

# SECTION S: PERMANENT SIGNAGE PLANS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. S1	TOTAL SHEETS S15
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Plotting Date: 03/01/2024

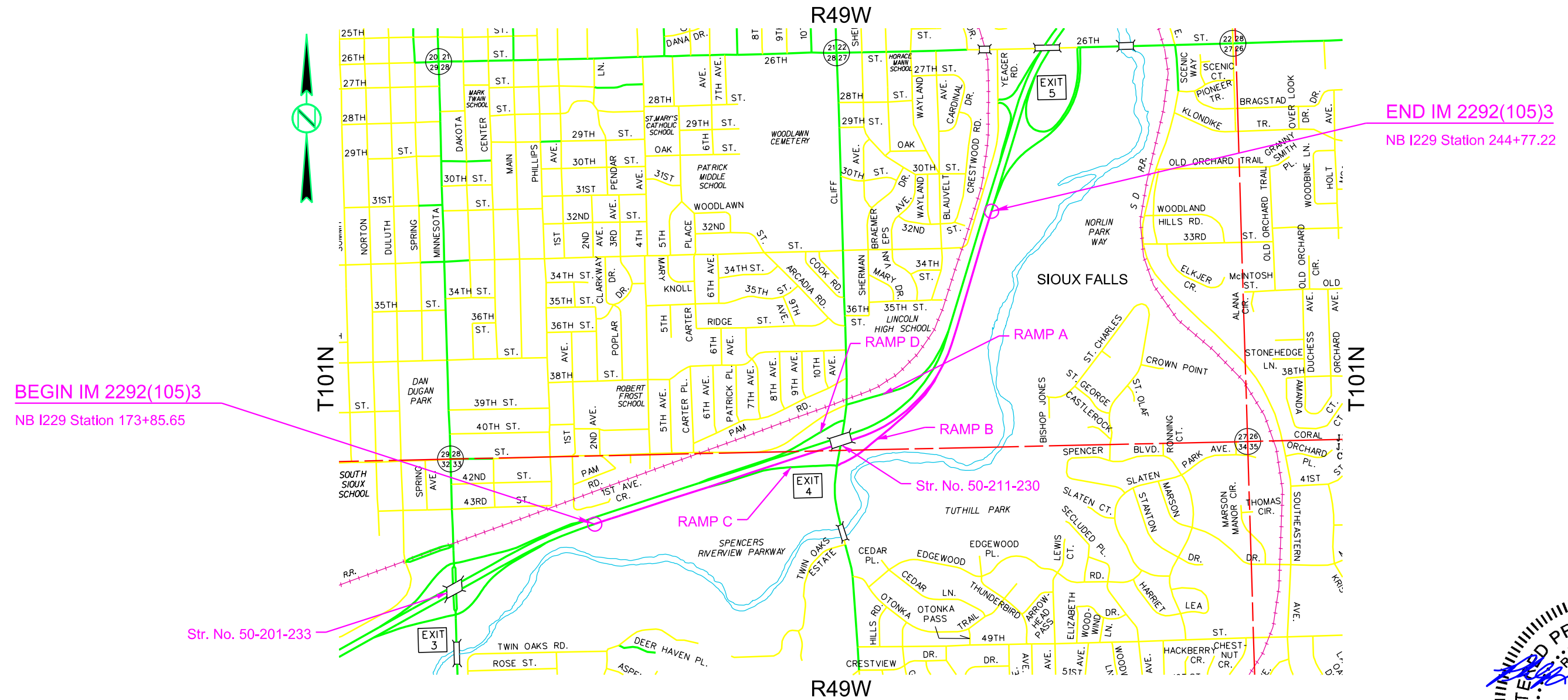
## INDEX OF SHEETS

S1	General Layout with Index
S2-S4	Estimate with General Notes and Tables
S5-S7	Permanent Signage
S8-S12	Sign Details
S13-S15	Standard Plates

Plot Scale - 1:1500

InfrastructureDesignGroup

Plotted From -



File - ...107\Cvs\_Sections\_Tiles.dgn

**SECTION S – ESTIMATE OF QUANTITIES**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0100	Remove Concrete Footing(s)	Lump Sum	LS
110E0130	Remove Traffic Sign	5	Each
110E5000	Salvage Sign Bridge	2	Each
110E7150	Remove Sign for Reset	5	Each
632E0012	1.5' Diameter Breakaway Support Concrete Footing	8.0	Ft
632E0014	1.75' Diameter Breakaway Support Concrete Footing	24.0	Ft
632E1215	S4x7.7 Steel Post	22.0	Ft
632E1235	W6x20 Steel Post	58.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	64.8	Ft
632E3105	Extruded Aluminum Sign, Removable Copy Super/Very High Intensity	229.5	SqFt
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	42.5	SqFt
632E3500	Reset Sign	6	Each
634E0275	Type 3 Barricade	3	Each

**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.

**REMOVE SIGN FOR RESET AND RESET SIGN**

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care. The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

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

**SALVAGE SIGN BRIDGE**

Sign bridge hardware will be kept with the respective sign bridge.

The cost for salvage sign bridge components, including attaching hardware, will be included in the contract unit price per each for Salvage Sign Bridge.

**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".

**SQUARE TUBE POST SLEEVE**

All 2.5" x 2.5", 12 Gauge perforated tube post will be sleeved with a 2-3/16" x 2-3/16" x 4', 12 Gauge perforated tube post.

**REMOVE CONCRETE FOOTING**

Concrete footings that are to be removed will be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area will be to the satisfaction of the Engineer.

The existing footings located at Exit 4 will be removed by the Contractor as per these plans.

All costs for removing the concrete footings will be incidental to the contract lump sum price for "Remove Concrete Footing(s)".



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(105)3	S3	S15
Plotting Date: 03/19/2024 Rev 03/19/2024 PLG			

**SIGN REMOVAL TABLE**

STATION-OFFSET	DESCRIPTION	REMOVE TRAFFIC SIGN	REMOVE SIGN FOR RESET	SALVAGE SIGN BRIDGE	TYPE OF POST	FIXED	BREAKAWAY
		110E0130	110E7150	110E5000			
<b>PCN 07CY: I229, Minnehaha County</b>							
195+49.3-56' R	Exit 4	1		1	Sign Bridge	1	
	Cliff Ave (Right, 45°)	1					
	Hospital		1				
199+72.0-40' R	Exit 4 (Exit Gore)	1			Steel Wide Flange(s)		1
204+40.0-48' R	Bridge Ices Before Road		1		Square Tube		1
215+90.8-53' R	Merge (Added Lane)		1		Round Tube		1
223+6.56-54' R	North		1		Round Tube		1
	I-29						
225+99.0-62' R	Exit 5	1		1	Sign Bridge	1	
	26 <sup>th</sup> Street ½ Mile	1					
227+96.0-62' R	65 MPH		1		Steel Wide Flange(s)	1	
	<b>SUBTOTAL =</b>	<b>5</b>	<b>5</b>	<b>2</b>		<b>3</b>	<b>4</b>



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(105)3	S4	S15

Plotting Date: 03/19/2024 Rev 03/19/2024 PLG

**SIGN INSTALLATION TABLE**

STATION-OFFSET	DESCRIPTION	SIGN CODE	SIGN SIZE (FT)	SIGN AREA		FIXED or BREAK-AWAY (S) Slip Base (A) Anchor Stub Post	(N)EW OR (R)EUSE POST	POST LENGTHS (FT, ABOVE GROUND)						FOOTING DATA		
				Type IV	Type XI			Single Perforated Tube	Dual Perforated Tube		Dual Steel Post		Dual Steel Post			
									Inside	Outside	Inside	Outside	Inside		Outside	
				632E3203	632E3115			2.5"	2.5"		S4x7.7		W6x20			
195+49.34 - 75' R	Exit 4	E1-5P	9.5 x 2.5		23.75	S	N						14.5	14.5	SEE SIGN SUPPORT TABLE	
	Cliff Ave (Right, 45°)	E6-2a	13.0 x 6.5		84.5											
	Hospital	Reset														
199+72.0 - 56' R	Exit 4	E5-1a	6.5 x 5.0	32.5		S	N		12.0	12.0						
200+04.5 - 55' R	Road Closed	R11-2	4.0 x 2.5	10.0												
204+40.0 - 92' R	Bridge Ices Before Road	Reset				A	N	13.8								
213+35.8 - 95' R	Merge (Added Lane)	Reset				A	N	13.8								
223+6.56 - 64' R	NORTH	Reset				A	N	13.2								
	I229	Reset														
225+99.0 - 77' R	Exit 5	E1-5P	9.5 x 2.5		23.75	S	N						14.5	14.5	SEE SIGN SUPPORT TABLE	
	26 <sup>th</sup> Street ½ Mile	E6-2a	15.0 x 6.5		97.5											
227+96.0 - 78' R	65 MPH	Reset				S	N				11.0	11.0			SEE SIGN SUPPORT TABLE	
<b>SUBTOTALS</b>				<b>42.5</b>	<b>229.5</b>			<b>40.8</b>	<b>12.0</b>	<b>12.0</b>	<b>11.0</b>	<b>11.0</b>	<b>29.0</b>	<b>29.0</b>		

**TWO POST BREAKAWAY SIGN SUPPORT TABLE**

STATION	DESCRIPTION	POST SIZE	FOOTING			STUB POST LENGTH	LONGITUDINAL REINFORCEMENT		SPIRAL REINFORCEMENT	
			DIAMETER	DEPTH (Ft)	QUANTITY (Ft)		QTY - SIZE	LENGTH	DIAMETER	LENGTH
195+49.3-75' R	Exit 4 : Cliff Avenue : Hospital	W6x20	1'-9"	6.0	12.0	2'-3"	8 - #8 Bars	5'-8"	1'-11"	51'-0"
225+99.0-77' R	Exit 5 : 26 <sup>th</sup> Street ½ Mile	W6x20	1'-9"	6.0	12.0	2'-3"	8 - #8 Bars	5'-8"	1'-11"	51'-0"
227+96.0-78' R	65 MPH	S4x7.7	1'-6"	4.0	8.0	1'-9"	6 - #6 Bars	3'-8"	1'-2"	2'-9"

