K;
 Table of letter and object lefts

N	W	8	t	h	A	v	e
6.63	10.75	22.38	27.38	31.13	42.13	46.25	50.38

2.00" Radius, 0.75" Border, White on Green;
 "US 281", C 2K;
 Table of letter and object lefts

U	S	2	8	1
6.00	11.75	23.25	28.75	34.38



2.00" Radius, 0.75" Border, White on Green;
 "N 19th St", C 2K;
 Table of letter and object lefts

N	1	9	t	h	S	t
8.13	17.75	20.88	25.88	29.50	39.88	43.63

2.00" Radius, 0.75" Border, White on Green;
 "133 St", C 2K;
 Table of letter and object lefts

1	3	3	S	t
6.50	9.63	15.00	27.50	32.50

PLOTTED FROM - TRAB10100

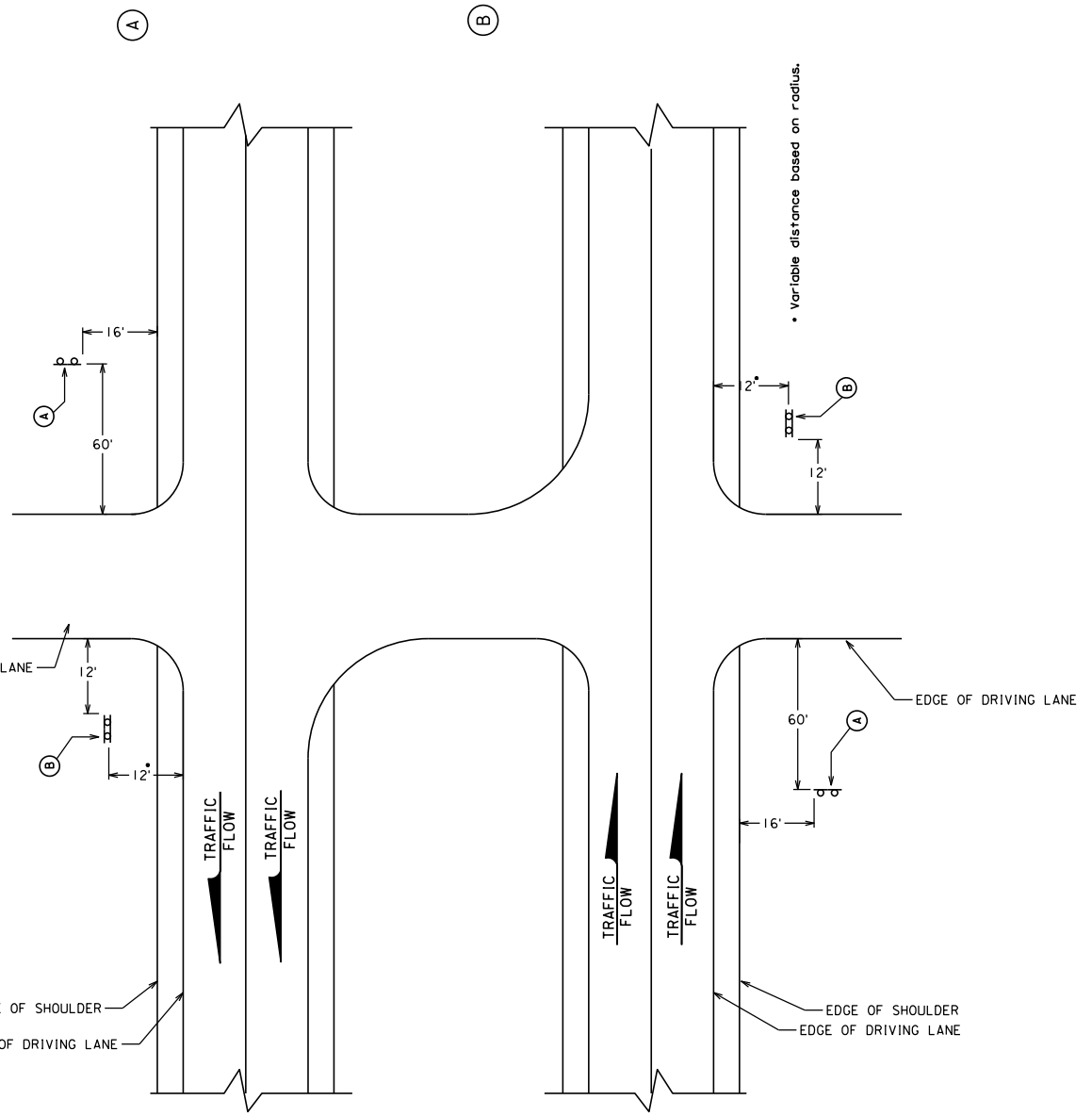
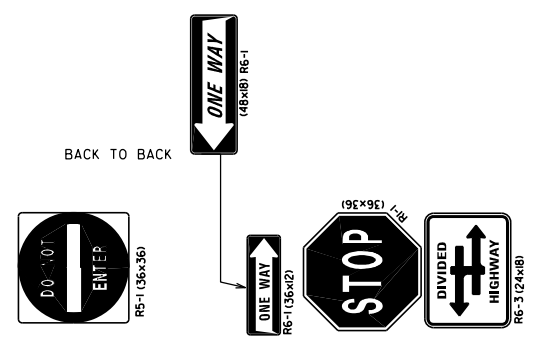
FILE - ... \PRJ\DEUEL0507\TITLEM.DGN

PLOT SCALE - 1:200

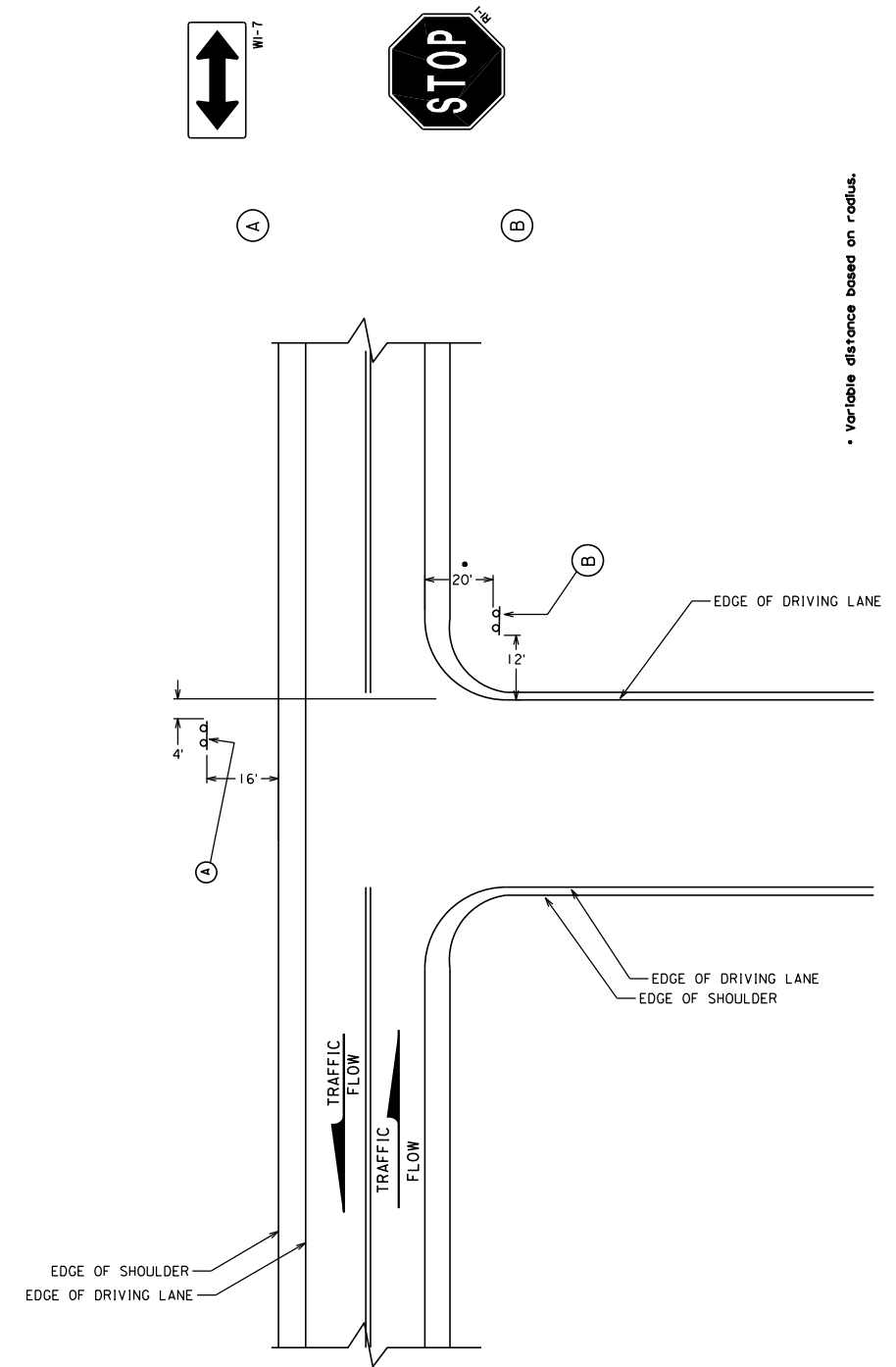
-PLOTTED FROM - TRAB10100

PLOT NAME - 1

FILE - ... \SIGNING-STANDARD PLATES.DGN

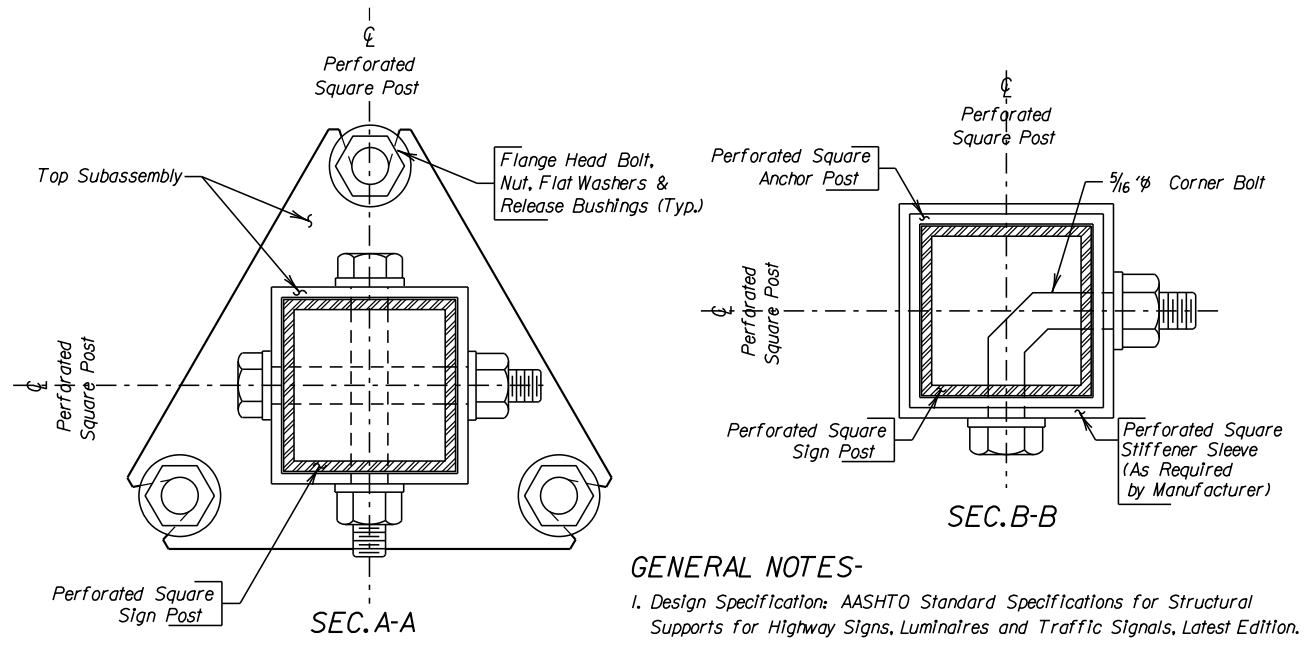


TYPICAL SIGN LAYOUT FOR DIVIDED HIGHWAYS WITH IMPROVED CROSSROAD (MEDIANS LESS THEN 30 FEET WIDE)