**TYPE 3 BARRICADE(S) TABLE**

TYPE 3 BARRICADE, 8' DOUBLE SIDED		
STATION-OFFSET	CLOSURE TYPE	PAYMENT QUANTITY
200+25.00-40' R	ROAD CLOSURE	3

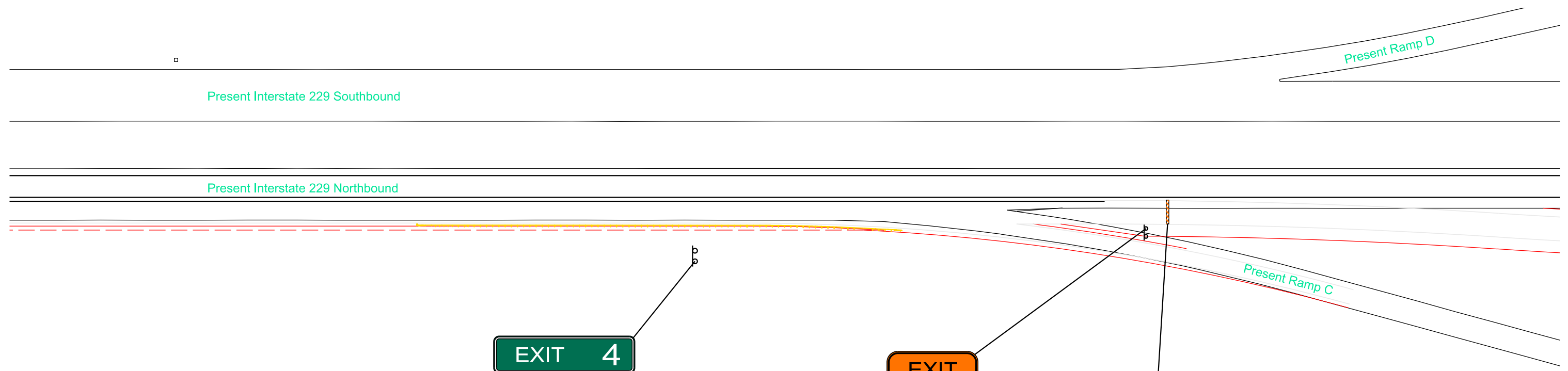
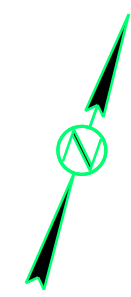


# PERMANENT SIGNAGE FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. S5	TOTAL SHEETS S15
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Plotting Date: 03/01/2024

Plot Scale - 1:100



EXIT 4

Cliff Avenue

H

INSTALL ON NEW W6x20 STEEL POSTS

EXIT 4

E5-1a  
INSTALL ON NEW PERFORATED STEEL POSTS (WITH SANDBAGS)

INSTALL ON TYPE 3 BARRICADE.

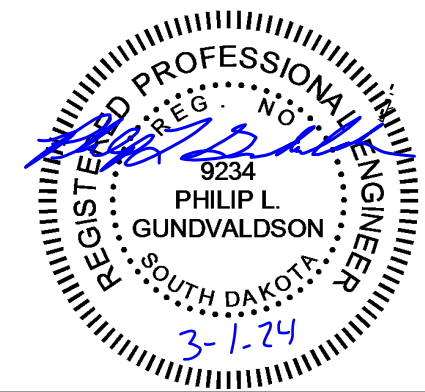
ROAD CLOSED

R11-2



INSTALL TYPE 3 BARRICADES ACROSS NB DIVERSION ROAD SECTION. MINIMUM OF (3) 8FT BARRICADES. (TO BE REMOVED WHEN ACTIVE TRAFFIC ON THE DIVERSION COMMENCES FOR PCN 05HN)

NOTE:  
PERMANENT SIGNAGE SHOWN IS FOR THE EXIT 4 DIVERSION (PCN 07CY) ONLY. NEW PERMANENT SIGNAGE WILL BE ESTABLISHED UNDER THE EXIT 4 RECONSTRUCTION (PCN 05HN).



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# PERMANENT SIGNAGE FOR BIDDING PURPOSES ONLY

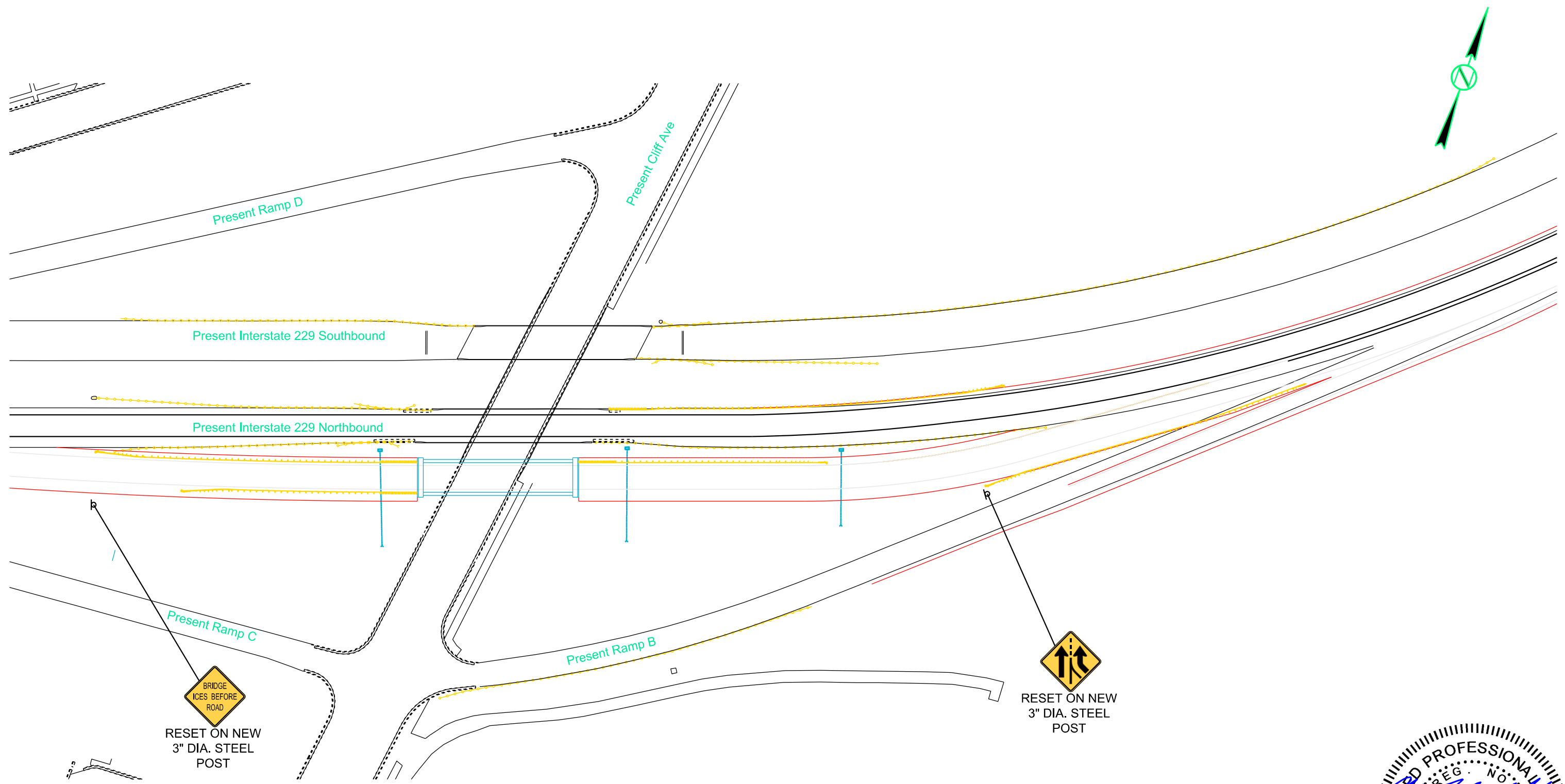
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(105)3	S6	S15

Plotting Date: 03/01/2024

Plot Scale - 1:100

InfrastructureDesignGroup

Plotted From -



File - ...107CVs\_Sections\_Layouts.dgn

# PERMANENT SIGNAGE FOR BIDDING PURPOSES ONLY

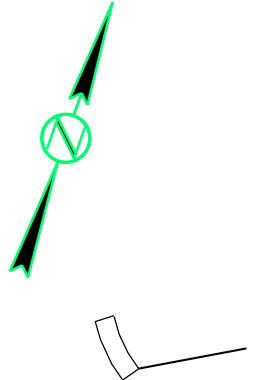
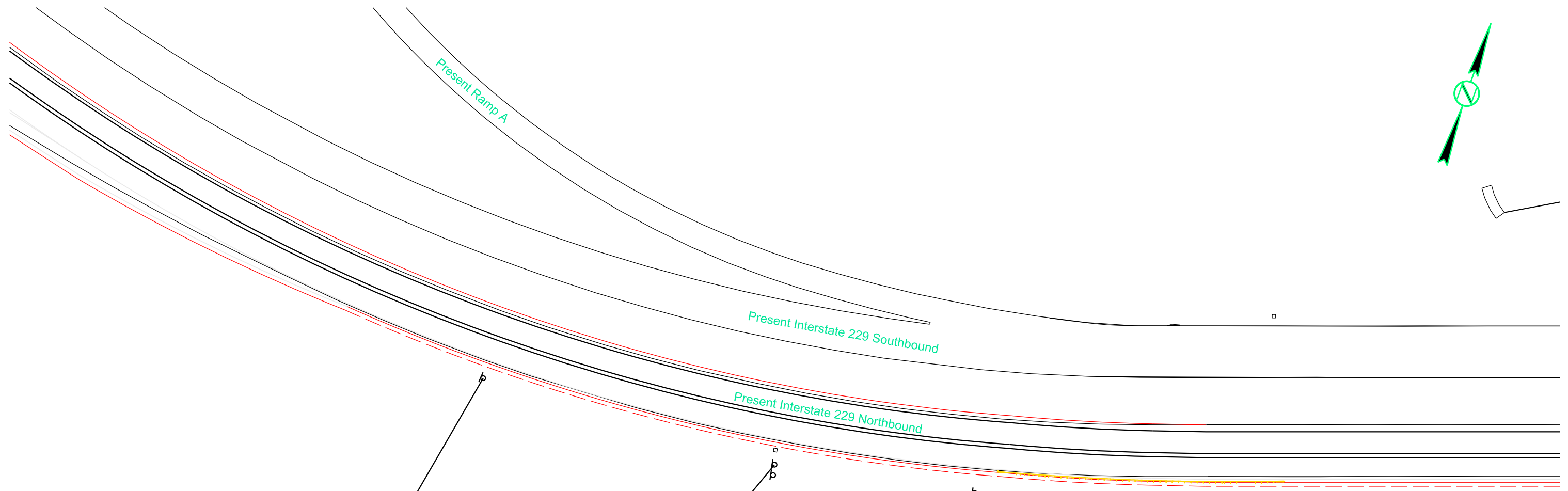
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	IM 2292(105)3	S7	S15