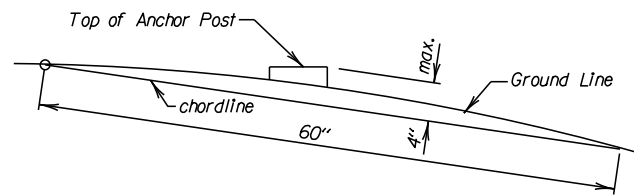
TYPICAL SIGN LAYOUT FOR HIGHWAYS WITH UNIMPROVED SIDEROAD

BREAKAWAY SIGN SUPPORTS



GENERAL NOTES-

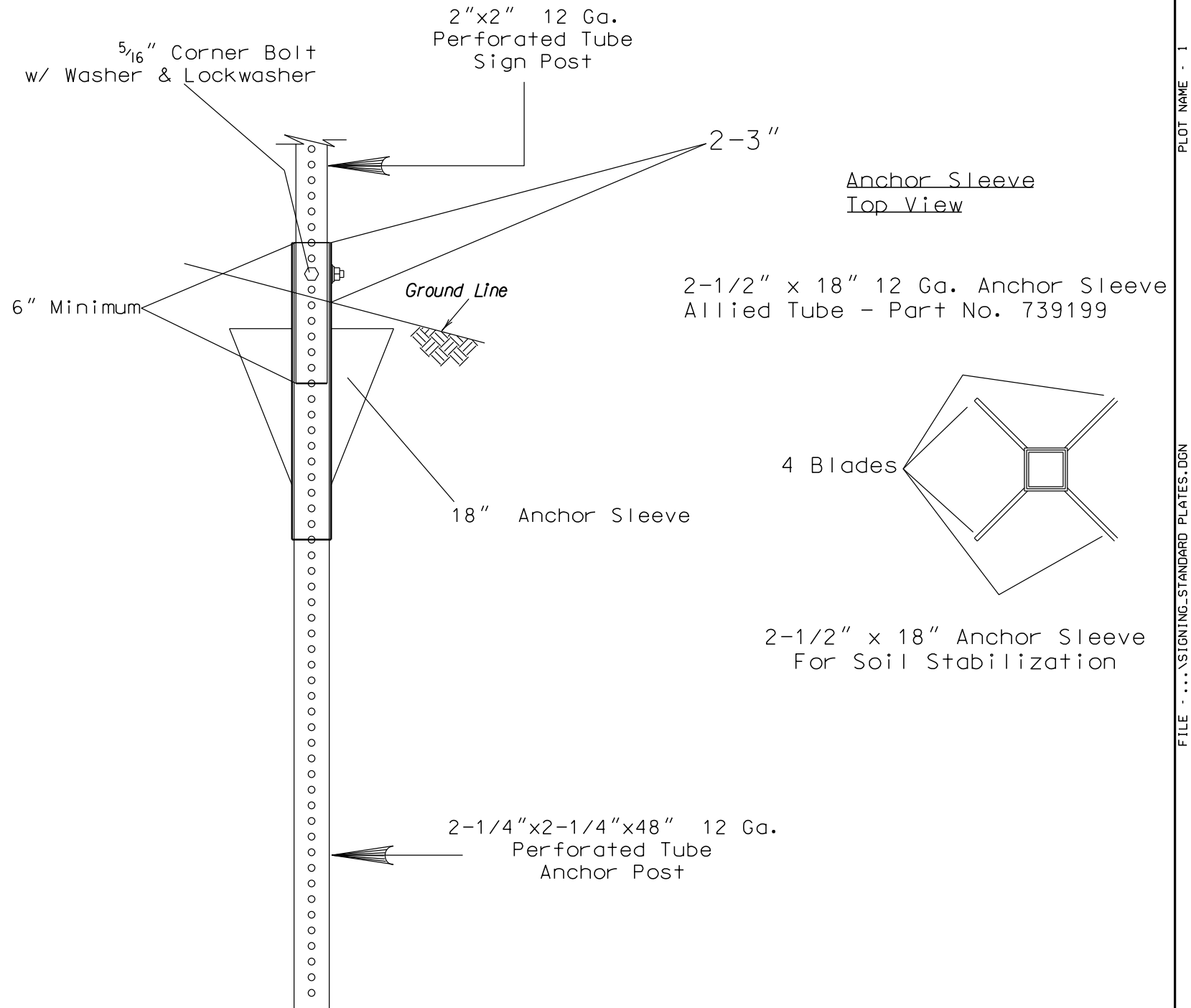
1. Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Latest Edition.
2. The manufacturer will provide certification that the posts and hardware furnished have essentially the same chemistry, mechanical properties and geometry as that used in the FHWA tests, and that it will meet the FHWA change in velocity requirements.
3. The manufacturer will also provide certification that the breakaway system furnished will develop the full shear and bending yield strength of the sign post section being spliced.
4. All posts will be galvanized in accordance with ASTM A653, Des. G-90.
5. All hardware will be galvanized in accordance with ASTM A153.



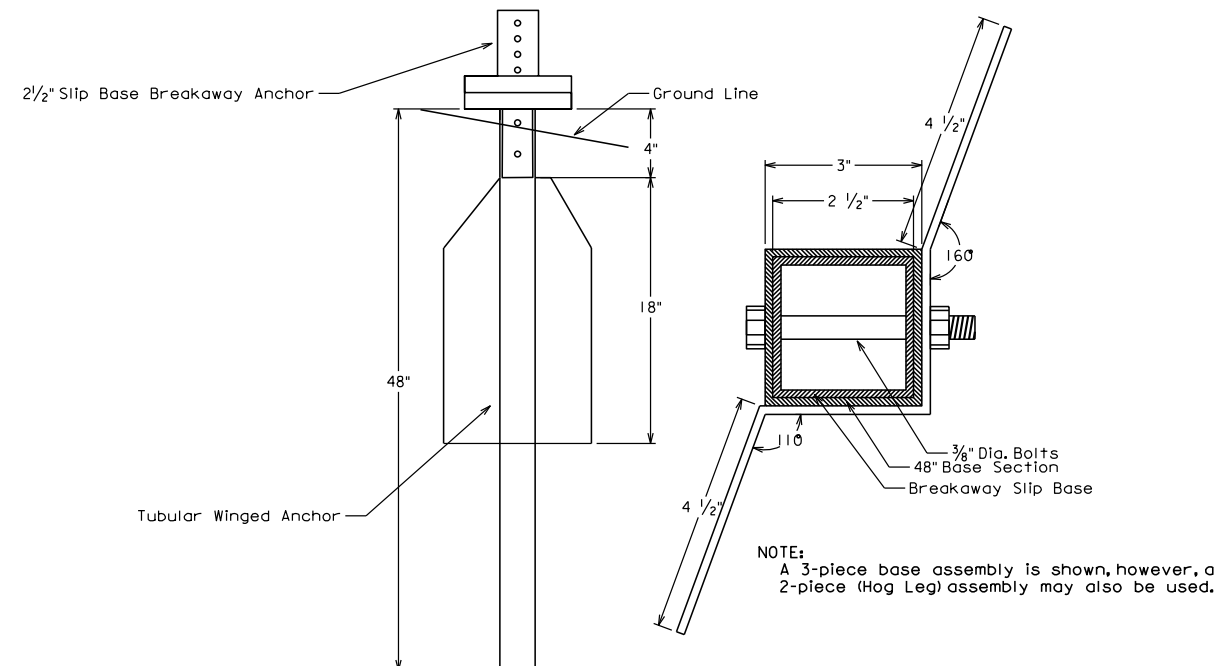
BREAKAWAY SUPPORT STUB CLEARANCE DIAGRAM

NOTE: The top of anchor post will NOT extend more than 4" max. above the chordline within a 60" chord.

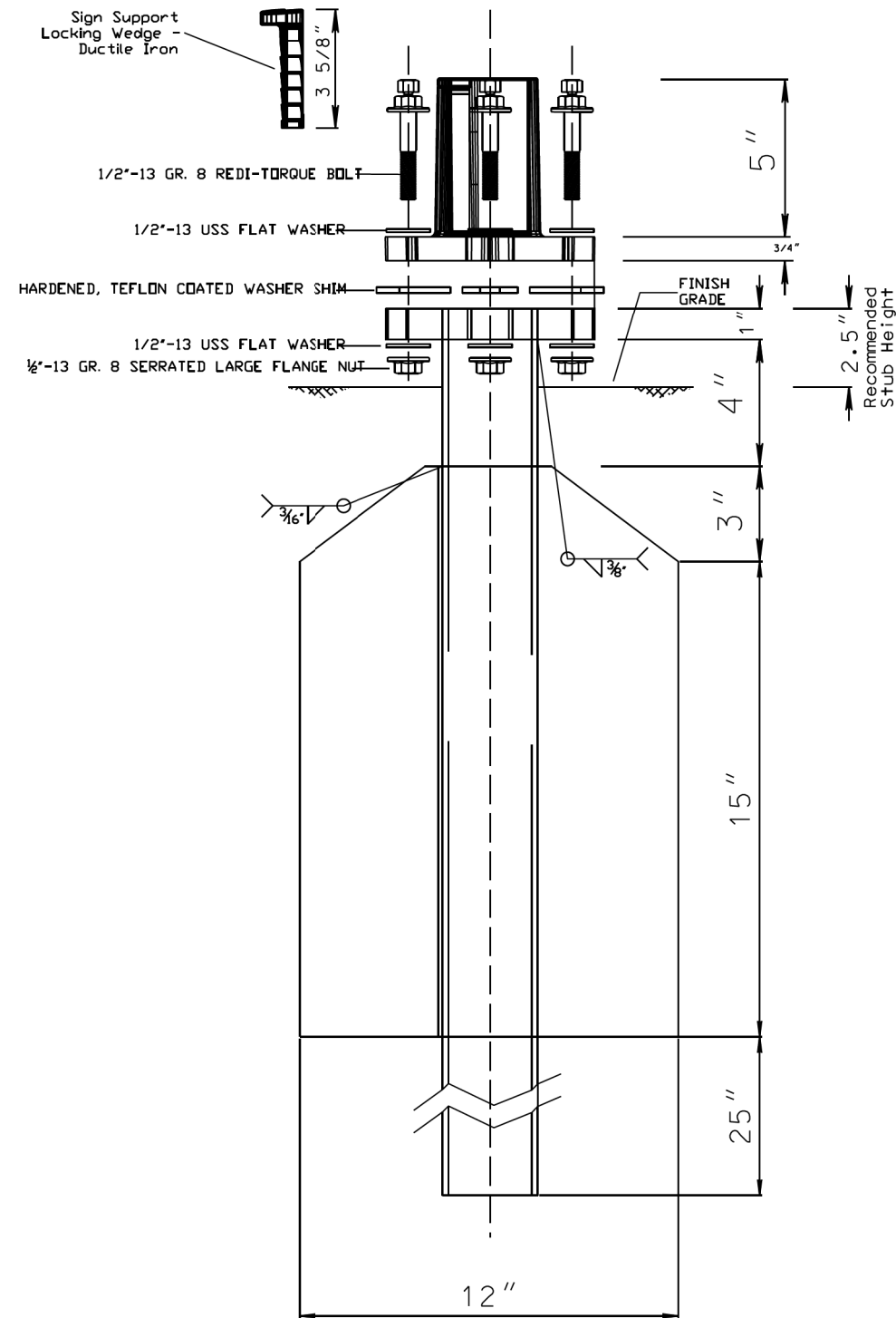
SIGN BASE DETAILS FOR A 2" SIGN POST



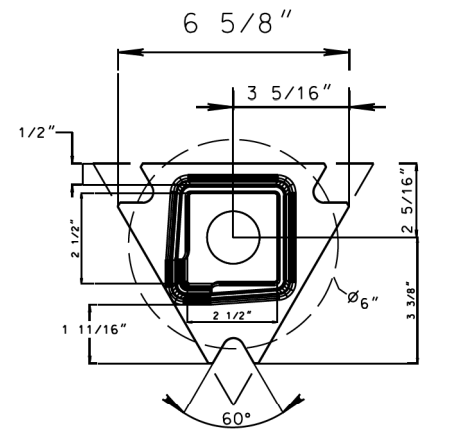
SIGN BASE DETAILS FOR A 2 1/2" SIGN POST