Plotting Date: 03/01/2024

Plot Scale - 1:100

Plotted From - InfrastructureDesignGroup

File - ...107CYs\_Sections/Layouts.dgn

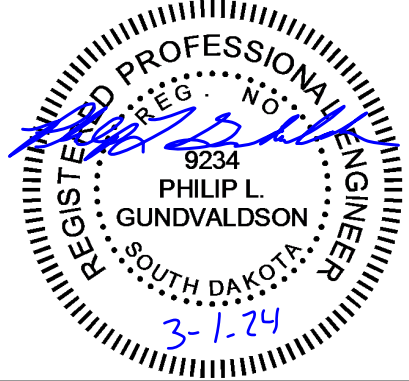


  
RESET ON NEW  
3" DIA. STEEL  
POST

**EXIT 5**  
**26th Street**  
**1/2 Mile**  
INSTALL ON NEW W6x20 STEEL POSTS

  
RESET ON NEW  
S4x7.7 STEEL  
POSTS

NOTE:  
PERMANENT SIGNAGE SHOWN IS FOR THE EXIT 4  
DIVERSION (PCN 07CY) ONLY. NEW PERMANENT  
SIGNAGE WILL BE ESTABLISHED UNDER THE EXIT  
4 RECONSTRUCTION (PCN 05HN).

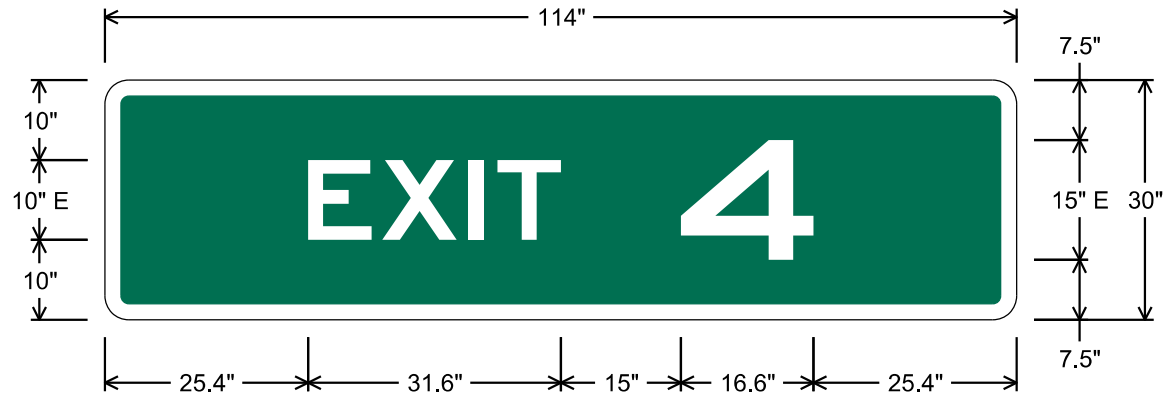


# SIGN DETAILS

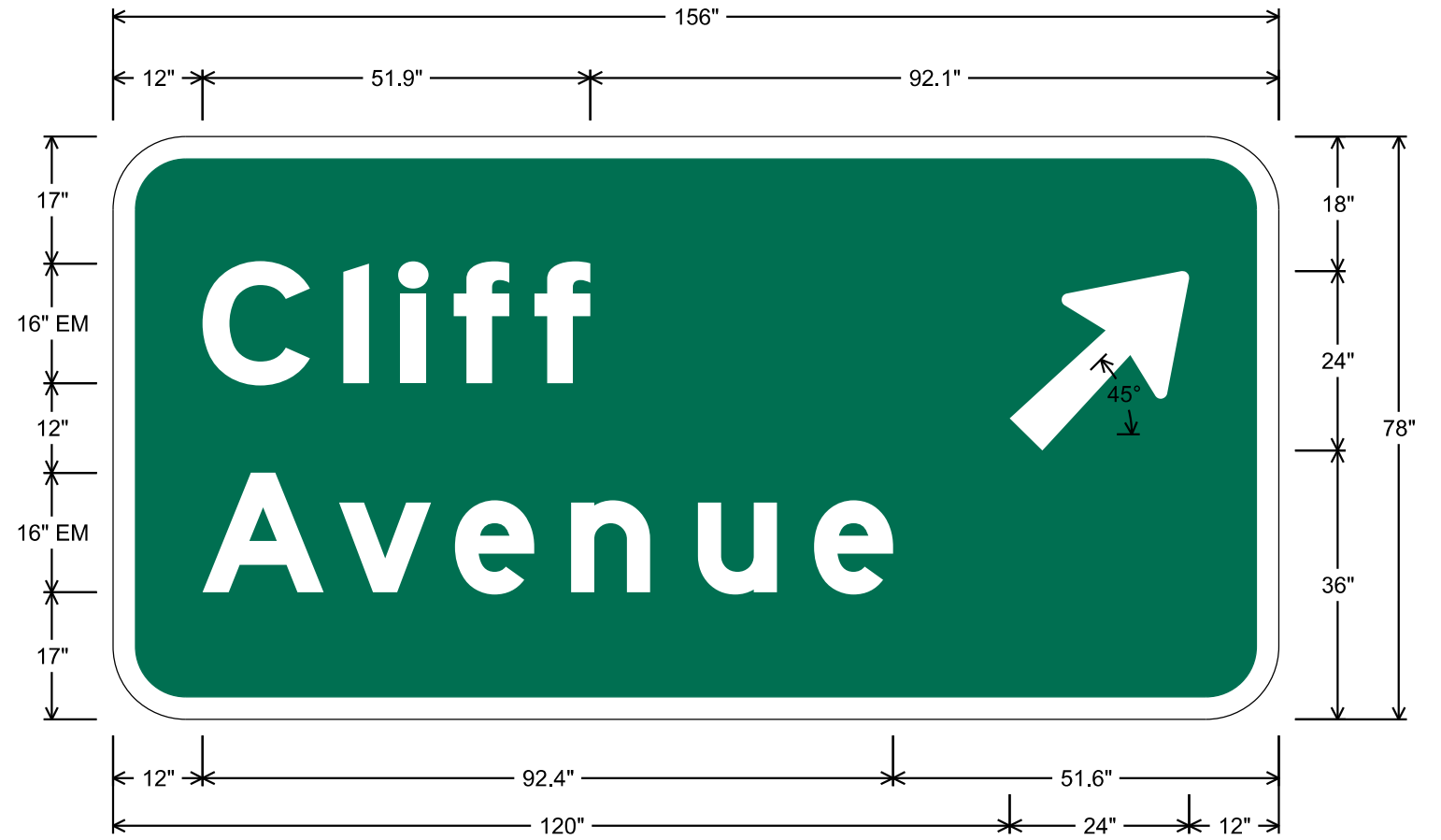
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. S8	TOTAL SHEETS S15
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Plotting Date: 03/01/2024



SIGN CODE	E1-5P
WIDTH x HEIGHT	114" x 30"
BORDER WIDTH	2"
CORNER RADIUS	3"
BACKGROUND	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: GREEN
LEGEND / BORDER	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: WHITE



SIGN CODE	E6-2a
WIDTH x HEIGHT	156" x 78"
BORDER WIDTH	3"
CORNER RADIUS	9.75"
ARROW	TYPE A (45°)
BACKGROUND	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: GREEN
LEGEND / BORDER	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: WHITE





# SIGN DETAILS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. S9	TOTAL SHEETS S15
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Plotting Date: 03/01/2024



SIGN CODE	E1-5P
WIDTH x HEIGHT	114" x 30"
BORDER WIDTH	2"
CORNER RADIUS	3"
BACKGROUND	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: GREEN
LEGEND / BORDER	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: WHITE

SIGN CODE	E6-2a
WIDTH x HEIGHT	180" x 78"
BORDER WIDTH	3"
CORNER RADIUS	9.75"
BACKGROUND	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: GREEN
LEGEND / BORDER	TYPE: TYPE XI SUPER/VERY HIGH INTENSITY COLOR: WHITE



# SIGN ERECTION DETAILS FOR BIDDING PURPOSES ONLY

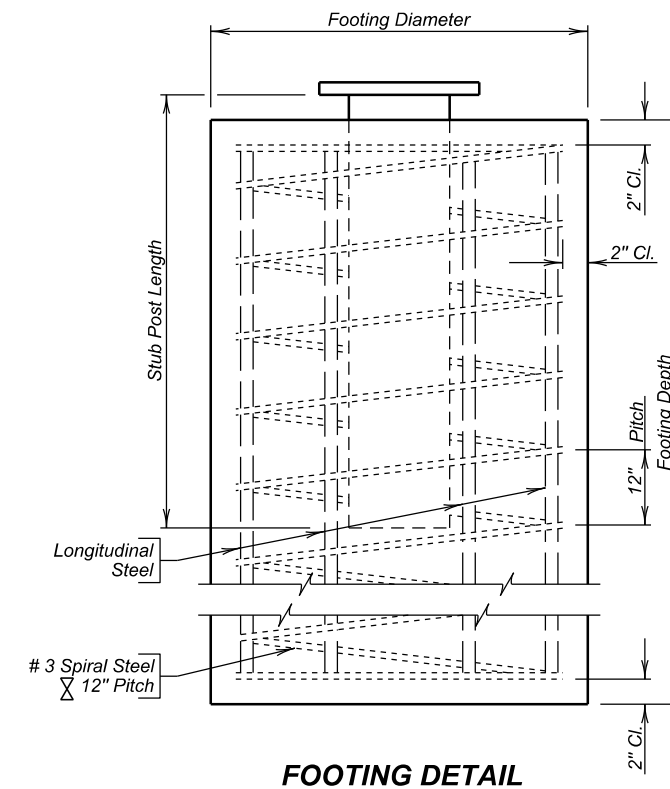
STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. S10	TOTAL SHEETS S15
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Plotting Date: 03/01/2024