48" WINGED ANCHOR SLIP BASE

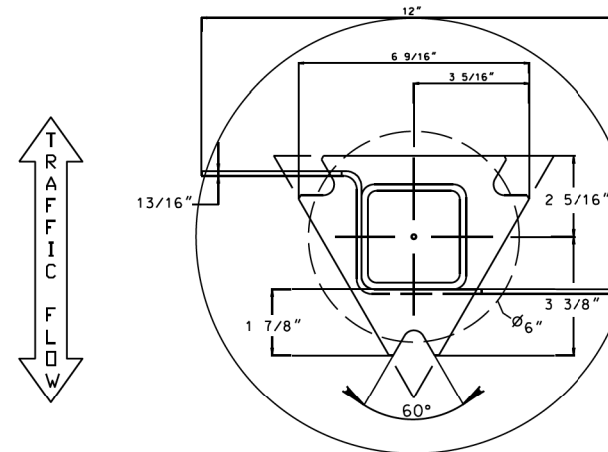


TOP POST RECEIVER
for 2-1/2" SQUARE POST



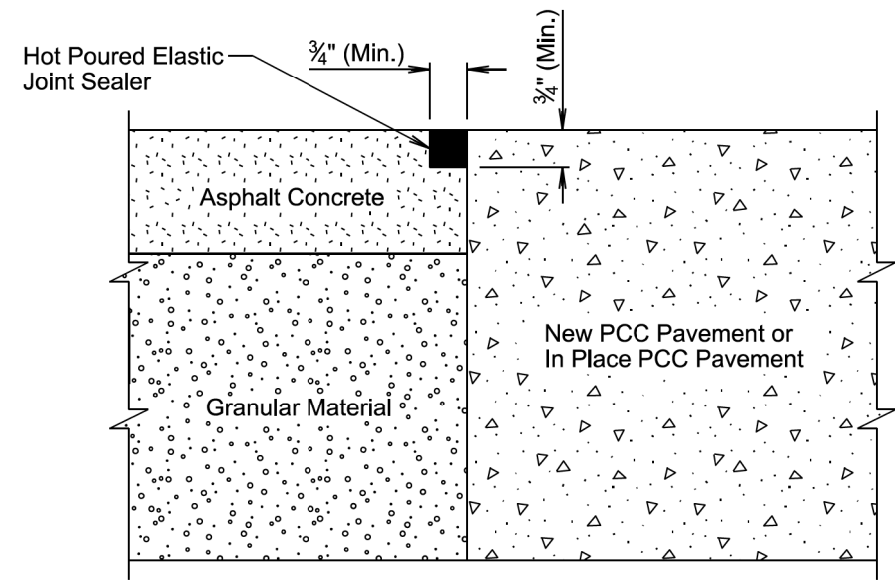
MATERIAL:
DUCTILE IRON CASTING, CLASS 65-45-12

BOTTOM UNIBASE
SOIL STUB



MATERIALS:
Tube - 3" x 3" x 7 ga. ASTM A500 Grade B tube
Stabilizing Wing - 7 ga. H.R.P.I. ASTM A 569
Plate - ASTM A572 grade 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0281(134)194	43	51
Plotting Date: 01/13/2025			



TRANSVERSE SECTION
(Asphalt Concrete Shoulder Joint)

September 14, 2019

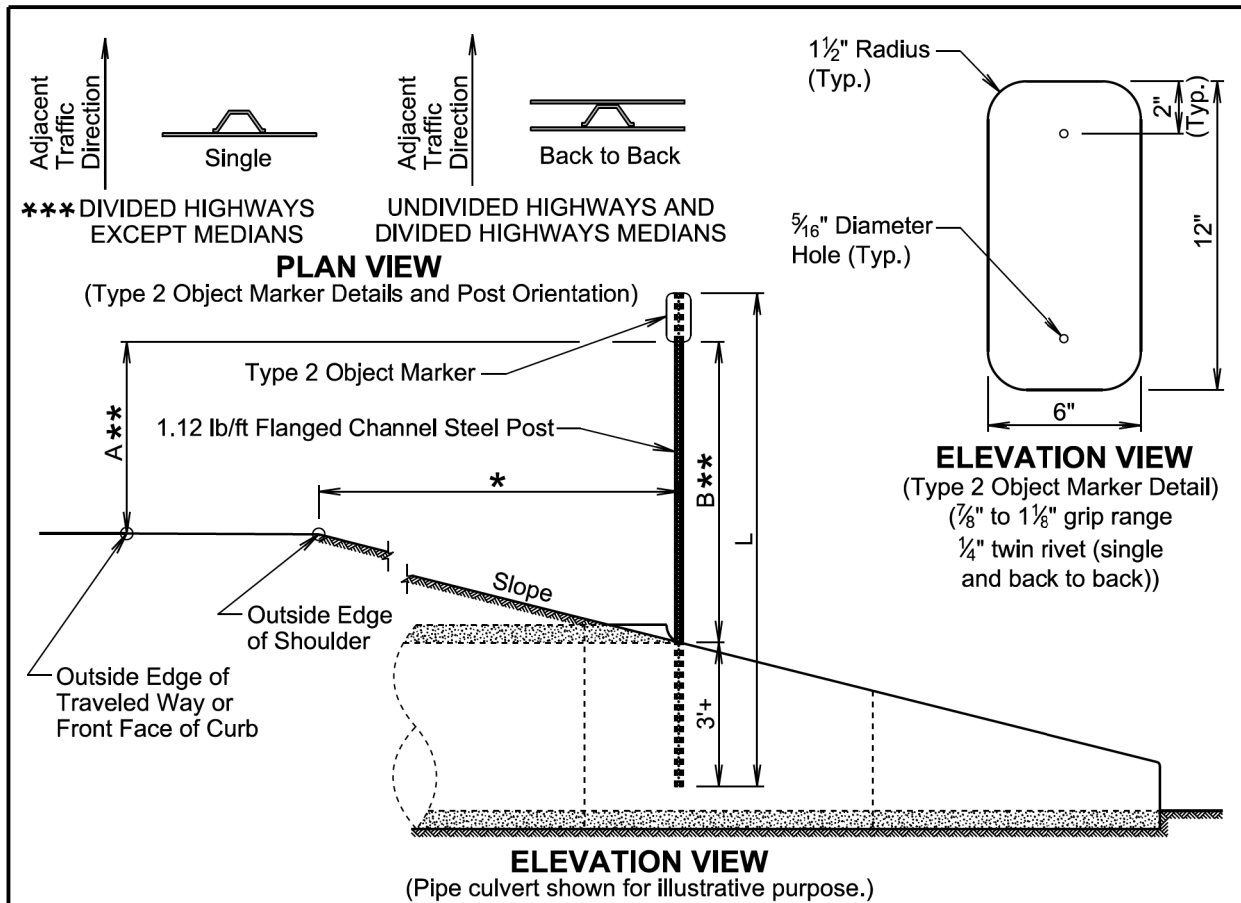
Published Date: 2025

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**ASPHALT CONCRETE SHOULDER JOINT
ADJACENT TO PCC PAVEMENT**

PLATE NUMBER
320.15

Sheet 1 of 1



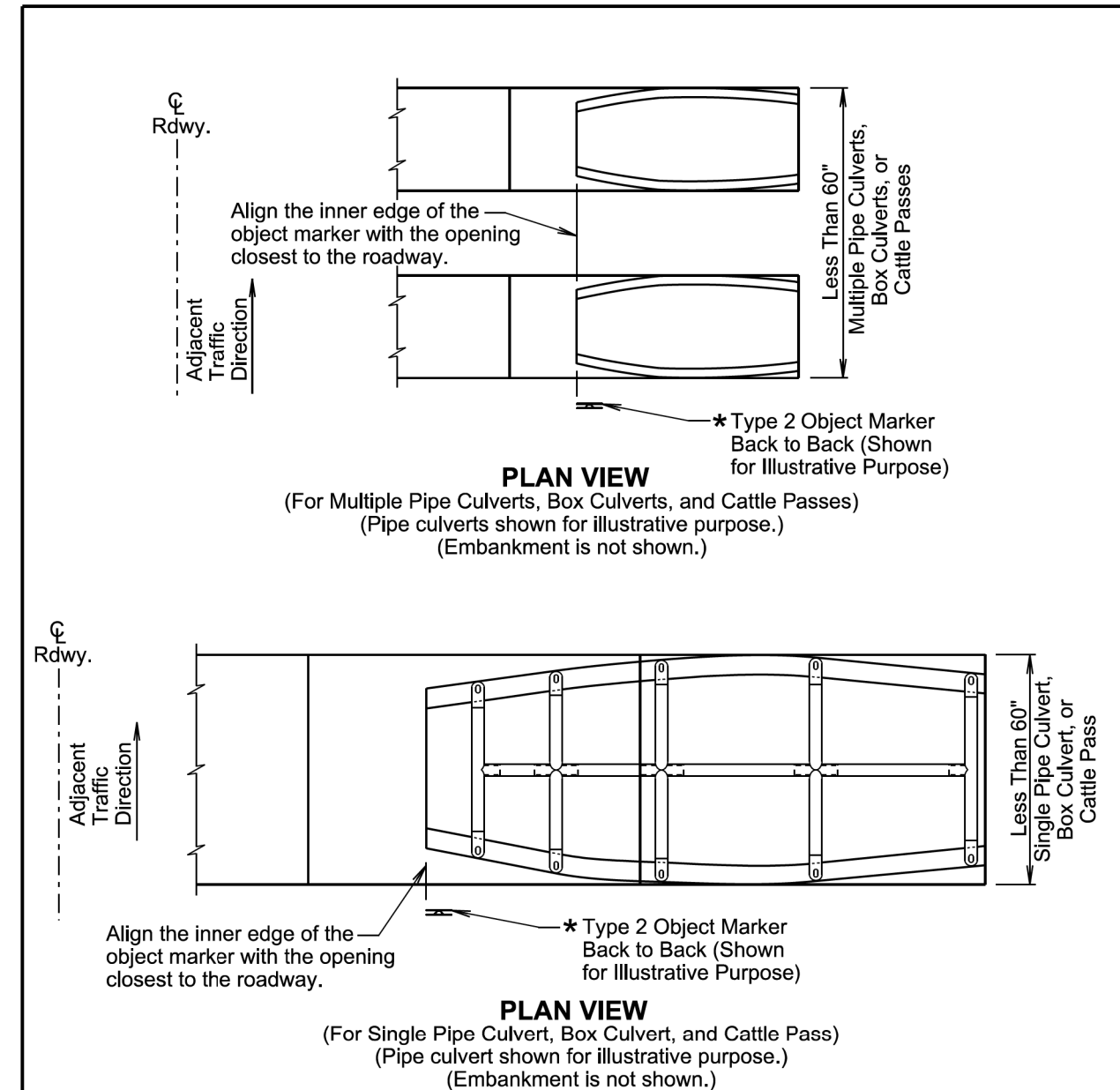
TYPE 2 OBJECT MARKER POST LENGTHS										
OFFSET (*)	1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'	
POST LENGTH (L)										
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