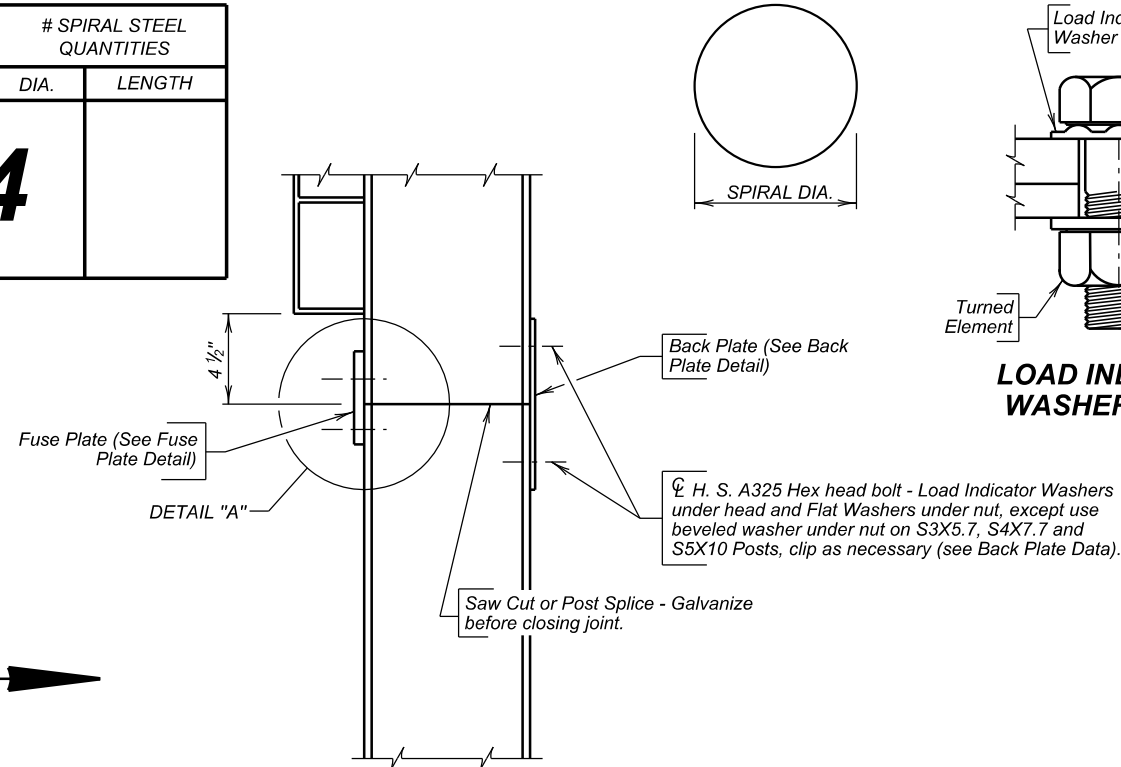
SITE LOCATION	POST SIZE	FOOTING DIMENSIONS		STUB POST LENGTH	LONGITUDINAL STEEL QUANTITIES			# SPIRAL STEEL QUANTITIES	
		DIA.	DEPTH		NO.	SIZE	LENGTH	DIA.	LENGTH
<b>SEE SHEET S4</b>									

⊗ # Spirals - Use 12" pitch and 1 1/2 extra turns at each end. Use 1 1/2 turns for lap at splice as required, or weld as approved by the Office of Bridge Design. Spirals may be smooth bars, Bar length shown does not include Splices. Dimensions are out to out of bars.

NOTE:  
The above is a Site Specific data entry table and the inserted information is the responsibility of the Region Traffic Engineer.

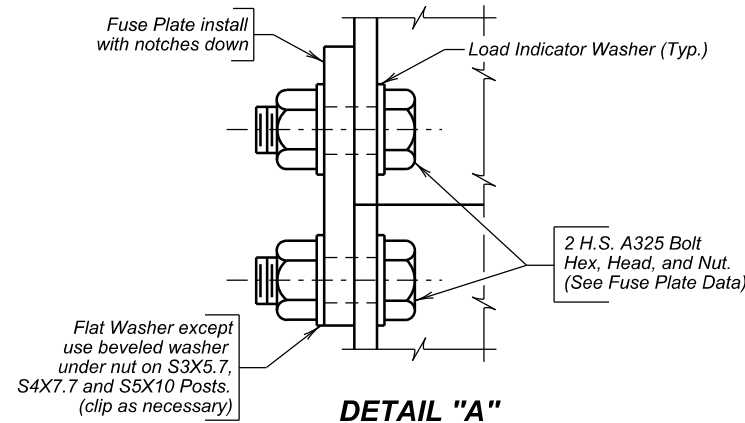


**FOOTING DETAIL**

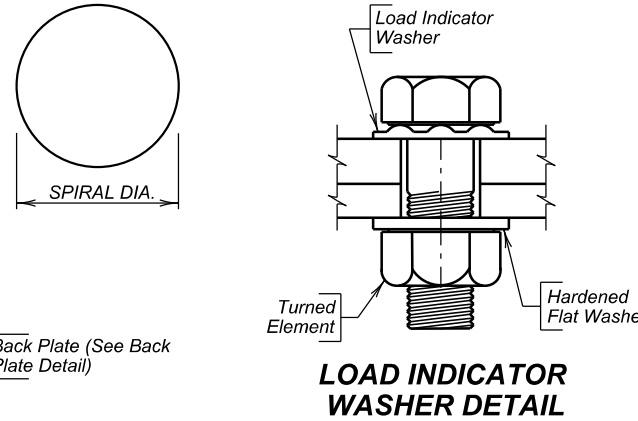


**FUSE & BACK PLATE INSTALLATION**

**TRAFFIC DIRECTION** →



**DETAIL "A"**



**LOAD INDICATOR WASHER DETAIL**

**NOTES**

- Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 2001 Edition with 2003 Interims.
- Concrete Footings shall be Class M6 - fc = 4000 p. s. i.
- Structural Steel shall conform to ASTM A36.
- All Reinforcing Steel, except spirals, shall conform to ASTM 615 Grade 60.
- Spiral Reinforcing Steel may be fabricated from cold drawn wire ASTM A1064, or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.
- All Bolts and Nuts shall conform to ASTM A325 except that 1/2" diameter bolts may conform to either ASTM A325 or ASTM A449. Washers shall conform to ASTM F436. All hardware shall be galvanized in accordance with ASTM F2329.
- All structural steel including Posts and Post Stubs shall be galvanized in accordance with ASTM A123.
- All Bolt Holes shall be drilled. All plate cuts shall preferably be saw cuts. However, Flame Cutting will be permitted providing all edges are ground smooth (metal projecting beyond the plane of the plate face will NOT be allowed).
- All welding and weld inspection shall be in accordance with the latest edition of AWS D 1.5 Structural Welding Code.

**PROCEDURE FOR ASSEMBLING SLIP BASE**

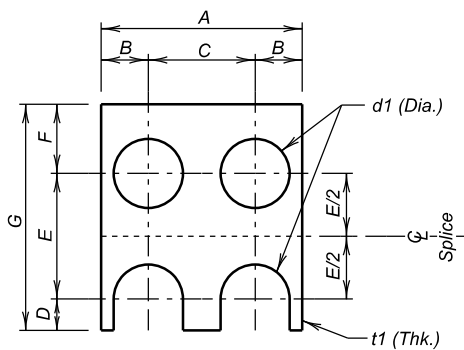
- Place galvanized Sheet Metal Diaphragms on top of the lower slip plate.
- Connect main post to Stub Post with clean unlubricated bolts and nuts with one Hardened Washer on each bolt between slip plates.
- Plumb post by adding shims between slip plates.
- Tighten bolts to a practical maximum, using a 12" - 15" wrench in order to bed surfaces and clean threads. DO NOT TIGHTEN TO PROOF LOAD.
- Loosen all bolts and retighten in increments, using a systematic order, until each bolt has been tightened to the specified torque corresponding to the post size used (See Slip Base Plate Data). Tighten bolts only to the torque specified. DO NOT OVERTIGHTEN. Check torque on each bolt after entire sign has been erected.

**ASSEMBLY OF FRICTION FUSE PLATES, BACK PLATES AND STIFFENERS**

High strength bolts shall be tightened so as to obtain a residual tension by the use of load indicator washers.

**SHOP PLANS**

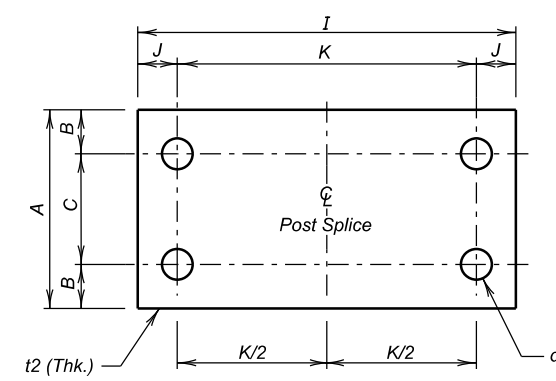
The fabricator shall submit shop plans in accordance with the Specifications or in Adobe PDF format. Shop plan submittals shall be sent to the Office of Bridge Design. Include design and check design, if applicable, with initial submittal.