GENERAL NOTES:

- *** The type 2 object marker may be installed back to back when specified in the plans. Post Length L was calculated based on a shoulder width of 6 feet at a crossslope of 4 percent and L was rounded up to the nearest 3 inches.
 - ** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.
- The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.
- Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

Published Date: 2025	SDDOT	TYPE 2 OBJECT MARKER (DIRECT DRIVE)	PLATE NUMBER 632.01
			Sheet 1 of 1

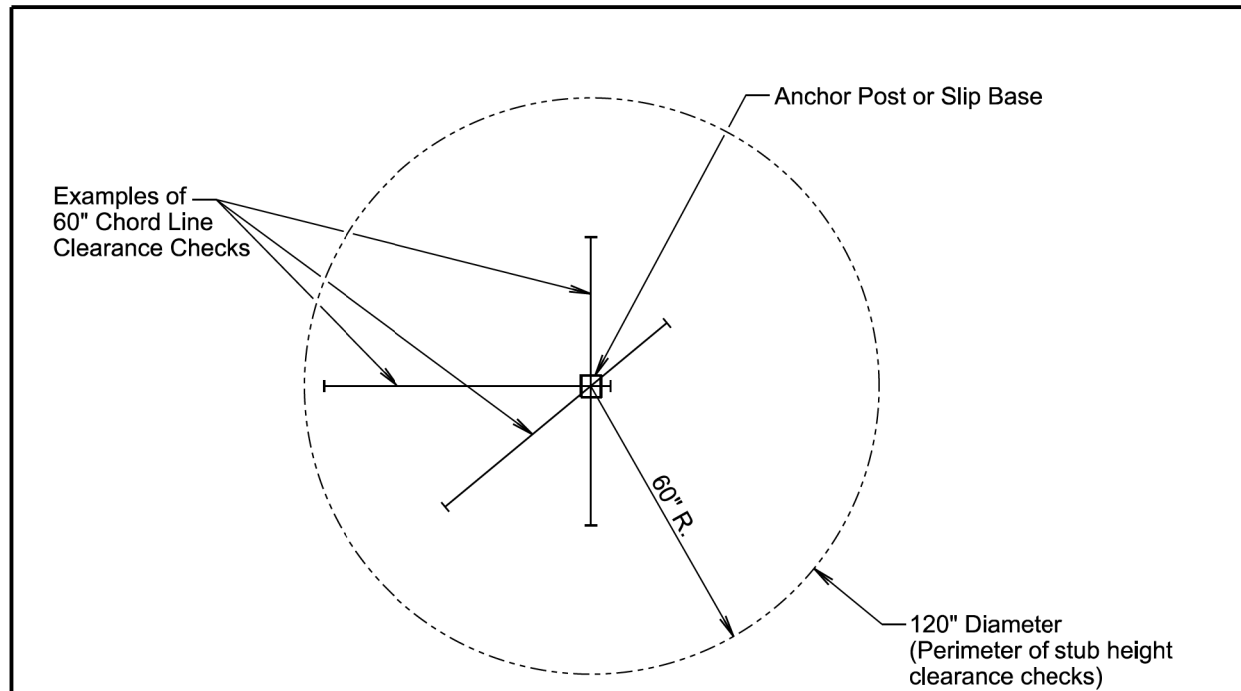


GENERAL NOTES:

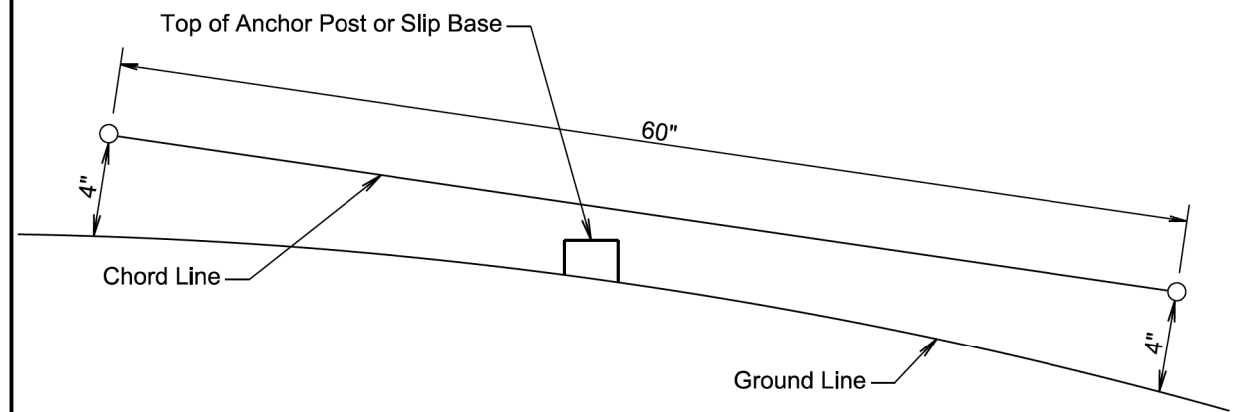
- This standard plate will be used in conjunction with standard plate 632.01.
- * The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2025	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)	PLATE NUMBER 632.03
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

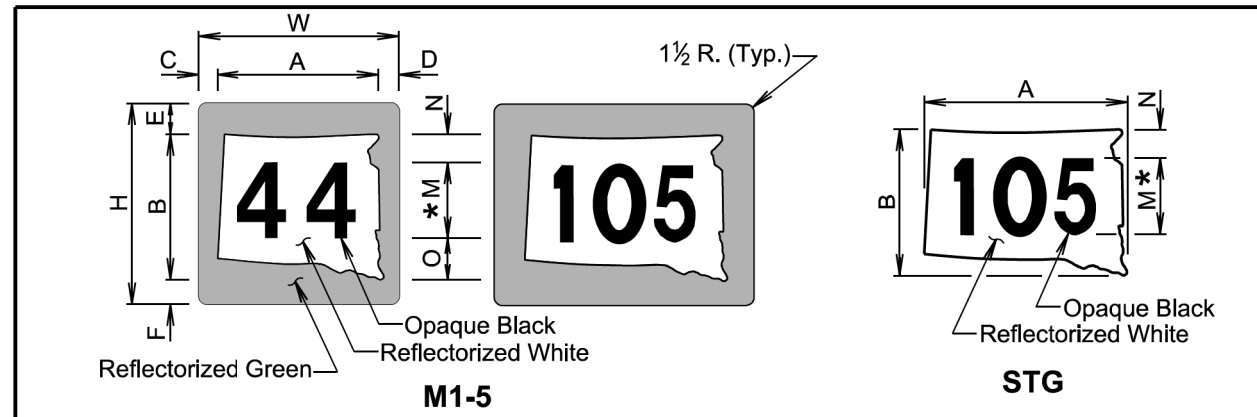
GENERAL NOTES:

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.

January 22, 2021

S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 632.18
		Sheet 1 of 1
<i>Published Date: 2025</i>		

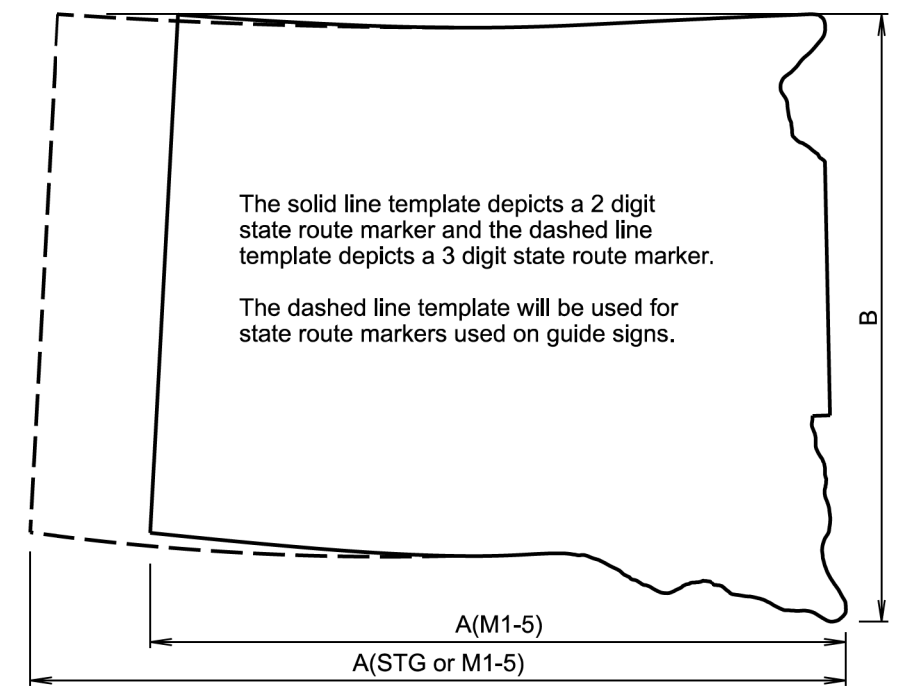


SIGN CODE	WxH	A	B	C	D	E	F	M*	N	O
M1-5	24x24	20 1/2	18	2	1 1/2	3 1/2	2 1/2	12D	2	4
M1-5 **	30x24	24	18	2 1/4	1 3/4	3 1/2	2 1/2	12D	2	4
M1-5	30x30	25 5/8	22 1/2	2 1/2	1 7/8	4 3/8	3 3/8	15D	2 1/2	5
M1-5	36x36	30 3/4	27	3	2 1/4	5 1/4	3 3/4	18D	3	6

SIGN CODE	AxB	M*	N
STG-24	24x18	10D	4
STG-32	32x24	12D	4 3/4
STG-48	48x36	18D	7
STG-64	64x48	24D	9 1/2

* In the few cases where there is not enough space for the numerals, the standard D series font may be replaced with C series font if approved by the Engineer.

** 3 Digits



TEMPLATE FOR STATE ROUTE MARKER

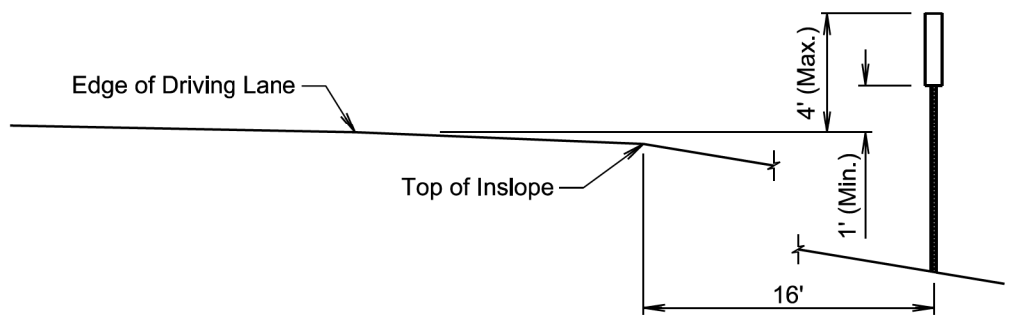
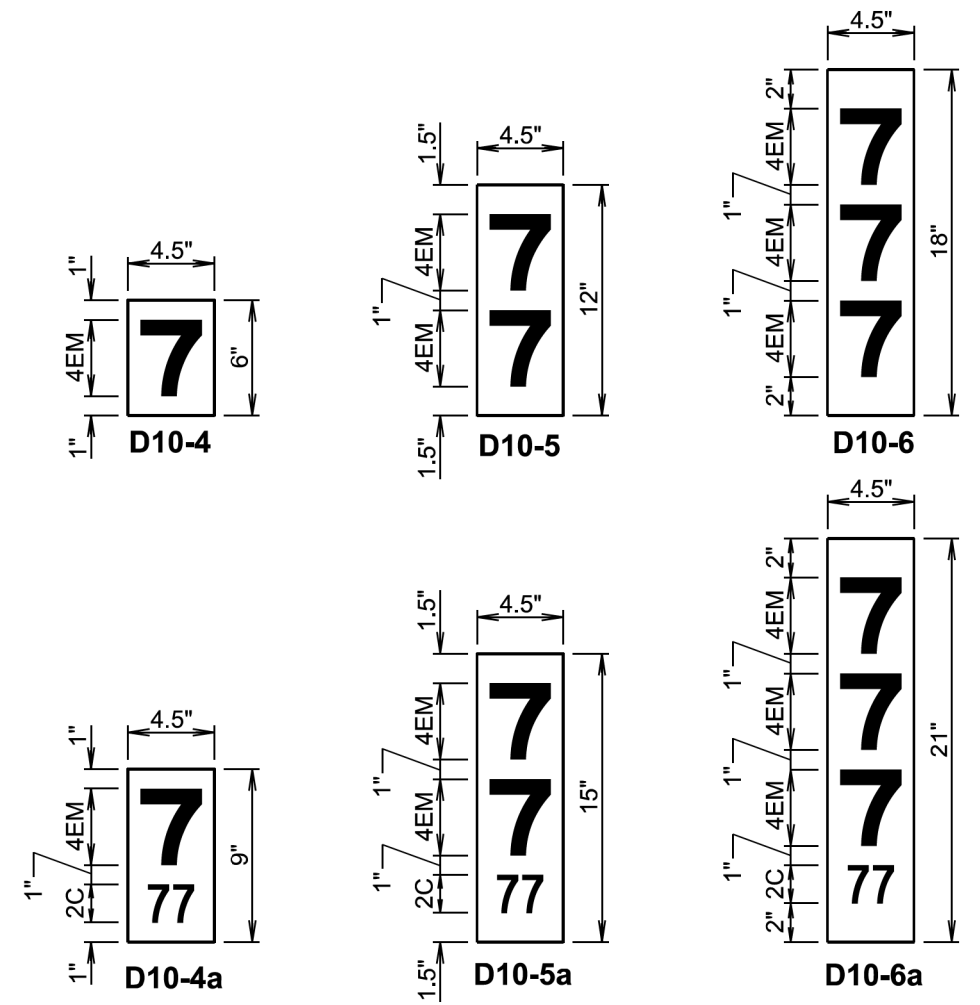
GENERAL NOTES:

The unit for all dimensions shown is inches.

Numerals will be D series font for all state route markers except as noted above.

December 23, 2019

S D D O T	STATE ROUTE MARKERS	PLATE NUMBER 632.20
		Sheet 1 of 1
<i>Published Date: 2025</i>		



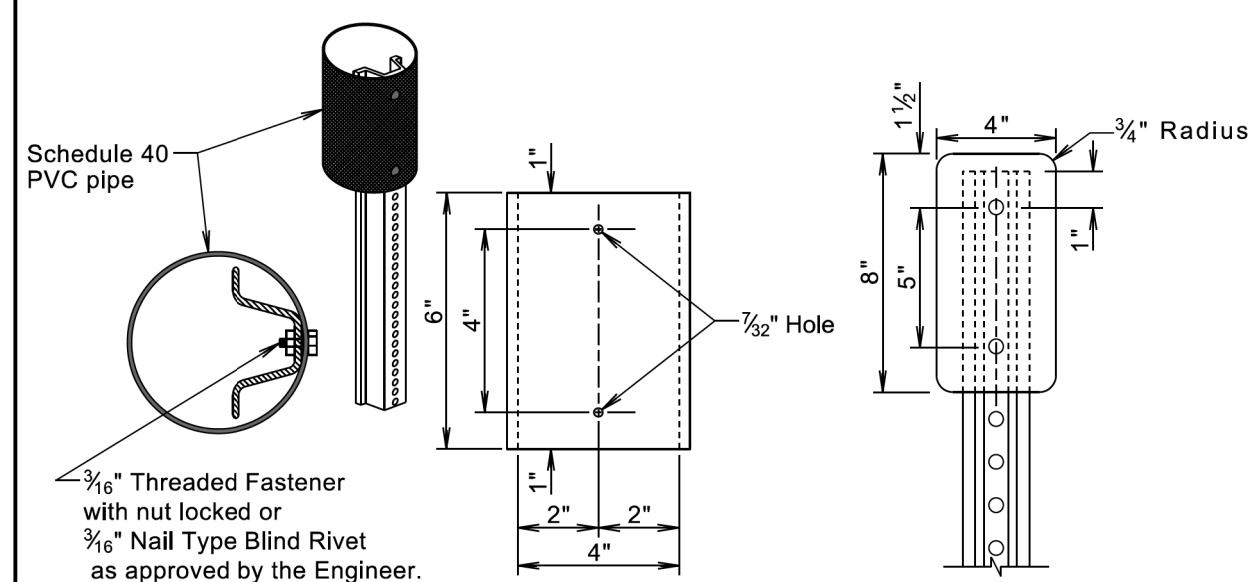
GENERAL NOTES:
 Background will be high intensity green.
 Legend will be high intensity white.
 Signs will have squared corners with no border.
 Sign locations will be staked by the Engineer.

ELEVATION VIEW

December 23, 2019

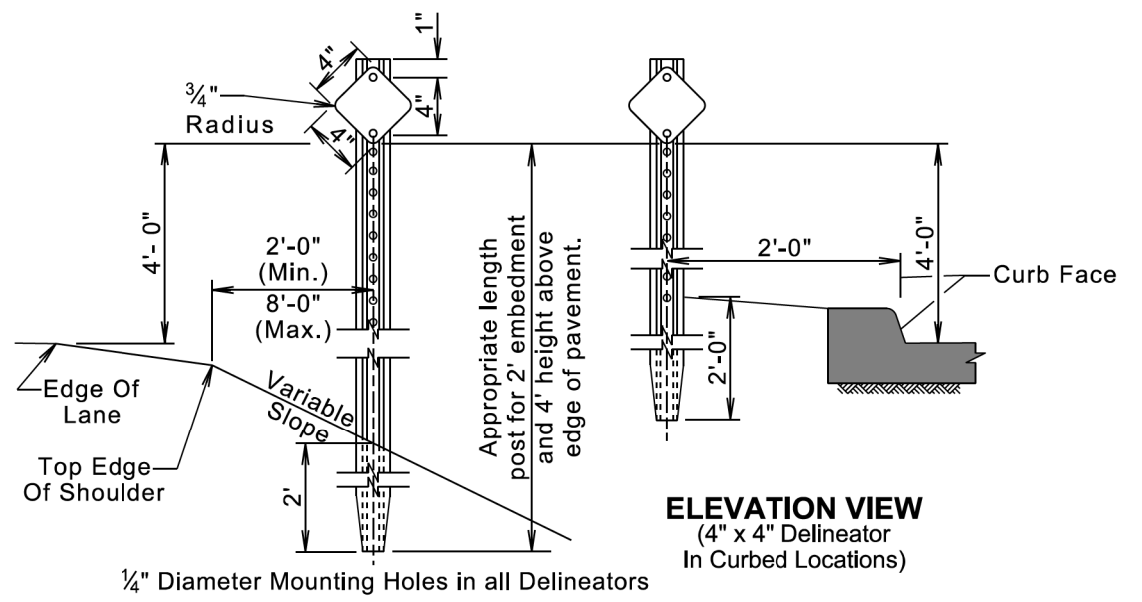
S D D O T	NON-INTERSTATE MILEAGE REFERENCE MARKERS	PLATE NUMBER 632.30
		Sheet 1 of 1

Published Date: 2025



ELEVATION VIEW
(4" Tubular delineator mounted on post)

ELEVATION VIEW
(4" x 8" Delineator)



ELEVATION VIEW
(4" x 4" Delineators)

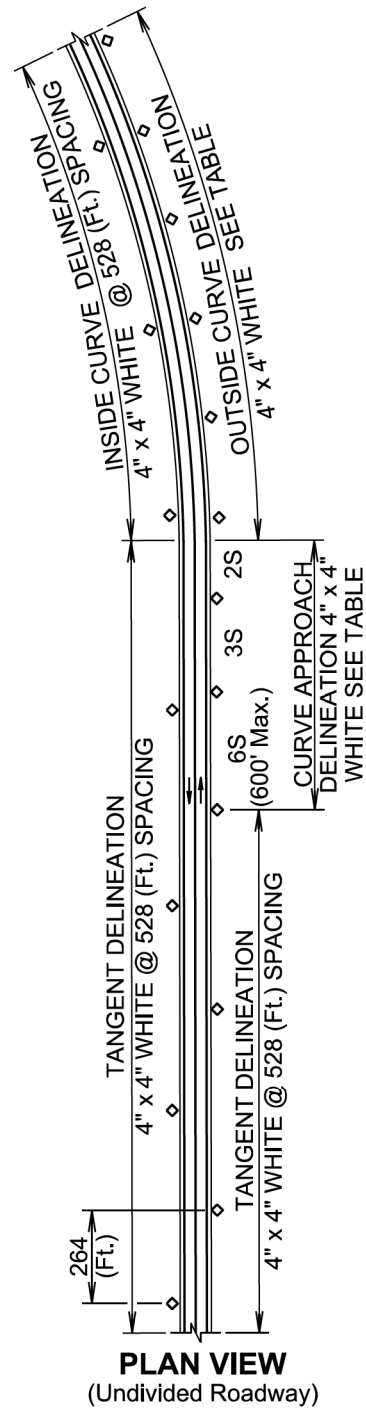
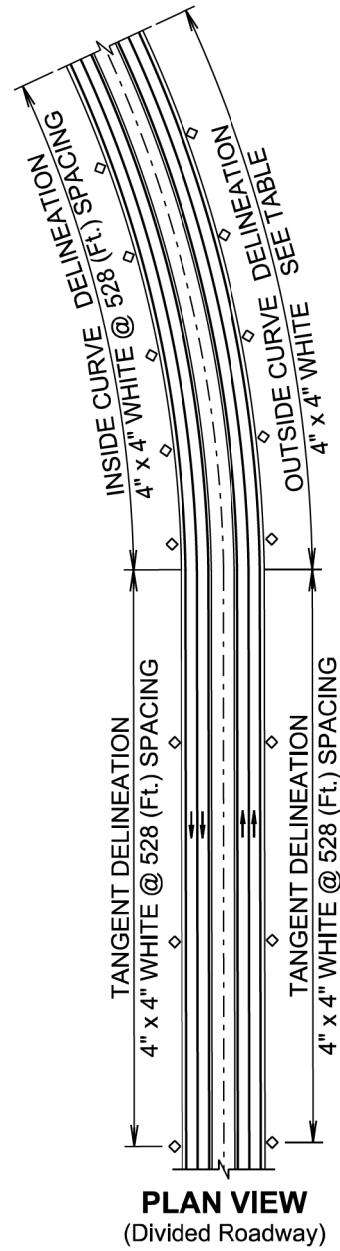
ELEVATION VIEW
(4" x 4" Delineator In Curbed Locations)

GENERAL NOTES:
 Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

S D D O T	DELINEATOR INSTALLATION DETAIL	PLATE NUMBER 632.42
		Sheet 1 of 1

Published Date: 2025



March 31, 2024

March 31, 2024

Published Date: 2025

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DELINEATOR INSTALLATION SPACING

PLATE NUMBER
632.46

Sheet 1 of 2

GENERAL NOTES:

Delineators will be located from 2 to 8 feet outside of the outer edge of shoulder. When a roadside barrier or other obstruction intrudes into the space between the pavement edge and the extension of the line of delineators, the delineators should be in line with the barrier or in line with the innermost edge of the obstruction.