**FUSE PLATE DETAIL**

Post Size	A	B	C	D	E	F	G	d1	t1	Bolt Size
S3X5.7	2 5/8"	9/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 3/8"	5/8" φ	1/4"	1/2" φ
S4X7.7	2 5/8"	9/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 3/8"	5/8" φ	1/4"	1/2" φ
S5X10	3"	1 1/16"	1 3/8"	5/8"	2 1/4"	1 1/8"	4"	3/4" φ	3/8"	5/8" φ
W6X12	4"	15/16"	2 1/8"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" φ	3/8"	5/8" φ
W6X15	6"	1 3/8"	3 1/4"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" φ	3/8"	5/8" φ
W6X20	6"	1 3/8"	3 1/4"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" φ	3/8"	5/8" φ

Post Size	A	B	C	J	K	I	d1	t2	Bolt Size
S3X5.7	2 5/8"	9/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" φ	1/4"	1/2" φ
S4X7.7	2 5/8"	9/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" φ	1/4"	1/2" φ
S5X10	3"	1 1/16"	1 3/8"	1 1/4"	4 3/4"	7 1/4"	3/4" φ	1/4"	5/8" φ
W6X12	4"	15/16"	2 1/8"	1 1/4"	4 3/4"	7 1/4"	3/4" φ	1/4"	5/8" φ
W6X15	6"	1 3/8"	3 1/4"	1 1/4"	5 1/4"	7 3/4"	3/4" φ	1/4"	5/8" φ
W6X20	6"	1 3/8"	3 1/4"	1 1/4"	5 1/4"	7 3/4"	3/4" φ	1/4"	5/8" φ



**BACK PLATE DETAIL**

**ERECTION DETAILS FOR TWO-POST ONE-DIRECTION BREAKAWAY SIGN SUPPORTS**  
S. D. DEPT. OF TRANSPORTATION  
**DECEMBER 2016** (1) OF (2)

DESIGNED BY RH/DM	DRAWN BY TB/MDG	CHECKED BY RH/DM/PW	Steve A. Johnson BRIDGE ENGINEER
CNTYPCNX	PCNXDSPG	BSTDBS2D	
REVISION	DATE	BY	
⊗ Pitch Correction	3/24/11	DM	
⊗ Specification Update	7/11/05	AV	

Plot Scale - N/A

InfrastructureDesignGroup

Plotted From -

File - ...107CVs\_SectionS\_ErectionDetails.dgn

# SIGN ERECTION DETAILS FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. S11	TOTAL SHEETS S15
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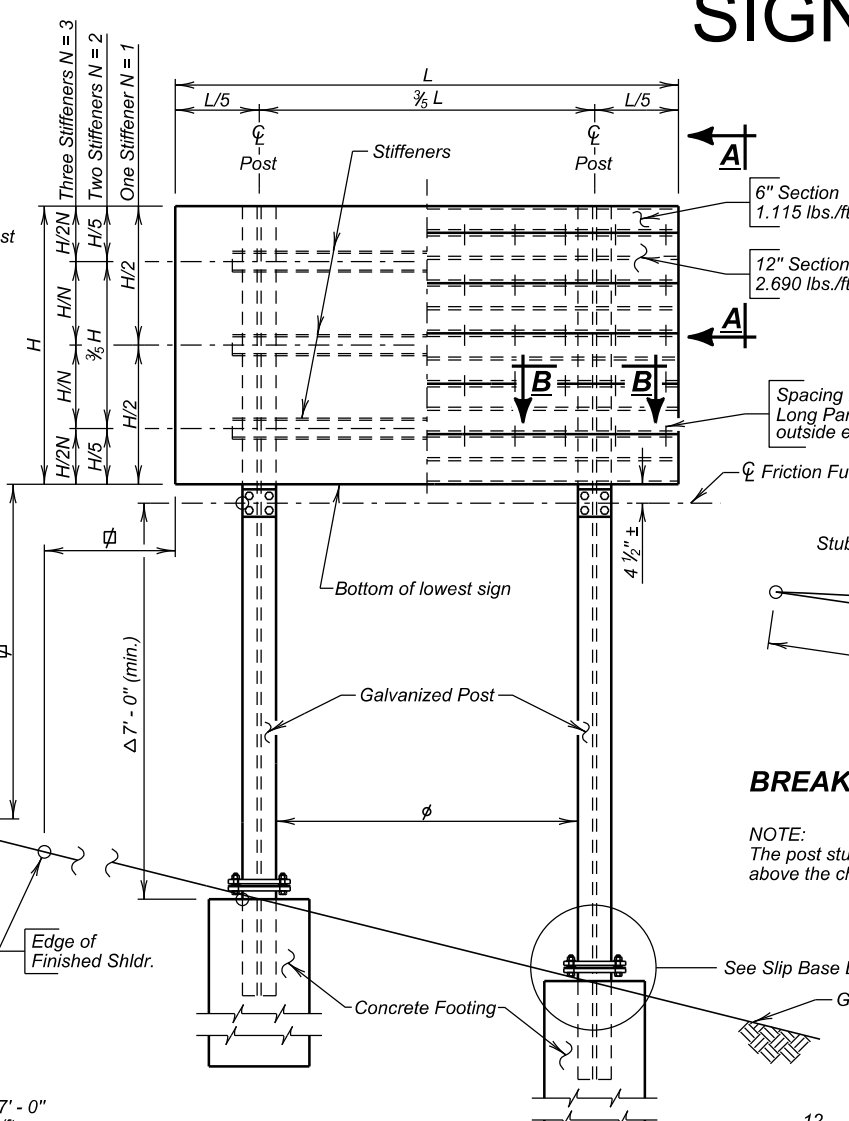
Plotting Date: 03/01/2024

NOTE:  
Sign face details shown are those for extruded aluminum panels.  
See Erection Details for SHEET ALUMINUM SIGNS for mounting flat sheet sign face.

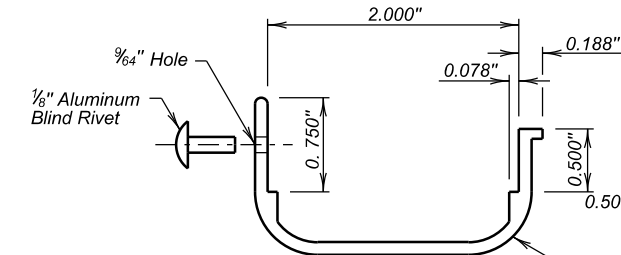
Δ Mounting height as recommended by latest edition of AASHTO ROADSIDE DESIGN GUIDE.

∅ Clear distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

NOTE:  
N = Number of Stiffeners to be used  
H = Vertical dimension of sign  
L = Horizontal dimension of Main Sign



**ELEVATION**



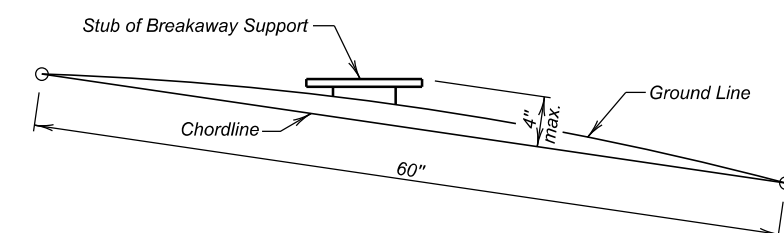
**SIDE TRIM MOLDING**

Side Trim Molding is required on all vertical edges of extruded panels. They shall be fastened at a minimum of one (1) rivet per panel.

Post	Stiffener	a	b	c	d	Bolt (A325)	Plate Thk.
S3X5.7 thru W8X21	C3X5	10 1/2"	5"	1 1/4"	8"	5/8" ∅	5/16"
W8X24 thru W10X45	C5X6.7	13 1/2"	6"	1 1/2"	10 1/2"	7/8" ∅	3/8"

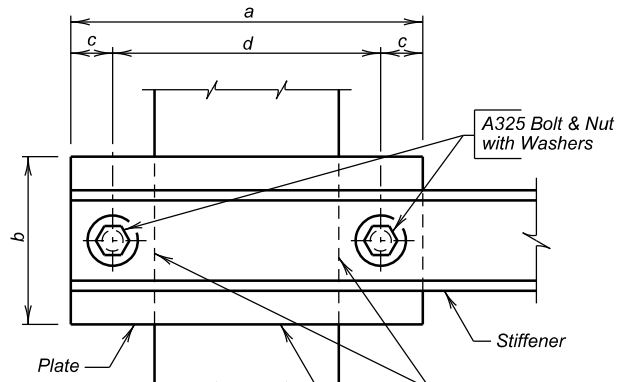
**STIFFENER NOTES**

- Stiffeners must always be used on Two Post Breakaway signs regardless of type of sign face employed.
- Number of stiffeners used, N, shall be as follows:  
if  $H <= 2' - 0"$  then  $N = 1$   
if  $2' - 0" < H <= 8' - 0"$  then  $N = 2$   
if  $8' - 0" < H <= 15' - 0"$  then  $N = 3$

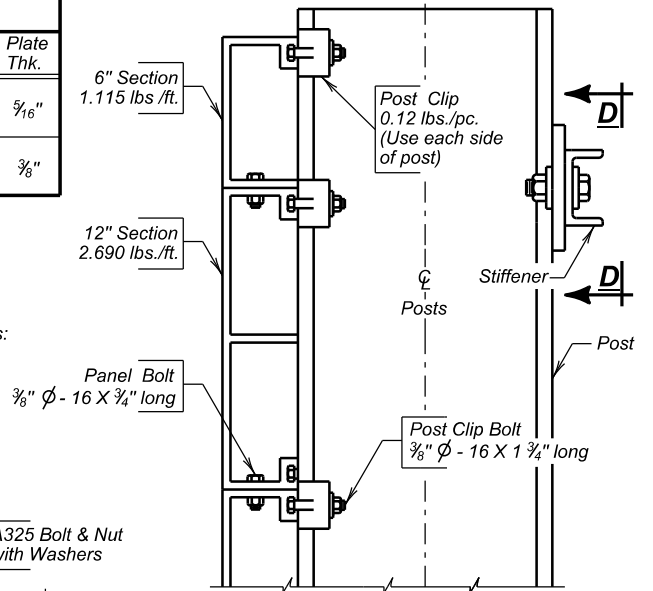


**BREAKAWAY SUPPORT STUB CLEARANCE DIAGRAM**

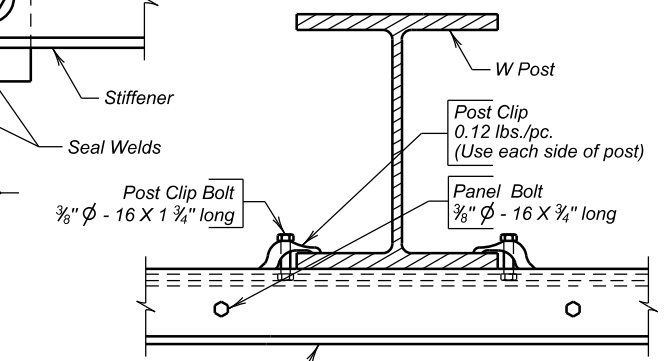
NOTE:  
The post stub and lower slip plate shall NOT extend more than 4" max. above the chordline within 60" chord.



**SEC. D - D**

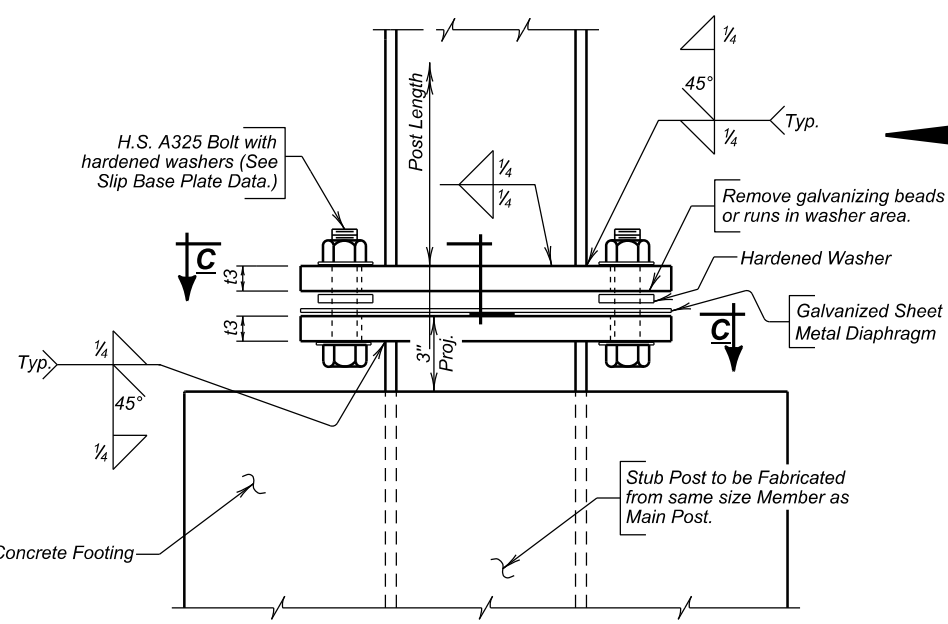


**SEC. A - A**

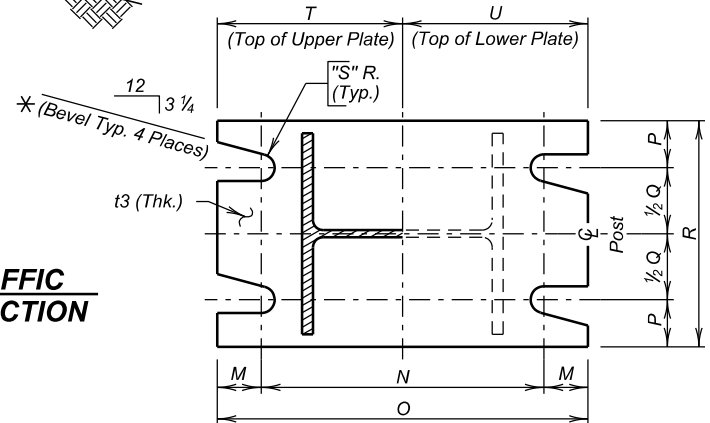


**SEC. B - B**  
(Stiffener not shown)

∅ Clear span between posts shall be 7' - 0" minimum for posts larger than 18 lb/ft. Reference FHWA acceptance letter dated 6/4/91 (Code SS-25).

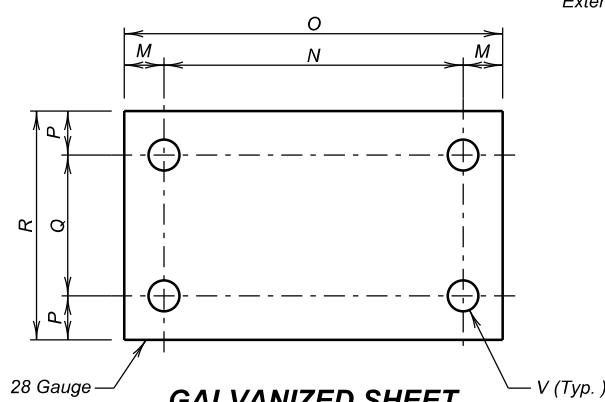


**SLIP BASE DETAIL**



**SEC. C - C**

\* NOTE:  
Above Bevel is for Sign on Right Shoulder. Plate Bevels are Opposite hand for Sign on Left Shoulder.



**GALVANIZED SHEET METAL DIAPHRAGM**

Post Size	M	N	O	P	Q	R	V
S3X5.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	5/8"
S4X7.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	5/8"
S5X10	7/8"	7 1/4"	9"	3/4"	2"	3 1/2"	3/4"
W6X12	7/8"	8 1/4"	10"	7/8"	2 3/4"	4 1/2"	3/4"
W6X15	1 1/8"	8 1/2"	10 3/4"	1 1/4"	4"	6 1/2"	7/8"
W6X20	1 1/8"	10"	1'-0 1/4"	1 1/4"	4"	6 1/2"	7/8"

Post Size	M	N	O	P	Q	R	S	T	U	t3	Bolt Size	Bolt Torque
S3X5.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	3/32"	3 3/4"	3 3/4"	5/8"	1/2" ∅	142" - #
S4X7.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	3/32"	3 3/4"	3 3/4"	5/8"	1/2" ∅	142" - #
S5X10	7/8"	7 1/4"	9"	3/4"	2"	3 1/2"	1 1/32"	4 1/2"	4 1/2"	7/8"	5/8" ∅	345" - #
W6X12	7/8"	8 1/4"	10"	7/8"	2 3/4"	4 1/2"	1 1/32"	5"	5"	7/8"	5/8" ∅	345" - #
W6X15	1 1/8"	8 1/2"	10 3/4"	1 1/4"	4"	6 1/2"	1 3/32"	5 3/8"	5 3/8"	1"	3/4" ∅	554" - #
W6X20	1 1/8"	10"	1'-0 1/4"	1 1/4"	4"	6 1/2"	1 3/32"	6 1/8"	6 1/8"	1"	3/4" ∅	554" - #

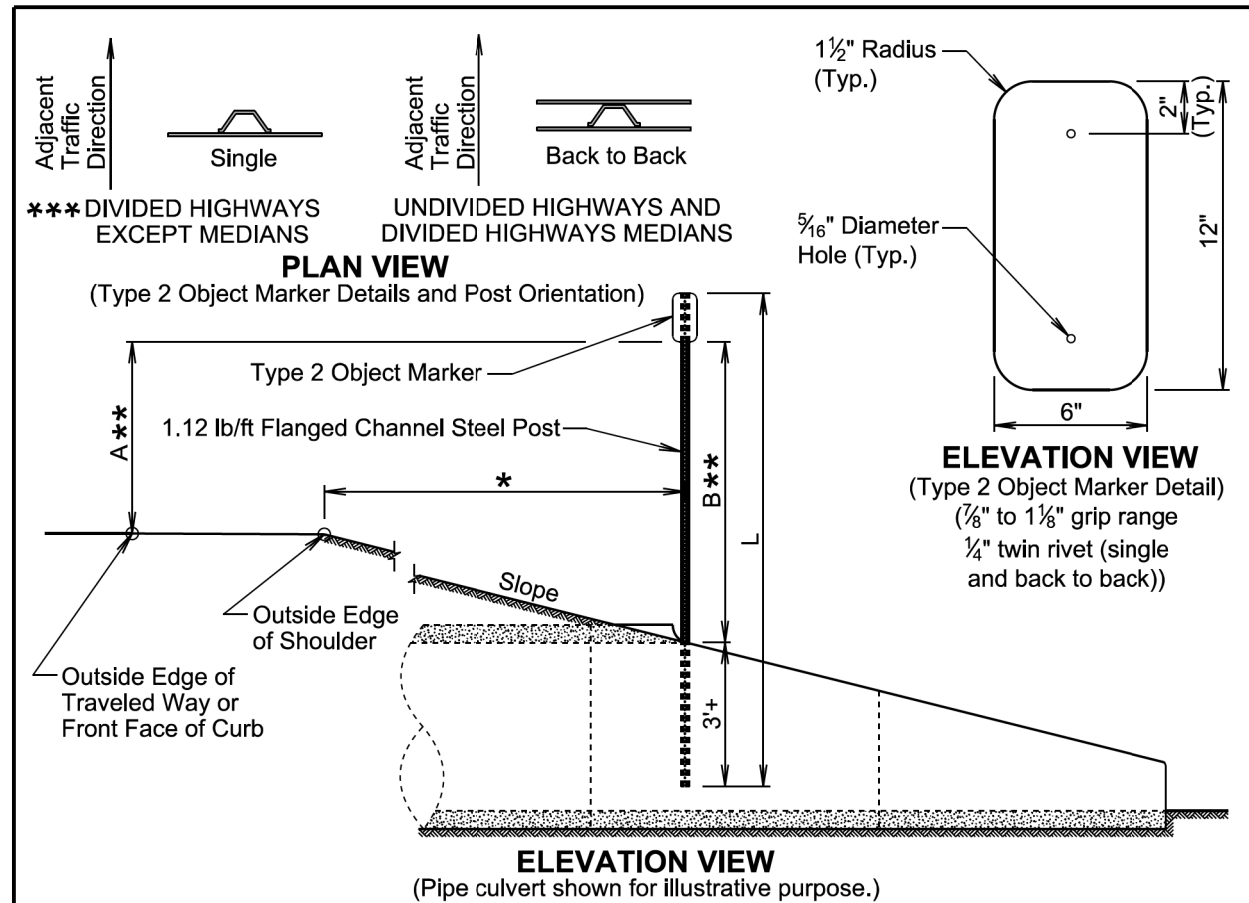
NOTE:  
Diaphragm need not be regalvanized after cutting to size and drilling of holes.