When normal spacing is interrupted by driveways, crossroads, or approaches, delineators falling within such areas may be moved in either direction a distance not exceeding one-quarter of the standard spacing. Delineators still falling within such areas should be eliminated.

The spacing for specific radii may be interpolated from the table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S, but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula $S = 3\sqrt{R - 50}$. The distances for S shown in the table were rounded to the nearest 5 feet.

Curve approach delineation is not required if curve delineation spacing exceeds 100 ft.

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

DELINEATOR SPACING OUTSIDE CURVE				
Radius of Curve (Ft.)	Curve Delineator Spacing (Ft.)	Curve Approach Spacing (Ft.)		
		A	B	C
50	20	40	65	125
115	25	50	75	150
150	30	60	90	180
180	35	70	110	215
250	40	85	125	250
300	45	95	140	285
400	55	110	170	300
500	65	125	190	300
600	70	140	210	300
700	75	150	230	300
800	80	165	245	300
900	85	175	260	300
1000	90	185	275	300

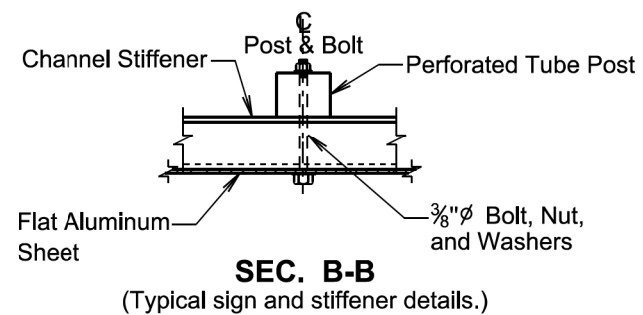
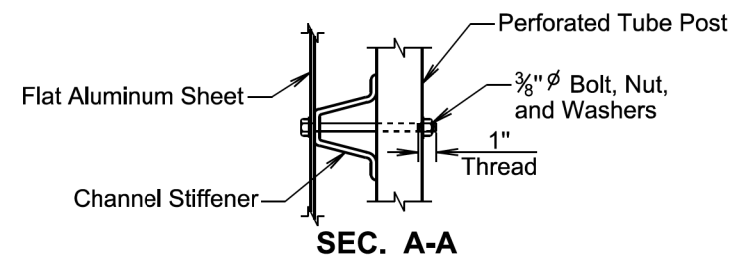
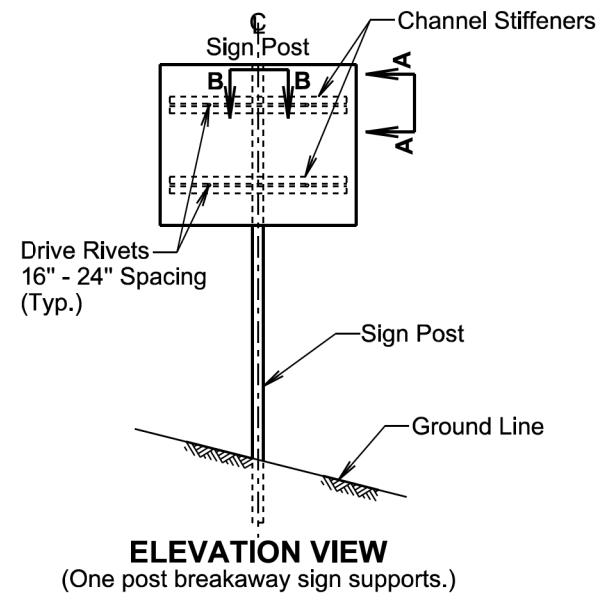
Published Date: 2025

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DELINEATOR INSTALLATION SPACING

PLATE NUMBER
632.46

Sheet 2 of 2



∅ A plastic washer, as recommended by the sheeting manufacturer, will be installed between the sign face and the metal washer shown.

November 19, 2020

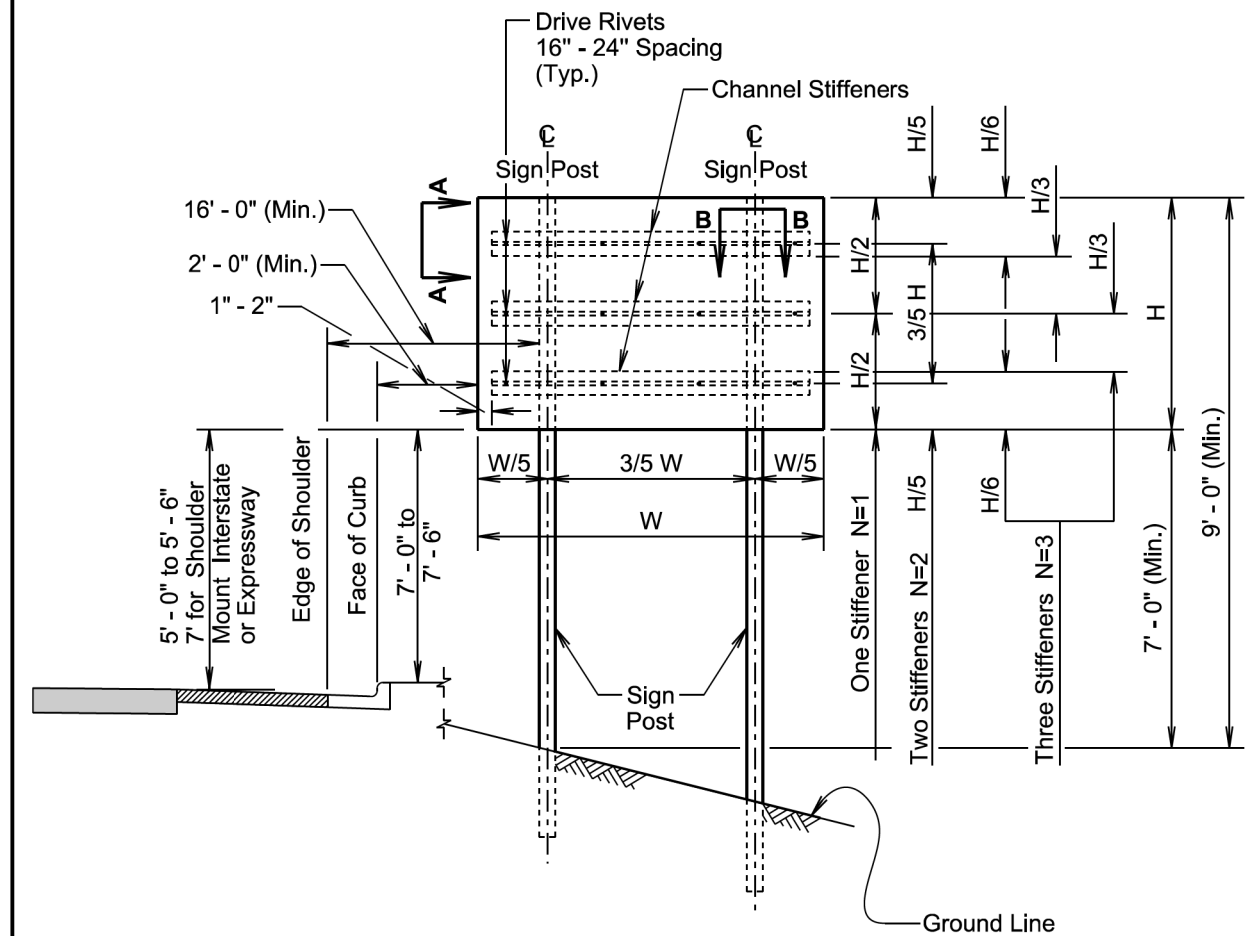
Published Date: 2025

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SIGN STIFFENER DETAILS

PLATE NUMBER
632.60

Sheet 1 of 2



GENERAL NOTES:

The number of stiffeners used (N) will be as follows:
 If $H \leq 2' - 0''$ then $N = 1$
 if $2' - 0'' < H \leq 8' - 0''$ then $N = 2$
 if $8' - 0'' < H \leq 15' - 0''$ then $N = 3$
 where H is the vertical dimension of the sign.

A minimum of two bolts will be required to fasten the sign to each post.

November 19, 2020

Published Date: 2025

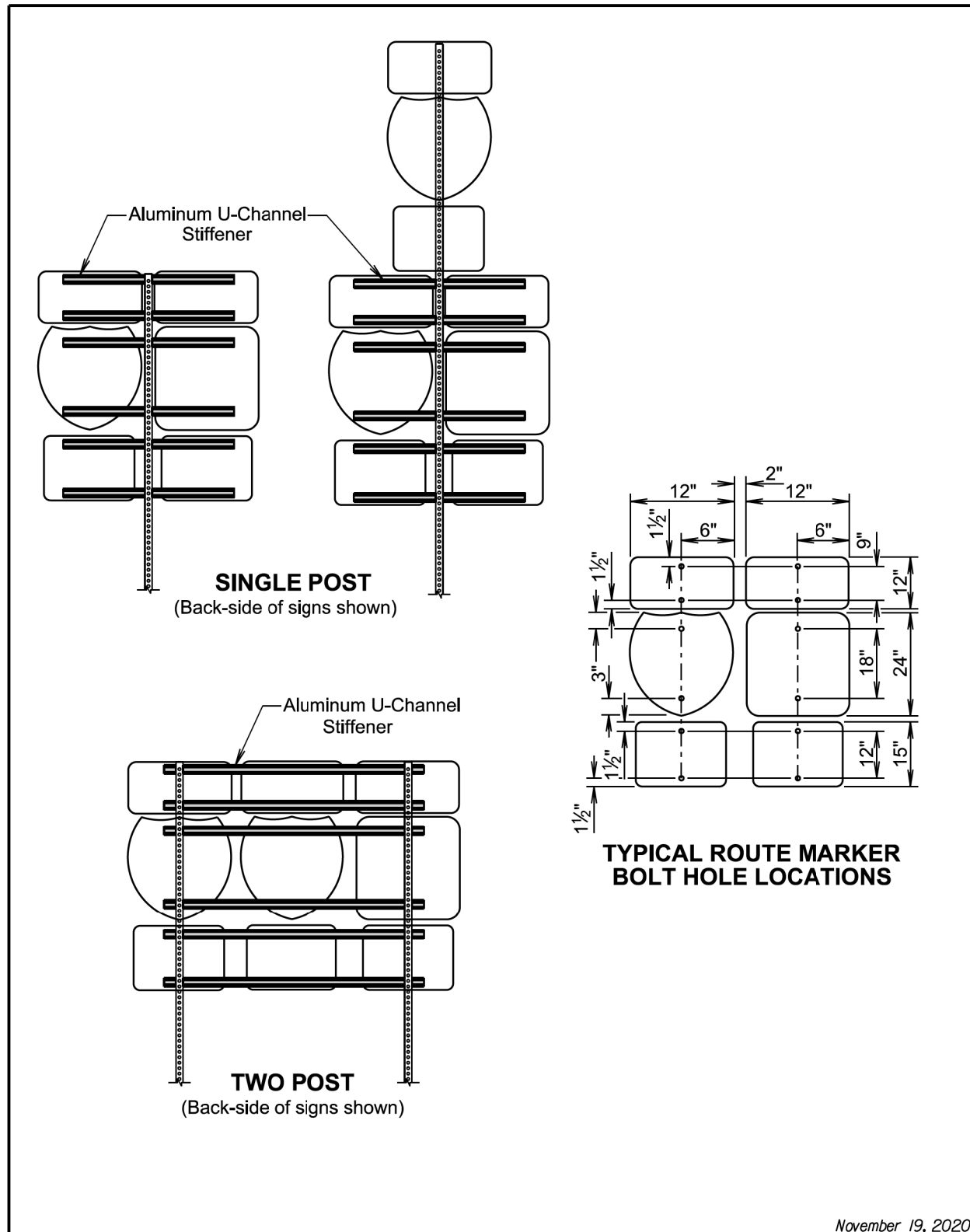
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SIGN STIFFENER DETAILS