**ERECTION DETAILS FOR TWO-POST ONE-DIRECTION BREAKAWAY SIGN SUPPORTS**  
S. D. DEPT. OF TRANSPORTATION  
DECEMBER 2016

DESIGNED BY RH/DM CNTYPCNX	DRAWN BY TB/MDG PCNXDSPG	CHECKED BY RH/DM/PW BSTDBS2D	Steve A. Johnson BRIDGE ENGINEER
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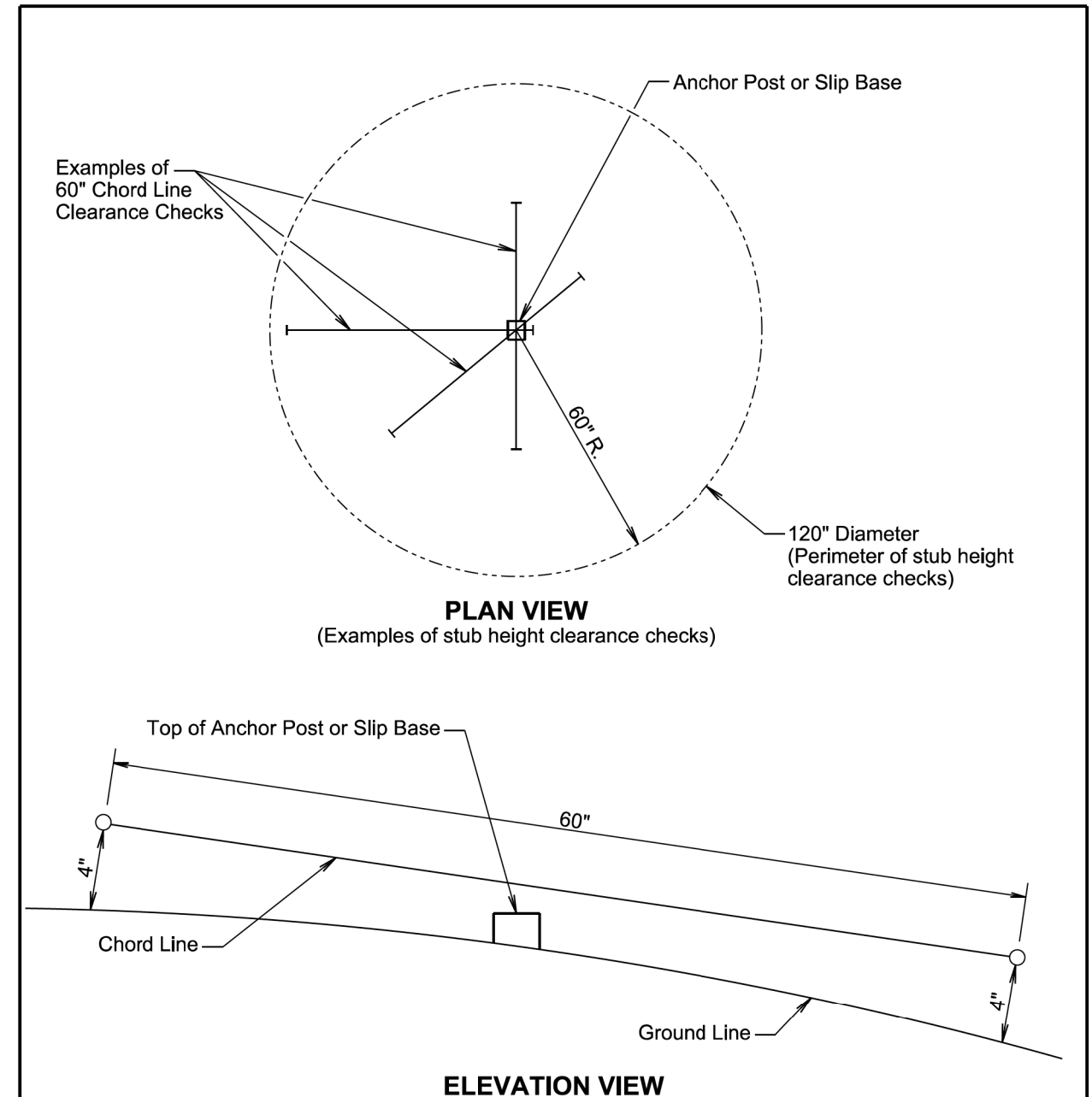
TYPE 2 OBJECT MARKER POST LENGTHS										
OFFSET (*)	1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'	
POST LENGTH (L)										
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	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

<b>Published Date: 2024</b>	<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER (DIRECT DRIVE)</b>	PLATE NUMBER 632.01
			Sheet 1 of 1

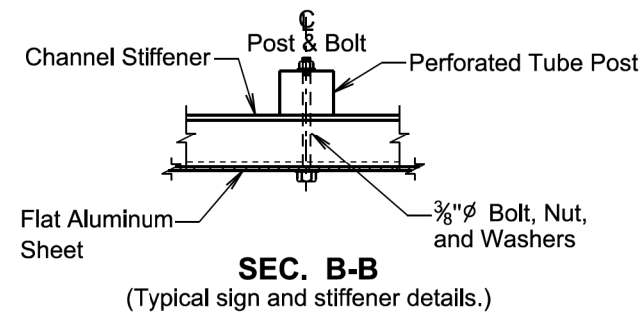
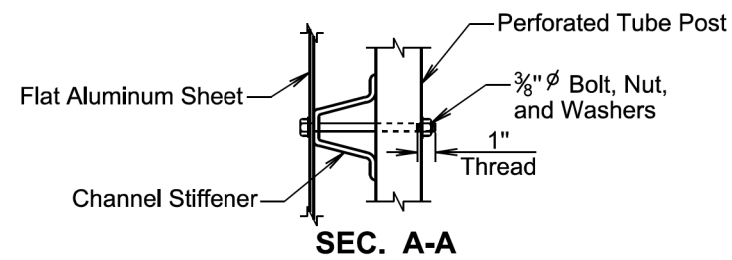
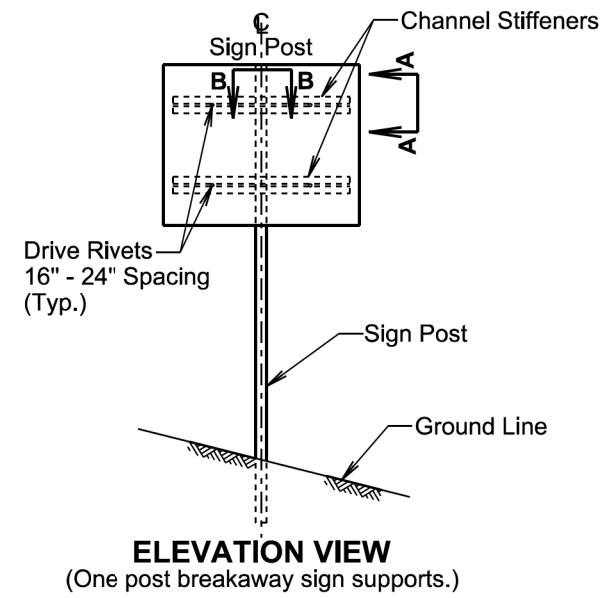


**GENERAL NOTES:**

- 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

<b>Published Date: 2024</b>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER 632.18
			Sheet 1 of 1

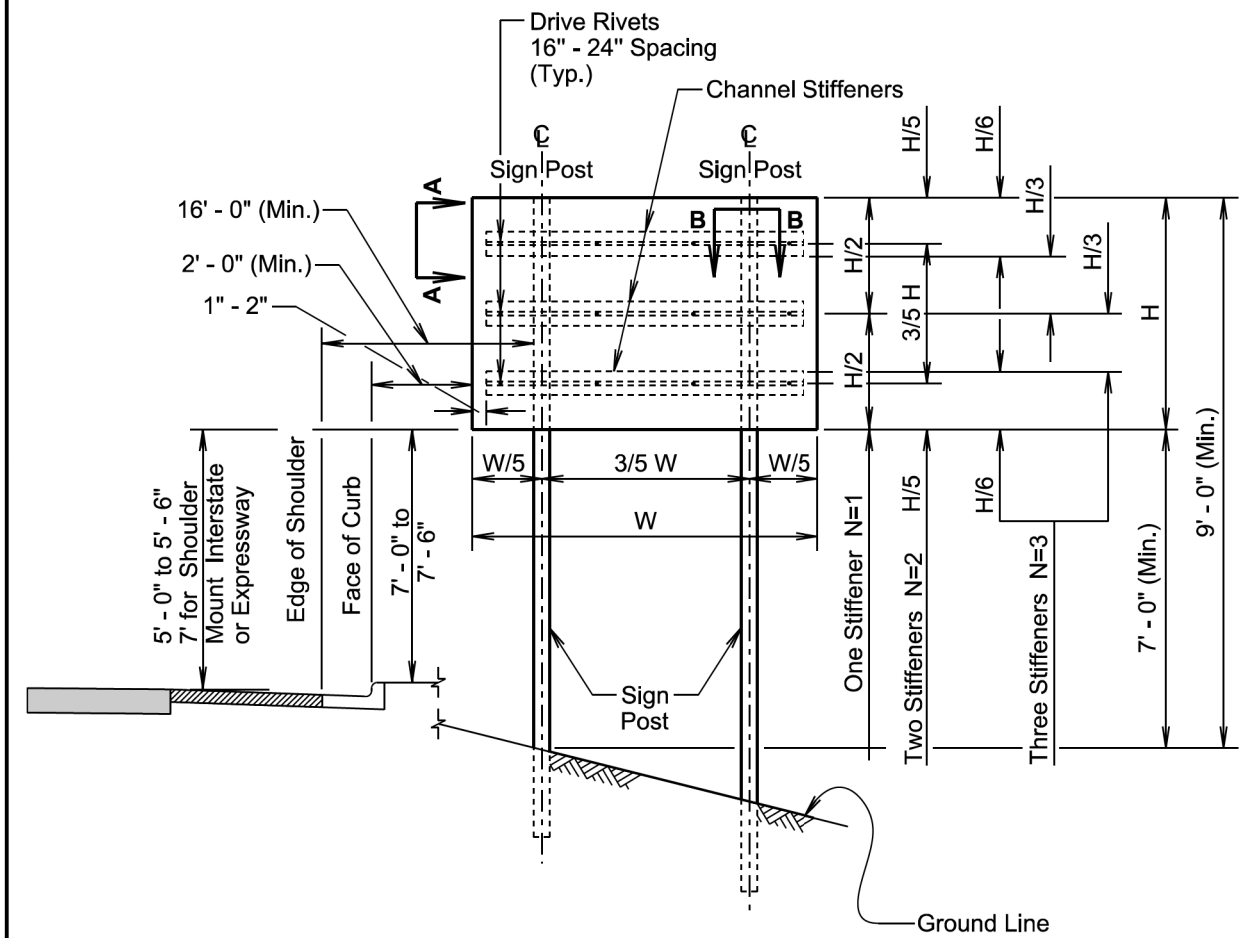


∅ A plastic washer, as recommended by the sheeting manufacturer, will be installed between the sign face and the metal washer shown.