PLATE NUMBER
632.60

Sheet 2 of 2

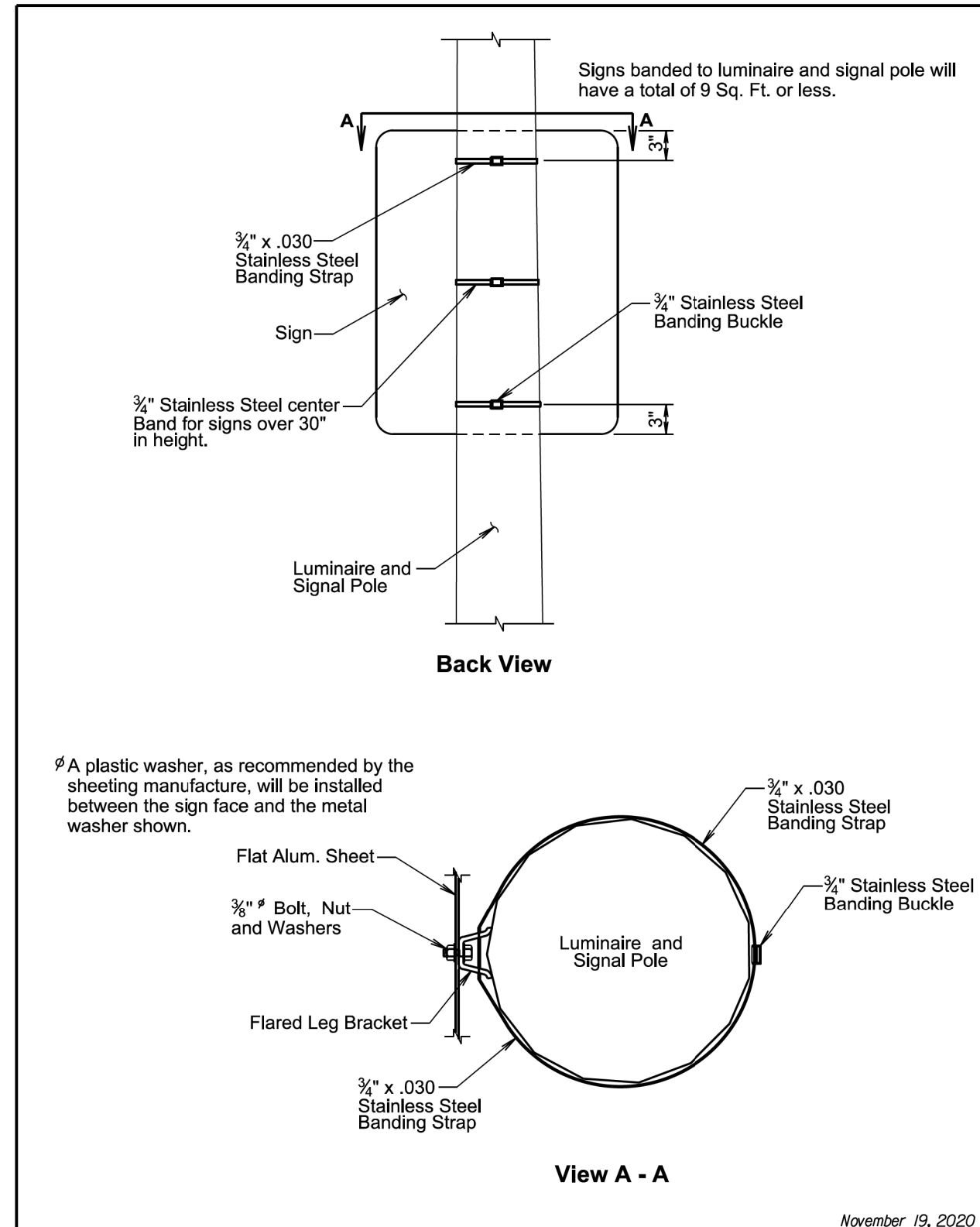
PLOT SCALE - 1:200



Published Date: 2025	S D D O T	MULTIPLE ROUTE MARKER SIGN STIFFENER INSTALLATION DETAILS	November 19, 2020
			PLATE NUMBER 632.62
			Sheet 1 of 1

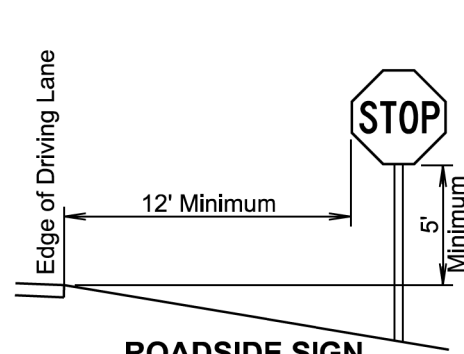
PLOT NAME - 5

FILE - ... \090Y SIGNING_STANDARD PLATES.DGN

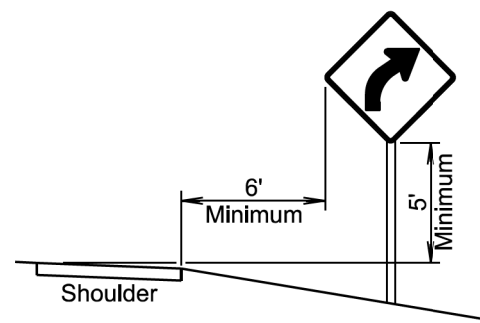


Published Date: 2025	S D D O T	BANDING SIGN TO LUMINAIRE AND SIGNAL POLE	November 19, 2020
			PLATE NUMBER 632.80
			Sheet 1 of 1

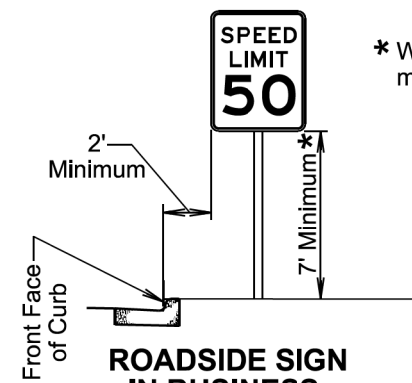
-PLOTTED FROM - TRAB10100



**ROADSIDE SIGN
IN RURAL AREA**

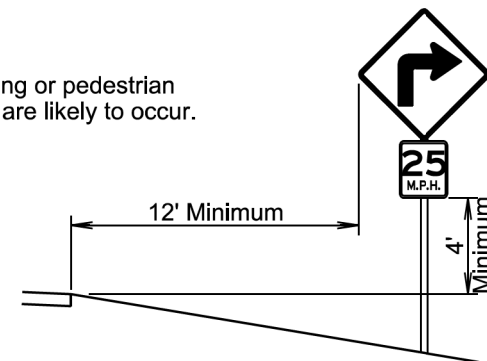


**ROADSIDE SIGN
IN RURAL AREA**
(If shoulder width is greater than 6 foot)

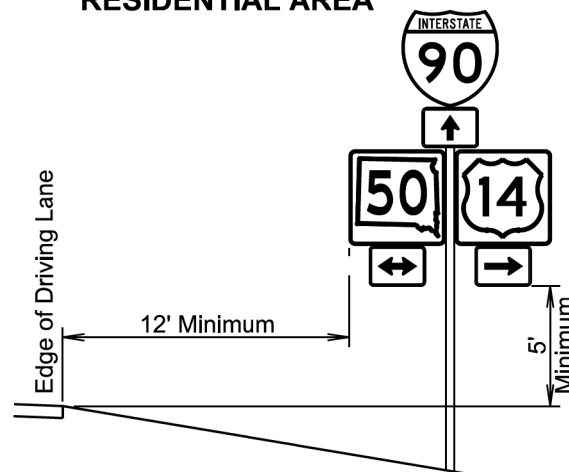


**ROADSIDE SIGN
IN BUSINESS,
COMMERCIAL, OR
RESIDENTIAL AREA**

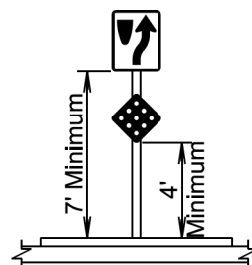
* Where parking or pedestrian movements are likely to occur.