November 19, 2020

<b>S D D O T</b>	<b>SIGN STIFFENER DETAILS</b>	PLATE NUMBER <b>632.60</b>
		Sheet 1 of 2

Published Date: 2024



**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.

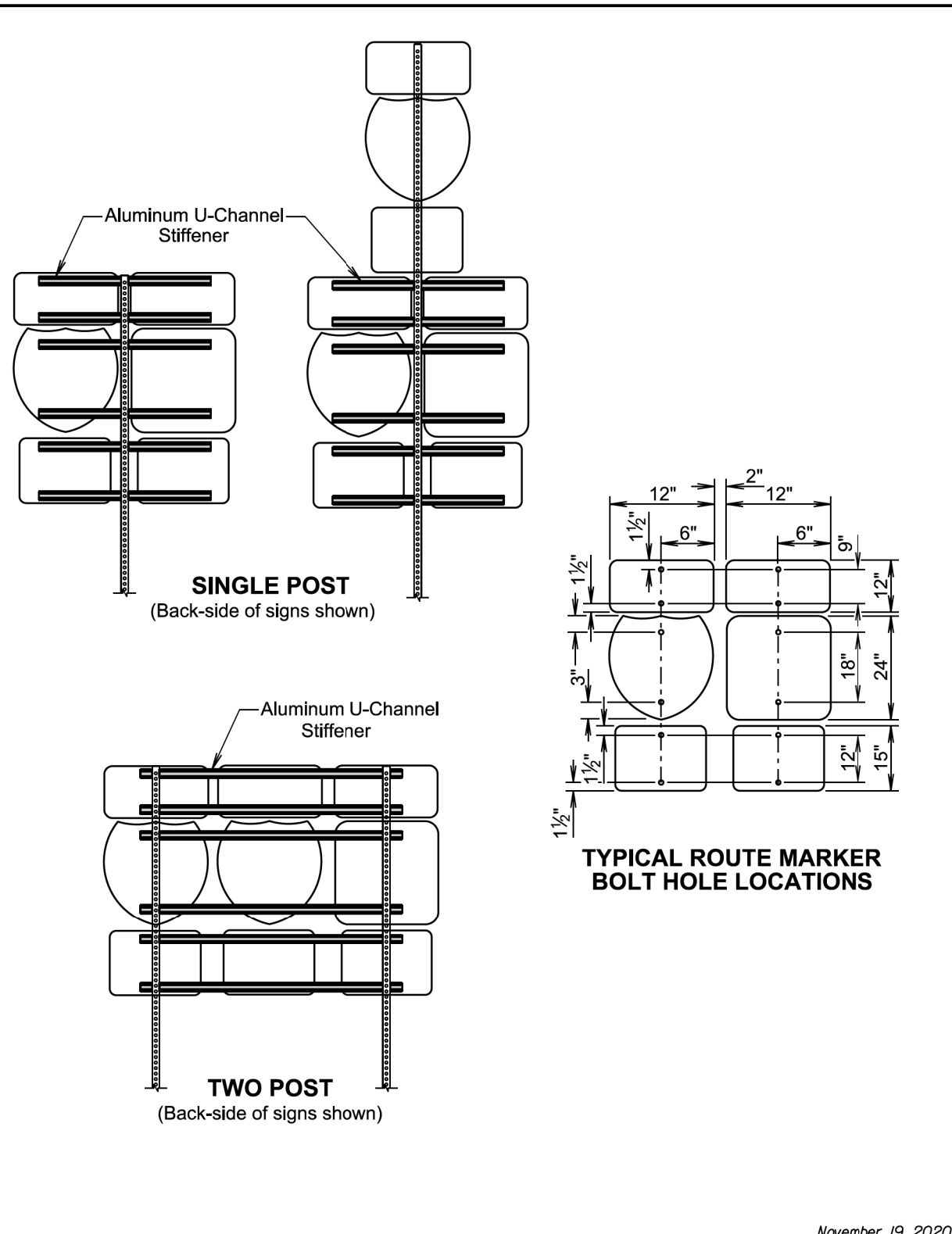
A minimum of two bolts will be required to fasten the sign to each post.

November 19, 2020

<b>S D D O T</b>	<b>SIGN STIFFENER DETAILS</b>	PLATE NUMBER <b>632.60</b>
		Sheet 2 of 2

Published Date: 2024





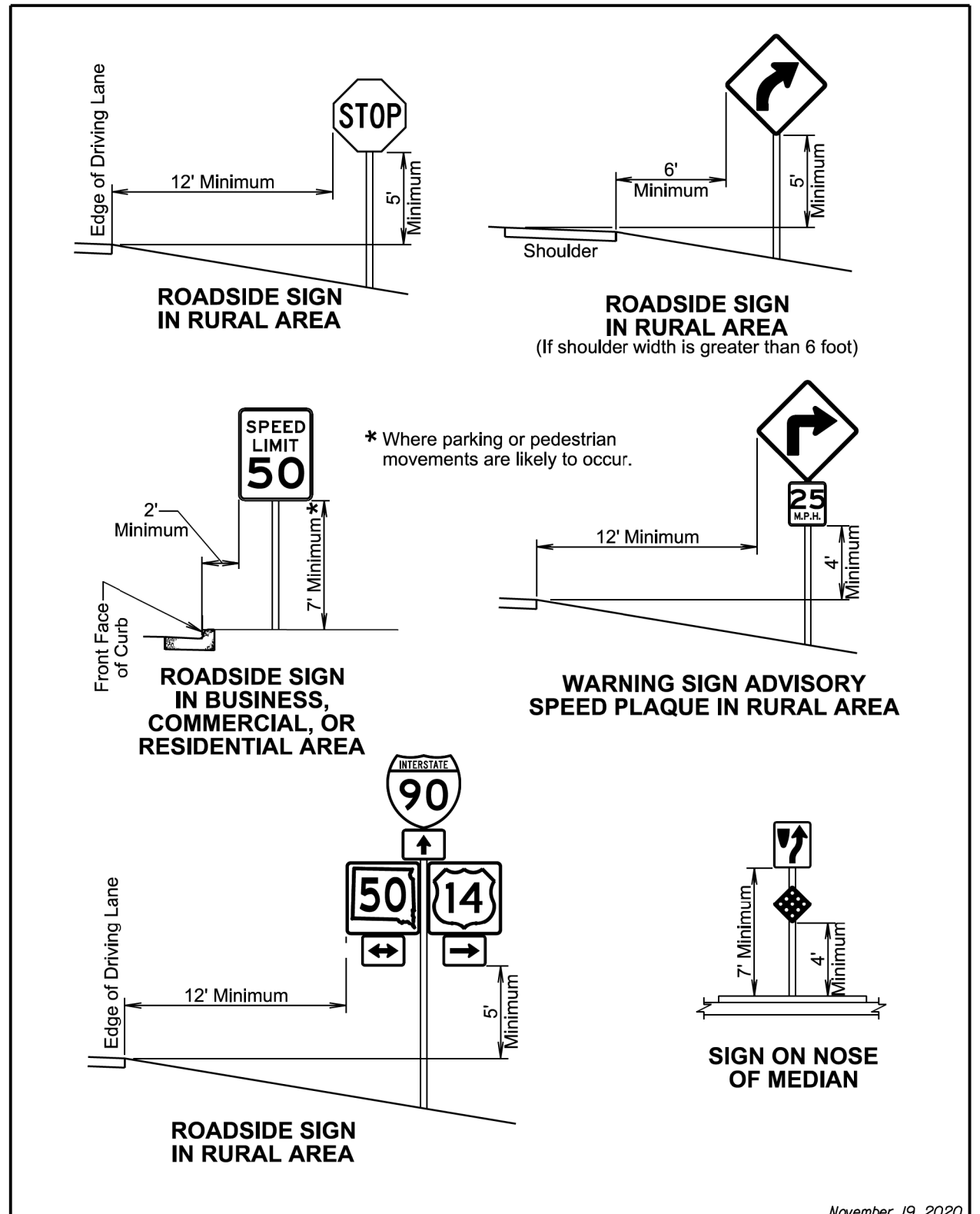
**SINGLE POST**  
(Back-side of signs shown)

**TWO POST**  
(Back-side of signs shown)

**TYPICAL ROUTE MARKER BOLT HOLE LOCATIONS**

November 19, 2020

<i>Published Date: 2024</i>	S D D O T	<b>MULTIPLE ROUTE MARKER SIGN STIFFENER INSTALLATION DETAILS</b>	PLATE NUMBER 632.62
			Sheet 1 of 1



**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**

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

**ROADSIDE SIGN IN RURAL AREA**

**SIGN ON NOSE OF MEDIAN**

\* Where parking or pedestrian movements are likely to occur.

November 19, 2020

<i>Published Date: 2024</i>	S D D O T	<b>OFFSETS FOR SIGN INSTALLATION</b>	PLATE NUMBER 632.90
			Sheet 1 of 1

Plot Scale - N/A

Plotted From - InfrastructureDesignGroup

File - ...107/CYS\_Sections\_Plates.dgn