**WARNING SIGN ADVISORY
SPEED PLAQUE IN RURAL AREA**



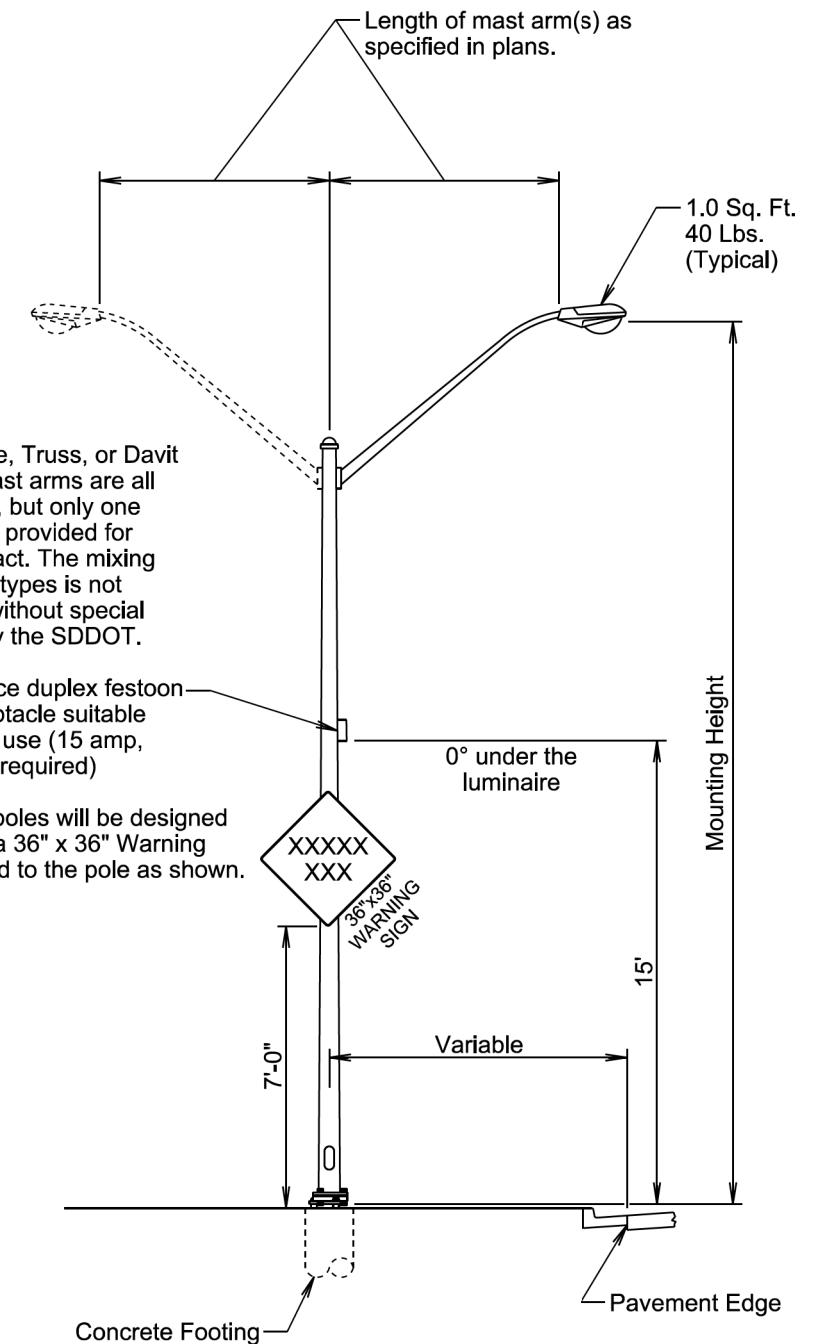
**ROADSIDE SIGN
IN RURAL AREA**



**SIGN ON NOSE
OF MEDIAN**

November 19, 2020

Published Date: 2025	S D D O T	OFFSETS FOR SIGN INSTALLATION	PLATE NUMBER 632.90
			Sheet 1 of 1



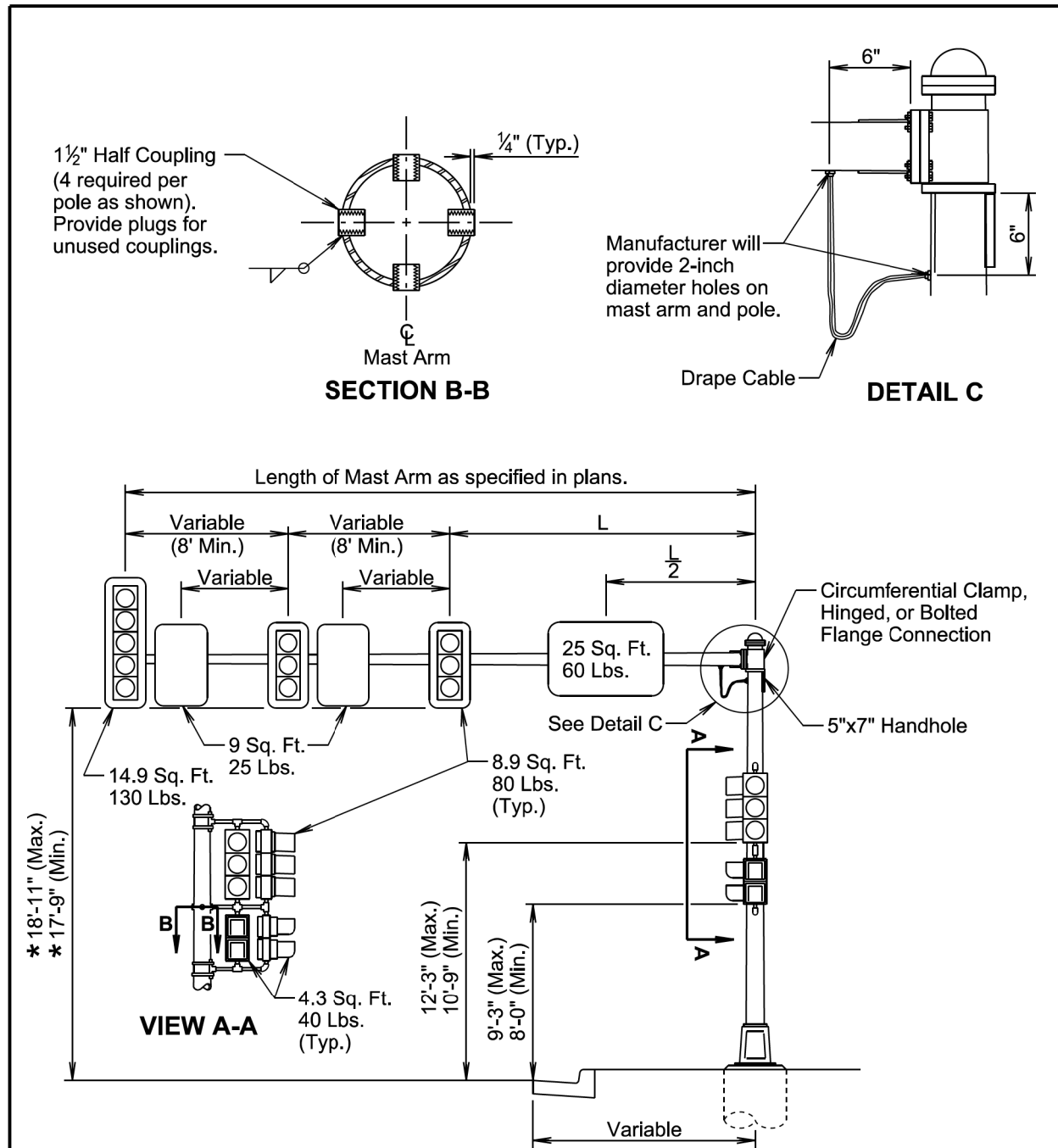
Single Tube, Truss, or Davit types of mast arms are all acceptable, but only one type will be provided for each contract. The mixing of different types is not permitted without special approval by the SDDOT.

Convenience duplex festoon outlet receptacle suitable for outdoor use (15 amp, 3-wire) (as required)

Luminaire poles will be designed to support a 36" x 36" Warning sign banded to the pole as shown.

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Published Date: 2025	S D D O T	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01
			Sheet 1 of 1



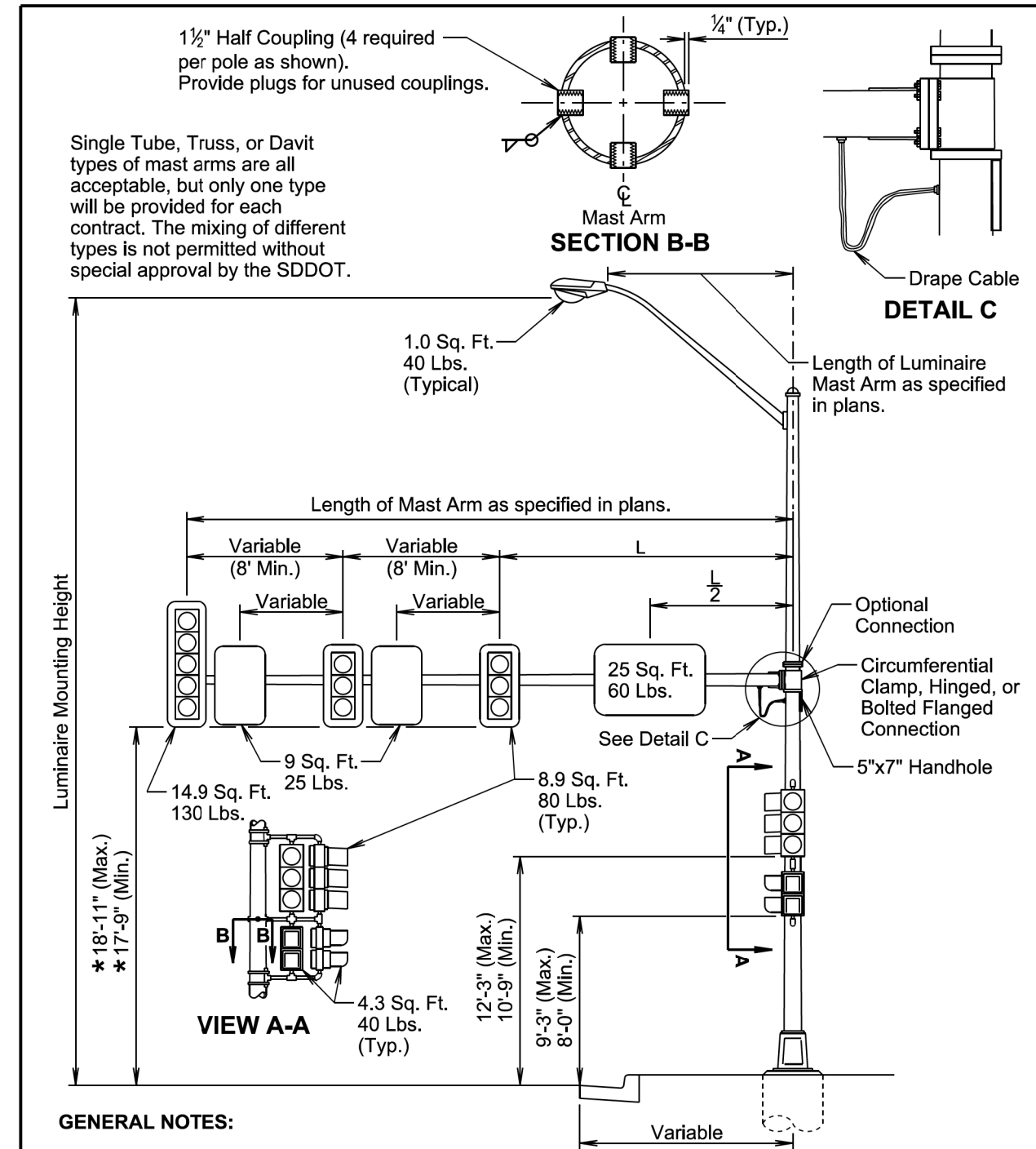
GENERAL NOTES:

Some of the signal heads are shown with backplates removed so that the mounting hardware is visible.

* The signal height allowances shown above are based on a horizontal distance greater than 53' between the signals and stop line. For horizontal distance of 53' and less between the signals and the stop line, the height allowances will be as specified in Section 4D.15 of the MUTCD.

November 19, 2022

S D D O T	SIGNAL POLE (WITH MAST ARM)	PLATE NUMBER 635.31
	Published Date: 2025	Sheet 1 of 1



GENERAL NOTES:

Some of the signal heads are shown with backplates removed so that the mounting hardware is visible.

* The signal height allowances shown above are based on a horizontal distance greater than 53' between the signals and stop line. For horizontal distance of 53' and less between the signals and the stop line, the height allowances will be as specified in Section 4D.15 of the MUTCD.

November 19, 2022

S D D O T	SIGNAL POLE (WITH MAST ARM AND LUMINAIRE EXTENSION)	PLATE NUMBER 635.32
	Published Date: 2025	Sheet 1 of 1